

DAVID Y. IGE
GOVERNOR



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CRAIG K. HIRAI
EXECUTIVE DIRECTOR

JUL 08 2017

STATE OF HAWAII

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT AND TOURISM
HAWAII HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
Honolulu, Hawaii 96813
FAX: (808) 587-0600

IN REPLY REFER TO:

17:PEO/37

June 9, 2017

RECEIVED
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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Mr. Scott Glenn, Director
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Mr. Glenn:

With this letter, the Hawai'i Housing Finance and Development Corporation (HHFDC) hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed Kahului Lani Affordable Senior Housing Project situated at TMK No. (2)3-7-005:003, in the Kahului District on the island of Maui for publication in the next available edition of the Environmental Notice.

Enclosed is a completed OEQC Publication Form, one (1) hard copy of the DEA-AFONSI, three (3) Adobe Acrobat PDF files of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Janice Takahashi, Chief Planner at (808) 587-0639.

Sincerely,

Craig K. Hirai
Executive Director

Enclosures

c: Catholic Charities Housing Development Corporation c/o Gary Furuta, Project Manager
Marisa Fujimoto, Munekiyo Hiraga

17-544

APPLICANT PUBLICATION FORM

Project Name:	Kahului Lani Affordable Senior Housing Project
Project Short Name:	Kahului Lani Affordable Senior Housing
HRS §343-5 Trigger(s):	Use of State or County land or funds
Island(s):	Maui
Judicial District(s):	Kahului
TMK(s):	(2)3-7-005:003
Permit(s)/Approval(s):	Special Management Area Use Permit
Approving Agency:	Hawai'i Housing Finance and Development Corporation
<i>Contact Name, Email, Telephone, Address</i>	Janice Takahashi janice.n.takahashi@hawaii.gov (808)587-0634 677 Queen Street, Suite 300 Honolulu, Hawai'i 96813
Applicant:	Catholic Charities Housing Development Corporation
<i>Contact Name, Email, Telephone, Address</i>	Gary Furuta, Project Manager gary@gsfhi.com (808)429-7815 1288 Ala Moana Boulevard #35A Honolulu, Hawai'i 96814
Consultant:	Munekiyo Hiraga
<i>Contact Name, Email, Telephone, Address</i>	Marisa Fujimoto planning@munekiyohiraga.com (808) 244-2015 305 High Street, Suite 104 Wailuku, Hawai'i 96793

Status (select one) DEA-AFNSI**Submittal Requirements**

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

 FEA-FONSI

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

 FEA-EISPN

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

 Act 172-12 EISPN
("Direct to EIS")

Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

 DEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

 FEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

 FEIS Acceptance
Determination

The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.

- FEIS Statutory Acceptance The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
- Supplemental EIS Determination The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
- Withdrawal Identify the specific document(s) to withdraw and explain in the project summary section.
- Other Contact the OEQC if your action is not one of the above items.

Project Summary

Provide a description of the proposed action and purpose and need in 200 words or less.

Catholic Charities Housing Development Corporation (CCHDC) is proposing the development of Kahului Lani in Kahului, Maui on 3.81 acres of land identified as TMK (2)3-7-005:003. The Project will include the development of two (2) six-story multi-family residential buildings, a two-story 7,500 sq. ft. multi-purpose building, parking, and related improvements. The proposed project will provide 164 one-bedroom units for rent to seniors who earn 60 percent or less of the County's median income and one (1) two-bedroom manager's unit. Catholic Charities Hawai'i will provide onsite case management services for residents.

Draft Environmental Assessment

PROPOSED KAHULUI LANI AFFORDABLE SENIOR HOUSING PROJECT (TMK (2)3-7-005:003)

Prepared for:

Catholic Charities Housing Development Corporation

Approving Agency:

Hawai'i Housing Finance and Development Corporation

June 2017

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by Munekiyo Hiraga



MUNEKIYO HIRAGA

Planning. Project Management. Sustainable Solutions.

Draft Environmental Assessment

PROPOSED KAHULUI LANI AFFORDABLE SENIOR HOUSING PROJECT (TMK (2)3-7-005:003)

Prepared for:

Catholic Charities Housing Development Corporation

Approving Agency:

Hawai'i Housing Finance and Development Corporation

June 2017

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Appendix D.	Preliminary Engineering Report

List of Acronyms

AFONSI	Anticipated Finding of No Significant Impact
AIS	Archaeological Inventory Survey
AM	Morning
AMI	Area Median Income
AMP	Archaeological Monitoring Plan
amsl	above mean sea level
BMPs	Best Management Practices
CCH	Catholic Charities Hawai'i
CCHDC	Catholic Charities Housing Development Corporation
cfs	cubic feet per second
CMU	Concrete Masonry Unit
DWS	Department of Water Supply
EA	Environmental Assessment
FAA	Federal Aviation Administration
Fd	Fill Land
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
gpd	gallons per day
HAR	Hawai'i Administrative Rules
HHFDC	Hawai'i Housing Finance and Development Corporation
HRS	Hawai'i Revised Statutes
LCAs	Land Commission Awards
LOS	Level-Of-Service
MCC	Maui County Code
MECO	Maui Electric Company, Ltd.
mg	million gallon
mgd	million gallons per day
MIP	Maui Island Plan
NPDES	National Pollutant Discharge Elimination System
OSP	Off-site Parking
PER	Preliminary Engineering Report
PM	Afternoon
PZUE	Pu'uone Sand, 7 to 30 percent slopes
RGB	Rural Growth Boundary
SCS	Scientific Consultant Services, Inc.
SHPD	State Historic Preservation Division
SMA	Special Management Area
STB	Small Town Boundary
TIAR	Traffic Impact Analysis Report
UGB	Urban Growth Boundary

Executive Summary

Project Name: Proposed Kahului Lani Affordable Senior Housing Project

Type of Document: Draft Environmental Assessment

Legal Authority: Chapter 343, Hawai'i Revised Statutes

Anticipated Determination: Anticipated Finding of No Significant Impact (AFONSI)

Applicable Environmental Assessment review "Trigger": Use of State Funds
Use of County Lands (offsite roadway improvements)

Location: Maui Island
Kahului
TMK No. (2)3-7-005:003

Landowner: A&B Kane LLC

Applicant: Catholic Charities Housing Development Corporation
Contact: Gary S. Furuta
Project Manager
1288 Ala Moana Boulevard #35A
Honolulu, Hawai'i 96814
Phone: (808) 429-7815

Approving Agency: Hawai'i Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawai'i 96813
Contact: Janice Takahashi
Phone: (808) 587-0634

Consultant: Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai'i 96793
Contact: Marisa Fujimoto
Phone: (808) 244-2015

Project Summary: Catholic Charities Housing Development Corporation (CCHDC) is proposing the development of Kahului Lani, consisting of 164 affordable senior housing units and one (1) manager's unit (165 units total) in Kahului, Maui.

The Kahului Lani Affordable Senior Housing Project will be developed on 3.81 acres of land identified as TMK (2)3-7-005:003. The subject property is located on Kane Street at its intersection with Vevau Street in the Kahului urban core.

The Kahului Lani Affordable Senior Housing Project will include the development of two (2) six-story multi-family residential buildings, a two-story 7,500 sq. ft. multi-purpose building, parking, and related improvements. The proposed project will provide 164 one-bedroom units for rent to seniors who earn 60 percent or less of the County's median income and one (1) two-bedroom manager's unit. Catholic Charities Hawai'i will provide onsite case management services for residents.

The Kahului Lani Affordable Senior Housing Project will receive funding assistance from the Hawai'i Housing Finance and Development Corporation. The use of State funds and use of County lands (for offsite roadway improvements) are triggers for the preparation of an Environmental Assessment (EA) pursuant to Chapter 343, Hawai'i Revised Statutes (HRS) and Section 11-200-6, Hawai'i Administrative Rules (HAR). As such, this EA is being prepared to evaluate the technical characteristics, environmental impacts, and alternatives, as well as to advance findings relative to the proposed project. The approving agency for the EA will be Hawai'i Housing Finance and Development Corporation. The EA also serves as the supporting technical document for the project's Special Management Area Use Permit application.

PROJECT OVERVIEW



I. PROJECT OVERVIEW

A. PROJECT LOCATION, CURRENT LAND USE, AND OWNERSHIP

Catholic Charities Housing Development Corporation (CCHDC) is proposing the development of Kahului Lani, comprised of 164 affordable senior housing units and one (1) resident manager's unit at 65 South Kane Street in Kahului, Maui. The Kahului Lani Affordable Senior Housing Project will be developed on 3.81 acres of land identified as TMK No. (2)3-7-005:003 (Parcel 003). The subject property formerly consisted of three (3) parcels, TMK Nos. (2)3-7-005:003, 011, and 023, which were consolidated under subdivision file No. 3.2166 in 2007 as Parcel 003. TMK No. (2)3-7-005:011 was reassigned to a narrow strip of land along the west side of School Street for road widening. The subject property (Parcel 003) is located on Kane Street at its intersection with Vevau Street in the Kahului urban core. See **Figure 1**.

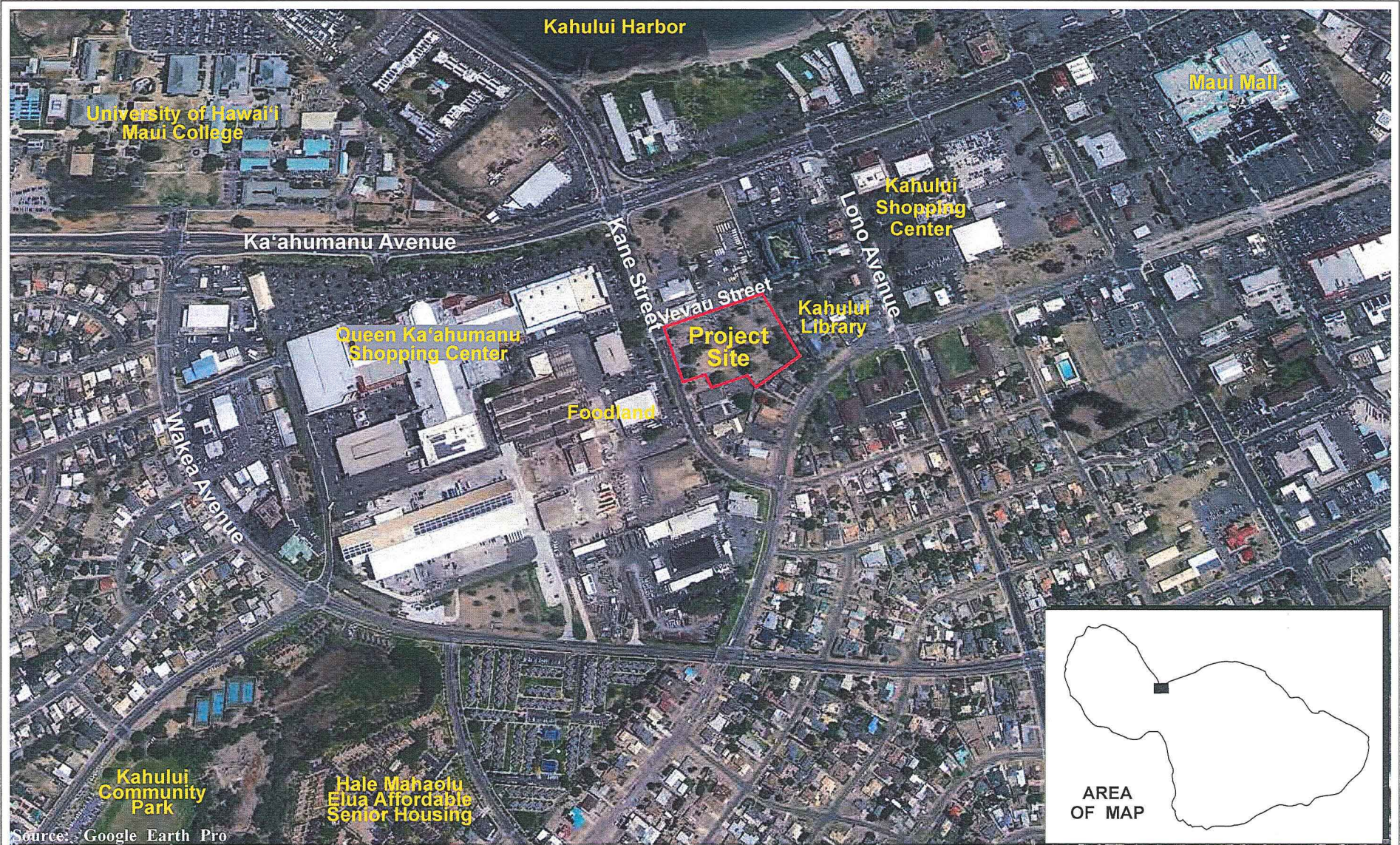
The project site is bordered by Vevau Street to the north, Kane Street to the west, and School Street to the east. Several churches, including the First Church of Christ, Scientist; Seicho No-Ie Maui; and Church of the Nazarene, as well as the Family Life Center are located to the south of the project site. Queen Ka'ahumanu Center is located across Kane Street from the property while the Kahului Public Library is located across School Street. Across Vevau Street are the McKinley Community School for Adults and the Waterfront Apartments. The County of Maui's central bus hub for the Maui Bus is located across the street from the project site at the Queen Ka'ahumanu Shopping Center.

A portion of the subject property was formerly used as a recreational go-kart facility. The go-kart track remains on the property, but the facility is no longer in operation. The remainder of the project site is vacant.

The project site is currently owned by A&B Kane LLC, managed by A&B Properties Hawai'i, LLC, Series T. The Applicant, CCHDC, is in the process of acquiring the site from A&B Kane LLC.

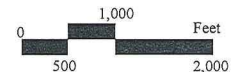
B. PROPOSED ACTION

The Kahului Lani Affordable Senior Housing Project will include the development of two (2) six-story multi-family residential buildings, a two-story 7,500 sq. ft. multi-purpose building, parking, and related improvements. See **Figure 2** and **Figure 3**. The proposed project will provide 164 one-bedroom units for rent to seniors who earn 60 percent or less of the County's median income and one (1) two-bedroom resident manager's unit. Units will be available for those earning up to 30 percent, 50 percent, and 60 percent of the area median income (AMI). Income limits and maximum rents will be in accordance with the

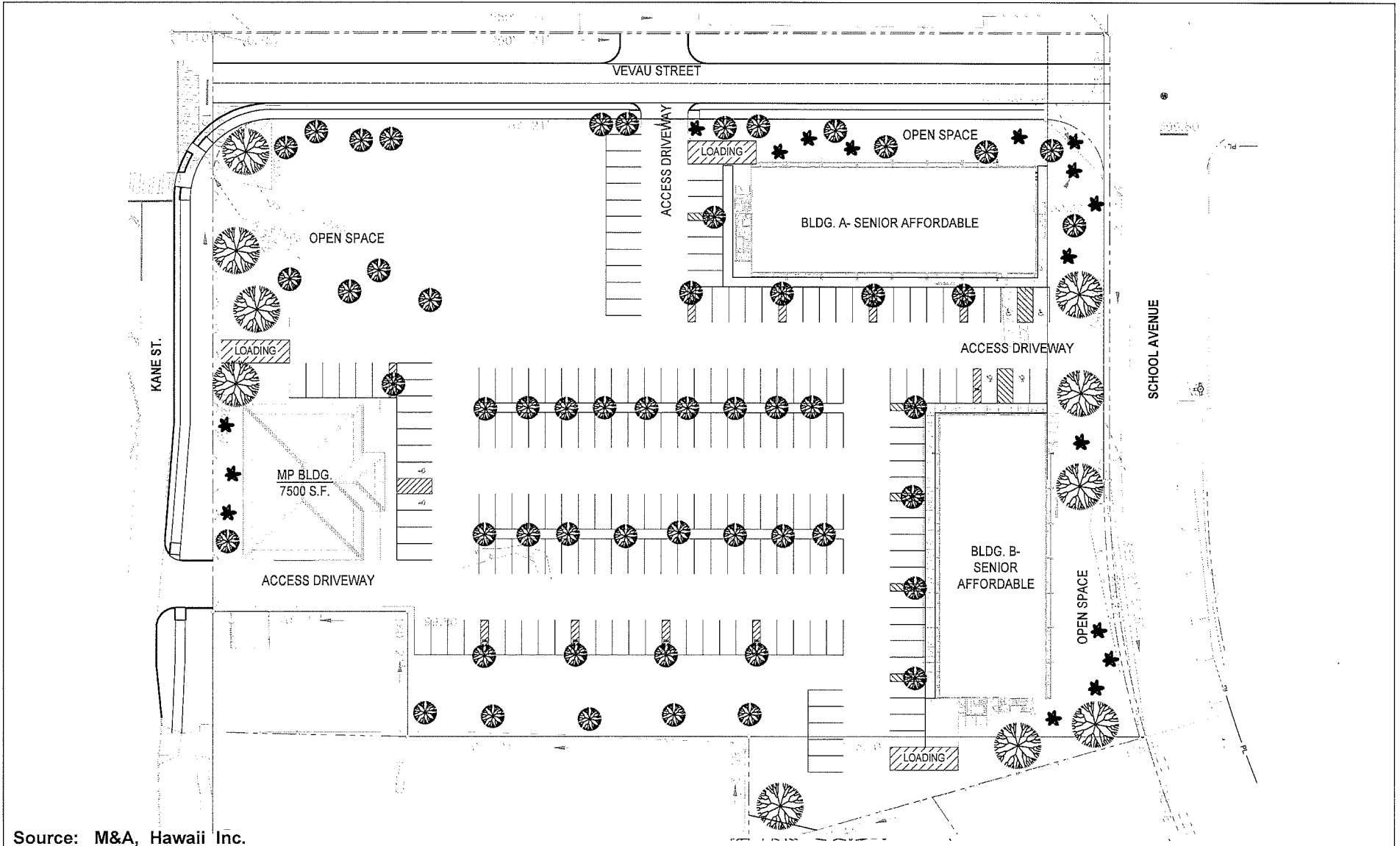


Source: Google Earth Pro

Figure 1 Kahului Lani Affordable Senior Housing Project
Property Location Map



Prepared for: Catholic Charities Housing Development Corporation



Source: M&A, Hawaii Inc.

Figure 2 Kahului Lani Affordable Senior Housing Project Site Plan

NOT TO SCALE



Prepared for: Catholic Charities Housing Development Corporation



Side Elevation

Front Elevation



Side Elevation

Rear Elevation

Source: M & A Hawaii

Figure 3

Kahului Lani Affordable Senior Housing Project Elevations

NOT TO SCALE

U.S. Housing and Urban Development (HUD) maximum rent schedule. The current income limits and proposed rents for the AMI targets for the project are listed below.

Table 1. 2017 HUD Income Limits and Proposed Gross Rents

AMI	Income Limits		Proposed Maximum Gross Monthly Rent*
	One Person	Two People	
30%	\$18,090	\$20,670	\$484
50%	\$30,150	\$34,450	\$807
60%	\$36,180	\$41,340	\$969

* Proposed maximum gross monthly rents are based on the 2017 HUD income and gross rent limits. Rents may be adjusted based on the HUD limits when the project is completed and being rented.

The multipurpose building will include offices for Catholic Charities Hawai'i (CCH), who will provide onsite case management services for residents, as well as dedicated space for residents of the project.

Access to the project site will be provided by new driveways off of Kane Street, Vevau Street, and School Street. The Kane Street access will be restricted to right-turns in and out of the property. Approximately two hundred sixty (260) parking stalls will be provided on the property through a combination of paved and grassed parking as permitted by Maui County Code, Chapter 19.036A. Twenty-two (22) of the parking stalls are being provided in compliance with an existing Offsite Parking (OSP) Permit for the Waterfront Apartments. The remaining parking stalls will be utilized by residents at Kahului Lani and CCH. Carport structures with photovoltaic panels may be provided in the parking lot, subject to the availability of funding.

It is noted that Vevau Street is located within the subject property, Parcel 003. Vevau Street will be improved to County standards and dedicated to the County of Maui. The adjacent side of School Street and Kane Street will also be improved to meet County standards. Offsite improvements include those planned for Kane Street, School Street, and TMK No. (2)3-7-005:011, the road widening parcel between the subject property and School Street.

C. PROJECT NEED

Affordable housing has been and continues to be an important need within the County of Maui and State of Hawai'i as a whole. Population and household growth have exceeded the development of new housing units, exacerbating the demand for housing and increasing housing costs.

The *Hawai'i Housing Planning Study, 2016*, prepared for the County's Department of Housing and Human Concerns, projected a demand for 13,949 new units in Maui County from 2015-2025. It notes that 7,136 of these new units would be needed for households earning 60 percent of the Area Median Income (AMI) or less, 4,882 of the projected

demand being for rental units. With respect to the effective demand for affordable rental housing for elderly persons (i.e., those who plan to move to another unit in the next ten (10) years), the study estimates a demand for 131 rental units affordable to senior households earning 60 percent or less of the Area Median Income (AMI) by 2025 (SMS, 2016). The study also notes that there is additional demand for ownership of affordable senior housing. The 2016 study provides a baseline framework for understanding housing demand for new households, but it notes that there are other factors that could change actual demand, such as ability to qualify for a preferred move (i.e. home ownership), and consideration of households that are currently doubled up, which are counted as one (1) household instead of two (2) (SMS, 2016). It is noted that there are lengthy waiting lists at existing affordable senior housing projects in Maui County.

A project-specific market study was conducted and concluded that due to the imbalance between supply and demand in the Central Maui area and the desirable location of the project in the center of the urban core, strong interest in these rental units is anticipated. Specifically, occupancy is anticipated to be at 97-100 percent by the end of the first year following completion of the project. See **Appendix “A”**.

The proposed Kahului Lani Affordable Senior Housing Project will provide much needed affordable rental housing for seniors in Central Maui. Existing affordable senior housing developments throughout Maui have lengthy waiting lists, a testament to the high demand present. The demand for affordable senior housing is anticipated to continue to grow as the County’s population ages.

D. CHAPTER 343, HAWAI‘I REVISED STATUTES REQUIREMENT

The Kahului Lani Affordable Senior Housing Project will receive funding assistance from the HHFDC. The use of State funds and use of County lands (for offsite roadway improvements) are triggers for the preparation of an Environmental Assessment (EA) pursuant to Chapter 343, Hawai‘i Revised Statutes (HRS) and Section 11-200-6, Hawai‘i Administrative Rules (HAR). As such, this EA is being prepared to evaluate the technical characteristics, environmental impacts, and alternatives, as well as to advance findings relative to the proposed project. The approving agency for the EA will be the HHFDC. The EA also serves as the supporting technical document for the project’s Special Management Area Use Permit application.

E. LAND USE ENTITLEMENT REQUIREMENTS

The project site is designated “Urban” by the State Land Use Commission and “B, Business/Commercial” by the Wailuku-Kahului Community Plan. The majority of the property is zoned “B-2, Community Business”, with the remainder designated as “R-3, Residential” by Maui County zoning. The multi-family residential buildings, multi-purpose

building, and parking will be developed on the portion of the property designated as “B-2, Community Business”, which is permitted by zoning.

1. Special Management Area Use Permit

The project site is located within the County’s Special Management Area (SMA). In 2005, a SMA Use Permit was obtained by A&B Properties, Inc. (landowner) and Agora Realty (applicant) for the previously proposed Kane Street Commercial Mixed-Use Project consisting of 90 residential units, 15,578 square feet of commercial space, and related improvements (SM1 2005/0004). The SMA Use Permit remains valid, with a deadline to initiate construction by June 30, 2017. A&B Properties, Inc. has submitted a request for a time extension for the deadline to initiate construction. However, given the new proposed use and reduced density of the project and based on discussions with the Department of Planning, CCHDC will submit a new SMA Use Permit application for the development of the Kahului Lani project. The EA will serve as a supporting document for the SMA Use Permit application.

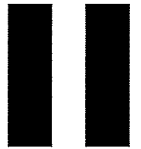
2. Parking Waiver

The proposed project meets the County of Maui’s definition of a residential mixed use as it will provide residential units as well as office space for Catholic Charities Hawai’i. Pursuant to Chapter 19.036A.160, Maui County Code, the Planning Director may waive up to 30 percent of required parking for residential mixed use projects. The County’s parking code requires two (2) parking stalls for each residential unit. Inasmuch as the proposed project involves the development of one-bedroom units for seniors and is located in close proximity to bus transportation, a 30 percent parking waiver will be requested from the Planning Director. As previously noted, a total of 260 parking stalls are proposed, including 238 stalls for the Kahului Lani Affordable Senior Housing Project and 22 stalls of offsite parking for the nearby Waterfront Apartments.

F. CONSTRUCTION COST AND IMPLEMENTATION TIME FRAME

The development of the proposed Kahului Lani Affordable Senior Housing Project will commence upon receipt of regulatory and construction permits and approvals. Construction is anticipated to span 32 months. The estimated cost of construction for the proposed project is \$47,766,000. Construction of the project will be done in two (2) phases. The first phase will include one (1) building with 81 affordable senior units and a manager’s unit along with the multi-purpose building. The second phase will be comprised of the second building with 83 affordable senior units.

**DESCRIPTION OF THE
EXISTING CONDITIONS,
POTENTIAL IMPACTS, AND
MITIGATION MEASURES**



II. DESCRIPTION OF THE EXISTING CONDITIONS, POTENTIAL IMPACTS, AND MITIGATION MEASURES

A. PHYSICAL SETTING

1. Surrounding Land Uses

a. Existing Conditions

The proposed project is located within the urban core of Kahului, within walking distance of various commercial centers, as well as the Kahului Harbor, the island's only deep water port. The Kahului Airport, the second busiest airport in the State, is also located in the region and is less than two (2) miles from the subject property. With its proximity to the harbor and airport, the Kahului region has emerged as the focal point for heavy industrial, light industrial, and commercial activities and services. These services include warehousing, baseyard operations, automotive sales and maintenance, and retailing for equipment and material suppliers.

The region is also considered Central Maui's commercial retailing center with the Maui Mall, Kahului Shopping Center, and Queen Ka'ahumanu Center located within a mile radius of each other. Surrounding this commercial core is an expansive residential area comprised principally of single-family residential units. Residential uses encompass the area extending from the Maui Memorial Medical Center to Pu'unē Avenue.

The project site is bordered by Vevau Street to the north, Kane Street to the west, and School Street to the east. Several churches, including the First Church of Christ, Scientist; Seicho No-le Maui; Church of the Nazarene; and Family Life Center, are located to the south of the project site. Foodland and Queen Ka'ahumanu Center are located on Kane Street across the street from the property, while the Kahului Public Library is located across School Street. The McKinley Community School for Adults, State of Hawai'i, Department of Accounting and General Services' Kahului Civic Center, and the Waterfront Apartments are across Vevau Street from the project site. Residential areas exist south of Kane Street after its intersection with Kamehameha Avenue.

b. Potential Impacts and Proposed Mitigation Measures

The proposed project will provide 164 one-bedroom units for rent to seniors who earn 60 percent or less of the County's median income and one (1) two-bedroom resident manager's unit. Catholic Charities Hawai'i (CCH) will provide onsite social service case management services for residents. The proposed action is compatible with the surrounding land uses, and significant adverse impacts are not anticipated as a result of the proposed project.

2. Climate

a. Existing Conditions

Like most areas of Hawai'i, Maui's climate is relatively uniform year-round. Characteristic of Hawai'i'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.

The climate of Maui County is defined by average temperatures ranging from 83.8 degrees in the warmest month at Kahului Airport to 67.3 degrees in the coolest month. August and September are historically the warmest months, while January and February are the coolest. Rainfall in the region averages approximately 29.26 inches per year. Winds in the Kahului region are predominantly out of the north and northeast (County of Maui, Office of Economic Development, 2015).

b. Potential Impacts and Mitigation Measures

The proposed action is not anticipated to adversely affect climatic conditions in the area. Landscaping, including shade trees throughout the parking lot, will be incorporated into the project to take advantage of the natural cooling effects of shading.

3. Topography and Soil Characteristics

a. Existing Conditions

The project site is relatively flat, having been previously developed for residential and commercial use. The property generally slopes from south to north, with an average slope of approximately 1.2 percent. Elevations onsite range from approximately 14 feet above mean sea level (amsl) the

southwest boundary to nine (9) feet amsl along the eastern boundary (Chris Hart & Partners, 2005).

According to the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii", prepared by the United States Department of Agriculture Soil Conservation Service, underlying the project site and surrounding lands are soils belonging to the Pulehu-Ewa-Jaucas association. See **Figure 4**. This soil association is characteristically deep and well-drained, as well as located on alluvial fans and in basins. The soil type specific to the project site is classified as Puuone Sand, 7 to 30 percent slopes (PZUE). See **Figure 5**. This soil is typically on sandhills near the ocean and consists of a surface layer approximately 20 inches thick of calcareous sand, over grayish brown cemented sand. Permeability is rapid above the cemented layer, runoff is slow, and the wind erosion hazard is moderate to severe. This soil type is typically used for pasture or residential development (U.S. Department of Agriculture, Soil Conservation Service, 1972).

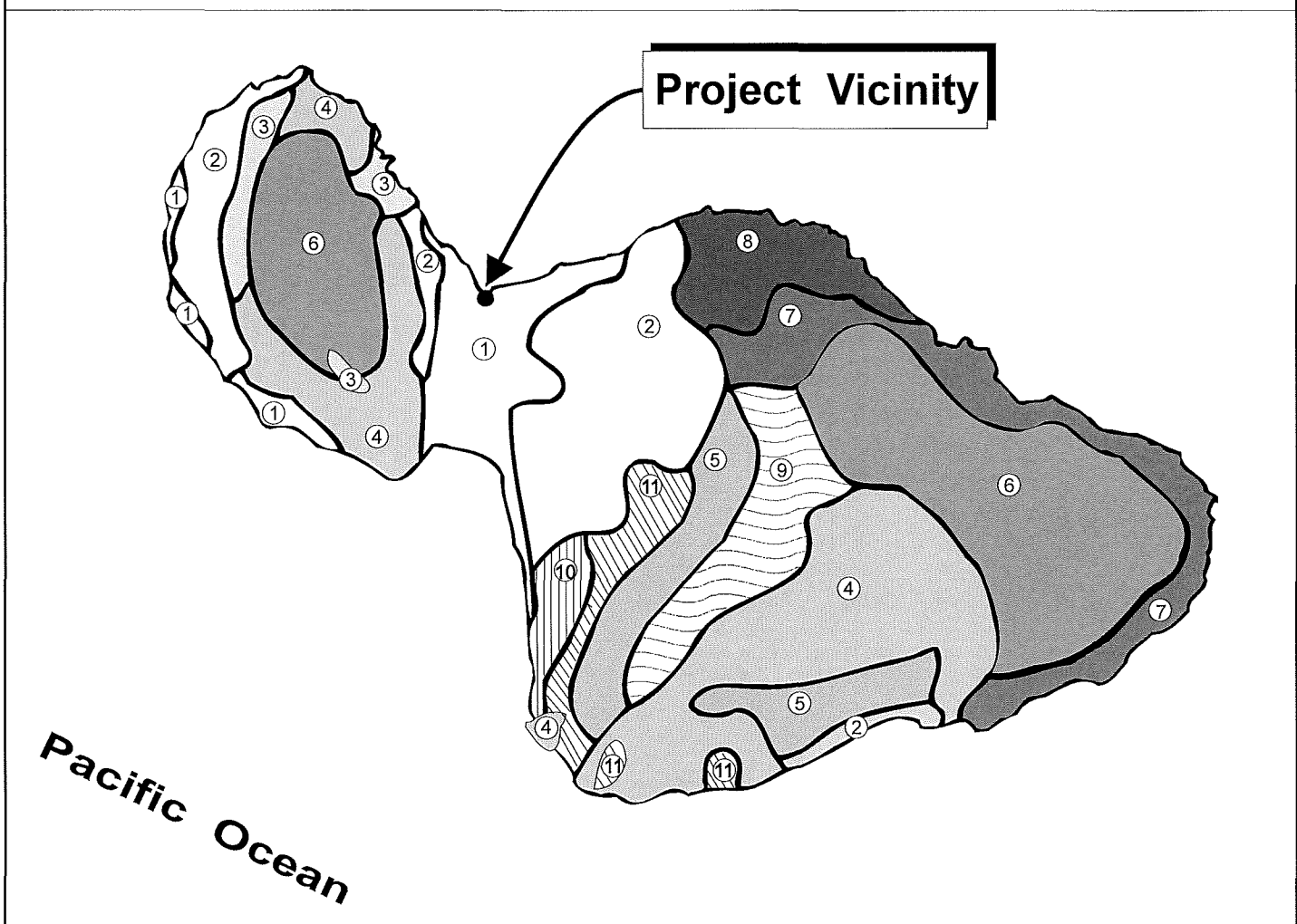
b. Potential Impacts and Mitigation Measures

The project site was previously topographically modified from its original condition to accommodate development. The site was previously developed for residential use, although the homes have since been removed, and a portion of the subject property was formerly used as a recreational go-kart facility.

The proposed project will result in ground altering activities and minor alterations to existing topographical conditions to provide drainage improvements, utility service, and the necessary finished floor elevations for the proposed residential, multi-purpose buildings, parking, and driveways. Grading activities associated with the improvements will be completed in accordance with Chapter 20.08, Soil Erosion and Sedimentation Control, of the Maui County Code and the permit requirements of the State of Hawai'i, Department of Health and the National Pollutant Discharge Elimination System (NPDES). Adverse impacts to topography and soil conditions in the vicinity of the project site are not anticipated as a result of the proposed action.

LEGEND

- | | |
|--|-------------------------------------|
| ① Pulehu-Ewa-Jaucas association | ⑦ Hana-Makaalae-Kailua association |
| ② Waiakoa-Keahua-Molokai association | ⑧ Pauwela-Haiku association |
| ③ Honolua-Olelo association | ⑨ Laumaia-Kaipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keawakapu-Makena association |
| ⑤ Puu Pa-Kula-Pane association | ⑪ Kamaole-Oanapuka association |
| ⑥ Hydrandepts-Tropaquods association | |



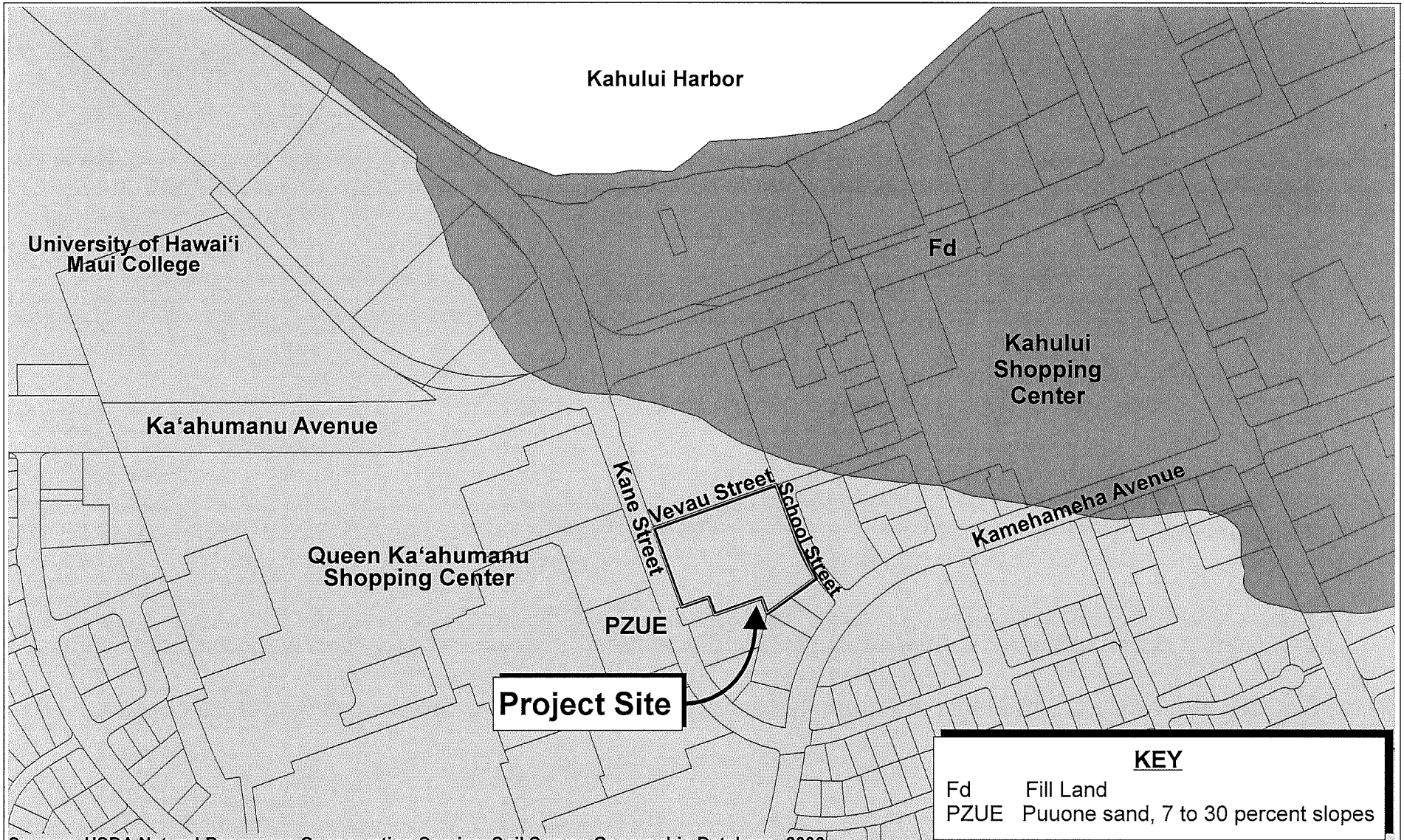
Source: USDA Soil Conservation Service

Figure 4

Kahului Lani Affordable Senior Housing Project
Soil Association Map

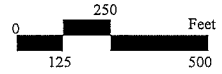
NOT TO SCALE





Source: USDA Natural Resources Conservation Service, Soil Survey Geographic Database, 2006

Figure 5 Kahului Lani Affordable Senior Housing Project
Soil Classification Map



Prepared for: Catholic Charities Housing Development Corporation

4. **Flood and Tsunami Hazards**

a. **Existing Conditions**

The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program under which flood-prone areas are identified and flood insurance is made available. FEMA produces Flood Insurance Rate Maps (FIRM), an insurance and floodplain map that identifies the areas subject to flooding during a 1-percent chance (100-year) flood event, as well as areas inundated by the 0.2-percent annual chance (500-year) flood. The 100-year floodplain is the boundary of the flood that has a 1-percent chance of being equaled or exceeded in any year, while the 500-year floodplain is the boundary of the flood that has a 0.2-percent chance of being equaled or exceeded in any given year. FEMA's FIRM indicates that the subject property is located within Zone X (unshaded). See **Figure 6**.

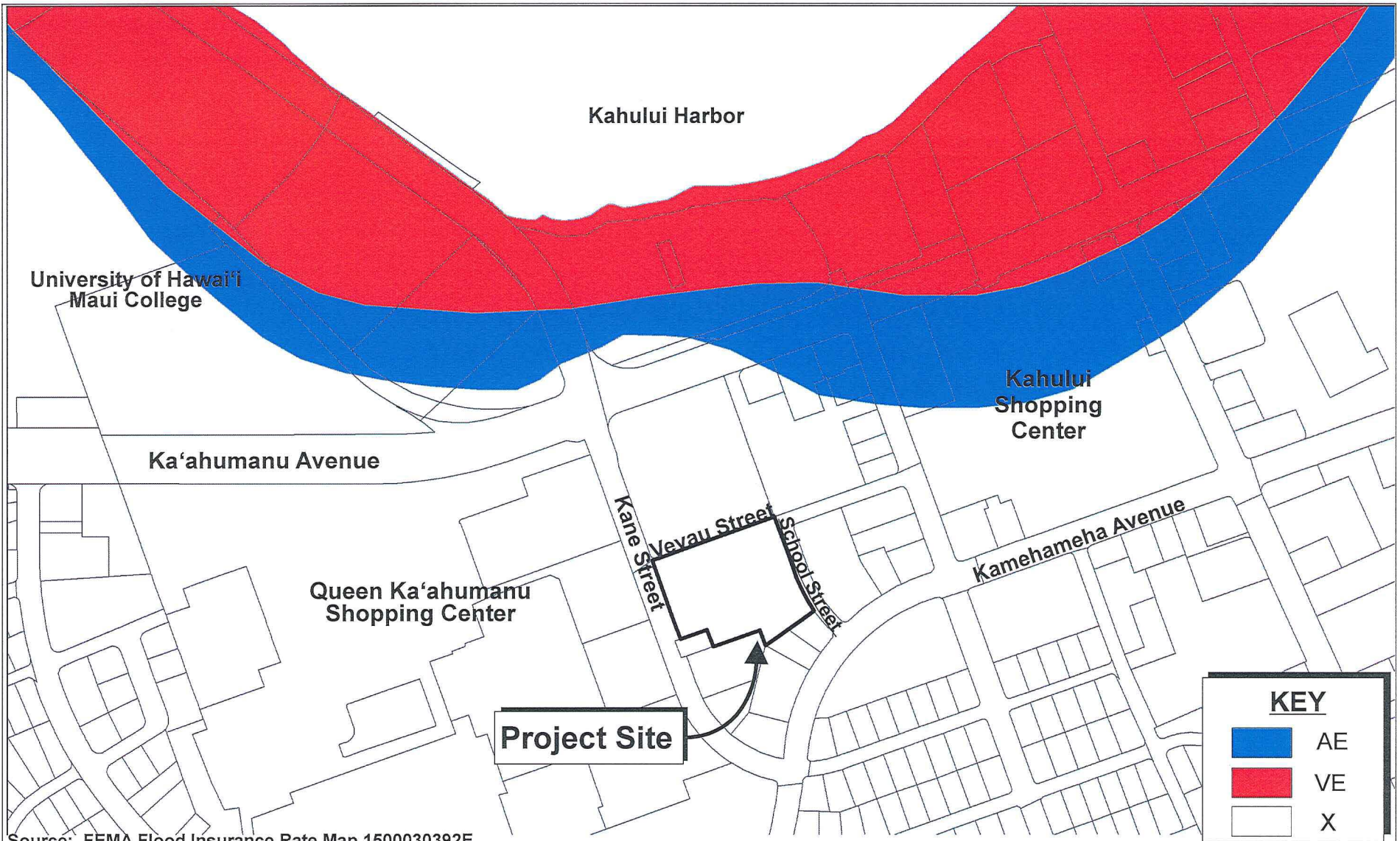
According to FEMA, Zone X is identified as areas of low flood risk and minimal flooding with no development restrictions. Specifically, Zone X (unshaded) corresponds to areas that are determined to be outside the 0.2-percent annual chance floodplain. Zone AE is identified as areas that lie within the 100-year coastal floodplains. Zone VE is identified as areas that lie within the 100-year coastal floodplains that have additional hazards associated with storm waves.

The proposed project area is located within the tsunami evacuation zone as designated by the County of Maui, Emergency Management Agency. See **Figure 7**.

b. **Potential Impacts and Mitigation Measures**

The proposed Kahului Lani Affordable Senior Housing Project is located within Flood Zone X, areas of minimal flooding. As such, a Special Flood Hazard Area Development Permit will not be required for project implementation.

Procedures to organize and direct operations at Kahului Lani in the event of an emergency or civil defense action, such as a tsunami, will be established. The procedures will identify protocol during times of emergency or disruption and specific actions dependent upon the type of emergency or disruption.



Source: FEMA Flood Insurance Rate Map 1500030392E

Figure 6 Kahului Lani Affordable Senior Housing Project
Flood Insurance Rate Map



Prepared for: Catholic Charities Housing Development Corporation



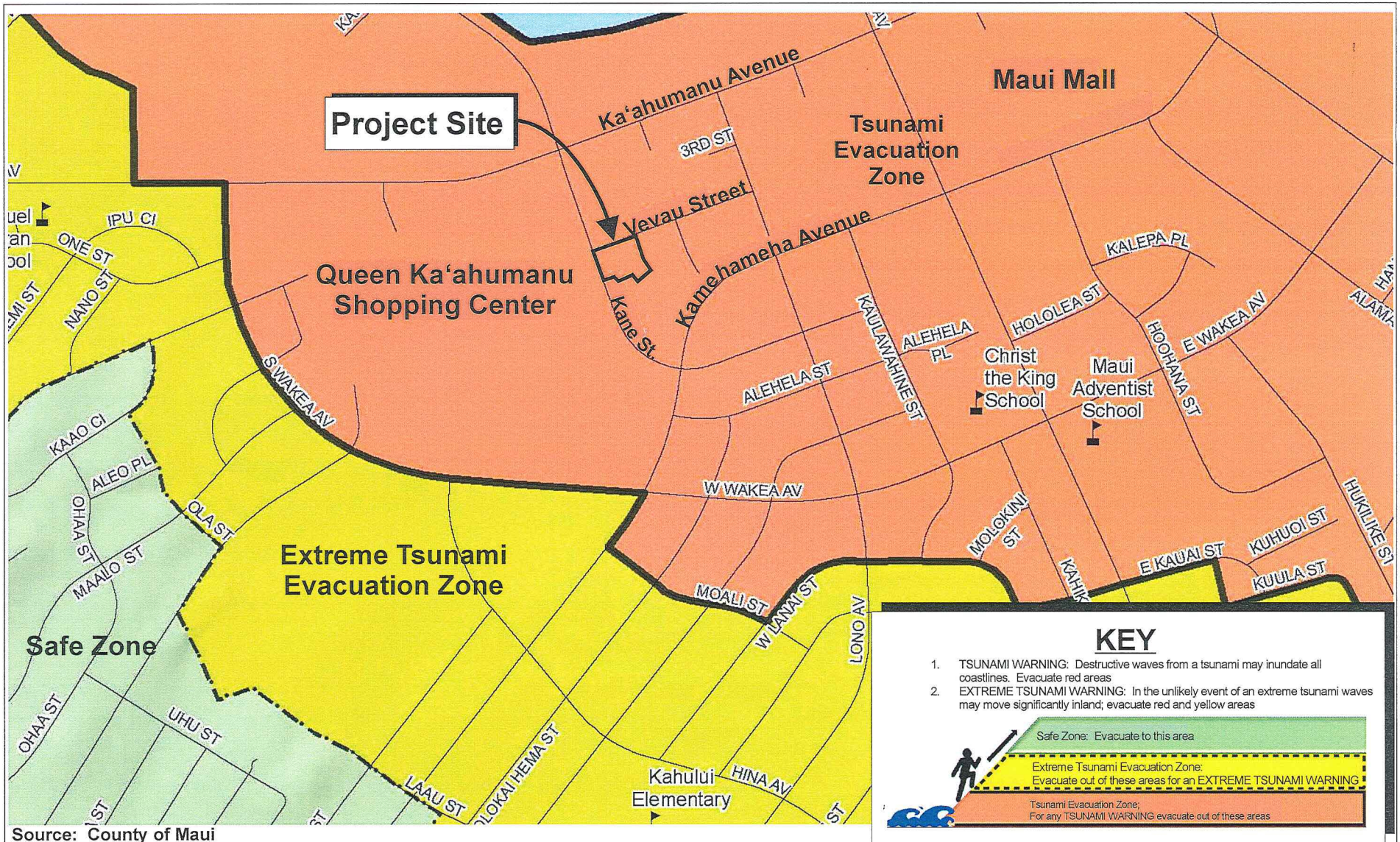


Figure 7

Kahului Lani Affordable Senior Housing Project Tsunami Evacuation Map

NOT TO SCALE



Prepared for: Catholic Charities Housing Development Corporation



Given the FIRM designation for the project area and the emergency and civil defense procedures to be established, no adverse impacts to flood and tsunami conditions are anticipated with the implementation of the proposed action.

With respect to sea level rise, the University of Hawai'i, School of Ocean and Earth Science Technology (SOEST) states that current research indicates that global mean sea level may rise by one (1) foot by mid-century and be 2.5 to 6.2 feet by 2100 (University of Hawai'i, SOEST, 2016). Because the project is located inland from the coast at elevations of approximately 9-14 feet amsl, impacts to the proposed project from sea level rise are not anticipated.

5. Streams and Wetlands

a. Existing Conditions

There are no streams in the vicinity of the project site. The closest wetland to the project area is Kanaha Pond, located approximately 0.8 of a mile west of the project area.

b. Potential Impacts and Mitigation Measures

No adverse impacts on streams or wetlands are anticipated as a result of the proposed project.

6. Flora, Fauna and Avifauna

a. Existing Conditions

The project site is located within the urbanized core of Kahului. As such, areas surrounding the project site are characteristic of the urban nature of Kahului. The subject property is partially developed and moderately landscaped with shade trees and other vegetation. There are no known rare, endangered, or threatened species of flora within the project site.

Fauna and avifauna at the project site are generally characteristic of urban areas. Fauna typically found in the vicinity include mongoose, rats, dogs, and cats. Avifauna typically include mynahs, several types of doves, and house sparrows. There are no rare, endangered, or threatened species of fauna or avifauna found at the project site (Chris Hart & Partners, 2005).

b. Potential Impacts and Mitigation Measures

There are no known significant habitats or rare, endangered, or threatened species of flora, fauna, and avifauna located within the project site. Landscaping is proposed as part of the project. Since the project site was previously developed with moderate landscaping, the proposed action is not anticipated to have an adverse impact upon these environmental features.

As recommended by the U.S. Fish and Wildlife Service, woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the Hawaiian hoary bat birthing and pup rearing season unless inspected for the presence of the hoary bat, and barbed wire fencing will not be used. Outdoor lights will be shielded to minimize impacts to seabirds, automatic motion sensor switches and controls will be considered for permanent outdoor lighting, and night construction will be avoided between September 15 and December 15. Additionally, the site will be surveyed for the presence of host plants for the Blackburn's sphinx moth prior to construction and appropriate mitigation measures will be implemented if such plants are present.

7. Archaeological Resources

a. Existing Conditions

As mentioned previously, a portion of the subject property was formerly developed and used as a recreational go-kart facility. In 2004 an Archaeological Inventory Survey (AIS) was completed for the project area by Scientific Consultant Services, Inc. (SCS). No significant historic sites or features were located during the AIS, however, the Archaeological Assessment Report recommends archaeological monitoring for future planned construction activities. See **Appendix "B"**. An Archaeological Monitoring Plan (AMP) was subsequently prepared and accepted by the State Historic Preservation Division (SHPD). See **Appendix "B-1"** and **Appendix "B-2"**. Archaeological monitoring was conducted on approximately 6.926 acres, including the project area, between September 22, 2005 and April 28, 2006. The Archaeological Monitoring Report stated that no human remains were discovered during monitoring and all archaeological materials documented and collected during monitoring dated to the Historic period. See **Appendix "B-3"**.

b. Potential Impacts and Mitigation Measures

Given the history of the project area and the developed nature of the surroundings, it is unlikely that significant archaeological and cultural remains will be uncovered at the project area. Nevertheless, as recommended in the Archaeological Assessment Report and by SHPD, archaeological monitoring will be implemented as a precautionary measure during all construction-related ground alterations within the project site. As requested by SHPD in their comment letter dated May 31, 2017, an updated AMP will be prepared and submitted to SHPD for review and acceptance.

In accordance with Section 6E-43.6, Hawai'i Revised Statutes (HRS) and Chapter 13-300, Hawai'i Administrative Rules (HAR), if any significant cultural deposits or human skeletal remains are encountered, work will stop in the immediate vicinity and SHPD will be contacted to establish the appropriate protocols and level of mitigation.

8. Cultural Resources

a. Existing Conditions

As noted previously, the project site is located within the ahupuaa of Wailuku, in the district of Wailuku. The ahupuaa of Wailuku is part of a greater area, known as Na Wai Eha, "The Four Waters", named after the four (4) major streams that fed the taro-growing areas of Waikapu, Wailuku, Waiehu, and Waihee.

In traditional times, Kahului appears to have been a marginal settlement location, relative to Wailuku Town and areas to the north. It contained scattered fishing settlements, which suggests a low population density or limited socio-economic status (SCS, 2004). While there are hundreds of Land Commission Awards (LCAs) for Wailuku, there are none for the project area.

At one time, areas upslope and west of the project area were covered with lo'i and house sites. Areas downslope sometimes served as burial grounds. The Archaeological Assessment Report notes that two (2) elderly homeless gentlemen living in the area recalled that the southern parcel previously had numerous small houses or shacks. Refer to **Appendix "B"**.

b. **Potential Impacts and Mitigation Measures**

Two (2) individuals familiar with the project area were interviewed to assess potential impacts the project may have on cultural resources and practices.

Hökūlani Holt

Hökūlani Holt is the Hawai'i Papa o ke Ao Cultural Director and the Director of the Ka Hikina O Ka Lā Program at the University of Hawai'i, Maui College (UHMC). Although she was born on Oahu, she came to Maui, where both her parents are from, and was raised from infancy by her maternal grandparents in Waiehu near Ka'ehu Bay until she was five (5) years old. The agreement between her parents and grandparents was that she would move back to O'ahu at age 5, but she returned to spend her summers here on Maui with her grandparents and moved here permanently in 1975.

When asked about her connection to the Kahului Lani project site, Hökūlani shared that as a child, she attended church with her grandparents at the Church of Jesus Christ of Latter Day Saints, near the project site. She also mentioned that the Kahului Shopping Center near the project site was the only shopping center when she was growing up, so she went there frequently. Her first work experience in high school was working at the former Maui Land and Pineapple Company cannery, which was also near the project site.

Hökūlani recalls that there used to be houses at the project site in the 1950s. She remembers the area being known as "Railroad Camp" because the families who worked for Kahului Railroad Company lived there. The railroad ran along Ka'ahumanu Avenue from the Wailuku Sugar Mill and connected to port near Hobron Road. It also ran from the port all the way down to the Pā'ia Sugar Mill. When the railroad closed down in the 1960s people living there had to move out of their homes because the land was being sold.

Hökūlani is not aware of any traditional cultural practices occurring at the project site, but she recalled that the families from "Railroad Camp" used to throw net and lay net at Kahului Harbor. She noted that there was also a "Fishing Camp" closer to Kahului Harbor that some of the locals referred to as "Raw Fish Camp" where the fishermen and their families lived. She mentioned that it is important for projects in general to not just consider what was culturally done there, but that the human connection with the natural environment be considered, such as the awareness of the way the winds blow, how the sun affects the surrounding area, and where the names of places originated from.

When asked about any additional considerations related to the project site, Hōkūlani noted that the road (Vevau Street) could be improved, and more recently she has observed more homeless people in that area. She noted that the proximity to shopping is good, but the project may want to consider improving the Kane Street crosswalk near Vevau Street. She said that UHMC has student housing near the project area and students utilize that crosswalk to access the shopping center and to get to school.

Gladys Baisa

Mrs. Gladys Baisa was born in 1940 in Pā'ia. She lived there with her family until the age of 6, when she moved to Makawao, where she grew up and still lives. Gladys describes herself as an avid reader and Rotarian. She is a long-time member of the Kahului Rotary Club because she used to work in Kahului at Maui Economic Opportunity, Inc. (MEO) and is deeply committed to serving her community. After retiring from MEO, Gladys served Maui County as a Councilmember in the Upcountry seat for ten (10) years.

Although the current MEO office is located at the Cameron Center, the former MEO office was located in the vicinity of the proposed Kahului Lani project, next to what used to be referred to as the old Kahului Elementary School. Gladys worked there from 1969 to 2005. She remembers the old go-kart facility that was located on a portion of the project area because it was very noisy.

In discussing the location of the proposed project, Gladys noted several changes since she left MEO. She mentioned that since the MEO office was relocated, the old Kahului Elementary School building was torn down, and she has noticed several Kingdom of Hawai'i events at the old MEO property. She also noted that there are a lot of homeless people who sleep under the trees near the library.

Gladys does not recall any historic cultural practices being carried out at the project site. She is not aware of any traditional beach or mountain access trails that would be affected by the proposed project. When asked if there are any cultural considerations that should be considered in the development plans for the Kahului Lani Affordable Senior Housing Project, she notes that mostly local people live in the surrounding area. It is a low-key area without much traffic.

The main cultural aspect that Gladys would like considered for the project is the culture of collaboration between the social service organizations on Maui. She advised that people from other social service agencies around

the state and even the country are impressed with the level of collaboration between local organizations like MEO, Kaunoa Senior Services, and Na Hoaloha and the Maui County Office on Aging to maximize the benefit provided to seniors in the Maui community. Gladys noted that there is definitely a need for affordable senior housing and reiterated the value of tapping into the existing network of social services available for the target community for this project. She hopes that this much needed project will embrace and continue that spirit of collaboration that has been cultivated in the social services for seniors within the Maui community.

Neither of the individuals interviewed were aware of any traditional cultural practices within the project area. As such, significant adverse impacts to cultural resources and practices are not anticipated for the project.

9. Air Quality

a. Existing Conditions

Air pollution in the Kahului area results from both natural and man-made sources. Natural sources include windblown dust. Man-made sources include industrial sources (e.g., power plants), mobile sources (e.g., vehicular traffic), and agricultural sources.

The proposed project is located within the urban core of Kahului and the only known sources of pollutant air emissions in the immediate vicinity are associated with fuel combustion emissions from vehicular activity on nearby roadways, and the Maui Electric Company Ltd.'s Kahului Power Plant located adjacent to Kahului Harbor.

Air quality in Hawai'i is relatively high, attributed in part to the consistent trade winds that quickly disperse concentrations of emissions. The rapid dispersion was evident during previous burning of sugar cane in fields which were located to the southeast of the Kahului residential core.

b. Potential Impacts and Mitigation Measures

Airborne particulates, including dust, may be generated during site preparation and construction activities. Dust control measures, such as regular watering and sprinkling and erection of dust fences around the construction site, will be implemented as needed to minimize windblown emissions. In the long term, vehicle-generated emissions from automobiles driving to and from the project are not anticipated to create significant adverse impacts to local and regional ambient air quality conditions.

10. **Noise**

a. **Existing Conditions**

Ambient noise conditions at the project site are typical of urban environments. Traffic noise from nearby roadways is the predominant source of background noise in the project vicinity.

b. **Potential Impacts and Mitigation Measures**

As with air quality, ambient noise conditions will be temporarily impacted by construction activities. Heavy construction equipment, such as bulldozers, front end loaders, and dump trucks and trailers, will be the dominant source of noise during site construction. Construction generated noise will be mitigated through Best Management Practices (BMPs) and construction activities will be limited to daylight work hours only. In addition, precautionary measures will be taken so as to not disrupt the adjacent tenants during the construction process.

In the context of long-term operations, the proposed Kahului Lani Affordable Senior Housing Project is not anticipated to significantly affect ambient noise levels.

11. **Visual Resources**

a. **Existing Conditions**

The project area is located within Kahului's commercial core. Properties surrounding the project site are developed and include Foodland and Queen Ka'ahumanu Center, the Kahului Public Library, the Waterfront Apartments, and several churches. Scenic resources to the west of the project site include Iao Valley and the West Maui Mountains. Haleakala lies east of the project site. To the north of the site lies the Kahului Harbor and the Pacific Ocean.

b. **Potential Impacts and Mitigation Measures**

The proposed Kahului Lani Affordable Senior Housing Project is within the urban core of Kahului and is not located in a designated scenic corridor. In the context of the surrounding urbanized and developed land uses, including the existing multi-story Waterfront Apartment buildings nearby, the proposed action is not anticipated to have a significant adverse impact upon the scenic and open space resources of the area. The six-story residential buildings are 62.5 feet in height, which is lower than the 90-foot

height limit established by the property's "B-2, Community Business" district zoning.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

a. Existing Conditions

The County of Maui had a population of 154,834 in 2010. Approximately 31 percent of the County's population, or 54,400 people, resided in the Waikuku-Kahului Community Plan region, the most populous region in the County (U.S. Census Bureau, 2010). In 2016, the estimated population of the County was 165,400 people, an increase of 7 percent since 2010 (U.S. Census Bureau, 2016). Population growth is expected to continue at a steady pace in Maui County, with the resident population expected to increase to 207,300 by 2030 (State of Hawai'i, Department of Business, Economic Development, and Tourism, 2012).

b. Potential Impacts and Mitigation Measures

The Kahului Lani Affordable Senior Housing Project is intended to meet the growing need for affordable senior housing on Maui. The *Hawai'i Housing Planning Study, 2016* prepared for the County's Department of Housing and Human Concerns, estimates an effective demand for 131 senior rental units affordable to households earning 60 percent or less of the Area Median Income (AMI) by the year 2025 (SMS, 2016). The study also notes that there is additional demand for ownership of affordable senior housing. The 2016 study provides a baseline framework for understanding housing demand, but it notes that there are other factors that could change actual demand, such as ability to qualify for a preferred move (i.e. home ownership), and consideration of households that are currently doubled up, which are counted as one (1) household instead of two (2) (SMS, 2016). It is noted that there are lengthy waiting lists at existing affordable senior housing projects in Maui County.

A project-specific market study was conducted and concluded that due to the imbalance between supply and demand in the Central Maui area and the desirable location of the project in the center of the urban core, occupancy for Kahului Lani is anticipated to be at 97-100 percent by the end of the first year following completion of the project. Refer to **Appendix "A"**.

2. Economy

a. Existing Conditions

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. The Kahului Harbor, a deep sea port, and Kahului Airport, both located in the Wailuku-Kahului region, provide vital links to off-island economies and links through which virtually all imports and exports pass. Visitor arrivals to Maui County were at 2,678,706 in 2014, with the vast majority traveling through Kahului Airport (County of Maui, Office of Economic Development, 2015). There were an estimated 80,250 jobs on Maui island in February 2017, an 11 percent increase since 2007 (Department of Labor and Industrial Relations, 2017).

The unemployment rate (not seasonally adjusted) for Maui County was 3.0 percent in April 2017, with Maui Island's rate at 2.9 percent, an improvement from the respective rates from April 2016 of 3.1 and 2.9 percent. The State's unemployment rate for April 2017 was 2.6 percent, down from 3.0 percent in February 2016 (Department of Labor and Industrial Relations, 2017).

b. Potential Impacts and Mitigation Measures

Short-term benefits to the local economy will occur with the provision of construction-related employment and related spending. In the long term, the proposed project will provide much needed affordable senior housing at a central, accessible location in the main urban area of the island.

C. PUBLIC SERVICES

1. Recreational Facilities

a. Existing Conditions

County recreational facilities are administered and maintained by the Department of Parks and Recreation. The Wailuku-Kahului region contains a network of recreational facilities comprised of mini-parks, as well as neighborhood and district parks. The region's seven (7) mini-parks are distributed throughout the area, while the region's eleven (11) neighborhood and three (3) district parks provide a wide range of facilities to meet the recreational needs of the community.

In the vicinity of the project site, shoreline and ocean recreation activities such as boating, fishing, diving, surfing, canoeing, kayaking, picnicking, and windsurfing are available at the Kahului Harbor and nearby beach parks. County parks in the immediate vicinity of the project site include Keopuolani Park and the War Memorial Sports Complex.

b. Potential Impacts and Mitigation Measures

The proposed Kahului Lani Affordable Senior Housing Project is not anticipated to adversely impact the existing level of recreational facilities and services available to Maui County residents. The project plans include multipurpose rooms in each residential building, as well as a 7,500 square foot multi-purpose building and open space areas, which may be utilized by residents for recreational purposes.

2. Police and Fire Protection

a. Existing Conditions

Police protection for the Wailuku-Kahului region is provided by the County Police Department headquartered on Mahalani Street, approximately one (1) mile from the project site. 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 Wailuku Station, located in Wailuku Town, as well as the Kahului Station located on Dairy Road. The project site is located approximately one (1) mile from the Kahului Station.

b. Potential Impacts and Mitigation Measures

Police and fire protection services are not expected to be adversely impacted by the proposed project. The proposed Kahului Lani Affordable Senior Housing Project will be located in the Kahului urban area and will not extend existing service area limits for emergency services.

3. Solid Waste

a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews are disposed at the County's Central Maui Landfill, located 4.0 miles southeast of the Kahului Airport. In addition to County-collected

refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

b. Potential Impacts and Mitigation Measures

During construction and following project completion, solid waste for the Kahului Lani Affordable Senior Housing Project will be handled by a private refuse collection company. The solid waste generated by the proposed project is not anticipated to adversely impact the County solid waste capacity of the Central Maui Landfill.

4. Healthcare

a. Existing Conditions

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 approximately 214-bed facility. In addition, numerous privately operated medical/dental clinics and offices are located in the area to serve the region's residents.

b. Potential Impacts and Mitigation Measures

The Kahului Lani Affordable Senior Housing Project is located within close proximity to existing medical facilities and services in the region, including the Maui Memorial Medical Center. Inasmuch as the proposed project is intended to accommodate the needs of Maui's existing and growing senior population, the project is not anticipated to increase the service demands placed upon emergency healthcare services.

5. Educational Facilities

a. Existing Conditions

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 Pomaikai, 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 and Pu'u Kukui Elementary School (Grades K-5), Iao Intermediate School (Grades 6-8), and Baldwin High School (Grades 9-12). The University of

Hawai'i Maui College is the primary higher education institution serving Maui.

b. Potential Impacts and Mitigation Measures

The proposed Kahului Lani Affordable Senior Housing Project is not expected to place new demands upon area schools. The rental units designated for affordable senior housing will be restricted to seniors and would exclude school-aged children. As such, adverse impacts to the public as well as private school systems are not anticipated as a result of the proposed action.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

A Traffic Impact Analysis Report (TIAR) was prepared for the proposed project. See **Appendix "C"**. The Wailuku-Kahului region is served by a roadway network which includes arterial, collector, and local roads. Major roadways in the vicinity of the project include the following:

Ka'ahumanu Avenue

Ka'ahumanu Avenue, north of the project site, is a two-way, six-lane, divided State highway with a posted speed limit of 30 miles per hour (mph) in the vicinity of the project site. It is the main thoroughfare through Kahului with an east-west orientation.

Kane Street/Kahului Beach Road

Kane Street is a two-way three-lane, undivided roadway running north-south with a posted speed limit of 20 mph in the vicinity of the project site. North of Ka'ahumanu Avenue, Kane Street turns into Kahului Beach Road. In the vicinity of the project site, Kane Street provides access to commercial/retail uses, including the Queen Ka'ahumanu Center.

Lono Avenue

Lono Avenue is a two-way, three-lane, undivided roadway running north-south with a posted speed limit of 20 mph in the vicinity of the project site.

Vevau Street

Vevau Street is a two-way two-lane, undivided roadway running east-west in the vicinity of the project site.

School Street

School Street is a two-way two-lane, undivided roadway running north-south in the vicinity of the project site, providing access to the Kahului Public Library and a church.

Kamehameha Avenue

Kamehameha Avenue is a two-way, two-lane undivided roadway in the vicinity of the project site, generally running east-west and curving to intersect with Kane Street in the north-south direction. Kamehameha Avenue provides access to commercial areas in the vicinity of the project site.

The TIAR included a Level Of Service (LOS) analysis for the various intersections surrounding the project area. The TIAR stated that during morning (AM) and afternoon (PM) peak traffic, some movements at the Ka'ahumanu Avenue/Kahului Beach Road/Kane Street and Ka'ahumanu Avenue/Lono Avenue intersection currently operate at LOS E/F, primarily due to signal coordination based on traffic volumes. However, according to the TIAR, overall signalized intersections operate at LOS D or better and all movements at unsignalized intersections operate at LOS C or better. See **Table 2**.

Table 2. Existing LOS for Signalized Study Intersection

Intersection	LOS for AM Peak Hour	LOS for PM Peak Hour
Ka'ahumanu Avenue/Kahului Beach Road/Kane Street	D	D
Ka'ahumanu Avenue/Lono Avenue	B	B
Kamehameha Avenue/Lono Avenue	B	C
Kamehameha Avenue/Kane Street	A	B
Source: Austin, Tsutsumi & Associates, Inc., 2017.		

b. Potential Impacts and Mitigation Measures

Access to the project site will be provided by new driveways off of Kane Street, Vevau Street, and School Street. The Kane Street access will be restricted to right turns in and out of the property. It is also noted that the County of Maui’s central bus hub for the Maui Bus is located across the street from the project site at the Queen Ka’ahumanu Shopping Center.

The TIAR included a background traffic analysis to define the future traffic conditions without the proposed project. Future traffic growth is dependent on two (2) components, ambient background growth and estimated traffic from other development projects in the vicinity of the project area. According to the TIAR, there are no known development or roadway projects within the study area. The background-plus-project projection assumes that the peak hours at the project site coincide with the peak hours at the study intersections, representing a worse-case scenario. See **Table 3** and refer to **Appendix “C”**.

Table 3. LOS for Signalized Study Intersections Without and With Proposed Project

Intersection	LOS for AM Peak Hour		LOS for PM Peak Hour	
	Without Project	With Project	Without Project	With Project
Ka’ahumanu Avenue/Kahului Beach Road/Kane Street	D	D	D	D
Ka’ahumanu Avenue/Lono Avenue	B	B	B	B
Kamehameha Avenue/Lono Avenue	B	B	C	C
Kamehameha Avenue/Kane Street	A	A	B	B

Source: Austin, Tsutsumi & Associates, Inc., 2017.

All movements at the study intersections are forecast to operate at the same LOS with or without the project. As such, no roadway improvements would be required as a result of the proposed project. However, as mentioned previously, roadway improvements are planned as part of the proposed project. Vevau Street will be improved to County standards, as will the adjacent sides of Kane Street and School Street, and Vevau Street will be dedicated to the County of Maui.

2. Airports

a. Existing Conditions

The Kahului Lani Affordable Senior Housing Project is proposed approximately 1.5 miles from Kahului Airport. Kahului Airport, Maui's primary airport, receives both interisland and overseas flights. In 2013, the airport hosted a total of 128,303 aircraft takeoffs and landings (County of Maui, Office of Economic Development, 2015).

b. Potential Impacts and Mitigation Measures

According to the Noise Exposure Map approved by the Federal Aviation Administration (FAA), the proposed Kahului Lani Affordable Senior Housing Project is outside of the designated area restricted from residential development. As such, no adverse impacts are anticipated due to the project's proximity to the airport.

3. Wastewater

a. Existing Conditions

Domestic wastewater generated in the Wailuku-Kahului region is conveyed to the County's Wailuku-Kahului Wastewater Reclamation Facility located one-half mile south of Kahului Harbor. The design capacity of the facility is 7.9 million gallons per day (mgd). The facility serves the Kahului, Wailuku, Paia, Kuau, and Spreckelsville areas. Cumulative allocated wastewater flows from the Kahului facility are approximately 6.6 mgd (Munekiyu Hiraga, 2015).

Wastewater infrastructure in the project vicinity includes an existing 8-inch sewerline along Kane Street, and an existing 15-inch sewerline along Vevau Street. See **Appendix "D"**.

b. Potential Impacts and Mitigation Measures

According to the Preliminary Engineering Report (PER) prepared for the project, the total wastewater flow for the project is estimated at approximately 44,775 gallons per day (gpd). Refer to **Appendix "D"**. The buildings will connect to the County wastewater system via the existing lines along Kane Street and Vevau Street. Sewer system improvements will be designed to comply with the Design Standards of the Wastewater Reclamation Division of the County of Maui.

4. Water

a. Existing Conditions

Domestic water and fire flow for the Kahului area are serviced from the 3.0 million gallon (mg) Mokuhau tank and wells in Happy Valley. There is an existing 8-inch waterline in Kane Street and existing 4-inch waterlines in Vevau and School Streets. There are two (2) existing 2-inch water meters servicing the property. Refer to **Appendix “D”**.

b. Potential Impacts and Mitigation Measures

As noted in the PER, the average daily domestic demand for potable water for the project is 103,400 gpd. The fire flow requirement is 1,250 gallons per minute. Refer to **Appendix “D”**. The project will be serviced by the two (2) existing 2-inch water meters, which connect to the existing waterlines in Kane, Vevau, and School Streets. The potable water system will comply with the latest Water System Standards and Standard Details for Water System Construction for the County of Maui, Department of Water Supply.

5. Drainage

a. Existing Conditions

There are no onsite drainage improvements within the project area. Runoff generally sheet-flows from south to north with some ponding in low spots on the property. The estimated runoff for a 50-year, 1-hour storm event is 2.7 cubic feet per second (cfs) (Chris Hart & Partners, 2005).

b. Potential Impacts and Mitigation Measures

The PER prepared for the project estimates that under conditions of a 50-year, 1-hour storm event, runoff from the project site will be increased approximately 10.0 cfs due to the proposed project, requiring approximately 18,000 cubic feet of retention storage. Refer to **Appendix “D”**. An onsite stormwater retention system is proposed under the parking lot to mitigate the increase in runoff resulting from the proposed project. A hydrodynamic separator will be installed to meet County stormwater quality requirements. Any overflow from the retention system will discharge into a catch basin along Kane Street. The proposed buildings will have downspouts that connect to the new subsurface drainage system. The drainage system design will comply with the Rules for the Design of Storm Drainage Facilities in the County of Maui, dated July 1995.

6. Electrical and Telephone Services

a. Existing Conditions

Electrical service to the area is currently provided by Maui Electric Company, Ltd. Telephone service is provided by Hawaiian Telcom. Existing utility infrastructure is located underground.

b. Potential Impacts and Mitigation Measures

The proposed action is not anticipated to impact existing utility facilities and services. Coordination will be carried out with the service providers to ensure timely service capability and capacity. Where feasible, energy conservation measures will be incorporated into the project. Carport structures with photovoltaic panels may be provided in the parking lot, subject to the availability of funding.

E. CUMULATIVE AND SECONDARY IMPACTS

Pursuant to Section 11-200-2 of the Hawai'i Administrative Rules, Chapter 200, entitled Environmental Impact Statement Rules, a cumulative impact means:

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area of Kahului on lands designated for urban use. The proposed project is not a phase of a larger action, nor does it represent a commitment to such actions. Given the surrounding development and urban land uses, significant environmental impacts are not anticipated as a result of the project. Significant impacts to public systems, such as water and wastewater, are not anticipated as a result of the proposed project. The TIAR prepared for the project concludes that LOS at nearby roadway intersections will not be significantly impacted by the project. As such, no cumulative impacts are anticipated as a result of the proposed project.

Secondary impacts are those which have the potential to occur late in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of a project. Given the surrounding development and urban land uses, significant environmental impacts are not anticipated as a result of the project. Given that the proposed Kahului Lani Affordable Senior Housing Project is intended to meet the documented shortage of affordable senior housing for the existing population, the project is not considered a population generator in and of itself. Therefore,

with the proposed mitigation measures, the project is not anticipated to result in significant adverse secondary impacts.

**RELATIONSHIP TO
GOVERNMENTAL PLANS,
POLICIES, AND CONTROLS**



III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawai'i Revised Statutes (HRS), 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 project site is located within the "Urban" district. See **Figure 8**. The proposed use of the property is consistent with "Urban" district provisions.

B. HAWAI'I STATE PLAN

Chapter 226, HRS, also known as the Hawai'i State Plan, is a long-range comprehensive plan which serves as a guide for the future long-term development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The Plan consists of three (3) parts. Part I includes the Overall Theme, Goals, Objectives, and Policies; Part II includes Planning, Coordination, and Implementation; and Part III establishes Priority Guidelines. Inasmuch as Part II of the State Plan covers its administrative structure and implementation process, discussion of the proposed project's applicability to Part II is not appropriate. Below is an analysis of the project's applicability to Part I and Part III of the Hawai'i State Plan.

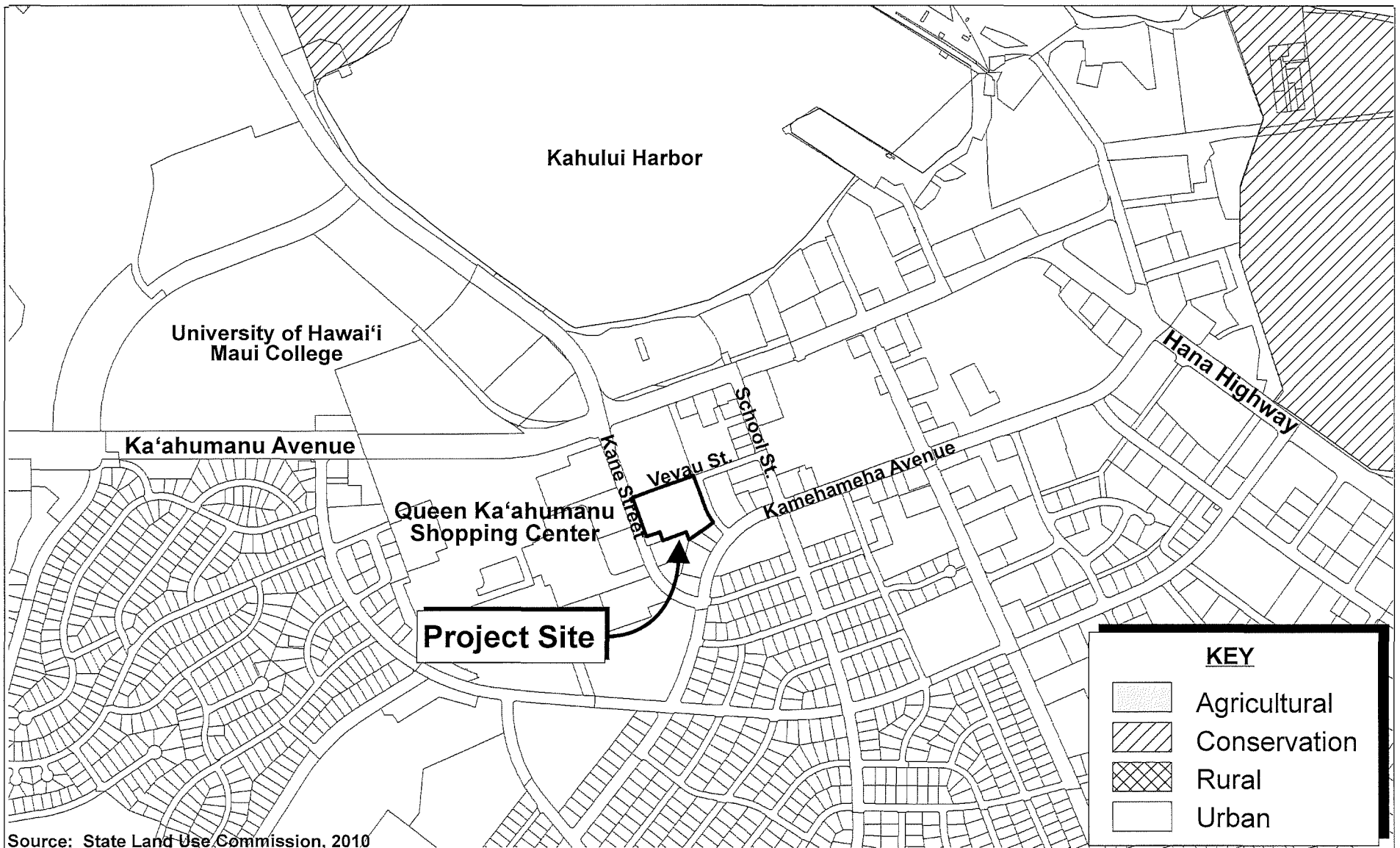
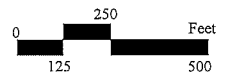


Figure 8 Kahului Lani Affordable Senior Housing Project
State Land Use District



Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
HRS 226-1: Findings and Purpose			
HRS 226-2: Definitions			
HRS 226-3: Overall Theme			
<p>HRS 226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self determination, it shall be the goal of the State to achieve:</p> <ol style="list-style-type: none"> 1. A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations. 2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people. 3. Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life. 			
<p>Analysis: <i>The Kahului Lani Affordable Senior Housing Project is consistent with the State goals listed above.</i></p>			
Chapter 226-5 Objective and Policies for Population			
<p>Objective: It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic and social objectives contained in this chapter.</p>			
Policies:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.	✓		
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.			✓
(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.	✓		
(4) Encourage research activities and public awareness programs to foster an understanding of Hawaii's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawaii's population.			✓
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.			✓
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			✓
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	✓		

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
<p>Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project will provide housing opportunities for seniors earning 60 percent or less of the County's median income within the Kahului urban core in close proximity to businesses and services. Kahului Lani will also employ a resident manager and house outreach services for Catholic Charities Hawai'i (CCH).</i></p>			
Chapter 226-6 Objectives and policies for the economy – – in general			
<p>Objectives: Planning for the State's economy in general shall be directed toward achievement of the following objectives:</p>			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.			✓
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.			✓
<p>Policies:</p>			
(1) Promote and encourage entrepreneurship within Hawaii by residents and nonresidents of the State.			✓
(2) Expand Hawaii's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			✓
(3) Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.			✓
(4) Transform and maintain Hawaii as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.			✓
(5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawaii.			✓
(6) Seek broader outlets for new or expanded Hawaii business investments.			✓
(7) Expand existing markets and penetrate new markets for Hawaii's products and services.			✓
(8) Assure that the basic economic needs of Hawaii's people are maintained in the event of disruptions in overseas transportation.			✓
(9) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.	✓		
(10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawaii's small scale producers, manufacturers, and distributors.			✓
(11) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawaii.			✓
(13) Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.			✓
(14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			✓
(15) Maintain acceptable working conditions and standards for Hawaii's workers.			✓
(16) Provide equal employment opportunities for all segments of Hawaii's population through affirmative action and nondiscrimination measures.			✓
(17) Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.			✓
(18) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy, particularly with respect to emerging industries in science and technology.			✓
(19) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.			✓
(20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new or innovative potential growth industries in particular.			✓
(21) Foster a business climate in Hawaii—including attitudes, tax and regulatory policies, and financial and technical assistance programs—that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			✓
<p>Analysis: <i>The proposed action will require construction of three (3) multi-story buildings to provide affordable senior housing and related improvements, stimulating the economy, in general.</i></p>			
<p>Chapter 226-7 Objectives and policies for the economy – – agriculture.</p>			
<p>Objectives: Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:</p>			
(1) Viability of Hawaii's sugar and pineapple industries.			✓
(2) Growth and development of diversified agriculture throughout the State.			✓
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
(1) Establish a clear direction for Hawaii's agriculture through stakeholder commitment and advocacy.			✓
(2) Encourage agriculture by making the best use of natural resources.			✓
(3) Provide the governor and the legislature with information and options needed for prudent decision-making for the development of agriculture.			✓
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			✓
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawaii's economy.			✓
(6) Seek the enactment and retention of federal and state legislation that benefits Hawaii's agricultural industries.			✓
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawaii's food producers and consumers in the State, nation, and world.			✓
(8) Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			✓
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			✓
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			✓
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			✓
(12) In addition to the State's priority on food, expand Hawaii's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			✓
(13) Promote economically competitive activities that increase Hawaii's agricultural self-sufficiency, including the increased purchase and use of Hawaii-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D-104.			✓
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			✓
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			✓
(16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māla, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu.			✓
(18) Increase and develop small-scale farms.			✓
Analysis: <i>Inasmuch as the proposed action is limited to the development of affordable senior housing, the above objectives and policies for the economy related to agriculture are not applicable to the proposed project.</i>			
Chapter 226-8 Objective and policies for the economy – – visitor industry.			
Objectives: Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.			
Policies:			
(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.			✓
(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.			✓
(3) Improve the quality of existing visitor destination areas by utilizing Hawaii's strengths in science and technology.			✓
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			✓
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.			✓
(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.			✓
(7) Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.			✓
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawaii's cultures and values.			✓
Analysis: <i>Inasmuch as the proposed action is limited to the development of affordable senior housing, the above objectives and policies for the economy related to the visitor industry are not applicable to the proposed project.</i>			
Chapter 226-9 Objective and policies for the economy – – federal expenditures.			
Objective: Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaii's economy.			
Policies:			
(1) Encourage the sustained flow of federal expenditures in Hawaii that generates long-term government civilian employment;			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(2) Promote Hawaii's supportive role in national defense, in a manner consistent with Hawaii's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaii's economy;			✓
(3) Promote the development of federally supported activities in Hawaii that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaii's environment;			✓
(4) Increase opportunities for entry and advancement of Hawaii's people into federal government service;			✓
(5) Promote federal use of local commodities, services, and facilities available in Hawaii;			✓
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaii; and			✓
(7) Pursue the return of federally controlled lands in Hawaii that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.			✓
Analysis: <i>The above objectives and policies for the economy related to federal expenditures are not applicable to the proposed Kahului Lani Affordable Senior Housing Project.</i>			
Chapter 226-10 Objective and policies for the economy – – potential growth and innovative activities.			
Objective: Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawaii's economic base.			
Policies:			
(1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawaii's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors;			✓
(2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawaii through the export of services or products or substitution of imported services or products;			✓
(3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements;			✓
(4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity;			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus;			✓
(6) Expand Hawaii's capacity to attract and service international programs and activities that generate employment for Hawaii's people;			✓
(7) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;			✓
(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, underground resources, and solid waste;			✓
(9) Promote Hawaii's geographic, environmental, social, and technological advantages to attract new or innovative economic activities into the State;			✓
(10) Provide public incentives and encourage private initiative to attract new or innovative industries that best support Hawaii's social, economic, physical, and environmental objectives;			✓
(11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			✓
(12) Develop, promote, and support research and educational and training programs that will enhance Hawaii's ability to attract and develop economic activities of benefit to Hawaii;			✓
(13) Foster a broader public recognition and understanding of the potential benefits of new or innovative growth-oriented industry in Hawaii;			✓
(14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaii's social, economic, physical, and environmental objectives;			✓
(15) Increase research and development of businesses and services in the telecommunications and information industries;			✓
(16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and			✓
(17) Recognize and promote health care and health care information technology as growth industries.			✓
Analysis: <i>The above objectives and policies related to potential growth and innovative activities are not applicable to the proposed project.</i>			
Chapter 226-10.5 Objectives and policies for the economy – – information industry.			
Objective: Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawaii as a leader in broadband and wireless communications and applications in the Pacific Region.			
Policies:			
(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawaii and between Hawaii and the world, and make			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
high speed communication available to all residents and businesses in Hawaii;			
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaii to accommodate future growth and innovation in Hawaii's economy;			✓
(3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawaii;			✓
(4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawaii, using technology to communicate with their headquarters, offices, or customers located out-of-state;			✓
(5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;			✓
(6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people;			✓
(7) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the information industry;			✓
(8) Foster a recognition of the contribution of the information industry to Hawaii's economy; and			✓
(9) Assist in the promotion of Hawaii as a broker, creator, and processor of information in the Pacific.			✓
Analysis: <i>Inasmuch as the proposed action is limited to the development of affordable senior housing, the above objectives and policies for the economy related to the information industry are not applicable to the proposed project.</i>			
Chapter 226-11 Objectives and policies for the physical environment – – land based, shoreline, and marine resources.			
Objectives: Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:			
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.	✓		
(2) Effective protection of Hawaii's unique and fragile environmental resources.			✓
Policies:			
(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.			✓
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.			✓
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	✓		

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.	✓		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			✓
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaii.			✓
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			✓
(8) Pursue compatible relationships among activities, facilities, and natural resources.			✓
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project makes prudent use of Hawai'i's land resources, as it is an urban infill project that provides affordable senior housing adjacent to existing retail and community services and facilities.</i>			
Chapter 226-12 Objective and policies for the physical environment – scenic, natural beauty, and historic resources.			
Objective: Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.			
Policies:			
(1) Promote the preservation and restoration of significant natural and historic resources.			✓
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.			✓
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.			✓
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.			✓
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	✓		
Analysis: <i>Although the Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area, it incorporates landscaping and open space in its design to complement the natural beauty of the environment.</i>			
Chapter 226-13 Objectives and policies for the physical environment – land, air, and water quality.			
Objectives: Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives.			
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.	✓		

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(2) Greater public awareness and appreciation of Hawaii's environmental resources.			✓
Policies:			
(1) Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.			✓
(2) Promote the proper management of Hawaii's land and water resources.			✓
(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.	✓		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaii's people.	✓		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	✓		
(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.	✓		
(7) Encourage urban developments in close proximity to existing services and facilities.	✓		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures and visitors.			✓
<p>Analysis: <i>As mentioned previously, the Kahului Lani Affordable Senior Housing Project is proposed adjacent to existing commercial and community services and facilities. The subject property is located in Flood X (unshaded). This designation denotes an area of low flood risk and minimal flooding with no development restrictions. The subject property is located within the tsunami evacuation zone; however, emergency and civil defense procedures to provide the necessary guidance to organize and direct operations at the retail buildings in the event of an emergency or civil defense action, such as a tsunami, will be established. During construction, Best Management Practices (BMPs) will be implemented to ensure that land, water, and air quality are maintained.</i></p>			
<p>Chapter 226-14 Objective and policies for facility systems – – in general.</p>			
<p>Objective: Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.</p>			
Policies:			
(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.			✓
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.			✓
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	✓		

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(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.			✓
Analysis: <i>The proposed project does not require improvements to existing facility systems.</i>			
Chapter 226-15 Objectives and policies for facility systems – – solid and liquid waste.			
Objectives: Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	✓		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.			✓
Policies:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.			✓
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	✓		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			✓
Analysis: <i>As noted previously, the proposed project does not require improvements to existing facility systems. Public health and sanitation standards related to the treatment and disposal of solid and liquid waste for the project will be maintained. The facility will include recycling bins for solid waste.</i>			
Chapter 226-16 Objective and policies for facility systems – – water.			
Objective: Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.			
Policies:			
(1) Coordinate development of land use activities with existing and potential water supply.	✓		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.			✓
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.			✓
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.			✓
(5) Support water supply services to areas experiencing critical water problems.			✓
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
meet long-term needs.			
Analysis: <i>The project will be serviced by the County of Maui, Department of Water Supply.</i>			
Chapter 226-17 Objectives and policies for facility systems – – transportation.			
Objectives: Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.	✓		
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.			✓
Policies:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;			✓
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;			✓
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;			✓
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			✓
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;			✓
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;	✓		
(7) Encourage a variety of carriers to offer increased opportunities and advantages to interisland movement of people and goods;			✓
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			✓
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;			✓
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment;	✓		
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;	✓		
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and			✓
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.	✓		

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Analysis: <i>The Kahului Lani Affordable Senior Housing Project will include improvements to Vevau Street, including sidewalks.</i>			
Chapter 226-18 Objectives and policies for facility systems – – energy.			
Objectives: Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			✓
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.			✓
(3) Greater diversification of energy generation in the face of threats to Hawaii's energy supplies and systems;	✓		
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and	✓		
(5) Utility models that make the social and financial interests of Hawaii's utility customers a priority.			✓
(b) To achieve the energy objectives, it shall be the policy of this State to ensure the short- and long-term provision of adequate, reasonably prices, and dependable energy services to accommodate demand.			✓
Policies:			
(1) Support research and development as well as promote the use of renewable energy sources;			✓
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;			✓
(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			✓
(4) Promote all cost-effective conservation of power and fuel supplies through measures, including:			✓
(A) Development of cost-effective demand-side management programs;			✓
(B) Education;			✓
(C) Adoption of energy-efficient practices and technologies; and			✓
(D) Increasing energy efficiency and decreasing energy use in public infrastructure			✓
(5) Ensure, to the extent that new supply-side resources are needed, that the development or expansion of energy systems uses the least-cost			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
energy supply option and maximizes efficient technologies; and			
(6) Support research, development, demonstration, and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	✓		
(7) Promote alternate fuels and transportation energy efficiency;			✓
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications;			✓
(9) Support actions that reduce, avoid, or sequester Hawaii's greenhouse gas emissions through agriculture and forestry initiatives;			✓
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects;			✓
(11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy sources; and			✓
(12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawaii.			✓
<p>Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project will consider the use of energy efficient fixtures and alternative energy sources, as practicable. As mentioned previously, carport structures with photovoltaic panels may be provided in the parking lot, subject to the availability of funding.</i></p>			
<p>Chapter 226-18.5 Objectives and policies for facility systems – – telecommunications.</p>			
<p>Objectives:</p> <p>(a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.</p> <p>(b) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.</p>			
<p>Policies:</p>			
(1) Facilitate research and development of telecommunications systems and resources;			✓
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			✓
(3) Promote efficient management and use of existing telecommunications systems and services; and			✓
(4) Facilitate the development of education and training of telecommunications personnel.			✓
<p>Analysis: <i>Inasmuch as the Kahului Lani Affordable Senior Housing Project is limited to development of 165 residential units, the above objectives and policies for facility systems related to telecommunications are not applicable to the proposed project.</i></p>			

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Chapter 226-19 Objectives and policies for socio-cultural advancement – – housing.			
Objectives: Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			
(1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaii's population.	✓		
(2) The orderly development of residential areas sensitive to community needs and other land uses.	✓		
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.			✓
Policies:			
(1) Effectively accommodate the housing needs of Hawaii's people.	✓		
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.	✓		
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.	✓		
(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.			✓
(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.	✓		
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.	✓		
(7) Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.	✓		
(8) Promote research and development of methods to reduce the cost of housing construction in Hawaii.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project is consistent with the above-noted objectives and policies. It is an urban infill project that provides affordable senior housing adjacent to existing commercial and community services and facilities.</i>			
Chapter 226-20 Objectives and policies for socio-cultural advancement – – health.			
Objectives: Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.	✓		

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(2) Maintenance of sanitary and environmentally healthful conditions in Hawaii's communities.	✓		
(3) Elimination of health disparities by identifying and addressing social determinants of health.	✓		
<u>Policies:</u>			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			✓
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.	✓		
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			✓
(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.	✓		
(5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.			✓
(6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.			✓
(7) Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data.			✓
<p>Analysis: <i>The Kahului Lani Affordable Senior Housing Project will include office space for CCH's social service outreach programs, which provide emergency assistance (rent, food, etc.) to low income families, assessments of families interested in becoming foster families, and aid to homeless vets. CCH will also provide on-site case management services for Kahului Lani residents. CCH services and programs are anticipated to benefit Kahului Lani residents and other members of the community through their outreach efforts from a personal health and wellness perspective.</i></p>			
Chapter 226-21 Objectives and policies for Socio-cultural advancement – – education.			
<p>Objective: Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.</p>			

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
<u>Policies:</u>			
(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.			✓
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.			✓
(3) Provide appropriate educational opportunities for groups with special needs.			✓
(4) Promote educational programs which enhance understanding of Hawaii's cultural heritage.			✓
(5) Provide higher educational opportunities that enable Hawaii's people to adapt to changing employment demands.			✓
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			✓
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.			✓
(8) Emphasize quality educational programs in Hawaii's institutions to promote academic excellence.			✓
(9) Support research programs and activities that enhance the education programs of the State.			✓
<i>Analysis:</i> As an affordable senior housing project, the objectives and policies listed above for socio-cultural advancement related to education are not applicable to Kahului Lani.			
Chapter 226-22 Objective and policies for socio-cultural advancement – – social services.			
<u>Objective:</u> Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.			
<u>Policies:</u>			
(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.	✓		
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.	✓		
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawaii's communities.			✓
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.	✓		

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.			✓
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.			✓
Analysis: <i>As mentioned previously, CCH will provide social services to low income families, and aid to homeless vets, as well as provide onsite case management services to Kahului Lani residents.</i>			
Chapter 226-23 Objective and policies for socio-cultural advancement – – leisure.			
Objective: Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			
Policies:			
(1) Foster and preserve Hawaii's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.			✓
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.			✓
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.			✓
(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.			✓
(5) Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.			✓
(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.			✓
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawaii's people.			✓
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.			✓
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawaii's population to participate in the creative arts.			✓
(10) Assure adequate access to significant natural and cultural resources in public ownership.			✓
Analysis: <i>Although the Kahului Lani Affordable Senior Housing Project will provide open space and recreational areas for its residents to enjoy, the specific policies for socio-cultural advancement related to leisure listed above are not applicable to the proposed project.</i>			

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Chapter 226-24 Objective and policies for socio-cultural advancement – – individual rights and personal well-being.			
Objective: Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.			
Policies:			
(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.			✓
(2) Uphold and protect the national and state constitutional rights of every individual.			✓
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.			✓
(4) Ensure equal opportunities for individual participation in society.			✓
Analysis: <i>The objective and policies listed above for socio-cultural advancement related to individual rights and personal well-being are not applicable to the proposed project.</i>			
Chapter 226-25 Objective and policies for socio-cultural advancement – – culture.			
Objective: Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.			
Policies:			
(1) Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii.			✓
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawaii's people and which are sensitive and responsive to family and community needs.			✓
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawaii.			✓
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawaii's people and visitors.			✓
Analysis: <i>The objective and policies listed above for socio-cultural advancement related to culture are not applicable to the proposed project.</i>			
Chapter 226-26 Objectives and policies for socio-cultural advancement – – public safety.			
Objective: Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			
(1) Assurance of public safety and adequate protection of life and property for all people.			✓

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(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.			✓
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawaii's people.			✓
<u>Policies:</u>			
(1) Ensure that public safety programs are effective and responsive to community needs.			✓
(2) Encourage increased community awareness and participation in public safety programs.			✓
<u>Policies:</u>			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			✓
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			✓
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			✓
<u>Policies:</u>			
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.			✓
(2) Enhance the coordination between emergency management programs throughout the State.			✓
<i>Analysis:</i> <i>The above objectives and policies for socio-cultural advancement related to public safety are not applicable to the proposed project.</i>			
Chapter 226-27 Objectives and policies for socio-cultural advancement – – government.			
<u>Objectives:</u> Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			
(1) Efficient, effective, and responsive government services at all levels in the State.			✓
(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.			✓
<u>Policies:</u>			
(1) Provide for necessary public goods and services not assumed by the private sector.			✓
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(3) Minimize the size of government to that necessary to be effective.			✓
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawaii.			✓
(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.			✓
(6) Provide for a balanced fiscal budget.			✓
(7) Improve the fiscal budgeting and management system of the State.			✓
(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.			✓
Analysis: <i>The above objectives and policies for socio-cultural advancement related to government are not applicable to the proposed project.</i>			

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
Chapter 226-101: Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
Chapter 226-102: Overall direction. The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.			
Chapter 226-103: Economic priority guidelines.			
(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy:			
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.			✓
(A) Encourage investments which:			
(i) Reflect long term commitments to the State;	✓		
(ii) Rely on economic linkages within the local economy;	✓		
(iii) Diversify the economy;			✓
(iv) Reinvest in the local economy;	✓		
(v) Are sensitive to community needs and priorities; and	✓		
(vi) Demonstrate a commitment to provide management opportunities to Hawaii residents; and			✓
(B) Encourage investments in innovative activities that have a nexus to the State, such as:			
(i) Present or former residents acting as entrepreneurs or principals;			✓
(ii) Academic support from an institution of higher education in Hawaii;			✓

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(iii) Investment interest from Hawaii residents;			✓
(iv) Resources unique to Hawaii that are required for innovative activity; and			✓
(v) Complementary or supportive industries or government programs or projects.			✓
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			✓
(3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			✓
(4) Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable.			✓
(5) Streamline the processes for building and development permit and review, and telecommunication infrastructure installation approval and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where scientific evidence indicates that public health, safety and welfare would not be adversely affected.			✓
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawaii's small-scale producers, manufacturers, and distributors.			✓
(7) Continue to seek legislation to protect Hawaii from transportation interruptions between Hawaii and the continental United States.			✓
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			✓
(A) An industry that can take advantage of Hawaii's unique location and available physical and human resources.			✓
(B) A clean industry that would have minimal adverse effects on Hawaii's environment.			✓
(C) An industry that is willing to hire and train Hawaii's people to meet the industry's labor needs at all levels of employment.			✓
(D) An industry that would provide reasonable income and steady employment.			✓
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawaii business.			✓
(10) Enhance the quality of Hawaii's labor force and develop and maintain career opportunities for Hawaii's people through the following actions:			✓
(A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.			✓
(B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.			✓
(C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			✓
(D) Promote career opportunities in all industries for Hawaii's people by encouraging firms doing business in the State to hire residents.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on-the-job training opportunities.			✓
(F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.			✓
(b) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawaii's residents and visitors.			✓
(2) Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			✓
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.			✓
(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawaii's significant natural, scenic, historic, and cultural resources.			✓
(5) Develop and maintain career opportunities in the visitor industry for Hawaii's people, with emphasis on managerial positions.			✓
(6) Support and coordinate tourism promotion abroad to enhance Hawaii's share of existing and potential visitor markets.			✓
(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			✓
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.			✓
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			✓
(c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			✓
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawaii.			✓
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			✓
(d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			
(1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.			✓
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			✓
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			✓
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			✓

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawaii's agricultural community.			✓
(6) Seek favorable freight rates for Hawaii's agricultural products from interisland and overseas transportation operators.			✓
(7) Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.			✓
(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			✓
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			✓
(10) Support the continuation of land currently in use for diversified agriculture.			✓
(11) Encourage residents and visitors to support Hawaii's farmers by purchasing locally grown food and food products.			✓
(e) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.			✓
(2) Encourage the improvement of irrigation technology and promote the use of nonpotable water for agricultural and landscaping purposes.			✓
(3) Increase the support for research and development of economically feasible alternative water sources.			✓
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.			✓
(f) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration, and commercialization of renewable energy sources.			✓
(2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.			✓
(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.			✓
(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.			✓
(g) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network, with an emphasis on broadband and wireless infrastructure and capability, that will serve as the foundation of and catalyst for overall economic growth and diversification in Hawaii.			✓
(2) Encourage the development of services such as financial data processing, a products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			✓
(3) Encourage the development of small businesses in the information field such as software development; the development of new information systems, peripherals, and applications; data conversion and data entry services; and home or cottage services such as computer programming, secretarial, and accounting services.			✓

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.			✓
(5) Encourage research activities, including legal research in the information and telecommunications fields.			✓
(6) Support promotional activities to market Hawaii's information industry services.			✓
(7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.			✓
<p>Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project is consistent with the above-noted economic priority guidelines related to increasing investment capital for new and expanding enterprises. The proposed project will satisfy a portion of the increasing need for affordable and senior housing in Central Maui and will also provide office space to support important social service programs.</i></p>			
<p>Chapter 226-104: Population growth and land resources priority guidelines.</p>			
<p>(a) Priority guidelines to effect desired statewide growth and distribution:</p>			
(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.			✓
(2) Manage a growth rate for Hawaii's economy that will parallel future employment needs for Hawaii's people.			✓
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	✓		
(4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			✓
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.	✓		
(6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.			✓
(7) Support the development of high technology parks on the neighbor islands.			✓
<p>(b) Priority guidelines for regional growth distribution and land resource utilization:</p>			
(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	✓		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.			✓
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			✓
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			✓
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.			✓
(7) Pursue rehabilitation of appropriate urban areas.			✓
(8) Support the redevelopment of Kakaako into a viable residential, industrial, and commercial community.			✓
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	✓		
(10) Identify critical environmental areas in Hawaii to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.			✓
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.			✓
(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	✓		
(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project will provide 164 affordable senior housing rental units in an urbanized area in Central Maui, away from critical environmental areas or agricultural lands.</i>			
Chapter 226-105: Crime and criminal justice.			
Priority guidelines in the area of crime and criminal justice:			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			✓
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			✓
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			✓
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			✓
(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			✓

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			✓
Analysis: <i>The priority guidelines listed above for crime and criminal justice are not applicable to the proposed project.</i>			
Chapter 226-106: Affordable housing.			
Priority guidelines for the provision of affordable housing:			
(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.			✓
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			✓
(3) Improve information and analysis relative to land availability and suitability for housing.			✓
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawaii's low- and moderate-income households, gap-group households, and residents with special needs.	✓		
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawaii's people for the purchase of initial owner-occupied housing.			✓
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.	✓		
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			✓
(8) Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.	✓		
Analysis: <i>CCHDC will utilize funding from the HHFDC to develop the Kahului Lani Affordable Senior Housing Project, which includes 164 affordable senior housing rental units for seniors earning 60 percent or less of the County's median income.</i>			
Chapter 226-107: Quality education.			
Priority guidelines to promote quality education:			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;			✓
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;			✓
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force;			✓
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision making responsibilities;			✓
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:			✓
(A) The electronic exchange of information;			✓
(B) Statewide electronic mail; and			✓
(C) Access to the Internet.			✓
(6) Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			✓

HAWAII STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(7) Pursue the establishment of Hawaii’s public and private universities and colleges as research and training centers of the Pacific;			✓
(8) Develop resources and programs for early childhood education;			✓
(9) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			✓
(10) Strengthen and expand educational programs and services for students with special needs.			✓
Analysis: <i>The priority guidelines above related to promoting quality education are not applicable to the proposed project.</i>			
CHAPTER 226-108: Sustainability			
Priority guidelines and principles to promote sustainability shall include:			
(1) Encouraging balanced economic, social, community, and environmental priorities;	✓		
(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;	✓		
(3) Promoting a diversified and dynamic economy;			✓
(4) Encouraging respect for the host culture;			✓
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;	✓		
(6) Considering the principles of the ahupuaa system; and			✓
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.			✓
Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project is an urban infill development that supports the above noted priority guidelines and principles to promote sustainability.</i>			
CHAPTER 226-109: Climate change adaptation			
Priority guidelines and principles to promote climate change adaptation shall include:			
(1) Ensure that Hawaii’s people are educated, informed, and aware of the impacts climate change may have on their communities;			✓
(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;			✓
(3) Invest in continued monitoring and research of Hawaii’s climate and the impacts of climate change on the State;			✓
(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;			✓
(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;			✓
(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;			✓
(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES	S	N/S	N/A
(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;			✓
(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and			✓
(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.			✓
Analysis: <i>The priority guidelines above related to climate change adaptation are not applicable to the proposed project.</i>			

C. MAUI COUNTY GENERAL PLAN

As indicated by the Maui County Charter, the purpose of the general plan shall be to:

... indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain 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.

Chapter 2.80B of the Maui County Code (MCC), relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan. The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010. The Maui Island Plan, which delineates areas for future urban and rural growth as part of a Directed Growth Strategy, was adopted as Ordinance No. 4004 on December 28, 2012.

The following sections identify pertinent objectives, policies, implementing actions and related provisions set forth in the Countywide Policy Plan and the Maui Island Plan. It is recognized that both documents are comprehensive in nature and address a number of functional planning areas which apply to all programs, plans, and projects. However, for purposes of addressing General Plan compliance requirements, policy considerations which are deemed most relevant in terms of compatibility and consistency are addressed in this report section.

1. **Countywide Policy Plan**

The Countywide Policy Plan was adopted in March 2010 and is a comprehensive policy document for the islands of Maui County to the year 2030. The plan replaces the *General Plan of the County of Maui 1990 Update* and provides the policy framework for the development of the forthcoming Maui Island Plan as well as for updating the nine detailed Community Plans.

The Countywide Policy Plan provides broad goals, objectives, policies and implementing actions that portray the desired direction of the County's future. Goals are intended to describe a desirable condition of the County by the year 2030 and are intentionally general. Objectives tend to be more specific and may be regarded as milestones to achieve the larger goals. Policies are not intended as regulations, but instead provide a general guideline for County decision makers, departments, and collaborating organizations toward the attainment of goals and objectives. Implementing actions are specific tasks, procedures, programs, or techniques that carry out policy.

Discussion of how the Kahului Lani Affordable Senior Housing Project conforms to the relevant goals, objectives, policies, and implementing actions of the Countywide Policy Plan is provided below.

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
A. PROTECT THE NATURAL ENVIRONMENT			
Goal: Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.			
Objective:			
(1) Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.			✓
Policies:			
(a) Perpetuate native Hawaiian biodiversity by preventing the introduction of invasive species, containing or eliminating existing noxious pests, and protecting critical habitat areas.			✓
(b) Preserve and reestablish indigenous and endemic species' habitats and their connectivity.			✓
(c) Restore and protect forests, wetlands, watersheds, and stream flows, and guard against wildfires, flooding, and erosion.			✓
(d) Protect baseline stream flows for perennial streams, and support policies that ensure adequate stream flow to support Native Hawaiian aquatic species, traditional kalo cultivation, and self-sustaining ahupua'a.			✓
(e) Protect undeveloped beaches, dunes, and coastal ecosystems, and restore natural shoreline processes.			✓
(f) Protect the natural state and integrity of unique terrain, valued natural environments, and geological features.			✓
(g) Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources.			✓
(h) Expand coordination with the State and nonprofit agencies and their volunteers to reduce invasive species, replant indigenous species, and identify critical habitat.			✓
Implementing Actions:			
(a) Develop island-wide networks of greenways, watercourses, and habitat corridors.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area in Kahului. The surrounding area has been largely impacted by development. As such, the above objective, policies, and implementing action related to the natural environment and open spaces are not applicable to the proposed project.</i>			
Objective:			
(2) Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.	✓		
Policies:			
(a) Protect and restore nearshore reef environments and water quality.			✓
(b) Protect marine resources and valued wildlife.			✓
(c) Improve the connection between urban environments and the natural landscape, and incorporate natural features of the land into urban design.			✓
(d) Utilize land-conservation tools to ensure the permanence of valued open spaces.			✓
(e) Mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.	✓		
(f) Strengthen coastal-zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff.	✓		
(g) Regulate the use and maintenance of stormwater-treatment systems that incorporate the use of native vegetation and mimic natural systems.			✓
(h) Advocate for stronger regulation of fishing, boating, cruise ship, and ecotourism activities.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(i) Restore watersheds and aquifer-recharge areas to healthy and productive status, and increase public knowledge about the importance of watershed stewardship, water conservation, and groundwater protection.			✓
Implementing Actions:			
(a) Develop regulations to minimize runoff of pollutants into nearshore waters and reduce nonpoint and point source pollution.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project will incorporate drainage basins to collect and treat runoff from the project site. As such, the above-noted objective and policies related to the quality of environmentally sensitive, locally valued natural resources, or the native ecology of the island are supported by the proposed project.</i>			
Objective:			
(3) Improve the stewardship of the natural environment.			
Policies:			
(a) Preserve and protect natural resources with significant scenic, economic, cultural, environmental, or recreational value.			✓
(b) Improve communication, coordination, and collaboration among government agencies, nonprofit organizations, communities, individuals, and land owners that work for the protection of the natural environment.			✓
(c) Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments.	✓		
(d) Improve efforts to mitigate and plan for the impact of natural disasters, human influenced emergencies, and global warming.			✓
(e) Regulate access to sensitive ecological sites and landscapes.			✓
(f) Reduce air, noise, light, land, and water pollution, and reduce Maui County's contribution to global climate change.			✓
(g) Plan and prepare for and educate visitors and residents about the possible effects of global warming.			✓
(h) Provide public access to beaches and shorelines for recreational and cultural purposes where appropriate.			✓
(i) Educate the construction and landscape industries and property owners about the use of best management practices to prevent erosion and nonpoint source pollution.			✓
(j) Support the acquisition of resources with scenic, environmental, and recreational value, and encumber their use.			✓
(k) Improve enforcement activities relating to the natural environment.			✓
(l) For each shoreline community, identify and prioritize beach-conservation objectives, and develop action plans for their implementation.			✓
Implementing Actions:			
(a) Document, record, and monitor existing conditions, populations, and locations of flora and fauna communities.			✓
(b) Implement Federal and State policies that require a reduction of greenhouse-gas emissions.			✓
(c) Establish a baseline inventory of available natural resources and their respective carrying capacities.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)		S	N/S	N/A
Analysis: <i>Temporary impacts related to air quality during construction will be mitigated with BMPs. Long-term impacts to land, air, aquatic, and marine environments are not anticipated as a result of the proposed project.</i>				
Objective:				
(4) Educate residents and visitors about responsible stewardship practices and the interconnectedness of the natural environment and people.				✓
Policies:				
(a) Expand education about native flora, fauna, and ecosystems.				✓
(b) Align priorities to recognize that the health of the natural environment and the health of people are inextricably linked.				✓
(c) Promote programs and incentives that decrease greenhouse-gas emissions and improve environmental stewardship.				✓
Analysis: <i>The above objective and policies related to responsible stewardship practices and interconnectedness of the natural environment and people are not applicable to the proposed project.</i>				
B. PRESERVE LOCAL CULTURES AND TRADITIONS				
Goal: Maui County will foster a spirit of pono and protect, perpetuate, and reinvigorate its residents multi-cultural values and traditions to ensure that current and future generations will enjoy the benefits of their rich island heritage.				
Objective:				
(1) Perpetuate the Hawaiian culture as a vital force in the lives of residents.				✓
Policies:				
(a) Protect and preserve access to mountain, ocean, and island resources for traditional Hawaiian cultural practices.				✓
(b) Prohibit inappropriate development of cultural lands and sites that are important for traditional Hawaiian cultural practices, and establish mandates for the special protection of these lands in perpetuity.				✓
(c) Promote the use of ahupua'a and moku management practices.				✓
(d) Encourage the use of traditional Hawaiian architecture and craftsmanship.				✓
(e) Promote the use of the Hawaiian language.				✓
(f) Recognize and preserve the unique natural and cultural characteristics of each ahupua'a or district.				✓
(g) Encourage schools to promote broader incorporation of Hawaiian and other local cultures' history and values lessons into curriculum.				✓
(h) Ensure the protection of Native Hawaiian rights.				✓
(i) Promote, encourage, and require the correct use of traditional place names, particularly in government documents, signage, and the tourism industry.				✓
Implementing Actions:				
(a) Establish alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each ahupua'a or district.				✓
(b) Develop requirements for all County applicants to perpetuate and use proper traditional place names in all applications submitted.				✓
Analysis: <i>The goal, objective, policies, and implementing actions listed above related to preserving local cultures and traditions are not applicable to the proposed project.</i>				

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Objective:			
(2) Emphasize respect for our island lifestyle and our unique local cultures, family, and natural environment.			✓
Policies:			
(a) Acknowledge the Hawaiian culture as the host culture, and foster respect and humility among residents and visitors toward the Hawaiian people and their practices.			✓
(b) Perpetuate a respect for diversity, and recognize the historic blending of cultures and ethnicities.			✓
(c) Encourage the perpetuation of each culture's unique cuisine, attire, dance, music, and folklore, and other unique island traditions and recreational activities.			✓
(d) Recognize the interconnectedness between the natural environment and the cultural heritage of the islands.			✓
(e) Protect and prioritize funding for recreational activities that support local cultural practices, such as surfing, fishing, and outrigger-canoe paddling.			✓
Analysis: <i>The objective and policies related to emphasizing respect for our island lifestyle and our unique local cultures, family, and natural environment noted above are not applicable to the proposed project.</i>			
Objective:			
(3) Preserve for present and future generations the opportunity to know and experience the arts, culture, and history of Maui County.			✓
Policies:			
(a) Foster teaching opportunities for cultural practitioners to share their knowledge and skills.			✓
(b) Support the development of cultural centers.			✓
(c) Broaden opportunities for public art and the display of local artwork.			✓
(d) Foster the Aloha Spirit by celebrating the Hawaiian host culture and other Maui County cultures through support of cultural-education programs, festivals, celebrations, and ceremonies.			✓
(e) Support the perpetuation of Hawaiian arts and culture.			✓
(f) Support programs and activities that record the oral and pictorial history of residents.			✓
(g) Support the development of repositories for culture, history, genealogy, oral history, film, and interactive learning.			✓
Implementing Actions:			
(a) Establish incentives for the display of public art.			✓
(b) Establish centers and programs of excellence for the perpetuation of Hawaiian arts and culture.			✓
Analysis: <i>The objective, policies, and implementing actions noted above related to preserving the opportunity to know and experience the arts, culture, and history of Maui County are not applicable to the proposed project.</i>			
Objective:			
(4) Preserve and restore significant historic architecture, structures, cultural sites, cultural districts, and cultural landscapes.			✓
Policies:			
(a) Support the development of island-wide historic, archaeological, and cultural resources inventories.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Promote the rehabilitation and adaptive reuse of historic sites, buildings, and structures to perpetuate a traditional sense of place.			✓
(c) Identify a sustainable rate of use and set forth specific policies to protect cultural resources.			✓
(d) Protect and preserve lands that are culturally or historically significant.			✓
(e) Support programs that protect, record, restore, maintain, provide education about, and interpret cultural districts, landscapes, sites, and artifacts in both natural and museum settings.			✓
(f) Perpetuate the authentic character and historic integrity of rural communities and small towns.			✓
(g) Seek solutions that honor the traditions and practices of the host culture while recognizing the needs of the community.			✓
(h) Support the development of an Archaeological District Ordinance.			✓
(i) Protect summits, slopes, and ridgelines from inappropriate development.			✓
(j) Support the registering of important historic sites on the State and Federal historic registers.			✓
(k) Provide opportunities for public involvement with restoration and enhancement of all types of cultural resources.			✓
(l) Foster partnerships to identify and preserve or revitalize historic and cultural sites.			✓
Implementing Actions:			
(a) Identify, develop, map, and maintain an inventory of locally significant natural, cultural, and historical resources for protection.			✓
(b) Prepare, continually update, and implement a cultural-management plan for cultural sites, districts, and landscapes, where appropriate.			✓
(c) Enact an Archaeological District Ordinance.			✓
(d) Nominate important historic sites to the State and Federal historic registers.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area in Kahului. The surrounding area has been largely impacted by development. There are no historic or cultural sites on the property; therefore, the above objective, policies, and implementing actions related to preserving and restoring significant historic and cultural sites are not applicable to the proposed project.</i>			
C. IMPROVE EDUCATION			
Goal: Residents will have access to lifelong formal and informal educational options enabling them to realize their ambitions.			
Objective:			
(1) Encourage the State to attract and retain school administrators and educators of the highest quality.			✓
Policies:			
(a) Encourage the State to provide teachers with nationally competitive pay and benefit packages.			✓
(b) Encourage the State to ensure teachers will have the teaching tools and support staff needed to provide students with an excellent education.			✓
(c) Explore Maui County district- and school-based decision making in public education.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)		S	N/S	N/A
Analysis: <i>The above objective and policies related to attracting and retaining school administrators are not applicable to the proposed project.</i>				
Objective:				
(2) Provide nurturing learning environments that build skills for the 21st century.				✓
Policies:				
(a) Expand professional-development opportunities in disciplines that support the economic-development goals of Maui County.				✓
(b) Plan for demographic, social, and technological changes in a timely manner.				✓
(c) Encourage collaborative partnerships to improve conditions of learning environments.				✓
(d) Promote development of neighborhood schools and educational centers.				✓
(e) Integrate schools, community parks, and playgrounds, and expand each community's use of these facilities.				✓
(f) Support coordination between land use and school-facility planning agencies.				✓
(g) Encourage the upgrade and ongoing maintenance of public-school facilities.				✓
(h) Encourage the State Department of Education to seek reliable, innovative, and alternative methods to support a level of per-pupil funding that places Hawai'i among the top tier of states nationally for its financial support of public schools.				✓
(i) Encourage the State to promote healthier, more productive learning environments, including by providing healthy meals, more physical activity, natural lighting, and passive cooling.				✓
(j) Encourage the State to support the development of benchmarks to measure the success of Hawai'i's public-education system and clarify lines of accountability.				✓
(k) Design school and park facilities in proximity to residential areas.				✓
(l) Support technology- and natural-environment-based learning.				✓
(m) Encourage the State to support lower student-teacher ratios in public schools.				✓
(n) Encourage alternative learning and educational opportunities.				✓
Implementing Actions:				
(a) Develop safe walking and bicycling programs for school children.				✓
Analysis: <i>The above objective, policies, and implementing action related to providing nurturing learning environments are not applicable to the proposed project.</i>				
Objective:				
(3) Provide all residents with educational opportunities that can help them better understand themselves and their surroundings and allow them to realize their ambitions.				✓
Policies:				
(a) Encourage the State to improve Maui Community College as a comprehensive community college that will serve each community.				✓
(b) Broaden the use of technology and telecommunications to improve educational opportunities throughout the County.				✓
(c) Attract graduate-level research programs and institutions.				✓
(d) Promote the teaching of traditional practices, including aquaculture; subsistence agriculture; Pacific Island, Asian, and other forms of alternative health practices; and indigenous Hawaiian architecture.				✓
(e) Integrate cultural and environmental values in education, including self-sufficiency and sustainability.				✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)			
	S	N/S	N/A
(f) Foster a partnership and ongoing dialogue between business organizations, formal educational institutions, and vocational training centers to tailor learning and mentoring programs to County needs.			✓
(g) Ensure teaching of the arts to all ages.			✓
(h) Expand and develop vocational learning opportunities by establishing trade schools.			✓
(i) Encourage the State to integrate financial and economic literacy in elementary, secondary, and higher-education levels.			✓
Implementing Actions:			
(a) Encourage the State to establish a four-year university, and support the development of other higher-education institutions to enable residents to obtain bachelor degrees and postgraduate degrees in Maui County.			✓
Analysis: <i>The above objective, policies, and implementing action related to providing educational opportunities are not applicable to the proposed project.</i>			
Objective:			
(4) Maximize community-based educational opportunities.			✓
Policies:			
(a) Encourage the State and others to expand pre-school, after-school, and homebased (parent-child) learning.			✓
(b) Support public-private partnerships to develop youth-internship, -apprenticeship, and -mentoring programs.			✓
(c) Support the development of a wide range of informal educational and cultural programs for all residents.			✓
(d) Improve partnerships that utilize the skills and talents at Hawai'i's colleges and universities to benefit the County.			✓
(e) Support career-development and job-recruitment programs and centers.			✓
(f) Attract learning institutions and specialty schools to diversify and enhance educational opportunities.			✓
(g) Expand education of important life skills for the general public.			✓
(h) Support community facilities such as museums, libraries, nature centers, and open spaces that provide interactive-learning opportunities for all ages.			✓
Analysis: <i>The above objective and policies related to maximizing community-based educational opportunities are not applicable to the proposed project.</i>			
D. STRENGTHEN SOCIAL AND HEALTHCARE SERVICES			
Goal: Health and social services in Maui County will fully and comprehensively serve all segments of the population.			
Objective:			
(1) In cooperation with the Federal and State governments and nonprofit agencies, broaden access to social and healthcare services and expand options to improve the overall wellness of the people of Maui County.	✓		
Policies:			
(a) Work with other levels of government and the nonprofit sector to expand services to address hunger, homelessness, and poverty.	✓		
(b) Support the improvement of opportunities for disadvantaged youth, encourage the tradition of hana'i relatives, and support expanded opportunities for foster care.			✓
(c) Support expanded long-term-care options, both in institutions and at home, for patients requiring ongoing assistance and medical attention.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(d) Encourage the expansion and improvement of local hospitals, facilitate the establishment of new healthcare facilities, and facilitate prompt and high-quality emergency- and urgent-care services for all.			✓
(e) Support broadened access to affordable health insurance and health care, and recognize the unique economic challenges posed to families when healthcare services are provided off-island.			✓
(f) Encourage equal access to social and healthcare services through both technological and traditional means.	✓		
Analysis: <i>The Kahului Lani Affordable Senior Housing Project will include office space for CCH's social service outreach programs, which provide emergency assistance (rent, food, etc.) to low income families, assessments of families interested in becoming foster families, and aid to homeless vets. CCH will also provide onsite case management services for Kahului Lani residents. CCH services and programs are anticipated to benefit Kahului Lani residents and other members of the community through their outreach efforts from a personal health and wellness perspective.</i>			
Objective:			
(2) Encourage the Federal and State governments and the private sector to improve the quality and delivery of social and healthcare services.	✓		
Policies:			
(a) Strengthen partnerships with government, nonprofit, and private organizations to provide funding and to improve counseling and other assistance to address substance abuse, domestic violence, and other pressing social challenges.			✓
(b) Encourage the State to improve the quality of medical personnel, facilities, services, and equipment.			✓
(c) Encourage investment to improve the recruitment of medical professionals and the quality of medical facilities and equipment throughout Maui County.			✓
(d) Promote the development of continuum-of-care facilities that provide assisted living, hospice, home-care, and skilled-nursing options allowing the individual to be cared for in a manner congruent with his or her needs and desires.			✓
(e) Support improved social, healthcare, and governmental services for special needs populations.			✓
(f) Plan for the needs of an aging population and the resulting impacts on social services, housing, and healthcare delivery.	✓		
(g) Improve coordination among the police, the courts, and the public in the administration of social and healthcare services.			✓
(h) Support programs that address needs of veterans.	✓		
(i) Support programs that address the needs of immigrants.			✓
Implementing Actions:			
(a) Invest in programs designed to improve the general welfare and quality of life of Native Hawaiians.			✓
(b) Assist and facilitate the State Department of Public Safety and others in efforts to strengthen programs and facilities that will improve the mental and social health of incarcerated people and assist in prison inmates' successful transition back into Maui County communities.			✓
(c) Develop and maintain a comprehensive index that will measure the health and wellness needs of families.			✓
(d) Provide heliports countywide for emergency health and safety purposes.			✓
Analysis: <i>As mentioned previously, the CCH onsite case management services and outreach programs will benefit the aging population as well as the veterans.</i>			

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Objective:			
(3) Strengthen public-awareness programs related to healthy lifestyles and social and medical services.			✓
Policies:			
(a) Expand public awareness about personal safety and crime prevention.			✓
(b) Encourage residents to pursue education and training for careers in the healthcare, social services, and community-development fields.			✓
(c) Expand public awareness and promote programs to achieve healthy eating habits and drug-free lifestyles.			✓
Analysis: <i>The onsite case management services provided by CCH will improve awareness of healthy lifestyles and social and medical services for residents.</i>			
E. EXPAND HOUSING OPPORTUNITIES FOR RESIDENTS			
Goal: Quality, island-appropriate housing will be available to all residents.			
Objective:			
(1) Reduce the affordable housing deficit for residents.	✓		
Policies:			
(a) Ensure that an adequate and permanent supply of affordable housing, both new and existing units, is made available for purchase or rental to our resident and/or workforce population, with special emphasis on providing housing for low- to moderate-income families, and ensure that all affordable housing remains affordable in perpetuity.	✓		
(b) Seek innovative ways to lower housing costs without compromising the quality of our island lifestyle.	✓		
(c) Seek innovative methods to secure land for the development of low- and moderate- income housing.			✓
(d) Provide the homeless population with emergency and transitional shelter and other supportive programs.			✓
(e) Provide for a range of senior-citizen and special needs housing choices on each island that affordably facilitates a continuum of care and services.	✓		
(f) Support the Department of Hawaiian Home Lands' development of homestead lands.			✓
(g) Manage property-tax burdens to protect affordable resident homeownership.			✓
(h) Explore taxation mechanisms to increase and maintain access to affordable housing.			✓
(i) Improve awareness regarding available affordable homeowner's insurance.			✓
(j) Redevelop commercial areas with a mixture of affordable residential and business uses, where appropriate.			✓
(k) Ensure residents are given priority to obtain affordable housing units developed in their communities, consistent with all applicable regulations.	✓		
(l) Establish pricing for affordable housing that is more reflective of Maui County's workforce than the United States Housing and Urban Development's median-income estimates for Maui County.			✓
(m) Develop neighborhoods with a mixture of accessible and integrated community facilities and services.			✓
(n) Provide alternative regulatory frameworks to facilitate the use of Kuleana lands by the descendants of Native Hawaiians who received those lands pursuant to the Kuleana Act of 1850.			✓
(o) Work with lending institutions to expand housing options and safeguard the financial security of homeowners.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(p) Promote the use of the community land trust model and other land-lease and land- financing options.			✓
(q) Support the opportunity to age in place by providing accessible and appropriately designed residential units.	✓		
Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project will provide 164 rental units for seniors earning 60 percent or less of the County's median income in an urbanized area near existing commercial and residential uses.</i>			
Objective:			
(2) Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small town character.	✓		
Policies:			
(a) Seek innovative ways to develop 'ohana cottages and accessory-dwelling units as affordable housing.			✓
(b) Design neighborhoods to foster interaction among neighbors.			✓
(c) Encourage a mix of social, economic, and age groups within neighborhoods.			✓
(d) Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.	✓		
(e) Encourage the building industry to use environmentally sustainable materials, technologies, and site planning.			✓
(f) Develop workforce housing in proximity to job centers and transit facilities.			✓
(g) Provide incentives to developers and owners who incorporate green building practices and energy-efficient technologies into their housing developments.			✓
Implementing Actions:			
(a) Revise laws to support neighborhood designs that incorporate a mix of housing types that are appropriate for island living.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project provides infill housing in an urban area. The proposed development complements the surrounding area.</i>			
Objective:			
(3) Increase and maintain the affordable housing inventory.	✓		
Policies:			
(a) Recognize housing as a basic human need, and work to fulfill that need.	✓		
(b) Prioritize available infrastructure capacity for affordable housing.			✓
(c) Improve communication, collaboration, and coordination among housing providers and social-service organizations.	✓		
(d) Study future projected housing needs, monitor economic cycles, and prepare for future conditions on each island.			✓
(e) Develop public-private and nonprofit partnerships that facilitate the construction of quality affordable housing.	✓		
(f) Streamline the review process for high-quality, affordable housing developments that implement the goals, objectives, and policies of the General Plan.			✓
(g) Minimize the intrusion of housing on prime, productive, and potentially productive agricultural lands and regionally valuable agricultural lands.			✓
(h) Encourage long-term residential use of existing and future housing to meet residential needs.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)		S	N/S	N/A
Implementing Actions:				
(a) Develop policies to even out the peaks and valleys in Maui County's construction-demand cycles.				✓
Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project meets the growing need for affordable housing on Maui and will provide 164 rental units for seniors earning 60 percent or less of the County's median income.</i>				
Objective:				
(4) Expand access to education related to housing options, homeownership, financing, and residential construction.				✓
Policies:				
(a) Broaden access to information about County, State, and Federal programs that provide financial assistance to renters and home buyers.				✓
(b) Expand access to information about opportunities for homeownership and self-help housing.				✓
(c) Educate residents about making housing choices that support their individual needs, the needs of their communities, and the health of the islands' natural systems.				✓
(d) Improve home buyers' education on all aspects of homeownership.				✓
Analysis: <i>The above objectives and policies related to housing education are not applicable to the proposed project.</i>				
F. STRENGTHEN THE LOCAL ECONOMY				
Goal: Maui County's economy will be diverse, sustainable, and supportive of community values.				
Objective:				
(1) Promote an economic climate that will encourage diversification of the County's economic base and a sustainable rate of economic growth.				✓
Policies:				
(a) Support economic decisions that create long-term benefits.				✓
(b) Promote lifelong education, career development, and technical training for existing and emerging industries.				✓
(c) Invest in infrastructure, facilities, and programs that foster economic diversification.				✓
(d) Support and promote locally produced products and locally owned operations and businesses that benefit local communities and meet local demand.				✓
(e) Support programs that assist industries to retain and attract more local labor and facilitate the creation of jobs that offer a living wage.				✓
(f) Encourage work environments that are safe, rewarding, and fulfilling to employees.				✓
(g) Support home-based businesses that are appropriate for and in character with the community.				✓
(h) Encourage businesses that promote the health and well-being of the residents, produce value-added products, and support community values.				✓
(i) Foster an understanding of the role of all industries in our economy.				✓
(j) Support efforts to improve conditions that foster economic vitality in our historic small towns.				✓
(k) Support and encourage traditional host-culture businesses and indigenous agricultural practices.				✓
(l) Support public and private entities that assist entrepreneurs in establishing locally operated businesses.				✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Implementing Actions:			
(a) Develop regulations and programs that support opportunities for local merchants, farmers, and small businesses to sell their goods and services directly to the public.			✓
(b) Monitor the carrying capacity of the islands' social, ecological, and infrastructure systems with respect to the economy.			✓
Analysis: <i>The above objective and policies related to encouraging diversification of the County's economic base and a sustainable rate of economic growth are not applicable to the proposed project.</i>			
Objective:			
(2) Diversify and expand sustainable forms of agriculture and aquaculture.			✓
Policies:			
(a) Support programs that position Maui County's agricultural products as premium export products.			✓
(b) Prioritize the use of agricultural land to feed the local population, and promote the use of agricultural lands for sustainable and diversified agricultural activities.			✓
(c) Capitalize on Hawaii's economic opportunities in the ecologically sensitive aquaculture industries.			✓
(d) Assist farmers to help make Maui County more self-sufficient in food production.			✓
(e) Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.			✓
(f) Support a tax structure that is conducive to the growth of the agricultural economy.			✓
(g) Enhance County efforts to monitor and regulate important agricultural issues.			✓
(h) Support education, research, and facilities that strengthen the agricultural industry.			✓
(i) Maintain the genetic integrity of existing food crops.			✓
(j) Encourage healthy and organic farm practices that contribute to land health and regeneration.			✓
(k) Support cooperatives and other types of nontraditional communal farming and efforts.			✓
(l) Encourage methods of monitoring and controlling genetically modified crops to prevent adverse effects.			✓
(m) Work with the State to ease the permitting process for the revitalization of traditional fish ponds.			✓
Implementing Actions:			
(a) Redirect efforts in the Office of Economic Development to further facilitate the development of the agricultural section and to monitor agricultural legislation and issues.			✓
(b) Publicly identify, with signage and other means, the field locations of all genetically modified crops.			✓
(c) Create agricultural parks in areas distant from genetically modified crops.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)		S	N/S	N/A
Analysis: <i>The above objective, policies, and implementing actions related to agriculture and aquaculture are not applicable to the proposed project.</i>				
Objective:				
(3) Support a visitor industry that respects the resident culture and the environment.				✓
Policies:				
(a) Promote traditional Hawaiian practices in visitor-related facilities and activities.				✓
(b) Encourage and educate the visitor industry to be sensitive to island lifestyles and cultural values.				✓
(c) Encourage a spirit of welcome for residents at visitor facilities, such as by offering kama'aina incentives and discount programs.				✓
(d) Support the renovation and enhancement of existing visitor facilities.				✓
(e) Support policies, programs, and a tax structure that redirect the benefits of the visitor industry back into the local community.				✓
(f) Encourage resident ownership of visitor-related businesses and facilities.				✓
(g) Develop partnerships to provide educational and training facilities to residents employed in the visitor industry.				✓
(h) Foster an understanding of local cultures, customs, and etiquette, and emphasize the importance of the Aloha Spirit as a common good for all.				✓
(i) Support the diversification, development, evolution, and integration of the visitor industry in a way that is compatible with the traditional, social, economic, spiritual, and environmental values of island residents				✓
(j) Improve collaboration between the visitor industry and the other sectors of Maui County's economy.				✓
(k) Perpetuate an authentic image of the Hawaiian culture and history and an appropriate recognition of the host culture.				✓
(l) Support the programs and initiatives outlined in the Maui County Tourism Strategic Plan 2006-2015.				✓
(m) Promote water conservation, beach conservation, and open-space conservation in areas providing services for visitors.				✓
(n) Recognize the important contributions that the visitor industry makes to the County's economy, and support a healthy and vibrant visitor industry.				✓
Analysis: <i>The above objective and policies related to the visitor industry are not applicable to the proposed project.</i>				
Objective:				
(4) Expand economic sectors that increase living-wage job choices and are compatible with community values.				✓
Policies:				
(a) Support emerging industries, including the following: <ul style="list-style-type: none"> • Health and wellness industry; • Sports and recreation industry; • Film and entertainment industry; • Arts and culture industry; • Renewable-energy industry; 	<ul style="list-style-type: none"> • Research and development industry; • High-technology and knowledge-based industries; • Education and training industry; • Ecotourism industry; and • Agritourism industry. 			✓
Analysis: <i>The above objective and policies related to the job sector are not applicable to the proposed project.</i>				

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
G. IMPROVE PARKS AND PUBLIC FACILITIES			
Goal: A full range of island-appropriate public facilities and recreational opportunities will be provided to improve the quality of life for residents and visitors.			
Objective:			
(1) Expand access to recreational opportunities and community facilities to meet the present and future needs of residents of all ages and physical abilities.			✓
Policies:			
(a) Protect, enhance, and expand access to public shoreline and mountain resources.			✓
(b) Expand and enhance the network of parks, multi-use paths, and bikeways.			✓
(c) Assist communities in developing recreational facilities that promote physical fitness.			✓
(d) Expand venue options for recreation and performances that enrich the lifestyles of Maui County's people.			✓
(e) Expand affordable recreational and after-school programs for youth.			✓
(f) Encourage and invest in recreational, social, and leisure activities that bring people together and build community pride.			✓
(g) Promote the development and enhancement of community centers, civic spaces, and gathering places throughout our communities.			✓
(h) Expand affordable access to recreational opportunities that support the local lifestyle.			✓
Implementing Actions:			
(a) Identify and reserve lands for cemeteries, and preserve existing cemeteries on all islands, appropriately accommodating varying cultural and, faith-based traditions.			✓
Analysis: <i>The above objective and policies related to expanding access to recreational opportunities and community facilities are not applicable to the proposed project.</i>			
Objective:			
(2) Improve the quality and adequacy of community facilities.			✓
Policies:			
(a) Provide an adequate supply of dedicated shelters and facilities for disaster relief.			✓
(b) Provide and maintain community facilities that are appropriately designed to reflect the traditions and customs of local cultures.			✓
(c) Ensure that parks and public facilities are safe and adequately equipped for the needs of all ages and physical abilities to the extent reasonable.			✓
(d) Maintain, enhance, expand, and provide new active and passive recreational facilities in ways that preserve the natural beauty of their locations.			✓
(e) Redesign or retrofit public facilities to adapt to major shifts in environmental or urban conditions to the extent reasonable.			✓
Analysis: <i>The above objective and policies related to the quality and adequacy of community facilities are not applicable to the proposed project.</i>			
Objective:			
(3) Enhance the funding, management, and planning of public facilities and park lands.			✓
Policies:			
(a) Identify and encourage the establishment of regulated and environmentally sound campgrounds.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Manage park use and control access to natural resources in order to rest sensitive places and utilize the resources in a sustainable manner.			✓
(c) Provide public-recreational facilities that are clean and well-maintained.			✓
(d) Develop partnerships to ensure proper stewardship of the islands' trails, public lands, and access systems.			✓
(e) Ensure that there is an adequate supply of public restrooms in convenient locations.			✓
Implementing Actions:			
(a) Encourage the State to allow for overnight fishing along the shoreline in accordance with management plans and regulations.			✓
(b) Develop and regularly update functional plans, including those relating to public facilities, parks, and campgrounds.			✓
(c) Develop and adopt local level-of-service standards for public facilities and parks.			✓
(d) Identify, acquire, and develop lands for parks, civic spaces, and public uses.			✓
Analysis: <i>The above objective and policies related to the funding, management, and planning of public facilities and park lands are not applicable to the proposed project.</i>			
H. DIVERSIFY TRANSPORTATION OPTIONS			
Goal: Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.			
Objective:			
(1) Provide an effective, affordable, and convenient ground-transportation system that is environmentally sustainable.			✓
Policies:			
(a) Execute planning strategies to reduce traffic congestion.			✓
(b) Plan for the efficient relocation of roadways for the public benefit.			✓
(c) Support the use of alternative roadway designs, such as traffic-calming techniques and modern roundabouts.			✓
(d) Increase route and mode options in the ground-transportation network.			✓
(e) Ensure that roadway systems are safe, efficient, and maintained in good condition.			✓
(f) Preserve roadway corridors that have historic, scenic, or unique physical attributes that enhance the character and scenic resources of communities.			✓
(g) Design new roads and roadway improvements to retain and enhance the existing character and scenic resources of the communities through which they pass.			✓
(h) Promote a variety of affordable and convenient transportation services that meet countywide and community needs and expand ridership of transit systems.			✓
(i) Collaborate with transit agencies, government agencies, employers, and operators to provide planning strategies that reduce peak-hour traffic.			✓
(j) Develop and expand an attractive, island-appropriate, and efficient public transportation system.			✓
(k) Provide and encourage the development of specialized transportation options for the young, the elderly, and persons with disabilities.			✓
(l) Evaluate all alternatives to preserve quality of life before widening roads.			✓
(m) Encourage businesses in the promotion of alternative transportation options for resident and visitor use.			✓
(n) Support the development of carbon-emission standards and an incentive program aimed at achieving County carbon-emission goals.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Implementing Actions:			
(a) Create incentives and implement strategies to reduce visitor dependence on rental cars.			✓
(b) Establish efficient public-transit routes between employment centers and primary workforce residential areas.			✓
(c) Create attractive, island-appropriate, conveniently located park-and-ride and ride-share facilities.			✓
Analysis: <i>The above objective, policies, and implementing actions related to transportation of people and goods are not applicable to the proposed project.</i>			
Objective:			
(2) Reduce the reliance on the automobile and fossil fuels by encouraging walking, bicycling, and other energy-efficient and safe alternative modes of transportation.	✓		
Policies:			
(a) Make walking and bicycling transportation safe and easy between and within communities.	✓		
(b) Require development to be designed with the pedestrian in mind.	✓		
(c) Design new and retrofit existing rights-of-way with adequate sidewalks, bicycle lanes, or separated multi-use transit corridors.	✓		
(d) Support the development of a countywide network of bikeways, equestrian trails, and pedestrian paths.			✓
(e) Support the reestablishment of traditional trails between communities, to the ocean, and through the mountains for public use.			✓
(f) Encourage educational programs to increase safety for pedestrians and bicyclists.			✓
Implementing Actions:			
(a) Design, build, and modify existing bikeways to improve safety and separation from automobiles.			✓
(b) Increase enforcement to reduce abuse of bicycle and pedestrian lanes by motorized vehicles.			✓
(c) Identify non-motorized transportation options as a priority for new sources of funding.			✓
Analysis: <i>The proposed Kahului Lani Affordable Senior Housing Project includes a sidewalk on Vevau Street.</i>			
Objective:			
(3) Improve opportunities for affordable, efficient, safe, and reliable air transportation.			✓
Policies:			
(a) Discourage private helicopter and fixed-wing landing sites to mitigate environmental and social impacts.			✓
(b) Encourage the use of quieter aircraft and noise-abatement procedures for arrivals and departures.			✓
(c) Encourage the modernization and maintenance of air-transportation facilities for general-aviation activities.			✓
(d) Encourage a viable and competitive atmosphere for air carriers to expand service and ensure sufficient intra-County flights and affordable fares for consumers.			✓
(e) Continue to support secondary airports, and encourage the State to provide them with adequate funding.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(f) During Community Plan updates, explore the use of the smaller airports.			✓
(g) Encourage the State to provide efficient, adequate, and affordable parking and transit connections within and around airports.			✓
Analysis: <i>The above objective and policies related to air transportation are not applicable to the proposed project.</i>			
Objective:			
(4) Improve opportunities for affordable, efficient, safe, and reliable ocean transportation.			✓
Policies:			
(a) Support programs and regulations that reduce the disposal of maritime waste and prevent spills into the ocean.			✓
(b) Encourage the upgrading of harbors to resist damage from natural hazards and disasters.			✓
(c) Encourage the State to study the use of existing harbors and set priorities for future use.			✓
(d) Explore all options to protect the traditional recreational uses of harbors, and mitigate harbor-upgrade impacts to recreational uses where feasible.			✓
(e) Encourage the upgrading of harbors and the separation of cargo and bulk materials from passenger and recreational uses.			✓
(f) Encourage the State to provide for improved capacity at shipping, docking, and storage facilities.			✓
(g) Encourage the State to provide adequate parking facilities and transit connections within and around harbor areas.			✓
(h) Encourage the redevelopment and revitalization of harbors while preserving historic and cultural assets in harbor districts.			✓
(i) Encourage the State to provide adequate facilities for small-boat operations, including small-boat launch ramps, according to community needs.			✓
(j) Support the maintenance and cleanliness of harbor facilities.			✓
(k) Support the redevelopment of harbors as pedestrian-oriented gathering places.			✓
Analysis: <i>The above objective and policies related to ocean transportation are not applicable to the proposed project.</i>			
Objective:			
(5) Improve and expand the planning and management of transportation systems.			✓
Policies:			
(a) Encourage progressive community design and development that will reduce transportation trips.			✓
(b) Require new developments to contribute their pro rata share of local and regional infrastructure costs.			✓
(c) Establish appropriate user fees for private enterprises that utilize public transportation facilities for recreational purposes.			✓
(d) Support the revision of roadway-design criteria and standards so that roads are compatible with surrounding neighborhoods and the character of rural areas.			✓
(e) Plan for multi-modal transportation and utility corridors on each island.			✓
(f) Support designing all transportation facilities, including airport, harbor, and mass-transit stations, to reflect Hawaiian architecture.			✓
(g) Utilize transportation-demand management as an integral part of transportation planning.			✓
(h) Accommodate the planting of street trees and other appropriate landscaping in all public rights-of-way.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Analysis: <i>The above objective and policies related to the planning and management of transportation systems are not applicable to the proposed project.</i>			
I. IMPROVE PHYSICAL INFRASTRUCTURE			
Goal: Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.			
Objective:			
(1) Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.			✓
Policies:			
(a) Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.	✓		
(b) Develop and fund improved water-delivery systems.			✓
(c) Ensure a reliable and affordable supply of water for productive agricultural uses.			✓
(d) Promote the reclamation of gray water, and enable the use of reclaimed, gray, and brackish water for activities that do not require potable water.			✓
(e) Retain and expand public control and ownership of water resources and delivery systems.			✓
(f) Improve the management of water systems so that surface-water and groundwater resources are not degraded by overuse or pollution.			✓
(g) Explore and promote alternative water-source-development methods.			✓
(h) Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.			✓
Implementing Actions:			
(a) Develop a process to review all applications for desalination.			✓
Analysis: <i>The project will be serviced by the Department of Water Supply. Coordination will be undertaken to ensure that there is adequate water supply for the project.</i>			
Objective:			
(2) Improve waste-disposal practices and systems to be efficient, safe, and as environmentally sound as possible.	✓		
Policies:			
(a) Provide sustainable waste-disposal systems and comprehensive, convenient recycling programs to reduce the flow of waste into landfills.			✓
(b) Support innovative and alternative practices in recycling solid waste and wastewater and disposing of hazardous waste.			✓
(c) Encourage vendors and owners of automobile, appliance, and white goods to participate in the safe disposal and recycling of such goods, and ensure greater accountability for large waste producers.			✓
(d) Develop strategies to promote public awareness to reduce pollution and litter, and encourage residents to reduce, reuse, recycle, and compost waste materials.	✓		
(e) Pursue improvements and upgrades to existing wastewater and solid-waste systems consistent with current and future plans and the County's Capital Improvement Program.			✓
Implementing Actions:			
(a) Establish recycling, trash-separation, and materials recovery programs and facilities to reduce the flow of waste into landfills.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Study the feasibility of developing environmentally safe waste-to-energy facilities.			✓
(c) Utilize taxes and fees as means to encourage conservation and recycling.			✓
(d) Implement and regularly update the Integrated Solid Waste Management Plan.			✓
(e) Phase out the use of injection wells.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing facility will have recycling bins to reduce the flow of waste into landfills.</i>			
Objective:			
(3) Significantly increase the use of renewable and green technologies to promote energy efficiency and energy self-sufficiency.			✓
Policies:			
(a) Promote the use of locally renewable energy sources, and reward energy efficiency.			✓
(b) Consider tax incentives and credits for the development of sustainable- and renewable-energy sources.			✓
(c) Expand education about energy conservation and self-sufficiency.			✓
(d) Encourage small-scale energy generation that utilizes wind, sun, water, biowaste, and other renewable sources of energy.	✓		
(e) Expand renewable-energy production.			✓
(f) Develop public-private partnerships to ensure the use of renewable energy and increase energy efficiency.			✓
(g) Require the incorporation of locally appropriate energy-saving and green building design concepts in all new developments by providing energy efficient urban design guidelines and amendments to the Building Code.	✓		
(h) Encourage the use of sustainable energy to power vehicles.			✓
(i) Promote the retrofitting of existing buildings and new development to incorporate energy-saving design concepts and devices.			✓
(j) Encourage green footprint practices.			✓
(k) Reduce Maui County's dependence on fossil fuels and energy imports.			✓
(l) Support green building practices such as the construction of buildings that aim to minimize carbon dioxide production, produce renewable energy, and recycle water.			✓
(m) Promote and support environmentally friendly practices in all energy sectors.			✓
Implementing Actions:			
(a) Adopt an energy-efficiency policy for Maui County government as a model for other jurisdictions.			✓
(b) Adopt a Green Building Code, and support green building practices.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project will consider incorporation of small-scale renewable energy generation, such as photovoltaic panels, if funding is available.</i>			
Objective:			
(4) Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.	✓		
Policies:			
(a) Capitalize on existing infrastructure capacity as a priority over infrastructure expansion.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Planning for new towns should only be considered if a region's growth is too large to be directed into infill and adjacent growth areas.	✓		
(c) Utilize appropriate infrastructure technologies in the appropriate locations.	✓		
(d) Promote land use patterns that can be provided with infrastructure and public facilities in a cost-effective manner.	✓		
(e) Support catchment systems and on-site wastewater treatment in rural areas and aggregated water and wastewater systems in urban areas if they are appropriately located.			✓
Implementing Actions:			
(a) Develop a streamlining system for urban infill projects.			✓
(b) Identify appropriate areas for urban expansion of existing towns where infrastructure and public facilities can be provided in a cost-effective manner.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area with existing infrastructure systems.</i>			
Objective:			
(5) Improve the planning and management of infrastructure systems.			✓
Policies:			
(a) Provide a reliable and sufficient level of funding to enhance and maintain infrastructure systems.			✓
(b) Require new developments to contribute their pro rata share of local and regional infrastructure costs.			✓
(c) Improve coordination among infrastructure providers and planning agencies to minimize construction impacts.			✓
(d) Maintain inventories of infrastructure capacity, and project future infrastructure needs.			✓
(e) Require social-justice and -equity issues to be considered during the infrastructure-planning process.			✓
(f) Discourage the development of critical infrastructure systems within hazard zones and the tsunami-inundation zone to the extent practical.			✓
(g) Ensure that infrastructure is built concurrent with or prior to development.			✓
(h) Ensure that basic infrastructure needs can be met during a disaster.			✓
(i) Locate public facilities and emergency services in appropriate locations that support the health, safety, and welfare of each community and that minimize delivery inefficiencies.			✓
(j) Promote the undergrounding of utility and other distribution lines for health safety, and aesthetic reasons.			✓
Implementing Actions:			
(a) Develop and regularly update functional plans for infrastructure systems.			✓
(b) Develop, adopt, and regularly update local or community-sensitive level-of service standards for infrastructure systems.			✓
Analysis: <i>The objective, policies, and implementing actions related to the planning and management of infrastructure systems are not applicable to the project.</i>			
J. PROMOTE SUSTAINABLE LAND USE AND GROWTH MANAGEMENT			
Goal: Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.			
Objective:			
(1) Improve land use management and implement a directed-growth strategy.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
<u>Policies:</u>			
(a) Establish, map, and enforce urban- and rural-growth limits.			✓
(b) Direct urban and rural growth to designated areas.	✓		
(c) Limit the number of visitor-accommodation units and facilities in Community Plan Areas.			✓
(d) Maintain a sustainable balance between the resident, part-time resident, and visitor populations.			✓
(e) Encourage redevelopment and infill in existing communities on lands intended for urban use to protect productive farm land and open-space resources.	✓		
(f) Discourage new entitlements for residential, resort, or commercial development along the shoreline.			✓
(g) Restrict development in areas that are prone to natural hazards, disasters, or sea-level rise.			✓
(h) Direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline, and cultural resources.	✓		
(i) Establish and maintain permanent open space between communities to protect each community's identity.			✓
(j) Support the dedication of land for public uses.			✓
(k) Preserve the public's rights of access to and continuous lateral access along all shorelines.			✓
(l) Enable existing and future communities to be self-sufficient through sustainable land use planning and management practices.			✓
(m) Protect summits, slopes, and ridgelines from inappropriate development.			✓
<u>Implementing Actions:</u>			
(a) Regularly update urban- and rural-growth boundaries and their maps.			✓
(b) Establish transfer and purchase of development rights programs.			✓
(c) Develop and adopt a green infrastructure plan.			✓
(d) Develop studies to help determine a sustainable social, environmental, and economic carrying capacity for each island.			✓
(e) Identify and define resort-destination areas.			✓
<i>Analysis:</i> <i>The Kahului Lani Affordable Senior Housing Project is an urban infill development proposed in an area with existing infrastructure and service capacity away from natural, scenic, shoreline, and cultural resources.</i>			
<u>Objective:</u>			
(2) Improve planning for and management of agricultural lands and rural areas.			✓
<u>Policies:</u>			
(a) Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.			✓
(b) Provide opportunities and incentives for self-sufficient and subsistence homesteads and farms.			✓
(c) Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.			✓
(d) Conduct agricultural-development planning to facilitate robust and sustainable agricultural activities.			✓
<u>Implementing Actions:</u>			
(a) Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Analysis: <i>The objective, policies, and implementing action above related to planning for and management of agricultural land and rural areas are not applicable to the proposed project.</i>			
Objective:			
(3) Design all developments to be in harmony with the environment and to protect each community's sense of place.	✓		
Policies:			
(a) Support and provide incentives for green building practices.			✓
(b) Encourage the incorporation of green building practices and technologies into all government facilities to the extent practicable.			✓
(c) Protect and enhance the unique architectural and landscape characteristics of each Community Plan Area, small town, and neighborhood.	✓		
(d) Ensure that adequate recreational areas, open spaces, and public-gathering places are provided and maintained in all urban centers and neighborhoods.	✓		
(e) Ensure business districts are distinctive, attractive, and pedestrian-friendly destinations.			✓
(f) Use trees and other forms of landscaping along rights-of-way and within parking lots to provide shade, beauty, urban-heat reduction, and separation of pedestrians from automobile traffic in accordance with community desires.	✓		
(g) Where appropriate, integrate public-transit, equestrian, pedestrian, and bicycle facilities, and public rights-of-way as design elements in new and existing communities.	✓		
(h) Ensure better connectivity and linkages between land uses.			✓
(i) Adequately buffer and mitigate noise and air pollution in mixed-use areas to maintain residential quality of life.			✓
(j) Protect rural communities and traditional small towns by regulating the footprint, locations, site planning, and design of structures.			✓
(k) Support small-town revitalization and preservation.			✓
(l) Facilitate safe pedestrian access, and create linkages between destinations and within parking areas.			✓
Implementing Actions:			
(a) Establish design guidelines and standards to enhance urban and rural environments.			✓
(b) Provide funding for civic-center and civic-space developments.			✓
(c) Establish and enhance urban forests in neighborhoods and business districts.			✓
Analysis: <i>The Kahului Lani Affordable Senior Housing Project is proposed in an urban area of Kahului. It will include sidewalks, open space areas, and trees and other landscaping along rights of ways and in parking areas and will complement the character of the surrounding area.</i>			
Objective:			
(4) Improve and increase efficiency in land use planning and management.	✓		
Policies:			
(a) Assess the cumulative impact of developments on natural ecosystems, natural resources, wildlife habitat, and surrounding uses.	✓		
(b) Ensure that new development projects requiring discretionary permits demonstrate a community need, show consistency with the General Plan, and provide an analysis of impacts.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Encourage public and private partnerships to preserve lands of importance, develop housing, and meet the needs of residents.	✓		
(d) Promote creative subdivision designs that implement best practices in land development, sustainable management of natural and physical resources, increased pedestrian and bicycle functionality and safety, and the principles of livable communities.			✓
(e) Coordinate with Federal, State, and County officials in order to ensure that land use decisions are consistent with County plans and the vision local populations have for their communities.	✓		
(f) Enable greater public participation in the review of subdivisions.			✓
(g) Improve land use decision making through the use of land- and geographic information systems.			✓
Implementing Actions:			
(a) Institute a time limit and sunseting stipulations on development entitlements and their implementation.			✓
<i>Analysis: The Kahului Lani Affordable Senior Housing Project supports the above-noted objective, policies, and implementing action related to land use planning and management. An assessment on the project's impact on natural ecosystems and resources, wildlife habitat, and surrounding resources is included in Chapter II. Assessments of the project's consistency with the General Plan and Wailuku-Kahului Community Plan are included in this chapter.</i>			
K. STRIVE FOR GOOD GOVERNANCE			
Goal: Government services will be transparent, effective, efficient, and responsive to the needs of residents.			
Objective:			
(1) Strengthen governmental planning, coordination, consensus building, and decision making.			✓
Policies:			
(a) Plan and prepare for the effects of social, demographic, economic, and environmental shifts.			✓
(b) Plan for and address the possible implications of Hawaiian sovereignty.			✓
(c) Encourage collaboration among government agencies to reduce duplication of efforts and promote information availability and exchange.			✓
(d) Expand opportunities for the County to be involved in and affect State and Federal decision making.			✓
(e) Plan and prepare for large-scale emergencies and contingencies.			✓
(f) Improve public awareness about preparing for natural hazards, disasters, and evacuation plans.			✓
(g) Improve coordination among Federal, State, and County agencies.			✓
Implementing Actions:			
(a) Develop policies, regulations, and programs to protect and enhance the unique character and needs of the County's various communities.			✓
(b) Evaluate and if necessary, recommend modifications to the County Charter that could result in a possible change to the form of governance for Maui County.			✓
(c) Study and evaluate the feasibility and implications of voting in Maui County Council elections.			✓
(d) Study and evaluate the feasibility of authorizing town governments in Maui County.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Analysis: <i>The above objective, policies, and implementing actions related to governmental planning, coordination, consensus build, and decision making are not applicable to the proposed project.</i>			
Objective:			
(2) Promote civic engagement.	✓		
Policies:			
(a) Foster consensus building through in-depth, innovative, and accessible public participatory processes.			✓
(b) Promote and ensure public participation and equal access to government among all citizens.			✓
(c) Encourage a broad cross-section of residents to volunteer on boards and commissions.			✓
(d) Encourage the State to improve its community-involvement processes.			✓
(e) Support community-based decision making.			✓
(f) Expand advisory functions at the community level.			✓
(g) Expand opportunities for all members of the public to participate in public meetings and forums.	✓		
(h) Facilitate the community's ability to obtain relevant documentation.			✓
(i) Increase voter registration and turnout.			✓
Implementing Actions:			
(a) Implement two-way communication using audio-visual technology that allows residents to participate in the County's planning processes.			✓
(b) Ensure and expand the use of online notification of County business and public meetings, and ensure the posting of all County board and commission meeting minutes.	✓		
(c) Explore funding mechanisms to improve participation by volunteers on boards and commissions.			✓
(d) Develop a project-review process that mandates early and ongoing consultation in and with communities affected by planning and land use activities.	✓		
Analysis: <i>Opportunities for public review and comment are provided through the Chapter 343 Environmental Assessment (EA) process for the proposed project. There will also be a public hearing for the Special Management Area (SMA) Use Permit for the project.</i>			
Objective:			
(3) Improve the efficiency, reliability, and transparency of County government's internal processes and decision making.			✓
Policies:			
(a) Use advanced technology to improve efficiency.			✓
(b) Simplify and clarify the permitting process to provide uniformity, reliability, efficiency, and transparency.			✓
(c) Improve communication with Lana'i and Moloka'i through the expanded use of information technologies, expanded staffing, and the creation and expansion of government-service centers.			✓
(d) Ensure that laws, policies, and regulations are internally consistent and effectuate the intent of the General Plan.			✓
Implementing Actions:			
(a) Update the County Code to be consistent with the General Plan.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Identify and update County regulations and procedures to increase the productivity and efficiency of County government.			✓
(c) Develop local level-of-service standards for infrastructure, public facilities, and services.			✓
(d) Implement plans through programs, regulations, and capital improvements in a timely manner.			✓
(e) Expand government online services.			✓
Analysis: <i>The above objective, policies, and implementing actions related to the County's internal processes and decision-making are not applicable to the proposed project.</i>			
Objective:			
(4) Adequately fund in order to effectively administer, implement, and enforce the General Plan.			✓
Policies:			
(a) Adequately fund, staff, and support the timely update and implementation of planning policy, programs, functional plans, and enforcement activities.			✓
(b) Ensure that the County's General Plan process provides for efficient planning at the County, island, town, and neighborhood level.			✓
(c) Encourage ongoing professional development, education, and training of County employees.			✓
(d) Encourage competitive compensation packages for County employees to attract and retain County personnel.			✓
(e) Enable the County government to be more responsive in implementing our General Plan and Community Plans.			✓
(f) Review discretionary permits for compliance with the Countywide Policy Plan.	✓		
(g) Strengthen the enforcement of County, State, and Federal land use laws.			✓
Implementing Actions:			
(a) Establish penalties to ensure compliance with County, State, and Federal land use laws.			✓
Analysis: <i>This assessment reviews the project's compliance with the Countywide Policy Plan.</i>			
Objective:			
(5) Strive for County government to be a role model for implementing cultural and environmental policies and practices.			✓
Policies:			
(a) Educate residents on the benefits of sustainable practices.			✓
(b) Encourage the retention and hiring of qualified professionals who can improve cultural and environmental practices.			✓
(c) Incorporate environmentally sound and culturally appropriate practices in government operations and services.			✓
(d) Encourage all vendors with County contracts to incorporate environmentally sound and culturally appropriate practices.			✓
Analysis: <i>The objective and policies above related to implementing environmentally sound and culturally appropriate practices at the government level are not applicable to the proposed project.</i>			

2. Maui Island Plan

The Maui Island Plan (MIP), is applicable to the island of Maui only, providing more specific policy-based strategies for population, land use, transportation, public and

community facilities, water and sewage systems, visitor destinations, urban design, and other matters related to future growth.

As provided by Chapter 2.80B, the MIP shall include the following components:

1. *An island-wide land use strategy, including a managed and directed growth plan*
2. *A water element assessing supply, demand and quality parameters*
3. *A nearshore ecosystem element assessing nearshore waters and requirements for preservation and restoration*
4. *An implementation program which addresses the County's 20-year capital improvement requirements, financial program for implementation, and action implementation schedule*
5. *Milestone indicators designed to measure implementation progress of the MIP*

It is noted the Ordinance No. 4004 does not address the component relating to the implementation program. Chapter 2.80B of the MCC, relating to the General Plan, was amended via Ordinance No. 3979, October 5, 2012, to provide that the implementation program component be adopted no later than one (1) year following the effective date of Ordinance No. 4004. The MIP implementation chapter was adopted as Ordinance No. 4126 on May 27, 2014.

The MIP addresses a number of planning categories with detailed policy analysis and recommendations which are framed in terms of goals, objectives, policies and implementing actions. These planning categories address the following areas:

1. *Population*
2. *Heritage Resources*
3. *Natural Hazards*
4. *Economic Development*
5. *Housing*
6. *Infrastructure and Public Facilities*
7. *Land Use*

Additionally, an essential element of the MIP is its directed growth plan which provides a management framework for future growth in a manner that is fiscally, environmentally, and culturally prudent. Among the directed growth management tools developed through the MIP process are maps delineating urban growth boundaries (UGB), small town boundaries (STB) and rural growth boundaries (RGB). The respective boundaries identify areas appropriate for future growth and their corresponding intent with respect to development character.

The proposed Kahului Lani Affordable Senior Housing Project is located within the UGB. In this regard, it is consistent with the directed growth strategy defined via growth maps adopted in the MIP.

In addition, the proposed project has been reviewed with respect to pertinent goals, objectives, policies, and implementing actions of the MIP. A summary of these policy statements are provided below:

POPULATION

Goal:

- 1.1 *Maui's people, values, and lifestyles thrive through strong, healthy, and vibrant island communities.*

Objective:

- 1.1.1 *Greater retention and return of island residents by providing viable work, education, and lifestyle options.*

Policy:

- 1.1.1.b *Expand housing, transportation, employment, and social opportunities to ensure residents are able to comfortably age within their communities.*

HOUSING

Goal:

- 5.1 *Maui will have safe, decent, appropriate, and affordable housing for all residents developed in a way that contributes to strong neighborhoods and a thriving island community.*

Objective:

- 5.1.1 *More livable communities that provide for a mix of housing types, land uses, income levels, and age.*

Policy:

- 5.1.1.e *Use planning and regulatory approaches to provide higher housing densities.*

Objective:

- 5.1.3 *Provide affordable housing, rental or in fee, to the broad spectrum of our island community.*

Policy:

- 5.1.3.d *Develop or support partnerships and initiatives that provide housing-related education/outreach.*

INFRASTRUCTURE AND PUBLIC FACILITIES

Goal:

- 6.4 *An interconnected, efficient, and well-maintained, multimodal transportation system.*

Objective:

- 6.4.2 *Safe, interconnected transit, roadway, bicycle, equestrian, and pedestrian network.*

Policies:

- 6.4.2.c *Require new development, where appropriate, to integrate sidewalks, pathways, bikeways, and transit infrastructure into new commercial and residential projects while enhancing community character.*

- 6.4.2.d *Identify and improve hazardous and substandard sections of roadways, drainage infrastructure, and bridges, provided that the historical integrity of the roads and bridges are protected.*

LAND USE

Goal:

- 7.3 *Maui will have livable human-scale urban communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.*

Objective:

- 7.3.1 *Facilitate and support a more compact, efficient, human-scale urban development pattern.*

Policy:

- 7.3.1.a *Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.*

Objective:

- 7.3.2 *Facilitate more self-sufficient and sustainable communities.*

Policy:

- 7.3.2.f *Facilitate the development of housing by focusing projects in locations where land and infrastructure costs facilitate the development of affordably-priced housing.*

DIRECTED GROWTH PLAN

- 8.1.e *New development shall be consistent with the UGBs, STBs, and all other applicable policies of the MIP. New urban-density development shall not be allowed outside of a UGB or STB.*
- 8.1.i *The County will promote (through incentives, financial participation, expedited project review, infrastructure/public facilities support, etc.) appropriate urban infill, redevelopment and the efficient use of buildable land within UGBs to avoid the need to expand the UGBs.*

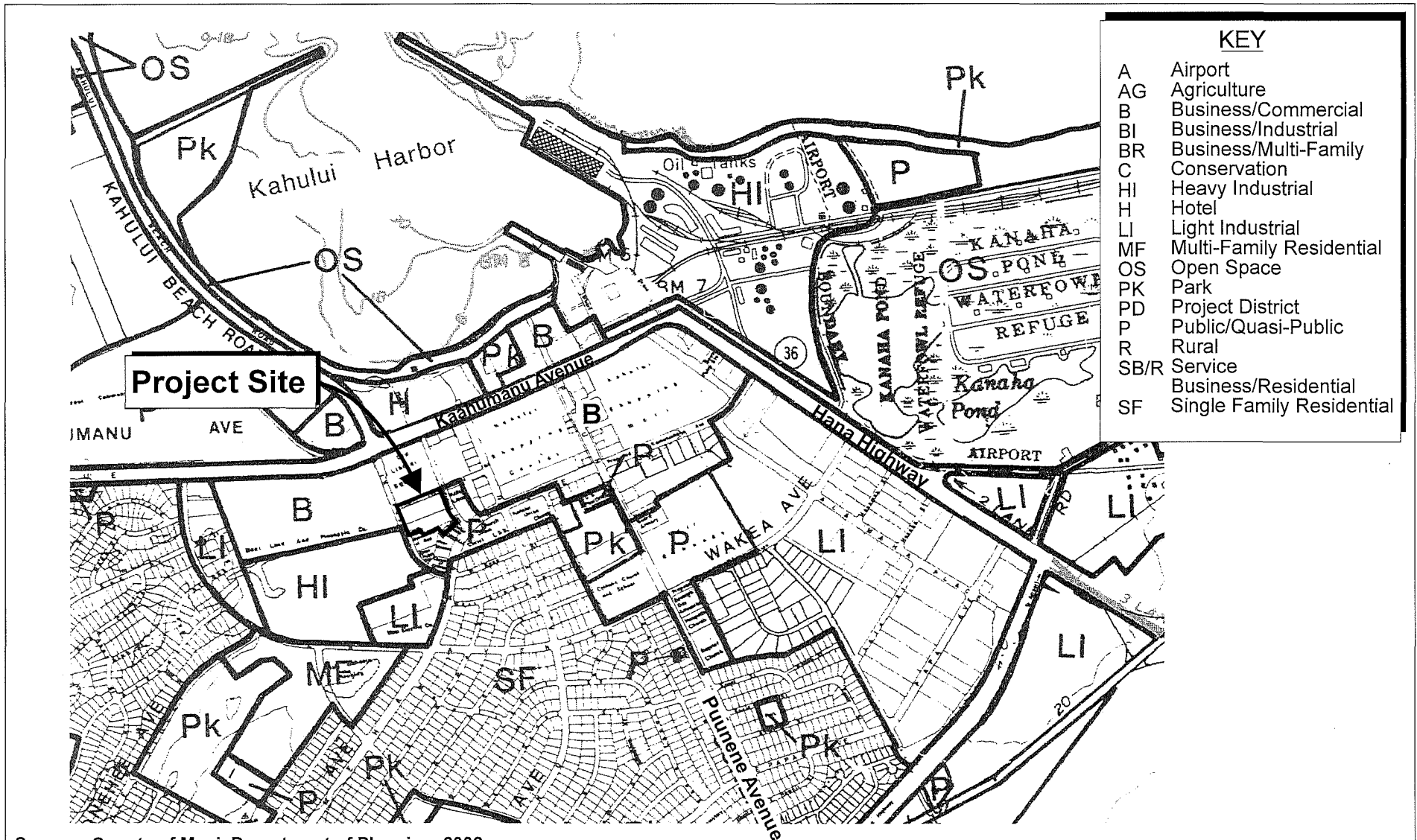
D. WAILUKU-KAHULUI COMMUNITY PLAN

The project site 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 9**. The project site is designated "B, Business/Commercial" by the Community Plan. The proposed project is in compliance with this community plan land use designation.

Further, the proposed project is consistent with the following goal and objectives and policies of the Wailuku-Kahului Community Plan:



Source: County of Maui, Department of Planning, 2002

Figure 9 Kahului Lani Affordable Senior Housing Project
Community Plan Map

NOT TO SCALE



Prepared for: Catholic Charities Housing Development Corporation



ENVIRONMENT

Goal:

A clean and attractive physical and natural environment in which man-made developments or alterations to the natural environment relate to sound environmental and ecological practices, and important scenic and open space resources are maintained for public use and enjoyment.

Objectives and Policies:

* * *

6. *Encourage the use of siltation basins and other erosion control features in the design of drainage systems.*

* * *

12. *Promote recycling programs to reduce solid waste disposal in landfills, including convenient drop-off points for recycled material.*

* * *

14. *Promote the planting and maintenance of trees and other landscape planting to enhance the streetscapes and the built-environment.*

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:

* * *

3. *Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.*
4. *Encourage the creation of elderly housing communities in various parts of the region that address the range of specialized needs for this population group.*

SOCIAL SERVICES/HEALTH

Objective and Policy:

* * *

3. *Expand social services for young and elderly persons.*

LAND USE

Goal:

An attractive, well-planned community with a mixture of compatible land uses in appropriate areas to accommodate the future needs of residents and visitors in a manner that provides for the social and economic well-being of residents and the preservation and enhancement of the region's environmental resources and traditional towns and villages.

Objective and Policy:

* * *

7. *The Community Plan map shall define the urban growth limits for the region.*

DRAINAGE

Objective and Policy:

* * *

4. *Ensure that stormwater run-off and siltation from proposed development will not adversely affect the marine environment and nearshore and offshore water quality. Minimize the increase in discharge of stormwater runoff to coastal waters by preserving flood storage capacity in low-lying areas, and encouraging infiltration of runoff.*

TRANSPORTATION

Objective and Policy:

* * *

6. *Accommodate bicycle and pedestrian ways within planned roadway improvements.*

URBAN DESIGN

Goal:

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

Objective and Policy for the Wailuku-Kahului Region in General

* * *

3. *Improve pedestrian and bicycle access within the region.*

Objectives and Policies for Kahului

* * *

2. *Circulation: provide and maintain sidewalks and bikeways for convenient and pleasant connections between activity centers, such as shopping centers, schools, Maui Community College and public parks. These pathways should have adequate separation from vehicular traffic for safety purposes.*
3. *Building Form and Character: maintain compatible scale relationships between the existing low-scale character of the area, adjacent public uses and higher buildings.*

* * *

- b. *The low-rise character of the central business area should be maintained. Higher building forms up to six stories should be sited in the central portion of commercial blocks.*

4. *Landscape Character*

* * *

- d. *Open parking areas should be landscaped to provide visual screening and shade.*

E. ZONING

The majority of the property is zoned "B-2, Community Business", with the remainder designated as "R-3, Residential" by Maui County zoning. The multi-family residential buildings, multi-purpose building, and parking will be developed on the portion of the property designated as "B-2, Community Business", which is permitted by zoning.

The proposed Kahului Lani Affordable Senior Housing Project is a “residential mixed-use project”, as defined by Chapter 19.04, MCC, as it includes residential uses as well as office and community services provided by Catholic Charities Hawai’i (CCH). As allowed by MCC Section 19.36A.160, a request will be submitted to the Director of Planning to waive 30 percent of the required parking for residential mixed-use projects. Additionally, MCC Section 19.36A.110 allows for 25 percent of the required parking to be provided on grassed areas. Coordination will be undertaken with the Department of Planning’s Zoning Administration and Enforcement Division to ensure that parking requirements for the project are met.

F. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

The project site is located within the County of Maui’s SMA. See **Figure 10**. Pursuant to HRS Chapter 205A and the Rules and Regulations of the Planning Commission of the County of Maui, projects located within the SMA are evaluated with respect to SMA objectives, policies, and guidelines. This section addresses the proposed action’s relationship to applicable coastal zone management considerations, as set forth in HRS Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

1. Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

- a. *Improve coordination and funding of coastal recreational planning and management; and*
- b. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management areas;*

- i. *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*

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;

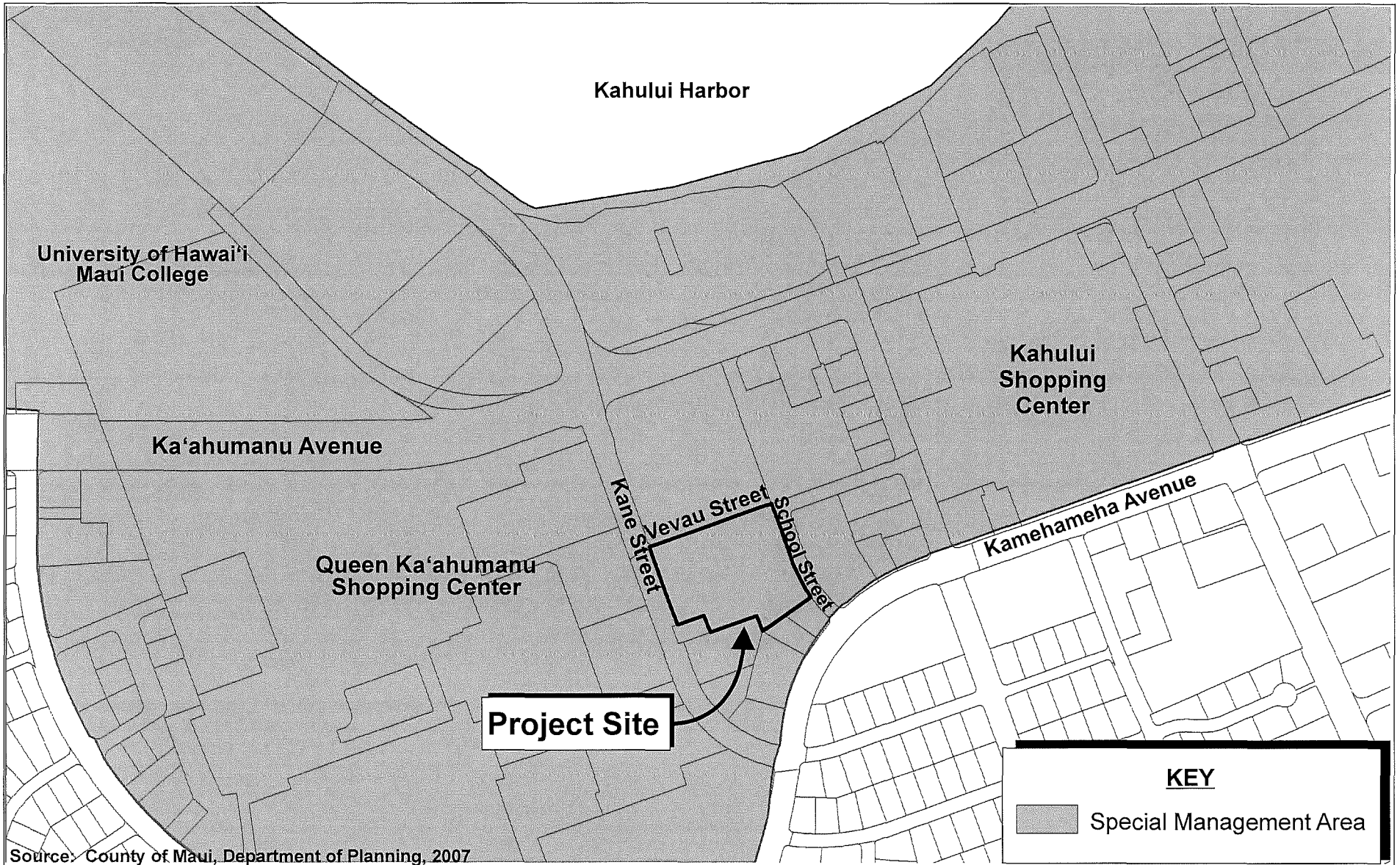


Figure 10 Kahului Lani Affordable Senior Housing Project
Special Management Area



Prepared for: Catholic Charities Housing Development Corporation



- ii. *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
- iii. *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
- iv. *Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
- v. *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;*
- vi. *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and*
- vii. *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.*

Response: The project site is located approximately 1,250 feet from the shoreline and within the urban core of Kahului. The proposed action will not affect coastal zone recreational opportunities. Accessibility to shoreline areas will not be impacted by the proposed action.

2. Historic Resources

Objective:

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

Policies:

- a. *Identify and analyze significant archaeological resources;*
- b. *Maximize information retention through preservation of remains and artifacts or salvage operations; and*
- c. *Support state goals for protection, restoration, interpretation, and display of historic resources.*

Response: As mentioned previously, a portion of the subject property was formerly developed and used as a recreational go-kart facility. In 2004 an Archaeological Inventory Survey (AIS), was completed by Scientific Consultant Services, Inc. (SCS) and no significant historic sites or features were located during the AIS, however, archaeological monitoring was recommended for future planned construction activities. See **Appendix “B”**.

Given the history of the area, developed nature of the surroundings, and the project area itself, it is unlikely that significant archaeological and cultural remains will be uncovered at the project area. Nevertheless, as recommended in the Archaeological Assessment Report and by SHPD, archaeological monitoring will be implemented as a precautionary measure during all construction-related ground alterations within the project site. As requested by SHPD in their comment letter dated May 31, 2017, an updated AMP will be prepared and submitted to SHPD for review and acceptance.

In accordance with Section 6E-43.6, Hawai'i Revised Statutes (HRS) and Chapter 13-300, Hawai'i Administrative Rules (HAR), if any significant cultural deposits or human skeletal remains are encountered, work will stop in the immediate vicinity and SHPD will be contacted to establish the appropriate protocols and level of mitigation.

3. Scenic and Open Space Resources

Objective:

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

Policies:

- a. *Identify valued scenic resources in the coastal zone management area;*
- b. *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
- c. *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- d. *Encourage those developments that are not coastal dependent to locate in inland areas.*

Response: The proposed Kahului Lani Affordable Senior Housing Project is not located in a designated scenic corridor and lies within an urbanized area of Maui.

There are existing multi-story buildings adjacent to the project area. In the context of the surrounding urbanized and developed land uses, including the multi-story Waterfront Apartment buildings, the proposed action is not anticipated to have a significant adverse impact upon the scenic and open space resources of the area.

4. Coastal Ecosystem

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: The proposed action is not anticipated to significantly disrupt or impact coastal ecosystems. Applicable BMPs and erosion-control measures will be implemented to mitigate runoff and minimize potential impacts to coastal water ecosystems during construction-related activities. The project will comply with all applicable County drainage provisions.

5. Economic Use

Objective:

- 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 action will support short-term construction and construction-related jobs and provide affordable housing for seniors earning 60 percent or less of the County's median income. The proposed project is not anticipated to result in any significant adverse economic impacts.

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: According to the Flood Insurance Rate Map for the area, the subject project area is located in Flood Zones X (unshaded), an area of minimal flooding. The site is located within the tsunami evacuation zone. The proposed action is not anticipated to increase the region's susceptibility to coastal hazards. Appropriate drainage measures will be implemented to ensure that downstream and adjacent properties are not adversely impacted. Further, as previously noted, emergency and civil defense procedures to organize and direct operations at the Kahului Lani facility in the event of an emergency or civil defense action, such as a tsunami, will be established.

7. Managing Development

Objective:

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

Policies:

- a. *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*
- b. *Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and*
- c. *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

Response: In accordance with the Rules of Practice and Procedures for the Maui Planning Commission and the SMA Rules for the Maui Planning Commission, this SMA Use Permit application will be filed with the County Planning Department and undergo public hearing and decision by the Maui Planning Commission. Opportunity for public review and consideration of the proposed action is provided through the SMA permitting 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 issues, developments, and government activities; and*
- c. *Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

Response: As previously noted, a public hearing is required as part of the County's SMA Use Permit process. The proposed project complies with the objective of public awareness, education, and participation.

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 project site is located approximately 1,250 feet from the shoreline and within the urban core of Kahului. Based on the project scope, location, and its proximity to other nearby commercial structures, the proposed action is not anticipated to affect the coastal environment. Beach access and shoreline recreation will not be impacted by the proposed action.

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 action is not anticipated to have adverse effects upon marine and coastal resources in the vicinity. As previously noted, the project site is located approximately 1,250 feet away from the shoreline. BMPs will be incorporated during construction to support the policies of effective management to protect marine and coastal resources.

In addition to the foregoing objectives and policies, HRS Section 205A-30.5 Prohibitions, provides specifications for the limitation of lighting in coastal shoreline areas in relation to the granting of SMA permits:

No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

- (1) *Directly illuminates the shoreline and ocean waters; or*
- (2) *Is directed to travel across property boundaries toward the shoreline and ocean waters.*

Subsection (a) shall not apply to special management area use permits for structures with:

Artificial lighting provided by a government agency or its authorized users for government operations, security, public safety, or navigational needs; provided that a government agency or its authorized users shall make reasonable efforts to properly position or shield lights to minimize adverse impacts.

Response: All exterior lighting proposed for the Kahului Lani Affordable Senior Housing Project will be shielded and configured in a downward direction. The design considerations are anticipated to mitigate light pollution and prevent light from traveling across property boundaries toward the shoreline and ocean. The project will comply with the County of Maui's outdoor lighting ordinance, as applicable.

G. MAUI PLANNING COMMISSION SPECIAL MANAGEMENT AREA RULES AND REGULATIONS

The Rules and Regulations of the Maui Planning Commission, Chapter 202 were established in order to implement Hawaii Revised Statutes, Chapter 205A relating to Coastal Zone Management and Special Management Areas. In addition to establishing procedures for processing of SMA applications and procurement of related permits, the rules assist the Commission in giving consideration to state policy regarding coastal zones.

This section addresses the project's relationship to applicable coastal zone management considerations as set forth in the Maui Planning Commission Rules and Regulations, Chapter 202, "Special Management Area Permit Procedures," which are provided for considering the significance of potential environmental and ecological effects of a proposed action. The criteria have been reviewed and analyzed with respect to the proposed Kahului Lani Affordable Senior Housing Project as follows.

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resources.

Due to the developed nature of the surrounding areas, no adverse impacts to natural or cultural resources are anticipated as a result of the proposed project. However, archaeological monitoring will be instituted during all ground-disturbing construction-related activities occurring. In accordance with HRS Section 6E-43.6 and Chapter 13-300, HAR, if any significant cultural deposits or human skeletal remains are encountered, work will stop in the immediate vicinity and SHPD will be contacted to establish the appropriate protocols and level of mitigation. In addition, there are no streams or wetlands which will be impacted, and there are no rare, threatened, or endangered species of plants or wildlife which will be affected by the proposed project.

2. Significantly curtails the range of beneficial uses of the environment.

The proposed project will not curtail the range of beneficial uses of the environment. It will provide much needed affordable housing to seniors earning 60 percent or less of the County's median income and social services through CCH outreach programs.

3. Conflicts with the county's or the state's long-term environmental policies or goals.

The proposed project does not conflict with the State's Environmental Policy and Guidelines as set forth in HRS Chapter 344. The proposed action is consistent with the underlying land use designations of the project site.

4. **Substantially affects the economic or social welfare and activities of the community, county, or state.**

On a short-term basis, the project will support construction and construction-related employment and have a beneficial impact on the local economy during the period of construction. From a long-term perspective, the proposed project will provide much needed affordable housing and social services to seniors earning 60 percent or less of the County's median income at a central, accessible location within the urbanized core of Kahului.

5. **Involves substantial secondary impacts, such as population changes and increased effects on public facilities, streets, drainage, sewage, and water systems, and pedestrian walkways.**

The proposed project is not anticipated to result in adverse secondary impacts to population or public services, facilities, or infrastructure systems.

6. **In itself has no significant adverse effects but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area of Kahului. The proposed project is not part of a larger action nor does it involve a commitment to such actions. Given the surrounding development and urban land uses, significant environmental impacts are not anticipated as a result of the project. No significant cumulative impacts are anticipated as a result of the proposed project.

7. **Substantially affects a rare, threatened, or endangered species of animal or plant, or its habitat.**

Given the developed nature of the area, there are no rare, threatened, or endangered species of fauna, flora, or their habitats at or adjacent to the project site. Adverse impacts to these environmental features are not anticipated.

8. **Is contrary to the state plan, county's general plan, appropriate community plans, zoning and subdivision ordinances.**

The proposed action is in accordance with applicable State, County, and the Wailuku-Kahului Community Plan land use policies and plans. Please refer to Sections B-E of this chapter for more detailed assessments of the project's consistency with the Hawai'i State Plan, Maui County General Plan, Wailuku-Kahului Community Plan, and Maui County zoning. No subdivision is being proposed for the project.

9. **Detrimentially affects air or water quality or ambient noise levels.**

Short-term air quality and noise impacts caused by construction activity will be mitigated through the implementation of BMPs. There are no long-term effects on air, water quality, or noise as a result of the proposed project.

10. **Affects an environmentally sensitive area, such as flood plains, shoreline, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh waters, or coastal waters.**

The subject property is located in Flood X (unshaded). This designation denotes an area of low flood risk and minimal flooding with no development restrictions. The subject property is located within the tsunami evacuation zone. Emergency and civil defense procedures to provide the necessary guidance to organize and direct operations at the facility in the event of an emergency or civil defense action, such as a tsunami, will be established.

11. **Substantially alters natural land forms and existing public views to and along the shoreline.**

The proposed project will not substantially alter natural land forms as the project site is currently developed and located within the urban core of Kahului.

12. **Is contrary to the objectives and policies of chapter 205A, HRS.**

A review of the objectives and policies of Chapter 205A, HRS, is provided in its entirety in the previous part of this section. Therein, it addresses the project's relationship to the Coastal Zone Management considerations. Based on the foregoing analysis, the project will appropriately and adequately mitigate impacts to SMA-relevant areas of interest. Accordingly, there are no anticipated significant environmental and ecological effects attributed to the proposed Kahului Lani Affordable Senior Housing Project.

**ALTERNATIVES TO THE
PROPOSED ACTION**

IV

IV. ALTERNATIVES TO THE PROPOSED ACTION

The applicant has looked at a variety of options in accommodating the proposed project.

A. PREFERRED ALTERNATIVE

The proposed project, outlined in Chapter I. Project Overview, represents the preferred alternative. The preferred alternative involves the construction of 164 affordable senior rental housing units and one (1) manager's unit in two (2) six-story multi-family buildings. The units will provide housing for seniors earning up to 60 percent of the County's Area Median Income (AMI). A 7,500 sq. ft. multi-purpose building, parking, and related improvements are also proposed. The preferred alternative provides affordable senior rental units to meet the growing demand for affordable senior housing.

B. NO ACTION ALTERNATIVE

The proposed project will provide much needed affordable senior housing in Central Maui. The no action alternative would involve the continued underutilization of lands identified for "Urban" use in the heart of Kahului and would not meet the growing housing needs for the local population. As such, the no action alternative was rejected.

C. DEFERRED ACTION ALTERNATIVE

Similar to the no action alternative, the deferred action alternative does not address the affordable senior housing needs of Maui County, which will continue to be exacerbated if new housing supply is not provided in response to the growing demand and aging population. For this reason, the deferred action alternative was not deemed appropriate.

D. 2005 SMA USE PERMIT APPROVAL ALTERNATIVE

As previously noted, a Special Management Area (SMA) Use Permit was obtained by A&B Properties, Inc. and Agora Realty in 2005 for the previously proposed Kane Street Commercial Mixed-Use Project consisting of 90 residential units, 15,578 square feet of commercial space, and related improvements (SM1 2005/0004). Agora Realty, the applicant for the Kane Street Commercial Mixed-Use Project, is no longer pursuing the project and Catholic Charities Housing Development Corporation is in the process of acquiring the project site. As such, the project approved by the 2005 SMA Use Permit is no longer a viable alternative for the subject property.

**SUMMARY OF UNAVOIDABLE
IMPACTS AND COMMITMENTS
OF RESOURCES**



V. SUMMARY OF UNAVOIDABLE IMPACTS AND COMMITMENTS OF RESOURCES

The development of the project will result in certain unavoidable construction-related environmental impacts as outlined in Chapter II.

In the short term, construction associated with the proposed development will generate noise impacts. These impacts will be limited to the immediate vicinity of the project construction areas. Sound attenuating construction equipment will be used, where practicable, to mitigate noise impacts caused by construction.

Unavoidable air quality impacts will also arise as a result of construction activities, such as the generation of dust and other airborne pollutants. Appropriate Best Management Practices (BMPs) will be incorporated in the construction process to mitigate adverse impacts, including frequent watering of exposed surfaces and regular maintenance of construction equipment to minimize construction-related impacts.

The project will commit approximately 3.8 acres of vacant land designated for "Urban" use to affordable senior housing. The proposed project will provide housing for 164 senior households in an area that is previously undeveloped. Infrastructure improvements required to service the proposed project will be provided by the Applicant, Catholic Charities Housing Development Corporation. Drainage improvements have been designed to fully retain the increase in runoff generated by the project. A Traffic Impact Assessment Report has also been prepared for the project and determined that Levels of Service at study intersections will not be significantly impacted by the project.

Development of the proposed project will also involve a commitment of energy, labor, fiscal, and material resources. The use of these resources, when weighed against the expected benefit to be derived from the project, is not considered an adverse commitment.

**SIGNIFICANCE CRITERIA
ASSESSMENT**

VI

VI. SIGNIFICANCE CRITERIA ASSESSMENT

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

1. **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.**

The proposed project commits approximately 3.8 acres of vacant land designated for "Urban" use for affordable senior housing. There are no endangered species or critical habitats in the project area. According to the Archaeological Assessment Report and cultural interviews completed for the project area, no significant impacts to historic or cultural resources are anticipated as a result of the proposed project.

2. **Curtails the range of beneficial uses of the environment.**

The proposed project will not curtail the range of beneficial uses of the environment. Best Management Practices (BMPs) have been identified and will be implemented to minimize any construction-related impacts. The project will provide much needed affordable senior housing in Central Maui.

3. **Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**

The proposed project does not conflict with the State's Environmental Policy and Guidelines as set forth in Chapter 344, Hawai'i Revised Statutes (HRS).

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

On a short-term basis, the project will support construction and construction-related employment and have a beneficial impact on the local economy during the period of construction. From a long-term perspective, the project will provide much needed affordable rental housing for seniors earning less than 60 percent of the Area Median Income (AMI). Therefore, implementation of the proposed action will be beneficial to the overall social welfare of the residents in the Central Maui area.

5. **Substantially affects public health.**

The proposed project is not anticipated to have any significant adverse impacts to public health.

6. **Involves substantial secondary impacts, such as population changes or effects on public facilities.**

The proposed project will provide 164 affordable rental units for seniors in the existing urban core of Kahului. It is anticipated that the project will serve to meet the documented shortage of housing for the existing population and projected population growth that would occur with or without the project. The project, in and of itself, is not a direct population generator.

The proposed project will include provision of infrastructure to service the development, including appropriate water, wastewater, drainage, and traffic improvements. As such, substantial secondary impacts are not anticipated as a result of the proposed project.

7. **Involves a substantial degradation of environmental quality.**

The project is not anticipated to have a significant adverse impact upon the natural environment. During construction, recommended BMPs will be implemented for erosion and sedimentation control. Drainage system design will comply with the Rules for Design of Storm Drainage Facilities in the County of Maui dated July 1995. Other appropriate mitigation measures will be developed in consultation with the applicable governmental agencies during the project design process.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The Kahului Lani Affordable Senior Housing Project is proposed in an urbanized area of Kahului. The proposed project is not part of a larger action nor does it represent a commitment to such actions. Given the surrounding development and urban land uses, significant environmental impacts are not anticipated as a result of the project. As such, no cumulative impacts are anticipated as a result of the proposed project.

9. **Substantially affects a rare, threatened, or endangered species, or its habitat.**

There are no known significant habitats or rare, endangered, or threatened species of flora, fauna, and avifauna located within the project site. Landscaping is proposed as part of the project. A copy of the project's landscape plan is provided in Section 11 of this application document. Since the project site is currently

developed with moderate landscaping, the proposed action is not anticipated to have an adverse impact upon these environmental features.

10. **Detrimentially affects air or water quality or ambient noise levels.**

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, and installation of dust screens will be implemented to minimize wind-blown emissions. In the short term, noise impacts will occur primarily from construction equipment and measures to remove blue rock. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance, will be used during construction activities. Construction noise impacts will be mitigated through compliance with the provisions of the State of Hawai'i, Department of Health Administrative Rules Title 11, Chapter 46, "Community Noise Control". These rules require a noise permit if the noise levels from construction activities are expected to exceed the allowable levels set forth in the Chapter 46 rules.

From a long-term perspective, the proposed project is not anticipated to significantly impact ambient air or noise quality in the region.

11. **Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.**

The subject property is located in Flood X (unshaded). This designation denotes an area of low flood risk and minimal flooding with no development restrictions. The subject property is located within the tsunami evacuation zone. Emergency and civil defense procedures to provide the necessary guidance to organize and direct operations at the facility in the event of an emergency or civil defense action, such as a tsunami, will be established.

12. **Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.**

The proposed Kahului Lani Affordable Senior Housing Project is not located in a designated scenic corridor and lies within an urbanized area of Maui. There are existing multi-story buildings adjacent to the project area. In the context of the surrounding urbanized and developed land uses, including the multi-story Waterfront Apartment buildings nearby, the proposed action is not anticipated to have a significant adverse impact upon the scenic and open space resources of the area.

13. Requires substantial energy consumption.

The proposed project will involve the commitment of fuel for construction equipment, vehicles, and machinery during construction and maintenance activities. Coordination with Maui Electric Company, Ltd. (MECO) will be undertaken during the electrical plans preparation phase of work to ensure all operational parameters are addressed for the proposed project. Where feasible, energy conservation measures will be incorporated into the project design.

In summary, the proposed project will provide 164 units of much needed affordable senior housing in Kahului. Based on the foregoing analysis, the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, the proposed action under this Chapter 343, HRS document is anticipated to be a Finding of No Significant Impact (AFONSI).

**LIST OF PERMITS AND
APPROVALS**

VII

VII. LIST OF PERMITS AND APPROVALS

The following list of permits and approvals are anticipated to be needed for project implementation.

1. **State of Hawai'i**

- A. National Pollutant Discharge Elimination System (NPDES) Permit, as applicable.
- B. Noise Permit, as applicable.

2. **County of Maui**

- A. Special Management Area Use Permit
- B. Parking Waiver
- C. Construction Permits

**PARTIES CONSULTED
DURING THE
PREPARATION OF THE
DRAFT ENVIRONMENTAL
ASSESSMENT; LETTERS
RECEIVED AND
RESPONSES TO
SUBSTANTIVE
COMMENTS**

VIII

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

The following agencies were consulted during preparation of the Draft Environmental Assessment (EA). Agency comments and responses to substantive comments are included herein.

1. Lt. Furyisa Miller
U.S. Coast Guard
Fourteenth Coast Guard District
300 Ala Moana Boulevard, Room
9-204
Honolulu, Hawai'i 96850-4982
2. Larry Yamamoto, State
Conservationist
U.S. Department of Agriculture
Natural Resources Conservation
Service
P.O. Box 50004
Honolulu, Hawai'i 96850-0001
3. Ranae Ganske-Cerizo, Soil
Conservationist
U.S. Department of Agriculture
Natural Resources Conservation
Service
210 Imi Kala Street, Suite 209
Wailuku, Hawai'i 96793-2100
4. Ryan Okahara, Field Office
Director
U.S. Department of Housing and
Urban Development
1132 Bishop Street, Suite 1400
Honolulu, Hawai'i 96813-4918
5. Michelle Bogardus, Island Team
Leader
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122
Honolulu, Hawai'i 96850
6. Ron V. Simpson, Manager
Federal Aviation Administration
Honolulu Airports District Office
Airports – Western Pacific Region
Box 50244
Honolulu, Hawai'i 96850
7. Roderick Becker, Comptroller
State of Hawai'i
Department of Accounting and
General Services
1151 Punchbowl Street, #426
Honolulu, Hawai'i 96813
8. Brigadier General Arthur "Joe"
Logan, Adjutant General
Hawai'i State Civil Defense
3949 Diamond Head Road
Honolulu, Hawai'i 96813-4495
9. Scott Enright, Chair
State of Hawai'i
Department of Agriculture
1428 South King Street
Honolulu, Hawai'i 96814-2512
10. Luis P. Salaveria, Director
State of Hawai'i
Department of Business,
Economic Development &
Tourism
P.O. Box 2359
Honolulu, Hawai'i 96804
11. Kathryn Matayoshi,
Superintendent
State of Hawai'i
Department of Education
P.O. Box 2360
Honolulu, Hawai'i 96804
12. Heidi Meeker
Office of Business Services
Department of Education
c/o Kalani High School
4680 Kalaniana'ole Highway, #T-
B1A
Honolulu, Hawai'i 96821

13. Virginia "Ginny" Pressler, MD,
MBA, FACS, Director
State of Hawai'i
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawai'i 96814
14. Lene Ichinotsubo
State of Hawai'i
Department of Health
919 Ala Moana Blvd., Room 212
Honolulu, Hawai'i 96814
15. Alec Wong, P.E., Chief
State of Hawai'i
Department of Health
Clean Water Branch
919 Ala Moana Blvd., Room 300
Honolulu, Hawai'i 96814
16. Laura McIntyre, AICP
Environmental Planning Office
Department of Health
919 Ala Moana Blvd., Suite 312
Honolulu, Hawai'i 96814
17. Patti Kitkowski
State of Hawai'i
Department of Health
Maui Sanitation Branch
54 South High Street, Room 300
Wailuku, Hawai'i 96793
18. Suzanne Case, Chairperson
State of Hawai'i
Department of Land and Natural
Resources
P. O. Box 621
Honolulu, Hawai'i 96809
19. Alan Downer, Administrator
State of Hawai'i
Department of Land and Natural
Resources
State Historic Preservation
Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707
20. Barker Fariss
State of Hawai'i
Department of Land and Natural
Resources
State Historic Preservation
Division
101 Maalaea Boat Harbor Road
Wailuku, Hawai'i 96793
21. Ford Fuchigami, Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813
22. Marvin Moniz, District Manager
Islands of Maui, Moloka'i and
Lāna'i
State of Hawai'i
Department of Transportation
Airports Division
1 Kahului Airport Road, Unit 5
Kahului, Hawai'i 96732
23. Craig Hirai, Executive Director
State of Hawai'i
Hawai'i Housing Finance and
Development Corporation
677 Queen Street
Honolulu, Hawai'i 96813
24. Jobie Masagatani, Chair
Hawaiian Home Lands
Commission
P.O. Box 1879
Honolulu, Hawai'i 96805
25. Scott Glenn, Director
Office of Environmental Quality
Control
235 S. Beretania Street, Suite
702
Honolulu, Hawai'i 96813
26. Dr. Kamana`opono Crabbe, Chief
Executive Officer
State of Hawai'i
Office of Hawaiian Affairs
560 N. Nimitz Highway, Suite 200
Honolulu, Hawai'i 96817

27. Leo R. Asuncion, Jr., AICP,
Director
State of Hawai'i
Office of Planning
P. O. Box 2359
Honolulu, Hawai'i 96804
28. Dan Orodenker, Executive Officer
State of Hawai'i
State Land Use Commission
P.O. Box 2359
Honolulu, Hawai'i 96804
29. Senator Gil Keith-Agaran
Hawai'i State Senate
Hawai'i State Capitol, Room 221
415 S. Beretania Street
Honolulu, Hawai'i 96813
30. Representative Justin Woodson
House of Representatives
Hawai'i State Capitol, Room 304
415 S. Beretania Street
Honolulu, Hawai'i 96813
31. Mayor Alan Arakawa
County of Maui
200 South High Street
Wailuku, Hawai'i 96793
32. Teena Rasmussen
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawai'i 96793
33. Stewart Stant, Director
County of Maui
Department of Environmental
Management
2050 Main Street, Suite 2B
Wailuku, Hawai'i 96793
34. Jeffrey A. Murray, Chief
County of Maui
Department of Fire and Public
Safety
200 Dairy Road
Kahului, Hawai'i 96732
35. Carol Reimann, Director
County of Maui
Department of Housing and
Human Concerns
One Main Plaza
2200 Main Street, Suite 546
Wailuku, Hawai'i 96793
36. Administrator
Kaunoa Senior Services
County of Maui
Department of Housing and
Human Concerns
Paia, Hawai'i 96779
37. Deborah Stone-Walls
Maui County Office on Aging
95 Mahalani Street, Room 20
Wailuku, Hawai'i 96793
38. Ka'ala Buenconsejo, Director
County of Maui
Department of Parks and
Recreation
700 Halia Nako Street, Unit 2F
Wailuku, Hawai'i 96793
39. William Spence, Director
County of Maui
Department of Planning
2200 Main Street, Suite 315
Wailuku, Hawai'i 96793
40. Tivoli Faaumu, Chief
County of Maui
Department of Police
55 Mahalani Street
Wailuku, Hawai'i 96793
41. David Goode, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawai'i 96793
42. Don Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawai'i 96793
43. David Taylor, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai'i 96793

44. Anna Foust
County of Maui
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawai'i 96793
45. Honorable Don Guzman, Council
Vice-Chair
Maui County Council
200 South High Street
Wailuku, Hawai'i 96793
46. Honorable Michael White, Council
Chair
Maui County Council
200 South High Street
Wailuku, Hawai'i 96793
47. Hawaiian Telcom
60 South Church Street
Wailuku, Hawai'i 96793
48. Michael Grider, Manager,
Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawai'i 96733
49. Lyn McNeff, Executive Director
Maui Economic Opportunity
99 Mahalani Street
Wailuku, Hawai'i 96793
50. Candice Carter, Executive
Director
Na Hoaloha
P.O. Box 3208
Wailuku, Hawai'i 96793



Natural Resources
Conservation Service
Pacific Islands Area

March 9, 2017

77 Hookele St. #202
Kahului, HI 96793
808-871-5500 ext. 3
Fax 855-878-2454

Ms. Marisa Fujimoto
Munekiyo Hiraga
305 High St., Suite 104
Wailuku, HI 96793

Subject: Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane St., Kahului, Maui, HI; TMK: (2) 3-7-005:003

Dear Ms. Fujimoto:

The project area is located within the County's Special Management Area (SMA)
The following must be considered:

1. Erosion Control Practices
 - a. disturb the smallest area of land possible for the shortest period of time
 - b. stabilize disturbed soils to prevent erosion from occurring
2. Schedule clearing and grading during the time of minimum erosion potential. (May 1 through October 31.)
3. Stage construction- plan and stage land disturbance activities so that only the area currently under construction is exposed, this will reduce sediments loads
4. Clear only areas essential for construction activities. Revegetate as soon as possible utilizing native plants for water savings.
5. Intercept runoff above disturbed slopes and convey to a permanent storm drain.
6. Operations and maintenance plan for the Kahului Lani Project.

Sincerely,

Ranae Ganske Cerizo
District Conservationist



June 9, 2017

Ranae Ganske-Cerizo
District Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Pacific Islands Area
77 Hookele Street, #202
Kahului, Hawai'i 96732

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Ms. Ganske-Cerizo:

Thank you for your letter dated March 9, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. Best Management Practices (BMPs), including erosion control practices, will be implemented during construction, as practicable.
2. To the extent practicable, the developer will schedule clearing and grading between May 1 and October 1.
3. Construction for the project will be phased, limiting erosion exposure for the project.
4. Clearing will be limited to construction areas. Cleared areas will be revegetated as soon as possible.
5. BMPs will be implemented to address drainage and runoff for the project during and after construction. A stormwater retention system will be installed to mitigate the increase in runoff from the site.
6. An operations and maintenance plan will be developed and implemented for the project.

Ranae Ganske-Cerizo
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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MAR 16 2017



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Honolulu, Hawaii 96850

MAR 14 2017

In Reply Refer To:
01EPIF00-2017-TA-0174

Munekiyo Hiraga
Attention: Ms. Marisa Fujimoto
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: Technical Assistance for the Proposed Kahului Lani Affordable Senior Housing
in Kahului, Maui County

Dear Ms. Fujimoto:

The U.S. Fish and Wildlife Service (Service) received your correspondence on March 6, 2017, requesting technical assistance to the proposed development of the Kahului Lani project, comprised of 164 affordable senior housing units. The project will be developed on 3.81 acres of land identified as TMK: (2)3-7-005:003. The Kahului Lani project will include the development of two (2) six-story multi-family residential buildings, a 7,500 square foot multipurpose building, parking, and related improvements. The Service offers the following comments to assist you in your planning process so that impacts to trust resources can be avoided through site preparation, construction, and operation. Our comments are provided under the authorities of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C 1531 *et seq.*).

Based on information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Project, there are four listed animal species in the vicinity of the project area: The federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian petrel (*Pterodroma sandwichensis*), band-rumped storm-petrel (*Oceanodroma castro*), and the threatened Newell's shearwater (*Puffinus auricularis newelli*). There is an insect species that could also be in the area, the Blackburn's sphinx moth (*Manduca blackburni*).

Avoidance and Minimization Measures

Hawaiian hoary bat

The endangered Hawaiian hoary bat may be present within the proposed project area. The Hawaiian hoary bat roosts in both exotic and native woody vegetation and will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Additionally, Hawaiian hoary bats forage for insects from as low as three feet to higher than 500 feet (152 meters) above the

ground. When barbed wire is used in fencing, Hawaiian hoary bats can become entangled. Therefore, the Service recommends barbed wire not be used for fencing and that if it must be used, it is only used within two inches of the ground surface.

Hawaiian petrel, Newell's shearwater, and band-rumped storm petrel

Hawaiian seabirds may traverse the project area at night during the breeding season. Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may collide with nearby wires, buildings, or other structures or they may land on the ground due to exhaustion. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable. To minimize potential project impacts to seabirds during their breeding season, all outdoor lights should be fully shielded so the bulb can only be seen from below bulb height and only used when necessary. Automatic motion sensor switches and controls should be installed on all outdoor lights or lights should be turned off when human activity is not occurring in the lighted area. Any increase in night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in seabird injury or mortality. Nighttime construction should be avoided during the seabird fledging period, September 15 through December 15.

Blackburn's sphinx moth

The Blackburn's sphinx moth could potentially be in the vicinity of the proposed project areas on Maui, Lanai, Kahoolawe, and the Island of Hawaii. The adult moth feeds on nectar from native plants including beach morning glory (*Ipomoea pes-caprae*), iliee (*Plumbago zeylanica*), maiapilo (*Capparis sandwichiana*). Blackburn's sphinx moth larvae feed upon non-native tree tobacco (*Nicotiana glauca*), which occupies disturbed areas such as open fields and roadway margins, and the native aiea (*Nothocestrum* spp.). We recommend that a biologist with Blackburn's sphinx moth experience survey the project area for the presence of adult and larval host plants. To pupate, Blackburn's sphinx moth larvae burrow into the soil near host plants and can remain in a state of torpor for up to a year (or more) before emerging from the soil. To minimize the potential for the project to adversely impact the Blackburn's sphinx moth, host plants should not be cut or removed and the soil within 33 feet (10 meters) of the host plants should not be disturbed.

Thank you for participating with us in the protection of our endangered species. If you have any further questions or concerns regarding this consultation, please contact Eldridge Naboa, Fish and Wildlife Biologist, 808-792-9451, e-mail: eldridge_naboa@fws.gov. When referring to this project, please include this reference number: **01EPIF00-2017-TA-0174**.

Sincerely,



Michelle Bogardus
Island Team Leader
Maui Nui and Hawaii Island



June 9, 2017

Michelle Bogardus
Island Team Leader
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Honolulu, Hawai'i 96850

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003 (01EPIF00-2017-TA-0174)

Dear Ms. Bogardus:

Thank you for your letter dated March 14, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. It is noted that the federally endangered Hawaiian hoary bat, Hawaiian petrel, band-rumped storm-petrel, and the threatened Newell's shearwater may be in the vicinity of the project area. It is further noted that the Blackburn's sphinx moth may be in the area.
2. It is noted that the Hawaiian hoary bat may roost in woody vegetation. As recommended, woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during bat birthing and pup rearing season unless inspected for the presence of the hoary bat. Furthermore, barbed wire will not be used in fencing.
3. Outdoor lights will be down-shielded to minimize impacts to seabirds. Automatic motion sensor switches and controls will be considered for any permanent outdoor lighting. Night construction will be avoided from September 15 through December 15, as recommended.
4. As recommended, the site will be surveyed for the presence of host plants for the Blackburn's sphinx moth prior to construction and appropriate mitigation measures will be implemented if such plants are present.

Michelle Bogardus
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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APR 03 2017

DAVID Y. IGE
GOVERNOR



RODERICK K. BECKER
Comptroller

AUDREY HIDANO
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

MAR 30 2017

(P)1106.7

Ms. Marissa Fujimoto, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: Early Consultation for
Senior Housing at Kane Street
Kahului, Maui, Hawaii
TMK: (2) 3-7-005: 003

Thank you for the opportunity to provide comments on the subject project. The Department of Accounting and General Services' Kahului Civic Center is located directly across Vevau Street from the proposed project.

We are concerned on how the proposed project will impact our facilities. Please keep us informed during the different phases of the project development so we may be able to submit comments as the project progresses.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Public Works Division at 586-0584.

Sincerely,

RODERICK K. BECKER
Comptroller

c: DAGS-MDO



June 9, 2017

Roderick K. Becker, Comptroller
State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810-0119

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Becker:

Thank you for your letter dated March 30, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. It is noted that the Department of Accounting and General Services' Kahului Civic Center is located directly across Vevau Street from the proposed project.
2. Copies of the Draft and Final Environmental Assessment (EA) and the Special Management Area Use Permit application for the project will be sent to your office for review and comment.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

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

Very truly yours,

Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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MAR 30 2017

DAVID Y. IGE
GOVERNOR



ARTHUR J. LOGAN
MAJOR GENERAL
ADJUTANT GENERAL

KENNETH S. HARA
BRIGADIER GENERAL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

March 23, 2017

Munekiyo Hiraga
Attn: Ms. Marisa Fujimoto
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing
at Kane Street, Kahului, Maui, Hawaii, TMK (2)3-7-005:003

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no comments to offer relative to the project.

If you have any questions or concerns, please have your staff contact Mr. Lloyd Maki, Assistant Chief Engineering Officer at (808) 733-8441.

Sincerely,

A handwritten signature in black ink, appearing to read "Neal S. Mitsuyoshi", with a long horizontal line extending to the right.

NEAL S. MITSUYOSHI
Colonel, Hawaii National Guard
Chief Engineering Officer

Cc: Ms. Havinne Okamura, Hawaii Emergency Management Agency



MAR 20 2017

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

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

March 17, 2017

Marisa Fujimoto, Senior Associate
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

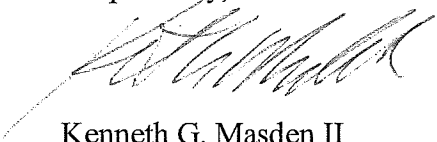
Re: Early Consultation for Kahului Lani Senior Housing, Kahului, Maui TMK 3-7-005:003

Dear Ms. Fujimoto:

The Department of Education (DOE) is responding to your request for early consultation on a proposal of 164 units of senior housing and one resident manager's unit. The project is located in the Central Maui School Impact Fee District. However the 164 senior units would be exempt from school impact fees, if the housing excludes school-aged children, by covenants or declarations recorded on the property. The DOE would like to know if the one resident manager's unit will also have the same restriction. If it does not, the DOE would collect school impact fees for the one resident manager's unit.

Thank you for the opportunity to raise these early considerations. If you have any questions, please call Heidi Meeker of the Planning Section, Facilities Development Branch, at 784-5095.

Respectfully,



Kenneth G. Masden II
Public Works Manager
Planning Section

KGM:jmb



MUNEKIYO HIRAGA

Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
PRESIDENT

Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT

Mark Alexander Roy
VICE PRESIDENT

Tessa Munekiyo Ng
VICE PRESIDENT

June 9, 2017

Kenneth G. Masden II
Public Works Manager
State of Hawai'i
Department of Education
P.O. Box 2360
Honolulu, Hawai'i 96804

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Masden:

Thank you for your letter dated March 17, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following response to your comment:

1. It is noted that the project is located within the Central Maui School Impact Fee District. The 164 senior units will exclude school-aged children by covenants or declarations recorded on the property and would therefore, be exempt from school impact fees. It is further noted that the DOE would collect school impact fees for the one (1) resident manager's unit that would not have the restriction.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,

Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233

www.munekiyoHIRAGA.com

MAR 23 2017

DAVID Y. IGE
GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/CWB

03031PNN.17

March 20, 2017

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

**SUBJECT: Comments on the Early Consultation for the Proposed Kahului Lani
Affordable Senior Housing at Kane Street
TMK: (2) 3-7-005:003
Kahului, Island of Maui, Hawaii**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your memorandum, dated March 3, 2017, requesting comments on your project. The DOH-CWB has reviewed the document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: <http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
 - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
 - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
 - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) 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..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

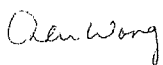
4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.
5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:
 - a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water

cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

- b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
- c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.
- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: <http://health.hawaii.gov/cwb>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



ALEC WONG, P.E., CHIEF
Clean Water Branch

NN:ak

c: DOH-EPO [via e-mail Noella.Narimatsu@doh.hawaii.gov only]



June 9, 2017

Alec Wong, P.E., Chief
State of Hawai'i
Department of Health
Clean Water Branch
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003 (EMD/CWB 03031PNN.17)

Dear Mr. Wong:

Thank you for your letter dated March 20, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses to your comments:

1. The Kahului Lani Affordable Senior Housing project will meet the criteria set forth in the Hawai'i Administrative Rules, Section 11-54-1.1, Antidegradation policy; Section 11-54-3, Designated uses; and Sections 11-54-4 through 8, Water quality criteria.
2. A National Pollutant Discharge Elimination System (NPDES) permit will be obtained, as applicable.
3. The proposed project does not involve work in, over, or under waters of the United States.
4. Discharges related to the project construction and operation activities will comply with the State's Water Quality Standards.
5. Project planning will incorporate Best Management Practices (BMPs), including consideration of low impact development methods for stormwater, natural resource conservation, and green building practices.

Alec Wong, P.E., Chief
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Chad McDonald, Mitsunaga & Associates, Inc.

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MAR 22 2017

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

EPO 17-064

March 17, 2017

Ms. Marisa Fujimoto
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793
Email: planning@munekiyohiraga.com

Dear Ms. Fujimoto:

SUBJECT: Early Consultation (EC) for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui
TMK: (2) 3-7-005:003

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your EC to our office on March 6, 2017

We understand from the EC that *"The Kahului Lani project will include the development of two (2) six-story multi-family residential buildings, a 7,500-sq. ft. multipurpose building, parking, and related improvements. The proposed project will provide 164 one-bedroom units for rent to seniors who earn 60 percent or less of the County's median income and one (1) two-bedroom resident manager's unit. Catholic Charities Hawaii (CCH) will provide onsite social service case management for residents. The multi-purpose building will primarily be an accessory use to support the senior tenants of Kahului Lani. A portion of the building will be used for CCH's outreach programs, which provide emergency assistance (rent, food, etc.) to low income families, assessments of families interested in becoming foster families, and aid to homeless vets."*

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments and available strategies to support sustainable and healthy design are provided at: <http://health.hawaii.gov/epo/landuse>. Projects are required to adhere to all applicable standard comments.

EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: <http://health.hawaii.gov/epo/eqis>.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: <https://eha-cloud.doh.hawaii.gov>. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (Hawaii Administrative Rules {HAR}, Chapter 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: <http://health.hawaii.gov/cwb>. If you have any questions, please contact the Clean Water Branch (CWB), Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Ms. Marisa Fujimoto
Page 2
March 17, 2017

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: <http://eha-web.doh.hawaii.gov/oegc-viewer>. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) {Hawaii Revised Statutes, Chapter 343} documents have been prepared.

To better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: <http://www.epa.gov/ejscreen>.

We request that you utilize all this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

Mahalo nui loa,



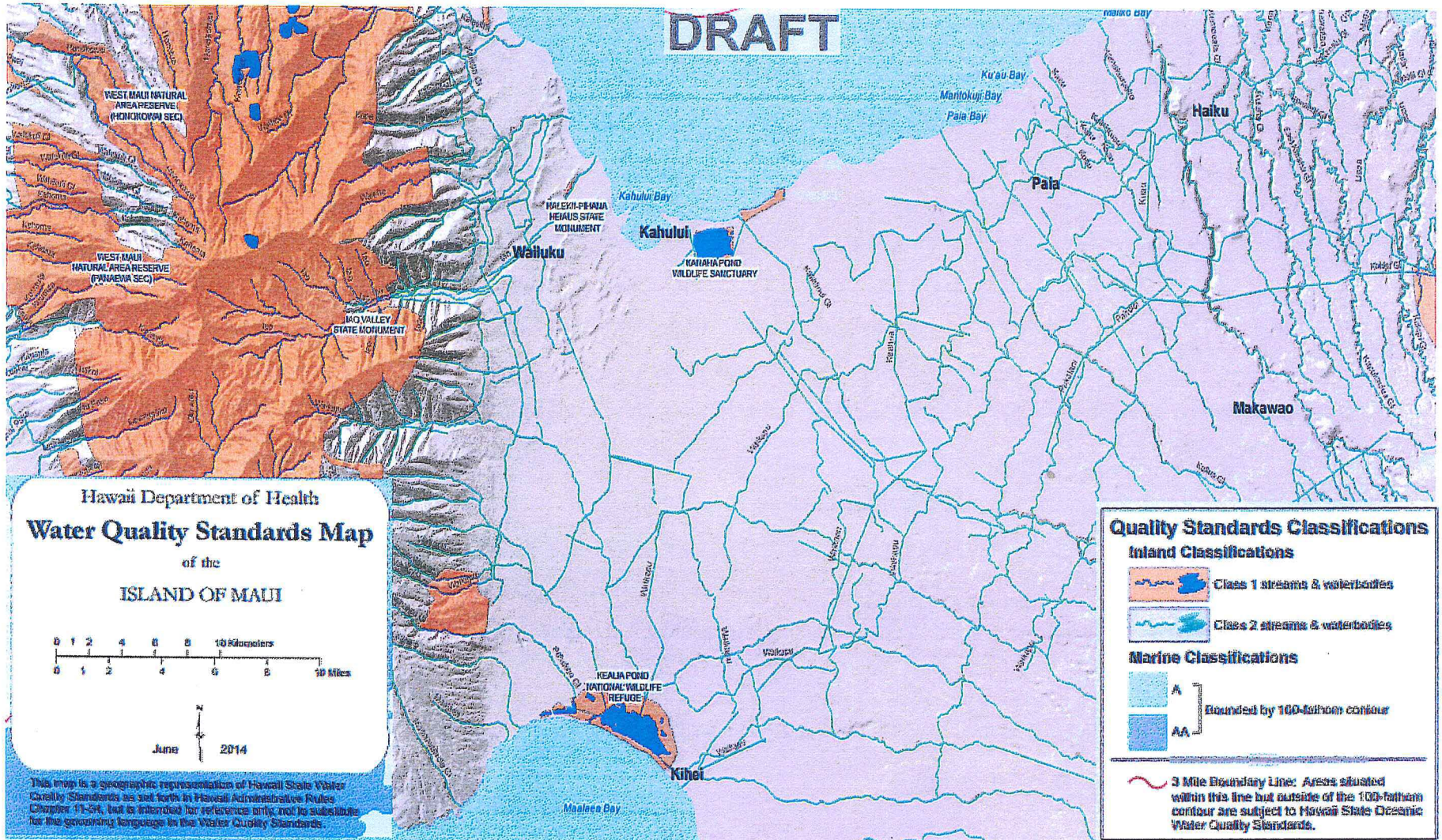
Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

LM:nn

Attachment 1: Environmental Health Management Web App Snipit of Project Area: <http://health.hawaii.gov/epo/egis>
Attachment 2: Clean Water Branch: Water Quality Standards Map - Maui
Attachment 3: OEQC viewer (of past EA's, EIS's in area)
Attachment 4: U.S. EPA EJSCREEN Report for Project Area

c: DOH: DHO Maui, CWB {via email only}

Attachment 2: Clean Water Branch: Water Quality Standards Map - Maui



Attachment 3: OEQC viewer (of past EA's, EIS's in area)

OEQC Viewer
Hybrid

Search: kahului 10 sites found

Results Filter

Show sites with no location

- Kahului Harbor 2030 Master Plan (DEIS)**
Environmental Impact Statement (Agency)
- KAHULUI COMMERCIAL HARBOR PIER 1C (FEA-FONSI)**
Environmental Assessment (Applicant)
- Wailuku **Kahului** Wastewater Reclamation Facility Shoreline Protection Extension (DEIS)
Environmental Impact Statement (Agency)
- KAHULUI TOWN CENTER (FEA-FONSI)**
Environmental Assessment (Applicant)
- KAHULUI COMMERCIAL HARBOR IMPROVEMENTS (FEA-FONSI)**
Environmental Assessment (Agency)
- Kahului Commercial Harbor 2025 Master Plan Traffic (DEA-S)**
Environmental Assessment (Agency)
- ACQUISITION OF LAND KAHULUI COMMERCIAL HARBOR (FEA-FONSI)**
Environmental Assessment (Agency)
- Kahului Bay Shoreline Protection Project (DEA-AFNSI)**
Environmental Assessment (Agency)
- Wailuku **Kahului** Wastewater Extension (FEA-EISPN)
Environmental Impact Statement (Agency)
- Wailuku **Kahului** Wastewater Reclamation Facility Shoreline Protection Extension (FEIS)



EJSCEEN Report (Version 2016)



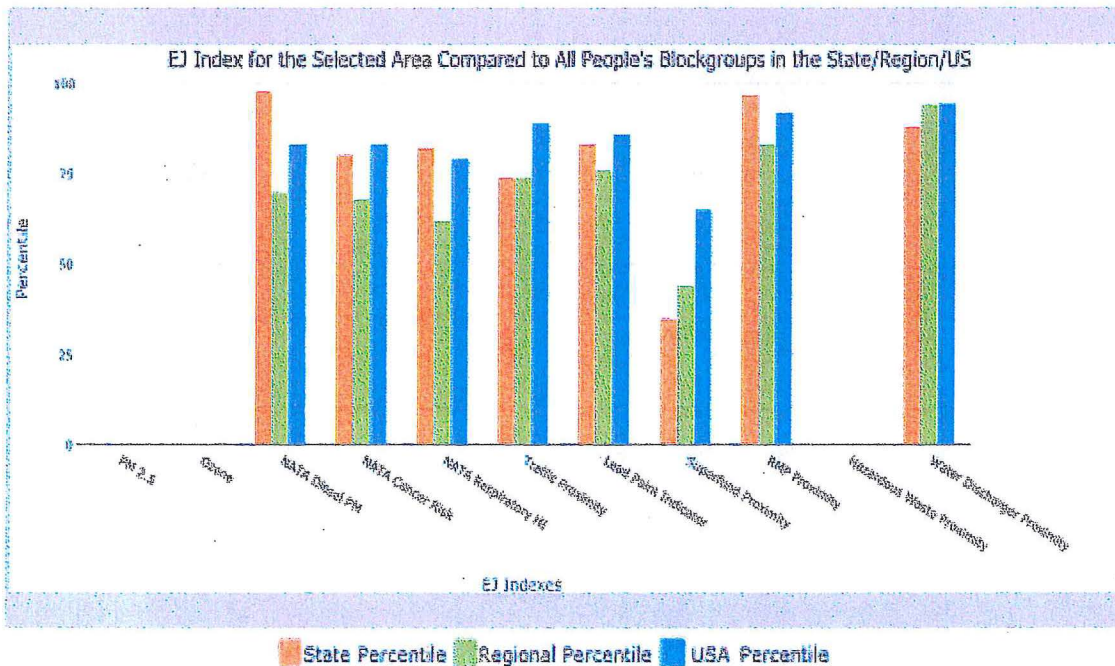
1 mile Ring Centered at 20.887609,-156.471420, HAWAII, EPA Region 9

Approximate Population: 14,936

Input Area (sq. miles): 3.14

Kahului Lani Affordable Senior Housing

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	98	70	83
EJ Index for NATA* Air Toxics Cancer Risk	80	68	83
EJ Index for NATA* Respiratory Hazard Index	82	62	79
EJ Index for Traffic Proximity and Volume	74	74	89
EJ Index for Lead Paint Indicator	83	76	86
EJ Index for Superfund Proximity	35	44	65
EJ Index for RMP Proximity	97	83	92
EJ Index for Hazardous Waste Proximity*	N/A	N/A	N/A
EJ Index for Water Discharger Proximity	88	94	94



This report shows the values for environmental and demographic indicators and EJSCEEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCEEN documentation for discussion of these issues before using reports.



1 mile Ring Centered at 20.887609, -156.471420, HAWAII, EPA Region 9

Approximate Population: 14,936

Input Area (sq. miles): 3.14

Kahului Lani Affordable Senior Housing



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	1



EISCREEN Report (Version 2016)



1 mile Ring Centered at 20.887609,-156.471420, HAWAII, EPA Region 9

Approximate Population: 14,936

Input Area (sq. miles): 3.14

Kahului Lani Affordable Senior Housing

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	0.771	0.149	98	0.978	<50th	0.937	50-60th
NATA* Cancer Risk (lifetime risk per million)	35	34	62	43	<50th	40	<50th
NATA* Respiratory Hazard Index	1.2	1	72	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	470	990	65	1100	58	590	77
Lead Paint Indicator (% Pre-1960 Housing)	0.28	0.16	75	0.24	63	0.3	59
Superfund Proximity (site count/km distance)	0	0.098	29	0.15	13	0.13	16
RMP Proximity (facility count/km distance)	0.75	0.19	95	0.57	78	0.43	83
Hazardous Waste Proximity* (facility count/km distance)	N/A	0.14	N/A	0.14	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.49	0.34	76	0.2	91	0.31	83
Demographic Indicators							
Demographic Index	64%	52%	84	47%	73	36%	84
Minority Population	91%	77%	74	58%	84	37%	91
Low Income Population	36%	26%	73	36%	54	35%	57
Linguistically Isolated Population	9%	6%	77	9%	63	5%	82
Population With Less Than High School Education	17%	9%	84	17%	58	14%	69
Population Under 5 years of age	6%	6%	49	7%	44	6%	48
Population over 64 years of age	16%	15%	59	13%	76	14%	70

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

EISCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EISCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EISCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

March 16, 2017

3/3



June 9, 2017

Laura Leialoha Phillips McIntyre, AICP, Program Manager
State of Hawai'i
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003 (Ref No. EPO 17-064)

Dear Ms. McIntyre:

Thank you for your letter dated March 17, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. Comments from the Department of Health (DOH) and Environmental Planning Office's websites will be reviewed and adhered to, as applicable.
2. A National Pollutant Discharge Elimination System (NPDES) permit will be obtained for the project, as applicable.
3. Thank you for providing information on the resources available from the Office of Environmental Quality Control and U.S. Environmental Protection Agency.

Laura Leialoha Phillips McIntyre, AICP
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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DAVID Y. IGE
GOVERNOR OF HAWAII



MAR 24 2017

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793-3378

March 22, 2017

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: **Request for Early Consultation for the Proposed Kahului Lani
Affordable Senior Housing at Kane Street, Kahului, Maui Hawaii
TMK: (2) 3-7-005:003**

Thank you for the opportunity to review this project. We have the following comments to offer:

The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work. Please call the Indoor & Radiological Health Branch at 808 586-4700.

It is strongly recommended that the Standard Comments found at the Department's website: <http://health.hawaii.gov/epo/home/landuse-planning-review-program/> be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230 or email me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski
District Environmental Health Program Chief

c EPO



June 9, 2017

Patti Kitkowski
District Environmental Health Program Chief
State of Hawai'i
Department of Health
Maui District Health Office
54 High Street
Wailuku, Hawai'i 96793-3378

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Ms. Kitkowski:

Thank you for your letter dated March 22, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. A noise permit will be obtained for the project, as applicable.
2. The Standard Comments on the Department's website will be considered for the project, as applicable.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,

Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

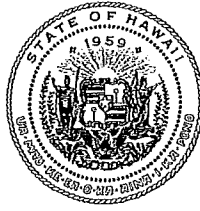
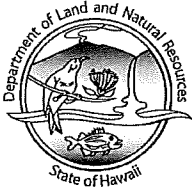
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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233

www.munekiyoHIRAGA.com

DAVID Y. IGE
GOVERNOR OF HAWAII



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 22, 2017

Munekiyo & Hiraga, Inc.
Attention: Ms. Marisa Fujimoto, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

via email: planning@mhplanning.com

Dear Ms. Fujimoto:

SUBJECT: Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street

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 your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

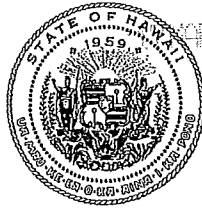
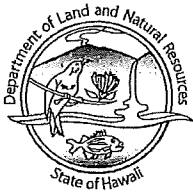
Sincerely,

A handwritten signature in black ink, appearing to read "Russell Y. Tsuji".

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 8, 2017

MEMORANDUM

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Maui District
- Historic Preservation

FROM: *o:*

Russell Y. Tsuji, Land Administrator

SUBJECT:

Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street

LOCATION:

Kahului, Island of Maui; TMK: (2) 3-7-005:003

APPLICANT:

Catholic Charities Housing Development Corporation

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **March 22, 2017**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

[Signature]

Print Name:

Cathy S. Chang, Chief Engineer

Date:

3/19/17

cc: Central Files

RECEIVED
LAND DIVISION
2017 MAR 15 AM 10:45
DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

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

LD/Russell Tsuji

Ref: Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a designated Flood Hazard.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zone designations can be found using the Flood Insurance Rate Map (FIRM), which can be accessed through the Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>).

Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may take precedence over the NFIP standards as local designations prove to be more restrictive. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

Signed: 
CARTY S. CHANG, CHIEF ENGINEER

Date: 3/14/17



June 9, 2017

Russell Y. Tsuji
Land Administrator
State of Hawai'i
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawai'i 96809

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Tsuji:

Thank you for your letter dated March 22, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

Engineering Division:

1. It is noted that the rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a designated Flood Hazard.
2. The proposed Kahului Lani Affordable Senior Housing project is located in Flood Zone X, outside of any designated Flood Hazard areas.
3. The County of Maui, Department of Planning was also consulted during the preparation of the Draft Environmental Assessment (EA) for the project and will be responsible for processing the Special Management Area Use Permit application for the project. Coordination will be undertaken regarding local flood ordinances, as applicable.

Russell Y. Tsuji
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

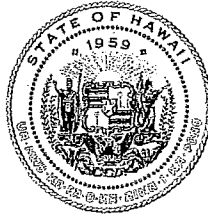
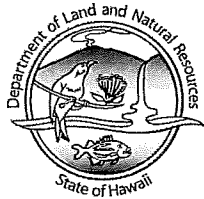
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cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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JUN 13 2017

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

JEFFREY T. PEARSON
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

May 31, 2017

Marisa Fujimoto, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai'i 96793

IN REPLY REFER TO:
LOG NO: 2017.00427
DOC NO: 1705MBF10
Archaeology

Aloha Ms. Fujimoto:

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Maui County
Request for Early Consultation for the Proposed Kahului Lani Affordable
Senior Housing at Kane Street, Kahului
Wailuku Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-7-005:003**

Thank you for your recent request to consult early on the subject project. The State Historic Preservation Division (SHPD) received this request on March 3, 2017.

Catholic Charities Housing Development Corporation (CCHDC) is proposing the development of the Kahului Lani project. The project will include 164 affordable senior housing units and one resident manager's unit in two six-story multi-family residential buildings; a 7,500 ft.² multipurpose building; and parking and related improvements. This project will be developed on 3.81 acres of land identified as TMK: (2) 3-7-005:003. The subject property is located on Kane Street at its intersection with Vevau Street in the Kahului urban core. The Kahului Lani project will receive funding assistance from the Hawai'i Housing Finance and Development Corporation (HHFDC). The use of State funds triggers compliance with Chapter 343, Hawai'i Revised Statutes (HRS). As such, an Environmental Assessment (EA) will be prepared for the proposed project. The HHFDC will serve as the approving agency for the EA.

The project site is also located within the County's Special Management Area (SMA). In 2005, a SMA Use Permit was obtained by A&B Properties, Inc. (landowner) and Agora Realty (applicant) for the previously proposed Kane Street Commercial Mixed-Use Project consisting of 90 residential units, 15,578 ft.² of commercial space, and related improvements (SM1 2005/0004). CCHDC is in the process of acquiring the subject property from A&B Properties, Inc. for development of the Kahului Lani Affordable Senior Housing project. Given the new proposed use and reduced density of the project and discussions with the Department of Planning, CCHDC will submit a new SMA Use Permit application for the development of the Kahului Lani project. The EA will serve as a supporting document for the SMA Use Permit application.

SHPD records indicate that an archaeological assessment (AA) for the subject parcel was reviewed and accepted by the SHPD (December 22, 2004; Log No. 2004.3585, Doc. No. 0412MK18). Furthermore, records indicate that a draft archaeological monitoring plan (AMP) was produced by Scientific Consultant Services, Inc. (SCS) and submitted to the SHPD for review on July 22, 2005. A revised final AMP was not reviewed and accepted by the SHPD.

The project area is located within a geological zone of older sand dune and silty clay deposits, a zone known to contain human burial features and historic habitation sites. Marked and unmarked human burial features have been

Marisa Fujimoto
May 31, 2017
Page 2

identified in surrounding areas. In addition, both in situ and disturbed subsurface historic properties may be present within previously developed areas, including both human burials and non-burial resources (e.g., cultural layers and pit features).

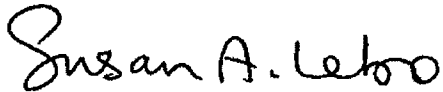
Based on the information above, the **SHPD requests archaeological monitoring** be conducted for all ground disturbing activities to identify and document any subsurface archaeological historic properties. A list of permitted archaeological firms is provided on the SHPD website at: <http://dlnr.hawaii.gov/shpd/about/branches/archaeology/>.

The SHPD requests a **new archaeological monitoring plan** meeting the requirements of Hawai'i Administrative Rules §13-279-4 be submitted for SHPD review and acceptance prior to permit issuance.

Please also keep in mind that pursuant to HAR §13-275-1(c)(1), the appropriate process for historic preservation review stipulates that the principal participants must prepare materials for review; and the lead agency must initiate consultation with the SHPD. Written consent to delegate this authority should be provided if a third-party will consult with the SHPD on behalf of principal participants involved in the historic preservation review process.

Please contact Dr. Barker Fariss at (808) 243-4626 or at matthew.b.fariss@hawaii.gov for any questions about this letter.

Mahalo,

A handwritten signature in black ink that reads "Susan A. Lebo". The signature is written in a cursive, flowing style.

Susan A. Lebo, PhD
Archaeology Branch Chief



June 15, 2017

Susan A. Lebo, PhD
Archaeology Branch Chief
State of Hawai'i
Department of Land and Natural Resources
State Historic Preservation Division
Kakuhihewa Building
601 Kamokila Blvd. Suite 555
Kapolei, Hawai'i 96707

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Dr. Lebo:

Thank you for your letter dated May 31, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. As noted, an Archaeological Assessment for the project site was reviewed and accepted by the SHPD in December 2004. An Archaeological Monitoring Plan (AMP) was subsequently prepared for the subject property in April 2007 and submitted to SHPD for review. The AMP was accepted by SHPD via letter dated October 9, 2007 (LOG NO:2007.1354).
2. It is noted that the project area is within a geological zone of older sand dune and silty clay deposits in which burial features and historic habitation sites may be found.
3. It is further noted that SHPD requests that archaeological monitoring be conducted for all ground disturbing activities for the project.
4. As requested, a new archaeological monitoring plan meeting the requirements of Hawaii Administrative Rules Section 13-279-4 will be prepared and submitted to SHPD for review and acceptance.

Susan A. Lebo, PhD
June 15, 2017
Page 2

5. The principal participant responsible for preparing material for the historic preservation review process is CCHDC. CCHDC will retain an archaeologist to prepare an updated AMP for SHPD review and acceptance and will provide written consent for the archaeologist to consult with SHPD on its behalf. The lead agency for this project is the Hawai'i Housing Development and Finance Corporation (HHFDC), who will be the approving agency for the Environmental Assessment (EA), pursuant to Hawai'i Revised Statutes Chapter 343. HHFDC will transmit a copy of the Draft EA to SHPD for review to initiate the consultation process.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

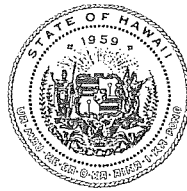
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cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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APR 13 2017

DAVID Y. IGE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097
April 6, 2017

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:
DIR 0375
HWY-PS 2.4484

Ms. Marisa Fujimoto
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: Request for Review of Pre-Consultation for a Draft Environmental Assessment
Kahului Lani Affordable Rental Senior Housing
Kahului, Maui, Hawaii
TMK No: (2) 3-7-005:003

Thank you for the opportunity to review the above-referenced project for the preparation of an upcoming Draft Environmental Assessment (DEA) required by Chapter 343, Hawaii Revised Statutes on the subject project for the use of State funds. A special use permit application will also be filed for the project.

The proposed development of the senior housing project will consist of two, 6-story multi-family residential building totaling 164 units, including a multi-purpose building and related improvements. Based on the Site Plan in Figure 2, it appears to depict multiple access points on Kane Street, School Avenue and Vevau Street. However, this is not too clear and should be clarified in the DEA.

A Traffic Impact Analysis Report (TIAR) shall be prepared and submitted to the Hawaii Department of Transportation. The 3.81-acres site is one block south of the Kaahumanu Avenue, State Route 32. Therefore, please include this in the project study area. Both the TIAR and the DEA should include a discussion of any traffic impacts generated by the project onto the nearby Kaahumanu Avenue and shall mitigate its traffic impacts at no cost to the State.

The DEA should provide additional details if there are any ancillary uses such as a daycare program or a fully-staffed nursing facility. It should also include the age population of the residents and their expected lifestyle patterns. These should all be accounted for and reflected in the TIAR's trip generation and anticipated pedestrian patterns.

Ms. Marisa Fujimoto
April 6, 2017
Page 2

HWY-PS 2.4484

If you have any questions, please contact Ken Tatsuguchi, Engineering Program Manager, Highways Division, Planning Branch at (808) 587-1830. Please reference file review number PS 2017-032.

Sincerely,

A handwritten signature in black ink, appearing to read 'F. N. Fuchigami', with a stylized flourish at the end.

FORD N. FUCHIGAMI
Director of Transportation



June 9, 2017

Ford N. Fuchigami, Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003 (DIR 0375 HWY-PS 2.4484)

Dear Mr. Fuchigami:

Thank you for your letter dated April 6, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. As the Kahului Lani Affordable Senior Housing Project is in the Special Management Area (SMA), a SMA Use Permit will be filed for the project. The project area is designated "Urban" by the State Land Use Commission and zoned B-2, Community Business District by the County of Maui. The proposed use is permitted and does not require a Special Use Permit.
2. The Draft Environmental Assessment (EA) for the proposed project will include a description of the project, including access to the project site.
3. A Traffic Impact Analysis Report (TIAR) will be prepared for the project and submitted to the State of Hawaii, Department of Transportation for review. The study area in the TIAR will include Kaahumanu Avenue in the vicinity of the project site.
4. The project does not include daycare or a nursing facility and 164 of the 165 rental units will be limited to seniors age 55 and older, or the applicable governing definition of "senior" tenants. This information will be specified in the Draft EA. The projected trip generation in the TIAR will be calculated in accordance with the Institute of Transportation Engineers Trip Generation Manual, 9th Edition.

Ford N. Fuchigami, Director
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

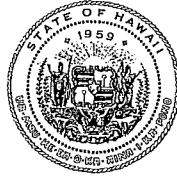
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cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.

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MAR 24 2017

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII



JOBIE M. K. MASAGATANI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

SHAN S. TSUTSUI
LT. GOVERNOR
STATE OF HAWAII

WILLIAM J. AILA, JR.
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879
HONOLULU, HAWAII 96805

March 21, 2017

Munekiyo Hiraga
Attention: Marisa Fujimoto
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: Request for Early Consultation for the Proposed
Kahului Lani Affordable Senior Housing at Kane
Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003


The Department of Hawaiian Home Lands acknowledges receiving the request for comments on the above-cited project. After reviewing the materials submitted, due to its lack of proximity to Hawaiian Home Lands, we do not anticipate any impacts to our lands or beneficiaries from the project. However, we do want to provide the following comments:

1. Based on our beneficiary population in the area of the proposed project, we do have an aging population that could benefit from this project. How will the proposed project specifically benefit our aging beneficiary population in the area?
2. We highly encourage all agencies to consult with Hawaiian Homestead community associations and other (N)native Hawaiian organizations when preparing environmental assessments in order to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians.

Ms. Fujimoto
March 20, 2017
Page 2

Mahalo for the opportunity to provide comments. If you have any questions, please call Julie-Ann Cachola at 620-9483 or contact via email at julie-ann.cachola@hawaii.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Kaleo Manuel". The signature is fluid and cursive, with a long horizontal stroke at the end.

M. Kaleo Manuel
Acting Planning Program Manager

c: Maui Hawaiian Homestead Associations



June 9, 2017

M. Kaleo Manuel
Acting Planning Program Manager
State of Hawai'i
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawai'i 96805

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Manuel:

Thank you for your letter dated March 21, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. The project will provide 164 rental units that will be made available to seniors earning 60 percent or less of the County of Maui's median income. If any of your beneficiaries in the area meet that criteria, each may be able to qualify to rent one (1) of the residential units.
2. It is noted that the Department of Hawaiian Home Lands encourages agencies to consult with Hawaiian Homestead community associations and other Native Hawaiian organizations during the preparation of environmental assessments. Individuals familiar with the project area and its history, including the Hawai'i Papa o ke Ao Cultural Director at University of Hawai'i Maui College, were interviewed to assess potential cultural impacts resulting from the project.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

M. Kaleo Manuel
June 9, 2017
Page 2

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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OFFICE OF PLANNING STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: <http://planning.hawaii.gov/>

MAR 27 2017

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING

Ref. No. P-15532

March 22, 2017

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

Subject: Request for Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawaii
TMK: (2) 3-7-005: 003

Thank you for the opportunity to provide comments on this early consultation request for the preparation of a Draft Environmental Assessment (Draft EA) for the Kahului Lani Affordable Senior Housing project. The early consultation request review material was transmitted to our office via letter dated March 3, 2017.

It is our understanding that the Catholic Charities Housing Development Corporation is proposing the development of an affordable senior housing project. The Kahului Lani project will be located on 3.81-acres of land within the urban core of Kahului, Maui.

Catholic Charities Hawaii (CCH) will provide onsite social services case management for building residents. A portion of the building will be used for CCH's outreach programs, emergency assistance to low-income families, prospective foster family assessments, and homeless assistance services for military veterans.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. Pursuant to Hawaii Administrative Rules (HAR) § 11-200-10(4) – general description of the action's technical, economic, social, and environmental characteristics; this project must demonstrate that it is consistent with a number of state environmental, social, economic goals, and policies for land use. Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Planning Act, provides goals, objectives, policies, and priority guidelines for growth, development, and the allocation of resources throughout the state in areas of state interest.

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
March 22, 2017
Page 2

The analysis on the Hawaii State Planning Act should include a discussion on the project's ability to meet all of the goals, objectives, policies, and priority guidelines or clarify where it is in conflict with them. If any of these themes are not applicable to the project, the Draft EA should affirmatively state such determination.

2. The coastal zone management (CZM) area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" (see HRS § 205A-1).

HRS Chapter 205A-5(b) requires all state and county agencies to enforce the CZM objectives and policies. The Draft EA should include an assessment as to how the proposed action conforms to the goals and objectives of the Hawaii CZM program as listed in HRS § 205A-2. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.

3. The review material acknowledges that this project site is located entirely within the Special Management Area (SMA) of the County of Maui. Please consult with the Department of Planning, County of Maui for the regulatory requirements on SMA use.
4. Pursuant to HAR § 11-200-10(6) – the identification and summary of impacts and alternatives considered; in order to ensure that the natural resources and coastal areas within the State of Hawaii remain protected, the Draft EA should summarize the potential impact to nearshore marine resources and actions proposed to ensure the coastal ecosystems are protected and potential hazards mitigated. The marine water quality classification, should be considered when developing mitigation measures to protect the coastal ecosystem. The Draft EA should detail proposed safeguards and best management practices (BMPs) used to protect water quality, and prevent sediment, soils, and construction debris from impacting the marine ecosystem.

The Draft EA should examine potential benefits and/or negative impacts resulting from this project on coastal and marine resources. Issues that may be examined include, but are not limited to, project-site characteristics in relation to erosion controls, undeveloped open spaces, and the absorption characteristics of nearby soil. Furthermore, it should differentiate between the existing permeable surfaces versus hardened surfaces that have a cumulative effect on the volume and speed of storm runoff. These items, as well as the marine water quality classification, should be considered when developing mitigation measures to protect the coastal ecosystem.

Because this project may increase the amount of impervious surfaces within an already urbanized area, please consider the use of low impact development (LID) design features. LID features that can be considered include options such as bioretention basins, rain

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
March 22, 2017
Page 3

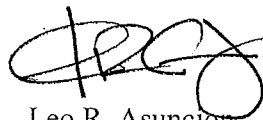
gardens, grassed swales, and onsite infiltration techniques that treat stormwater in place, rather than allow rainfall to flow offsite.

OP has a number of resources available to assist in the development of projects which may assist in the mitigation of sediment loss and stormwater control, thus protecting the nearshore environment. OP recommends consulting these guidance documents and stormwater evaluative tools when developing strategies to address polluted runoff. They offer useful techniques to keep land-based pollutants and sediment in place and prevent contaminating nearshore waters.

- Hawaii Watershed Guidance provides direction on mitigation strategies for urban development activities that will safeguard fragile watersheds and implement watershed plans http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI_Watershed_Guidance_Final.pdf
- Stormwater Impact Assessments can be used to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area
http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf
- Low Impact Development (LID), A Practitioners Guide covers a range of structural best management practices for stormwater control management, onsite infiltration techniques, water reuse methods, and building layout designs that minimize negative environmental impacts
http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf

If you have any questions regarding this comment letter, please contact Joshua Hekekoa of our office at (808) 587-2845.

Sincerely,



Leo R. Asuncion
Director



June 9, 2017

Leo R. Asuncion, Director
State of Hawai'i
Office of Planning
P.O. Box 2359
Honolulu, Hawai'i 96804

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003 (Ref. No. P-15532)

Dear Mr. Asuncion:

Thank you for your letter dated March 22, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. The Draft Environmental Assessment (EA) will include an assessment of the project's consistency with state environmental, social, and economic goals and policies for land use, including the Hawaii State Plan.
2. The Draft EA will include an assessment on the project's conformance to the goals and objectives of the Hawai'i CZM program as listed in the Hawai'i Revised Statutes 205A-2.
3. A Special Management Area Use Permit is required for the project, and an application will be filed with the County of Maui, Department of Planning, accordingly.
4. The Draft EA will include an assessment on the potential impacts on coastal and marine resources resulting from the project and Best Management Practices (BMPs) that will be implemented to protect water quality. Low impact development design features are being considered for the project, and will be incorporated, if practical. We appreciate the informational resources provided by the Office of Planning and will share these with the developer for consideration.

Leo R. Asuncion, Director
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

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

Very truly yours,

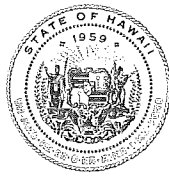


Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Chad McDonald, Mitsunaga & Associates, Inc.

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MAR 13 2017

HOUSE OF REPRESENTATIVES

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

March 9, 2017

Munekiyo Hiraga
Attention: Marisa Fujimoto
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto,

I support this endeavor to provide the affordable housing for our kupuna.

It would also be beneficial to provide a section or additional building of affordable rentals for non-senior applicants.

I do however have some concerns about the proposed building being six stories in the designated area. I'm not sure how well it would conform to the aesthetics in the surrounding area.

Thank you for the opportunity to share my thoughts and concerns.

Mahalo,

Representative Justin H. Woodson

State Capitol, Room 405

415 S Beretania Street
Honolulu, Hawaii 96813

808-586-6210

repwoodson@capitol.hawaii.gov

Representative Justin H.

Woodson

District 9

Kahului ▪ Puunene

Old Sand Hills ▪ Maui Lani

Chair Committee on

Higher Education

Member Committees on:

Education, Intrastate and

Commerce,

Tourism, and Veterans, Military,

International Affairs,

and Culture and the Arts



June 9, 2017

Representative Justin H. Woodson
House of Representatives
State of Hawai'i
State Capitol
Honolulu, Hawai'i 96813

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Representative Woodson:

Thank you for your letter dated March 9, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. Thank you for noting your support of this project.
2. While CCHDC recognizes the need for non-senior affordable rental housing, funding for the project is based on it being dedicated for affordable senior housing.
3. Thank you for sharing your concerns about the aesthetic-impact of the six-story residential buildings. The project is proposed in the urbanized area of Kahului amongst other multi-story buildings surrounding the project, including the Ka'ahumanu Shopping Center and parking structure, HFM Foodservice building across Kane Street, and the Waterfront Apartment buildings across Vevau Street. Additionally, since the project is proposed within the Special Management Area, the design and aesthetics will be reviewed by the Maui County Urban Design Review Board.

Representative Justin H. Woodson
June 9, 2017
Page 2

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

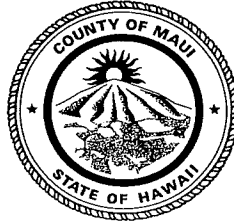
cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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APR 06 2017

ALAN M. ARAKAWA
Mayor
STEWART STANT
Director
MICHAEL M. MIYAMOTO
Deputy Director

MICHAEL RATTE
Solid Waste Division
ERIC NAKAGAWA, P.E.
Wastewater Reclamation Division



**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**
2050 MAIN STREET, SUITE 2B
WAILUKU, MAUI, HAWAII 96793

March 29, 2017

Ms. Marisa Fujimoto
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

**SUBJECT: KAHULUI LANI
AFFORDABLE SENIOR HOUSING PROJECT AT KANE STREET
EARLY CONSULTATION
TMK (2) 3-7-005:003, KAHULUI**

We reviewed the subject request and have the following comments:

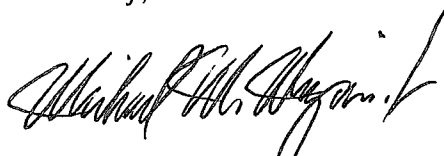
1. Solid Waste Division comments:
 - a. None.
2. Wastewater Reclamation Division (WWRD) comments:
 - a. Although wastewater system capacity is currently available as of the date of this letter, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
 - b. Wastewater contribution calculations are required before building permit is issued.
 - c. Developer shall pay assessment fees for treatment plant expansion costs in accordance with ordinance setting forth such fees. The property is located in the Kahului Service Area.
 - d. Once a Resolution is approved by the County Council, the WWRD can waive the applicable wastewater assessment fees. If a Resolution is not approved, the developer shall pay the required assessment fees.
 - e. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
 - f. Show or list minimum slope of new sewer laterals.
 - g. Plans should show the existing/proposed sewer service lateral.

Ms. Marisa Fujimoto
Munekiyo Hiraga
March 29, 2017
Page 2 of 2

- h. Plans shall show the existing property sewer service manhole near the property line. If a property sewer service manhole does not exist, one shall be installed.
- i. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
- j. Kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens etc.)
- k. Non-contact cooling water and condensate should not drain to the wastewater system.

If you have any questions regarding this letter, please contact Michael Miyamoto at 270-8230.

Sincerely,



MICHAEL M. MIYAMOTO
Deputy Director of Environmental Management



June 9, 2017

Michael Miyamoto, Deputy Director
County of Maui
Department of Environmental Management
2050 Main Street, Suite 2B
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Miyamoto:

Thank you for your letter dated March 29, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. It is noted that the Department of Environmental Management (DEM) Solid Waste Division does not have any comments at this time.
2. Wastewater Reclamation Division (WWRD) comments
 - a. It is noted that there is wastewater system capacity to service the project as of the date of this letter. It is further noted that wastewater system capacity cannot be ensured until the issuance of the building permit.
 - b. Wastewater calculations will be included in the Draft Environmental Assessment (EA) for the project.
 - c. It is noted that assessment fees for treatment plant expansion may be required by ordinance and that the project is located in the Kahului Service Area.
 - d. It is noted that the Maui County Council may approve a resolution allowing the WWRD to waive wastewater assessment fees.
 - e. The developer will fund necessary off-site improvements to collection system and wastewater pump stations.

Michael Miyamoto, Deputy Director
June 9, 2017
Page 2

- f. Minimum slope of new sewer laterals will be shown on construction plans for the project.
- g. Construction plans for the project will show existing and proposed sewer service laterals.
- h. Construction plans will reflect any existing property sewer service manholes near property lines of the subject parcel. It is further noted that if property sewer manholes do not exist, one shall be installed.
- i. Construction plans will reflect existing easements and ownership.
- j. Kitchen facilities within the proposed project will comply with pre-treatment requirements.
- k. The design will comply with this requirement.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Chad McDonald, Mitsunaga & Associates, Inc.

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DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

MAR 10 2017

ALAN M. ARAKAWA
Mayor
CAROL K. REIMANN
Director
JAN SHISHIDO
Deputy Director

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

March 8, 2017

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Marisa Fujimoto:

**Subject: Request for Early Consultation for the Proposed Kahului
Lani Affordable Senior Housing at Kane Street, Kahului, Maui,
Hawaii, TMK (2) 3-7-005:003**

Thank you for the opportunity to review the request for Early Consultation for the above subject project. The Department would like to offer the following comments:

1. The subject project is subject to comply with the requirements set forth in Chapter 2.96, Maui County Code.
2. The applicant is required to enter into residential workforce housing agreement prior to final subdivision approval or issuance of building permit for the subject project.

Please call Mr. Veranio Tongson Jr. of our Housing Division at (808) 270-1741 if you have any questions.

Sincerely,

BUDDY A. ALMEIDA
Housing Administrator

cc: Director of Housing and Human Concerns



MUNEKIYO HIRAGA

Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
PRESIDENT

Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT

Mark Alexander Roy
VICE PRESIDENT

Tessa Munekiyo Ng
VICE PRESIDENT

June 9, 2017

Buddy Almeida, Housing Administrator
County of Maui
Department of Housing and Human Concerns
35 Lunalilo Street, Suite 102
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Almeida:

Thank you for your letter dated March 8, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. The Kahului Lani Affordable Senior Housing project will comply with Chapter 2.96, Maui County Code. The proposed project will provide 164 rental units affordable to seniors earning less than 60 percent of the County's Area Median Income and one (1) resident manager's unit.
2. It is noted that the applicant will be required to enter into residential workforce housing agreement prior to the issuance of building permits for the subject project.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233

www.munekiyoHIRAGA.com

Buddy Almeida, Housing Administrator
June 9, 2017
Page 2

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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MAR 30 2017

DEBORAH STONE-WALLS
Executive on Aging

PHONE (808) 270-7755

FAX (808) 270-7935

E-MAIL: mcoa.adrc@mauicounty.gov



ALAN ARAKAWA
Mayor

CAROL K. REIMANN
Director
Housing & Human Concerns

JAN SHISHIDO
Deputy Director
Housing & Human Concerns

COUNTY OF MAUI
DEPARTMENT OF HOUSING AND HUMAN CONCERNS
MAUI COUNTY OFFICE ON AGING
AN AREA AGENCY ON AGING

March 24, 2017

J. WALTER CAMERON CENTER
95 MAHALANI STREET, ROOM 20
WAILUKU, HAWAII 96793

Munekiyo Hiraga
Attention: Marisa Fujimoto
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Request for Early Consultation for the Proposed Kahului Lani
Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i,
TMK (2)3-7-005:003

Dear Ms. Fujimoto:

Thank you for the opportunity to provide comment regarding the Catholic Charities Housing Development Corporation (CCHDC) proposal to develop the Kahului Lani project in Kahului which will include 164 affordable senior housing units and one (1) resident manager's unit.

Historically, Maui County seniors have experienced difficulty in accessing affordable senior housing, and waiting time for such housing is most often measured in years. The overwhelming lack of available units contributes to increased levels of stress for both seniors and their family members and friends. Therefore, projects that serve to increase the inventory that is appropriate for and accessible to our growing aging population generally receive support.

Furthermore, Catholic Charities has demonstrated long-term commitment to increasing the quality of life for seniors in Hawaii. The availability of onsite social service case management coupled with Catholic Charities emphasis on supporting senior residents through activities available in the multi-purpose building will contribute to a healthy and vibrant community.

The project is proposed in a central area of Maui that is close to shopping, transportation, and entertainment. Seniors desiring to live active and engaged lives will, therefore, find the convenience of accessing a variety of opportunities quite beneficial.

I look forward to learning more about the project. Please let me know if I can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "DSW".

Deborah Stone-Walls



June 9, 2017

Deborah Stone-Walls
County of Maui
Department of Housing and Human Concerns
Maui County Office on Aging
J. Walter Cameron Center
95 Mahalani Street
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Ms. Stone-Walls:

Thank you for your letter dated March 24, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

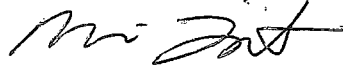
1. It is noted that the Office On Aging confirms that there is an established need for affordable senior housing in Maui County.
2. We appreciate the Office On Aging's acknowledgment of Catholic Charities' commitment to improving the quality of life for seniors in Hawai'i.
3. Your comment regarding the convenient and beneficial of location of the project to the target resident population is also noted and appreciated.
4. We will transmit a copy of the Draft Environmental Assessment (EA) for the project, which will provide additional information on the project. We look forward to receiving any additional comments and insights you may have on the Draft EA.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

Deborah Stone-Walls
June 9, 2017
Page 2

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

Very truly yours,



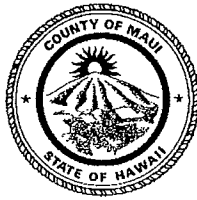
Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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ALAN M. ARAKAWA
Mayor



MAR 23 2017
KA'ALA BUENCONSEJO
Director

BRIANNE L. SAVAGE
Deputy Director

DEPARTMENT OF PARKS & RECREATION

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

(808) 270-7230
FAX (808) 270-7934

March 14, 2017

Ms. Marisa Fujimoto
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:

**SUBJECT: REQUEST FOR EARLY CONSULTATION FOR THE PROPOSED
KAHULUI LANI AFFORDABLE SENIOR HOUSING AT KANE STREET,
KAHULUI, MAUI, HAWAII, TMK: (2) 3-7-005:003**

The Department of Parks and Recreation (DPR) does not have any comments or objections to the project. Once the applicant provides DPR with a copy of the fully executed 201H HRS affordable housing agreement with the Hawaii Housing Finance and Development Corporation, DPR will provide exemption from Maui County Code Section 18.16.320 Parks and Playgrounds.

Should you have any questions or concerns, please feel free to contact me or Robert Halvorson, Chief of Planning and Development, at (808) 270-7931.

Sincerely,

A handwritten signature in black ink, appearing to read "Ka'ala Buenconsejo", is written over a faint, larger version of the signature.

KA'ALA BUENCONSEJO
Director of Parks & Recreation

c: Robert Halvorson, Chief of Planning and Development

KB:RH:csa



June 9, 2017

Ka'ala Buenconsejo, Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nakoia Street, Unit 2
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Buenconsejo:

Thank you for your letter dated March 14, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. It is noted that the Department of Parks and Recreation (DPR) does not have any comments or objections to the project.
2. A Hawai'i Revised Statutes 201H affordable housing agreement will not be required for the The Kahului Lani Affordable Senior Housing project; however, an affordable housing agreement with the Hawai'i Housing Finance and Development Corporation or the County Department of Housing and Human Concerns will be provided for exemption from Maui County Code Section 18.16.320 Parks and Playgrounds.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

Ka'ala Buenconsejo, Director
June 9, 2017
Page 2

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

Very truly yours,

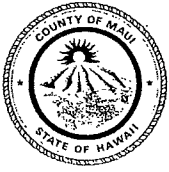


Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

POLICE DEPARTMENT

COUNTY OF MAUI

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



TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

March 22, 2017

Ms. Marisa Fujimoto
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Fujimoto:


SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior
Housing at Kane Street, Kahului, Maui, Hawaii
TMK: (2) 3-7-005:003

This is in response to your letter dated March 3, 2017, requesting comments on the above subject.

Please refer to the enclosed copy of the to/from submitted by Officer Jhun-Lee Casio of our Community Policing Office.

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

Sincerely,


Assistant Chief John Jakubczak
for: TIVOLI S. FAAUMU
Chief of Police

Enclosure

TO : TIVOLI FAAUMU, CHIEF OF POLICE, COUNTY OF MAUI
VIA : CHANNELS - CONCERNS/RECOMMENDATIONS OF OFC. CASIO'S
ASSESSMENT ARE NOTED - A4 3/21/17
FROM : JHUN-LEE CASIO, POLICE OFFICER III, COMMUNITY POLICING
SUBJECT : RESPONSE TO A REQUEST FOR COMMENTS REGARDING:
REQUEST FOR EARLY CONSULATATION FOR THE PROPOSED
KAHULUI LANI AFFORDABLE SENIOR HOUSING AT KANE ST.
KAHULUI, MAUI, HAWAII:

This communication is submitted as a response to a request for comments by Marisa FUJIMOTO, Senior Associate of the Munekiyo Hiraga Planning Project Management Sustainable Solutions.

PROJECT : Proposed Kahului Lani Affordable Senior Housing at Kane Street
TMK (2) 3-7-005:003
LOCATION : Corner of Kane Street and Vevau Street, Kahului.
TMK NO. : TMK (2) 3-7-005:003

RESPONSE:

In review of the submitted documents, concerns from the police perspective are upon the safety of pedestrian and vehicular movement.

The MUNEKIYO HIRAGA Project Management Company is seeking for Early Consultation for Proposed Kahului Lani Affordable Senior Housing at Kane Street in Kahului under TMK No. (2) 3-7-005:003.

The (CCHDC) Catholic Charities Housing Development Corporation is proposing the development of the Kahului Lani Project which comprised of 164 affordable senior housing units on a 3.81 acres of land. The proposed project will include the development of two (2) six-story multi-family residential buildings, a 7,500 sq. ft. multipurpose building, parking, and related improvements.

The project site is located within the County's Special Management Area (SMA). CCHDC is in the process of acquiring the subject property from A&B Properties, Inc. for development of this proposed project.

During the construction phase, extreme efforts should be made to minimize noise, dust, and debris so not to inhibit those whose health and well being may be affected. Adequate traffic control devices and personnel should also be utilized to minimize the impacts to pedestrian and vehicular movement by the heavy equipment and vehicles traveling in and out of the area.


It is the duty of the project manager to examine the impact of vehicular movement within the area while work is conducted on this project.

It is also important to consider proper and adequate lighting during evening, late night, and early morning hours during construction and after the project is completed. Congregation of the unlawful element, whether it is by status offense or by criminal offense tends to occur in poorly lit areas that are easily accessible and away from the general population.

CONCLUSION:

There are no objections to the proposed Kahului Lani Affordable Senior Housing project, from the police standpoint, in regards to pedestrian and vehicular movement. However, consideration is requested for sufficient lighting to be installed for not only the safety of vehicular movement, but for crime prevention and deterrence as well.

Respectfully submitted,



Jhun-lee Casio E#12935
Police Officer III / Community Policing
03/20/17 at 0840 hrs.

CONCUR WITH OFF. CASIO'S
COMMENTS.



3/20/17



June 9, 2017

John Jakubczak, Assistant Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Assistant Chief Jakubczak:

Thank you for your letter dated March 22, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. Best Management Practices (BMPs) will be implemented during construction to mitigate potential noise and air quality impacts. Traffic control devices and personnel will be utilized, as needed, to minimize impacts to pedestrian and vehicular movement during construction.
2. The project manager will ensure that vehicular movement is not significantly impacted during project construction.
3. Lighting and other security measures will be considered to prevent or deter unlawful congregating during construction.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

John Jakubczak, Assistant Chief
June 9, 2017
Page 2

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)

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APR 03 2017

GLEN A. UENO, P.E., P.L.S.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

LESLI L. OTANI, P.E., L.S.
Highways Division



ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

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

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

March 28, 2017

Ms. Marisa Fujimoto, Senior Associate
MUNEKIYO HIRAGA
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

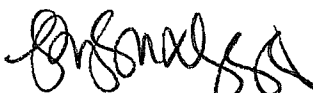
Dear Ms. Fujimoto:

**SUBJECT: REQUEST FOR EARLY CONSULTATION FOR THE PROPOSED
KAHULUI LANI AFFORDABLE SENIOR HOUSING AT KANE
STREET, KAHULUI, MAUI, HAWAII; TMK: (2) 3-7-005:003**

We reviewed your early consultation request and have no comments at this time.

If you have any questions regarding this memorandum, please call Rowena Dagdag-Andaya at 270-7845.

Sincerely,


DAVID C. GOODE
Director of Public Works

DCG:RMDA:da

xc: Engineering Division

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MAR 16 2017

ALAN M. ARAKAWA
Mayor



DON MEDEIROS
Director

MARC I. TAKAMORI
Deputy Director
(808) 270-7511

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
2145 Kaohu Street, Suite 102
Wailuku, Hawaii, USA 96793

March 14, 2017

Ms. Marisa Fujimoto
Munekiyo & Hiraga, Inc.
305 High Street
Suite 104
Wailuku, HI 96793

Subject: Proposed Kahului Lani Affordable Senior Housing at Kane Street

Dear Ms. Fujimoto,

Thank you for the opportunity to comment on this project. This sounds like a great project and location being that it is located across the street from our main bus hub at the Queen Ka'ahumanu Center. Other than that, we have no further comments to make regarding this project at this time.

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Don Medeiros", is written in a cursive style.

Don Medeiros
Director



June 9, 2017

Don Medeiros, Director
County of Maui
Department of Transportation
2145 Kaohu Street, Suite 102
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Medeiros:

Thank you for your letter dated March 14, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following response to your comment:

1. Thank you your support of this project. It is noted that the project is located across the street from the main bus hub at the Queen Ka'ahumanu Center.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft Environmental Assessment for the proposed project.

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

Very truly yours,

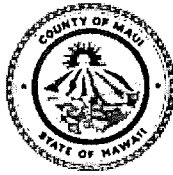
Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.

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ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

GLADYS C. BAISA
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauewater.org

March 16, 2017

Marisa Fujimoto, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Subject: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing
TMK: (2)3-7-005:003

Dear Ms. Fujimoto,

Thank you for the opportunity to participate in the Early Consultation process.

Source Availability and System Infrastructure

The Draft Environmental Assessment (DEA) should identify sources of potable and non-potable demand for the proposed project. The project area is served by the Central Maui System. The main sources of water for the Central system are the designated Iao aquifer, Waihee aquifer, the Iao tunnel and the Iao-Waikapu Ditch in the designated Na Wai Eha.

Two 8-inch water transmission lines run adjacent to the property on School Street and Kane Street. One fire hydrant is located directly across the street from the project location on School Street and two fire hydrants are across the street on Kane Street. The property has two 2-inch meters.

Pollution Prevention

In order to protect ground and surface water resources as well as our coastal areas, we recommend that in addition to any required Best Management Practices (BMPs) the following measures designed to minimize infiltration and runoff be implemented during construction:

- Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground. Remove all construction debris and toxic substances daily to prevent entry into the ocean.
- Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.
- Properly install and maintain erosion control barriers such as silt fencing or straw bales.

"By Water All Things Find Life"

- Disturb the smallest area possible.
- Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure rapid stand establishment. Apply biocides only during dry periods of low rainfall to minimize chemical run-off.
- Keep run-off on site.

Conservation

The DWS recommends the following conservation measures for implementation in the project.

Indoor Conservation Measures:

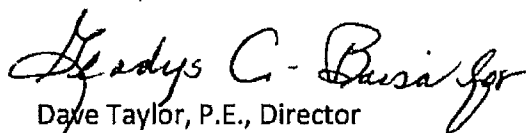
- Use EPA WaterSense labeled plumbing fixtures.
- Install flow reducers and faucet aerators in all plumbing fixtures wherever possible.
- Install dual flush toilets with high efficiency models that use 1.28 gallons per flush or less.
- Install showerheads with a flow rate of 1.5 gallons per minute (gpm) at 60 pounds per square inch (psi).
- Install bathroom sink faucets with fixtures that do not exceed 1 gpm at 60 psi. Laundry facilities and/or individual unit machines must use Energy Star labeled washers.

Outdoor Conservation Measures:

- Use Smart Approved WaterMark irrigation products. Examples include evapotranspiration (ET) irrigation controllers, drip irrigation, and water saving spray heads.
- Avoid plant fertilizing and pruning that would stimulate excessive growth. Time watering to occur in the early morning or evening to limit evaporation. Limit turf to as small an area as possible.
- Use native climate-adapted plants for landscaping. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species.
- Dust control: Reclaimed water for dust control is available from the Kahului Wastewater Treatment plant at a reasonable cost and should be considered as an alternative source of water for dust control during construction.

Attached are BMPs for Parking Lots. Should you have any questions, please contact staff planner Audrey Dack at (808) 463-3109 or Audrey.dack@co.maui.hi.us.

Sincerely,



Dave Taylor, P.E., Director

apd

"By Water All Things Find Life"

Parking Lots - Best Management Practices (BMPs)

Follow these BMPs to control pollutant discharges. The objectives are: 1) to keep pollutants from contacting rain, and 2) to keep pollutants from being dumped or poured into the storm drains. The goal is "only rain in the storm drain."

- Sweep parking lots frequently: at least weekly, daily is preferable. Small areas can be swept with a broom, whereas larger areas may need a vacuum truck or mechanical sweeper. Dispose of sweepings properly.
- Post signs to control litter and prevent patrons from working with automobile fluids in your parking lot (changing oil, adding transmission fluid, etc.). You could be liable for their mess on your property!
- Use absorbent material to clean up automotive fluids on the parking lot. Dispose of absorbent material properly. Hazardous materials must comply with hazardous materials storage and disposal requirements.
- Pick up litter daily; dispose of debris in the garbage.
- Keep dumpster areas free of litter and lids closed.
- Wash water from all cleaning operations must be discharged to the sanitary sewer.
- If cleaning with water and detergent is needed, use a mobile washing unit that is self-contained; **do not** allow the wash water (whether or not it is soapy) to discharge to the storm drain system.



June 9, 2017

Dave Taylor, P.E., Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai'i 96793

SUBJECT: Early Consultation for the Proposed Kahului Lani Affordable Senior Housing at Kane Street, Kahului, Maui, Hawai'i, TMK (2)3-7-005:003

Dear Mr. Taylor:

Thank you for your letter dated March 16, 2017, providing early consultation comments on the proposed Kahului Lani Affordable Senior Housing project. On behalf of Catholic Charities Housing Development Corporation (CCHDC), we offer the following responses in the order of your comments:

1. The Draft Environmental Assessment (EA) for the project will identify demand and sources of potable and non-potable water for the project. It is noted that the project area is serviced by the Central Maui water system and that there are existing 8-inch water transmission lines adjacent to the property on School Street and Kane Street and two 2-inch water meters. It is further noted that there are fire hydrants located on School Street and Kane Street.
2. Your suggested measures to minimize infiltration and runoff during construction will be shared with CCHDC and the contractor.
3. Your recommended indoor and outdoor conservation measures will be shared with CCHDC for consideration.

We appreciate your input, and will include a copy of your comment letter along with this response letter in the Draft EA for the proposed project.

Dave Taylor, P.E., Director
June 9, 2017
Page 2

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

Very truly yours,



Marisa Fujimoto
Senior Associate

MF:lh

cc: Gary Furuta, GSF, LLC (on behalf of CCHDC)
Chad McDonald, Mitsunaga & Associates, Inc.

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REFERENCES

IX

IX. REFERENCES

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**Central Maui Affordable Rental
Housing Market Study**

APPENDIX

A

I. INTRODUCTION OF STUDY

Ricky Cassiday is a market researcher who specializes in analyzing residential real estate markets has retained to perform a study analyzing the affordable rental housing market on the island of Maui. This study describes on the historical, current, and projected rental market conditions and trends in order to help analyze the feasibility of the proposed development, as well as to comply with the study guidelines.

The study entailed collecting, comparing and analyzing information that has a bearing on the numerous aspects of market demand for the proposed project, including but not limited to publicly available real property, economic and commercial data. Rental information was collected from rental agencies, condominium resident managers, and the classified ads on-line with Craigslist, Rental Jungle, and other services. Income and demographic information was obtained from the State of Hawaii, City and County of Honolulu, Bureau of the Census, Ribbon Demographics and CLARITAS, a Nielsen Company.

The study conforms to the affordable housing study guidelines published this year by the state agency charged with affordable housing development, Hawaii Housing Finance & Development Corporation. The data and statements herein are based on independent research by Ricky Cassiday and are in no way contingent upon outside findings or recommendations.

II. SCOPE OF WORK

As stipulated by the Hawaii Housing Finance and Development Corporation, this Market Study will include:

- A statement of the competence of the market analyst.
- A description of the proposed site.
- Geographic definition and analysis of the market area.
- Identification of the project including location, unit counts, income levels and target population.
- Analysis of household sizes and types in market.
- Demographic analysis of the number of households in the market area which are income eligible and can afford to pay the rent. Estimate of capture rates for the market areas.
- A description of comparable developments in the market area.
- Analysis of practically available rents, vacancy rates, operating expenses and turnover rates of comparable properties in the market area.
- Analysis of practically available rents, vacancy rates and turnover rates of market rate properties in the market area.
- Expected market absorption of the proposed rental housing, including a description of the effect of the market area.
- Identification and commentary of proposed projects in the market areas.

III. MARKET ANALYST

Ricky Cassiday focuses exclusively on residential market research in the state of Hawaii, servicing the developer, lending and landowning community with regular reports on the housing markets. Additionally, it conducts numerous feasibility studies, including the for-sale and for-rent affordable housing projects – to date, 42 on Oahu, 6 on the Big Island, 4 on Maui and 9 on Kauai.

IV. DESCRIPTION OF PROPOSED SITE

SITE: The subject property, Kane Street Senior Rental, is located in Kahalui in Central Maui, in the County of Maui in the state of Hawaii. The majority of the primary housing is located in Central Maui, as well as most of the housing development on this island, located within the Kehalani and Maui Lani master planned communities.

The subject property is in a desirable location since it is close to shopping, support services restaurants, transportation, parks, and medical facilities. For instance, there are a number of restaurants, grocery stores, sundry shops and other medical and personal services within easy walking distance. It is also within easy walking distance of the county's free transportation system.

The major hospital on the island, Maui general is about a mile away. In addition, it lies at the epicenter of the island's population and employment base; this makes it convenient to most families living on the island to visit.

As it sits within the community business district, it is suitable for multi-level attached residential housing development.

V. GEOGRAPHIC DEFINITION OF MARKET AREA:

The County of Maui will serve as the market area for this study. Such a definition was analyzed and deemed appropriate for the following reasons:

- Almost 99% of entire island's population lives in within a 22 mile radius
- All major medical facilities are located within a 5 mile radius, and
- There is an acute need for any affordably priced shelter on the island.

Maui County is the third largest county in the state, as ranked by population and economic activity, behind the City & County of Honolulu (Oahu) and the Big Island of Hawaii. Historically, Maui- Lahaina - was the original port of the nation of Hawaii, as well as the first resort area in the state. Maui has since grown into the state's second largest tourist destination, thanks the major resort areas in West and South Maui.

Agriculture, specifically sugar cane and pineapple crops, had been the historic mainstay of Maui's economy starting in the 19th century. However, high costs and third world competition gutted those businesses, and, in their place arose Diversified agriculture (macadamia nuts, vegetables and flowers). The tourism and service industries replaced agriculture as the driver for the county's economy. The visitor industry encompasses three primary destination-resort master planned communities, several similar vacation oriented communities, and the ancillary businesses of real estate, retail, restaurant, service and travel industries. With the growth of tourism, the population growth was stimulated, rising almost 75 percent since 1975.

Today, it has one of the strongest brands in the global visitor industry, as well as a somewhat diversified economy, at least relative to the other neighbor islands in the state (with agriculture, services and high technology being the other mainstays). That said, the main driver on the island of economic activity is money spent by visitors and homeowners from outside the island on recreation or lifestyle. Indeed, like the rest of the state, the county's economy's comparative advantage involves a very high quality of life, relative to the rest of the world, including resorts and second home communities.

The majority of the primary housing development is located in Central Maui, while the majority of the second home housing development is located in and around the resorts in West and South Maui, primarily the areas of Napili and Kihei. Second home development is a major component of the housing development on the island, accounting for around 25-30% of total sales and 50-60% of the gross revenues (on average, 2003-2013).

VI. ANALYSIS OF MARKET AREA:

DESCRIPTION OF MARKET:

The following are highlights from the 2014 American Community Survey 1-Year Estimates, and they describe the statewide market:

- In 2014, the median household income for Hawaii was \$69,592, not statistically significant from the 2013 median income of \$69,027. Hawaii ranked 6th in the nation in regard to the highest median household income.
- Hawaii's median family income in 2014 was \$79,187 and was not statistically significant from last year's median value of \$80,992. Among all states in the nation, Hawaii had the 8th highest median family income.
- The percent of people in poverty increased from 10.8% in 2013 to 11.4% in 2014. This difference, however, was not statistically significant. The State of Hawaii ranked as the 45th lowest in the nation for percent of people in poverty.
- The percent of families in poverty increased from 7.1% in 2013 to 7.8% in 2014, but the difference was not statistically significant.
- The percent of population with no health insurance coverage among Hawaii's civilian population was 5.3% in 2014, a decrease from the 6.7% in 2013. This change was statistically significant. Hawaii tied with D.C. for the third lowest percentage of health insurance coverage in the nation.
- Hawaii's median housing value increased from \$500,000 in 2013 to \$528,000 in 2014. This increase was statistically significant. Hawaii remained #1 in the ranking with the highest median housing value in the U.S.
- The median housing costs for owners with a mortgage fell from \$2,245 in 2013 to \$2,173 in 2014. This difference was statistically significant. The State of Hawaii ranked 3rd among all states in regard to highest median cost.

MARKET AREA HOUSING DEMAND:

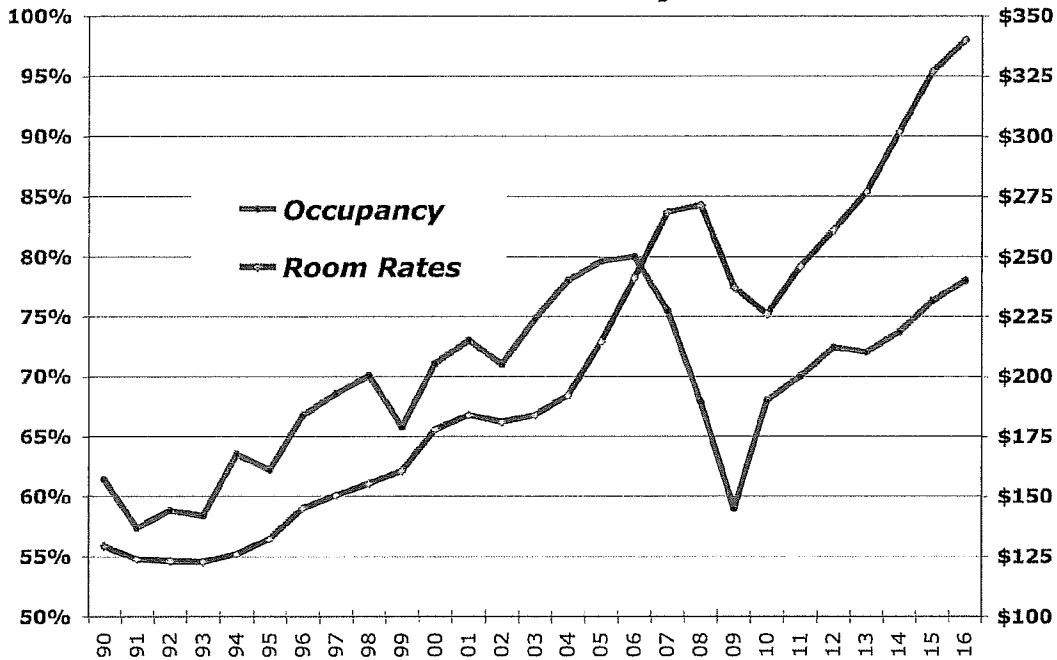
Simply put, rents move closely in synch with an area's economic growth, and the mechanism by which this growth occurs is via rising incomes and higher job counts. Both feed directly into demand for housing.

In the short run, economic growth is determined by trading activity, the most important of which is the level and balance of trade between the area and its major trading partners. In the case of Maui County, the major trade is in recreational goods and services, the largest of which is the visitor industry. The health of this industry is tied to the health of the economies that send visitors to Maui County. The second most important industry is federal spending, mainly national security

items, as Hawaii has the second largest concentration of service personal globally. Then, in the longer run, economic growth is also determined by population changes (both migration and demographic) and lifestyle preferences.

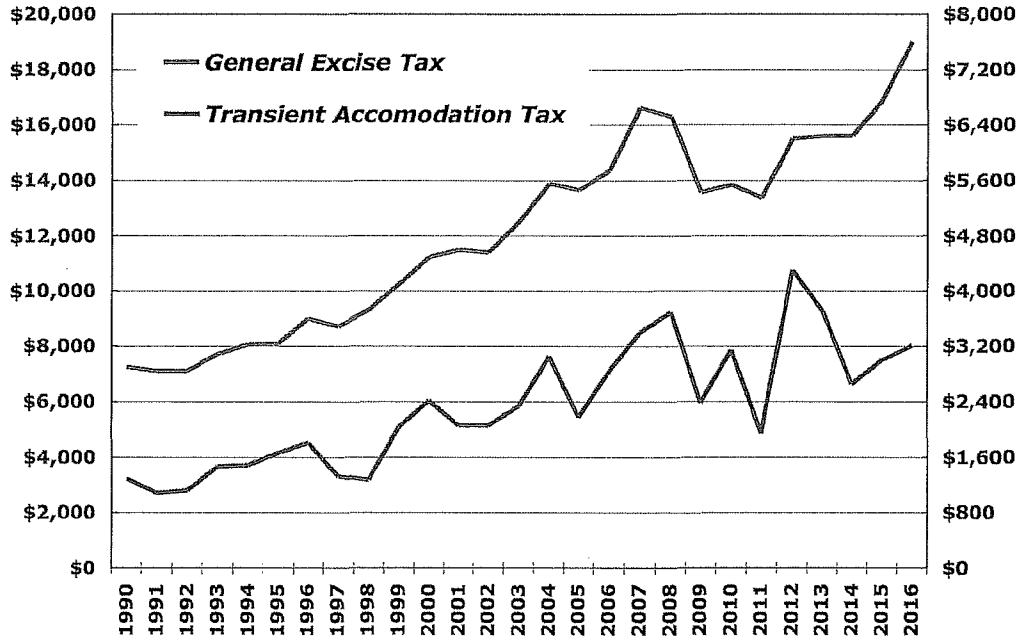
As Maui County's major industry is tourism, the major trading partners here would be the US, Canada and Asia (mainly Japan) on the international level; then California, and the west coast states, on the national level; and finally on the state level. With regard to that, the economic health of these trading partners currently is growing, thanks to a stable interest rate environment, low energy costs and growing jobs and incomes, particularly in the US and particularly in California.

Maui Visitor Industry Trends



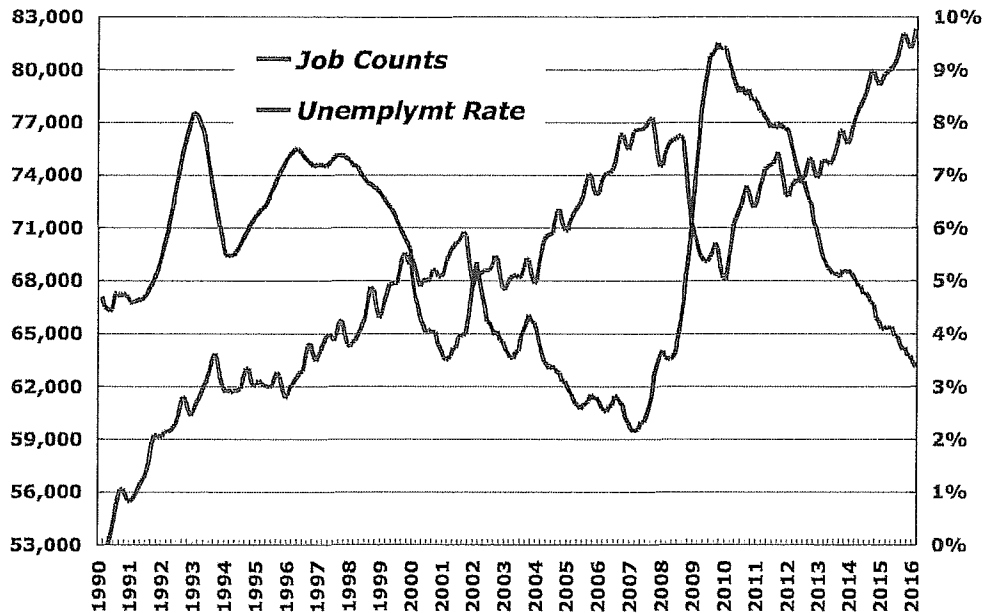
Currently, Maui is rebounding strongly out of a long and drawn out economic down cycle, thanks to a boom in tourism. This is confirmed in both the room rates and occupancy percentage, and can be seen again in the rise in county tax revenues from both the room tax and the general excise tax. This is leading to a recovery/growth in other sectors of the economy, notably business services, hotels/restaurants/retail and health care.

Sales Taxes & Visitor Tax



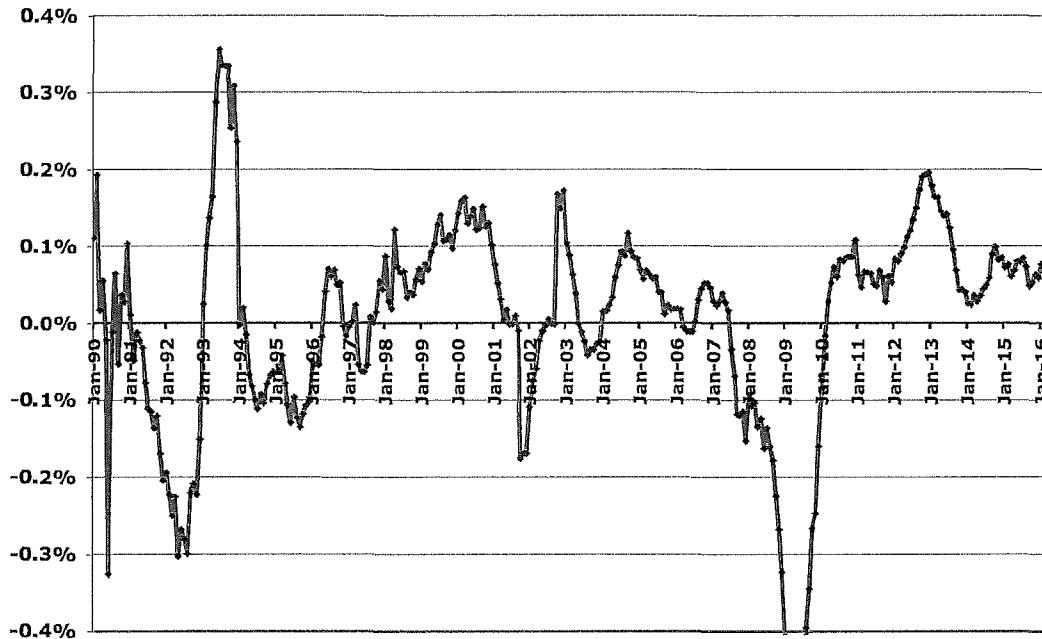
Thanks to the visitor services activity, the county's unemployment rate has dropped significantly over the last three years, while job counts have increased over the same period.

Jobs & Unemployment, 3 Month Ave



The growth in employment has outstripped the growth in the workforce population, as seen below (the positive percent shows more job growth than the population of working age individuals. This will lead in higher in-migration, as job seekers are attracted by job opportunities.

Growth in Workforce vs Jobs



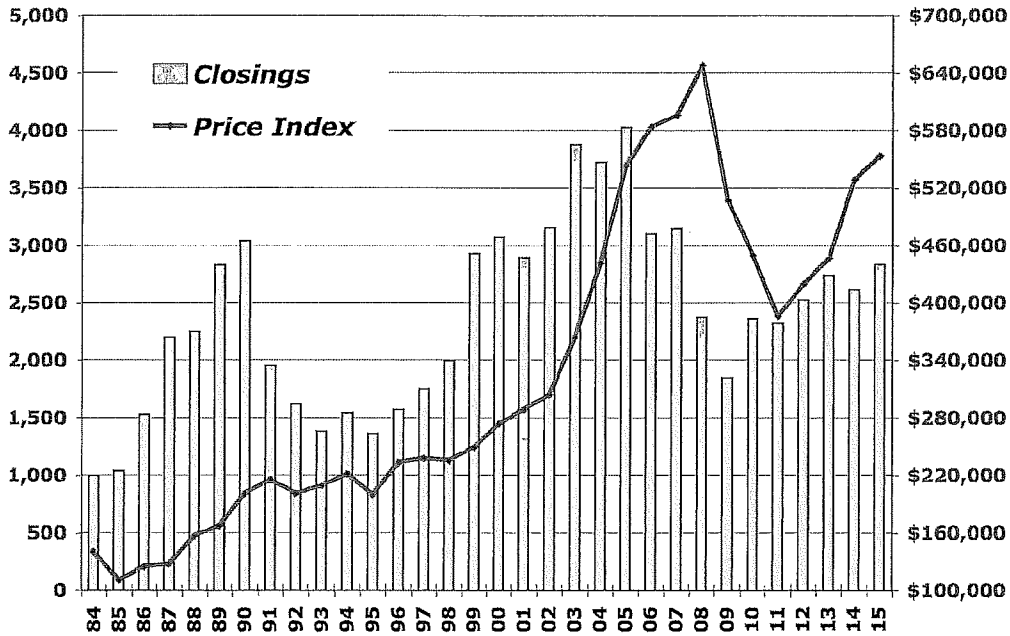
In-migration of working age individuals will likely be in the construction and visitor services. As seen in the following chart, construction – in the residential sector – went down significantly since the recession in 2008. Currently, it is climbing upwards, out of the hole it has been in.

Turning to the residential market, Maui's real estate supply is inflexible and constrained, but to a greater degree – the political climate there is decidedly unfriendly towards any and all attempts to expand the supply of residentially zoned land. At the same time, demand for residential real estate is both flexible and strong, particularly in good economic times and over the long run.

In combination, this results in a market that can dramatically volatile, up and down, in terms of sales and, to a lesser extent, prices. We note that in the past cycles, prices have been relatively 'sticky' downward, i.e., generally holding on to accumulated values. In this cycle, however, the price appreciation was so extensive and lasted so long, that the ensuing price depreciation during the down cycle has also been extensive.

Currently, Maui's for-sale residential markets have moved well into the up-cycle, with both sales activity and prices on the rise. The chart above shows total residential sales, as well as an aggregate price index. It confirms the cyclicity of the market, particularly the compressed price appreciation and depreciation. It also, with some extrapolation, that this may run for another 3-4 years (barring external events, smile).

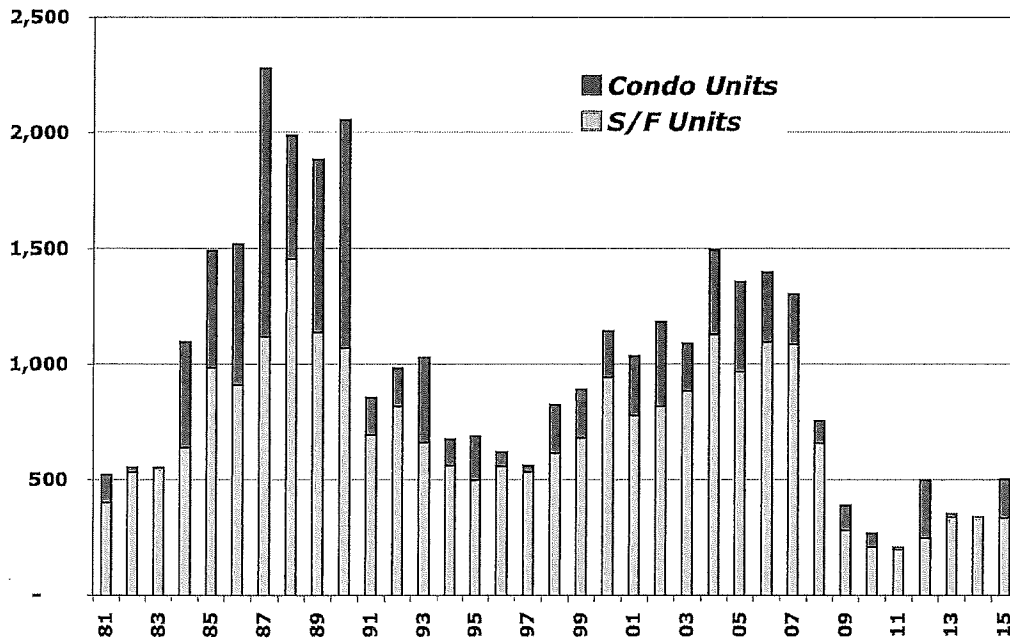
Total Sales: New, Resale, Condo, Homes



MARKET AREA HOUSING SUPPLY:

The best solution to combat the growing demand is to increase the supply of housing for this segment of the population. Unfortunately, Maui's housing development process is uncertain, time consuming and expensive, the future supply of units is low.

Maui Permit Totals

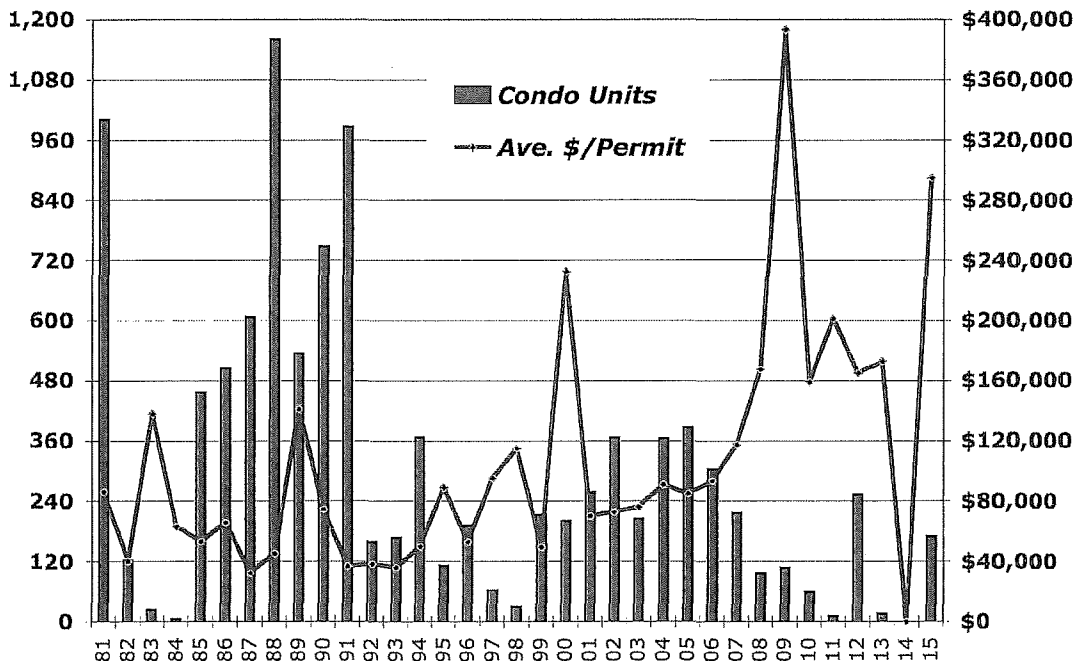


Factors that contribute to such short supply include the scarcity of land as well as the arduous process of zoning for housing under the laws governing land use. Furthermore, construction is costly, labor is tight and the cost of inputs is high due to the long supply chain.

The aforementioned can be seen in the table below - condo production has been declining since the 1970s, for reasons noted above. A quick overview of the next chart shows that the number of permitted units has sunk so low that it set an all-time historical low three years ago.

As such, the combination of inelastic supply and elastic demand lends to this market's extreme volatility: over the swing between the bottom and the top of the market, sales can more than triple and prices can more than double. Furthermore, the length of the cycle is usually 5 to 8 years, depending often on external conditions: the direction of interest rates, economic growth in the visitor and offshore buyer markets and the costs of materials.

Maui Condominium Permits



VII. IDENTIFICATION OF PROJECT

LOCATION: The subject property, Kane Street Senior Rental, is located in Kahalui in Central Maui, in the County of Maui in the state of Hawaii. The majority of the primary housing is located in Central Maui, as well as most of the housing development on this island, located within the Kehalani and Maui Lani master planned communities. It is close to shopping, support services restaurants, transportation, parks, and medical facilities. For instance, there are a number of restaurants, grocery stores, sundry shops and other medical and personal services within easy walking distance.

PROJECT: This is a low-income residential project to eligible senior households, which would allow them to continue to live in a desirable mixed-use neighborhood with easy access to medical and other services via the local transit system.

The project concept is to build 165 one-bedroom one-bath units, in two six story buildings. There will be extensive parklands surrounding these buildings, as well as an accessory multi-purpose building.

INCOME LEVELS: The target population will be senior citizens, age 55+, who have incomes at or below 30%, 50% and 60% of the Area Median Income. The unit mix is described below:

PROPOSED PROJECT SUPPLY

AMI	Units	Rents
30%	16	\$431
50%	66	\$625
60%	82	\$700
	164	

TARGET POPULATION: The project is limited by deed restrictions to elderly 62 years and over and disabled.

VIII. ANALYSIS OF HOUSEHOLD SIZES & TYPES

The study guidelines call for an analysis of household sizes and types in the market.

Since Kane Street Senior Rental is categorized as attached housing, and is going to be a one-bedroom unit, the study will focus on this type of dwelling. Our analysis of household types and sizes will employ housing statistics provided by the County of Maui's Real Property Assessment and Property Assessment Division.

The majority of the attached one bedroom unit stock on the island is old. It also, of late, has a very high accessed value, signifying that this is not housing that will be available to lower-income households.

CONDOMINIUM HOUSING PRODUCTION TRENDS, ISLAND WIDE

	Units	Ave. Sq Ftg	Ave. Accessed Values	Ave. Values Per Sq Ft
1955 or less	1	672	\$155,800	\$232
1960-1964	20	821	\$264,830	\$323
1965-1969	564	683	\$302,991	\$444
1970-1974	1,857	664	\$350,623	\$528
1975-1979	2,591	720	\$396,067	\$550
1980-1984	1,581	769	\$377,051	\$490
1985-1989	951	722	\$274,963	\$381
1990-1994	469	779	\$333,171	\$428
1995-1999	77	891	\$426,369	\$479
2000-2004	82	900	\$505,740	\$562
2005-2009	303	693	\$462,134	\$667

Another way to show this is to isolate just for those one-bedroom units that are owner occupied.

CONDOMINIUM HOUSING, OWNER-OCCUPIED, ISLAND WIDE

	Units	Ave. Sq Ftg	Ave. Accessed Values
1960-1964	1	1,008	\$314,300
1965-1969	43	666	\$272,058
1970-1974	184	606	\$230,198
1975-1979	266	681	\$297,714
1980-1984	128	677	\$215,270
1985-1989	54	725	\$235,730
1990-1994	84	714	\$235,890
1995-1999	12	741	\$290,883
2000-2004	6	684	\$272,500
2005-2009	7	667	\$213,243

Finally, when we look at the housing just in the immediate vicinity, we see it is half of what there is on the island.

CONDOMINIUM HOUSING, OWNER-OCCUPIED, 5-MILE RADIUS

	Units	Ave. Sq Ftg	Ave. Accessed Values
1965-1969	9	537	\$107,456
1970-1974	103	604	\$215,675
1975-1979	130	617	\$234,232
1980-1984	84	626	\$186,699
1985-1989	9	641	\$203,389
1990-1994	59	596	\$150,724
1995-1999	12	741	\$290,883
2000-2004	6	684	\$272,500
2005-2009	4	734	\$199,400
1965-1969	9	537	\$107,456

Hawaii has one of the lowest percentage ownership housing markets in the nation and is among one of the least affordable. The same is true for Maui, but even more so. Such can be attributed to the limited supply of land, very high costs of production and very strong housing demand, resulting in low housing production and high prices. The problem is exacerbated by the fact that housing prices have exceeded household incomes for over 25 years.

IX. DEMOGRAPHIC ANALYSIS OF MARKET AREA HOUSEHOLDS

The scope of work calls for a demographic analysis of the number of households in the market area, which are income eligible and can afford to pay the rent. The target market is comprised of those senior households who satisfy the income restrictions and other requirements for entering into a rental contract for these units.

This section starts by looking at the level and the sources of long-term rental housing demand for this and all demographics on the island of Maui, given expected population changes, and analyzes how this would fit with the proposed projects' development plan.

TOTAL HOUSEHOLD DEMAND: The following tables show population growth per annum, starting in 2000 and ending in 2015, the last year we have population data for. This time frame roughly encompasses an entire real estate cycle, as 2000 was a few years into the upswing of the 1998-2006 market, as 2015 is a few years past the bottom of this market, 2010-2011.

The population change per annum is changed into a household change per annum by factoring it by the average number of people in a household, as determined by the US Census. This then is new households in the market, and equates to housing need.

It is then compared to the number of homes available to them that were produced that year. If there were more homes produced than households were formed (an assumption), then there would be a surplus of supply (homes) over demand (population growth), and vice versa.

A note here: the number of homes shown as produced are actual new homes created, as defined in the tax assessor's data base as 'Year Built.' However, not all those new homes were available to them, particularly those at the lower income levels. As seen in this report, a preponderance of new homes are produced for households making a higher income, as they are a more profitable and less risky market segment.

Therefore, total housing production is reduced by a factor that reflects whether these new homes were available to local families or not. This factor is related to the by the percentage of housing stock in the county that is owner-occupied (i.e., whether they were sold to households that occupy the dwelling unit, or to those who do not, meaning second home owners and investors). When the entire stock of housing of condominiums and single-family homes in the county was considered, 82% of condominiums and 28% of single-family homes were not owner-occupants.

Given that, we determined the factor should be set at a level that was less than half the percentage of non-owners. This was because some of these non-owner units would be rented out by their owner-investors, and thus they would be available as rental units. We deemed this to be conservative, as it is our experience that most newly created housing is not absorbed by investors, save at the higher price ranges.

Thus, housing production was compared to households created, and the difference was calculated per annum, showing housing need surplus or deficit, and then calculated cumulatively.

MAUI POPULATION GROWTH TO HOUSING DEMAND, 2001 to 2015

	Population	Annual Change	Persons Per Household	Households Created	Housing Production	Need vs. Production	Cumulative Need
2000	129,078		2.91		591		
2001	132,428	3,350	2.90	1,155	772	(383)	(383)
2002	134,583	2,155	2.89	744	540	(204)	(587)
2003	137,596	3,013	2.89	1,043	735	(308)	(895)
2004	140,625	3,029	2.88	1,051	719	(332)	(1,227)
2005	143,448	2,823	2.87	984	1,001	17	(1,210)
2006	145,776	2,328	2.86	815	551	(264)	(1,473)
2007	148,117	2,341	2.85	823	600	(222)	(1,696)
2008	151,424	3,307	2.83	1,167	442	(725)	(2,420)
2009	153,393	1,969	2.82	698	214	(484)	(2,904)
2010	155,052	1,659	2.82	588	124	(465)	(3,369)
2011	156,651	1,599	2.82	567	68	(499)	(3,868)
2012	158,510	1,709	2.82	606	163	(443)	(4,364)
2013	160,947	2,437	2.82	863	262	(601)	(4,965)
2014	163,398	2,451	2.82	868	305	(563)	(5,528)
2015	164,637	1,239	2.82	439	341	(98)	(5,626)

Under these assumptions, the model indicates that every year in this time period, save for two, there was greater household growth than housing production, or an imbalance favoring higher prices (and thus higher rental rates). Further, this imbalance, or unmet housing need, gets carried forward to the next year, and added to the next year's differential. As seen, the potential for unmet housing need, just over the last 12 years, is 5,000 units.

Our analysis of this market begins with the population growth 2010-2020, using data from the US Census. Again, we took the change in the population, and then used that to derive housing demand. In this, we averaged the size of household over this ten-year time period, and it came out to 2.82 people per household on average.

HOUSING NEED, PER DBEDT 2040 POPULATION PROJECTIONS

	2000	2010	2020
Resident population	129,078	155,214	181,000
Pop Growth		26,136	25,786
Household size (US Census)	2.87	2.91	2.82
Housing Need		8,981	9,131
Housing Need, p.a.		898	913

We again went compare future household growth to past housing production, the growth of housing supply, over the 2000-2010 period. This measure of total homes supplied (from the table above) was 5,698 units, or 570 units per annum. Thus, comparing the future household growth of 9,131 dwellings to past housing production available to owner occupants, this exercise shows a deficit of 243 dwelling units, on an annual basis: $570 - 913 = (243)$, shortage of homes relative to housing need.

Accounting for past and future, this model thus shows that more than 9,100 dwelling units will be needed in the county to accommodate future projected household housing need.

SENIOR MARKET DEMAND

Kane Street Elderly will be producing only one-bedroom unit rentals for those making approximately 30%, 50% and 60% of the Area Median Income (AMI). The table below describes the project’s number of units by AMI count.

UNIT BREAKDOWN

Counts	
AMI @ 30%	16
AMI @ 50%	66
AMI @ 60%	82

Next, the table describes the affordable guidelines on income limits, which can then be used to calculate a rental range that a senior household potentially could pay for housing.

MULTIFAMILY TAX SUBSIDY PROJECT INCOME LIMITS, 2015 MAUI

AMI	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person
30%	\$15,770	\$18,020	\$20,280	\$22,530	\$24,330	\$26,130
50%	\$26,290	\$30,040	\$33,800	\$37,550	\$40,550	\$43,560
60%	\$31,540	\$36,050	\$40,550	\$45,060	\$48,660	\$52,270

Using these income guidelines, HCDCH then sets the prices that can be charged to households under the affordable housing regulations. These affordable housing prices are set according to, primarily, the size of household (number of persons) and annual interest rates. Per household size, there is an occupancy requirement for the minimum and maximum number of persons in a household buying (or renting) an affordable unit.

OCCUPANCY REQUIREMENT

Bedrooms	Occupancy Range	Occupancy Likely
0 Bedroom	1-2 Persons	1-2 Persons
1 Bedroom	1-3 Persons	1-2 Persons
2 Bedroom	2-5 Persons	2-3 Persons

Thus, the maximum household size for a studio unit is two persons a one-bedroom unit is three persons and for a two-bedroom unit, it is five persons. However, for practical purposes, and to be conservative, we will assume that most of these units will be bought by less than the number allowable. For instance we think the likely occupancy for a one-bedroom units will be a household having two people qualifying.

The target AMI income limits per senior household, according to the HUD 2015 AMI definition, are described below. The underlying data comes from Ribbon Demographics, a Californian firm that specializes in taking the 2010 US Census data and representing it in ways that are meaningful to those seeking to understand the demographic demand for affordable housing. In particular, it identifies what kinds of housing (size, in term of bedroom counts) and at what price ranges those in the market might have a demand (note: this is a projection to 2015, using the info given by those polled in the 2010 Census).

The following table then takes the data and translates it into the total population per AMI on the island that are renting, then the total population that are owning, and then finally the combination of the two. The project allows two people per household, so that data table below shows this for both one and for two person households.

SENIOR DEMAND, 62 YEARS +:

We start with showing the demand for seniors aged 62 years and older.

POTENTIAL DEMAND, RENTER ONLY HOUSEHOLDS BY AMI AND FAMILY SIZE

AMI	1-Person	2-Person	Totals
30%	973	238	1,212
50%	757	250	1,007
60%	313	172	485

POTENTIAL DEMAND, SENIOR RENTERS & OWNERS BY AMI AND FAMILY SIZE

AMI	1-Person	2-Person	Totals
30%	1,674	838	2,512
50%	1,335	826	2,161
60%	586	496	1,082

The next step is to take the number of potential households who would qualify to live in these units, and compare them with the number of units to be rehabilitated by this project. This is done below.

SUPPLY VS POTENTIAL DEMAND, BY AMI, 2015

AMI	Supply	Renters Totals	Renters & Owners	Market Share, Renter	Market Share, Renter & Owner
30%	16	1,212	2,512	1.32%	0.64%
50%	66	1,007	2,161	6.55%	3.05%
60%	82	485	1,082	16.91%	7.58%

SENIOR DEMAND, 55 YEARS +:

In the interest of giving complete information, the tables below show how changing the age restriction from 62 years and older to 55 years and older changes the size of the potential demand.

POTENTIAL DEMAND, 55 YO+ RENTER ONLY HOUSEHOLDS BY AMI AND FAMILY SIZE

AMI	1-Person	2-Person	Totals
30%	1,264	388	1,652
50%	951	391	1,343
60%	407	208	614

POTENTIAL DEMAND, 55 YO+ RENTERS & OWNERS BY AMI AND FAMILY SIZE

AMI	1-Person	2-Person	Totals
30%	2,069	1,106	3,174
50%	1,595	1,037	2,632
60%	721	574	1,296

SUPPLY VS POTENTIAL DEMAND, BY AMI, 2015, 55 YO+

AMI	Supply	Renters Totals	Renters & Owners	Market Share, Renter	Market Share, Renter & Owner
30%	16	1,652	3,174	0.97%	0.50%
50%	66	1,343	2,632	4.91%	2.51%
60%	82	614	1,296	13.36%	6.33%

This then shows the level of potential demand is clearly available potentially to absorb these rental units. Plus, these units will be very attractive to those seniors living in other projects, especially in projects located further away from the center of the city, and in projects that were built a decade or more ago.

X. DESCRIPTION OF COMPARABLE PROPERTIES IN THE MARKET AREA

The following table summarizes the number of affordable rental unit projects in the county of Maui for seniors by their AMI and their unit counts.

SUPPLY OF SENIOR HOUSING, COUNTYWIDE

AMI	Projects	Units
30%	3	106
50%	12	458
60%	1	180
Total	16	744

The next table summarizes the same, but only for Central Maui (including Kihei and Upcountry).

SUPPLY OF SENIOR HOUSING, CENTRAL MAUI

AMI	Projects	Units
30%	2	64
50%	8	334
60%	1	180
Total	11	578

The next table shows more detail, but only for Central Maui (including Kihei and Upcountry).

SUPPLY OF SENIOR HOUSING, CENTRAL MAUI, BY BEDROOM TYPE

AMI	Projects	Units	Studios	1 Beds
30%	2	64		64
50%	8	334	122	207
60%	1	180		179
Total	11	578	122	450

XI. ANALYSIS OF COMPARABLE PROPERTIES IN THE MARKET AREA

The next table describes the universe of comparable one bedroom affordable housing units on Maui being rented to seniors making 30%, 60% and 50% of AMI. Of interest is their vacancy levels and wait lists.

We start with the units serving the 30% of AMI senior market.

AFFORDABLE RENTAL HOUSING STOCK, SENIORS, CENTRAL MAUI 30% AMI

Name	Units	Studios	1 Beds	Vacancies	Waitlist
Hale Mahaolu Ehiku, Ph. IA	34		34	0.0	61
Hale Mahaolu Ehiku, Ph. II	30		30	0.0	166
Totals	64		64	0.0	114

Next, we look into the units serving the 50% and 60% of AMI senior market.

AFFORDABLE RENTAL HOUSING STOCK, SENIORS, CENTRAL MAUI 50% AMI

Name	Units	Studios	1 Beds	Vacancies	Waitlist
Hale Mahaolu Akahi	110	73	37	2.0	73
Hale Mahaolu Eha	40	39		0.0	279
Hale Mahaolu Ehiku, Ph. IB	20		19	0.0	79
Hale Mahaolu Ekolu	42	10	31	0.0	250
Hale Mahaolu Elima	60		59	1.0	302
Lokenani Hale	62		61	0.0	100
Totals	334	122	207	3.0	154

AFFORDABLE RENTAL HOUSING STOCK, SENIORS, CENTRAL MAUI 60% AMI

Name	Units	Studios	1 Beds	Vacancies	Waitlist
Hale Mahaolu Elua	180		179	1.0	370

As seen, per the tables below, there are very few vacancies and long waitlists.

XII. ANALYSIS OF MARKET RATE PROPERTIES PROPERTIES IN THE MARKET AREA

It is worth noting that in Hawaii, there are very few large unit rental properties existing - as opposed to the great many small unit properties, when compared to other US urban centers. So, as a practical matter, there are no large operators to call and survey for their rents, vacancy rates, operating expenses and turnover rates. Indeed, the same goes for the comparable units in the section above. In light of that, the Internet was used to research websites that specialize in rental units.

OPEN MARKET RENTAL PROPERTIES:

Over the last week in April 2016, we reviewed the area listings for rental apartment units on the Internet over the last 2 months, specifically those advertised as being the 'least expensive'.

The following tables describe those units, and compare it to \$700, the highest rent for the subject property:

ONE BEDROOM MARKET RENTALS, SELECTED OFFERINGS

	Gima Aparts Wailuku	Puuone Kahalui Hale Alii	Wailuku	Haiku Cottage	Kihei, Roomate	Kahalui, Roomate	Lahaina Trailer	Kenilto Kihei	
\$700	\$875	\$1,050	\$1,200	\$1,150	\$880	\$900	\$900	\$970	\$1,200

As seen, the projected rents for these rehabilitated units sit below those of the market. Note: Many of these market comparables are not nearly as advantageously located as this project. As seen, the project's rents are well below those of the market.

OPEN MARKET SENIOR ONLY RENTAL PROPERTIES:

There are two market rate housing projects in Central Maui that cater exclusively to seniors, 55+ years, Kalama Heights and Roselani Place. Kalama Heights targets independent living, while Roselani Place targets assisted living and independent living. As such, Kalama Heights is the only true comparable. Also, note that Kalama Heights has an all-inclusive rent structure, which includes utilities, meals, transportation, and activities, so it is not a true comparable.

KALAMA HEIGHTS OFFERINGS

	Count	Rent
Studio	46	\$2,500.0
One Bed	60	\$3,150.0
Two Bed	14	\$3,900-\$5,000

XIII. PROPOSED PROJECTS IN THE MARKET AREAS

On-Going Master Planned Communities on Maui overall include the following list of major ones that have an impact upon primary housing market.

- Maui Lani consists of approximately 1,000 acres of land in the Central Maui plains that has approximately 950 units completed. Completed phases are the Greens, Grand Fairways North, Grand Fairways, The Island and The Bluffs. There's an upcoming Village project containing mixed use product that will allow both residential and small scale commercial uses of approximately 650 units. Some 2,000 units remain to be developed.
- Kehalani has approximately 550 acres of developable land area with numerous ongoing residential developments and approximately 1,000 units remaining within this project district.

Potential Master Planned Communities are projects in their preliminary stages of development.

- Wallea 670, or Honua'ula, received Maui Planning Commission approval to rezone the land from on agriculture to residential and commercial districts. The owners hope to be allowed to build some 1,400 single-family homes and multi-family units, 2.1 units per acre. There was going to be one golf course and approximately 80,000 square feet of retail space, but there seems to be a change of plan. The Council and Mayor approved their zoning through adoption of an Ordinance and not by the Maui Planning Commission. They agreed that their 250 affordable units would be located offsite, at Kaonoulu.
- Maalaea Mauka may build some 1,100 housing units mauka of the boat harbor. Potentially, it will have different products including affordable, market priced and luxury units.

- Waiehu Mauka Affordable Housing: 100 multi-family units housed in 20 buildings and six (6) single-family residential lots on an 8- acre parcel. The multi-family units will target households earning up to 120 percent of the area median income category.
- Kihei Mauka is a residential project in Kihei, Maui providing 600 new affordable and market-priced homes, a mixture of single-family and multi-family, with prices expected to range between \$300,000 and \$600,000. The first units will be MF, and affordable, and closed in 2018-2019. They sit next to Monsanto and downwind from Sugar Mill
- Pu'unani will be a largely rural 550-unit subdivision with 310 house lots and 240 town homes. It abuts Kehalani, Wailuku Heights II and Waiolani Mauka. It is a development by Towne, Steve Goodfellow of Maui and a partnership led by Lloyd Sodetani of Maui Realty Co. Inc. It is on 210 acres of prime but fallow Maui farmland

PROJECTED NEW INVENTORY:

There may be a number of senior unit projects being planned, but the one that comes to mind is the 61-unit affordable housing project in Pukalani called Hale Maha'olu 'Ewalu Senior Residential Housing Project. It sits within the Kulamalu Commercial subdivision and is being developed by the Dowling Company. It consists of three two- and three-story apartment buildings containing one- and two-bedroom units for seniors.

there is one (1) other affordable senior housing project proposed for the island of Maui. The proposed Kula Ridge Affordable Housing Subdivision includes 34 affordable senior housing units. The units will be duplexes for below-moderate and moderate-income senior households. Unlike the proposed Hale Mahaolu Ewalu project, the Kula Ridge senior housing units will be for sale units. Completion of the units is anticipated by 2015 or 2016.

XIV. EXPECTED ABSORPTION AND IMPACT ON AREA MARKET

RENTAL MARKET CONDITIONS: Condominium living has been an important part of the county's housing market since the late 1960's. With developable land limited and construction costs expensive, multi-family units have been the most efficient way to provide affordable housing, both owning and renting, for a significant percentage of the island's residents.

That said, multi-family housing was also attractive to visitors from outside the island, primarily as a way to lower the cost of their vacation. Further, it also became an opportunity to own a second home and/or to invest in a rental property.

Over the latter part of the 1990's, the county enjoyed strong growth in the demand for these vacation rentals, thanks to the high quality of life in the state and the attractiveness of lifestyle on the island, there are a large numbers of rental units targeting visitors only.

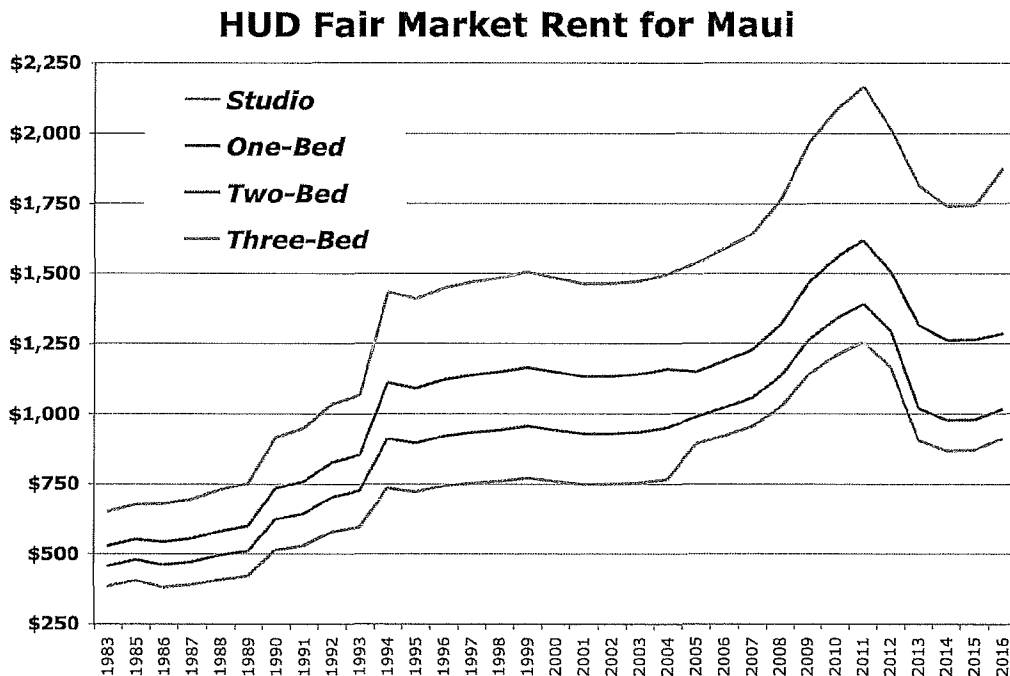
This investor market grew to be the predominant one on Maui today. It is characterized by high rental rates. This is why many of the island's multifamily unit owners cater to this demand both individual owners of rental units, as well as corporate or institutional owners of rental projects.

As far as actual rental rates being charged in the rental market (other than the rental market survey, in the next section), the following is called "Fair Market Rents" (FMR) and comes from the US Housing and Urban Development department, HUD.

Every year, HUD analyzes the rental markets across the country annually, and then publishes a set of gross rent estimates for an area. They include the shelter rent plus the cost of all tenant-paid utilities, minus conveniences, like telephone and Internet.

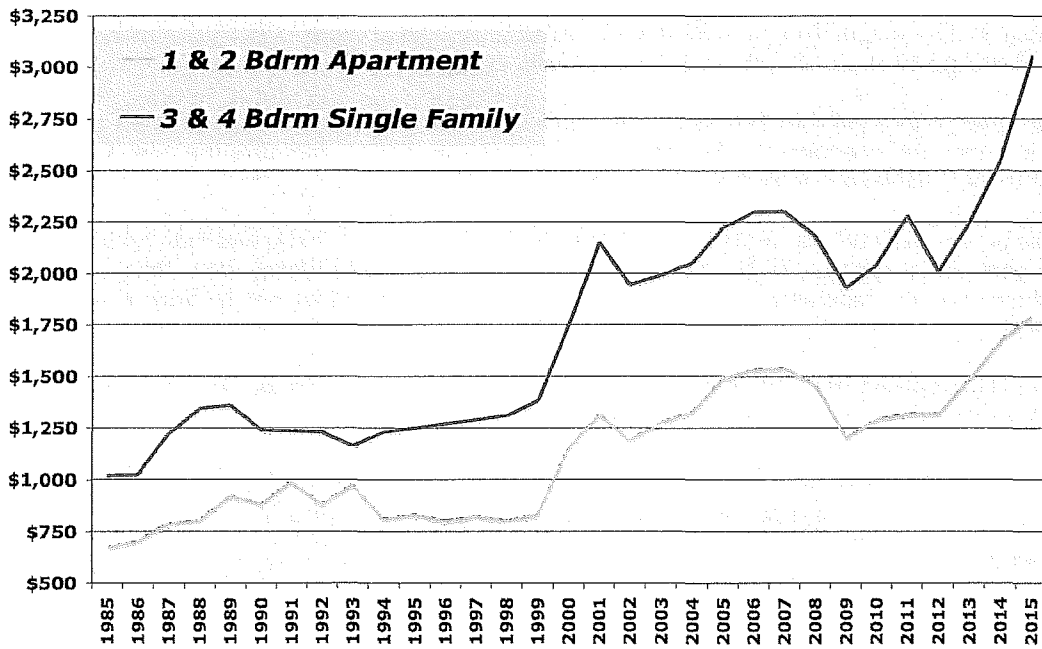
As seen, the HUD defined rents for the county declined in 2011 to 2014, and then accelerated the last year. This appears to be an anomaly, inasmuch as these years were those where the economy and the residential real estate cycle reviving, both for prices and closings in the for-sale market.

Generally speaking, the for-sale and the rental markets are very similar, with one trend closely tracking the other.



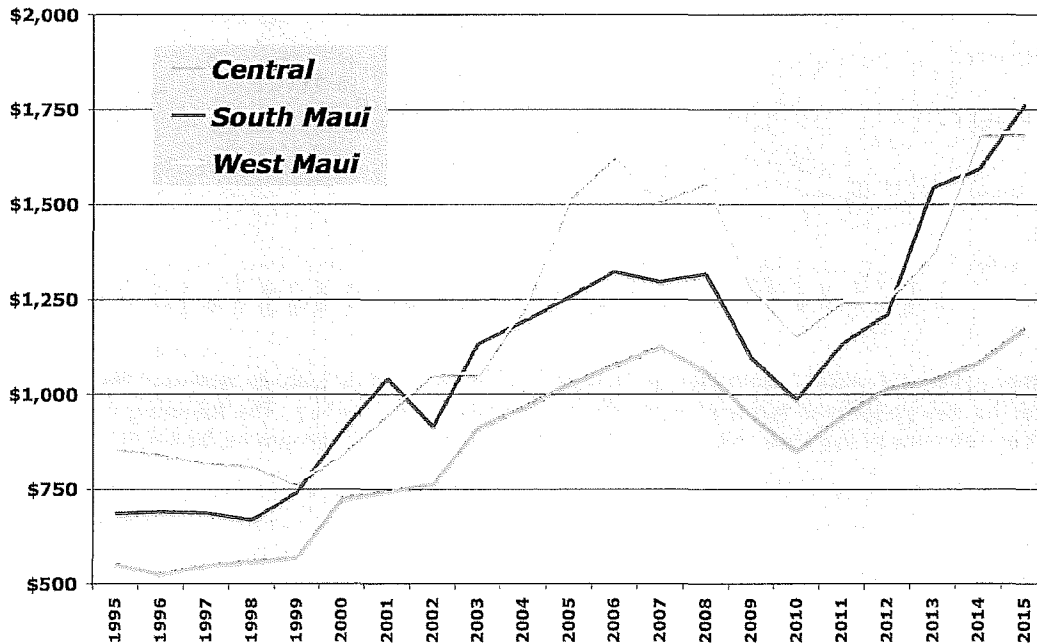
Another source of rental information is Craigslist. In essence, this website replaced the classified ads in the newspapers in terms of being the clearinghouse for renters. The following charts show first the overview of the Maui market, and then focus on the one bedroom multif-family market.

Maui County Rents



The following charts show the data since 1995.

Multifamily One Bedroom Rents, Maui



As seen, the areas with high rental rates are the same areas that have the major resorts on Maui, South and West Maui.

In sum, the rental rate trends are going higher, and this then is indicative of market conditions in which either supply is inadequate, or demand is excessive, or both.

CONCLUSIONS:

The project represents a significant increase in the number of units serving the seniors on Maui, as the following table shows.

SUPPLY OF SENIOR HOUSING, CENTRAL MAUI

AMI	Projects	Existing Units, County	Existing Units, Central	Proposed Units	Proposed Unit Increase, County	Proposed Unit Increase, Central
30%	2	106	64	16	15%	25%
50%	8	458	334	66	14%	20%
60%	1	180	180	82	46%	46%
Total	11	744	578	164	22%	28%

That said, given the perennial imbalance between the supply and demand in this market area for affordable rental housing, we expect that this project will be met by strong interest from renter households in these newly constructed rental units. This project, in particular, benefits from a very desirable location in the center of the urban core.

Thus, it is reasonable to expect the project will be achieving 97%-100% occupancy in the first 12 months, post-completion. And, given the high demand for rental housing and the low numbers being supplied, we believe that the effect on the market will be negligible, at least in terms of causing any softness in asking rental levels from current rental landlords.

**Archaeological
Assessment Report**

APPENDIX

B

SCS Project 501-1

**AN ARCHAEOLOGICAL ASSESSMENT REPORT OF
APPROXIMATELY 6.926 ACRES OF LAND IN WAILUKU AHUPUA'A,
WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII
[TMK: 3-7-004: 001; TMK: 3-7-005: 003, 011, & 023]**

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INTRODUCTION

Scientific Consultant Services (SCS), Inc. conducted an Archaeological Inventory Survey (AIS) in Kahului, Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i (TMK: 3-7-004: 001; TMK: 3-7-005: 003, 011, & 023). The survey covered an area of approximately 6.926 acres on two separate land parcels (Figures 1 and 2). Fieldwork was conducted on September 28–29, 2004, by Christopher Monahan, Ph.D., and by Jon Wilson, B.A.

The work described in this report precedes the Maui Community College Lono Avenue Student Housing Project (TMK: 3-7-004: 001) and the Kane Street Business and Residential Mixed Use Project (TMK: 3-7-005: 003, 011, & 023). Several small-scale commercial operations are located on various portions of these parcels, and approximately half of the total area is either presently undeveloped land (*e.g.*, the southeast half of TMK: 3-7-005: 003, 011, & 023) or paved parking lots and roads (*e.g.*, TMK: 3-7-004: 001) (Figures 3–5). Because of its location in central Kahului, there is little surviving surface character predating the most recent period. Therefore, the AIS focused on testing the subsurface deposits for significant historic and/or traditional resources. A total of 30 Stratigraphic Trenches were excavated in the two parcels using a backhoe.

Findings of the AIS, presented in detail below, were negative. No significant historic sites or features were located. Therefore, in accordance with SHPD guidelines, the survey can be summarized in an abbreviated report form called an Archaeological Assessment (SHPD 2002). However, due to the presence of sandy deposits throughout the project area, and, due to the well-documented presence of traditional Native Hawaiian burials and other archaeological resources in the general Kahului area, future planned construction activities should be subjected to appropriate Archaeological Monitoring.

ENVIRONMENTAL SETTING

The project area, comprising approximately 6.926 acres on two separate parcels, is located in the town of Kahului, Wailuku Ahupua`a, Wailuku District, Maui Island (see Figure 1). Kahului is situated on the northern side of the low sandy isthmus between East and West Maui. The project area is approximately 400 m (¼ mile) south of Kahului Harbor, just south of the main east-to-west thoroughfare of Kaahumanu Avenue.

The two separate parcels comprising the project area are subunits of a larger block bounded by Kaahumanu Avenue (to the north), Lono Avenue (to the east), Kane Street (to the

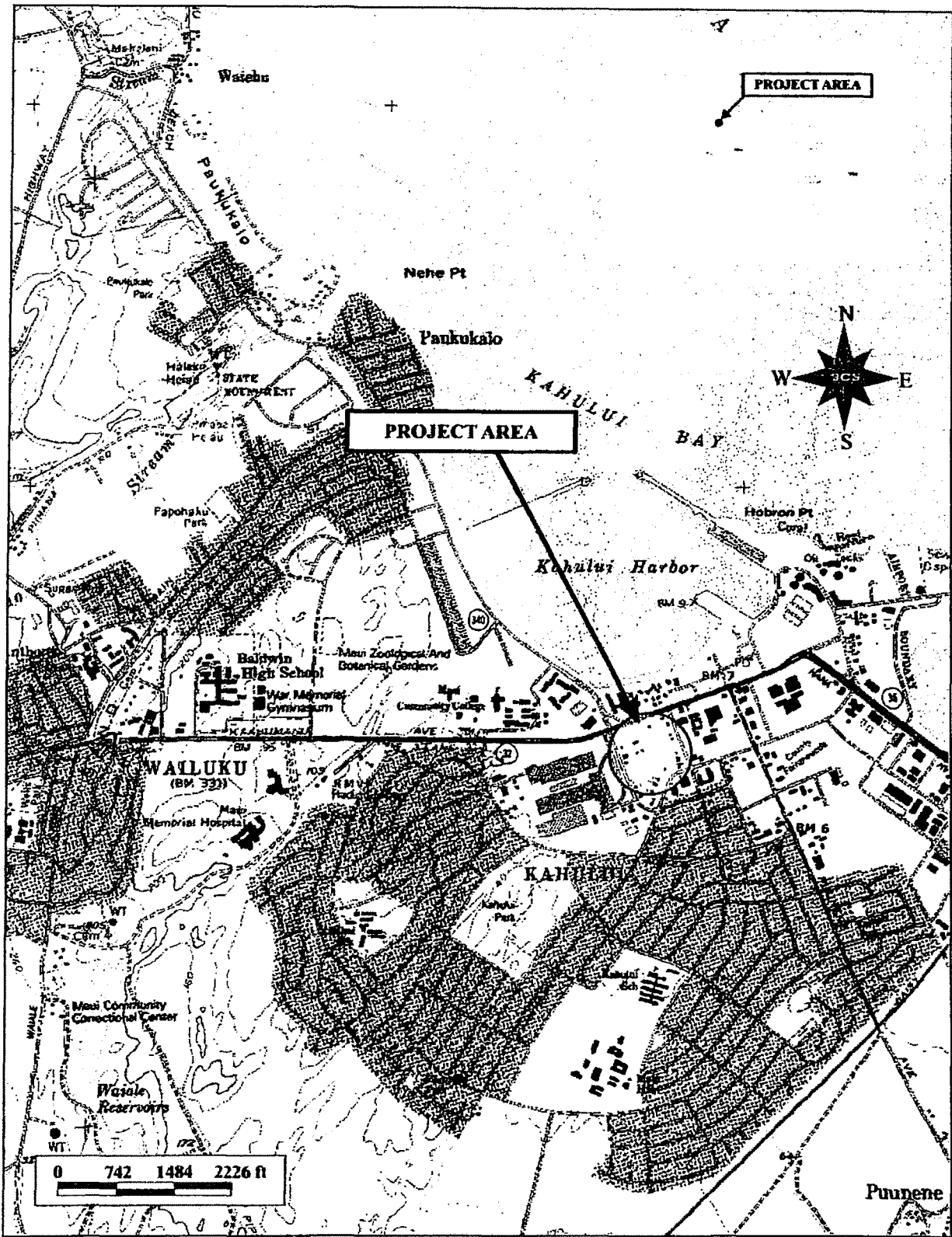


Figure 1: USGS (Wailuku Quadrangle) Map Showing Project Area Location.

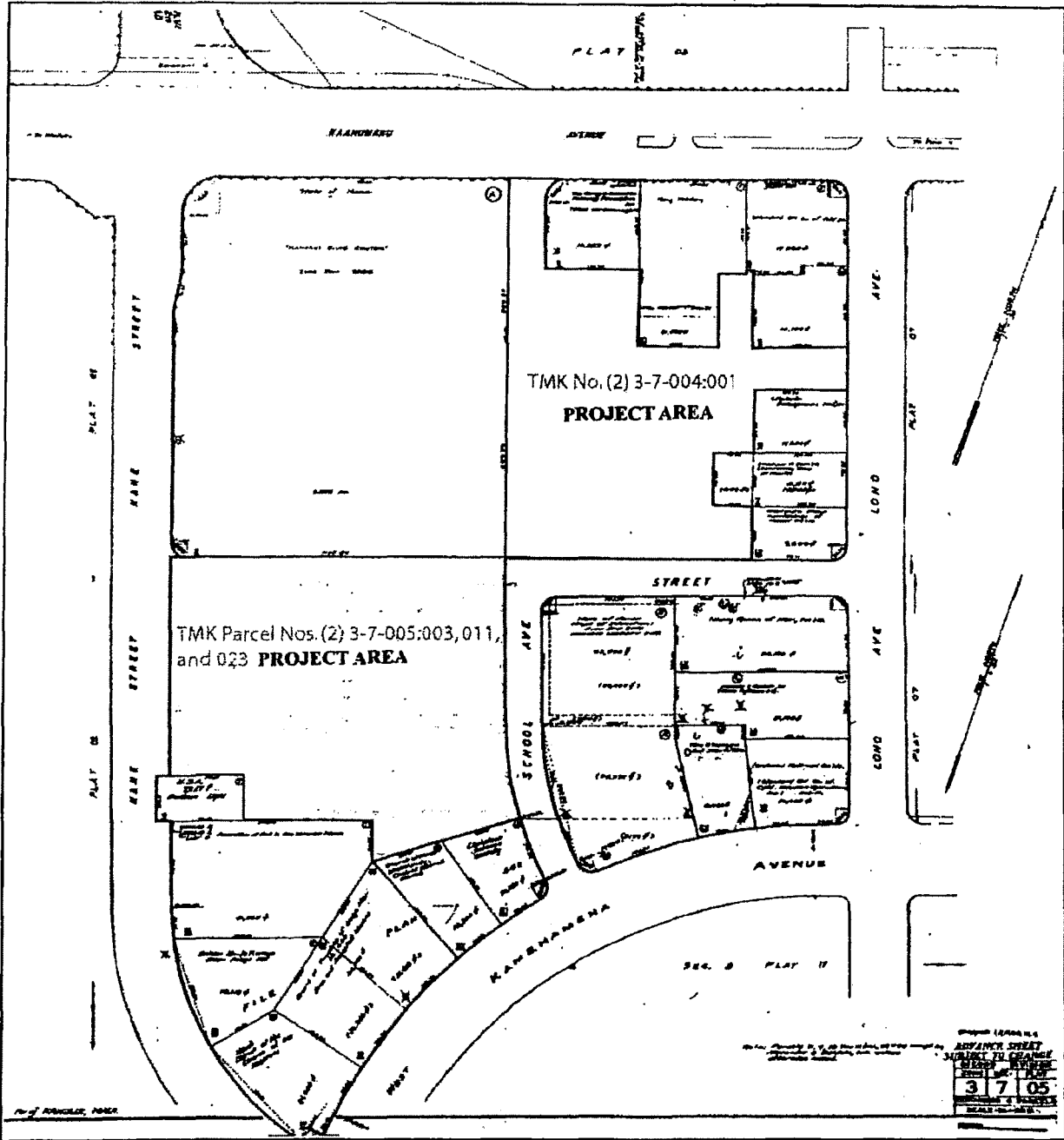


Figure 2: Tax Map Key (TMK) Showing Project Area Parcels.



Figure 3: Aerial Photograph Showing Existing Project Area Location (Map Provided by Chris Hart and Partners).



Figure 4: Overview of TMK: 3-7-004: 001, the Northern Parcel in the Project Area, Eastern Half, Facing Northwest (ST-19 in Foreground).



Figure 5: Overview of TMK: 3-7-005:003, 011, and 023, the Southern Parcel in the Project Area, Eastern Half, Facing Northwest (ST-19 in Foreground).

west), and Kamehameha Avenue (to the south) (see Figures 2–3). For the purposes of this report, TMK: 3-7-004: 001 is designated the ‘northern parcel’, whereas TMK: 3-7-005: 003, 011, & 023 is designated the ‘southern parcel.’ The southern parcel (see Figure 2) includes Vevau Street, a paved cross street between the major thoroughfares of Kane Street and Lono Avenue that was not tested. It also includes two existing commercial operations (a ‘Go Kart’ track, and a remote-controlled car track) that could not be tested, since they were in operation at the time of the survey. The southern half of this (southern) parcel is mostly an open grassy area (Figure 6). The northern parcel (see Figure 2) includes an unnamed paved cross street roughly bisecting the property from Lono Avenue to a bus parking facility in the western adjacent lot. An existing commercial operation (a miniature golf course) is located in the southwest corner of the northern parcel. Much of this parcel consists of paved and unpaved (gravel) parking areas (overflow parking from adjacent lots).

Elevation in the project area is approximately 2–3 m above mean annual sea level (amsl). The terrain in the northern parcel is predominately flat, dipping down gently (approximately 0.5 m over 100 m distance) to the north and northwest (see Figure 4). The water table is typically at, or slightly less than, 2.0 m below the present ground surface. The terrain in the southern parcel is slightly more variable, with an elevated area in the southeast that dips down more significantly (approximately 1.5 m over 140 m distance) to the west and to the northwest (Figure 7). The water table is somewhat deeper (> 2.0 m) in this parcel.



Figure 6: Southern (Undeveloped) Half of the Southern Parcel (TMK: 3-7-005:003, 011, and 023), Facing East (ST-3 in Foreground).

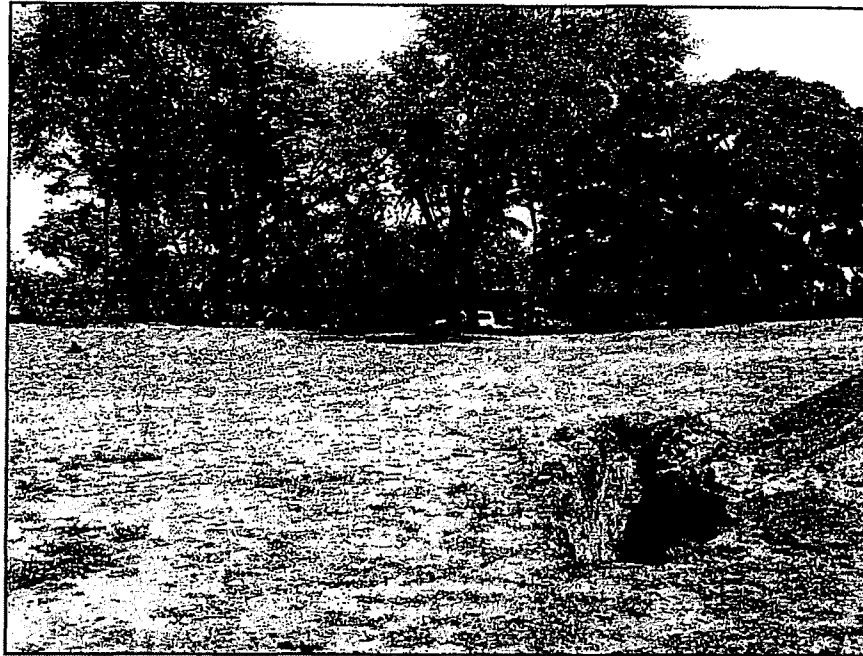


Figure 7: Elevated Southeast Area of the Southern Parcel (TMK: 3-7-005:003, 011, and 023), Facing East (ST-10 in Foreground).

According to Foote *et al.* (1972), there are two main soil types in the project area. The boundary between these two main soil types runs more or less between the northern and southern parcels (Figure 8). The southern parcel consists exclusively of 'Puone Sand' (PZUE). The northern parcel consists predominantly of 'Fill Land' (Fd). As discussed in more detail below (see FINDINGS), subsurface excavation demonstrated a significantly more complex soil-stratigraphic record in both parcels, which include buried clays and consolidated silts, in addition to sand. The northern parcel has a relatively deep, natural stratigraphy below the upper fill layer. In any case, Puone Sand occurs on sand hills near the ocean, and common uses include pasturage and habitation sites (Foote *et al.* 1972).

Kahului is fairly dry owing in part to the 'rain shadow' effect of Haleakala. According to Armstrong (1983), annual rainfall in the project area is between the 500 mm (20 in.) and 760 mm (30 in.) isohyets. Giambelluca *et al.* (1986) indicate the project area sits more or less on the 500 mm (20 in.) isohyet. Approximately 70% of the project area has no vegetation, since it is covered by commercial operations, paving, or dirt/gravel. Where present, vegetation is dominated by invasive grasses and weeds (see Figures 4–7) with a few common trees species, including *Cocos nucifera* (Coconut Palm), *Mangifera indica* (Mango), and *Prosopis pallida* (*Kiawe*) (Hargreaves and Hargreaves (1964). No native species are present in the project area.

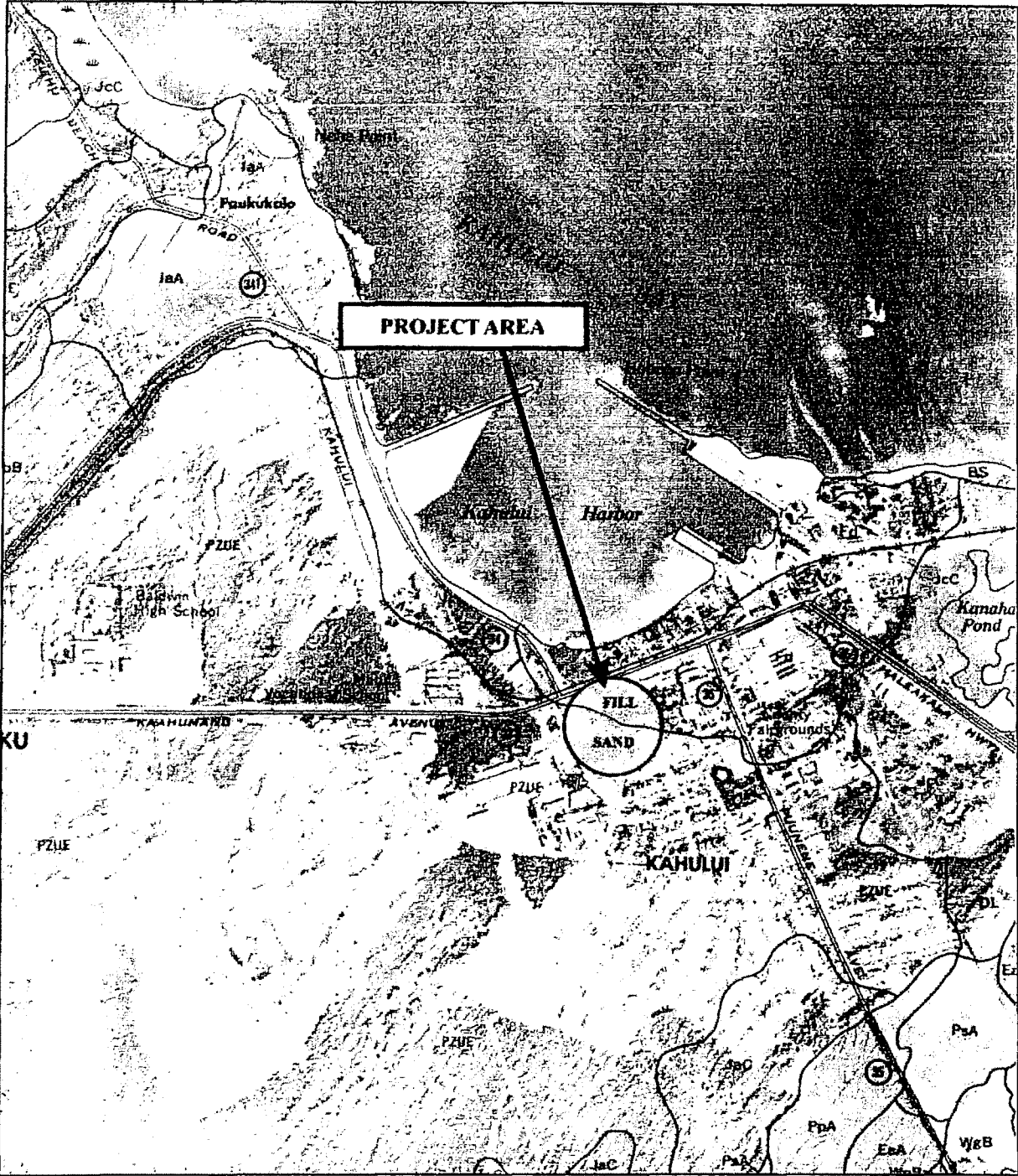


Figure 8: Soil Distribution Map of the Project Area (Foote *et al.* 1972).

BACKGROUND

TRADITIONAL SETTING

Kahului Town is part of Wailuku Ahupua`a and Wailuku District, which collectively have yielded a substantial archaeological and historic record. The following is a brief summary of the salient aspects of these data.

In traditional times, it appears that Kahului was a relatively marginal settlement location, compared with Wailuku Town and areas to the north of Wailuku. Handy (1940) described the low-lying coastal areas east of Wailuku (including Kahului) as having scattered fishing settlements, which usually implies a relatively low population density or limited socio-economic status.

The Wailuku District was once known as “The Four Streams Area” (*Na Wai Eha*), which refers to the four main valleys that drain the eastern slopes of West Maui, including the massive Iao Valley (Handy and Handy 1972). The area from Waihe`e to Wailuku was formally the most extensive continuous area of wet taro cultivation in the Hawaiian Islands. Wailuku, itself, has been described as a “chiefly center” (Sterling 1998:90), although the seat of power was almost certainly concentrated in and around the Iao Valley, on the other (west) side of Wailuku from the project area. Areas upslope and west of the project area, including Wailuku Town, were once covered with *lo`i* (irrigated stone terraces) and house sites. Areas downslope and closer to the project area were burial grounds in traditional times.

Areas around the Waihe`e and Waiehu Streams, although a few miles north of the project area, have yielded some of the earliest settlement dates in Maui (Kirch 1985). Cordy *et al.* (1978) have proposed that the coast and lower valleys in this area were first settled by A.D. 300 to 600. Closer to the project area, the Wailuku Sand Hills, about a mile to the west, have yielded substantial numbers of burials and other evidence of traditional Native Hawaiian settlement (see PREVIOUS ARCHAEOLOGY, below).

Sterling’s (1998) compendium of traditional archaeological sites on Maui has much to say about the Wailuku District, in general, and the Wailuku Ahupua`a, in particular. Documented *heiau* from Wailuku Ahupua`a include:

- Kaluli Heiau (Walker Site 42)—since destroyed
- Pihana Heiau (Walker Site 43)—located just west of the Sand Hills (Wailuku)
- Halekii Heiau (Walker Site 44)—located just north of the Sand Hills (Wailuku)
- Various Heiau (Walker Sites 45–54)—ten named *heiau* in Wailuku, all destroyed

A major inland fishpond was located at the present day spot of Kanaha Pond and Bird Sanctuary, just east of the project area. In traditional times, this was sometimes referred to as two, artificially joined ponds (Kanaha and Mauoni).

There is an interesting passage about Kahului during the middle 19th century by G.W. Bates (1854), cited in Sterling (1998). Bates' interpretation of a major battleground site in Kahului may not have been accurate, although there are many oral traditions about battles in this general area, but the rest of his description is instructive and worth quoting at length:

Leaving Wai-lu-ku, and passing along toward the village Kahului, a distance of three miles, the traveler passes over the old battle-ground named after the village. It is distinctly marked by moving sand hills, which owe their formation to the northeast trades. Here these winds blow almost with the violence of a sirocco, and clouds of sand are carried across the northern side of the isthmus to a height of several hundred feet... In places laid bare by the action of winds, there were human skeletons projecting...(Sterling 1998:92)

HISTORIC SETTING

Literally hundreds of Land Commission Awards (LCA) are documented for Wailuku Ahupua`a (see, *e.g.*, Sterling 1998:86; Burgett and Spear 2003), although, in keeping with the broad settlement pattern outlined above, most of these were located in and around Iao Valley, west of the Wailuku Town and well removed from the project area. The existence of such large numbers of LCAs, however, does attest to the large settled population in the lower Iao Valley during the middle 19th century, and residents of Kahului were no doubt drawn into this sphere of influence.

There are no LCAs for the project area, which is owned by Alexander and Baldwin, Inc., according to TMK data (see Figure 2). The soil map by Foote *et al.* (1972) defines more or less the entire northern parcel as 'fill land', presumably, in this case, to stabilize coastal Kahului Bay (see Figure 1). Two older gentlemen living (homelessly) on the northern parcel described the southern parcel as previously having numerous, small houses (more like shacks, according to one of the informants).

Traditional land utilization was rapidly and dramatically supplanted by sugar cane cultivation during the 1850s (Dorrance and Morgan 2000). Many of the awarded LCAs in Wailuku Ahupua`a were under sugar cane cultivation by the mid 19th century. Sites and features built during this period include water irrigation ditches, terraces, free standing walls, historic

houses, and mill structures. Cultivation of sugar cane dominated land use in Wailuku Ahupua`a well into the middle 20th century.

PREVIOUS ARCHAEOLOGY

There is no shortage of archaeological studies focused in the Wailuku Town area (see below), but little work has taken place in and around the project area in Kahului.

A substantial number of traditional archaeological sites and features, including many burials in sandy deposits, have been documented in and around the historic Wailuku Town. *The following is a sampling of these studies.* Archaeological Monitoring by Morawski and Spear (2001) yielded an historic refuse deposit and one set of disturbed (disarticulated) human remains (Site -5125) interpreted as a traditional Native Hawaiian burial. The human remains were recovered in Pu`uone sands several hundred meters from the shoreline, in a similar sedimentary context as the southern parcel of the present project area.

Fredricksen and Fredricksen (2002) conducted an Archaeological Inventory Survey on a small (< 1.0-acre) parcel along Lower Main Street in Wailuku. The survey documented a remnant of a precontact habitation site (-4730), buried food remains, and one traditional Native Hawaiian burial in Pu`uone sands.

Human remains were exposed during construction at a parcel on Lower Main Street in Wailuku (Donham 1994). Site -3556 contains the remains of at least four individuals in association with a shell ring, beads, and other shell ornaments.

Burgett and Spear (1996) conducted an inventory survey of 1.3 acres on Lower Main Street in Wailuku in sand hill deposits, identifying two buried traditional sites in the process (including burials, fire pits, and a cultural layer). Burgett and Spear (1995) conducted another Archaeological Inventory Survey along Lower Main Street in the Wailuku Sand Hill deposits (Home Maid Bakery location), identifying a precontact habitation site and a burial (Sites -3924 and -3925).

Dunn and Spear (1995) describe the results of Archaeological Monitoring in Wailuku in sand hill deposits. Three sites were identified, including two burials (Site -4005 and -4068) and a hearth (-4067).

Several other projects in the Wailuku area have also recovered traditional buried deposits and human burials (*e.g.*, Connolly 1973; Spear 1995; Pantaleo and Sinoto 1996; Fredricksen and Fredricksen 1999).

Fredricksen and Fredricksen (1993) conducted an inventory survey of 2 acres across from the junction of Waiehu Beach Road and Kahului Beach Road, just north of the project area. The survey identified: an historic railroad berm (Site -3112); a stratified site containing both historic (Site -3119A, upper) and traditional (Site -3119B, lower) components; and, a large (precontact) habitation site with multiple burials (Site -3120) (Fredrickson *et al.* (1997). Still more burials were recovered in the same project area at a later date (Site -4668) (Fredricksen 2000, cited in Fredricksen and Fredricksen 2002).

Fredricksen *et al.* (1995) conducted Archaeological Inventory Survey of three small parcels on Lower Main Street in Wailuku, and identified one traditional cultural layer (Site -4127).

EXPECTED FINDINGS

Based on all of the above background information, including the character of the two lots in the project area, expected findings of this Archaeological Inventory Survey were as follows:

- (1) There was a moderate likelihood of finding traditional Native Hawaiian burials, especially in the southern parcel, due to the presence of Pu'uone sand hill deposits known to contain such evidence;
- (2) There was a moderate likelihood of finding subsurface evidence of traditional Native Hawaiian activities, especially in the southern parcel, including: hearths (*imu*), midden deposits, and other occupation debris (*e.g.*, stone tool waste, fishing camps);
- (3) There was a moderate likelihood of finding historic debris of various kinds, especially as fill or past garbage dumping; sites and features related to commercial sugar agriculture were also possible;
- (4) There was a low likelihood of finding significant surface features or sites, since the two lots in the project area consist mostly of open grassy areas, commercial structures, and residences.

METHODOLOGY

Christopher Monahan, Ph.D., and Jon Wilson, B.A., conducted the fieldwork on September 28–29, 2004. All aspects of the work were photographed with a digital camera. There were two main field activities as follows:

(1) *Conduct a pedestrian survey of the project area*—The irregularly-shaped project area was walked, measured, and compared with existing TMK maps in order to accurately establish its boundaries. Mr. Michael Bollenbacher (Agora Realty) walked the project area with SCS archaeologists and indicated one location where buried utility lines were known to occur. The project area was also inspected for evidence of surface features. This consisted mostly of looking for subtle topographic variation (e.g., depressions and built-up areas) that might indicate past human alterations of the landscape.

(2) *Mechanically test (excavate) for subsurface evidence of significant archaeological and/or historical sites or features*—30 Stratigraphic Trenches (ST) measuring approximately 7 m by 70 cm were excavated using a backhoe. All excavation was directed and monitored by an SCS archaeologist. The trenches were positioned in order to sample all parts of the project area not covered by existing commercial operations or by asphalt paving. Soils from these trench excavations were not screened. All trenches were photographed upon completion. One representative excavation wall in each trench was sketched to illustrate soil stratigraphy. Soil and sediments were described in accordance with standard archaeological procedure (U.S. Dept. of Agriculture Soil Survey Staff 1951, 1962; Munsell 1990).

Laboratory work, conducted at SCS facilities in Honolulu, consisted of digitally drafting all maps and sketches, archiving digital images, and describing and documenting all recovered artifacts. No charcoal samples were collected, since no significant buried cultural layers were encountered. All documentation pertaining to this project and all recovered artifacts are currently being curated at SCS facilities in Honolulu.

FINDINGS

OVERVIEW

As stated above, a total of 30 Stratigraphic Trenches were excavated using a backhoe (Figure 9, Table 1). Findings can be summarized as follows:

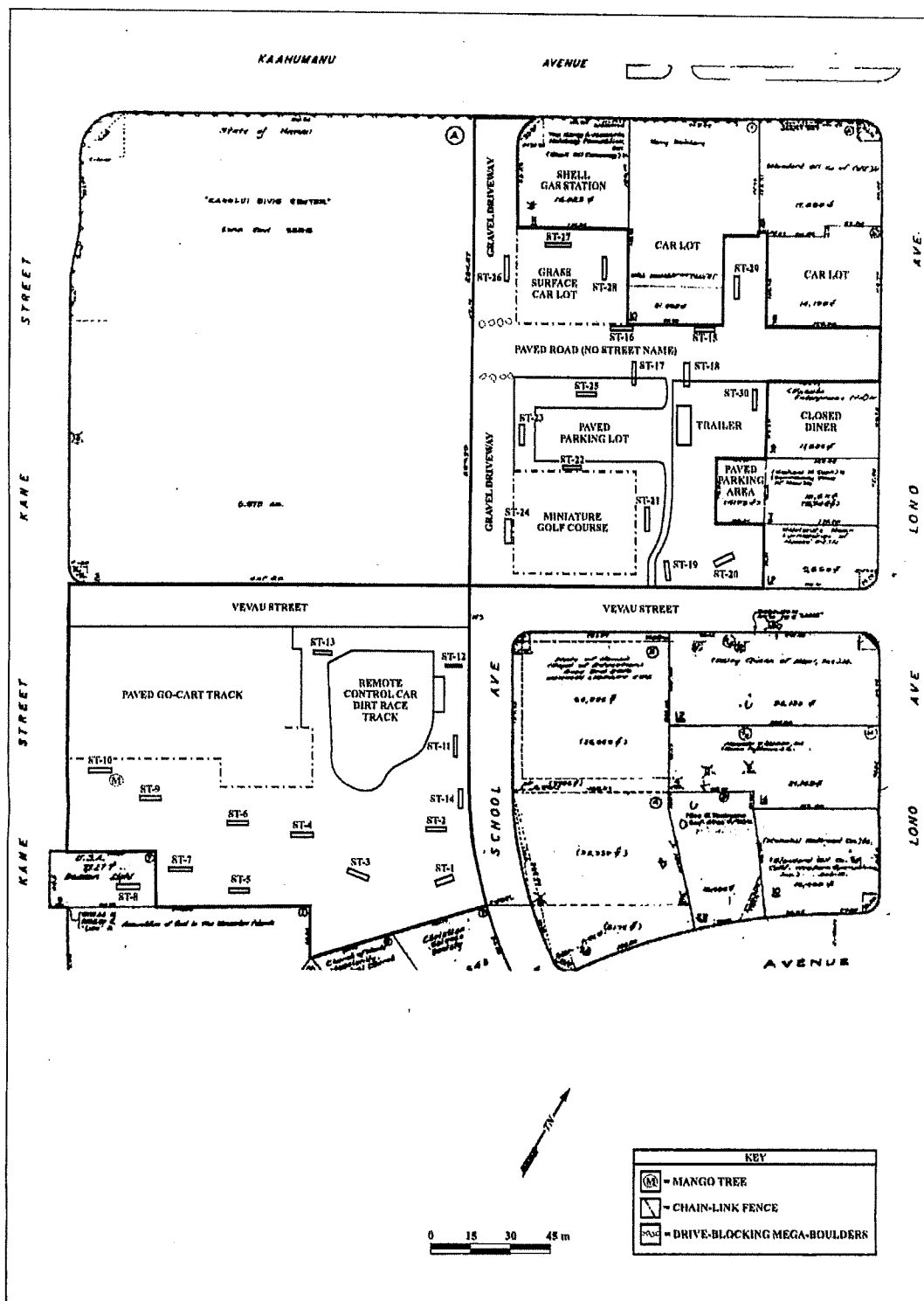


Figure 9: Project Area Map Showing Location of Stratigraphic Trenches and Major Features of the Landscape.

(1) No surface sites or features of potential historic significance were present in the project area;

(2) Excavation failed to yield any significant buried (subsurface) features or significant artifacts; all excavation units exposed natural, sandy deposits, some with well-defined bedding structures, but all units also yielded additional non-sandy layers; the water table was encountered at depths of approximately 1.58 m to 2.90 m below the present ground surface, averaging 2.05 m below the present ground surface;

(3) No traditional artifacts or buried cultural layers were recovered in any of the excavations;

(4) No human remains were recovered in any of the excavations;

(5) Upper 'fill' layers in the northern parcel yielded two recent historic trash features and two pockets of coral; none of these features are significant because they are not demonstrably older than 50 years, based on both artifact analyses and on stratigraphic criteria (see below).

SOIL STRATIGRAPHY

Trenching exposed a relatively dynamic and complex natural stratigraphy, with markedly different sedimentary layers (*e.g.*, predominantly sand, predominantly silt, and predominantly clay) frequently present in a single excavation unit. Variation in the vertical and lateral distribution of sediments clearly demonstrates that the project area has experienced several major cycles of physiographic change through time. Several markedly different kinds of physiographic landforms are represented, including: coastal dune (represented by several major bedded sand units), inland marsh/pond (represented by one major clay unit, in the lower portion of the sequence), and non-marine, non-marsh lands (represented by several extremely consolidated silt units). A major layer (Ia) of water worn pebbles and cobbles was also exposed throughout much of the project area, at the base of one of the bedded sand units, suggestive of a 'fining upward sequence' (*i.e.*, a major high water/flooding/overbank event). Finally, all units yielded a basal coarse sandy unit at the water table. These main layers, designated by Roman Numerals, are described below. Note that, since many of these units occur in multiple, recurring cycles, the numeral designations do not necessarily imply any particular stratigraphic position. In other words, bedded sands (Layer I) were frequently present below consolidated silts (Layer II), sometimes alternating back and forth between the two.

The main soil-stratigraphic units are described below. This description does not include the upper 'fill layer' present in many units. The fill layer typically consisted of a structureless, jumbled mixture of sediments from Layers I (medium sand) and II (silt), frequently containing recent historic and relatively modern debris, and between 20–40 cmbs (sometimes up to 50 cmbs).

Layer I: Loose- to moderately-consolidated, yellowish brown (10YR 5/6) to grayish brown (10YR 5/2) medium-grained sand; bedding structures typically visible as thin alternating bands of slightly different sediment color and grain size; small pebbles common, typically concentrated in thin bands; variable thickness, but usually between 20–50 cm; this layer is frequently associated with an extremely consolidated silt (Layer II, see below), which may occur above or below, and a dense layer of water worn pebbles and cobbles (designated IA, see below) at the base of Layer I; included some recent historic and modern debris; occasional charcoal flecking, but very sparse;

Layer Ia: This is a subunit of Layer I, which typically occurs at the base of the bedded sands; water worn pebble and cobble conglomerate in gray (2.5YR 6/1) medium-grained sand; this subunit, along with the bedded sands, appear to be a major 'fining upward' sequence present over much of the site; no cultural material; no charcoal;

Layer II: Extremely consolidated (resistant) strong brown (7.5YR 4/6) silt, appears 'reddish brown' in color in the field; occurs as alternating bands between layers of bedded sand (I), typically between 10–20 cm thick; occasional charcoal flecking, but very sparse;

Layer III: Wet, sticky dark brown (7.5YR 3/3) clay with some (limited) silt content; no inclusions; this layer was typically located deep in the sequence (below 1.0 m), directly above the basal sand unit (IV) or separated from the basal sand unit by one layer of bedded sand; no cultural material; no charcoal;

Layer IV: Wet, unconsolidated coarse sand with abundant small pebbles, small water worn shell fragments, small water worn coral fragments; the basal marine sand unit common to all trenches; coincident with the water table; color of this unit varies but is very difficult to categorize since it consists of such large grains (of which the shells, pebbles, and corals are a major component), giving it a 'multi-color', almost pixilated appearance; no cultural material; no charcoal.

Table 1: Summary of Stratigraphic Trenches (ST) in Project Area.

Unit	Par. ¹	Size (m)	Depth (cm)	Layers Present ²	Findings	Stratigraphic Comments
ST-1	S	6.8 x 0.7	220	I, II, IV	None	Recently buried surface @ 40–45 cmbs (same as in ST-1)
ST-2	S	7.3 x 0.7	240	I, II, IV	Modern garbage between 50–70 cmbs	Recently buried surface @ 60 cmbs (same as in ST-1)
ST-3	S	7.4 x 0.7	220	I, Ia, II, III, IV	Pockets of modern garbage @ 15–20 cmbs	
ST-4	S	8.0 x 0.7	197	I, Ia, III, IV	None	
ST-5	S	7.4 x 0.7	198	I, Ia, III, IV	None	Pebble-cobble layer (Ia) appears as possible channel cut & fill
ST-6	S	7.5 x 0.7	223	I, Ia, III, IV	None	
ST-7	S	7.5 x 0.7	218	I, Ia, II, III, IV	None	
ST-8	S	7.5 x 0.7	210	I, Ia, II, III, IV	None	
ST-9	S	7.0 x 0.7	227	I, Ia, II, III, IV	None	Fining upward sequence in base of lowest bedded sand (I), atop clay (III)
ST-10	S	7.2 x 0.7	218	I, Ia, II, III, IV	None	
ST-11	S	7.8 x 0.7	219	I, II, III, IV	None	
ST-12	S	7.3 x 0.7	200	I, II, III, IV	None	
ST-13	S	8.2 x 0.7	225	I, Ia, III, IV	None	
ST-14	S	7.2 x 0.7	290	I, II, III, IV	Modern garbage in upper 30–60 cmbs	
ST-15	N	7.3 x 0.7	164	I, II, IV	None	
ST-16	N	7.1 x 0.7	158	I & IV	None	
ST-17	N	7.0 x 0.7	180	I, II, IV	None	
ST-18	N	7.3 x 0.7	193	I, II, IV	None	
ST-19	N	7.0 x 0.7	200	I, II, IV	None	2 fining upward sequences at base of bedded sands
ST-20	N	7.0 x 0.7	220	I, II, III, IV	None	
ST-21	N	7.4 x 0.7	218	I, II, III, IV	Burned bone, ash, charcoal flecks	Recent historic burn lenses at 20–30 cmbs; capped by mixed fill
ST-22	N	6.9 x 0.7	207	I, II, III, IV	Large pocket of large coral chunks	Upper layer = 30–40 cmbs of jumbled fill, mixed sand and silt layers; coral pocket between 50–150 cmbs
ST-23	N	6.9 x 0.7	190	I & IV	Recent historic burn layer, fragmentary artifacts	Upper layer = 25–30 cmbs of jumbled fill, mixed sand and silt layers Historic burn/artifact layer @ 40–50 cmbs
ST-24	N	6.7 x 0.7	185	I, III, IV	Recent finds, including construction debris	Upper layer 35–40 cmbs of jumbled fill, mixed sand and silt layers
ST-25	N	7.0 x 0.7	170	I, Ia, IV	Recent histories (glass, ceramics, metal)	Upper layer 20–30 cmbs of jumbled fill, mixed sand and silt layers
ST-26	N	6.2 x 0.7	180	I & IV	None	Upper layer 30–40 cmbs of jumbled fill, mixed sand and silt layers
ST-27	N	7.0 x 0.7	163	I & IV	None	Upper layer 25–30 cmbs of jumbled fill, mixed sand and silt layers
ST-28	N	5.9 x 0.7	160	I, Ia, II, IV	None	Upper layer 25–30 cmbs of jumbled fill, mixed sand and silt layers; fining upward sequence (base @ 50 cmbs)
ST-29	N	7.0 x 0.7	185	I, Ia, II, IV	None	Coral pocket between 20–160 cmbs; gray sand unit (unique color); fining upward sequence (base @ 125 cmbs)
ST-30	N	7.0 x 0.7	270	I, III, IV	Buried parking lot layer @ 20–25 cmbs	2 clay layers, a unique occurrence in the project area

¹ Par.: N = Northern parcel (TMK: 3-7-004: 001), S = Southern parcel (TMK: 3-7-005: 003, 011, 023). See text for more details.

² Layer designations (see text for detailed descriptions): I = medium-grained sand, typically bedded (color varies); Ia = water worn pebble and cobble conglomerate in gray, medium-grained sand; II = 'strong brown' consolidated silt; III = dark brown, very sticky clay with silt; IV = basal coarse-grained sand (color varies).

Trench Profile Transect: Southern Parcel (TMK: 3-7-005: 003, 011, 023)

Figure 10 is a trench profile transect for the southern parcel. The figure includes six trenches, arranged from west to east (*i.e.*, ST-10, ST-9, ST-6, ST-4, ST-3, and ST-1) (see Figure 9). Note, there is a slight elevation gain (approximately 1.5 m over 140 m distance) from west (ST-10) to east (ST-1). Figures 11–12 are representative trench profiles from the southern parcel. The profiles show that:

- both the lower clay layer and the pebble-cobble conglomerate layer are traceable throughout the entire transect, except for the easternmost unit (ST-1); these observations suggest that much of the southern parcel was probably underwater and/or marshy for much of its existence; thus, the absence of cultural materials is not particularly surprising;
- the extremely consolidated silt, typically occurring as alternating bands between bedded sand layers, is discontinuously expressed across the transect; it occurs at both the east end (ST-1 and ST-3) and the west end (ST-9 and ST-10), but not in the middle (ST-4 and ST-6).

Trench Profile Transect: Northern Parcel (TMK: 3-7-004: 001)

Figure 13 is a trench profile transect for the northern parcel. Note, this schematic transect is roughly perpendicular to the southern profile transect (see Figure 9). The figure includes five trenches (*i.e.*, ST-23, ST-25, ST-17, ST-15, and ST-29) arranged more or less from south to north. Figures 14–15 are representative trench profiles from the southern parcel. The profiles show that:

- the lower clay unit is not present in this transect, nor in (northern parcel) units to the west, but it is represented in five other (northern parcel) trenches to the east (*i.e.*, ST-20, 21, 22, 24, and 30);
- the pebble-cobble conglomerate layer is present discontinuously (as a lens in ST-25, and as a major unit in ST-29), but is generally not a major, widespread unit in the northern parcel, as it is in the southern parcel;
- the extremely consolidated silt, typically occurring as alternating bands between bedded sand layers, is present from the middle of the transect (ST-17) to the north (ST-15 and ST-29), and in most other units from the northern parcel.

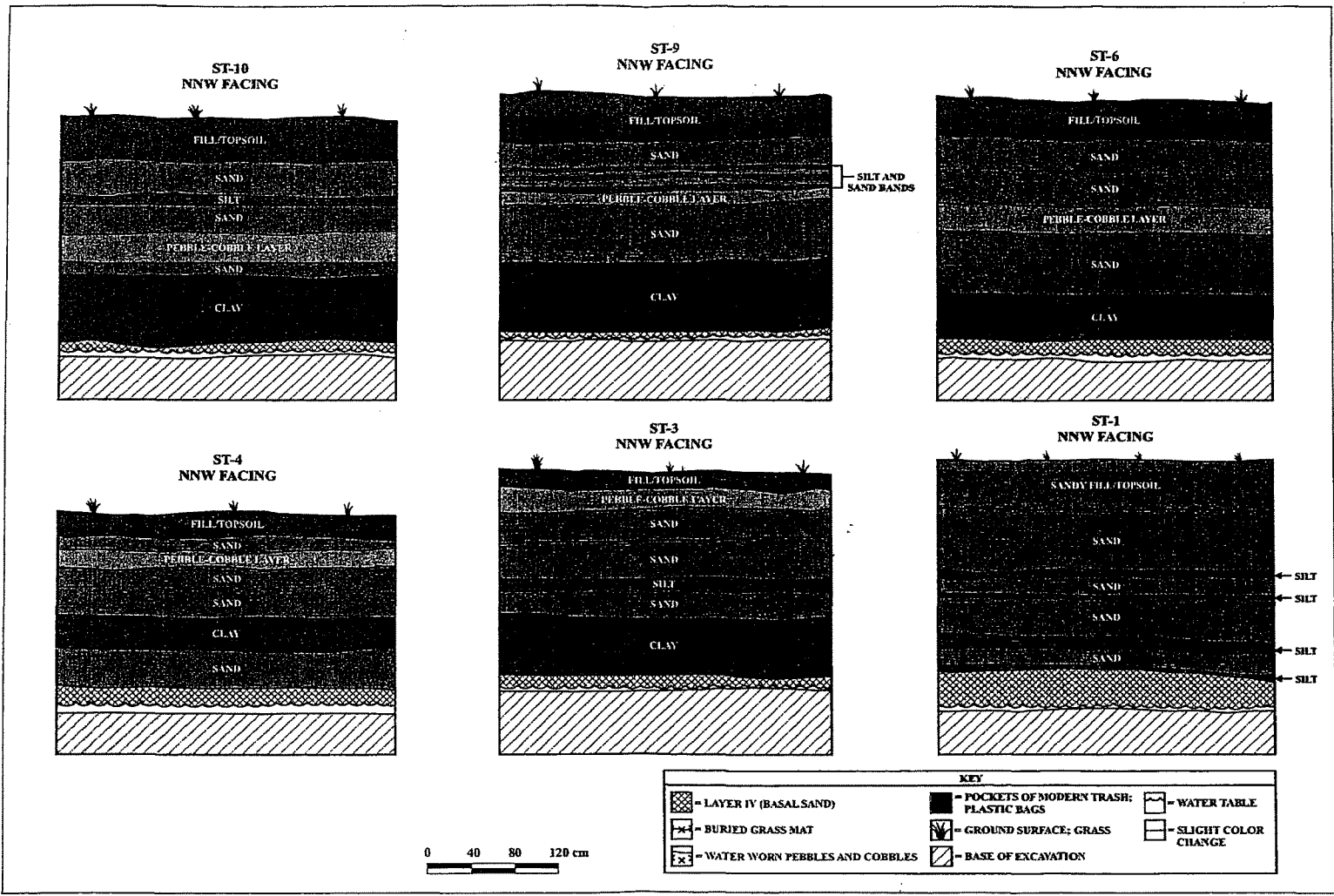


Figure 10: Trench Profile Transect, Southern Parcel (TMK: 3-7-005:003, 011, and 023).

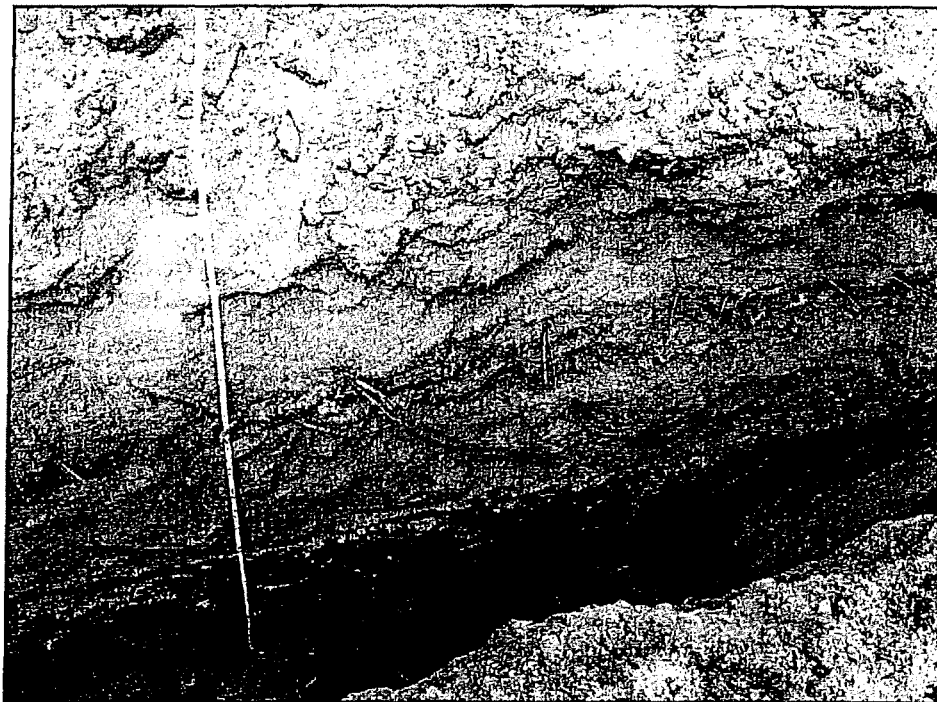


Figure 11: ST-8, Post-excavation Profile, Facing North, Southern Parcel.

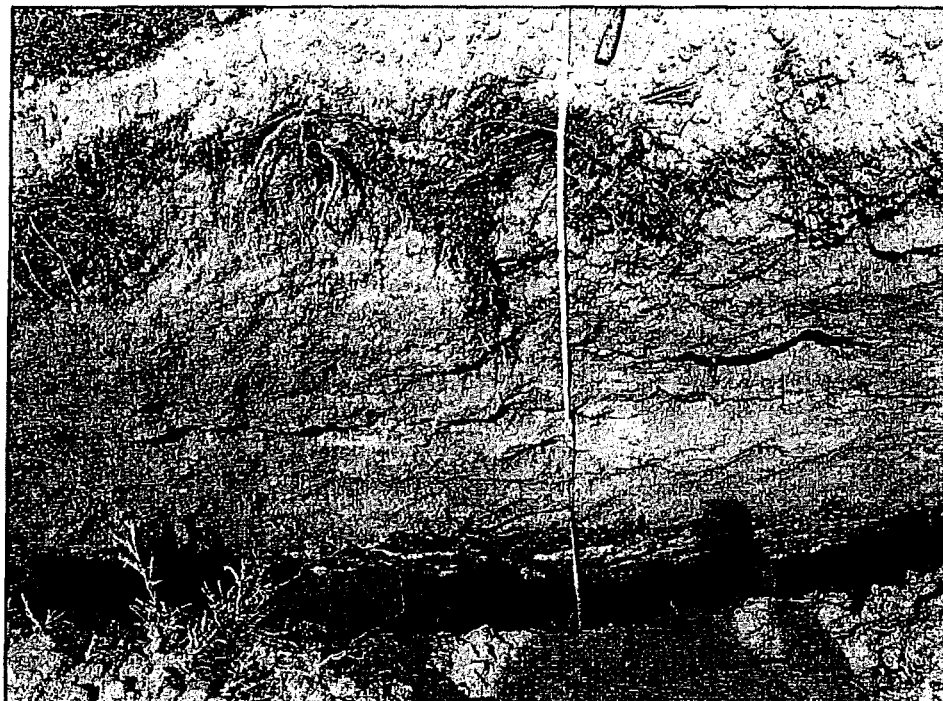


Figure 12: ST-6, Post-excavation, Facing Northwest, Southern Parcel.

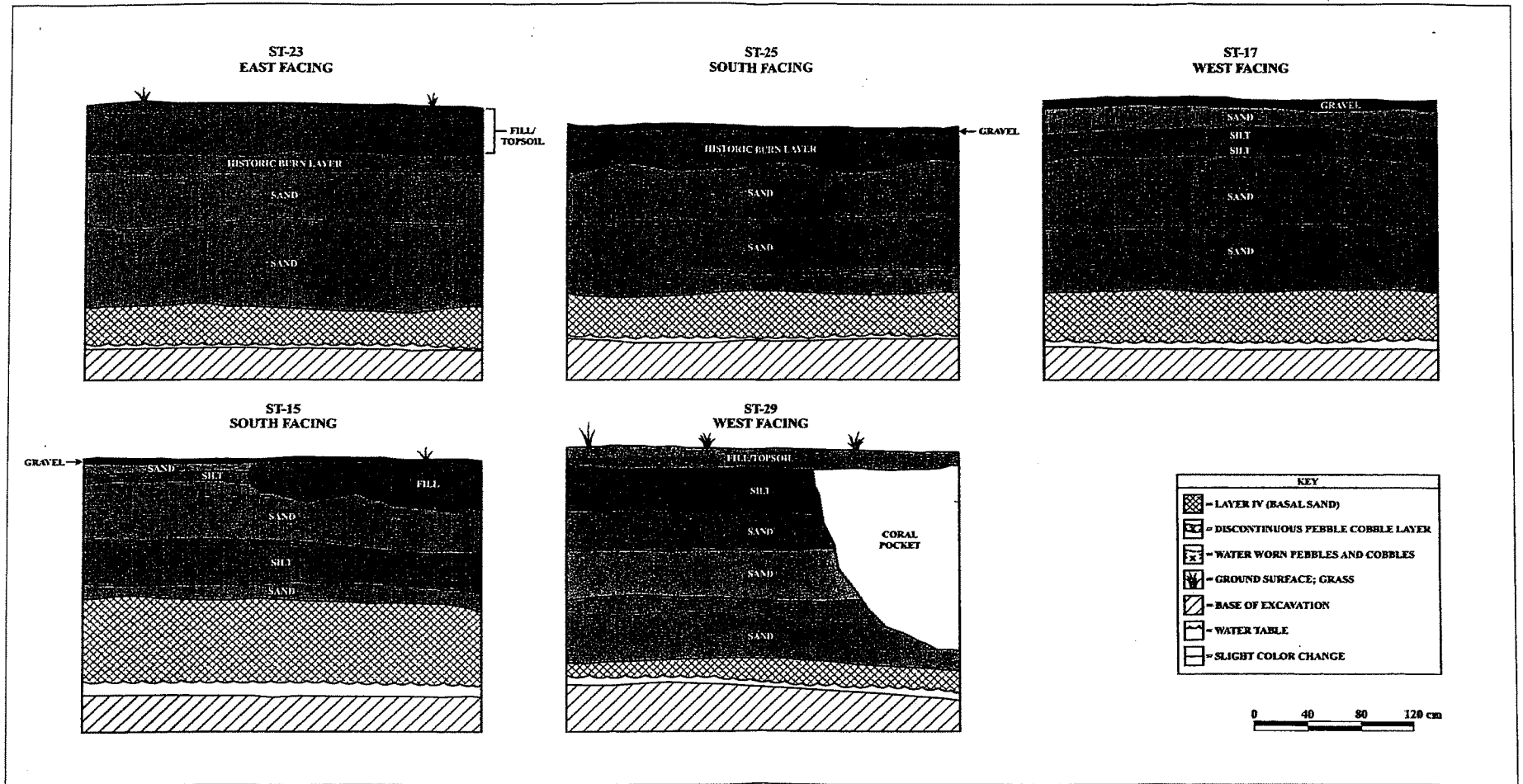


Figure 13: Trench Profile Transect, Northern Parcel (TMK: 3-7-004:001).



Figure 14: ST-15, Post-excavation Profile, Facing Northwest, Northern Parcel.



Figure 15: ST-18, Post-excavation Profile, Facing North, Northern Parcel.

RECENT HISTORIC BURIED FEATURES

Four recent historic buried features were exposed in excavations in the northern parcel. All of these features derive from upper fill layers. *None of these are significant, but all are briefly described and documented here for the record:*

- ST-23—a recent historic burn layer, containing recent historic debris (Figure 16), was exposed in the upper fill layers, between 40–50 cmbs (Figure 17, and see Figure 13); this burn layer was capped by a structureless, jumbled admixture of medium-grained sand (lens and discontinuous layers) and consolidated silt layers;
- ST-21—two recent historic burn lenses, containing burned bone, ash, and charcoal, were exposed in the upper fill layers, between 20–30 cmbs; this burn layer was capped by a structureless, jumbled admixture of medium-grained sand (lens and discontinuous layers) and consolidated silt layers;
- ST-22 and ST-29—two relatively large pockets of loosely organized large fragments of coral were exposed in these two trenches (Figure 18, and see Figure 13); both of these features were dug into the subsurface, cross-cutting older buried sand and/or silt layers, and both emanate from the base of the upper fill layer, suggesting the coral features and the fill episodes are broadly contemporaneous.

RECOMMENDATIONS

No significant historic and/or archaeological sites or features were recorded in the project area. However, due to the presence of sandy deposits throughout the project area, and, due to the well-documented presence of traditional Native Hawaiian burials and other archaeological resources in the general Kahului area, future planned construction activities should be subjected to appropriate Archaeological Monitoring.

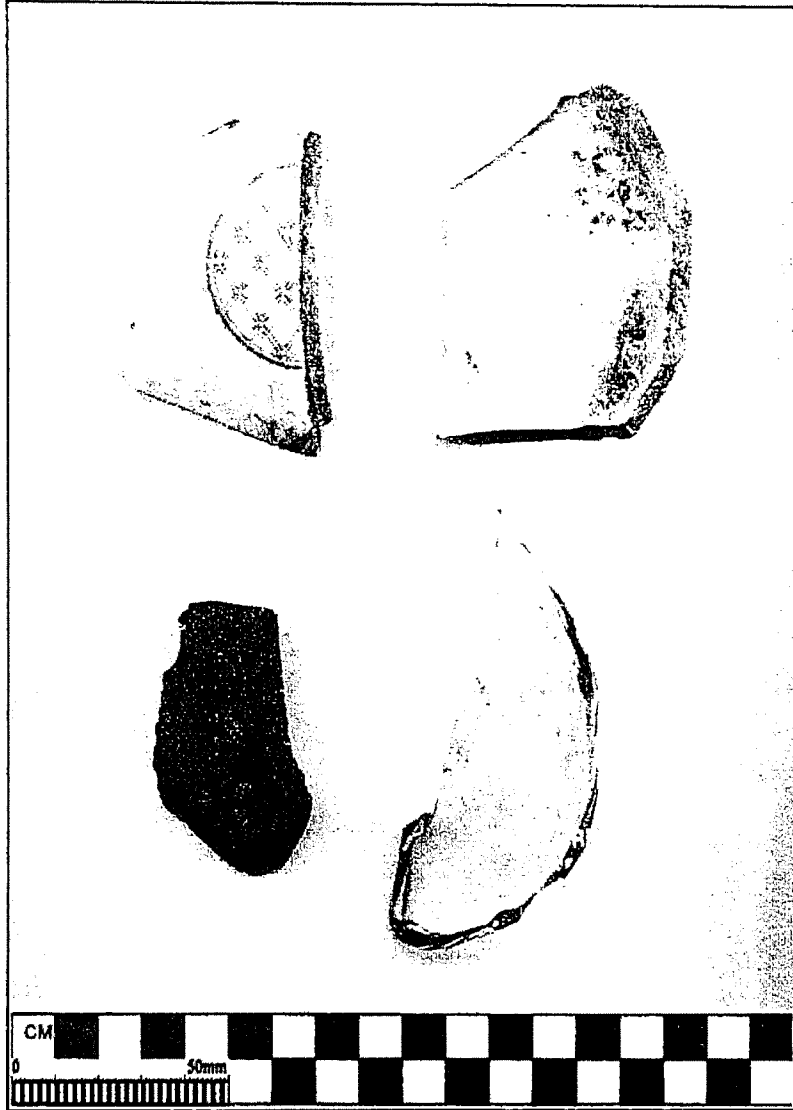


Figure 16: Representative Recent Historic Debris from ST-23, Approximately 40–50 cmbs.

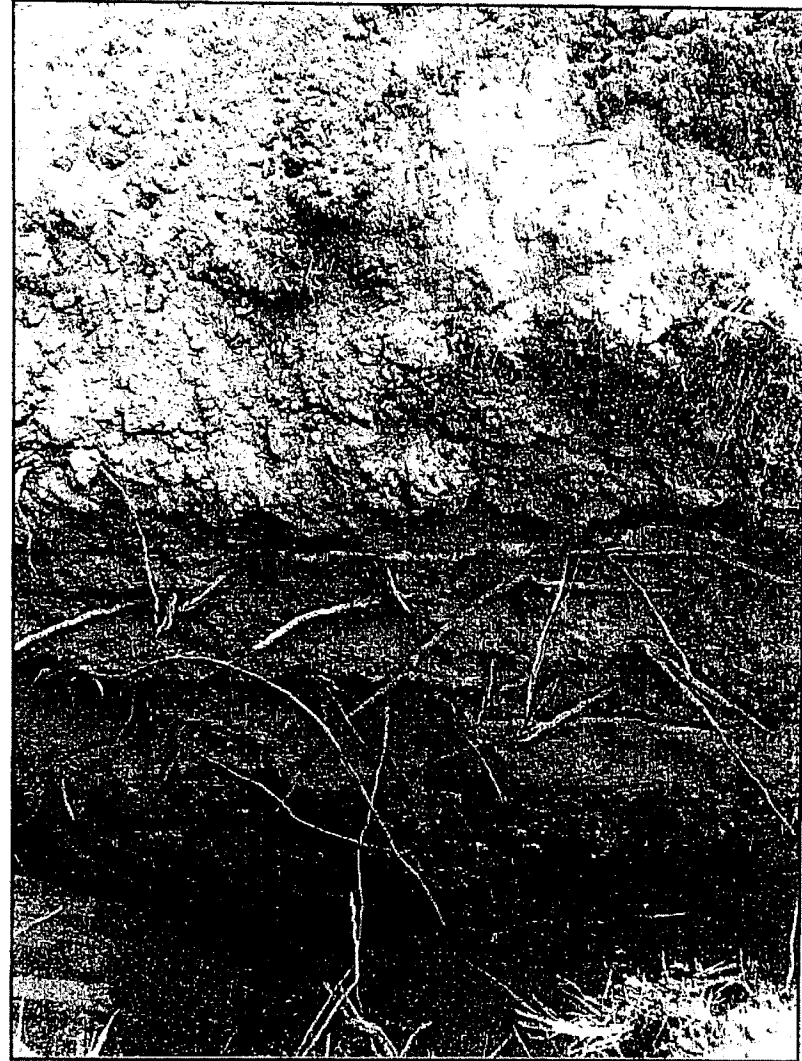


Figure 17: Historic Burn Layer in ST-23, Facing Northeast (Visible as Gray and White Layers).



Figure 18: Coral Pocket in ST-22, Facing West.

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**Archaeological
Monitoring Plan**

APPENDIX

B-1

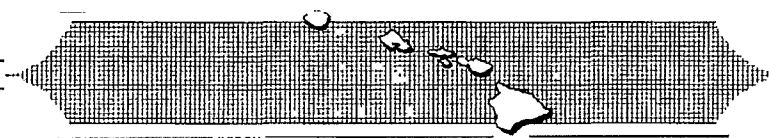
SCS Project Number 822-AMP-1

**AN ARCHAEOLOGICAL MONITORING PLAN
FOR 3.86 ACRES IN KAHULUI, WAILUKU AHUPUA`A
WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII
[TMK: (2) 3-7-005: 003, -011, & -023]**

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April 2007

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Honolulu, HI 96813

SCIENTIFIC CONSULTANT SERVICES Inc.



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INTRODUCTION

At the request of Mr. Darren S. Lake of A&B Properties, Inc., Scientific Consultant Services, Inc. (SCS) has been produced this Archaeological Monitoring Plan (AMP) associated with the construction of a mixed-use project on 3.86 acres in Kahului, Wailua Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK (2) 3-7-005:003, -011, -023] (Figures 1 and 2). The plans included in the mixed-use project include 103 residential units and 20,000 ft² (1858.06 m²) of commercial space within the 3.86 acres. Due to the presence of sandy deposits throughout the project area, and due to the well-documented presence of traditional Native Hawaiian burials and other archaeological resources in the general Kahului area, planned construction activities must be subjected to appropriate Archaeological Monitoring.

This AMP will ensure that if human remains are identified during subsurface work, appropriate and lawful protocol concerning the Inadvertent Discovery of Human Remains (pursuant to §13-300-40a, b, c, HAR) is followed. This AMP will ensure that if cultural deposits are identified, the work will satisfy reporting requirements outlined in §13-279-5(5) through (6). Archaeological monitoring typically occurs as a mitigation measure when an undertaking is highly likely to uncover significant historical remains (see also Athens 1994:4-13). This Monitoring Plan itemizes expectations for the type of cultural resources that could be encountered in the area, depicts how archaeological sites, features, or burials, if identified, will be documented, and outlines consultation procedures to be followed in the event that any significant archaeological deposits or burials are identified. This plan further identifies the measures to be taken to ensure that an adequate amount of time is allotted to properly record and treat any deposits/burials which may be encountered during the project.

This AMP will require the approval of the SHPD (Dr. Melissa Kirkendall, SHPD-Maui) prior to the commencement of significant excavation within the project area. The following text provides more detailed information on the reasons for monitoring, potential site types to be encountered during excavation, monitoring conventions, and methodology for field and laboratory work, curation of any finds, and reporting of the data.

ENVIRONMENTAL SETTING

The project area, comprising approximately 3.86 acres within three adjoining parcels, is located in the town of Kahului, Wailuku Ahupua`a, Wailuku District, Maui Island (see Figure 1). Kahului is situated on the northern side of the low sandy isthmus between East and West Maui.

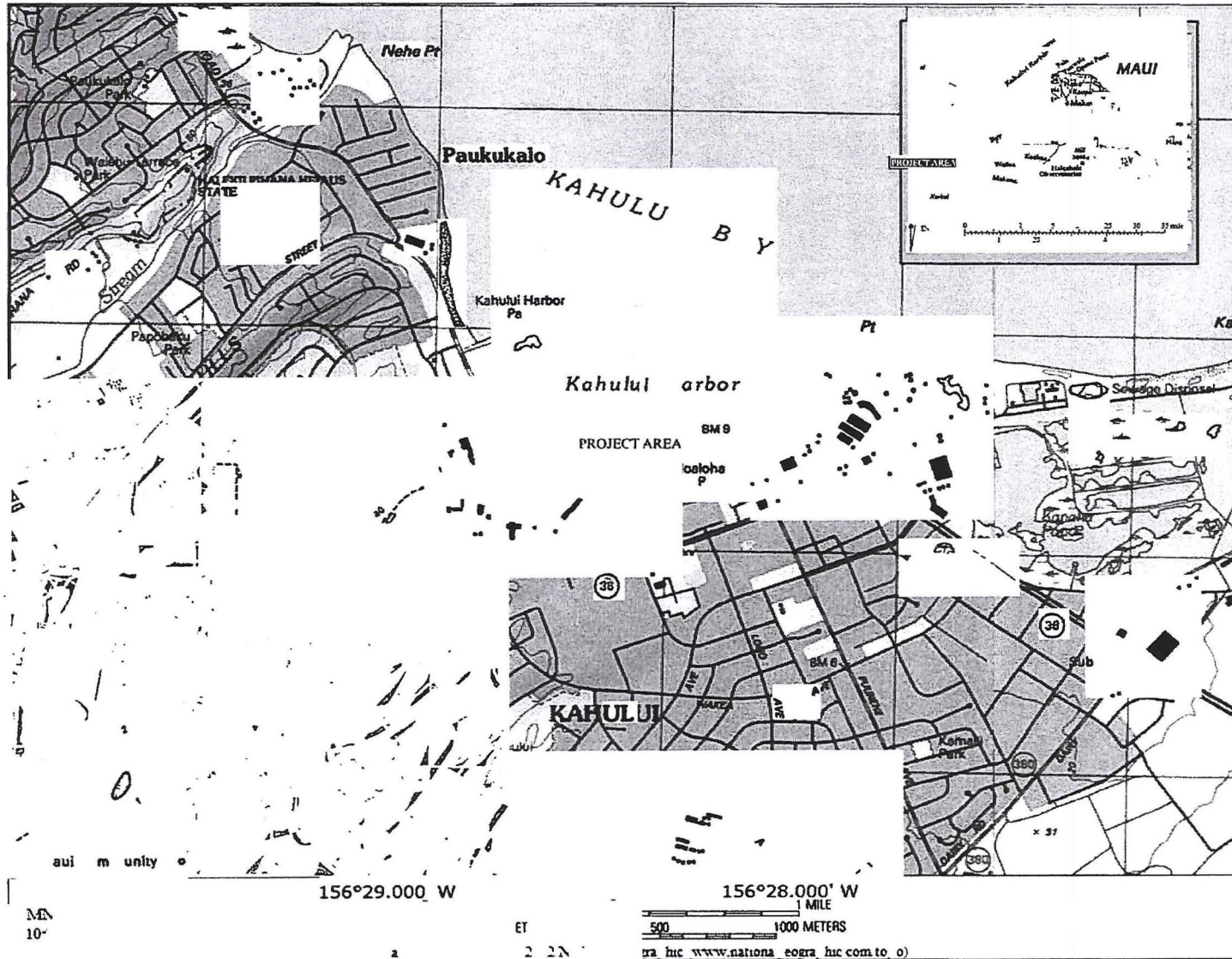


Figure 1: USGS Quadrangle Map Showing Project Area.

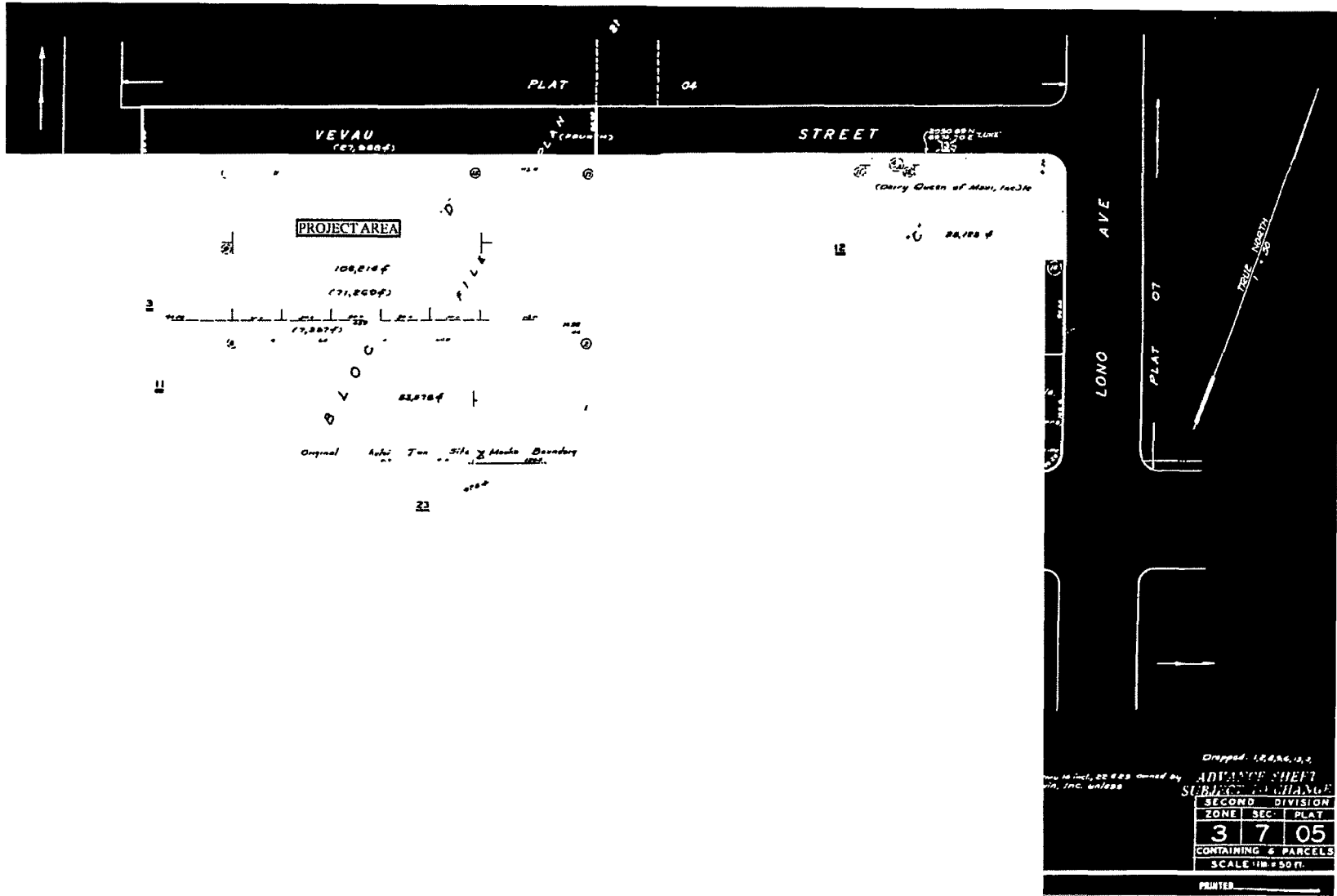


Figure 2: Tax Map Key [TMK] Showing Project Area.

The project area is approximately 450 m (¼ mile) south of Kahului Harbor, just south of the main east-to-west thoroughfare of Kaahumanu Avenue.

The parcels comprising the project area are bounded by Vevau Street to the north, School Avenue to the east, and Kane Street to the west. Elevation in the project area is approximately 2–3 m above mean annual sea level (amsl). The terrain is variable with an elevated area in the southeast that dips down significantly (approximately 1.5 m over 140 m distance) to the west and to the northwest.

According to Foote *et al.* (1972), there is one soil type in the project area which consists exclusively of 'Puuone Sand' (PZUE). Puuone Sand occurs on sand hills near the ocean, permeability is rapid, runoff is slow and the hazard of wind erosion is moderate to severe. Common uses include pasturage and habitation sites (Foote *et al.* 1972).

Kahului is fairly dry owing in part to the 'rain shadow' effect of Haleakala. According to Armstrong (1983), annual rainfall in the project area is between the 500 mm (20 in.) and 760 mm (30 in.) isohyets. Giambelluca *et al.* (1986) indicate the project area sits more or less on the 500 mm (20 in.) isohyet. Approximately 70% of the project area has no vegetation, since it is covered by commercial operations, paving, or dirt/gravel. Where present, vegetation is dominated by invasive grasses and weeds with a few common trees species, including *Cocus nucifera* (Coconut Palm), *Mangifera indica* (Mango), and *Prosopis pallida* (*Kiawe*) (Hargreaves and Hargreaves (1964). No native species are present in the project area.

BACKGROUND

TRADITIONAL SETTING

Kahului Town is part of Wailuku Ahupua`a and Wailuku District, which collectively have yielded a substantial archaeological and historic record. The following is a brief summary of the salient aspects of these data.

In traditional times, it appears that Kahului was a relatively marginal settlement location, compared with Wailuku Town and areas to the north of Wailuku. Handy (1940) described the low-lying coastal areas east of Wailuku (including Kahului) as having scattered fishing settlements, which usually implies a relatively low population density or limited socio-economic status.

The Wailuku District was once known as “The Four Streams Area” (*Na Wai Eha*), which refers to the four main valleys that drain the eastern slopes of West Maui, including the massive Iao Valley (Handy and Handy 1972). The area from Waihe`e to Wailuku was formally the most extensive continuous area of wet taro cultivation in the Hawaiian Islands. Wailuku, itself, has been described as a “chiefly center” (Sterling 1998:90), although the seat of power was almost certainly concentrated in and around the Iao Valley, on the other (west) side of Wailuku from the project area. Areas upslope and west of the project area, including Wailuku Town, were once covered with *lo`i* (irrigated stone terraces) and house sites. Areas downslope and closer to the project area were burial grounds in traditional times.

Areas around the Waihe`e and Waiehu Streams, although a few miles north of the project area, have yielded some of the earliest settlement dates in Maui (Kirch 1985). Cordy *et al.* (1978) have proposed that the coast and lower valleys in this area were first settled by A.D. 300 to 600. Closer to the project area, the Wailuku Sand Hills, about a mile to the west, have yielded substantial numbers of burials and other evidence of traditional Native Hawaiian settlement (see PREVIOUS ARCHAEOLOGY, below).

Sterling’s (1998) compendium of traditional archaeological sites on Maui has much to say about the Wailuku District, in general, and the Wailuku Ahupua`a, in particular.

Documented *heiau* from Wailuku Ahupua`a include:

- Kaluli Heiau.....(Walker Site 42)—since destroyed
- Pihana Heiau.....(Walker Site 43)—located just west of the Sand Hills (Wailuku)
- Halekii Heiau.....(Walker Site 44)—located just north of the Sand Hills (Wailuku)
- Various Heiau.....(Walker Sites 45–54)—ten named *heiau* in Wailuku, all destroyed

A major inland fishpond was located at the present day spot of Kanaha Pond and Bird Sanctuary, just east of the project area. In traditional times, this was sometimes referred to as two, artificially joined ponds (Kanaha and Mauoni).

There is an interesting passage about Kahului during the middle 19th century by G.W. Bates (1854), cited in Sterling (1998). Bates’ interpretation of a major battleground site in Kahului may not have been accurate, although there are many oral traditions about battles in this general area, but the rest of his description is instructive and worth quoting at length:

Leaving Wai-lu-ku, and passing along toward the village Kahului, a distance of three miles, the traveler passes over the old battle-ground named after the village. It is distinctly marked by moving sand hills, which owe their formation to the northeast trades. Here these winds blow almost with the violence of a sirocco, and clouds of sand are carried across the northern side of the isthmus to a height of several hundred feet... In places laid bare by the action of winds, there were human skeletons projecting... (Sterling 1998:92)

HISTORIC SETTING

Literally hundreds of Land Commission Awards (LCA) are documented for Wailuku Ahupua`a (see, *e.g.*, Sterling 1998:86; Burgett and Spear 2003), although, in keeping with the broad settlement pattern outlined above, most of these were located in and around Iao Valley, west of the Wailuku Town and well removed from the project area. The existence of such large numbers of LCAs, however, does attest to the large settled population in the lower Iao Valley during the middle 19th century, and residents of Kahului were no doubt drawn into this sphere of influence.

There are no LCAs for the project area, which is owned by Alexander and Baldwin, Inc., according to TMK data (see Figure 2). The soil map by Foote *et al.* (1972) defines the area to the north of the project area as more or less ‘fill land’, presumably, in this case, to stabilize coastal Kahului Bay. Two older gentlemen living (homelessly) to the north of the parcel described the current parcel as previously having numerous, small houses (more like shacks, according to one of the informants).

Traditional land utilization was rapidly and dramatically supplanted by sugar cane cultivation during the 1850s (Dorrance and Morgan 2000). Many of the awarded LCAs in Wailuku Ahupua`a were under sugar cane cultivation by the mid 19th century. Sites and features built during this period include water irrigation ditches, terraces, free standing walls, historic houses, and mill structures. Cultivation of sugar cane dominated land use in Wailuku Ahupua`a well into the middle 20th century.

PREVIOUS ARCHAEOLOGY

There is no shortage of archaeological studies focused in the Wailuku Town area (see below), but little work has taken place in or around the immediate vicinity of this project area prior to SCS’s initial survey (Monahan 2004) in which no cultural materials of archaeological interest were found.

A substantial number of traditional archaeological sites and features, including many burials in sandy deposits, have been documented in and around the historic Wailuku Town. The following is a sampling of these studies. Archaeological Monitoring by Morawski and Spear (2001) yielded an historic refuse deposit and one set of disturbed (disarticulated) human remains (Site -5125) interpreted as a traditional Native Hawaiian burial. The human remains were recovered in Pu`uone sands several hundred meters from the shoreline, in a similar sedimentary context as the present project area.

Fredricksen and Fredricksen (2002) conducted an Archaeological Inventory Survey on a small (< 1.0-acre) parcel along Lower Main Street in Wailuku. The survey documented a remnant of a pre-Contact habitation site (-4730), buried food remains, and one traditional Native Hawaiian burial in Pu`uone sands.

Human remains were exposed during construction at a parcel on Lower Main Street in Wailuku (Donham 1994). Site -3556 contains the remains of at least four individuals in association with a shell ring, beads, and other shell ornaments.

Burgett and Spear (1996) conducted an inventory survey of 1.3 acres on Lower Main Street in Wailuku in sand hill deposits, identifying two buried traditional sites in the process (including burials, fire pits, and a cultural layer). Burgett and Spear (1995) conducted another Archaeological Inventory Survey along Lower Main Street in the Wailuku Sand Hill deposits (Home Maid Bakery location), identifying a precontact habitation site and a burial (Sites -3924 and -3925).

Dunn and Spear (1995) describe the results of Archaeological Monitoring in Wailuku in sand hill deposits. Three sites were identified, including two burials (Site -4005 and -4068) and a hearth (-4067).

Several other projects in the Wailuku area have also recovered traditional buried deposits and human burials (*e.g.*, Connolly 1973; Spear 1995; Pantaleo and Sinoto 1996; Fredricksen and Fredricksen 1999).

Fredricksen and Fredricksen (1993) conducted an inventory survey of 2 acres across from the junction of Waiehu Beach Road and Kahului Beach Road, just north of the project area. The survey identified: a historic railroad berm (Site -3112); a stratified site containing both historic (Site -3119A, upper) and traditional (Site -3119B, lower) components; and, a large (precontact)

habitation site with multiple burials (Site -3120) (Fredrickson *et al.* 1997). Still more burials were recovered in the same project area at a later date (Site -4668) (Fredricksen 2000, cited in Fredricksen and Fredricksen 2002).

Fredricksen *et al.* (1995) conducted Archaeological Inventory Survey of three small parcels on Lower Main Street in Wailuku, and identified one traditional cultural layer (Site -4127).

EXPECTED FINDINGS DURING MONITORING

Based on all of the above background information expected findings during Monitoring include:

- (1) No surface cultural material of archaeological interest
- (2) A variety of subsurface stratigraphy that includes a significant sandy layer (highest in potential for containing traditional burials).
- (3) There is a high likelihood of finding historic and modern (mostly archaeologically insignificant) debris of various kinds, especially as fill or past garbage dumping.

MONITORING CONVENTIONS AND METHODOLOGY

This Archaeological Monitoring Plan has been devised in accordance with DLNR rules governing standards for Archaeological Monitoring (DLNR 2003). SCS monitors will adhere to the following guidelines during monitoring:

1. A qualified archaeologist from SCS intimately familiar with the project area and the results of previous archaeological work conducted in the Wailuku area will conduct on-site monitoring of subsurface construction activities on the parcel. If significant deposits or features are identified and additional field personnel are required, SCS will notify the contractor or representatives thereof before additional personnel are brought to the site.
2. If features or cultural deposits are identified during Monitoring, the on-site archaeologist will have the authority to temporarily suspend construction activities at the significant location so that the cultural feature(s) or deposit(s) may be fully evaluated and appropriate treatment of the cultural deposit(s) is conducted. SHPD (Ms. Melissa Kirkendall) will be contacted to establish feature significance and potential mitigation procedures. Treatment activities primarily include documenting the feature/deposit through plotting its location on an overall site map, illustrating a plan view map of the feature/deposit, profiling the deposit in two dimensions, photographing the finds (with

the exception of human burials), collecting artifact and soil samples, and triangulating the finds on a map. Construction work and/or back-filling of excavation pits or trenches will only continue in the sample location when all documentation has been completed.

3. Soil stratigraphy associated with subsurface cultural deposits will be noted and photographed, particularly those containing significant quantities or qualities of cultural materials. If deemed significant by SHPD and SCS, these deposits will be sampled, as determined by the same.

4. In the event that human remains are encountered, all work in the immediate area of the find will cease and the area will be secured from further activity until burial protocol has been completed. The SHPD island archaeologist (Ms. Melissa Kirkendall) and SHPD-Burial Sites Program (located in Kapolei, O'ahu) will both be immediately identified about the discovery of human remains on the property. Notification of the discovery will also be made to the Maui Islands Burial Council by either SHPD (Melissa Kirkendall) or SCS (Michael Dega). As this is a Monitoring project, SHPD retains jurisdiction on the discovery of any human remains. A determination of the minimum number of individuals (MNI), age(s), and ethnicity of the burial(s) will be ascertained in the field by SCS. Rules outlined in Chapter 6e, Section 43 shall be followed. Profiles, plan view maps, and illustrative documentation of skeletal parts will be recorded to document the burial(s). The burial location will be identified and marked. If a burial is disturbed during trench excavations, materials excavated from the vicinity of the burial(s) will be manually screened through 1/8-inch wire mesh screens to recover any displaced skeletal material. If the remains are to be removed, the work will be in compliance with HRS 6.E-43.6, Procedures Relating to Inadvertent Discoveries after approval from SHPD.

5. To ensure that contractors and the construction crew are aware of this Archaeological Monitoring Plan and possible site types to be encountered on the parcel, a brief coordination meeting will be held between the construction team and monitoring archaeologist prior to initiation of the project. The construction crew will also be informed about the possibility that human burials could be encountered and how they should proceed if they observe such remains.

6. SCS will provide all coordination with the contractor, SHPD, and any other group involved in the project. SCS will coordinate all Monitoring and sampling activities with the contractor's safety officers to ensure that proper safety regulations and protective measures meet compliance. Close coordination will also be maintained with construction representatives in order to adequately inform personnel of the possibility that open archaeological units or trenches may occur in the project area.

7. As necessary, verbal reports will be made to SHPD and any other agencies as requested.

LABORATORY ANALYSIS

All samples collected during the project, except human remains, will undergo analysis at the SCS laboratory in Honolulu. In the event that human remains are identified and the SHPD and Maui Island Burial Council authorize their removal, they will be curated on Maui. Photographs, illustrations, and all notes accumulated during the project will be curated at the Honolulu laboratory. All retrieved artifact and midden samples will thoroughly cleaned, sorted, and analyzed. Significant artifacts will be photographed, sketched, and classified (qualitative analysis). All metric measurements and weights will be recorded (quantitative analysis). These data will be presented in tabular form within the final monitoring report. Midden samples will be minimally identified to major 'class' (e.g., bivalve, gastropod mollusk, echinoderm, fish, bird, mammal). All data will be clearly recorded on standard laboratory forms that also include number and weight (as appropriate) of each constituent category. These counts will also be included in the final report.

Should any samples amenable to dating be collected from a significant cultural deposit, they will be prepared in the SCS laboratory and submitted for specialized radiocarbon analysis. While primary emphasis for dating is placed on charcoal samples, we do not preclude the use of other material such as marine shell or nonhuman bone materials. SCS will consult with SHPD and the client if radiocarbon dates are deemed necessary.

All stratigraphic profiles will be drafted for presentation in the final report. Soil stratigraphy encountered during excavation will be documented utilizing metric graph paper and United States Department of Agriculture (USDA) Munsell soil color charts. Representative plan view sketches showing the location and morphology of identified sites/features/deposits will be compiled and illustrated.

CURATION

If requested by the land owner, SCS will curate all recovered materials in Honolulu (except human remains, which would remain on-island) until a permanent, more suitable curation center is identified. The land owner may request to curate all recovered cultural materials once analysis has been completed.

REPORTING

An Archaeological Monitoring report documenting the project findings and interpretation, following SHPD guidelines for Archaeological Monitoring reports, will be

prepared and submitted 45 days after the completion of fieldwork. This time line is requested to account for any radiocarbon age determinations (typically 30-45 days), if necessary.

If cultural features or deposits are identified during fieldwork, the sites will be evaluated for historical significance and assessed under State and Federal Significance Criteria. The Archaeological Monitoring report will be drafted until accepted by SHPD and will then be submitted to both SHPD and the client.

If human remains are identified during the course of this project, a Burial Treatment Plan will be prepared for review by SHPD and the Maui Island Burial Council. It is expected that any remains identified during this project will be permanently curated at an on-site re-burial shrine.

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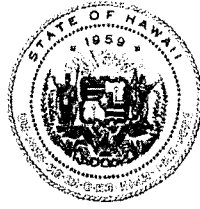
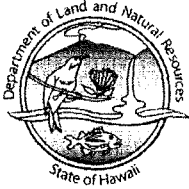
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**Archaeological
Monitoring Plan
Approval**

APPENDIX

B-2

LINDA LINGLE
GOVERNOR OF HAWAII



LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
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KAPOLEI, HAWAII 96707

822
October 9, 2007

Dr. Michael Dega
Scientific Consultant Services (SCS)
711 Kapiolani Boulevard, Suite 975
Honolulu, Hawai'i 96813

LOG NO: 2007.1354
DOC NO: 0709JP31
Archaeology

Dear Dr. Dega:

**SUBJECT: Chapter 6E-42 Historic Preservation Review [County] –
Archaeological Monitoring Plan for Construction Activities Related to
Grading and Grubbing Permit (G T2006/0110),
Work on County Roadway Permit (WTP T2006/0076), and
Building Permit Applications (B T2006/2737 & B T2006/2738) for 'Aina 'O Kane
Wailuku Ahupua'a, Wailuku District, Island of Maui
TMK (2) 3-7-005:003, 011, and 023 (Portions)**

Thank you for the opportunity to review this plan which our staff originally received in April 2007 (Cordle and Dega 2007, *An Archaeological Monitoring Plan for 3.86 Acres in Kahului, Wailuku Ahupua'a, Wailuku District, Island of Maui, Hawai'i TMK (2) 3-7-005:003, 011 & 023*) ...Scientific Consultant Services, Inc

We have previously been involved with archaeological mitigation on the subject parcel including an archaeological assessment, a monitoring program, and field results presented in an archaeological monitoring report (LOG NO: 2004.3332/ DOC NO: 0411CD21; LOG NO: 2004.3585/ DOC NO: 0412MK18; LOG NO: 2005.1807/ DOC NO: 0509MK12; LOG NO: 2007.0399/ DOC NO: 0702MK20). We have previously recommended full-time archaeological monitoring for the current project (LOG NO: 2006.4066/ DOC NO: 0612JP02).

The Archaeological Monitoring Plan is acceptable and conforms to Hawaii Administrative Rules Chapter 13-279, which governs standards for archaeological monitoring. This archaeological monitoring program includes the following provisions: A qualified archaeologist will be on-site on a full-time basis and one archaeologist will be assigned for each piece of operating heavy equipment. All excavation activities on the subject parcel will have an archaeological monitor actively observing the construction activities. The on-site archaeologist will have the authority to halt excavation in the event that cultural materials are identified. Consultation with the Maui State Historic Preservation Division (SHPD) will occur in this event, to determine acceptable course of action.

If human burials are identified, work will immediately cease, the SHPD Burial Sites Program/Culture and History Branch (243-4640), Maui SHPD Archaeology Branch (243-1285), Oahu SHPD (692-8015), and

Dr. Michael Dega

Page 2

the Maui/Lanai Islands Burial Council will be notified. Compliance with procedures outlined in HRS 6E-43 will be followed. Coordination meetings with the construction crew will be held prior to project initiation. The plan further indicates that an acceptable report will be submitted to this office within 45 days (SHPD deadline is 180 days) of project completion.

We believe it is unlikely that any historic properties will be affected by construction work related to the project, with the implementation of this accepted archaeological monitoring plan. Please notify our Maui (243-5838) and Oahu offices (692-8020), via facsimile, at onset and completion of the project and monitoring program (and/or submit phased reports based on findings). If there are any concerns or questions, feel free to contact us at (808) 243-4641 or (808) 243-1285.

Aloha,



for Melanie Chinen, Administrator
State Historic Preservation Division

JP:oap

c: DPWEM, County of Maui, FAX 270-7972
Director, Dept of Planning, FAX 270-7634
Maui Cultural Resources Commission, Dept. of Planning, 250 S. High Street, Wailuku, HI 96793
Hinano Rodrigues, Cultural Historian, SHPD
Jenny Pickett, SHPD Maui

**Archaeological
Monitoring Report**

APPENDIX

B-3

Exhibit I

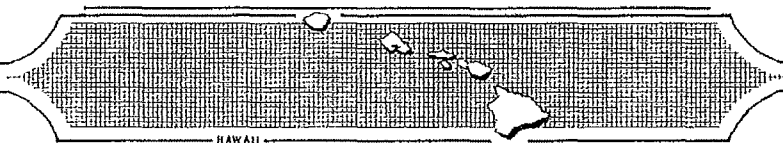
SCS Project 602-AMR-1

**AN ARCHAEOLOGICAL MONITORING REPORT
FOR 6.926 ACRES IN WAILUKU AHUPUA'A
WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII
[TMK: 3-7-004: 001; TMK: 3-7-005: 003, 011, & 023]**

Prepared by:
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November 2006

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ABSTRACT

Scientific Consultant Services (SCS), Inc. conducted Archaeological Monitoring during construction work in Kahului, Wailuku Ahupua'a, Wailuku District, Maui, Hawai'i [TMK: 3-7-004: 001; TMK: 3-7-005: 003, 011, & 023]. Construction work occurred intermittently over a seven-month period. The planned work included mechanical excavation for the installation of new sewer and drain lines, excavation of postholes for a dust fence, grading of the entire project area down to two inches, and the installation of a manhole and drain line.

Monitoring was conducted due to the high potential for the inadvertent discovery of human remains and/or traditional or historic cultural deposits. While no such finds were made during the course of this work, numerous historic artifacts, including bottles, were collected. The majority of artifacts collected during Monitoring date to the late Historic and Modern periods. The data collected during this work are presented in the following Monitoring Report.

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INTRODUCTION

Scientific Consultant Services (SCS), Inc. conducted Archaeological Monitoring of construction on approximately 6.926 acres in Kahului, Wailuku Ahupua`a, Wailuku District, Island of Maui, Hawai'i (Figures 1 and 2). Ground altering activities conducted on this parcel consisted of trenching for new drain and sewer line installation, excavation of postholes for a dust fence, and grading of the entire project area down to two inches. Monitoring was conducted between September 22, 2005 and April 28, 2006 by J. Frey, B.A. and J. Risedorf, under the direction of Project Director W.R. Fortini, B.A., and Principal Investigator Mike Dega, Ph.D. Monitoring was conducted in accordance with the rules and regulations established by the Department of Land and Natural Resources, State Historic Preservation Division, under rule 13-279-5.

Due to the presence of sandy deposits throughout the project area and the well-documented presence of traditional Native Hawaiian burials, as well as other archaeological resources, in the general Kahului area, all construction activities in this parcel have been subjected to Archaeological Monitoring. However, no human remains were discovered during the course of this work. All archaeological materials documented and collected during this work dated to the Historic period. These included various historic objects, including several glass bottles.

ENVIRONMENTAL SETTING

The project area, comprising approximately 6.926 acres on two separate parcels, is located in the town of Kahului, Wailuku Ahupua`a, Wailuku District, Maui Island (see Figure 1). Kahului is situated on the northern side of the low sandy isthmus between East and West Maui. The project area is approximately 400 m (¼ mile) south of Kahului Harbor, just south of the main east-to-west thoroughfare of Kaahumanu Avenue.

The two separate parcels comprising the project area are subunits of a larger block bounded by Kaahumanu Avenue (to the north), Lono Avenue (to the east), Kane Street (to the west), and Kamehameha Avenue (to the south) (see Figures 2 and 3). For the purposes of this report, TMK: 3-7-004: 001 is designated the 'northern parcel', whereas TMK: 3-7-005: 003, 011, & 023 is designated the 'southern parcel.' The southern parcel (see Figure 2) includes Vevau Street, a paved cross street between the major thoroughfares of Kane Street and Lono Avenue that was not tested. It also includes two existing commercial operations (a 'Go Kart' track, and a remote-controlled car track) that could not be tested, since they were in operation at the time of the survey. The southern half of this (southern) parcel is mostly an open grassy area.

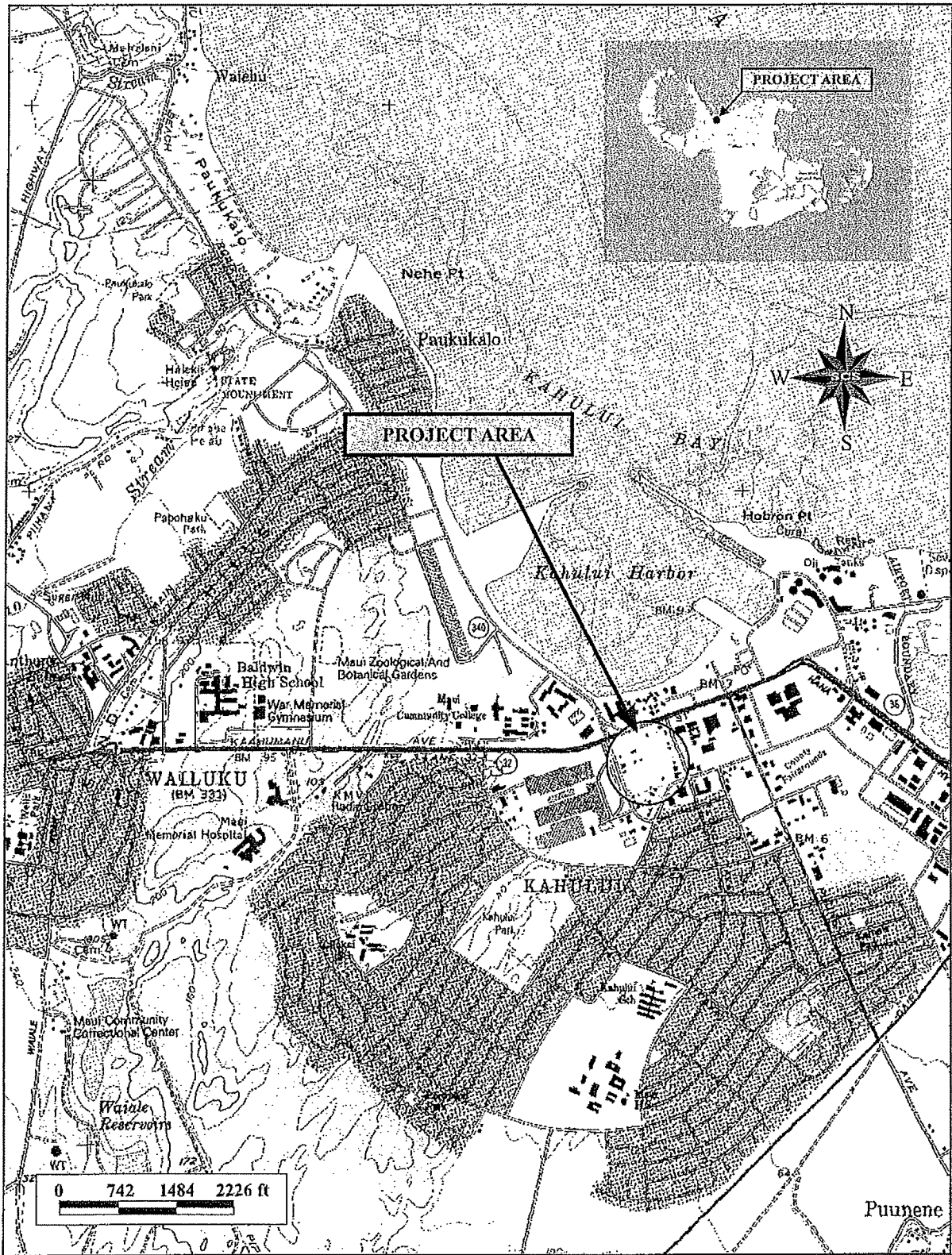


Figure 1: USGS (Wailuku Quadrangle) Map Showing Project Area Location.

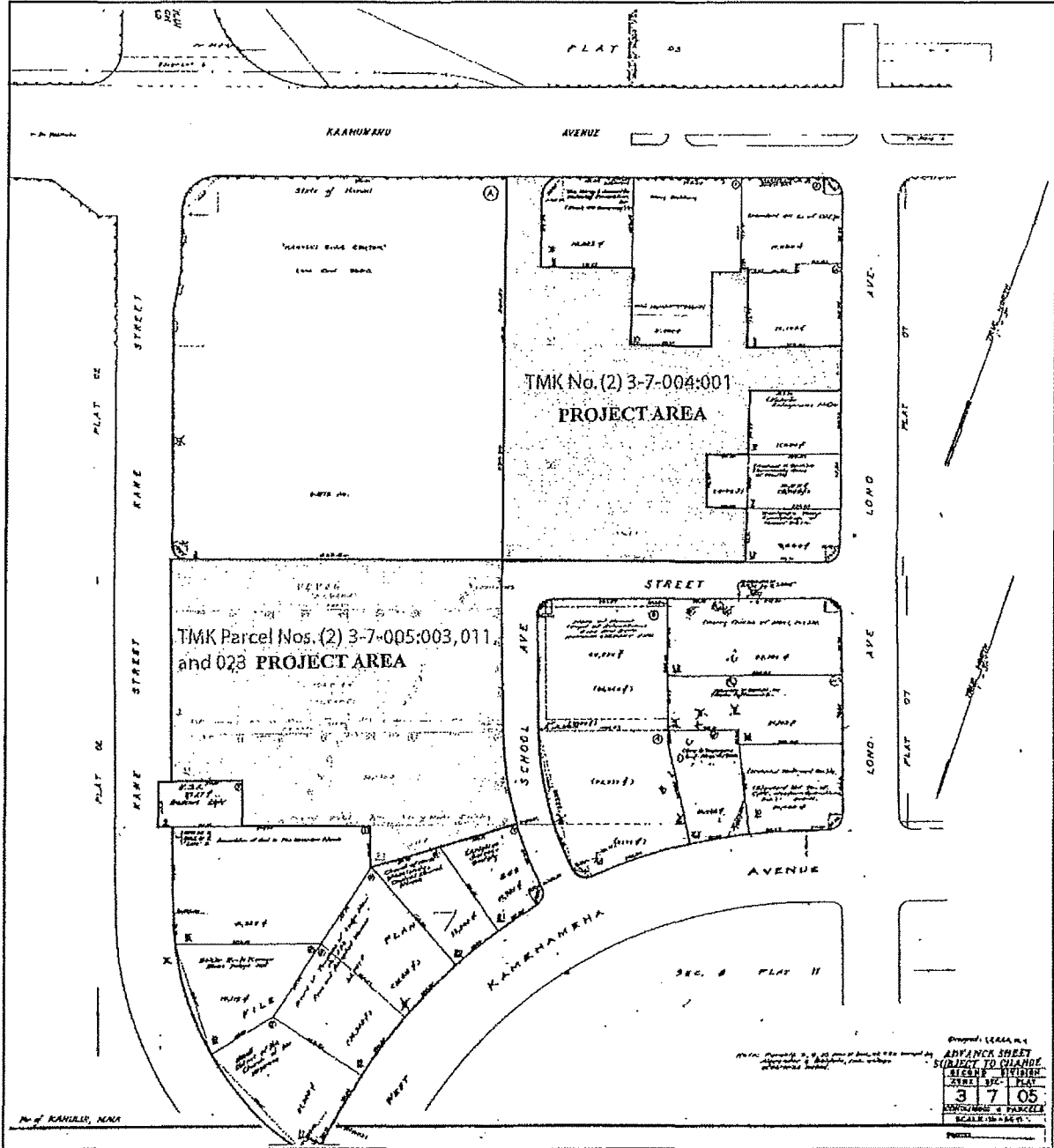


Figure 2: Tax Map Key [TMK] Showing Project Area Parcels.



Figure 3: Aerial Photograph Showing Existing Project Area Location (Map Provided by Chris Hart and Partners).

The northern parcel (see Figure 2) includes an unnamed paved cross street roughly bisecting the property from Lono Avenue to a bus parking facility in the western adjacent lot. An existing commercial operation (a miniature golf course) is located in the southwest corner of the northern parcel. Much of this parcel consists of paved and unpaved (gravel) parking areas (overflow parking from adjacent lots).

Elevation in the project area is approximately 2–3 m above mean annual sea level (amsl). The terrain in the northern parcel is predominately flat, dipping down gently (approximately 0.5 m over 100 m distance) to the north and northwest (see Figure 4). The water table is typically at, or slightly less than, 2.0 m below the present ground surface. The terrain in the southern parcel is slightly more variable, with an elevated area in the southeast that dips down more significantly (approximately 1.5 m over 140 m distance) to the west and to the northwest (Figure 7). The water table is somewhat deeper (> 2.0 m) in this parcel.

According to Foote *et al.* (1972), there are two main soil types in the project area. The boundary between these two main soil types runs more or less between the northern and southern parcels (Figure 8). The southern parcel consists exclusively of ‘Puuone Sand’ (PZUE). The northern parcel consists predominantly of ‘Fill Land’ (Fd). As discussed in more detail below (see FINDINGS), subsurface excavation demonstrated a significantly more complex soil-stratigraphic record in both parcels, which include buried clays and consolidated silts, in addition to sand. The northern parcel has a relatively deep, natural stratigraphy below the upper fill layer. In any case, Puuone Sand occurs on sand hills near the ocean, and common uses include pasturage and habitation sites (Foote *et al.* 1972).

Kahului is fairly dry owing in part to the ‘rain shadow’ effect of Haleakala. According to Armstrong (1983), annual rainfall in the project area is between the 500 mm (20 in.) and 760 mm (30 in.) isohyets. Giambelluca *et al.* (1986) indicate the project area sits more or less on the 500 mm (20 in.) isohyet. Approximately 70% of the project area has no vegetation, since it is covered by commercial operations, paving, or dirt/gravel. Where present, vegetation is dominated by invasive grasses and weeds (see Figures 4–7) with a few common trees species, including *Cocus nucifera* (Coconut Palm), *Mangifera indica* (Mango), and *Prosopis pallida* (*Kiawe*) (Hargreaves and Hargreaves 1964). No native species are present in the project area.

BACKGROUND

TRADITIONAL SETTING

Kahului Town is part of Wailuku Ahupua`a and Wailuku District, which collectively have yielded a substantial archaeological and historic record. The following is a brief summary of the salient aspects of these data.

In traditional times, it appears that Kahului was a relatively marginal settlement location, compared with Wailuku Town and areas to the north of Wailuku. Handy (1940) described the low-lying coastal areas east of Wailuku (including Kahului) as having scattered fishing settlements, which usually implies a relatively low population density or limited socio-economic status.

The Wailuku District was once known as “The Four Streams Area” (*Na Wai Eha*), which refers to the four main valleys that drain the eastern slopes of West Maui, including the massive Iao Valley (Handy and Handy 1972). The area from Waihe`e to Wailuku was formally the most extensive continuous area of wet taro cultivation in the Hawaiian Islands. Wailuku, itself, has been described as a “chiefly center” (Sterling 1998:90), although the seat of power was almost certainly concentrated in and around the Iao Valley, on the other (west) side of Wailuku from the project area. Areas upslope and west of the project area, including Wailuku Town, were once covered with *lo`i* (irrigated stone terraces) and house sites. Areas downslope and closer to the project area were burial grounds in traditional times.

Areas around the Waihe`e and Waiehu Streams, a few miles north of the project area, have yielded some of the earliest settlement dates in Maui (Kirch 1985). Cordy *et al.* (1978) have proposed that the coast and lower valleys in this area were first settled by A.D. 300 to 600. Closer to the project area, the Wailuku Sand Hills, about a mile to the west, have yielded substantial numbers of burials and other evidence of traditional Native Hawaiian settlement (see PREVIOUS ARCHAEOLOGY, below).

Sterling’s (1998) compendium of traditional archaeological sites on Maui has much to say about the Wailuku District, in general, and the Wailuku Ahupua`a, in particular. Documented *heiau* from Wailuku Ahupua`a include:

- Kaluli Heiau (Walker Site 42)—since destroyed
- Pihana Heiau (Walker Site 43)—located just west of the Sand Hills (Wailuku)
- Halekii Heiau (Walker Site 44)—located just north of the Sand Hills (Wailuku)
- Various Heiau (Walker Sites 45–54)—ten named *heiau* in Wailuku, all destroyed

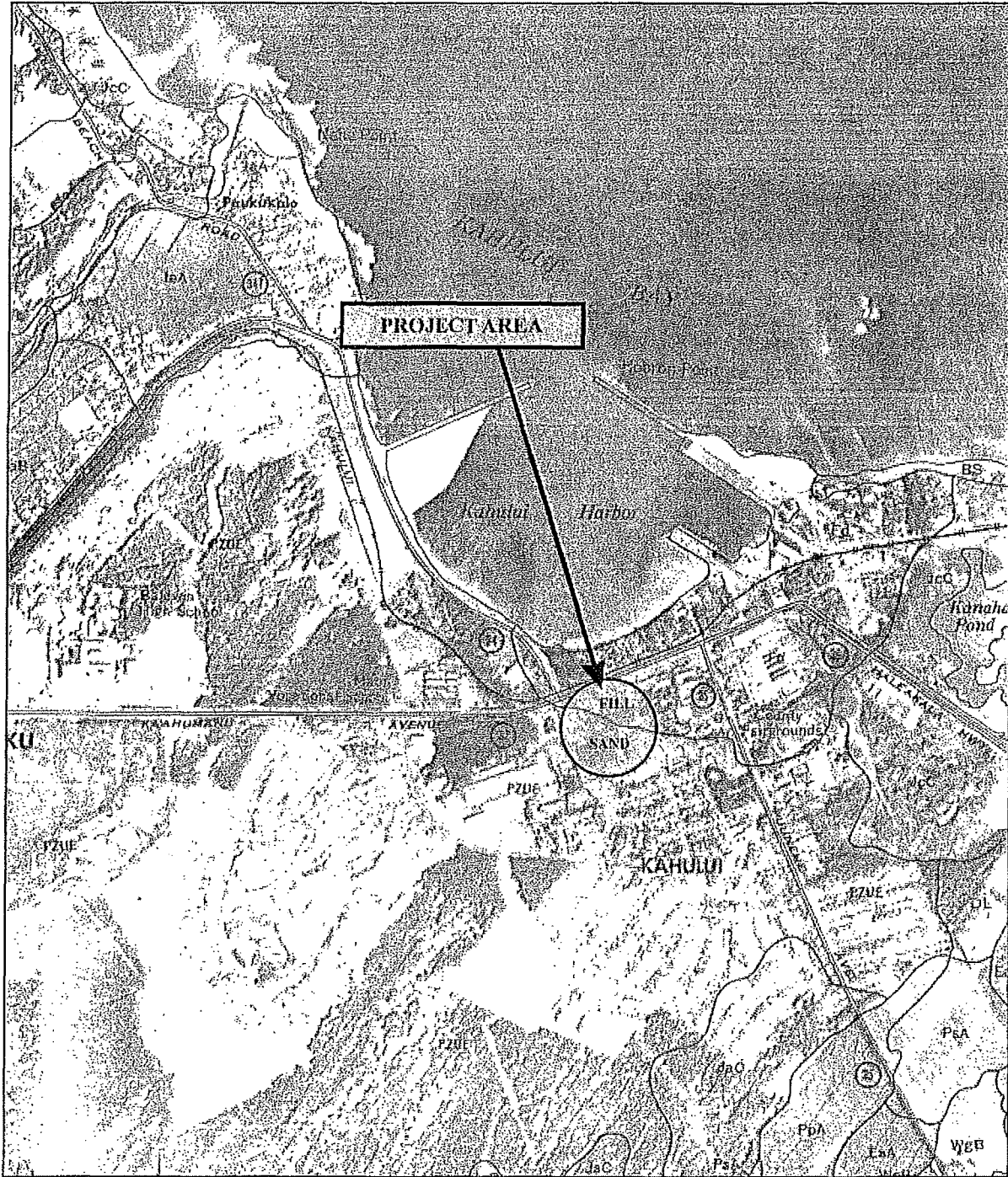


Figure 4: Soil Distribution Map of the Project Area (Foote *et al.* 1972).

A major inland fishpond was located at the present day spot of Kanaha Pond and Bird Sanctuary, just east of the project area. In traditional times, this was sometimes referred to as two, artificially joined ponds (Kanaha and Mauoni).

There is an interesting passage about Kahului during the middle 19th century by G.W. Bates (1854), cited in Sterling (1998). Bates' interpretation of a major battleground site in Kahului may not have been accurate, although there are many oral traditions about battles in this general area, but the rest of his description is instructive and worth quoting at length:

Leaving Wai-lu-ku, and passing along toward the village Kahului, a distance of three miles, the traveler passes over the old battle-ground named after the village. It is distinctly marked by moving sand hills, which owe their formation to the northeast trades. Here these winds blow almost with the violence of a sirocco, and clouds of sand are carried across the northern side of the isthmus to a height of several hundred feet... In places laid bare by the action of winds, there were human skeletons projecting...(Sterling 1998:92)

HISTORIC SETTING

Literally hundreds of Land Commission Awards (LCA) are documented for Wailuku Ahupua`a (see, *e.g.*, Sterling 1998:86; Burgett and Spear 2003), although, in keeping with the broad settlement pattern outlined above, most of these were located in and around Iao Valley, west of the Wailuku Town and well removed from the project area. The existence of such large numbers of LCAs, however, does attest to the large settled population in the lower Iao Valley during the middle 19th century, and residents of Kahului were no doubt drawn into this sphere of influence.

There are no LCAs for the project area, which is owned by Alexander and Baldwin, Inc., according to TMK data (see Figure 2). The soil map by Foote *et al.* (1972) defines more or less the entire northern parcel as 'fill land', presumably, in this case, to stabilize coastal Kahului Bay (see Figure 1). Two older gentlemen living (homelessly) on the northern parcel described the southern parcel as previously having numerous, small houses (more like shacks, according to one of the informants).

Traditional land utilization was rapidly and dramatically supplanted by sugar cane cultivation during the 1850s (Dorrance and Morgan 2000). Many of the awarded LCAs in Wailuku Ahupua`a were under sugar cane cultivation by the mid 19th century. Sites and features built during this period include water irrigation ditches, terraces, free standing walls, historic

houses, and mill structures. Cultivation of sugar cane dominated land use in Wailuku Ahupua`a well into the middle 20th century.

PREVIOUS ARCHAEOLOGY

There is no shortage of archaeological studies focused in the Wailuku Town area (see below), but little work has taken place in or around the immediate vicinity of this project area prior to SCS's initial survey (Monahan 2004).

A substantial number of traditional archaeological sites and features, including many burials in sandy deposits, have been documented in and around the historic Wailuku Town. The following is a sampling of these studies. Archaeological Monitoring by Morawski and Spear (2001) yielded an historic refuse deposit and one set of disturbed (disarticulated) human remains (Site -5125) interpreted as a traditional Native Hawaiian burial. The human remains were recovered in Pu`uone sands several hundred meters from the shoreline, in a similar sedimentary context as the southern parcel of the present project area.

Fredricksen and Fredricksen (2002) conducted an Archaeological Inventory Survey on a small (< 1.0-acre) parcel along Lower Main Street in Wailuku. The survey documented a remnant of a pre-Contact habitation site (-4730), buried food remains, and one traditional Native Hawaiian burial in Pu`uone sands.

Human remains were exposed during construction at a parcel on Lower Main Street in Wailuku (Donham 1994). Site -3556 contains the remains of at least four individuals in association with a shell ring, beads, and other shell ornaments.

Burgett and Spear (1996) conducted an inventory survey of 1.3 acres on Lower Main Street in Wailuku in sand hill deposits, identifying two buried traditional sites in the process (including burials, fire pits, and a cultural layer). Burgett and Spear (1995) conducted another Archaeological Inventory Survey along Lower Main Street in the Wailuku Sand Hill deposits (Home Maid Bakery location), identifying a pre-Contact habitation site and a burial (Sites -3924 and -3925).

Dunn and Spear (1995) describe the results of Archaeological Monitoring in Wailuku in sand hill deposits. Three sites were identified, including two burials (Site -4005 and -4068) and a hearth (-4067).

Several other projects in the Wailuku area have also recovered traditional buried deposits and human burials (e.g., Connolly 1973; Spear 1995; Pantaleo and Sinoto 1996; Fredricksen and Fredricksen 1999).

Fredricksen and Fredricksen (1993) conducted an inventory survey of 2 acres across from the junction of Waiehu Beach Road and Kahului Beach Road, just north of the project area. The survey identified: an historic railroad berm (Site -3112); a stratified site containing both historic (Site -3119A, upper) and traditional (Site -3119B, lower) components; and, a large (pre-Contact) habitation site with multiple burials (Site -3120) (Fredrickson *et al.* (1997). Still more burials were recovered in the same project area at a later date (Site -4668) (Fredricksen 2000, cited in Fredricksen and Fredricksen 2002).

Fredricksen *et al.* (1995) conducted Archaeological Inventory Survey of three small parcels on Lower Main Street in Wailuku, and identified one traditional cultural layer (Site -4127).

MONITORING CONVENTIONS AND METHODOLOGY

This AMR has been prepared in accordance with DLNR-SHPD rules governing standards for Archaeological Monitoring (§13-279). Archaeological monitors adhered to the following guidelines during monitoring:

1. A qualified archaeologist from SCS familiar with the project area and the results of previous archaeological work conducted in the area monitored subsurface construction activities on the project area. When significant deposits or features were identified and additional field personnel were required, the archaeologist notified the contractor or representatives before additional personnel were brought to the site.
2. When features or cultural deposits were identified during Archaeological Monitoring, the on-site archaeologist had the authority to temporarily suspend construction activities at the significant location so that the cultural feature(s) or deposit(s) could be fully evaluated and appropriate treatment of the cultural deposit(s) could be conducted. These actions were needed to fulfill the reporting requirements specified in §13-279-5(5) through (6). SHPD archaeologists were consulted to establish feature significance and potential mitigation procedures. Treatment activities primarily included documenting the feature/deposit through plotting its location on an overall site map, illustrating a plan view map of the feature/deposit, profiling the deposit in three dimensions, photographing the finds (with the exception of human burials), artifact and soil sample collection, and triangulation of the finds. Construction work was permitted only after all documentation was completed.

3. Stratigraphy in association with subsurface cultural deposits was noted and photographed, particularly from deposits containing significant cultural materials. If deemed significant by SHPD and SCS, these deposits were sampled.
4. To ensure that contractors and the construction crew were aware of this AMP and possible site types to be encountered in the project area, a brief coordination meeting was held between the construction personnel and monitoring archaeologist prior to initiation of the project. The construction crew was also informed as to the possibility that human burials could be encountered and how they should proceed if they observe such remains.
5. SCS provided all coordination with the contractor, SHPD, and any other group involved in the project. SCS coordinated all monitoring and sampling activities with the safety officers for the contractors to ensure that proper safety regulations and protective measures met compliance. Close coordination was also maintained with construction representatives in order to adequately inform personnel of the possibility that open archaeological units or trenches occurred in the project area.
6. As necessary, verbal reports were made to SHPD, and any other agencies as requested.

LABORATORY ANALYSIS

All samples collected during the project, except human remains, underwent analysis at the SCS laboratory in Maui, in accordance with SHPD rules (§13-279, HAR). All photographs, illustrations, and field notes accumulated during the project are being curated at the Honolulu laboratory (SCS). All retrieved artifacts and midden samples have been cleaned, sorted, and analyzed by an SCS lab technician. Significant artifacts were photographed, sketched, and classified (qualitative analysis). All metric measurements and weights were recorded (quantitative analysis). These data were presented in tabular form within the final monitoring report. Midden samples were minimally identified to major 'class' (e.g., bivalve, gastropod mollusk, echinoderm, fish, bird, and mammal). All data were clearly recorded on standard laboratory forms which also included number and weight (as appropriate) of each constituent category. These counts were also included in the final report.

No datable or macrobotanical samples were collected during the course of this work. Therefore, no such procedures were executed. Also, no drafted stratigraphic profiles have been included, as none were drawn in the field. Stratigraphic data was recorded by photography and written notation.

CURATION

SCS will continue to curate all recovered materials in Maui until the work is completed, reviewed, and accepted by the state. All materials gathered during this project (including documentation) are ultimately the property of the client, who may request their transfer subsequent to the acceptance of the final Archaeological Monitoring Report.

REPORTING

This Archaeological Monitoring Report documenting all aspects of the work has been submitted within 60 days of the completion of fieldwork, in accordance with SHPD administrative rules (§13-279-5).

All cultural features and deposits have been evaluated for historic significance according to criteria established in §13-275-6(b), HAR. Subsequent to changes suggested by SHPD, a final draft of the Archaeological Monitoring Report will be submitted to the SHPD and to the client.

MONITORING RESULTS

SOIL STRATIGRAPHY

The stratigraphy that was observed during Monitoring was consistent with that observed during previous work on this project area.

The main soil-stratigraphic units are described below. This description does not include the upper 'fill layer' present in much of the project area. The fill layer consisted of a loose, unstructured mixture of gravel and silt spanning up to 50 cmbs. The remaining soil layers observed throughout the site are as follows:

Layer I: Loose- to moderately-consolidated, yellowish brown (10YR 5/6) to grayish brown (10YR 5/2) medium-grained sand; bedding structures typically visible as thin alternating bands of slightly different sediment color and grain size; small pebbles common, typically concentrated in thin bands; variable thickness, but usually between 20–50 cm; this layer is frequently associated with an extremely consolidated silt (Layer II, see below), which may occur above or below, and a dense layer of water worn pebbles and cobbles (designated IA, see below) at the base of Layer I; included some recent historic and modern debris; occasional charcoal flecking, but very sparse;

Layer Ia: This is a subunit of Layer I, which typically occurs at the base of the bedded sands; water worn pebble and cobble conglomerate in gray (2.5YR 6/1) medium-grained sand; this subunit, along with the bedded sands, appear to be a

major 'fining upward' sequence present over much of the site; no cultural material; no charcoal;

Layer II: Extremely consolidated (resistant) strong brown (7.5YR 4/6) silt, appears 'reddish brown' in color in the field; occurs as alternating bands between layers of bedded sand (I), typically between 10–20 cm thick; occasional charcoal flecking, but very sparse;

Layer III: Wet, sticky dark brown (7.5YR 3/3) clay with some (limited) silt content; no inclusions; this layer was typically located deep in the sequence (below 1.0 m), directly above the basal sand unit (IV) or separated from the basal sand unit by one layer of bedded sand; no cultural material; no charcoal;

Layer IV: Wet, unconsolidated coarse sand with abundant small pebbles, small water worn shell fragments, small water worn coral fragments; the basal marine sand unit common to all trenches; coincident with the water table; color of this unit varies but is very difficult to categorize since it consists of such large grains (of which the shells, pebbles, and corals are a major component), giving it a 'multi-color', almost pixelated appearance; no cultural material; no charcoal.

ARTIFACTS

No traditional deposits, such as shell midden or lithics were observed. However, a sizable sample of Historic glass bottles was collected from throughout the project area. These included several whole and fragmentary soda, medicine and ink bottles dating from the early- to mid-twentieth century. Notable among these are three Maui Soda Works bottles and a Coca-cola bottle dating to c. 1920. Marbles, both modern and historic, ceramic houseware sherds and decomposing lumber were also observed. These finds were located in mixed proveniences, with no clear temporal associations observed. The admixture of modern and historic materials implies heavy disturbance throughout the project area—results that are congruent with the site expectations. The artifacts that were collected during monitoring are summarized in Appendix A.

SIGNIFICANCE ASSESSMENT AND RECOMMENDATIONS

The project area has been evaluated for significance according to the broad criteria established for the State and National Register of Historic Places. The five criteria are classified as follows:

- Criterion A Site is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion B Site is associated with the lives of persons significant in our past;

- Criterion C Site is an excellent site type; it embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction;
- Criterion D Site has yielded or has the potential to yield information important in prehistory and history;
- Criterion E Site has cultural significance; probable religious structures or burials present (State of Hawai'i criterion only).

The subject parcels, noted as TMK: 3-7-004: 001 and TMK: 3-7-005: 003, 011, & 023, yielded no traditional artifacts or deposits, such as shell midden. There were, however, dense accumulations of Historic and Modern period debris including datable bottles, ceramic sherds and cut mammal bones. Due to their importance to the understanding of the recent habitation history of the Kahului area, these materials are considered significant under Criterion A.

While these materials do not call for continued archaeological monitoring, the presence of undisturbed beach sand, as observed throughout archaeological work here, does. In the context of Wailuku District, intact beach sand deposits yield a high potential for the inadvertent discovery of human remains. Therefore, the presence of such matrix also qualifies the project area as significant under Criteria D and E.

In conclusion, the potential for the inadvertent discovery of human remains in this project area, as well as in the general area, remains high. Therefore, archaeological monitoring is recommended for any future ground disturbing construction activities in this area.

**Traffic Impact
Analysis Report**

APPENDIX

C

TRAFFIC IMPACT ANALYSIS REPORT

KAHULUI LANI

SENIOR AFFORDABLE HOUSING

Kahului, Maui, Hawaii

DRAFT FINAL

May 5, 2017

Prepared for:

Catholic Charities Housing Development Corporation
c/o Catholic Charities Hawaii
1822 Keeaumoku Street
Honolulu, Hawaii 96822



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TRAFFIC IMPACT ANALYSIS REPORT
KAHULUI LANI SENIOR AFFORDABLE HOUSING

Kahului, Maui, Hawaii

DRAFT FINAL

Prepared for

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c/o Catholic Charities Hawaii
1822 Keeaumoku Street
Honolulu, Hawaii 96822

Prepared by

Austin, Tsutsumi & Associates, Inc.

Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawai'i

May 5, 2017



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TRAFFIC IMPACT ANALYSIS REPORT

KAHULUI LANI SENIOR AFFORDABLE HOUSING

Kahului, Maui, Hawaii

1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the potential traffic impacts resulting from the proposed Kahului Lani Senior Affordable Housing project (hereinafter referred to as the "Project").

1.1 Location

The Project is located in Kahului, east of Queen Kaahumanu Shopping Center and west of Kahului Public Library on the island of Maui. The Project is bound by Vevau Street to the north, Kane Street to the west, and School Avenue on the east. Figure 1.1 shows the Project location.

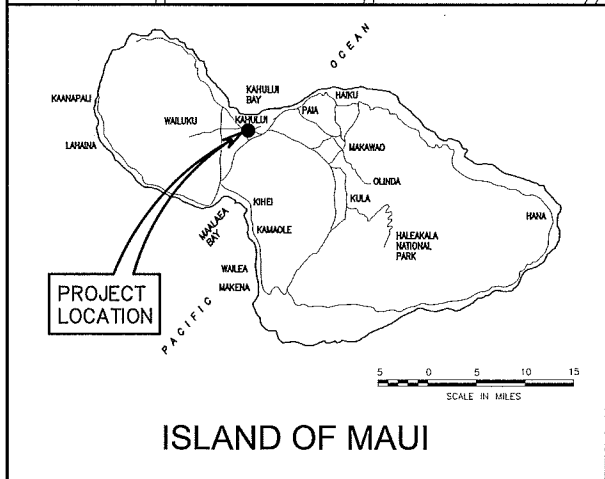
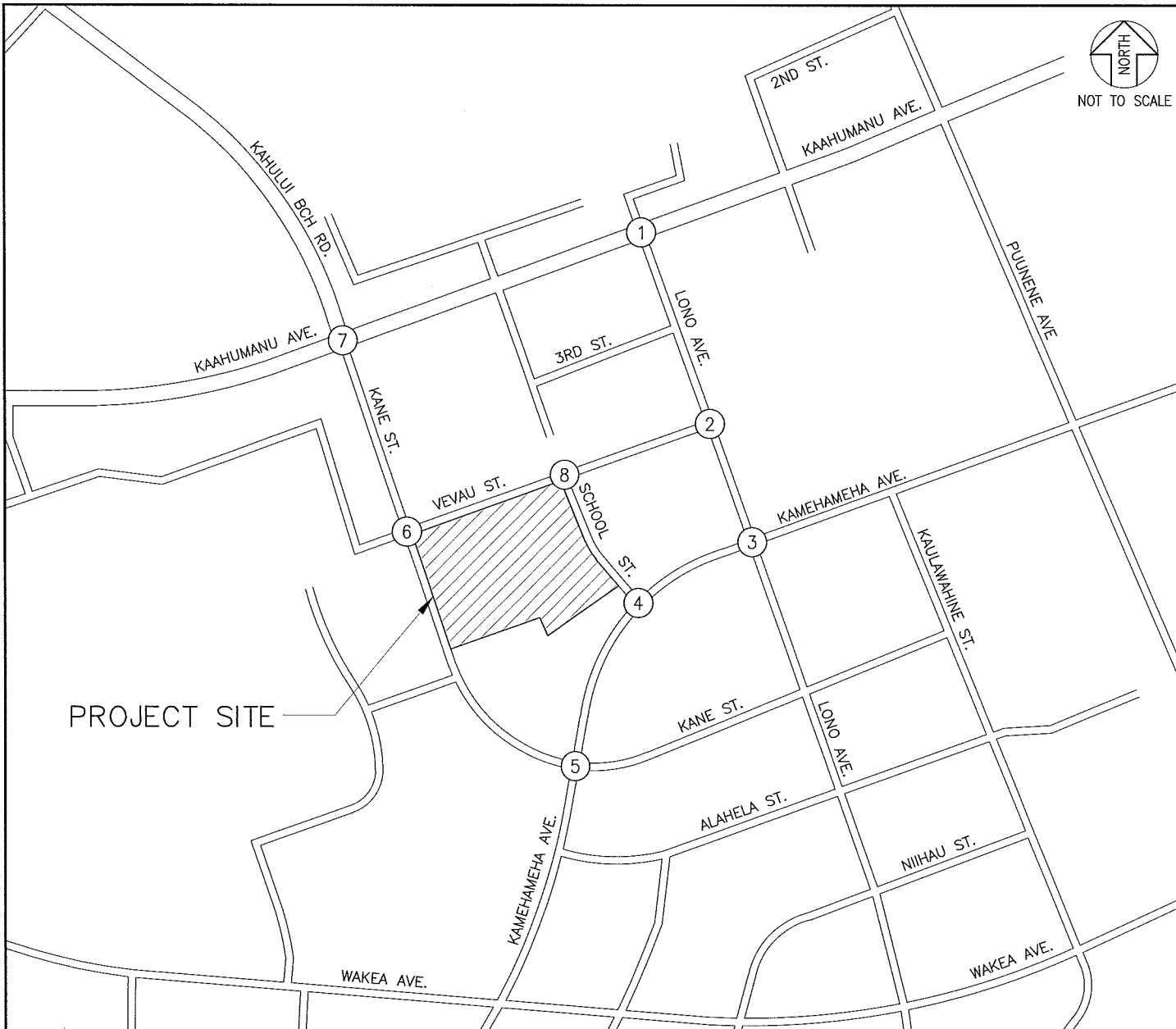
1.2 Project Description

The Project proposes to construct 164 senior rental units, 1 managers unit, approximately 2,500 square feet of recreational space for the residents of the Project, 5,000 square feet of office type space for Catholic Charities of Hawaii, and park space. Access will be provided via Project driveways from School Street, Vevau Street and Kane Street. The Kane Street access is proposed as a right-in right-out access only.

The Project is anticipating completion by Year 2019. Figure 1.2 shows the Project site plan.



NOT TO SCALE



STUDY INTERSECTIONS	
①	KAAHUMANU AVE. & LONO AVE.
②	LONO AVE. & VEAU ST.
③	KAMEHAMEHA AVE. & LONO AVE.
④	KAMEHAMEHA AVE. & SCHOOL ST.
⑤	KAMEHAMEHA AVE. & KANE ST.
⑥	KANE ST. & VEAU ST.
⑦	KAAHUMANU AVE. & KAHULUI BCH RD. & KANE ST.
⑧	VEAU ST. & SCHOOL ST.

KAHULUI LANI SENIOR AFFORDABLE HOUSING
TIAR

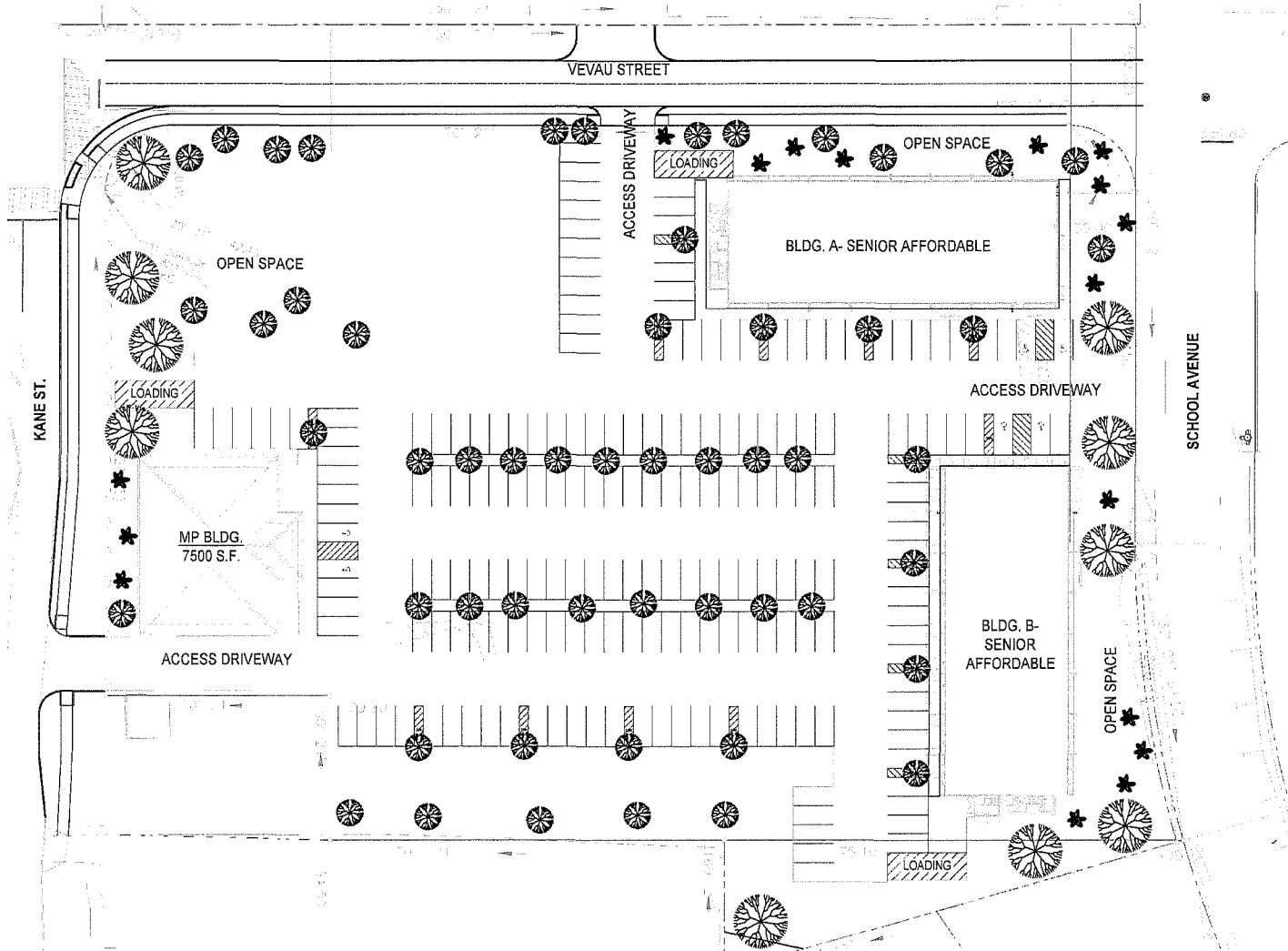
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS
HONOLULU, HAWAII

FIGURE
1.1

LOCATION MAP

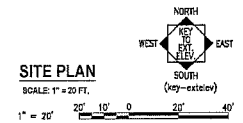


NOT TO SCALE



KAHULUI LANI SENIOR AFFORDABLE

KAHULUI, MAUI



SITE PLAN

SCALE: 1" = 20 FT.

1" = 20' 0 10' 20' 40'

M & A. HAWAII INC.
747 AMANA STREET, SUITE 218
HONOLULU, HAWAII 96814

KAHULUI LANI SENIOR
AFFORDABLE HOUSING

TIAR



AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS HONOLULU, HAWAII

FIGURE

1.2

SITE PLAN



2. STUDY METHODOLOGY

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), dated 2010, methodology for calculating volume to capacity ratios, delays and corresponding Levels of Service was utilized in this study. LOS definitions for signalized and unsignalized intersections are provided in Appendix B.

2.1 Intersection Analysis

For applicable intersections shown in Section 2.2, intersection analysis was performed using the traffic analysis software Synchro, which prepares Highway Capacity Manual (HCM) reports. The reports contain quantitative delay results, as based on intersection lane geometry, signal timing (including coordination and actuated minimums and maximums), and hourly traffic volume.

Based on the vehicular delay, reserve capacity and critical gaps at the intersection, an LOS is assigned (see Appendix B) as a qualitative measure of performance. These results constitute the technical analysis that will form the basis of the recommendations outlined in this report.

2.2 Study Area Intersection Analysis

Intersection analysis within the study area was performed on the following intersections based on their proximity to the Project:

- Kaahumanu Avenue/Kahului Beach Road/Kane Street
- Kaahumanu Avenue/Lono Avenue
- Kane Street/Vevau Street
- Vevau Street/School Street
- Lono Avenue/Vevau Street
- Kamehameha Avenue/Kane Street
- Kamehameha Avenue/School Street
- Kamehameha Avenue/Lono Avenue



3. EXISTING TRAFFIC CONDITIONS

The existing conditions scenario represents the traffic conditions within the study area as it currently stands, without the Project.

3.1 Roadway Network

Kaahumanu Avenue – in the vicinity of the Project is generally an east-west, two-way, six-lane (three-lanes in the each direction), divided arterial roadway with a posted speed limit of 30 miles per hour (mph). Kaahumanu Avenue serves as an arterial roadway between Kahului and Wailuku; connecting Hana Highway on the east end and Main Street on the west end. It also serves access to various commercial and industrial businesses.

Kahului Beach Road/Kane Street - is generally a north-south, two-way, three-lane (two-lane in the southbound direction and one-lane in the northbound direction), undivided roadway with a posted speed limit of 20 mph along Kane Street and 35 mph along Kahului Beach Road in the vicinity of the Project. Kahului Beach Road begins north of Kaahumanu Avenue and Kane Street begins south of Kaahumanu Avenue. In the vicinity of the Project, Kane Street provides access to Queen Kaahumanu Center and other small businesses.

Lono Avenue - is generally a north-south, two-way, three-lane (one-lane in each direction with a two-way left-turn lane), undivided roadway with a posted speed limit of 20 mph in the vicinity of the Project. Lono Avenue begins at Kaahumanu Avenue and terminates at Makalii Street on the south end. In the vicinity of the Project, Lono Avenue serves access to various retail spaces. Further south of its intersection with Kamehameha Highway, Lono Avenue provides access to residential areas.

Vevau Street - is generally an east-west, two-way, two-lane, undivided roadway. Vevau Street begins at Kane Street and terminates at Lono Avenue on the east end. Vevau Street provides access to various retail spaces as well as an apartment complex.

School Street - is generally a north-south, two-way, two-lane, undivided roadway. School Street begins at Vevau Street and terminates at Kamehameha Avenue on the south end. School Street provides access to the Kahului Public Library and a church.

Kamehameha Avenue - is generally an east-west roadway, curving to intersect with Kane Street in the north-south direction. In the vicinity of the Project, Kamehameha Avenue is a two-way, two-lane, undivided roadway with a posted speed limit of 30 mph in the vicinity of the Project. Kamehameha Avenue begins at Hana Highway and terminates beyond Maui Lani Parkway on the south/west end. Kamehameha Avenue provides a secondary access, between commercial areas located in the vicinity of the Project and residential areas in Kahului; secondary to Hana Highway, Dairy Road, and Kaahumanu Avenue.



3.2 Existing Traffic Volumes

The existing traffic volume data at the study intersections were collected on Wednesday, March 8, 2017. Based on this traffic count data, the following peak hours were determined during the weekday:

- AM peak hour of traffic - 7:15 AM to 8:15 AM,
- PM peak hour of traffic – 3:45 PM to 4:45 PM.

Study intersections traffic count data is provided in Appendix A.

3.3 Existing Traffic Conditions Analysis and Observations

Kaahumanu Avenue/Kahului Beach Road/Kane Street is a signalized cross intersection with higher volumes traveling along the eastbound and westbound direction as well as the southbound left-turn (from Kahului Beach Road) and westbound right-turn (to Kahului Beach Road). The westbound right-turn is a channelized right-turn into its own lane.

Since the southbound left-turn movement operates with a relatively high vehicular volume (approximately 900 vehicles per hour) during the AM and PM peak hours of traffic, the movement is provided with a lengthy green time. The intersection also operates on a coordinated timing plan, which requires the intersection to run on a fixed cycle length, favoring mainline through traffic along Kaahumanu Avenue. As a result, some various mainline left-turn movements and the Kane Street approach operate at LOS E/F. Observations, performed over multiple days, indicate the westbound approach queues back to Lono Avenue with the majority of the vehicles clearing within one signal cycle, while the eastbound queues during the PM peak hour of traffic queued at varying lengths from a 5-car length queue to queues that spilled back to or beyond the Queen Kaahumanu Center signalized access.

Kaahumanu Avenue/Lono Avenue is a signalized cross intersection with higher volumes traveling along the eastbound and westbound directions. The north leg of the intersection is the entrance to Maui Seaside Hotel and secondary access to Maui Beach Hotel. During both the AM and PM peak hours of traffic, the eastbound left-turn and westbound left-turn operates at LOS E due to signal coordination and low vehicular volumes between 10 to 50 vehicles.

Kane Street/Vevau Street is an unsignalized cross intersection with the eastbound and westbound approaches as the stop-controlled approach. The eastbound leg provides access to Queen Kaahumanu Shopping Center. The intersection operates at LOS C or better during the AM and PM peak hours of traffic.

Vevau Street/School Street is an unsignalized T- intersection with the northbound (School Street) approach as the stem of the “T” and the stop-controlled approach. The intersection operates at LOS A or better during the AM and PM peak hours of traffic.

Lono Avenue/Vevau Street is an unsignalized cross intersection with the eastbound and westbound approaches as the stop-controlled approach. The westbound leg is one of four access points to Kahului Shopping Center. The intersection operates at LOS C or better during the AM and PM peak hours of traffic.



Kamehameha Avenue/Lono Avenue is a signalized cross intersection. The eastbound leg provides access to Queen Kaahumanu Shopping Center. The intersection operates at LOS C or better during the AM and PM peak hours of traffic.

Kamehameha Avenue/School Street is an unsignalized T-intersection with the southbound approach as the stem of the “T” and the stop-controlled approach. The intersection operates at LOS C or better during the AM and PM peak hours of traffic.

Kamehameha Avenue/Kane Street is a signalized cross intersection. The eastbound leg provides access to Queen Kaahumanu Shopping Center. The intersection operates at LOS B or better during the AM and PM peak hours of traffic.

Existing traffic volumes, lane configuration and movement LOS are illustrated in Figure 3.1. Table 3.1 shows the existing delay, v/c ratio, and LOS for the study intersections, with the full LOS summary tables provided in Appendix C.

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

DATE OF COUNTS:
MARCH 8, 2017


AM PEAK HOUR:
7:15 AM - 8:15 AM

PM PEAK HOUR:
3:45 PM - 4:45 PM

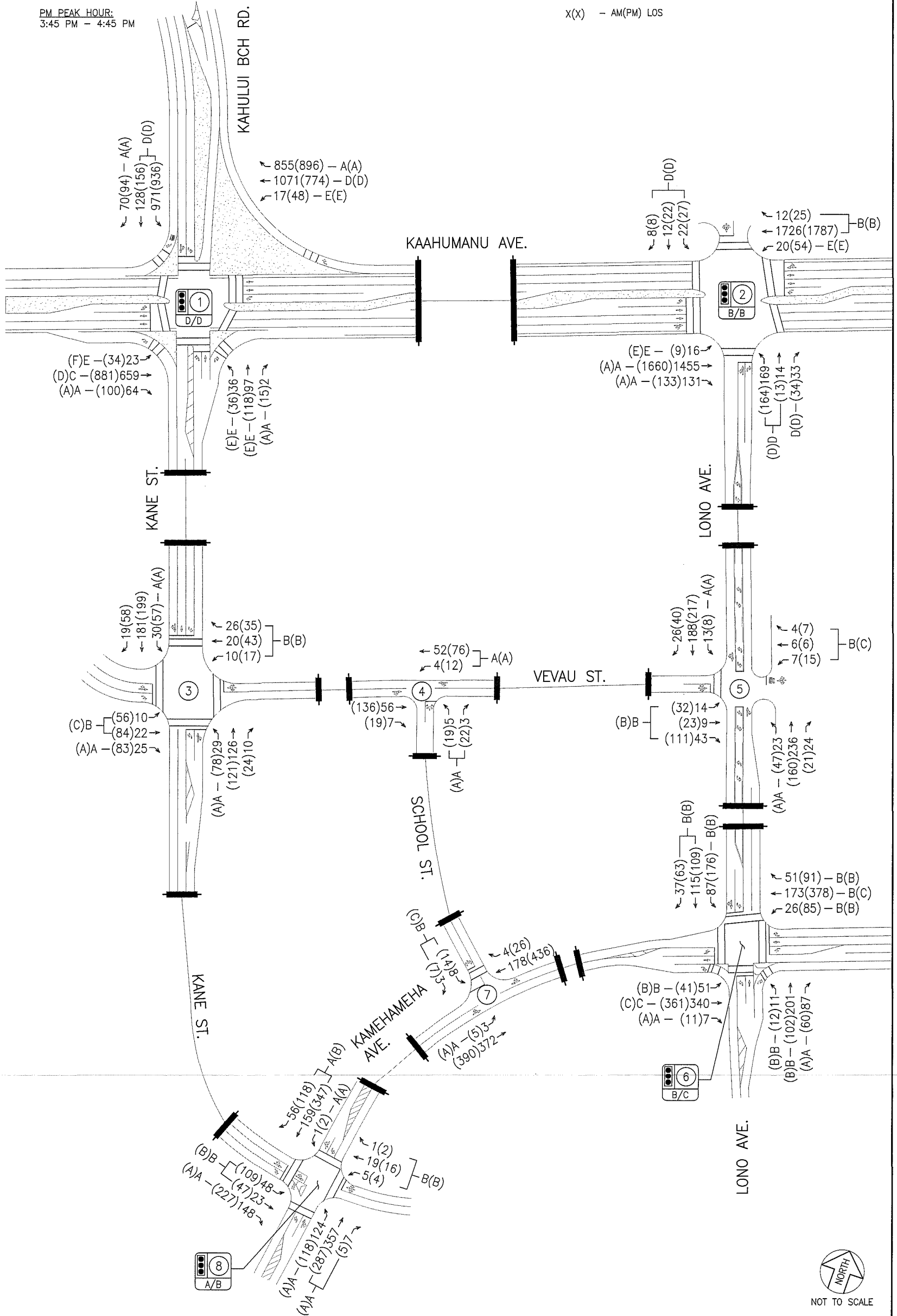
LEGEND

##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

 - SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS

 - UNSIGNALIZED INTERSECTION X

X(X) - AM(PM) LOS



KAHULUI LANI SENIOR AFFORDABLE HOUSING TIAR

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ENGINEERS, SURVEYORS HONOLULU, HAWAII

EXISTING LANE CONFIGURATION, VOLUME AND LEVEL OF SERVICE

FIGURE

3.1



Table 3.1: Existing Conditions
Level of Service Summary

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Kane Street/Kahului Beach Road & Kaahumanu Ave						
NB LT	58.1	0.29	E	56.1	0.25	E
NB TH	67.0	0.75	E	65.9	0.78	E
NB RT	0.0	0.00	A	0.0	0.00	A
EB LT	77.2	0.62	E	81.3	0.74	F
EB TH	28.9	0.49	C	36.5	0.70	D
EB RT	0.0	0.00	A	0.0	0.00	A
WB LT	74.9	0.55	E	77.6	0.77	E
WB TH	37.4	0.80	D	48.3	0.60	D
WB RT	0.0	0.00	A	0.0	0.00	A
SB LT	50.5	0.92	D	50.3	0.92	D
SB RT	0.0	0.00	A	0.0	0.00	A
OVERALL	41.9	-	D	47.1	-	D
2: Lono Street & Kaahumanu Ave						
NB LT/TH	51.9	0.68	D	51.0	0.67	D
NB RT	40.0	0.10	D	38.3	0.10	D
EB LT	71.2	0.54	E	70.0	0.48	E
EB TH	0.5	0.51	A	7.0	0.61	A
EB TH/RT	1.0	0.51	A	7.4	0.62	A
WB LT	76.9	0.59	E	77.2	0.78	E
WB TH/RT	13.2	0.55	B	14.5	0.59	B
SB LT/TH/RT	49.7	0.38	D	49.9	0.46	D
OVERALL	11.1	-	B	14.6	-	B
3: Kane Street & Vevau Street						
NB LT	7.7	0.02	A	7.9	0.03	A
EB LT/TH	13.7	0.08	B	22.1	0.42	C
EB RT	9.0	0.03	A	9.5	0.10	A
WB LT/TH/RT	11.6	0.10	B	14.8	0.22	B
SB LT	7.6	0.02	A	7.6	0.04	A
OVERALL	3.5	-	-	7.5	-	-
4: School Street & Vevau Street						
NB LT/RT	9.0	0.01	A	9.8	0.06	A
WB LT	7.4	0.00	A	7.6	0.01	A
OVERALL	0.8	-	-	1.7	-	-



Table 3.1: Existing Conditions
Level of Service Summary
Continued

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
5: Lono Street & Vevau Street						
NB LT	7.7	0.02	A	7.9	0.04	A
EB LT/TH/RT	11.7	0.12	B	13.6	0.30	B
WB LT/TH/RT	13.5	0.04	B	15.1	0.08	C
SB LT	7.8	0.01	A	7.6	0.01	A
OVERALL	2.1	-	-	4.5	-	-
6: Kamehameha Ave & Lono Street						
NB LT	12.3	0.02	B	14.6	0.03	B
NB TH	16.1	0.36	B	17.0	0.20	B
NB RT	0.0	0.00	A	0.0	0.00	A
EB LT	15.2	0.14	B	16.6	0.17	B
EB TH	24.6	0.78	C	28.5	0.80	C
EB RT	0.0	0.00	A	0.0	0.00	A
WB LT	16.4	0.11	B	16.6	0.31	B
WB TH	19.1	0.43	B	26.8	0.78	C
WB RT	17.3	0.15	B	17.1	0.22	B
SB LT	11.0	0.18	B	12.7	0.33	B
SB TH/RT	12.8	0.24	B	15.1	0.29	B
OVERALL	18.3	-	B	21.7	-	C
7: Kamehameha Ave & School Street						
EB LT	7.6	0.00	A	8.6	0.01	A
SB LT/RT	12.0	0.02	B	17.9	0.11	C
OVERALL	0.3	-	-	0.6	-	-
8: Kamehameha Ave & Kane Street						
NB LT	5.1	0.20	A	6.6	0.26	A
NB TH/RT	6.5	0.51	A	6.2	0.35	A
EB LT/TH	12.2	0.21	B	16.1	0.43	B
EB RT	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	11.7	0.08	B	14.0	0.06	B
SB LT	6.8	0.00	A	6.9	0.00	A
SB TH/RT	8.4	0.43	A	11.1	0.71	B
OVERALL	7.5	-	A	10.0	-	B



4. BASE YEAR 2019 TRAFFIC CONDITIONS

4.1 Defacto Growth Rate

Projections for Year 2019 traffic were based upon the Maui Regional Traffic Demand Model (MRTDM). The MRTDM projects traffic growth to year 2035 (baseline year 2007). The MRTDM shows a range of growth rates along the study roadways, therefore, the following growth rates were utilized:

- Kaahumanu Avenue – 0.7%
- Kane Street – 3.4%
- Kamehameha Avenue – 4.7%
- Lono Avenue – 3.5%

These percentages were applied to the existing traffic volumes.

4.2 Traffic Forecasts for Known Developments

No major developments are anticipated to be constructed in the vicinity of the Project.

4.3 Planned Roadway Projects

Currently, no improvements are planned for the study roadways within the vicinity of the Project according to the State of Hawaii, Department of Transportation (HDOT) Statewide Transportation Improvement Program (STIP).

4.4 Base Year 2019 Analysis

By year 2019, the majority of intersections are anticipated to operate similar to existing conditions, due to no major anticipated traffic increases in the area. The following study intersections are anticipated to experience a higher LOS than existing conditions:

Kaahumanu Avenue/Kahului Beach Road/Kane Street intersection will operate similar to existing conditions, with various mainline left-turn and minor street approaches operating at LOS E/F conditions during the AM and PM peak hours of traffic.

Kaahumanu Avenue/Lono Avenue intersection westbound through/right-turn lane is anticipated to operate at LOS C during the AM peak hour of traffic. Eastbound and westbound left-turn movements will continue operating at LOS E conditions.

Kane Street/Vevau Street intersection eastbound left-turn/through movement is anticipated to operate at LOS C during the AM peak hour of traffic and LOS D during the PM peak hour of traffic.

Vevau Street/School Street intersection northbound left-turn/right-turn operates at LOS B during the PM peak hour of traffic.

Projected traffic volumes, lane configuration and movement LOS are illustrated in Figure 4.1. Table 4.1 shows the Year 2019 LOS at the study intersections, with the full LOS summary tables provided in Appendix C.



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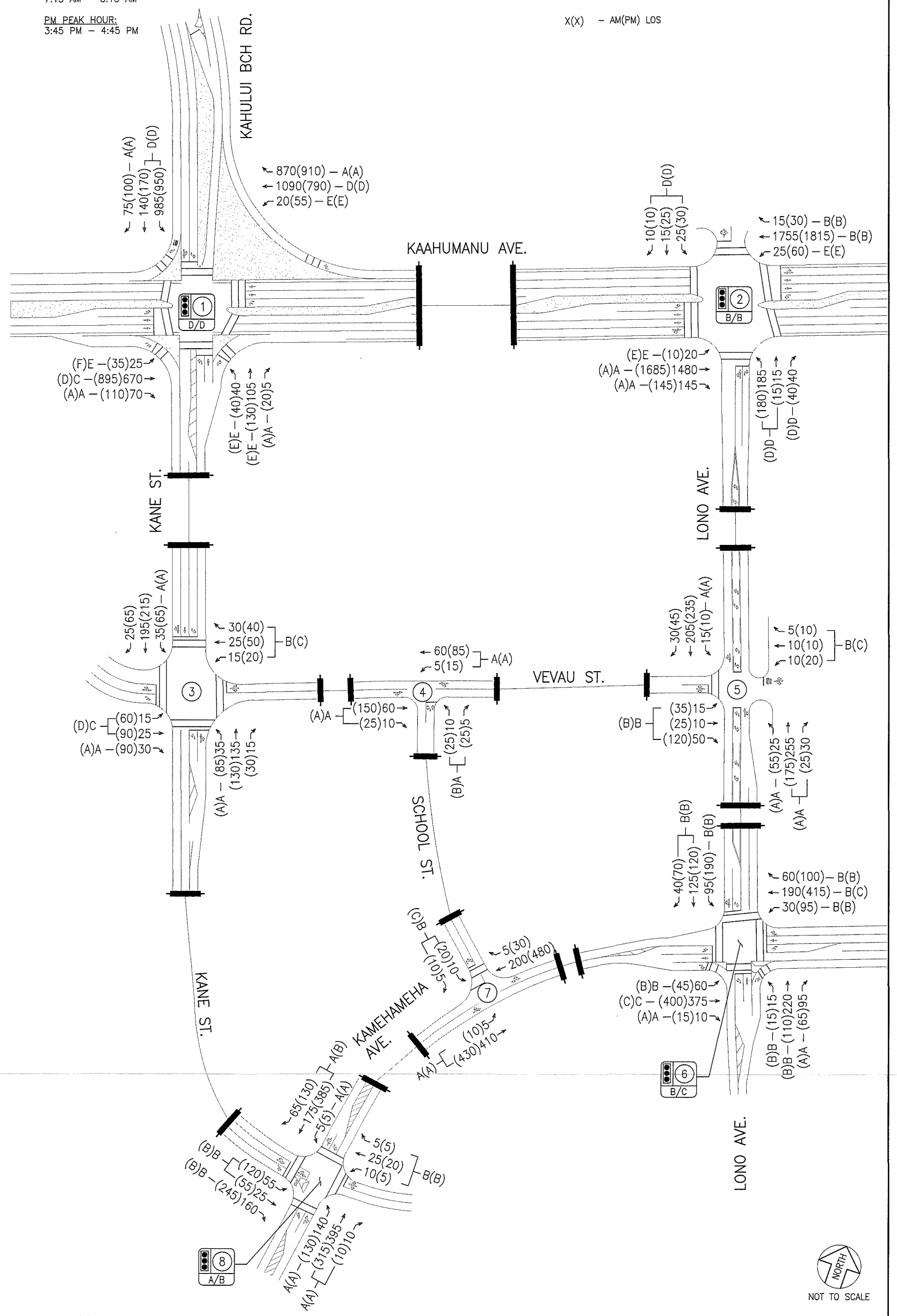
DATE OF COUNTS:
MARCH 8, 2017

AM PEAK HOUR:
7:15 AM - 8:15 AM

PM PEAK HOUR:
3:45 PM - 4:45 PM

LEGEND

- ##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
-  - SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS
-  - UNSIGNALIZED INTERSECTION X
- X(X) - AM(PM) LOS



KAHULUI LANI SENIOR AFFORDABLE HOUSING TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS HONOLULU, HAWAII

BASE YEAR 2019 LANE CONFIGURATION, VOLUME AND LEVEL OF SERVICE

FIGURE

4.1

Table 4.2: Existing Conditions and Base Year 2019
Level of Service Summary

Intersection	Existing Conditions						Base Year 2019					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Kane Street/Kahului Beach Road & Kaahumanu Ave												
NB LT	58.1	0.29	E	56.1	0.25	E	57.8	0.31	E	55.4	0.26	E
NB TH	67.0	0.75	E	65.9	0.78	E	67.3	0.78	E	65.6	0.80	E
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	77.2	0.62	E	81.3	0.74	F	77.5	0.64	E	81.9	0.75	F
EB TH	28.9	0.49	C	36.5	0.70	D	30.4	0.51	C	39.7	0.75	D
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT	74.9	0.55	E	77.6	0.77	E	74.3	0.59	E	75.6	0.77	E
WB TH	37.4	0.80	D	48.3	0.60	D	39.9	0.84	D	49.9	0.63	D
WB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
SB LT	50.5	0.92	D	50.3	0.92	D	50.8	0.93	D	50.6	0.93	D
SB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
OVERALL	41.9	-	D	47.1	-	D	43.4	-	D	48.7	-	D
2: Lono Street & Kaahumanu Ave												
NB LT/TH	51.9	0.68	D	51.0	0.67	D	51.8	0.70	D	51.0	0.69	D
NB RT	40.0	0.10	D	38.3	0.10	D	37.4	0.11	D	35.9	0.10	D
EB LT	71.2	0.54	E	70.0	0.48	E	70.0	0.59	E	68.4	0.49	E
EB TH	0.5	0.51	A	7.0	0.61	A	0.6	0.55	A	9.3	0.66	A
EB TH/RT	1.0	0.51	A	7.4	0.62	A	1.2	0.55	A	9.8	0.66	A
WB LT	76.9	0.59	E	77.2	0.78	E	77.5	0.64	E	76.0	0.78	E
WB TH/RT	13.2	0.55	B	14.5	0.59	B	15.9	0.59	B	17.0	0.62	B
SB LT/TH/RT	49.7	0.38	D	49.9	0.46	D	49.1	0.43	D	50.4	0.51	D
OVERALL	11.1	-	B	14.6	-	B	12.8	-	B	17.1	-	B
3: Kane Street & Vevau Street												
NB LT	7.7	0.02	A	7.9	0.03	A	7.8	0.03	A	8.0	0.03	A
EB LT/TH	13.7	0.08	B	22.1	0.42	C	15.0	0.11	C	27.8	0.51	D
EB RT	9.0	0.03	A	9.5	0.10	A	9.1	0.04	A	9.7	0.11	A
WB LT/TH/RT	11.6	0.10	B	14.8	0.22	B	12.5	0.14	B	16.8	0.28	C
SB LT	7.6	0.02	A	7.6	0.04	A	7.6	0.03	A	7.7	0.05	A
OVERALL	3.5	-	-	7.5	-	-	3.9	-	-	8.7	-	-
4: School Street & Vevau Street												
NB LT/RT	9.0	0.01	A	9.8	0.06	A	9.1	0.02	A	10.1	0.07	B
WB LT	7.4	0.00	A	7.6	0.01	A	7.4	0.00	A	7.6	0.01	A
OVERALL	0.8	-	-	1.7	-	-	1.2	-	-	1.9	-	-
5: Lono Street & Vevau Street												
NB LT	7.7	0.02	A	7.9	0.04	A	7.8	0.02	A	7.9	0.04	A
EB LT/TH/RT	11.7	0.12	B	13.6	0.30	B	12.2	0.14	B	13.6	0.30	B
WB LT/TH/RT	13.5	0.04	B	15.1	0.08	C	14.6	0.07	B	15.1	0.08	C
SB LT	7.8	0.01	A	7.6	0.01	A	7.9	0.01	A	7.6	0.01	A
OVERALL	2.1	-	-	4.5	-	-	2.4	-	-	4.5	-	-
6: Kamehameha Ave & Lono Street												
NB LT	12.3	0.02	B	14.6	0.03	B	13.0	0.03	B	15.1	0.03	B
NB TH	16.1	0.36	B	17.0	0.20	B	17.6	0.41	B	17.8	0.22	B
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	15.2	0.14	B	16.6	0.17	B	15.1	0.17	B	16.7	0.19	B
EB TH	24.6	0.78	C	28.5	0.80	C	27.4	0.82	C	33.2	0.85	C
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT	16.4	0.11	B	16.6	0.31	B	16.5	0.13	B	17.0	0.36	B
WB TH	19.1	0.43	B	26.8	0.78	C	19.2	0.45	B	30.2	0.82	C
WB RT	17.3	0.15	B	17.1	0.22	B	17.3	0.17	B	17.1	0.23	B
SB LT	11.0	0.18	B	12.7	0.33	B	11.9	0.21	B	13.6	0.37	B
SB TH/RT	12.8	0.24	B	15.1	0.29	B	14.0	0.27	B	16.3	0.33	B
OVERALL	18.3	-	B	21.7	-	C	19.7	-	B	24.2	-	C

Table 4.2: Existing Conditions and Base Year 2019
Level of Service Summary
Continued

Intersection	Existing Conditions						Base Year 2019					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
7: Kamehameha Ave & School Street												
EB LT	7.6	0.00	A	8.6	0.01	A	7.7	0.00	A	8.6	0.01	A
SB LT/RT	12.0	0.02	B	17.9	0.11	C	12.5	0.03	B	17.9	0.11	C
OVERALL	0.3	-	-	0.6	-	-	0.4	-	-	0.6	-	-
8: Kamehameha Ave & Kane Street												
NB LT	5.1	0.20	A	6.6	0.26	A	5.2	0.22	A	7.5	0.30	A
NB TH/RT	6.5	0.51	A	6.2	0.35	A	6.9	0.55	A	6.7	0.38	A
EB LT/TH	12.2	0.21	B	16.1	0.43	B	12.8	0.23	B	17.2	0.47	B
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	11.7	0.08	B	14.0	0.06	B	12.3	0.13	B	14.8	0.08	B
SB LT	6.8	0.00	A	6.9	0.00	A	6.9	0.01	A	7.2	0.01	A
SB TH/RT	8.4	0.43	A	11.1	0.71	B	8.7	0.46	A	13.3	0.76	B
OVERALL	7.5	-	A	10.0	-	B	7.9	-	A	11.4	-	B



5. FUTURE YEAR 2019 TRAFFIC CONDITIONS

The future traffic conditions scenario represents the traffic conditions within the Project study area with full build-out of the Project. According to the current Project plan, this will occur by Year 2019.

5.1 Background

As previously mentioned in Section 1.2, the Project proposes to construct 164 senior rental units, 1 manager's unit, approximately 2,500 square feet of recreational space for the residents of the Project, 5,000 square feet of office space for Catholic Charities of Hawaii, and park space. For purposes of this TIAR, 165 Senior Adult Housing units and a 5,000 SF single-tenant office building was used to generate traffic for the Project.

5.2 Travel Demand Estimations

5.2.1 Trip Generation

The Institute of Transportation Engineers (ITE) publishes a book based on empirical data compiled from a body of more than 4,250 trip generation studies submitted by public agencies, developers, consulting firms, and associations. This publication, titled Trip Generation Manual, 9th Edition, provides trip rates and/or formulae based on graphs that correlate vehicular trips with independent variables. See Table 5.1 and 5.2 for Trip Generation formulae/rates and projections for the Project.

Table 5.1: Project Trip Generation Formulae/Rates

Land Use Type (ITE Code)	Independent Variable	AM Peak Hour		PM Peak Hour	
		Rate	% Enter	Rate	% Enter
Senior Adult Housing Attached (ITE 252)	Dwelling Unit	$(0.2*x)-1.66$	35%	$(0.24*x)-2.11$	60%
Single Tenant Office Bldg (ITE 715)	1,000 SF	$(1.67*x)+21.93$	89%	$(1.52*x)+34.6$	15%

Notes:

x = Independent Variable

SF = Square Feet

Table 5.2: New Project-Generated Trips

Land Use	Units	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Senior Adult Housing	165 Units	11	21	32	23	15	38
Single Tenant Office Building	5,000 SF	28	3	31	6	37	43
Total New Trips		39	24	63	29	52	81



5.2.2 Trip Distribution

Trips generated by the Project were distributed throughout the study area based upon existing travel patterns within the vicinity of the Project and anticipated nearby roadway configurations. The traffic generated by the Project was added to the forecast Base Year 2019 traffic volumes within the vicinity of the Project to constitute the traffic volumes for the Future Year 2019 traffic conditions with the Project. Figure 5.1 illustrates the Project-generated trip distribution.

5.3 Future Year 2019 Analysis

Upon completion of the Project, all movements at the study intersections are forecast to operate with nearly the same LOS as Base Year 2019 conditions. Various mainline left-turn and minor street approaches at the Kaahumanu Avenue/Kahului Beach Road/Kane Street intersection will continue to operate at LOS E/F conditions due to signal coordination. The Project will only increase traffic at the intersection by approximately 0.6 percent. All movement delays will experience minimal increases of zero to one second, with no direct volume increases to the more critical mainline through movements along Kaahumanu Avenue. At the remaining study intersections, all movements will continue to operate with the same LOS, with a minimal delay increase of zero to two seconds, from Base Year 2019 conditions.

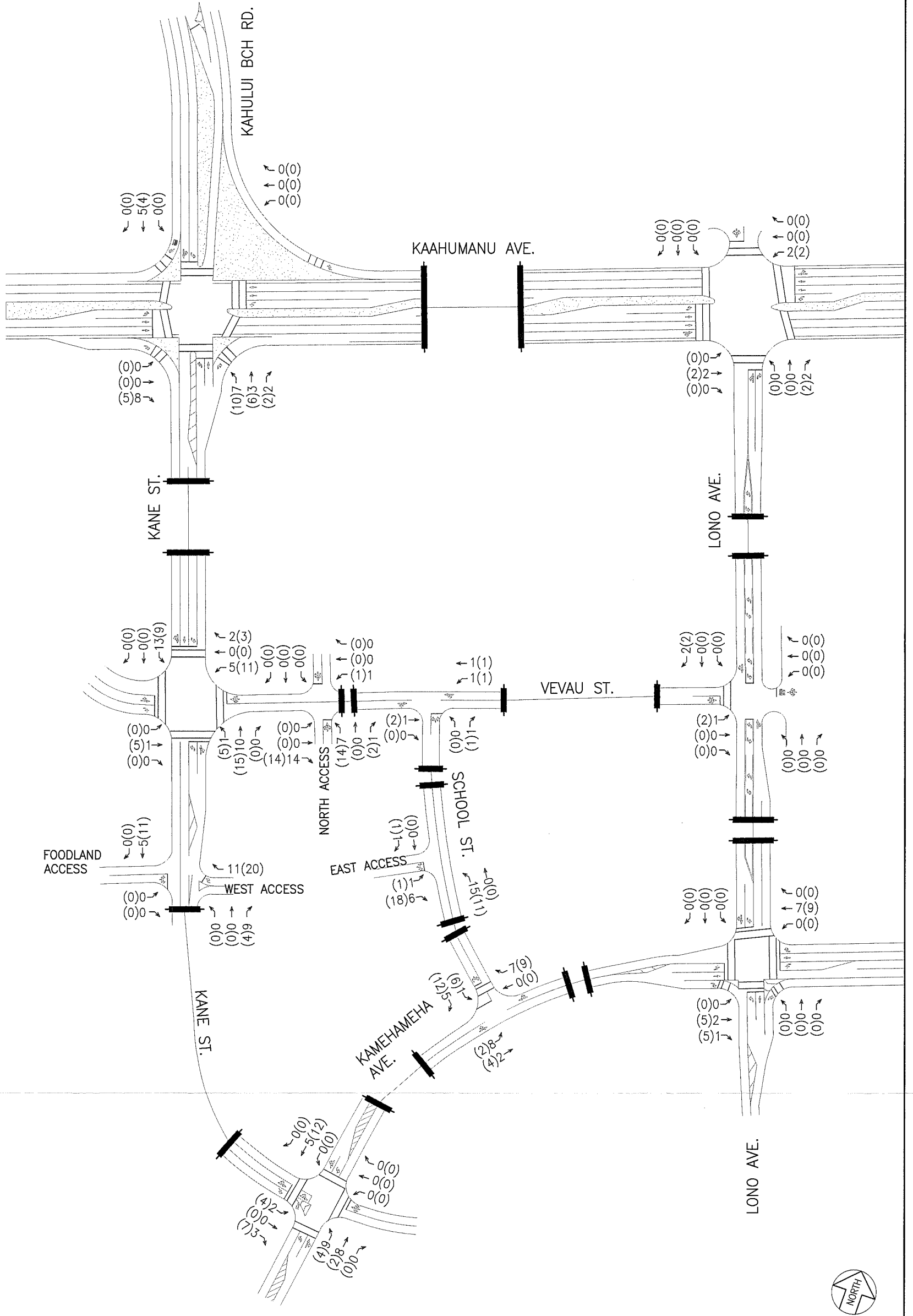
All proposed access intersections will operate at LOS B or better during the AM and PM peak hours of traffic.

Figure 5.2 illustrates the forecast traffic volumes, lane configuration, and LOS for Future Year 2019 conditions. Table 5.3 summarizes the delay, V/C, and LOS at the study intersections for the Future Year 2025 conditions. Full LOS summary tables are provided in Appendix C.

NOTE:
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LEGEND

##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES



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

PROJECT-GENERATED TRIP DISTRIBUTION

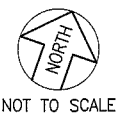
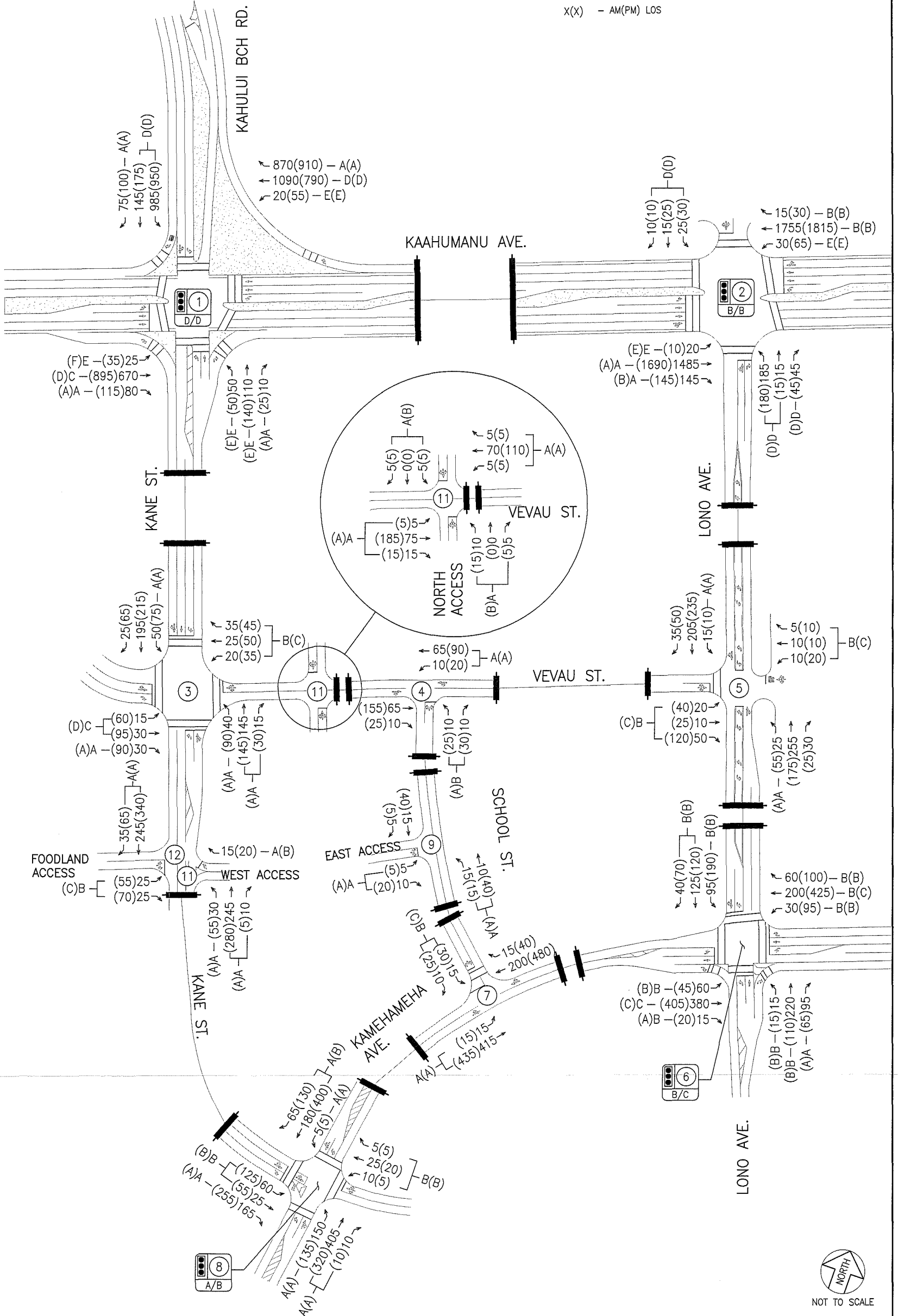
FIGURE

5.1

NOTE:
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LEGEND

- ##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
-  - SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS
-  - UNSIGNALIZED INTERSECTION X
- X(X) - AM(PM) LOS



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FUTURE YEAR 2019 LANE CONFIGURATION, VOLUME AND LEVEL OF SERVICE

FIGURE

5.2

Table 5.3: Existing Conditions, Base Year 2019, and Future Year 2019
Level of Service Summary

Intersection	Existing Conditions						Base Year 2019						Future Year 2019					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Kane Street/Kahului Beach Road & Kaahumanu Ave																		
NB LT	58.1	0.29	E	56.1	0.25	E	57.8	0.31	E	55.4	0.26	E	58.0	0.37	E	55.1	0.30	E
NB TH	67.0	0.75	E	65.9	0.78	E	67.3	0.78	E	65.6	0.80	E	67.0	0.78	E	66.2	0.81	E
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	77.2	0.62	E	81.3	0.74	F	77.5	0.64	E	81.9	0.75	F	77.5	0.64	E	81.9	0.75	F
EB TH	28.9	0.49	C	36.5	0.70	D	30.4	0.51	C	39.7	0.75	D	30.9	0.52	C	40.9	0.76	D
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT	74.9	0.55	E	77.6	0.77	E	74.3	0.59	E	75.6	0.77	E	74.3	0.59	E	75.6	0.77	E
WB TH	37.4	0.80	D	48.3	0.60	D	39.9	0.84	D	49.9	0.63	D	40.8	0.84	D	50.6	0.64	D
WB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
SB LT	50.5	0.92	D	50.3	0.92	D	50.8	0.93	D	50.6	0.93	D	50.9	0.93	D	50.7	0.93	D
SB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
OVERALL	41.9	-	D	47.1	-	D	43.4	-	D	48.7	-	D	44.0	-	D	49.4	-	D
2: Lono Street & Kaahumanu Ave																		
NB LT/TH	51.9	0.68	D	51.0	0.67	D	51.8	0.70	D	51.0	0.69	D	51.8	0.70	D	51.0	0.69	D
NB RT	40.0	0.10	D	38.3	0.10	D	37.4	0.11	D	35.9	0.10	D	37.5	0.12	D	36.1	0.12	D
EB LT	71.2	0.54	E	70.0	0.48	E	70.0	0.59	E	68.4	0.49	E	70.0	0.59	E	68.2	0.49	E
EB TH	0.5	0.51	A	7.0	0.61	A	0.6	0.55	A	9.3	0.66	A	0.6	0.56	A	9.6	0.67	A
EB TH/RT	1.0	0.51	A	7.4	0.62	A	1.2	0.55	A	9.8	0.66	A	1.2	0.56	A	10.2	0.67	B
WB LT	76.9	0.59	E	77.2	0.78	E	77.5	0.64	E	76.0	0.78	E	79.3	0.69	E	79.0	0.79	E
WB TH/RT	13.2	0.55	B	14.5	0.59	B	15.9	0.59	B	17.0	0.62	B	15.9	0.59	B	17.0	0.62	B
SB LT/TH/RT	49.7	0.38	D	49.9	0.46	D	49.1	0.43	D	50.4	0.51	D	49.1	0.43	D	50.4	0.51	D
OVERALL	11.1	-	B	14.6	-	B	12.8	-	B	17.1	-	B	12.9	-	B	17.4	-	B
3: Kane Street & Vevau Street																		
NB LT	7.7	0.02	A	7.9	0.03	A	7.8	0.03	A	8.0	0.03	A	7.8	0.03	A	8.0	0.04	A
EB LT/TH	13.7	0.08	B	22.1	0.42	C	15.0	0.11	C	27.8	0.51	D	16.3	0.13	C	32.9	0.58	D
EB RT	9.0	0.03	A	9.5	0.10	A	9.1	0.04	A	9.7	0.11	A	9.1	0.04	A	9.7	0.11	A
WB LT/TH/RT	11.6	0.10	B	14.8	0.22	B	12.5	0.14	B	16.8	0.28	C	13.3	0.17	B	20.2	0.38	C
SB LT	7.6	0.02	A	7.6	0.04	A	7.6	0.03	A	7.7	0.05	A	7.7	0.04	A	7.7	0.06	A
OVERALL	3.5	-	-	7.5	-	-	3.9	-	-	8.7	-	-	4.4	-	-	10.2	-	-
4: School Street & Vevau Street																		
NB LT/RT	9.0	0.01	A	9.8	0.06	A	9.1	0.02	A	10.1	0.07	B	9.1	0.02	A	10.2	0.08	B
WB LT	7.4	0.00	A	7.6	0.01	A	7.4	0.00	A	7.6	0.01	A	7.4	0.01	A	7.7	0.02	A
OVERALL	0.8	-	-	1.7	-	-	1.2	-	-	1.9	-	-	1.5	-	-	2.1	-	-

Table 5.3: Existing Conditions, Base Year 2019, and Future Year 2019
Level of Service Summary
Continued

Intersection	Existing Conditions						Base Year 2019						Future Year 2019					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
5: Lono Street & Vevau Street																		
NB LT	7.7	0.02	A	7.9	0.04	A	7.8	0.02	A	7.9	0.04	A	7.8	0.02	A	8.0	0.05	A
EB LT/TH/RT	11.7	0.12	B	13.6	0.30	B	12.2	0.14	B	13.6	0.30	B	12.6	0.16	B	15.3	0.37	C
WB LT/TH/RT	13.5	0.04	B	15.1	0.08	C	14.6	0.07	B	15.1	0.08	C	14.7	0.07	B	16.9	0.13	C
SB LT	7.8	0.01	A	7.6	0.01	A	7.9	0.01	A	7.6	0.01	A	7.9	0.01	A	7.7	0.01	A
OVERALL	2.1	-	-	4.5	-	-	2.4	-	-	4.5	-	-	2.5	-	-	5.2	-	-
6: Kamehameha Ave & Lono Street																		
NB LT	12.3	0.02	B	14.6	0.03	B	13.0	0.03	B	15.1	0.03	B	13.0	0.03	B	15.1	0.03	B
NB TH	16.1	0.36	B	17.0	0.20	B	17.6	0.41	B	17.8	0.22	B	17.7	0.41	B	17.8	0.22	B
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	15.2	0.14	B	16.6	0.17	B	15.1	0.17	B	16.7	0.19	B	15.1	0.17	B	16.8	0.20	B
EB TH	24.6	0.78	C	28.5	0.80	C	27.4	0.82	C	33.2	0.85	C	27.8	0.82	C	34.1	0.86	C
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT	16.4	0.11	B	16.6	0.31	B	16.5	0.13	B	17.0	0.36	B	16.5	0.13	B	17.1	0.37	B
WB TH	19.1	0.43	B	26.8	0.78	C	19.2	0.45	B	30.2	0.82	C	19.3	0.47	B	31.8	0.84	C
WB RT	17.3	0.15	B	17.1	0.22	B	17.3	0.17	B	17.1	0.23	B	17.3	0.16	B	17.0	0.23	B
SB LT	11.0	0.18	B	12.7	0.33	B	11.9	0.21	B	13.6	0.37	B	12.0	0.21	B	13.6	0.37	B
SB TH/RT	12.8	0.24	B	15.1	0.29	B	14.0	0.27	B	16.3	0.33	B	14.1	0.27	B	16.4	0.33	B
OVERALL	18.3	-	B	21.7	-	C	19.7	-	B	24.2	-	C	19.9	-	B	24.9	-	C
7: Kamehameha Ave & School Street																		
EB LT	7.6	0.00	A	8.6	0.01	A	7.7	0.00	A	8.6	0.01	A	7.7	0.01	A	8.6	0.02	A
SB LT/RT	12.0	0.02	B	17.9	0.11	C	12.5	0.03	B	17.9	0.11	C	12.7	0.06	B	18.5	0.18	C
OVERALL	0.3	-	-	0.6	-	-	0.4	-	-	0.6	-	-	0.7	-	-	1.1	-	-
8: Kamehameha Ave & Kane Street																		
NB LT	5.1	0.20	A	6.6	0.26	A	5.2	0.22	A	7.5	0.30	A	5.2	0.24	A	7.9	0.33	A
NB TH/RT	6.5	0.51	A	6.2	0.35	A	6.9	0.55	A	6.7	0.38	A	7.0	0.56	A	6.8	0.38	A
EB LT/TH	12.2	0.21	B	16.1	0.43	B	12.8	0.23	B	17.2	0.47	B	13.0	0.25	B	17.6	0.48	B
EB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	11.7	0.08	B	14.0	0.06	B	12.3	0.13	B	14.8	0.08	B	12.4	0.12	B	15.0	0.08	B
SB LT	6.8	0.00	A	6.9	0.00	A	6.9	0.01	A	7.2	0.01	A	7.0	0.01	A	7.3	0.01	A
SB TH/RT	8.4	0.43	A	11.1	0.71	B	8.7	0.46	A	13.3	0.76	B	8.8	0.47	A	14.2	0.78	B
OVERALL	7.5	-	A	10.0	-	B	7.9	-	A	11.4	-	B	7.9	-	A	12.0	-	B

Table 5.3: Existing Conditions, Base Year 2019, and Future Year 2019
Level of Service Summary
Continued

Intersection	Existing Conditions						Base Year 2019						Future Year 2019					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
9: School Street & East Access																		
NB LT	-	-	-	-	-	-	-	-	-	-	-	-	7.3	0.01	A	7.3	0.01	A
EB LT/RT	-	-	-	-	-	-	-	-	-	-	-	-	8.6	0.02	A	8.8	0.03	A
OVERALL	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	2.6	-	-
10: North Access/Exist. D/W & Vevau Street																		
NB LT/TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	9.5	0.02	A	10.8	0.03	B
EB LT	-	-	-	-	-	-	-	-	-	-	-	-	7.4	0.00	A	7.5	0.00	A
WB LT	-	-	-	-	-	-	-	-	-	-	-	-	7.4	0.00	A	7.7	0.00	A
SB LT/TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	9.3	0.01	A	10.1	0.02	B
OVERALL	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	1.1	-	-
11: Kane Street & West Access																		
WB RT	-	-	-	-	-	-	-	-	-	-	-	-	9.8	0.02	A	10.1	0.03	B
OVERALL	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3	-	-
12: Kane Street & Foodland D/W																		
NB LT	-	-	-	-	-	-	-	-	-	-	-	-	7.9	0.03	A	8.4	0.05	A
EB LT/RT	-	-	-	-	-	-	-	-	-	-	-	-	12.0	0.10	B	17.3	0.32	C
OVERALL	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	-	3.1	-	-

6. CONCLUSIONS

Existing Conditions

During the AM and PM peak hours of traffic, some movements at the Kaahumanu Avenue/Kahului Beach Road/Kane Street intersection operates at LOS E/F conditions. Since the southbound left-turn movement operates with a relatively high vehicular volume (approximately 900 vehicles per hour) during the AM and PM peak hours of traffic, the movement is provided with a lengthy green time. The intersection also operates on a coordinated timing plan, which requires the intersection to run on a fixed cycle length, favoring mainline through traffic along Kaahumanu Avenue. As a result, some various mainline left-turn movements and the Kane Street approach operate at LOS E/F. Observations, performed over multiple days, indicate the westbound approach queues back to Lono Avenue with the majority of the vehicles clearing within one signal cycle, while the eastbound queues during the PM peak hour of traffic queued at varying lengths from a 5-car length queue to queues that spilled back to or beyond the Queen Kaahumanu Center signalized access.

At the Kaahumanu Avenue/Lono Avenue intersection, the eastbound left-turn and westbound left-turn operates at LOS E due to signal coordination and low vehicular volumes between 10 to 50 vehicles. All other intersections operate at LOS C or better during the AM and PM peak hours of traffic.

Base Year 2019

This TIAR assumes that the Project will be completed by Year 2019. Based on the MRTDM, traffic volumes within the vicinity of the Project are anticipated to increase at different rates due to the anticipated growth. Therefore, the following growth rates were utilized:

- Kaahumanu Avenue – 0.7%
- Kane Street – 3.4%
- Kamehameha Avenue – 4.7%
- Lono Avenue – 3.5%

By Year 2019 without the Project, the Kaahumanu Avenue/Kahului Beach Road/Kane Street intersection and Kaahumanu Avenue/Lono Avenue intersection will operate similar to existing conditions, with various mainline left-turn and northbound approach movements operating at LOS E/F conditions during the AM and PM peak hours of traffic. All other intersections are anticipated to operate at LOS D or better during the AM and PM peak hours of traffic.

Future Year 2019 WITH the Project

The Project proposes to construct 164 senior rental units, 1 manager's unit, with 2,500 square feet of recreational space for the residents, 5,000 square feet of office type space for Catholic Charities of Hawaii, and park space. These proposed land uses are forecast to generate an additional 63 AM and 81 PM peak hour trips, which were distributed throughout the study area based upon existing travel patterns and added to the forecast Base Year 2019 traffic volumes. Access to the Project will be provided via driveways from School Street, Vevau Street and Kane Street. The Kane Street access will be a right-in right-out access only.



Upon completion of the Project, all movements at the study intersections are forecast to operate with nearly the same LOS as Base Year 2019 conditions. At the Kaahumanu Avenue/Kahului Beach Road intersection, the Project will only increase traffic by approximately 0.6 percent. All movement delays will experience minimal increases of zero to one second, with no direct volume increases to the more critical mainline through movements along Kaahumanu Avenue.

All proposed access intersections will operate at LOS B or better during the AM and PM peak hours of traffic.



7. REFERENCES

1. American Association of State Highway Transportation Officials, A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011.
2. Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.
3. Transportation Research Board, Highway Capacity Manual, 2010.



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CIVIL ENGINEERS • SURVEYORS

APPENDICES



APPENDIX A

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521

Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM_Kahului Beach Road_Kane St - Kaahumanu Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 1

Groups Printed- Unshifted

Start Time	KAAHUMANU AVE Eastbound				KAAHUMANU AVE Westbound				KANE ST Northbound				KAHULUI BEACH RD Southbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:45 AM	11	166	17	6	4	165	123	1	5	19	0	0	212	28	9	3	769
Total	11	166	17	6	4	165	123	1	5	19	0	0	212	28	9	3	769
07:00 AM	4	152	9	1	4	191	171	1	5	19	2	2	237	23	17	0	838
07:15 AM	3	167	17	2	5	244	190	1	10	28	1	0	246	28	26	0	968
07:30 AM	9	169	12	1	2	277	218	0	11	30	0	4	253	34	14	1	1035
07:45 AM	5	163	26	0	5	291	229	0	9	18	0	2	254	32	16	2	1052
Total	21	651	64	4	16	1003	808	2	35	95	3	8	990	117	73	3	3893
08:00 AM	6	160	9	4	5	259	218	0	6	21	1	4	218	34	14	0	959
08:15 AM	17	118	5	0	8	213	170	0	8	23	6	0	239	28	20	0	855
08:30 AM	9	150	1	0	13	198	241	0	5	16	10	0	202	15	23	0	883
Grand Total	64	1245	96	14	46	1838	1560	3	59	174	20	12	1861	222	139	6	7359
Apprch %	4.5	87.7	6.8	1	1.3	53.3	45.3	0.1	22.3	65.7	7.5	4.5	83.5	10	6.2	0.3	
Total %	0.9	16.9	1.3	0.2	0.6	25	21.2	0	0.8	2.4	0.3	0.2	25.3	3	1.9	0.1	

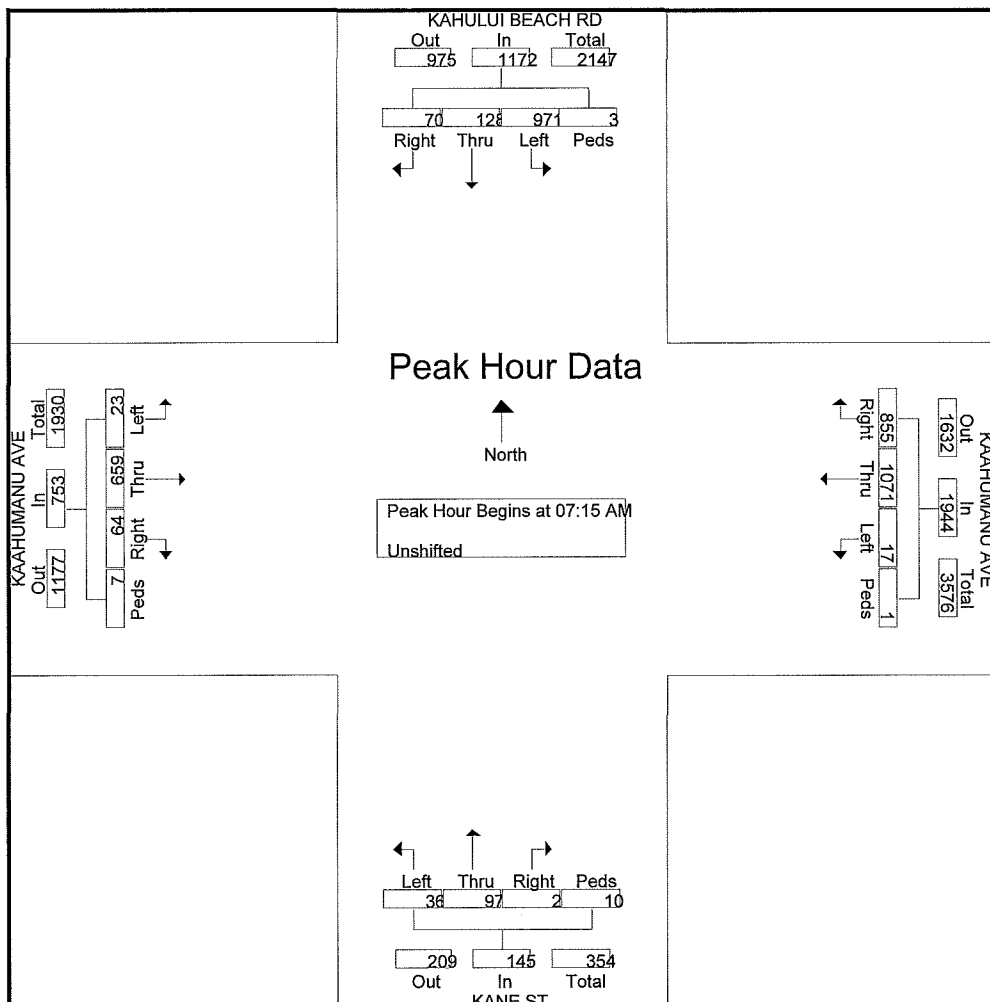
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Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM_Kahului Beach Road_Kane St - Kaahumanu Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

Start Time	KAAHUMANU AVE Eastbound					KAAHUMANU AVE Westbound					KANE ST Northbound					KAHULUI BEACH RD Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	167	17	2	189	5	244	190	1	440	10	28	1	0	39	246	28	26	0	300	968
07:30 AM	9	169	12	1	191	2	277	218	0	497	11	30	0	4	45	253	34	14	1	302	1035
07:45 AM	5	163	26	0	194	5	291	229	0	525	9	18	0	2	29	254	32	16	2	304	1052
08:00 AM	6	160	9	4	179	5	259	218	0	482	6	21	1	4	32	218	34	14	0	266	959
Total Volume	23	659	64	7	753	17	1071	855	1	1944	36	97	2	10	145	971	128	70	3	1172	4014
% App. Total	3.1	87.5	8.5	0.9		0.9	55.1	44	0.1		24.8	66.9	1.4	6.9		82.8	10.9	6	0.3		
PHF	.639	.975	.615	.438	.970	.850	.920	.933	.250	.926	.818	.808	.500	.625	.806	.956	.941	.673	.375	.964	.954



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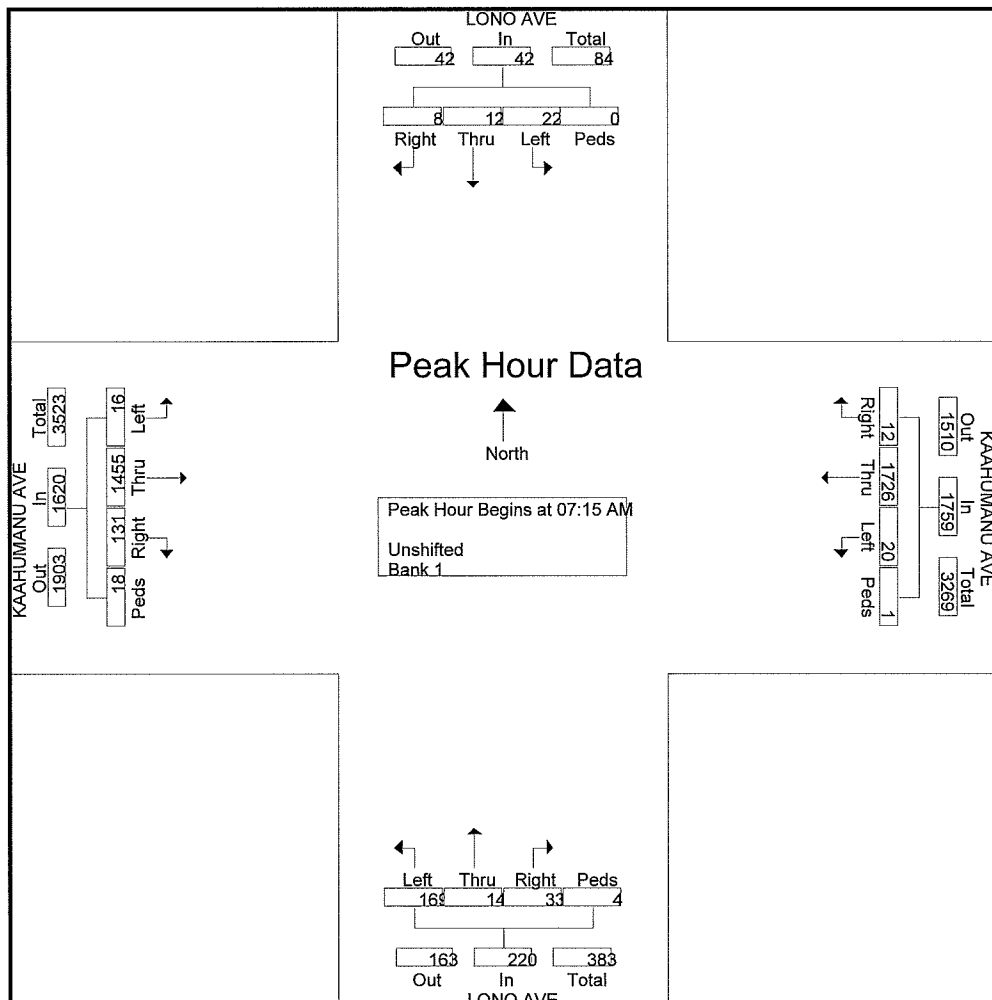
File Name : AM_Lono Ave - Kaahumanu Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					KAAHUMANU AVE Westbound					LONO AVE Northbound					KAAHUMANU AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	4	3	0	0	7	7	394	1	0	402	43	0	9	1	53	2	354	40	2	398	860
07:30 AM	6	1	3	0	10	6	469	2	0	477	51	5	10	1	67	5	372	29	5	411	965
07:45 AM	4	3	5	0	12	4	425	4	1	434	33	7	10	2	52	7	365	34	2	408	906
08:00 AM	8	5	0	0	13	3	438	5	0	446	42	2	4	0	48	2	364	28	9	403	910
Total Volume	22	12	8	0	42	20	1726	12	1	1759	169	14	33	4	220	16	1455	131	18	1620	3641
% App. Total	52.4	28.6	19	0		1.1	98.1	0.7	0.1		76.8	6.4	15	1.8		1	89.8	8.1	1.1		
PHF	.688	.600	.400	.000	.808	.714	.920	.600	.250	.922	.828	.500	.825	.500	.821	.571	.978	.819	.500	.985	.943



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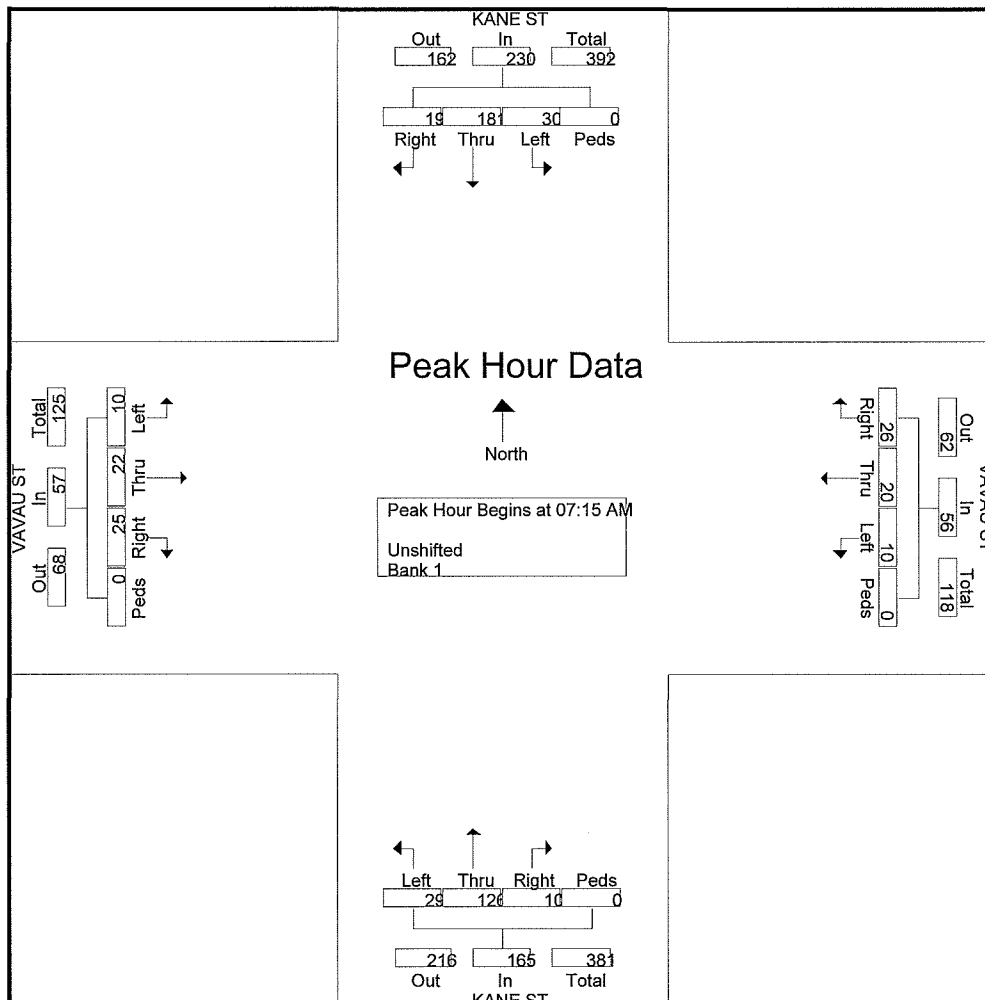
File Name : AM_Kane St - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KANE ST Southbound					VAVAU ST Westbound					KANE ST Northbound					VAVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	5	52	2	0	59	3	5	10	0	18	7	31	3	0	41	1	6	5	0	12	130
07:30 AM	7	41	4	0	52	1	2	6	0	9	8	37	2	0	47	4	6	4	0	14	122
07:45 AM	10	51	6	0	67	0	10	6	0	16	5	24	2	0	31	2	5	12	0	19	133
08:00 AM	8	37	7	0	52	6	3	4	0	13	9	34	3	0	46	3	5	4	0	12	123
Total Volume	30	181	19	0	230	10	20	26	0	56	29	126	10	0	165	10	22	25	0	57	508
% App. Total	13	78.7	8.3	0		17.9	35.7	46.4	0		17.6	76.4	6.1	0		17.5	38.6	43.9	0		
PHF	.750	.870	.679	.000	.858	.417	.500	.650	.000	.778	.806	.851	.833	.000	.878	.625	.917	.521	.000	.750	.955



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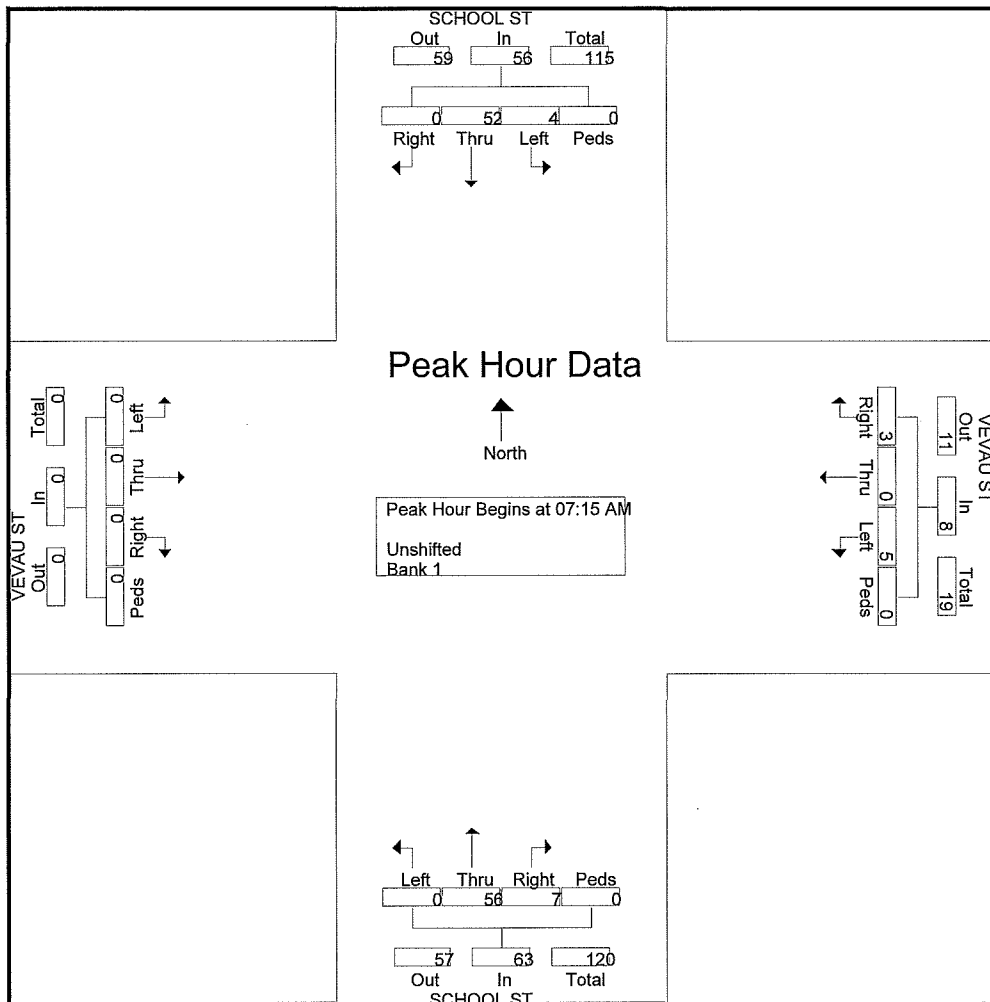
File Name : AM_School St - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	SCHOOL ST Southbound					VEVAU ST Westbound					SCHOOL ST Northbound					VEVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	14	0	0	14	2	0	0	0	2	0	12	1	0	13	0	0	0	0	0	29
07:30 AM	1	10	0	0	11	0	0	0	0	0	0	14	2	0	16	0	0	0	0	0	27
07:45 AM	3	15	0	0	18	0	0	1	0	1	0	16	2	0	18	0	0	0	0	0	37
08:00 AM	0	13	0	0	13	3	0	2	0	5	0	14	2	0	16	0	0	0	0	0	34
Total Volume	4	52	0	0	56	5	0	3	0	8	0	56	7	0	63	0	0	0	0	0	127
% App. Total	7.1	92.9	0	0		62.5	0	37.5	0		0	88.9	11.1	0		0	0	0	0		
PHF	.333	.867	.000	.000	.778	.417	.000	.375	.000	.400	.000	.875	.875	.000	.875	.000	.000	.000	.000	.000	.858



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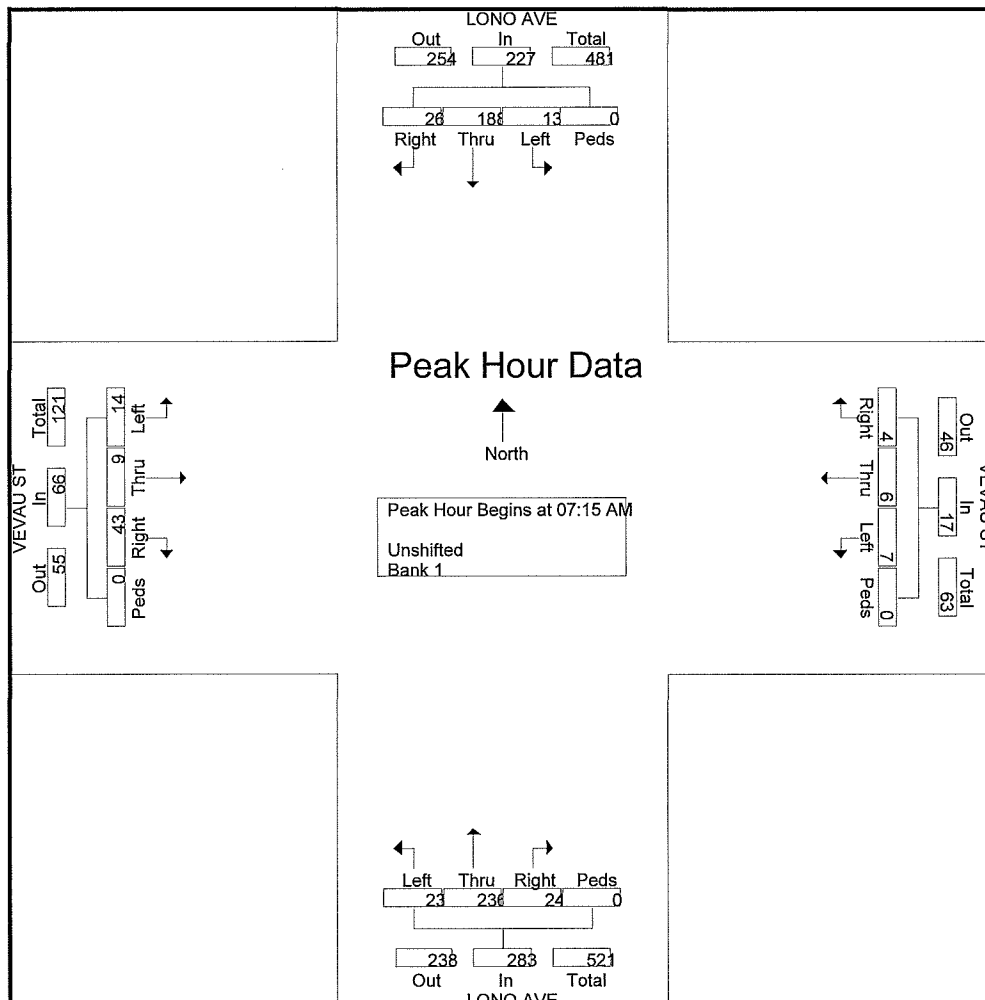
File Name : AM_Lono Ave - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					VEVAU ST Westbound					LONO AVE Northbound					VEVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	5	48	7	0	60	1	2	1	0	4	4	61	5	0	70	6	2	6	0	14	148
07:30 AM	3	40	8	0	51	0	0	1	0	1	5	66	3	0	74	2	2	11	0	15	141
07:45 AM	2	59	6	0	67	1	2	0	0	3	9	56	11	0	76	2	1	16	0	19	165
08:00 AM	3	41	5	0	49	5	2	2	0	9	5	53	5	0	63	4	4	10	0	18	139
Total Volume	13	188	26	0	227	7	6	4	0	17	23	236	24	0	283	14	9	43	0	66	593
% App. Total	5.7	82.8	11.5	0		41.2	35.3	23.5	0		8.1	83.4	8.5	0		21.2	13.6	65.2	0		
PHF	.650	.797	.813	.000	.847	.350	.750	.500	.000	.472	.639	.894	.545	.000	.931	.583	.563	.672	.000	.868	.898



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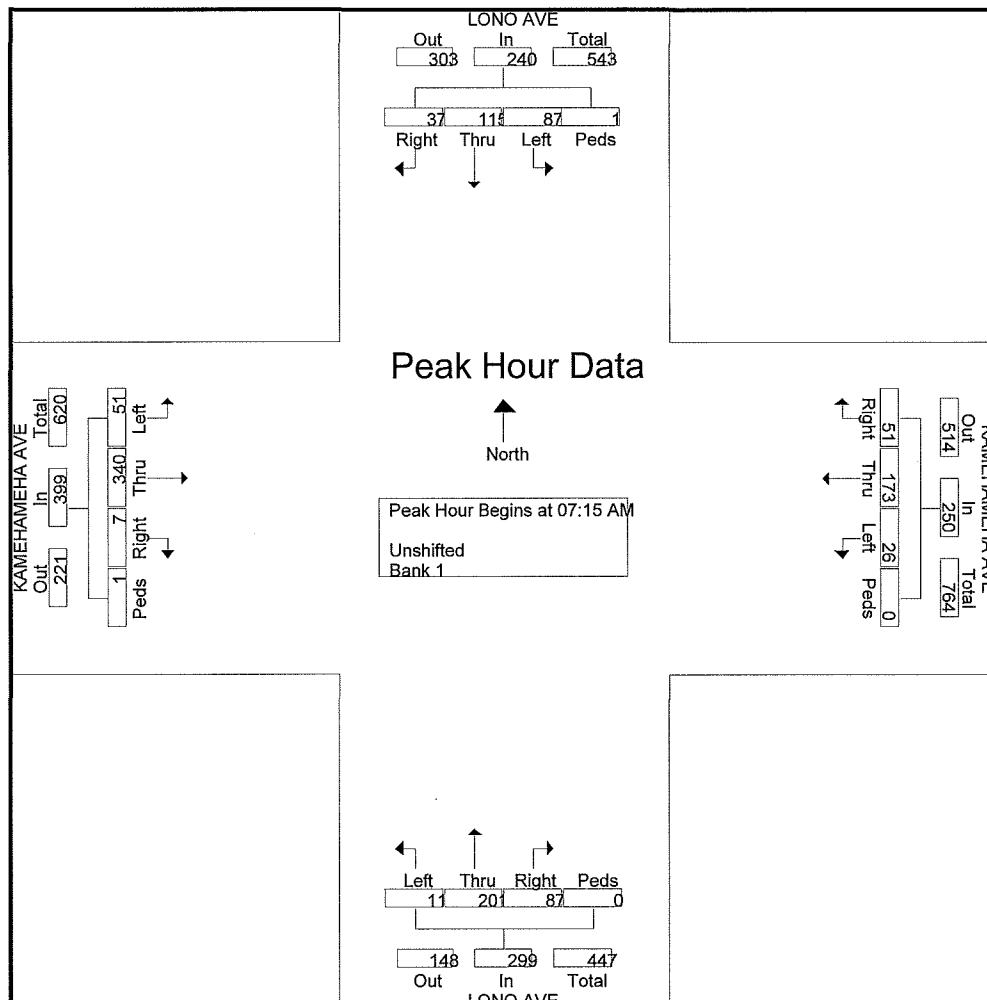
File Name : AM_Lono Ave - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					KAMEHAMEHA AVE Westbound					LONO AVE Northbound					KAMEHAMEHA AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	14	32	12	0	58	7	35	3	0	45	3	57	12	0	72	7	74	0	1	82	257
07:30 AM	23	30	5	0	58	9	41	12	0	62	4	58	25	0	87	10	78	3	0	91	298
07:45 AM	26	30	13	0	69	6	38	17	0	61	2	47	29	0	78	22	118	3	0	143	351
08:00 AM	24	23	7	1	55	4	59	19	0	82	2	39	21	0	62	12	70	1	0	83	282
Total Volume	87	115	37	1	240	26	173	51	0	250	11	201	87	0	299	51	340	7	1	399	1188
% App. Total	36.2	47.9	15.4	0.4		10.4	69.2	20.4	0		3.7	67.2	29.1	0		12.8	85.2	1.8	0.3		
PHF	.837	.898	.712	.250	.870	.722	.733	.671	.000	.762	.688	.866	.750	.000	.859	.580	.720	.583	.250	.698	.846



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File Name : AM_School St - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 1

Groups Printed- Unshifted

Start Time	KAMEHAMEHA AVE Eastbound				KAMEHAMEHA AVE Westbound				SCHOOL ST Northbound				SCHOOL ST Southbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:45 AM	1	52	1	0	0	40	1	0	0	0	0	0	2	0	0	0	97
Total	1	52	1	0	0	40	1	0	0	0	0	0	2	0	0	0	97
07:00 AM	3	47	0	0	0	32	3	0	0	0	0	0	0	0	1	0	86
07:15 AM	2	87	0	0	0	46	1	0	0	0	0	1	1	0	0	0	138
07:30 AM	0	106	0	0	0	50	1	0	0	0	0	0	3	0	1	1	162
07:45 AM	0	131	0	0	0	51	2	0	0	0	0	0	4	0	2	0	190
Total	5	371	0	0	0	179	7	0	0	0	0	1	8	0	4	1	576
08:00 AM	1	48	0	0	0	31	0	0	0	0	0	0	0	0	0	0	80
08:15 AM	1	57	0	0	0	66	4	0	0	0	0	0	5	0	0	0	133
08:30 AM	0	75	0	0	0	55	2	0	0	0	0	0	2	0	0	1	135
Grand Total	8	603	1	0	0	371	14	0	0	0	0	1	17	0	4	2	1021
Apprch %	1.3	98.5	0.2	0	0	96.4	3.6	0	0	0	0	100	73.9	0	17.4	8.7	
Total %	0.8	59.1	0.1	0	0	36.3	1.4	0	0	0	0	0.1	1.7	0	0.4	0.2	

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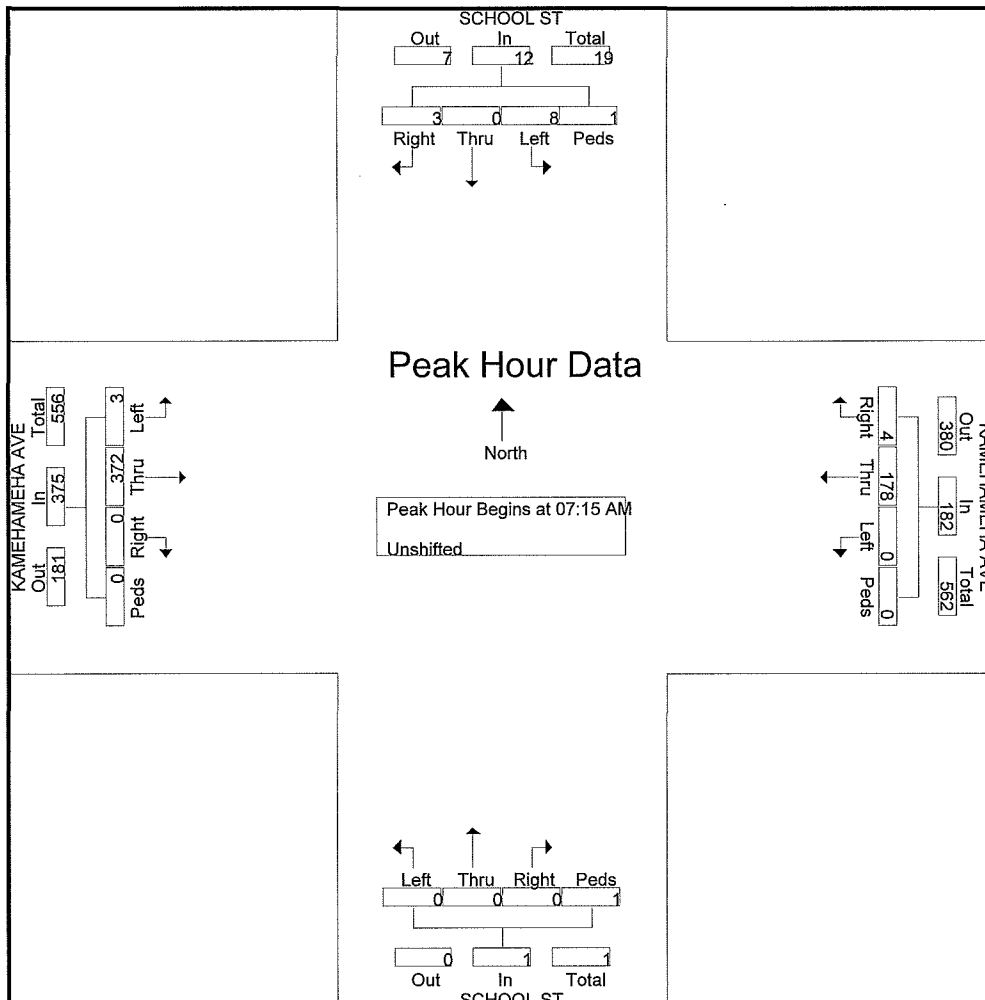
File Name : AM_School St - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KAMEHAMEHA AVE Eastbound					KAMEHAMEHA AVE Westbound					SCHOOL ST Northbound					SCHOOL ST Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	87	0	0	89	0	46	1	0	47	0	0	0	1	1	1	0	0	0	1	138
07:30 AM	0	106	0	0	106	0	50	1	0	51	0	0	0	0	0	3	0	1	1	5	162
07:45 AM	0	131	0	0	131	0	51	2	0	53	0	0	0	0	0	4	0	2	0	6	190
08:00 AM	1	48	0	0	49	0	31	0	0	31	0	0	0	0	0	0	0	0	0	0	80
Total Volume	3	372	0	0	375	0	178	4	0	182	0	0	0	1	1	8	0	3	1	12	570
% App. Total	0.8	99.2	0	0		0	97.8	2.2	0		0	0	0	100		66.7	0	25	8.3		
PHF	.375	.710	.000	.000	.716	.000	.873	.500	.000	.858	.000	.000	.000	.250	.250	.500	.000	.375	.250	.500	.750



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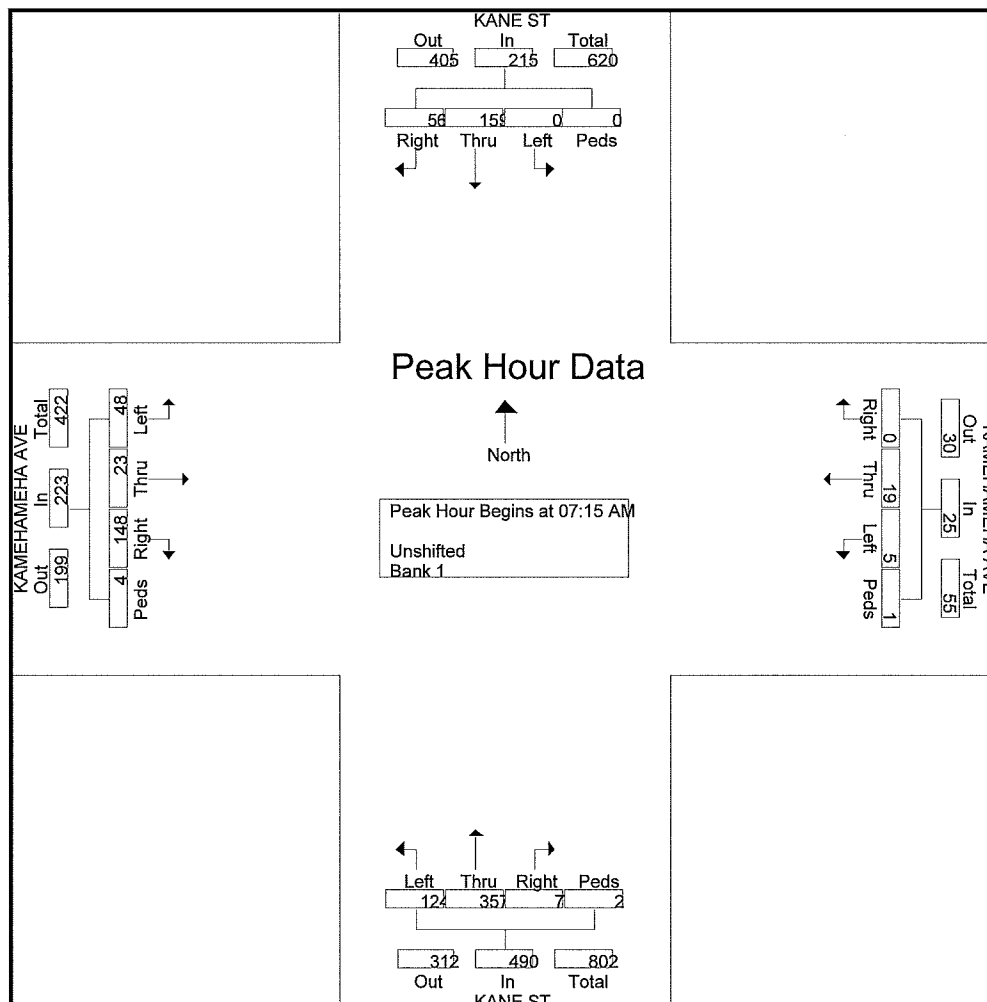
File Name : AM_Kane St - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KANE ST Southbound					KAMEHAMEHA AVE Westbound					KANE ST Northbound					KAMEHAMEHA AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 08:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	34	10	0	44	0	5	0	0	5	34	75	3	1	113	12	3	42	2	59	221
07:30 AM	0	40	11	0	51	2	4	0	1	7	34	97	2	0	133	7	5	38	0	50	241
07:45 AM	0	41	12	0	53	2	4	0	0	6	29	112	2	1	144	18	9	34	2	63	266
08:00 AM	0	44	23	0	67	1	6	0	0	7	27	73	0	0	100	11	6	34	0	51	225
Total Volume	0	159	56	0	215	5	19	0	1	25	124	357	7	2	490	48	23	148	4	223	953
% App. Total	0	74	26	0		20	76	0	4		25.3	72.9	1.4	0.4		21.5	10.3	66.4	1.8		
PHF	.000	.903	.609	.000	.802	.625	.792	.000	.250	.893	.912	.797	.583	.500	.851	.667	.639	.881	.500	.885	.896



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File Name : PM_Kahului Beach Road_Kane St - Kaahumanu Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 1

Groups Printed- Unshifted

Start Time	KAAHUMANU AVE Eastbound				KAAHUMANU AVE Westbound				KANE ST Northbound				KAHULUI BEACH RD Southbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
03:15 PM	9	210	29	1	14	202	191	0	16	24	3	0	190	38	30	0	957
03:30 PM	14	202	25	4	13	209	221	0	7	31	6	0	217	48	18	0	1015
03:45 PM	9	220	28	4	12	190	180	0	9	29	3	0	221	25	29	0	959
Total	32	632	82	9	39	601	592	0	32	84	12	0	628	111	77	0	2931
04:00 PM	6	242	20	1	11	219	242	0	10	24	5	0	231	45	22	0	1078
04:15 PM	10	223	30	3	10	173	229	1	4	31	5	0	239	51	22	0	1031
04:30 PM	9	196	22	8	15	192	245	1	13	34	2	0	245	35	21	1	1039
04:45 PM	7	239	30	0	14	244	288	0	9	33	12	0	251	38	24	0	1189
Total	32	900	102	12	50	828	1004	2	36	122	24	0	966	169	89	1	4337
05:00 PM	6	177	29	0	15	222	279	0	6	35	10	0	228	42	22	0	1071
Grand Total	70	1709	213	21	104	1651	1875	2	74	241	46	0	1822	322	188	1	8339
Apprch %	3.5	84.9	10.6	1	2.9	45.5	51.6	0.1	20.5	66.8	12.7	0	78.1	13.8	8.1	0	
Total %	0.8	20.5	2.6	0.3	1.2	19.8	22.5	0	0.9	2.9	0.6	0	21.8	3.9	2.3	0	

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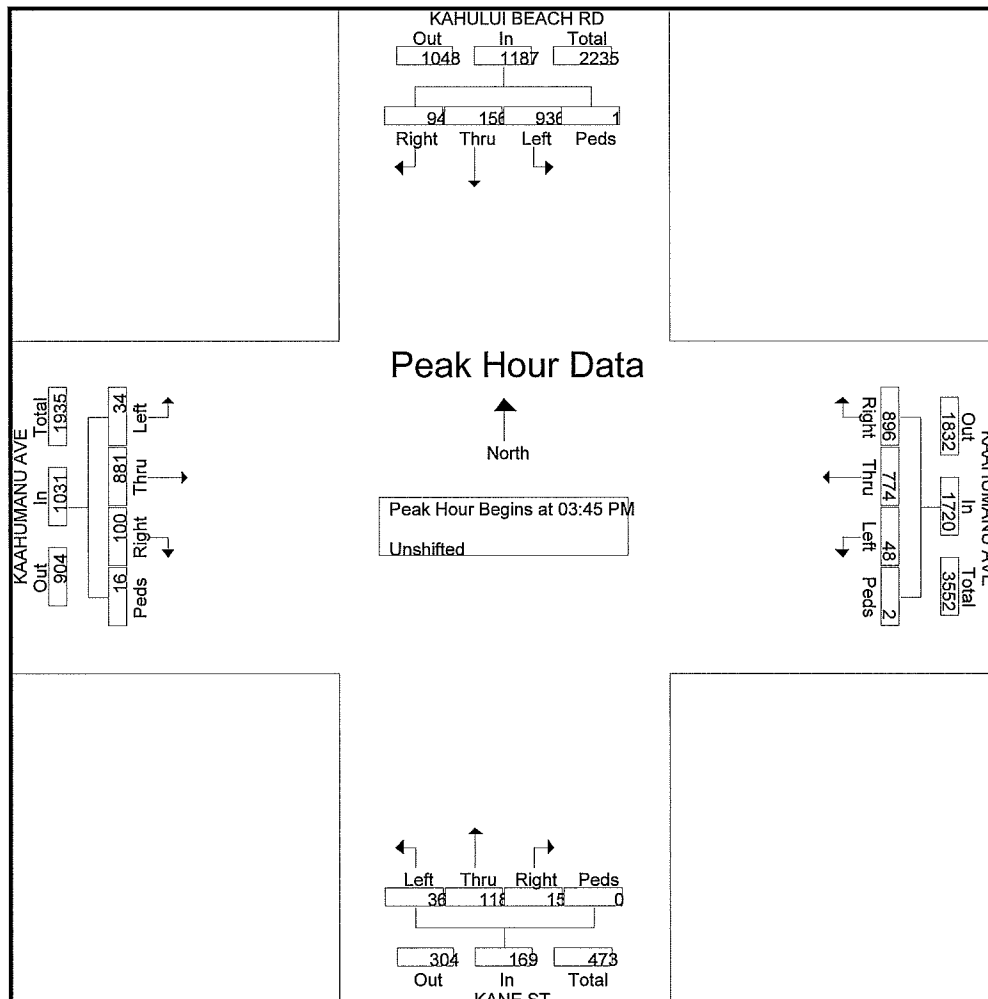
File Name : PM_Kahului Beach Road_Kane St - Kaahumanu Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KAAHUMANU AVE Eastbound					KAAHUMANU AVE Westbound					KANE ST Northbound					KAHULUI BEACH RD Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	9	220	28	4	261	12	190	180	0	382	9	29	3	0	41	221	25	29	0	275	959
04:00 PM	6	242	20	1	269	11	219	242	0	472	10	24	5	0	39	231	45	22	0	298	1078
04:15 PM	10	223	30	3	266	10	173	229	1	413	4	31	5	0	40	239	51	22	0	312	1031
04:30 PM	9	196	22	8	235	15	192	245	1	453	13	34	2	0	49	245	35	21	1	302	1039
Total Volume	34	881	100	16	1031	48	774	896	2	1720	36	118	15	0	169	936	156	94	1	1187	4107
% App. Total	3.3	85.5	9.7	1.6		2.8	45	52.1	0.1		21.3	69.8	8.9	0		78.9	13.1	7.9	0.1		
PHF	.850	.910	.833	.500	.958	.800	.884	.914	.500	.911	.692	.868	.750	.000	.862	.955	.765	.810	.250	.951	.952



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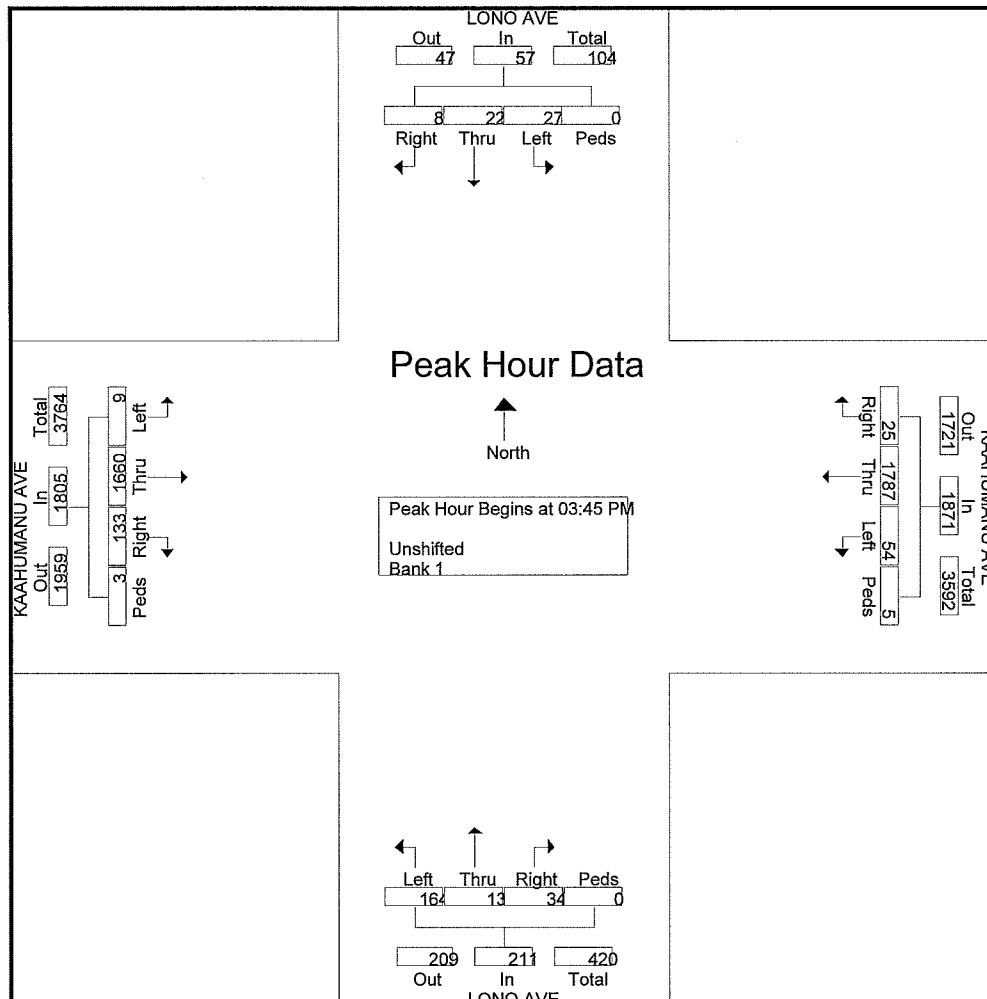
File Name : PM_Lono Ave - Kaahumanu Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					KAAHUMANU AVE Westbound					LONO AVE Northbound					KAAHUMANU AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	5	2	1	0	8	12	419	5	2	438	47	3	6	0	56	0	436	27	0	463	965
04:00 PM	6	5	0	0	11	17	477	3	0	497	44	1	7	0	52	2	385	56	2	445	1005
04:15 PM	8	5	3	0	16	15	427	9	3	454	32	7	16	0	55	2	433	23	1	459	984
04:30 PM	8	10	4	0	22	10	464	8	0	482	41	2	5	0	48	5	406	27	0	438	990
Total Volume	27	22	8	0	57	54	1787	25	5	1871	164	13	34	0	211	9	1660	133	3	1805	3944
% App. Total	47.4	38.6	14	0		2.9	95.5	1.3	0.3		77.7	6.2	16.1	0		0.5	92	7.4	0.2		
PHF	.844	.550	.500	.000	.648	.794	.937	.694	.417	.941	.872	.464	.531	.000	.942	.450	.952	.594	.375	.975	.981



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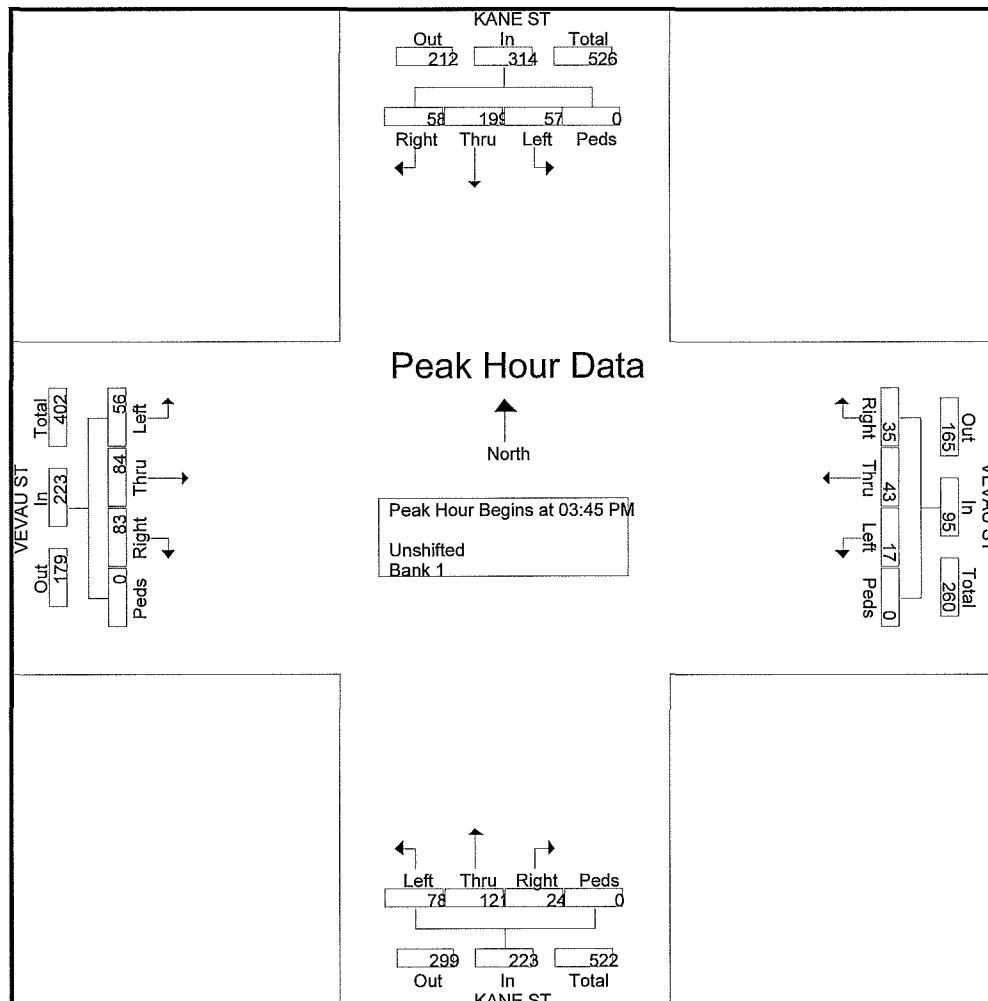
File Name : PM_Kane St - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KANE ST Southbound					VEVAU ST Westbound					KANE ST Northbound					VEVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	14	44	14	0	72	4	13	10	0	27	20	29	10	0	59	13	20	23	0	56	214
04:00 PM	11	52	14	0	77	3	12	5	0	20	17	32	3	0	52	13	25	21	0	59	208
04:15 PM	22	55	16	0	93	4	9	11	0	24	16	26	5	0	47	15	17	17	0	49	213
04:30 PM	10	48	14	0	72	6	9	9	0	24	25	34	6	0	65	15	22	22	0	59	220
Total Volume	57	199	58	0	314	17	43	35	0	95	78	121	24	0	223	56	84	83	0	223	855
% App. Total	18.2	63.4	18.5	0		17.9	45.3	36.8	0		35	54.3	10.8	0		25.1	37.7	37.2	0		
PHF	.648	.905	.906	.000	.844	.708	.827	.795	.000	.880	.780	.890	.600	.000	.858	.933	.840	.902	.000	.945	.972



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File Name : PM_School St - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 1

Groups Printed- Unshifted - Bank 1

Start Time	SCHOOL ST Southbound				VEVAU ST Westbound				SCHOOL ST Northbound				VEVAU ST Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
03:15 PM	0	0	0	0	1	19	0	0	5	0	6	0	0	40	8	0	79
03:30 PM	0	0	0	0	4	13	0	0	3	0	4	0	0	31	3	0	58
03:45 PM	0	0	0	0	3	24	0	0	7	0	7	0	0	38	4	0	83
Total	0	0	0	0	8	56	0	0	15	0	17	0	0	109	15	0	220
04:00 PM	0	0	0	0	2	16	0	0	2	0	5	0	0	31	4	0	60
04:15 PM	0	0	0	0	3	18	0	0	3	0	7	0	0	34	5	0	70
04:30 PM	0	0	0	0	4	18	0	0	7	0	3	0	0	33	6	0	71
04:45 PM	0	0	0	0	3	25	0	0	8	0	4	0	0	30	9	0	79
Total	0	0	0	0	12	77	0	0	20	0	19	0	0	128	24	0	280
05:00 PM	0	0	0	0	1	15	0	0	2	0	2	0	0	31	0	0	51
Grand Total	0	0	0	0	21	148	0	0	37	0	38	0	0	268	39	0	551
Apprch %	0	0	0	0	12.4	87.6	0	0	49.3	0	50.7	0	0	87.3	12.7	0	
Total %	0	0	0	0	3.8	26.9	0	0	6.7	0	6.9	0	0	48.6	7.1	0	
Unshifted	0	0	0	0	21	148	0	0	37	0	38	0	0	268	39	0	551
% Unshifted	0	0	0	0	100	100	0	0	100	0	100	0	0	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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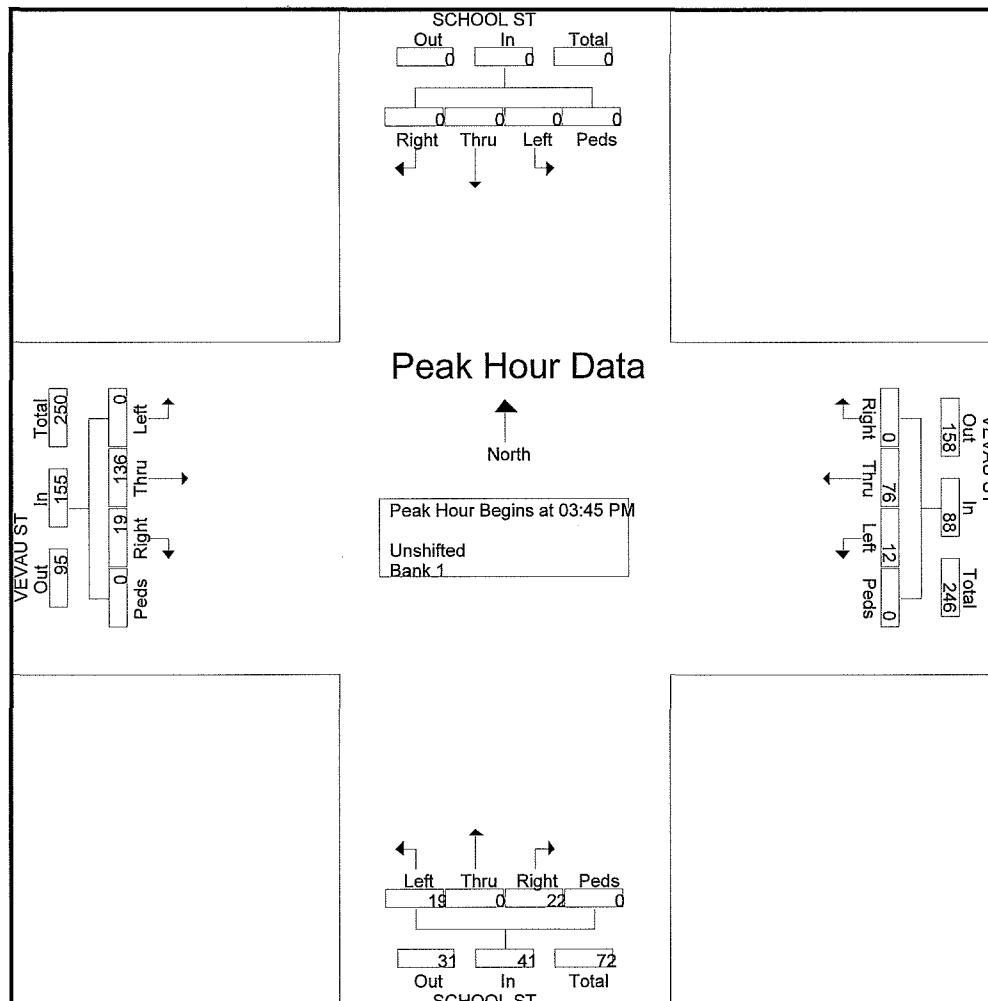
File Name : PM_School St - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	SCHOOL ST Southbound					VEVAU ST Westbound					SCHOOL ST Northbound					VEVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	3	24	0	0	27	7	0	7	0	14	0	38	4	0	42	83
04:00 PM	0	0	0	0	0	2	16	0	0	18	2	0	5	0	7	0	31	4	0	35	60
04:15 PM	0	0	0	0	0	3	18	0	0	21	3	0	7	0	10	0	34	5	0	39	70
04:30 PM	0	0	0	0	0	4	18	0	0	22	7	0	3	0	10	0	33	6	0	39	71
Total Volume	0	0	0	0	0	12	76	0	0	88	19	0	22	0	41	0	136	19	0	155	284
% App. Total	0	0	0	0		13.6	86.4	0	0		46.3	0	53.7	0		0	87.7	12.3	0		
PHF	.000	.000	.000	.000	.000	.750	.792	.000	.000	.815	.679	.000	.786	.000	.732	.000	.895	.792	.000	.923	.855



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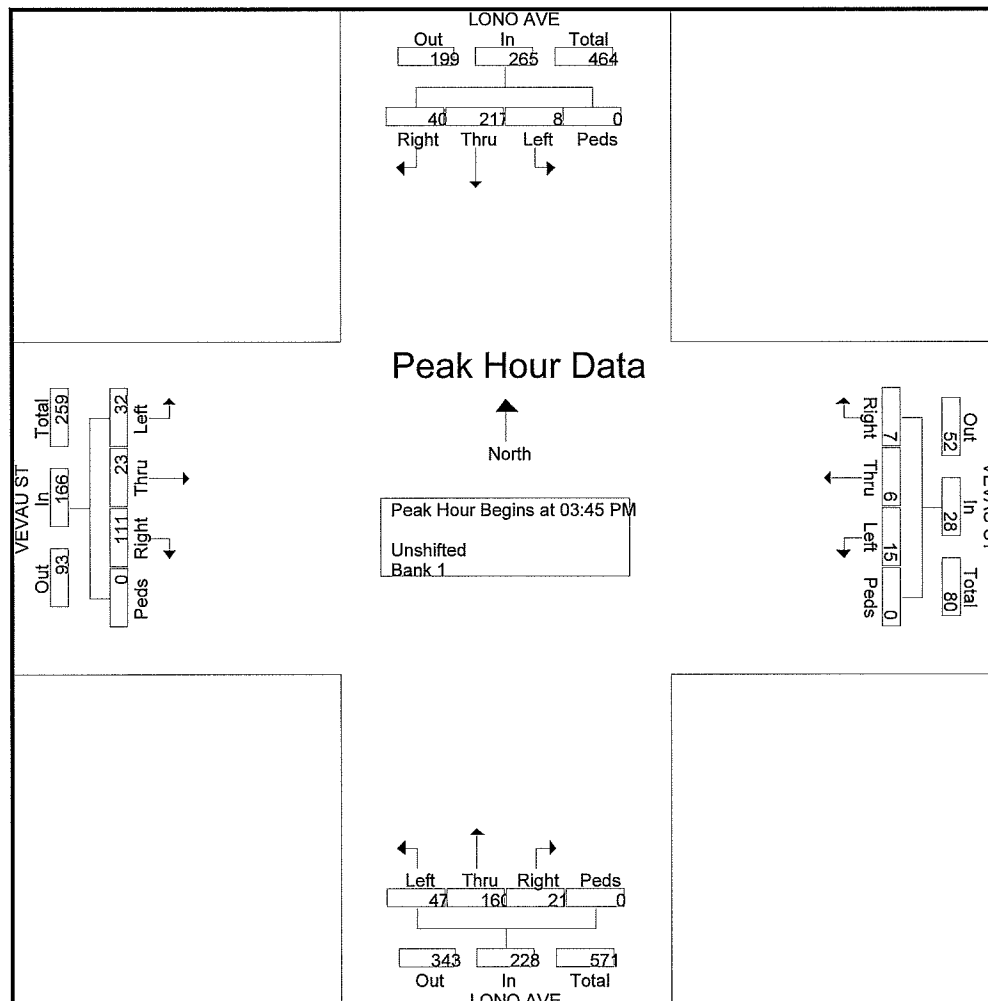
File Name : PM_Lono Ave - Vevau St

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					VEVAU ST Westbound					LONO AVE Northbound					VEVAU ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	3	56	12	0	71	1	2	0	0	3	13	46	7	0	66	8	7	31	0	46	186
04:00 PM	3	55	5	0	63	1	1	0	0	2	13	39	4	0	56	6	4	26	0	36	157
04:15 PM	2	51	7	0	60	7	2	5	0	14	14	42	5	0	61	11	4	30	0	45	180
04:30 PM	0	55	16	0	71	6	1	2	0	9	7	33	5	0	45	7	8	24	0	39	164
Total Volume	8	217	40	0	265	15	6	7	0	28	47	160	21	0	228	32	23	111	0	166	687
% App. Total	3	81.9	15.1	0		53.6	21.4	25	0		20.6	70.2	9.2	0		19.3	13.9	66.9	0		
PHF	.667	.969	.625	.000	.933	.536	.750	.350	.000	.500	.839	.870	.750	.000	.864	.727	.719	.895	.000	.902	.923



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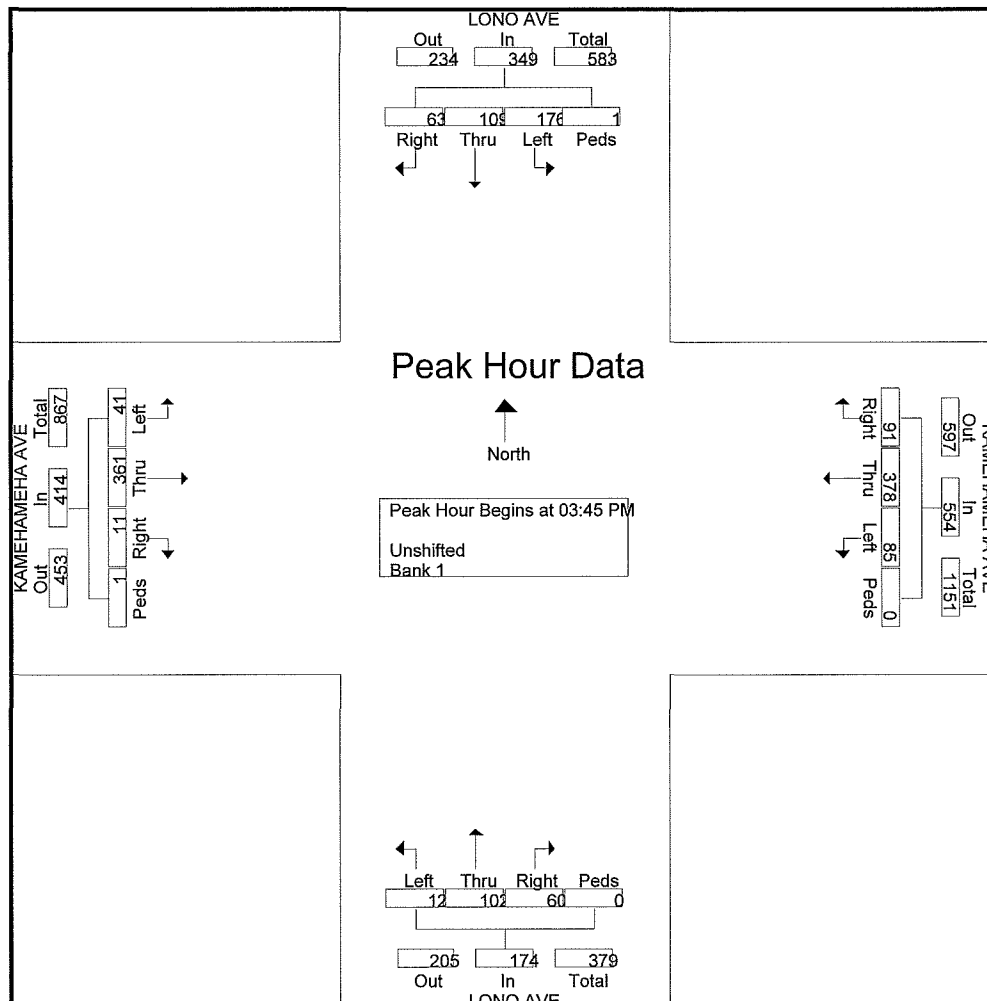
File Name : PM_Lono Ave - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	LONO AVE Southbound					KAMEHAMEHA AVE Westbound					LONO AVE Northbound					KAMEHAMEHA AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	50	29	16	0	95	13	81	25	0	119	1	30	18	0	49	13	109	4	0	126	389
04:00 PM	42	25	13	1	81	25	76	24	0	125	6	24	19	0	49	11	85	2	0	98	353
04:15 PM	48	24	15	0	87	21	98	26	0	145	5	27	9	0	41	9	87	3	0	99	372
04:30 PM	36	31	19	0	86	26	123	16	0	165	0	21	14	0	35	8	80	2	1	91	377
Total Volume	176	109	63	1	349	85	378	91	0	554	12	102	60	0	174	41	361	11	1	414	1491
% App. Total	50.4	31.2	18.1	0.3		15.3	68.2	16.4	0		6.9	58.6	34.5	0		9.9	87.2	2.7	0.2		
PHF	.880	.879	.829	.250	.918	.817	.768	.875	.000	.839	.500	.850	.789	.000	.888	.788	.828	.688	.250	.821	.958



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Site Code : 00000000

Start Date : 3/8/2017

Page No : 1

Groups Printed- Unshifted

Start Time	KAMEHAMEHA AVE Eastbound				KAMEHAMEHA AVE Westbound				SCHOOL ST Northbound				SCHOOL ST Southbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
03:15 PM	3	88	0	0	0	79	4	0	0	0	0	0	2	0	1	0	177
03:30 PM	3	109	0	0	0	95	9	0	0	0	0	0	2	0	8	0	226
03:45 PM	1	113	0	0	0	101	4	0	0	0	0	0	5	0	1	0	225
Total	7	310	0	0	0	275	17	0	0	0	0	0	9	0	10	0	628
04:00 PM	1	101	0	0	0	89	8	0	0	0	0	0	3	0	5	0	207
04:15 PM	2	92	0	0	0	108	8	0	0	0	0	0	3	0	1	0	214
04:30 PM	1	84	0	0	0	138	6	0	0	0	0	0	3	0	0	0	232
04:45 PM	1	95	0	0	0	112	2	0	0	0	0	0	7	0	7	0	224
Total	5	372	0	0	0	447	24	0	0	0	0	0	16	0	13	0	877
05:00 PM	2	87	0	0	0	131	4	0	0	0	0	0	3	0	3	0	230
Grand Total	14	769	0	0	0	853	45	0	0	0	0	0	28	0	26	0	1735
Apprch %	1.8	98.2	0	0	0	95	5	0	0	0	0	0	51.9	0	48.1	0	
Total %	0.8	44.3	0	0	0	49.2	2.6	0	0	0	0	0	1.6	0	1.5	0	

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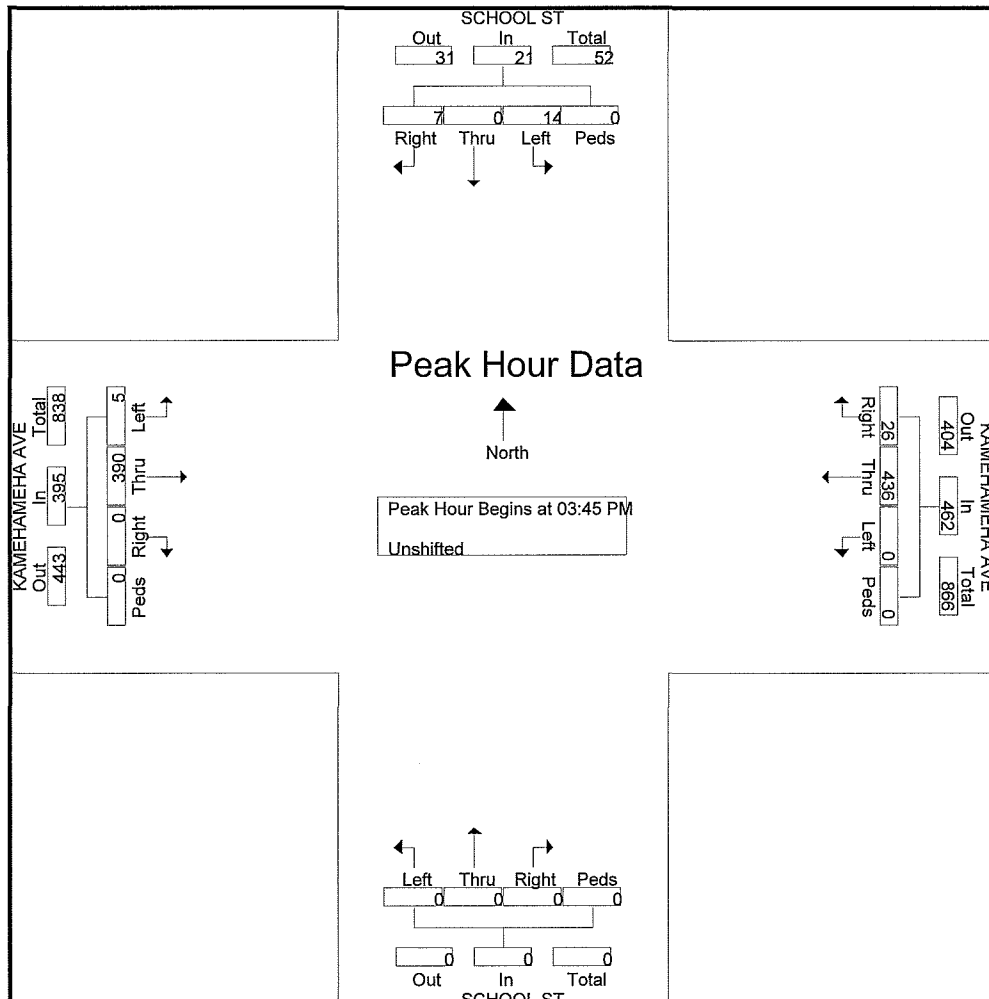
File Name : PM_School St - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KAMEHAMEHA AVE Eastbound					KAMEHAMEHA AVE Westbound					SCHOOL ST Northbound					SCHOOL ST Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	1	113	0	0	114	0	101	4	0	105	0	0	0	0	0	5	0	1	0	6	225
04:00 PM	1	101	0	0	102	0	89	8	0	97	0	0	0	0	0	3	0	5	0	8	207
04:15 PM	2	92	0	0	94	0	108	8	0	116	0	0	0	0	0	3	0	1	0	4	214
04:30 PM	1	84	0	0	85	0	138	6	0	144	0	0	0	0	0	3	0	0	0	3	232
Total Volume	5	390	0	0	395	0	436	26	0	462	0	0	0	0	0	14	0	7	0	21	878
% App. Total	1.3	98.7	0	0		0	94.4	5.6	0		0	0	0	0		66.7	0	33.3	0		
PHF	.625	.863	.000	.000	.866	.000	.790	.813	.000	.802	.000	.000	.000	.000	.000	.700	.000	.350	.000	.656	.946



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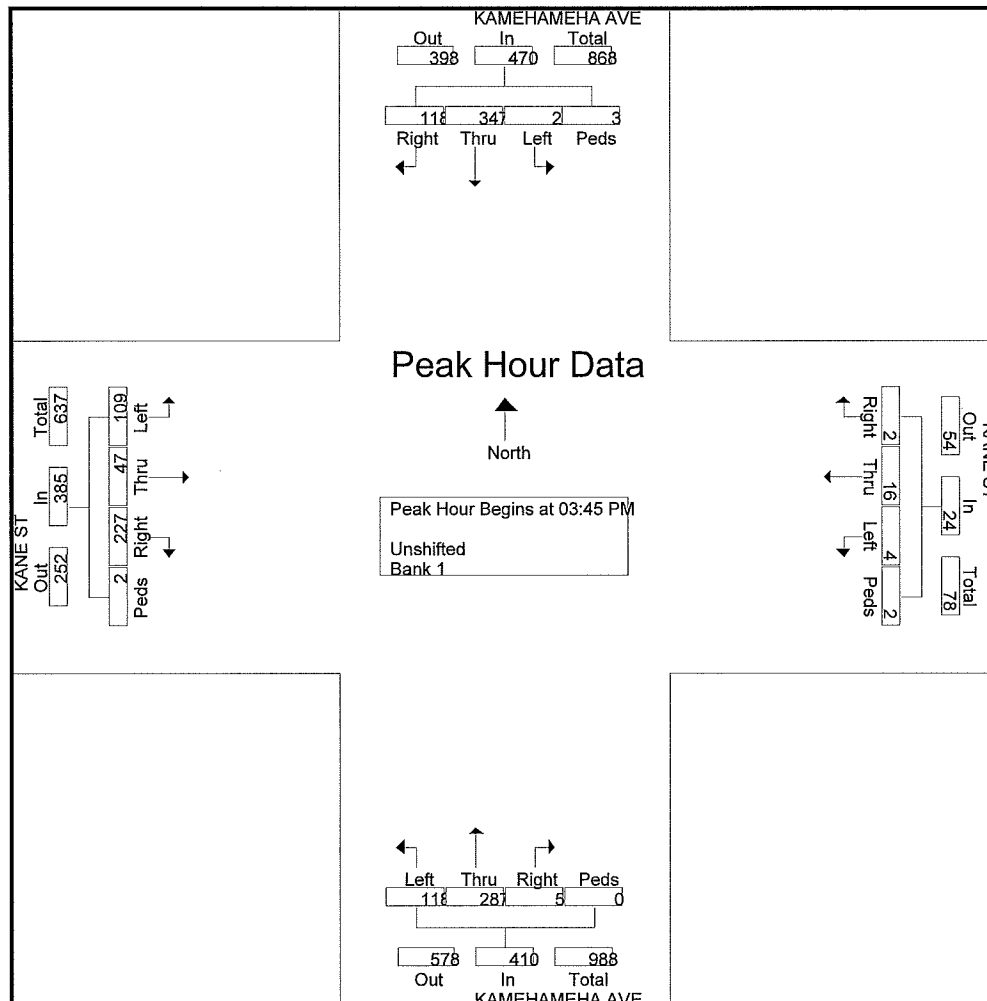
File Name : PM_Kane St - Kamehameha Ave

Site Code : 00000000

Start Date : 3/8/2017

Page No : 2

Start Time	KAMEHAMEHA AVE Southbound					KANE ST Westbound					KAMEHAMEHA AVE Northbound					KANE ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	1	70	37	0	108	1	5	1	0	7	22	93	2	0	117	27	6	58	0	91	323
04:00 PM	0	70	24	3	97	0	4	0	0	4	34	75	2	0	111	25	12	56	0	93	305
04:15 PM	1	100	24	0	125	2	5	1	2	10	30	68	1	0	99	30	13	60	2	105	339
04:30 PM	0	107	33	0	140	1	2	0	0	3	32	51	0	0	83	27	16	53	0	96	322
Total Volume	2	347	118	3	470	4	16	2	2	24	118	287	5	0	410	109	47	227	2	385	1289
% App. Total	0.4	73.8	25.1	0.6		16.7	66.7	8.3	8.3		28.8	70	1.2	0		28.3	12.2	59	0.5		
PHF	.500	.811	.797	.250	.839	.500	.800	.500	.250	.600	.868	.772	.625	.000	.876	.908	.734	.946	.250	.917	.951





APPENDIX B

LEVEL OF SERVICE CRITERIA

APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 2010)

Level of service for signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

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 is dependent 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 or approach in question.

VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2010)

The level of service criteria for unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec./veh.)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

**VEHICULAR LEVEL OF SERVICE CRITERIA FOR
ROUNABOUT INTERSECTIONS (HCM 2010)**

Level of service criteria for vehicles at roundabout intersections is defined based upon the approach v/c ratios as well as control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay. However, as the table below denotes, LOS F is assigned if the volume-to-capacity ratio of a lane exceeds 1.0 regardless of the control delay. Roundabout LOS criteria are given in the table below.

Level-of Service Criteria for Roundabout Intersections

Control Delay (sec./veh.)	LOS by Volume-to Capacity Ratio	
	v/c<1.0	v/c>1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F



APPENDIX C

LEVEL OF SERVICE CALCULATIONS



























APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing AM Peak
-
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

EXIST AM
 4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	659	64	17	1071	855	36	97	2	971	128	70
Future Volume (veh/h)	23	659	64	17	1071	855	36	97	2	971	128	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	25	716	0	18	1164	0	39	105	0	1154	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	1474	659	33	1458	652	132	139	118	1249	0	557
Arrive On Green	0.02	0.42	0.00	0.02	0.41	0.00	0.07	0.07	0.00	0.35	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	25	716	0	18	1164	0	39	105	0	1154	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	1.8	19.2	0.0	1.3	37.5	0.0	2.7	7.2	0.0	40.6	0.0	0.0
Cycle Q Clear(g_c), s	1.8	19.2	0.0	1.3	37.5	0.0	2.7	7.2	0.0	40.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	41	1474	659	33	1458	652	132	139	118	1249	0	557
V/C Ratio(X)	0.62	0.49	0.00	0.55	0.80	0.00	0.29	0.75	0.00	0.92	0.00	0.00
Avail Cap(c_a), veh/h	143	1474	659	143	1458	652	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.84	0.84	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.9	27.8	0.0	63.3	33.5	0.0	56.9	59.0	0.0	40.4	0.0	0.0
Incr Delay (d2), s/veh	14.2	1.1	0.0	11.6	3.9	0.0	1.2	8.0	0.0	10.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	9.6	0.0	0.7	19.1	0.0	1.4	4.0	0.0	21.6	0.0	0.0
LnGrp Delay(d),s/veh	77.2	28.9	0.0	74.9	37.4	0.0	58.1	67.0	0.0	50.5	0.0	0.0
LnGrp LOS	E	C		E	D		E	E		D		
Approach Vol, veh/h		741			1182			144			1154	
Approach Delay, s/veh		30.5			38.0			64.6			50.5	
Approach LOS		C			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	58.6		50.3	7.5	58.0		14.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	30.5		50.5	10.5	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.3	21.2		42.6	3.8	39.5		9.2				
Green Ext Time (p_c), s	0.0	7.3		3.2	0.0	0.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				41.9								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary
2: Lono Street & Kaahumanu Ave

EXIST AM
4/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑			↖ ↑↑↑			↑		↗		↘	
Traffic Volume (veh/h)	16	1455	131	20	1726	12	169	14	33	22	12	8
Future Volume (veh/h)	16	1455	131	20	1726	12	169	14	33	22	12	8
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	17	1582	142	22	1876	13	184	15	36	24	13	9
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	31	3086	277	37	3403	24	273	18	356	70	36	16
Arrive On Green	0.04	1.00	1.00	0.02	0.65	0.65	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	4750	426	1774	5210	36	974	79	1581	125	158	69
Grp Volume(v), veh/h	17	1129	595	22	1220	669	199	0	36	46	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1786	1774	1695	1856	1053	0	1581	352	0	0
Q Serve(g_s), s	1.2	0.0	0.0	1.6	25.4	25.4	0.0	0.0	2.3	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.0	1.6	25.4	25.4	24.6	0.0	2.3	26.3	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.02	0.92		1.00	0.52		0.20
Lane Grp Cap(c), veh/h	31	2202	1160	37	2214	1212	291	0	356	122	0	0
V/C Ratio(X)	0.54	0.51	0.51	0.59	0.55	0.55	0.68	0.00	0.10	0.38	0.00	0.00
Avail Cap(c_a), veh/h	130	2202	1160	130	2214	1212	380	0	456	216	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.64	0.64	0.64	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.2	0.0	0.0	63.1	12.2	12.2	48.5	0.0	39.9	47.7	0.0	0.0
Incr Delay (d2), s/veh	9.0	0.5	1.0	13.8	1.0	1.8	3.3	0.0	0.1	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.3	0.9	12.2	13.6	7.2	0.0	1.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	71.2	0.5	1.0	76.9	13.2	14.0	51.9	0.0	40.0	49.7	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	D		D	D		
Approach Vol, veh/h		1741			1911			235			46	
Approach Delay, s/veh		1.4			14.2			50.1			49.7	
Approach LOS		A			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	89.0		33.8	6.8	89.4		33.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5	69.5		37.5	9.5	69.5		37.5				
Max Q Clear Time (g_c+I), s	13.6	2.0		26.6	3.2	27.4		28.3				
Green Ext Time (p_c), s	0.0	58.0		1.1	0.0	38.2		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay				11.1								
HCM 2010 LOS				B								

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	10	22	25	10	20	26	29	126	10	30	181	19
Future Vol, veh/h	10	22	25	10	20	26	29	126	10	30	181	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	24	27	11	22	28	32	137	11	33	197	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	502	483	109	381	488	142	217	0	0	148	0	0
Stage 1	272	272	-	205	205	-	-	-	-	-	-	-
Stage 2	230	211	-	176	283	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	466	483	924	564	479	905	1351	-	-	1432	-	-
Stage 1	711	684	-	796	731	-	-	-	-	-	-	-
Stage 2	772	727	-	809	676	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	420	461	924	507	457	905	1351	-	-	1432	-	-
Mov Cap-2 Maneuver	420	461	-	507	457	-	-	-	-	-	-	-
Stage 1	694	668	-	777	714	-	-	-	-	-	-	-
Stage 2	708	710	-	740	660	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	11.6	1.4	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1351	-	-	447	924	607	1432	-	-
HCM Lane V/C Ratio	0.023	-	-	0.078	0.029	0.1	0.023	-	-
HCM Control Delay (s)	7.7	-	-	13.7	9	11.6	7.6	-	-
HCM Lane LOS	A	-	-	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0.3	0.1	-	-

Intersection

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	56	7	4	52	5	3
Future Vol, veh/h	56	7	4	52	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	8	4	57	5	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	68	130
Stage 1	-	-	65
Stage 2	-	-	65
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1533	864
Stage 1	-	-	958
Stage 2	-	-	958
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1533	861
Mov Cap-2 Maneuver	-	-	861
Stage 1	-	-	958
Stage 2	-	-	955

























Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	908	-	-	1533	-
HCM Lane V/C Ratio	0.01	-	-	0.003	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	14	9	43	7	6	4	23	236	24	13	188	26
Future Vol, veh/h	14	9	43	7	6	4	23	236	24	13	188	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	10	47	8	7	4	25	257	26	14	204	28
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	572	580	218	595	581	270	233	0	0	283	0	0
Stage 1	247	247	-	320	320	-	-	-	-	-	-	-
Stage 2	325	333	-	275	261	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	431	426	822	416	425	769	1335	-	-	1279	-	-
Stage 1	757	702	-	692	652	-	-	-	-	-	-	-
Stage 2	687	644	-	731	692	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	414	413	822	377	412	769	1335	-	-	1279	-	-
Mov Cap-2 Maneuver	414	413	-	377	412	-	-	-	-	-	-	-
Stage 1	743	694	-	679	640	-	-	-	-	-	-	-
Stage 2	663	632	-	672	684	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.7			13.5			0.6			0.4		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1335	-	-	612	443	1279	-	-				
HCM Lane V/C Ratio	0.019	-	-	0.117	0.042	0.011	-	-				
HCM Control Delay (s)	7.7	-	-	11.7	13.5	7.8	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-				

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

EXIST AM
4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	340	7	26	173	51	11	201	87	87	115	37
Future Volume (veh/h)	51	340	7	26	173	51	11	201	87	87	115	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	55	370	0	28	188	55	12	218	0	95	125	40
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	472	401	253	435	370	540	609	517	525	515	165
Arrive On Green	0.05	0.25	0.00	0.03	0.23	0.23	0.02	0.33	0.00	0.07	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1353	433
Grp Volume(v), veh/h	55	370	0	28	188	55	12	218	0	95	0	165
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1786
Q Serve(g_s), s	1.3	10.4	0.0	0.7	4.8	1.6	0.3	5.0	0.0	1.9	0.0	3.6
Cycle Q Clear(g_c), s	1.3	10.4	0.0	0.7	4.8	1.6	0.3	5.0	0.0	1.9	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	386	472	401	253	435	370	540	609	517	525	0	679
V/C Ratio(X)	0.14	0.78	0.00	0.11	0.43	0.15	0.02	0.36	0.00	0.18	0.00	0.24
Avail Cap(c_a), veh/h	453	612	520	354	612	520	671	609	517	564	0	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	19.6	0.0	16.2	18.4	17.1	12.3	14.5	0.0	10.8	0.0	11.9
Incr Delay (d2), s/veh	0.2	5.0	0.0	0.2	0.7	0.2	0.0	1.6	0.0	0.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	6.0	0.0	0.3	2.5	0.7	0.1	2.8	0.0	0.9	0.0	1.9
LnGrp Delay(d),s/veh	15.2	24.6	0.0	16.4	19.1	17.3	12.3	16.1	0.0	11.0	0.0	12.8
LnGrp LOS	B	C		B	B	B	B	B		B		B
Approach Vol, veh/h		425			271			230			260	
Approach Delay, s/veh		23.4			18.4			15.9			12.1	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	22.9	6.3	18.8	5.4	25.9	7.4	17.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+1), s	3.9	7.0	2.7	12.4	2.3	5.6	3.3	6.8				
Green Ext Time (p_c), s	0.0	1.7	0.0	1.9	0.0	1.8	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	3	372	178	4	8	3
Future Vol, veh/h	3	372	178	4	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	404	193	4	9	3




















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	198	0	196
Stage 1	-	-	196
Stage 2	-	-	411
Critical Hdwy	4.12	-	6.22
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.318
Pot Cap-1 Maneuver	1375	-	845
Stage 1	-	-	837
Stage 2	-	-	669
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1375	-	845
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	837
Stage 2	-	-	667

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	524
HCM Lane V/C Ratio	0.002	-	-	-	0.023
HCM Control Delay (s)	7.6	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

EXIST AM
4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	23	148	5	19	1	124	357	7	1	159	56
Future Volume (veh/h)	48	23	148	5	19	1	124	357	7	1	159	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	52	25	0	5	21	1	135	388	8	1	173	61
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	50	157	179	144	7	690	763	16	520	401	142
Arrive On Green	0.10	0.10	0.00	0.10	0.10	0.10	0.12	0.42	0.42	0.00	0.30	0.30
Sat Flow, veh/h	1046	503	1583	271	1451	66	1774	1819	37	1774	1317	464
Grp Volume(v), veh/h	77	0	0	27	0	0	135	0	396	1	0	234
Grp Sat Flow(s),veh/h/ln	1549	0	1583	1789	0	0	1774	0	1856	1774	0	1781
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	1.3	0.0	4.4	0.0	0.0	3.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.4	0.0	0.0	1.3	0.0	4.4	0.0	0.0	3.0
Prop In Lane	0.68		1.00	0.19		0.04	1.00		0.02	1.00		0.26
Lane Grp Cap(c), veh/h	368	0	157	329	0	0	690	0	778	520	0	543
V/C Ratio(X)	0.21	0.00	0.00	0.08	0.00	0.00	0.20	0.00	0.51	0.00	0.00	0.43
Avail Cap(c_a), veh/h	1212	0	1042	1301	0	0	894	0	1420	924	0	1362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	0.0	11.6	0.0	0.0	4.9	0.0	6.0	6.8	0.0	7.8
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.5	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.2	0.0	0.0	0.6	0.0	2.3	0.0	0.0	1.5
LnGrp Delay(d),s/veh	12.2	0.0	0.0	11.7	0.0	0.0	5.1	0.0	6.5	6.8	0.0	8.4
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		77			27			531			235	
Approach Delay, s/veh		12.2			11.7			6.2			8.4	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	16.3		7.3	7.8	13.1		7.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	21.5		18.5	6.5	21.5		18.5				
Max Q Clear Time (g_c+I1), s	2.0	6.4		3.3	3.3	5.0		2.4				
Green Ext Time (p_c), s	0.0	3.5		0.4	0.1	3.6		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			7.5									
HCM 2010 LOS			A									



























APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing PM Peak
-
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

EXIST PM
 4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	881	100	48	774	896	36	118	15	936	156	94
Future Volume (veh/h)	34	881	100	48	774	896	36	118	15	936	156	94
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	37	958	0	52	841	0	39	128	0	1138	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	50	1370	613	68	1405	628	156	164	139	1236	0	551
Arrive On Green	0.03	0.39	0.00	0.01	0.13	0.00	0.09	0.09	0.00	0.35	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	37	958	0	52	841	0	39	128	0	1138	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	2.7	29.6	0.0	3.8	29.1	0.0	2.7	8.7	0.0	40.0	0.0	0.0
Cycle Q Clear(g_c), s	2.7	29.6	0.0	3.8	29.1	0.0	2.7	8.7	0.0	40.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	50	1370	613	68	1405	628	156	164	139	1236	0	551
V/C Ratio(X)	0.74	0.70	0.00	0.77	0.60	0.00	0.25	0.78	0.00	0.92	0.00	0.00
Avail Cap(c_a), veh/h	212	1370	613	212	1405	628	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.83	0.83	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.7	33.5	0.0	63.6	46.7	0.0	55.3	58.0	0.0	40.6	0.0	0.0
Incr Delay (d2), s/veh	18.6	3.0	0.0	14.0	1.6	0.0	0.8	7.8	0.0	9.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	14.9	0.0	2.1	14.6	0.0	1.3	4.9	0.0	21.3	0.0	0.0
LnGrp Delay(d),s/veh	81.3	36.5	0.0	77.6	48.3	0.0	56.1	65.9	0.0	50.3	0.0	0.0
LnGrp LOS	F	D		E	D		E	E		D		
Approach Vol, veh/h		995			893			167			1138	
Approach Delay, s/veh		38.1			50.0			63.6			50.3	
Approach LOS		D			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	54.8		49.8	8.2	56.1		15.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	15.5	25.5		50.5	15.5	25.5		20.5				
Max Q Clear Time (g_c+1), s	5.8	31.6		42.0	4.7	31.1		10.7				
Green Ext Time (p_c), s	0.1	0.0		3.3	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				47.1								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary
2: Lono Street & Kaahumanu Ave

EXIST PM
4/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↑		↖ ↗		↕	
Traffic Volume (veh/h)	9	1660	133	54	1787	25	164	13	34	27	22	8
Future Volume (veh/h)	9	1660	133	54	1787	25	164	13	34	27	22	8
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	10	1804	145	59	1942	27	178	14	37	29	24	9
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	21	2933	235	76	3318	46	268	17	382	70	51	14
Arrive On Green	0.02	0.81	0.81	0.04	0.64	0.64	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	4800	385	1774	5168	72	886	70	1574	121	212	57
Grp Volume(v), veh/h	10	1273	676	59	1273	696	192	0	37	62	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1795	1774	1695	1850	956	0	1574	389	0	0
Q Serve(g_s), s	0.7	18.3	18.4	4.3	28.0	28.0	0.0	0.0	2.4	2.4	0.0	0.0
Cycle Q Clear(g_c), s	0.7	18.3	18.4	4.3	28.0	28.0	26.3	0.0	2.4	28.7	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.04	0.93		1.00	0.47		0.15
Lane Grp Cap(c), veh/h	21	2071	1097	76	2177	1188	285	0	382	135	0	0
V/C Ratio(X)	0.48	0.61	0.62	0.78	0.59	0.59	0.67	0.00	0.10	0.46	0.00	0.00
Avail Cap(c_a), veh/h	130	2071	1097	130	2177	1188	349	0	454	206	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.37	0.37	0.37	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.6	6.5	6.5	61.6	13.3	13.3	47.2	0.0	38.2	47.5	0.0	0.0
Incr Delay (d2), s/veh	6.4	0.5	1.0	15.6	1.2	2.1	3.7	0.0	0.1	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.3	9.2	2.4	13.4	15.0	6.9	0.0	1.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	70.0	7.0	7.4	77.2	14.5	15.5	51.0	0.0	38.3	49.9	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	D		D	D		
Approach Vol, veh/h	1959			2028			229		62			
Approach Delay, s/veh	7.5			16.7			48.9		49.9			
Approach LOS	A			B			D		D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.1	83.9		36.0	6.0	88.0		36.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5	69.5		37.5	9.5	69.5		37.5				
Max Q Clear Time (g_c+I), s	10.3	20.4		28.3	2.7	30.0		30.7				
Green Ext Time (p_c), s	0.0	45.6		1.0	0.0	37.2		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay	14.6											
HCM 2010 LOS	B											

Intersection

Int Delay, s/veh 7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	56	84	83	17	43	35	29	126	10	57	199	58
Future Vol, veh/h	56	84	83	17	43	35	29	126	10	57	199	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	91	90	18	47	38	32	137	11	62	216	63

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	620	583	140	483	608	142	279	0	0	148	0	0
Stage 1	372	372	-	205	205	-	-	-	-	-	-	-
Stage 2	248	211	-	278	403	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	386	423	883	480	410	905	1282	-	-	1432	-	-
Stage 1	621	618	-	796	731	-	-	-	-	-	-	-
Stage 2	755	727	-	706	599	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	318	395	883	337	382	905	1282	-	-	1432	-	-
Mov Cap-2 Maneuver	318	395	-	337	382	-	-	-	-	-	-	-
Stage 1	605	591	-	776	713	-	-	-	-	-	-	-
Stage 2	659	709	-	513	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	14.8	1.4	1.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	360	883	471	1432	-	-
HCM Lane V/C Ratio	0.025	-	-	0.423	0.102	0.219	0.043	-	-
HCM Control Delay (s)	7.9	-	-	22.1	9.5	14.8	7.6	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.3	0.8	0.1	-	-

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	136	19	12	76	19	22
Future Vol, veh/h	136	19	12	76	19	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	21	13	83	21	24

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	168
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1410
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1410
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	798	-	-	1410	-
HCM Lane V/C Ratio	0.056	-	-	0.009	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	32	23	111	15	6	7	47	160	21	8	217	40
Future Vol, veh/h	32	23	111	15	6	7	47	160	21	8	217	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	25	121	16	7	8	51	174	23	9	236	43

























Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	570	574	258	636	585	185	279	0	0	197	0	0
Stage 1	275	275	-	288	288	-	-	-	-	-	-	-
Stage 2	295	299	-	348	297	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	432	429	781	391	423	857	1284	-	-	1376	-	-
Stage 1	731	683	-	720	674	-	-	-	-	-	-	-
Stage 2	713	666	-	668	668	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	408	409	781	304	404	857	1284	-	-	1376	-	-
Mov Cap-2 Maneuver	408	409	-	304	404	-	-	-	-	-	-	-
Stage 1	702	679	-	691	647	-	-	-	-	-	-	-
Stage 2	672	640	-	540	664	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	15.1	1.6	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1284	-	-	600	387	1376	-	-
HCM Lane V/C Ratio	0.04	-	-	0.301	0.079	0.006	-	-
HCM Control Delay (s)	7.9	-	-	13.6	15.1	7.6	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

EXIST PM
4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	361	11	85	378	91	12	102	60	176	109	63
Future Volume (veh/h)	41	361	11	85	378	91	12	102	60	176	109	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	45	392	0	92	411	99	13	111	0	191	118	68
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	266	490	416	297	529	449	490	556	472	587	405	233
Arrive On Green	0.04	0.26	0.00	0.06	0.28	0.28	0.02	0.30	0.00	0.08	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1110	640
Grp Volume(v), veh/h	45	392	0	92	411	99	13	111	0	191	0	186
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1750
Q Serve(g_s), s	1.1	12.1	0.0	2.3	12.5	2.9	0.3	2.7	0.0	4.4	0.0	4.7
Cycle Q Clear(g_c), s	1.1	12.1	0.0	2.3	12.5	2.9	0.3	2.7	0.0	4.4	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	266	490	416	297	529	449	490	556	472	587	0	638
V/C Ratio(X)	0.17	0.80	0.00	0.31	0.78	0.22	0.03	0.20	0.00	0.33	0.00	0.29
Avail Cap(c_a), veh/h	332	559	475	326	559	475	605	556	472	587	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	21.2	0.0	16.0	20.3	16.9	14.6	16.2	0.0	12.3	0.0	13.9
Incr Delay (d2), s/veh	0.3	7.2	0.0	0.6	6.5	0.2	0.0	0.8	0.0	0.3	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.2	0.0	1.1	7.4	1.3	0.2	1.5	0.0	2.1	0.0	2.4
LnGrp Delay(d),s/veh	16.6	28.5	0.0	16.6	26.8	17.1	14.6	17.0	0.0	12.7	0.0	15.1
LnGrp LOS	B	C		B	C	B	B	B		B		B
Approach Vol, veh/h		437			602			124			377	
Approach Delay, s/veh		27.2			23.7			16.7			13.9	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	22.9	8.5	20.7	5.5	27.0	7.2	22.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+l1), s	6.4	4.7	4.3	14.1	2.3	6.7	3.1	14.5				
Green Ext Time (p_c), s	0.0	1.4	0.0	2.1	0.0	1.3	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			21.7									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	5	390	436	26	14	7
Future Vol, veh/h	5	390	436	26	14	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	424	474	28	15	8




















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	502	0	923
Stage 1	-	-	488
Stage 2	-	-	435
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1062	-	299
Stage 1	-	-	617
Stage 2	-	-	653
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1062	-	297
Mov Cap-2 Maneuver	-	-	297
Stage 1	-	-	617
Stage 2	-	-	649

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1062	-	-	-	355
HCM Lane V/C Ratio	0.005	-	-	-	0.064
HCM Control Delay (s)	8.4	0	-	-	15.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

EXIST PM
4/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	47	227	4	16	2	118	287	5	2	347	118
Future Volume (veh/h)	109	47	227	4	16	2	118	287	5	2	347	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	51	0	4	17	2	128	312	5	2	377	128
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	74	244	131	232	24	501	898	14	602	528	179
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.15	0.10	0.49	0.49	0.00	0.40	0.40
Sat Flow, veh/h	1045	480	1583	138	1506	157	1774	1828	29	1774	1331	452
Grp Volume(v), veh/h	169	0	0	23	0	0	128	0	317	2	0	505
Grp Sat Flow(s),veh/h/ln	1525	0	1583	1800	0	0	1774	0	1858	1774	0	1783
Q Serve(g_s), s	3.6	0.0	0.0	0.0	0.0	0.0	1.4	0.0	4.0	0.0	0.0	9.1
Cycle Q Clear(g_c), s	4.0	0.0	0.0	0.4	0.0	0.0	1.4	0.0	4.0	0.0	0.0	9.1
Prop In Lane	0.70		1.00	0.17		0.09	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	394	0	244	387	0	0	501	0	912	602	0	708
V/C Ratio(X)	0.43	0.00	0.00	0.06	0.00	0.00	0.26	0.00	0.35	0.00	0.00	0.71
Avail Cap(c_a), veh/h	888	0	764	953	0	0	583	0	1090	851	0	1046
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	13.9	0.0	0.0	6.3	0.0	6.0	6.9	0.0	9.7
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.2	0.0	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	0.2	0.0	0.0	0.7	0.0	2.1	0.0	0.0	4.6
LnGrp Delay(d),s/veh	16.1	0.0	0.0	14.0	0.0	0.0	6.6	0.0	6.2	6.9	0.0	11.1
LnGrp LOS	B			B			A		A	A		B
Approach Vol, veh/h		169			23			445			507	
Approach Delay, s/veh		16.1			14.0			6.3			11.1	
Approach LOS		B			B			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	23.3		10.4	8.2	19.7		10.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.5		18.5	5.5	22.5		18.5				
Max Q Clear Time (g_c+I1), s	2.0	6.0		6.0	3.4	11.1		2.4				
Green Ext Time (p_c), s	0.0	5.0		0.8	0.1	4.1		0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			10.0									
HCM 2010 LOS			B									



APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2019 AM Peak
-
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

BASE YEAR AM
 5/2/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	670	70	20	1090	870	40	105	5	985	140	75
Future Volume (veh/h)	25	670	70	20	1090	870	40	105	5	985	140	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	27	728	0	22	1185	0	43	114	0	1180	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	1429	639	37	1418	635	140	147	125	1271	0	567
Arrive On Green	0.02	0.40	0.00	0.02	0.40	0.00	0.08	0.08	0.00	0.36	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	27	728	0	22	1185	0	43	114	0	1180	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	2.0	20.1	0.0	1.6	39.2	0.0	3.0	7.8	0.0	41.6	0.0	0.0
Cycle Q Clear(g_c), s	2.0	20.1	0.0	1.6	39.2	0.0	3.0	7.8	0.0	41.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	42	1429	639	37	1418	635	140	147	125	1271	0	567
V/C Ratio(X)	0.64	0.51	0.00	0.59	0.84	0.00	0.31	0.78	0.00	0.93	0.00	0.00
Avail Cap(c_a), veh/h	143	1429	639	143	1418	635	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.80	0.80	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.9	29.1	0.0	63.1	35.1	0.0	56.5	58.8	0.0	40.1	0.0	0.0
Incr Delay (d2), s/veh	14.6	1.3	0.0	11.2	4.9	0.0	1.2	8.6	0.0	10.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	10.1	0.0	0.9	20.0	0.0	1.5	4.4	0.0	22.2	0.0	0.0
LnGrp Delay(d),s/veh	77.5	30.4	0.0	74.3	39.9	0.0	57.8	67.3	0.0	50.8	0.0	0.0
LnGrp LOS	E	C		E	D		E	E		D		
Approach Vol, veh/h		755			1207			157			1180	
Approach Delay, s/veh		32.1			40.6			64.7			50.8	
Approach LOS		C			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	57.0		51.1	7.6	56.6		14.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	30.5		50.5	10.5	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	22.1		43.6	4.0	41.2		9.8				
Green Ext Time (p_c), s	0.0	6.8		3.0	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			43.4									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
2: Lono Street & Kaahumanu Ave

BASE YEAR AM
5/2/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑			↖ ↑↑↑			↑		↗	↘		
Traffic Volume (veh/h)	20	1480	145	25	1755	15	185	15	40	25	15	10
Future Volume (veh/h)	20	1480	145	25	1755	15	185	15	40	25	15	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	22	1609	158	27	1908	16	201	16	43	27	16	11
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	2913	286	42	3234	27	289	19	401	70	39	17
Arrive On Green	0.04	1.00	1.00	0.02	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	4706	461	1774	5202	44	932	74	1581	113	154	68
Grp Volume(v), veh/h	22	1159	608	27	1243	681	217	0	43	54	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1777	1774	1695	1855	1006	0	1581	336	0	0
Q Serve(g_s), s	1.6	0.0	0.0	2.0	28.5	28.5	0.0	0.0	2.7	2.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	2.0	28.5	28.5	28.0	0.0	2.7	30.2	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.02	0.93		1.00	0.50		0.20
Lane Grp Cap(c), veh/h	37	2098	1100	42	2108	1153	308	0	401	127	0	0
V/C Ratio(X)	0.59	0.55	0.55	0.64	0.59	0.59	0.70	0.00	0.11	0.43	0.00	0.00
Avail Cap(c_a), veh/h	130	2098	1100	130	2108	1153	358	0	456	180	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.58	0.58	0.58	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	61.7	0.0	0.0	62.9	14.7	14.7	46.7	0.0	37.3	46.8	0.0	0.0
Incr Delay (d2), s/veh	8.3	0.6	1.2	14.6	1.2	2.2	5.1	0.0	0.1	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.4	1.1	13.7	15.3	7.9	0.0	1.2	2.0	0.0	0.0
LnGrp Delay(d),s/veh	70.0	0.6	1.2	77.5	15.9	16.9	51.8	0.0	37.4	49.1	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	D		D	D		
Approach Vol, veh/h	1789			1951			260		54			
Approach Delay, s/veh	1.7			17.1			49.4		49.1			
Approach LOS	A			B			D		D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	7.6	85.0	37.4		7.2	85.3	37.4					
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s	69.5	69.5	37.5		9.5	69.5	37.5					
Max Q Clear Time (g_c+I+L), s	2.0	2.0	30.0		3.6	30.5	32.2					
Green Ext Time (p_c), s	0.0	58.9	1.0		0.0	35.9	0.8					
Intersection Summary												
HCM 2010 Ctrl Delay	12.8											
HCM 2010 LOS	B											

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Vol, veh/h	15	25	30	15	25	30	35	135	15	35	195	25
Future Vol, veh/h	15	25	30	15	25	30	35	135	15	35	195	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	27	33	16	27	33	38	147	16	38	212	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	563	541	120	427	546	155	239	0	0	163	0	0
Stage 1	302	302	-	231	231	-	-	-	-	-	-	-
Stage 2	261	239	-	196	315	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	423	447	909	525	444	890	1326	-	-	1414	-	-
Stage 1	683	664	-	771	713	-	-	-	-	-	-	-
Stage 2	743	707	-	788	655	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	371	423	909	461	420	890	1326	-	-	1414	-	-
Mov Cap-2 Maneuver	371	423	-	461	420	-	-	-	-	-	-	-
Stage 1	663	646	-	749	693	-	-	-	-	-	-	-
Stage 2	668	687	-	708	637	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	12.5	1.5	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1326	-	-	402	909	557	1414	-	-
HCM Lane V/C Ratio	0.029	-	-	0.108	0.036	0.137	0.027	-	-
HCM Control Delay (s)	7.8	-	-	15	9.1	12.5	7.6	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0.5	0.1	-	-

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			1	1	
Traffic Vol, veh/h	60	10	5	60	10	5
Future Vol, veh/h	60	10	5	60	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	11	5	65	11	5

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	76	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	1523	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1523	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

























Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	886	-	-	1523	-
HCM Lane V/C Ratio	0.018	-	-	0.004	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	15	10	50	10	10	5	25	255	30	15	205	30
Future Vol, veh/h	15	10	50	10	10	5	25	255	30	15	205	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	11	54	11	11	5	27	277	33	16	223	33
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	628	636	239	652	636	293	255	0	0	310	0	0
Stage 1	272	272	-	348	348	-	-	-	-	-	-	-
Stage 2	356	364	-	304	288	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	395	395	800	381	395	746	1310	-	-	1250	-	-
Stage 1	734	685	-	668	634	-	-	-	-	-	-	-
Stage 2	661	624	-	705	674	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	374	382	800	339	382	746	1310	-	-	1250	-	-
Mov Cap-2 Maneuver	374	382	-	339	382	-	-	-	-	-	-	-
Stage 1	719	676	-	654	621	-	-	-	-	-	-	-
Stage 2	631	611	-	638	665	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.2			14.6			0.6			0.5		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1310	-	-	582	401	1250	-	-				
HCM Lane V/C Ratio	0.021	-	-	0.14	0.068	0.013	-	-				
HCM Control Delay (s)	7.8	-	-	12.2	14.6	7.9	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	0	-	-				

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

BASE YEAR AM
5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	375	10	30	190	60	15	220	95	95	125	40
Future Volume (veh/h)	60	375	10	30	190	60	15	220	95	95	125	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	65	408	0	33	207	65	16	239	0	103	136	43
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	500	425	248	462	393	514	590	501	493	498	157
Arrive On Green	0.06	0.27	0.00	0.04	0.25	0.25	0.02	0.32	0.00	0.07	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1358	429
Grp Volume(v), veh/h	65	408	0	33	207	65	16	239	0	103	0	179
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1787
Q Serve(g_s), s	1.5	11.9	0.0	0.8	5.5	1.9	0.4	5.8	0.0	2.2	0.0	4.1
Cycle Q Clear(g_c), s	1.5	11.9	0.0	0.8	5.5	1.9	0.4	5.8	0.0	2.2	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	393	500	425	248	462	393	514	590	501	493	0	655
V/C Ratio(X)	0.17	0.82	0.00	0.13	0.45	0.17	0.03	0.41	0.00	0.21	0.00	0.27
Avail Cap(c_a), veh/h	446	593	504	338	593	504	632	590	501	525	0	655
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	19.9	0.0	16.2	18.5	17.1	12.9	15.6	0.0	11.7	0.0	12.9
Incr Delay (d2), s/veh	0.2	7.5	0.0	0.2	0.7	0.2	0.0	2.1	0.0	0.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	7.2	0.0	0.4	2.9	0.8	0.2	3.3	0.0	1.1	0.0	2.2
LnGrp Delay(d),s/veh	15.1	27.4	0.0	16.5	19.2	17.3	13.0	17.6	0.0	11.9	0.0	14.0
LnGrp LOS	B	C		B	B	B	B	B		B		B
Approach Vol, veh/h		473			305			255			282	
Approach Delay, s/veh		25.7			18.5			17.3			13.2	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	22.9	6.6	20.1	5.6	25.8	7.7	18.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+l1), s	4.2	7.8	2.8	13.9	2.4	6.1	3.5	7.5				
Green Ext Time (p_c), s	0.0	1.8	0.0	1.7	0.0	2.0	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			19.7									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	5	410	200	5	10	5
Future Vol, veh/h	5	410	200	5	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	446	217	5	11	5




















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	223	0	677
Stage 1	-	-	220
Stage 2	-	-	457
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1346	-	418
Stage 1	-	-	817
Stage 2	-	-	638
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1346	-	416
Mov Cap-2 Maneuver	-	-	416
Stage 1	-	-	817
Stage 2	-	-	635

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1346	-	-	-	498
HCM Lane V/C Ratio	0.004	-	-	-	0.033
HCM Control Delay (s)	7.7	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

BASE YEAR AM
5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	25	160	10	25	5	140	395	10	5	175	65
Future Volume (veh/h)	55	25	160	10	25	5	140	395	10	5	175	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	60	27	0	11	27	5	152	429	11	5	190	71
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	53	175	189	133	22	678	781	20	494	413	154
Arrive On Green	0.11	0.11	0.00	0.11	0.11	0.11	0.12	0.43	0.43	0.01	0.32	0.32
Sat Flow, veh/h	1071	482	1583	344	1201	203	1774	1808	46	1774	1294	484
Grp Volume(v), veh/h	87	0	0	43	0	0	152	0	440	5	0	261
Grp Sat Flow(s),veh/h/ln	1553	0	1583	1748	0	0	1774	0	1855	1774	0	1777
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	1.5	0.0	5.3	0.1	0.0	3.5
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.6	0.0	0.0	1.5	0.0	5.3	0.1	0.0	3.5
Prop In Lane	0.69		1.00	0.26		0.12	1.00		0.03	1.00		0.27
Lane Grp Cap(c), veh/h	375	0	175	344	0	0	678	0	801	494	0	567
V/C Ratio(X)	0.23	0.00	0.00	0.13	0.00	0.00	0.22	0.00	0.55	0.01	0.00	0.46
Avail Cap(c_a), veh/h	1133	0	978	1195	0	0	850	0	1332	867	0	1276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	12.1	0.0	0.0	5.0	0.0	6.3	6.9	0.0	8.1
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.6	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.3	0.0	0.0	0.7	0.0	2.8	0.0	0.0	1.8
LnGrp Delay(d),s/veh	12.8	0.0	0.0	12.3	0.0	0.0	5.2	0.0	6.9	6.9	0.0	8.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		87			43			592				266
Approach Delay, s/veh		12.8			12.3			6.5				8.7
Approach LOS		B			B			A				A
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.4		7.8	8.1	14.0		7.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	21.5		18.5	6.5	21.5		18.5				
Max Q Clear Time (g_c+I1), s	2.1	7.3		3.5	3.5	5.5		2.6				
Green Ext Time (p_c), s	0.0	3.8		0.5	0.1	4.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			7.9									
HCM 2010 LOS			A									



APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2019 PM Peak
-
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

BASE YEAR PM
 5/4/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	895	110	55	790	910	40	130	20	950	170	100
Future Volume (veh/h)	35	895	110	55	790	910	40	130	20	950	170	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	973	0	60	859	0	43	141	0	1165	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	1303	583	78	1356	607	168	177	150	1258	0	562
Arrive On Green	0.03	0.37	0.00	0.01	0.13	0.00	0.09	0.09	0.00	0.35	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	38	973	0	60	859	0	43	141	0	1165	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	2.8	31.2	0.0	4.4	30.0	0.0	2.9	9.6	0.0	41.0	0.0	0.0
Cycle Q Clear(g_c), s	2.8	31.2	0.0	4.4	30.0	0.0	2.9	9.6	0.0	41.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	51	1303	583	78	1356	607	168	177	150	1258	0	562
V/C Ratio(X)	0.75	0.75	0.00	0.77	0.63	0.00	0.26	0.80	0.00	0.93	0.00	0.00
Avail Cap(c_a), veh/h	212	1303	583	212	1356	607	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.81	0.81	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.7	35.8	0.0	63.4	48.1	0.0	54.6	57.6	0.0	40.3	0.0	0.0
Incr Delay (d2), s/veh	19.2	3.9	0.0	12.1	1.8	0.0	0.8	8.0	0.0	10.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	15.8	0.0	2.4	15.1	0.0	1.5	5.4	0.0	21.9	0.0	0.0
LnGrp Delay(d),s/veh	81.9	39.7	0.0	75.6	49.9	0.0	55.4	65.6	0.0	50.6	0.0	0.0
LnGrp LOS	F	D		E	D		E	E		D		
Approach Vol, veh/h		1011			919			184			1165	
Approach Delay, s/veh		41.3			51.6			63.2			50.6	
Approach LOS		D			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	52.3		50.6	8.2	54.3		16.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	15.5	25.5		50.5	15.5	25.5		20.5				
Max Q Clear Time (g_c+I1), s	6.4	33.2		43.0	4.8	32.0		11.6				
Green Ext Time (p_c), s	0.1	0.0		3.1	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			48.7									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
2: Lono Street & Kaahumanu Ave

BASE YEAR PM
5/4/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘			↖ ↗ ↘				↑	↗		↖	
Traffic Volume (veh/h)	10	1685	145	60	1815	30	180	15	40	30	25	10
Future Volume (veh/h)	10	1685	145	60	1815	30	180	15	40	30	25	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	11	1832	158	65	1973	33	196	16	43	33	27	11
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	2774	238	83	3172	53	286	19	422	72	53	15
Arrive On Green	0.02	0.77	0.77	0.05	0.62	0.62	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	4771	410	1774	5152	86	870	71	1574	117	197	58
Grp Volume(v), veh/h	11	1300	690	65	1298	708	212	0	43	71	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1790	1774	1695	1848	941	0	1574	372	0	0
Q Serve(g_s), s	0.8	23.0	23.3	4.7	31.0	31.0	0.0	0.0	2.7	3.2	0.0	0.0
Cycle Q Clear(g_c), s	0.8	23.0	23.3	4.7	31.0	31.0	29.1	0.0	2.7	32.3	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.05	0.92		1.00	0.46		0.15
Lane Grp Cap(c), veh/h	22	1971	1041	83	2088	1138	305	0	422	140	0	0
V/C Ratio(X)	0.49	0.66	0.66	0.78	0.62	0.62	0.69	0.00	0.10	0.51	0.00	0.00
Avail Cap(c_a), veh/h	130	1971	1041	130	2088	1138	334	0	454	172	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.30	0.30	0.30	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.5	8.8	8.8	61.3	15.5	15.6	45.5	0.0	35.8	47.6	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.5	1.0	14.7	1.4	2.6	5.5	0.0	0.1	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	10.6	11.4	2.7	14.8	16.5	7.7	0.0	1.2	2.6	0.0	0.0
LnGrp Delay(d),s/veh	68.4	9.3	9.8	76.0	17.0	18.1	51.0	0.0	35.9	50.4	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	D		D	D		
Approach Vol, veh/h		2001			2071			255			71	
Approach Delay, s/veh		9.8			19.2			48.5			50.4	
Approach LOS		A			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	60.6	80.1		39.3	6.1	84.6		39.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	9.5	69.5		37.5	9.5	69.5		37.5				
Max Q Clear Time (g_c+I), s	10.7	25.3		31.1	2.8	33.0		34.3				
Green Ext Time (p_c), s	0.0	41.7		0.9	0.0	34.7		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				17.1								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Vol, veh/h	60	90	90	20	50	40	35	135	15	65	215	65
Future Vol, veh/h	60	90	90	20	50	40	35	135	15	65	215	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	98	98	22	54	43	38	147	16	71	234	71

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	690	649	152	538	677	155	304	0	0	163	0	0
Stage 1	410	410	-	231	231	-	-	-	-	-	-	-
Stage 2	280	239	-	307	446	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	345	388	868	440	374	890	1255	-	-	1414	-	-
Stage 1	590	595	-	771	713	-	-	-	-	-	-	-
Stage 2	726	707	-	679	573	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	271	357	868	290	344	890	1255	-	-	1414	-	-
Mov Cap-2 Maneuver	271	357	-	290	344	-	-	-	-	-	-	-
Stage 1	572	565	-	748	691	-	-	-	-	-	-	-
Stage 2	617	686	-	473	544	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	16.8	1.5	1.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1255	-	-	317	868	424	1414	-	-
HCM Lane V/C Ratio	0.03	-	-	0.514	0.113	0.282	0.05	-	-
HCM Control Delay (s)	8	-	-	27.8	9.7	16.8	7.7	-	-
HCM Lane LOS	A	-	-	D	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.8	0.4	1.1	0.2	-	-

Intersection

Int Delay, s/veh 1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↓	↑	
Traffic Vol, veh/h	150	25	15	85	25	25
Future Vol, veh/h	150	25	15	85	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	163	27	16	92	27	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	190	0	302	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	125	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1384	-	690	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1384	-	682	866
Mov Cap-2 Maneuver	-	-	-	-	682	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	763	-	-	1384	-
HCM Lane V/C Ratio	0.071	-	-	0.012	-
HCM Control Delay (s)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection													
Int Delay, s/veh	5.1												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	35	25	120	20	10	10	55	175	25	10	235	45
Future Vol, veh/h	35	25	120	20	10	10	55	175	25	10	235	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	27	130	22	11	11	60	190	27	11	255	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	636	639	280	703	649	204	304	0	0	217	0	0
Stage 1	302	302	-	323	323	-	-	-	-	-	-	-
Stage 2	334	337	-	380	326	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	391	394	759	352	389	837	1257	-	-	1353	-	-
Stage 1	707	664	-	689	650	-	-	-	-	-	-	-
Stage 2	680	641	-	642	648	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	361	372	759	264	367	837	1257	-	-	1353	-	-
Mov Cap-2 Maneuver	361	372	-	264	367	-	-	-	-	-	-	-
Stage 1	673	659	-	656	619	-	-	-	-	-	-	-
Stage 2	628	610	-	506	643	-	-	-	-	-	-	-

























Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	16.8	1.7	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	559	348	1353	-	-
HCM Lane V/C Ratio	0.048	-	-	0.35	0.125	0.008	-	-
HCM Control Delay (s)	8	-	-	14.9	16.8	7.7	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.6	0.4	0	-	-

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

BASE YEAR PM

5/4/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	400	15	95	415	100	15	110	65	190	120	70
Future Volume (veh/h)	45	400	15	95	415	100	15	110	65	190	120	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	49	435	0	103	451	109	16	120	0	207	130	76
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	511	435	283	550	467	462	544	463	567	391	228
Arrive On Green	0.05	0.27	0.00	0.07	0.30	0.30	0.02	0.29	0.00	0.08	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1104	645
Grp Volume(v), veh/h	49	435	0	103	451	109	16	120	0	207	0	206
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1749
Q Serve(g_s), s	1.2	13.9	0.0	2.6	14.2	3.3	0.4	3.1	0.0	5.0	0.0	5.4
Cycle Q Clear(g_c), s	1.2	13.9	0.0	2.6	14.2	3.3	0.4	3.1	0.0	5.0	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	255	511	435	283	550	467	462	544	463	567	0	619
V/C Ratio(X)	0.19	0.85	0.00	0.36	0.82	0.23	0.03	0.22	0.00	0.37	0.00	0.33
Avail Cap(c_a), veh/h	314	547	465	306	550	467	569	544	463	567	0	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	21.6	0.0	16.2	20.6	16.8	15.1	16.9	0.0	13.2	0.0	14.9
Incr Delay (d2), s/veh	0.4	11.6	0.0	0.8	9.6	0.3	0.0	0.9	0.0	0.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.8	0.0	1.3	8.7	1.5	0.2	1.7	0.0	2.5	0.0	2.9
LnGrp Delay(d),s/veh	16.7	33.2	0.0	17.0	30.2	17.1	15.1	17.8	0.0	13.6	0.0	16.3
LnGrp LOS	B	C		B	C	B	B	B		B		B
Approach Vol, veh/h		484			663			136			413	
Approach Delay, s/veh		31.5			26.0			17.5			15.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	22.9	8.7	21.8	5.7	26.8	7.4	23.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I1), s	7.0	5.1	4.6	15.9	2.4	7.4	3.2	16.2				
Green Ext Time (p_c), s	0.0	1.5	0.0	1.4	0.0	1.4	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		2	
Traffic Vol, veh/h	10	430	480	30	20	10
Future Vol, veh/h	10	430	480	30	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	467	522	33	22	11




















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	554	0	1027
Stage 1	-	-	538
Stage 2	-	-	489
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1016	-	260
Stage 1	-	-	585
Stage 2	-	-	616
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1016	-	256
Mov Cap-2 Maneuver	-	-	256
Stage 1	-	-	585
Stage 2	-	-	607

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1016	-	-	-	311
HCM Lane V/C Ratio	0.011	-	-	-	0.105
HCM Control Delay (s)	8.6	0	-	-	17.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

BASE YEAR PM
5/4/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	55	245	5	20	5	130	315	10	5	385	130
Future Volume (veh/h)	120	55	245	5	20	5	130	315	10	5	385	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	130	60	0	5	22	5	141	342	11	5	418	141
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	89	271	118	239	48	463	899	29	576	549	185
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.17	0.10	0.50	0.50	0.01	0.41	0.41
Sat Flow, veh/h	1012	517	1583	112	1393	279	1774	1795	58	1774	1334	450
Grp Volume(v), veh/h	190	0	0	32	0	0	141	0	353	5	0	559
Grp Sat Flow(s),veh/h/ln	1529	0	1583	1783	0	0	1774	0	1853	1774	0	1783
Q Serve(g_s), s	4.3	0.0	0.0	0.0	0.0	0.0	1.7	0.0	4.9	0.1	0.0	11.3
Cycle Q Clear(g_c), s	4.9	0.0	0.0	0.6	0.0	0.0	1.7	0.0	4.9	0.1	0.0	11.3
Prop In Lane	0.68		1.00	0.16		0.16	1.00		0.03	1.00		0.25
Lane Grp Cap(c), veh/h	406	0	271	405	0	0	463	0	928	576	0	734
V/C Ratio(X)	0.47	0.00	0.00	0.08	0.00	0.00	0.30	0.00	0.38	0.01	0.00	0.76
Avail Cap(c_a), veh/h	810	0	697	864	0	0	524	0	992	796	0	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	0.0	14.7	0.0	0.0	7.1	0.0	6.5	7.2	0.0	10.6
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.3	0.0	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.3	0.0	0.0	0.8	0.0	2.5	0.0	0.0	6.0
LnGrp Delay(d),s/veh	17.2	0.0	0.0	14.8	0.0	0.0	7.5	0.0	6.7	7.2	0.0	13.3
LnGrp LOS	B			B			A		A	A		B
Approach Vol, veh/h		190			32			494			564	
Approach Delay, s/veh		17.2			14.8			7.0			13.2	
Approach LOS		B			B			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	25.5		11.7	8.5	21.8		11.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.5		18.5	5.5	22.5		18.5				
Max Q Clear Time (g_c+I1), s	2.1	6.9		6.9	3.7	13.3		2.6				
Green Ext Time (p_c), s	0.0	5.5		0.9	0.1	4.0		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			11.4									
HCM 2010 LOS			B									



























APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2019 AM Peak
-
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

FUTURE YEAR AM
 5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	670	80	20	1090	870	50	110	10	985	145	75
Future Volume (veh/h)	25	670	80	20	1090	870	50	110	10	985	145	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	27	728	0	22	1185	0	54	120	0	1184	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	1413	632	37	1403	627	146	153	130	1274	0	568
Arrive On Green	0.02	0.40	0.00	0.02	0.40	0.00	0.08	0.08	0.00	0.36	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	27	728	0	22	1185	0	54	120	0	1184	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	2.0	20.2	0.0	1.6	39.5	0.0	3.7	8.2	0.0	41.7	0.0	0.0
Cycle Q Clear(g_c), s	2.0	20.2	0.0	1.6	39.5	0.0	3.7	8.2	0.0	41.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	42	1413	632	37	1403	627	146	153	130	1274	0	568
V/C Ratio(X)	0.64	0.52	0.00	0.59	0.84	0.00	0.37	0.78	0.00	0.93	0.00	0.00
Avail Cap(c_a), veh/h	143	1413	632	143	1403	627	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.80	0.80	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.9	29.5	0.0	63.1	35.6	0.0	56.5	58.5	0.0	40.1	0.0	0.0
Incr Delay (d2), s/veh	14.6	1.3	0.0	11.2	5.2	0.0	1.6	8.4	0.0	10.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	10.2	0.0	0.9	20.3	0.0	1.9	4.6	0.0	22.3	0.0	0.0
LnGrp Delay(d),s/veh	77.5	30.9	0.0	74.3	40.8	0.0	58.0	67.0	0.0	50.9	0.0	0.0
LnGrp LOS	E	C		E	D		E	E		D		
Approach Vol, veh/h		755			1207			174			1184	
Approach Delay, s/veh		32.6			41.5			64.2			50.9	
Approach LOS		C			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	56.4		51.2	7.6	56.0		15.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	30.5		50.5	10.5	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	22.2		43.7	4.0	41.5		10.2				
Green Ext Time (p_c), s	0.0	6.7		2.9	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
 2: Lono Street & Kaahumanu Ave

FUTURE YEAR AM
 5/2/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑↑			↑		↗	↘		↘
Traffic Volume (veh/h)	20	1485	145	30	1755	15	185	15	45	25	15	10
Future Volume (veh/h)	20	1485	145	30	1755	15	185	15	45	25	15	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	22	1614	158	33	1908	16	201	16	49	27	16	11
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	2900	283	48	3234	27	290	19	401	70	39	17
Arrive On Green	0.04	1.00	1.00	0.03	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	4707	460	1774	5202	44	932	74	1581	113	154	68
Grp Volume(v), veh/h	22	1162	610	33	1243	681	217	0	49	54	0	0
Grp Sat Flow(s), veh/h/ln	1774	1695	1777	1774	1695	1855	1007	0	1581	336	0	0
Q Serve(g_s), s	1.6	0.0	0.0	2.4	28.5	28.5	0.0	0.0	3.1	2.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	2.4	28.5	28.5	28.0	0.0	3.1	30.2	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.02	0.93		1.00	0.50		0.20
Lane Grp Cap(c), veh/h	37	2088	1095	48	2108	1153	308	0	401	127	0	0
V/C Ratio(X)	0.59	0.56	0.56	0.69	0.59	0.59	0.70	0.00	0.12	0.43	0.00	0.00
Avail Cap(c_a), veh/h	130	2088	1095	130	2108	1153	358	0	456	179	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.58	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	61.7	0.0	0.0	62.7	14.7	14.7	46.7	0.0	37.4	46.8	0.0	0.0
Incr Delay (d2), s/veh	8.3	0.6	1.2	16.6	1.2	2.2	5.1	0.0	0.1	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.4	1.4	13.7	15.3	7.9	0.0	1.4	2.0	0.0	0.0
LnGrp Delay(d),s/veh	70.0	0.6	1.2	79.3	15.9	16.9	51.8	0.0	37.5	49.1	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	D		D	D		
Approach Vol, veh/h		1794			1957			266			54	
Approach Delay, s/veh		1.7			17.3			49.2			49.1	
Approach LOS		A			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	84.6		37.4	7.2	85.3		37.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	9.5	69.5		37.5	9.5	69.5		37.5				
Max Q Clear Time (g_c+1), s	14.4	2.0		30.0	3.6	30.5		32.2				
Green Ext Time (p_c), s	0.0	59.0		1.0	0.0	36.0		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	30	30	20	25	35	40	145	15	50	195	25
Future Vol, veh/h	15	30	30	20	25	35	40	145	15	50	195	25
Conflicting Peds, #/hr	1	0	3	3	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	33	33	22	27	38	43	158	16	54	212	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	620	595	123	487	601	167	239	0	0	174	0	0
Stage 1	334	334	-	253	253	-	-	-	-	-	-	-
Stage 2	286	261	-	234	348	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	386	417	905	477	413	877	1326	-	-	1401	-	-
Stage 1	654	642	-	751	697	-	-	-	-	-	-	-
Stage 2	721	692	-	749	633	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	331	388	902	406	384	876	1322	-	-	1400	-	-
Mov Cap-2 Maneuver	331	388	-	406	384	-	-	-	-	-	-	-
Stage 1	633	617	-	727	674	-	-	-	-	-	-	-
Stage 2	640	669	-	656	609	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	13.3	1.6	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	367	902	518	1400	-	-
HCM Lane V/C Ratio	0.033	-	-	0.133	0.036	0.168	0.039	-	-
HCM Control Delay (s)	7.8	-	-	16.3	9.1	13.3	7.7	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0.6	0.1	-	-

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	65	10	10	65	10	10
Future Vol, veh/h	65	10	10	65	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	11	11	71	11	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	82	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	1515	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1515	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	892	-	-	1515	-
HCM Lane V/C Ratio	0.024	-	-	0.007	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	10	50	10	10	5	25	255	30	15	205	35
Future Vol, veh/h	20	10	50	10	10	5	25	255	30	15	205	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	11	54	11	11	5	27	277	33	16	223	38

























Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	630	638	242	655	641	293	261	0	0	310	0	0
Stage 1	274	274	-	348	348	-	-	-	-	-	-	-
Stage 2	356	364	-	307	293	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	394	394	797	379	393	746	1303	-	-	1250	-	-
Stage 1	732	683	-	668	634	-	-	-	-	-	-	-
Stage 2	661	624	-	703	670	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	373	381	797	337	380	746	1303	-	-	1250	-	-
Mov Cap-2 Maneuver	373	381	-	337	380	-	-	-	-	-	-	-
Stage 1	717	674	-	654	621	-	-	-	-	-	-	-
Stage 2	631	611	-	636	661	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	14.7	0.6	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1303	-	-	561	399	1250	-	-
HCM Lane V/C Ratio	0.021	-	-	0.155	0.068	0.013	-	-
HCM Control Delay (s)	7.8	-	-	12.6	14.7	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	0	-	-

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

FUTURE YEAR AM
5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	380	15	30	200	60	15	220	95	95	125	40
Future Volume (veh/h)	60	380	15	30	200	60	15	220	95	95	125	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	65	413	0	33	217	65	16	239	0	103	136	43
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	504	428	247	466	396	512	588	500	491	496	157
Arrive On Green	0.06	0.27	0.00	0.04	0.25	0.25	0.02	0.32	0.00	0.07	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1358	429
Grp Volume(v), veh/h	65	413	0	33	217	65	16	239	0	103	0	179
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1787
Q Serve(g_s), s	1.5	12.1	0.0	0.8	5.8	1.9	0.4	5.9	0.0	2.2	0.0	4.1
Cycle Q Clear(g_c), s	1.5	12.1	0.0	0.8	5.8	1.9	0.4	5.9	0.0	2.2	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	388	504	428	247	466	396	512	588	500	491	0	653
V/C Ratio(X)	0.17	0.82	0.00	0.13	0.47	0.16	0.03	0.41	0.00	0.21	0.00	0.27
Avail Cap(c_a), veh/h	441	591	503	336	591	503	630	588	500	523	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	19.9	0.0	16.2	18.6	17.1	13.0	15.7	0.0	11.8	0.0	13.0
Incr Delay (d2), s/veh	0.2	7.8	0.0	0.2	0.7	0.2	0.0	2.1	0.0	0.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	7.3	0.0	0.4	3.0	0.8	0.2	3.3	0.0	1.1	0.0	2.2
LnGrp Delay(d),s/veh	15.1	27.8	0.0	16.5	19.3	17.3	13.0	17.7	0.0	12.0	0.0	14.1
LnGrp LOS	B	C		B	B	B	B	B		B		B
Approach Vol, veh/h		478			315			255			282	
Approach Delay, s/veh		26.0			18.6			17.4			13.3	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	22.9	6.6	20.3	5.6	25.8	7.8	19.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+1), s	4.2	7.9	2.8	14.1	2.4	6.1	3.5	7.8				
Green Ext Time (p_c), s	0.0	1.8	0.0	1.6	0.0	2.0	0.0	3.1				
Intersection Summary												
HCM 2010 Ctrl Delay			19.9									
HCM 2010 LOS			B									

Intersection							
Int Delay, s/veh	0.7						

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	15	415	200	15	15	10
Future Vol, veh/h	15	415	200	15	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	451	217	16	16	11




















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	234	0	710
Stage 1	-	-	226
Stage 2	-	-	484
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1333	-	400
Stage 1	-	-	812
Stage 2	-	-	620
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1333	-	394
Mov Cap-2 Maneuver	-	-	394
Stage 1	-	-	812
Stage 2	-	-	610

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1333	-	-	-	496
HCM Lane V/C Ratio	0.012	-	-	-	0.055
HCM Control Delay (s)	7.7	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

FUTURE YEAR AM
5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	25	165	10	25	5	150	405	10	5	180	65
Future Volume (veh/h)	60	25	165	10	25	5	150	405	10	5	180	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	27	0	11	27	5	163	440	11	5	196	71
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	51	177	186	135	23	678	792	20	489	420	152
Arrive On Green	0.11	0.11	0.00	0.11	0.11	0.11	0.12	0.44	0.44	0.01	0.32	0.32
Sat Flow, veh/h	1093	454	1583	338	1211	204	1774	1810	45	1774	1306	473
Grp Volume(v), veh/h	92	0	0	43	0	0	163	0	451	5	0	267
Grp Sat Flow(s), veh/h/ln	1546	0	1583	1752	0	0	1774	0	1855	1774	0	1779
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	5.5	0.1	0.0	3.6
Cycle Q Clear(g_c), s	1.6	0.0	0.0	0.7	0.0	0.0	1.6	0.0	5.5	0.1	0.0	3.6
Prop In Lane	0.71		1.00	0.26		0.12	1.00		0.02	1.00		0.27
Lane Grp Cap(c), veh/h	375	0	177	345	0	0	678	0	812	489	0	572
V/C Ratio(X)	0.25	0.00	0.00	0.12	0.00	0.00	0.24	0.00	0.56	0.01	0.00	0.47
Avail Cap(c_a), veh/h	1113	0	963	1177	0	0	839	0	1311	856	0	1257
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	0.0	12.3	0.0	0.0	5.0	0.0	6.4	6.9	0.0	8.2
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.6	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.3	0.0	0.0	0.8	0.0	2.9	0.0	0.0	1.9
LnGrp Delay(d),s/veh	13.0	0.0	0.0	12.4	0.0	0.0	5.2	0.0	7.0	7.0	0.0	8.8
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		92			43			614			272	
Approach Delay, s/veh		13.0			12.4			6.5			8.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.8		7.9	8.2	14.3		7.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	21.5		18.5	6.5	21.5		18.5				
Max Q Clear Time (g_c+1), s	2.1	7.5		3.6	3.6	5.6		2.7				
Green Ext Time (p_c), s	0.0	3.9		0.5	0.1	4.1		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			7.9									
HCM 2010 LOS			A									

Intersection

Int Delay, s/veh 4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	5	10	15	10	15	5
Future Vol, veh/h	5	10	15	10	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	16	11	16	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	62	19	22	0	-	0
Stage 1	19	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	944	1059	1593	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	935	1059	1593	-	-	-
Mov Cap-2 Maneuver	935	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	8.6		4.4		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1593	-	1014	-	-
HCM Lane V/C Ratio	0.01	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	5	75	15	5	70	5	10	0	5	5	0	5
Future Vol, veh/h	5	75	15	5	70	5	10	0	5	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	82	16	5	76	5	11	0	5	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	98	0	0	193	193	90	193	199	79
Stage 1	-	-	-	-	-	-	101	101	-	90	90	-
Stage 2	-	-	-	-	-	-	92	92	-	103	109	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1495	-	-	767	702	968	767	697	981
Stage 1	-	-	-	-	-	-	905	811	-	917	820	-
Stage 2	-	-	-	-	-	-	915	819	-	903	805	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1515	-	-	1495	-	-	759	697	968	759	692	981
Mov Cap-2 Maneuver	-	-	-	-	-	-	759	697	-	759	692	-
Stage 1	-	-	-	-	-	-	902	809	-	914	817	-
Stage 2	-	-	-	-	-	-	906	816	-	895	803	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.5			9.5			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	818	1515	-	-	1495	-	-	856				
HCM Lane V/C Ratio	0.02	0.004	-	-	0.004	-	-	0.013				
HCM Control Delay (s)	9.5	7.4	0	-	7.4	0	-	9.3				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0				

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	245	10	0	245
Future Vol, veh/h	0	15	245	10	0	245
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	266	11	0	266

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	272	0 0
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	6.23	- -
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	3.319	- -
Pot Cap-1 Maneuver	0	766	0 -
Stage 1	0	-	0 -
Stage 2	0	-	0 -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	-	766	- -
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 766	-
HCM Lane V/C Ratio	-	- 0.021	-
HCM Control Delay (s)	-	- 9.8	-
HCM Lane LOS	-	- A	-
HCM 95th %tile Q(veh)	-	- 0.1	-

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	W
Traffic Vol, veh/h	25	25	30	245	240	35
Future Vol, veh/h	25	25	30	245	240	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	27	33	266	261	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	612	149	299	0	-	0
Stage 1	280	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	440	871	1261	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	426	871	1261	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	572	-	-
HCM Lane V/C Ratio	0.026	-	0.095	-	-
HCM Control Delay (s)	7.9	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-



APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2019 PM Peak
-

HCM 2010 Signalized Intersection Summary
 1: Kane Street/Kahului Beach Road & Kaahumanu Ave

FUTURE YEAR PM
 5/2/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	895	115	55	790	910	50	140	25	950	175	100
Future Volume (veh/h)	35	895	115	55	790	910	50	140	25	950	175	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	973	0	60	859	0	54	152	0	1169	0	0
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	1278	572	78	1332	596	179	188	160	1262	0	563
Arrive On Green	0.03	0.36	0.00	0.01	0.12	0.00	0.10	0.10	0.00	0.36	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	3548	0	1583
Grp Volume(v), veh/h	38	973	0	60	859	0	54	152	0	1169	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1583
Q Serve(g_s), s	2.8	31.5	0.0	4.4	30.0	0.0	3.7	10.4	0.0	41.2	0.0	0.0
Cycle Q Clear(g_c), s	2.8	31.5	0.0	4.4	30.0	0.0	3.7	10.4	0.0	41.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	51	1278	572	78	1332	596	179	188	160	1262	0	563
V/C Ratio(X)	0.75	0.76	0.00	0.77	0.64	0.00	0.30	0.81	0.00	0.93	0.00	0.00
Avail Cap(c_a), veh/h	212	1278	572	212	1332	596	280	294	250	1378	0	615
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.81	0.81	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.7	36.6	0.0	63.4	48.7	0.0	54.2	57.2	0.0	40.3	0.0	0.0
Incr Delay (d2), s/veh	19.2	4.3	0.0	12.1	2.0	0.0	0.9	9.0	0.0	10.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	16.2	0.0	2.4	15.1	0.0	1.8	5.8	0.0	22.0	0.0	0.0
LnGrp Delay(d),s/veh	81.9	40.9	0.0	75.6	50.6	0.0	55.1	66.2	0.0	50.7	0.0	0.0
LnGrp LOS	F	D		E	D		E	E		D		
Approach Vol, veh/h		1011			919			206			1169	
Approach Delay, s/veh		42.4			52.2			63.3			50.7	
Approach LOS		D			D			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	51.5		50.7	8.2	53.4		17.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	15.5	25.5		50.5	15.5	25.5		20.5				
Max Q Clear Time (g_c+1), s	6.4	33.5		43.2	4.8	32.0		12.4				
Green Ext Time (p_c), s	0.1	0.0		3.1	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			49.4									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
2: Lono Street & Kaahumanu Ave

FUTURE YEAR PM
5/2/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↑↑↑			↔ ↑↑↑			↑		↗		↘	
Traffic Volume (veh/h)	10	1690	145	65	1815	30	180	15	45	30	25	10
Future Volume (veh/h)	10	1690	145	65	1815	30	180	15	45	30	25	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	11	1837	158	71	1973	33	196	16	49	33	27	11
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	2755	236	90	3172	53	286	19	422	72	53	15
Arrive On Green	0.02	0.77	0.77	0.05	0.62	0.62	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	4772	409	1774	5152	86	870	71	1576	117	197	58
Grp Volume(v), veh/h	11	1303	692	71	1298	708	212	0	49	71	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1791	1774	1695	1848	941	0	1576	372	0	0
Q Serve(g_s), s	0.8	23.7	24.0	5.1	31.0	31.0	0.0	0.0	3.1	3.2	0.0	0.0
Cycle Q Clear(g_c), s	0.8	23.7	24.0	5.1	31.0	31.0	29.1	0.0	3.1	32.3	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.05	0.92		1.00	0.46		0.15
Lane Grp Cap(c), veh/h	22	1957	1034	90	2087	1138	305	0	422	140	0	0
V/C Ratio(X)	0.49	0.67	0.67	0.79	0.62	0.62	0.69	0.00	0.12	0.51	0.00	0.00
Avail Cap(c_a), veh/h	130	1957	1034	130	2087	1138	334	0	455	172	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.29	0.29	0.29	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.5	9.1	9.2	61.0	15.6	15.6	45.5	0.0	36.0	47.6	0.0	0.0
Incr Delay (d2), s/veh	4.7	0.5	1.0	18.0	1.4	2.6	5.5	0.0	0.1	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	10.9	11.7	3.0	14.8	16.5	7.7	0.0	1.4	2.6	0.0	0.0
LnGrp Delay(d),s/veh	68.2	9.6	10.2	79.0	17.0	18.1	51.0	0.0	36.1	50.4	0.0	0.0
LnGrp LOS	E	A	B	E	B	B	D		D	D		
Approach Vol, veh/h	2006			2077			261		71			
Approach Delay, s/veh	10.1			19.5			48.2		50.4			
Approach LOS	B			B			D		D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	79.6			39.3	6.1	84.5		39.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	69.5			37.5	9.5	69.5		37.5				
Max Q Clear Time (g_c+I1), s	26.0			31.1	2.8	33.0		34.3				
Green Ext Time (p_c), s	0.0	41.1		0.9	0.0	34.7		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay	17.4											
HCM 2010 LOS	B											

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	
Traffic Vol, veh/h	60	95	90	35	50	45	40	145	15	75	215	65
Future Vol, veh/h	60	95	90	35	50	45	40	145	15	75	215	65
Conflicting Peds, #/hr	1	0	3	3	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	103	98	38	54	49	43	158	16	82	234	71
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	693	155	588	720	167	304	0	0	174	0	0
Stage 1	432	432	-	253	253	-	-	-	-	-	-	-
Stage 2	305	261	-	335	467	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	320	366	864	406	353	877	1255	-	-	1401	-	-
Stage 1	573	581	-	751	697	-	-	-	-	-	-	-
Stage 2	704	692	-	653	561	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	245	333	862	255	321	876	1251	-	-	1400	-	-
Mov Cap-2 Maneuver	245	333	-	255	321	-	-	-	-	-	-	-
Stage 1	553	547	-	725	673	-	-	-	-	-	-	-
Stage 2	589	668	-	441	528	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	24.4			20.2			1.6			1.6		
HCM LOS	C			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1251	-	-	292	862	377	1400	-	-			
HCM Lane V/C Ratio	0.035	-	-	0.577	0.113	0.375	0.058	-	-			
HCM Control Delay (s)	8	-	-	32.9	9.7	20.2	7.7	-	-			
HCM Lane LOS	A	-	-	D	A	C	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	3.4	0.4	1.7	0.2	-	-			

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖		↘	
Traffic Vol, veh/h	155	25	20	90	25	30
Future Vol, veh/h	155	25	20	90	25	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	27	22	98	27	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	196	0	323	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	141	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1377	-	671	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1377	-	660	861
Mov Cap-2 Maneuver	-	-	-	-	660	-
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	871	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1377	-
HCM Lane V/C Ratio	0.079	-	-	0.016	-
HCM Control Delay (s)	10.2	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	25	120	20	10	10	55	175	25	10	235	50
Future Vol, veh/h	40	25	120	20	10	10	55	175	25	10	235	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	120	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	27	130	22	11	11	60	190	27	11	255	54

























Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	638	641	283	706	655	204	310	0	0	217	0	0
Stage 1	304	304	-	323	323	-	-	-	-	-	-	-
Stage 2	334	337	-	383	332	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	389	393	756	351	386	837	1250	-	-	1353	-	-
Stage 1	705	663	-	689	650	-	-	-	-	-	-	-
Stage 2	680	641	-	640	644	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	359	371	756	263	364	837	1250	-	-	1353	-	-
Mov Cap-2 Maneuver	359	371	-	263	364	-	-	-	-	-	-	-
Stage 1	671	658	-	656	619	-	-	-	-	-	-	-
Stage 2	628	610	-	504	639	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	16.9	1.7	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1250	-	-	548	346	1353	-	-
HCM Lane V/C Ratio	0.048	-	-	0.367	0.126	0.008	-	-
HCM Control Delay (s)	8	-	-	15.3	16.9	7.7	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.7	0.4	0	-	-

HCM 2010 Signalized Intersection Summary
6: Kamehameha Ave & Lono Street

FUTURE YEAR PM
5/2/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	405	20	95	425	100	15	110	65	190	120	70
Future Volume (veh/h)	45	405	20	95	425	100	15	110	65	190	120	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	49	440	0	103	462	109	16	120	0	207	130	76
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	512	436	280	551	468	462	544	462	566	390	228
Arrive On Green	0.05	0.28	0.00	0.07	0.30	0.30	0.02	0.29	0.00	0.08	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1104	645
Grp Volume(v), veh/h	49	440	0	103	462	109	16	120	0	207	0	206
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1749
Q Serve(g_s), s	1.2	14.1	0.0	2.6	14.6	3.3	0.4	3.1	0.0	5.0	0.0	5.4
Cycle Q Clear(g_c), s	1.2	14.1	0.0	2.6	14.6	3.3	0.4	3.1	0.0	5.0	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	248	512	436	280	551	468	462	544	462	566	0	618
V/C Ratio(X)	0.20	0.86	0.00	0.37	0.84	0.23	0.03	0.22	0.00	0.37	0.00	0.33
Avail Cap(c_a), veh/h	308	547	465	303	551	468	568	544	462	566	0	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	21.7	0.0	16.3	20.8	16.8	15.1	16.9	0.0	13.2	0.0	14.9
Incr Delay (d2), s/veh	0.4	12.4	0.0	0.8	11.0	0.3	0.0	0.9	0.0	0.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	9.0	0.0	1.3	9.1	1.5	0.2	1.7	0.0	2.5	0.0	2.9
LnGrp Delay(d),s/veh	16.8	34.1	0.0	17.1	31.8	17.0	15.1	17.8	0.0	13.6	0.0	16.4
LnGrp LOS	B	C		B	C	B	B	B		B		B
Approach Vol, veh/h		489			674			136				413
Approach Delay, s/veh		32.3			27.2			17.5				15.0
Approach LOS		C			C			B				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	22.9	8.7	21.8	5.7	26.8	7.4	23.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.4	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I1), s	7.0	5.1	4.6	16.1	2.4	7.4	3.2	16.6				
Green Ext Time (p_c), s	0.0	1.5	0.0	1.2	0.0	1.4	0.0	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			24.9									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	15	435	480	40	30	25
Future Vol, veh/h	15	435	480	40	30	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	473	522	43	33	27

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	565	0	1048
Stage 1	-	-	543
Stage 2	-	-	505
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1007	-	252
Stage 1	-	-	582
Stage 2	-	-	606
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1007	-	246
Mov Cap-2 Maneuver	-	-	246
Stage 1	-	-	582
Stage 2	-	-	593

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1007	-	-	-	327
HCM Lane V/C Ratio	0.016	-	-	-	0.183
HCM Control Delay (s)	8.6	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.7

HCM 2010 Signalized Intersection Summary
8: Kamehameha Ave & Kane Street

FUTURE YEAR PM
5/2/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	55	255	5	20	5	135	320	10	5	400	130
Future Volume (veh/h)	125	55	255	5	20	5	135	320	10	5	400	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	136	60	0	5	22	5	147	348	11	5	435	141
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	87	278	116	245	49	451	906	29	571	560	181
Arrive On Green	0.18	0.18	0.00	0.18	0.18	0.18	0.10	0.50	0.50	0.01	0.42	0.42
Sat Flow, veh/h	1029	495	1583	109	1396	279	1774	1796	57	1774	1349	437
Grp Volume(v), veh/h	196	0	0	32	0	0	147	0	359	5	0	576
Grp Sat Flow(s),veh/h/ln	1524	0	1583	1784	0	0	1774	0	1853	1774	0	1786
Q Serve(g_s), s	4.6	0.0	0.0	0.0	0.0	0.0	1.8	0.0	5.1	0.1	0.0	12.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	0.6	0.0	0.0	1.8	0.0	5.1	0.1	0.0	12.0
Prop In Lane	0.69		1.00	0.16		0.16	1.00		0.03	1.00		0.24
Lane Grp Cap(c), veh/h	409	0	278	410	0	0	451	0	934	571	0	741
V/C Ratio(X)	0.48	0.00	0.00	0.08	0.00	0.00	0.33	0.00	0.38	0.01	0.00	0.78
Avail Cap(c_a), veh/h	789	0	679	843	0	0	507	0	967	786	0	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	0.0	14.9	0.0	0.0	7.4	0.0	6.6	7.2	0.0	10.9
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.3	0.0	0.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	0.3	0.0	0.0	0.9	0.0	2.7	0.0	0.0	6.4
LnGrp Delay(d),s/veh	17.6	0.0	0.0	15.0	0.0	0.0	7.9	0.0	6.8	7.3	0.0	14.2
LnGrp LOS	B			B			A		A	A		B
Approach Vol, veh/h		196			32			506			581	
Approach Delay, s/veh		17.6			15.0			7.1			14.1	
Approach LOS		B			B			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	26.2		12.1	8.6	22.4		12.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.5		18.5	5.5	22.5		18.5				
Max Q Clear Time (g_c+I1), s	2.1	7.1		7.2	3.8	14.0		2.6				
Green Ext Time (p_c), s	0.0	5.6		0.9	0.1	3.9		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay				12.0								
HCM 2010 LOS				B								

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	5	20	15	40	40	5
Future Vol, veh/h	5	20	15	40	40	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	22	16	43	43	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	122	46	49	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	76	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	853	1023	1558	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	846	1023	1558	-	-	-
Mov Cap-2 Maneuver	846	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	923	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1558	-	982	-	-
HCM Lane V/C Ratio	0.01	-	0.028	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	185	15	5	110	5	15	0	5	5	0	5
Future Vol, veh/h	5	185	15	5	110	5	15	0	5	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	201	16	5	120	5	16	0	5	5	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	125	0	0	217	0	0	356	356	209	356	361	122
Stage 1	-	-	-	-	-	-	220	220	-	133	133	-
Stage 2	-	-	-	-	-	-	136	136	-	223	228	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1462	-	-	1353	-	-	599	570	831	599	566	929
Stage 1	-	-	-	-	-	-	782	721	-	870	786	-
Stage 2	-	-	-	-	-	-	867	784	-	780	715	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1462	-	-	1353	-	-	592	565	831	591	561	929
Mov Cap-2 Maneuver	-	-	-	-	-	-	592	565	-	591	561	-
Stage 1	-	-	-	-	-	-	779	718	-	867	783	-
Stage 2	-	-	-	-	-	-	858	781	-	772	712	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	10.8	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	638	1462	-	-	1353	-	-	722
HCM Lane V/C Ratio	0.034	0.004	-	-	0.004	-	-	0.015
HCM Control Delay (s)	10.8	7.5	0	-	7.7	0	-	10.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑			↑↑
Traffic Vol, veh/h	0	20	280	5	0	340
Future Vol, veh/h	0	20	280	5	0	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	304	5	0	370

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	307	0 0
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	6.23	- -
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	3.319	- -
Pot Cap-1 Maneuver	0	732	- - 0 -
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	- -
Mov Cap-1 Maneuver	-	732	- - - -
Mov Cap-2 Maneuver	-	-	- - - -
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 732	-
HCM Lane V/C Ratio	-	- 0.03	-
HCM Control Delay (s)	-	- 10.1	-
HCM Lane LOS	-	- B	-
HCM 95th %tile Q(veh)	-	- 0.1	-

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT			T	TT	
Traffic Vol, veh/h	55	70	55	280	325	65
Future Vol, veh/h	55	70	55	280	325	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	76	60	304	353	71

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	813	212	424	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	332	794	1133	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	311	794	1133	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1133	-	472	-	-
HCM Lane V/C Ratio	0.053	-	0.288	-	-
HCM Control Delay (s)	8.4	-	15.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

**Preliminary Engineering
Report**

APPENDIX

D

PRELIMINARY ENGINEERING REPORT
FOR
KAHULUI LANI

Kahului, Maui, Hawaii

T.M.K.: (2) 3-7-005: 003

Prepared by:



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A. Site Accessibility and Parking

The Kahului Lani development is located at TMK: (2) 3-7-005:003 in Kahului along Kane Street on the Island of Maui. The proposed development includes the construction of two senior apartment rentals totaling 165 units. The housing development has a project area of approximately 3.8 acres and includes parking, utilities, a multipurpose building and open landscape space.

New parking lots will be provided for the project and will be provided through a combination of paved and grass parking, as allowed by Maui County Code, Chapter 19.036A. Three (3) loading zones (12' x 35') will be provided, one for each building. Off-site improvements will be made to Vevau, Kane and School Streets to provide sidewalks curbs and gutters. Vevau Street will be modified to eliminate the encroachment into the project's parcels.

The *Hawaii Statewide Uniform Design Manual For Streets and Highways*, DOT Highways Division & DPW Counties of the State of Hawaii, October 1980, will be utilized in the design of the Vevau Street realignment as well as the off-site improvements to Kane and School Streets. The parking lot improvements will be designed to comply with Maui County Code. Traffic control plans required for the project will be provided as necessary.

The project will comply with Americans with Disabilities (ADA) Guidelines. Final plans will be submitted to the Disability and Communication Access Board (DCAB) for ADA review.

The proposed project site will include a fire access lane compliant to County of Maui Fire Department Standards and the National Fire Protection Association Fire Code.

B. Grading and Drainage

The grading of the 3.8 acre site will comply with the Maui County Grading Ordinance and the recommendations of the geotechnical engineer. Cut and fill slopes will be 2:1 or flatter unless otherwise specified by the geotechnical engineer.

Drainage system improvements will be incorporated into the proposed project. The proposed building will have downspouts connecting to a new subsurface drainage system. A storm water retention system will be installed to mitigate the increase in runoff from the site. A hydrodynamic separator will be installed to meet County storm water quality requirements.

The design of the on-site drainage system will comply with the Rules For the Design of Storm Drainage Facilities in the County of Maui, dated July 1995. Under a 50-year, 1-hour storm event the project will increase the storm water runoff from the site by approximately 10.0 cubic feet per second. This will require approximately 18,000 cubic feet of retention storage. The storm water retention system will be installed under the parking lot within the site. The overflow from the retention system will discharge into a catch basin along Kane Street.

According to the Flood Insurance Rate Map 15000330392E dated September 25, 2009, the entire property lies within Zone X, an area of minimal flood hazard.

Erosion and dust control measures will be implemented to accommodate neighboring public and private facilities.

C. Water System

The potable water system will comply with the latest *Water System Standards* and *Standard Details for Water System Construction*, Department of Water Supply. The proposed buildings will connect to the existing 8" water line in Kane Street and an existing 4-inch line in Vevau and School Streets. The Department of Water Supply has indicated that there are two 2" water meters servicing the property. The water source will be the 3.0 M.G. Mokuhau tank and wells in Happy Valley, which is at elevation 358 feet.

The average daily domestic demand of the project is 103,400 gallons per day including irrigation demand. The fire flow requirement for the project is 1,250 gallons per minute.

D. Sewer System

The sewer system will be designed to comply with the Design Standards of the Wastewater Reclamation Division, County of Maui.

The buildings will connect their sewer lines to the existing 8-inch sewer line on Kane Street and/or the existing 15-inch sewer line in Vevau Street. Wastewater will be transported to the Wailuku-Kahului wastewater treatment plant.

The total average wastewater flow is 44,775 gallons per day.

APPENDIX A: DRAINAGE

FEMA's National Flood Hazard Layer (Official)

Data from Flood Insurance Rate Maps (FIRMs) where available digitally. New NFHL FIRMette Print app available: <http://tinyurl.com/j4xwp5e>



USGS The National Map: Orthoimagery | National Geospatial-Intelligence Agency (NGA); Delta State University; Esri | Print here instead: <http://tinyurl.com/j4xwp5e> Support: FEMAMapSpecialist@riskmapcds.com | Esri, HERE, Garmin, iPC | DigitalGlobe, GeoEye

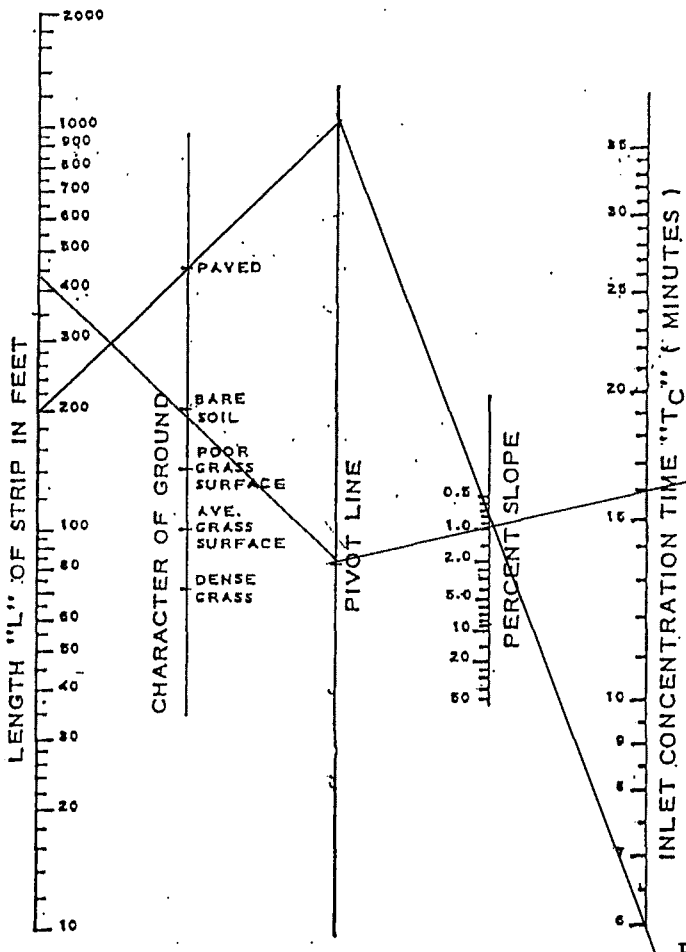
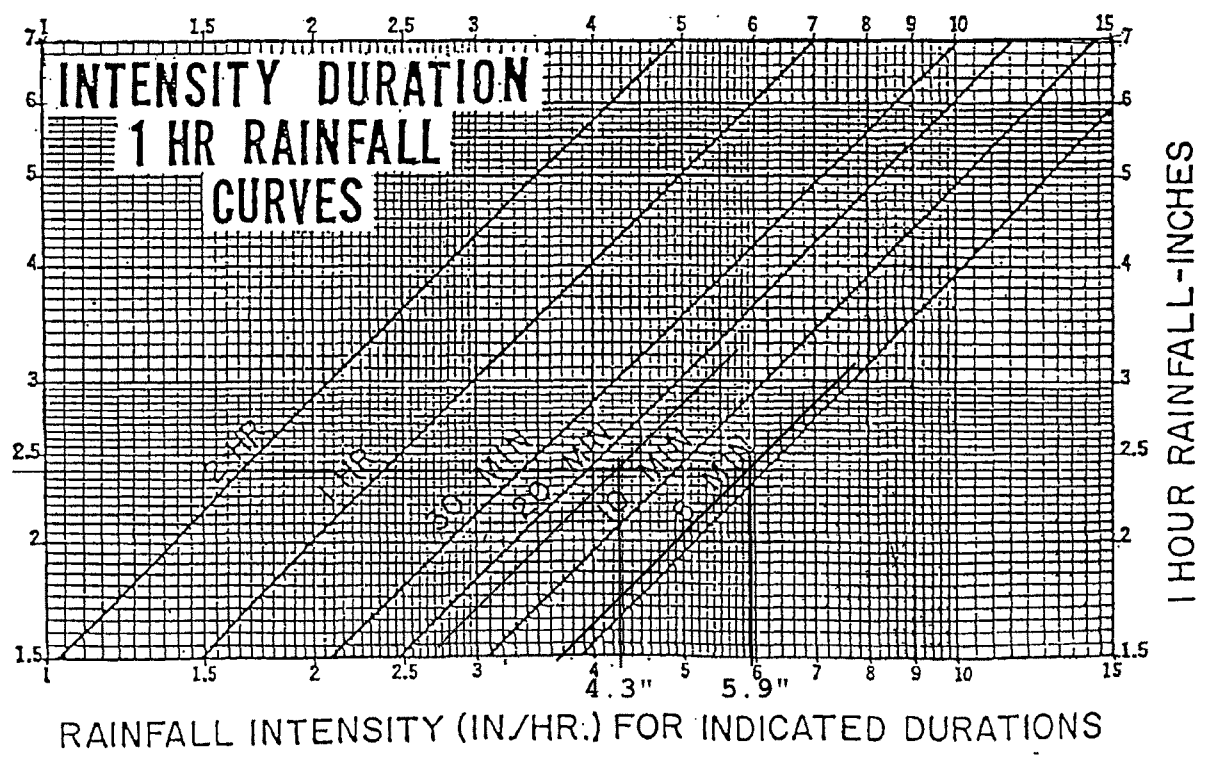


Plate 1
Exist. Condition: 17 min.

Overland Flow Chart

Proposed Condition: 6 min.

Plate 2



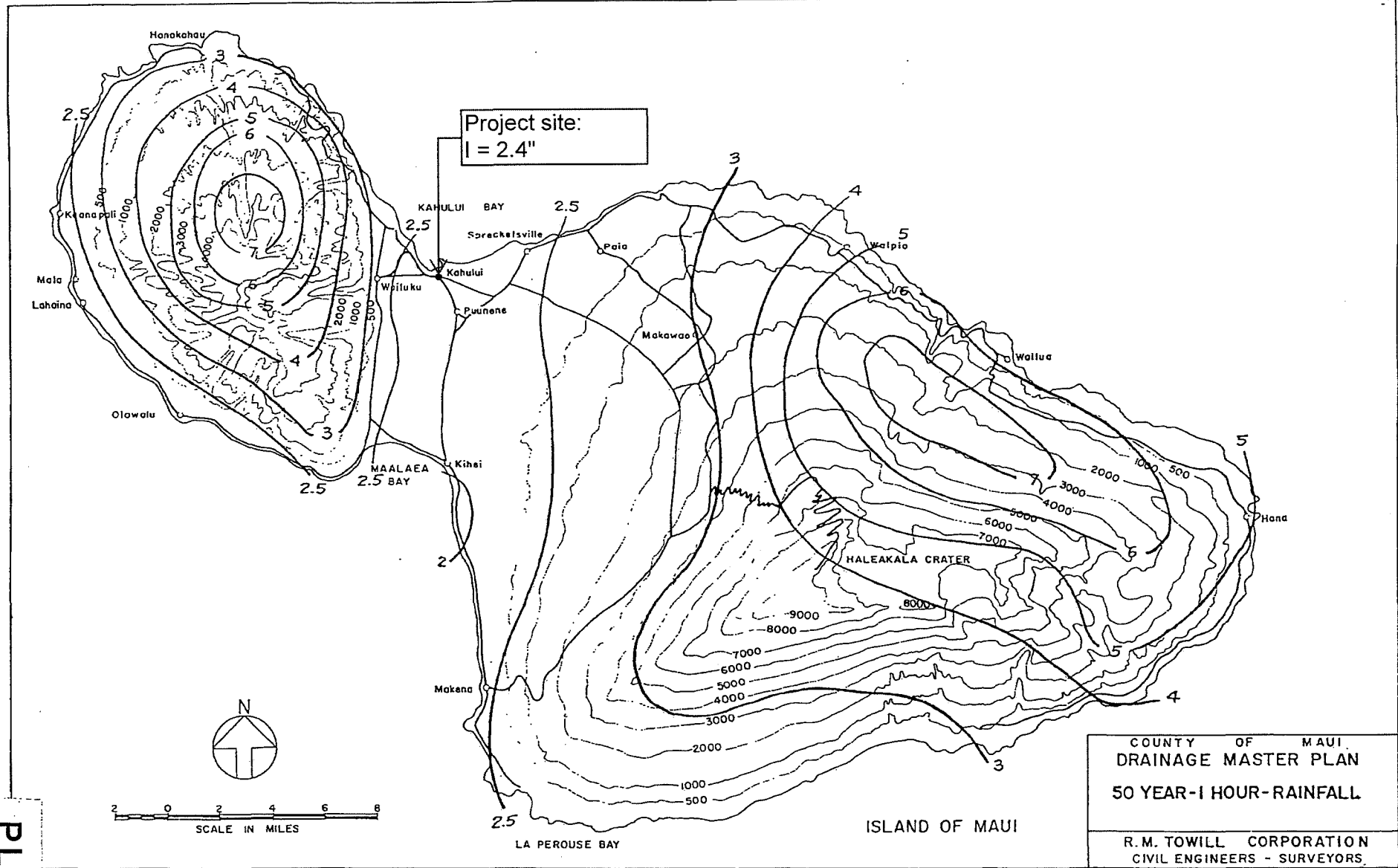


PLATE 7

KAHULUI LANI - Stormwater Quality Calculations						
Reference: Rules for Design of Storm Water Treatment Best Management Practices, 2012						
Section 15-111-5 (b) (1). Flow through based treatment						
C	0.7	ref. Table 3, apartment area				
I	0.4	inches				
A	3.81	acres				
Q=C*I*A	1.07	cfs				

APPENDIX B: WATER SYSTEM

Kahului Lani

TMK: 2-1-013: 148 (Por)

WATER SYSTEM DEMAND

Water demand calculated from "Water System Standards", Department of Water Supply, County of Maui, 2002.

Project Area: 3.8 Acres

Building A: Senior Affordable (6 Story Building) = 82 units

Building B: Senior Affordable (6 Story Building) = 83 units

Multipurpose Building = 7500 sf

Multi-Family Low Rise (DWS Planning Criteria):

560 gals / unit OR 5000 gals / acre (Table 100-18)

Total Project

Average Daily Demand: 560 gpd x 165 units = **92,400 gpd**

Maximum Daily Demand: 1.5 x 92,400 gpd = 138,600 gpd (Table 100-20)

Peak Hour Demand: 5.0 x 92,400 gpd = 462,000 gpd (Table 100-20)

Fire Flow Requirement: 1250 gpm for 2 hour duration (Table 100-19)

Total Fire Flow: 1250 gpm x 2 hrs x 60 min/hr = 150,000 gallons

Pipeline Sizing (Fire line): Provide required fire flow at a minimum of 20 psi residual pressure at fire hydrants.

Fire Hydrant Spacing: 350 feet maximum for Duplex

All irrigation will be done during non-peak hours

APPENDIX C: SEWER SYSTEM

Kahului Lani

TMK: 3-7-005:003

SEWER SYSTEM DEMAND

Reference: "Wastewater Flow Standards", County of Maui Wastewater Reclamation Division Feb. 2006

For an Apartment/Condo, wastewater flow contribution is estimated at 255 gal/unit/day

For Multipurpose Building (Church, large), wastewater flow contribution is estimated at 6 gal/seat/day

Building A: Senior Affordable (6 Story Building) = 82 units

Building B: Senior Affordable (6 Story Building) = 83 units

Multipurpose Building = 450 seats

Proposed Sewer Demand

$165 \times 255 = 42,075 \text{ gpd}$

$450 \times 6 = 2700 \text{ gpd}$

Total Average Wastewater Flow = **44,775 gpd**

Maximum Wastewater Flow

Population = 3.811 acres \times 250 cpa = 953 persons

Using Babbitt formula, flow factor = 5.05

$44,775 \times 5.05 = 226,183 \text{ gpd}$

Total Maximum Wastewater Flow = **226,114 gpd**

Dry Weather Infiltration/Inflow:

953 persons \times 5 pdcd = **4765 gpd**

Wet Weather Infiltration/Inflow:

3.811 acres \times 1250 gad = **4764 gpd**

Design Average Flow

$44,775 \text{ gpd} + 4765 \text{ gpd} = 49,540 \text{ gpd}$

Design Maximum Flow

$226,114 \text{ gpd} + 4765 \text{ gpd} = 230,879 \text{ gpd}$

Design Peak Flow

$230,879 \text{ gpd} + 4764 \text{ gpd} = 235,643 \text{ gpd}$