RECORDS OF COMMUNICATION/INTERVIEW

Phase I Environmental Site Assessment Property Questionnaire

Circle all that apply: User • Owner • Key Site Manager

Please complete **ALL** sections of this questionnaire and return a **signed and dated** copy to ENPRO Environmental via FAX at **808-262-4449** or e-mail at **info@enproenvironmental.com** as soon as possible.

Communication with:

Name: Jeffrey H. Overton
Company: GTO
Phone Number: 808-351-4200
Date: 5/7/2019
Amount of Time Familiar With Site: n/a
Relationship to Site: Project consultant

PROJECT NO.: **1902-00083-PH1**
PROJECT NAME/ADDRESS: **153 West Kaahumanu Avenue**

Prior to answering the questions supplied in the table below, please provide ENPRO with the following information:

A. What is your purpose/reason for requesting a Phase I Environmental Site Assessment of the above referenced property? _____

B. Can you supply a floor plan diagram and list of tenants for the structures at the property? If so, please attach copies with your questionnaire responses or send separately prior to the site visit.

DIRECTIONS: Please answer all questions to the best of your knowledge and in good faith. Mark the appropriate response with an "**X**". (Note: **U/NR** indicates "Unknown" or "No Response").
If you not know the answer, please check the **U/NR** box rather than the **No** box.
Please also elaborate on ALL **Yes** responses in the **Comment** box (for example, if the response to "Is the adjoining property used for an industrial use?" is **Yes**, please explain, e.g., "The building next door is used for canning tomatoes"). You may also provide additional information to **U/NR** and **No** responses as necessary.
If you have any questions while completing the questionnaire, please contact us.

	Question	Response			Comment
		Yes	No	U/NR	
1.	Are you aware of any pending, threatened, or past ***litigation*** relevant to hazardous substances or petroleum products in, on, or from the property?			X	
2.	Are you aware of any pending, threatened, or past ***administrative proceedings*** relevant to hazardous substances or petroleum products in, on, or from the property?			X	
3.	Are you aware of any ***notices from any governmental entity*** regarding any possible violation(s) of environmental laws or possible liability relating to hazardous substances or petroleum products in, on, or from the property?			X	

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PROJECT NO.: 1902-00083-PH1
PROJECT NAME/ADDRESS: 153 West Kaahumanu Avenue

	Question	Response			Comment
		Yes	No	U/ NR	
4.	Are you aware of any ***environmental cleanup liens*** against the property that are filed or recorded under federal, tribal, state, or local law?			X	
5.	Are you aware of any ***Activity and Use Limitations (AULs)***, including engineering controls, land use restrictions, or institutional controls that are in place at the property and/or have been filed or recorded in a registry under federal, tribal, state, or local law?			X	
6.	Do you have any ***specialized knowledge*** or experience related to possible environmental concerns at the property or nearby properties? (For example, are you involved in the same line of business as the current or former occupants at the property or adjacent/nearby properties such that you would have specialized knowledge of the chemicals and processes used by this type of business?)			X	
7.	Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the ***devalued purchase price*** is because contamination is known or believed to be present at the property? (Please reply in **Comment** section)			X	
8.	Are you aware of ***commonly known or reasonably ascertainable information*** about the property or nearby properties that would help ENPRO to identify conditions indicative of releases or threatened releases? (For example, neighboring property is known to have once been a vehicle junk yard)			X	
9.	Do you know any ***past uses*** of the property which may have contributed to potential contaminant releases?			X	
10.	Do you know of any ***specific chemicals*** that are present or once were present at the property?			X	
11.	Do you know of any ***spills or other chemical releases*** that have taken place at the property?			X	
12.	Do you know of any ***environmental cleanups*** that have taken place at the property?			X	
13.	Based on your knowledge and experience related to the property, are there any ***obvious indicators*** that point to the presence or likely presence of contamination at the property?			X	
14.	a.) Is the ***property*** used for an industrial use?			X	
	b.) Are any ***adjacent properties*** used for an industrial use?			X	
15.	a.) Has the ***property*** been used for an industrial use ***in the past***?			X	
	b.) Have any of the ***adjacent properties*** been used for an industrial use ***in the past***?			X	

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	Question	Response			Comment
		Yes	No	U/ NR	
16.	a.) Is the ***property*** used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?			X	
	b.) Are any of the ***adjacent properties*** used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?			X	
17.	a.) Has the ***property*** been used ***in the past*** as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage; disposal, processing, or recycling facility?			X	
	b.) Have any of the ***adjacent properties*** been used ***in the past*** as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?			X	
18.	a.) Are there ***currently*** any automotive or industrial **batteries** damaged or discarded, or **pesticides, paints, or other chemicals** in individual containers of greater than five gallons in volume or fifty gallons in the aggregate, stored on, or used at the ***property*** or at the *facility*?			X	
	b.) Have there been ***previously*** any automotive or industrial **batteries** damaged or discarded, or **pesticides, paints, or other chemicals** in individual containers of greater than five gallons in volume or fifty gallons in the aggregate, stored on or used at the ***property*** or at the *facility*?			X	
19.	a.) Are there ***currently*** any industrial **drums** (typically 55-gallon) or **sacks of chemical** located on the ***property?***			X	
	b.) Have there been ***previously*** any industrial **drums** (typically 55-gallon) or **sacks of chemical** located on the ***property?***			X	
20.	a.) Are there ***currently*** any ground water monitoring wells or other **ground water wells** (e.g., drinking water wells) located on the ***property***?			X	
	b.) Have there been ***previously*** any ground water monitoring wells or other **ground water wells** (e.g., drinking water wells) located on the ***property***?			X	
21.	a.) Are there ***currently*** any ground water monitoring wells or other **ground water wells** (e.g., drinking water wells) located on any of the ***adjacent properties?***			X	
	b.) Have there been ***previously*** any ground water monitoring wells or other **ground water wells** (e.g., drinking water wells) located on any of the ***adjacent properties?***			X	

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	Question	Response			Comment
		Yes	No	U/ NR	
22.	a.) Has ***fill dirt*** been brought onto the property which originated from a ***contaminated site?***			X	
	b.) Has ***fill dirt*** been brought onto the property which is of ***unknown origin?***			X	
23.	a.) Are there ***currently*** any ***pits, ponds or lagoons*** on the property in connection with waste treatment or waste disposal?			X	
	b.) Have there been ***previously*** any ***pits, ponds or lagoons*** on the property in connection with waste treatment or waste disposal?			X	
24.	a.) Is there ***currently*** any ***stained soil*** on the property?			X	
	b.) Has there been ***previously*** any ***stained soil*** on the property?			X	
25.	a.) Are there ***currently*** any registered or unregistered ***storage tanks*** (above ground or underground) located on the property?			X	
	a.) Have there been ***previously*** any registered or unregistered ***storage tanks*** (above ground or underground) located on the property?			X	
26.	a.) Are there ***currently*** any ***vent pipes, fill pipes, or access ways indicating a fill pipe*** protruding from the ground on the property ***or*** adjacent to any structures on the property?			X	
	b.) Have there been ***previously*** any ***vent pipes, fill pipes, or access ways indicating a fill pipe*** protruding from the ground on the property ***or*** adjacent to any structures on the property?			X	
27.	a.) Are there ***currently*** any ***flooring, drains, or walls*** located within the structure(s) on the property that are stained by substances other than water ***or*** are emitting foul odors?			X	
	b.) Have there been ***previously*** any ***flooring, drains, or walls*** located within the structure(s) on the property that are stained by substances other than water ***or*** are emitting foul odors?			X	
28.	a.) ***If the property is served by a private well*** or non-public water system, ***have contaminants been identified*** in the well or system that exceed guidelines applicable to the water system?			X	
	b.) ***If the property is served by a private well*** or non-public water system, ***has the well been designated as contaminated*** by any government environmental/health agency?			X	
29.	a.) Are there any ***environmental liens or government notifications*** relating to ***current violations*** of environmental laws with respect to the property or any facility located on the property?			X	
	b.) Are you aware of the ***past existence*** of any ***environmental violations*** of environmental laws with respect to the property or any facility located on the property?			X	

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	Question	Response			Comment
		Yes	No	U/ NR	
30.	a.) Have you been informed of the existence of any ***hazardous substances or petroleum products*** which are ***currently*** used or stored on the property?			X	
	b.) Have you been informed of the ***past*** existence of any ***hazardous substances or petroleum products*** used or stored on the property?			X	
31.	a.) Are you aware of any ***previous Environmental Site Assessments*** of the property or facility which indicated the presence of ***hazardous materials or petroleum products?***			X	
	b.) Are you aware of any ***previous Environmental Site Assessments*** which indicated the ***contamination of the property or facility?***			X	
	c.) Are you aware of any ***previous Environmental Site Assessments*** which ***recommended further assessment*** of the property or facility?			X	
32.	a.) Are you aware of any ***pending, threatened, or past litigation*** relevant to hazardous substances or petroleum products involving the property?			X	
	b.) Are you aware of any ***pending, threatened, or past administrative proceedings*** relevant to hazardous substances or petroleum products involving the property?			X	
	c.) Are you aware of any notices from any government entity regarding any ***possible violations*** of environmental laws or ***possible liability*** relevant to hazardous substances or petroleum products involving the property?			X	
33.	a.) Does the property ***discharge waste water*** on or adjacent to the property, other than storm water, into a ***storm water sewer system?***			X	
	b.) Does the property ***discharge waste water*** on or adjacent to the property, other than storm water, into a ***sanitary sewer system?***			X	
34.	Have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials been ***dumped above grade, buried, and/or burned on the property?***			X	
35.	Is there any ***transformer, capacitor, or any hydraulic equipment*** on the property for which there are any records of the presence of ***PCBs?***			X	
36.	a.) Is there now, or have there ever been any ***asbestos-containing materials (ACM)*** in any application on the property?			X	
	b.) Has there ever been any ***testing for ACM*** conducted on the property?			X	

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	Question	Response			Comment
		Yes	No	U/ NR	
36.	c.) Is there an ***asbestos Operations and Maintenance*** (O & M) program in place at the property?			X	
37.	a.) Is there now, or have there ever been any ***Lead-Based Paint (LBP)*** in any application on the property?			X	
	b.) Has there ever been any ***testing for LBP*** conducted on the property?			X	
	c.) Is there a ***LBP O & M*** program in place at the property?			X	
38.	Has the ***water*** at the property ever been tested for ***lead?***			X	
39.	Has ***radon testing*** ever been conducted at the property?			X	
40.	Is the property, or any portion of the property, located or involved in any ***Ecologically Sensitive Areas*** (i.e., wetlands, coastal barrier resource areas, coastal barrier improvement act areas, flood plain, endangered species, etc.)?			X	
41.	a.) Is the property, ***or*** any property within 1.0 mile of the property, listed on the Federal ***National Priorities List (NPL)?***			X	
	b.) Is the property, ***or*** any property within 0.5 miles of the property, listed on the Federal ***CERCLIS List?***			X	
	c.) Is the property, ***or*** any property within 1.0 mile of the property, listed by the Federal government as a ***RCRA TSD Facility?***			X	
42.	a.) Is the property, ***or*** any property within 1.0 mile of the property, listed by the State government as a ***Hazardous Waste site?***			X	
	b.) Is the property, ***or*** any property within 0.5 miles of the property, listed by the State government as a ***CERCLIS-equivalent site?***			X	
	c.) Is the property, ***or*** any property within 0.5 miles of the property, listed by the State as a ***Leaking Underground Storage Tank (LUST) site?***			X	
	c.) Is the property, ***or*** any property within 0.5 miles of the property, listed by the State as a ***Solid Waste/Landfill facility?***			X	

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Respondent Affirmation:

Respondent represents that to the best of the respondent's knowledge the above statements and facts are true and correct and to the best of the respondent's actual knowledge, no material facts have been suppressed or misstated.

Signature _____ Date 5/8/19
(For oral communications, the word "Affirmed" appears on the signature line)

or

Answers to this questionnaire have been orally communicated to a representative of Environmental Professionals, completed by:

Name _____ Signature _____ Date _____

151 Hekili Street ▪ Suite 210 ▪ Kailua, HI 96734
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MICHAEL P. VICTORINO
Mayor

David C. Thyne
Fire Chief

Bradford Ventura
Deputy Chief

County of Maui

Department of Fire and Public Safety
Fire Prevention Bureau

313 Manea Place | Wailuku, Hawaii 96793
(808) 876-4690 | fax (808) 244-1363

February 22, 2019

ENPRO Environmental
Attn: Rob Lothringer
151 Hekili Street, Suite 210
Kailua, HI 96734

SUBJECT:
153 W. Kaahumanu Ave.; TMK: 3-7-004 : 003

Greetings Mr. Lothringer,

In response to your letter requesting information regarding any fires, complaints, permits, violations involving hazardous materials use, underground storage tank records (active and removed tanks), leaking underground storage tank records, or aboveground storage tank records for the abovementioned properties – we have found the following:

- Fire Incident February 17, 2013 - RFS #13-00000346 – electrical panel

If there are any questions or comments, please feel free to contact our office at (808) 876-4690 or by email at fire.prevention@mauicounty.gov.

Thank You
Misty Cordeiro – Secretary

Mckenzie Brown

From: Capps, Brittani <brittani.capps@mauielectric.com>
Sent: Friday, April 26, 2019 4:11 PM
To: Roberta Bitzer
Subject: RE: Request for Information
Attachments: 2019_04_26_ENPRO_TIR_ME.pdf

Hi Roberta-

Please see transformer info request attached. Meters would not have any PCBs. Maui Electric may own the meter only, but the cabinet assembly would belong to the customer, and Maui Electric would not have any knowledge of the cabinet contents. The electrical panel fire in 2013 involved equipment owned by the customer, and did not involve Maui Electric equipment. Please let me know if you have any further questions.

-Brittani

From: Roberta Bitzer [mailto:rbitzer@enproenvironmental.com]
Sent: Thursday, April 25, 2019 12:09 PM
To: Capps, Brittani
Subject: Request for Information

[This email is coming from an EXTERNAL source. Please use caution when opening attachments or links in suspicious email.]

Hello Brittany,

See the attached request for information and pictures.

Thank you,

Roberta Bitzer
Senior Environmental Professional

151 Hekili Street Suite 210 Kailua HI 96734
Direct Line: 808-748-2111
Ph: 808-262-0909 Fx: 808-262-4449
www.enproenvironmental.com

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TSC 2.5.1 (Maui Electric)
Due Diligence Inquiries

April 26, 2019

Roberta Bitzer
ENPRO Environmental
151 Hekili Street, Suite 210
Kailua, HI 96734

Transmitted via email: rbitzer@enproenvironmental.com

Dear Ms. Bitzer:

Subject: **Transformer Information**
Vevau Street & School Street
Kahului, Maui, Hawaii

In response to your request for information regarding Maui Electric transformers at the above referenced location, we are providing the following information:

Pole / Vault Number	Transformer Number	Type	Date Purchased	PCB Status
NA	17495	Pad-Mount	February 2006	Non-PCB

If you have any other questions, please contact me at (808) 872-3548 or brittani.capps@mauielectric.com.

Sincerely,

Brittani Capps-Balinbin
Environmental Compliance Engineer

QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

environmental ENPRO™

Kenton Beal
Executive Vice President

CAREER HISTORY

More than twenty-five years of professional environmental project development and management. Strong emphasis on risk evaluation, risk ranking and environmental hazard assessment. Experienced in portfolio-wide environmental management and prioritizing resource allocation to address environmental liabilities in a cost effective manner. Has developed thousands of project budgets for planning and implementation purposes. Performed numerous RCRA hazardous waste characterization investigations, Phase I and II environmental investigations, remediation of soil and groundwater and environmental management of large construction projects. Projects have included urban renewal, remediation management at petroleum refineries, best management practices, storm water management, solid waste management, construction-related permitting, indoor air quality evaluations, closure of RCRA Treatment Storage and Disposal (TSD) facilities, remediation management for fungal contamination, evaluation of environmental issues related to lease disputes and commercial property transactions. Has performed and managed thousands of mold and moisture investigations ranging from single-family residential properties to high-rise commercial and resort properties.

PROFESSIONAL AFFILIATIONS

Registered Environmental Assessor (California)
Past President, Hawaii Chapter of the Institute of Hazardous Materials Managers
Registered Geologist (California)
Certified Professional Geologist (American Institute of Professional Geologists)
American Indoor Air Quality Council (Board of Directors, Hawaii Chapter)
Certified Indoor Environmentalist (Indoor Air Quality Association)
Certified in Mold Loss Prevention (Indoor Air Quality Association)
American Industrial Hygiene Association

EDUCATION

MBA, Hawaii Pacific University, 2001
M.S., Geology and Geophysics, University of Hawaii, 1987
B.A., Geology, University of California at Santa Barbara, 1984

GEOGRAPHIC EXPERIENCE

Successfully completed projects throughout the major Hawaiian Islands, Guam, Saipan, CNMI, Puerto Rico, Japan, and throughout the United States

ENVIRONMENTAL INVESTIGATION/ REMEDIATION EXPERIENCE

Projects have included wood treatment facilities, petroleum refineries, underground storage tank (UST) sites, agricultural facilities, urban renewal projects, petroleum bulk storage terminals impacted with free floating petroleum hydrocarbons, dry cleaners, and a variety of commercial/industrial facilities. Received No Further Action status at multiple sites from the State of Hawaii Department of Health. Successful experience with investigation and remediation projects for real property transfers and redevelopment. Design of corrective measures for indoor air quality complaints. Mold and moisture training, prevention and response planning.

Kenton Beal
Executive Vice President

SPECIALIZED TRAINING

Mold Loss Prevention, Indoor Air Quality Association
Groundwater Flow through Porous and Fractured Media, University of Wisconsin-Madison
Corrective Action for Containing and Controlling Ground Water Contamination, National Water Well Association
Basic Ground Water Modeling, National Water Well Association
Project Management, University of Hawaii
Clean Air Act Amendment 112 ®, U.S. EPA
Management & Supervision of Hazardous Waste Operations, Unitek Environmental Consultants
AHERA Asbestos Management Planner
AHERA Asbestos Inspector
HVAC and the Indoor Environment, American Indoor Air Quality Council
IICRC S520 Mold Remediation Guideline, American Indoor Air Quality Council
Case Studies in Environmental Mold, American Industrial Hygiene Association
Health Effects of Mold, American Indoor Air Quality Council
40-hour Hazwoper Training and Refreshers, Various
Understanding Environmental Sampling and Data Analysis
Managing Uncertainty with Systematic Planning

PROFESSIONAL PRESENTATIONS

Building Operator Certification, Indoor Environmental Quality, University of Hawaii
Environmental Game Changers, Honolulu, Hawaii
Indoor Air Quality in Commercial Buildings, American Society of Heating and Refrigeration Engineers
Environmental Solutions for Real Estate Transactions, Honolulu Board of Realtors
Storm Water Monitoring, Law Seminars International, Honolulu
Mold Remediation Boot Camp, Las Vegas
Mold University™, Honolulu and Houston
Indoor Air Quality for Property Managers, San Francisco, Honolulu, Las Vegas, Los Angeles
Mold Report™, San Francisco, Honolulu, Las Vegas, Los Angeles
Mold Awareness, International Executive Housekeepers Association
Advanced Conference on Real Estate, Law Seminars International
Hot Topics in the Mold Industry, American Indoor Air Quality Council, Hawaii
Mold Investigation Training, Pensacola, Fort Lauderdale, Orlando, Tampa, Florida
Environmental Investigation for Emergency Services, Burbank and Long Beach California
Multi-Family Residential Development, Lohrman Education Services, Honolulu
Environmental Law Seminar A to Z, NBI, Inc., Honolulu
Real Estate Development From Beginning to End, Lorman Educations Services, Honolulu

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Roberta Bitzer

Senior Environmental Professional

CAREER HISTORY

Over a decade of professional environmental project development, monitoring and management; regulatory compliance inspections, assessments and oversight of multiple abatement projects, including lead based paint, asbestos, mold, particulates and other regulated substances.

Hawaii Department of Health (HDOH) and Environmental Protection Agency (EPA) Certified LBP Risk Assessor experience conducting Housing and Urban Development (HUD) guided LBP inspection utilizing X-Ray Fluorescence (XRF) analysis for large scale multi-family housing developments, preparation of lead abatement and lead disturbance specifications, lead disturbance and abatement work plans, and lead compliance plans, HUD lead risk assessments, OSHA training, as well as monitoring and clearance of LBP abatement projects.

HDOH and EPA Certified Asbestos Inspector, Project Monitor, Management Planner, and Project Designer experienced in conducting inspections for demolition and renovation projects, monitoring and clearance of abatement projects, preparation of asbestos abatement specification and asbestos abatement work plans, as well as Operations and Maintenance (O&M) Plans.

ACAC Certified Indoor Environmental Consultant (CIEC) experienced in the evaluation of indoor environments and microbiological laboratory data to assess the extent of fungal contamination and/or the efficacy of mold remediation projects (post remediation verification, PRV). Experienced in remediation management and remediation planning/design, as well as IAQ assessment, remediation, and design for non-fungal indoor air contaminants such as volatile organic compounds (VOCs), particulates, and combustion products.

Experienced in conducting ASTM Standard Phase I Environmental Site Assessments (ESAs), Phase II Soil, Soil Vapor, and Groundwater Sampling, and Phase III Remediation Activities. ESA sampling activities have included the collection of multi-increment surface and sub-surface soil samples in accordance with HDOH Hazard Evaluation and Emergency Response (HEER) Office Technical Guidance Manual (TGM) guidelines, composite and discrete soil sampling in accordance with TGM guidelines, groundwater sampling in accordance with TGM guidelines, and soil vapor sampling in accordance with TGM guidelines. Remediation activities have included UST removal and oversight of excavation, transport, management and disposal of contaminated soil.

Development of Spill Prevention Control and Countermeasure (SPCC) Plans and Facility Response Plans for multiple installations throughout Hawaii.

Served as project manager for risk evaluation for a large trust estate (>300 properties). Evaluation involved ranking sites by relative risk and establishing recommendations for further investigation and/or remediation. Risk evaluation and site assessment work addressed PCBs, petroleum-related contaminants, pesticides, asbestos, lead and other metals, USTs, and non-point source contaminants. Review of federal, state and county databases and regulatory files pertaining to environmental issues as well as Environmental Impact Statements.

Research experience includes writing, research, and fieldwork in support of the preparation of a dissertation and a thesis; and investigation of the larvicidal activity of plant extracts against mosquito larvae of *Aedes aegypti* and *Culex quinquefasciatus*.

Experience working with public and private special interest groups.

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Roberta Bitzer

Senior Environmental Professional

EDUCATION

B.S. Biology, 2002. Universidade Estadual do Norte Fluminense do Norte Fluminense – Rio de Janeiro, Brazil.

M.S. Exchange Program, 2004: The Environment, Economic Development and Quality of Life Nexus, US-Brazil Higher Education Consortia, Fairfield University – Connecticut, USA.

M.S. Environmental Sciences, 2006. Universidade Estadual do Norte Fluminense do Norte Fluminense – Rio de Janeiro, Brazil.

PUBLICATIONS

Roberta P. De Souza. *Organic Matter, Specific Surface Area, and Heavy Metal Interactions in Guanabara Bay Sediments.* Undergraduate Dissertation, Universidade Estadual do Norte Fluminense do Norte Fluminense – Rio de Janeiro, Brazil. Speciality: Environmental Sciences. 83p. 2002.

Roberta P. De Souza. *Heavy Metal Pollution in Guanabara Bay sediments*. Master's Thesis, Universidade Estadual do Norte Fluminense do Norte Fluminense – Rio de Janeiro, Brazil. Speciality: Environmental Sciences. 90p. 2006.

PRESENTATIONS

Roberta P. de Souza, Carlos E. Rezende, Luiz R. Gaelzer and Eliane R. Goncalez, *"Heavy Metal Pollution in Sediments of Guanabara Bay, Rio de Janeiro, Brazil," XIII International Conference on Heavy Metals in the Environment* – ICHMET held in Rio de Janeiro, Brazil, June 5 - 9, 2005.

SPECIALIZED TRAINING

Training in Environmental Management System Auditing, March 21 and 27, 2005**.**

Training in EPA All Appropriate Inquiries by the HDOH and USEPA; June 14, 2007

Training in Asbestos and Lead Paint Regulations; September 2007

Training in Managing Multiple Priorities; September 2007

Training in Building Science and Understanding Building Failures; May 2008

CONTINUING EDUCATION

Hawaii Brownfields Redevelopment Forum #3 by HDOH; October 2007

Hawaii Brownfields Redevelopment Forum #4 by HDOH; October 2008

HVAC & Mold Remediation Webinar; November 2008

Workshop to Review and Discuss Updates to the Environmental Hazard Evaluation (EHE) Guidance and Associated Environmental Action Levels (EALs) by HDOH; December 2008

Environmental Compliance for Hawaii Design Professionals by HalfMoon LLC; January 2009

Vapor Intrusion Workshop by HDOH; April 2009

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Roberta Bitzer
Senior Environmental Professional

CERTIFICATIONS HDOH Certified Asbestos Inspector, Project Monitor, Project Designer and Management Planner

HDOH Lead Based Paint Risk Assessor

EPA Certified Lead Renovator

ACAC Certified Indoor Environmental Consultant

HAZWOPER-40 Hours

American Red Cross, Adult and Pediatric First Aid/CPR/AED

LANGUAGE SKILLS Portuguese and Spanish

AWARDS FIPSE/CAPES Scholarship; 2004

CNPq Scholarship; 2003/2004

Research Institute for Marine Ecosystems Almirante Paulo Moreira Scholarship; 2002

FAPERJ Scholarship; 2001

Mckenzie Brown

Environmental Technician

CAREER HISTORY

Experienced in conducting ASTM Standard Phase I Environmental Site Assessments (ESA)'s and site assessment work addressing PCBs, petroleum-related contaminants, pesticides, asbestos, metals, underground storage tanks (USTs), volatile organic compounds (VOCs), and non-point source contaminants and review of federal, state and county databases and regulatory files.

Experienced in conducting hazardous materials surveys and environmental site assessments for asbestos containing building materials.

Experienced in conducting fungal inspection surveys for moisture intrusion, visible suspect mold and indoor air quality investigations.

Experienced in conducting post remediation verification (PRV) for mold and moisture intrusion remediation and hygienic indoor surfaces.

Experienced in environmental research and report preparation.

Experienced in ecological fieldwork.

EDUCATION

B.S. Environmental Science – 2018 Hawaii Pacific University.

SPECIALIZED TRAINING

AHERA Asbestos Building Inspector Certification, No. HIASB-4662

CPR/AED for Pro Rescuers; Responding to Emergencies; First Aid Certified, Certification ID: GVS5E5 (Exp. 11/27/2020)



Toll Free Phone 866.262.0909 • Toll Free Fax 866.262.4440
www.enproenvironmental.com

Appendix G

Hazardous Materials Survey



Hazardous Materials Survey

No. 1902-00082-HAZ

153 West Ka'ahumanu Avenue
Kahului, Hawaii

environmental ENPRO

Prepared for

G70

111 South King Street Unit 170

Honolulu, Hawaii 96817

July 12, 2019

Prepared for:

G70
111 South King Street Unit 170
Honolulu, Hawaii 96817

Hazardous Materials Survey



153 West Ka'ahumanu Avenue
Kahului, Hawaii 96732

Prepared by:

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ENPRO Project Number:	1902-00082-HAZ
Date of Report:	July, 12, 2019
On-Site Investigation:	May 9, 2019

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1.0 BACKGROUND

ENPRO Environmental (ENPRO) was retained by G70 to perform sampling and analysis for hazardous materials at 153 West Ka'ahumanu Avenue, Kahului, Hawaii. The purpose of this project was to assess the presence of readily accessible and identifiable hazardous materials. Hazardous materials included, but were not limited to:

- PCB-containing ballasts/transformers
- mercury-containing lamps
- stored chemicals
- asbestos-containing material
- lead-containing paints

1.1 REGULATORY REQUIREMENTS FOR DEMOLITION/RENOVATION

Mercury

All fluorescent light tubes are considered to be mercury-containing. When lamps are taken out of service and intended to be discarded, they become regulated Universal Waste.

PCB

During removal, identify polychlorinated biphenyl (PCB) vs. non-PCB ballasts per label identification. Leaking PCB ballasts require special handling and disposal. All other ballasts meet the definition of a non-regulated Small Capacitor and therefore do not have specialized disposal requirements.

Asbestos

The removal of regulated asbestos containing material (RACM) is required prior to demolition for all RACM that exceeds the threshold limits as defined in the regulations, National Emission Standards for Hazardous Air Pollutants (NESHAPS).

Notification to the State of Hawaii, Department of Health is required for all demolition projects in Hawaii. Requirements for NESHAPS RACM occur when a cumulative threshold limit of 160 square feet, 260 linear feet of pipe insulation and/or 35 cubic feet is exceeded.

Lead Containing Paints

If the property is to undergo demolition, OSHA regulations apply to abatement workers. Additionally, demolition debris shall need to be sampled and tested (using toxicity characteristic leaching procedure [TCLP] analytical procedures) to meet municipal disposal site acceptance criteria. Other than demolition considerations, no other regulations apply.

United States Environmental Protection Agency (EPA) regulations effective April 2010 require that specialized lead-based paint training is required for all renovators/painters who disturb greater than six square feet of interior painted surfaces per room, or greater than twenty square feet of exterior painted surfaces in target housing and child occupied facilities constructed prior to 1978. If an assessment has not been conducted to determine if lead based paint (LBP) is present in a pre-1978 structure, the paint may be presumed by the contractor to be LBP, and all requirements apply. Affected areas may be sampled and tested by a certified lead inspector and if no LBP is present, these regulations do not apply. This regulation does not apply to commercial structures and non-target housing.

Additional regulations specifically addressing lead-based paint include Housing and Urban Development (HUD) (1995) guidelines and the Consumer Product Safety Act (1977). and the United States Environmental Protection Agency (EPA) Renovation, Repair and Painting (RRP) Final Rule (2008) for Target Housing and Child Occupied Facilities. These regulations are for housing and consumer products and do not apply to most commercial properties or to demolition activities.

United States Department of Labor Occupational Safety and Health Administration (OSHA) regulations apply to worker protection during renovation and demolition activities. At a minimum OSHA requires lead awareness training for all workers who may be exposed to airborne lead concentrations above the OSHA Action Level (AL) of thirty micrograms per cubic meter (30 µg/m3) for an 8-hour timeweighted average (TWA).

Canec

OSHA regulations apply to worker protection during renovation and demolition activities. At a minimum OSHA requires arsenic awareness training for all workers who may be exposed to airborne arsenic concentrations above the OSHA AL of 5 $\mu g/m^3$ for an 8-hour TWA.

The on-island landfill does not regulate the disposal of canec fiberboard materials which may contain arsenic. In accordance with 40 CFR 261 and HAR 11-261-4(b)(9), wood and wood products with arsenic are exempt from hazardous waste disposal regulations.

Prior to canec removal, the contractor should contact a landfill licensed to accept construction and demolition material solid waste and inquire if a profile (Toxicity Characteristic Leaching Procedure) of the canec waste is required as a prerequisite for disposal. If one is required, the Contractor should prepare the documentation necessary to ensure acceptance and provide the test results and documentation to the Contracting Officer's Representative (COR).

1.2 TASKS

The tasks of performing the hazardous materials investigation and assessment included:

1) Investigation of accessible areas of the project site for PCB-containing ballasts and mercury-containing lamps
2) Inventory and documentation of stored chemicals located on site
3) Investigation of accessible areas of the project site for suspect arsenic-containing materials, particularly sugarcane pressboard (canec)
4) Investigation of accessible areas of the project site for suspect asbestos-containing materials (ACM)
5) Collection of suspect ACM samples and analysis by polarized light microscopy
6) Investigation of accessible areas of the project site to evaluate the different applications of paint
7) Collection of representative paint samples for laboratory analysis by atomic absorption to determine lead content
8) Preparation of a technical report presenting the data and findings of our assessment

1.3 LIMITATIONS

Only readily accessible areas were inspected. Excluded from detailed observation were the following areas:

- A decommissioned outbuilding with poor structural integrity was not accessed for safety reasons
- The roof was not accessed per G70 personnel request

ENPRO has relied upon the Client or the Client's representative for access and assumes no liability for areas not identified by the Client or the Client's representatives. ENPRO is not responsible for inspecting, assessing or otherwise consulting with respect to hidden or inaccessible materials. Areas that may not be sampled are behind walls, above ceilings, inside utility conduits and ventilation ducts, and exterior roofing.

Suspect materials not sampled and analyzed due to limitations or inaccessibility which shall be disturbed during demolition/renovation activities must be sampled and analyzed for asbestos, or assumed to be ACM. Suspect ACM which may be encountered during demolition includes, but is not limited to:

- Thermal system insulation (TSI)
- Surfacing materials including skim coat, paint, texture
- Drywall, tape, and joint compound
- Floor coverings, mastic
- Roofing materials
- Patching materials
- Grout
- Window glaze
- Sealants
- Concrete fillers
- Transite-like materials
- Wallboard
- Ceiling panels

This investigation is limited to the structure and aboveground portions of the subject property only.

This report should be considered in conjunction with any previous hazardous materials investigation reports completed for the project site. This survey report is not an asbestos abatement project specification, all quantifications are estimates and specific layers of homogenous materials identified as asbestos or non-asbestos materials by the laboratory analysis are not segregated in ENPRO's quantifications. ENPRO recommends that the client retain a certified Asbestos Project Designer to prepare asbestos abatement project specifications and an asbestos abatement work plan to address the removal of ACM at the project site prior to demolition/renovation.

1.4 RESULTS OF PREVIOUS INVESTIGATIONS

ENPRO reviewed a previous Asbestos Containing Materials (ACM) investigation prepared by EnvironMeteo (EMET) Services, Inc. dated March, 22 2007. The report revealed that the vinyl floor tiles found in Annex A consisted of 2-3% Chrysotile.

2.0 PROPERTY DESCRIPTION

2.1 GENERAL

The project site was located in Kahului, on the central northside of the island of Maui.

The project site was a single-story school building occupied by Maui Community School for Adult Education.

2.2 BUILDING MATERIALS

The structures at the project site were composed of wood and concrete masonry unit (CMU) exterior walls, drywall interior walls, and a sloped shingle roof. Suspect materials sampled for lead included interior and exterior paints. Suspect materials sampled for asbestos included:

- canec ceiling
- acoustic ceiling tile
- drop ceiling tile
- textured ceiling tile
- caulking materials
- cove base and associated mastic
- carpet and associated mastic
- canec walls

3.0 SAMPLING PROCEDURES

3.1 SUSPECT ASBESTOS-CONTAINING MATERIALS

During the investigation, suspected asbestos-containing materials, including surfacing material and flooring were sampled, quantified, and assessed for current condition and friability.

The following materials are not considered suspect and do not require sampling when discovered during an investigation:

- Metal
- Cork
- Rubber
- Fiberglass
- Wood
- Ceramic tile (not including grout and mastic)

Representative samples of suspect asbestos containing materials were collected from homogeneous areas, three samples of each homogenous material were sampled in accordance with Environmental Protection Agency (EPA) and State of Hawaii Department of Health (DOH) minimum sampling requirements. A total of twenty-seven bulk samples, representing nine homogenous materials, were submitted for analysis. The bulk samples were analyzed by polarized light microscopy using EPA Method 600/M4-82-020 and/or 600/R-93/116 by a NVLAP (National Voluntary Laboratory Accreditation Program) accredited laboratory.

3.2 PAINTED SURFACES

During the investigation, the investigator located, assessed, and sampled the various painted surfaces of the project site. A representative sampling of interior and exterior painted surfaces was performed.

A total of five samples were collected and analyzed for total lead content using EMC SOP Method #L01/1 and EPA SW-846 Method 7420.

4.0 OBSERVATIONS AND MATERIALS INVENTORY

4.1 LIGHT BALLASTS CONTAINING PCBS

Light Ballasts

A total of eighty-six fluorescent light fixtures were observed on the project site. All ballasts associated with these eighty-six fixtures are assumed to contain PCBs.

PCB ballasts are found in the housing of fluorescent, mercury vapor, and high intensity discharge lighting that were manufactured prior to 1980. Over the years, old fixtures have been decommissioned during demolition, renovation, general maintenance projects, and energy-saving lighting installations. When ballasts are put out of service, they become subject to Federal and State waste regulations. The primary law regulating PCBs is the Toxic Substance Control Act (TSCA).

TSCA regulates the manufacture, sale, use, and disposal of certain chemical substances, and requires testing, tracking, pre- screening, and record keeping of chemical products. TSCA also regulates the disposal of PCBs. In specific situations, ballasts are exempt from TSCA requirements. For instance, TSCA does not regulate the disposal of non-leaking, Small Capacitors. A fluorescent lamp ballast is classified as a Small Capacitor if it contains less than 3 pounds of dielectric fluid and/or has a total volume of less than 100 cubic inches. A lighting ballast is also considered a Small Capacitor if it has a volume between 100 and 200 cubic inches and has a total weight of less than nine pounds. Small Capacitors are subject to TSCA under two conditions:

- If the Small Capacitor is leaking PCB's, it is regulated as a PCB Article, as defined in 40 CFR 761.3 of the federal PCB regulations. PCB Articles with concentrations at 500 parts per million (ppm) or greater must be disposed of in an incinerator complying with 40 CFR 761.70, or in a chemical waste landfill complying with 40 CFR 761.75. PCB Articles disposed at a chemical waste landfill must be drained of all free flowing PCBs and the drained PCBs greater than 500 ppm must be disposed of by incineration meeting the specifications in 40 CFR 761.70

- In the second condition, Small Capacitors (intact or leaking) owned by any person who manufactures or at any time manufactured PCB-containing capacitors or PCB-containing equipment defined in 40 CFR 761.60(b)(2)(iv), must ensure delivery of the PCB-containing capacitor to a TSCA-permitted incinerator for disposal. PCB-containing ballasts also may be subject to regulation under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLA has many features including establishing reportable levels for certain substances and a notification requirement for release of these substances.

PCBs are a hazardous substance under CERCLA reportable quantity requirements and releases exceeding one pound during a 24-hour period must be reported to the National Response Center (NRC), as specified in Section 102 (a) of CERCLA. For information on reporting requirements, contact NRC at 1-800-424-8802.

All light ballasts observed on the project site meet the definition of a non-regulated Small Capacitor and therefore not regulated per disposal requirements, presuming they are not leaking.

4.2 LAMPS CONTAINING MERCURY

A total of eighty-six fluorescent light fixtures were observed on the project site. All fluorescent light tubes associated with these eighty-six fixtures are considered to be mercury-containing. These lamps, also referred to as "universal waste lamps" are defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.

Universal Waste Regulations apply to the above lamps only when such lamps are taken out of service intended for disposal. A used lamp becomes a waste on the date it is discarded.

A small quantity handler of universal waste must manage lamps in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A small quantity handler of universal waste must contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.

(2) A small quantity handler of universal waste must immediately clean up and place in a container any lamp that is broken and must place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment. Containers must be closed, structurally sound, compatible with the contents of the lamps and must lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.

4.3 HAZARDOUS MATERIALS

No significant quantities of hazardous materials were observed being stored on the project site.

5.0 SUSPECT ARSENIC-CONTAINING BUILDING MATERIALS/CANEC

5.1 BUILDING MATERIALS

During the investigation, building materials, including ceiling and wall material, were assessed for suspect arsenic-containing canec. Approximately 3,800 ft^2 of canec ceiling, and 60,000 ft^2 of canec walls were discovered during the investigation. Canec building materials were discovered in the following areas:

- Annex A
- Principal's Office
- Men's Restroom
- Women's Restroom
- The Learning Center Computer Lab
- Adult Basic Education Resource Room
- Literacy Center
- Family Involvement Trainer Room
- Annex B
- Storage Room
- Clerk Room
- SASA Room
- Annex D

6.0 ANALYTICAL RESULTS

Table 1 presents the results of the asbestos analyses. The table includes the sample number, the location, the material sampled, and the analytical result.

Table 2 presents the results of the total lead analyses. The table includes the sample number, sample location, the material sampled, and the analytical result.

Table 1

Asbestos Sampling Locations and Analytical Results

SAMPLE NUMBER	LOCATION	MATERIAL	ASBESTOS DETECTED
A-1 (a, b, c)	SASA Room Hall	Ceiling Tile, White/ Tan	No
A-2 (a, b, c)	Vice Principal Office	Ceiling Tile, White/ Tan Ceiling Tile, White/ Gray	No No
A-3 (a, b, c)	Account Clerk Room	Ceiling Tile, White/ Tan Glue, Brown	No No
A-4 (a, b, c)	Annex C	Ceiling Tile, Beige/ Off White	No
A-5 (a, b, c)	Annex B	Ceiling Tile, Beige/ Off White	No
A-6 (a, b, c)	Annex D	Cove Base, Gray Mastic, Yellow	No No
A-7 (a, b, c)	Men's Restroom Women's Restroom	Caulking, White/ Off White	No
A-8 (a, b, c)	SASA Room Hall Vice Principal Office	Carpet, Beige/ Brown Mastic, Yellow Carpet, Purple	No No No
A-9 (a, b, c)	Annex A Hall Annex B	Canec Walls, White/ Tan	No

Table 2

Paint Sample Locations and Analytical Results – Total Lead

SAMPLE NUMBER	LOCATION	MATERIAL	TOTAL LEAD (% by Weight)
LP-1	Annex D	White Interior Paint	0.047
LP-2	**Annex B**	**Green Exterior Paint**	**1.30***
LP-3	Annex B	Brown Exterior Paint	0.448
LP-4	Principal Office	Purple Interior Paint	BRL
LP-5	The Learning Center Computer Lab	Brown Interior Paint	0.020

BRL = Below Reportable Limits, * = Dilution Factor Changed, BOLD = Lead-based paint

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 ASBESTOS-CONTAINING MATERIALS

Based on the analytical results, none of the twenty-seven analyzed samples were determined to contain asbestos.

Recommendation

Based on the analytical results, no recommendations are made.

7.2 LEAD-BASED AND LEAD-CONTAINING PAINT

Of the five samples analyzed for total lead content, three were determined to be lead-containing paint and one was determined to be lead-based paint.

- LP-1, White Interior Paint - Lead-containing
- LP-2, Green Exterior Paint - Lead-based
- LP-3, Brown Exterior Paint - Lead-containing
- LP-5, Brown Interior Paint - Lead-containing

EPA regulations effective April 2010 require that specialized lead-based paint training is required for all renovators/painters who disturb greater than six square feet of interior painted surfaces per room or greater than twenty square feet of exterior painted surfaces in target housing and child-occupied facilities constructed prior to 1978. If an assessment has not been conducted to determine if lead based paint (LBP) is present in a pre-1978 structure, the paint may be presumed by the contractor to be LBP, and all requirements apply. Affected areas may be sampled and tested by a certified lead inspector and if no LBP is present, these regulations do not apply. These regulations do not apply to complete demolition jobs.

Additional regulations specifically addressing lead-based paint include Housing and Urban Development (HUD) (1995) guidelines and the Consumer Product Safety Act (1977). These regulations are for housing and consumer products.

OSHA regulations apply to worker protection during renovation and demolition activities.

Recommendation

If the property is to undergo renovation or demolition, OSHA regulations apply to abatement workers. Additionally, demolition debris shall need to be sampled and tested (per TCLP) to meet municipal disposal site acceptance criteria. Other than renovation or demolition considerations, no other regulations apply.

If the property is to undergo renovation or demolition, OSHA regulations apply to abatement workers. At a minimum OSHA requires lead awareness training for all workers who may be exposed to airborne lead concentrations above the OSHA Action Level (AL) of thirty micrograms per cubic meter (30 µg/m3) for an 8-hour time-weighted average (TWA). Additionally, demolition debris shall need to be sampled and tested (per TCLP) to meet municipal disposal site acceptance criteria. Other than demolition considerations, no other regulations apply.

7.3 LIGHT BALLAST CONTAINING PCBs

PCBs (polychlorinated biphenyl) are regulated under the Toxic Substances Control Act (TSCA), which obligates a property owner to clean up any spills occurring on their property. Fluorescent light fixtures are present at the project site. Fluorescent light fixtures manufactured prior to 1980 may contain ballasts with PCBs.

A total of eighty-six fluorescent light fixtures were observed on the project site. All ballasts associated with the eighty-six light fixtures are assumed to contain PCBs.

Recommendation

During removal, identify polychlorinated biphenyl (PCB) vs. non-PCB ballasts per label identification. Leaking PCB ballasts require special handling and disposal. All other ballasts meet the definition of a non-regulated Small Capacitor and therefore do not have specialized disposal requirements.

7.4 LAMPS CONTAINING MERCURY

A total of eighty-six fluorescent light fixtures were observed on the project site. All fluorescent light tubes associated with these fixtures are considered to be mercury-containing.

Recommendation

All fluorescent light lamps associated with these fixtures are considered to be mercury-containing. When lamps are taken out of service and intended to be discarded, they must be disposed of as regulated universal waste.

7.5 SUSPECT ARSENIC-CONTAINING MATERIALS/CANEC

Approximately 3,800 ft^2 of canec ceiling, and 60,000 ft^2 of canec walls were discovered during the investigation.

Recommendation

OSHA regulations apply to workers. All workers exposed to airborne arsenic concentrations greater than the AL shall require specialized training per OSHA regulations and may require respiratory protection if potential exposure may exceed the PEL.

The on-island landfill does not regulate the disposal of canec fiberboard materials which may contain arsenic. In accordance with HAR 11-261-4(b)(9), wood and wood products with arsenic are exempt from hazardous waste disposal regulations. However, the contractor shall contact the landfill and prepare the documentation necessary to ensure acceptance. Moreover, the canec material shall be segregated from other demolition debris and properly wrapped in polyethylene sheeting in order to meet the on-island landfill acceptance requirements.

Other than OSHA worker protection and disposal considerations, no other regulations apply.

7.6 HAZARDOUS MATERIALS

No significant quantities of hazardous materials were observed being stored on the project site.

Recommendation

As there were no significant quantities of hazardous materials observed, no recommendations are made.

8.0 CERTIFICATIONS

ENPRO Environmental (ENPRO) has completed a Hazardous Materials Survey at 153 West Ka'ahumanu Avenue, Kahului, Hawaii (project site). The survey followed the methods and procedures consistent with good commercial or customary practice designed to conform to acceptable industry standards. This report is exclusively for the use and benefit of the Client identified on the title page of the report and is not for the use or benefit of, nor may it be relied upon by, any other person or entity. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than the Client hereof without, in each case, the written consent of the undersigned or the Client.



Investigated By: Daisy Finch, Environmental Professional
HIASB Certification Number: 4262



Prepared By: Shawn Champion, Environmental Technition



Reviewed By: Randy Herold, President

9.0 APPENDICES

Photographs

Figures

Analytical Results

SITE PHOTOGRAPHS



Photo 1

153 West Ka’ahumanu Avenue, Kahului, Hawaii

Project Number: 1905-00082-HAZ

153 West Ka’ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019



Photo 2

Sample A-1a Canec Ceiling, SASA Room

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019

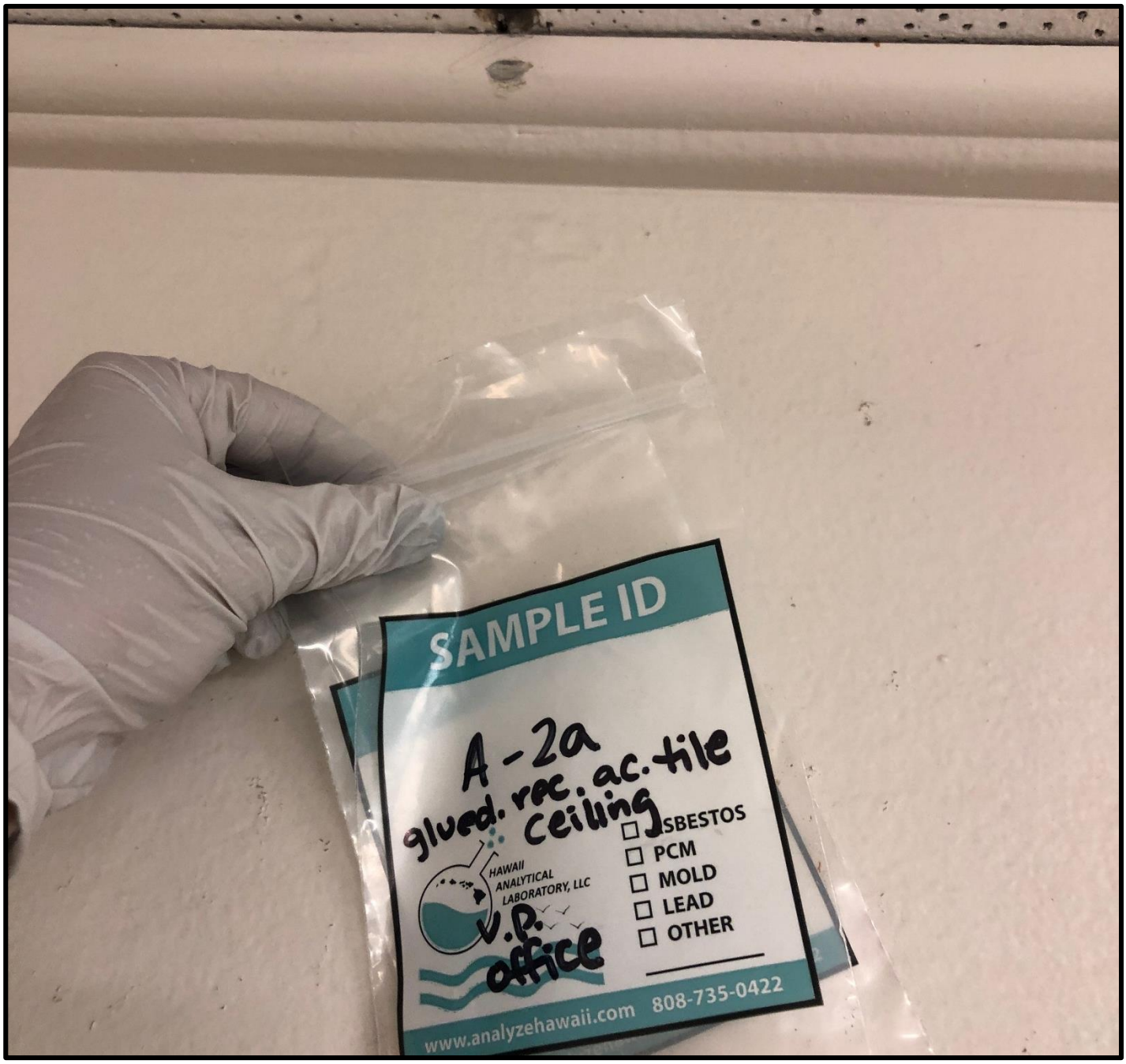

Photo 3

Sample A-2a Rectangle Glued Acoustic Ceiling Tile, Vice Principal Office

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019

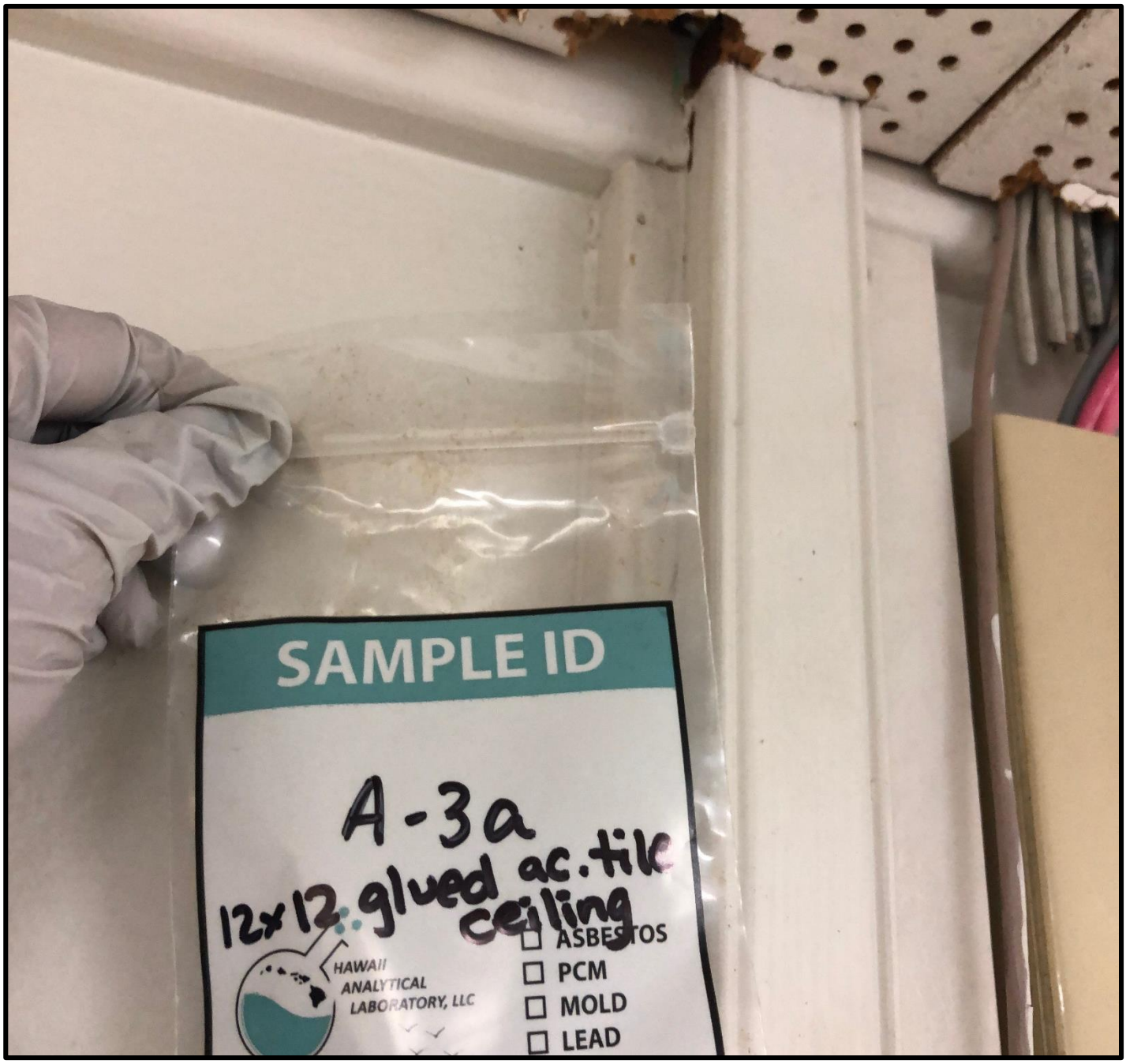

Photo 4

Sample A-3a 12”x12” Glued Acoustic Ceiling Tile, Account Clerk Room

Project Number: 1905-00082-HAZ

153 West Ka’ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019

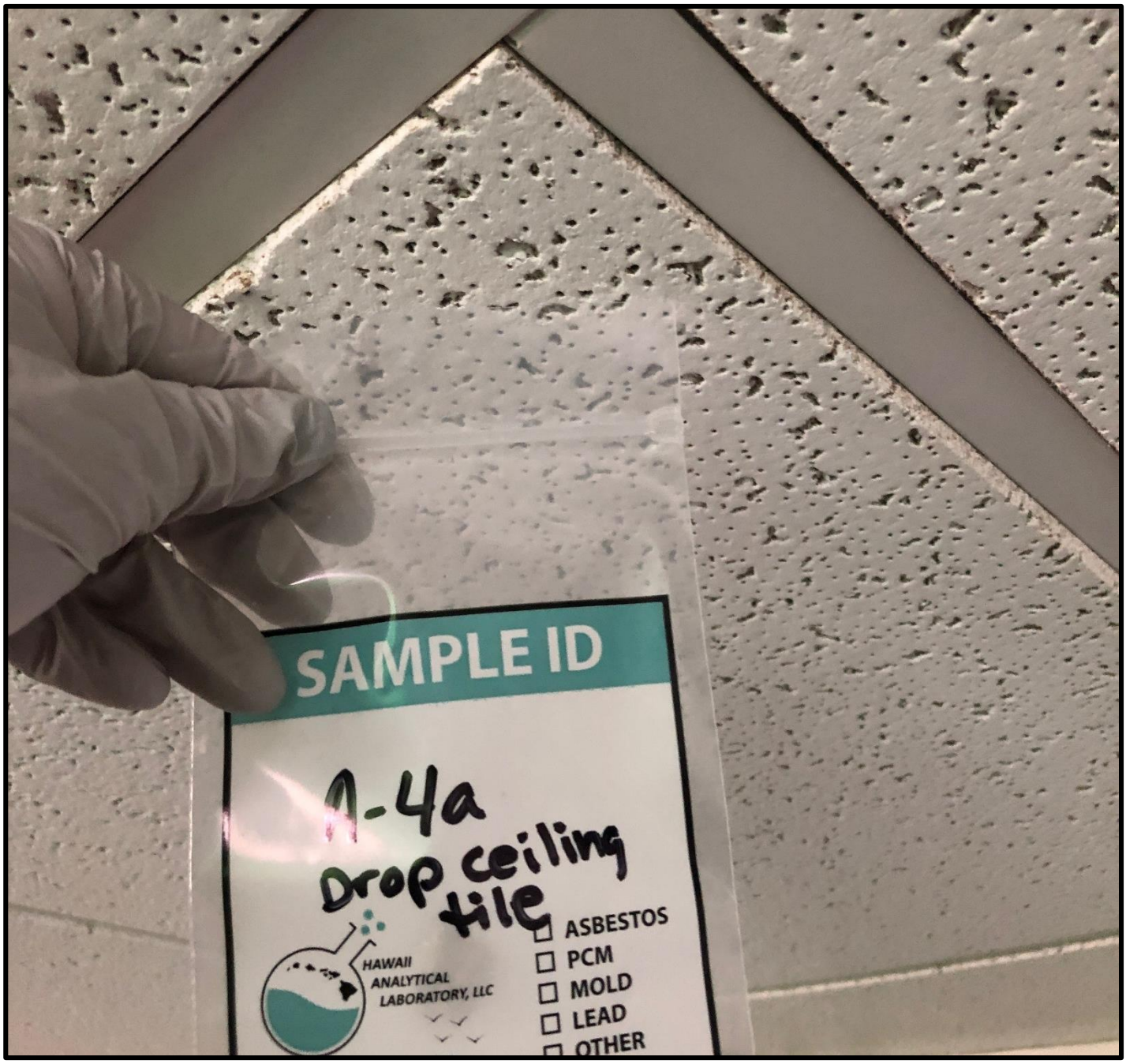

Photo 5

Sample A-4a Drop Ceiling Tile, Annex C



Photo 6

Sample A-5a Textured Ceiling Tile, Annex B



Photo 7

Sample A-6a Cove Base, Annex D

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019



Photo 8

Sample A-7a Caulking, Women's Restroom

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019



Photo 9

Sample A-8a Carpet/Mastic, SASA Room

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019

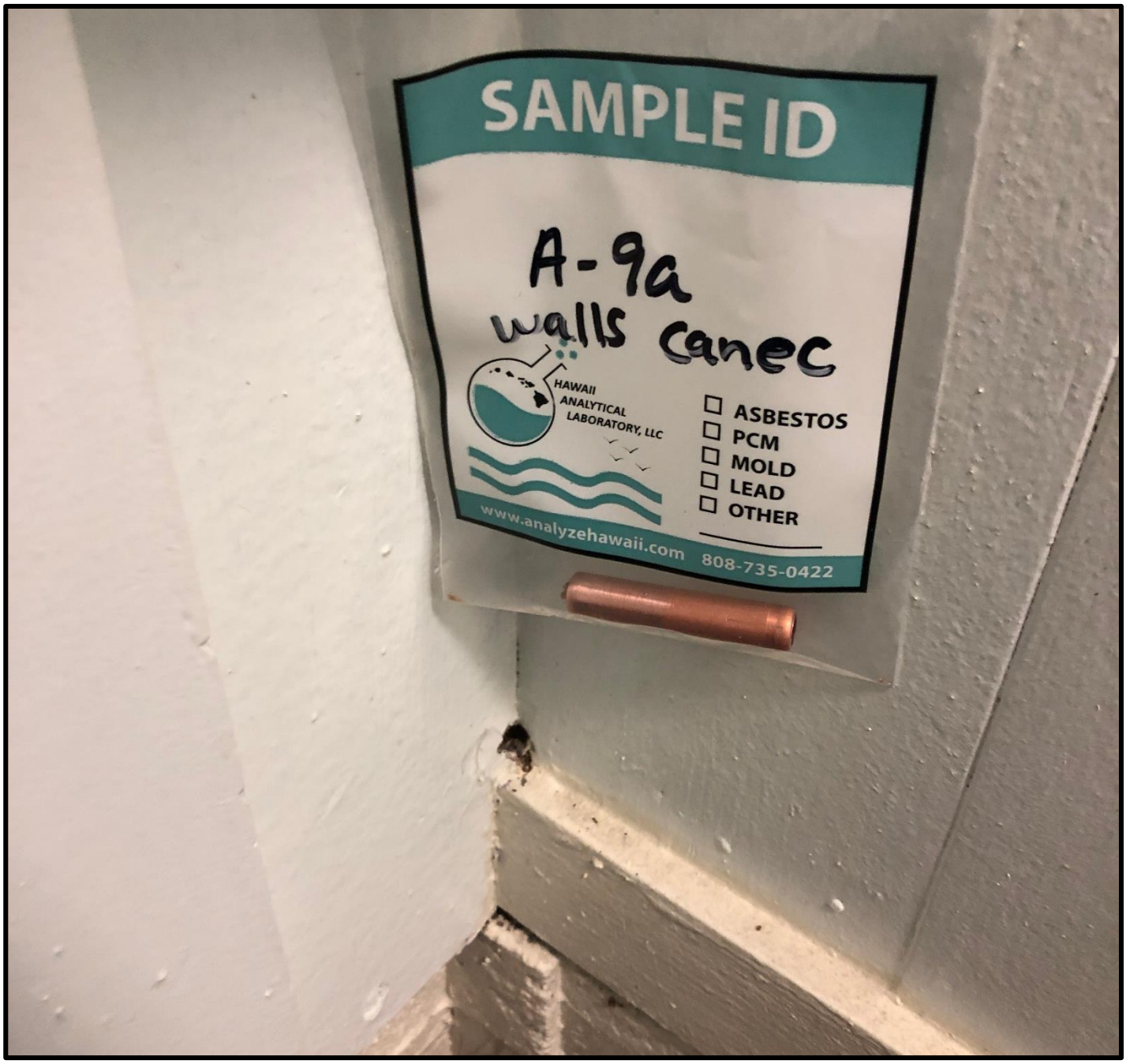

Photo 10

Sample A-9a Canec Walls, Annex A

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019

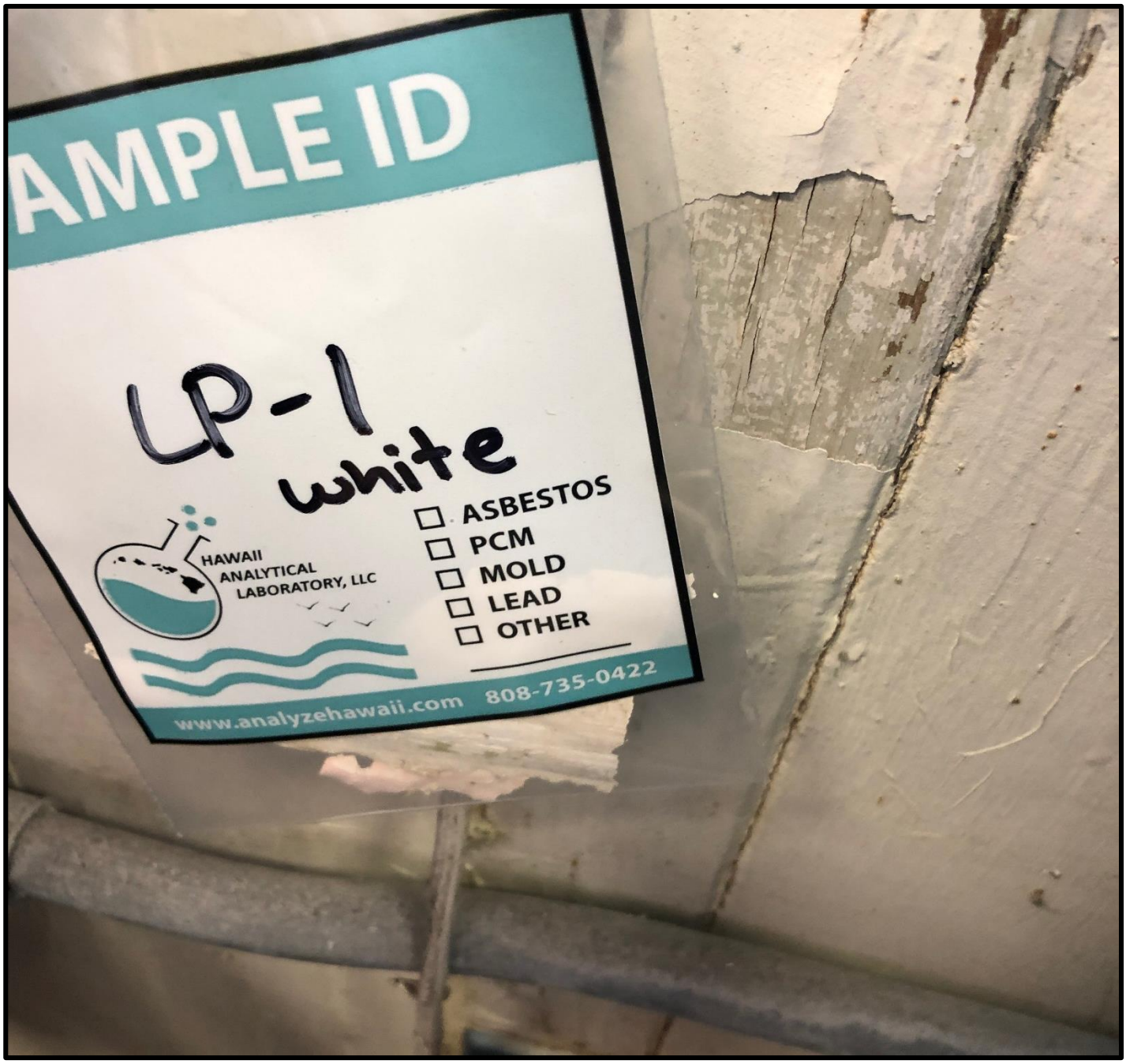

Photo 11

Paint Sample 1 White Interior Paint, Annex D



Photo 12

Paint Sample 2 Green Exterior Paint, Annex B

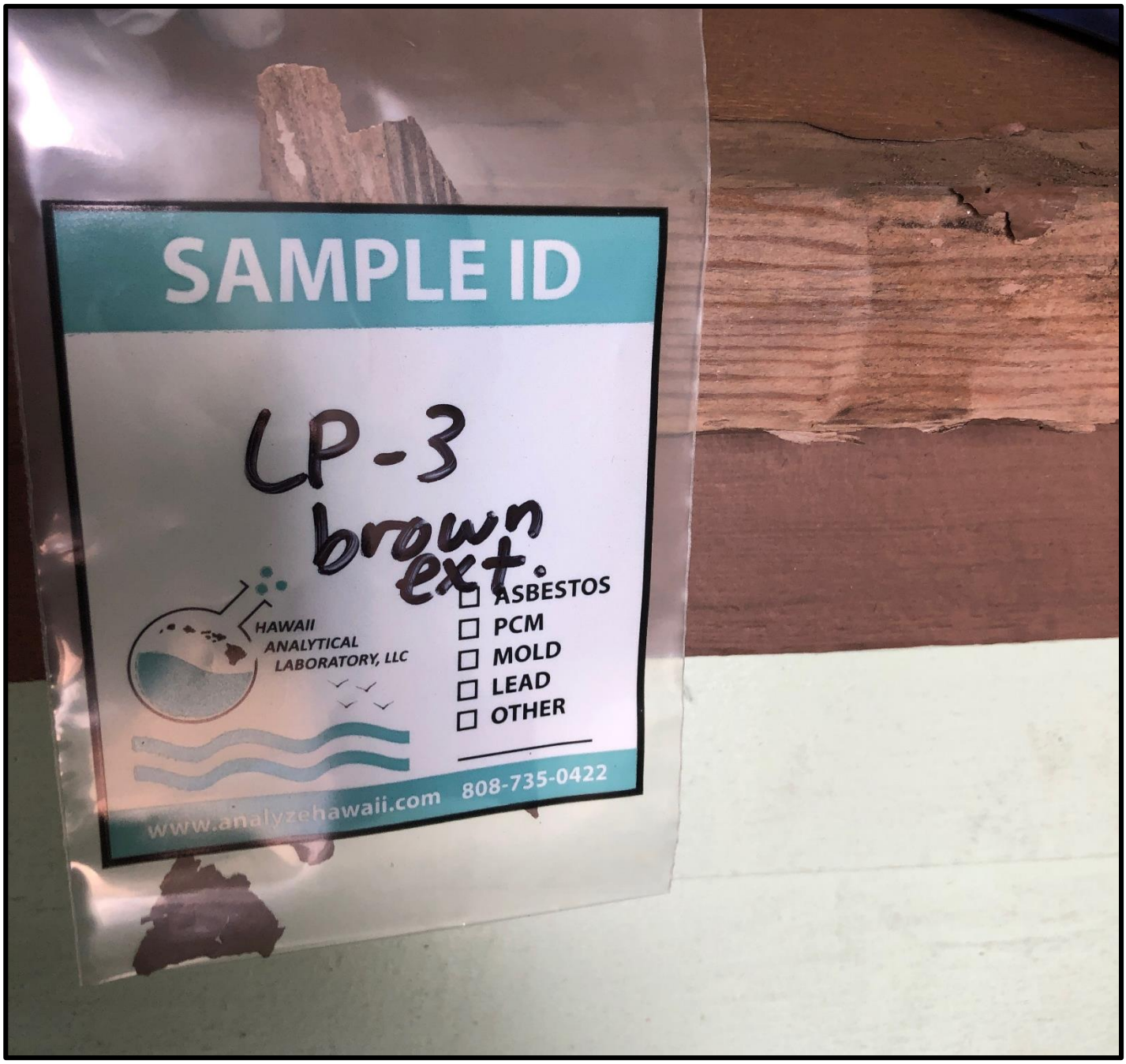

Photo 13

Paint Sample 3 Brown Exterior Paint, Annex B



Photo 14

Paint Sample 4 Purple Interior Paint, Principal Office

Project Number: 1905-00082-HAZ

153 West Ka'ahumanu Ave, Kahului, Hawaii

Date of Photos: May 9 2019



Photo 15

Paint Sample 5 Brown Interior Paint, The Learning Center Computer Lab

FIGURES

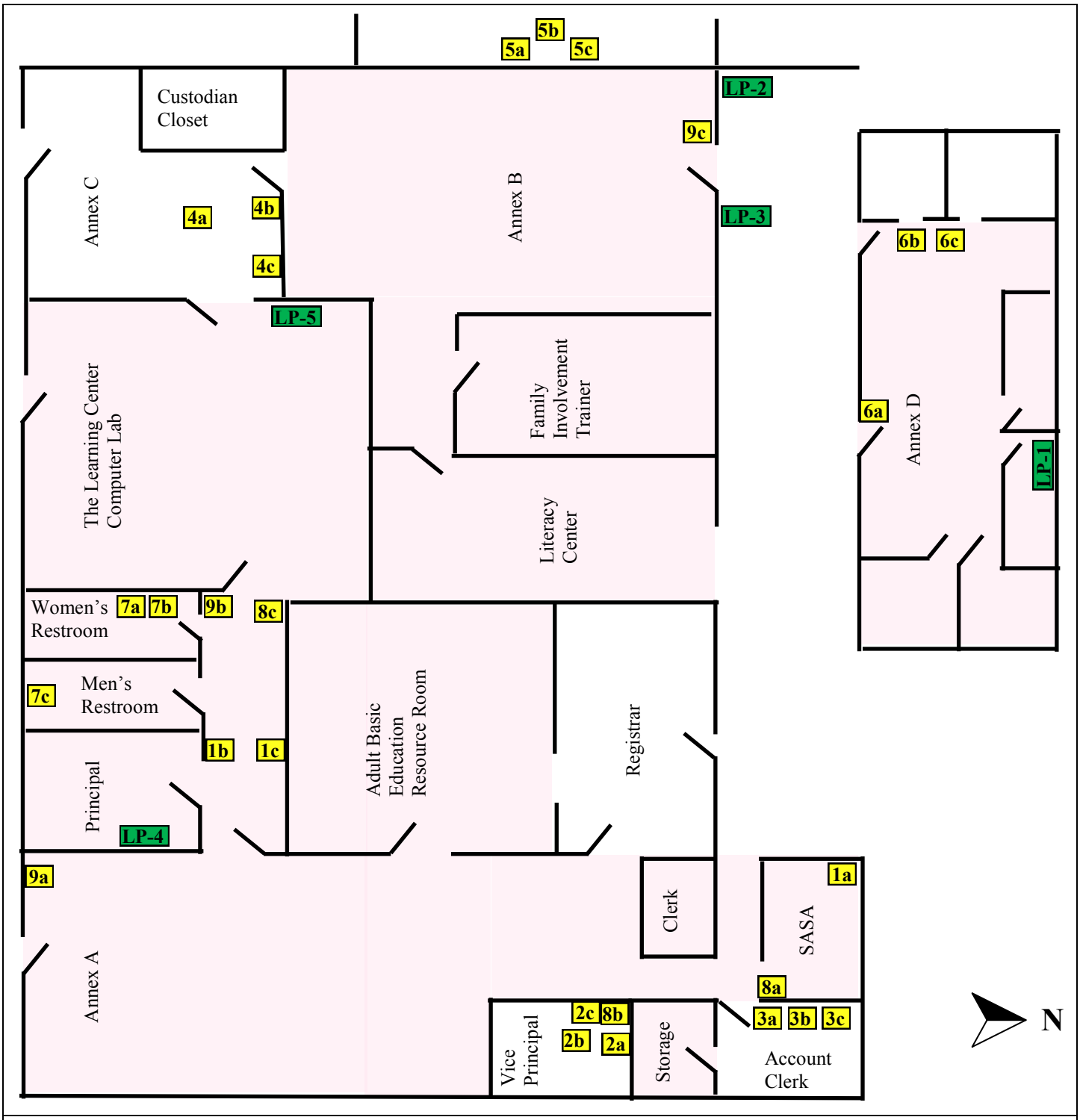

Figure 1

153 West Ka'ahumanu Avenue, Kahului, Hawaii

Standardized Floor Plan Graphics



Paint Sample

Asbestos Sample

LP-1 LP-2 LP-3 LP-4 LP-5

1 2 3 4 5 6 7 8 9

Canec Material Observed

Key

ANALYTICAL RESULTS

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-001 A-1a		Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0220059-002 A-1b		Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0220059-003 A-1c		Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0220059-004 A-2a		LAYER 1 Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
		LAYER 2 Ceiling Tile, White/ Gray	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	45% 35% 20%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-005 A-2b		LAYER 1 Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
		LAYER 2 Ceiling Tile, White/ Gray	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	50% 30% 20%
0220059-006 A-2c		LAYER 1 Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
		LAYER 2 Ceiling Tile, White/ Gray	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	45% 35% 20%
0220059-007 A-3a		Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
0220059-008 A-3b		LAYER 1 Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
		LAYER 2 Glue, Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Binder/Filler	<1% 99%

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Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-009 A-3c		LAYER 1 Ceiling Tile, White/ Tan	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
		LAYER 2 Glue, Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Binder/Filler	1% 99%
0220059-010 A-4a		Ceiling Tile, Beige/ Off White	No	None Detected	Cellulose Fiber Mineral Wool Carbonates Gypsum Quartz Perlite Binder/Filler	75% 5% 20%
0220059-011 A-4b		Ceiling Tile, Beige/ Off White	No	None Detected	Cellulose Fiber Mineral Wool Carbonates Gypsum Quartz Perlite Binder/Filler	75% 5% 20%
0220059-012 A-4c		Ceiling Tile, Beige/ Off White	No	None Detected	Cellulose Fiber Mineral Wool Carbonates Gypsum Quartz Perlite Binder/Filler	75% 5% 20%

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Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-013 A-5a		Ceiling Tile, Beige/ Off White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	55% 25% 20%
0220059-014 A-5b		Ceiling Tile, Beige/ Off White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	55% 25% 20%
0220059-015 A-5c		Ceiling Tile, Beige/ Off White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Gypsum Quartz Perlite Binder/Filler	60% 20% 20%
0220059-016 A-6a		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%

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Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0220059-017 A-6b		LAYER 1 Cove Base, Gray	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected		Carbonates Quartz Binder/Filler	100%
0220059-018 A-6c		LAYER 1 Cove Base, Gray	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected		Carbonates Quartz Binder/Filler	100%
0220059-019 A-7a		Caulking, White/ Off White	No	None Detected		Silicone	100%
0220059-020 A-7b		Caulking, White/ Off White	No	None Detected		Quartz Silicone	100%
0220059-021 A-7c		Caulking, White/ Off White	No	None Detected		Silicone	100%

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Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-022		LAYER 1	No	None Detected	Synthetic Fiber	85%
A-8a		Carpet, Beige/ Brown			Carbonates	
					Binder/Filler	15%
		LAYER 2	No	None Detected	Synthetic Fiber	1%
		Mastic, Yellow			Cellulose Fiber	<1%
					Carbonates	
					Quartz	
					Binder/Filler	98%
0220059-023		LAYER 1	No	None Detected	Synthetic Fiber	85%
A-8b		Carpet, Beige/ Brown			Carbonates	
					Binder/Filler	15%
		LAYER 2	No	None Detected	Synthetic Fiber	1%
		Mastic, Yellow			Cellulose Fiber	<1%
					Carbonates	
					Quartz	
					Gypsum	
					Binder/Filler	98%
0220059-024		LAYER 1	No	None Detected	Synthetic Fiber	85%
A-8c		Carpet, Purple			Carbonates	
					Binder/Filler	15%
		LAYER 2	No	None Detected	Cellulose Fiber	<1%
		Mastic, Yellow			Carbonates	
					Quartz	
					Binder/Filler	99%
0220059-025		Canec Walls, White/ Tan	No	None Detected	Cellulose Fiber	85%
A-9a					Carbonates	
					Gypsum	
					Quartz	
					Binder/Filler	15%

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Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0220059

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENPRO	Job# / P.O. #:	1902-00082-HAZ
Address:	151 HEKILI ST, STE 210	Date Received:	05/14/2019
	KAILUA, HI 96734	Date Analyzed:	05/17/2019
Collected:	05/09/2019	Date Reported:	05/17/2019
Project Name:	153 W. KA'AHUMANU AVE	EPA Method:	EPA 600/R-93/116
Address:	KAHULUI, MAUI	Submitted By:	DAISY FINCH
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0220059-026 A-9b		Canec Walls, White/ Tan	No	None Detected	Cellulose Fiber	85%
					Carbonates	
					Gypsum	
					Quartz	
					Binder/Filler	15%
0220059-027 A-9c		Canec Walls, White/ Tan	No	None Detected	Cellulose Fiber	85%
					Carbonates	
					Gypsum	
					Quartz	
					Binder/Filler	15%

Analyst - Octavio Gavarreteayestas

Signatory - Lab Director - Kurt Kettler

Distinctly stratified, easily separable layers of samples are analyzed as subsamples of the whole and are reported separately for each discernible layer. All analyses are derived from calibrated visual estimate and measured in area percent unless otherwise noted. The report applies to the standards or procedures identified and to the sample(s) tested. The test results are not necessarily indicated or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. These reports are for the exclusive use of the addressed client and that they will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. The report shall not be reproduced except in full, without written approval by our laboratory. The samples not destroyed in testing are retained a maximum of thirty days. The laboratory measurement of uncertainty for the test method is approximately less than 1 by area percent. Accredited by the National Institute of Standards and Technology, Voluntary Laboratory Accreditation Program for selected test method for asbestos. The accreditation or any reports generated by this laboratory in no way constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Polarized Light Microscopy may not be consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.

EMC LABS, INC.

9830 South 51st Street, Suite B-109 / PHOENIX, ARIZONA 85044 / 480-940-5294 or 800-362-3373 / FAX 480-893-1726
emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES

EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L75020	**DATE RECEIVED:**	05/14/19
CLIENT:	ENPRO Environmental	**REPORT DATE:**	05/17/19
		DATE OF ANALYSIS:	05/15/19
CLIENT ADDRESS:	151 Kekili Street, Suite 210 Kailua, HI 96734	**P.O. NO.:**	
PROJECT NAME:	153 W. Ka'ahumanu Ave. Kahului Maui	**PROJECT NO.:**	1902-00082-HAZ

EMC # L75020-	SAMPLE DATE /19	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
1	05/09	LP-1	White Interior Paint	0.010	0.047
2	05/09	LP-2	Green Exterior Paint	0.10	1.30^
3	05/09	LP-3	Brown Exterior Paint	0.010	0.448
4	05/09	LP-4	Purple Interior Paint	0.010	BRL
5	05/09	LP-5	Brown Interior Paint	0.010	0.020

^ = Dilution Factor Changed ***** = Excessive Substrate May Bias Sample Results **BRL** = Below Reportable Limits **#** = Very Small Amount Of Sample Submitted, May Affect Result

This report applies to the standards or procedures identified and to the samples tested only. The test results are not necessarily indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. Unless otherwise noted, all quality control analyses for the samples noted above were within acceptable limits.

Where it is noted that a sample with excessive substrate was submitted for laboratory analysis, such analysis may be biased. The lead content of such sample may, in actuality, be greater than reported. EMC makes no warranty, express or implied, as to the accuracy of the analysis of samples noted to have been submitted with excessive substrate. Resampling is recommended in such situations to verify original laboratory results.

These reports are for the exclusive use of the addressed client and are rendered upon the condition that they will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. Samples not destroyed in testing are retained a maximum of sixty (60) days.

ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

Rev. 11/30/08

Page 1 of 3

CHAIN OF CUSTODY

EMC Laboratories
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 22[illegible]0059 (2)
TAT: 3day
Rec'd: MAY 14 P.M.

COMPANY NAME: ENPRO Environmental
151 Hekili Street, Suite 210
Kailua, HI 96734
CONTACT: Daisy Finch
Phone/Fax: 866-262-0909 / 808-268-2124
Email: dfinch@enproenvironmental.com

BILL TO: (if different Location)
info@enproenvironmental.com

Now Accepting: VISA - MASTERCARD

Price Quoted: $ _____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [4-Day] [5-Day] [6-10 Day]
   - Standard
   **** Prior to confirmation of turnaround time is required.
   **** Additional charges for rush analysis (please call marketing department for pricing details)
   **** Laboratory analysis may be subject to delay if credit terms are not met.
2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] [Return samples to me at my expense]
   (if you do not indicate preference, EMC will dispose of samples 60 days from analysis)

(27)

4. Project Name: 153 W. Ka'ahumanu Ave. Kahului Maui
   P.O. Number: _____ Project Number: 1902-00082-HAZ

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION / MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
1	A-1a	5/9/19	canec ceiling	Y N			
2	b		1	Y N			
3	c		1	Y N			
4	A-2a		Rectangle Accoustic tile ceiling	Y N			
5	b		1	Y N			
6	c		1	Y N			
7	A-3a		12x12 glued ac. tile ceiling	Y N			
8	b		1	Y N			
9	c		1	Y N			
10	A-4a		Drop ceiling tile	Y N			
11	b		1	Y N			
12	c		1	Y N			
13	A-5a		Textured ceiling tile	Y N			
14	b		1	Y N			
15	c		1	Y N			
				Y N			

SPECIAL INSTRUCTIONS: Stop at first positive homogeneous layer per sample

Sample Collector: (Print) Daisy Finch (Signature) D Finch

Relinquished by:	D. Finch	Date/Time: 5/9/19	Received by:	Fed Ex	Date/Time: 5/9/19
Relinquished by:		Date/Time: 4pm	Received by:	Diana Federico	Date/Time: 5/14/19 4pm
Relinquished by:	Diana Federico	Date/Time: 5/14/19	Received by:		Date/Time: 5/14/19

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

CHAIN OF CUSTODY

EMC Laboratories
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: 220059
Rec'd:

COMPANY NAME: ENPRO Environmental
151 Hekili Street, Suite 210
Kailua, HI 96734
CONTACT: Daisy Finch
Phone/Fax: 866-262-0909 / 808-268-2124
Email: dfinch@enproenvironmental.com

BILL TO: (if different Location)
info@enproenvironmental.com

Now Accepting: VISA - MASTERCARD

Price Quoted: $ _____ / Sample $ _____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [4-Day] [5-Day] [6-10 Day]
   Standard
   **** **Prior** to confirmation of turnaround time is **required**.
   **** Additional charges for rush analysis (please call marketing department for pricing details)
   **** Laboratory analysis may be subject to delay if credit terms are not met. *
2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
   (if you do not indicate preference, EMC will dispose of samples **60 days** from analysis)

4. Project Name: 153 W. Ka'ahumanu Ave. Kahului Maui
   P.O. Number: _____ Project Number: 1902-00082-HAZ

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION / MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
16	A-6a	5/9/19	cove base	Y N			
17	1 b		1	Y N			
18	1 c		1	Y N			
19	A-7 a		caulking (bathroom)	Y N			
20	1 b		1	Y N			
21	1 c		1	Y N			
22	A-8 a		carpet/mastic	Y N			
23	1 b		1	Y N			
24	1 c		1	Y N			
25	A-9 a		canec walls	Y N			
26	1 b		1	Y N			
27	1 c		1	Y N			
28 *	LP-1		White Interior Paint	Y N			
29 *	LP-2		Green Exterior "	Y N			
30 *	LP-3		Brown Exterior "	Y N			
31 *	LP-4		Purple Interior "	Y N			

SPECIAL INSTRUCTIONS: Stop at first positive homogeneous layer per sample

Sample Collector: (Print) Daisy Finch (Signature) DFinch

Relinquished by:	D. Finch	Date/Time: 5/9/19	Received by:	Fed Ex	Date/Time: 5/9/19
Relinquished by:		Date/Time: 4pm	Received by:	Diana Federico	Date/Time: 5/14/19 4pm
Relinquished by:	Diana Federico	Date/Time: 5/14/19	Received by:		Date/Time: 17:49

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

CHAIN OF CUSTODY

EMC Laboratories
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: L75020
TAT: 3day
Rec'd: 5/14/19

COMPANY NAME: ENPRO Environmental
151 Hekili Street, Suite 210
Kailua, HI 96734
CONTACT: Daisy Finch
Phone/Fax: 866-262-0909 / 808-268-2124
Email: dfinch@enproenvironmental.com

BILL TO: (if different Location)
info@enproenvironmental.com

Now Accepting: VISA - MASTERCARD

Price Quoted: $ _____ / Sample $ _____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [4-Day] [5-Day] [6-10 Day]

Standard

**** Prior to confirmation of turnaround time is required.
**** Additional charges for rush analysis (please call marketing department for pricing details)
**** Laboratory analysis may be subject to delay if credit terms are not met. *

2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
(if you do not indicate preference, EMC will dispose of samples 60 days from analysis)

4. Project Name: 153 W. Ka'ahumanu Ave. Kahului Maui
P.O. Number: _____ Project Number: 1902-00082-HAZ

	EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION / MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
	16	A-6a	5/9/19	cove base	Y N			
	17	b			Y N			
	18	c			Y N			
	19	A-7a		caulking (bathroom)	Y N			
	20	b			Y N			
	21	c			Y N			
	22	A-8a		carpet/mastic	Y N			
	23	b			Y N			
	24	c			Y N			
	25	A-9a		canec walls	Y N			
	26	b			Y N			
	27	c			Y N			
1	28*	LP-1		White Interior Paint	Y N			
2	29*	LP-2		Green Exterior "	Y N			
3	30*	LP-3		Brown Exterior "	Y N			
4	31*	LP-4		Purple Interior "	Y N			

SPECIAL INSTRUCTIONS: Stop at first positive homogeneous layer per sample

Sample Collector: (Print) Daisy Finch (Signature) D Finch

Relinquished by: D. Finch Date/Time: 5/9/19 Received by: Fed Ex Date/Time: 5/9/19
Relinquished by: Date/Time: 4pm Received by: D Jorre Date/Time: 5/14/19
Relinquished by: D Jorre Date/Time: 5/14/19 Received by: Date/Time: 5/14/19

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Page 3 of 3

CHAIN OF CUSTODY

EMC Laboratories
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: L75020
Rec'd:

COMPANY NAME: ENPRO Environmental
151 Hekili Street, Suite 210
Kailua, HI 96734
CONTACT: Daisy Finch
Phone/Fax: 866-262-0909 / 808-268-2124
Email: dfinch@enproenvironmental.com

BILL TO: (if different Location)
info@enproenvironmental.com

Now Accepting: VISA - MASTERCARD

Price Quoted: $ _____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [4-Day] [5-Day] [6-10 Day]
Standard
**** Prior to confirmation of turnaround time is required.
**** Additional charges for rush analysis (please call marketing department for pricing details)
**** Laboratory analysis may be subject to delay if credit terms are not met.
2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
(if you do not indicate preference, EMC will dispose of samples 60 days from analysis)

4. Project Name: 153 W. Ka'ahumanu Ave. Kahului Maui
P.O. Number: _____ Project Number: 1902-00082-HAZ

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION / MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
32	LP-5	5/9/19	Brown Interior Paint	Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			

5

SPECIAL INSTRUCTIONS: Stop at first positive homogeneous layer per sample
Sample Collector: (Print) Daisy Finch (Signature)

Relinquished by: D. Finch Date/Time: 5/9/19 Received by: Fed Ex Date/Time: 5/9/19
Relinquished by: _____ Date/Time: 4pm Received by: _____ Date/Time: 5/14/19
Relinquished by: _____ Date/Time: 5/14/19 Received by: _____ Date/Time: 5/14/19

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.



Toll Free Phone 866.262.0909 • Toll Free Fax 866.262.4440
www.enproenvironmental.com

Appendix H

Limited Asbestos, TCPL, and Lead-Based Paint Sampling and Analysis

January 21, 2020

Mr. Jeffrey H. Overton
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96817

RE: Limited Asbestos, TCLP, and Lead-Based Paint Sampling and Analysis
153 West Ka'ahumanu Avenue
Kahului, Hawaii
ENPRO Project Number: 1902-00082-HAZ

Dear Mr. Overton,

This letter is in regard to the limited asbestos, Toxicity Characteristic Leaching Procedure (TCLP) and lead-based paint sampling and analysis, conducted on December 27, 2019 at the above referenced property. The purpose of this project was to collect and analyze samples of certain suspect asbestos containing materials (ACM) from the roof of the former education building as well as the collapsed structure adjacent to the former education building, collect a representative sample of building materials for TCLP lead analysis from the collapsed structure, and collect representative paint chip samples for total lead analysis from the collapsed structure. Sampling focused on materials which may be disturbed during demolition activities.

Asbestos

Specific materials for asbestos sampling and analysis included:

- Roofing materials with associated layers from the former education building and collapsed structure
- Canec board from the collapsed structure

Three samples of each suspect material were collected by a State of Hawaii Department of Health (DOH) certified asbestos inspector (HIASB certification # 4262) and submitted to an independent laboratory for asbestos analysis.

The suspect asbestos samples were analyzed by polarized light microscopy using EPA Method 600/M4-82-020 by Hawaii Analytical Laboratory, LLC, a NVLAP (National Voluntary Laboratory Accreditation Program) accredited laboratory. The results for the samples are listed in the following table:

Table 1

Asbestos Sampling Locations and Analytical Results

SAMPLE NUMBER	LOCATION	MATERIAL	ASBESTOS DETECTED
A-1 (a, b, c)	Asphalt Roof of Former Education Building	Black felt Black mastic material Black shingle Black shingle (1) Black shingle (2)	No No No No No
A-2 (a, b, c)	Thermoplastic Polyolefin Roof of Former Education Building	Off-white/black membrane material Brown fibrous layer Yellow foam	No No No
A-3 (a*, b*, c)	**Roof of Collapsed Structure**	Black roofing tar material Black shingle **Black mastic**	No No **Yes**
A-4 (a, b, c)	Collapsed Structure	White/brown canec board	No

Based on the analytical results, the following material from the roof of the collapsed structure contained asbestos:

- Black mastic, 4% chrysotile

National Emission Standards for Hazardous Air Pollutants (NESHAP) states that if asbestos is identified in amounts less than 10%, the owner or operator of the building must elect to assume the amount to be greater than 1% and treat the material as asbestos-containing material or request verification of the amount by point counting. All sampled materials containing <1% asbestos must be further analyzed via point count or assumed and handled as ACM.

To the extent feasible, the roofing material of the collapsed structure should be segregated and disposed as asbestos containing material. Due to the condition of the structure, this work would be expected to require a variance from the DOH. We recommend that an Asbestos Abatement Work Plan be prepared and submitted to the DOH for review, along with a request for a variance to perform this work.

Workers disturbing any quantity of ACM must have minimum United States Occupational Safety and Health Administration (OSHA) asbestos awareness training as specific to the class of disturbance work. A ten-day notification to the DOH is required for the removal of 160 square feet or 260 linear feet or more of Regulated ACM, however a courtesy notification is recommended for smaller quantities of ACM.

TCLP

A composite sample of the components of the waste to be generated during demolition of the collapsed structure adjacent to the former educational building was collected. The sample was assembled to represent each component in proportion to its contribution to the total volume of the waste. The selected increments or each waste material were combined as one composite sample for TCLP lead analysis using EPA Method 1311m/7000Bm. The result of the sample is listed in the table on the following page.

Table 2

Building Materials Sampling Locations and Analytical Results
TCLP- Lead

SAMPLE NUMBER	LOCATION	MATERIAL	TCLP - LEAD (mg/L)
TCLP-1	Collapsed structure adjacent to the former educational building	Bulk	2.4

The composite sample collected for TCLP testing for leachable lead indicated the presence of 2.4 mg/L of leachable lead, which is below the EPA's regulatory level of 5 mg/L.

Based on the result of the TCLP sampling and analysis, there are no special handling or disposal requirements.

Lead Paint

A total of two paint chip samples were collected from the collapsed structure adjacent to the former educational building. The samples were analyzed for total lead by flame atomic absorption spectrophotometry (FAAS) using the National Institute for Occupational Safety and Health (NIOSH) Method 7082m. The results of the samples are listed in the following table:

Table 3

Building Materials Sampling Locations and Analytical Results
Lead-Based Paint

SAMPLE NUMBER	LOCATION	MATERIAL	LEAD (mg/kg)
LP-1	Collapsed structure adjacent to the former educational building, exterior	Paint-Green	6,100
LP-2	Collapsed structure adjacent to the former educational building, exterior	Paint-Brown	19,000

Based on the analytical results, sample LP-1 and sample LP-2 were determined to be lead-based paint. Lead-based paint is classified as any paint containing 5,000 milligrams per kilogram of lead or greater.

EPA regulations effective April 2010 require that specialized lead-based paint training is required for all renovators/painters who disturb greater than six square feet of interior painted surfaces per room or greater than twenty square feet of exterior painted surfaces in target housing and child-occupied facilities constructed prior to 1978.

Additional regulations specifically addressing lead-based paint include Housing and Urban Development (HUD) (1995) guidelines and the Consumer Product Safety Act (1977). These regulations are for housing and consumer products.

If the property is to undergo renovation or demolition, OSHA regulations apply to abatement workers. At a minimum OSHA requires lead awareness training for all workers who may be exposed to airborne lead concentrations above the OSHA Action Level (AL) of thirty micrograms per cubic meter (30 µg/m3) for an 8-hour time-weighted average (TWA). Additionally, demolition must be sampled and tested (per TCLP) to meet municipal disposal site acceptance criteria (see prior section). Following demolition and removal of the building we recommend sampling soil beneath the building footprint for lead and organochlorine termiticides.

It has been a pleasure to be of service to you. Please contact me at 748-2116 if you have any questions regarding this project.

Sincerely,

S. Champion

Shawn Champion
Environmental Professional
HIASB Certification Number 4790

Enclosures: Laboratory Reports
Photographs

Laboratory Report

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Friday, January 3, 2020

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

Bulk Asbestos Determination

Sample No.	Your Sample Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
201965729	**A-1a Asphalt roof adult school NE**		NONE DETECTED		Cellulose / wood fiber (undulose)	**20**	Tar	1/2/2020
Layer	Black felt							
Comments								
201965729	**A-1a Asphalt roof adult school NE**		NONE DETECTED		None detected		Tar	1/2/2020
Layer	Black mastic material							
Comments								
201965729	**A-1a Asphalt roof adult school NE**		NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle							
Comments								
201965730	**A-1b Asphalt roof adult school SW**		NONE DETECTED		Cellulose / wood fiber (undulose)	**20**	Tar	1/2/2020
Layer	Black felt							
Comments								
201965730	**A-1b Asphalt roof adult school SW**		NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle (1)							
Comments								
201965730	**A-1b Asphalt roof adult school SW**		NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle (2)							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 2 - 20190622

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

Bulk Asbestos Determination

Sample No.	Your Sample Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
201965731	**A-1c Asphalt roof adult school SE**		NONE DETECTED		Cellulose / wood fiber (undulose)	**20**	Tar	1/2/2020
Layer	Black felt							
Comments								
201965731	**A-1c Asphalt roof adult school SE**		NONE DETECTED		None detected		Tar	1/2/2020
Layer	Black mastic material							
Comments								
201965731	**A-1c Asphalt roof adult school SE**		NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle							
Comments								
201965732	**A-2a TPO roof adult school SW**		NONE DETECTED		Synthetic fiber (undulose)	**2**	Binder + other	1/2/2020
Layer	Off-white/black membrane material							
Comments								
201965733	**A-2b TPO roof adult school S**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**85**	Binder	1/2/2020
Layer	Brown fibrous layer							
Comments								
201965733	**A-2b TPO roof adult school S**		NONE DETECTED		Synthetic fiber (undulose)	**5**	Binder + other	1/2/2020
Layer	Off-white/black membrane material							
Comments								
201965733	**A-2b TPO roof adult school S**		NONE DETECTED		None detected		Foam	1/2/2020
Layer	Yellow foam							
Comments								
201965734	**A-2c TPO roof adult school SE**		NONE DETECTED		Synthetic fiber (undulose)	**2**	Binder + other	1/2/2020
Layer	Off-white/black membrane material							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 2 - 20190622

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

Bulk Asbestos Determination

Sample No.	Your Sample Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
201965735	**A-3a Roofing collapsed building**	**N**	NONE DETECTED		Cellulose (undulose)	**20**	Tar	1/2/2020
Layer	Black roofing tar material							
Comments								
201965735	**A-3a Roofing collapsed building**	**N**	NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle							
Comments								
201965736	**A-3b Roofing collapsed building**	**E**	NONE DETECTED		Cellulose (undulose)	**20**	Tar	1/2/2020
Layer	Black roofing tar material							
Comments								
201965736	**A-3b Roofing collapsed building**	**E**	NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle							
Comments								
201965737	**A-3c Roofing collapsed building**	**S** **Yes**	Chrysotile	**4**	None detected		Tar + other	1/2/2020
Layer	Black mastic							
Comments								
201965737	**A-3c Roofing collapsed building**	**S**	NONE DETECTED		Cellulose (undulose)	**20**	Tar	1/2/2020
Layer	Black roofing tar material							
Comments								
201965737	**A-3c Roofing collapsed building**	**S**	NONE DETECTED		Fibrous glass (amorphous)	**10**	Tar + aggregate	1/2/2020
Layer	Black shingle							
Comments								
201965738	**A-4a Canec collapsed building**	**N**	NONE DETECTED		Cellulose / wood fiber (undulose)	**85**	Binder + paint	1/2/2020
Layer	White/brown canec board							
Comments								

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

Bulk Asbestos Determination

Sample No.	Your Sample Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
201965739	**A-4b Canec collapsed building E**		NONE DETECTED		Cellulose / wood fiber (undulose)	**85**	Binder + paint	1/2/2020
Layer	White/brown canec board							
Comments								
201965740	**A-4c Canec collapsed building S**		NONE DETECTED		Cellulose / wood fiber (undulose)	**85**	Binder + paint	1/2/2020
Layer	White/brown canec board							
Comments								

General Comments
The bulk sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures outlined in the United States Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020, Dec. 1982) and / or "Method for Determination of Asbestos in bulk Building Materials" (EPA-600/R-93-116, July 1993). The analysis of each bulk sample relates only to the material examined, and may or may not represent the overall composition of its original source. Floor tile and other resinously bound materials, when analyzed by the EPA methods referenced above may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. Alternative methods of identification, including Transmission Electron Microscopy (TEM) may or may not be applicable. We utilize calibrated visual area estimation on a routine basis and do not conduct point counting unless specifically requested to do so. Estimated error for the visual determinations presented are 50% relative (1 to 5%); 25% relative (6 to 25%) and 20% (>26% v/v). We will not separate layers which in our opinion are not readily discernable. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Governement. Unless otherwise indicated, the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
None Detected = asbestos was not observed in the sample. If trace amount of asbestos was detected below our quantifiable limits of 1.0%, <1% (trace) would be indicated and the asbestos type listed. Point counting, where applicable, are recommended to improve accuracy.

Jennifer Hsu Liao
Laboratory Manager

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Friday, January 3, 2020

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

Lead, total (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Sample No.	Your Sample Description	Results	Units	Date Analyzed
201965741	**LP-1 Green paint collapsed building**	6100	mg/kg	12/30/2019
Comments				
201965742	**LP-2 Brown paint collapsed building**	19000	mg/kg	12/30/2019
Comments				

TCLP Lead

EPA Method: 1311m/7000Bm

Sample No.	Your Sample Description	Results	Units	Date Analyzed
201965743	**TCLP Collapsed building**	2.4	mg/L	1/3/2020
Comments				

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808) 262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 201911063
Date Submitted: 12/30/2019
Your Project: 1902-00082-HAZ, 153 W.Kaahumanu Ave Kahului, 12/27/19

All Quality Control data are acceptable unless otherwise noted.
MRL for lead air is 5ug.
MRL for lead wipe is 10ug.
MRL for lead paint or soil is 40 mg/kg for a 0.25g sample.

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. Modifications to this methodology may have been made based upon the analyst's professional judgment and / or sample matrix effects encountered. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document profiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
# = Analytical methods marked with an "#" are not within our AIHA LAP, LLC Scope of Accreditation.
MRL = Method Reporting Limit.

Jennifer Hsu Liao
Laboratory Manager

Hawaii Analytical Laboratory, LLC
3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	ENPRO Environmental
Company	ENPRO Environmental
Address*	151Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	262-0909
Report results to	info@enproenvironmental.com
via email or fax	shawnpchampion@gmail.com 1/2/20
or verbal:	to office

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:
- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: 153 W. Ka'ahumanu Ave Kahului

Client Project No.: 1902-00082-HAZ

Sampled By: D. Finch

Comments / Special Instructions: 1/20/20 Shawn asked to add his personal email re

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER, per sample

LAB USE ONLY
Lab Report No.: 201911063

Sample Identification* (Maximum of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
A-1a asphalt roof adult school	NE 12/27/19	BULK		PLM		201965729
A-1b "	SW					201965730
A-1C "	SE					201965731
A-2a TPO roof adult school	SW					201965732
A-2b "	S					201965733
A-2C "	SE					201965734
A-3a roofing collapsed building	N					201965735
A-3b "	E					201965736
A-3C "	S					201965737
A-4a canec collapsed building	N					201965738
A-4b "	E					201965739
A-4C "	S					201965740

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
D Finch D Finch	12-27-19 10am	Fed EX Stephanie Iha	12-27-19 10 am

Sample description can be paint chips, concrete, specific sample collection location, etc
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
*Required fields, failure to complete these fields may result in a delay in your samples being processed.
Rev 20140701

12-30-19P01:04 RCVD

3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	ENPRO Environmental
Company	ENPRO Environmental
Address*	151Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	262-0909
Report results to	info@enproenvironmental.com
via email or fax or verbal	to office

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:
- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: 153 W. Ka'ahumanu Ave Kahului | Client Project No.: 1902-00082-HAZ | Sampled By: D. Finch

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER, per sample

LAB USE ONLY
Lab Report No.: 201911063

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
LP-1 greenpaint collapsed building	12/27/19	PAINT		LEAD		201965741
LP-2 brown paint "	"	"		"		201965742
TCLP collapsed buildings	"	BULK		TCLP LEAD		201965743

last entry DF

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
DFinch DFinch	12-27-19 10AM	Fed Ex Stephanie Iha	12-27-19 10 AM

Sample description can be paint chips, concrete, specific sample collection location, etc
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
*Required fields, failure to complete these fields may result in a delay in your samples being processed.
Rev 20140701

12-30-19P01:04 RCVD

PHOTOGRAPHS



Photo 1

153 West Kaahumanu Avenue, Former Education Building, Facing Northeast

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 2

153 West Kaahumanu Avenue, Collapsed Building, Facing East

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 3

Asbestos Sample A1-a, Asphalt Roof, Northeast, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 4

Asbestos Sample A1-b, Asphalt Roof, Southwest, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 5

Asbestos Sample A1-c, Asphalt Roof, Southeast, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 6

Asbestos Sample A2-a, Thermoplastic Polyolefin Roof, Southwest, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 7

Asbestos Sample A2-b, Thermoplastic Polyolefin Roof, South, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 8

Asbestos Sample A2-c, Thermoplastic Polyolefin Roof, Southeast, Former Education Center Building

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 9

Asbestos Sample A3-a, Asphalt Roof, North, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 10

Asbestos Sample A3-b, Asphalt Roof, East, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 11

Asbestos Sample A3-c, Asphalt Roof, South, Collapsed Structure



Photo 12

Asbestos Sample A4-a, Canec Board, North, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 13

Asbestos Sample A4-b, Canec Board, East, Collapsed Structure



Photo 14

Asbestos Sample A4-c, Canec Board, South, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 15

Lead Paint Chip Sample L-1, Green Paint, Exterior, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019

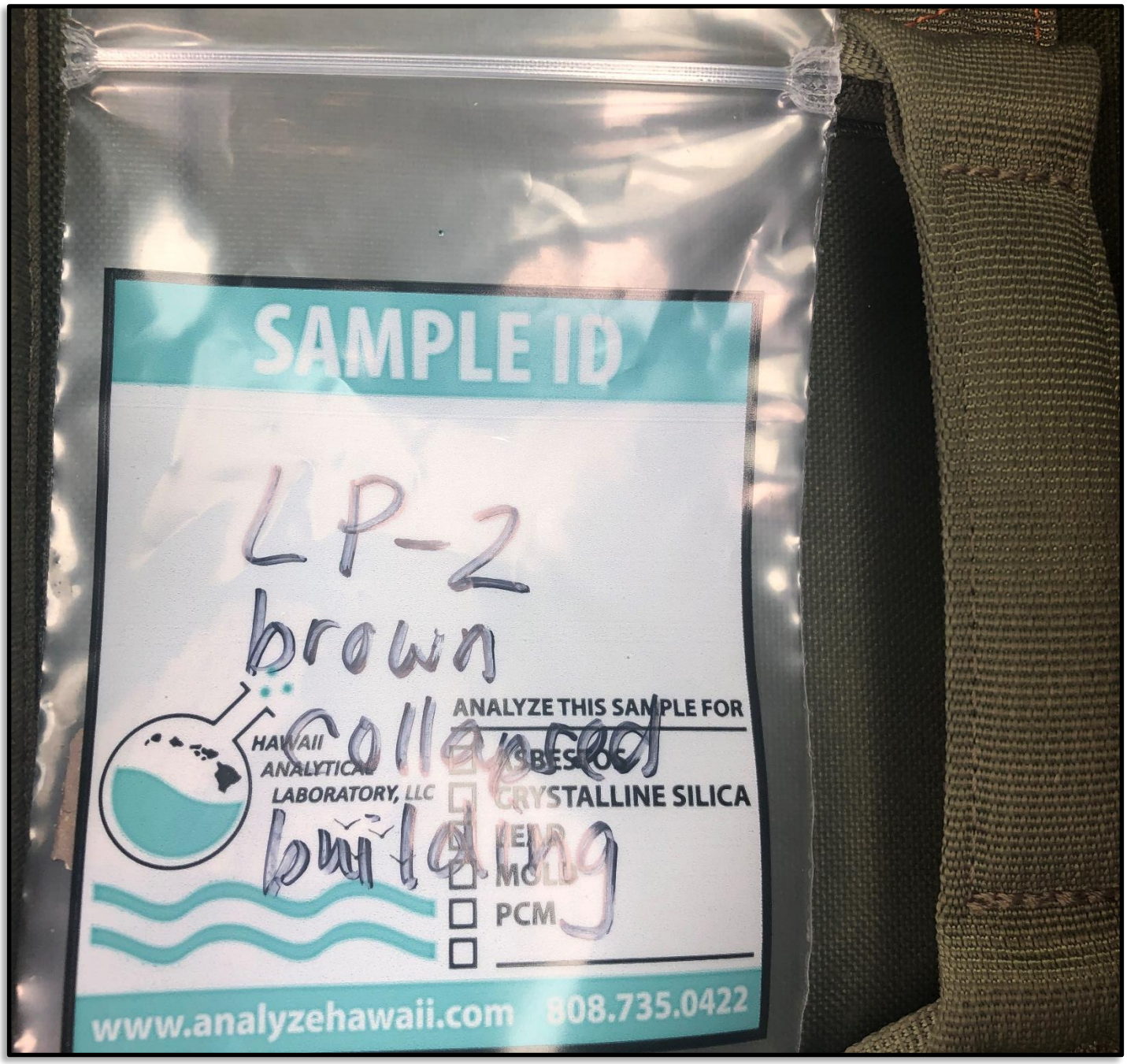

Photo 16

Lead Paint Chip Sample L-2, Brown Paint, Exterior, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019



Photo 17

Toxicity Characteristic Leaching Procedure (TCLP) – Lead Sample, Collapsed Structure

Project Number: 1902-00082-HAZ

153 West Ka'ahuamnu Avenue

Date of Photos: December 27, 2019

Appendix I

Mobility Analysis Report

Mobility Analysis Report (MAR) for the Proposed Kahului Civic Center Mixed-Use Complex

Prepared for:
G70

December 7, 2021 (Final)

SD19-0304

FEHR PEERS

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1. Executive Summary

This report documents the assessment of traffic, mobility, and access with the proposed redevelopment of the site located at 153 West Kaahumanu Avenue (Tax Map Key: (2) 3-7-004:003 (por.)) in the community of Kahului, on the island of Maui. The Kahului Civic Center Mixed-Use Complex project (i.e., the "Project") is proposed by the State of Hawai'i (State), Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC) and is a collaborative effort with the State Department of Accounting and General Services. The project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center) that will replace an existing adult community school building on the site.

Approximately 300 multi-family dwelling units (mixture of 1-, 2- and 3-bedroom units) will be provided in two buildings (both roughly six stories), and approximately 414 parking spaces will be provided in two three-level parking podiums for the multi-family housing. The preliminary program for the Civic Center (roughly four stories) includes space for State offices, the State Department of Education's (DOE) McKinley Community School for Adults, and the Kahului Public Library. A parking deck built over a surface parking lot will provide approximately 182 parking spaces for the Civic Center. Community-oriented commercial space may be included in either the multi-family housing building(s) or the Civic Center. For purposes of this analysis the Civic Center is assumed to include: 38,000 sf for State office space, 16,000 sf for the Kahului Public Library, 7,000 sf for the State DOE's McKinley Community School for Adults, and 5,000 sf for a community-oriented commercial space. The Civic Center program spaces may be adjusted due to the needs and priorities of State agencies and availability of funding. The project is anticipated to be built and fully occupied by 2026. Vehicular access to the site is proposed via two driveways: 1) one on Kane Street approximately 190 feet north of Vevau Street, and 2) one on Vevau Street approximately 150 feet east of Kane Street.

The impacts of the proposed project to mobility and access surrounding the project site were evaluated following guidelines and standards of the affected government agencies, including the County of Maui and the State of Hawaii Department of Transportation (HDOT). A multimodal evaluation of potential mobility effects from the project was conducted to determine potential impacts to walking, biking, transit, and traffic operations. Seven study intersections in the vicinity of the project were evaluated during the weekday morning (AM) and evening (PM) peak hours for Existing (2020) conditions and for Future (2026) conditions without and with the project.

Trip generation for the facility was determined based on standard trip rates published in the *Trip Generation Manual* (10th Edition, 2017) by the Institute of Transportation Engineers (ITE), as well as appropriate reductions to account for the mix of uses and the travel characteristics of other uses in this part of Kahului. The proposed project is expected to generate 2,378 net new daily vehicle trips, including 151 net new vehicle trips during the AM peak hour (73 inbound/78 outbound) and 223 net new vehicle trips during the PM peak hour (102 inbound/118 outbound).

Key findings of the mobility analysis are summarized below:



- The project will not have a significant impact at any study intersection. However, operations at Kane Street/Vevau Street are expected to be LOS F for the side street approaches in the PM peak hour, both without and with the project. Furthermore, without providing additional capacity or modifying traffic control at Kane Street/Vevau Street, the westbound queues are projected to extend past the project driveway on Vevau Street in the PM peak hour.

- To improve operations at the Kane Street/Vevau Street intersection, the existing traffic control devices would have to be modified to provide additional gaps in traffic on Kane Street. A multi-way stop warrant is projected to be met at the Kane Street/Vevau Street intersection under Existing (2020) conditions, as well as under Future (2026) conditions both without and with the project. This improvement would result in average vehicle delays of 12.5 and 17.8 seconds in the AM and PM peak hours, respectively. An evaluation of volume warrants for a traffic signal shows that a signal is not warranted under any of the study scenarios.
  Because the all-way stop control (AWSC) is expected to be warranted without the project, the new development would typically be required to contribute its fair share (30.1%) toward the design and installation. If AWSC is not implemented, a rectangular rapid-flashing beacon (RRFB) should be installed to enhance pedestrian access and safety.

- The section of Kane Street between Vevau Street and West Kaahumanu Avenue should be restriped to allow partial access to the project site via a driveway on the east side of Kane Street. Given the proximity of the Kane Street driveway to the Kane Street/Vevau Street intersection and potential safety issues with outbound vehicles crossing a left-turn lane, it is recommended that left turns out of the Kane driveway be prohibited.

- The project will provide a total of 596 parking spaces. Although the unadjusted required parking supply is 774 spaces, the project is centrally located within the community of Kahului, which provides nearby transit, pedestrian, and bicycle access. Furthermore, the live/work mixed uses that make up the project will allow for sharing of the parking deck spaces. Therefore, per the Maui County Code Chapter 19.36B.100 reduction criteria (which allows for up to a 50% reduction), the on-site parking at the proposed project is expected to be sufficient, and no substantial parking issues are anticipated. For all project uses combined, the proposed parking supply is 23% less than the unadjusted requirement.

- Short-term bicycle parking (e.g., bicycle racks) should be provided on the project site near the main entrance to the building housing commercial uses, which would allow employees and visitors to secure their bicycles while inside the project. Bicycle storage should be provided in or near the residential buildings to allow for longer-term bicycle storage for residents.

- The following pedestrian enhancements at Kane Street/Vevau Street are recommended:
  - Restripe the southbound Kane Street approach to Vevau Street to be a southbound right-turn lane, a southbound through lane, and a southbound left-turn lane. This improvement would result in average vehicle delays of 13.3 and 19.0 seconds in the AM and PM peak hours, respectively.

  - Implement AWSC control to improve intersection operations as noted above. If AWSC is not implemented by the County of Maui, an alternative pedestrian enhancement would be to provide a rectangular rapid flashing beacon (RRFB) for the crosswalk on the north leg of the intersection to improve pedestrian safety.
  - Construct a curb extension on the southwest corner of the intersection to shorten the pedestrian crossing distance.

- The County of Maui Department of Public Works is currently preparing plans for Complete Streets improvements on Kane Street from West Kaahumanu Avenue to West Kamehameha Avenue. These improvements include wider sidewalks for pedestrians, separate bicycle facilities for cyclists, and enhancements at the Kane Street/Vevau Street intersection to shorten pedestrian crossings and manage vehicle speeds. While the improvement plans are still being developed and several alternative cross-sections are being considered, the project site plan will be designed to accommodate the County improvements and the recommendations listed above are consistent with Complete Streets guidelines and best practices.

2. Introduction

This mobility analysis report (MAR) presents the study conducted by Fehr & Peers for the proposed redevelopment of the site located at 153 West Kaahumanu Avenue in the community of Kahului on the island of Maui. This MAR was conducted in accordance with the guidelines and standards of the affected government agencies, and it addresses the potential impact of the project on all modes of travel.

The project site encompasses 4.72 acres located on TMK (2) 3-7-004:003 (por.)in Kahului. The parcel is under the jurisdiction of the Hawaiian Housing Finance & Development Corporation (HHFDC). The project site is bounded by Kane Street to the west, Vevau Street to the south, West Kaahumanu Avenue to the north, and a shopping center development and The Waterfront Apartments to the east, as shown on **Figure 1**. The site currently includes a building that houses the McKinley Community School for Adults and this use is expected to be incorporated into the new project.

2.1 Project Description

The Kahului Civic Center Mixed-Use Complex project (i.e., the "Project") is proposed by the State of Hawai'i (State), Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC) and is a collaborative effort with the State Department of Accounting and General Services. The project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center) that will replace an existing adult community school building on the site.

Approximately 300 multi-family dwelling units (mixture of 1-, 2- and 3-bedroom units) will be provided in two buildings (both roughly six stories), and approximately 414 parking spaces will be provided in two three-level parking podiums for the multi-family housing. The preliminary program for the Civic Center (roughly four stories) includes space for State offices, the State Department of Education's (DOE) McKinley Community School for Adults, and the Kahului Public Library. A parking deck built over a surface parking lot will provide approximately 182 parking spaces for the Civic Center. Community-oriented commercial space may be included in either the multi-family housing building(s) or the Civic Center. For purposes of this analysis the Civic Center is assumed to include: 38,000 sf for State office space, 16,000 sf for the Kahului Public Library, 7,000 sf for the State DOE's McKinley Community School for Adults, and 5,000 sf for a community-oriented commercial space. The Civic Center program spaces may be adjusted due to the needs and priorities of State agencies and availability of funding. The project is anticipated to be built and fully occupied by 2026. Vehicular access to the site is proposed via two driveways: 1) one on Kane Street approximately 190 feet north of Vevau Street, and 2) one on Vevau Street approximately 150 feet east of Kane Street. The project site plan is shown on **Figure 2**.

2.2 Study Area

The transportation analysis focused on evaluating the potential project-related transportation impacts at seven existing intersections in the vicinity of the proposed project. The analyzed intersections are listed below and are shown on **Figure 1**:

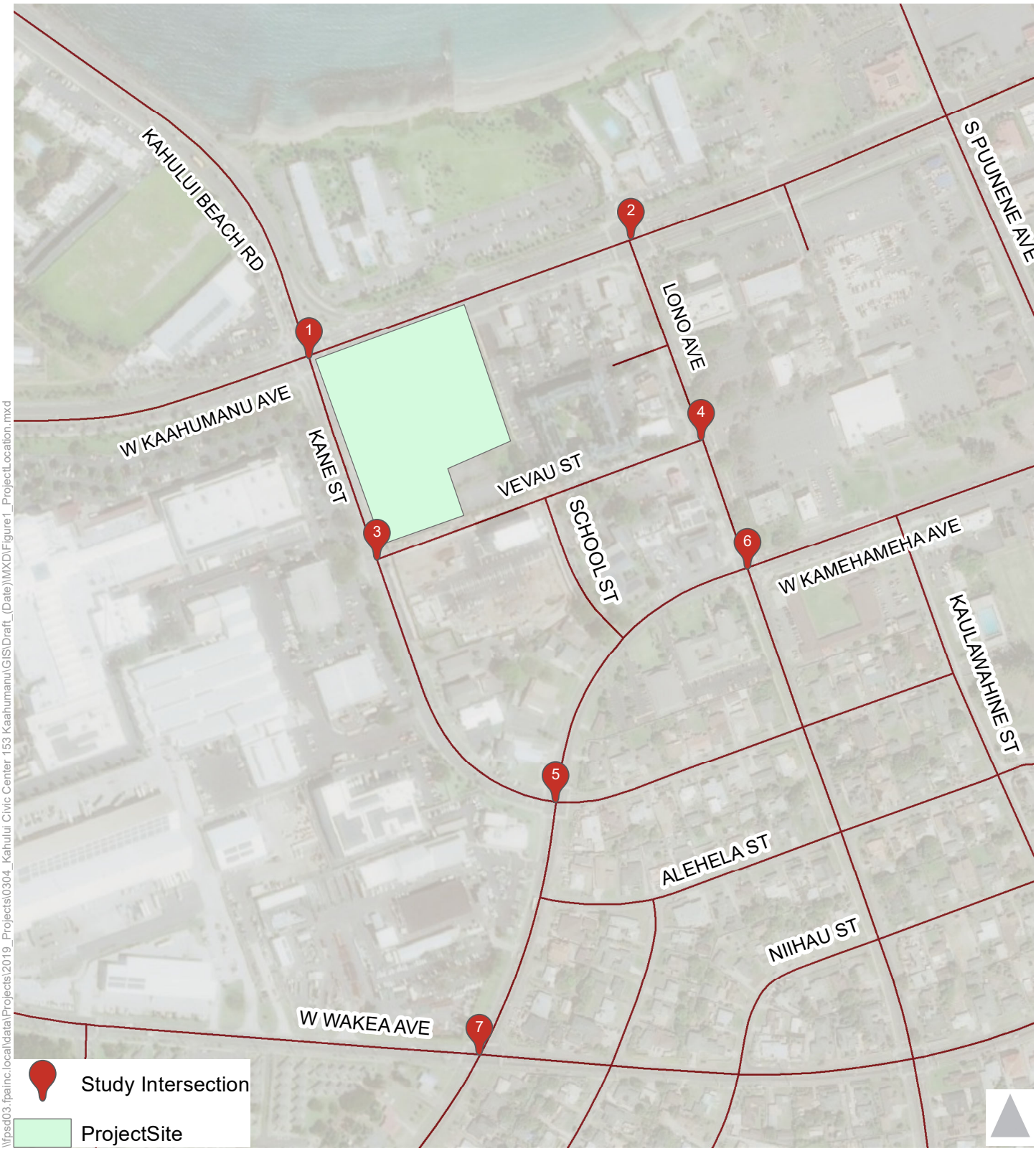
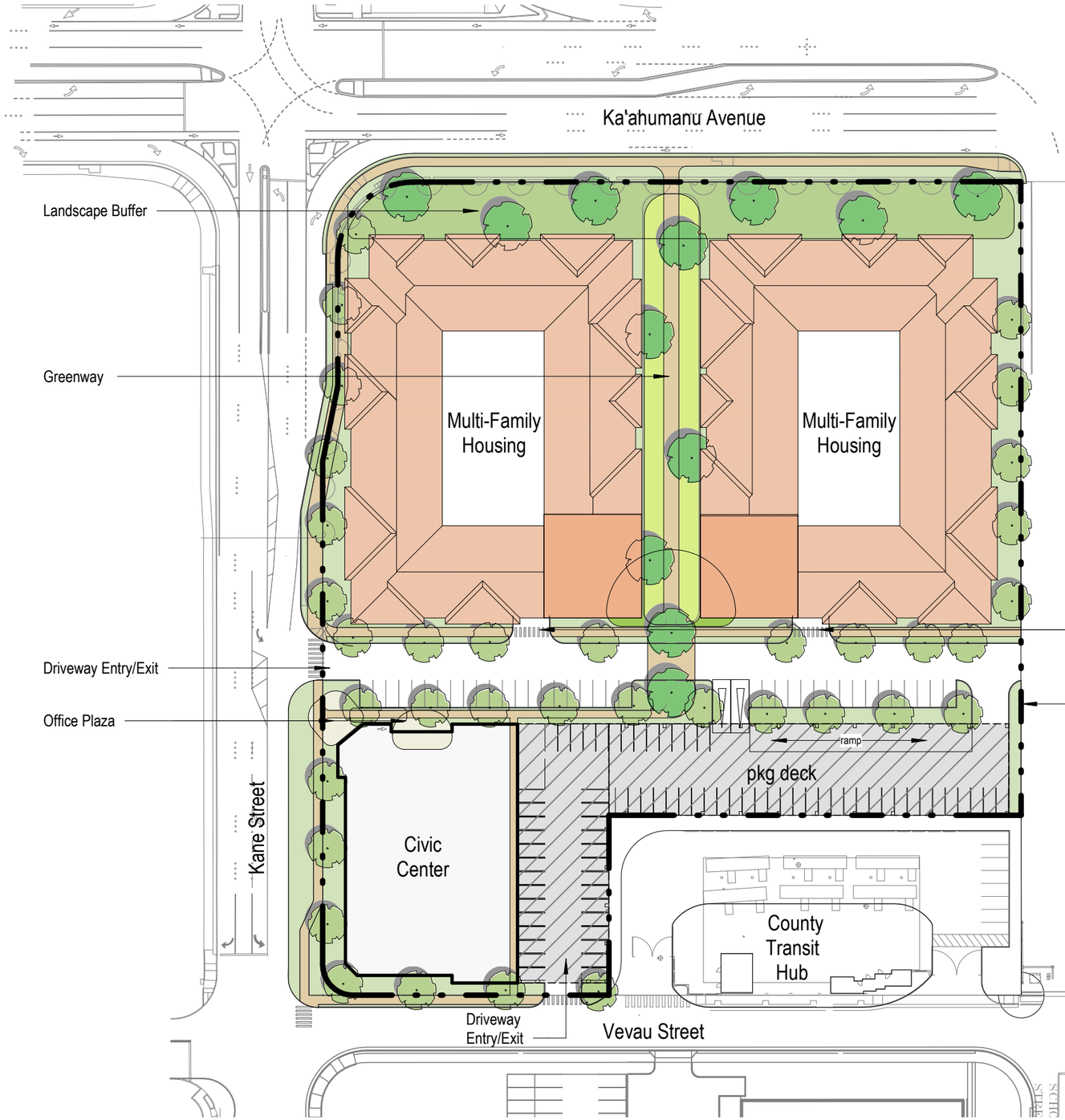


Figure 1

Project Location



LAND AREA AND ZONING INFORMATION

	LAND		Allowable SF	Setback	
PARCEL	**5.572 acre**	**242,716 sf**	**485,433 sf**		
				Front	None
Total Lot Area	**5.572 acre**		**Zoning**	**Side/Rear**	None or adjacent zone
Transit Plaza	.85 acre		Land Use	B-2	
MUC	4.722 acre		Height	90-ft	
			Density	2. FAR	

KAHULUI CIVIC CENTER MIXED-USE PROGRAM

Total Residential Units	**300 du**	**Density**	**1.6 FAR**
Residential Subtotal	**315,000 gsf**	**Parking Required by Code***	**774 stalls**
		* County Code requirement without mixed use reduction	
Retail or Office	5,000 gsf	**Parking Target ******	**596 stalls**
School	7,000 gsf	** Retail/Office at 1stall/500sf	86 stalls
Office	38,000 gsf	** Library 40 stalls	40 stalls
Library	16,000 gsf	** Residential 1stall/1bdrm; 1.5stall/2bdrm; 2stall/3bdr	414 stalls
Non-Residential Subtotal	**66,000 gsf**	** School 8 per classroom	56 stalls
Total Floor Area	**381,000**	**Parking Provided**	**596 stalls**

Note:
Diagrams and tabulations are preliminary and subject to change. Total building floor areas and space counts are not final and will be adjusted as the building design evolves and support / circulation / mechanical areas are identified.

0' 40' 80' 160'

Kahului Civic Center Mixed-Use Complex

Site Plan

ENTITLEMENT EXHIBITS
March 2022

1

1. Kahului Beach Road-Kane Street/West Kaahumanu Avenue
2. Lono Avenue/West Kaahumanu Avenue
3. Kane Street/Vevau Street
4. Lono Avenue/Vevau Street
5. Kane Street/Kamehameha Avenue
6. Lono Avenue/Kamehameha Avenue
7. Kamehameha Avenue/Wakea Avenue

2.3 Study Scenarios

The operations of the study intersections were evaluated during the weekday AM and PM peak hours for the following scenarios:

- **Existing Conditions** – Given the ongoing COVID-19 pandemic, it was not possible to conduct new traffic counts that reflect typical levels of peak hour volumes. Accordingly, the analysis of existing traffic conditions is based on historic 2017 and 2018 counts collected for the environmental analysis of the nearby Vevau Street Bus Hub and the Kahului Lani senior affordable housing complex. These counts were increased to account for growth in the greater Kahului area through the year 2020 *plus* traffic generated from recently constructed developments within the study area, representing an existing conditions scenario if the COVID-19 pandemic had not occurred. The analysis of traffic operations under this scenario was conducted for the peak hours and existing intersection configurations. The existing conditions analysis also includes a description of key area roadways and a review of existing transit facilities and services near the site.
- **Future (2026) No Project Conditions** – Existing peak-hour volumes increased to account for forecasted growth in the area at the opening year of the project in 2026. Traffic growth was estimated based on an annual growth factor to account for ambient growth *plus* traffic generated from approved (but not yet constructed) and pending developments within the study area. This scenario includes future planned roadway improvements and forms the comparison baseline for identifying with-project impacts.
- **Future (2026) Plus Project Conditions** – This traffic scenario includes traffic volumes under Future (2026) No Project conditions plus the addition of forecasted project-generated traffic. The assessment of traffic operations will include any future planned roadway improvements and any mobility infrastructure enhancements proposed by the project.

2.4 Traffic Analysis Methods

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual 6th Edition* (HCM 6), published by the Transportation Research Board in 2016. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined, from LOS A, with the least congested operating conditions, to LOS F, with the most

congested operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

2.4.1 Signalized Intersections

The method described in "Chapter 19: Signalized Intersections" of the *HCM 6* was used to prepare the LOS calculations for the signalized study intersections. This LOS method analyzes a signalized intersection's operation based on average control delay per vehicle. Control delay alone is used to characterize LOS for the entire intersection or for an approach. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using Synchro 10.0 analysis software and is correlated to a LOS designation, as shown in **Table 1**.

Table 1: Signalized Intersection LOS Definitions

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high-delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board, 2016.

2.4.2 Unsignalized Intersections

The operations of the unsignalized intersections were evaluated using the method contained in "Chapter 20: Two-Way Stop-Controlled Intersections" of the *HCM 6*. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At this two-way- or side-street-stop-controlled (TWSC or SSSC) intersection, the average control delay is calculated for the

minor-street stopped movement and the major-street left turns, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For approaches with multiple lanes, the control delay is computed for each movement; the movement with the worst (i.e., longest) delay is presented for TWSC. As shown in **Table 2**, LOS F is assigned to the movement if the volume-to-capacity (V/C) ratio for the movement exceed 1.0, regardless of control delay. The average control delay for unsignalized intersections is calculated using Synchro 10.0 analysis software and is correlated to a LOS designation, as shown in **Table 2**.

Table 2: Unsignalized Intersection LOS Definitions

Level of Service	Description	Delay in Seconds
A	Little or no delay	≤ 10.0
B	Short traffic delay	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board, 2016.

2.4.3 Significant Impact Criteria

The analysis of Future (2026) conditions compares future no-project operations with conditions when the project is fully built out to determine whether project implementation is expected to result in a significant impact on the surrounding roadways. Based on previous studies conducted for the County of Maui, the minimum desired operating standard for a signalized intersection is typically LOS D. Additionally, the State of Hawaii Department of Transportation–Highways Division (HDOT) strives to maintain LOS D intersection operations for state facilities. Both agencies usually define a significant intersection impact as when the operation of an intersection or turning movement (depending on the traffic control device) changes from LOS D or better to LOS E or F. Impacts are also defined to occur when the addition of project traffic exacerbates locations already operating at or projected to operate at LOS E or F. When evaluating intersection operations at any location, other factors are considered in the analysis, such as traffic volumes and potential secondary impacts to pedestrian, bicycle, and transit travel.

Significant impacts are categorized as either a project-specific or cumulative impact. An impact is considered project-specific at a signalized intersection if the addition of project traffic is expected to degrade LOS D or better operations to LOS E or F operations. An impact is considered a cumulative impact at a signalized intersection if the addition of project trips exacerbates LOS E or F operations and increases the intersection delay by more than five (5) seconds.

For unsignalized intersections, the criterion for a project-specific impact is the same as for signalized intersections, as described above. However, the project is determined to have a potentially significant cumulative impact when it adds traffic to a study location that includes a controlled approach operating at an undesirable level (i.e., LOS E or F) *and* one or more volume-based signal warrants are met. The signal warrants used for this evaluation are those described in Chapter 4C of the *Manual of Uniform Control Devices* (MUTCD, 2009), published by the US Department of Transportation Federal Highways Administration (FHWA).

The County of Maui and HDOT do not publish detailed criteria for significant pedestrian, bicycle, and transit impacts. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. Existing facilities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of facilities/services currently in place. The assessments of planned pedestrian, bicycle, and transit facilities were conducted using information in planning documents, such as the *Hele Mai Maui 2040*, the *Wailuku-Kahului Community Plan*, the Hawaii Department of Transportation's *Bike Plan Hawaii Master Plan*, and the *Central Maui Pedestrian and Bicycle Master Plan for 2030*. For these modes, if the proposed project is expected to conflict with existing or planned improvements to pedestrian and bicycle facilities, or if the project is expected to generate a substantial demand that could warrant additional transit service, then the project would be determined to have a project-specific impact to non-motorized modes of transportation.

3. Existing Conditions

This chapter describes the existing pedestrian, bicycle, and transit facilities, as well as the roadway network located within the project study area. A discussion of the existing intersection LOS operation results is also included in this chapter.

3.1 Existing Site and Transportation Facilities

The existing site contains the Department of Education's McKinley Community School for Adults, a lawnmower maintenance building, an abandoned building in disrepair, a surface parking lot, and a grass area with trees occupying the makai half of the site. A focused data collection effort was undertaken to identify existing transportation conditions in the vicinity of the proposed site. The assessment of existing conditions relevant to this study includes existing public transit, bicycle, and pedestrian facilities, as well as an inventory of the street system, traffic volumes on these facilities, and operating conditions at key intersections.

3.1.1 Existing Transit Facilities and Services

Maui Bus Service, operated by Roberts Hawaii, provides public transit service around the island with 13 bus routes. Each route typically operates seven days a week, including holidays. It is noted that, due to the COVID-19 pandemic, bus routes 2 and 6 were suspended between April 13 and June 30, 2020, and bus routes 15 and 25 were suspended on April 13 and were not in operation at the time that this report was prepared.

Transit routes 1, 2, 5, 6, 8, 10, 20, 35, 39, and 40 all provide service along study roadways and serve the major transfer center at Queen Kaahumanu Center, located on Kane Street opposite the project site. The existing transit schedules are summarized in **Table 3**.

The major transfer center is planned to be relocated by 2021 to the Vevau Street Bus Hub immediately adjacent to and south of the proposed project site. At the time of project buildout, this center will provide the closest transit access with six bus bays, providing benches, trash receptacles, and restrooms under a canopy for shade.

3.1.2 Existing Bicycle Activity

According to the *Vevau Street Bus Hub Traffic Impact Analysis Report* prepared by Austin, Tsutsumi & Associates, Inc. and dated April 17, 2019, "only a few (2-3) cyclists were observed within the project area," which is generally the same as the study area of this analysis in that it consisted of West Kaahumanu Avenue, Kahului Beach Road, Kane Street, Lono Avenue, and Vevau Street, and only excluded Kamehameha Avenue.

Table 3: Existing Transit Services

Route	From	To	Operating Hours	Headway
1 / 2 (opposing directions) – Wailuku Loop	Wailuku	Kahului	6:30 am – 10:00 pm	1 hour
5 / 6 (opposing directions) – Kahului Loop	Queen Kaahumanu Center	Maui Marketplace	6:30 am – 10:00 pm	1 hour
8 – Waihee Villager	Kahului	Waihee via Waiehu	7:15 am – 8:00 pm	3 hours
10 – Kihei Islander	Kahului	Wailea via Kihei	5:30 am – 9:30 pm	1 hour
20 – Lahaina Islander	Queen Kaahumanu Center	Wharf Cinema Center	5:30 am – 9:30 pm	1 hour
35 – Haiku Islander	Kahului	Haiku	5:30 am – 10:00 pm	1.5 hours
39 – Kula Islander	Kahului	Kula via Pukalani	5:56 am – 9:11 pm	3 hours
40 – Upcountry Islander	Kahului	Makawao via Pukalani and Haliimaile	6:00 am – 10:30 pm	1.5 hours

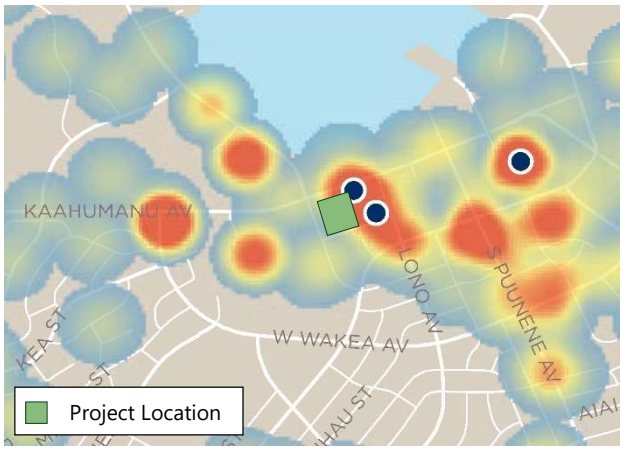
Source: Fehr & Peers, 2021; Maui Bus

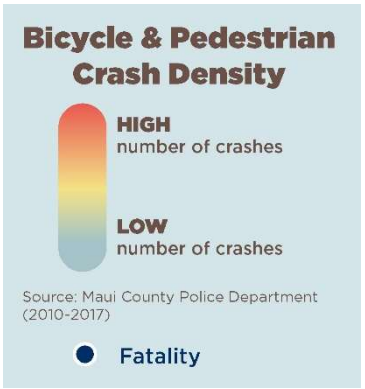
3.1.3 Existing Pedestrian Activity

According to the *Vevau Street Bus Hub Traffic Impact Analysis Report* prepared by Austin, Tsutsumi & Associates, Inc. and dated April 17, 2019, the study area has a minimal amount of pedestrian activity, with counts of two to 23 pedestrians passing through each intersection during the peak hours. The highest pedestrian volumes occur at the intersections along West Kaahumanu Avenue and at the Kane Street/Vevau Street intersection.

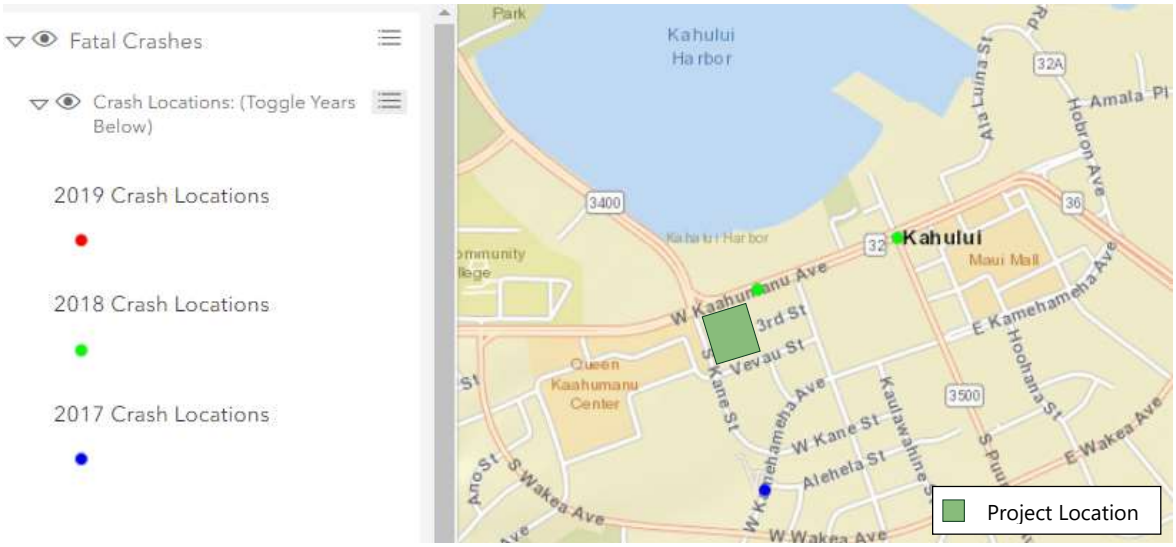
3.1.4 Collision History

Available collision information was reviewed to identify the occurrence of collisions by mode in the study area. According to *Hele Mai Maui 2040*, the study area includes relatively high bicycle and pedestrian crash density based on data from 2010 through 2017, including two fatal collisions near West Kaahumanu Avenue/Lono Avenue. A screenshot from the *Hele Mai Maui 2040* report is shown below:





Additionally, according to the US Department of Transportation (USDOT) Fatality Analysis Reporting System (FARS) data for 2017 through 2019, one fatal collision occurred along West Kaahumanu Avenue between Kahului Beach Road-Kane Street and Lono Avenue in 2018, and one fatal collision occurred along Kamehameha Avenue to the south of Kane Street in 2017. A screenshot of the FARS data is shown below.



Source: https://cdan.nhtsa.gov/SASStoredProcess/guest

3.1.5 Existing Roadway System

The key roadways providing access to or in the vicinity of the project site are described below. As noted in **Chapter 2**, the site is located east of Kane Street between West Kaahumanu Avenue and Vevau Street.

Kaahumanu Avenue is a principal arterial under the jurisdiction of HDOT (Route 32). It extends as a three-lane facility from Kinipopo Street to approximately 400 feet west of the Naniloa Drive overcrossing, where it becomes a four-lane facility to Kahului Beach Road-Kane Street (except for a short, five-lane section between the Kanaloa Ave-Mahalani Street and Wahinepio Avenue-South Papa Street intersections). East of Kane Street, it continues as a six-lane facility to Hana Highway east of Wharf Street. The street is designated West Kaahumanu Avenue to the west of Puunene Avenue. Adjacent to the project, the posted speed limit is 30 miles per hour (mph). A continuous sidewalk is provided on the south side of the roadway west of Kahului Beach Road, but no sidewalk or path is provided on the north side of the street between the Queen Kaahumanu Center driveway and Kahului Beach Road. A sidewalk is provided on both sides of the roadway east of Kahului Beach Road-Kane Street immediately fronting the project site. Bike lanes are provided in both directions, and on-street parking is prohibited.

Kamehameha Avenue is a two- to four-lane facility under the jurisdiction of the County of Maui. It extends as a local roadway from its western terminus at Meheu Circle to South Papa Avenue, and from there it

continues as a minor collector to Hana Highway. The four-lane section extends between Lono Avenue and Hana Highway. Near the project site, the posted speed limit is 30 mph. A narrow sidewalk is provided on the north/makai side of the street between Kane Street and Lono Street. Kamehameha Avenue is a designated bike route with paved shoulders on both sides of the roadway. On-street parking is not permitted along the entire length of the roadway.

Kahului Beach Road is a four-lane minor arterial that is under the jurisdiction of the County of Maui. It extends from Waiehu Beach Road (where it intersects with Lower Main Street) to West Kaahumanu Avenue, where it connects with Kane Street. Between Kaihee Place and West Kaahumanu Avenue, a third southeast-bound lane is also provided. The posted speed limit is 35 mph. Sidewalks are provided on the west side of the street from Kaihee Place to West Kaahumanu Avenue. Kahului Beach Road is not a designated bike route, but paved shoulders are provided on both sides of the roadway, and on-street parking is prohibited.

Kane Street is a two-lane local roadway under the jurisdiction of the County of Maui. It extends from West Kaahumanu Avenue, where it connects opposite Kahului Beach Road, to an eastern terminus at Kaulawahine Street. Between West Kaahumanu Avenue and Kamehameha Avenue, a second southbound lane is also provided. The posted speed limit is 20 mph. Sidewalks are provided on the west side of the roadway along the project site frontage and are also provided on the east side of the project from Vevau Street to approximately 200 feet west of Kamehameha Avenue. No designated bike facility is provided on Kane Street. On-street parking is provided on the east side of the street for a stretch of approximately 300 feet along the frontage of the King's Chapel Polynesian, Family Life Center, and Seicho No-Ie Maui developments.

Lono Avenue is a two-lane minor collector that is under the jurisdiction of the County of Maui. It extends from West Kaahumanu Avenue to Makalii Street. The posted speed limit is 20 mph north of Kamehameha Avenue and 30 mph south of Kamehameha Avenue in the vicinity of the project. Sidewalks are provided on both sides of the street between West Kaahumanu Avenue and Kamehameha Avenue, and a sidewalk continues on the west side of the street to the south of Kamehameha Avenue. Bike lanes are provided in both directions near the project, except for a stretch of approximately 230 feet south of Kamehameha Avenue in the southbound direction. Near the project, on-street parking is prohibited.

Vevau Street is a two-lane roadway that extends from Kane Street to Lono Avenue. It is a private roadway between Kane Street and School Street, and under the jurisdiction of the County of Maui between School Street and Lono Avenue. No speed limit is posted, but the assumed speed limit is 20 mph. A sidewalk or path is provided on the north side of Vevau Street east of School Street; however, for approximately 130 feet immediately west of Lono Avenue, the provided path is asphalt, has a steep cross-grade, and is adjacent to perpendicular parking such that vehicles may extend into the pedestrian path. Additional sidewalks have been constructed on both sides of Vevau Street to the west of School Street as part of the Kahului Lani Affordable Senior Housing project. No designated bike facility is provided on Vevau Street, and on-street parking is not provided.



West Wakea Avenue is a two-lane roadway extending from W Kaahumanu Avenue to S Puunene Avenue (with E Wakea Avenue extending further east from S Puunene Avenue to Hana Highway). It is a collector roadway under County of Maui jurisdiction and includes a posted speed limit of 30 mph in the vicinity of W Kamehameha Avenue near the project site. In this area, a sidewalk is provided on the mauka side of the roadway, and bicycle lanes are striped in both directions. Wide grass shoulders are also provided on Wakea Avenue on both sides of the street near Kamehameha Avenue, and these areas are frequently used for parking adjacent to the residential uses that front the street. Commercial establishments and a Maui Electric base yard also front the street west of Kamehameha Avenue on the north side of the street.

3.2 Existing Traffic Volumes/Lane Configurations

Given the ongoing COVID-19 pandemic, it was not possible to conduct traffic counts that reflect typical levels of peak hour volumes. Accordingly, the analysis of existing traffic conditions is based on historic 2017 and 2018 counts collected for the environmental analysis of the nearby Vevau Street Bus Hub and the Kahului Lani senior affordable housing complex.

These historic counts were increased to account for growth in the area to Year 2020 *plus* traffic generated from recently constructed developments in the study area. For this study, the growth factor was derived from historic daily traffic count data and the Maui Travel Demand Forecasting Model (TDFM), which was developed for use in HDOT's *2035 Federal-Aid Highways Transportation Plan for the District of Maui* (July 2014). The model assigns traffic across the roadway network for the base and horizon years generated by land use and socioeconomic data developed by HDOT in consultation with the County of Maui. The 2007 model base year scenario daily traffic volumes were compared to those for the Year 2035 forecast to determine long-term traffic growth estimates.

The comparison demonstrated that expected growth along nearby roadways varies with the size of the facility. Specifically, high-capacity roadways near the project site (Kahului Beach Road, West Kaahumanu Avenue, and Kamehameha Avenue) are forecasted to increase at an annual rate of 0.9%, while lower-capacity roadways (Kane Street, Vevau Street, and Lono Avenue) are forecasted to increase at an annual rate of 3.7% (see **Appendix B**). However, a regional demand model, such as the Maui TDFM, is not typically accurate for local and/or lower-volume facilities. Furthermore, a growth rate of 3.7% is very high and difficult to sustain over an extended period. Historic counts on Lono Avenue alternatively indicate that growth from 2015 to 2017 averaged 2.8% per year. Accordingly, a 2.5% growth rate is considered a more reasonable estimate of future growth given existing volumes, and this rate was applied to lower-capacity facilities and private driveways in the study area. On higher-capacity facilities, a rounded annual growth rate of 1.0% was applied.

Using these growth rates, historic turning movement counts for the seven key study intersections during the weekday AM and PM peak hours were grown over three years to 2020, representing an existing condition scenario assuming the COVID-19 pandemic had not occurred.

Existing lane configurations and signal controls were obtained through the environmental analysis documents and confirmed using recent Google Maps Street View data. Signal timing data was obtained

from the Hawaii Department of Transportation for the West Kaahumanu Avenue intersections and from the County of Maui Highways Division for the Kamehameha Avenue intersections. **Figure 3** presents the analyzed peak hour turning movement volumes, corresponding lane configurations, and traffic control devices under Existing conditions. **Appendix A** provides traffic count data sheets.

3.3 Existing Intersection Operations

Peak hour intersection capacity analysis was performed for the study intersections using the methodology described in **Section 2.4** and the recently collected peak hour traffic count data. Due to *HCM 6* limitations for analyzing signalized intersections, Kane Street has been analyzed as having a speed limit of 25 mph at the intersections with West Kaahumanu Avenue and with Kamehameha Avenue, and Lono Avenue has similarly been analyzed as having a speed limit of 25 mph at the intersection with West Kaahumanu Avenue and the northern leg of the intersection with Kamehameha Avenue. **Table 4** summarizes the results of the intersection operations analysis for Existing conditions. Detailed LOS worksheets are provided in **Appendix C**. As shown in **Table 4**, overall intersection operations are generally LOS D or better at all locations and in both peak hours. The one exception is Kane Street/Vevau Street, where the eastbound approach (exiting the Queen Kaahumanu Center driveway) is calculated to operate at LOS F conditions in the PM peak hour.

3.3.1 Consistency with Previous Analyses

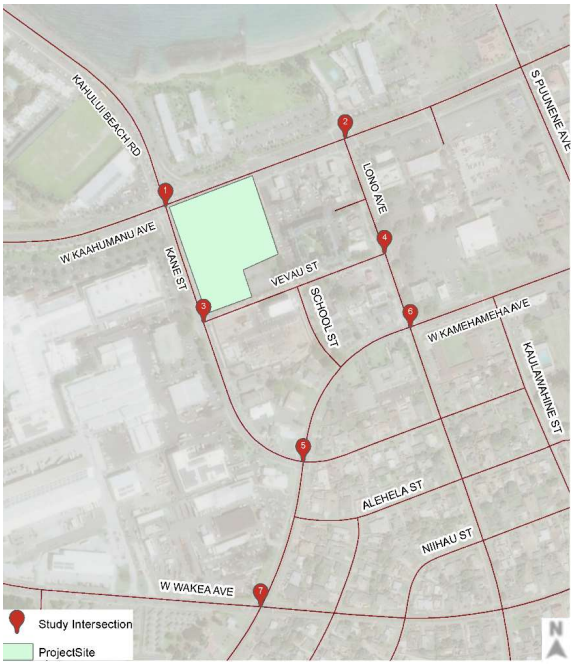
As stated in **Section 3.2**, due to the COVID-19 pandemic, it was not possible to conduct field observations for typical peak hour traffic operations, and accordingly the analysis was validated by comparing to previously approved traffic studies. The operations results provided in **Table 4** are generally consistent with previous analyses and considerations of additional volume growth to year 2020.

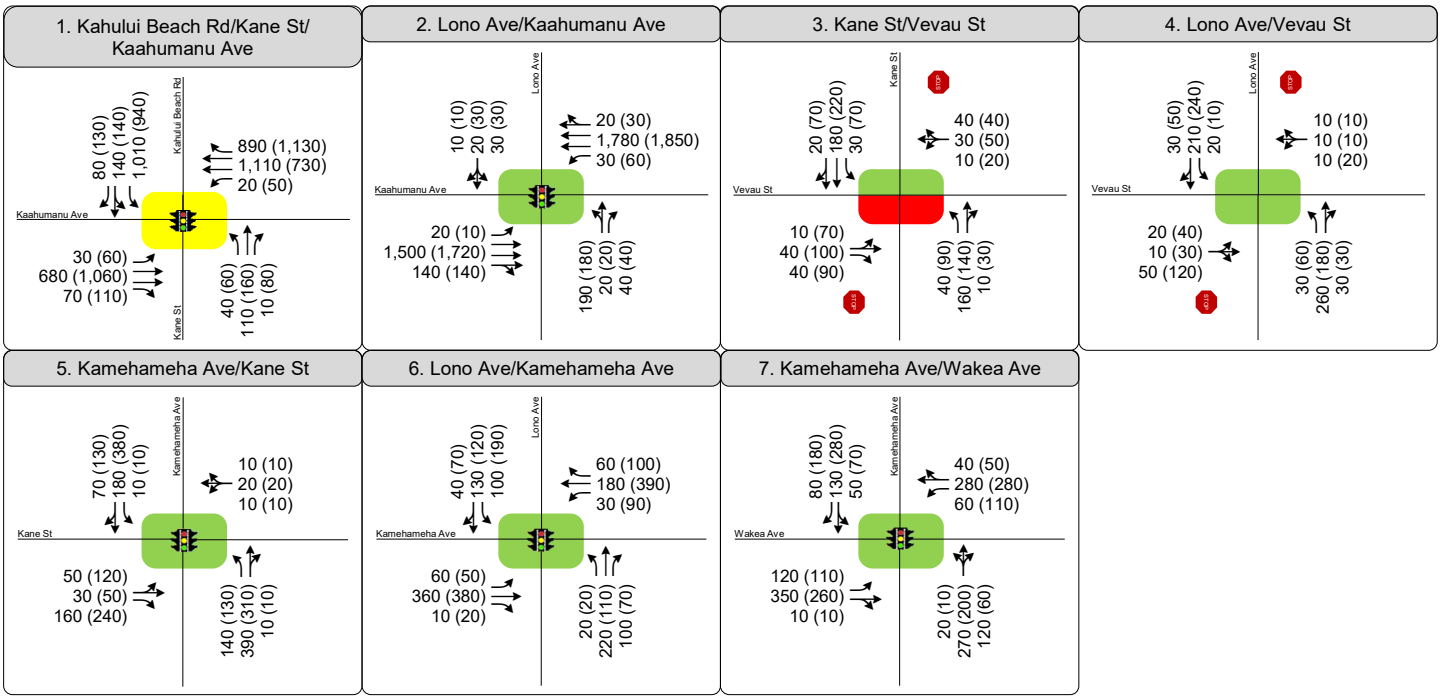
According to the *Vevau Street Bus Hub Traffic Impact Analysis Report* prepared by Austin, Tsutsumi & Associates, Inc. and dated April 17, 2019, traffic on the study roadways is "generally free-flowing," and "some queueing occurred at the approaches to the signalized intersections of West Kaahumanu Avenue/Kahului Beach Road-Kane Street and West Kaahumanu Avenue/Lono Avenue but generally cleared within one cycle length."

3.3.2 Warrant Analysis

When a movement operates at an undesirable LOS (E or F), the need for a traffic signal or other traffic control device modification is typically evaluated based on standard warrant criteria. Both the MUTCD Four-Hour and Eight-Hour Signal Warrant analyses were performed for the Kane Street/Vevau Street intersection because the eastbound approach is calculated to operate at LOS F during the PM peak hour under existing conditions. These analyses take into consideration the vehicles per hour during each of the highest four hours and eight hours, respectively, including the total volume on both major street intersection approaches and the higher-volume minor street intersection approach. The intersection does not meet either traffic signal warrant under existing conditions.







Study Intersection

Project Site

AM PM LOS: A-C D E F

XX (XX) AM (PM) Peak Hour Traffic Volume

Lane Configuration

Signalized

Figure 3

Peak Hour Traffic Volumes and Lane Configurations - Existing (2019) Conditions

Table 4: Existing (2020) Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Intersection or Worst Movement		Worst Movement (for SSSC)
			Delay (sec/veh)[1]	LOS	
1. Kahului Beach Rd-Kane St/ W Kaahumanu Ave	Signalized	AM	51.9	D	
		PM	54.3	D	
2. Lono Ave/W Kaahumanu Ave	Signalized	AM	23.0	C	
		PM	14.0	B	
3. Kane St/Vevau St	SSSC	AM	16.7	C	EBL/T
		PM	**53.7**	**F**	EBL/T
4. Lono Ave/Vevau St	SSSC	AM	15.1	C	WBL/T/R
		PM	17.9	C	WBL/T/R
5. Kane St/Kamehameha Ave	Signalized	AM	8.8	A	
		PM	11.3	B	
6. Lono Ave/Kamehameha Ave	Signalized	AM	16.4	B	
		PM	15.7	B	
7. Kamehameha Ave/Wakea Ave	Signalized	AM	31.6	C	
		PM	32.0	C	

Source: Fehr & Peers, 2021.
Notes:
SSSC=Side-Street Stop Controlled
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled intersections.

The MUTCD Multi-Way Stop Warrant was also evaluated for the Kane Street/Vevau Street intersection to determine if all-way stop control (AWSC) would be an appropriate control configuration. This analysis takes into consideration peak hour minor street vehicular delay and multimodal volumes during each of the highest eight hours, including the total vehicle volume on both major street intersection approaches and the total combined vehicle, bicycle, and pedestrian volume on both minor street intersection approaches. The intersection meets the multi-way stop warrant under existing conditions. The signal warrant and multi-way stop warrant worksheets are included in **Appendix D**.

4. Future (2026) No Project Conditions

To evaluate the potential impacts of traffic generated by the proposed project on the surrounding street system, it was necessary to first develop estimates of future traffic conditions in the area without the project. Future traffic conditions without the project reflect traffic increases due to regional growth and development near the study site at the time the project is expected to be fully built and occupied. This scenario is referred to as baseline or "no project" conditions. The forecasted future traffic volumes were then used as a baseline to identify impacts from the project on the roadway system. This chapter describes the development of this future traffic scenario.

4.1 Future (2026) No Project Traffic Estimates

The following section summarizes the growth assumptions used to estimate the amount of traffic that would be added to existing intersection volumes to develop volume estimates for Future (2026) No Project conditions.

4.1.1 Areawide Growth

A growth factor is typically applied to the baseline traffic volumes to account for future regional growth. As described in **Section 3.2**, the growth factor derived for this study from historic daily traffic count data was determined to be 2.5% for lower-capacity facilities and private driveways in the study area, and 1.0% for higher-capacity facilities. This forecast does not make any adjustments to account for reductions in traffic due to the ongoing COVID-19 pandemic.

In addition to this ambient growth, specific planned projects in the study area should be accounted for. The relevant planned projects in the immediate vicinity include the planned Vevau Street Bus Hub, which will be located immediately adjacent to the project site along Vevau Street, and the Kahului Lani Affordable Senior Housing project, which will be located south of Vevau Street, across from the project site. The Vevau Street Bus Hub is expected to be completed in late 2021 or early 2022. While phase 1 of Kahului Lani opened in July 2020, the occupancy rate is unknown, and accordingly this project was not included in Existing conditions. Full buildout of the Kahului Lani project is expected in the Spring 2022 before the Kahului Civic Center will be developed. Trip assignments for both projects (as given in the respective Traffic Impact Analysis Reports prepared by Austin, Tsutsumi & Associates) are presented in **Appendix E**. These trips were added to the forecasted volumes described above to obtain Future (2026) No Project conditions traffic volumes.

4.1.2 Future Transportation Improvements

The Kahului Lani Affordable Senior Housing project has constructed new sidewalks along its frontage on Kane Street and along both sides of Vevau Street west of School Street. No other roadway infrastructure improvements are planned in the immediate study area. Therefore, the intersection lane configurations and traffic control devices are expected to remain the same as under Existing conditions. It is noted that the West Kaahumanu Avenue Community Corridor planning effort began in late 2020 and will include the portion of West Kaahumanu Avenue within the study area, but the specific improvements and implementation schedule of that project were unknown at the time this report was written, and therefore could not be captured in this analysis. **Figure 4** illustrates the forecasted peak hour traffic volumes and lane configurations for Future (2026) No Project conditions.

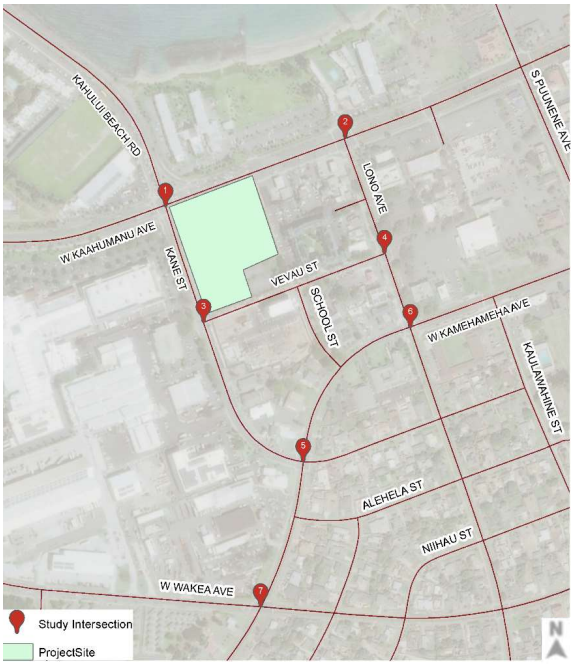
4.2 Future (2026) No Project Intersection Levels of Service

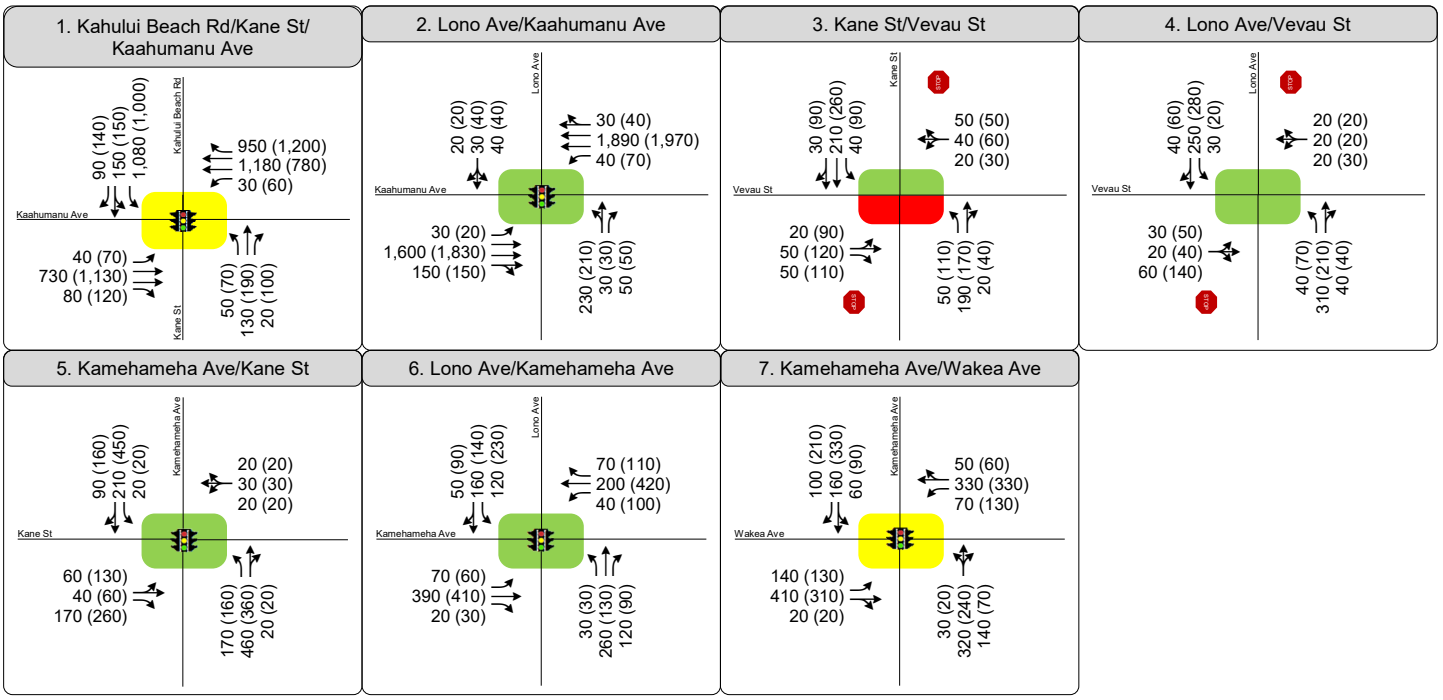
Levels of service (LOS) calculations were conducted to evaluate the operating levels of the study intersections under Future (2026) No Project conditions with the forecasted growth in traffic. The results of the LOS analysis for the study intersections are presented in **Table 5.** The corresponding LOS calculation sheets are included in **Appendix C**.

Table 5: Future (2026) No Project Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Intersection Delay (sec/veh)[1]	Intersection LOS	Worst Movement (for SSSC)
1. Kahului Beach Rd-Kane St/ W Kaahumanu Ave	Signalized	AM	**63.0**	**E**	
		PM	**62.8**	**E**	
2. Lono Ave/W Kaahumanu Ave	Signalized	AM	32.2	C	
		PM	21.0	C	
3. Kane St/Vevau St	SSSC	AM	22.9	C	EBL/T
		PM	**> 180.0***	**F**	EBL/T
4. Lono Ave/Vevau St	SSSC	AM	20.5	C	WBL/T/R
		PM	24.9	C	EBL/T/R
5. Kane St/Kamehameha Ave	Signalized	AM	9.8	A	
		PM	14.3	B	
6. Lono Ave/Kamehameha Ave	Signalized	AM	18.3	B	
		PM	17.5	C	
7. Kamehameha Ave/Wakea Ave	Signalized	AM	45.6	D	
		PM	48.6	D	

Source: Fehr & Peers, 2021.
Notes:
SSSC=Side-Street Stop Controlled
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for the signalized intersection. The vehicular delay for the worst movement is reported for the side-street stop-controlled intersection.
* Calculated delays above 180 seconds are not reliable and indicate substantially oversaturated conditions.





Study Intersection

Project Site

AM PM LOS: A-C D E F

XX (XX) AM (PM) Peak Hour Traffic Volume

Lane Configuration

Signalized

Figure 4

Peak Hour Traffic Volumes and Lane Configurations - Future (2026) No Project Conditions

The changes in operations from Existing conditions are the result of the addition of ambient traffic growth. The analysis results indicate that the Kane Street/Vevau Street intersection is forecasted to operate at undesirable levels (LOS F) under Future (2026) No Project conditions in the PM peak hour, as it also did under Existing conditions. The worst critical movement is the eastbound shared left-turn/through lane, which is forecasted to have a demand of 210 vehicles in the PM peak hour. The results also show that Kahului Beach Road-Kane Street/West Kaahumanu Avenue is forecasted to operate at undesirable levels (LOS E) under both peak hours. The movements with the highest demand at this location are the westbound and eastbound through movements in the AM and PM peak hours, respectively, as well as the southbound left-turn movement during both peak hours.

Both a Four-Hour and an Eight-Hour Signal Warrant analysis were performed for the Kane Street/Vevau Street intersection for the Future (2026) No Project scenario because one or more side street movements is/are forecasted to operate at LOS F during the PM peak hour. The intersection does not meet either traffic signal warrant under Future (2026) No Project conditions.

The MUTCD Multi-Way Stop Warrant was also evaluated for the Kane Street/Vevau Street intersection under this scenario. The intersection will satisfy the multi-way stop minimum warrant criteria under Future (2026) No Project conditions, illustrating that an all-way stop would be warranted regardless of project implementation. The signal warrant and the multi-way stop warrant worksheets are included in **Appendix D**.

5. Project Traffic Estimates

This section describes the anticipated number of vehicle trips and the directionality of those trips that would result from implementation of the proposed project. Future traffic added to the roadway system by the project is estimated using a three-step process: (1) project trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic that would be added to the roadway network. The second step estimates the direction of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. This process is described in more detail in the following sections.

5.1 Project Trip Generation Estimates

The vehicle trip generation for the proposed project was estimated using standard trip rates published in the *Trip Generation Manual* (10th Edition, 2017) by the Institute of Transportation Engineers (ITE). The proposed offices will be leased by DAGS but occupied by various state agencies. Accordingly, the General Office Building land use was considered most appropriate to capture the variety of tenants, as opposed to the Government Office Building land use, which assumes a single tenant. The trip generation for the McKinley Community School for Adults was estimated based on interviews with school staff and engineering judgement. The community-oriented commercial business was assumed to be a day care.

The project trip totals were then adjusted using the Mixed-Use (MXD) Trip Generation Model developed by Fehr & Peers and the Environmental Protection Agency (EPA), which is based on statistically superior data compared to the mixed-use methodology used by ITE alone. This model accounts for the site context and other factors to estimate potential internalization and multimodal trip reductions using published travel survey data.

As shown in **Table 6**, the proposed project is expected to generate a total of 3,188 gross new daily vehicle trips, including 187 gross new vehicle trips during the AM peak hour (99 inbound/88 outbound) and 312 gross new vehicle trips during the PM peak hour (156 inbound/155 outbound). Additionally, another 128 daily trips will be internal to the project, 186 daily trips are expected to be made by transit, and 865 daily trips are projected to be made via a combination of walking and biking.

Furthermore, the existing site contains the McKinley Community School for Adults, and the trips generated by the existing uses to be replaced by the project can be taken as credit. As shown in **Table 6**, after accounting for these existing trips, the proposed project is expected to generate 2,378 net new daily vehicle trips, including 151 net new vehicles trips during the AM peak hour (73 inbound/78 outbound) and 223 net new vehicle trips during the PM peak hour (102 inbound/118 outbound).

Table 6: Project Vehicle Trip Generation Estimates

Land Use	Quantity	Vehicle Trips						
		Daily[1]	AM			PM		
			In	Out	Total	In	Out	Total
Proposed Project Uses								
Multi-Family Housing	300 dwelling units	1,633	26	74	100	77	50	127
General Office Building	38,000 square feet	415	53	9	62	7	38	45
Library	16,000 square feet	1,124	9	4	13	63	69	132
McKinley Community School for Adults	7,000 square feet	957	30	13	43	58	43	101
Community-Serving Commercial	5,000 square feet	238	29	26	55	26	30	56
Gross New Trips		***4,367***	***147***	***126***	***273***	***231***	***230***	***461***
Internal Capture Reduction		(128)	(10)	(8)	(18)	(28)	(28)	(56)
Transit Reduction		(186)	(6)	(5)	(11)	(8)	(9)	(17)
Walk and Bike Reduction		(865)	(32)	(25)	(57)	(38)	(38)	(76)
Gross New Vehicle Trips (A)		**3,188**	**99**	**88**	**187**	**157**	**155**	**312**
Existing Uses								
McKinley Community School for Adults	7,800 square feet	1,067	33	15	48	64	48	112
Internal Capture Reduction		(0)	(0)	(0)	(0)	(0)	(0)	(0)
Transit Reduction		(45)	(1)	(1)	(2)	(2)	(2)	(4)
Walk and Bike Reduction		(211)	(6)	(4)	(10)	(9)	(9)	(18)
Existing Vehicle Trips (B)		**810**	**26**	**10**	**36**	**53**	**37**	**89**
NET NEW VEHICLE TRIPS (A - B)		**2,378**	**73**	**78**	**151**	**104**	**118**	**223**

Source: Fehr & Peers, 2021 using Institute of Transportation Engineers *Trip Generation Manual* (10th Edition, 2017) trip rates and Mixed-Use (MXD) Trip Generation Model developed by Fehr & Peers and the Environmental Protection Agency.

Notes:

[1] Trip rates for the multi-family housing based on Land Use Code 221 for mid-rise housing from the *Trip Generation Manual*
Daily: T = 5.45 * X - 1.75, where T = trips, X = number of dwelling units
AM Peak Hour: Ln(T) = 0.98 * Ln(X) - 0.98, where T = trips, X = number of dwelling units, In 26% / Out 74%;
PM Peak Hour: Ln(T) = 0.96 * Ln(X) - 0.63, where T = trips, X = number of dwelling units, In 61% / Out 39%

Trip rates for the state office space based on Land Use Code 710 from the *Trip Generation Manual*
Daily: Ln(T) = 0.97 * Ln(X) + 2.50, where T = trips, X = 1,000 square feet (sf) gross floor area (GFA)
AM Peak Hour: T = 0.94 * X + 26.49, where T = trips, X = 1,000 sf GFA, In 86% / Out 14%;
PM Peak Hour: Ln(T) = 0.95 * Ln(X) + 0.36, where T = trips, X = 1,000 sf GFA, In 16% / Out 84%

Trip rates for the McKinley Community School for Adults is based on interviews with the school staff and engineering judgement.

Trip rates for the community-serving based on Land Use Code 565 for a day-care from the *Trip Generation Manual*
Daily: 47.62 trips per 1,000 sf GFA
AM Peak Hour: 11.00 trips per 1,000 sf GFA, In 53% / Out 47%;
PM Peak Hour: 11.12 trips per 1,000 sf GFA, In 47% / Out 53%

Trip rates for the library based on Land Use Code 590 from the *Trip Generation Manual*
Daily: Ln(T) = 0.99 * Ln(X) + 4.28, where T = trips, X = 1,000 sf GFA
AM Peak Hour: T = 1.75 * X - 14.59, where T = trips, X = 1,000 sf GFA, In 71% / Out 29%;
PM Peak Hour: T = 9.33 * X - 17.13, where T = trips, X = 1,000 sf GFA, In 48% / Out 52%

Project Trip Distribution and Assignment

The geographic distribution of trips generated by the proposed project is dependent on characteristics of the street system serving the project site, the level of accessibility of routes to and from the project site, and primary land uses to which project tenants would be drawn (e.g., job centers, residential areas, shopping destinations, services, and schools).

The project's trip distribution pattern was primarily developed by using Teralytics cell phone data to determine the regional geographic distribution. The more localized distribution was based on available travel paths and Google Maps typical travel times. The resulting overall trip distribution pattern estimates for the peak hour project-generated traffic are as follows:

- 5% to/from North along Kahului Beach Road
- 25% to/from West along Kaahumanu Avenue
- 22% to/from Southwest along Kamehameha Avenue
- 9% to/from South along Lono Avenue
- 31% to/from East along Kaahumanu Avenue
- 8% to/from East along Kamehameha Avenue

Figure 5 illustrates the project trip distribution pattern described above.

Using the estimated trip generation and the distribution patterns discussed above, the traffic generated by the proposed project was assigned to the individual turning movements at intersections within the street network. At the Kane Street project driveway, left turns out of the driveway were assumed to be prohibited based on the site access analysis documented in **Chapter 7**. **Figure 6** details the project's trip assignment at each study intersection.

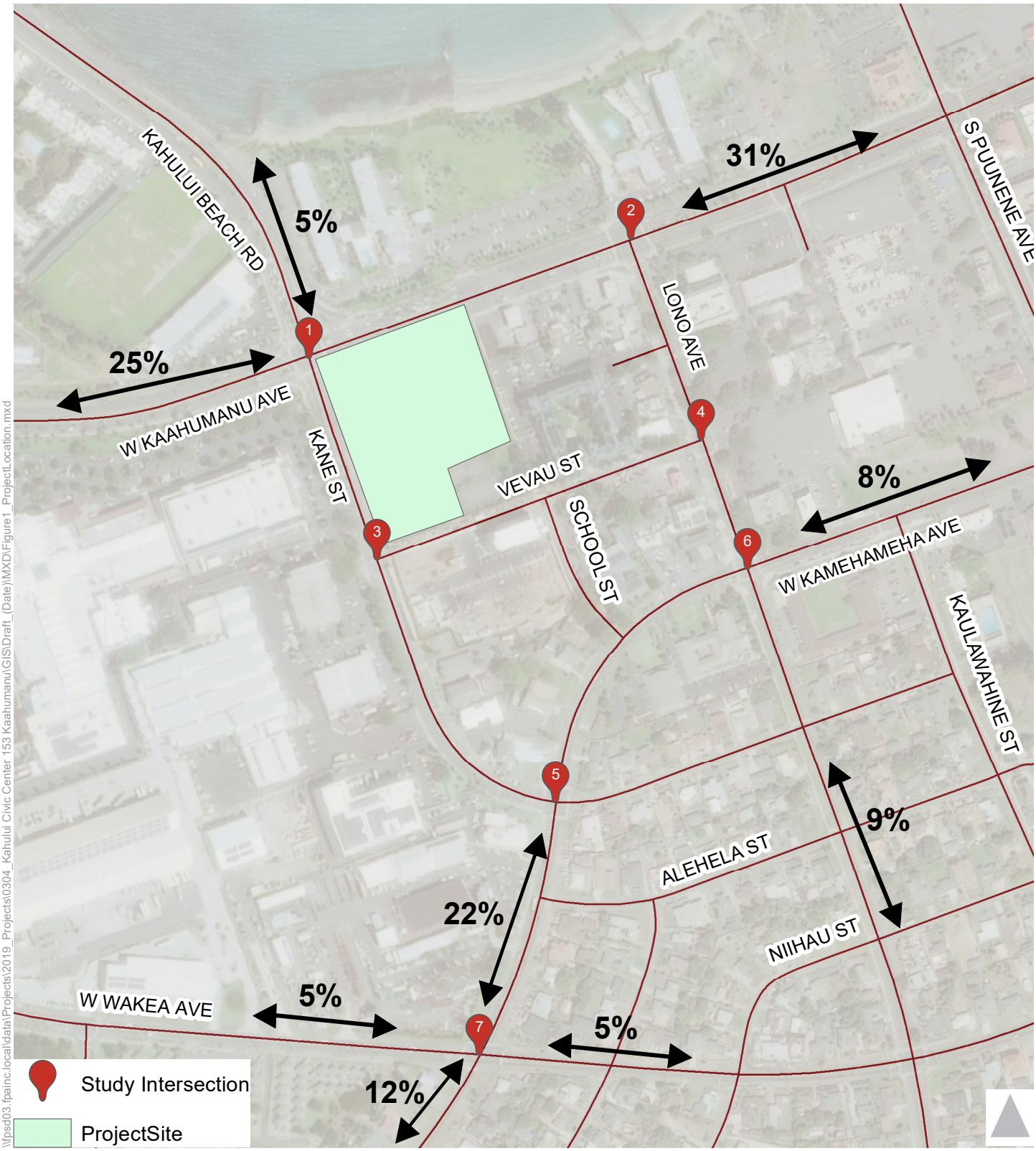
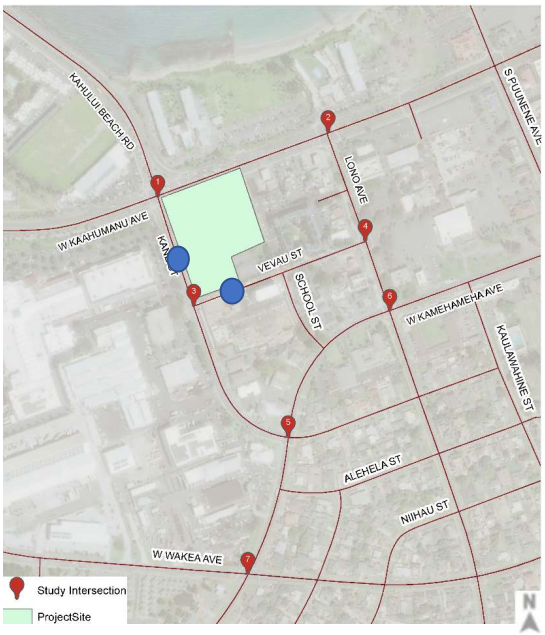
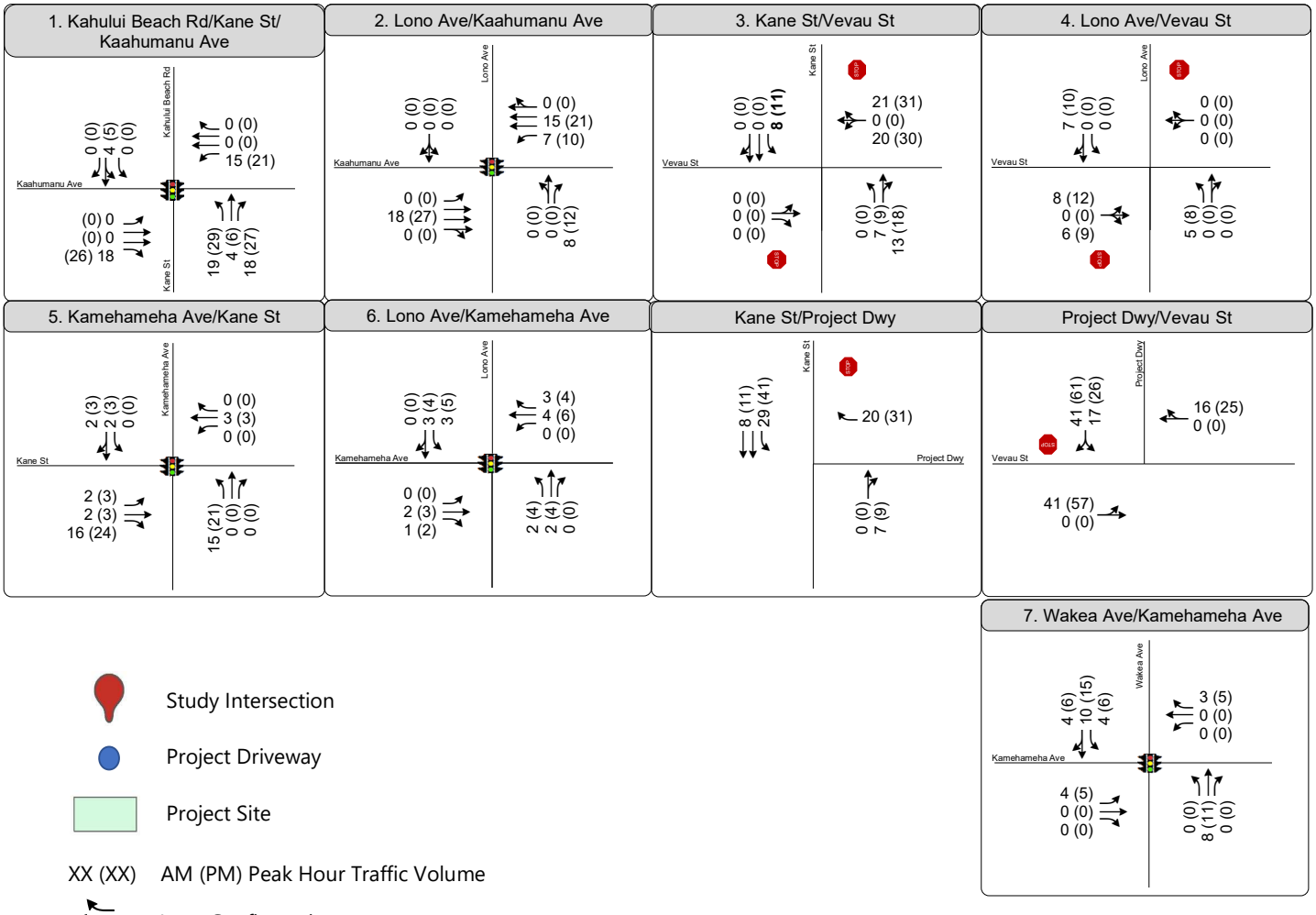


Figure 5

Project Trip Distribution





Study Intersection

Project Driveway

Project Site

XX (XX) AM (PM) Peak Hour Traffic Volume

Lane Configuration

Signalized

Figure 6

Project Trip Assignment

6. Future (2026) Plus Project Conditions

This section describes the analysis of potential impacts on the roadway system due to projected future increases in traffic, including traffic generated by the project in 2026. The Future (2026) Plus Project roadway network is the same network assumed under the Future No Project scenario. The analysis compares the project levels of service (LOS) at each study intersection with and without the addition of project-generated trips to determine potential impacts to the transportation network.

6.1 Future (2026) Plus Project Intersection Levels of Service

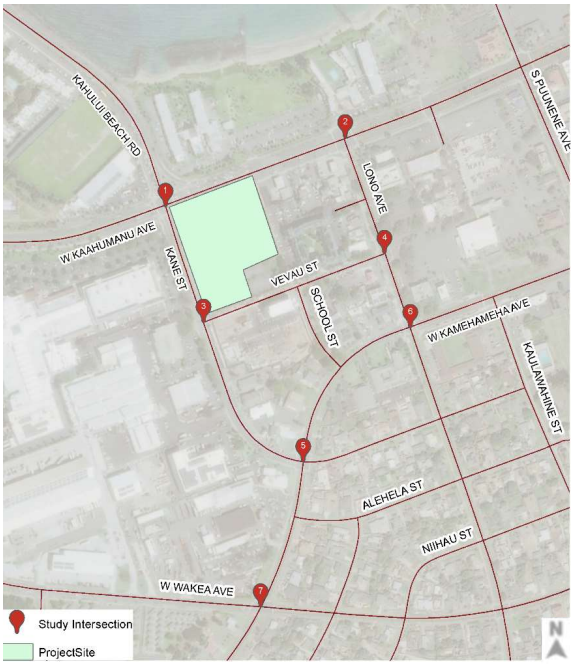
To forecast the peak hour operating conditions at each study intersection, the project trip assignment was superimposed on Future (2026) No Project traffic volumes to yield Future (2026) Plus Project volumes.

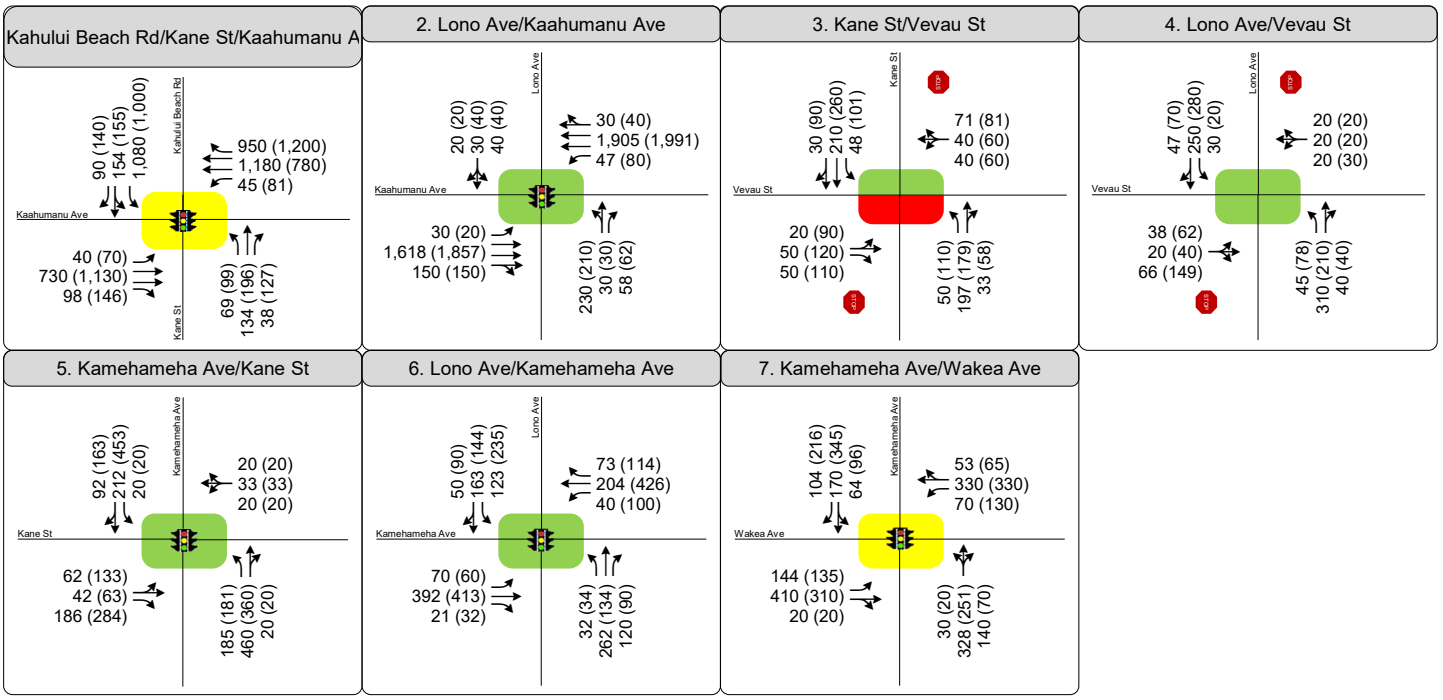
Figure 7 presents the forecasted Future (2026) Plus Project AM and PM peak hour volumes. The peak hour volumes were used to analyze operations using the LOS methodology described in **Section 2.4**. The comparative LOS analysis results for the study intersections under Future (2028) Without and With Project conditions are presented in **Table 7**. Detailed LOS results are included in **Appendix C**.

The results presented in **Table 7** indicate that under Future (2026) Plus Project conditions, operations at the signalized intersections are largely unchanged with the addition of project-generated traffic, with less than three seconds of increased delay at each location and in each peak hour. At the unsignalized intersections, LOS F conditions in the PM peak hour at Kane Street/Vevau Street are exacerbated by project traffic, and operations otherwise remain acceptable (LOS D or better) with the addition of project-generated traffic. While the project does exacerbate LOS E conditions at Kaahumanu Avenue/Kahului Beach Road-Kane Street, it adds at most 2.8 additional seconds of delay. Therefore, the project is not forecasted to cause a significant impact at this location. This is consistent with the fact that the project is adding traffic to movements that have relatively low demand as compared to other movements at the intersection.

Both a Four-Hour and an Eight-Hour Signal Warrant analysis were performed for the Kane Street/Vevau Street intersection for the Future (2026) Plus Project scenario because one or more side street movements is/are forecasted to operate at LOS F during the PM peak hour. The intersection does not meet either traffic signal warrant under Future (2026) Plus Project conditions. Therefore, the project is not determined to have a significant impact at Kane Street/Vevau Street based on the established significance criteria. However, the excessive delay at the intersection could be reduced by modifying the traffic control devices at the intersection, which would also have multimodal benefits, including pedestrian safety enhancements.







Study Intersection

Project Site

AM PM LOS: A-C D E F

XX (XX) AM (PM) Peak Hour Traffic Volume

Lane Configuration

Signalized

Figure 7

Peak Hour Traffic Volumes and Lane Configurations - Future (2026) Plus Project Conditions

Table 7: Future (2026) Without and With Project Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Future No Project Conditions			Future Plus Project Conditions			Change in Delay (sec/veh)[1]
			Intersection or Worst Movement		Worst Movement (for SSSC)	Intersection or Worst Movement		Worst Movement (for SSSC)	
			Delay (sec/veh)[1]	LOS		Delay (sec/veh)[1]	LOS		
1. Kahului Beach Rd-Kane St/ W Kaahumanu Ave	Signalized	AM	**63.0**	**E**		**64.7**	**E**		1.7
		PM	**62.8**	**E**		**65.6**	**E**		2.8
2. Lono Ave/ W Kaahumanu Ave	Signalized	AM	32.2	C		32.5	C		0.3
		PM	21.0	C		21.0	C		0.0
3. Kane St/Vevau St	SSSC	AM	22.9	C	EBL/T	26.7	D	EBL/T	3.8
		PM	**> 180.0***	**F**	EBL/T	**> 180.0***	**F**	EBL/T	**> 60.0**
4. Lono Ave/Vevau St	SSSC	AM	20.5	C	WBL/T/R	21.2	C	WBL/T/R	0.7
		PM	24.9	C	EBL/T/R	31.6	D	EBL/T/R	6.7
5. Kane St/ Kamehameha Ave	Signalized	AM	9.8	A		10.1	B		0.3
		PM	14.3	B		15.5	B		1.2
6. Lono Ave/ Kamehameha Ave	Signalized	AM	18.3	B		18.5	B		0.2
		PM	17.5	B		18.0	B		0.5
7. Kamehameha Ave/Wakea Ave	Signalized	AM	45.6	D		48.6	D		3.0
		PM	48.6	D		53.9	D		5.3

Source: Fehr & Peers, 2021.
Notes:
SSSC=Side-Street Stop Controlled
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for the signalized intersection. The vehicular delay for the worst movement is reported for the side-street stop-controlled intersection.
* Calculated delays above 180 seconds are not reliable and indicate substantially oversaturated conditions.

Accordingly, the MUTCD Multi-Way Stop Warrant was also evaluated for the Kane Street/Vevau Street intersection. The intersection will meet the multi-way stop warrant under Future (2026) Plus Project conditions, as it also did under No Project conditions. Because the project exacerbates undesirable conditions that are projected to occur under No Project conditions, the project would be expected to contribute its fair share to the cost of any improvement. The signal warrant and multi-way stop warrant worksheets are included in **Appendix D**.

Recommended Improvement

Although the project does not have a significant impact at Kane Street/Vevau Street due to the signal warrant not being met, the delay for selected side-street turning movements at this location is projected to be very high in the PM peak hour, both without and with the project. It is noted that the worst approach at this location is the shopping center driveway located across from the project, although the movements on Vevau Street exiting from the project are also projected to operate at LOS F, both without and with the proposed project.

According to the projected volume data, a multi-way stop is warranted at this location under Future (2026) conditions, both without and with the proposed project. Implementation of this control would result in average vehicle delays of 12.5 and 17.8 seconds in the AM and PM peak hours, respectively. Because the all-way stop control (AWSC) is expected to be warranted without the project, the new development would typically be required to contribute its fair share toward the design and installation. This share is 30.1% based on an average of AM and PM peak hour project traffic volumes as a share of future growth.

It is noted that AWSC would add delay to the northbound and southbound approaches, which currently are uncontrolled movements, but this control is not expected to substantially affect operations at adjacent intersections. The County of Maui will make the final determination on AWSC implementation at the Kane Street/Vevau Street intersection.



7. Site Access, Circulation, and Parking

This chapter includes a review of the site access and on-site circulation for vehicles, bicyclists, and pedestrians, which would also include most transit users. An evaluation of off-site active and transit travel modes is presented in **Chapter 8**.

7.1 Site Access

As shown in the site plan, vehicle access to the site is provided via two driveways: one on Kane Street located approximately 190 feet north of Vevau Street, and one on Vevau Street located approximately 150 feet east of Kane Street. The Kane Street driveway could be designed as a full-access driveway with an inbound left-turn pocket, and by providing a short refuge lane or permitting outbound left turns to cross the southbound left-turn pocket for Kane Street/Vevau Street. However, the proximity of the Kane Street driveway to the Kane Street/Vevau Street intersection could result in potential safety issues with outbound vehicles crossing a left-turn lane and minimizing the number of vehicles that would be entering the southbound travel lane approaching Vevau Street. Thus, it is recommended that left turns out of the Kane Street driveway be prohibited. A short length of painted median would distinguish between the pocket at the driveway and the pocket at the Kane Street/Vevau Street intersection. It should be noted that if AWSC is implemented at Kane Street/Vevau Street, southbound left-turn queues to Vevau Street are projected to only extend to up 100 feet, which can be accommodated by the proposed pocket length. Project vehicles that are destined for Kane Street south of Vevau Street could simply turn right from the Vevau Street driveway, and then left onto Kane Street.

Another issue associated with introducing the Kane Street driveway is the speed limit on this section of roadway. The existing 20-mph speed limit sign for southbound vehicles on Kane Street is located approximately 200 feet north of Vevau Street, immediately across from the proposed project driveway. Because vehicles continuing south from Kahului Beach Road onto Kane Street could be traveling 35 mph before this point, it is recommended that the 20-mph speed limit sign be moved as close to West Kaahumanu Avenue as possible. This modification would enhance safety for all users on Kane Street and would help to facilitate merging for vehicles making the eastbound right turn at West Kaahumanu Avenue/Kahului Beach Road-Kane Street and desiring to turn left into the project site.

The driveway on Vevau Street will be full access. It is noted that without AWSC at Kane Street/Vevau Street, the westbound queues at the intersection are projected to extend more than 150 feet past the Vevau Street driveway in the PM peak hour. This would result in temporary but regular delays for vehicles entering and exiting the site, as well as blockages of the entrance to the Vevau Street Bus Hub. With AWSC implemented at Kane Street/Vevau Street as recommended in **Section 6.1.1**, westbound queues



would only extend up to approximately 70 feet, and no substantial vehicle access issues would be anticipated with construction of the proposed project.

Striping for conceptual site access designs along with enhancements for pedestrian safety at the Kane Street/Vevau Street intersection (discussed in **Chapter 8**) are provided on **Figure 8**. The southbound left-turn pocket at the Kane Street driveway should be designed to accommodate two vehicles or be approximately 40 to 50 feet long. Overall, on-site access is deemed adequate with the proposed improvements, and no on-site modifications are recommended.

7.2 Collision Assessment

The proposed project is not changing the transportation network in the vicinity where fatal crashes occur as discussed in **Section 3.1.4**. While the project will add a small amount of traffic to these facilities where these crashes occurred, the project is not anticipated to change the crash rate. Given that it is not possible to perfectly predict human behavior and random fluctuations in crash locations or frequency, additional factors and influences may obfuscate the effects of the proposed project. This does not constitute, and is not meant to be, a comprehensive review of safety in the study or surrounding area, which could be much broader in scope (e.g., including a review of individual collision records, human factors considerations, and comparisons of the collision rates and frequencies with similar localities).

7.3 On-Site Circulation & Parking

A 182-space parking deck will be provided for the building housing the offices, library, school, and commercial uses. The required non-residential parking supply per the Maui County Code Chapter 19.36B.020 is 174, so the proposed supply will exceed the Code's minimum requirement for the non-residential building.

A total of 414 parking spaces will be provided in the residential buildings (or 207 spaces per building). Although the unadjusted required residential parking supply is 600 spaces, the project is centrally located within the community of Kahului, which provides nearby transit, pedestrian, and bicycle access. Furthermore, the live/work mixed uses that make up the project will allow for sharing of the parking deck spaces. Specifically, excess overnight residential parking demand can be accommodated by the parking deck while the commercial uses are closed. Therefore, per the Maui County Code Chapter 19.36B.100 reduction criteria (which allows for up to a 50% reduction), the on-site parking at the proposed project is consistent with the County parking policy. For all project uses combined, the proposed parking supply is 23% less than the unadjusted requirement.

Short-term bicycle parking (e.g., bicycle racks) should be provided on the project site near the main entrance to the building housing commercial uses, which would allow employees and visitors to secure their bicycles while inside the project. Bicycle storage should be provided in or near the residential buildings to allow for longer-term bicycle storage for residents.

No substantial circulation or parking issues are anticipated with construction of the proposed project.





Conceptual – Not for Construction. Additional Detailed Analysis and Engineering Design Required.

Figure 8

Conceptual Site Access

8. Multimodal Assessment

This chapter includes a review of multimodal access to the site and on-site facilities and circulation for buses, other vehicles, pedestrians, and bicyclists surrounding the site.

8.1 Transit Facilities and Services

Sufficient transit service is currently provided to Kahului by Maui Bus. The Vevau Street Bus Hub is currently being constructed immediately adjacent to the project to the southeast, which will be able to serve project residents, commuters, and visitors at the time of project buildout. Some increase in demand to transit is anticipated with implementation of the proposed project, which can be accommodated based on existing service and frequency, as well as planned bus stop amenities. Within the project study area, implementation of the proposed project is not expected to conflict with any existing or planned transit service included in the planning documents listed in **Section 2.4.3.** No significant impacts to transit are anticipated to occur with buildout of the proposed project.

8.2 Bicycle Facilities

Bicyclists will access the site via the existing roadway network. Along West Kaahumanu Avenue and West Kamehameha Avenue separate bike lanes are provided, while on Kane Street and Vevau Street they must share the road with vehicles. Kane Street and Vevau Street both include posted 20-mph speed limits that help to enhance safety for cyclists by limiting vehicle speeds. The project is not expected to generate a significant amount of bike demand (fewer than 15 bike trips in the peak hour on any single facility in one direction are anticipated), such that the existing facilities can accommodate project-generated bicycle demand.

Implementation of the proposed project is not expected to conflict with any existing bikeways or planned bicycle facilities included in the planning documents listed in **Section 2.4.3**. Accordingly, no significant impacts to bicyclists are expected to occur with buildout of the proposed project.

8.3 Pedestrian Facilities

Pedestrians will access the site via existing sidewalks along Vevau Street, along the east side of Kane Street to the south of Vevau Street, and along the south side of West Kaahumanu Avenue. The project is expected to construct a sidewalk along the east of Kane Street between West Kaahumanu Avenue and Vevau Street as part of its frontage improvements. The project will also provide a pedestrian path connection to West Kaahumanu Avenue along the north edge of the project. Pedestrian access should be provided on both sides of each project driveway to separate pedestrians from vehicles. All study intersections include high-visibility crosswalks to enhance pedestrian movement.

Given the new development along the east side of Kane Street included the project, the Vevau Street Bus Hub, and the Kahului Lani senior affordable housing complex, as well as the desired improvements to

pedestrian crossing at Kane Street/Vevau Street identified in *Hele Mai Maui 2040* and the *Central Maui Pedestrian and Bicycle Master Plan for 2030*, the following pedestrian enhancements at Kane Street/Vevau Street are recommended:

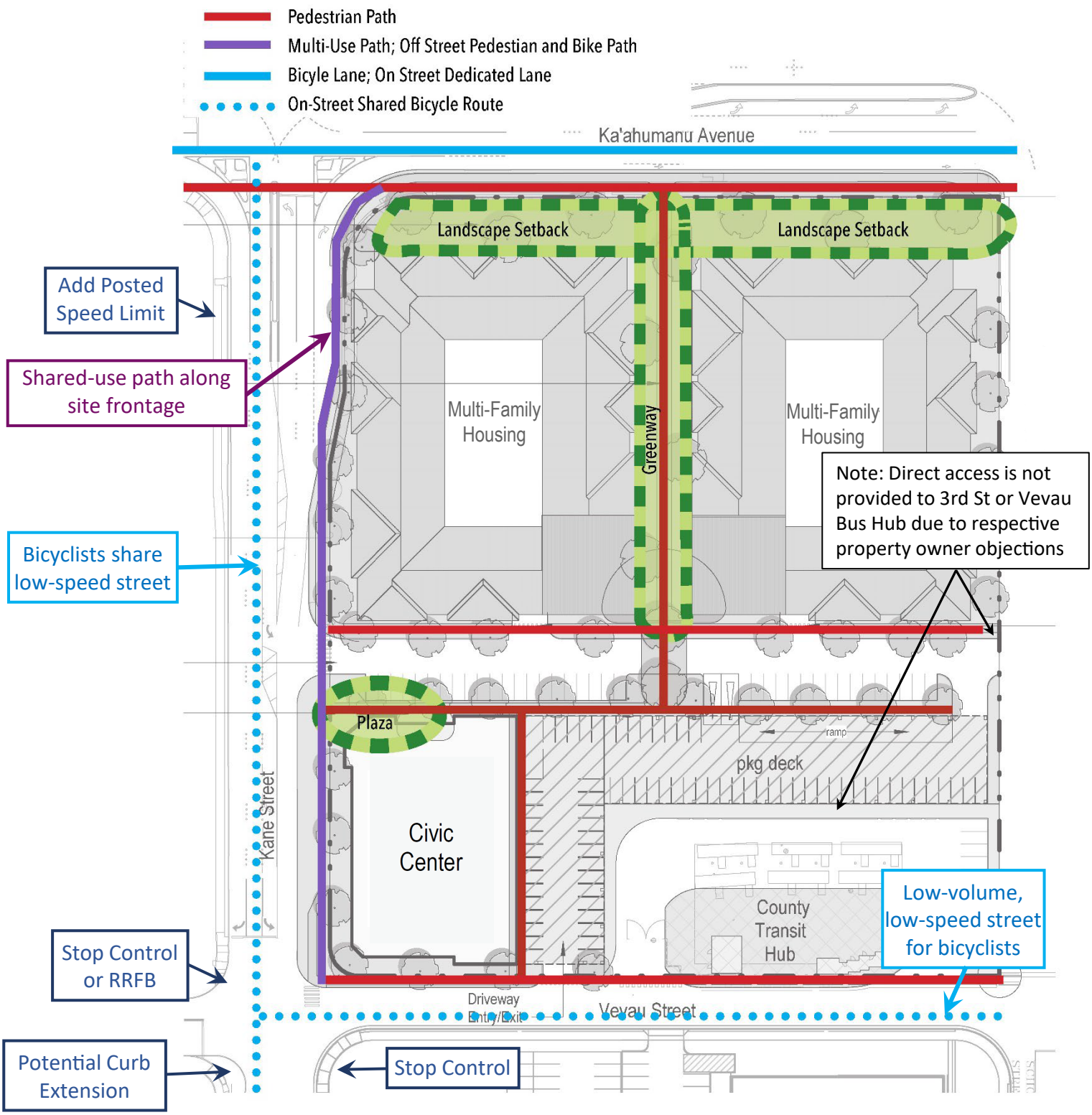
- Implement AWSC as warranted.
    - As noted in **Section 6.1.1**, AWSC would add delay to the northbound and southbound approaches that currently are uncontrolled movements, but this control is not expected to substantially affect operations at adjacent intersections. The County of Maui will make the final determination on AWSC implementation at the Kane Street/Vevau Street intersection.
    - If AWSC is not implemented, an alternative pedestrian enhancement would be to provide a rectangular rapid flashing beacon (RRFB) for the crossing on the north leg to improve pedestrian safety. As noted in **Section 7.1**, without implementation of AWSC, however, vehicle queues and delays on Vevau Street would cause excessive peak hour congestion and queueing.
- Restripe the southbound Kane Street approach to Vevau Street to be a southbound right-turn lane, a southbound through lane, and a southbound left-turn lane. This improvement, in combination with AWSC, would result in average vehicle delays of 13.3 and 19.0 seconds in the AM and PM peak hours, respectively.
- Construct a curb extension on the southwest corner of the intersection to shorten the pedestrian crossing distance. This improvement could be implemented with or without AWSC as part of restriping the southbound approach.

Implementation of the proposed project is not expected to conflict with any existing or planned pedestrian facilities included in the planning documents listed in **Section 2.4.3**. No significant impacts to pedestrians are forecasted to occur with buildout of the project.

Multimodal circulation, including the identified improvements, is summarized on **Figure 9**.

8.4 Future Improvements

The County of Maui Department of Public Works is currently preparing plans for Complete Streets improvements on Kane Street from West Kaahumanu Avenue to West Kamehameha Avenue. These improvements include wider sidewalks for pedestrians, separate bicycle facilities for cyclists, and enhancements at the Kane Street/Vevau Street intersection to shorten pedestrian crossings and manage vehicle speeds. While the improvement plans are still being developed, several alternative cross-sections are being considered:



Conceptual – Not for Construction. Additional Detailed Analysis and Engineering Design Required.

Figure 9

Multimodal Circulation

- Alternate 1: Install a protected intersection at Kane Street and Vevau Street, with one-way protected bicycle lanes and a raised midblock crosswalk between Vevau Street and Kamehameha Avenue
- Alternate 2: Install a raised intersection at Kane Street and Vevau Street, with a shared-use path on the east side of the street and a raised midblock crosswalk between Vevau Street and Kamehameha Avenue
- Alternate 3: Install a 10-foot-wide pedestrian promenade south of Kaahumanu Avenue on the east side of Kane Street, one-way standard bicycle lanes, and raised crosswalk at two locations: 1) across the south leg of the Kane Street at Vevau Street, and 2) midblock between Vevau Street and Kamehameha Avenue

Alternates 1 and 2 are more desirable in that they both provide greater bicycle and pedestrian safety enhancements superior pedestrian facilities compared to those provided in Alternate 3. The project site plan will be designed to accommodate the future County improvements, and the recommendations listed above in Section 6.1 and Sections 8.1 through 8.3 are consistent with the County plans and Complete Streets best practices.

Appendix A: Historic Traffic Count Data

Excerpt from Kahului Lani Affordable Senior Housing Project Draft EA Appendix C: Traffic Impact Analysis Report (prepared by Austin, Tsutsumi & Associates, Inc.)

FEHR PEERS

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

	KAAHUMANU AVE Eastbound				KAAHUMANU AVE Westbound				KANE ST Northbound				KAHULUI BEACH RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
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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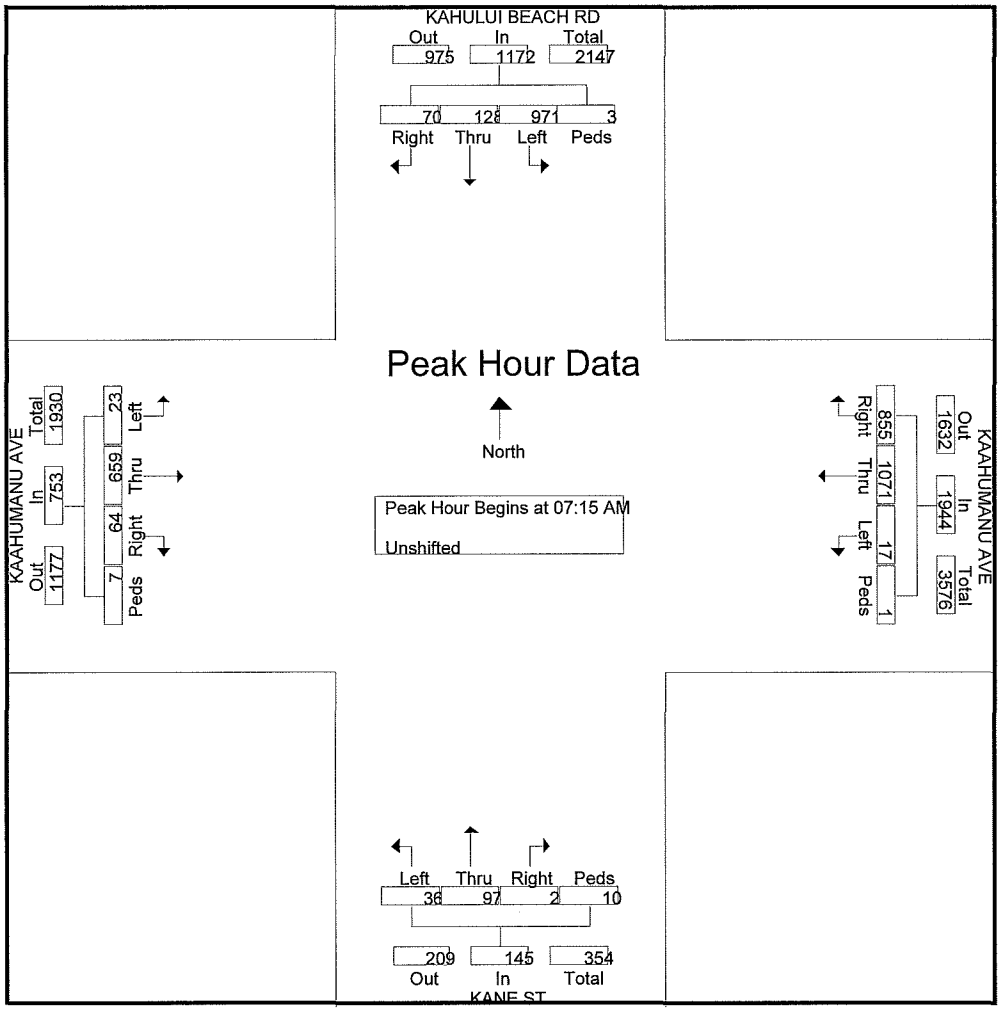
	KAAHUMANU AVE Eastbound					KAAHUMANU AVE Westbound					KANE ST Northbound					KAHULUI BEACH RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:45 AM to 08:30 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 : 1

Groups Printed- Unshifted - Bank 1

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Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
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Total	5	1	1	0	3	279	1	0	38	1	9	0	2	415	22	3	780
07:00 AM	5	3	1	0	4	336	2	3	36	2	2	2	2	341	22	4	765
07:15 AM	4	3	0	0	7	394	1	0	43	0	9	1	2	354	40	2	860
07:30 AM	6	1	3	0	6	469	2	0	51	5	10	1	5	372	29	5	965
07:45 AM	4	3	5	0	4	425	4	1	33	7	10	2	7	365	34	2	906
Total	19	10	9	0	21	1624	9	4	163	14	31	6	16	1432	125	13	3496
08:00 AM	8	5	0	0	3	438	5	0	42	2	4	0	2	364	28	9	910
08:15 AM	6	1	0	0	6	386	2	0	30	2	5	3	2	331	21	8	803
08:30 AM	8	7	7	0	9	430	2	0	23	4	10	0	3	318	30	4	855
Grand Total	46	24	17	0	42	3157	19	4	296	23	59	9	25	2860	226	37	6844
Apprch %	52.9	27.6	19.5	0	1.3	98	0.6	0.1	76.5	5.9	15.2	2.3	0.8	90.9	7.2	1.2	
Total %	0.7	0.4	0.2	0	0.6	46.1	0.3	0.1	4.3	0.3	0.9	0.1	0.4	41.8	3.3	0.5	
Unshifted	46	24	17	0	42	3157	19	4	296	23	59	9	25	2860	226	37	6844
% Unshifted	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	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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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:45 AM to 08:30 AM - Peak 1 of 1																					
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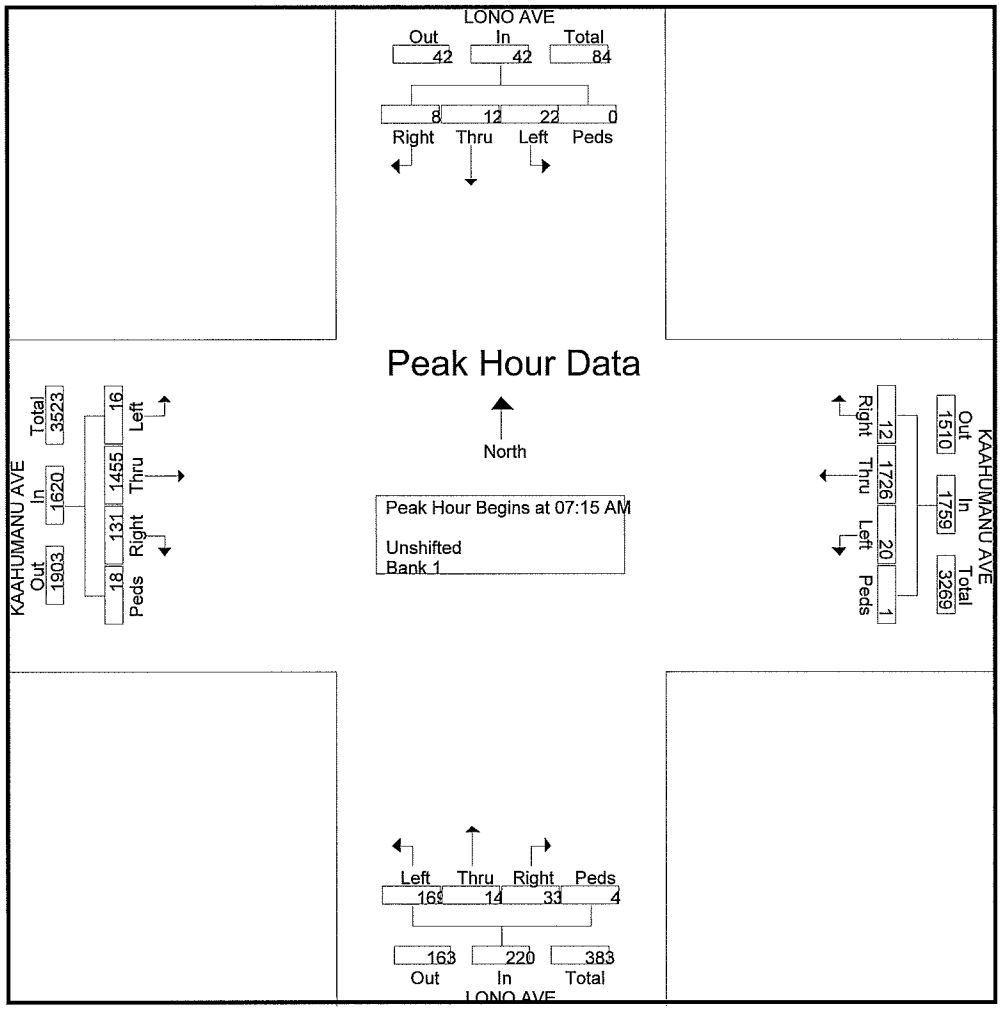
07:30 AM	6	1	3	0	10	6	**469**	2	0	**477**	**51**	5	**10**	1	**67**	5	**372**	29	5	**411**	**965**
07:45 AM	4	3	**5**	0	12	4	425	4	**1**	434	33	**7**	10	**2**	52	**7**	365	34	2	408	906
08:00 AM	**8**	**5**	0	0	**13**	3	438	**5**	0	446	42	2	4	0	48	2	364	28	**9**	403	910
Total Volume	22	12	8	0	42	20	1726	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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	LONO AVE Southbound				VEVAU ST Westbound				LONO AVE Northbound				VEVAU ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:45 AM	1	44	7	0	0	0	0	0	2	51	2	0	5	2	7	0	121
Total	1	44	7	0	0	0	0	0	2	51	2	0	5	2	7	0	121
07:00 AM	0	32	5	0	1	1	1	0	3	47	3	0	0	1	9	0	103
07:15 AM	5	48	7	0	1	2	1	0	4	61	5	0	6	2	6	0	148
07:30 AM	3	40	8	0	0	0	1	0	5	66	3	0	2	2	11	0	141
07:45 AM	2	59	6	0	1	2	0	0	9	56	11	0	2	1	16	0	165
Total	10	179	26	0	3	5	3	0	21	230	22	0	10	6	42	0	557
08:00 AM	3	41	5	0	5	2	2	0	5	53	5	0	4	4	10	0	139
08:15 AM	4	26	5	0	1	1	1	0	5	38	5	0	2	0	8	0	96
08:30 AM	3	51	3	0	1	4	2	0	2	48	1	0	2	1	12	0	130
Grand Total	21	341	46	0	10	12	8	0	35	420	35	0	23	13	79	0	1043
Apprch %	5.1	83.6	11.3	0	33.3	40	26.7	0	7.1	85.7	7.1	0	20	11.3	68.7	0	
Total %	2	32.7	4.4	0	1	1.2	0.8	0	3.4	40.3	3.4	0	2.2	1.2	7.6	0	
Unshifted	21	341	46	0	10	12	8	0	35	420	35	0	23	13	79	0	1043
% Unshifted	100	100	100	0	100	100	100	0	100	100	100	0	100	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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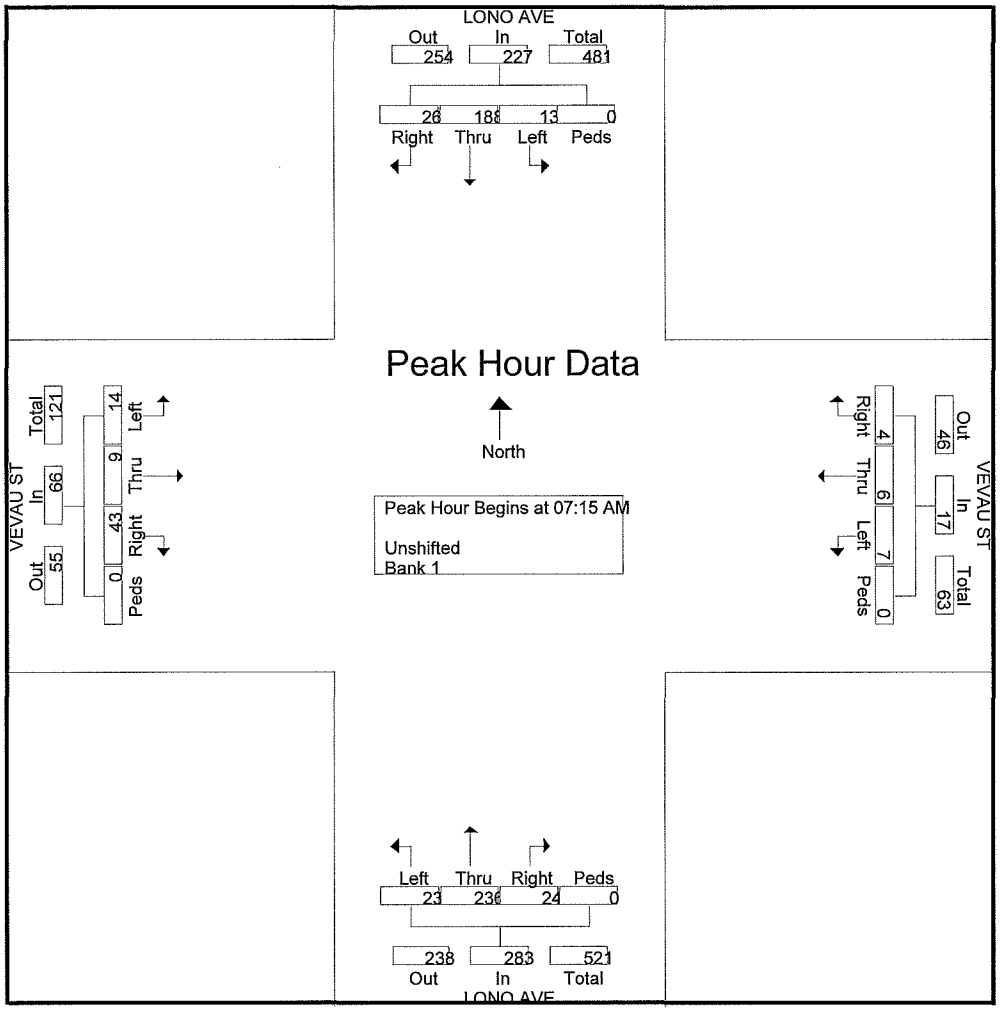
File Name : AM_Lono Ave - Vevau St
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	LONO AVE Southbound					VEVAU ST Westbound					LONO AVE Northbound					VEVAU ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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 : 1

Groups Printed- Unshifted - Bank 1

	LONO AVE Southbound				KAMEHAMEHA AVE Westbound				LONO AVE Northbound				KAMEHAMEHA AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:45 AM	18	25	10	0	1	30	6	0	4	36	12	0	17	38	3	1	201
Total	18	25	10	0	1	30	6	0	4	36	12	0	17	38	3	1	201
07:00 AM	17	19	3	2	2	30	9	0	2	36	10	0	11	38	0	1	180
07:15 AM	14	32	12	0	7	35	3	0	3	57	12	0	7	74	0	1	257
07:30 AM	23	30	5	0	9	41	12	0	4	58	25	0	10	78	3	0	298
07:45 AM	26	30	13	0	6	38	17	0	2	47	29	0	22	118	3	0	351
Total	80	111	33	2	24	144	41	0	11	198	76	0	50	308	6	2	1086
08:00 AM	24	23	7	1	4	59	19	0	2	39	21	0	12	70	1	0	282
08:15 AM	15	13	6	0	5	56	17	0	1	21	13	1	13	51	1	0	213
08:30 AM	29	21	15	1	5	44	14	0	2	21	17	0	11	58	1	0	239
Grand Total	166	193	71	4	39	333	97	0	20	315	139	1	103	525	12	3	2021
Apprch %	38.2	44.5	16.4	0.9	8.3	71	20.7	0	4.2	66.3	29.3	0.2	16	81.6	1.9	0.5	
Total %	8.2	9.5	3.5	0.2	1.9	16.5	4.8	0	1	15.6	6.9	0	5.1	26	0.6	0.1	
Unshifted	166	193	71	4	39	333	97	0	20	315	139	1	103	525	12	3	2021
% Unshifted	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	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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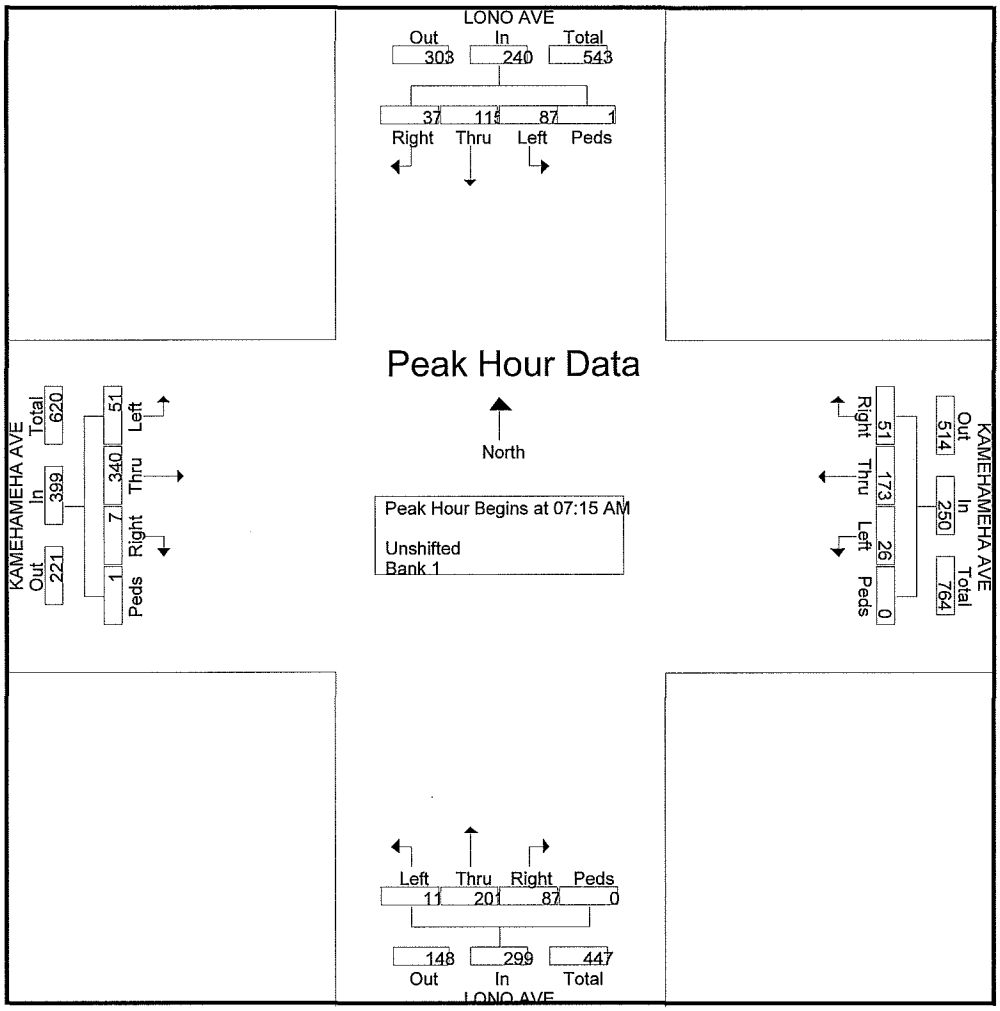
File Name : AM_Lono Ave - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	LONO AVE Southbound					KAMEHAMEHA AVE Westbound					LONO AVE Northbound					KAMEHAMEHA AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	KANE ST Southbound				KAMEHAMEHA AVE Westbound				KANE ST Northbound				KAMEHAMEHA AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:45 AM	0	40	5	0	1	4	1	0	23	46	0	0	2	2	38	0	162
Total	0	40	5	0	1	4	1	0	23	46	0	0	2	2	38	0	162
07:00 AM	1	25	7	0	0	8	0	0	23	51	1	2	4	4	33	0	159
07:15 AM	0	34	10	0	0	5	0	0	34	75	3	1	12	3	42	2	221
07:30 AM	0	40	11	0	2	4	0	1	24	97	2	0	7	5	38	0	241
07:45 AM	0	41	12	0	2	4	0	0	29	112	2	1	18	9	34	2	266
Total	1	140	40	0	4	21	0	1	120	335	8	4	41	21	147	4	887
08:00 AM	0	44	23	0	1	6	0	0	27	73	0	0	11	6	34	0	225
08:15 AM	0	39	19	0	0	2	0	0	25	51	1	0	7	6	27	1	178
08:30 AM	0	44	19	1	0	3	0	0	29	65	1	0	12	3	26	0	203
Grand Total	1	307	106	1	6	36	1	1	224	570	10	4	73	38	272	5	1655
Apprch %	0.2	74	25.5	0.2	13.6	81.8	2.3	2.3	27.7	70.5	1.2	0.5	18.8	9.8	70.1	1.3	
Total %	0.1	18.5	6.4	0.1	0.4	2.2	0.1	0.1	13.5	34.4	0.6	0.2	4.4	2.3	16.4	0.3	
Unshifted	1	307	106	1	6	36	1	1	224	570	10	4	73	38	272	5	1655
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	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

Revised for Fehr & Peers analysis

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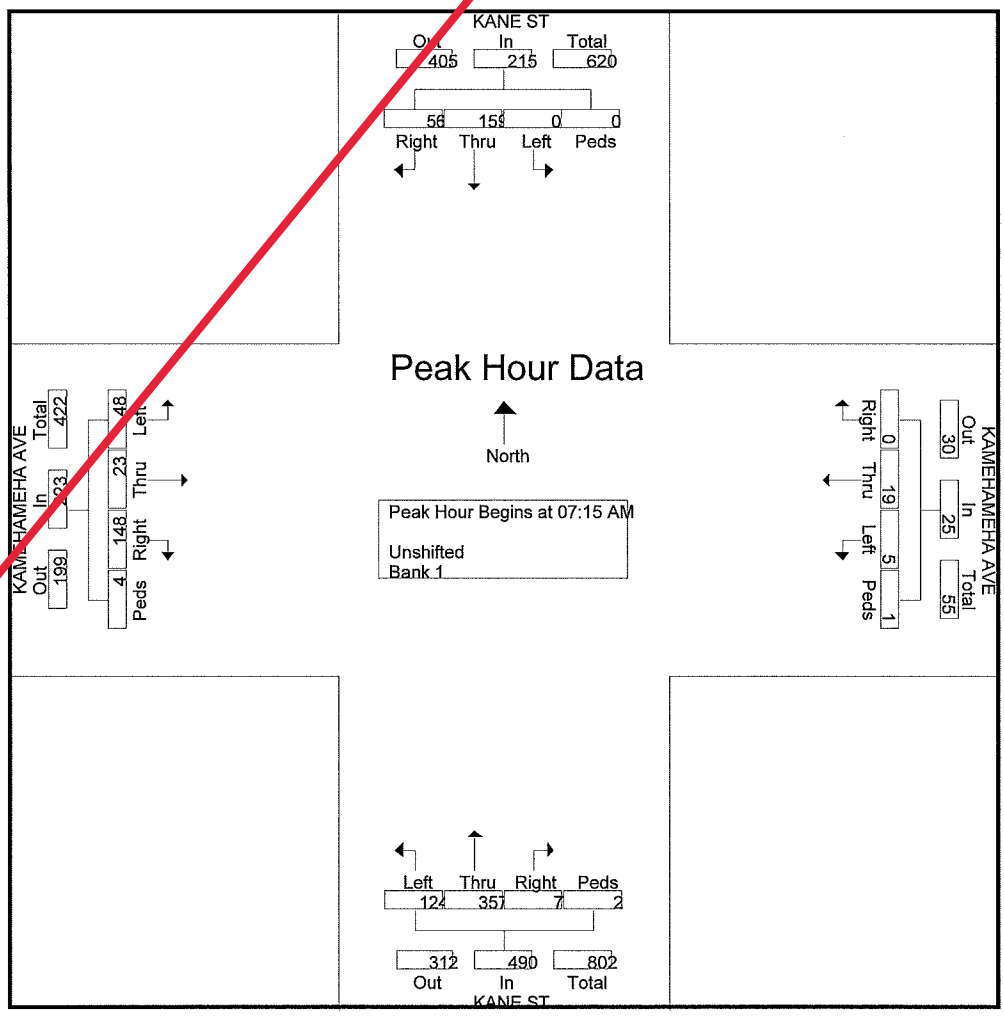
File Name : AM_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	KANE ST Southbound					KAMEHAMEHA AVE Westbound					KANE ST Northbound					KAMEHAMEHA AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	34	10	0	44	0	5	0	0	5	**34**	75	**5**	**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



Revised for Fehr & Peers analysis

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File Name : AM_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	Kamehameha Ave Southbound				Kane St Westbound				Kamehameha Ave Northbound				Kane St Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:45 AM	0	40	5	0	1	4	1	0	23	46	0	0	2	2	38	0	162
Total	0	40	5	0	1	4	1	0	23	46	0	0	2	2	38	0	162
07:00 AM	1	25	7	0	0	8	0	0	23	51	1	2	4	4	33	0	159
07:15 AM	0	34	10	0	0	5	0	0	34	75	3	1	12	3	42	2	221
07:30 AM	0	40	11	0	2	4	0	1	34	97	2	0	7	5	38	0	241
07:45 AM	0	41	12	0	2	4	0	0	29	112	2	1	18	9	34	2	266
Total	1	140	40	0	4	21	0	1	120	335	8	4	41	21	147	4	887
08:00 AM	0	44	23	0	1	6	0	0	27	73	0	0	11	6	34	0	225
08:15 AM	0	39	19	0	0	2	0	0	25	51	1	0	7	6	27	1	178
08:30 AM	0	44	19	1	0	3	0	0	29	65	1	0	12	3	26	0	203
Grand Total	1	307	106	1	6	36	1	1	224	570	10	4	73	38	272	5	1655
Apprch %	0.2	74	25.5	0.2	13.6	81.8	2.3	2.3	27.7	70.5	1.2	0.5	18.8	9.8	70.1	1.3	
Total %	0.1	18.5	6.4	0.1	0.4	2.2	0.1	0.1	13.5	34.4	0.6	0.2	4.4	2.3	16.4	0.3	
Unshifted	1	307	106	1	6	36	1	1	224	570	10	4	73	38	272	5	1655
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	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

Fehr & Peers revisions: streets appear to be incorrectly labeled, assumed correct roadway orientation matches PM count (Kane EB/WB and Kamehameha NB/SB)

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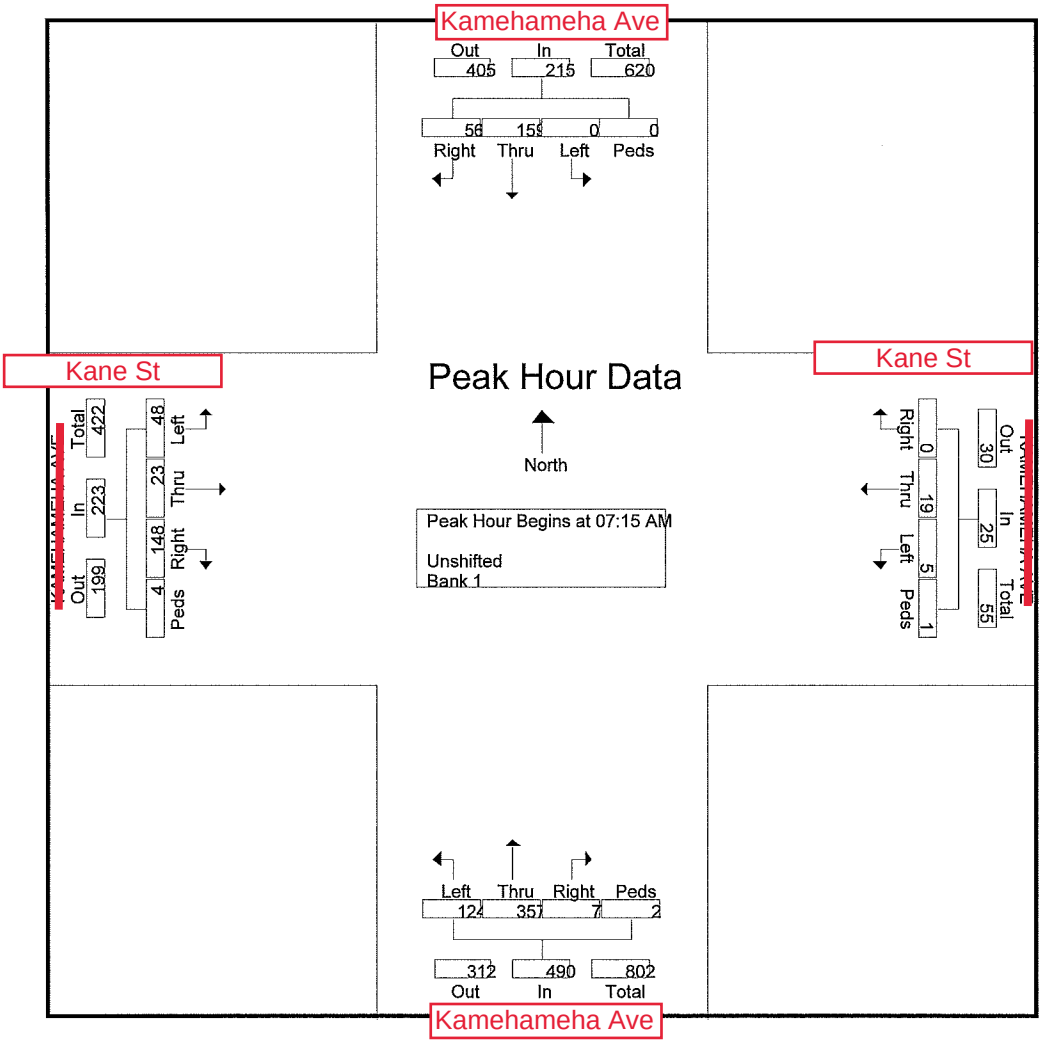
File Name : AM_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	Kamehameha Ave Southbound					Kane St Westbound					Kamehameha Ave Northbound					Kane St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	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



Fehr & Peers revisions: streets appear to be incorrectly labeled, assumed correct roadway orientation matches PM count (Kane EB/WB and Kamehameha NB/SB)

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File Name : PM_Kahului Beach Road_Kane St - Kaahumanu Ave
Site Code : 00000000
Start Date : 3/8/2017
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Groups Printed- Unshifted

	KAAHUMANU AVE Eastbound				KAAHUMANU AVE Westbound				KANE ST Northbound				KAHULUI BEACH RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
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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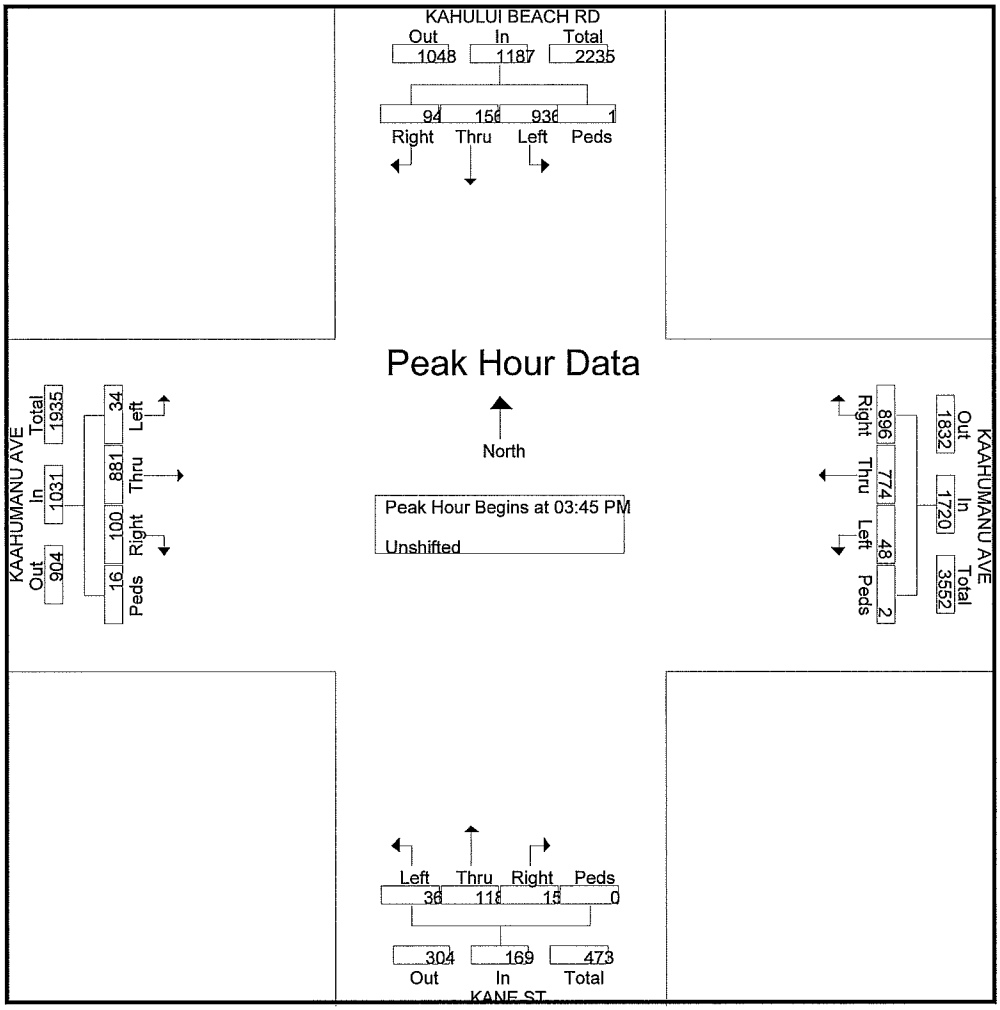
File Name : PM_Kahului Beach Road_Kane St - Kaahumanu Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	KAAHUMANU AVE Eastbound					KAAHUMANU AVE Westbound					KANE ST Northbound					KAHULUI BEACH RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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 : 1

Groups Printed- Unshifted - Bank 1

	LONO AVE Southbound				KAAHUMANU AVE Westbound				LONO AVE Northbound				KAAHUMANU AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:15 PM	2	1	1	0	16	377	2	0	53	0	8	0	0	385	21	1	867
03:30 PM	4	3	0	0	12	453	3	1	46	2	19	0	2	409	29	2	985
03:45 PM	5	2	1	0	12	419	5	2	47	3	6	0	0	436	27	0	965
Total	11	6	2	0	40	1249	10	3	146	5	33	0	2	1230	77	3	2817
04:00 PM	6	5	0	0	17	477	3	0	44	1	7	0	2	385	56	2	1005
04:15 PM	8	5	3	0	15	427	9	3	32	7	16	0	2	433	23	1	984
04:30 PM	8	10	4	0	10	464	8	0	41	2	5	0	5	406	27	0	990
04:45 PM	4	1	3	0	17	452	9	0	37	1	8	0	4	430	17	2	985
Total	26	21	10	0	59	1820	29	3	154	11	36	0	13	1654	123	5	3964
05:00 PM	3	2	0	0	6	409	3	3	61	5	7	0	0	368	22	0	889
Grand Total	40	29	12	0	105	3478	42	9	361	21	76	0	15	3252	222	8	7670
Apprch %	49.4	35.8	14.8	0	2.9	95.7	1.2	0.2	78.8	4.6	16.6	0	0.4	93	6.3	0.2	
Total %	0.5	0.4	0.2	0	1.4	45.3	0.5	0.1	4.7	0.3	1	0	0.2	42.4	2.9	0.1	
Unshifted	40	29	12	0	105	3478	42	9	361	21	76	0	15	3252	222	8	7670
% Unshifted	100	100	100	0	100	100	100	100	100	100	100	0	100	100	100	100	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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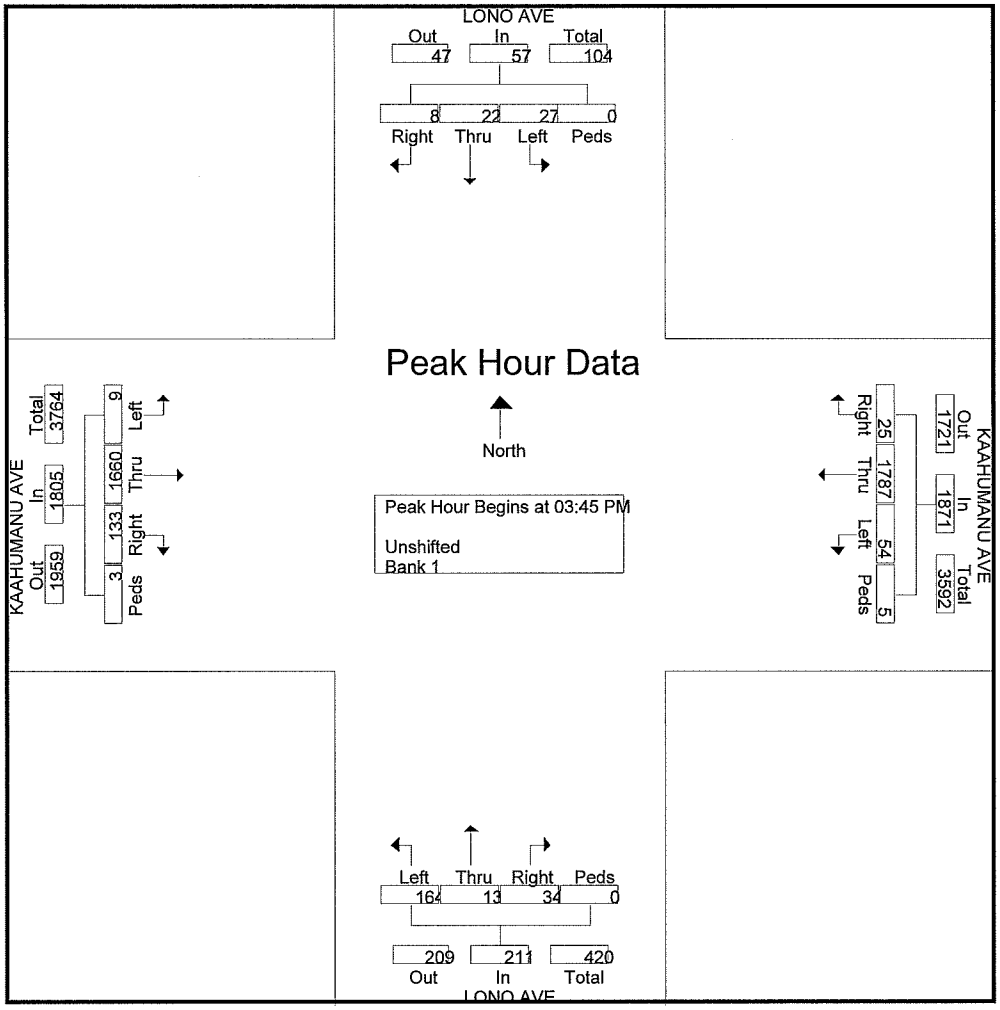
File Name : PM_Lono Ave - Kaahumanu Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	LONO AVE Southbound					KAAHUMANU AVE Westbound					LONO AVE Northbound					KAAHUMANU AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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_Lono Ave - Vevau St
Site Code : 00000000
Start Date : 3/8/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	LONO AVE Southbound				VEVAU ST Westbound				LONO AVE Northbound				VEVAU ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:15 PM	2	42	7	0	9	1	4	0	8	48	1	0	9	1	36	0	168
03:30 PM	0	56	11	0	4	5	2	0	7	60	4	0	9	0	34	0	192
03:45 PM	3	56	12	0	1	2	0	0	13	46	7	0	8	7	31	0	186
Total	5	154	30	0	14	8	6	0	28	154	12	0	26	8	101	0	546
04:00 PM	3	55	5	0	1	1	0	0	13	39	4	0	6	4	26	0	157
04:15 PM	2	51	7	0	7	2	5	0	14	42	5	0	11	4	30	0	180
04:30 PM	0	55	16	0	6	1	2	0	7	33	5	0	7	8	24	0	164
04:45 PM	1	41	11	0	2	3	3	0	15	43	3	0	7	3	25	0	157
Total	6	202	39	0	16	7	10	0	49	157	17	0	31	19	105	0	658
05:00 PM	0	49	7	0	8	1	2	0	10	55	10	0	9	3	25	0	179
Grand Total	11	405	76	0	38	16	18	0	87	366	39	0	66	30	231	0	1383
Apprch %	2.2	82.3	15.4	0	52.8	22.2	25	0	17.7	74.4	7.9	0	20.2	9.2	70.6	0	
Total %	0.8	29.3	5.5	0	2.7	1.2	1.3	0	6.3	26.5	2.8	0	4.8	2.2	16.7	0	
Unshifted	11	405	76	0	38	16	18	0	87	366	39	0	66	30	231	0	1383
% Unshifted	100	100	100	0	100	100	100	0	100	100	100	0	100	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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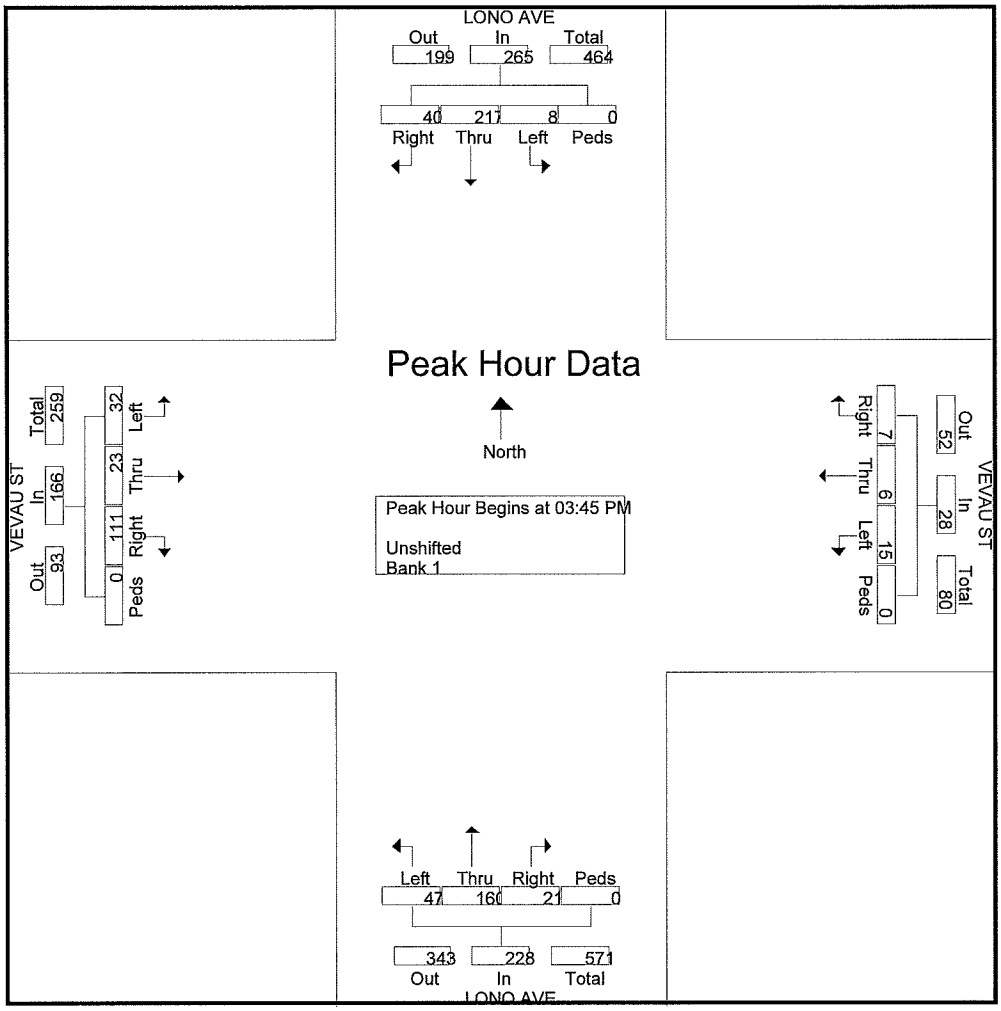
File Name : PM_Lono Ave - Vevau St
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	LONO AVE Southbound					VEVAU ST Westbound					LONO AVE Northbound					VEVAU ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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 : 1

Groups Printed- Unshifted - Bank 1

	LONO AVE Southbound				KAMEHAMEHA AVE Westbound				LONO AVE Northbound				KAMEHAMEHA AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:15 PM	43	26	16	0	11	69	24	1	1	28	23	0	12	73	5	0	332
03:30 PM	59	25	16	1	18	82	21	0	4	32	18	0	12	99	4	0	391
03:45 PM	50	29	16	0	13	81	25	0	1	30	18	0	13	109	4	0	389
Total	152	80	48	1	42	232	70	1	6	90	59	0	37	281	13	0	1112
04:00 PM	42	25	13	1	25	76	24	0	6	24	19	0	11	85	2	0	353
04:15 PM	48	24	15	0	21	98	26	0	5	27	9	0	9	87	3	0	372
04:30 PM	36	31	19	0	26	123	16	0	0	21	14	0	8	80	2	1	377
04:45 PM	37	28	11	1	17	91	18	0	11	30	21	0	6	80	3	0	354
Total	163	108	58	2	89	388	84	0	22	102	63	0	34	332	10	1	1456
05:00 PM	36	28	17	0	19	110	27	0	5	33	12	0	10	79	3	0	379
Grand Total	351	216	123	3	150	730	181	1	33	225	134	0	81	692	26	1	2947
Apprch %	50.6	31.2	17.7	0.4	14.1	68.7	17	0.1	8.4	57.4	34.2	0	10.1	86.5	3.2	0.1	
Total %	11.9	7.3	4.2	0.1	5.1	24.8	6.1	0	1.1	7.6	4.5	0	2.7	23.5	0.9	0	
Unshifted	351	216	123	3	150	730	181	1	33	225	134	0	81	692	26	1	2947
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	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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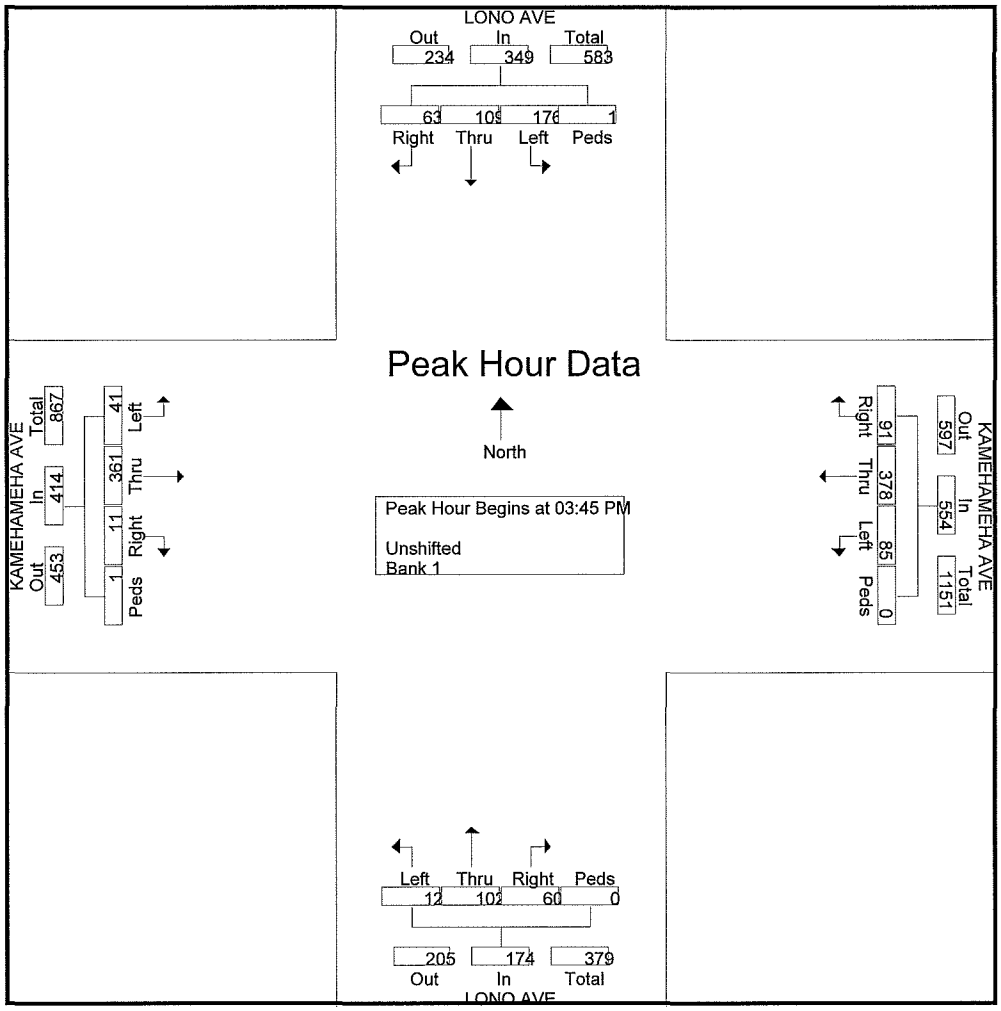
File Name : PM_Lono Ave - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	LONO AVE Southbound					KAMEHAMEHA AVE Westbound					LONO AVE Northbound					KAMEHAMEHA AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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



Austin Tsutsumi & Associates

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File Name : PM_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	KAMEHAMEHA AVE Southbound				KANE ST Westbound				KAMEHAMEHA AVE Northbound				KANE ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:15 PM	0	67	18	0	1	2	0	0	29	60	0	1	33	5	54	0	270
03:30 PM	2	67	26	0	2	3	0	0	39	94	1	0	29	10	62	0	335
03:45 PM	1	70	37	0	1	5	1	0	22	93	2	0	27	6	58	0	323
Total	3	204	81	0	4	10	1	0	90	247	3	1	89	21	174	0	928
04:00 PM	0	70	24	3	0	4	0	0	34	75	2	0	25	12	56	0	305
04:15 PM	1	100	24	0	2	5	1	2	30	68	1	0	30	13	60	2	339
04:30 PM	0	107	33	0	1	2	0	0	32	51	0	0	27	16	53	0	322
04:45 PM	1	80	22	0	1	5	1	0	31	67	2	1	34	4	49	0	298
Total	2	357	103	3	4	16	2	2	127	261	5	1	116	45	218	2	1264
05:00 PM	0	86	32	0	0	4	0	0	20	50	0	0	31	3	56	0	282
Grand Total	5	647	216	3	8	30	3	2	237	558	8	2	236	69	448	2	2474
Apprch %	0.6	74.3	24.8	0.3	18.6	69.8	7	4.7	29.4	69.3	1	0.2	31.3	9.1	59.3	0.3	
Total %	0.2	26.2	8.7	0.1	0.3	1.2	0.1	0.1	9.6	22.6	0.3	0.1	9.5	2.8	18.1	0.1	
Unshifted	5	647	216	3	8	30	3	2	237	558	8	2	236	69	448	2	2474
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	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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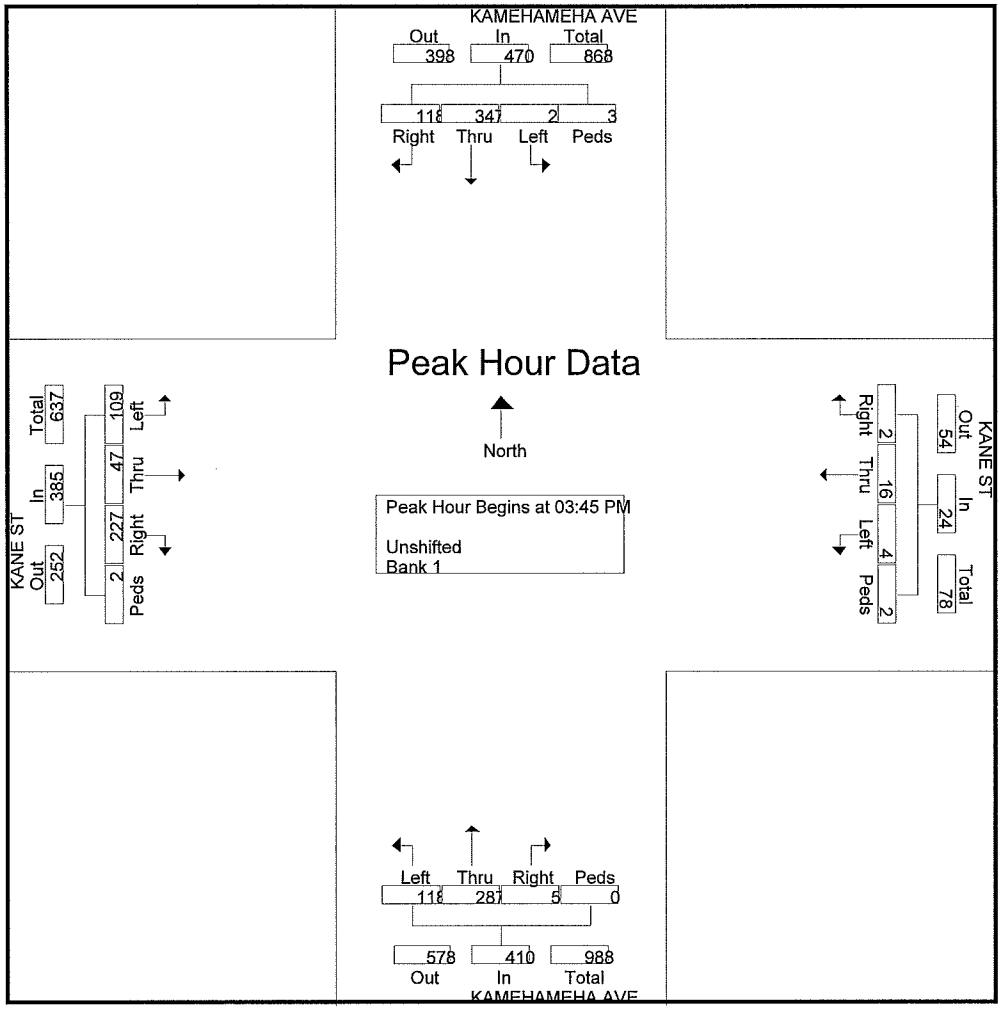
File Name : PM_Kane St - Kamehameha Ave
Site Code : 00000000
Start Date : 3/8/2017
Page No : 2

	KAMEHAMEHA AVE Southbound					KANE ST Westbound					KAMEHAMEHA AVE Northbound					KANE ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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



Excerpt from Transit Hub Relocation at Kahului, Maui, Hawaii Draft EA Appendix E: Traffic Impact Analysis Report (prepared by Austin, Tsutsumi & Associates, Inc.)

FEHR PEERS

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
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File Name : Kane St - Vevau St
Site Code : 18-550 Maui Bus Hub
Start Date : 10/16/2018
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	KANE STREET SOUTHBOUND				VEVAU STREET WESTBOUND				KANE STREET NORTHBOUND				QKC DWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:45	5	57	1	0	4	5	9	0	8	25	5	5	1	5	5	0	135
Total	5	57	1	0	4	5	9	0	8	25	5	5	1	5	5	0	135
07:00	6	46	7	1	3	2	7	0	5	19	2	0	5	7	4	1	115
07:15	12	37	3	1	1	3	4	0	5	32	1	1	2	6	10	1	119
07:30	8	51	6	4	4	6	12	0	8	38	3	3	0	5	9	1	158
07:45	3	47	2	3	0	6	7	0	9	43	3	3	3	12	8	1	150
Total	29	181	18	9	8	17	30	0	27	132	9	7	10	30	31	4	542
08:00	4	36	4	0	4	5	7	0	7	38	0	0	4	6	5	0	120
08:15	6	32	5	0	3	4	6	0	7	15	0	0	3	5	4	0	90
08:30	4	35	9	0	1	5	3	0	16	25	1	3	3	9	12	2	128
Grand Total	48	341	37	9	20	36	55	0	65	235	15	15	21	55	57	6	1015
Apprch %	11	78.4	8.5	2.1	18	32.4	49.5	0	19.7	71.2	4.5	4.5	15.1	39.6	41	4.3	
Total %	4.7	33.6	3.6	0.9	2	3.5	5.4	0	6.4	23.2	1.5	1.5	2.1	5.4	5.6	0.6	
Motorcycles	1	0	0	0	0	1	0	0	0	3	0	0	0	3	1	0	9
% Motorcycles	2.1	0	0	0	0	2.8	0	0	0	1.3	0	0	0	5.5	1.8	0	0.9
Cars & Light Goods	46	325	37	0	20	35	53	0	65	218	15	0	21	50	54	0	939
% Cars & Light Goods	95.8	95.3	100	0	100	97.2	96.4	0	100	92.8	100	0	100	90.9	94.7	0	92.5
Buses	0	3	0	0	0	0	1	0	0	2	0	0	0	0	1	0	7
% Buses	0	0.9	0	0	0	0	1.8	0	0	0.9	0	0	0	0	1.8	0	0.7
Single-Unit Trucks	1	12	0	0	0	0	1	0	0	9	0	0	0	1	1	0	25
% Single-Unit Trucks	2.1	3.5	0	0	0	0	1.8	0	0	3.8	0	0	0	1.8	1.8	0	2.5
Articulated Trucks	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
% Articulated Trucks	0	0.3	0	0	0	0	0	0	0	1.3	0	0	0	0	0	0	0.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	13.3	0	0	0	0	0.2
Pedestrians	0	0	0	9	0	0	0	0	0	0	0	13	0	0	0	6	28
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	86.7	0	0	0	100	2.8

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
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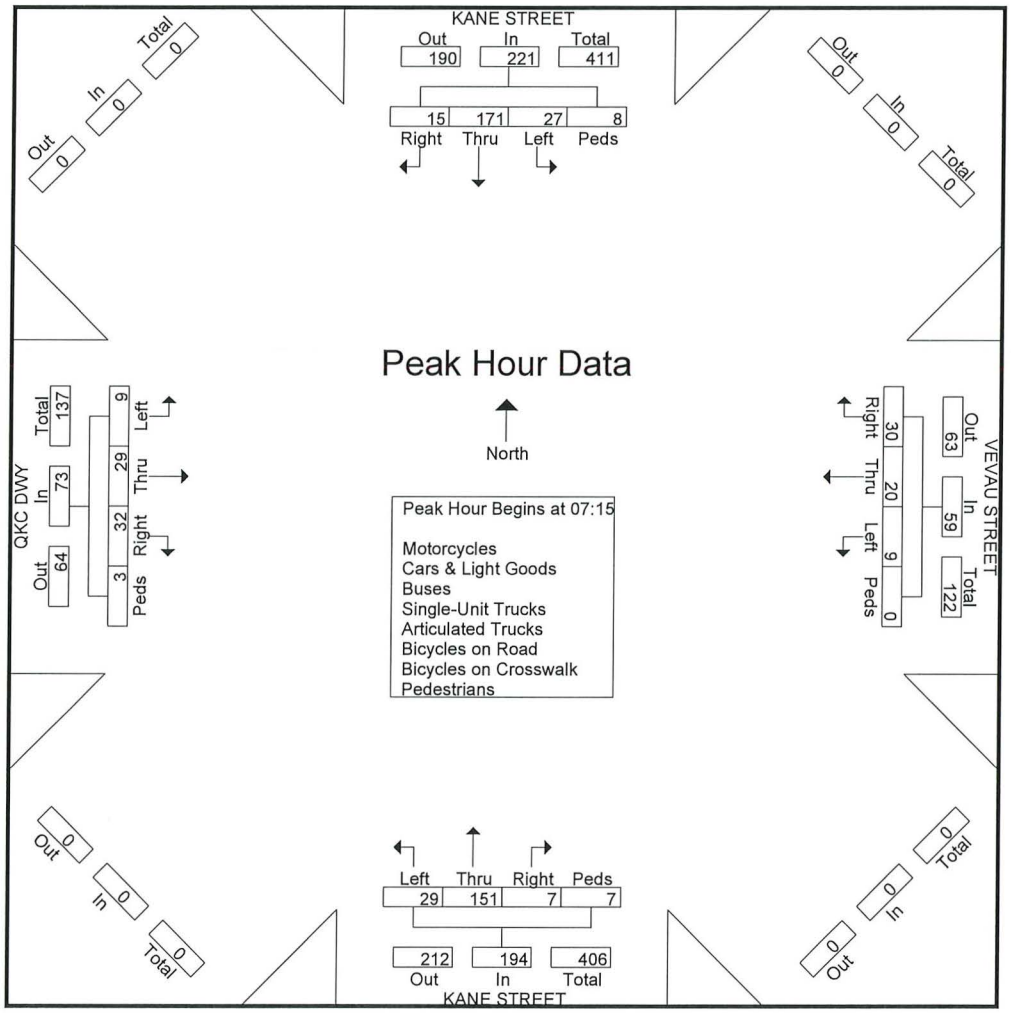
File Name : Kane St - Vevau St
Site Code : 18-550 Maui Bus Hub
Start Date : 10/16/2018
Page No : 2

	KANE STREET SOUTHBOUND					VEVAU STREET WESTBOUND					KANE STREET NORTHBOUND					QKC DWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:45 to 08:30 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	**12**	37	3	1	53	1	3	4	0	8	5	32	1	1	39	2	6	**10**	**1**	19	119
07:30	8	**51**	**6**	**4**	**69**	**4**	**6**	**12**	0	**22**	8	38	**3**	**3**	52	0	5	9	1	15	**158**
07:45	3	47	2	3	55	0	6	7	0	13	**9**	**43**	3	3	**58**	3	**12**	8	1	**24**	150
08:00	4	36	4	0	44	4	5	7	0	16	7	38	0	0	45	**4**	6	5	0	15	120
Total Volume	27	171	15	8	221	9	20	30	0	59	29	151	7	7	194	9	29	32	3	73	547
% App. Total	12.2	77.4	6.8	3.6		15.3	33.9	50.8	0		14.9	77.8	3.6	3.6		12.3	39.7	43.8	4.1		
PHF	.563	.838	.625	.500	.801	.563	.833	.625	.000	.670	.806	.878	.583	.583	.836	.563	.604	.800	.750	.760	.866



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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	KANE STREET SOUTHBOUND				VEVAU STREET WESTBOUND				KANE STREET NORTHBOUND				QKC DWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:15	15	42	16	1	3	3	9	0	23	25	3	4	16	12	16	0	188
15:30	10	45	12	4	3	8	9	0	11	35	3	2	15	11	25	1	194
15:45	7	47	14	3	3	10	4	1	16	30	1	3	12	8	18	1	178
Total	32	134	42	8	9	21	22	1	50	90	7	9	43	31	59	2	560
16:00	5	45	10	2	3	7	11	0	14	38	3	0	12	11	16	3	180
16:15	7	53	12	3	4	11	10	0	21	41	3	2	15	10	24	0	216
16:30	10	55	7	2	10	8	11	0	20	38	4	3	12	14	23	2	219
16:45	8	52	11	0	6	8	10	2	14	35	4	1	16	12	15	0	194
Total	30	205	40	7	23	34	42	2	69	152	14	6	55	47	78	5	809
17:00	6	58	11	2	7	7	10	0	10	30	5	4	12	13	18	0	193
Grand Total	68	397	93	17	39	62	74	3	129	272	26	19	110	91	155	7	1562
Apprch %	11.8	69	16.2	3	21.9	34.8	41.6	1.7	28.9	61	5.8	4.3	30.3	25.1	42.7	1.9	
Total %	4.4	25.4	6	1.1	2.5	4	4.7	0.2	8.3	17.4	1.7	1.2	7	5.8	9.9	0.4	
Motorcycles	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	4
% Motorcycles	0	0.3	0	0	0	3.2	0	0	0	0	0	0	0	1.1	0	0	0.3
Cars & Light Goods	67	389	92	0	39	58	72	0	126	265	26	0	109	88	154	0	1485
% Cars & Light Goods	98.5	98	98.9	0	100	93.5	97.3	0	97.7	97.4	100	0	99.1	96.7	99.4	0	95.1
Buses	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
% Buses	0	0.5	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0.3
Single-Unit Trucks	1	3	1	0	0	0	1	0	1	4	0	0	1	1	1	0	14
% Single-Unit Trucks	1.5	0.8	1.1	0	0	0	1.4	0	0.8	1.5	0	0	0.9	1.1	0.6	0	0.9
Articulated Trucks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Articulated Trucks	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	1	0	0	0	2	1	0	2	1	0	0	0	1	0	0	8
% Bicycles on Road	0	0.3	0	0	0	3.2	1.4	0	1.6	0.4	0	0	0	1.1	0	0	0.5
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28.6	0.1
Pedestrians	0	0	0	17	0	0	0	3	0	0	0	19	0	0	0	5	44
% Pedestrians	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	71.4	2.8

Austin Tsutsumi & Associates

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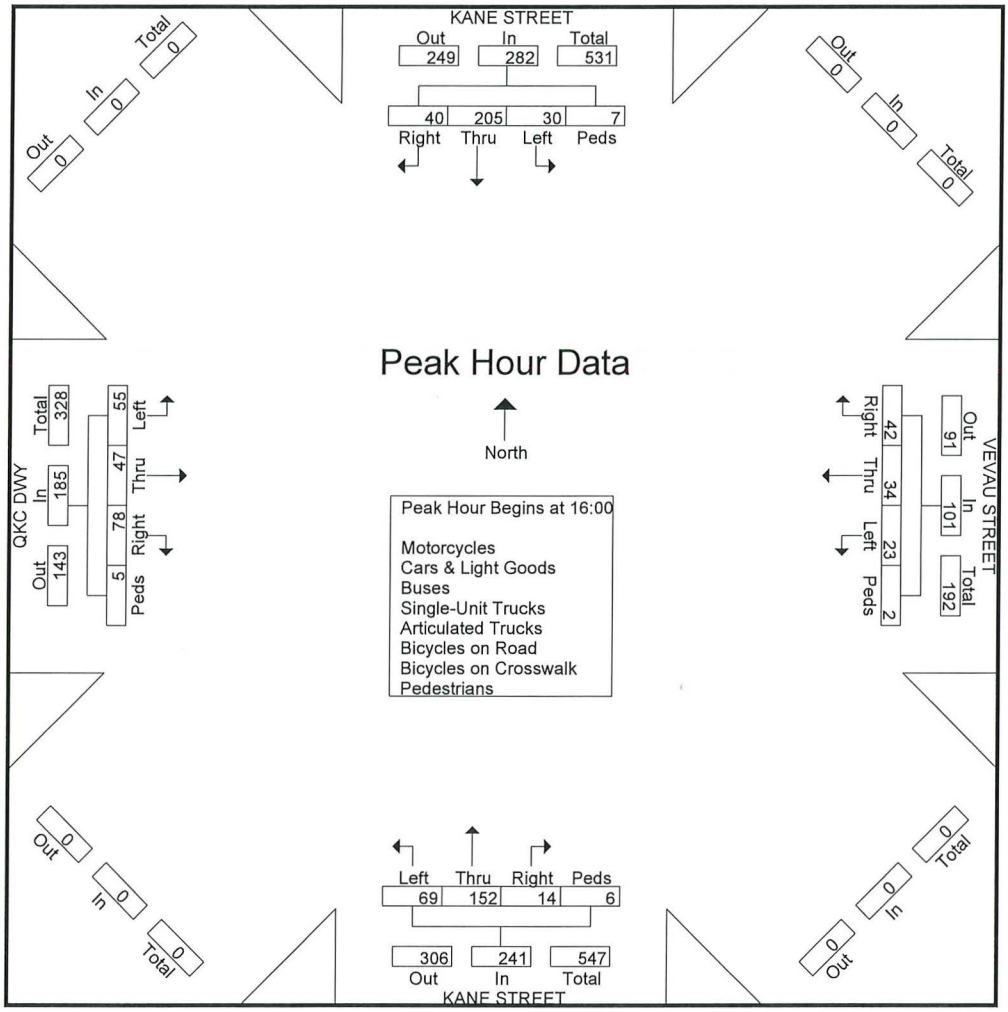
File Name : Kane St - Vevau St
Site Code : 18-550 Maui Bus Hub
Start Date : 10/16/2018
Page No : 2

	KANE STREET SOUTHBOUND					VEVAU STREET WESTBOUND					KANE STREET NORTHBOUND					QKC DWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	5	45	10	2	62	3	7	**11**	0	21	14	38	3	0	55	12	11	16	**3**	42	180
16:15	7	53	**12**	**3**	**75**	4	**11**	10	0	25	**21**	**41**	3	2	**67**	15	10	**24**	0	49	216
16:30	**10**	**55**	7	2	74	**10**	8	11	0	**29**	20	38	**4**	**3**	65	12	**14**	23	2	**51**	**219**
16:45	8	52	11	0	71	6	8	10	**2**	26	14	35	4	1	54	**16**	12	15	0	43	194
Total Volume	30	205	40	7	282	23	34	42	2	101	69	152	14	6	241	55	47	78	5	185	809
% App. Total	10.6	72.7	14.2	2.5		22.8	33.7	41.6	2		28.6	63.1	5.8	2.5		29.7	25.4	42.2	2.7		
PHF	.750	.932	.833	.583	.940	.575	.773	.955	.250	.871	.821	.927	.875	.500	.899	.859	.839	.813	.417	.907	.924



Austin, Tsutsumi & Associates
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Honolulu, Hawaii, United States 12345
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Count Name: 18-550 Kane St-Vevau St 101618
6am-6pm
Site Code: 18-550 Maui Bus Hub
Start Date: 10/16/2018

Turning Movement Data

Start Time	KANE STREET Southbound						VEVAU STREET Westbound						KANE STREET Northbound						QKC DWY Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	4	23	5	0	0	32	0	1	0	0	0	1	2	8	2	0	0	12	1	2	0	0	0	3	48
6:15 AM	2	23	8	0	0	33	1	4	3	0	0	8	5	12	2	0	3	19	3	2	1	0	0	6	66
6:30 AM	0	34	7	0	1	41	4	0	2	0	0	6	4	16	1	0	0	21	5	1	2	0	1	8	76
6:45 AM	1	57	5	0	0	63	9	5	4	0	0	18	5	25	8	0	5	38	5	5	1	0	0	11	130
Hourly Total	7	137	25	0	1	169	14	10	9	0	0	33	16	61	13	0	8	90	14	10	4	0	1	28	320
7:00 AM	7	46	6	0	1	59	7	2	3	0	0	12	2	19	5	0	0	26	4	7	5	0	1	16	113
7:15 AM	3	37	12	0	1	52	4	3	1	0	0	8	1	32	5	0	1	38	10	6	2	0	1	18	116
7:30 AM	6	51	8	0	4	65	12	6	4	0	0	22	3	38	8	0	3	49	9	5	0	0	1	14	150
7:45 AM	2	47	3	0	3	52	7	6	0	0	0	13	3	43	9	0	3	55	8	12	3	0	1	23	143
Hourly Total	18	181	29	0	9	228	30	17	8	0	0	55	9	132	27	0	7	168	31	30	10	0	4	71	522
8:00 AM	4	36	4	0	0	44	7	5	4	1	0	17	0	38	7	0	0	45	5	6	4	0	0	15	121
8:15 AM	5	32	6	0	0	43	6	4	3	0	0	13	0	15	7	0	0	22	4	5	3	0	0	12	90
8:30 AM	9	35	4	0	0	48	3	5	1	0	0	9	1	25	16	0	3	42	12	9	3	0	2	24	123
8:45 AM	6	45	6	0	3	57	8	5	1	0	0	14	1	26	9	0	2	36	5	1	3	0	1	9	116
Hourly Total	24	148	20	0	3	192	24	19	9	1	0	53	2	104	39	0	5	145	26	21	13	0	3	60	450
9:00 AM	12	35	9	0	3	56	6	3	2	0	0	11	3	29	17	0	0	49	18	4	4	0	1	26	142
9:15 AM	6	31	6	0	3	43	5	7	2	0	1	14	5	21	11	0	1	37	13	2	6	0	2	21	115
9:30 AM	6	40	7	0	0	53	5	4	2	0	0	11	5	26	19	0	3	50	9	6	7	0	1	22	136
9:45 AM	22	43	13	0	2	78	7	5	5	0	0	17	0	30	15	0	2	45	19	8	8	0	0	35	175
Hourly Total	46	149	35	0	8	230	23	19	11	0	1	53	13	106	62	0	6	181	59	20	25	0	4	104	568
10:00 AM	25	42	5	0	1	72	3	7	5	0	0	15	6	25	24	0	0	55	13	7	6	0	1	26	168
10:15 AM	20	48	5	0	1	73	6	6	0	0	0	12	1	21	15	0	2	37	18	17	11	0	2	46	168
10:30 AM	16	43	7	0	5	66	3	2	8	0	2	13	6	22	17	0	2	45	14	11	14	0	0	39	163
10:45 AM	17	27	5	0	0	49	4	11	2	0	0	17	4	26	17	0	2	47	17	4	16	0	0	37	150
Hourly Total	78	160	22	0	7	260	16	26	15	0	2	57	17	94	73	0	6	184	62	39	47	0	3	148	649
11:00 AM	20	51	10	0	0	81	5	9	4	0	0	18	5	19	17	0	1	41	15	15	15	0	0	45	185
11:15 AM	11	35	8	0	3	54	5	4	3	0	0	12	2	34	15	0	2	51	18	7	16	0	5	41	158
11:30 AM	14	37	8	0	2	59	5	9	5	0	0	19	5	27	22	0	1	54	12	15	14	0	0	41	173
11:45 AM	16	52	8	0	1	76	10	6	2	0	0	18	3	31	12	0	2	46	11	13	16	0	0	40	180
Hourly Total	61	175	34	0	6	270	25	28	14	0	0	67	15	111	66	0	6	192	56	50	61	0	5	167	696
12:00 PM	16	41	10	0	2	67	5	8	3	0	1	16	2	28	15	0	0	45	13	10	14	0	1	37	165
12:15 PM	10	37	5	0	0	52	11	7	5	0	0	23	2	37	19	0	1	58	17	10	9	0	1	36	169
12:30 PM	7	29	9	0	1	45	5	10	1	0	0	16	6	24	19	0	3	49	17	13	19	0	2	49	159
12:45 PM	14	28	9	0	2	51	9	11	6	0	0	26	3	18	14	0	0	35	23	19	16	0	1	58	170
Hourly Total	47	135	33	0	5	215	30	36	15	0	1	81	13	107	67	0	4	187	70	52	58	0	5	180	663
1:00 PM	8	50	3	0	0	61	7	6	4	0	4	17	2	37	12	0	5	51	25	19	12	0	0	56	185
1:15 PM	15	43	6	0	3	64	13	5	3	0	3	21	3	21	12	0	2	36	15	11	15	0	2	41	162
1:30 PM	4	44	7	0	0	55	6	10	5	0	2	21	4	23	6	0	2	33	15	10	18	0	0	43	152
1:45 PM	17	59	5	0	2	81	5	6	0	0	1	11	4	29	11	0	1	44	16	9	7	0	1	32	168
Hourly Total	44	196	21	0	5	261	31	27	12	0	10	70	13	110	41	0	10	164	71	49	52	0	3	172	667

2:00 PM	15	40	8	0	6	63	5	6	4	0	0	15	2	32	13	0	0	47	15	10	12	0	0	37	162
2:15 PM	11	37	9	0	1	57	10	3	10	0	1	23	4	46	18	0	1	68	22	9	10	0	0	41	189
2:30 PM	18	41	12	0	3	71	8	6	4	0	0	18	6	43	18	0	0	67	24	9	12	0	1	45	201
2:45 PM	10	52	10	0	0	72	8	7	8	0	0	23	2	27	15	0	2	44	25	15	15	0	4	55	194
Hourly Total	54	170	39	0	10	263	31	22	26	0	1	79	14	148	64	0	3	226	86	43	49	0	5	178	746
3:00 PM	7	37	11	0	3	55	3	12	4	0	0	19	5	32	18	0	4	55	12	15	7	0	0	34	163
3:15 PM	16	42	15	0	1	73	9	3	3	0	0	15	3	25	23	0	4	51	16	12	16	0	0	44	183
3:30 PM	12	45	10	0	4	67	9	8	3	0	0	20	3	35	11	0	2	49	25	11	15	0	1	51	187
3:45 PM	14	47	7	0	3	68	4	10	3	0	1	17	1	30	16	0	3	47	18	8	12	0	1	38	170
Hourly Total	49	171	43	0	11	263	25	33	13	0	1	71	12	122	68	0	13	202	71	46	50	0	2	167	703
4:00 PM	10	45	5	0	2	60	11	7	3	0	0	21	3	38	14	0	0	55	16	11	12	0	3	39	175
4:15 PM	12	53	7	0	3	72	10	11	4	0	0	25	3	41	21	0	2	65	24	10	15	0	0	49	211
4:30 PM	7	55	10	0	2	72	11	8	10	0	0	29	4	38	20	0	3	62	23	14	12	0	2	49	212
4:45 PM	11	52	8	0	0	71	10	8	6	0	2	24	4	35	14	0	1	53	15	12	16	0	0	43	191
Hourly Total	40	205	30	0	7	275	42	34	23	0	2	99	14	152	69	0	6	235	78	47	55	0	5	180	789
5:00 PM	11	58	6	0	2	75	10	7	7	0	0	24	5	30	10	0	4	45	18	13	12	0	0	43	187
5:15 PM	8	49	12	0	3	69	5	4	3	0	1	12	3	30	20	0	0	53	15	13	6	0	2	34	168
5:30 PM	8	55	6	0	0	69	4	8	3	0	0	15	5	35	14	0	2	54	17	8	8	0	1	33	171
5:45 PM	6	34	7	0	5	47	7	6	6	0	0	19	4	29	9	0	1	42	22	12	11	0	0	45	153
Hourly Total	33	196	31	0	10	260	26	25	19	0	1	70	17	124	53	0	7	194	72	46	37	0	3	155	679
Grand Total	501	2023	362	0	82	2886	317	296	174	1	19	788	155	1371	642	0	81	2168	696	453	461	0	43	1610	7452
Approach %	17.4	70.1	12.5	0.0	-	-	40.2	37.6	22.1	0.1	-	-	7.1	63.2	29.6	0.0	-	-	43.2	28.1	28.6	0.0	-	-	-
Total %	6.7	27.1	4.9	0.0	-	38.7	4.3	4.0	2.3	0.0	-	10.6	2.1	18.4	8.6	0.0	-	29.1	9.3	6.1	6.2	0.0	-	21.6	-
Motorcycles	0	4	2	0	-	6	1	12	0	0	-	13	1	5	0	0	-	6	6	4	1	0	-	11	36
% Motorcycles	0.0	0.2	0.6	-	-	0.2	0.3	4.1	0.0	0.0	-	1.6	0.6	0.4	0.0	-	-	0.3	0.9	0.9	0.2	-	-	0.7	0.5
Cars & Light Goods	498	1953	349	0	-	2800	308	276	163	1	-	748	150	1314	634	0	-	2098	679	438	452	0	-	1569	7215
% Cars & Light Goods	99.4	96.5	96.4	-	-	97.0	97.2	93.2	93.7	100.0	-	94.9	96.8	95.8	98.8	-	-	96.8	97.6	96.7	98.0	-	-	97.5	96.8
Buses	0	9	4	0	-	13	2	0	1	0	-	3	1	7	0	0	-	8	4	1	2	0	-	7	31
% Buses	0.0	0.4	1.1	-	-	0.5	0.6	0.0	0.6	0.0	-	0.4	0.6	0.5	0.0	-	-	0.4	0.6	0.2	0.4	-	-	0.4	0.4
Single-Unit Trucks	3	44	4	0	-	51	4	0	8	0	-	12	3	33	5	0	-	41	6	5	6	0	-	17	121
% Single-Unit Trucks	0.6	2.2	1.1	-	-	1.8	1.3	0.0	4.6	0.0	-	1.5	1.9	2.4	0.8	-	-	1.9	0.9	1.1	1.3	-	-	1.1	1.6
Articulated Trucks	0	8	0	0	-	8	0	0	1	0	-	1	0	10	0	0	-	10	0	0	0	0	-	0	19
% Articulated Trucks	0.0	0.4	0.0	-	-	0.3	0.0	0.0	0.6	0.0	-	0.1	0.0	0.7	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	5	3	0	-	8	2	8	1	0	-	11	0	2	3	0	-	5	1	5	0	0	-	6	30
% Bicycles on Road	0.0	0.2	0.8	-	-	0.3	0.6	2.7	0.6	0.0	-	1.4	0.0	0.1	0.5	-	-	0.2	0.1	1.1	0.0	-	-	0.4	0.4
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	1.2	-	-	-	-	-	5.3	-	-	-	-	-	4.9	-	-	-	-	-	16.3	-	-
Pedestrians	-	-	-	-	81	-	-	-	-	-	18	-	-	-	-	-	77	-	-	-	-	-	36	-	-
% Pedestrians	-	-	-	-	98.8	-	-	-	-	-	94.7	-	-	-	-	-	95.1	-	-	-	-	-	83.7	-	-

Austin, Tsutsumi & Associates
501 Sumner Street, Suite 521

Honolulu, Hawaii, United States 12345
(808) 533-3646 rfukuda@atahawaii.com

Count Name: 18-550 Kane St-Vevau St 101318
6am-6pm
Site Code: 18-550 Maui Bus Hub
Start Date: 10/13/2018

Turning Movement Data

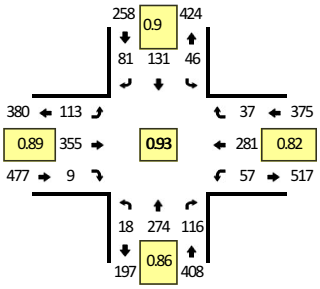
Start Time	KANE ST Southbound						VEVAU ST Westbound						KANE ST Northbound						QKC DWY Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	2	11	0	0	0	13	0	4	0	1	0	5	1	9	1	0	0	11	2	1	0	0	0	3	32
6:15 AM	2	12	1	0	2	15	1	0	1	0	0	2	3	9	0	0	0	12	0	2	1	0	0	3	32
6:30 AM	1	17	2	0	1	20	0	3	1	0	0	4	0	6	1	0	0	7	1	3	1	0	0	5	36
6:45 AM	3	16	1	0	0	20	1	4	1	0	0	6	0	10	4	0	0	14	2	1	2	0	0	5	45
Hourly Total	8	56	4	0	3	68	2	11	3	1	0	17	4	34	6	0	0	44	5	7	4	0	0	16	145
7:00 AM	4	29	6	0	0	39	2	5	2	0	0	9	4	16	3	0	0	23	2	3	2	0	0	7	78
7:15 AM	3	25	6	0	0	34	7	2	1	0	0	10	2	26	4	0	0	32	3	3	4	0	1	10	86
7:30 AM	4	21	2	0	0	27	2	5	2	0	0	9	0	18	5	0	1	23	3	0	5	0	0	8	67
7:45 AM	7	35	6	0	2	48	4	6	0	0	0	10	2	25	10	0	1	37	6	2	4	0	1	12	107
Hourly Total	18	110	20	0	2	148	15	18	5	0	0	38	8	85	22	0	2	115	14	8	15	0	2	37	338
8:00 AM	6	25	7	0	1	38	5	3	0	0	0	8	6	21	5	0	2	32	8	3	1	0	0	12	90
8:15 AM	8	48	5	0	0	61	2	3	1	0	0	6	3	31	7	0	0	41	0	7	3	0	1	10	118
8:30 AM	10	36	5	0	1	51	3	2	3	0	0	8	3	18	3	0	1	24	2	4	5	0	0	11	94
8:45 AM	5	41	5	0	1	51	4	4	1	0	0	9	5	27	5	0	2	37	2	7	3	0	2	12	109
Hourly Total	29	150	22	0	3	201	14	12	5	0	0	31	17	97	20	0	5	134	12	21	12	0	3	45	411
9:00 AM	3	38	5	0	5	46	2	5	3	0	0	10	2	16	10	0	1	28	5	4	4	0	0	13	97
9:15 AM	19	42	8	1	1	70	7	5	4	0	0	16	4	22	11	0	0	37	8	4	5	0	2	17	140
9:30 AM	18	30	4	0	0	52	4	4	4	0	1	12	5	21	17	0	4	43	11	4	9	0	2	24	131
9:45 AM	13	36	5	0	1	54	6	5	3	0	0	14	2	36	15	0	2	53	13	8	8	0	0	29	150
Hourly Total	53	146	22	1	7	222	19	19	14	0	1	52	13	95	53	0	7	161	37	20	26	0	4	83	518
10:00 AM	17	46	7	0	1	70	4	5	5	0	1	14	2	20	11	0	3	33	10	10	9	0	1	29	146
10:15 AM	8	43	6	0	1	57	5	4	2	0	0	11	5	29	25	0	1	59	13	14	14	0	2	41	168
10:30 AM	17	54	6	0	3	77	7	7	3	0	0	17	4	27	19	0	4	50	18	6	9	0	1	33	177
10:45 AM	22	40	12	0	2	74	4	7	4	0	0	15	5	23	28	0	1	56	20	9	10	0	2	39	184
Hourly Total	64	183	31	0	7	278	20	23	14	0	1	57	16	99	83	0	9	198	61	39	42	0	6	142	675
11:00 AM	23	36	6	0	3	65	6	13	1	0	0	20	1	31	32	0	1	64	20	12	18	0	1	50	199
11:15 AM	17	43	8	0	1	68	4	10	3	0	1	17	3	31	17	0	1	51	20	10	10	0	0	40	176
11:30 AM	19	40	11	0	2	70	5	10	4	0	0	19	5	25	18	0	4	48	23	16	20	0	0	59	196
11:45 AM	27	45	7	1	1	80	8	10	5	0	1	23	2	24	19	0	3	45	18	13	14	0	0	45	193
Hourly Total	86	164	32	1	7	283	23	43	13	0	2	79	11	111	86	0	9	208	81	51	62	0	1	194	764
12:00 PM	17	36	6	0	2	59	4	3	4	0	0	11	6	32	25	0	0	63	24	7	10	1	0	42	175
12:15 PM	17	31	5	0	3	53	4	11	4	0	0	19	4	18	24	0	0	46	30	12	21	0	0	63	181
12:30 PM	16	42	6	0	1	64	3	9	2	0	0	14	2	23	30	0	3	55	22	13	11	0	0	46	179
12:45 PM	20	28	4	0	0	52	3	9	1	0	2	13	2	22	27	0	7	51	13	14	20	0	0	47	163
Hourly Total	70	137	21	0	6	228	14	32	11	0	2	57	14	95	106	0	10	215	89	46	62	1	0	198	698
1:00 PM	20	34	11	0	0	65	3	14	3	0	0	20	5	35	16	0	4	56	29	11	22	0	0	62	203
1:15 PM	25	52	9	0	3	86	4	9	8	0	0	21	3	28	26	0	2	57	21	8	21	0	0	50	214
1:30 PM	25	34	5	0	3	64	7	6	6	0	0	19	2	21	14	0	0	37	27	13	16	0	0	56	176
1:45 PM	11	39	7	0	2	57	4	9	2	0	0	15	3	30	20	0	2	53	26	5	24	0	0	55	180
Hourly Total	81	159	32	0	8	272	18	38	19	0	0	75	13	114	76	0	8	203	103	37	83	0	0	223	773

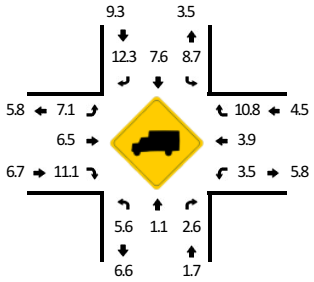
2:00 PM	19	42	9	0	3	70	5	6	3	0	1	14	3	18	16	0	4	37	27	9	17	0	1	53	174
2:15 PM	17	32	3	0	3	52	4	8	3	0	0	15	1	18	17	0	1	36	20	10	20	0	0	50	153
2:30 PM	20	30	3	0	1	53	3	5	2	0	0	10	1	27	13	0	0	41	25	13	22	0	0	60	164
2:45 PM	16	42	7	0	2	65	1	3	3	0	0	7	2	29	15	0	0	46	19	11	18	0	1	48	166
Hourly Total	72	146	22	0	9	240	13	22	11	0	1	46	7	92	61	0	5	160	91	43	77	0	2	211	657
3:00 PM	4	39	5	0	0	48	8	9	2	0	0	19	5	29	19	0	1	53	25	13	15	0	1	53	173
3:15 PM	8	45	1	0	1	54	2	7	3	0	1	12	0	27	24	0	2	51	14	14	26	0	1	54	171
3:30 PM	12	30	7	0	1	49	3	7	3	0	2	13	3	28	25	0	11	56	17	15	13	0	0	45	163
3:45 PM	14	31	2	0	0	47	1	6	2	0	0	9	6	38	18	0	2	62	22	13	29	0	0	64	182
Hourly Total	38	145	15	0	2	198	14	29	10	0	3	53	14	122	86	0	16	222	78	55	83	0	2	216	689
4:00 PM	7	37	5	0	4	49	8	1	4	0	1	13	5	37	11	0	6	53	28	10	15	0	0	53	168
4:15 PM	16	46	4	0	5	66	3	8	3	0	6	14	3	23	20	0	1	46	16	4	9	0	5	29	155
4:30 PM	12	34	5	0	1	51	7	8	5	0	0	20	1	35	17	0	2	53	18	11	15	0	3	44	168
4:45 PM	11	34	7	0	3	52	7	6	0	0	1	13	4	24	19	0	2	47	26	11	11	0	0	48	160
Hourly Total	46	151	21	0	13	218	25	23	12	0	8	60	13	119	67	0	11	199	88	36	50	0	8	174	651
5:00 PM	14	33	10	0	1	57	4	7	5	0	0	16	1	27	14	0	0	42	31	8	18	0	1	57	172
5:15 PM	10	33	5	0	0	48	4	6	4	0	0	14	7	28	8	0	0	43	18	3	10	0	2	31	136
5:30 PM	8	35	3	0	1	46	3	9	4	0	0	16	2	32	16	0	1	50	14	8	18	0	0	40	152
5:45 PM	8	39	9	0	0	56	4	6	4	0	0	14	1	23	13	0	1	37	17	7	17	0	1	41	148
Hourly Total	40	140	27	0	2	207	15	28	17	0	0	60	11	110	51	0	2	172	80	26	63	0	4	169	608
Grand Total	605	1687	269	2	69	2563	192	298	134	1	18	625	141	1173	717	0	84	2031	739	389	579	1	32	1708	6927
Approach %	23.6	65.8	10.5	0.1	-	-	30.7	47.7	21.4	0.2	-	-	6.9	57.8	35.3	0.0	-	-	43.3	22.8	33.9	0.1	-	-	-
Total %	8.7	24.4	3.9	0.0	-	37.0	2.8	4.3	1.9	0.0	-	9.0	2.0	16.9	10.4	0.0	-	29.3	10.7	5.6	8.4	0.0	-	24.7	-
Motorcycles	2	5	3	0	-	10	2	2	4	0	-	8	2	5	2	0	-	9	3	4	4	0	-	11	38
% Motorcycles	0.3	0.3	1.1	0.0	-	0.4	1.0	0.7	3.0	0.0	-	1.3	1.4	0.4	0.3	-	-	0.4	0.4	1.0	0.7	0.0	-	0.6	0.5
Cars & Light Goods	602	1660	265	2	-	2529	188	290	119	1	-	598	139	1148	712	0	-	1999	730	383	564	1	-	1678	6804
% Cars & Light Goods	99.5	98.4	98.5	100.0	-	98.7	97.9	97.3	88.8	100.0	-	95.7	98.6	97.9	99.3	-	-	98.4	98.8	98.5	97.4	100.0	-	98.2	98.2
Buses	0	1	0	0	-	1	1	1	1	0	-	3	0	4	0	0	-	4	5	0	3	0	-	8	16
% Buses	0.0	0.1	0.0	0.0	-	0.0	0.5	0.3	0.7	0.0	-	0.5	0.0	0.3	0.0	-	-	0.2	0.7	0.0	0.5	0.0	-	0.5	0.2
Single-Unit Trucks	0	16	0	0	-	16	1	1	6	0	-	8	0	10	2	0	-	12	0	0	8	0	-	8	44
% Single-Unit Trucks	0.0	0.9	0.0	0.0	-	0.6	0.5	0.3	4.5	0.0	-	1.3	0.0	0.9	0.3	-	-	0.6	0.0	0.0	1.4	0.0	-	0.5	0.6
Articulated Trucks	0	2	0	0	-	2	0	0	3	0	-	3	0	2	0	0	-	2	0	0	0	0	-	0	7
% Articulated Trucks	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	2.2	0.0	-	0.5	0.0	0.2	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	1	3	1	0	-	5	0	4	1	0	-	5	0	4	1	0	-	5	1	2	0	0	-	3	18
% Bicycles on Road	0.2	0.2	0.4	0.0	-	0.2	0.0	1.3	0.7	0.0	-	0.8	0.0	0.3	0.1	-	-	0.2	0.1	0.5	0.0	0.0	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	1.4	-	-	-	-	-	5.6	-	-	-	-	-	4.8	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	68	-	-	-	-	-	17	-	-	-	-	-	80	-	-	-	-	-	28	-	-
% Pedestrians	-	-	-	-	98.6	-	-	-	-	-	94.4	-	-	-	-	-	95.2	-	-	-	-	-	87.5	-	-

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

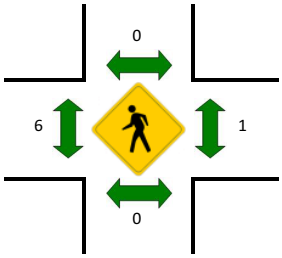
LOCATION: W Kamehameha Ave -- W Wakea Ave | **QC JOB #:** 15610105
CITY/STATE: Kahului, HI | **DATE:** Wed, Nov 10 2021

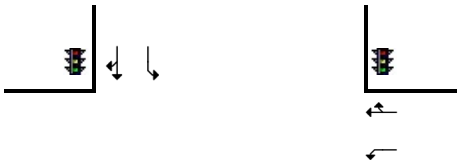
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

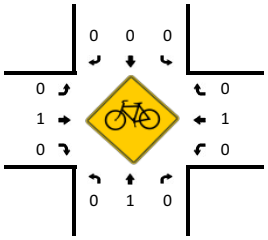


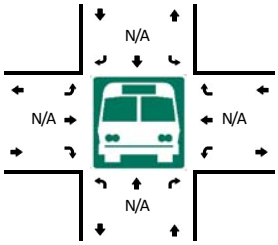


Quality Counts
DATA THAT DRIVES COMMUNITIES

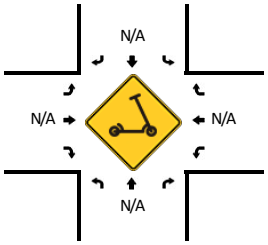












15-Min Count Period Beginning At	W Kamehameha Ave (Northbound)				W Kamehameha Ave (Southbound)				W Wakea Ave (Eastbound)				W Wakea Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	1	22	9	0	3	13	7	0	14	30	3	0	4	10	4	0	120	
6:15 AM	2	30	14	0	6	13	9	0	11	30	1	0	8	19	3	0	146	
6:30 AM	0	21	16	0	10	27	13	0	18	42	0	0	5	34	5	0	191	
6:45 AM	2	44	18	0	10	34	18	0	18	60	0	0	5	28	8	0	245	702
7:00 AM	2	33	27	0	7	30	26	0	20	74	0	0	6	56	5	0	286	868
7:15 AM	3	66	28	0	8	20	25	0	26	70	4	0	10	59	7	0	326	1048
7:30 AM	7	66	31	0	14	40	18	0	27	95	2	0	16	75	6	0	397	1254
7:45 AM	5	65	18	0	14	38	19	0	30	103	1	0	14	89	12	0	408	1417
8:00 AM	3	77	39	0	10	33	19	0	30	87	2	0	17	58	12	0	387	1518
8:15 AM	3	58	18	0	15	46	20	0	18	49	1	0	13	53	5	0	299	1491
8:30 AM	4	38	9	0	8	36	23	0	33	47	4	0	6	40	2	0	250	1344
8:45 AM	1	43	21	0	14	31	18	0	26	50	3	0	10	52	7	0	276	1212

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	260	72	0	56	152	76	0	120	412	4	0	56	356	48	0	1632
Heavy Trucks	4	4	0		4	12	4		0	24	0		0	8	8		68
Buses																	
Pedestrians		0				0				12				4			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 11/17/2021 10:43 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

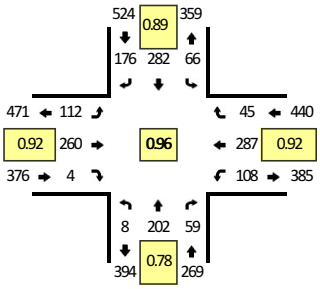
Type of peak hour being reported: Intersection Peak

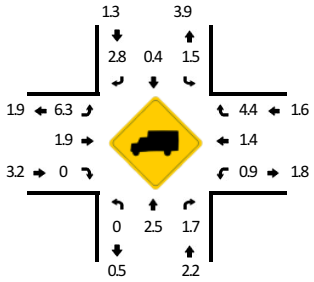
Method for determining peak hour: Total Entering Volume

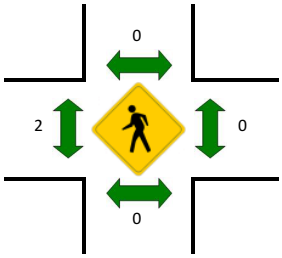
LOCATION: W Kamehameha Ave -- W Wakea Ave
CITY/STATE: Kahului, HI

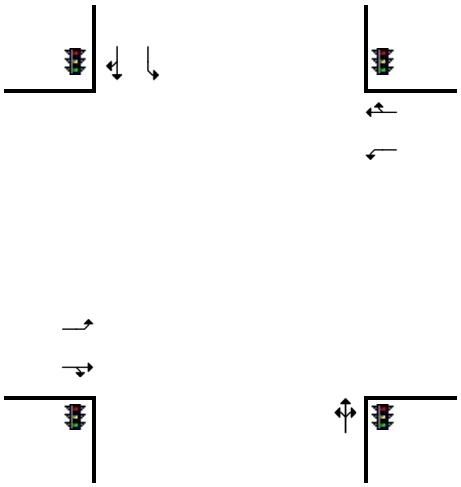
QC JOB #: 15610106
DATE: Wed, Nov 10 2021

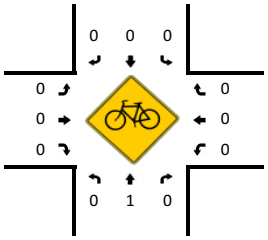
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

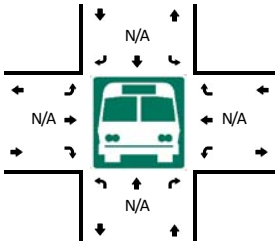


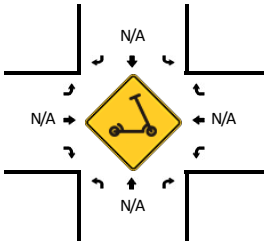












15-Min Count Period Beginning At	W Kamehameha Ave (Northbound)				W Kamehameha Ave (Southbound)				W Wakea Ave (Eastbound)				W Wakea Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	1	47	28	0	19	64	35	0	25	60	2	0	17	62	10	0	370	
3:15 PM	4	65	17	0	20	75	43	0	26	55	4	0	19	67	3	0	398	
3:30 PM	5	49	20	0	16	61	42	0	26	72	2	0	16	53	16	0	378	
3:45 PM	1	46	11	0	15	63	24	0	17	83	1	0	26	66	16	0	369	1515
4:00 PM	2	42	14	0	19	73	37	0	31	63	2	0	22	62	12	0	379	1524
4:15 PM	3	46	11	0	19	83	45	0	25	64	2	0	30	79	10	0	417	1543
4:30 PM	0	40	18	0	16	74	54	0	25	71	0	0	24	79	8	0	409	1574
4:45 PM	2	65	19	0	12	61	32	0	34	66	2	0	25	68	10	0	396	1601
5:00 PM	3	51	11	0	19	64	45	0	28	59	0	0	29	61	17	0	387	1609
5:15 PM	1	50	16	0	14	80	50	0	13	42	2	0	23	69	12	0	372	1564
5:30 PM	1	38	15	0	22	65	30	0	18	65	2	0	33	70	10	0	369	1524
5:45 PM	1	47	14	0	14	79	42	0	31	60	4	0	29	68	8	0	397	1525

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	184	44	0	76	332	180	0	100	256	8	0	120	316	40	0	1668
Heavy Trucks	0	12	0		0	0	12		4	4	0		0	0	0		32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 11/17/2021 10:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
DATA THAT DRIVES COMMUNITIES

Site Code: 15610105 & 15610106

Date: 11/10/2021

Location: W Kamehameha Ave & W Wakea Ave

Count Times: 6:00AM-9:00AM
3:00PM-6:00PM

			AM			PM		
A	**B**	**C**	**1**	**2**	**3**	**1**	**2**	**3**
			0:10	0:17	0:11	0:15	0:16	-
			-	0:07	0:14	-	-	0:20
			0:28	0:53	1:05	0:32	0:44	0:16
			0:20	0:38	0:41	0:44	0:41	0:38
			0:42	0:44	0:56	0:28	0:30	0:21
	Total		1:40	2:39	3:07	1:59	2:11	1:35

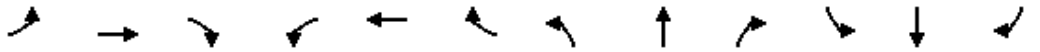
Appendix B: Annual Growth Rate Calculation

Maui Travel Demand Forecasting Model Volumes

Street	Segment	2007	2030	CAGR	
Kahului Beach Rd/Kane St	N of Kaahumanu Ave	40,660	50,658	1.0%	
	S of Kaahumanu Ave	4,136	9,362	3.6%	
Lono Ave	S of Kaahumanu Ave	4,196	7,952	2.8%	
	S of Vevau St	4,491	8,687	2.9%	
	S of Kamehameha Ave	2,623	5,898	3.6%	
Kaahumanu Ave	W of Kane St	24,891	34,123	1.4%	
	E of Kane St	54,940	67,066	0.9%	
	E of Lono Ave	52,253	61,132	0.7%	
Kamehameha Ave	W of Kane St	5,157	8,205	2.0%	
	E of Kane St	2,746	10,044	5.8%	
	E of Lono Ave	4,078	12,626	5.0%	
					CAGR applied
Total of High Vol (>20k) Streets		*172,743*	*212,979*	***0.9%***	***1.0%***
Total of Low Vol (<20k) Streets		*27,426*	*62,774*	***3.7%***	***2.5%***

CAGR = Compound Annual Growth Rate

Appendix C: LOS Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	680	70	20	1110	890	40	110	10	1010	140	80
Future Volume (veh/h)	30	680	70	20	1110	890	40	110	10	1010	140	80
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	716	0	21	1168	0	42	116	0	1168	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	40	1376		26	1346		146	153		1241	0	
Arrive On Green	0.02	0.39	0.00	0.00	0.13	0.00	0.08	0.08	0.00	0.35	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	32	716	0	21	1168	0	42	116	0	1168	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	2.3	20.2	0.0	1.5	42.3	0.0	2.9	8.0	0.0	41.6	0.0	0.0
Cycle Q Clear(g_c), s	2.3	20.2	0.0	1.5	42.3	0.0	2.9	8.0	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	40	1376		26	1346		146	153		1241	0	
V/C Ratio(X)	0.79	0.52		0.82	0.87		0.29	0.76		0.94	0.00	
Avail Cap(c_a), veh/h	122	1376		122	1346		258	271		1332	0	
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	0.79	0.79	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.2	30.3	0.0	64.5	53.6	0.0	56.0	58.3	0.0	40.9	0.0	0.0
Incr Delay (d2), s/veh	11.9	1.4	0.0	16.7	6.3	0.0	1.3	8.8	0.0	12.5	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	1.2	8.9	0.0	0.8	21.2	0.0	1.4	4.1	0.0	19.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.1	31.7	0.0	81.2	59.9	0.0	57.3	67.2	0.0	53.4	0.0	0.0
LnGrp LOS	E	C		F	E		E	E		D	A	
Approach Vol, veh/h		748	A		1189	A		158	A		1168	A
Approach Delay, s/veh		33.6			60.2			64.5			53.4	
Approach LOS		C			E			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	56.7		15.7	8.0	55.6		50.6				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	9.0	32.0		19.0	9.0	32.0		49.0				
Max Q Clear Time (g_c+I1), s	3.5	22.2		10.0	4.3	44.3		43.6				
Green Ext Time (p_c), s	0.0	5.2		0.5	0.0	0.0		2.0				

Intersection Summary			
HCM 6th Ctrl Delay		51.9	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1500	140	30	1780	20	190	20	40	30	20	10
Future Volume (veh/h)	20	1500	140	30	1780	20	190	20	40	30	20	10
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		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	21	1596	142	32	1894	20	202	21	9	32	21	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	26	2988	266	40	3304	35	269	22	341	58	30	4
Arrive On Green	0.01	0.42	0.42	0.02	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1767	4736	421	1767	5168	55	970	101	1530	66	137	19
Grp Volume(v), veh/h	21	1138	600	32	1237	677	223	0	9	58	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1780	1767	1689	1845	1070	0	1530	222	0	0
Q Serve(g_s), s	1.5	32.6	32.7	2.3	27.1	27.1	0.0	0.0	0.6	2.3	0.0	0.0
Cycle Q Clear(g_c), s	1.5	32.6	32.7	2.3	27.1	27.1	26.6	0.0	0.6	29.0	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.03	0.91		1.00	0.55		0.09
Lane Grp Cap(c), veh/h	26	2131	1123	40	2159	1180	292	0	341	92	0	0
V/C Ratio(X)	0.82	0.53	0.53	0.79	0.57	0.57	0.76	0.00	0.03	0.63	0.00	0.00
Avail Cap(c_a), veh/h	109	2131	1123	109	2159	1180	292	0	341	92	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.56	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	64.2	23.3	23.3	63.2	13.3	13.3	49.6	0.0	39.5	53.4	0.0	0.0
Incr Delay (d2), s/veh	12.5	0.5	1.0	11.9	1.1	2.0	11.4	0.0	0.0	12.7	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	0.8	14.1	15.0	1.2	10.2	11.5	8.1	0.0	0.2	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.6	23.8	24.3	75.1	14.5	15.4	61.0	0.0	39.5	66.1	0.0	0.0
LnGrp LOS	E	C	C	E	B	B	E	A	D	E	A	A
Approach Vol, veh/h		1759			1946			232			58	
Approach Delay, s/veh		24.6			15.8			60.2			66.1	
Approach LOS		C			B			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	88.0		34.0	6.9	89.1		34.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	3.0	77.0		29.0	8.0	77.0		29.0
Max Q Clear Time (g_c+I1), s	4.3	34.7		31.0	3.5	29.1		28.6
Green Ext Time (p_c), s	0.0	31.7		0.0	0.0	38.0		0.1

Intersection Summary		
HCM 6th Ctrl Delay		23.0
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	40	40	10	30	40	40	160	10	30	180	20
Future Vol, veh/h	10	40	40	10	30	40	40	160	10	30	180	20
Conflicting Peds, #/hr	12	0	11	8	0	9	11	0	8	9	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	46	46	11	34	46	46	184	11	34	207	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	633	595	138	497	601	211	242	0	0	204	0	0
Stage 1	299	299	-	291	291	-	-	-	-	-	-	-
Stage 2	334	296	-	206	310	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	376	415	883	468	412	826	1316	-	-	1360	-	-
Stage 1	683	663	-	714	669	-	-	-	-	-	-	-
Stage 2	676	665	-	775	656	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	308	383	864	377	380	810	1301	-	-	1348	-	-
Mov Cap-2 Maneuver	308	383	-	377	380	-	-	-	-	-	-	-
Stage 1	652	639	-	683	640	-	-	-	-	-	-	-
Stage 2	575	636	-	657	632	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	13.5	1.5	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1301	-	-	365	864	517	1348	-	-
HCM Lane V/C Ratio	0.035	-	-	0.157	0.053	0.178	0.026	-	-
HCM Control Delay (s)	7.9	-	-	16.7	9.4	13.5	7.7	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.2	0.6	0.1	-	-

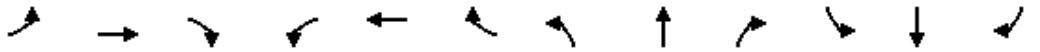
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	20	10	50	10	10	10	30	260	30	20	210	30
Future Vol, veh/h	20	10	50	10	10	10	30	260	30	20	210	30
Conflicting Peds, #/hr	7	0	10	7	0	4	10	0	7	4	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	11	56	11	11	11	33	289	33	22	233	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	694	699	270	716	699	320	276	0	0	329	0	0
Stage 1	304	304	-	379	379	-	-	-	-	-	-	-
Stage 2	390	395	-	337	320	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	356	363	766	344	363	718	1281	-	-	1225	-	-
Stage 1	703	661	-	641	613	-	-	-	-	-	-	-
Stage 2	632	603	-	675	651	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	341	751	295	341	708	1269	-	-	1217	-	-
Mov Cap-2 Maneuver	325	341	-	295	341	-	-	-	-	-	-	-
Stage 1	678	642	-	620	593	-	-	-	-	-	-	-
Stage 2	591	583	-	597	633	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	15.1	0.7	0.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1269	-	-	508	388	1217	-	-
HCM Lane V/C Ratio	0.026	-	-	0.175	0.086	0.018	-	-
HCM Control Delay (s)	7.9	-	-	13.6	15.1	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	30	160	10	20	10	140	390	10	10	180	70
Future Volume (veh/h)	50	30	160	10	20	10	140	390	10	10	180	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	53	32	30	11	21	2	147	411	10	11	189	58
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	258	110	214	165	180	14	661	835	20	497	533	164
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.08	0.46	0.46	0.01	0.39	0.39
Sat Flow, veh/h	776	800	1557	303	1309	101	1767	1803	44	1767	1360	417
Grp Volume(v), veh/h	85	0	30	34	0	0	147	0	421	11	0	247
Grp Sat Flow(s),veh/h/ln	1576	0	1557	1713	0	0	1767	0	1847	1767	0	1777
Q Serve(g_s), s	0.8	0.0	0.7	0.0	0.0	0.0	1.8	0.0	6.1	0.1	0.0	3.8
Cycle Q Clear(g_c), s	1.8	0.0	0.7	0.6	0.0	0.0	1.8	0.0	6.1	0.1	0.0	3.8
Prop In Lane	0.62		1.00	0.32		0.06	1.00		0.02	1.00		0.23
Lane Grp Cap(c), veh/h	368	0	214	359	0	0	661	0	855	497	0	697
V/C Ratio(X)	0.23	0.00	0.14	0.09	0.00	0.00	0.22	0.00	0.49	0.02	0.00	0.35
Avail Cap(c_a), veh/h	1140	0	1007	1186	0	0	1202	0	2390	1163	0	2299
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	14.7	14.6	0.0	0.0	5.7	0.0	7.2	7.1	0.0	8.3
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.4
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	0.0	0.2	0.2	0.0	0.0	0.4	0.0	1.7	0.0	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	0.0	14.8	14.7	0.0	0.0	5.8	0.0	7.8	7.1	0.0	8.7
LnGrp LOS	B	A	B	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		115			34			568			258	
Approach Delay, s/veh		15.1			14.7			7.3			8.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	23.9		10.3	7.2	21.2		10.3				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.1	8.1		3.8	3.8	5.8		2.6				
Green Ext Time (p_c), s	0.0	4.4		0.3	0.1	2.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		8.8	
HCM 6th LOS		A	



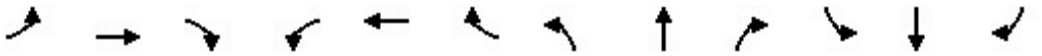
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	360	10	30	180	60	20	220	100	100	130	40
Future Volume (veh/h)	60	360	10	30	180	60	20	220	100	100	130	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	71	429	4	36	214	22	24	262	0	119	155	41
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	447	578	488	285	542	458	381	386		364	377	100
Arrive On Green	0.04	0.31	0.31	0.02	0.29	0.29	0.02	0.21	0.00	0.08	0.27	0.27
Sat Flow, veh/h	1767	1856	1567	1767	1856	1567	1767	1856	1572	1767	1413	374
Grp Volume(v), veh/h	71	429	4	36	214	22	24	262	0	119	0	196
Grp Sat Flow(s),veh/h/ln	1767	1856	1567	1767	1856	1567	1767	1856	1572	1767	0	1787
Q Serve(g_s), s	1.4	10.3	0.1	0.7	4.6	0.5	0.5	6.5	0.0	2.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	10.3	0.1	0.7	4.6	0.5	0.5	6.5	0.0	2.5	0.0	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	447	578	488	285	542	458	381	386		364	0	476
V/C Ratio(X)	0.16	0.74	0.01	0.13	0.40	0.05	0.06	0.68		0.33	0.00	0.41
Avail Cap(c_a), veh/h	1009	1676	1415	882	1676	1415	989	1117		869	0	1076
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.7	15.4	11.8	12.8	14.1	12.7	15.2	18.2	0.0	13.9	0.0	15.1
Incr Delay (d2), s/veh	0.1	1.9	0.0	0.1	0.5	0.0	0.0	2.1	0.0	0.2	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	0.5	4.0	0.0	0.2	1.7	0.2	0.2	2.7	0.0	0.9	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	17.3	11.8	12.9	14.6	12.7	15.2	20.3	0.0	14.1	0.0	15.6
LnGrp LOS	B	B	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		504			272			286	A		315	
Approach Delay, s/veh		16.4			14.2			19.9			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	20.5	5.3	18.3	6.7	19.6	8.3	15.4
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	2.7	12.3	2.5	6.5	3.4	6.6	4.5	8.5
Green Ext Time (p_c), s	0.0	2.9	0.0	1.2	0.1	1.4	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	350	10	60	280	40	20	270	120	50	130	80
Future Volume (veh/h)	120	350	10	60	280	40	20	270	120	50	130	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	129	376	10	65	301	40	22	290	121	54	140	14
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	290	457	12	252	374	50	26	344	144	74	193	225
Arrive On Green	0.08	0.25	0.25	0.06	0.23	0.23	0.29	0.29	0.29	0.15	0.15	0.15
Sat Flow, veh/h	1767	1798	48	1767	1599	213	89	1169	488	509	1321	1540
Grp Volume(v), veh/h	129	0	386	65	0	341	433	0	0	194	0	14
Grp Sat Flow(s),veh/h/ln	1767	0	1846	1767	0	1812	1745	0	0	1830	0	1540
Q Serve(g_s), s	4.4	0.0	16.2	2.2	0.0	14.6	19.1	0.0	0.0	8.3	0.0	0.6
Cycle Q Clear(g_c), s	4.4	0.0	16.2	2.2	0.0	14.6	19.1	0.0	0.0	8.3	0.0	0.6
Prop In Lane	1.00		0.03	1.00		0.12	0.05		0.28	0.28		1.00
Lane Grp Cap(c), veh/h	290	0	470	252	0	424	514	0	0	267	0	225
V/C Ratio(X)	0.45	0.00	0.82	0.26	0.00	0.80	0.84	0.00	0.00	0.73	0.00	0.06
Avail Cap(c_a), veh/h	577	0	1667	403	0	1459	1086	0	0	871	0	733
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	28.8	22.5	0.0	29.6	27.1	0.0	0.0	33.4	0.0	30.2
Incr Delay (d2), s/veh	1.1	0.0	3.7	0.5	0.0	3.6	3.8	0.0	0.0	3.8	0.0	0.1
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	7.4	0.9	0.0	6.5	8.1	0.0	0.0	3.9	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	0.0	32.5	23.0	0.0	33.2	30.9	0.0	0.0	37.2	0.0	30.3
LnGrp LOS	C	A	C	C	A	C	C	A	A	D	A	C
Approach Vol, veh/h		515			406			433			208	
Approach Delay, s/veh		30.2			31.6			30.9			36.7	
Approach LOS		C			C			C			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		29.1	10.0	25.8		17.0	11.7	24.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		51.0	12.0	74.0		39.0	20.0	66.0				
Max Q Clear Time (g_c+I1), s		21.1	4.2	18.2		10.3	6.4	16.6				
Green Ext Time (p_c), s		3.1	0.1	2.7		1.2	0.3	2.3				

Intersection Summary												
HCM 6th Ctrl Delay			31.6									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1060	110	50	730	1130	60	160	80	940	140	130
Future Volume (veh/h)	60	1060	110	50	730	1130	60	160	80	940	140	130
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	62	1093	0	52	753	0	62	165	0	1072	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	79	1383		67	1359		170	179		1123	0	
Arrive On Green	0.04	0.39	0.00	0.01	0.13	0.00	0.10	0.10	0.00	0.32	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	62	1093	0	52	753	0	62	165	0	1072	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	4.7	36.9	0.0	4.0	27.1	0.0	4.4	11.9	0.0	40.1	0.0	0.0
Cycle Q Clear(g_c), s	4.7	36.9	0.0	4.0	27.1	0.0	4.4	11.9	0.0	40.1	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	79	1383		67	1359		170	179		1123	0	
V/C Ratio(X)	0.78	0.79		0.78	0.55		0.36	0.92		0.95	0.00	
Avail Cap(c_a), veh/h	157	1383		157	1359		170	179		1152	0	
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	63.8	36.1	0.0	66.1	48.0	0.0	57.1	60.5	0.0	45.1	0.0	0.0
Incr Delay (d2), s/veh	6.2	4.7	0.0	5.8	1.4	0.0	1.6	46.1	0.0	16.4	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	2.3	16.7	0.0	1.9	13.1	0.0	2.1	7.9	0.0	19.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	40.8	0.0	71.9	49.4	0.0	58.7	106.6	0.0	61.5	0.0	0.0
LnGrp LOS	E	D		E	D		E	F		E	A	
Approach Vol, veh/h		1155	A		805	A		227	A		1072	A
Approach Delay, s/veh		42.4			50.8			93.5			61.5	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	59.0		18.0	11.0	58.0		47.9				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	12.0	45.0		13.0	12.0	45.0		44.0				
Max Q Clear Time (g_c+I1), s	6.0	38.9		13.9	6.7	29.1		42.1				
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	7.6		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1720	140	60	1850	30	180	20	40	30	30	10
Future Volume (veh/h)	10	1720	140	60	1850	30	180	20	40	30	30	10
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	1755	137	61	1888	30	184	20	8	31	31	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	12	2982	232	78	3388	54	224	19	335	39	29	3
Arrive On Green	0.01	1.00	1.00	0.04	0.66	0.66	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1767	4791	373	1767	5136	82	809	88	1559	0	137	13
Grp Volume(v), veh/h	10	1236	656	61	1241	677	204	0	8	68	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1787	1767	1689	1841	897	0	1559	150	0	0
Q Serve(g_s), s	0.8	0.0	0.0	4.6	26.7	26.7	0.0	0.0	0.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	4.6	26.7	26.7	29.0	0.0	0.5	29.0	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.04	0.90		1.00	0.46		0.09
Lane Grp Cap(c), veh/h	12	2102	1112	78	2228	1214	243	0	335	71	0	0
V/C Ratio(X)	0.81	0.59	0.59	0.78	0.56	0.56	0.84	0.00	0.02	0.96	0.00	0.00
Avail Cap(c_a), veh/h	144	2102	1112	144	2228	1214	243	0	335	71	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)	0.38	0.38	0.38	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	66.5	0.0	0.0	63.9	12.4	12.4	53.8	0.0	41.8	54.3	0.0	0.0
Incr Delay (d2), s/veh	16.4	0.5	0.9	6.2	1.0	1.9	22.0	0.0	0.0	91.5	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	0.1	0.3	2.2	10.0	11.2	8.6	0.0	0.2	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.9	0.5	0.9	70.1	13.4	14.2	75.8	0.0	41.9	145.8	0.0	0.0
LnGrp LOS	F	A	A	E	B	B	E	A	D	F	A	A
Approach Vol, veh/h		1902			1979			212			68	
Approach Delay, s/veh		1.0			15.4			74.5			145.8	
Approach LOS		A			B			E			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	90.0		34.0	5.9	95.1		34.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	6.0	79.0		29.0	11.0	79.0		29.0
Max Q Clear Time (g_c+I1), s	3.6	2.0		31.0	2.8	28.7		31.0
Green Ext Time (p_c), s	0.0	53.7		0.0	0.0	39.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	13.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	100	90	20	50	40	90	140	30	70	220	70
Future Vol, veh/h	70	100	90	20	50	40	90	140	30	70	220	70
Conflicting Peds, #/hr	13	0	12	9	0	10	12	0	9	10	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	72	103	93	21	52	41	93	144	31	72	227	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	825	791	175	677	812	183	312	0	0	185	0	0
Stage 1	420	420	-	356	356	-	-	-	-	-	-	-
Stage 2	405	371	-	321	456	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	276	320	836	351	311	856	1240	-	-	1382	-	-
Stage 1	580	587	-	658	626	-	-	-	-	-	-	-
Stage 2	619	617	-	663	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	274	816	196	266	837	1225	-	-	1369	-	-
Mov Cap-2 Maneuver	198	274	-	196	266	-	-	-	-	-	-	-
Stage 1	530	549	-	602	573	-	-	-	-	-	-	-
Stage 2	489	565	-	447	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.6	21.8	2.8	1.5
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1225	-	-	237	816	326	1369	-	-
HCM Lane V/C Ratio	0.076	-	-	0.739	0.114	0.348	0.053	-	-
HCM Control Delay (s)	8.2	-	-	53.7	10	21.8	7.8	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	5.1	0.4	1.5	0.2	-	-

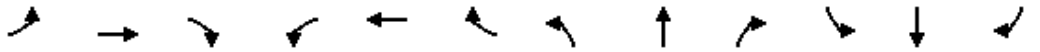
Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	40	30	120	20	10	10	60	180	30	10	240	50
Future Vol, veh/h	40	30	120	20	10	10	60	180	30	10	240	50
Conflicting Peds, #/hr	3	0	3	2	0	2	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	33	130	22	11	11	65	196	33	11	261	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	670	674	294	740	685	218	318	0	0	231	0	0
Stage 1	313	313	-	345	345	-	-	-	-	-	-	-
Stage 2	357	361	-	395	340	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	369	375	743	331	369	819	1236	-	-	1331	-	-
Stage 1	696	655	-	668	634	-	-	-	-	-	-	-
Stage 2	659	624	-	628	637	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	337	351	739	241	345	815	1232	-	-	1328	-	-
Mov Cap-2 Maneuver	337	351	-	241	345	-	-	-	-	-	-	-
Stage 1	658	648	-	631	599	-	-	-	-	-	-	-
Stage 2	603	590	-	486	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	17.9	1.8	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	518	322	1328	-	-
HCM Lane V/C Ratio	0.053	-	-	0.399	0.135	0.008	-	-
HCM Control Delay (s)	8.1	-	-	16.5	17.9	7.7	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.9	0.5	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	50	240	10	20	10	130	310	10	10	380	130
Future Volume (veh/h)	120	50	240	10	20	10	130	310	10	10	380	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	125	52	52	10	21	2	135	323	9	10	396	123
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	326	85	256	143	205	16	451	865	24	565	567	176
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.48	0.48	0.01	0.42	0.42
Sat Flow, veh/h	1127	517	1553	213	1249	94	1767	1796	50	1767	1357	421
Grp Volume(v), veh/h	177	0	52	33	0	0	135	0	332	10	0	519
Grp Sat Flow(s),veh/h/ln	1644	0	1553	1556	0	0	1767	0	1846	1767	0	1778
Q Serve(g_s), s	0.0	0.0	1.3	0.0	0.0	0.0	1.8	0.0	5.0	0.1	0.0	10.5
Cycle Q Clear(g_c), s	4.1	0.0	1.3	4.1	0.0	0.0	1.8	0.0	5.0	0.1	0.0	10.5
Prop In Lane	0.71		1.00	0.30		0.06	1.00		0.03	1.00		0.24
Lane Grp Cap(c), veh/h	411	0	256	363	0	0	451	0	889	565	0	743
V/C Ratio(X)	0.43	0.00	0.20	0.09	0.00	0.00	0.30	0.00	0.37	0.02	0.00	0.70
Avail Cap(c_a), veh/h	1016	0	890	1021	0	0	928	0	2115	1154	0	2037
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	15.8	15.5	0.0	0.0	7.4	0.0	7.2	7.2	0.0	10.4
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	1.7
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	1.5	0.0	0.4	0.3	0.0	0.0	0.5	0.0	1.5	0.0	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	0.0	15.9	15.6	0.0	0.0	7.5	0.0	7.5	7.2	0.0	12.1
LnGrp LOS	B	A	B	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		229			33			467			529	
Approach Delay, s/veh		16.9			15.6			7.5			12.1	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	27.0		12.2	7.2	24.2		12.2				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.1	7.0		6.1	3.8	12.5		6.1				
Green Ext Time (p_c), s	0.0	3.3		0.7	0.1	5.8		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		11.3	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	380	20	90	390	100	20	110	70	190	120	70
Future Volume (veh/h)	50	380	20	90	390	100	20	110	70	190	120	70
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	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	52	396	6	94	406	34	21	115	0	198	125	58
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	330	549	464	354	596	504	322	225		455	278	129
Arrive On Green	0.03	0.30	0.30	0.06	0.32	0.32	0.02	0.12	0.00	0.13	0.23	0.23
Sat Flow, veh/h	1767	1856	1567	1767	1856	1568	1767	1856	1572	1767	1197	556
Grp Volume(v), veh/h	52	396	6	94	406	34	21	115	0	198	0	183
Grp Sat Flow(s),veh/h/ln	1767	1856	1567	1767	1856	1568	1767	1856	1572	1767	0	1753
Q Serve(g_s), s	1.0	9.1	0.1	1.7	9.0	0.7	0.5	2.8	0.0	4.3	0.0	4.3
Cycle Q Clear(g_c), s	1.0	9.1	0.1	1.7	9.0	0.7	0.5	2.8	0.0	4.3	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	330	549	464	354	596	504	322	225		455	0	407
V/C Ratio(X)	0.16	0.72	0.01	0.27	0.68	0.07	0.07	0.51		0.44	0.00	0.45
Avail Cap(c_a), veh/h	944	1755	1483	922	1755	1483	964	1170		900	0	1105
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	15.0	11.8	11.5	14.0	11.2	17.9	19.6	0.0	13.8	0.0	15.6
Incr Delay (d2), s/veh	0.1	1.8	0.0	0.1	1.4	0.1	0.0	1.8	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	0.3	3.5	0.0	0.6	3.4	0.2	0.2	1.2	0.0	1.5	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.9	16.8	11.9	11.6	15.4	11.3	18.0	21.4	0.0	14.0	0.0	16.4
LnGrp LOS	B	B	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		454			534			136	A		381	
Approach Delay, s/veh		16.2			14.5			20.8			15.2	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	19.1	5.2	16.1	6.0	20.3	10.5	10.8
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	3.7	11.1	2.5	6.3	3.0	11.0	6.3	4.8
Green Ext Time (p_c), s	0.1	2.7	0.0	1.1	0.0	2.9	0.2	0.6

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

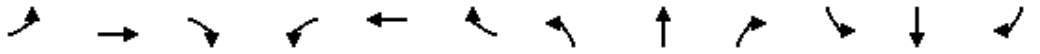
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	260	10	110	280	50	10	200	60	70	280	180
Future Volume (veh/h)	110	260	10	110	280	50	10	200	60	70	280	180
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	120	283	10	120	304	50	11	217	58	76	304	72
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	274	426	15	321	370	61	14	270	72	92	367	391
Arrive On Green	0.08	0.24	0.24	0.08	0.24	0.24	0.20	0.20	0.20	0.25	0.25	0.25
Sat Flow, veh/h	1767	1781	63	1767	1554	256	69	1354	362	367	1470	1566
Grp Volume(v), veh/h	120	0	293	120	0	354	286	0	0	380	0	72
Grp Sat Flow(s),veh/h/ln	1767	0	1844	1767	0	1810	1785	0	0	1837	0	1566
Q Serve(g_s), s	4.2	0.0	12.1	4.2	0.0	15.7	12.9	0.0	0.0	16.5	0.0	3.1
Cycle Q Clear(g_c), s	4.2	0.0	12.1	4.2	0.0	15.7	12.9	0.0	0.0	16.5	0.0	3.1
Prop In Lane	1.00		0.03	1.00		0.14	0.04		0.20	0.20		1.00
Lane Grp Cap(c), veh/h	274	0	441	321	0	431	356	0	0	458	0	391
V/C Ratio(X)	0.44	0.00	0.66	0.37	0.00	0.82	0.80	0.00	0.00	0.83	0.00	0.18
Avail Cap(c_a), veh/h	557	0	1616	439	0	1414	1078	0	0	848	0	723
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	29.1	22.3	0.0	30.5	32.2	0.0	0.0	30.0	0.0	24.9
Incr Delay (d2), s/veh	1.1	0.0	1.7	0.7	0.0	4.0	4.3	0.0	0.0	3.9	0.0	0.2
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	1.8	0.0	5.4	1.8	0.0	7.1	5.8	0.0	0.0	7.6	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	0.0	30.8	23.1	0.0	34.4	36.5	0.0	0.0	33.9	0.0	25.2
LnGrp LOS	C	A	C	C	A	C	D	A	A	C	A	C
Approach Vol, veh/h		413			474			286			452	
Approach Delay, s/veh		28.8			31.6			36.5			32.5	
Approach LOS		C			C			D			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		21.8	11.4	25.2		26.1	11.4	25.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		51.0	12.0	74.0		39.0	20.0	66.0				
Max Q Clear Time (g_c+I1), s		14.9	6.2	14.1		18.5	6.2	17.7				
Green Ext Time (p_c), s		1.9	0.1	2.0		2.5	0.2	2.5				

Intersection Summary												
HCM 6th Ctrl Delay			32.0									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	730	80	30	1180	950	50	130	20	1080	150	90
Future Volume (veh/h)	40	730	80	30	1180	950	50	130	20	1080	150	90
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	42	768	0	32	1242	0	53	137	0	1250	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	54	1241		41	1214		168	176		1303	0	
Arrive On Green	0.03	0.35	0.00	0.01	0.11	0.00	0.09	0.09	0.00	0.37	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	42	768	0	32	1242	0	53	137	0	1250	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	3.1	23.5	0.0	2.4	44.8	0.0	3.6	9.4	0.0	44.9	0.0	0.0
Cycle Q Clear(g_c), s	3.1	23.5	0.0	2.4	44.8	0.0	3.6	9.4	0.0	44.9	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	54	1241		41	1214		168	176		1303	0	
V/C Ratio(X)	0.78	0.62		0.79	1.02		0.32	0.78		0.96	0.00	
Avail Cap(c_a), veh/h	122	1241		122	1214		258	271		1332	0	
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	0.72	0.72	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.6	34.9	0.0	64.2	57.6	0.0	54.9	57.5	0.0	40.1	0.0	0.0
Incr Delay (d2), s/veh	8.7	2.3	0.0	8.8	27.9	0.0	1.3	8.9	0.0	15.7	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	1.5	10.5	0.0	1.2	26.0	0.0	1.7	4.9	0.0	21.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.3	37.2	0.0	72.9	85.5	0.0	56.2	66.4	0.0	55.8	0.0	0.0
LnGrp LOS	E	D		E	F		E	E		E	A	
Approach Vol, veh/h		810	A		1274	A		190	A		1250	A
Approach Delay, s/veh		39.0			85.2			63.5			55.8	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	51.8		17.3	9.0	50.8		52.9				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	9.0	32.0		19.0	9.0	32.0		49.0				
Max Q Clear Time (g_c+I1), s	4.4	25.5		11.4	5.1	46.8		46.9				
Green Ext Time (p_c), s	0.0	3.9		0.6	0.0	0.0		1.0				

Intersection Summary		
HCM 6th Ctrl Delay	63.0	
HCM 6th LOS	E	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1600	150	40	1890	30	230	30	50	40	30	20
Future Volume (veh/h)	30	1600	150	40	1890	30	230	30	50	40	30	20
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	0.98		0.97	0.98		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	1702	151	43	2011	31	245	32	12	43	32	12
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	41	2950	261	55	3242	50	242	25	339	41	24	4
Arrive On Green	0.02	0.42	0.42	0.03	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1767	4738	419	1767	5139	79	852	111	1522	0	110	18
Grp Volume(v), veh/h	32	1212	641	43	1321	721	277	0	12	87	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1780	1767	1689	1841	964	0	1522	127	0	0
Q Serve(g_s), s	2.3	35.8	35.9	3.1	30.8	30.9	0.0	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	35.8	35.9	3.1	30.8	30.9	29.0	0.0	0.8	29.0	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.04	0.88		1.00	0.49		0.14
Lane Grp Cap(c), veh/h	41	2103	1108	55	2131	1161	267	0	339	70	0	0
V/C Ratio(X)	0.79	0.58	0.58	0.78	0.62	0.62	1.04	0.00	0.04	1.25	0.00	0.00
Avail Cap(c_a), veh/h	109	2103	1108	109	2131	1161	267	0	339	70	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.7	24.7	24.8	62.5	14.5	14.6	53.3	0.0	39.5	53.6	0.0	0.0
Incr Delay (d2), s/veh	5.7	0.5	1.0	8.5	1.4	2.5	64.9	0.0	0.0	188.4	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	1.1	15.4	16.5	1.5	11.7	13.2	13.8	0.0	0.3	6.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.4	25.3	25.8	71.0	15.9	17.1	118.3	0.0	39.6	242.0	0.0	0.0
LnGrp LOS	E	C	C	E	B	B	F	A	D	F	A	A
Approach Vol, veh/h		1885			2085			289			87	
Approach Delay, s/veh		26.2			17.4			115.0			242.0	
Approach LOS		C			B			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.1	86.9		34.0	8.0	88.0		34.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	8.0	77.0		29.0	8.0	77.0		29.0
Max Q Clear Time (g_c+I1), s	5.1	37.9		31.0	4.3	32.9		31.0
Green Ext Time (p_c), s	0.0	31.5		0.0	0.0	37.3		0.0

Intersection Summary		
HCM 6th Ctrl Delay	32.2	
HCM 6th LOS	C	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	50	50	20	40	50	50	190	20	40	210	30
Future Vol, veh/h	20	50	50	20	40	50	50	190	20	40	210	30
Conflicting Peds, #/hr	14	0	13	10	0	11	13	0	10	11	0	14
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	57	57	23	46	57	57	218	23	46	241	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	773	730	165	609	736	255	289	0	0	252	0	0
Stage 1	364	364	-	355	355	-	-	-	-	-	-	-
Stage 2	409	366	-	254	381	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	301	347	848	391	344	780	1265	-	-	1305	-	-
Stage 1	626	621	-	659	627	-	-	-	-	-	-	-
Stage 2	616	620	-	726	610	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	226	312	826	287	309	762	1248	-	-	1291	-	-
Mov Cap-2 Maneuver	226	312	-	287	309	-	-	-	-	-	-	-
Stage 1	590	591	-	622	592	-	-	-	-	-	-	-
Stage 2	495	585	-	581	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	17.4	1.5	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1248	-	-	281	826	415	1291	-	-
HCM Lane V/C Ratio	0.046	-	-	0.286	0.07	0.305	0.036	-	-
HCM Control Delay (s)	8	-	-	22.9	9.7	17.4	7.9	-	-
HCM Lane LOS	A	-	-	C	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.2	1.3	0.1	-	-

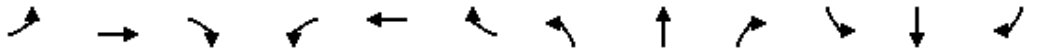
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	30	20	60	20	20	20	40	310	40	30	250	40
Future Vol, veh/h	30	20	60	20	20	20	40	310	40	30	250	40
Conflicting Peds, #/hr	9	0	12	9	0	5	12	0	9	5	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	22	67	22	22	22	44	344	44	33	278	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	863	863	324	886	863	384	334	0	0	397	0	0
Stage 1	378	378	-	463	463	-	-	-	-	-	-	-
Stage 2	485	485	-	423	400	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	274	291	715	264	291	661	1220	-	-	1156	-	-
Stage 1	642	613	-	577	562	-	-	-	-	-	-	-
Stage 2	561	550	-	607	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	231	267	699	209	267	650	1206	-	-	1146	-	-
Mov Cap-2 Maneuver	231	267	-	209	267	-	-	-	-	-	-	-
Stage 1	612	588	-	551	537	-	-	-	-	-	-	-
Stage 2	496	525	-	507	576	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	20.5	0.8	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1206	-	-	379	298	1146	-	-
HCM Lane V/C Ratio	0.037	-	-	0.322	0.224	0.029	-	-
HCM Control Delay (s)	8.1	-	-	19	20.5	8.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.8	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	40	170	20	30	20	170	460	20	20	210	90
Future Volume (veh/h)	60	40	170	20	30	20	170	460	20	20	210	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	63	42	21	21	32	6	179	484	20	21	221	78
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	258	122	230	175	171	25	621	805	33	438	497	176
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.46	0.46	0.02	0.38	0.38
Sat Flow, veh/h	764	821	1552	356	1150	170	1767	1769	73	1767	1307	461
Grp Volume(v), veh/h	105	0	21	59	0	0	179	0	504	21	0	299
Grp Sat Flow(s),veh/h/ln	1585	0	1552	1676	0	0	1767	0	1842	1767	0	1768
Q Serve(g_s), s	0.9	0.0	0.5	0.0	0.0	0.0	2.2	0.0	8.2	0.3	0.0	5.0
Cycle Q Clear(g_c), s	2.2	0.0	0.5	1.1	0.0	0.0	2.2	0.0	8.2	0.3	0.0	5.0
Prop In Lane	0.60		1.00	0.36		0.10	1.00		0.04	1.00		0.26
Lane Grp Cap(c), veh/h	379	0	230	371	0	0	621	0	838	438	0	673
V/C Ratio(X)	0.28	0.00	0.09	0.16	0.00	0.00	0.29	0.00	0.60	0.05	0.00	0.44
Avail Cap(c_a), veh/h	1101	0	971	1131	0	0	1115	0	2306	1065	0	2213
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	1.00	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	14.7	15.0	0.0	0.0	6.1	0.0	8.2	7.6	0.0	9.2
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	1.0	0.0	0.0	0.7
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	0.8	0.0	0.1	0.4	0.0	0.0	0.5	0.0	2.4	0.1	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	14.7	15.0	0.0	0.0	6.2	0.0	9.2	7.6	0.0	9.9
LnGrp LOS	B	A	B	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		126			59			683			320	
Approach Delay, s/veh		15.4			15.0			8.4			9.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	24.2		10.9	7.8	21.2		10.9				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	10.2		4.2	4.2	7.0		3.1				
Green Ext Time (p_c), s	0.0	5.5		0.4	0.2	3.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		9.8	
HCM 6th LOS		A	



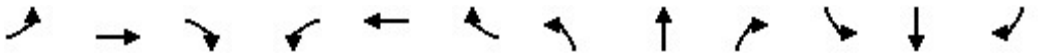
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	390	20	40	200	70	30	260	120	120	160	50
Future Volume (veh/h)	70	390	20	40	200	70	30	260	120	120	160	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	464	9	48	238	25	36	310	0	143	190	53
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	434	599	505	265	560	472	370	427		358	409	114
Arrive On Green	0.05	0.32	0.32	0.03	0.30	0.30	0.02	0.23	0.00	0.09	0.29	0.29
Sat Flow, veh/h	1767	1856	1565	1767	1856	1565	1767	1856	1572	1767	1394	389
Grp Volume(v), veh/h	83	464	9	48	238	25	36	310	0	143	0	243
Grp Sat Flow(s),veh/h/ln	1767	1856	1565	1767	1856	1565	1767	1856	1572	1767	0	1783
Q Serve(g_s), s	1.8	12.9	0.2	1.1	5.9	0.6	0.9	8.8	0.0	3.3	0.0	6.4
Cycle Q Clear(g_c), s	1.8	12.9	0.2	1.1	5.9	0.6	0.9	8.8	0.0	3.3	0.0	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	434	599	505	265	560	472	370	427		358	0	523
V/C Ratio(X)	0.19	0.77	0.02	0.18	0.43	0.05	0.10	0.73		0.40	0.00	0.46
Avail Cap(c_a), veh/h	902	1460	1232	771	1460	1231	886	973		762	0	935
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	17.5	13.2	14.4	16.0	14.2	16.4	20.4	0.0	14.7	0.0	16.5
Incr Delay (d2), s/veh	0.1	2.2	0.0	0.1	0.5	0.0	0.0	2.4	0.0	0.3	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	5.2	0.1	0.4	2.3	0.2	0.3	3.8	0.0	1.2	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	19.7	13.2	14.6	16.5	14.2	16.4	22.7	0.0	15.0	0.0	17.2
LnGrp LOS	B	B	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		556			311			346	A		386	
Approach Delay, s/veh		18.6			16.0			22.1			16.4	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	23.5	5.8	21.8	7.4	22.3	9.4	18.1
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	3.1	14.9	2.9	8.4	3.8	7.9	5.3	10.8
Green Ext Time (p_c), s	0.0	3.2	0.0	1.5	0.1	1.6	0.1	1.7

Intersection Summary	
HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

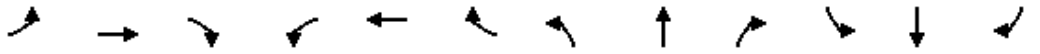
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	410	20	70	330	50	30	320	140	60	160	100
Future Volume (veh/h)	140	410	20	70	330	50	30	320	140	60	160	100
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	152	446	21	76	359	51	33	348	144	65	174	17
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	246	511	24	194	411	58	36	385	159	78	210	242
Arrive On Green	0.08	0.29	0.29	0.05	0.26	0.26	0.33	0.33	0.33	0.16	0.16	0.16
Sat Flow, veh/h	1767	1758	83	1767	1589	226	110	1165	482	498	1333	1538
Grp Volume(v), veh/h	152	0	467	76	0	410	525	0	0	239	0	17
Grp Sat Flow(s),veh/h/ln	1767	0	1841	1767	0	1815	1757	0	0	1831	0	1538
Q Serve(g_s), s	7.1	0.0	28.0	3.6	0.0	25.1	33.1	0.0	0.0	14.7	0.0	1.1
Cycle Q Clear(g_c), s	7.1	0.0	28.0	3.6	0.0	25.1	33.1	0.0	0.0	14.7	0.0	1.1
Prop In Lane	1.00		0.04	1.00		0.12	0.06		0.27	0.27		1.00
Lane Grp Cap(c), veh/h	246	0	535	194	0	469	580	0	0	289	0	242
V/C Ratio(X)	0.62	0.00	0.87	0.39	0.00	0.87	0.90	0.00	0.00	0.83	0.00	0.07
Avail Cap(c_a), veh/h	408	0	1175	290	0	1033	773	0	0	616	0	517
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	39.1	31.8	0.0	41.2	37.1	0.0	0.0	47.3	0.0	41.6
Incr Delay (d2), s/veh	2.5	0.0	4.6	1.3	0.0	5.3	11.5	0.0	0.0	6.0	0.0	0.1
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	3.2	0.0	13.2	1.6	0.0	11.8	15.8	0.0	0.0	7.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	43.7	33.1	0.0	46.4	48.6	0.0	0.0	53.4	0.0	41.7
LnGrp LOS	C	A	D	C	A	D	D	A	A	D	A	D
Approach Vol, veh/h		619			486			525			256	
Approach Delay, s/veh		41.1			44.4			48.6			52.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.3	10.7	38.7		23.3	14.4	35.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		51.0	12.0	74.0		39.0	20.0	66.0				
Max Q Clear Time (g_c+I1), s		35.1	5.6	30.0		16.7	9.1	27.1				
Green Ext Time (p_c), s		3.2	0.1	3.4		1.4	0.3	2.9				

Intersection Summary												
HCM 6th Ctrl Delay			45.6									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1130	120	60	780	1200	70	190	100	1000	150	140
Future Volume (veh/h)	70	1130	120	60	780	1200	70	190	100	1000	150	140
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	72	1165	0	62	804	0	72	196	0	1142	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	91	1330		80	1307		170	179		1152	0	
Arrive On Green	0.05	0.38	0.00	0.01	0.12	0.00	0.10	0.10	0.00	0.33	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	72	1165	0	62	804	0	72	196	0	1142	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	5.4	41.5	0.0	4.7	29.2	0.0	5.2	13.0	0.0	43.4	0.0	0.0
Cycle Q Clear(g_c), s	5.4	41.5	0.0	4.7	29.2	0.0	5.2	13.0	0.0	43.4	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	91	1330		80	1307		170	179		1152	0	
V/C Ratio(X)	0.79	0.88		0.78	0.62		0.42	1.10		0.99	0.00	
Avail Cap(c_a), veh/h	157	1330		157	1307		170	179		1152	0	
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	0.74	0.74	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.3	39.1	0.0	65.8	50.1	0.0	57.5	61.0	0.0	45.3	0.0	0.0
Incr Delay (d2), s/veh	5.6	8.3	0.0	4.5	1.6	0.0	2.0	95.6	0.0	24.3	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	2.6	19.3	0.0	2.3	14.2	0.0	2.4	10.9	0.0	22.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	47.4	0.0	70.4	51.7	0.0	59.5	156.6	0.0	69.7	0.0	0.0
LnGrp LOS	E	D		E	D		E	F		E	A	
Approach Vol, veh/h		1237	A		866	A		268	A		1142	A
Approach Delay, s/veh		48.7			53.1			130.5			69.7	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	56.9		18.0	12.0	56.0		49.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	12.0	45.0		13.0	12.0	45.0		44.0				
Max Q Clear Time (g_c+I1), s	6.7	43.5		15.0	7.4	31.2		45.4				
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	7.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		62.8
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1830	150	70	1970	40	210	30	50	40	40	20
Future Volume (veh/h)	20	1830	150	70	1970	40	210	30	50	40	40	20
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	20	1867	146	71	2010	40	214	31	11	41	41	14
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	24	2950	230	90	3338	66	211	23	334	38	31	5
Arrive On Green	0.03	1.00	1.00	0.05	0.65	0.65	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1767	4790	373	1767	5112	102	751	109	1557	0	143	24
Grp Volume(v), veh/h	20	1314	699	71	1327	723	245	0	11	96	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1786	1767	1689	1837	860	0	1557	167	0	0
Q Serve(g_s), s	1.5	0.0	0.0	5.4	30.3	30.4	0.0	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	5.4	30.3	30.4	29.0	0.0	0.8	29.0	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.06	0.87		1.00	0.43		0.15
Lane Grp Cap(c), veh/h	24	2080	1100	90	2205	1199	235	0	334	74	0	0
V/C Ratio(X)	0.82	0.63	0.64	0.79	0.60	0.60	1.04	0.00	0.03	1.30	0.00	0.00
Avail Cap(c_a), veh/h	144	2080	1100	144	2205	1199	235	0	334	74	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)	0.26	0.26	0.26	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	65.5	0.0	0.0	63.4	13.4	13.4	56.1	0.0	41.9	54.1	0.0	0.0
Incr Delay (d2), s/veh	6.6	0.4	0.7	5.7	1.2	2.2	70.7	0.0	0.0	204.1	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	0.7	0.1	0.2	2.6	11.5	12.8	12.8	0.0	0.3	6.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.0	0.4	0.7	69.0	14.6	15.7	126.8	0.0	42.0	258.2	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	F	A	D	F	A	A
Approach Vol, veh/h		2033			2121			256			96	
Approach Delay, s/veh		1.2			16.8			123.2			258.2	
Approach LOS		A			B			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	89.1		34.0	6.9	94.1		34.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	79.0		29.0	11.0	79.0		29.0				
Max Q Clear Time (g_c+I1), s	7.4	2.0		31.0	3.5	32.4		31.0				
Green Ext Time (p_c), s	0.0	57.9		0.0	0.0	39.2		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	50.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	120	110	30	60	50	110	170	40	90	260	90
Future Vol, veh/h	90	120	110	30	60	50	110	170	40	90	260	90
Conflicting Peds, #/hr	16	0	14	11	0	12	14	0	11	12	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	93	124	113	31	62	52	113	175	41	93	268	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1012	971	211	830	997	224	377	0	0	228	0	0
Stage 1	517	517	-	434	434	-	-	-	-	-	-	-
Stage 2	495	454	-	396	563	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	204	251	792	274	242	812	1173	-	-	1332	-	-
Stage 1	508	531	-	597	578	-	-	-	-	-	-	-
Stage 2	553	566	-	599	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	205	770	105	197	790	1155	-	-	1317	-	-
Mov Cap-2 Maneuver	124	205	-	105	197	-	-	-	-	-	-	-
Stage 1	451	486	-	533	516	-	-	-	-	-	-	-
Stage 2	404	505	-	349	463	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	166.6	50.9	2.9	1.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1155	-	-	160	770	214	1317	-	-
HCM Lane V/C Ratio	0.098	-	-	1.353	0.147	0.674	0.07	-	-
HCM Control Delay (s)	8.5	-	-	248.4	10.5	50.9	7.9	-	-
HCM Lane LOS	A	-	-	F	B	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	13.2	0.5	4.2	0.2	-	-

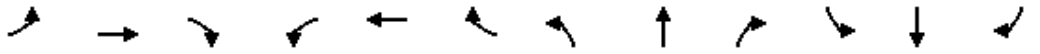
Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	50	40	140	30	20	20	70	210	40	20	280	60
Future Vol, veh/h	50	40	140	30	20	20	70	210	40	20	280	60
Conflicting Peds, #/hr	4	0	4	3	0	3	4	0	3	3	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	43	152	33	22	22	76	228	43	22	304	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	813	811	345	887	822	257	373	0	0	274	0	0
Stage 1	385	385	-	405	405	-	-	-	-	-	-	-
Stage 2	428	426	-	482	417	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	296	312	696	264	308	779	1180	-	-	1283	-	-
Stage 1	636	609	-	620	597	-	-	-	-	-	-	-
Stage 2	603	584	-	564	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	252	285	691	170	281	774	1176	-	-	1279	-	-
Mov Cap-2 Maneuver	252	285	-	170	281	-	-	-	-	-	-	-
Stage 1	593	596	-	578	556	-	-	-	-	-	-	-
Stage 2	525	544	-	399	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.9	24.9	1.8	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1176	-	-	425	256	1279	-	-
HCM Lane V/C Ratio	0.065	-	-	0.588	0.297	0.017	-	-
HCM Control Delay (s)	8.3	-	-	24.9	24.9	7.9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.7	1.2	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	60	260	20	30	20	160	360	20	20	450	160
Future Volume (veh/h)	130	60	260	20	30	20	160	360	20	20	450	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	135	62	54	21	31	7	167	375	19	21	469	155
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	279	98	322	118	142	23	388	897	45	532	606	200
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.08	0.51	0.51	0.02	0.45	0.45
Sat Flow, veh/h	836	474	1554	158	683	113	1767	1750	89	1767	1333	441
Grp Volume(v), veh/h	197	0	54	59	0	0	167	0	394	21	0	624
Grp Sat Flow(s),veh/h/ln	1310	0	1554	954	0	0	1767	0	1839	1767	0	1774
Q Serve(g_s), s	0.0	0.0	1.6	0.2	0.0	0.0	2.7	0.0	7.7	0.4	0.0	17.1
Cycle Q Clear(g_c), s	8.5	0.0	1.6	8.7	0.0	0.0	2.7	0.0	7.7	0.4	0.0	17.1
Prop In Lane	0.69		1.00	0.36		0.12	1.00		0.05	1.00		0.25
Lane Grp Cap(c), veh/h	377	0	322	283	0	0	388	0	942	532	0	806
V/C Ratio(X)	0.52	0.00	0.17	0.21	0.00	0.00	0.43	0.00	0.42	0.04	0.00	0.77
Avail Cap(c_a), veh/h	711	0	674	635	0	0	710	0	1596	957	0	1539
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	18.7	18.9	0.0	0.0	10.0	0.0	8.7	8.2	0.0	13.2
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.1	0.0	0.0	0.3	0.0	0.4	0.0	0.0	2.3
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	2.4	0.0	0.6	0.6	0.0	0.0	0.8	0.0	2.6	0.1	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	0.0	18.8	19.1	0.0	0.0	10.3	0.0	9.1	8.2	0.0	15.6
LnGrp LOS	C	A	B	B	A	A	B	A	A	A	A	B
Approach Vol, veh/h		251			59			561			645	
Approach Delay, s/veh		21.1			19.1			9.5			15.3	
Approach LOS		C			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	35.5		17.0	8.5	32.2		17.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.4	9.7		10.5	4.7	19.1		10.7				
Green Ext Time (p_c), s	0.0	4.0		0.7	0.2	7.1		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			14.3									
HCM 6th LOS			B									



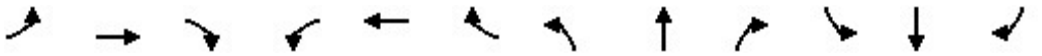
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	410	30	100	420	110	30	130	90	230	140	90
Future Volume (veh/h)	60	410	30	100	420	110	30	130	90	230	140	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	62	427	10	104	438	36	31	135	0	240	146	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	313	569	479	337	614	518	322	247		472	291	158
Arrive On Green	0.04	0.31	0.31	0.06	0.33	0.33	0.02	0.13	0.00	0.15	0.26	0.26
Sat Flow, veh/h	1767	1856	1565	1767	1856	1565	1767	1856	1572	1767	1130	611
Grp Volume(v), veh/h	62	427	10	104	438	36	31	135	0	240	0	225
Grp Sat Flow(s),veh/h/ln	1767	1856	1565	1767	1856	1565	1767	1856	1572	1767	0	1741
Q Serve(g_s), s	1.3	11.2	0.2	2.1	11.1	0.8	0.8	3.7	0.0	5.8	0.0	5.9
Cycle Q Clear(g_c), s	1.3	11.2	0.2	2.1	11.1	0.8	0.8	3.7	0.0	5.8	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	313	569	479	337	614	518	322	247		472	0	449
V/C Ratio(X)	0.20	0.75	0.02	0.31	0.71	0.07	0.10	0.55		0.51	0.00	0.50
Avail Cap(c_a), veh/h	838	1552	1309	818	1552	1309	876	1035		806	0	971
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.0	16.8	13.0	12.7	15.8	12.3	19.6	21.8	0.0	14.9	0.0	17.0
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.2	1.6	0.1	0.0	1.9	0.0	0.3	0.0	0.9
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	0.5	4.5	0.1	0.7	4.3	0.3	0.3	1.6	0.0	2.1	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	18.8	13.0	12.9	17.3	12.4	19.7	23.7	0.0	15.3	0.0	17.9
LnGrp LOS	B	B	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		499			578			166	A		465	
Approach Delay, s/veh		18.0			16.2			22.9			16.5	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	21.5	5.6	18.9	6.5	22.8	12.3	12.2
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	4.1	13.2	2.8	7.9	3.3	13.1	7.8	5.7
Green Ext Time (p_c), s	0.1	2.9	0.0	1.4	0.0	3.1	0.3	0.7

Intersection Summary	
HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

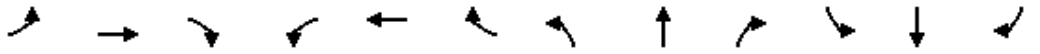
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	310	20	130	330	60	20	240	70	90	330	210
Future Volume (veh/h)	130	310	20	130	330	60	20	240	70	90	330	210
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	141	337	21	141	359	61	22	261	71	98	359	99
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	231	457	28	277	407	69	25	298	81	107	393	427
Arrive On Green	0.08	0.26	0.26	0.07	0.26	0.26	0.23	0.23	0.23	0.27	0.27	0.27
Sat Flow, veh/h	1767	1728	108	1767	1546	263	111	1314	358	394	1442	1564
Grp Volume(v), veh/h	141	0	358	141	0	420	354	0	0	457	0	99
Grp Sat Flow(s),veh/h/ln	1767	0	1836	1767	0	1808	1783	0	0	1836	0	1564
Q Serve(g_s), s	7.1	0.0	22.0	7.1	0.0	27.5	23.6	0.0	0.0	29.7	0.0	6.1
Cycle Q Clear(g_c), s	7.1	0.0	22.0	7.1	0.0	27.5	23.6	0.0	0.0	29.7	0.0	6.1
Prop In Lane	1.00		0.06	1.00		0.15	0.06		0.20	0.21		1.00
Lane Grp Cap(c), veh/h	231	0	485	277	0	476	404	0	0	501	0	427
V/C Ratio(X)	0.61	0.00	0.74	0.51	0.00	0.88	0.88	0.00	0.00	0.91	0.00	0.23
Avail Cap(c_a), veh/h	383	0	1102	318	0	968	737	0	0	581	0	495
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.9	0.0	41.5	31.7	0.0	43.6	46.1	0.0	0.0	43.4	0.0	34.8
Incr Delay (d2), s/veh	2.6	0.0	2.2	1.4	0.0	5.6	6.2	0.0	0.0	17.4	0.0	0.3
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	3.2	0.0	10.2	3.1	0.0	13.0	11.1	0.0	0.0	15.8	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	43.7	33.1	0.0	49.2	52.2	0.0	0.0	60.8	0.0	35.1
LnGrp LOS	D	A	D	C	A	D	D	A	A	E	A	D
Approach Vol, veh/h		499			561			354			556	
Approach Delay, s/veh		41.4			45.1			52.2			56.2	
Approach LOS		D			D			D			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		32.9	14.2	37.6		38.6	14.3	37.5				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		51.0	12.0	74.0		39.0	20.0	66.0				
Max Q Clear Time (g_c+I1), s		25.6	9.1	24.0		31.7	9.1	29.5				
Green Ext Time (p_c), s		2.3	0.1	2.5		1.9	0.3	3.0				

Intersection Summary												
HCM 6th Ctrl Delay			48.6									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	730	98	45	1180	950	69	134	38	1080	154	90
Future Volume (veh/h)	40	730	98	45	1180	950	69	134	38	1080	154	90
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	42	768	0	47	1242	0	73	141	0	1253	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	54	1187		61	1201		173	182		1305	0	
Arrive On Green	0.03	0.34	0.00	0.01	0.11	0.00	0.10	0.10	0.00	0.37	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	42	768	0	47	1242	0	73	141	0	1253	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	3.1	24.0	0.0	3.4	44.3	0.0	5.1	9.6	0.0	45.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	24.0	0.0	3.4	44.3	0.0	5.1	9.6	0.0	45.0	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	54	1187		61	1201		173	182		1305	0	
V/C Ratio(X)	0.78	0.65		0.78	1.03		0.42	0.77		0.96	0.00	
Avail Cap(c_a), veh/h	122	1187		122	1201		258	271		1332	0	
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	0.72	0.72	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.6	36.6	0.0	63.8	57.7	0.0	55.1	57.2	0.0	40.1	0.0	0.0
Incr Delay (d2), s/veh	8.7	2.7	0.0	5.6	31.5	0.0	2.0	9.1	0.0	15.8	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	1.5	10.8	0.0	1.7	26.3	0.0	2.4	5.0	0.0	21.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.3	39.3	0.0	69.4	89.1	0.0	57.1	66.3	0.0	55.9	0.0	0.0
LnGrp LOS	E	D		E	F		E	E		E	A	
Approach Vol, veh/h		810	A		1289	A		214	A		1253	A
Approach Delay, s/veh		40.9			88.4			63.1			55.9	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	49.8		17.8	9.0	50.3		53.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	9.0	32.0		19.0	9.0	32.0		49.0				
Max Q Clear Time (g_c+I1), s	5.4	26.0		11.6	5.1	46.3		47.0				
Green Ext Time (p_c), s	0.0	3.7		0.6	0.0	0.0		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		64.7
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1618	150	47	1905	30	230	30	58	40	30	20
Future Volume (veh/h)	30	1618	150	47	1905	30	230	30	58	40	30	20
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	0.98		0.97	0.98		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	1721	151	50	2027	31	245	32	14	43	32	12
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	41	2927	256	64	3243	50	242	25	339	41	24	4
Arrive On Green	0.02	0.41	0.41	0.04	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1767	4740	415	1767	5140	79	852	111	1522	0	110	18
Grp Volume(v), veh/h	32	1225	647	50	1331	727	277	0	14	87	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1777	1767	1689	1841	964	0	1522	127	0	0
Q Serve(g_s), s	2.3	36.5	36.7	3.6	31.2	31.3	0.0	0.0	0.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	36.5	36.7	3.6	31.2	31.3	29.0	0.0	0.9	29.0	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.04	0.88		1.00	0.49		0.14
Lane Grp Cap(c), veh/h	41	2085	1097	64	2131	1161	267	0	339	70	0	0
V/C Ratio(X)	0.79	0.59	0.59	0.78	0.62	0.63	1.04	0.00	0.04	1.25	0.00	0.00
Avail Cap(c_a), veh/h	109	2085	1097	109	2131	1161	267	0	339	70	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	0.42	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.7	25.3	25.3	62.1	14.6	14.6	53.3	0.0	39.6	53.6	0.0	0.0
Incr Delay (d2), s/veh	5.3	0.5	1.0	7.4	1.4	2.6	64.9	0.0	0.0	188.4	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	1.1	15.7	16.8	1.8	11.9	13.4	13.8	0.0	0.4	6.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	25.8	26.3	69.5	16.0	17.2	118.3	0.0	39.6	242.0	0.0	0.0
LnGrp LOS	E	C	C	E	B	B	F	A	D	F	A	A
Approach Vol, veh/h		1904			2108			291			87	
Approach Delay, s/veh		26.7			17.7			114.5			242.0	
Approach LOS		C			B			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.7	86.3		34.0	8.0	88.0		34.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	8.3	77.0		29.0	8.0	77.0		29.0
Max Q Clear Time (g_c+I1), s	5.6	38.7		31.0	4.3	33.3		31.0
Green Ext Time (p_c), s	0.0	31.2		0.0	0.0	37.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Future Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Conflicting Peds, #/hr	18	0	17	26	0	27	17	0	26	27	0	18
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	57	57	46	46	82	57	226	38	55	241	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	836	791	182	671	789	299	293	0	0	291	0	0
Stage 1	386	386	-	386	386	-	-	-	-	-	-	-
Stage 2	450	405	-	285	403	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	272	320	827	354	321	737	1261	-	-	1263	-	-
Stage 1	607	607	-	634	607	-	-	-	-	-	-	-
Stage 2	585	596	-	697	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	188	279	793	245	280	700	1239	-	-	1231	-	-
Mov Cap-2 Maneuver	188	279	-	245	280	-	-	-	-	-	-	-
Stage 1	569	570	-	589	564	-	-	-	-	-	-	-
Stage 2	441	554	-	542	561	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.7	23	1.4	1.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	245	793	371	1231	-	-
HCM Lane V/C Ratio	0.046	-	-	0.328	0.072	0.468	0.045	-	-
HCM Control Delay (s)	8	-	-	26.7	9.9	23	8.1	-	-
HCM Lane LOS	A	-	-	D	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.2	2.4	0.1	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	38	20	66	20	20	20	45	310	40	30	250	47
Future Vol, veh/h	38	20	66	20	20	20	45	310	40	30	250	47
Conflicting Peds, #/hr	12	0	12	9	0	8	12	0	9	8	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	42	22	73	22	22	22	50	344	44	33	278	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	882	879	328	905	883	387	342	0	0	397	0	0
Stage 1	382	382	-	475	475	-	-	-	-	-	-	-
Stage 2	500	497	-	430	408	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	266	285	711	256	284	659	1211	-	-	1156	-	-
Stage 1	638	611	-	569	556	-	-	-	-	-	-	-
Stage 2	551	543	-	601	595	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	222	260	695	199	259	646	1197	-	-	1146	-	-
Mov Cap-2 Maneuver	222	260	-	199	259	-	-	-	-	-	-	-
Stage 1	604	587	-	541	528	-	-	-	-	-	-	-
Stage 2	483	515	-	497	571	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	21.2	0.9	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1197	-	-	361	288	1146	-	-
HCM Lane V/C Ratio	0.042	-	-	0.382	0.231	0.029	-	-
HCM Control Delay (s)	8.1	-	-	21	21.2	8.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.7	0.9	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	42	186	20	33	20	185	460	20	20	212	92
Future Volume (veh/h)	62	42	186	20	33	20	185	460	20	20	212	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	0.99		0.99	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	65	44	35	21	35	7	195	484	20	21	223	80
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	256	132	244	167	185	29	615	806	33	433	486	174
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.10	0.46	0.46	0.02	0.37	0.37
Sat Flow, veh/h	735	836	1543	320	1172	186	1767	1768	73	1767	1297	465
Grp Volume(v), veh/h	109	0	35	63	0	0	195	0	504	21	0	303
Grp Sat Flow(s),veh/h/ln	1570	0	1543	1678	0	0	1767	0	1841	1767	0	1763
Q Serve(g_s), s	1.1	0.0	0.8	0.0	0.0	0.0	2.5	0.0	8.4	0.3	0.0	5.3
Cycle Q Clear(g_c), s	2.4	0.0	0.8	1.2	0.0	0.0	2.5	0.0	8.4	0.3	0.0	5.3
Prop In Lane	0.60		1.00	0.33		0.11	1.00		0.04	1.00		0.26
Lane Grp Cap(c), veh/h	388	0	244	382	0	0	615	0	840	433	0	661
V/C Ratio(X)	0.28	0.00	0.14	0.16	0.00	0.00	0.32	0.00	0.60	0.05	0.00	0.46
Avail Cap(c_a), veh/h	1066	0	939	1098	0	0	1081	0	2242	1042	0	2147
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	14.9	15.1	0.0	0.0	6.2	0.0	8.4	7.9	0.0	9.7
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	1.0	0.0	0.0	0.7
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	0.8	0.0	0.3	0.5	0.0	0.0	0.6	0.0	2.5	0.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	15.0	15.2	0.0	0.0	6.3	0.0	9.3	7.9	0.0	10.4
LnGrp LOS	B	A	B	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		144			63			699			324	
Approach Delay, s/veh		15.5			15.2			8.5			10.2	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	24.7		11.5	8.2	21.4		11.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	10.4		4.4	4.5	7.3		3.2				
Green Ext Time (p_c), s	0.0	5.5		0.4	0.2	3.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		10.1	
HCM 6th LOS		B	



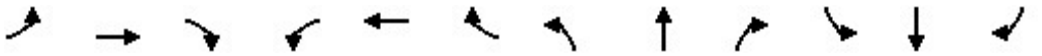
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	392	21	40	204	73	32	262	120	123	163	50
Future Volume (veh/h)	70	392	21	40	204	73	32	262	120	123	163	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	467	8	48	243	26	38	312	0	146	194	53
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	429	603	507	263	564	474	372	436		361	418	114
Arrive On Green	0.05	0.33	0.33	0.03	0.30	0.30	0.02	0.23	0.00	0.09	0.30	0.30
Sat Flow, veh/h	1767	1856	1560	1767	1856	1560	1767	1856	1572	1767	1400	383
Grp Volume(v), veh/h	83	467	8	48	243	26	38	312	0	146	0	247
Grp Sat Flow(s),veh/h/ln	1767	1856	1560	1767	1856	1560	1767	1856	1572	1767	0	1783
Q Serve(g_s), s	1.9	13.3	0.2	1.1	6.1	0.7	1.0	9.1	0.0	3.5	0.0	6.6
Cycle Q Clear(g_c), s	1.9	13.3	0.2	1.1	6.1	0.7	1.0	9.1	0.0	3.5	0.0	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	429	603	507	263	564	474	372	436		361	0	532
V/C Ratio(X)	0.19	0.77	0.02	0.18	0.43	0.05	0.10	0.72		0.40	0.00	0.46
Avail Cap(c_a), veh/h	884	1424	1198	755	1424	1197	872	950		750	0	912
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	17.8	13.4	14.7	16.3	14.4	16.5	20.6	0.0	14.9	0.0	16.8
Incr Delay (d2), s/veh	0.1	2.2	0.0	0.1	0.5	0.0	0.0	2.2	0.0	0.3	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	5.4	0.1	0.4	2.4	0.2	0.4	3.9	0.0	1.3	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.3	20.0	13.4	14.8	16.8	14.5	16.6	22.8	0.0	15.1	0.0	17.4
LnGrp LOS	B	C	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		558			317			350	A		393	
Approach Delay, s/veh		18.9			16.3			22.2			16.5	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.1	5.9	22.5	7.4	22.8	9.6	18.8
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	3.1	15.3	3.0	8.6	3.9	8.1	5.5	11.1
Green Ext Time (p_c), s	0.0	3.2	0.0	1.5	0.1	1.6	0.2	1.7

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

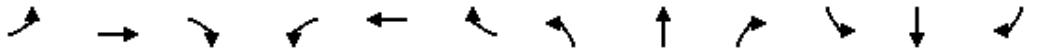
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	410	20	70	330	53	30	328	140	64	170	104
Future Volume (veh/h)	144	410	20	70	330	53	30	328	140	64	170	104
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	157	446	21	76	359	55	33	357	144	70	185	20
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	242	515	24	192	407	62	36	390	157	82	217	252
Arrive On Green	0.08	0.29	0.29	0.05	0.26	0.26	0.33	0.33	0.33	0.16	0.16	0.16
Sat Flow, veh/h	1767	1758	83	1767	1571	241	109	1176	474	502	1328	1539
Grp Volume(v), veh/h	157	0	467	76	0	414	534	0	0	255	0	20
Grp Sat Flow(s),veh/h/ln	1767	0	1841	1767	0	1812	1759	0	0	1830	0	1539
Q Serve(g_s), s	7.8	0.0	29.5	3.8	0.0	26.9	35.7	0.0	0.0	16.6	0.0	1.4
Cycle Q Clear(g_c), s	7.8	0.0	29.5	3.8	0.0	26.9	35.7	0.0	0.0	16.6	0.0	1.4
Prop In Lane	1.00		0.04	1.00		0.13	0.06		0.27	0.27		1.00
Lane Grp Cap(c), veh/h	242	0	540	192	0	470	584	0	0	300	0	252
V/C Ratio(X)	0.65	0.00	0.87	0.40	0.00	0.88	0.91	0.00	0.00	0.85	0.00	0.08
Avail Cap(c_a), veh/h	385	0	1110	280	0	975	731	0	0	582	0	489
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	41.1	33.6	0.0	43.6	39.3	0.0	0.0	49.8	0.0	43.5
Incr Delay (d2), s/veh	2.9	0.0	4.3	1.3	0.0	5.6	14.0	0.0	0.0	6.7	0.0	0.1
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	3.5	0.0	13.9	1.7	0.0	12.7	17.5	0.0	0.0	8.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	0.0	45.4	34.9	0.0	49.2	53.2	0.0	0.0	56.6	0.0	43.6
LnGrp LOS	D	A	D	C	A	D	D	A	A	E	A	D
Approach Vol, veh/h		624			490			534			275	
Approach Delay, s/veh		42.8			47.0			53.2			55.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	45.7	10.9	41.0	25.1	15.0	36.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	51.0	12.0	74.0	39.0	20.0	66.0
Max Q Clear Time (g_c+I1), s	37.7	5.8	31.5	18.6	9.8	28.9
Green Ext Time (p_c), s	3.0	0.1	3.4	1.5	0.3	2.9

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1130	146	81	780	1200	99	196	127	1000	155	140
Future Volume (veh/h)	70	1130	146	81	780	1200	99	196	127	1000	155	140
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	72	1165	0	84	804	0	102	202	0	1145	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	91	1278		105	1307		170	179		1152	0	
Arrive On Green	0.05	0.36	0.00	0.02	0.12	0.00	0.10	0.10	0.00	0.33	0.00	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	1767	1856	1572	3534	0	1572
Grp Volume(v), veh/h	72	1165	0	84	804	0	102	202	0	1145	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1767	1856	1572	1767	0	1572
Q Serve(g_s), s	5.4	42.5	0.0	6.4	29.2	0.0	7.5	13.0	0.0	43.6	0.0	0.0
Cycle Q Clear(g_c), s	5.4	42.5	0.0	6.4	29.2	0.0	7.5	13.0	0.0	43.6	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	91	1278		105	1307		170	179		1152	0	
V/C Ratio(X)	0.79	0.91		0.80	0.62		0.60	1.13		0.99	0.00	
Avail Cap(c_a), veh/h	157	1278		157	1307		170	179		1152	0	
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	0.73	0.73	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.3	41.0	0.0	65.4	50.1	0.0	58.5	61.0	0.0	45.4	0.0	0.0
Incr Delay (d2), s/veh	5.6	11.3	0.0	6.6	1.6	0.0	6.2	106.7	0.0	25.0	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	2.6	20.3	0.0	3.2	14.2	0.0	3.7	11.5	0.0	22.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	52.2	0.0	72.0	51.7	0.0	64.7	167.7	0.0	70.4	0.0	0.0
LnGrp LOS	E	D		E	D		E	F		E	A	
Approach Vol, veh/h		1237	A		888	A		304	A		1145	A
Approach Delay, s/veh		53.2			53.6			133.2			70.4	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	55.0		18.0	12.0	56.0		49.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	12.0	45.0		13.0	12.0	45.0		44.0				
Max Q Clear Time (g_c+I1), s	8.4	44.5		15.0	7.4	31.2		45.6				
Green Ext Time (p_c), s	0.0	0.5		0.0	0.0	7.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		65.6
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1857	150	80	1991	40	210	30	62	40	40	20
Future Volume (veh/h)	20	1857	150	80	1991	40	210	30	62	40	40	20
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		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	20	1895	147	82	2032	40	214	31	13	41	41	14
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	24	2916	225	102	3339	66	211	23	334	38	31	5
Arrive On Green	0.03	1.00	1.00	0.06	0.65	0.65	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1767	4790	370	1767	5114	101	751	109	1557	0	143	24
Grp Volume(v), veh/h	20	1334	708	82	1341	731	245	0	13	96	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1783	1767	1689	1837	860	0	1557	167	0	0
Q Serve(g_s), s	1.5	0.0	0.0	6.2	30.9	31.0	0.0	0.0	0.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	6.2	30.9	31.0	29.0	0.0	0.9	29.0	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.05	0.87		1.00	0.43		0.15
Lane Grp Cap(c), veh/h	24	2056	1085	102	2205	1199	235	0	334	74	0	0
V/C Ratio(X)	0.82	0.65	0.65	0.80	0.61	0.61	1.04	0.00	0.04	1.30	0.00	0.00
Avail Cap(c_a), veh/h	144	2056	1085	144	2205	1199	235	0	334	74	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)	0.18	0.18	0.18	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	65.5	0.0	0.0	62.8	13.5	13.5	56.1	0.0	42.0	54.1	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.3	0.6	12.8	1.3	2.3	70.7	0.0	0.0	204.1	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	0.7	0.1	0.2	3.2	11.7	13.1	12.8	0.0	0.4	6.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	0.3	0.6	75.6	14.7	15.8	126.8	0.0	42.0	258.2	0.0	0.0
LnGrp LOS	E	A	A	E	B	B	F	A	D	F	A	A
Approach Vol, veh/h		2062			2154			258			96	
Approach Delay, s/veh		1.1			17.4			122.6			258.2	
Approach LOS		A			B			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.8	88.2		34.0	6.9	94.1		34.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	7.8	79.0		29.0	11.0	79.0		29.0
Max Q Clear Time (g_c+I1), s	8.2	2.0		31.0	3.5	33.0		31.0
Green Ext Time (p_c), s	0.0	58.8		0.0	0.0	39.1		0.0

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	100.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Future Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Conflicting Peds, #/hr	21	0	19	32	0	33	19	0	32	33	0	21
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	130	-	-	-	75	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	93	124	113	62	62	84	113	185	60	104	268	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1091	1048	234	910	1064	281	382	0	0	278	0	0
Stage 1	544	544	-	474	474	-	-	-	-	-	-	-
Stage 2	547	504	-	436	590	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	179	226	766	241	221	754	1168	-	-	1277	-	-
Stage 1	490	516	-	568	555	-	-	-	-	-	-	-
Stage 2	518	538	-	567	492	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	95	177	728	74	173	707	1145	-	-	1237	-	-
Mov Cap-2 Maneuver	95	177	-	74	173	-	-	-	-	-	-	-
Stage 1	433	463	-	496	485	-	-	-	-	-	-	-
Stage 2	348	470	-	311	442	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	263.7	233.4	2.7	1.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1145	-	-	129	728	158	1237	-	-
HCM Lane V/C Ratio	0.099	-	-	1.678	0.156	1.311	0.084	-	-
HCM Control Delay (s)	8.5	-	-	$ 396.1	10.9	233.4	8.2	-	-
HCM Lane LOS	A	-	-	F	B	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	16	0.6	12.4	0.3	-	-

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	62	40	149	30	20	20	78	210	40	20	280	70
Future Vol, veh/h	62	40	149	30	20	20	78	210	40	20	280	70
Conflicting Peds, #/hr	8	0	4	3	0	7	4	0	3	7	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	67	43	162	33	22	22	85	228	43	22	304	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	844	842	354	920	859	265	388	0	0	278	0	0
Stage 1	394	394	-	427	427	-	-	-	-	-	-	-
Stage 2	450	448	-	493	432	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	282	300	688	250	293	771	1165	-	-	1279	-	-
Stage 1	629	603	-	604	584	-	-	-	-	-	-	-
Stage 2	587	571	-	556	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	236	269	680	154	263	760	1156	-	-	1270	-	-
Mov Cap-2 Maneuver	236	269	-	154	263	-	-	-	-	-	-	-
Stage 1	578	588	-	556	537	-	-	-	-	-	-	-
Stage 2	503	525	-	384	566	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.6	27.3	2	0.4
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1156	-	-	398	236	1270	-	-
HCM Lane V/C Ratio	0.073	-	-	0.685	0.322	0.017	-	-
HCM Control Delay (s)	8.4	-	-	31.6	27.3	7.9	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	5	1.3	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	63	284	20	33	20	181	360	20	20	453	163
Future Volume (veh/h)	133	63	284	20	33	20	181	360	20	20	453	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	139	66	60	21	34	7	189	375	19	21	472	158
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	267	101	350	106	141	22	379	900	46	523	596	200
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.51	0.51	0.02	0.45	0.45
Sat Flow, veh/h	754	448	1555	125	626	96	1767	1750	89	1767	1325	444
Grp Volume(v), veh/h	205	0	60	62	0	0	189	0	394	21	0	630
Grp Sat Flow(s),veh/h/ln	1202	0	1555	847	0	0	1767	0	1838	1767	0	1769
Q Serve(g_s), s	0.0	0.0	1.9	0.3	0.0	0.0	3.2	0.0	8.2	0.4	0.0	18.9
Cycle Q Clear(g_c), s	10.7	0.0	1.9	11.0	0.0	0.0	3.2	0.0	8.2	0.4	0.0	18.9
Prop In Lane	0.68		1.00	0.34		0.11	1.00		0.05	1.00		0.25
Lane Grp Cap(c), veh/h	368	0	350	268	0	0	379	0	945	523	0	796
V/C Ratio(X)	0.56	0.00	0.17	0.23	0.00	0.00	0.50	0.00	0.42	0.04	0.00	0.79
Avail Cap(c_a), veh/h	628	0	625	544	0	0	657	0	1477	914	0	1421
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	19.4	19.8	0.0	0.0	11.2	0.0	9.3	9.0	0.0	14.6
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.2	0.0	0.0	0.4	0.0	0.4	0.0	0.0	2.6
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	2.7	0.0	0.7	0.7	0.0	0.0	1.0	0.0	2.9	0.1	0.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	0.0	19.5	19.9	0.0	0.0	11.6	0.0	9.8	9.0	0.0	17.2
LnGrp LOS	C	A	B	B	A	A	B	A	A	A	A	B
Approach Vol, veh/h		265			62			583			651	
Approach Delay, s/veh		22.3			19.9			10.4			16.9	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	38.0		19.0	9.2	34.0		19.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	15.0	50.0		25.0	15.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.4	10.2		12.7	5.2	20.9		13.0				
Green Ext Time (p_c), s	0.0	4.0		0.7	0.2	7.1		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.5	
HCM 6th LOS		B	



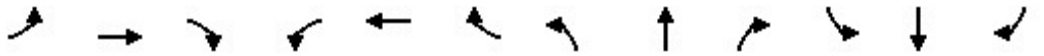
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	413	32	100	426	114	34	134	90	235	144	90
Future Volume (veh/h)	60	413	32	100	426	114	34	134	90	235	144	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		1.00	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	62	430	10	104	444	38	35	140	0	245	150	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	304	572	480	330	617	519	334	273		480	308	162
Arrive On Green	0.04	0.31	0.31	0.06	0.33	0.33	0.02	0.15	0.00	0.15	0.27	0.27
Sat Flow, veh/h	1767	1856	1560	1767	1856	1561	1767	1856	1572	1767	1139	600
Grp Volume(v), veh/h	62	430	10	104	444	38	35	140	0	245	0	229
Grp Sat Flow(s),veh/h/ln	1767	1856	1560	1767	1856	1561	1767	1856	1572	1767	0	1740
Q Serve(g_s), s	1.3	11.7	0.3	2.2	11.8	0.9	0.9	3.9	0.0	6.1	0.0	6.2
Cycle Q Clear(g_c), s	1.3	11.7	0.3	2.2	11.8	0.9	0.9	3.9	0.0	6.1	0.0	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	304	572	480	330	617	519	334	273		480	0	470
V/C Ratio(X)	0.20	0.75	0.02	0.32	0.72	0.07	0.10	0.51		0.51	0.00	0.49
Avail Cap(c_a), veh/h	804	1484	1248	787	1484	1249	859	990		789	0	928
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	17.5	13.6	13.3	16.5	12.9	19.8	22.1	0.0	15.1	0.0	17.3
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.2	1.6	0.1	0.1	1.5	0.0	0.3	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	0.5	4.8	0.1	0.8	4.7	0.3	0.4	1.7	0.0	2.3	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	19.6	13.6	13.5	18.1	12.9	19.8	23.6	0.0	15.4	0.0	18.0
LnGrp LOS	B	B	B	B	B	B	B	C		B	A	B
Approach Vol, veh/h		502			586			175	A		474	
Approach Delay, s/veh		18.7			16.9			22.8			16.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	22.3	5.8	20.2	6.6	23.7	12.7	13.3
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	18.0	45.0	18.0	30.0	18.0	45.0	18.0	30.0
Max Q Clear Time (g_c+I1), s	4.2	13.7	2.9	8.2	3.3	13.8	8.1	5.9
Green Ext Time (p_c), s	0.1	2.9	0.0	1.4	0.0	3.2	0.3	0.7

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	310	20	130	330	65	20	251	70	96	345	216
Future Volume (veh/h)	135	310	20	130	330	65	20	251	70	96	345	216
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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	147	337	21	141	359	67	22	273	71	104	375	109
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	225	464	29	276	402	75	25	307	80	111	399	434
Arrive On Green	0.08	0.27	0.27	0.07	0.26	0.26	0.23	0.23	0.23	0.28	0.28	0.28
Sat Flow, veh/h	1767	1728	108	1767	1521	284	107	1332	346	399	1437	1564
Grp Volume(v), veh/h	147	0	358	141	0	426	366	0	0	479	0	109
Grp Sat Flow(s),veh/h/ln	1767	0	1836	1767	0	1804	1785	0	0	1836	0	1564
Q Serve(g_s), s	8.0	0.0	23.6	7.6	0.0	30.3	26.4	0.0	0.0	34.0	0.0	7.2
Cycle Q Clear(g_c), s	8.0	0.0	23.6	7.6	0.0	30.3	26.4	0.0	0.0	34.0	0.0	7.2
Prop In Lane	1.00		0.06	1.00		0.16	0.06		0.19	0.22		1.00
Lane Grp Cap(c), veh/h	225	0	493	276	0	478	412	0	0	510	0	434
V/C Ratio(X)	0.65	0.00	0.73	0.51	0.00	0.89	0.89	0.00	0.00	0.94	0.00	0.25
Avail Cap(c_a), veh/h	355	0	1020	306	0	894	684	0	0	538	0	458
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.6	0.0	44.3	34.1	0.0	47.1	49.6	0.0	0.0	47.0	0.0	37.3
Incr Delay (d2), s/veh	3.2	0.0	2.1	1.5	0.0	6.0	8.2	0.0	0.0	24.1	0.0	0.3
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	3.6	0.0	11.0	3.4	0.0	14.4	12.7	0.0	0.0	18.8	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	0.0	46.3	35.5	0.0	53.1	57.7	0.0	0.0	71.1	0.0	37.6
LnGrp LOS	D	A	D	D	A	D	E	A	A	E	A	D
Approach Vol, veh/h		505			567			366			588	
Approach Delay, s/veh		44.1			48.7			57.7			64.9	
Approach LOS		D			D			E			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		35.7	14.7	40.7		42.0	15.2	40.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		51.0	12.0	74.0		39.0	20.0	66.0				
Max Q Clear Time (g_c+I1), s		28.4	9.6	25.6		36.0	10.0	32.3				
Green Ext Time (p_c), s		2.3	0.1	2.5		1.0	0.3	3.0				

Intersection Summary	
HCM 6th Ctrl Delay	53.9
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Future Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	57	57	46	46	82	57	226	38	55	241	34
Number of Lanes	0	1	1	0	1	0	1	1	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	1	2
HCM Control Delay	10.9	12.9	14.2	11.4
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	29%	0%	26%	100%	0%	0%
Vol Thru, %	0%	86%	71%	0%	26%	0%	100%	70%
Vol Right, %	0%	14%	0%	100%	47%	0%	0%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	230	70	50	151	48	140	100
LT Vol	50	0	20	0	40	48	0	0
Through Vol	0	197	50	0	40	0	140	70
RT Vol	0	33	0	50	71	0	0	30
Lane Flow Rate	57	264	80	57	174	55	161	115
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.113	0.474	0.163	0.103	0.328	0.108	0.294	0.203
Departure Headway (Hd)	7.07	6.46	7.289	6.434	6.813	7.079	6.571	6.358
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	504	555	488	552	524	504	544	561
Service Time	4.851	4.24	5.085	4.229	4.604	4.861	4.353	4.14
HCM Lane V/C Ratio	0.113	0.476	0.164	0.103	0.332	0.109	0.296	0.205
HCM Control Delay	10.8	15	11.5	10	12.9	10.7	12.1	10.8
HCM Lane LOS	B	B	B	A	B	B	B	B
HCM 95th-tile Q	0.4	2.5	0.6	0.3	1.4	0.4	1.2	0.8

Intersection	
Intersection Delay, s/veh	17.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Future Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	93	124	113	62	62	84	113	185	60	104	268	93
Number of Lanes	0	1	1	0	1	0	1	1	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	1	2
HCM Control Delay	18.1	19.9	19.2	15.7
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	43%	0%	30%	100%	0%	0%
Vol Thru, %	0%	76%	57%	0%	30%	0%	100%	49%
Vol Right, %	0%	24%	0%	100%	40%	0%	0%	51%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	237	210	110	201	101	173	177
LT Vol	110	0	90	0	60	101	0	0
Through Vol	0	179	120	0	60	0	173	87
RT Vol	0	58	0	110	81	0	0	90
Lane Flow Rate	113	244	216	113	207	104	179	182
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.282	0.56	0.524	0.245	0.501	0.252	0.407	0.396
Departure Headway (Hd)	8.949	8.253	8.718	7.78	8.696	8.707	8.191	7.824
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	401	437	414	462	414	413	440	461
Service Time	6.697	6.001	6.468	5.53	6.447	6.451	5.935	5.568
HCM Lane V/C Ratio	0.282	0.558	0.522	0.245	0.5	0.252	0.407	0.395
HCM Control Delay	15.2	21.1	20.7	13.1	19.9	14.4	16.5	15.6
HCM Lane LOS	C	C	C	B	C	B	C	C
HCM 95th-tile Q	1.1	3.3	2.9	1	2.7	1	1.9	1.9

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Future Vol, veh/h	20	50	50	40	40	71	50	197	33	48	210	30
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	57	57	46	46	82	57	226	38	55	241	34
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	1	2
HCM Control Delay	11	13.1	14.4	13.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	29%	0%	26%	100%	0%	0%
Vol Thru, %	0%	86%	71%	0%	26%	0%	100%	0%
Vol Right, %	0%	14%	0%	100%	47%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	230	70	50	151	48	210	30
LT Vol	50	0	20	0	40	48	0	0
Through Vol	0	197	50	0	40	0	210	0
RT Vol	0	33	0	50	71	0	0	30
Lane Flow Rate	57	264	80	57	174	55	241	34
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.113	0.477	0.166	0.105	0.335	0.109	0.441	0.056
Departure Headway (Hd)	7.203	6.592	7.433	6.577	6.955	7.19	6.682	5.97
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	501	550	485	548	521	502	543	603
Service Time	4.903	4.292	5.141	4.286	4.655	4.89	4.382	3.67
HCM Lane V/C Ratio	0.114	0.48	0.165	0.104	0.334	0.11	0.444	0.056
HCM Control Delay	10.8	15.2	11.6	10.1	13.1	10.8	14.5	9
HCM Lane LOS	B	C	B	B	B	B	B	A
HCM 95th-tile Q	0.4	2.6	0.6	0.3	1.5	0.4	2.2	0.2

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Future Vol, veh/h	90	120	110	60	60	81	110	179	58	101	260	90
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	93	124	113	62	62	84	113	185	60	104	268	93
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	1	2
HCM Control Delay	18.2	20.1	19.4	18.9
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	43%	0%	30%	100%	0%	0%
Vol Thru, %	0%	76%	57%	0%	30%	0%	100%	0%
Vol Right, %	0%	24%	0%	100%	40%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	237	210	110	201	101	260	90
LT Vol	110	0	90	0	60	101	0	0
Through Vol	0	179	120	0	60	0	260	0
RT Vol	0	58	0	110	81	0	0	90
Lane Flow Rate	113	244	216	113	207	104	268	93
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.283	0.563	0.527	0.247	0.503	0.252	0.611	0.193
Departure Headway (Hd)	8.991	8.295	8.768	7.829	8.747	8.721	8.206	7.484
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	400	435	411	458	412	412	440	480
Service Time	6.743	6.045	6.518	5.578	6.5	6.469	5.953	5.231
HCM Lane V/C Ratio	0.282	0.561	0.526	0.247	0.502	0.252	0.609	0.194
HCM Control Delay	15.3	21.3	20.9	13.1	20.1	14.4	23.1	12
HCM Lane LOS	C	C	C	B	C	B	C	B
HCM 95th-tile Q	1.1	3.4	3	1	2.7	1	4	0.7

Appendix D: Intersection Control Warrants

FEHR PEERS

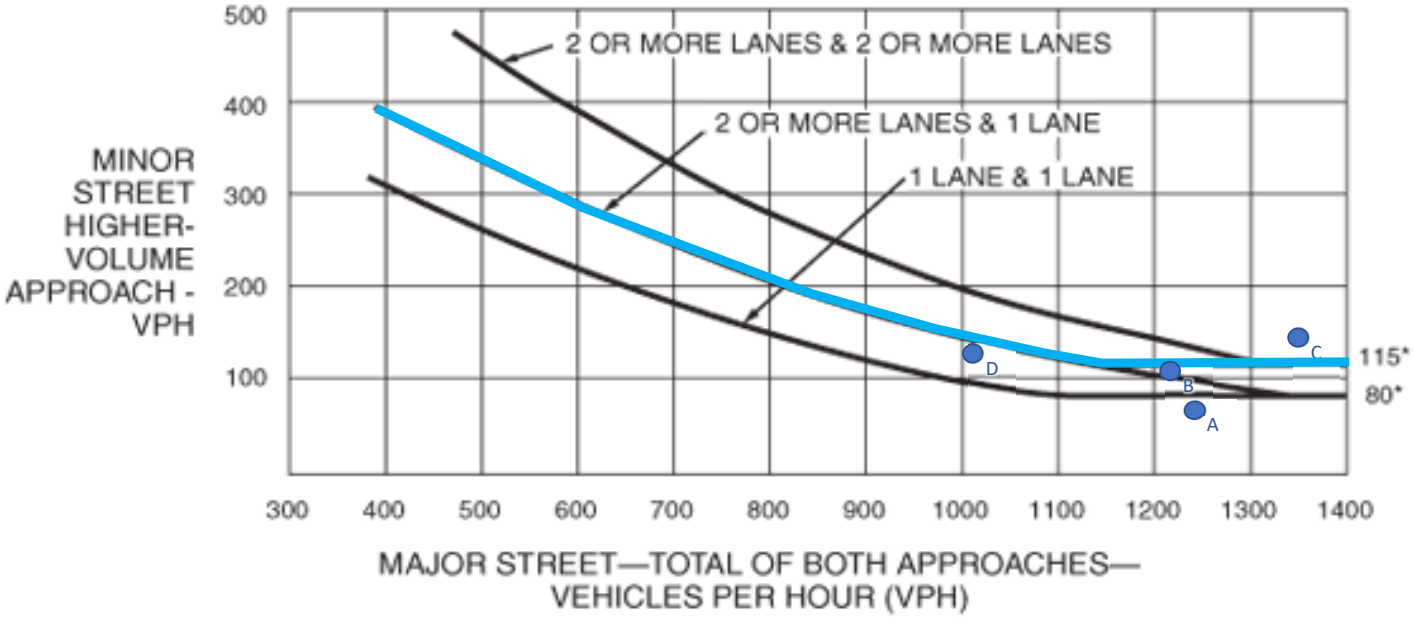
4-Hour Traffic Signal Warrant

Major Street	S High St	Major Street Direction		Project	Wailuku State Office
Minor Street	Wells St (all movements)	x	North/South	Scenario	Existing
			East/West		

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (all movements)		
Number of Approach Lanes			**1**	**2**		
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM	1,038	97	No	**No**
	B	3:00 PM - 4:00 PM	1,217	114	No	
	C	4:00 PM - 5:00 PM	1,347	139	Yes	
	D	5:00 PM - 6:00 PM	1,005	121	No	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

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8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (all movements)		East/West	Scenario	Existing

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (all movements)				
Number of Approach Lanes		**1**	**2**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	6:00 AM - 7:00 AM	761	53	No	**No**	No	**No**
	7:00 AM - 8:00 AM	1,343	71	No		No	
	8:00 AM - 9:00 AM	952	75	No		No	
	3:00 PM - 4:00 PM	1,217	114	No		Yes	
	4:00 PM - 5:00 PM	1,347	139	No		Yes	
	5:00 PM - 6:00 PM	1,005	121	No		Yes	
	Not Collected						
	Not Collected						

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

4-Hour Traffic Signal Warrant

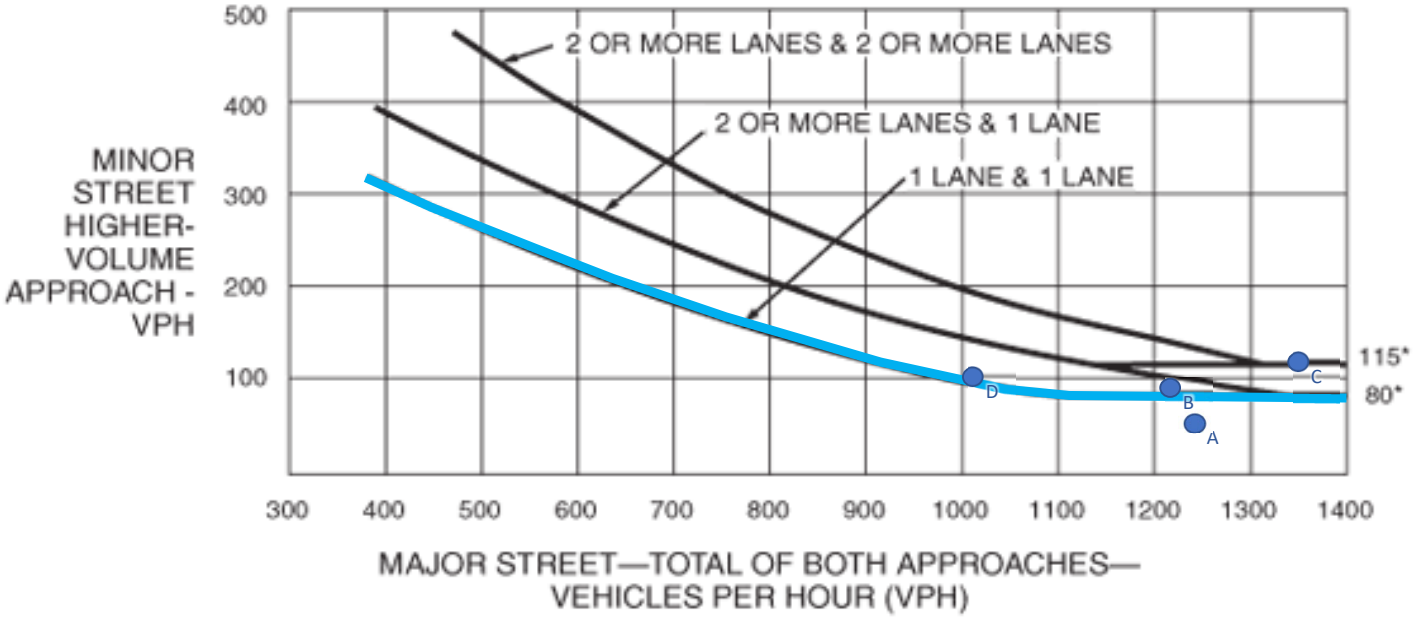
Major Street Direction

Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Existing

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (left-turn only)		
Number of Approach Lanes			**1**	**1**		
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM	1,038	77	No	**No**
	B	3:00 PM - 4:00 PM	1,217	90	Yes	
	C	4:00 PM - 5:00 PM	1,347	115	Yes	
	D	5:00 PM - 6:00 PM	1,005	100	Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

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8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Existing

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (left-turn only)				
Number of Approach Lanes		**1**	**1**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	6:00 AM - 7:00 AM	761	41	No	**No**	No	**No**
	7:00 AM - 8:00 AM	1,343	49	No		No	
	8:00 AM - 9:00 AM	952	50	No		No	
	3:00 PM - 4:00 PM	1,217	90	No		Yes	
	4:00 PM - 5:00 PM	1,347	115	No		Yes	
	5:00 PM - 6:00 PM	1,005	100	No		Yes	
	Not Collected						
	Not Collected						

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

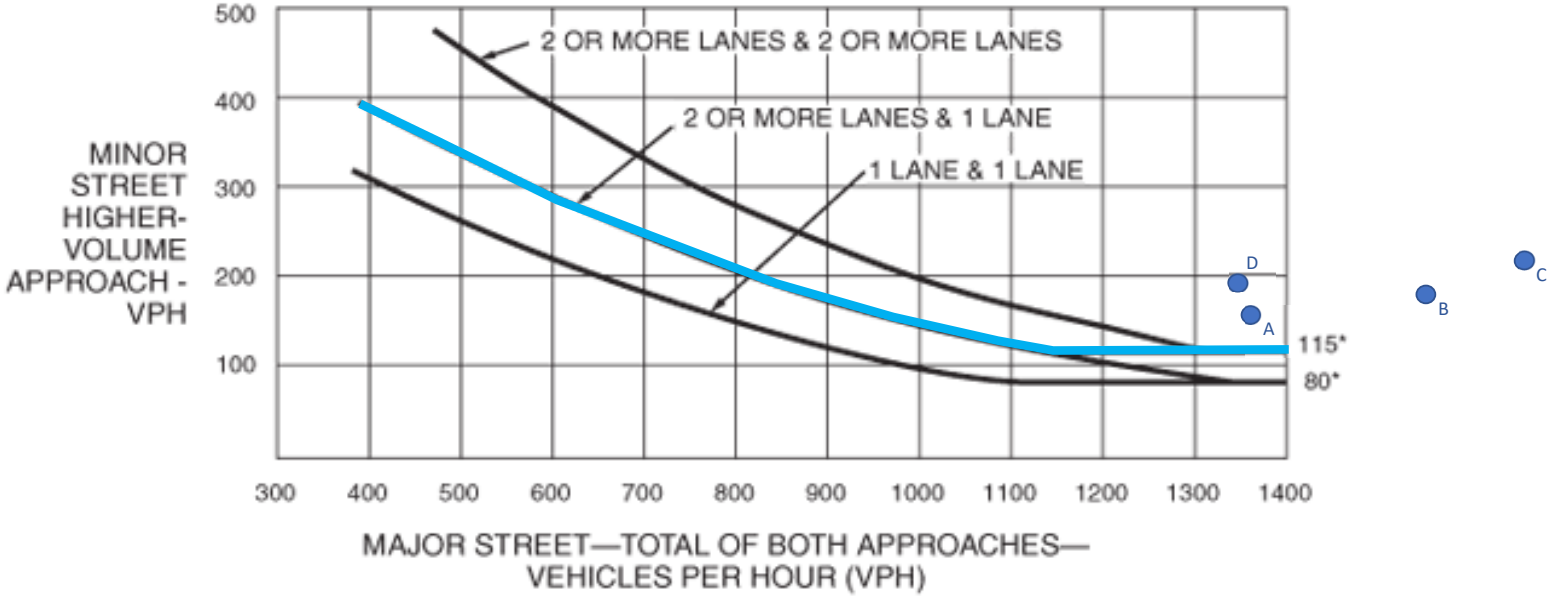
4-Hour Traffic Signal Warrant

			Major Street Direction			
Major Street	S High St		x	North/South	Project	Wailuku State Office
Minor Street	Wells St (all movements)			East/West	Scenario	Future No Project

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (all movements)		
Number of Approach Lanes			**1**	**2**		
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM**	1,360	160	Yes	**Yes**
	B	3:00 PM - 4:00 PM	1,630	180	Yes	
	C	4:00 PM - 5:00 PM	1,810	210	Yes	
	D	5:00 PM - 6:00 PM	1,350	190	Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.
** Shoulder hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

FEHR PEERS

8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (all movements)		East/West	Scenario	Future No Project

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (all movements)				
Number of Approach Lanes		**1**	**2**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	8:00 AM - 9:00 AM	1,280	110	No	**No**	Yes	**Yes**
	12:00 PM - 1:00 PM**	1,190	140	No		Yes	
	1:00 PM - 2:00 PM**	1,200	140	No		Yes	
	2:00 PM - 3:00 PM**	1,360	160	No		Yes	
	3:00 PM - 4:00 PM	1,630	180	No		Yes	
	4:00 PM - 5:00 PM	1,810	210	Yes		Yes	
	5:00 PM - 6:00 PM	1,350	190	No		Yes	
	6:00 PM - 7:00 PM**	1,080	130	No		Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

** Off-peak hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

FEHR PEERS

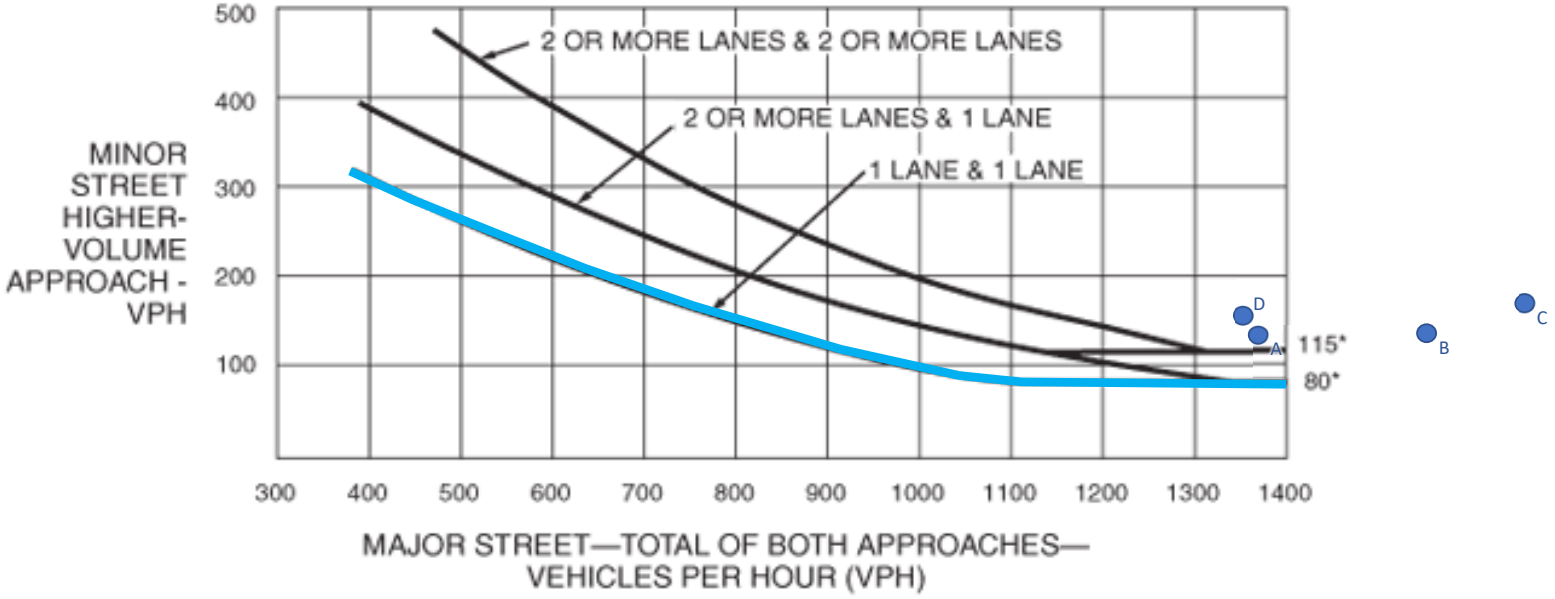
4-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Future No Project

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (left-turn only)		
Number of Approach Lanes			**1**	**1**		
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM	1,360	130	Yes	**Yes**
	B	3:00 PM - 4:00 PM	1,630	140	Yes	
	C	4:00 PM - 5:00 PM	1,810	170	Yes	
	D	5:00 PM - 6:00 PM	1,350	150	Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.
** Shoulder hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

FEHR PEERS

8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Future No Project

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (left-turn only)				
Number of Approach Lanes		**1**	**1**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	8:00 AM - 9:00 AM	1,280	70	No	**No**	No	**No**
	12:00 PM - 1:00 PM**	1,190	120	No		Yes	
	1:00 PM - 2:00 PM**	1,200	120	No		Yes	
	2:00 PM - 3:00 PM**	1,360	130	No		Yes	
	3:00 PM - 4:00 PM	1,630	140	No		Yes	
	4:00 PM - 5:00 PM	1,810	170	Yes		Yes	
	5:00 PM - 6:00 PM	1,350	150	No		Yes	
	6:00 PM - 7:00 PM**	1,080	100	No		Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

** Off-peak hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

FEHR PEERS

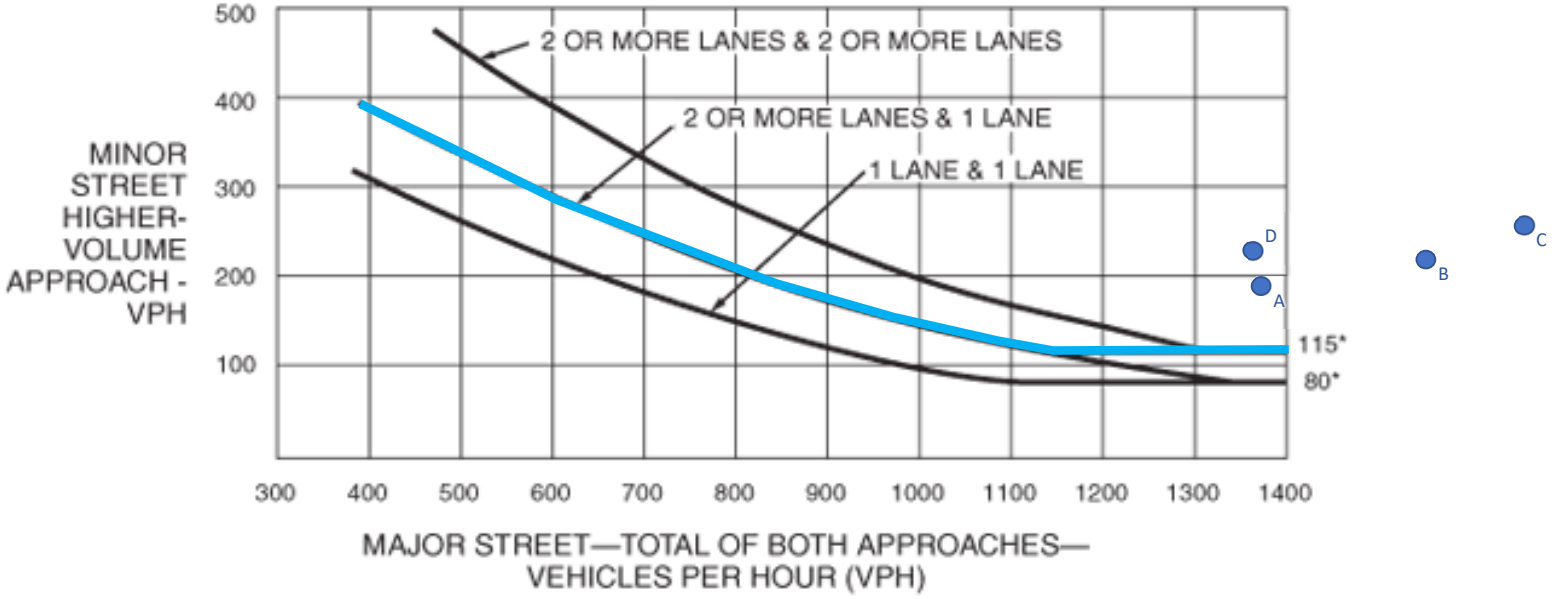
4-Hour Traffic Signal Warrant

			Major Street Direction				
Major Street	S High St		x	North/South	Project	Wailuku State Office
Minor Street	Wells St (all movements)			East/West	Scenario	Future Plus Project

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (all movements)		
Number of Approach Lanes			**1**	**2**		**Yes**
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM**	1,370	190	Yes	
	B	3:00 PM - 4:00 PM	1,640	210	Yes	
	C	4:00 PM - 5:00 PM	1,820	250	Yes	
	D	5:00 PM - 6:00 PM	1,360	220	Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.
** Shoulder hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

FEHR PEERS

8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (all movements)		East/West	Scenario	Future Plus Project

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (all movements)				
Number of Approach Lanes		**1**	**2**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	8:00 AM - 9:00 AM	1,310	110	No	**No**	Yes	**Yes**
	12:00 PM - 1:00 PM**	1,200	170	No		Yes	
	1:00 PM - 2:00 PM**	1,210	170	No		Yes	
	2:00 PM - 3:00 PM**	1,370	190	No		Yes	
	3:00 PM - 4:00 PM	1,640	210	Yes		Yes	
	4:00 PM - 5:00 PM	1,820	250	Yes		Yes	
	5:00 PM - 6:00 PM	1,360	220	Yes		Yes	
	6:00 PM - 7:00 PM**	1,080	150	No		Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

** Off-peak hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

FEHR PEERS

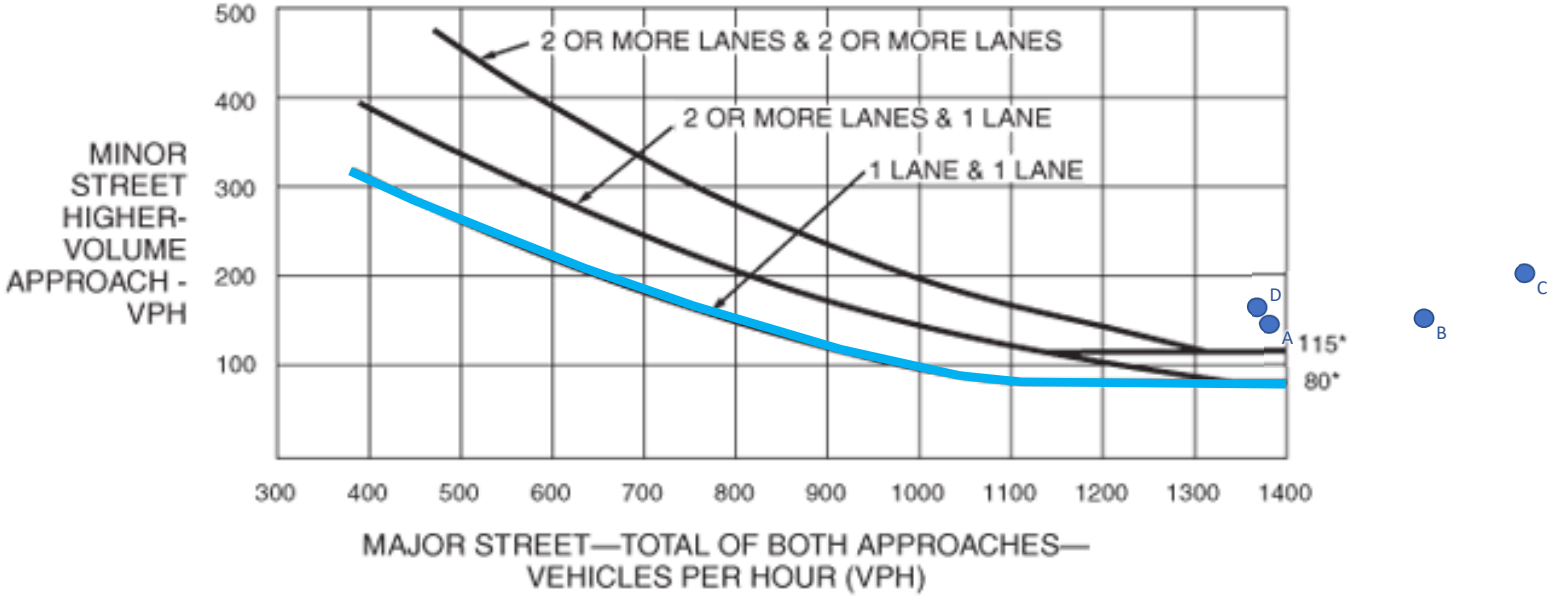
4-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Future Plus Project

			Major Street	Minor Street	Above Threshold?	Warrant Met?
			S High St	Wells St (left-turn only)		
Number of Approach Lanes			**1**	**1**		**Yes**
Traffic Volume (VPH) *	A	2:00 PM - 3:00 PM	1,370	150	Yes	
	B	3:00 PM - 4:00 PM	1,640	160	Yes	
	C	4:00 PM - 5:00 PM	1,820	200	Yes	
	D	5:00 PM - 6:00 PM	1,360	170	Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.
** Shoulder hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

FEHR PEERS

8-Hour Traffic Signal Warrant

		Major Street Direction			
Major Street	S High St	x	North/South	Project	Wailuku State Office
Minor Street	Wells St (left-turn only)		East/West	Scenario	Future Plus Project

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		**Vehicles per hour on major street (total of both approaches)**				**Vehicles per hour on higher-volume minor-street approach (one direction only)**			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

		Major Street	**Minor Street**	**A Warrant**		**B Warrant**	
		S High St	Wells St (left-turn only)				
Number of Approach Lanes		**1**	**1**	**Above Threshold?**	**Warrant Met?**	**Above Threshold?**	**Warrant Met?**
Traffic Volume (VPH) *	8:00 AM - 9:00 AM	1,310	80	No	**No**	Yes	**Yes**
	12:00 PM - 1:00 PM**	1,200	130	No		Yes	
	1:00 PM - 2:00 PM**	1,210	130	No		Yes	
	2:00 PM - 3:00 PM**	1,370	150	Yes		Yes	
	3:00 PM - 4:00 PM	1,640	160	Yes		Yes	
	4:00 PM - 5:00 PM	1,820	200	Yes		Yes	
	5:00 PM - 6:00 PM	1,360	170	Yes		Yes	
	6:00 PM - 7:00 PM**	1,080	120	No		Yes	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

** Off-peak hour intersection volumes were estimated using available 24-hour DOT counts on South High Street.

Appendix E: Cumulative Project Trip Generation

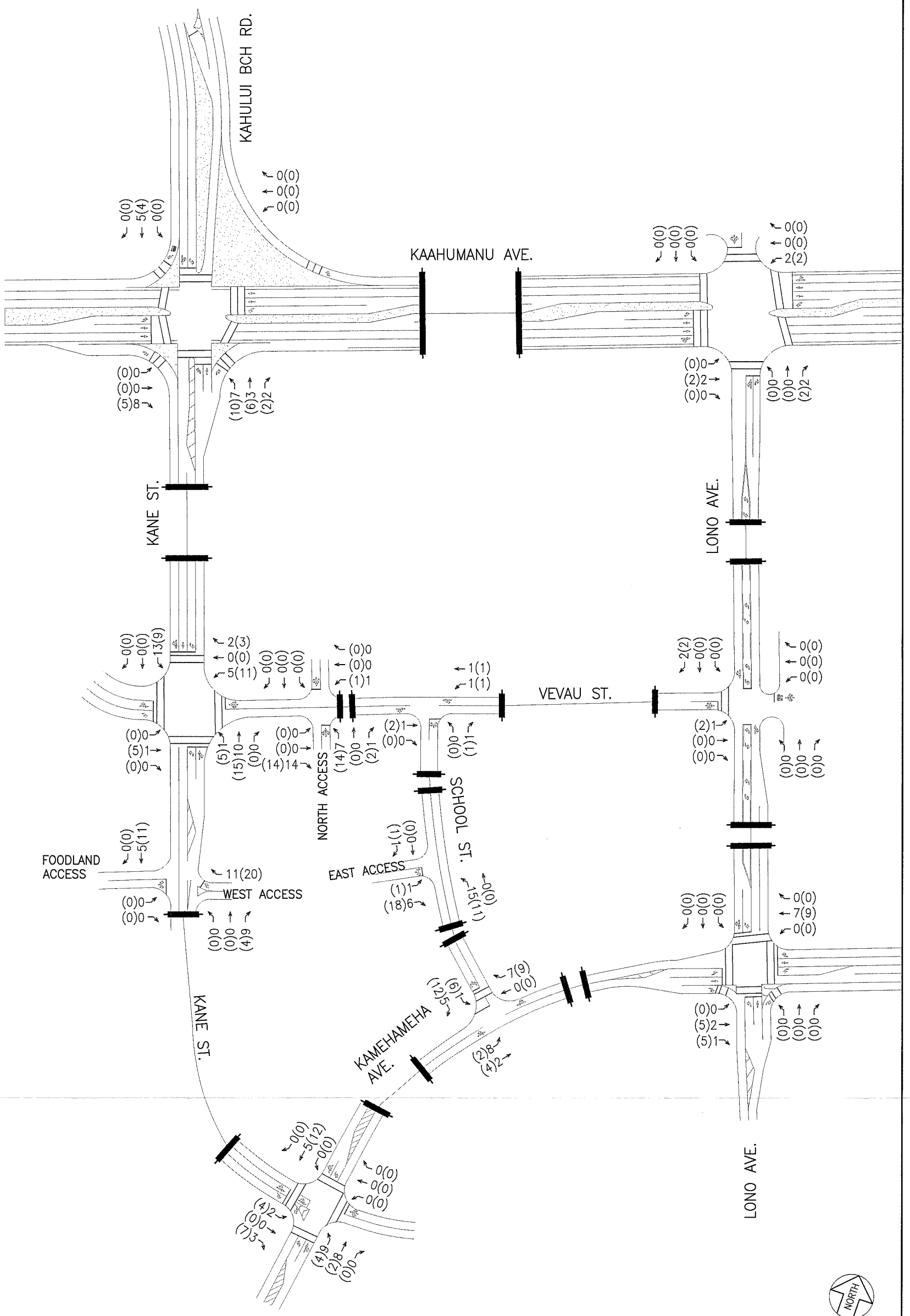
Excerpt from Kahului Lani Affordable Senior Housing Project Draft EA Appendix C: Traffic Impact Analysis Report (prepared by Austin, Tsutsumi & Associates, Inc.)

FEHR PEERS

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

LEGEND

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES



KAHULUI LANI SENIOR AFFORDABLE HOUSING TIAR	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE 5.1
	PROJECT-GENERATED TRIP DISTRIBUTION	

Excerpt from Transit Hub Relocation at Kahului, Maui, Hawaii Draft EA Appendix E: Traffic Impact Analysis Report (prepared by Austin, Tsutsumi & Associates, Inc.)

FEHR PEERS

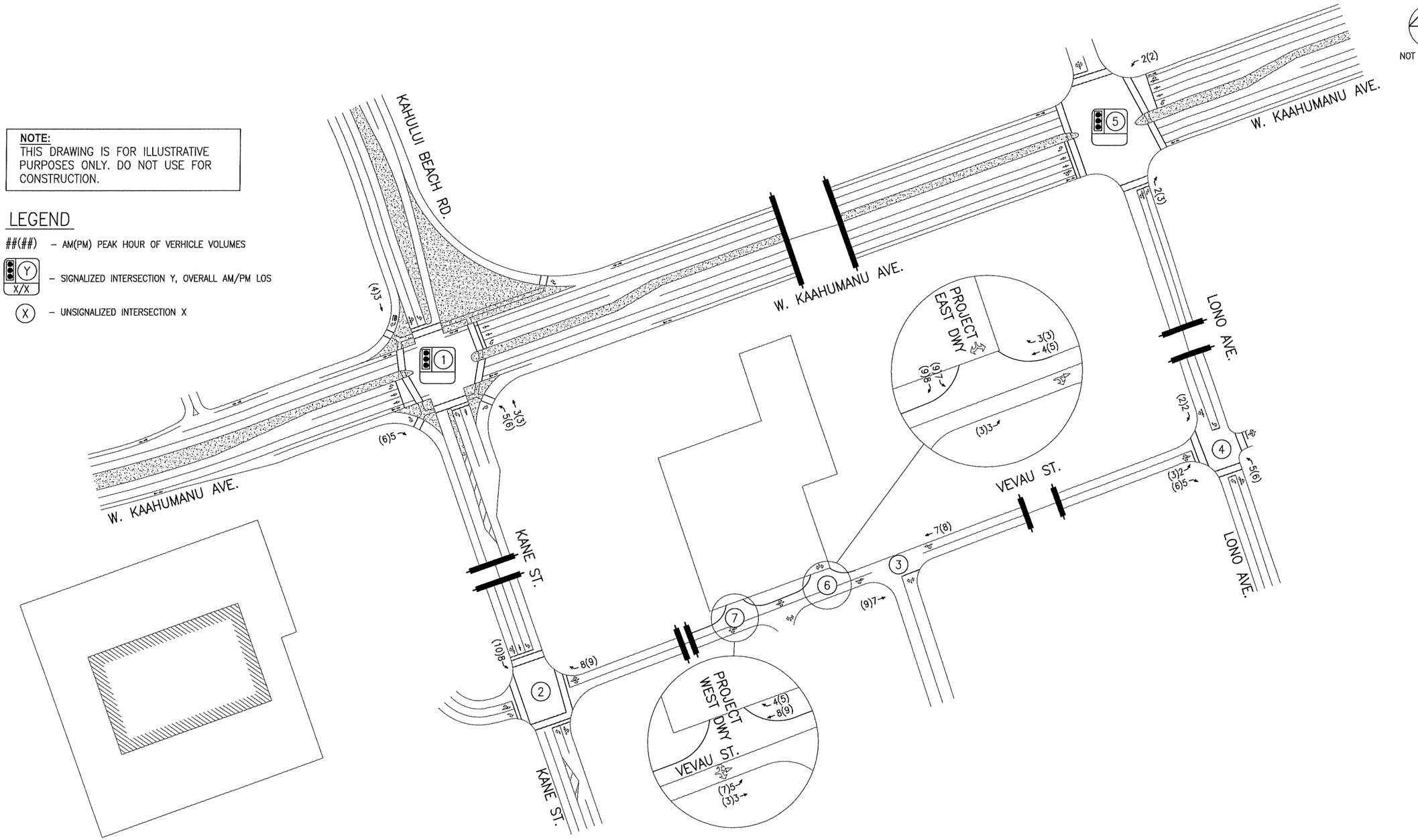
NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

LEGEND

##(##) – AM(PM) PEAK HOUR OF VERHICLE VOLUMES

(Y) X/X – SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS

(X) – UNSIGNALIZED INTERSECTION X



VEVAU STREET BUS HUB TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

PROJECT-GENERATED TRIPS

FIGURE 5.1

Appendix J

Historical Resource Evaluation Report

HISTORICAL RESOURCE EVALUATION REPORT

KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX PROJECT
WAILUKU AHUPUA‘A, WAILUKU DISTRICT, ISLAND OF MAUI, HAWAI‘I

TMK: (2) 3-7-004:003 (POR.)

Prepared for:

State of Hawai‘i
Department of Business, Economic Development & Tourism
Hawai’i Housing Finance & Development Corporation
677 Queen Street, Suite 300
Honolulu, HI 96813

On behalf of:

G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Prepared by:

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2150 Silverado Trail North
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Yarbrough Architectural Resources

Project No: YAR_KPAC-Maui2021

January 2022

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I. SUMMARY OF FINDINGS

This Historic Resource Evaluation Report (HRER or Report) is conducted for the proposed Kahului Civic Center and Mixed-Use Complex Project in Wailuku Ahupua‘a, Wailuku District, on the island of Maui. This is located at 153 W. Ka‘ahumanu Avenue on a portion of TMK: (2) 3-7-004:003.

This HRER evaluates the property for historical significance to comply with Hawai’i Revised Statutes (HRS) 6E-8, Hawai’i Administrative Rules (HAR) 13-275-6, criteria a through e. This report recommends that the property is significant and, therefore, applies the seven (7) aspects of historical integrity to recommend whether or not it retains sufficient integrity to convey that significance. This HRER meets the standards of an Intensive Level Survey (ILS) assessment and evaluates the property against the criteria of both the National Register of Historic Places (NRHP) and the Hawai’i Register of Historic Places (HRHP) per HAR 13-275-6.

This work was designed to identify any historic properties that may be located on the parcels in anticipation of the proposed construction. The HRER included a survey recorded by photographs (see Attachment B – Photographic Record) and notes. The property has three buildings and a stone-and-mortar wall and has been affected by a recent demolition and regrading at the northwest portion of a parcel. The Administration Building is in fair to good condition; a Cafeteria Building is in an advanced state of collapse; a utility shed is ubiquitous and of uncertain construction date; and a historic-era wall is in good condition. A preservation plan should be prepared for the wall and mitigation measures developed in the form of documentation and public interpretation programming for the remaining building. See IX. CONCLUSIONS AND RECOMMENDATIONS.

II. INTRODUCTION

YAR was retained as a sub-consultant to Keala Pono Archaeological Consulting, LLC and at the request of G70 on behalf of the Hawai'i Housing Finance & Development Corporation (HHFDC) to conduct this Historic Resources Evaluation Report for the Kahului Civic Center and Mixed-Use Complex Project (Project). Project planning and design will consider mitigation measures for the entirety or portions of the potential historic property and in preparation for state and possibly federal permitting and funding processes associated with the Project.

This report is drafted to meet the requirements and standards of a state project and state historic preservation law, as set out in Chapter 6E-8 of the Hawai'i Revised Statutes and Hawai'i Administrative Rules (HAR) §13–276, the State Historic Preservation Division (SHPD) Architecture Survey Guidelines to comply with HRS 6E-8, HAR 13-275-6, criteria a through e for an Intensive Level Survey (ILS). The report begins with a description of the project area and a historical overview of land use and property development. The next section presents methods used in the fieldwork, followed by results of the survey. Project results are summarized and recommendations are made in the final section. This HRER is a technical study designed to address both State and Federal regulatory standards. For example, if authorization from the U.S. Department of Housing and Urban Development (HUD) for funding, U.S. Army Corps of Engineers (USACE) to fill a Waters of the United States (WOTUS) permit pursuant to Section 404 of the Federal Clean Water Act (CWA) due to potential coastal impacts, or other federal permitting or funding were pursued, the Project may qualify as an "undertaking" and be subject to the National Historic Preservation Act of 1966 (54 USC §306108), commonly known as "Section 106" and Section 106's implementing regulations (36 CFR 800 et seq.). If more than one federal agency is involved in funding and permitting, then one federal agency must agree to take on the role as lead-agency. The lead-agency role under Section 106 includes the identification of potential historic properties, determination of the presence or absence of a historic property by historical evaluation, and, if one is present, the Project's proposed effect on the historic property. These processes are routinely completed by technical studies that address State and Federal statues and language and may jointly follow the recommendations of a qualified architectural historian consultant. Therefore, this HRER was conducted to anticipate the requirements to satisfy Section 106, as well as State of Hawai'i statutes.

A historical field survey and historic property identification effort were completed by YAR on June 7 and 8, 2021 for the purpose of recording the subject property. See Attachment B – Photographic Record.

Qualifications of Preparer

Edward Yarbrough, M.S. Historic Preservation, Principal of Yarbrough Architectural Resources is the Principal Investigator/Senior Architectural Historian for this Report. For over 30-years Yarbrough developed documentation for projects subject to federal and state historic preservation mandates. He is sole proprietor of Yarbrough Architectural Resources. Yarbrough exceeds the Historic Preservation Professional Qualification Standards for Architectural History, as set forth by U.S. Secretary of the Interior. See Attachment A – Preparer's Resume.

III. PROJECT LOCATION AND DESCRIPTION

Project Location

The project area is located in Kahului, approximately 300 m (.2 mi.) inland from the coast at Kahului Harbor (Figure 1) on 1.91 ha (4.72 ac.) of TMK: (2) 3-7-004:003 (Figure 2). TMK: (2) 3-7-004:003 is a 2.26-ha (5.572-ac.) property owned by the State of Hawai'i located at 153 W. Ka'ahumanu Avenue. The property is bounded by W. Ka'ahumanu Avenue to the north, Kane Street to the west, Vevau Street to the south, and private parcels to the east.

The property currently houses the Maui Community School for Adults, which includes two buildings that were constructed in 1920 and occupy the southern portion of the parcel. Site topography is relatively flat, and there is little to no vegetation on the properties. The project area lies at roughly 2 m (7 ft.) above mean sea level (amsl), and rainfall averages approximately 42 cm (17 in.) per year (Giambelluca et al. 2013).

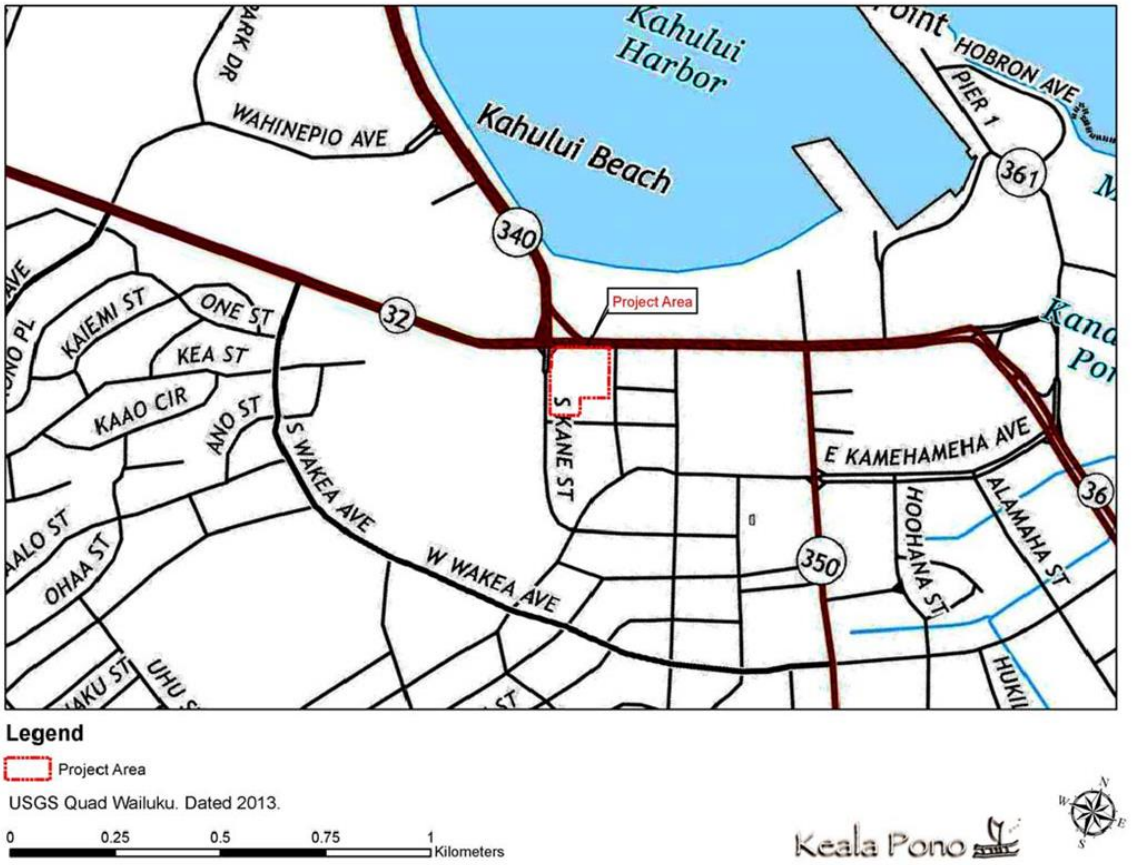

Figure 1 Project area is the parcel boundary, TMK: (2) 3-7-004:003. (Source: 7.5-minute Wailuku quadrangle map, USGS 2013, Keala Pono Archaeological Consulting, LLC, *Archaeological Inventory Survey* 2021)

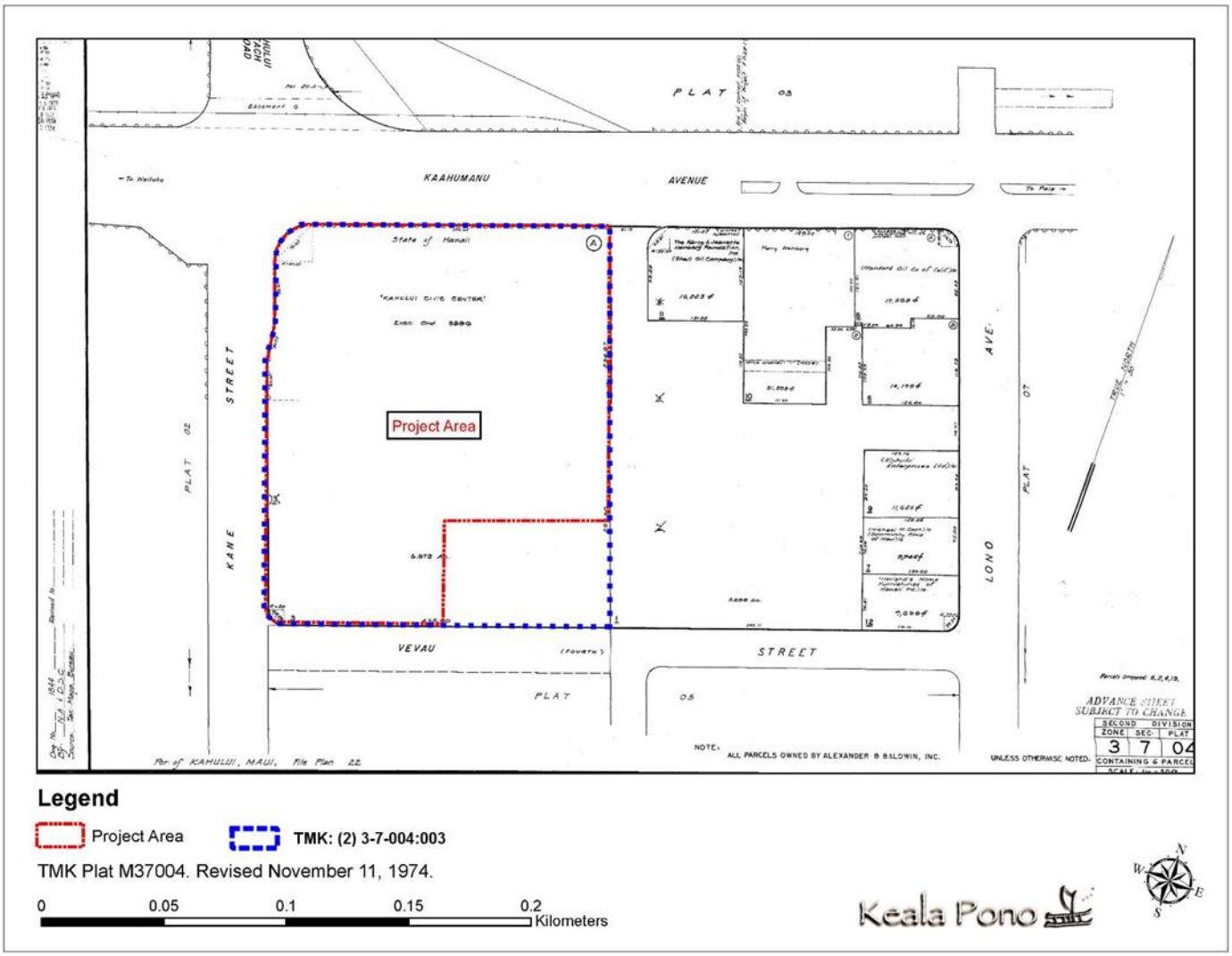

Figure 2 The 4.72-acre parcel lies within a largely redeveloped area. (Source: TMK plat map, State of Hawai'i 1974, Keala Pono Archaeological Consulting, LLC, *Archaeological Inventory Survey* 2021)

Project Description

The Kahului Civic Center and Mixed-Use Complex Project (Project) is a collaborative effort between HHFDC and the State Department of Accounting and General Services (DAGS).

The Project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center). The multi-family housing buildings and Civic Center will provide a total of approximately 381,000 SF of floor area and approximately 596 parking spaces. Approximately 300 multi-family dwelling units (mixture of 1-, 2- and 3-bedroom units) will be provided in two buildings (both roughly six stories); and approximately 414 parking spaces will be provided in two three-level parking podiums for the multi-family housing. The preliminary program for the Civic Center (roughly four stories) includes space for State offices, the State Department of Education's McKinley Community School for Adults, and the Kahului Public Library. A parking deck built over a surface parking lot will provide approximately 182 parking spaces for the Civic Center. Community-oriented commercial space may be included in either the

multi-family housing building(s) or the Civic Center. The Civic Center program spaces may be adjusted due to the needs and priorities of State agencies and availability of funding.

The County's new Transit Hub is currently being constructed on the southeast portion (0.85 acres) of the Project parcel along Vevau Street. The County's new Transit Hub is not a part of this Project. The County's new Transit Hub will replace the existing Transit Hub, located at the Queen Kaʻahumanu Center.

Regulatory Context

This HRER is a technical study that meets the requirements to inform both state and federal regulatory processes pertinent to historic preservation laws. The Hawai'i SHPD reviews projects for impacts to historic properties in order to lessen or mitigate those impacts. There are three types of historic preservation reviews under HRS 6E: 6E-10, 6E-08, and 6E-42. The proposed Kahului Civic Center and Mixed-Use Complex Project is a 6E-8 project subject to HAR 13-275-6. HAR 13-275 outlines a 6-step review process. As a State-owned property subject to 275-5(b)(5), the SHPD determined an Intensive Level Survey would adequately identify, document, and evaluate the subject property and recommend whether it was historically significant, as measured against the HRHP significance criteria and, then, against the seven (7) aspects of integrity. A property that is found to be historically significant but lacks the integrity to continue to convey that significance, is not a "historic resource" as defined under HRS 6E.

A formal determination of historical significance through evaluation by the SHPD is also necessary for a Project that may require authorization from the USACE, to fill Waters of the United States (WOTUS) pursuant to Section 404 of the Clean Water Act (CWA), for U.S. Housing and Urban Development (USHUD) funding or permitting, or for other federal permitting or funding. For example, authorization by the USACE under the CWA constitutes an "undertaking" by the USACE that is subject to Section 106, 54 USC §306108 and Section 106's implementing regulations (36 CFR 800 et seq.). Issuance of a permit constitutes an Undertaking, as that term is defined in 36 CFR parts 800.3(a) and 800.16(y). USACE permitting or USHUD funding would constitute a federal nexus for the Project; therefore, compliance with Section 106 of the National Historic Preservation Act would be required.

Federal Regulations

The Kahului Civic Center and Mixed-Use Complex Project is not subject to federal regulations. The project seeks neither federal permits nor grants. However, the Federal Regulations are provided to lend this technical study greatest utility in case of unforeseeable changes to project mandates.

National Historic Preservation Act of 1966

Section 106 established the federal government's policy on historic preservation and the programs, including the National Register of Historic Places (NRHP), through which the policy is implemented. Section 106 (16 USC 470f) requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit or allocating federal funds), to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on any undertaking that could adversely affect historical properties eligible for listing on the NRHP. As defined in 36 CFR 800.5(a)(1) "Adverse effects occur when an

undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the National Register".

Area of Potential Effects

The APE includes both an Archaeological and a Built Environment APE based on different potentialities by the undertaking for adverse effects posed to either resource type. The Archaeological APE (also referred to as the Area of Direct Impact [ADI] or Direct APE) is established according to the horizontal and vertical extent of disturbance from proposed construction-related activities; refer to the Project's AIS. The Built Environment APE (also referred to as the Architectural APE, Area of Indirect Impact [AII] or Indirect APE) includes the ADI and indirectly affected properties. The Built Environment APE must consider indirect effects to potential historic properties caused from visual, audio, or atmospheric intrusions, shadow effects, vibrations from construction activities, or changes to access or use. Because the properties surrounding the subject property are contemporary and less than 50 years of age, the Built Environment APE does not extend beyond the parcel boundaries to consider indirect effects.

Under Section 106, the quality of significance in cultural resources is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons in or past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in history or prehistory.

In general, historic sites are evaluated in terms of Criteria A through C, while archaeological and prehistoric sites are most often evaluated in terms of Criterion D, which refers to the research potential of the site (36 CFR 60.4). Whether or not a site is considered important is determined by the capacity of the site to address pertinent local and regional research themes.

This Project is not currently subject to Section 106 and its implementing regulations (16 USC 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63). However, because projects may run into permitting mandates or funding opportunities requiring the USHUD, USACE or other federal agency administrative approvals, this technical study considers whether the Project would affect historic properties that meet the criteria for listing on the NRHP. The pertinent federal agency would be the lead-agency for purposes of Section 106 compliance, for consultation with the Hawai'i SHPD, and to inform the ACHP.

The State of Hawai'i implements Section 106 through its statewide comprehensive cultural resource surveys and preservation programs. The SHPD, as an office of the Hawai'i Department of Land and

Natural Resources (DLNR), implements the policies of Section 106 on a statewide level. The SHPD also maintains the Hawai'i Cultural Resource Information System (HICRIS). The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

State Regulations

HRS Chapter 6E-8

This 6E-8 project is subject to HAR 13-275-6. The SHPD guides compliance with HRS Chapter 6E-8 in the following six-step process:

Step 1: Identification and Inventory
13-275-5(b): The agency shall first consult with the SHPD to determine if the area proposed for the project needs to undergo an inventory survey to determine if historic properties are present. The SHPD shall supply a response in writing within 30 days.

- 275-5(b)(1) The response shall justify that no historic properties are present or likely to be present
- 275-5(b)(2) The agency submits information claiming that no significant historic properties are present and SHPD agrees
- issue determination of no historic properties affected within 30 days and historic preservation review ends
- 275-5(b)(4) The agency submits information and SHPD determines an adequate survey exists for which significant historic properties are present
- 275-5(b)(5) The SHPD determines an inventory survey is needed to adequately identify, document, and evaluate historic properties
- Proceed to Step 2

Step 2: Evaluation of Significance
13-275-6(d) Each significant historic property identified shall be assessed for its significance and be submitted to the SHPD in writing. The SHPD shall agree/disagree with the significance evaluations within 45 days.

- 275-6(e) The SHPD agrees with the evaluation that none of the historic properties are significant
- issue determination of no historic properties affected and historic preservation review ends
- 275-6(e) The SHPD agrees that significant historic properties are present –
- Proceed to Step 3

Step 3: Determining Effects to Significant Historic Properties
13-275-7(a) The agency shall determine the effects of a project on significant historic properties and provide a determination of either "No Historic Properties Affected" or "Effect, with proposed/agreed upon mitigation commitments"
275-7(c) Effect determinations shall be submitted to SHPD for review
275-7(c)(2) The SHPD shall respond to effect determinations within 45 days of receipt

- 275-7(e) The SHPD agrees with the effect determination that no historic properties will be affected by the project
- issue determination of no historic properties affected and historic preservation review ends
- 275-6(e) The SHPD agrees that significant historic properties will be affected by the project
- Proceed to Step 4

Step 4: Mitigation Commitments

275-8(a) If a project will have affect significant historic properties than mitigation commitments must be proposed/agreed to. Mitigation shall be specific to each property affected.

- 275-8(b) The SHPD shall notify the agency within 45 days if mitigation commitments are not acceptable
- Consultation shall occur to resolve disagreements and commitments shall be resubmitted to the SHPD
- 275-8(c) The SHPD shall notify the agency within 45 days if mitigation commitments are acceptable
- Proceed to Step 5

Step 5: Development of Mitigation Plans

275-8(h) After mitigation commitments are accepted, the agency shall develop detailed mitigation plans and provide them to the SHPD.

- 275-8(h)(7) The SHPD shall notify the agency within 45 days if mitigation commitments are not acceptable
- Consultation shall occur to resolve disagreements and commitments shall be resubmitted to the SHPD
- 275-8(h)(8) The SHPD shall notify the agency within 45 days if mitigation commitments are acceptable
- Proceed to Step 6

Step 6: Verification of Mitigation Completion

275-9(a) Once mitigation plans are accepted and carried out, the agency shall submit verification reports to the SHPD. The report shall document successful completion of the mitigation tasks.

- 275-9(b) The SHPD shall notify the agency within 45 days if mitigation commitments are not acceptable
- Consultation shall occur to resolve disagreements and commitments shall be resubmitted to the SHPD
- 275-9(c) The SHPD shall notify the agency within 45 days if mitigation commitments are acceptable
- The historic preservation review process ends

275-9(d) When mitigation commitments involved preservation, data recovery, architectural recordation, an agency may request an accelerated, 2 step verification process. During the accelerated process, SHPD shall supply responses within 30 days.

Hawai'i Register of Historic Places

The Hawai‘i Register of Historic Places (HRHP) is an official list of properties that have been recognized for their significance to the history, architecture, archaeology, or culture of Hawai‘i communities. Buildings, structures, sites, districts, and objects over 50-years of age are eligible for nomination to the HRHP. Properties that meet any of the criteria of the HRHP and then, found to retain sufficient integrity to convey that significance are “historic resources” pursuant to HRS Chapter 6E-8. Paralleling the four (4) criteria of the NRHP, the HRHP criteria are:

> (A) That are associated with events that have made a significant contribution to broad patterns of our American or Hawaiian history;

(B) That are associated with the lives of persons significant in our past;

(C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) That have yielded, or may be likely to yield, information important in prehistory or history.

(E) That have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity. [HAR 13-275-6(b)]

IV. HISTORICAL CONTEXT

As the significance of cultural resources is best assessed with regard to environmental and cultural contexts, initial descriptions of the natural and cultural setting of the Project region are presented below. The historic context of the Area of Potential Effect (APE) that would be required for the Project is not fully developed herein but general setting and the specific contexts of the two buildings and stone-and-mortar wall are presented.

The historic context is largely adapted from the Cultural Background section of this Project's *Archaeological Inventory Survey* (AIS). Windy Keala McElroy, PhD, Principal, Max Pinsonneault, MA, and Leandra Medina, BA of Keala Pono Archaeological Consulting, LLC conducted significant background research for both this Report and the AIS and co-authored the AIS in June 2021. In addition, the Historic American Building Survey (HABS) documentation of Building E, subsequently demolished, on the same property provided reliable historic context for the subject property.

Research for the AIS was conducted at the Hawai'i State Library, the University of Hawai'i at Mānoa libraries, the SHPD library, and online on the Office of Hawaiian Affairs website (OHA n.d.) and the Department of Accounting and General Services (DAGS n.d.), Waihona Aina (n.d.), Avakonohiki (n.d.), and Ulukau (n.d.) databases. Archaeological reports, historical reference books, and historic maps were among the materials examined.

Wailuku in Traditional Times

Place names often shed light on traditional views of an area and can provide important contextual information. Wailuku literally means "water of destruction" (Pukui et al. 1974:225) due to the battles that took place there, most notably the battle at 'Īao Valley between Kamehameha the Great and Kahekili. Wailuku is also referred to as Nā Wai 'Ehā, which translates to "the four waters," after the four streams that run through its valleys: Waiehu, Waikapū, Wailuku, and Waihe'e. The old 'okana (land division) named Nā Wai 'Ehā comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Pu'u Kukui and the ridges radiating from it.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names "usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history" (Pukui et al. 1974:xii).

Place names associated with the study area are listed in the Place Names of Hawai'i (Pukui et al. 1974), along with the meanings of the names and/or comments about the specific locales:

Haleki'i...Alternate name for the heiau at Pihana, Maui. Lit,. image house. (Pukui et al. 1974:37)

'Īao. Stream, valley, peak (2,250 feet high), park, and one-time sacred burying place of chiefs, Wai-luku qd....Maui. Lit., cloud supreme. (Pukui et al. 1974:55)

Ka'ahumanu. Church, Wai-luku, Maui. Named for Queen Ka'ahumanu, favorite wife of Ka-mehameaha I, who was later kuhina nui (executive officer), and who died a Christian in 1832. Lit., the bird [feather] cloak. (Pukui et al. 1974:59)

Kaʻākaupōhaku. Ancient surfing area, Wai-luku qd., Maui. (Finney 1950b:345) Lit., the north (or right-hand) stone. (Pukui et al. 1974:60)

Kahului. Town, elementary school, port, bay, railroad, and surfing area known as Kahului Breakwater (Finney 1959a:108), Maui. Probably Lit., the winning. (Pukui et al. 1974:67)

Kaleholeho. Ancient surfing area, Ka-halui area, Maui. Lit., the callus. (Pukui et al. 1974:76)

Kanahā. Wildlife sanctuary and pond near Ka-halui, Maui, said to have been built by Chief Kiha-a-Piʻilani, brother-in-law of ʻUmi (HM387) who lived about A.D. 1500. Nearly 500 native Hawaiian stilts (āeʻo) have been counted here at one time, about a third of the known total. Some 50 kinds of birds have been seen here, including herons, geese, ducks, owls, plovers, sand pipers, tattlers, coots, pheasants, and doves...Lit., the shattered [thing]. (Pukui et al. 1974:83)

Kepaniwai. Park, Wailuku, Maui. Lit., the water dam (Wai-luku Stream was choked with human bodies after the slaughter there). (Pukui et al. 1974:109)

Kinihāpai. Stream, Wai-luku qd., Maui. Lit., carry multitudes. (Pukui et al. 1974:112)

Māniaina. Ditch, Wailuku qd., Maui...Lit., a shuddering sensation. (Pukui et al. 1974:145)

Nākalaloa. Stream, Wailuku qd., Maui. Lit., the long [house] gables. (Pukui et al. 1974:161)

Nehe. Point. Wai-luku qd., Maui...Lit., rustle. (Pukui et al. 1974:164)

Paukūkalo. Homesteads, coastal area, and surfing area, Ka-halui, Maui. Lit., taro piece. (Pukui et al. 1974:181)

Wailuku...land division...city, point, sugar company, and stream, West Maui; site of the battle in the late eighteenth century in which the army of Ka-lani-ʻōpuʻu was nearly annihilated by Ka-hekili of Maui. Lit., water [of] destruction. (Pukui 1974:225)

Subsistence and Traditional Land Use

Wailuku was a gathering place and home to important chiefs and their attendants (ʻĪʻī 1959:135). Handy et al. (1991:272) assert that there were five centers of population on the island of Maui, one of which was the part of West Maui, “where four deep valley streams watered four areas of taro land spreading fanwise to seaward: the Four Waters (Na-wai-ʻeha) famed in song and story–Waiheʻe, Waiehu, Wailuku, and Waikapu.”

Wailuku is the third of the four streams that flows from the uplands of Puʻu Kukui’s ridges and down through ʻĪao Valley. Portions of the current city of Wailuku were built on old agricultural terraces (Handy et al. 1991:497):

> Along the broad stream bed of ʻIao Valley, extending several miles up and inland, the carefully leveled and stone-encased terraces may be seen. In the lower section of the valleythese broad terraces served, in 1934, as sites for Camps 6 and 10 of Wailuku Sugar Plantation, being utilized for houses, gardens, playgrounds, and roads. A little farther up, neat private homes and vegetable and flower gardens covered these old taro terraces; whileat their upper limit the terraces were submerged in guava thickets.

> Here a few wild taros were found, but we saw no terraces in ʻIao or Wailuku being used as flooded taro patches. It is significant that here, as at Waiheʻe, the old terraces were adapted to market gardening (Chinese bananas, vegetables, and flowers) by Japanese and Portuguese gardeners. (Handy et al. 1991:497)

The waters of Waikapū Stream were once diverted to feed loʻi systems, and its overflow was discharged on the dry plains on the isthmus between East and West Maui (Handy et al. 1991:496).

These abundant waters were later tapped for sugarcane irrigation (see Figure 3. and the Historic Wailuku section). Cheever commented on the loʻi of Wailuku in the mid-19th century:

> As you get into the valley and vega of Wailuku, you see numerous remains of old kihapais, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people than now…The whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it. (Cheever 1851 in Sterling 1998:75)

In addition to agricultural cultivation, fishponds were constructed in the region, near Kahului. Two major ponds are thought to have been constructed around AD 1500 during the rule of Kiha-a-Piʻilani (Kamakau 1992:42; Pukui et al. 1974:83). The ponds were named Kanahā and Mauʻoni. Kiha-a-Piʻilani also built the ala loa, a trail that circled the entire island. Another source states that the fishponds were constructed by Kapiʻioho'okalani, an aliʻi of Oʻahu and Molokaʻi, and that the walls were built by men passing stones from one to another in a line that extended from Makawela to Kanahā (Puea-a-Makakaualii in Sterling 1998:87).

A number of heiau have been identified within the ahupuaʻa of Wailuku, with Halekiʻi and Pihana located approximately two kilometers northeast of the current study area. An annual publication by T.G. Thrum, the Hawaiian Almanac and Annual for 1909 briefly describes some of the heiau found in Wailuku:

> Pihana- Wailuku, near end of coral and sand ridge, one-half mile from the sea; about 300x120 ft. in size; walls in complete ruins showing foundations massive.
>
> Halekii- Wailuku, some 300 ft. to N.E. of Pihana and about 100 ft. square in size.
>
> Kalui-Wailuku, at Puu-o-hala; repaired in time of Kahekili; Kaleopuupuu its priest.
>
> Malumaluakua-Keahuku-Olokua-Olopio-Malena-Wailuku. No Particulars gathered of these heiaus further than nearly all of the Wailuku temples, with the Kapokea one in Waihee are named among those consecrated by Liho-liho during a year's stay en route to Oahu, preceding the peleleu fleet. (Thrum 1909:38)

Moʻolelo

The island of Maui was named after the legendary demigod Māui (Pukui et al. 1974), known for his trickiness. Legends tell of how he stole fire, raised the sky and snared the sun, trapped winds, and changed landscapes. Among all of the moʻolelo, one of his biggest accomplishments was fishing land out of the ocean and creating the Hawaiian Islands. Earlier accounts share that the name of the island was once called Ihikapalaumaewa in ancient times, prior to Papa and Wākea and before their child Māui became famous (Sterling 1998).

The wind name for Wailuku is Makani-lawe-malie, or “the wind that takes it easy” (Nuuhiwa in Sterling 1998:62). And it is said that the aliʻi of the area spent much time surfing (Kamakau 1992:82).

The plains of Kamaʻomaʻo in Wailuku were a place of wandering souls:

> There are many who have died and have returned to say that they had no claim to an ʻaumakua {realm} (kuleanaʻole). These are the souls, it is said, who only wander upon the plain of Kamaʻomaʻo on Maui or on the plain at Puʻuokapolei on Oahu. Spiders and moths are their food. (Kamakau 1991:29)

A final moʻolelo concerns the appearance of foreigners in Wailuku in the mid-13th century, long before the first written record of foreigners arriving in the islands (Fornander 1969 [1878–1885]: 80–82). A chief named Wakalana governed the windward side of Maui and lived in Wailuku. At this time, a ship called Mamala came to Wailuku. The ship’s captain was named Kaluikia-Manu, and other men and women on board were named Neleike, Malaea, Haakoa, and Hika. Nelieke later became Wakalana’s wife, and together they bore fair skinned children with bright, shining eyes (Fornander 1969 [1878–1885]:81). Their descendants intermarried with other Hawaiians and many of them lived in Waimalu and Honouliuli on Oʻahu. Fornander posits that the moʻolelo may refer to a Japanese fishing vessel that was blown off course, as Europeans were not near Hawaiian waters at that time (1969 [1878–1885]:81).

ʻŌlelo Noʻeau

Wailuku’s connection with its distinguished coast is preserved in many traditional proverbs and wise sayings. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter reminds us that if we know these proverbs and wise sayings well, then we will know Hawaiʻi well (Pukui 1983). Four ʻōlelo noʻeau were found that speak of Wailuku. They provide further insight to the traditional landscape and history of the region.

Kei nu aku la paha aʻu ʻĀlapa I ka wai o Wailuku.

My ʻĀlapa warriors must now be drinking the water of Wailuku.

Said when an expected success has turned into failure. This was a remark made by Kalaniōpuʻu to his wife Kalola and son Kiwalaʻō, in the belief that his selected warriors, the ʻĀlapa, were winning in their battle against Kahekili. Instead they were utterly destroyed. (Pukui 1983:184)

Na wai ʻehā.

The four wai.

A poetic term for these places on Maui: Wailuku, Waiehu, Waiheʻe, Waikapū, each of which has a flowing water (wai). (Pukui 1983:251)

Pili ka hanu o Wailuku.

Wailuku holds its breath.

Said of one who is speechless or petrified with either fear or extreme cold. There is a play on luku (destruction). Refers to Wailuku, Maui. (Pukui 1983:290)

Wailuku I ka malu he kuawa.

Wailuku in the shelter of the valleys.

Wailuku, Maui, reposes in the shelter of the clouds and the valley. (Pukui 1983:290)

War and Conquest in Wailuku

Maui's ahupua'a of Wailuku was wrought with warfare through much of its known history, including what some would term as a 100 years' war. Many stories and accounts have been passed down. Rev. Cheever, in his book, Life in the Sandwich Islands: or, The Heart of the Pacific, As It Was and Is, wrote of how the various wars had an effect on how each stream in Wailuku was named:

There are in this region four streams in succession from the different gorges of the mountain, significantly named, it is thought, from the events of battles which have transpired upon them.

Waikapu—The water where the conch was blown, and the engagement began.

Waiehu—The water where the combatants smoked with dust and perspiration.

Wailuku— The water of destruction, where the battle began to be fierce and fatal.

Waihee—The water of total rout and defeat, where the army melted away. (Cheever 1851:59)

One of the earliest battles was that between owls and men: "The owls retaliated against an act committed by a cruel man by flocking to Wailuku and descending upon him" (Silva n.d). Another mention of this battle refers to the origin of the ahupua'a's name: "The cruel man was punished, and the battle place still bears the name Wailuku, Water-of-killing" (Pukui and Curtis 1974:179).

In addition to the battles with owls, many battles were fought between chiefs. In the 16th century, the 15th mō'ī of Maui, Pi'ilani, united the island's districts through war, and gave his daughter to marry the current mō'ī of Hawai'i Island. Due to this marriage, there was peace between the two kings of each island, until Pi'ilani died and a rivalry sparked between his two sons, Lono-a-Pi'ilani and Kiha-a-Pi'ilani (Speakman 1978). The eldest son, Lono, had inherited Maui and he sought to kill his brother Kiha, who then escaped to Hāna and met a young chiefess, Koleamoku. They fell in love and secretly married, even though she had been promised to Lono. The couple moved to Hawai'i Island, where Kiha's sister was still living with 'Umi, to avoid being captured by Lono. 'Umi took the side of Kiha and launched a war with Maui. Lono was defeated and 'Umi took partial control of the island of Maui, in Hāna, and peace was once again observed until the 17th century.

In the early 18th century, Kekaulike united the kingdom of Maui through war. While there were times of peace after this, things got worse for Maui by the end of the century with many wars with Hawai'i Island's king, Alapa'i who was trying to gain control of it. Kekaulike perished when fleeing to Wailuku:

> When Ke-kau-like heard that the ruling chief of Hawai'i was at Kohala on his way to war against Maui, he was afraid and fled to Wailuku in his double war canoe named Ke-aka- milo. He sailed with his wives and children…his officers, war leaders, chiefs, and fightingmen, including warriors, spearmen, and counselors. Some went by canoe and someoverland, and the fleet landed at Kapa'ahu at the pit of 'Ai-hako'ko in Kula. Here on the shore the chiefs prepared a litter for Ke-kau-like and bore him upland to Halekii in Kukahua. There Ke-kau-like died, and sound of lamentation for the dead arose. (Kamakau1992:69)

In an important battle, Kalaniʻōpuʻu was defeated in Wailuku (Kamakau 1992:85–91). It was in 1776 that Kalaniʻōpuʻu returned to war with Maui and was overthrown by Kahekili's army. It is said that Kalaniʻōpuʻu's forces "were slain like fish enclosed in a net," and the slaughter was known as Ahulau ka Piʻipiʻi Kakanilua, or Slaughter of the Piʻipiʻi at Kakanilua (Kamakau 1992:86). Unthwarted, however, Kalaniʻōpuʻu prepared for another assault. Kahahana, the aliʻi of Oʻahu and Molokaʻi, came to assist Kahekili. This battle was fought in the area between Wailuku and Waikapū. Again, Kalaniʻōpuʻu's forces were surrounded and killed.

Afflicted by war, Maui became impoverished, and Vancouver mentioned during his visit in 1793 that King Kahekili was having trouble finding enough provisions for his own ship (Speakman 1978). Kahekili was the last king of Maui and was able to rule Molokaʻi, Lanaʻi, and Oʻahu during his reign but was unable to conquer Hawaiʻi Island.

Foreigners increasingly visited Hawaiʻi after Captain Cook arrived at Kahului Bay in the late 18th century, and this was happening as Kamehameha was rising to power. Kamehameha, armed with a cannon he acquired by foreigners, went to battle in Wailuku.

> The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skillful warriors of Maui took part, but Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was a great slaughter. Had they fought face-to-face and hand-to-hand, as the custom was, they would have been equally matched. But the defensive was drawn up in a narrow pass in ʻIao , and the offensive advanced from below and drew up the cannon as far as far as Kawelowelo'ula and shot from there into ʻIao and the hills about, and the men were routed. The victors pursued them and slew the vanquished as they scrambled up the cliffs. There was a great slaughter, but mostly among the commoners; no important chief was killed in the battle. "Clawed off the cliff" (Ka ʻuwaʻu-pali) and "The damming of the waters" (Ka-pani-wai) this battle was called." (Kamakau 1992:148–149)

After winning the battle on Maui, Kamehameha moved on to conquer the remaining islands of Molokaʻi, Oʻahu, and Kauaʻi.

Historic Wailuku: The 19th and 20th Centuries

In 1832, missionaries began arriving in Maui and established a girls' school in Wailuku. Around that time, the sugar industry was introduced, greatly affecting Wailuku. The Hungtai Sugar Works company, founded in 1828 by two Chinese merchants, was the first location of sugar production on the island. King Kamehameha had a sugar mill built in Wailuku in the 1840s, which much of the initial sugar industry had developed around. The abundance of water supply and accessible land in Wailuku allowed for the sugar industry to develop and become profitable within a short time period. In addition, the mills built in the early 1960s were among the most advanced, being steam powered. The arrival of over 100 foreign laborers to work on the plantations began to greatly change the population composition of the region, along with the decline in native population. The Wailuku Sugar Company was established in 1862 and later took over the Waiheʻe Plantation to the north. By 1867, 2,250 acres of land was planted with sugar in Wailuku. Much of the sugarcane cultivation took place in the western portion of Wailuku until 1876 when industry advancements enabled expansion to other dryer areas (Wilcox 1996, MacLennan 1997:102).

In the second half of the 19th century, the sugar industry in Hawai'i greatly expanded as a result of the 1876 Reciprocity Treaty between the U.S. and the Hawaiian Kingdom, which gave

the U.S. market free access to Hawai‘i’s land for sugar and other products. A major player in the Hawaiian sugar industry, Claus Spreckels, a German immigrant to the United States, had first established a major sugar refinery in San Francisco. He initially opposed the 1876 Reciprocity Treaty between the United States and Hawai‘i as he believed it would cause insurmountable competition in the sugar industry. However, in order to keep up with potential competition, Spreckels traveled to Maui in 1878 where he later founded the Hawaiian Commercial & Sugar Company (HC&S). He purchased and leased 40,000 acres of eastern Wailuku, including the Wailuku Commons. After obtaining the Wailuku Commons in 1882, Spreckels gained water and transport rights for his crops, creating a thriving sugar industry and plantation town named for himself–Spreckelsville. HC&S was incorporated in 1884 by Spreckels using $10 million in capital; his sugar empire on Maui included four sugar mills, 35 miles of railway (including equipment), a water reservoir, and a canal system built by a fellow German-American engineer which was highly advanced for its time (Spiekermann 2019:5). Spreckels’ Waihe‘e Ditch was the center of conflict at that time, with the Wailuku Sugar Company objecting that Spreckels did not have a right-of-way through their land or rights to the waters of Waihe‘e Stream. Spreckels eventually lost control of HC&S and a new ditch was constructed. By the 1900s, a complicated system of ditches wove its way through both East and West Maui (Figure 4).

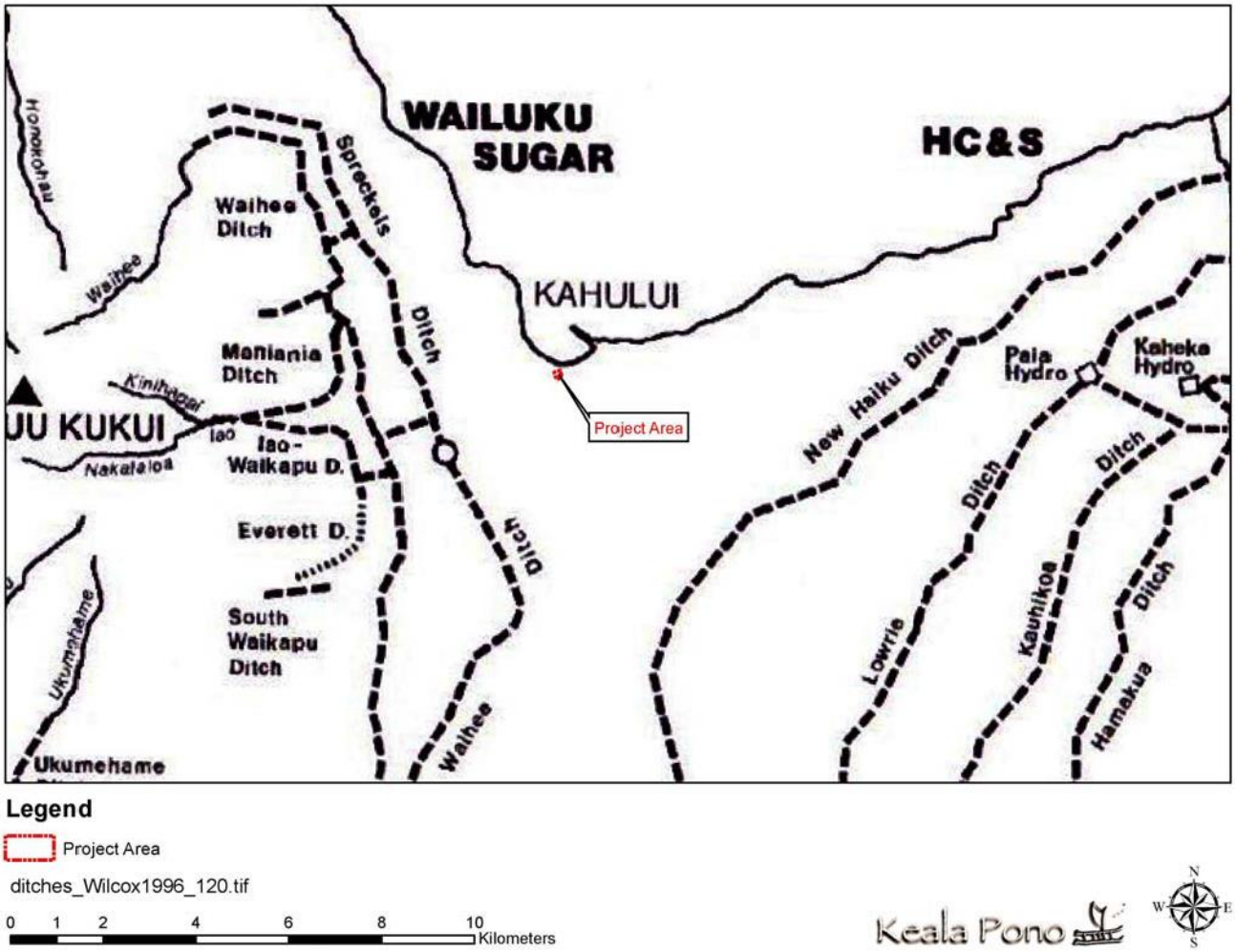

Figure 3 Major sugarcane irrigation ditches on the island of Maui (Wilcox 1996:120 from Keala Pono Archaeological Consulting 2021).

With the rise of the sugar industry in Wailuku, Kahului, and continuing on further east to Spreckelsville and Pāʻia, it was apparent that a railroad was needed to transport sugar to be exported to the U.S. The Kahului Railroad was first organized under the partnership between Thomas H. Hobron, William O. Smith, and William H. Baily. The first section of the railroad that extended from Wailuku to Kahului was completed by 1879. Hobron also operated a general merchandising business on Bay Street in Kahului, which later became the headquarters for the railroad. The railroad became a primary means of transporting all kinds of good and also passengers, including school children, to and from Kahului Harbor to locations from Wailuku in the East to sugar industry settlements growing to the West. Construction began in 1880 of the railroad sections east of Kahului to Pāʻia and Spreckelsville. The three partners then sold the company to Samuel G. Wilder upon completion of the eastern section in 1884. In 1899, the railroad was then sold to HC&S Company–which by then was owned by Henry P. Baldwin and Associates. By 1913, the railroad extended east to the cannery in Hāʻiku. The main railroad terminal in Kahului was expanded in the 1920s to encompass a 219-acre facility. In 1923, a new railroad general office was constructed (today, the general office is located just northeast of the current Project area). By this time, a total of 34 miles of the main line, nine miles of a secondary line, ten steam locomotives and 265 cars were in service. However, the depression of the 1930s and World War II of the 1940s saw a reduction in general service. The gradual introduction of motor busses starting in 1936 largely replaced locomotive transportation service in Kahului and by the end of the 1960s, the railroad had ended all services (Ramsay 1960).

The burgeoning sugar industry in Wailuku and Kahului also contributed to the increased use of Kahului Harbor as a major trade port. According to Burns (1991:47), by 1840, a small jetty may have been located at what is now the Maui Beach Hotel (formerly the Maui Palms Hotel), just north of the Project area. In the 1870s, T.H. Hobron operated the Ka Moi, a schooner that ran between Kahului and Honolulu (Thomas 1983). A small commercial landing was opened in 1879 for the purposes of the sugar trade. Soon thereafter, Spreckels began operating Oceanic Steamship Lines between Kahului and North America out of the Kahului Harbor, making it the main shipping point for sugar from all of the Maui plantations. Samuel Wilder built the first breakwater wall and had part of the harbor dredged in 1904. The dredging fill was used to fill in the areas where the main business section is now located (Burns 1991:48).

The 20th century saw the project area developed into the Maui Community School, and two historic buildings from this era still stand. This Report addresses those buildings. In addition to the historic buildings, a rock and mortar wall, namely Stone and Mortar Wall, Historical Feature No. 1, is known to be located within the project area. The wall dates to 1939 and was constructed with New Deal funding via the Works Progress Administration (WPA).

Māhele Land Tenure

The change in the traditional land tenure system in Hawaiʻi began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki

Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kamaʻāina totaling only about 30,000 acres and recorded in ten large volumes.

In the mid-1900s, the majority of the Wailuku Ahupuaʻa was marked as Crown Land. And in 1872, when Kamehameha V died, his sister Princess Ruth Keʻelikōlani inherited the land. She owned part, while 743.4 acres in the ʻili of Owa in Wailuku was granted to Kamehameha's steward Kuihelani. Princess Ruth eventually sold half of the Crown Lands in 1882 to Claus Spreckels even though he already held a lease for 16,000 acres in Wailuku.

The entirety of the current study area was encompassed by LCA 7713:23, awarded to Princess Victoria Kamāmalu. The LCA constituted 391 acres of the former ʻili of Kula which consisted of lands from Wailuku to the portion of Kahului that borders the bay. Located just south of the current study area, was an area referred to as the Wailuku Commons and designated Crown Lands.

Historic Maps

Historic maps help to paint a picture of Wailuku in years past and illustrate the many changes that have taken place in the region. This section presents a selection of four maps from the 19th and 20th centuries that provide insight to the project area. Note that names are spelled as they are written on each map.

The first map depicts the lands of Wailuku and Kahului by W.D. Alexander in 1881 (Figure 4). No structures are present within the Wailuku vicinity, but buildings can be seen near Kahului Harbor and the Kahului Railroad interchange and yard. The railway from Kahului, west to Wailuku and east to Spreckelsville and Pāʻia, is depicted just north of the current project area.

The next map, drawn in 1885, shows several interesting features in Wailuku (Figure 5). Sand hills are depicted, extending almost as far inland as Waiale Pond. The project area vicinity appears to be within "GRANT 3433 C. SPRECKELS" and "Hawaiian Commercial and Sugar Co." which at the time was owned by Claus Spreckels. The Kahului Railroad is depicted to the north and a trail that runs west to Wailuku is located just north of the project area.

A map by Hugh Howell from 1896 depicts the growing town of Kahului, which is based around the Kahului Railroad (Figure 6). The railroad is depicted heading west toward Wailuku from the Kahului town center. Roads are also depicted extending from Kahului toward Wailuku and heading north along the coastline.

The final map by surveyor James M. Dunn offers a closer look at the project area within the town of Kahului from 1953 (Figure 7). This map shows the project area is bound by Main, Kane, School, and Fourth Streets, with Third Street bisecting the subject lot in half. This map depicts the Kahului town site showing various deeds and boundaries, and indicates that most of the project area was deeded to the Territory of Hawai'i from HC&S Company on December 21, 1925. It also shows that the northeast corner of the subject property was deeded to the Department of Instruction/Correction of the Territory of Hawai'i on September 17, 1908.

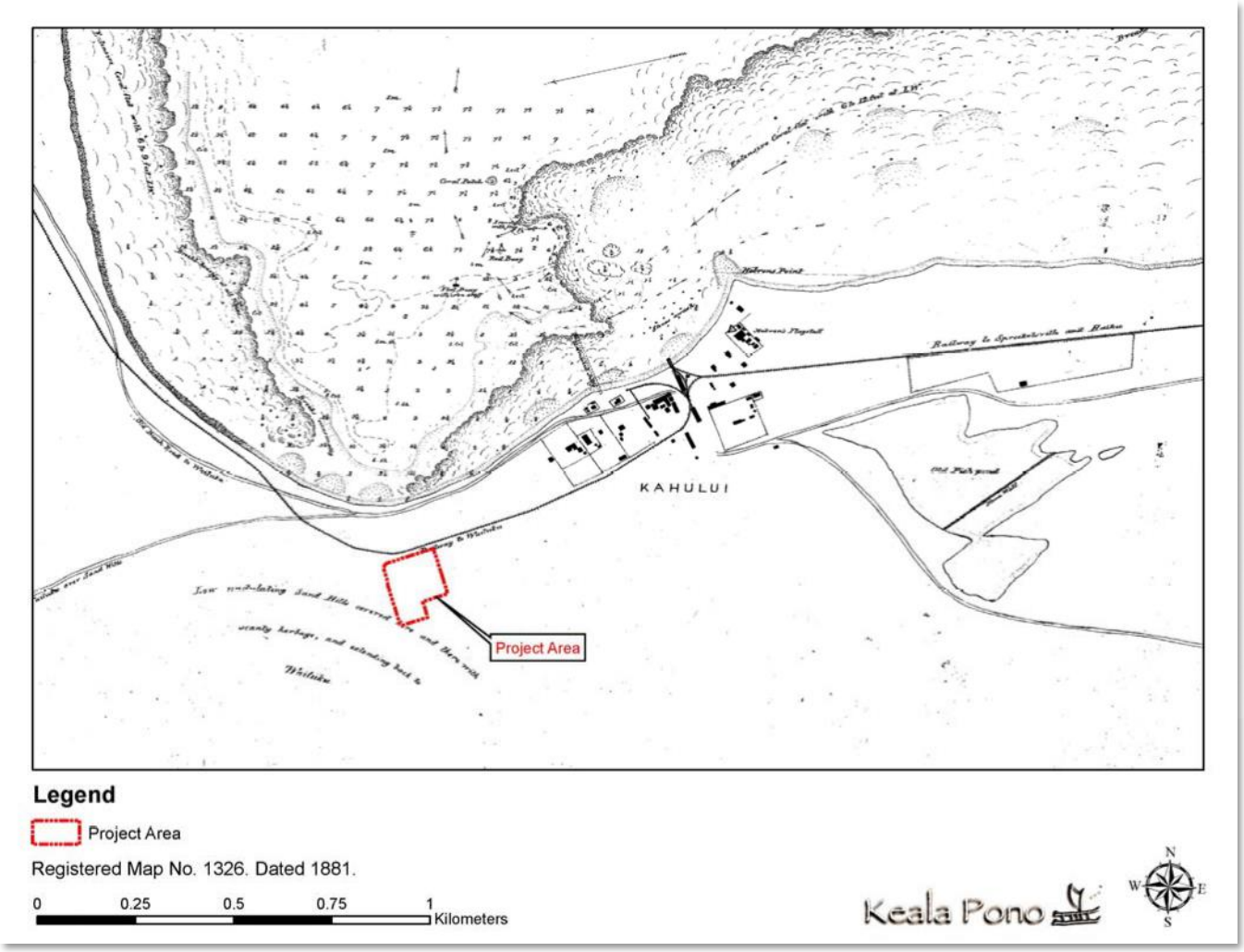

Figure 4 Portion of a map of Wailuku area, including Kahului (Alexander 1881 from Keala Pono Archaeological Consulting 2021).

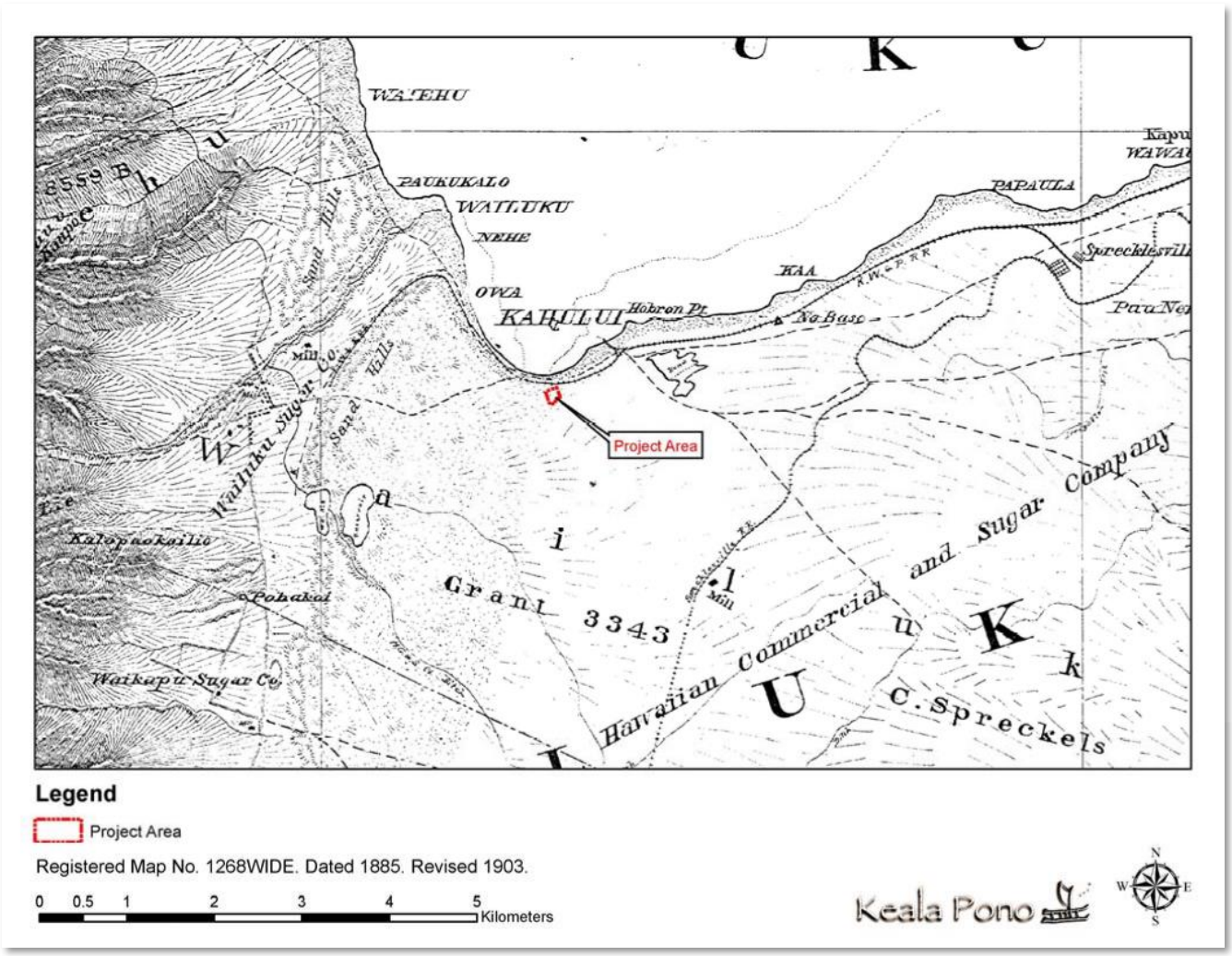

Figure 5 Portion of a map of Maui (Dodge 1885 from Keala Pono Archaeological Consulting 2021).

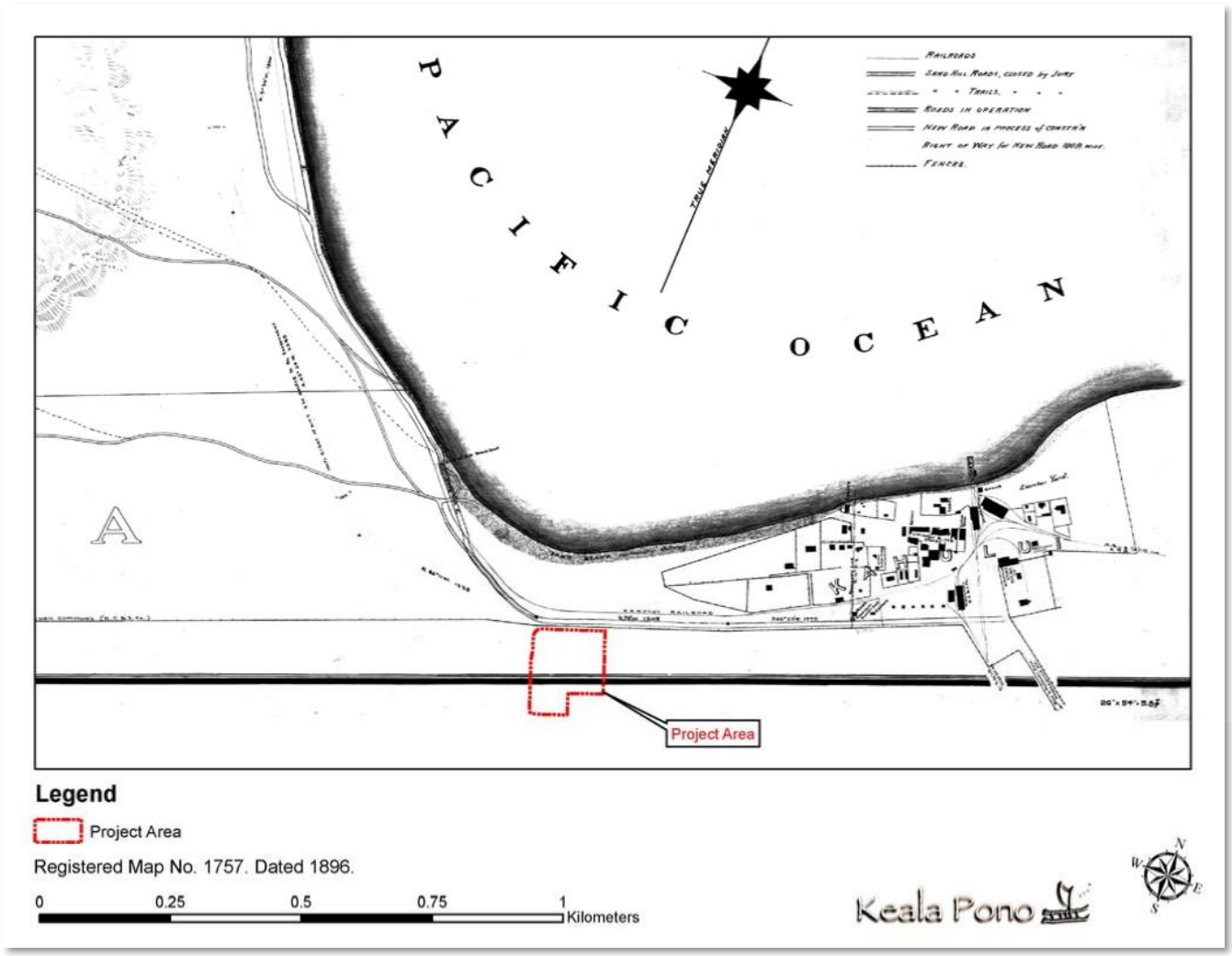

Figure 6 Portion of a map of Kahului and Kahului Harbor (Howell 1896 from Keala Pono Archaeological Consulting 2021).

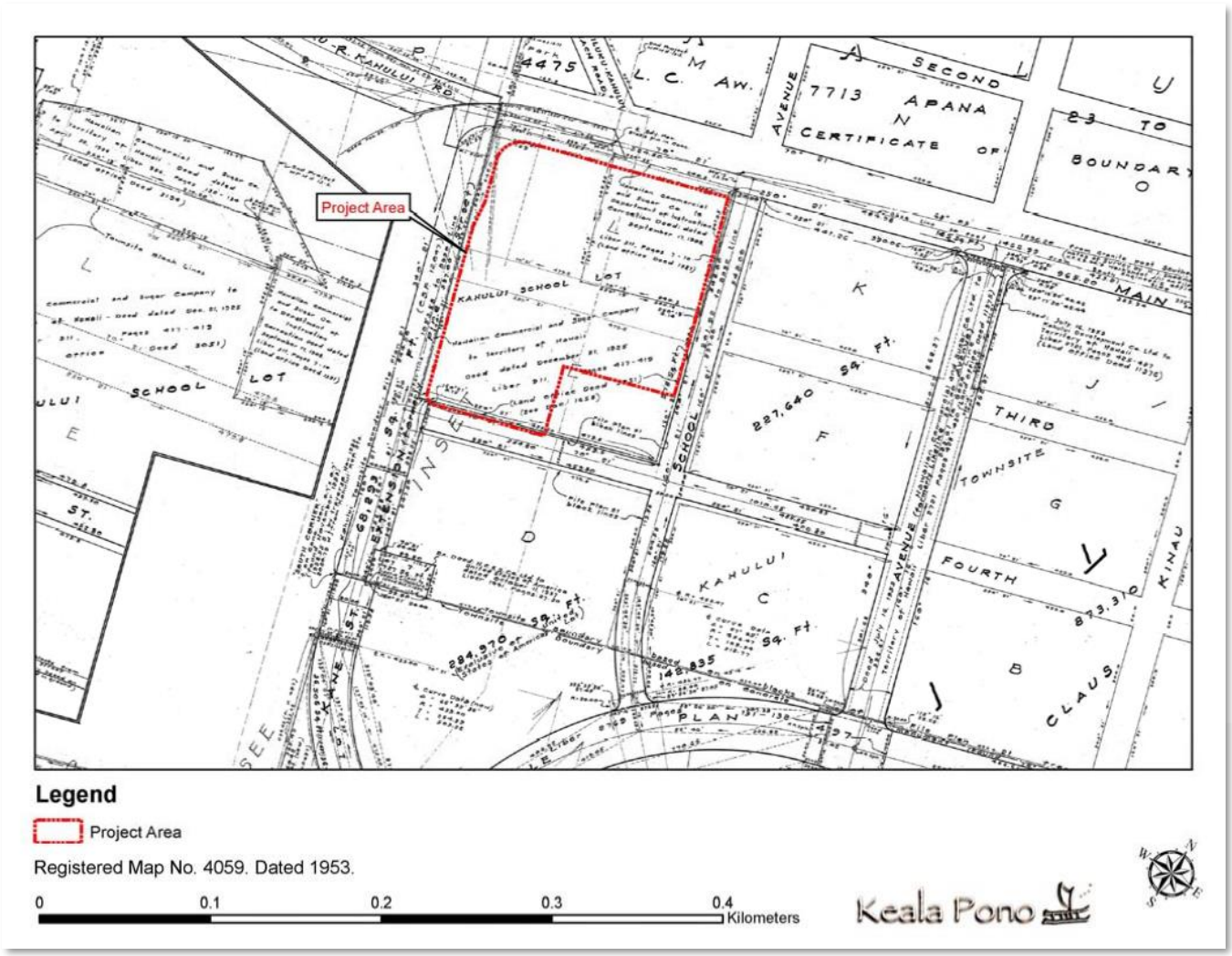

Figure 7 Portion of a map of the town of Kahului with a close up inset of the subject property (Dunn 1953 from Keala Pono Archaeological Consulting 2021).

Kahului School Development

The Kahului School was established in 1900. In 1906 it was a one room school. By the 1922–23 school year it had 275 students that were taught by five teachers. By 1926, elementary schools on Maui were undergoing improvements to their physical plants. That year a concrete schoolhouse was built at Pāʻia, and it was "the policy of the Maui Supervisors to erect permanent concrete buildings in large centers and to use the old wooden buildings…for reconstruction… in rural sections." (Territory of Hawai'i 1928; Maui News 1922; Territory of Hawai'i 1926)

In 1927 a concrete, two story, 15 classroom school building was built at the Kahului campus for grades 1–8. The building had classrooms that were 27' x 30' and it contained an office and two rest rooms. Construction of the building began in mid-May and the building opened in September, about five days after the start of the new school year. The two-story configuration was chosen over another design, with three single-story wings of five classrooms each arranged around a courtyard. Both designs were submitted to the Department of Public Instruction in January 1927 by architect William d'Esmond. The courtyard design (14,500 square feet) was projected to cost $42,500 and the two-story design (12,500 square feet), which was chosen, was projected to cost $39,000. The

1927 building, of plastered concrete, was built by Robert Sano, and featured maple floors and stairs and was "attractive in appearance from without and should suffice for the needs of the town without addition for a considerable number of years to come." At the start of the 1928 school year, Kahului School had an enrolment of 403 students and there was also a teacher's cottage on the campus. The two-story building would provide the main classrooms for Kahului School for over 30 years, until a new campus was built in 1959 at another location. The building would be demolished ca. 1996. (Maui News 1960; Maui News 1927; Territory of Hawai'i 1928; DAGS 1996)

The 1927 two story building had a center section with a gable roof and side sections at the east and west that were lower, with parapeted gable roofs. Windows were typically paired six-over- six-light double-hung sash. Over the front door (facing Main St.) was the inscription "Hale Imi." The English translation of the Hawaiian word "hale" is house or building, and the translation of the verb "imi" is to look, hunt, seek, or search. The design of the 1927 two-story building was very similar to the design of Iao School (date of construction unknown) at Wailuku. (Wright 1974)

The campus of Kahului School in early 1927 (before the two-story classroom building was built) consisted of three small buildings that were sited just northwest of the intersection of School and 3rd streets. The two-story building was built within the 3rd Street right of way, just south of the three buildings. The old classroom building (one of the three), which the 1927 two-story building replaced, was wood frame and at the time stood "between the street [Main St. now Kaahumanu Ave.] and the new concrete structure." The old wood frame classroom building was not slated to stand there long, "it [was] to be demolished and used for the Huelo School [sic], according to county plans." (Maui News 1927)

As of 1945, the Maui Vocational School was located on the same block as Kahului School, adjacent to the southwest. Established in 1932 as the second trade school facility on Maui, the first being Lahainaluna High School, Maui Vocational School began with 5 instructors and 80 students. By 1955 Maui Vocational School had moved off the block to a dedicated campus to the west on Kaahumanu Ave. (Sanborn Fire Insurance Co. Map 1945; Wist 1940)

In the late 1930s the Works Progress Administration (WPA) and Maui County constructed a low stone fence along the Main Street boundary of the campus. In 1939 the campus was landscaped with night blooming cereus and coconut trees, and the construction of concrete walkways between buildings. A young banyan tree was moved from one area of the campus to another. (Maui News 1939)

In 1953 a new, four-room, kindergarten building was built at the Kahului School campus by Y. Yoshimori Contractors for $44,655. The construction included "toilets for each room, an outdoor equipment room, closet, sink, sliding doors, and an outdoor activity lanai" and covered an area of 24' x 176'. (Maui News 1953)

Growing enrollments through the 1930s, post war, and 1950s put increasing pressure on the buildings of the Kahului School campus at Main and South Kane streets. In early 1958, Hawaiian Commercial & Sugar Company (HC&S) gave Maui County 23 acres of land at Lono and Hina avenues for a new school. Groundbreaking for the construction of the new school was held on January 29, 1959 and construction was slated to be completed by the end of the year. Classes opened at the new school in early April 1960; it contained 32 classrooms and could accommodate about 1,000 students. At the time of the new school's construction, the existing campus at Main Street (Kaahumanu St.) had 31 classrooms and handled 989 students. The 1953 kindergarten building (at the Main St. campus) was moved to the new school and had one classroom added to

it. This gave (old) Kahului School 27 classrooms that could accommodate more than 900 students. (Maui News 1957; Maui News 1959)

Although the new school was a replacement for the old campus, the Maui District office of the Department of Public Instruction (DPI) intended to retain the old school and grounds to provide future classroom space. This was because HC&S was scheduled to close some of its plantation villages. The students from these villages, then accommodated at Pāʻia and Kaunoa schools, were expected to move to Kahului with their families. It was anticipated that "several hundred" new students would be registered in the Kahului district for the 1961–62 term, the majority of new students coming from Pāʻia, Puʻunene, and Kaunoa schools. (Maui News 1959; Maui News 1960)

The DPI predictions for the coming years were accurate. In March 1961, enrollment at the new school reached 1,204. On March 20 a new third grade class, taught by Mrs. Helen Hirose, was begun at the old campus. At that time there were 7 classes held at the old campus and 33 at the new campus. The two campuses were still joined under one administration but they would split in April and the old campus would become Lihikai School. (Maui News 1961a; Maui News 1961b)

When Lihikai School (old campus of Kahului School) started the 1961–62 school year it had classes for grades 1–8 and kindergarten, plus instructors for remedial reading and adjustment, and a librarian. The school had undergone renovation of the cafeteria and kitchen, painting, and new fluorescent lighting of the classrooms in the main building. "Although the school plant is undeniably ancient, everything possible has and is being done to see that it is renovated to a point that Lihikai will be a school of pleasant surroundings." (Maui News 1961c)

The 1961 revival of the campus into a grade school did not last for long. In April 1964, ground was broken for another new school campus at Papa Avenue and Maʻalo Street. Reed & Martin International was the contractor for the $987,000 project, which was occupied by early June 1965 and named Lihikai School. Students from the former Lihikai School (old campus of Kahului School at Main St.) were moved into the new facility. Two buildings were moved off the old campus; a four-classroom building was moved to Waiheʻe School and an office-library building was moved to Kihei School. (Maui News 1964; Maui News 1965)

In August 1968 the two-story concrete school building (1927) at the old campus was slated to be converted into dormitory space for students of Maui Community College (MCC). The conversion would cost $51,000 and include furnishings and was expected to be completed by the opening of the 1969 Spring Semester to serve students from outlying areas of the county (Lanaʻi, Molokaʻi, Hana) on a priority basis. MCC enrollment for September 1968 was projected to reach 750, up from 565 from the previous year. (Maui News 1968)

The former campus of Kahului School began to be dismantled after 1996 when the 1927 two story classroom building and three small storage buildings were taken down. From about 1970 to the present the former campus was used by Maui Economic Opportunity, Inc. as a base yard for buses. (DAGS 1996)

VI. FIELD METHODS

On June 7 and 8, 2021, Edward Yarbrough, sole proprietor and senior architectural historian for Yarbrough Architectural Resources, conducted a site visit, taking photographs and notes of the former Kahului School property. Yarbrough had access to the stone and mortar wall, Administrative Building's exterior and limited areas of its interior, to the exterior of the Utility Shed, but very limited access to the Cafeteria Building. The Cafeteria Building is in a state of collapse and is fenced off due to safety and liability concerns. The Cafeteria Building's access points were limited to the views seen in Attachment B. - Photographic Record. All photography was conducted on June 7, 2021.

VII. PHYSICAL DESCRIPTION OF HISTORIC FEATURES

Architectural Resources



Figure 8 Historic Features located within the subject property (Aerial view from Google Earth 2020).

Stone and Mortar Wall, Historic Feature No. 1

The *Archaeological Inventory Survey* (Keala Pono Archaeological 2021) refers to a rock and mortar wall, also referred to as a stone and mortar wall in this Report, as “Site 1.” Site 1, shown as Historic Feature number 1. in Figure 9, consists of a wall demarcating the northern property boundary that curves around the corner and frontages of W. Ka’ahumanu Avenue and Kane Street. The wall is composed of rounded basalt cobbles and stones set in mortar [See Attachment B – Photographic Record, Stone and Mortar Wall, Civilian Conservation Corps (CCC)]. The New Deal’s Works Progress Administration (WPA) funded the CCC and other programs to create employment and to improve public infrastructure following the Great Depression. An embossed masonry unit on the outside curve of the wall reads “WPA 1939” (Figure 8).



Figure 9 Stone and mortar wall with embossed date of construction, "WPA 1939." (Photograph courtesy of Keala Pono Archaeological Consulting 2021)

The longest section of the wall fronts W. Ka‘ahumanu Avenue and measures 140 m long and approximately 70 cm high. See Attachment B – Photographic Record, subsection Stone and Mortar Wall, Civilian Conservation Corps. There are three gaps in the wall, roughly 1 m wide each. The central gap exhibits a cement pad on the ground surface. The west and east ends of this northern section curve so that the wall is extended to the south on both sides. The extension on the west end of the wall runs for 21 m to the south and steps down in height from 100 to 50 cm and then slopes down toward the south from 50 to 30 cm high. There are remnants of a chain-link fence in this section. On the east end of the wall there is a 1.6 m-long extension that runs to the south. Here the wall is approximately 60 cm high.

The wall exhibits two placards indicating a construction date of 1939 with the inscription “W.P.A.,” referring to the Works Progress Administration. The W.P.A. or WPA was a widespread infrastructure and employment program established in 1935 as part of the New Deal, which aimed at restoring the U.S. economy after the Great Depression. The WPA initiated and funded public works and arts projects throughout the U.S., including many in Hawai‘i. Other projects around the State include

bridges, canals, parks, retaining walls, pavilions, as well as military, school, and airport improvements.

The wall is in good condition, although it has some sections of missing rocks and other segments that have quite clearly undergone significant repairs. The chainlink portion along Kane Street is partially collapsed and has significant oxidation to support poles and fencing matrix. This wall is historic in age and functioned as a partial boundary for the property. It is representative of basalt wall construction during the Territorial era in Hawai‘i and is an important vestige of the effort to restore the economy after the Great Depression.

Administration Building, Historic Feature No. 2

The largest building remaining on the property is a school constructed in 1920. See Figure 9 and Attachment B – Photographic Record, Administration Building. Referred to as the Administration Building in this report, the building is an H-plan with a front extension under one complex hip roof. The front extension is separated from the H-plan by a breezeway hall. The wood building clad in clapboard, has broad eaves with prominent rafters.

The building’s foundation is a concrete pad with concrete lower perimeter walls that rise approximately 2 feet above grade. The west wing of the building has a raised loading dock, fewer and smaller windows, and doors comprised of vertically set tongue-and-groove boards for vehicular egress while other elevations have pedestrian doors and fenestration suitable for classrooms. Windows throughout the building are wood-frame but some may be replacements of earlier windows. Window types include tripartite glazing stacked vertically with operable or inoperable central awning sashes and tripartite glazing stacked vertically with similarly fixed top and bottom lights but larger jalousie windows in the center.

The building’s internal breezeway hall is secured by wooden slat bars and secure entry gates at each end, one at either side of the central façade’s extension. Both entry gates face north toward breezes coming off Kahului Harbor. Large classrooms and administrative offices with very high ceilings, approximately 12 feet in height, create interior spaces with ample air circulation that is amplified by the orientation of the internal breezeway. The entry porches are supported by full-height posts with chamfered corners and prominent curved brackets. Each porch has engaged posts at each end and a central post.

The rear elevation of the building is lined with large windows facing a paved parking area and Vevau Street. The rear used to form a courtyard, possibly a playground, between the long wall of the Administration Building and the now-demolished Building E, constructed in 1939.

The character-defining features of the Administration Building are its:

a) Complex plan and commensurate hip and gable-on-hip roofline;
b) Broad eaves with fretted or stepped rafter tails;
c) High single-story edifice and internal breezeway for improved air circulation;
d) Qualify craftsmanship and materials, including prominent entry posts with chamfered corners and shaped brackets;
e) Relieved, sharp-edged clapboard creating texture and shadow; and,
f) Large-scale fenestration for natural lighting of classrooms and administrative offices.

The Administration Building conveys design quality and construction and materials representative of its construction in 1920. The finished carpentry and qualify lumber reflect the importance of the public school to the community that it served and the statewide investment in public education at the time of its construction.

Cafeteria Building, Historic Feature No. 3

The Cafeteria Building's post on concrete footing foundations and roof are in a state of collapse. Many of the walls, both exterior and interior, are partially or completely collapsed as well. The single-story, wood-frame building has a T-plan and is elevated approximately two feet above grade on wood posts supported laterally by brackets tied to joists and seated on concrete masonry unit footings. The walls are comprised of 4 inch wide vertical boards.

A pair of contemporary clerestory black aluminum sliding windows are set on the west elevation. The building's deterioration is so advanced that it is unable to convey any historical significance that it may have had as a feature or contributed to the property as a whole.

Utility Shed, Historic Feature No. 4

The Utility Shed is situated between the Administrative and Cafeteria buildings. Set on three elongated concrete footings rising 2.5 feet above grade, the Utility Shed appears to house electrical panels that can be accessed from both sides through two sets of metal double doors on each side. At the narrow ends, the shed is clad in vertical boards. The utilitarian structure is ubiquitous and of uncertain construction date.

VIII. SIGNIFICANCE EVALUATION

This evaluation of the former Kahului School property, namely TMK: (2) 3-7-004:003 (por.), is designed to comply with HRS Chapter 6E-8 and related administrative rules for an Intensive Level Survey and, if necessary in the future, to satisfy historic property analysis pursuant to Section 106. The recommendations in this evaluation are conducted as an architectural or built-environment consideration of significance but do not reflect archaeological data that may arise at a later time when a Project may require excavation or other activities that may impact buried resources. However, this evaluation addresses the stone and mortar wall and concurs with recommendations from Keala Pono Archaeological Consulting's *Archaeological Inventory Survey* drafted in June 2021 as a tandem cultural resources technical study for the same Project's environmental process. The property includes four (4) above-ground, historic-era features that present differing historical value or significance and different states of historical integrity:

1. Stone and Mortar Wall;
2. Administrative Building;
3. Cafeteria Building;
4. Utility Shed.

Under each of the parallel NRHP and HRHP criteria, the property is addressed as a whole. However, each of the four features are analyzed under each criterion as contributing or non-contributing elements. Elements that are found to contribute to the historical significance of the property are recommended as character-defining features that should be afforded historic preservation measures under the limited requirements of a given regulatory framework.

In case federal permitting or funding are elicited by the Project in the future, Section 106 compliance may be required. Therefore, this HRER, a technical study, is designed to inform federal, state, or dual regulatory processes. Section 106 considers properties eligible to the NRHP to be "historic properties," similar to the HRS Chapter 6E-8 consideration of "historic resources." Note that the HRHP also has a Criterion E consideration that is addressed without an NRHP-parallel criterion. Historic properties and resources are environmental resources and subject to certain processes and protections under the law. For a property to be a historic property or historic resource it must first qualify as significant under at least one of the NRHP or HRHP criteria and retain the historical integrity to convey that significance. Therefore, the following two sections are divided into application of the first four significance criteria for the NRHP and then for the HRHP including Criterion "e," and then followed by a consideration of the seven aspects of historical integrity.

Application of the NRHP Significance Criteria

Eligibility of a property under any one or more criteria of the NRHP qualifies the property to limited historic preservation considerations and protections under HRS Chapter 6E-8 and Section 106. The four criteria of the NRHP are recommended below. However, only the lead-federal agency with concurrence from SHPD can make an actual *determination* of historical significance under Section 106:

NRHP Criterion A – ***Recommend Eligibility***

To qualify for listing under Criterion A of the NRHP, a property must be identified with an important event in history. Based on the review of historical documentation of the significance of the Kahului School, the educational facility was central to community life and development in the early 20th Century for Kahului and central Maui communities connected to it through the Kahului Railroad. The property conveys the local significance of education in early-20th Century Kahului and Maui through the devotion of quality construction and design for the Administration Building and dedication of durable design of the stone and mortar wall. Further, the association with the Kahului Railroad and its local stop for transporting school children to and from Kahului School evidences the property's importance to community life throughout the 20th Century. The Cafeteria Building shares this significance, however, as discussed in the following section, lacks the historic integrity to continue to convey that significance. The Stone and Mortar Wall with its embossed "WPA 1939" is important evidence of the economic recovery and full employment goals in the United States through New Deal programs funded by the WPA and their efficacy in Maui. The Utility Shed does not contribute to the property's historical significance. The Administrative Building and Stone and Mortar Wall reflect the importance of the public school to the community and the WPA to economic recovery in Hawaii, lending the property historical significance as a whole. Therefore, this property is recommended as eligible under Criterion A.

NRHP Criterion B – *Recommend Ineligibility*

To qualify for listing under Criterion B of the NRHP, a property must be significantly identified with a person important in history. The Kahului School does not appear to be associated with any individual who rises to exceptional significance within the community. This recommendation considers the property's constituent features. Therefore, this property is recommended as ineligible under NRHP Criterion B.

NRHP Criterion C – ***Recommend Eligibility***

To qualify for listing under Criterion C of the NRHP, a resource must be identified with important movements in, or masters of, design and construction or as representative of a historically significant architectural or engineering type. This property's Administrative Building is illustrative of quality design and construction. The internal breezeway and dedication of shaped and large-scale lumber convey the school's significance, an architectural representation of the importance of the building's function to the community it was built to serve. Similarly, the basalt stone, curved wall was built with durability and quality of component parts; it is significant for its construction method and represents a rare and important wall type in the region. Neither the Cafeteria Building nor the Utility Shed contribute to this aspect of the property's significance. Therefore, this property is recommended as eligible under NRHP Criterion C.

NRHP Criterion D – *Recommend Ineligibility with caveat*

To qualify for listing under Criterion D of the NRHP, a property must have yielded or be likely to yield information important to prehistory or history. The four historic-era features discussed are not likely to yield further information and represent well-understood construction types. However, the *Archaeological Inventory Survey* (Keala Pono Archaeological Consulting 2021) addresses the property as a whole and beyond the scope of this report. Therefore, this report simply addresses the property relative to the four aforementioned features and with this consideration recommends the property is ineligible under NRHP Criterion D.

Application of the HRHP Significance Criteria

HRHP Criterion "a" – ***Recommend Eligibility***

To qualify for listing under Criterion "a" of the HRHP, a property must be identified with an important event in history. Based on the review of historical documentation of the significance of the Kahului School, the educational facility was central to community life and development in the early 20th Century for Kahului and central Maui communities connected to it through the Kahului Railroad. The property conveys the local significance of education in early-20th Century Kahului and Maui through the devotion of quality construction and design for the Administration Building and dedication of durable design of the stone and mortar wall. Further, the association with the Kahului Railroad and its local stop for transporting school children to and from Kahului School evidences the property's importance to community life throughout the 20th Century. The Cafeteria Building shares this significance, however, as discussed in the following section, lacks the historic integrity to continue to convey that significance. The Stone and Mortar Wall with its embossed "WPA 1939" is important evidence of the economic recovery and full employment goals in the United States through New Deal programs funded by the WPA and their efficacy in Maui. The Utility Shed does not contribute to the property's historical significance. The Administrative Building and Stone and Mortar Wall reflect the importance of the public school to the community and the WPA to economic recovery in Hawaii, lending the property historical significance as a whole. Therefore, this property is recommended as eligible under Criterion "a."

HRHP Criterion "b" – *Recommend Ineligibility*

To qualify for listing under Criterion "b" of the HRHP, a property must be significantly identified with a person important in history. The Kahului School does not appear to be associated with any individual who rises to exceptional significance within the community. This recommendation considers the property's constituent features. Therefore, this property is recommended as ineligible under HRHP Criterion "b."

HRHP Criterion "c" – ***Recommend Eligibility***

To qualify for listing under Criterion "c" of the HRHP, a resource must be identified with important movements in, or masters of, design and construction or as representative of a historically significant architectural or engineering type. This property's Administrative Building is illustrative of quality design and construction. The internal breezeway and dedication of shaped and large-scale lumber convey the school's significance, an architectural representation of the importance of the building's function to the community it was built to serve. Similarly, the basalt stone, curved wall was built with durability and quality of component parts; its construction method represents a rare and important wall type in the region. Neither the Cafeteria Building nor the Utility Shed contribute to this aspect of the property's significance. The design and construction of the Administrative Building and Stone and Mortar Wall are character-defining features that lend the property historical significance as a whole. Therefore, this property is recommended as eligible under HRHP Criterion "c."

HRHP Criterion "d" – *Recommend Ineligibility with caveat*

To qualify for listing under Criterion "d" of the HRHP, a property must have yielded or be likely to yield information important to prehistory or history. The four historic-era features discussed are not likely to yield further information and represent well-understood construction types. However, the *Archaeological Inventory Survey* (Keala Pono Archaeological Consulting 2021) addresses the property as a whole and beyond the scope

of this Report. Therefore, this report simply addresses the property relative to the four aforementioned built features and with this consideration recommends the property is ineligible under HRHP Criterion “d.”

HRHP Criterion “e” – Recommend Ineligibility

The site is not significant under criterion e because it is not important to a specific ethnic group and is not associated with cultural practices. A cultural impact assessment for the property did identify the cultural practice of gathering plumeria from the project area, according to the *Archaeological Inventory Survey* conducted by Keala Pono Archaeological Consulting under the auspices of the same Project. However, neither the wall nor the buildings on the property are associated with this practice. While portions of the wall will be impacted by construction, parts of the wall will be preserved in place.

Historical Integrity Assessment

The Department of Interior, National Park Service recognizes seven aspects of historical integrity, that of location, setting, design, workmanship, materials, feeling, and association. The subject property as a whole retains sufficient historical integrity in the Administration Building and Stone and Mortar Wall to continue to convey historical significance under criteria A and C of the NRHP and under criteria “a” and “d” of the HRHP. The Cafeteria Building is in too advanced a state of decay and collapse to convey its significance or to contribute to the significance of the property as a whole. The Utility Shed does not have historical significance nor contribute to the property’s significance and, therefore, does not have historical integrity to retain or lose. The Administrative Building and the Stone and Mortar Wall are character-defining features of the Kahului School property and retain historical integrity of location, setting, design, workmanship, materials, feeling, and association. Due to the existing condition of the Administrative Building and the Stone and Mortar Wall, this property as a whole retains sufficient historical integrity to convey its significance

IX. CONCLUSIONS AND RECOMMENDATIONS

A cultural resources field investigation was conducted of the proposed Project area on June 7 and 8, 2021 by Edward Yarbrough, a qualified architectural historian. As previously discussed in Section IV, this cultural resource inventory was conducted to address the potential historic property in preparation for Project compliance with HRS Chapter 6E-8 and, if required at a later stage, to satisfy Section 106 (36 CFR Part 800.4 Identification of historic properties).

This Report recommends that the former Kahului School, as an architectural resource, is likely to be determined to be a historic resource pursuant to HRS Chapter 6E-8 by the State of Hawai'i and a historic property for purposes of Section 106 compliance by a potential federal lead-agency.

The subject property appears to convey the historical significance of educational development in 20th Century Kahului and Maui and the role of WPA and New Deal investment in the economically devastated economy of the United States in the 1930s, satisfying the thresholds set by Criterion A of the NRHP/HRHP. Through the Administration Building and Stone and Mortar Wall features, the property retains sufficient historic integrity to continue to convey that significance. In addition, the Administration Building conveys design quality and construction and materials representative of its construction in 1920. The 1939 Stone and Mortar Wall also is representative of the quality of construction typically found in WPA and New Deal infrastructure.

The Project involves the demolition of existing structures and partial removal of the WPA-era Stone and Mortar Wall. The Administrative Building and the Stone and Mortar Wall are character-defining features of the historically significant property. The proposed effect for the Administrative Building and the Stone and Mortal Wall is "Effect, with proposed mitigation commitments" since the work has the potential to affect the significant historic property.

The mitigation agreements shall be made in consultation with the SHPD. The proposed mitigation measure for the Administrative Building would be an architectural recordation. For the Stone and Mortar Wall, design alternatives should be explored to minimize impacts to the extent possible and the remainder of the wall should be preserved.

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1939 "Fujita Gets School Job in Kahului." April 5, 1939.

1953 "Kindergarten at Kahului School." April 11, 1953.

1959 "New Kahului School." May 9, 1959.

1960 “DPI Needs Old School in Kahului.” March 6, 1960.

1961a “Enrollment at Kahului Hits 1,204.” March 18, 1961.

1961b “Old School Designated as Lihikai.” April 29, 1961.

1961c “Lihikai is New in More Than Name.” September 2, 1961.

1964 “Groundbreaking Rites Saturday fro New School.” April 15, 1964.

1965 “Moving Okayed for 4-Room School Unit.” June 9, 1965.

1968 “Old Lihikai School to Become New Maui Community College Dormitory.” August 17, 1968.

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ATTACHMENT A. – PREPARER'S RESUME

Yarbrough Architectural Resources

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Sr Architectural Historian | Cultural Resources Manager
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PROFESSIONAL PROFILE

Edward Yarbrough is an architectural historian with 30-years of experience in historical and architectural evaluation, survey, quality assurance to establish a responsive process, quality control of technical studies (QA/QC), and analysis for environmental documents. Yarbrough's related skills include survey, National Historic Preservation Act and California Environmental Quality Act evaluations, impact analysis, findings of effect, resolution of adverse effects, treatment plan development and implementation, preservation policy, and agreement document development.

Yarbrough meets the Secretary of the Interior Standards (36 CFR 61) as a Qualified Architectural Historian. He developed regulatory compliance programs, technical and compliance documentation, interpretive text, and plans and agreements for public utilities and planning departments, NPS, USACE, HUD, The Presidio Trust, affordable housing and other developers, school districts, universities, and dozens of other federal, state, territorial, county and civic government agencies.

EDUCATION

M.S., Historic Preservation, School of Architecture
University of Oregon, 1996
B.A., Classical Architecture
University of California, Berkeley, 1989

California Preservation Foundation
Preservation Design Award for Historical Documentation
Recipient 2016

EXPERIENCE

- **Downtown Reconnaissance Survey, Town of Fairfax. 2020.** Conduct reconnaissance survey to assist Town planning including development of Objective Design Development Standards with County of Marin in response to recent California Senate Bill 35 objectivity requirements.
- **Upper York Creek Dam Removal, Historic American Engineering Record (HAER), City of St. Helena. 2020.** Complete, submit archival HAER of 1900/1935 dam to the NPS and Library of Congress.
- **Bolinas Lagoon Wye Wetland Project, Marin Open Space District & Golden Gate National Park Conservancy. Bolinas. 2020.** Section 106 for Army Corps & CEQA compliance, cultural landscape study.
- **Sulphur Creek Fish Passage Improvement, Napa Regional Conservation District & WRA. St. Helena. 2020.** Evaluate and develop protection measures for early 20th-C. caste-in-place bridge.
- **Old Oliver Brothers Salt Works, U-Haul. Hayward. 2020.** Bring Army Corps' Section 106 & City's CEQA processes into alignment; develop Built Environment Treatment Plan to minimize adverse effect (Section 106) and mitigate significant impact (CEQA).
- **Berkeley Pier: University, Marina, Spinnaker Improvement Project, City of Berkeley & NCE. 2019.** CEQA analysis of Berkeley Pier, led by City of Berkeley Public Works & Dept. of Planning & Development
- **Golden Gate National Parks Conservancy, Crissy Field Next Project, San Francisco. 2018-2022.** Section 106 for highly scrutinized redesign of SF's iconic Crissy Field at the northern beach of the Presidio of SF, avoiding or resolving adverse effects to the Presidio of SF Natl Hist. Landmark District.
- **HABS Photography of Opae'ula 15 Reservoir, Kamehameha Schools, Hale'iwa, Oahu, Hawai'i. 2017.** Develop Physical Description section and Record of Photography following the Historic American Engineering Record (HAER) guidelines.
- **Sacramento Housing and Redevelopment Agency & NCE, Arden Way Affordable Housing Project. 2019.** Evaluated and considered effects under Section 106 of the National Historic Preservation Act (Section 106), led by HUD, and pursuant to CEQA, led by City of Sacramento.
- **Los Angeles County Dept. of Public Works (LACDPW), Willow Street Invert Access Ramps. 2019.** Evaluation, effects under Section 106 for USACE, and pursuant to CEQA for segment of the LA River.
- **Placer County Government Center & Mercy Housing Auburn North. 2019.** DeWitt Hospital Historic District, Section 106 led by HUD, pursuant to CEQA for Placer Co. Planning Services Division.

- **Town of Portola Valley & Thomas Worth, Friedman McCubbin Law Group LLP of San Francisco. 2019.** *Historic Resource Evaluation* for Bill & Jean Lane Estate, founders of *Sunset Magazine* pursuant to CEQA and local Historic Resources Element (GMP) and related ordinances.
- **Canyon Tunnel/Kirkwood Powerhouse & Penstock HRE and Holm Powerhouse and Penstock HRE— San Francisco Public Utilities Commission (SFPUC), Hetch-Hetchy, Moccasin, California. 2016.** Lead author of two Historic Resource Evaluations (HRE) peer-reviewed by JRP Consulting and SFPUC cultural resources staff and approved.
- **San Gabriel Mission Historic American Building Survey (HABS) Update & Condition Assessment—Altamont Corridor Express, Los Angeles, California. 2014.** Record and prevent damage to the 18th- and early 19th-Century Arcángel San Gabriel Mission.
- **Central Villages, Guam Historical Architecture Survey, Part 1 of 2. – National Park Service, Pacific West Regional Office & Government of Guam, Guam Historic Resources Division, Guam. 2017/2019.** Survey and co-authored Central Villages Guam Historical Architecture Survey, Part 1 of 2.
- **Sacramento Transportation Department, Sacramento Intermodal Transit Facility Track Relocation Project Environmental Documents, Depot Architectural Guidelines & HABS Report. 2009–2012.** Supported and lead broad Section 106 and CEQA analyses and mitigation implementation for improvements to the Sacramento Railyards and the Sacramento Depot and Platforms.
- **Marin Municipal Water District, Golden Gate National Parks Conservancy & Golden Gate National Recreation Area. West Peak Restoration Project (One Tam). 2019.** CEQA analysis and Section 106 update and amendment of 1995 EA for Mill Valley Air Force Station atop Mt. Tamalpais.
- **US-80/Central Avenue Local Road Improvement Project, City of Richmond. 2019.** Caltrans local assistance improvements requiring CEQA and Section 106 review.
- **Dunsmuir Trail, Chabot Lake Regional Park, East Bay Regional Park District, Oakland & San Leandro, California. 2018.** CEQA/Section 106 analysis of new trail with CCC camp structures.
- **Kamehameha Heights Reconnaissance Survey, Water System Improvement Project, Honolulu Board of Water Supply, Oahu, Hawai'i 2018.** Reconnaissance survey 315 properties,2- bridges.
- **San Francisco County Transportation Authority, Presidio Parkway Project. 2014–2016**. Project Manager/Section 106 Compliance Panelist: Serving as treatment oversight panel representative for SFCTA overseeing compliance with the cultural resources' laws.
- **San Francisco County Transportation Authority, Doyle Drive Replacement Project. 2008-2014.** PM/Architectural Historian for 115-acre Historic American Landscape Survey – HALS-CA-9, six Historic American Building Surveys – HABS, and two Historic American Engineering Records – HAER. Authored 88 Condition Assessments, including Palace of Fine Arts, for Presidio of SF NHL.
- **Main Post Cultural Resources Consultation—The Presidio Trust, San Francisco, California. 2011–2012.** Wrote two HABS reports for two buildings as mitigation measures at the Main Post Master.
- **City and County of San Francisco Public Works & Planning departments, Better Market Street. 2015–2016**. Redesign of the City's grand boulevard CEQA, led by City, and Section 106, led by FTA.
- **HABS Photography for Flag Circle Tennis/Basketball Court and Road, Nimitz Hill, U. S. Naval Base, Guam 2016.** HALS-format, archival photographs and Architectural History Assessment for Fleet Admiral Chester Nimitz and senior staff of Pacific Fleet, constructed in 1945.
- **Menlo Park Planning, Stanford University & SRI International. Campus Update. 2015.** CEQA analysis for master plan update.
- **City of San Mateo, Central Park Improvement Project. 2016**. Evaluated key resources in National Register-eligible Central Park as potential contributors to the historic district's significance under CEQA.
- **Rogers Ranch, Pacific Gas & Electric, Point Reyes National Seashore, California. 2016.** Assess effects to National Historic Landmark District from new utility development.
- **Bridge Demolition over East Canal, Pacific Gas & Electric, Bakersfield, California. 2016.** Record canal segment with bridge for a PGE Cultural Resources Constraints Report prior to demolition.
- **Evergreen Mabury Project, Pacific Gas & Electric, Milpitas and San Jose, California. 2016.** Record and evaluate two substations as potential historic resources.
- **Black Butte Dam Erosion Control Project, Section 106 Inventory Report. Orland, California. 2016.** With Army Corps of Engineers federal as lead agency, evaluated the 1958 dam complex as a potential historic property.

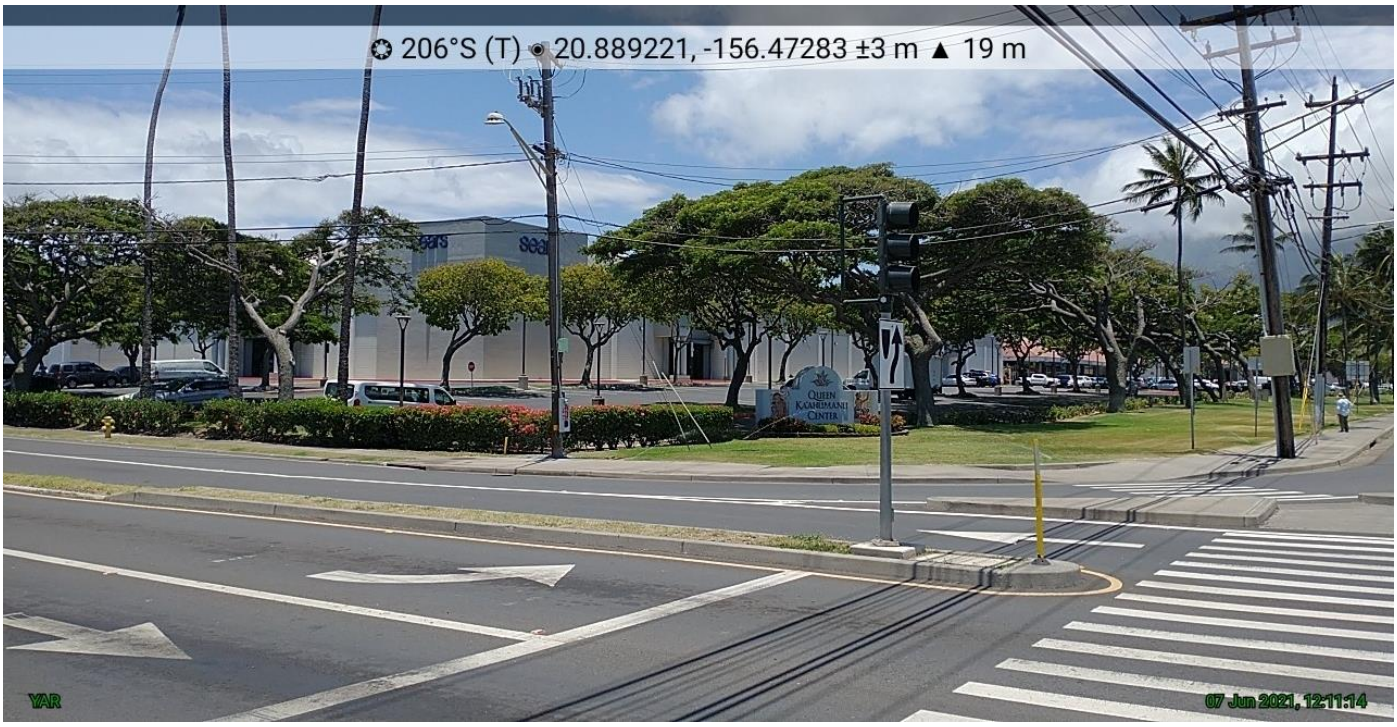
ATTACHMENT B. – PHOTOGRAPHIC RECORD

(June 7, 2021)

STONE AND MORTAR WALL, HISTORICAL FEATURE NO. 1




238°SW (T) • 20.889178, -156.472522 ±3 m ▲ 17 m
sears
YAR
07 Jun 2021, 12:09:48


206°S (T) • 20.889221, -156.47283 ±3 m ▲ 19 m
YAR
07 Jun 2021, 12:11:14


320°NW (T) • 20.889224, -156.472829 ±3 m ▲ 20 m
YAR
07 Jun 2021, 12:11:23


128°SE (T) • 20.889228, -156.472838 ±3 m ▲ 19 m
YAR
07 Jun 2021, 12:11:32


88°E (T) • 20.889228, -156.472835 ±3 m ▲ 18 m
YAR
07 Jun 2021, 12:11:40


22°N (T) 20.889053, -156.472734 ±3 m ▲ 20 m
YAR
07 Jun 2021, 12:12:26


147°SE (T) 20.888983, -156.472698 ±3 m 19 m
YAR
07 Jun 2021, 12:12:59


90°E (T) 20.888559, -156.471947 ±3 m ▲ 19 m
Inc.
RANSP ATION DEPT.
YAR
07 Jun 2021, 12:16:01


18°N (T) 20.888741, -156.471996 ±3 m ▲ 18 m
YAR
07 Jun 2021, 12:14:49


331°NW (T) ◉ 20.888696, -156.471997 ±3 m ▲ 18 m
NO LOITERING NO TRESPASSING
YAR
07 Jun 2021, 12:15:11

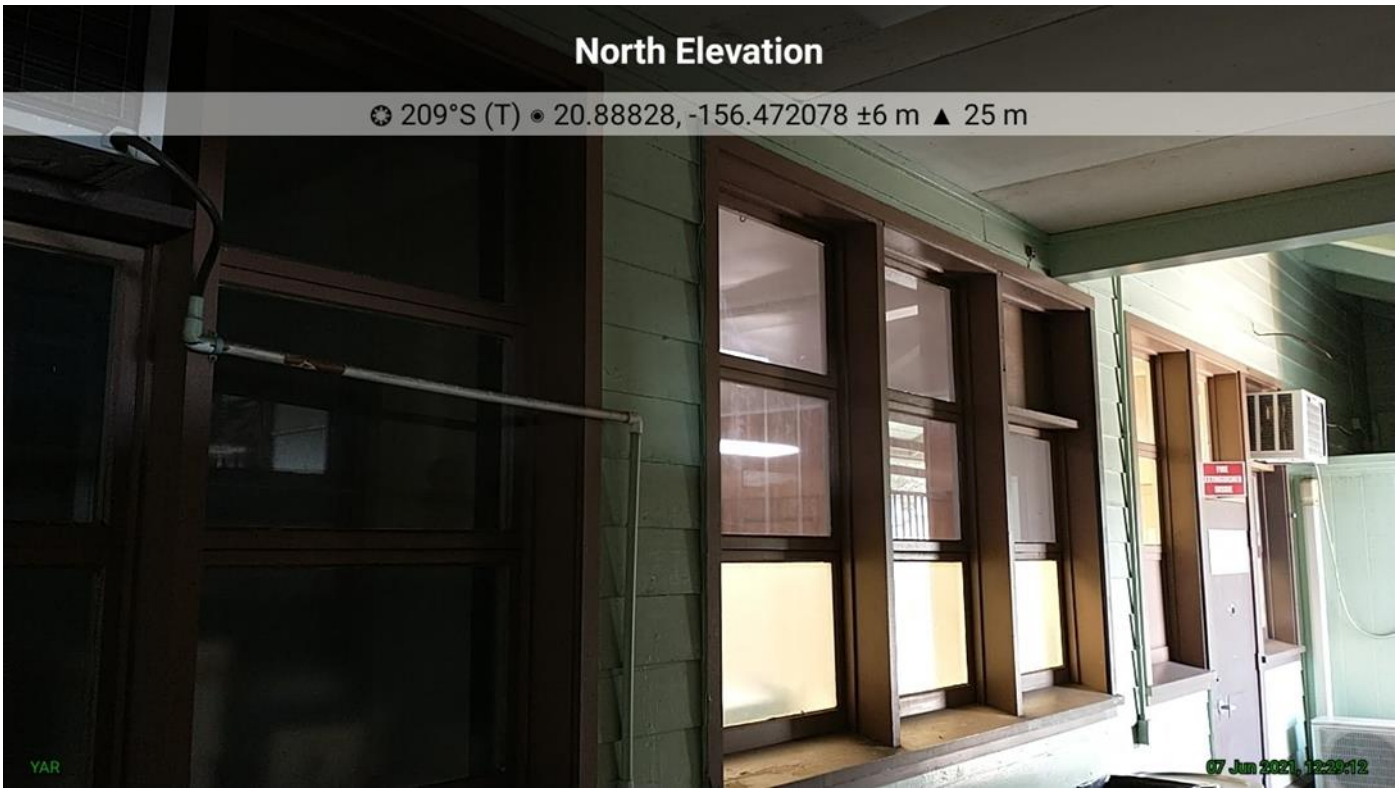

300°W (T) ◉ 20.888698, -156.471989 ±3 m ▲ 21 m
NO LOITERING NO TRESPASSING
YAR
07 Jun 2021, 12:15:36

ADMINISTRATION BUILDING, HISTORICAL FEATURES NO. 2



North West Elevation




North Elevation
209°S (T) 20.88828, -156.472078 ±6 m ▲ 25 m
YAR
07 Jun 2021, 12:29:12


West Elevation
118°E (T) 20.888279, -156.47208 ±9 m ▲ 25 m
door on the left.
YAR
07 Jun 2021, 12:29:34


North Elevation
212°S (T) 20.888392, -156.472084 ±5 m ▲ 24 m
NO PARKING
YAR
07 Jun 2021, 12:30:13



North West Elevation




North West Elevation
142°SE (T) • 20.888387, -156.472226 ±4 m ▲ 19 m
NO PARKING
NO PARKING
YAR
07 Jun 2021, 12:36:41

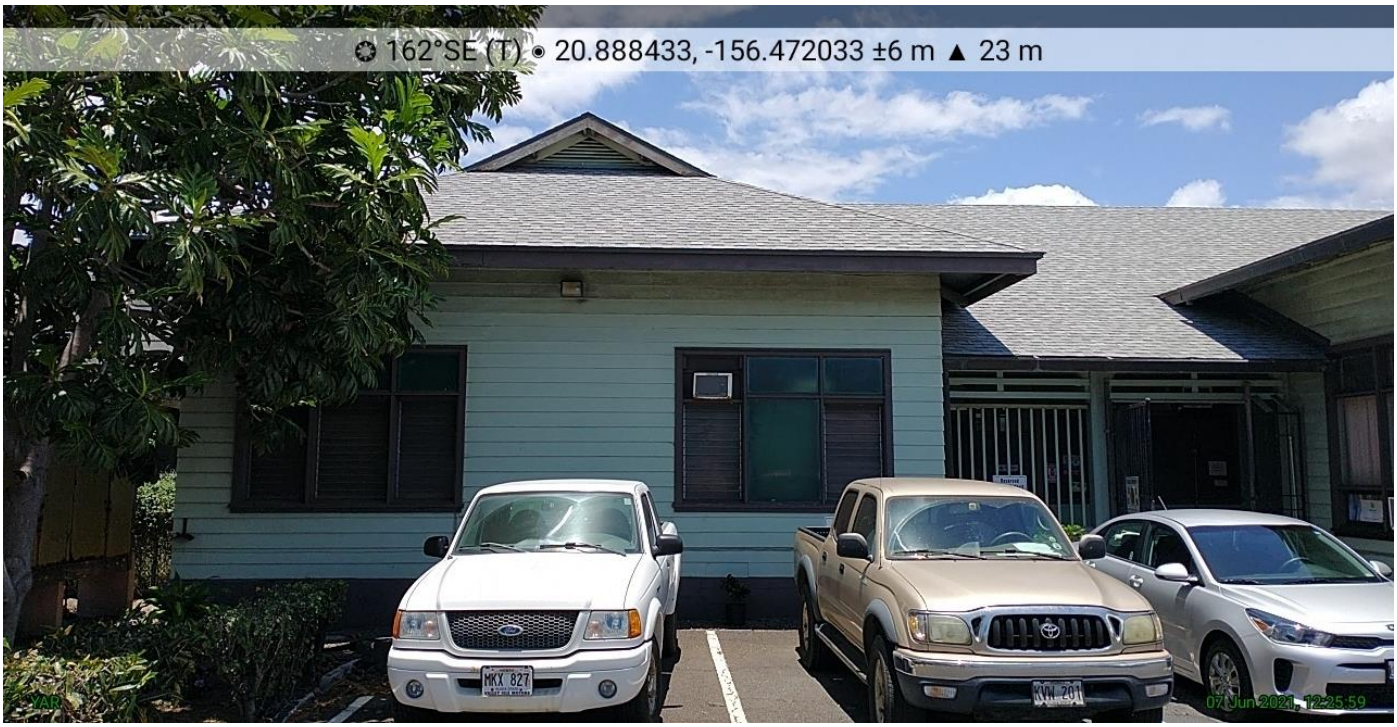

322°NW (T) • 20.887935, -156.471985 ±5 m ▲ 19 m
YAR
07 Jun 2021, 12:37:30


356°N (T) ◉ 20.887945, -156.472199 ±4 m ▲ 20 m
YAR
07 Jun 2021, 12:38:50


23°N (T) ◉ 20.887907, -156.472304 ±5 m ▲ 30 m
YAR
07 Jun 2021, 12:39:17


347°NW (T) • 20.888045, -156.472265 ±3 m ▲ 27 m
YAR
07 Jun 2021, 12:39:56


301°W (T) • 20.888222, -156.471871 ±4 m ▲ 22 m
YAR
07 Jun 2021, 12:41:06

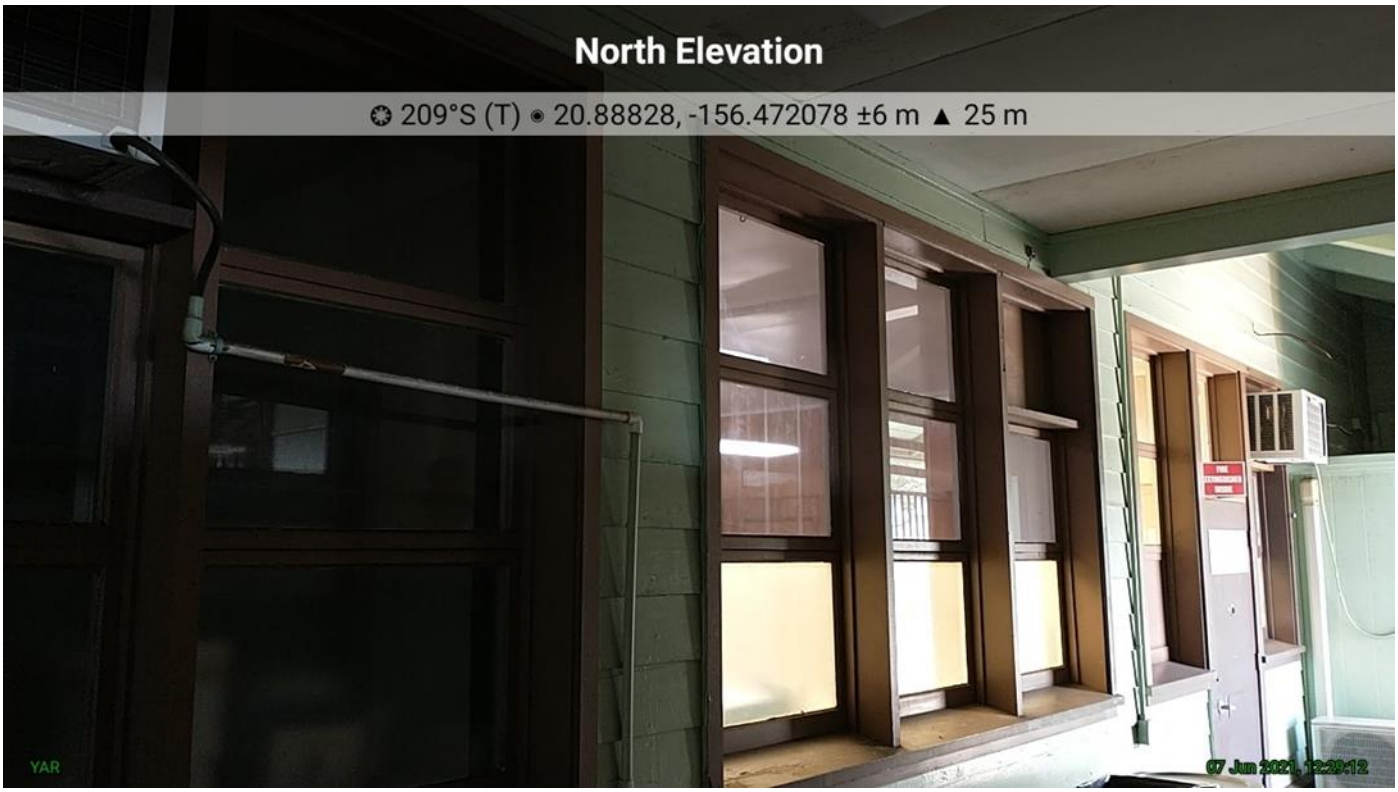

162°SE (T) • 20.888433, -156.472033 ±6 m ▲ 23 m
MKX 827
07 Jun 2021 12:25:59


South East Elevation
316°NW (T) 20.888268, -156.472071 ±8 m ▲ 23 m
YAR
07 Jun 2021, 12:27:05


East Elevation
298°W (T) 20.888258, -156.47207 ±11 m ▲ 23 m
YAR
07 Jun 2021, 12:27:13






North Elevation
209°S (T) 20.88828, -156.472078 ±6 m ▲ 25 m
YAR
07 Jun 2021, 12:29:12


FIRE
EXTINGUISHER
INSIDE


East Elevation
299°W (T) 20.888274, -156.472064 ±9 m ▲ 25 m
YAR
07 Jun 2021, 12:27:37

CAFETERIA BUILDING RUINS, HISTORICAL FEATURE NO. 3






120°E (T) 20.888434, -156.471946 ±7 m ▲ 25 m
NO SMOKING
YAR
07 Jun 2021, 12:20:32


102°E (T) • 20.888361, -156.472012 ±3 m ▲ 4 m
YAR
07 Jun 2021, 12:25:16


144°SE (T) • 20.888486, -156.471936 ±4 m ▲ 9 m
YAR
07 Jun 2021, 12:16:14

ELECTRICAL SHED, HISTORICAL FEATURE NO. 4



Appendix K

Archaeological Inventory Survey

REVISED DRAFT— Archaeological Inventory Survey for the Kahului Civic Center Mixed-Use Complex Project, Wailuku Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi

TMK: (2) 3-7-004:003 (por.)



Prepared For:

State of Hawaiʻi
Department of Business, Economic Development & Tourism
Hawaii Housing Finance & Development Corporation
677 Queen Street, Suite 300
Honolulu, HI 96813

January 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

REVISED DRAFT— Archaeological Inventory Survey for the Kahului Civic Center Mixed-Use Complex Project, Wailuku Ahupua‘a, Wailuku District, Island of Maui, Hawai‘i

TMK: (2) 3-7-004:003 (por.)

Prepared For:

State of Hawai‘i
Department of Business, Economic Development & Tourism
Hawaii Housing Finance & Development Corporation
677 Queen Street, Suite 300
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January 2022

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MANAGEMENT SUMMARY

An archaeological inventory survey (AIS) was conducted for the proposed Kahului Civic Center Mixed-Use Complex Project in Wailuku Ahupua‘a, Wailuku District, on the island of Maui. This is located at 153 W. Ka‘ahumanu Avenue on a portion of TMK: (2) 3-7-004:003. This work was designed to identify any historic properties that may be located on the parcels in anticipation of the proposed construction. The AIS included a pedestrian survey that covered 100% of the project area, as well as test excavations consisting of 17 trenches. The property has been disturbed by modern use, and one site, the historic Kahului School was identified. The school consists of three historic buildings and a mortared basalt boundary wall.

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INTRODUCTION

At the request of G70, on behalf of the Hawai‘i Housing Finance & Development Corporation (HHFDC) Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for the proposed Kahului Civic Center Mixed-Use Complex Project in Wailuku Ahupua‘a, Wailuku District, on the island of Maui. This is located at 153 W. Ka‘ahumanu Avenue on a portion of TMK: (2) 3-7-004:003. This work was designed to identify, document, assess significance, and provide mitigation recommendations for any historic properties that may be located in the project area in anticipation of the proposed construction.

This report is drafted to meet the requirements and standards of state historic preservation law, as set out in Chapter 6E of the Hawai‘i Revised Statutes and Hawaii Administrative Rules (HAR) §13–276, the *Rules Governing Standards for Archaeological Inventory Surveys and Reports*. The report begins with a description of the project area and a historical overview of land use, Hawaiian traditions, and archaeology in the area. The next section presents methods used in the fieldwork, followed by results of the survey. Project results are summarized and recommendations are made in the final section. Hawaiian words and technical terms are defined in a glossary at the end of the document.

Project Location and Natural Environment

The project area is located in Kahului, approximately 300 m (.2 mi.) inland from the coast at Kahului Harbor (Figure 1) on 1.91 ha (4.72 ac.) portion of TMK: (2) 3-7-004:003. TMK: (2) 3-7-004:003 is a 2.26-ha (5.572-ac.) property owned by the State of Hawai‘i located at 153 W. Ka‘ahumanu Avenue (Figure 2). The property is bounded by W. Ka‘ahumanu Avenue to the north, Kane Street to the west, Vevau Street to the south, and private parcels to the east.

The property currently houses the McKinley Community School for Adults Maui Campus, which includes three buildings that were constructed in 1920. Topography is relatively flat, and there is little to no vegetation on the properties. The project area lies at roughly 2 m (7 ft.) above mean sea level (amsl), and rainfall averages approximately 42 cm (17 in.) per year (Giambelluca et al. 2013).

The island of Maui was created by two separate shield volcanoes, Haleakalā in the east and Pu‘u Kukui in the west. The two land masses are connected by an isthmus when “lavas of Haleakala banked against the already existing West Maui volcano” (Macdonald et al. 1983:380). The project area is located in the large ahupua‘a of Wailuku in West Maui. Wailuku consists of Kahului Bay, from Paūkukalo to Kapukaulua; ‘Īao Valley; and the northern part of the island’s isthmus, which includes Waikapū, Waiehu, Waihe‘e, Kahakuloa, and Pulehunui. Wailuku is bordered by the ahupua‘a of Ka‘anapali and Lahaina to the west, and Hamakuapoko to the east.

The isthmus on which the majority of Wailuku lies has soils composed of “alluvial fans of outwashed silts and gravels, overlain by coralline sands blown inland from the coast. The lower levels have become firmly lithified, forming a soft rock known as colianite” (Stearns 1978:10). The lithified sand dunes occur on the alluvial fans along the coast and farther inland from Kahului to Waihe‘e. Some of these dunes reach heights as great as 60 m (197 ft.) (Macdonald et al. 1983:388; Carlquist 1980:60).

Soils in the southwest half of the project area consist of Puuone sand 7–30% slopes (PZUE) (Figure 3). These soils are located on dunes near the coast and are often used for pasture and housing (Foote

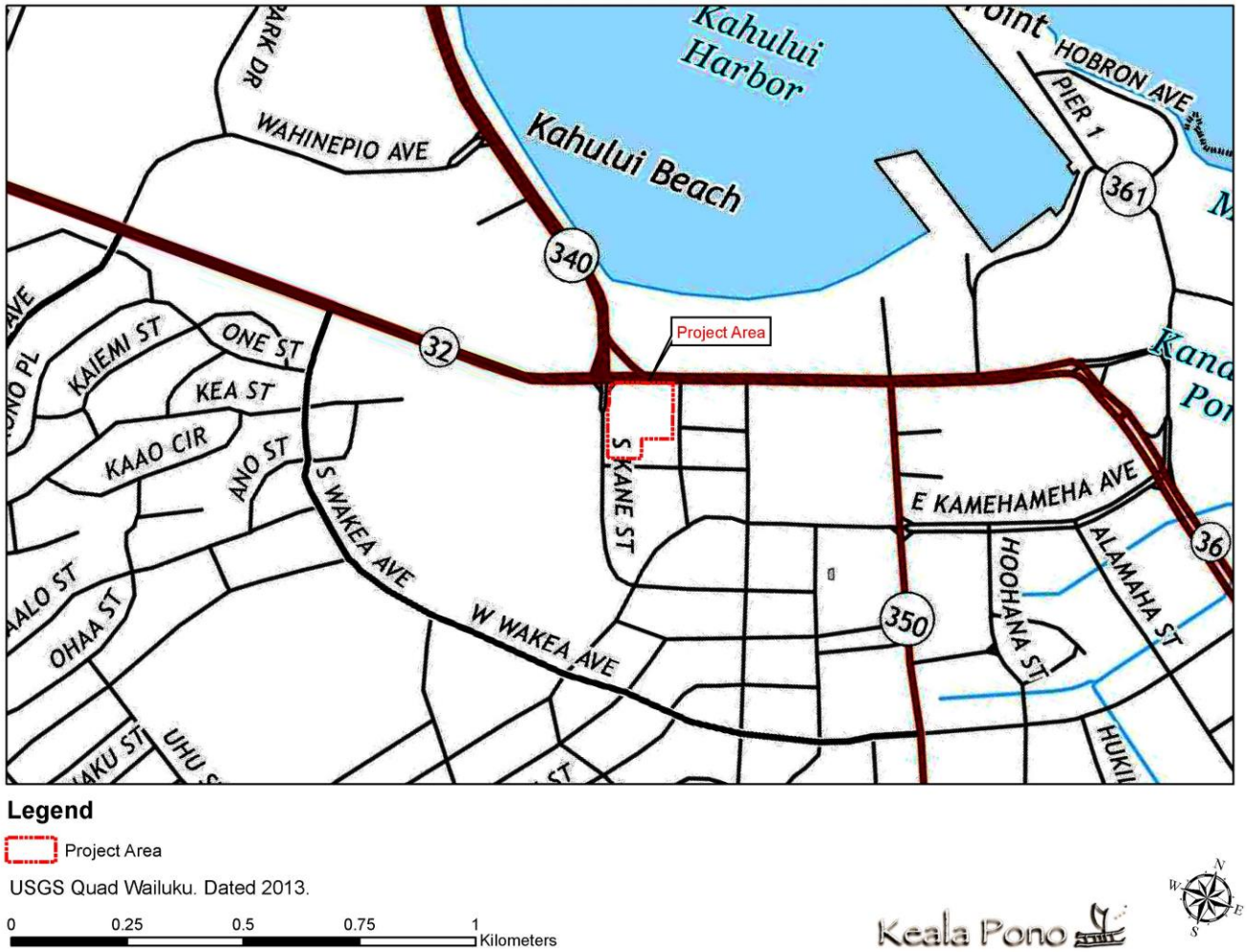

Figure 1. Project area on a 7.5 minute Wailuku quadrangle map (USGS 2013).

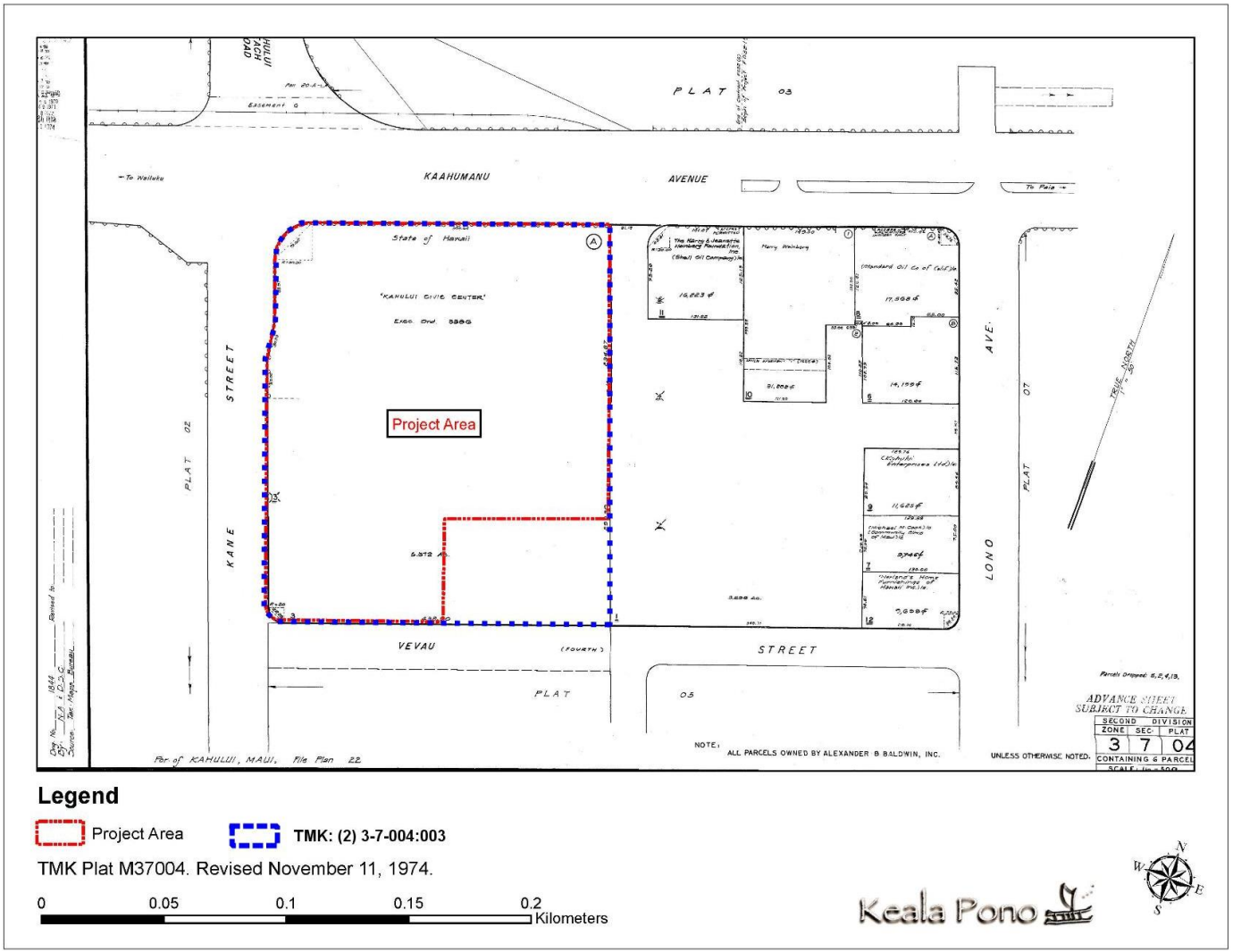

Figure 2. Project area on a TMK plat map (State of Hawai‘i 1974).

et al. 1972:117). The northeast half of the parcel lies on Fill land (Fd). This soil type consists mainly of lands that have been filled with bagasse and slurry from sugar mills, although some areas are filled with dredged material (Foote et al. 1972:31). As the project area is very close to Kahului Harbor, it is likely that the fill material here derived from dredging of the harbor.

Project Description

The Kahului Civic Center Mixed-Use Complex Project (Project) is a collaborative effort between HHFDC and the State Department of Accounting and General Services (DAGS). The Project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center). The multi-family housing buildings and Civic Center will provide a total of approximately 381,000 SF of floor area and approximately 596 parking spaces. Approximately 300 multi-family dwelling units (mixture of 1-, 2- and 3-bedroom units) will be provided in two buildings (both roughly six stories); and approximately 414 parking spaces will be provided in two three-level parking podiums for the multi-family housing. The preliminary program for the Civic Center (roughly four stories) includes space for State offices, the State Department of Education's McKinley Community School for Adults, and the Kahului Public Library. A parking deck built over a surface parking lot will provide approximately 182 parking spaces for the Civic Center. Community-oriented commercial space may be included in either the multi-family housing building(s) or the Civic Center. The Civic Center program spaces may be adjusted due to the needs and priorities of State agencies and availability of funding. Existing structures on the Project parcel to be demolished include the Department of Education's McKinley Community School for Adults Maui Campus, a lawnmower maintenance building (one-story), a collapsed building (one-story) and a parking lot with 21 parking spaces.

The County's new Transit Hub is currently being constructed on the southeast portion (0.85 acres) of the Project parcel along Vevau Street. The County's new Transit Hub is not a part of this Project. The County's new Transit Hub will replace the existing Transit Hub, located at the Queen Ka'ahumanu Center.



Figure 3. Soils in the project area (data from Foote et al. 1972).

CULTURAL BACKGROUND

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the project lands. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD library, and online on the Office of Hawaiian Affairs website (OHA n.d.) and the Department of Accounting and General Services (DAGS n.d.), Waihona Aina (n.d.), Avakonohiki (n.d.), and Ulukau (n.d.) databases. Archaeological reports, historical reference books, and historic maps were among the materials examined.

Wailuku in Traditional Times

Place names often shed light on traditional views of an area and can provide important contextual information. Wailuku literally means "water of destruction" (Pukui et al. 1974:225) due to the battles that took place there, most notably the battle at ʻĪao Valley between Kamehameha the Great and Kahekili. Wailuku is also referred to as Nā Wai ʻEhā, which translates to "the four waters," after the four streams that run through its valleys: Waiehu, Waikapū, Wailuku, and Waiheʻe. The old ʻokana (land division) named Nā Wai ʻEhā comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Puʻu Kukui and the ridges radiating from it.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names "usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history" (Pukui et al. 1974:xii).

Place names associated with the study area are listed in the *Place Names of Hawaii* (Pukui et al. 1974), along with the meanings of the names and/or comments about the specific locales:

> Halekiʻi...Alternate name for the *heiau* at Pihana, Maui. *Lit,*. image house. (Pukui et al. 1974:37)
>
> ʻĪao. Stream, valley, peak (2,250 feet high), park, and one-time sacred burying place of chiefs, Wai-luku qd....Maui....*Lit*., cloud supreme. (Pukui et al. 1974:55)
>
> Kaʻahumanu. Church, Wai-luku, Maui...Named for Queen Kaʻahumanu, favorite wife of Ka-mehameaha I, who was later *kuhina nui* (executive officer), and who died a Christian in 1832...*Lit*., the bird [feather] cloak. (Pukui et al. 1974:59)
>
> Kaʻākaupōhaku. Ancient surfing area, Wai-luku qd., Maui. (Finney 1950b:345) *Lit*., the north (or right-hand) stone. (Pukui et al. 1974:60)
>
> Kahului. Town, elementary school, port, bay, railroad, and surfing area known as Kahului Breakwater (Finney 1959a:108), Maui. Probably *Lit*., the winning. (Pukui et al. 1974:67)
>
> Kaleholeho. Ancient surfing area, Ka-halui area, Maui. *Lit*., the callus. (Pukui et al. 1974:76)

> Kanahā. Wildlife sanctuary and pond near Ka-halui, Maui, said to have been built by Chief Kiha-a-Piʻilani, brother-in-law of ʻUmi (HM387) who lived about A.D. 1500. Nearly 500 native Hawaiian stilts (āeʻo) have been counted here at one time, about a third of the known total. Some 50 kinds of birds have been seen here, including herons, geese, ducks, owls, plovers, sand pipers, tattlers, coots, pheasants, and doves...*Lit*., the shattered [thing]. (Pukui et al. 1974:83)
>
> Kepaniwai. Park, Wailuku, Maui. *Lit*., the water dam (Wai-luku Stream was choked with human bodies after the slaughter there). (Pukui et al. 1974:109)
>
> Kinihāpai. Stream, Wai-luku qd., Maui. *Lit*., carry multitudes. (Pukui et al. 1974:112)
>
> Māniaina. Ditch, Wailuku qd., Maui...*Lit*., a shuddering sensation. (Pukui et al. 1974:145)
>
> Nākalaloa. Stream, Wailuku qd., Maui. *Lit*., the long [house] gables. (Pukui et al. 1974:161)
>
> Nehe. Point. Wai-luku qd., Maui...*Lit*., rustle. (Pukui et al. 1974:164)
>
> Paukūkalo. Homesteads, coastal area, and surfing area, Ka-halui, Maui. *Lit*., taro piece. (Pukui et al. 1974:181)
>
> Wailuku...land division...city, point, sugar company, and stream, West Maui; site of the battle in the late eighteenth century in which the army of Ka-lani-ʻōpuʻu was nearly annihilated by Ka-hekili of Maui. *Lit*., water [of] destruction. (Pukui 1974:225)

Subsistence and Traditional Land Use

Wailuku was a gathering place and home to important chiefs and their attendants (ʻĪʻī 1959:135). Handy et al. (1991:272) assert that there were five centers of population on the island of Maui, one of which was the part of West Maui, "where four deep valley streams watered four areas of taro land spreading fanwise to seaward: the Four Waters (Na-wai-ʻeha) famed in song and story–Waiheʻe, Waiehu, Wailuku, and Waikapu."

Wailuku is the third of the four streams that flows from the uplands of Puʻu Kukui's ridges and down through ʻĪao Valley. Portions of the current city of Wailuku were built on old agricultural terraces (Handy et al. 1991:497):

> Along the broad stream bed of ʻIao Valley, extending several miles up and inland, the carefully leveled and stone-encased terraces may be seen. In the lower section of the valley these broad terraces served, in 1934, as sites for Camps 6 and 10 of Wailuku Sugar Plantation, being utilized for houses, gardens, playgrounds, and roads. A little farther up, neat private homes and vegetable and flower gardens covered these old taro terraces; while at their upper limit the terraces were submerged in guava thickets. Here a few wild taros were found, but we saw no terraces in ʻIao or Wailuku being used as flooded taro patches. It is significant that here, as at Waiheʻe, the old terraces were adapted to market gardening (Chinese bananas, vegetables, and flowers) by Japanese and Portuguese gardeners. (Handy et al. 1991:497)

The waters of Waikapū Stream were once diverted to feed loʻi systems, and its overflow was discharged on the dry plains on the isthmus between East and West Maui (Handy et al. 1991:496).

These abundant waters were later tapped for sugarcane irrigation (see Historic Wailuku section). Cheever commented on the loʻi of Wailuku in the mid-19th century:

> As you get into the valley and vega of Wailuku, you see numerous remains of old kihapais, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people than now…The whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it. (Cheever 1851 in Sterling 1998:75)

In addition to agricultural cultivation, fishponds were constructed in the region, near Kahului. Two major ponds are thought to have been constructed around AD 1500 during the rule of Kiha-a-Piʻilani (Kamakau 1992:42; Pukui et al. 1974:83). The ponds were named Kanahā and Mauʻoni. Kiha-a-Piʻilani also built the ala loa, a trail that circled the entire island. Another source states that the fishponds were constructed by Kapiʻioho'okalani, an aliʻi of Oʻahu and Molokaʻi, and that the walls were built by men passing stones from one to another in a line that extended from Makawela to Kanahā (Puea-a-Makakaualii in Sterling 1998:87).

A number of heiau have been identified within the ahupuaʻa of Wailuku, with Halekiʻi and Pihana located approximately two kilometers northeast of the current study area. An annual publication by T.G. Thrum, the *Hawaiian Almanac and Annual for 1909* briefly describes some of the heiau found in Wailuku:

> Pihana- Wailuku, near end of coral and sand ridge, one-half mile from the sea; about 300x120 ft. in size; walls in complete ruins showing foundations massive.
>
> Halekii- Wailuku, some 300 ft. to N.E. of Pihana and about 100 ft. square in size.
>
> Kalui- Wailuku, at Puu-o-hala; repaired in time of Kahekili; Kaleopuupuu its priest.
>
> Malumaluakua-Keahuku-Olokua-Olopio-Malena- Wailuku. No Particulars gathered of these heiaus further than nearly all of the Wailuku temples, with the Kapokea one in Waihee are named among those consecrated by Liho-liho during a year's stay en route to Oahu, preceding the peleleu fleet. (Thrum 1909:38)

Moʻolelo

The island of Maui was named after the legendary demigod Māui (Pukui et al. 1974), known for his trickiness. Legends tell of how he stole fire, raised the sky and snared the sun, trapped winds, and changed landscapes. Among all of the moʻolelo, one of his biggest accomplishments was fishing land out of the ocean and creating the Hawaiian Islands. Earlier accounts share that the name of the island was once called Ihikapalaumaewa in ancient times, prior to Papa and Wākea and before their child Māui became famous (Sterling 1998).

The wind name for Wailuku is Makani-lawe-malie, or "the wind that takes it easy" (Nuuhiwa in Sterling 1998:62). And it is said that the aliʻi of the area spent much time surfing (Kamakau 1992:82).

The plains of Kamaʻomaʻo in Wailuku were a place of wandering souls:

> There are many who have died and have returned to say that they had no claim to an ʻaumakua {realm} (kuleanaʻole). These are the souls, it is said, who only wander upon the plain of Kamaʻomaʻo on Maui or on the plain at Puʻuokapolei on Oahu. Spiders and moths are their food. (Kamakau 1991:29)

A final moʻolelo concerns the appearance of foreigners in Wailuku in the mid-13th century, long before the first written record of foreigners arriving in the islands (Fornander 1969 [1878–1885]: 80–82). A chief named Wakalana governed the windward side of Maui and lived in Wailuku. At this time, a ship called Mamala came to Wailuku. The ship's captain was named Kaluikia-Manu, and other men and women on board were named Neleike, Malaea, Haakoa, and Hika. Nelieke later became Wakalana's wife, and together they bore fair skinned children with bright, shining eyes (Fornander 1969 [1878–1885]:81). Their descendants intermarried with other Hawaiians and many of them lived in Waimalu and Honouliuli on Oʻahu. Fornander posits that the moʻolelo may refer to a Japanese fishing vessel that was blown off course, as Europeans were not near Hawaiian waters at that time (1969 [1878–1885]:81).

ʻŌlelo Noʻeau

Wailuku's connection with its distinguished coast is preserved in many traditional proverbs and wise sayings. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter reminds us that if we know these proverbs and wise sayings well, then we will know Hawaiʻi well (Pukui 1983). Four ʻōlelo noʻeau were found that speak of Wailuku. They provide further insight to the traditional landscape and history of the region.

> **Kei nu aku la paha aʻu ʻĀlapa I ka wai o Wailuku.**
>
> *My ʻĀlapa warriors must now be drinking the water of Wailuku.*
>
> Said when an expected success has turned into failure. This was a remark made by Kalaniōpuʻu to his wife Kalola and son Kiwalaʻō, in the belief that his selected warriors, the ʻĀlapa, were winning in their battle against Kahekili. Instead they were utterly destroyed. (Pukui 1983:184)

> **Na wai ʻehā.**
>
> *The four* wai.
>
> A poetic term for these places on Maui: Wailuku, Waiehu, Waiheʻe, Waikapū, each of which has a flowing water (*wai*). (Pukui 1983:251)

> **Pili ka hanu o Wailuku.**
>
> *Wailuku holds its breath.*
>
> Said of one who is speechless or petrified with either fear or extreme cold. There is a play on *luku* (destruction). Refers to Wailuku, Maui. (Pukui 1983:290)

> **Wailuku I ka malu he kuawa.**
>
> *Wailuku in the shelter of the valleys.*
>
> Wailuku, Maui, reposes in the shelter of the clouds and the valley. (Pukui 1983:290)

War and Conquest in Wailuku

Maui's ahupuaʻa of Wailuku was wrought with warfare through much of its known history, including what some would term as a 100 years' war. Many stories and accounts have been passed down. Rev. Cheever, in his book, *Life in the Sandwich Islands: or, The Heart of the Pacific, As It Was and Is*, wrote of how the various wars had an effect on how each stream in Wailuku was named:

> There are in this region four streams in succession from the different gorges of the mountain, significantly named, it is thought, from the events of battles which have transpired upon them. Waikapu—The water where the conch was blown, and the engagement began.

> Waiehu—The water where the combatants smoked with dust and perspiration. Wailuku—The water of destruction, where the battle began to be fierce and fatal. Waihee—The water of total rout and defeat, where the army melted away. (Cheever 1851:59)

One of the earliest battles was that between owls and men: "The owls retaliated against an act committed by a cruel man by flocking to Wailuku and descending upon him" (Silva n.d). Another mention of this battle refers to the origin of the ahupua'a's name: "The cruel man was punished, and the battle place still bears the name Wailuku, Water-of-killing" (Pukui and Curtis 1974:179).

In addition to the battles with owls, many battles were fought between chiefs. In the 16th century, the 15th mō'ī of Maui, Pi'ilani, united the island's districts through war, and gave his daughter to marry the current mō'ī of Hawai'i Island. Due to this marriage, there was peace between the two kings of each island, until Pi'ilani died and a rivalry sparked between his two sons, Lono-a-Pi'ilani and Kiha-a-Pi'ilani (Speakman 1978). The eldest son, Lono, had inherited Maui and he sought to kill his brother Kiha, who then escaped to Hāna and met a young chiefess, Koleamoku. They fell in love and secretly married, even though she had been promised to Lono. The couple moved to Hawai'i Island, where Kiha's sister was still living with 'Umi, to avoid being captured by Lono. 'Umi took the side of Kiha and launched a war with Maui. Lono was defeated and 'Umi took partial control of the island of Maui, in Hāna, and peace was once again observed until the 17th century.

In the early 18th century, Kekaulike united the kingdom of Maui through war. While there were times of peace after this, things got worse for Maui by the end of the century with many wars with Hawai'i Island's king, Alapa'i who was trying to gain control of it. Kekaulike perished when fleeing to Wailuku:

> When Ke-kau-like heard that the ruling chief of Hawaii was at Kohala on his way to war against Maui, he was afraid and fled to Wailuku in his double war canoe named Ke-aka-milo. He sailed with his wives and children…his officers, war leaders, chiefs, and fighting men, including warriors, spearmen, and counselors. Some went by canoe and some overland, and the fleet landed at Kapa'ahu at the pit of 'Ai-hako'ko in Kula. Here on the shore the chiefs prepared a litter for Ke-kau-like and bore him upland to Halekii in Kukahua. There Ke-kau-like died, and sound of lamentation for the dead arose. (Kamakau 1992:69)

In an important battle, Kalani'ōpu'u was defeated in Wailuku (Kamakau 1992:85–91). It was in 1776 that Kalani'ōpu'u returned to war with Maui and was overthrown by Kahekili's army. It is said that Kalani'ōpu'u's forces "were slain like fish enclosed in a net," and the slaughter was known as *Ahulau ka Pi'ipi'i Kakanilua*, or Slaughter of the Pi'ipi'i at Kakanilua (Kamakau 1992:86). Unthwarted, however, Kalani'ōpu'u prepared for another assault. Kahahana, the ali'i of O'ahu and Moloka'i, came to assist Kahekili. This battle was fought in the area between Wailuku and Waikapū. Again, Kalani'ōpu'u's forces were surrounded and killed.

Afflicted by war, Maui became impoverished, and Vancouver mentioned during his visit in 1793 that King Kahekili was having trouble finding enough provisions for his own ship (Speakman 1978). Kahekili was the last king of Maui and was able to rule Moloka'i, Lana'i, and O'ahu during his reign but was unable to conquer Hawai'i Island.

Foreigners increasingly visited Hawai'i after Captain Cook arrived at Kahului Bay in the late 18th century, and this was happening as Kamehameha was rising to power. Kamehameha, armed with a cannon he acquired by foreigners, went to battle in Wailuku.

> The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skillful warriors of Maui took part, but

> Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was a great slaughter. Had they fought face-to-face and hand-to-hand, as the custom was, they would have been equally matched. But the defensive was drawn up in a narrow pass in ʻIao , and the offensive advanced from below and drew up the cannon as far as far as Kawelowelo‘ula and shot from there into ʻIao and the hills about, and the men were routed. The victors pursued them and slew the vanquished as they scrambled up the cliffs. There was a great slaughter, but mostly among the commoners; no important chief was killed in the battle. “Clawed off the cliff” (Ka ʻuwa‘u-pali) and “The damming of the waters” (Ka-pani-wai) this battle was called.” (Kamakau 1992:148–149)

After winning the battle on Maui, Kamehameha moved on to conquer the remaining islands of Moloka‘i, O‘ahu, and Kaua‘i.

Historic Wailuku: The 19th and 20th Centuries

In 1832, missionaries began arriving in Maui and established a girls’ school in Wailuku. Around that time, the sugar industry was introduced, greatly affecting Wailuku. The Hungtai Sugar Works company, founded in 1828 by two Chinese merchants, was the first location of sugar production on the island. King Kamehameha had a sugar mill built in Wailuku in the 1840s, which much of the initial sugar industry had developed around. The abundance of water supply and accessible land in Wailuku allowed for the sugar industry to develop and become profitable within a short time period. In addition, the mills built in the early 1960s were among the most advanced, being steam powered. The arrival of over 100 foreign laborers to work on the plantations began to greatly change the population composition of the region, along with the decline in native population. The Wailuku Sugar Company was established in 1862 and later took over the Waihe‘e Plantation to the north. By 1867, 2,250 acres of land was planted with sugar in Wailuku. Much of the sugarcane cultivation took place in the western portion of Wailuku until 1876 when industry advancements enabled expansion to other dryer areas (Wilcox 1996, MacLennan 1997:102).

In the second half of the 19th century, the sugar industry in Hawaii greatly expanded as a result of the 1876 Reciprocity Treaty between the U.S. and the Hawaiian Kingdom, which gave the U.S. market free access to Hawai‘i’s land for sugar and other products. A major player in the Hawaiian sugar industry, Claus Spreckels, a German immigrant to the United States, had first established a major sugar refinery in San Francisco. He initially opposed the 1876 Reciprocity Treaty between the United States and Hawai‘i as he believed it would cause insurmountable competition in the sugar industry. However, in order to keep up with potential competition, Spreckels traveled to Maui in 1878 where he later founded the Hawaiian Commercial & Sugar Company (HC&S). He purchased and leased 40,000 acres of eastern Wailuku, including the Wailuku Commons. After obtaining the Wailuku Commons in 1882, Spreckels gained water and transport rights for his crops, creating a thriving sugar industry and plantation town named for himself–Spreckelsville. HC&S was incorporated in 1884 by Spreckels using $10 million in capital; his sugar empire on Maui included four sugar mills, 35 miles of railway (including equipment), a water reservoir, and a canal system built by a fellow German-American engineer which was highly advanced for its time (Spiekermann 2019:5). Spreckels’ Waihe‘e Ditch was the center of conflict at that time, with the Wailuku Sugar Company objecting that Spreckels did not have a right-of-way through their land or rights to waters of Waihe‘e Stream. Spreckels eventually lost control of HC&S and a new ditch was constructed. By the 1900s, a complicated system of ditches wove its way through both East and West Maui (Figure 4).

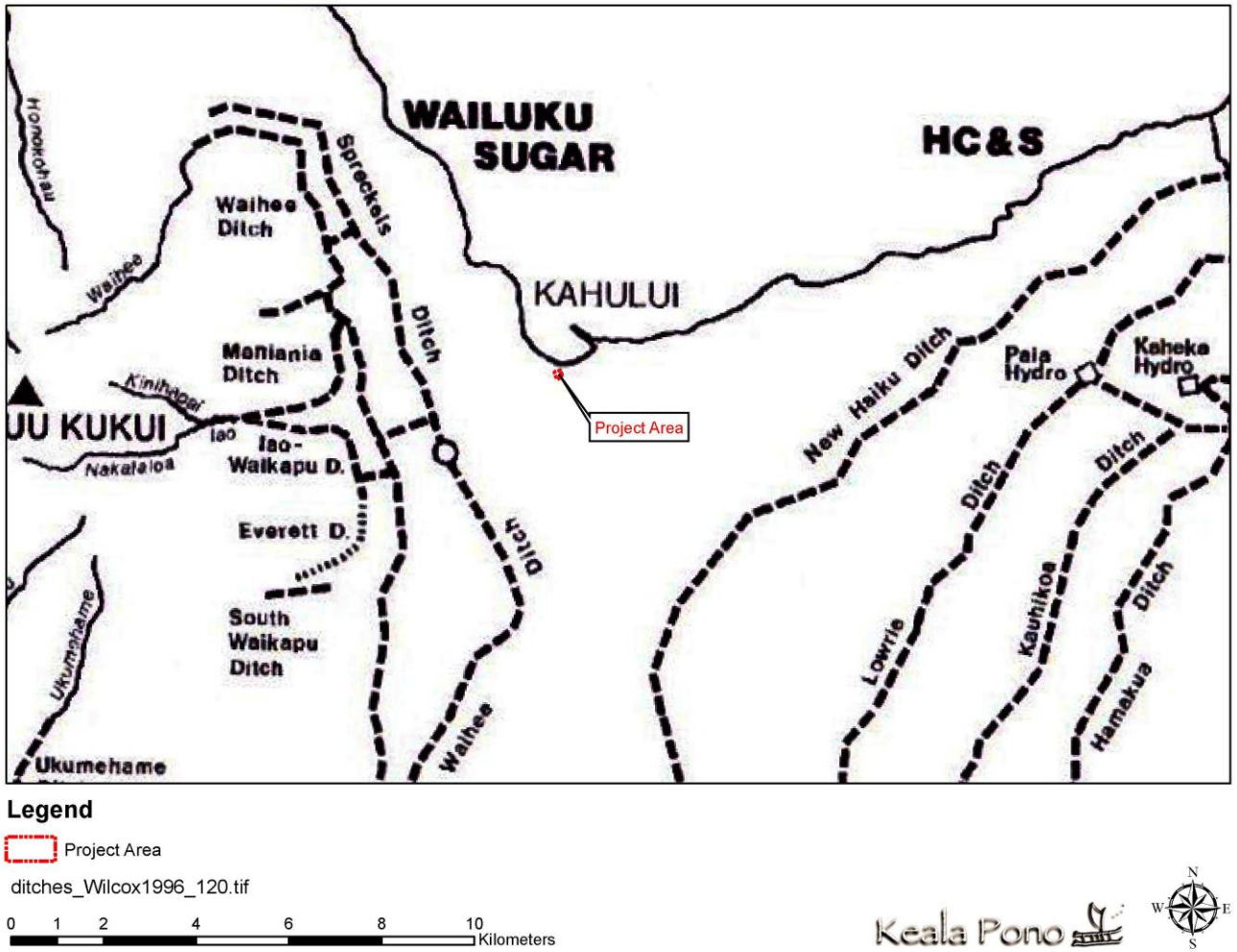

Figure 4. Major sugarcane irrigation ditches on the island of Maui (Wilcox 1996:120).

With the rise of the sugar industry in Wailuku, Kahului, and continuing on further east to Spreckelsville and Pāʻia, it was apparent that a railroad was needed to transport sugar to be exported to the U.S. The Kahului Railroad was first organized under the partnership between Thomas H. Hobron, William O. Smith, and William H. Baily. The first section of the railroad that extended from Wailuku to Kahului was completed by 1879. Hobron also operated a general merchandising business on Bay Street in Kahului, which later became the headquarters for the railroad. Construction began in 1880 of the railroad sections east of Kahului to Pāʻia and Spreckelsville. The three partners then sold the company to Samuel G. Wilder upon completion of the eastern section in 1884. In 1899, the railroad was then sold to HC&S Company–which by then was owned by Henry P. Baldwin and Associates. By 1913, the railroad extended east to the cannery in Hāʻiku. The main railroad terminal in Kahului was expanded in the 1920s to encompass a 219-acre facility. In 1923, a new railroad general office was constructed (today, the general office is located just northeast of the current project area). By this time, a total of 34 miles of the main line, nine miles of a secondary line, ten steam locomotives and 265 cars were in service. However, the depression of the 1930s and World War II of the 1940s saw a reduction in general service. The gradual introduction of motor busses starting in 1936 largely replaced locomotive transportation service in Kahului and by the end of the 1960s, the railroad had ended all services (Ramsay 1960).

The burgeoning sugar industry in Wailuku and Kahului also contributed to the increased use of Kahului Harbor as a major trade port. According to Burns (1991:47), by 1840, a small jetty may have been located at what is now the Maui Beach Hotel (formerly the Maui Palms Hotel), just north of the project area. In the 1870s, T.H. Hobron operated the *Ka Moi*, a schooner that ran between Kahului and Honolulu (Thomas 1983). A small commercial landing was opened in 1879 for the purposes of the sugar trade. Soon thereafter, Spreckels began operating Oceanic Steamship Lines between Kahului and North America out of the Kahului Harbor, making it the main shipping point for sugar from all of the Maui plantations. Samuel Wilder built the first breakwater wall and had part of the harbor dredged in 1904. The dredging fill was used to fill in the areas where the main business section is now located (Burns 1991:48).

Māhele Land Tenure

The change in the traditional land tenure system in Hawaiʻi began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the summer and fall of 1850 two pieces of key legislation were adopted by the Kingdom of Hawaii. First, on July 10th of 1850, the Alien Land Ownership Act was established, allowing foreigners to hold title to lands within the Kingdom. Less than a month later, the Alien Land Ownership Act was followed by the Kuleana Act on August 6th of 1850. The Kuleana Act allowed citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kamaʻāina totaling only about 30,000 acres and recorded in ten large volumes.

In the mid-1900s, the majority of the Wailuku Ahupua‘a was marked as Crown Land. And in 1872, when Kamehameha V died, his sister Princess Ruth Ke‘elikōlani inherited the land. She owned part, while 743.4 acres in the ‘ili of Owa in Wailuku was granted to Kamehameha’s steward Kuihelani. Princess Ruth eventually sold half of the Crown Lands in 1882 to Claus Spreckels even though he already held a lease for 16,000 acres in Wailuku.

The entirety of the current study area was encompassed by LCA 7713:23, awarded to Princess Victoria Kamāmalu. The LCA constituted 391 acres of the former ‘ili of Kula which consisted of lands from Wailuku to the portion of Kahului that borders the bay. Located just south of the current study area, was an area referred to as the Wailuku Commons and designated Crown Lands.

The Kahului School

The early 20th century saw the project area develop into a bustling school campus. The Kahului School itself was first established in 1900 (Ruzicka 2011) as a one-room school. This was replaced in the 1920s by the two-story Kahului School building and the old Maui Vocational School (MVS) building. The final period of construction happened in 1939 with the construction of the school annex and the boundary wall on the northern edge of the property. Aerial photos and USGS maps from 1950–1983 clearly show the MVS building, the Kahului School building and the school annex (Figures 5–8).

Today the school campus is dramatically different from its early 20th century form. The MVS moved up Ka‘ahumanu Avenue to a new campus in the 1940s before eventually becoming the University of Hawai‘i Maui College. Now, the old MVS building is used by the McKinley Community School for Adults Maui Campus. The Kahului School building went on to be included in the Kahului Historic District (SIHP 50-50-04-1607) in 1975, before it was demolished in 1996. This is reflected in the most recent aerial photos and USGS map, where the school has been replaced with greenspace (Figures 9 and 10). The 1939 school annex was most recently demolished in 2021. A historic resource evaluation report (HRER) has been prepared for the buildings that are still standing within the project area (Yarbrough 2021).

Additional information for the Kahului School is presented in the appendix of this report. This information, which dates to 1936, was provided by Annalise Kehler of the Maui County Cultural Resources Commission (CRC). It includes photos and a map of the school, as well as data on buildings and other structures.

Other Historic Maps of the Project Vicinity

Historic maps help to paint a picture of Wailuku in years past and illustrate the many changes that have taken place in the region. This section presents a selection of four maps from the 19th and 20th centuries that provide insight to the project area. Note that names are spelled as they are written on each map.

The first map depicts the lands of Wailuku and Kahului by W.D. Alexander in 1881 (Figure 11). No structures are present within the Wailuku vicinity, but buildings can be seen near Kahului Harbor and the Kahului Railroad interchange and yard. The railway from Kahului, west to Wailuku and east to Spreckelsville and Pā‘ia, is depicted just north of the current project area.

The next map, drawn in 1885, shows several interesting features in Wailuku (Figure 12). Sand hills are depicted, extending almost as far inland as Waiale Pond. The project area vicinity appears to be



Figure 5. Project area projected on a 1950 USGS aerial photo (USGS 1950).

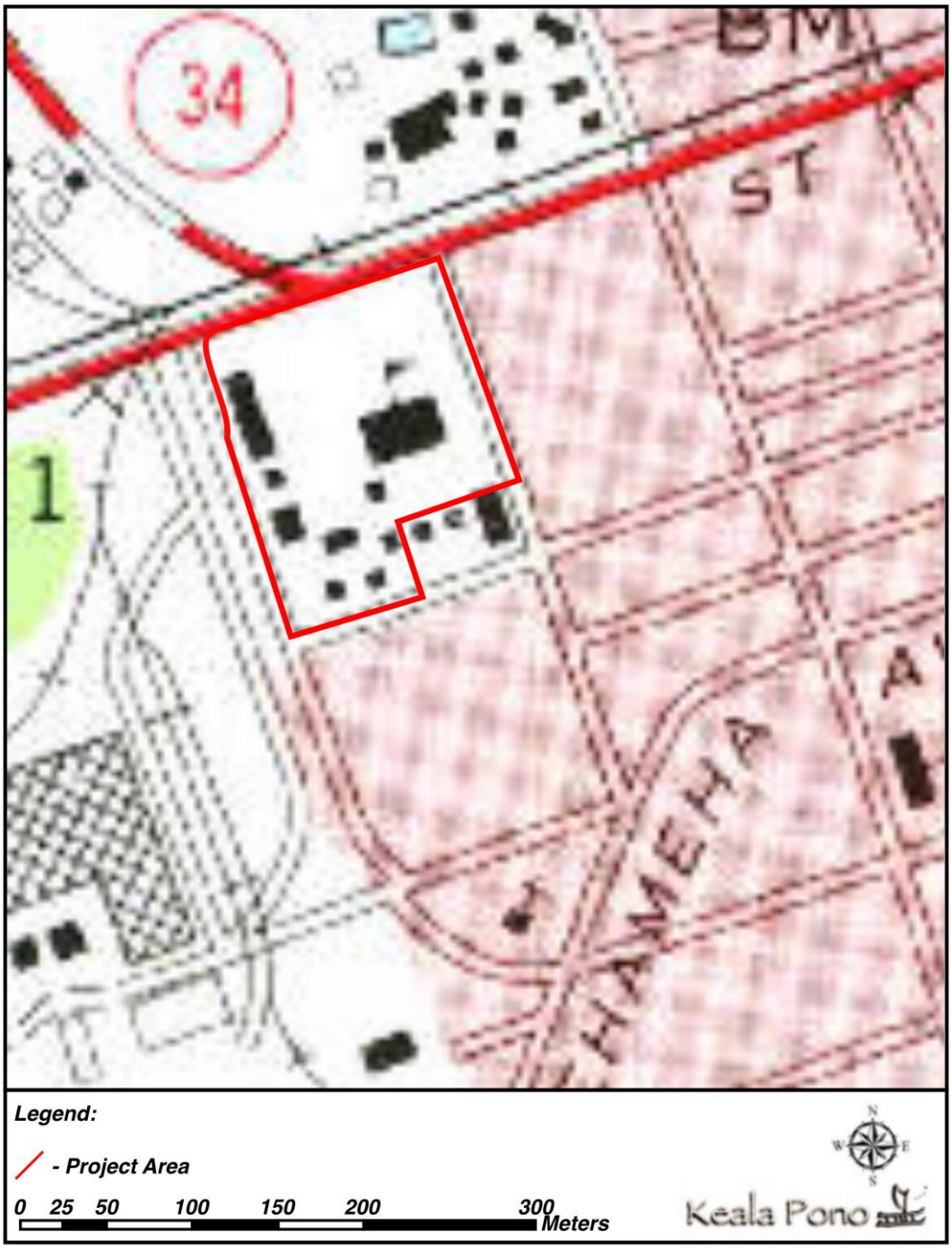

Figure 6. Project area plotted on a 1955 topographic map (USGS 1955).



Figure 7. Project area plotted on a 1965 USDA aerial photo (USDA 1965).

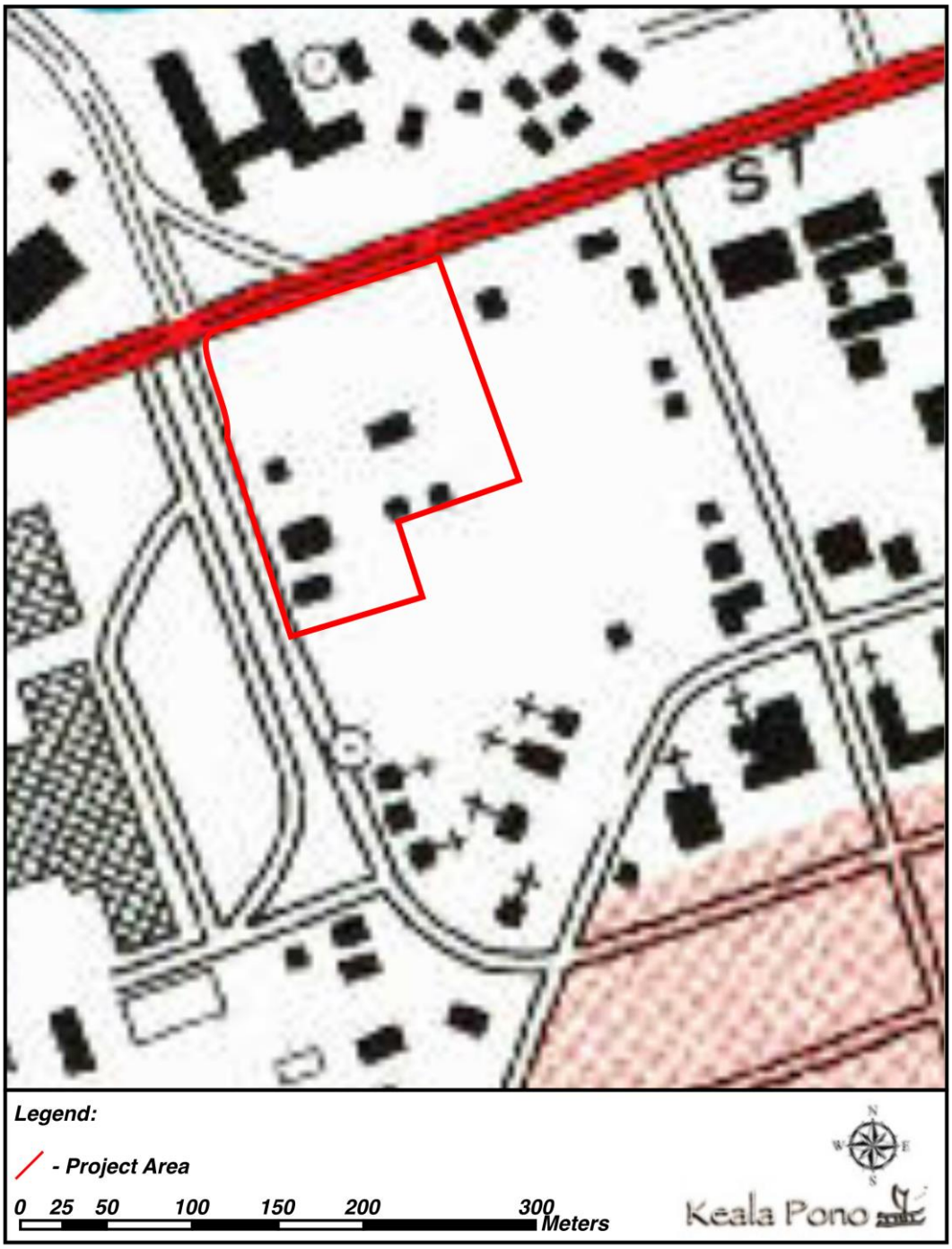

Figure 8. Project area plotted on a 1983 topographic map (USGS 1983).

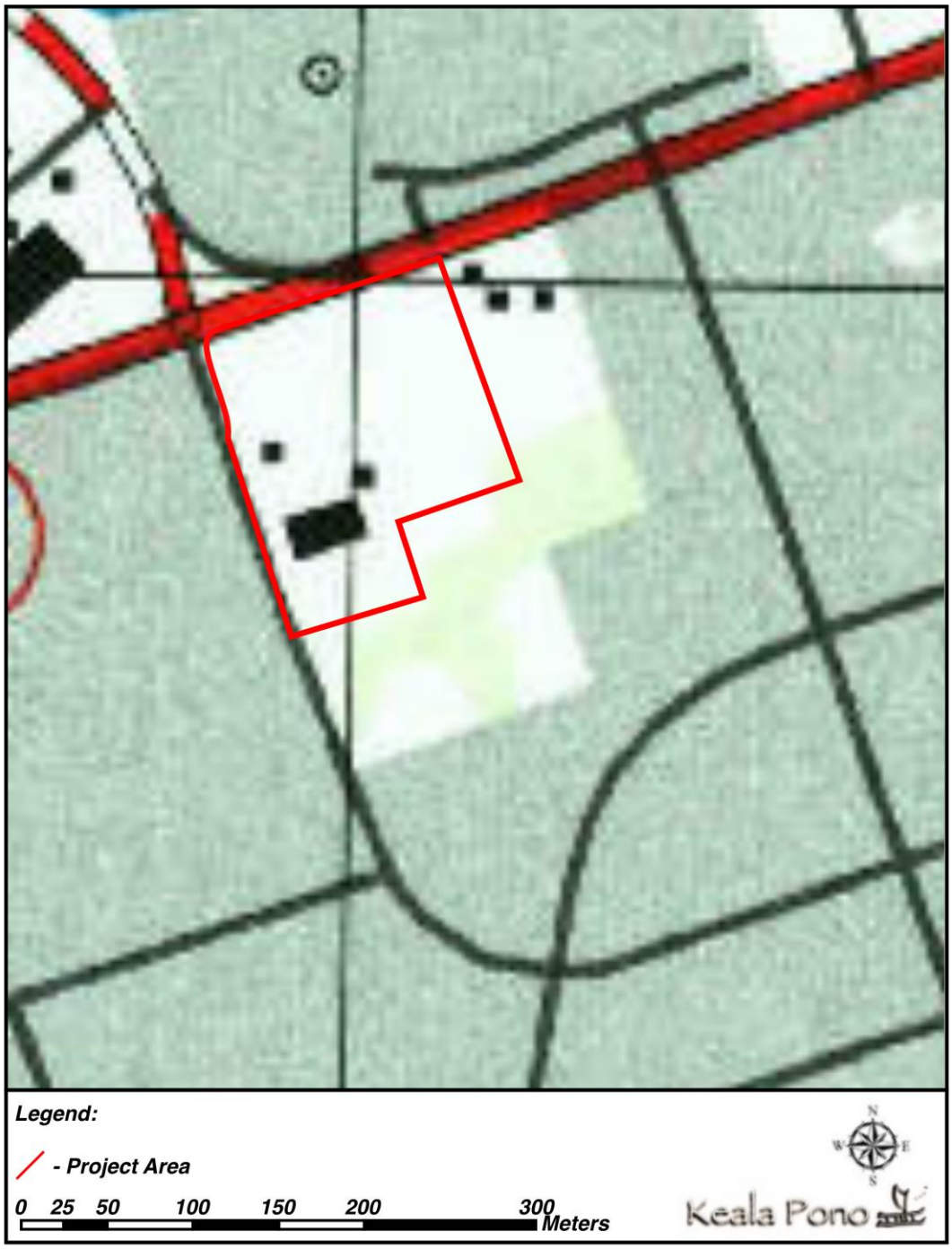

Figure 9. Project area plotted on a 1997 topographic map (USGS 1997).



Figure 10. Project area plotted on a 2000 NOAA aerial photo (NOAA 2000).

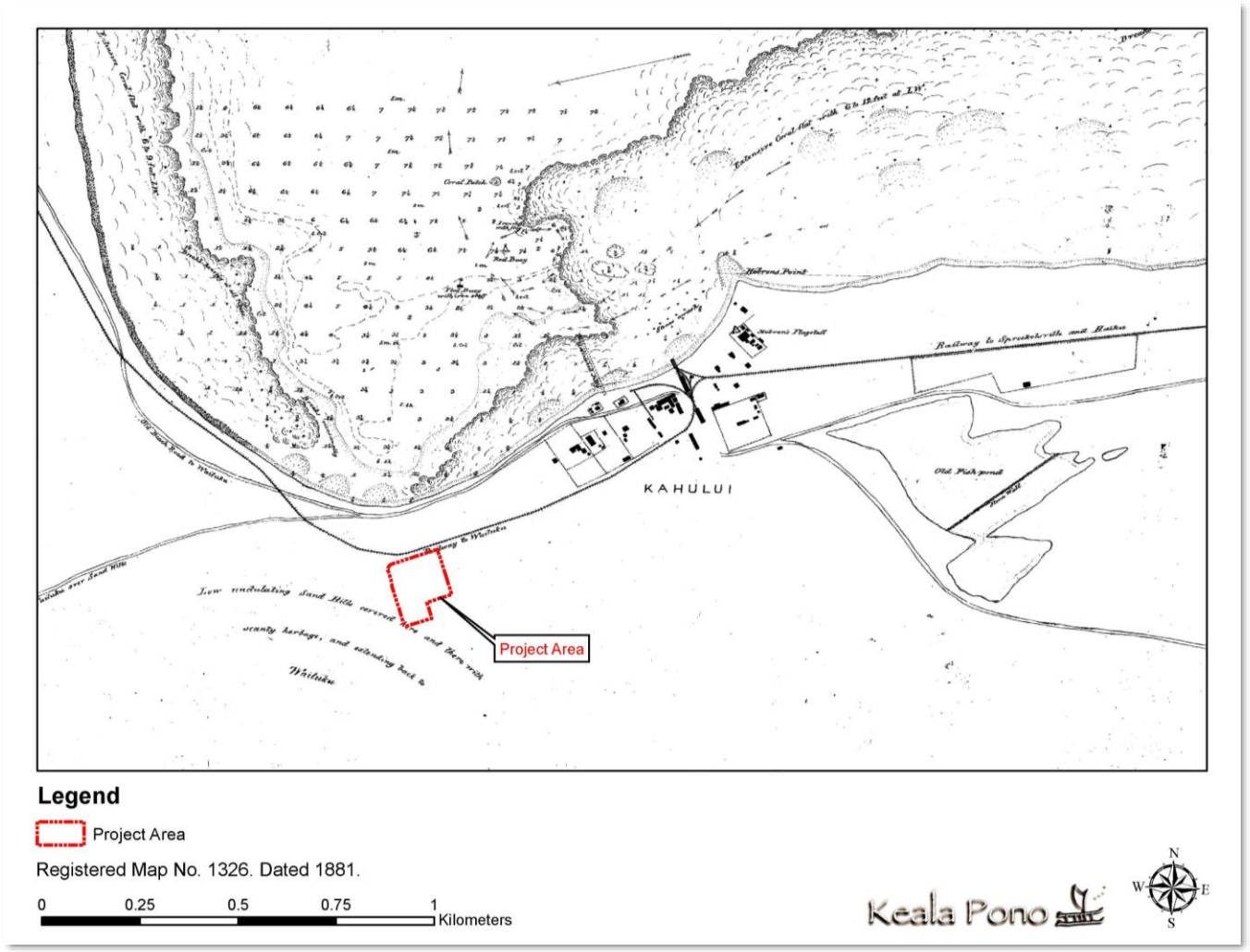

Figure 11. Portion of a map of Wailuku area, including Kahului (Alexander 1881).

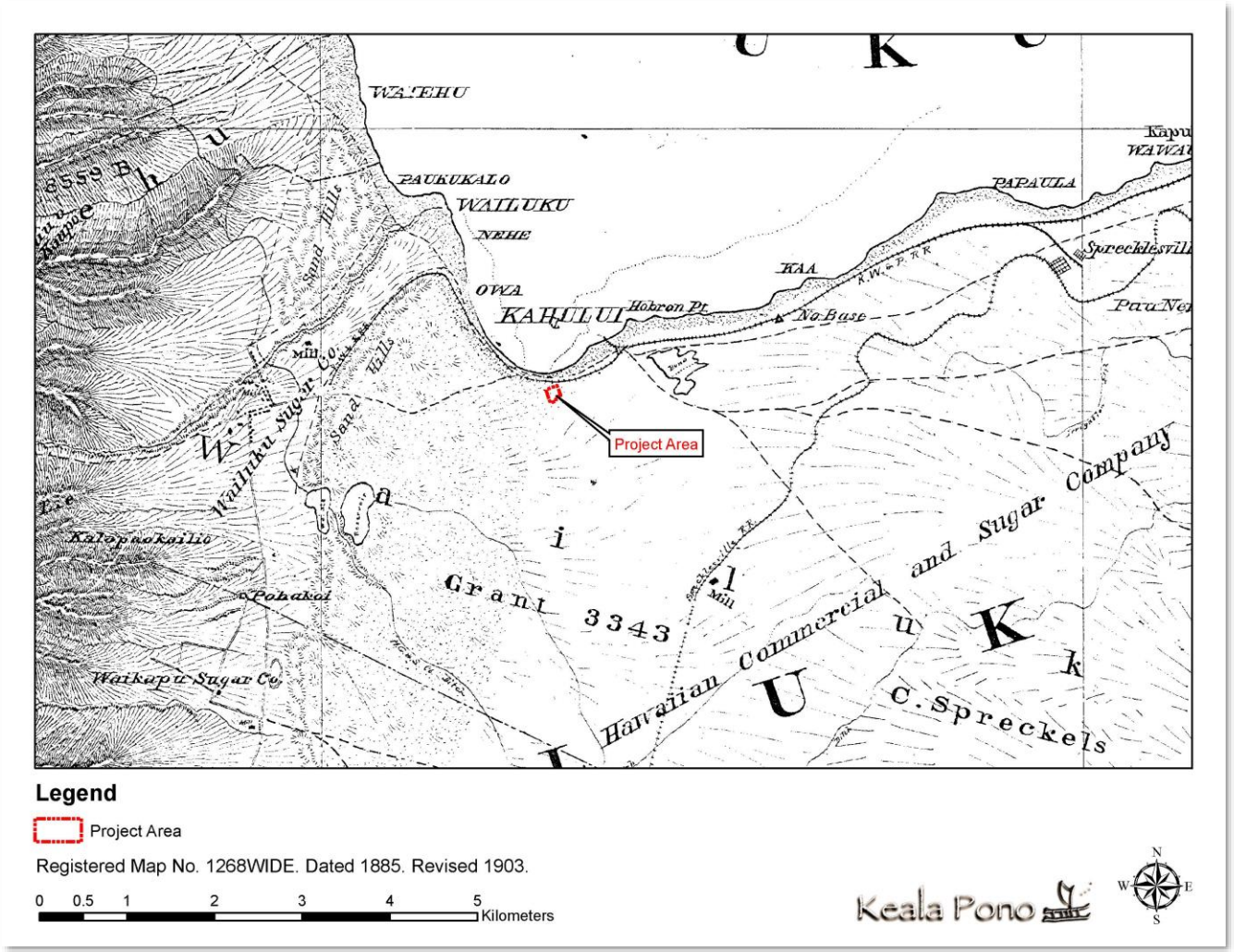

Figure 12. Portion of a map of Maui (Dodge 1885).

within “GRANT 3433 C. SPRECKELS” and “Hawaiian Commercial and Sugar Co.” which at the time was owned by Claus Spreckels. The Kahului Railroad is depicted to the north and a trail that runs west to Wailuku is located just north of the project area.

A map by Hugh Howell from 1896 depicts the growing town of Kahului, which is based around the Kahului Railroad (Figure 13). The railroad is depicted heading west toward Wailuku from the Kahului town center. Roads are also depicted extending from Kahului toward Wailuku and heading north along the coastline.

The final map by surveyor James M. Dunn offers a closer look at the project area within the town of Kahului from 1953 (Figure 14). This map shows the project area is bound by Main, Kane, School, and Fourth Streets, with Third Street bisecting the subject lot in half. This map depicts the Kahului town site showing various deeds and boundaries, and indicates that most of the project area was deeded to the Territory of Hawaii from HC&S Company on December 21, 1925. It also shows that the northeast corner of the subject property was deeded to the Department of Instruction/Correction of the Territory of Hawaii on September 17, 1908.

Previous Archaeology

Many archaeological studies have been conducted in Wailuku. The following discussion provides information on archaeological investigations that have been carried out within approximately 1 km of the project area, based on reports found in the SHPD library in Kapolei, Hawai‘i (Figure 15 and Table 1). Projects are summarized below in chronological order and State Inventory of Historic Places (SIHP) numbers are listed with the prefix 50-50-04.

Some of the earliest archaeological surveys and descriptions of Maui were done by Thrum in 1909 and Winslow Walker in 1928–1929. Thrum published the *Hawaiian Almanac and Annual for 1909* where he listed and described eight heiau in Wailuku. These are Pihana, Halekii, Kaluli, Malumaluakua, Keahuku, Olokua, Olopio, and Malena. Walker never published his work, but wrote a manuscript which is cited in works such as Sterling’s *Sites of Maui* (1998). Walker noted ten heiau for Wailuku (Keahuku, Olokua, Olopio, Malena, Pohakuokahi, Lelemako, Kawelowelo, Kaulupala, Palamaihiki, and Oloolokalani), but could not find any of them (Walker in Sterling 1998:79). In addition to these, Walker also described Kaluli Heiau, Pihana Heiau, and Haleki‘i Heiau for Wailuku. None of these heiau are located in the vicinity of the project area, however.

After this early work, no archaeological studies were conducted in the project vicinity until 1990, when archaeology started being conducted due to legal requirements. This is with the notable exception of the nomination of the Kahului Historic District to the Hawai‘i Register of Historic Places (HRHP) in 1975. While the site was never formerly designated as a district, it was assigned SIHP 50-50-04-1607. The informal historic district includes a roundhouse, shop, office, bank, fairground, and the now demolished two-story school building originally located within the project area.

In 1990, an archeological inventory survey for the former Maui Palms Hotel (now the Maui Seaside Hotel) produced significant findings (Donham 1990). Located just north of the current project area, along the Kahului Harbor, midden and various artifacts were found eroding out of a sand embankment on the hotel property. The site, SIHP 50-50-04-0852, was found to be of historic origin based on the artifact types found and the lack of pre-contact artifacts. Hand-powered auger cores were excavated as part of the inventory survey. Observed surface and subsurface materials included clear, green, amber bottle glass, plastic, metal fragments, brick, ceramics, charcoal, shell, fish bones,

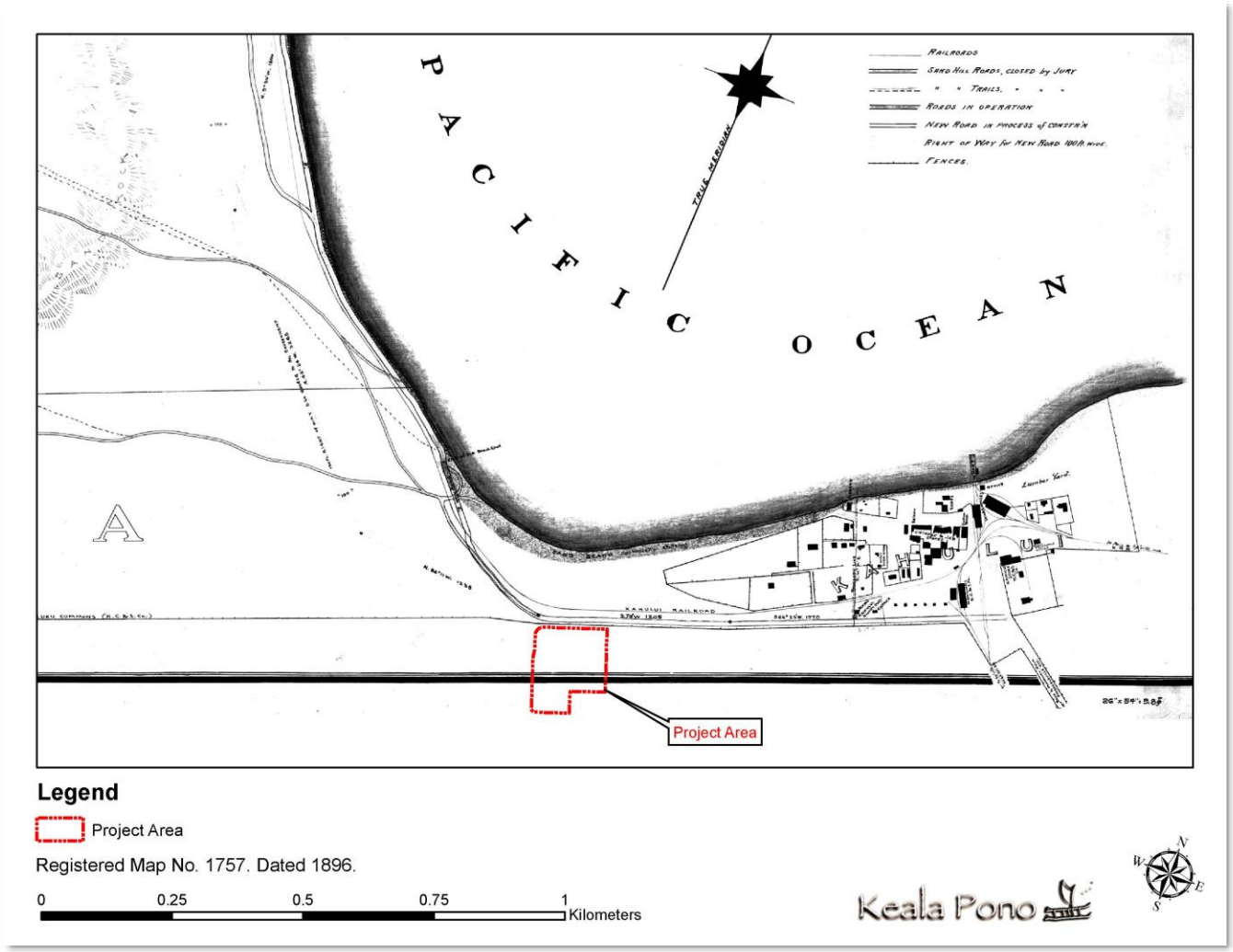

Figure 13. Portion of a map of Kahului and Kahului Harbor (Howell 1896).

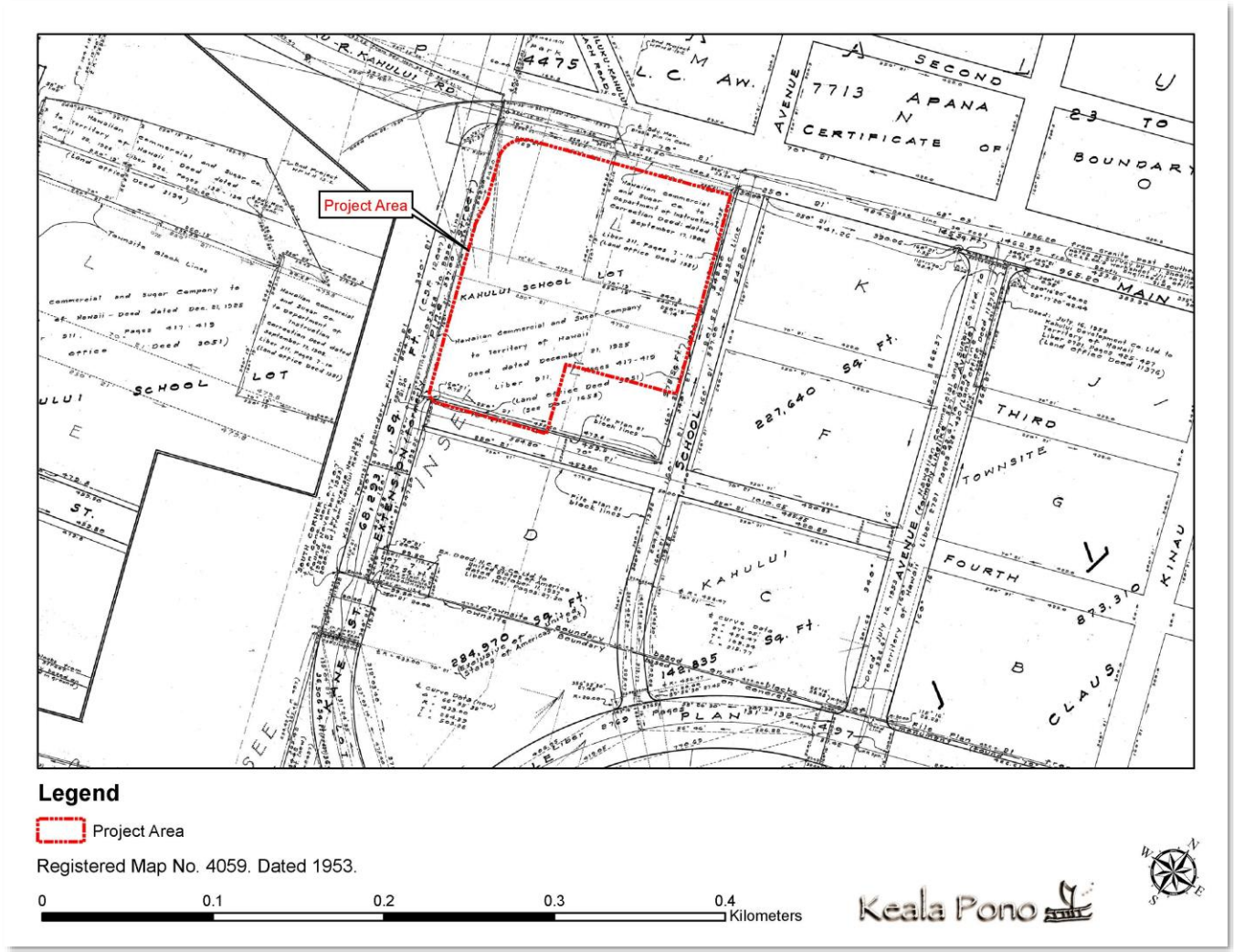

Figure 14. Portion of a map of the town of Kahului with a close up inset of the subject property (Dunn 1953).

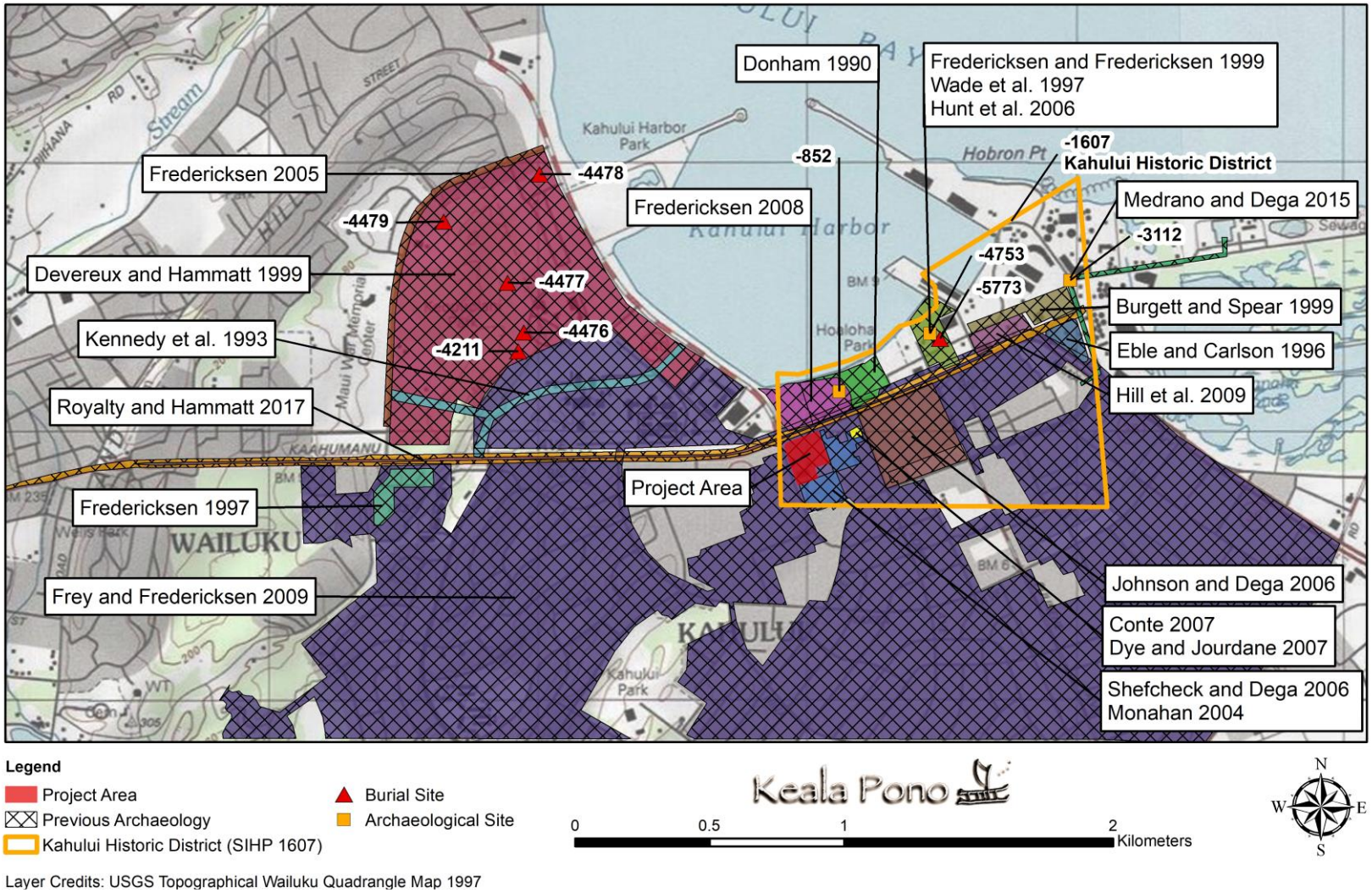

Figure 15. Previous archaeological studies and known archaeological sites in the vicinity of the project area.

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Author/Year	Location	Work Completed	Findings
Thrum 1909	Island-Wide	Heiau Documentation	Noted eight heiau in Wailuku, none in the project vicinity.
Walker 1928–1929	Island-Wide	Survey	Noted ten heiau in Wailuku but could not locate them; none are in the project vicinity.
Donham 1990	Maui Palms Hotel	Archaeological Inventory Survey	Identified SIHP 50-50-04-0852, consisting of surface and subsurface historic artifacts and faunal remains.
Kennedy et al. 1993	Wahinepio Ave.	Archaeological Inventory Survey	No historic properties identified.
Eble and Carlson 1996	Hobron Triangle	Archaeological Inventory Survey	No historic properties identified.
Fredericksen 1997	Mahalani St.	Archaeological Monitoring	No historic properties identified.
Wade et al. 1997	Kahului Harbor	Archaeological Inventory Survey	No historic properties identified.
Fredericksen and Fredericksen 1999	Kahului Harbor Barge Terminal	Archaeological Monitoring	Identified SIHP 50-50-04-4753, a subsurface deposit of historic artifacts with an underlying ʻiliʻili pavement.
Burgett and Spear 1999	Kahului Harbor	Archaeological Monitoring	No significant historic properties identified, but did document what was thought to be a pit related to historic harbor activities.
Devereux and Hammatt 1999	Keōpūolani Regional Park	Archaeological Monitoring	Identified four burial sites (SIHP 50-50-04-4476 – 50-50-04-4479). Two sets of human remains stored at SHPD were reinterred along with a previously recorded burial (SIHP 50-50-04-4211) that was partially preserved.
Monahan 2004	TMK: (2) 3-7-004:001; 3-7-005:003, 011, 023	Archaeological Inventory Survey	No historic properties identified.
Fredericksen 2005	Kanaloa Ave.	Archaeological Monitoring	Documented two previously disturbed human burials (SIHP 50-50-04-5471 and 50-50-04-5472), four pre-contact burials (SIHP 50-50-04-5495), and two pre-contact habitation sites (SIHP 50-50-04-5496 and 5660).
Johnson and Dega 2006	Kahului Shopping Center	Archaeological Inventory Survey	Recorded historic artifacts in a secondary context, no significant historic properties were identified.
Shefcheck and Dega 2006	TMK: (2) 3-7-004:001; 3-7-005:003, 011, 023	Archaeological Monitoring	Recorded historic artifacts in a secondary context, no significant historic properties were identified.
Hunt et al. 2006	Puʻunene Container Yard	Archaeological Inventory Survey	Documented one burial (SIHP 50-50-04-5773) and isolated artifacts added to the Kahului Historic District (SIHP 50-50-04-1607).

Table 1. (continued)

Author/Year	Location	Work Completed	Findings
Conte 2007	Ka‘ahumanu Ave.	Archaeological Inventory Survey	Observed three faunal bone fragments; no significant historic properties were identified.
Dye and Jourdane 2007	Lono Ave.	Historic Properties Assessment	No surface historic properties identified.
Fredericksen 2008	Maui Beach Hotel	Archaeological Inventory Survey	No historic properties identified.
Frey and Fredericksen 2009	Kahului coastal region	Archaeological Monitoring	No historic properties identified.
Hill et al. 2009	Kahului Harbor	Archaeological Literature Review and Field Inspection	Identified three historic buildings and a park associated with Kahului Railroad and HC&S Plantation infrastructure.
Medrano and Dega 2015	Kahului Harbor	Archaeological Monitoring	Identified intact remnants of the Kahului Railroad and its infrastructure, SIHP 50-50-04-3112.
Royalty and Hammatt 2017	Main St. and Ka‘ahumanu Ave.	Archaeological Monitoring	Documented four previously identified historic properties listed on the National Register of Historic Places (SIHP 50-50-04-1633, 50-50-04-1541, 50-50-04-1630, and 50-50-04-1607). SIHP 50-50-04-8498, a historic structural remnant was newly documented. None of these sites are near the current project area.
Duhaylonsod et al. 2021	Current Project Area	Cultural Impact Assessment	Compiled background information for the project area and conducted three ethnographic interviews.

and butcher-cut faunal remains. No further work was recommended for the site prior to the onset of construction activities, but archaeological monitoring was recommended during construction for this project.

An archaeological survey with subsurface testing north of the former Maui Community College Campus produced no significant findings (Kennedy 1993). A surface survey did not identify any archaeological resources. Subsequently, 54 trenches were excavated and two features were recorded. These consisted of an in-situ wooden post, and a trash pit, both of which were determined to be of modern origin. These features were not recommended for preservation or any further work and no SIHP numbers were assigned.

An archaeological inventory survey was completed for the Kahului Barge Terminal Improvements Project (Wade et al. 1997). No historic properties were identified and the fieldwork was reported as an archaeological assessment. Due to the presence of deep undisturbed sand deposits, archaeological monitoring was recommended. Two years later, archaeological monitoring was conducted for the same project at the Kahului Harbor (Fredericksen and Fredericksen 1999). While it was apparent that the majority of the project area had undergone extensive ground disturbance, one subsurface site was located, SIHP 50-50-04-4753, at the northwestern boundary of the project area. The site consisted of modern and historic materials at the upper level, a mix of modern/historic and pre-contact materials in the middle level and the bottom layer was described as a pavement of water-

worn pebbles (ʻiliʻili) up to 22 cm thick. Beneath the pavement was culturally sterile sand. The pavement extended over an area 10 m in length and an indeterminate width. It was recommended that additional work would be needed in order to determine the site extent, age, and function.

Archaeological monitoring for the construction of storage yard improvements at Kahului Harbor produced no significant findings (Burgett and Spear 1999). While no definitive cultural resources were encountered, an unusual rock and soil-filled pit was documented. Its purpose and age were not determined, but the authors speculated that it may have been associated with historic harbor facilities formerly in the area.

Construction of the 110-acre Keōpūolani Regional Park in 1999 required archaeological monitoring (Devereux and Hammatt 1999). During grubbing and grading activities, four human burials were encountered (SIHP 50-50-04-4476 through 50-50-04-4479). A prior study of the property in 1996 uncovered a human burial that was partially preserved (SIHP 50-50-04-4211). Another two sets of human remains were being held by SHPD and reinterred with SIHP 50-50-04-4211.

Human burials were identified during archaeological monitoring for improvements to Kanaloa Avenue (Fredericksen 2005). This included four pre-contact burials assigned SHIP 5495 and two previously disturbed human burials (SIHP 50-50-04-5471 and 50-50-04-5472). The disturbed remains were reinterred with the SIHP 50-50-04-5495 burials. In addition to the human remains, two habitation sites dating to the pre-contact era were also documented (SIHP 50-50-04-5496 and 50-50-04-5660).

Archaeological monitoring for the Puʻunene Container Yard covered the Fredericksen and Fredericksen (1999) Barge Terminal project area (Hunt et al. 2006). A post-contact burial was identified during monitoring and designated as SIHP 50-50-04-5773. Traditional and historic artifacts associated with the burial included glass and shell beads, basalt and shell sinkers, a basalt core, an octopus lure, a worked basalt cobble, a poi pounder, basalt hammer stones, and a chopping stone. These artifacts were included with SIHP 50-50-04-1607, the Kahului Historic District.

In 2004, an archaeological inventory survey was completed for the Maui Community College Lono Avenue Student Housing Project located on two contiguous parcels adjacent to the current project area to the south and east (Monahan 2004). The fieldwork did not identify historic properties, however due to the proximity to documented burials and archaeological sites, archaeological monitoring was recommended. Archaeological monitoring did not identify traditional Hawaiian cultural material or sites, but a large quantity of historic bottles was collected from throughout both properties (Shefcheck and Dega 2006). No SIHP numbers were assigned, even though a significance assessment was included in the report, based on artifacts identified. It was recommended that an archaeological monitor should be on site for any further excavations within the project area and its immediate vicinity.

An archaeological assessment for the proposed development of the Kahului Shopping Center was conducted at a property located just east and adjacent to the current project area (Johnson and Dega 2006). A total of 16 trenches were excavated, and while modern and historic artifacts dating from the 1920s were identified, it was concluded that they were from a secondary context, having been brought in with fill and deposited in that location. However, due to the possibility of identifying human remains during construction, it was recommended to have an archaeological monitor on site during any further excavation on the property.

An archaeological assessment for the installation of a cell tower at a property along Kaʻahumanu Avenue, located to the east and adjacent to the current project area had minimal findings (Conte 2007). Within the three test trenches that were excavated, only two fragments of machine cut cow

bone and one chicken bone fragment were identified. While it was determined that nothing of cultural significance was found, archaeological monitoring was recommended for all excavations related to the cell tower project due to the presence of undisturbed sand deposits.

A historic properties assessment was conducted for a property just west of the current project (Dye and Jourdane 2007). It was determined that the installation of telecommunications equipment would have no effect on historic properties, yet an archaeological inventory survey was recommended because of the subsurface archaeological sites that have been identified nearby.

An archaeological literature review and field inspection at two parcels adjacent to the Kahului Harbor identified four surface historic properties (Hill et al. 2009). These consist of three historic buildings and a historic-era park that is associated with the HC&S sugar enterprise and the Kahului Railroad. Additional work was recommended to establish significance and mitigation recommendations for each property. No SIHP numbers were assigned at the time of the study.

Archaeological monitoring for the Kahului and Wailuku Force Main Project further documented the Kahului Railroad, SIHP 50-50-04-3112 (Medrano and Dega 2015). Additional components of the railroad infrastructure were recorded, with intact remnants of the railroad found directly beneath the modern road pavement. Isolated historic artifacts (modern debris, a bottle, and railroad ties, spikes, and rail wheel) were also recorded during monitoring. It was recommended that any additional work in the vicinity should proceed with an archaeological monitoring program.

In 2017, archaeological monitoring was conducted for the Main Street and Kaʻahumanu Avenue resurfacing project from High Street to Hobron Avenue (Royalty and Hammatt 2017). Four previously identified historic properties were recorded during monitoring. The Waiale Drive Bridge (SIHP 50-50-04-1633), Kaʻahumanu Avenue-Naniloa Drive Overpass (SIHP 50-50-04-1541), Baldwin High School (SIHP 50-50-04-1630), and the Kaʻahumanu Church (SIHP 50-50-04-1607) are all listed on the National Register of Historic Places, however none of these sites are located near the current project area. A historic concrete structural foundation (SIHP 50-50-04-8498) was also documented.

Additionally, two archaeological inventory surveys (Eble and Carlson 1996, Frederickson 2008) and two archaeological monitoring studies (Frey and Fredericksen 2009, Fredericksen 1997) had no significant findings during fieldwork.

Most recently, a cultural impact assessment was completed for the current project (Duhaylonsod et al. 2021). Three ethnographic interviews were conducted, and the following recommendations were made for the project: 1) Have a cultural monitor on site during construction; 2) Allow access to the facilities for all community members rather than a members-only facility; 3) Keep open communication with the community regarding the project; 4) Plant useful foliage on the property such as plumeria, lauaʻe, palapalai, noni, kalo, and naupaka for the community to gather, and to hold cultural classes on the property, such as lei-making, to make good use of the plants; 5) Use native plants instead of invasives for landscaping on the grounds; 6) If any trees on the property are being cut down, consult the community to see if the trees can be utilized by community members.

Summary of Background Research

Several archaeological implications can be made based on the background research presented above. The southern end of the current project area is the location for the McKinley Community School for Adults Maui Campus, while the north end of the lot is a landscaped field. In pre-contact times, the Wailuku region was one of five population centers on the island of Maui (Handy et al. 1991), as well as an area of chiefly residence (ʻĪʻī 1959). Portions of the current city of Wailuku were also built

atop former agricultural terraces with its well-watered location (Handy et al. 1991). However, Wailuku was afflicted by warfare through much of its history [with the meaning of Wailuku being 'water of destruction] (e.g., Kamakau 1992, Pukui et al. 1974).

In the post-contact era, sugar interests took the forefront of the Wailuku and Kahului economy, and cane fields, mills, ditches, a railroad, and other infrastructure forever changed the landscape. According to historic maps, the vicinity surrounding the current project area was not under heavy development or cultivation until at least the mid-20th century. Vestiges of the sugar industry still remain, particularly the Kahului Railroad, which is not far north from the project area.

Anticipated Finds and Research Questions

Archaeological studies conducted near the project area can help inform on the kinds of subsurface archaeological resources that may be found. The closest archaeological studies to the project identified historic artifacts and intact portions of the Kahului Railroad infrastructure. In the areas just outside the immediate vicinity of the project area, traditional Hawaiian artifacts and human burials have been identified. It is possible that these kinds of archaeological resources will be found on the property. A historic wall and three historic buildings are known to occur within the project area.

Research questions will broadly address the identification of the above archaeological resources and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Are there subsurface cultural deposits or evidence of human burials within the survey area? Where are they located and what time period do they belong to?
2. Are there any vestiges of historic-era use of the project area other than the wall and three buildings still standing on the property? Are there subsurface remnants of the Kahului Railroad in this area of Kahului?

Once these basic questions are answered, additional research questions may be developed in consultation with SHPD, tailored to the specific kinds of archaeological resources that occur in the project area.

METHODS

Pedestrian survey and subsurface testing were carried out on June 14 and 15, 2021 by Jeffrey Lapinad, Max Pinsonneault MA, and Windy McElroy, PhD. McElroy served as Principal Investigator, overseeing all aspects of the project.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for the entire area. Archaeologists were spaced approximately 2 m apart. Of the 1.91 ha (4.72 ac.) survey area, 100% was covered on foot. The study area is open and flat with excellent visibility, and the project area has been disturbed by modern development, including portions that are paved in asphalt.

Test trenches (TR) were excavated in 17 locations throughout the project area. The excavation strategy was approved by SHPD beforehand. Excavation was accomplished with a backhoe (Figure 16). Vertical provenience was measured from the surface, and trenches were excavated to the water table. Profiles were drawn and photographed, and soils were described using the USDA *Soil Survey Manual* (Soil Science Division Staff 2017), Munsell soil color charts (Munsell 2010), and a sediment texture flowchart (Thien 1979). Smartphone cameras were used to take digital photos of various stages of the work and where profiles were drawn. Photo logs and bag lists recorded photo locations and information for collected cultural material. Trench locations were recorded with a 3 m-accurate Garmin GPSmap 66st, and all trenches were backfilled after excavation. Where trenches were excavated on asphalt paving, the asphalt was repaired after backfilling.

The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report, rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2-35). All cultural material thought to be 50 years or older was collected. Collected materials are temporarily being curated at the Keala Pono storage facility in Honolulu until they can be returned to the landowner.



Figure 16. Excavation with a backhoe. Orientation is to the southeast.

RESULTS

Pedestrian survey and subsurface testing were conducted at TMK: (2) 3-7-004:003 (por.) in Wailuku Ahupua‘a, Wailuku District, on the island of Maui. One archaeological site, the Kahului School, was found on the surface, and it consists of a wall and three buildings. Excavation of 17 trenches did not yield any evidence of subsurface archaeological deposits or features. Trenches were spread across the entire parcel, with a concentration of trenches in the large yard on the northern side of the project parcel (Figures 17–19). Stratigraphic layers were organized according to their depth and projected age to form an area stratigraphy utilizing a Harris Matrix, according to the methodology put forth by Edward Harris (1979). In addition to this AIS, a historic architectural report (Yarbrough 2021) and a cultural impact assessment were prepared (Duhaylonsod et al. 2021).

SIHP 50-50-04-08872 - Kahului School Campus

SIHP 50-50-04-08872 is the former Kahului School campus, located on TMK: (2) 3-7-004:003 (Figures 20 and 21). The main features of the site are a low stone wall (Feature 1) and the MCSA building (Feature 2). Also on the property are a collapsed cafeteria building and a utility shed. The wall was constructed in 1939, and the MCSA building was built in 1920. Neither the cafeteria or the utility shed are particularly notable in terms of historical significance. The present deterioration of the cafeteria has removed any historical significance it might once have had, while the utility shed is a purely utilitarian structure, with no apparent historical significance. The boundary wall and the MCSA building do possess integrity of location and feeling however, and are historically significant.

Two additional historic buildings were located on this property in the past, the two-story school building, constructed in 1920, and the school annex, built in 1939. Both structures are now demolished. The two-story school building was part of the Kahului Historic District (SIHP 50-50-04-1607). First proposed in 1975, the district included a railroad roundhouse, a bank, the fairgrounds, and the two-story school building that used to be on this property. The district was centered around preserving the history of the port of Kahului, the second largest port in Hawai‘i.

Feature 1 – Boundary Wall

Formal Type: Wall
Size: 140 m long (plus two extensions of 21 m and 1.6 m, respectively), 85 cm wide, 70 cm tall
Shape: Linear, with extensions at either end
Construction: Mortared cobbles and stones
Surface Remains: None
Subsurface Deposits: None
Condition: Good
Function: Boundary
Age: Historic
Significance Criteria: a, associated with efforts to restore the economy after the Great Depression; and c, characteristic of territorial-era construction in Hawai‘i

Feature 1 consists of a wall demarcating the northern property boundary. The wall is composed of rounded basalt cobbles and stones set in mortar (Figure 22). The longest section of the wall fronts W. Ka‘ahumanu Avenue and measures 140 m long and approximately 70 cm high (Figure 23). There are three gaps in the wall, roughly 1 m wide each. The central gap exhibits a cement pad on the ground surface (Figure 24). The west and east ends of this northern section curve so that the wall is extended to the south on both sides. The extension on the west end of the wall runs for 21 m to the south and steps down in height from 100 to 50 cm (Figure 25) and then slopes down toward the south from 50 to 30 cm high. There are remnants of a chain-link fence in this section. On the east

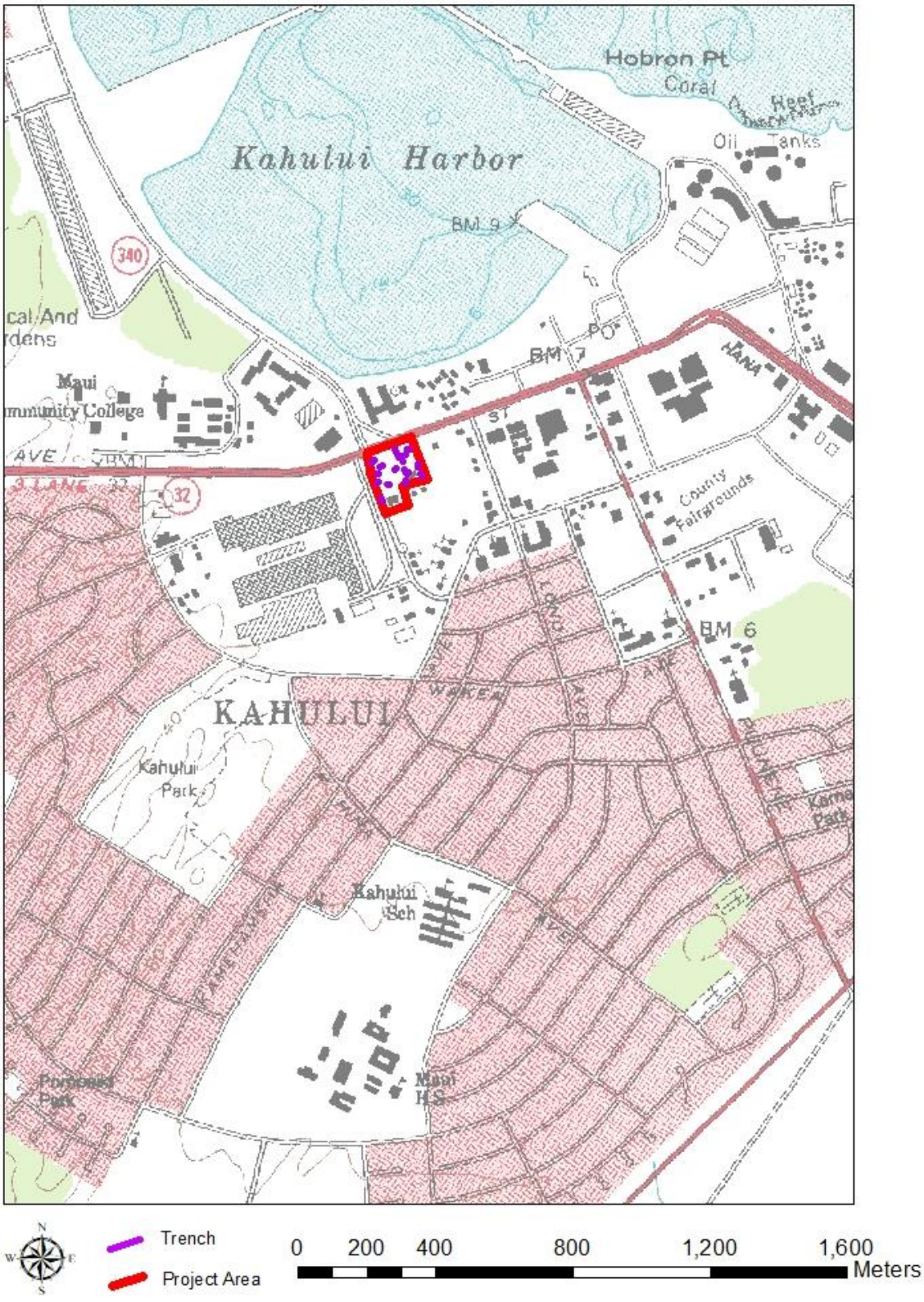

Figure 17. Trench locations plotted on a topographic map (USGS 2013).



Figure 18. Closer view of trench locations plotted on aerial imagery.

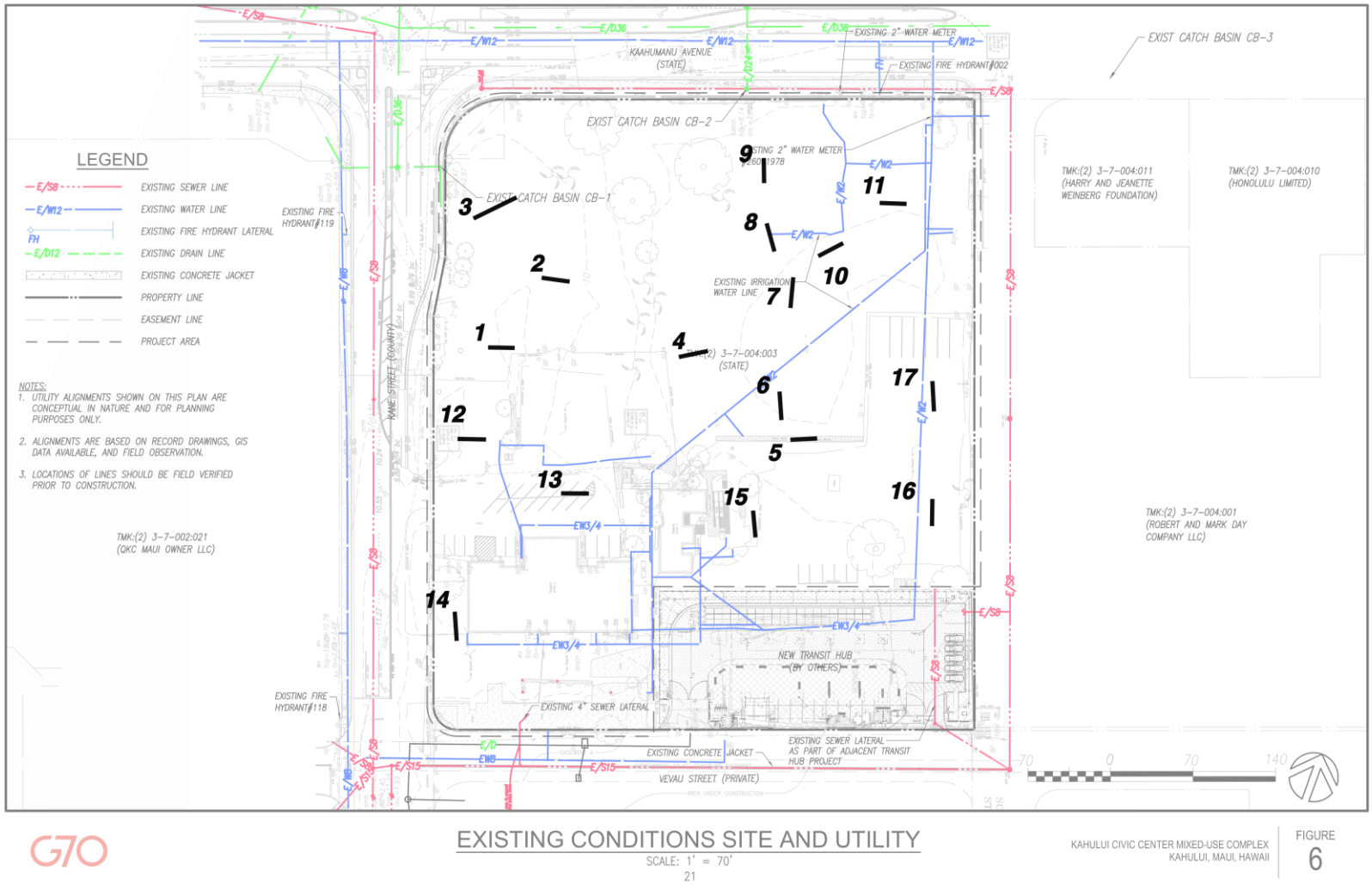

Figure 19. Trench locations plotted over project construction plans.

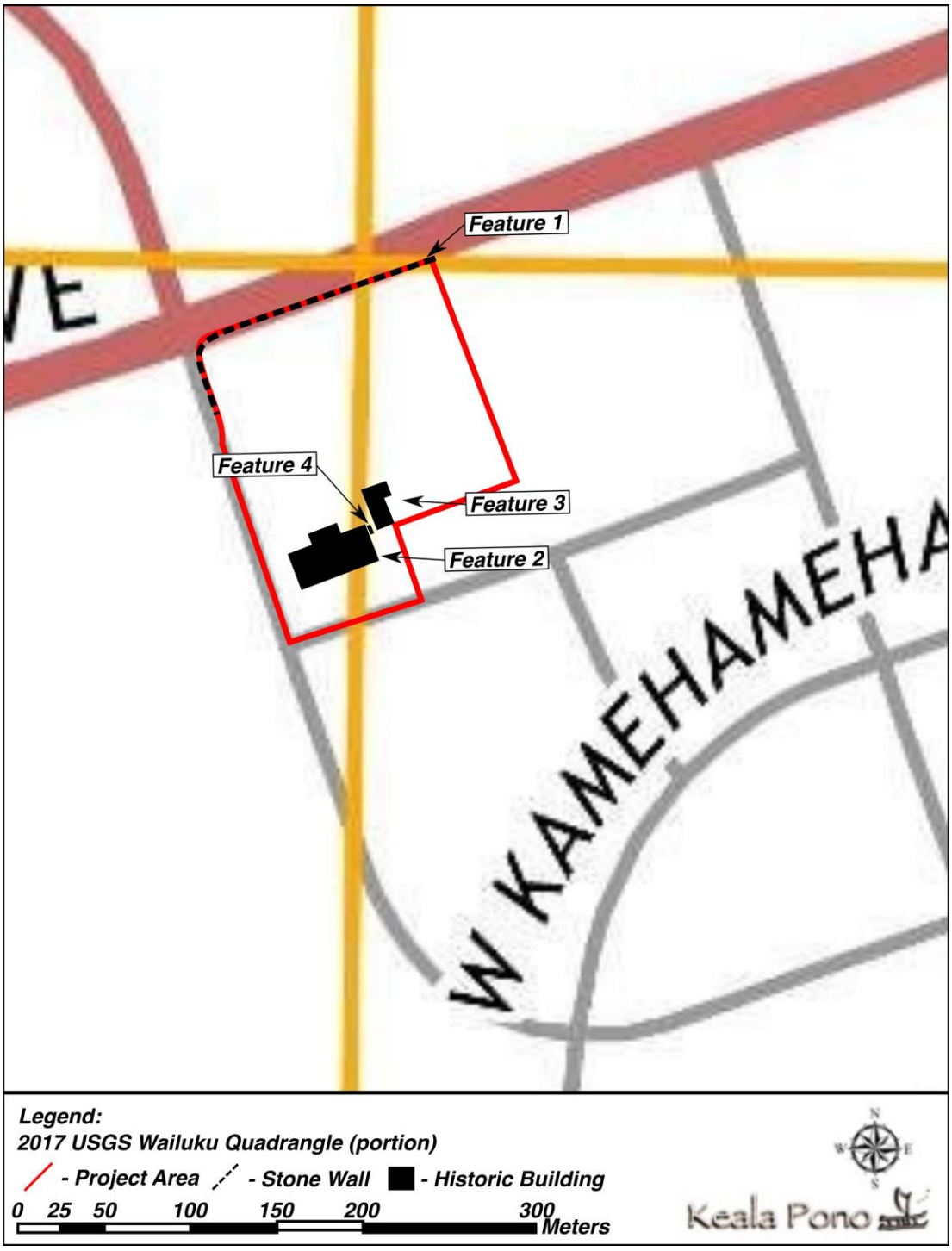

Figure 20. SIHP 50-50-04-08872 plotted on a topographic map (USGS 2017).



Figure 21. A 2000 NOAA aerial photograph showing SIHP 50-50-04-08872.

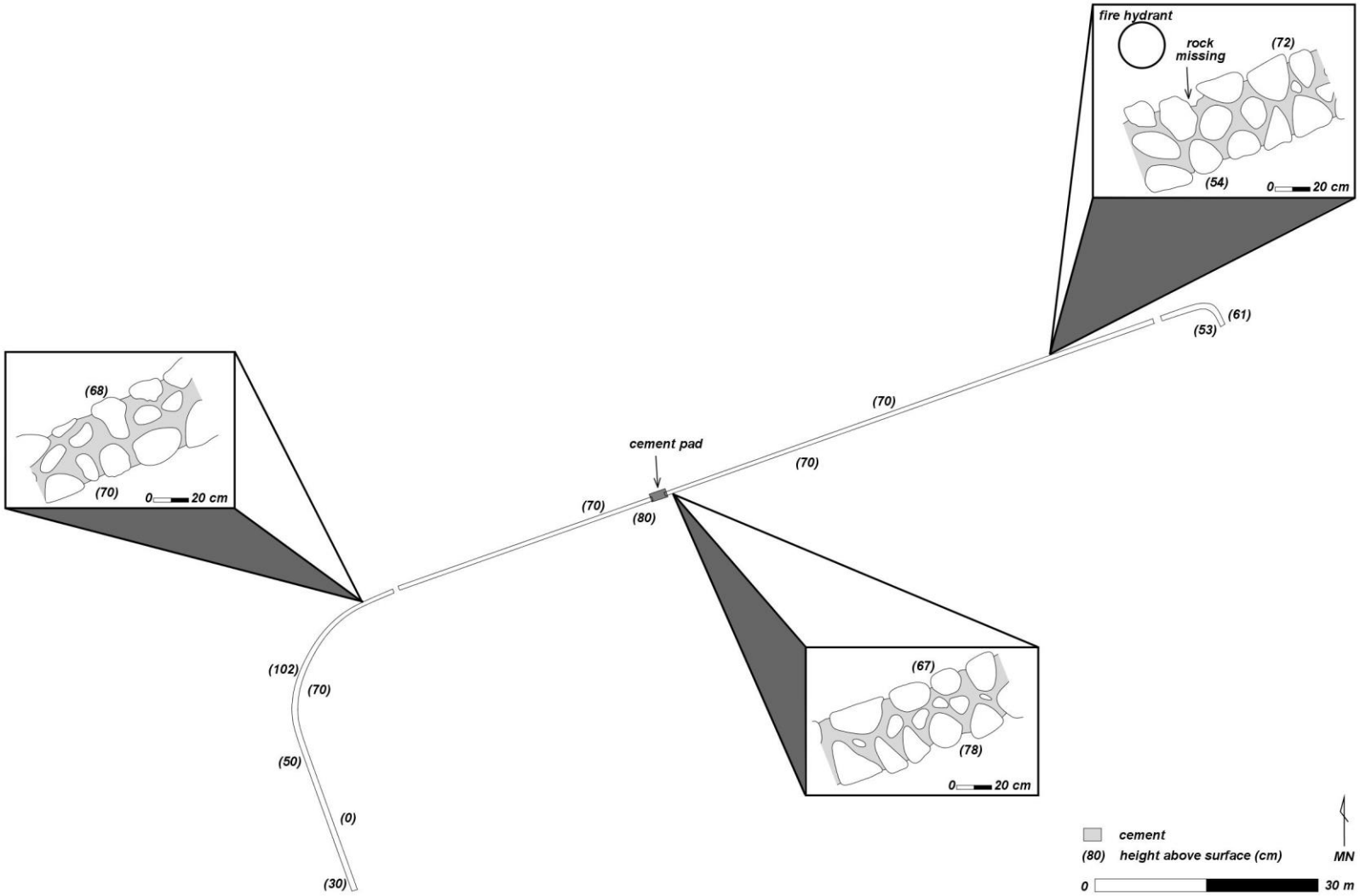

Figure 22. Plan view drawing of Site 1 wall with wall detail in insets.



Figure 23. Photo of the northern wall, facing east. Note the repaired section of cement.



Figure 24. Central gap on the northern wall, with concrete pad, facing south.



Figure 25. Change in wall height, western extension, facing east.

end of the wall there is a 1.6 m-long extension that runs to the south (Figure 26). Here the wall is approximately 60 cm high.

The wall exhibits two placards indicating a construction date of 1939 with the inscription "W.P.A.," referring to the Works Progress Administration (e.g., Figure 27). The W.P.A. was a widespread infrastructure and employment program established in 1935 as part of the New Deal, which aimed at restoring the U.S. economy after the Great Depression. The W.P.A. initiated public works and arts projects throughout the U.S., including many in Hawai'i. Other projects around the State include bridges, canals, parks, pavilions, as well as military, school, and airport improvements. While not directly funded by the W.P.A., the now demolished school annex was built concurrently in 1939.

The wall is in good condition, although it has some sections of missing rocks and other segments that have quite clearly undergone significant repairs (e.g., Figure 28; also see Figure 23). This wall is historic in age and functioned as a partial boundary for the property. It is representative of basalt wall construction during the Territorial era in Hawai'i and is an important vestige of the effort to restore the economy after the Great Depression.

Feature 2 – McKinley Community School for Adults Maui Campus Building (Old Maui Vocational School)

Formal Type: Building
Size: A one story building, measuring 50 m long 22.5 m wide, with a 21 m long 10 m protrusion off the north side.
Shape: H-Plan building with a front extension
Construction: Concrete base and perimeter, and wooden upper.
Surface Remains: None
Subsurface Deposits: None
Condition: Good
Function: School / Office
Age: Historic
Significance Criterion: c, characteristic of territorial-era construction in Hawai'i

The largest structure remaining on the property is the old Maui Vocational School, constructed in 1920 (Figures 29 and 30). Currently used as the MCSA building, the structure is an H-plan with a front extension under one complex hip roof. The extension on the front of the building is separated from the H-plan by a U-shaped breezeway hall. The clapboard clad wood building has broad eaves with prominent rafters. The foundation of the building consists of a concrete pad with a concrete lower perimeter that rises roughly 2 feet above grade. The windows are wood framed, but it is possible that some are replacements of earlier windows. The building's internal breezeway has wooden slat bars and secure entry gates bracketing both sides of the central extension on the north side of the building. The breezeway collects and amplifies the breeze coming off Kahului Harbor cooling the high ceilings in the large classrooms and administrative offices.

Feature 3 – Cafeteria

Formal Type: Building
Size: A one story building, measuring 25 m long, 10 m wide, with a 5 m protrusion off the north side
Shape: T-Plan building with a small extension
Construction: Post-on-Concrete footings elevating a single-story wood-frame building
Surface Remains: None
Subsurface Deposits: None
Condition: Poor
Function: Cafeteria
Age: Historic
Significance Criteria: None



Figure 26. Eastern extension, facing west.



Figure 27. Plaque on the northeastern corner, facing southwest.



Figure 28. Example of missing stones in the northern wall, facing south.



Figure 29. Feature 2 the MCSA building, facing south.



Figure 30. Feature 2 the MCSA building, facing east.

Temporary Feature 3 is a partially collapsed, elevated, single-story, wooden T-plan building, constructed on posts anchored in concrete footings (Figure 31). The building is located in the center of the property between the demolished school building and the MCSA building. Judging by the building's design and construction, it was built sometime in the 20th century.

Feature 4 – Utility Shed

Formal Type: Building
Size: A small utility shed, measuring 5 m long, by 2 m wide, elevated, 70 cm off the ground.
Shape: Rectangular
Construction: Concrete footings elevating a small wood and steel shed.
Surface Remains: None
Subsurface Deposits: None
Condition: Good
Function: Electrical
Age: Historic or Modern
Significance Criteria: None

Feature 4 is a small wooden shed, elevated 70 cm off the ground on three concrete footings (Figure 32). The shed houses electrical panels and is utilitarian in nature. The structure is located in the center of the property, between the MCSA building and the cafeteria. Judging by the building's design and construction, it was constructed sometime in the 20th century.

Discussion

Due to the ravages of time and development, only two structures on the property have retained their historic integrity over the years. Feature 1 has retained its integrity of feeling (partial), location, materials, design, workmanship, and association. Furthermore, the boundary wall is a valuable contributing resource to the Kahului Historic District as it holds a prominent position along Ka'ahumanu Avenue, and adds to the historic feel and setting of Kahului. Feature 2 has retained its integrity of location, design, materials, workmanship, and association. This integrity would certainly qualify it for inclusion in the Kahului Historic District as well, as the building is not only a great example of Territorial era construction, but the last operational building on the Kahului School Campus. Both Features 3 and 4 would offer little as contributing resources to the Kahului Historic District. Feature 3 has fallen into such a state of disrepair that it only has integrity of location and partial integrity of association. Feature 4 is a common utilitarian shed that is unremarkable and only retains a tenuous integrity of association.

While both Features 1 and 2 would likely be eligible for their own SIHP numbers, packaging them together is more appropriate as their interpretation is inseparable from the Kahului School itself. Together they demonstrate the importance of the Kahului School Campus in the early and mid-20th century, through multiple periods of development. Between the high quality lumber and carpentry used to build the MCSA, and the carefully inset plaques in the basalt and mortar wall, pride can be seen in the structures remaining on the campus today. This pride is almost certainly a reflection of the school's importance in the past.

The cultural impact assessment that was prepared as a part of this project interviewed three community members to gather mana'o and ike on the project area and vicinity. Unfortunately, the old school building was rarely mentioned during the interviews, only being brought up concerning its recent status as an abandoned building before it was demolished (Duhaylonsod et al. 2021). Even so, the school building was likely included in the historic district because of its importance to the local community. Other consultation was conducted by G70, in which stakeholders were engaged, including federal, state, and county agencies, elected officials, utility companies, as well as



Figure 31. Feature 3, cafeteria building ruins, facing east.



Figure 32. Feature 4, utility shed, facing southeast.

community organizations and neighbors of the property. G70 also held a public meeting in February 2021 where a broad net was cast to invite folks to attend. Most recently, consultation was also conducted with Annalise Kehler of the CRC and Janet Six of SHPD on December 22, 2021. Several mitigation recommendations were offered for the historic structures on the property:

- The Feature 1 wall should be preserved as much as possible; particularly in the sections where the plaques are located.
- If sections of the wall must be partially dismantled, they could be moved to a nearby location on the property or their rocks incorporated in the design of the building(s) with accompanying interpretive signage.
- Options to either reuse or move the Feature 2 Administration Building should be considered.
- If the Administration Building and cafeteria must be demolished, a Historic American Buildings Survey (HABS) should be completed.
- Low-density buildings with wide setbacks from property lines are preferred, to fit in with the character of the Kahului Historic District. Additionally, air flow throughout the Site should be considered.

Considering the Kahului School Site as a whole, it clearly contributes to the Historic Kahului District. The boundary wall running along Ka‘ahumanu Avenue is very prominent and is characteristic of the materials, design, and workmanship of early 20th century Hawai‘i; the MCSA Building is well constructed in Territorial-era style and is the last intact building of the school that remains. Therefore the Kahului School Campus is representative of early 20th century growth of Kahului and contributes to the Kahului Historic District.

Area Stratigraphy

In total, 12 distinct stratigraphic layers were encountered in the project area, consisting of two pavements, a basecourse, and nine soil layers (Table 2). These layers were organized into a Harris Matrix to demonstrate their relationships to each other (Figure 33). Of note, layers P-I, P-II, and B-I are classified outside of the standard stratigraphic sequence (I, II, III, etc.) because of their clear modern construction and use. The Harris Matrix is read from top to bottom, with the youngest layers being found at the top and the oldest layers being found at the bottom. Lines connecting layers demonstrate boundaries that have been identified. Any layer that is found below another has been identified as older, either through stratigraphic inference or through the identification of objects found within the layer. Layers on the same level as each other are not necessarily identified to be from the same period. Instead, there is no evidence demonstrating their relative age one way or the other.

The first tier of the Harris Matrix represents the surface layer of the project area. This includes an asphalt pavement (P-I) and its basecourse (B-I), a compacted gravel pavement (P-II), and topsoils (I, II, and III). The second tier of the Harris Matrix is populated by two layers of secondary fill – Layers IV and V. The natural layers of the project area are found below this, sometimes demarcated by Layer VI, a buried sandy loam topsoil lens that forms the third tier of the Harris Matrix. The fourth tier of the matrix is Layer VII, a natural layer of sandy loam. Finally, the fifth and bottom tier of the matrix is a sandy loam (VIII) and a buried stream deposit or remnant of the old coastline (IX).

Table 2. Area Stratigraphy Derived from Profiles within the Project Area

Layer	Average Depth (cmbs)	Munsell Color	Description	Interpretation
P-I	0–10	-	An asphalt pavement	Modern pavement
P-II	0–25	-	A compact gravel pavement	Modern pavement
B-I	10–20	-	A compact basecourse	Modern basecourse
I	0–27	10YR3/3 (dark brown)	Sandy loam; dry; non-sticky; non-plastic; 1–25% fine to medium roots; 1–5% gravel; abandoned utilities; concrete rubble; historic glass bottle (Acc. 1); smooth, gradual to clear boundary with Layer V.	Topsoil
II	0–40	10YR6/2 (light gray)	Sandy loam; dry; non-sticky; non-plastic; 90% fine roots; 1% gravel; smooth, diffuse boundary with Layer V.	Topsoil
III	0–20	10YR4/3 (brown)	Sandy clay loam; wet; slightly sticky; very plastic; 30% fine roots; 1% gravel; smooth, diffuse boundary with Layer IV.	Topsoil
IV	20–94	7.5YR6/3 (light brown)	Sandy loam; dry; non-sticky; non-plastic; 0–5% fine roots; 0–5% gravel; smooth, clear boundary with Layer VI.	Fill
V	26–21	10YR6/2 (light gray)	Rocky sandy loam; dry; non-sticky; non-plastic; 0–5% fine to coarse roots; 2–10% gravel to stone sized basalt; concrete rubble; abandoned utilities; smooth, clear boundary with Layer VI; smooth, gradual to clear boundary with Layer VIII; smooth, clear boundary with Layer IX.	Fill
VI	78–105	5YR6/8 (reddish yellow)	Sandy loam; wet; non-sticky; non-plastic; 5–30% fine to coarse roots; 2–5% gravel; smooth, abrupt boundary with Layer VII; smooth, clear boundary with Layer VIII.	Buried topsoil lens
VII	82–148	10YR6/2 (light gray)	Sandy loam; wet; non-sticky; non-plastic; 0–5% medium roots; 2–10% gravel to cobble sized rocks; smooth, gradual to clear boundary with Layer VIII.	Natural
VIII	110–208	10YR2/2 (very dark brown)	Sandy loam; wet; non-sticky; non-plastic; no roots; 1–5% gravel and coral cobbles; smooth, diffuse boundary with Layer IX; typically base of excavation.	Natural
IX	134–174	10YR2/2 (very dark brown)	Rocky sandy loam; wet; non-sticky; non-plastic; no roots; 90% waterworn cobbles; smooth, gradual to clear boundary with Layer VIII.	Natural buried streambed or portion of old coastline

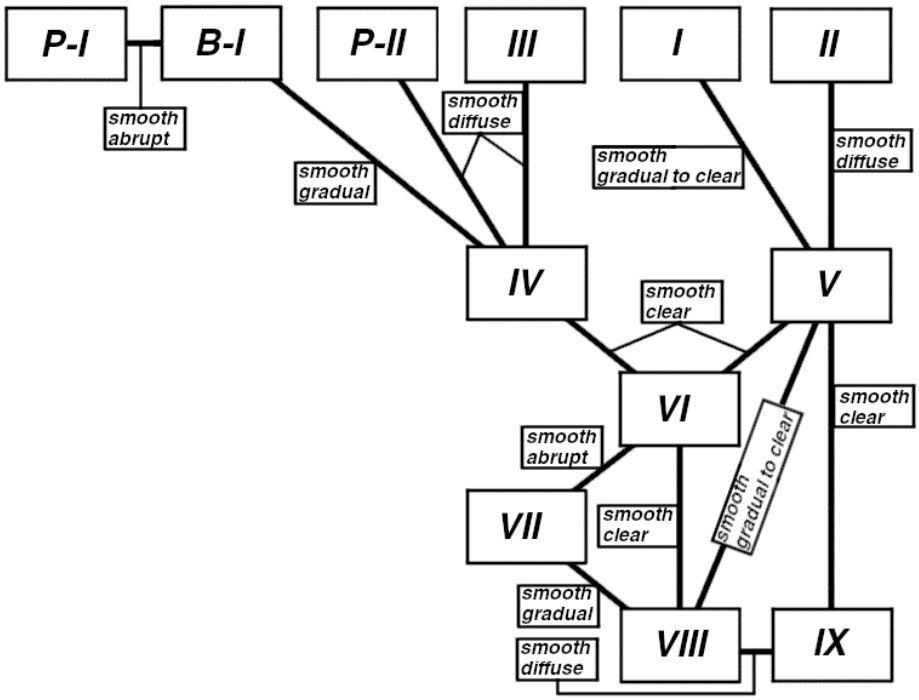

Figure 33. Harris Matrix of the project area, demonstrating the relationship between individual layers, with the youngest layers at the top and the oldest layers at the bottom.

Layers P-I and B-I are found over the northern parking lot and form the modern pavement and basecourse for the primary parking lot in the project area. Layer P-I extends from the surface to a maximum depth of roughly 10 cmbs, and Layer B-I extends from Layer P-I to a maximum depth of 20 cmbs. Both layers have a thickness of 10 cm.

Layer P-II is found in the eastern parking lot, which is now repurposed for construction storage, and is either the remnants of the basecourse from an asphalt pavement or a compacted gravel pavement. The pavement extends from the surface to a maximum depth ranging from 20–30 cmbs, with an average thickness of 25 cm.

Layer I is a dark brown, dry sandy topsoil found throughout the northern yard that dominates the northern half of the project area. The layer extends from the surface to a maximum depth of 10–40 cmbs with a typical thickness of 30 cm. Layer I contains 1–25% fine to medium roots, 1–5% gravel, abandoned utilities, concrete rubble, and a glass bottle fragment (Acc. 1). The soil has a smooth boundary with Layer V below, ranging from gradual to clear in distinctness.

Layer II is a light gray, dry sandy loam topsoil found west of the eastern parking lot. The layer extends from the surface to a maximum depth of 40 cmbs, with a thickness of 40 cm. Layer II contains 90% fine roots and 1% gravel. The soil has a smooth and diffuse boundary with Layer V below.

Layer III is a slightly sticky, very plastic, wet, brown, sandy clay loam topsoil found immediately northwest of the southern parking lot. The layer extends from the surface to a maximum depth of 20

cmbs, with a thickness of 20 cm. Layer III contains 30% fine roots and 1% gravel. This soil has a smooth, diffuse boundary with layer IV below.

Layer IV is a light brown, dry sandy loam found along the southern portion of the project parcel. The layer extends from a minimum depth of 10–30 cmbs, and runs to a maximum depth of 60–110 cmbs, with a typical thickness of 70 cm. Layer IV contains 0–5% fine roots and 0–5% gravel. This soil has a smooth, clear boundary with Layer VI below.

Layer V is a light gray, dry, rocky, sandy loam found throughout the northern portion of the project area. Extending from a minimum depth of 0–30 cmbs and running to a maximum depth of 70–190 cmbs, this soil has an average thickness of 90 cm. Layer V contains 0–5% fine to coarse roots and 2–10% gravel, cobbles, and stones, in addition to concrete rubble and abandoned utilities. Below Layer V, this soil shares a smooth, clear boundary with Layer VI and IX and a smooth, gradual to clear boundary with Layer VIII.

Layer VI is a reddish yellow, wet sandy loam, buried topsoil. Layer VI is found along the southern portion of the project area and delineates the artificial and natural soils where it is found. The layer extends from a minimum depth of 60–110 cmbs and runs to a maximum depth of 80–120 cmbs, with a typical thickness of roughly 30 cm. Layer VI contains 5–30% fine to coarse roots and 2–5% gravel. Below Layer VI the soil shares a smooth, abrupt boundary with Layer VII and a smooth, clear boundary with Layer VIII.

Layer VII is the younger of the natural soils in the project area. Found throughout the southern portions of the project area, Layer VII is a light gray, wet, sandy loam with 0–5% medium roots and 2–10% gravel to cobble sized rocks. This layer extends from a minimum depth of 50–120 cmbs and runs to a maximum depth of 140–160 cmbs, with an average thickness of 50 cm. Layer VII shares a smooth, gradual to clear boundary with Layer VIII below.

Layer VIII is the older of the natural sediments in the project area. Found throughout the entire project area, Layer VIII is a very dark brown, wet sandy loam containing 1–5% basalt gravel and coral cobbles. Extending from a minimum depth of 60–165 cmbs and running to the base of excavation, the thickness of Layer VIII is unknown. While Layer VIII was typically the base of excavations during trenching, it was sometimes found above and/or below Layer IX, of which it formed a smooth, diffuse boundary.

Layer IX is a buried streambed or old coastline remnant found intermittently throughout the project area. Similar to Layer VIII, Layer IX is a very dark brown, wet sandy loam, but whereas Layer VIII contains 1–5% gravels and cobbles, Layer IX contains 90% waterworn cobbles. Layer IX extends from a minimum depth of 60–250 cmbs and runs to maximum depth of 110–270 cmbs, with a typical thickness of 30 cm. As mentioned above, Layer IX is found above, below, and within Layer VIII, likely associating these layers together chronologically.

The stratigraphy in the project area can be diagnosed in two aspects, in terms of north and south, and artificial and natural. Interestingly both divisions are apparent on the Harris Matrix (see Figure 33). The stratigraphy presented in the southern portion of the site is the branch on the left side of the figure, while the simpler stratigraphy to the north forms the upper right. Below, the natural sediments form an organic cluster, unifying the northern and southern branches of the site at Layer VI and VIII. Interestingly, despite the parcel's curious stratigraphy, the layers themselves are predominantly sterile, with only a single subsurface artifact being encountered during the entire project (Acc. 1). The only evidence that Layers IV and V are fill is the abandoned utilities and construction debris found in Layer V and the buried topsoil found below Layer IV.

Another important aspect is Layer IX, the buried streambed or old coastline remnant, found near the bottom of the sequence. While we could not identify its exact path across the area, it does meander significantly around the lower sections of the stratigraphic sequence. This is possibly the remnants of an ancient drainage flowing north to the ocean.

Representative Profiles

The area stratigraphy above was constructed by analyzing 17 trenches (TR) excavated throughout the project area. From these exploratory trenches, eight distinct stratigraphy patterns were encountered, for each of which we provide a representative profile drawing and photo. Profile locations are shown in Figures 17–19. Table 3 (at the end of this section) and the paragraphs below describe individual trench stratigraphy.

TR 1 is located on the western edge of the northern yard, approximately 20 meters northwest of the gate to the northern parking lot. TR 1 reaches a depth of 290 cmbs and includes Layers I, V, and VIII (Figures 34 and 35). In TR 1, Layer I contains 1% gravel rocks and 25% fine roots and extends from the surface to 30 cmbs. A historic glass bottle finish (Acc. 1) was found in this layer at approximately 25 cmbs. Additionally, an abandoned concrete jacket was encountered at the base of Layer I amidst concrete rubble. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 30-180 cmbs and contains 2% gravel rocks, a 4x4 wooden beam at 120 cmbs, a concrete jacket at 70 cmbs, and wires from 40-60 cmbs. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 165-290 cmbs, contains 3% cobbles, is sterile, and crosses the water table, where digging was halted.

The stratigraphy encountered in TR 1 is typical of the trenches dug throughout the northern yard, with a nearly identical stratigraphic sequence being encountered in TR 3, TR 4, TR 5, TR 6, TR 8, and TR 10. In addition, this stratigraphy is similar if not identical to TR 2, TR 7, TR 9, and TR 11. Notably, all of these trenches are located in the northern yard, and none of them contain Layer VI, the buried topsoil encountered elsewhere in the project area. Additionally, the boundaries between layers are very smooth with little verticality. When considered together, the lack of a buried topsoil and the smoothness of the boundary between Layers V and VIII may indicate bulldozing, likely to landscape the yard present on the surface today.

TR 2 is located on the western edge of the northern yard, approximately 30 m north of the gate to the northern parking lot. TR 2 reaches a depth of 240 cmbs and includes Layers V and VIII (Figures 36 and 37). In TR 2, Layer V runs from the surface to 150 cmbs and contains 2% basalt gravel and 5% fine to coarse roots. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 120 cmbs to the base of excavation and contains 2% gravel and broken natural marine shells. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted. The stratigraphy encountered in TR 2 is unique amongst the project area in that it does not have a distinct layer of root heavy topsoil. Aside from the lack of topsoil, TR 2 presents a very similar stratigraphy to the rest of the northern yard trenches.

TR 3 has a similar stratigraphy to TR 1 (see Figure 34). Located on the western edge of the northern yard, TR 3 is approximately 60 m north-northwest of the gate to the northern parking lot. TR 3 reaches a depth of 290 cmbs and includes Layers I, V, and VIII. In TR 3, Layer I runs from the surface to 40 cmbs and contains 1% basalt gravel and 1% fine roots. Layer I also contains concrete rubble. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 30–190 cmbs and contains 1% basalt gravel and 1% fine to coarse roots. Layer V has a smooth, gradual boundary with Layer VIII below. Layer VIII runs from 160 cmbs to the base of excavation and contains 1% gravel rocks, 2% coral cobbles, and broken natural marine shells. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

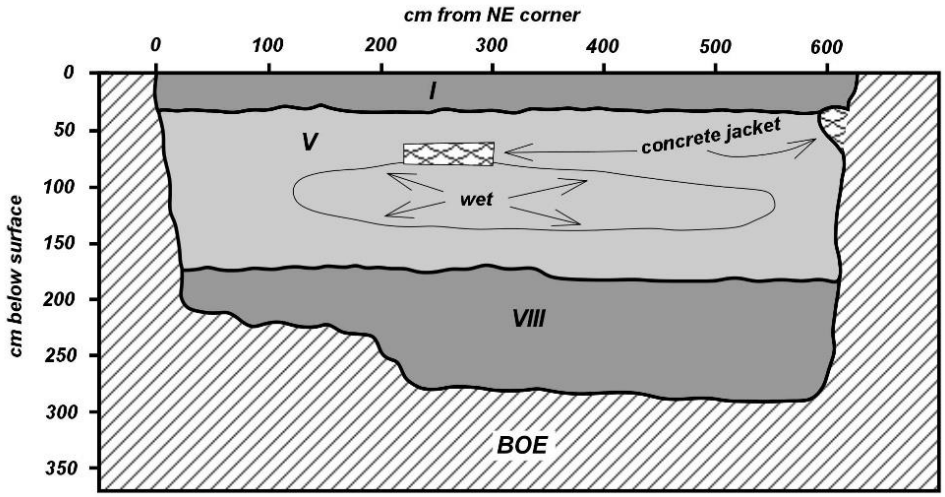

Figure 34. Profile drawing of TR 1, facing east.



Figure 35. Profile photo of TR 1, facing east.

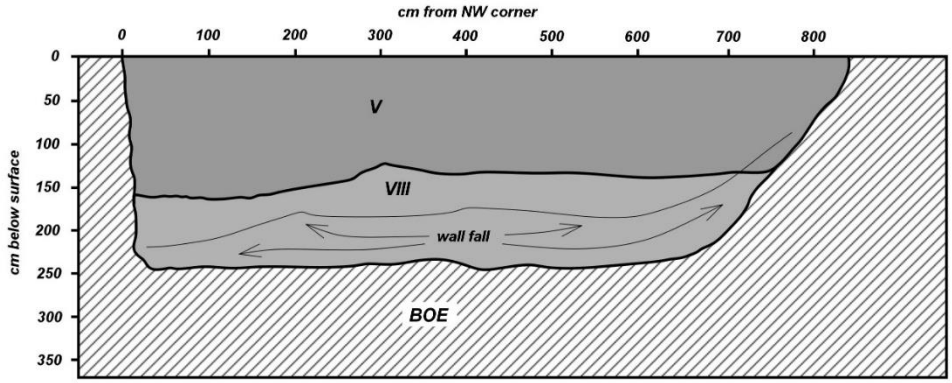

Figure 36. Profile drawing of TR 2, facing north.



Figure 37. Profile photo of TR 2, facing north.

TR 4 has a similar stratigraphy to TR 1 (see Figure 34). Located in the central portion of the northern yard, TR 4 is approximately 30 m east-northeast of the gate to the northern parking lot. TR 4 reaches a depth of 170 cmbs and includes Layers I, V, and VIII. In TR 4, Layer I runs from the surface to 40 cmbs and contains 5% basalt gravel and 25% fine to medium roots. Additionally, Layer I also contains a piece of rebar at 16 cmbs. Layer I has a smooth, clear boundary with Layer V below. Layer V runs from 30–100 cmbs and contains 10% gravel to stone sized rocks and 5% fine roots. Additionally, Layer V contains an abandoned waterline at 43 cmbs. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 100 cmbs to the base of excavation and contains 5% gravel rocks. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

TR 5 has a similar stratigraphy to TR 1 (see Figure 34). Located in the central portion of the northern yard, TR 4 is approximately 90 m east northeast of the gate to the northern parking lot. TR 5 reaches a depth of 190 cmbs and includes Layers I, V, and VIII. In TR 5, Layer I runs from the surface to 30 cmbs and contains 5% basalt gravel and 25% fine to medium roots. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 30–80 cmbs and contains 10% gravel to cobble sized rocks and 5% fine roots. Additionally, Layer V contains a piece of rebar at 35 cmbs, an abandoned waterline at 41 cmbs, and concrete rubble throughout the layer. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 70 cmbs to the base of excavation and contains 5% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

TR 6 has a similar stratigraphy to TR 1 (see Figure 34). Located in the central portion of the northern yard, TR 6 is approximately 60 m east-northeast of the gate to the northern parking lot. A ceramic sherd (Acc. 2) was found on the surface nearby. TR 6 reaches a depth of 150 cmbs and includes Layers I, V, and VIII. In TR 6, Layer I runs from the surface to 30 cmbs and contains 5% basalt gravel and 25% fine to medium roots. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 30–70 cmbs and contains 10% gravel to stone-sized rocks and 5% fine roots. Additionally, Layer V contains a piece of rebar at 38 cmbs, an abandoned pipe at 41 cmbs, and concrete rubble throughout the layer. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 60 cmbs to the base of excavation and contains 1% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

TR 7 has a slightly different stratigraphy than TR 1, with Layer IX, a buried streambed or old coastline remnant, present between Layer II and VIII (Figure 38). Located in the central portion of the northern yard, TR 7 is approximately 60 m northeast of the gate to the northern parking lot. TR 7 reaches a depth of 150 cmbs and includes Layers I, V, VIII, and IX (Figure 39). In TR 7, Layer I runs from the surface to 30 cmbs and contains 5% basalt gravel and 10% fine to medium roots. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 20–90 cmbs and contains 10% gravel to cobble-sized rocks and 5% fine roots. Additionally, Layer V contains an abandoned irrigation line at 39 cmbs and concrete rubble throughout the layer. Layer V has a smooth, clear boundary with Layers VIII and IX below. Layer IX runs from 60–110 cmbs and contains 90% waterworn cobbles. In this trench, Layer IX lies above Layer VIII, with a smooth, gradual boundary below. Layer VIII runs from 80 cmbs to the base of excavation and contains 5% gravel rocks. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

The stratigraphy encountered in TR 7 is representative of the north yard trenches that encountered the buried streambed or old coastline remnant. While in TR 7 Layer IX is above Layer VIII, the two layers are intermixed in other parts of the project area. TR 9 and TR 11 have a similar stratigraphy to TR 7. The exact path of the buried streambed or old coastline is challenging to tell with our limited subsurface testing alone, but it evidently meanders throughout the project area with a particular cluster in the northeastern corner of the property.

TR 8 has a similar stratigraphy to TR 1 (see Figure 34). Located in the central portion of the northern yard, TR 8 is approximately 75 m northeast of the gate to the northern parking lot. TR 8 reaches a depth of 160 cmbs and includes Layers I, V, and VIII. In TR 8, Layer I runs from the surface to 20 cmbs and contains 5% basalt gravel and 20% fine roots. Additionally, Layer I contains an abandoned irrigation line at 7 cmbs. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 10–90 cmbs and contains 2% gravel rocks and 5% fine roots. Additionally, Layer V contains concrete rubble. Layer V has a smooth, clear boundary with Layer VIII below. Layer VIII runs from 90 cmbs to the base of excavation and contains 2% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

TR 9 has a similar stratigraphy to TR 7 (see Figure 38). Located in the central portion of the northern yard, TR 9 is approximately 90 m north northeast of the gate to the northern parking lot. TR 9 reaches a depth of 170 cmbs and includes Layers I, V, VIII, and IX. In TR 9, Layer I runs from the surface to 20 cmbs and contains 5% basalt gravel and 20% fine roots. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 10–90 cmbs and contains 2% basalt gravel and 5% fine roots. Layer V has a smooth, clear boundary with Layers VIII and IX below. Layer IX runs from 80–110 cmbs and contains 90% waterworn cobbles. Layer IX has a smooth, gradual boundary with Layer VIII below. Layer VIII runs from 100 cmbs to the base of excavation and contains 5% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

TR 11 has a similar stratigraphy to TR 7 (see Figure 38). Located in the northeastern corner of the northern yard, TR 11 is approximately 100 m northeast of the gate to the northern parking lot. TR 11 reaches a depth of 170 cmbs and includes Layers I, V, VIII, and IX. In TR 11, Layer I runs from the surface to 10 cmbs and contains 5% basalt gravel and 20% fine roots. Layer I has a smooth, gradual boundary with Layer V below. Layer V runs from 10–80 cmbs and contains 10% gravel to cobble sized rocks and 5% fine roots. Layer V has a smooth, clear boundary with Layers VIII below.

Layer VIII runs from 70 cmbs to the base of excavation and contains 2% gravel rocks. Layer VIII has a smooth, gradual boundary with Layer IX below. Layer IX runs from 150 cmbs to the base of excavation and contains 90% waterworn cobbles. In portions of this trench, Layer IX was exposed on both sides and below by Layer VIII. Both Layer VIII and IX are archaeologically sterile and cross the water table, where digging was halted.

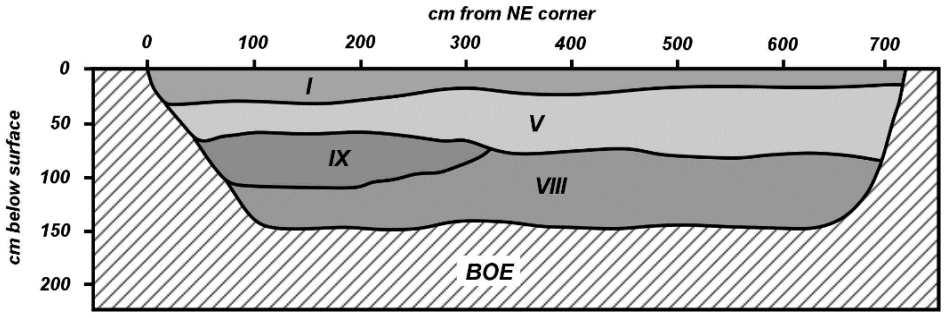

Figure 38. Profile drawing of TR 7, facing east.



Figure 39. Profile photo of TR 7, facing east.

TR 12 exhibits the more variable stratigraphy of the southern and eastern portions of the project area (Figure 40). Located in the southwestern corner of the northern yard, TR 12 is approximately 30 m west southwest of the gate to the northern parking lot. TR 12 reaches a depth of 270 cmbs and includes Layers I, IV, VI, VII, VIII, and IX (Figure 41). In TR 12, Layer I runs from the surface to 30 cmbs and contains 5% basalt gravel and 20% fine roots. Additionally, Layer I contained a large metal pipe at 15 cmbs. Layer I has a smooth, clear boundary with Layer IV below. Layer IV runs from 20–110 cmbs and contains 5% gravel rocks and 5% fine roots. Layer IV has a smooth, clear boundary with Layer VI below. Layer VI runs from 70–120 cmbs and contains 30% medium to coarse roots. Layer VI has a smooth, clear boundary with Layer VII below. Layer VII runs from 70–160 cmbs and contains 10% gravel to cobble sized rocks. Layer VII has a smooth, gradual boundary with Layer VIII below. Layer VIII runs from 130–250 cmbs and contains 2% gravel. Layer VIII has a smooth, clear boundary with Layer IX below. Layer IX runs from 250 cmbs to the base of excavation and contains 90% waterworn cobbles. Layers VIII and IX are archaeologically sterile and cross the water table, where digging was halted.

The stratigraphy encountered in TR 12 is the first profile presented that shows the buried topsoil encountered throughout the rest of the project area. TR 12 is the only trench in the northern yard containing Layers IV, VI, and VII. Notably, TR 12 is also the only trench excavated in the panhandle of the northern yard, south of the gate (see Figure 18). The stratigraphy here likely indicates that

whatever bulldozing event that took place in the rest of the northern yard did not occur south of the gate between the yard and the parking lot. This is conclusion is strengthened because not only are Layer VI – the buried topsoil – and Layer VII – the intermediate natural sediment above Layer VIII – present, but also a different fill layer exists above Layer VI. Layer IV is present here instead of Layer V. This stratigraphic sequence has some variation throughout the remainder of the project area, but the general order of Layer IV over Layer VI over Layer VII over Layer VIII remains consistent through TR 12, TR 13, and TR 14.

TR 13 exhibits the more variable stratigraphy of the southern and eastern portions of the project area (Figure 42). Located in the center of the northern parking lot, TR 13 is approximately 30 m south of the gate to the northern yard. TR 13 reaches a depth of 240 cmbs and includes Layers P-I, B-I, IV, VI, VII, VIII, and IX (Figure 43). In TR 13, Layer P-I is an asphalt pavement that runs from the surface to 10 cmbs. Layer P-I has a smooth, very abrupt boundary with Layer B-I below. Layer B-I is a basecourse that runs from 10–20 cmbs. Layer B-I has a smooth, gradual boundary with Layer IV below. Layer IV runs from 20–90 cmbs and has a smooth, clear boundary with Layer VI below. Layer VI runs from 70–100 cmbs and contains 5% fine roots. Layer VI has a smooth, gradual boundary with Layer VII below. Layer VII runs from 80–140 cmbs and contains 5% gravel sized rocks and 5% medium roots. Layer VII has a smooth, gradual boundary with Layer IX below. Layer IX runs from 130–210 cmbs and contains 90% waterworn cobbles. Layer IX has a smooth, diffuse boundary with Layer VIII below and aside. Layer VIII runs from 140 cmbs to the base of excavation and contains 5% basalt gravel. Layers VIII is archaeologically sterile and crosses the water table, where digging was halted. TR 13 is the only trench that was excavated through the parking lot north of the main building on the property. While the top two layers are different than TR 12 to the west and TR 14 to the southwest, the lower half is very similar, with the primary difference being the much thicker presence of Layer IX in this section.

TR 14 also exhibits the more variable stratigraphy of the southern and eastern portions of the project area (Figure 44). TR 14 is located between the northern and southern parking lots. TR 14 reaches a depth of 270 cmbs and includes Layers III, IV, VI, VII, and VIII (Figure 45). In TR 14, Layer III runs from the surface to 20 cmbs and contains 1% basalt gravel and 30% fine roots. Layer III has a smooth, diffuse boundary with Layer IV below. Layer IV runs from 10–110 cmbs and contains 5% basalt gravel and 5% fine roots. Layer III has a smooth, clear boundary with Layer VI below. Layer VI runs from 110–120 cmbs and contains 5% basalt gravel and 5% fine roots. Layer VI has a smooth, clear boundary with Layer VII below. Layer VII runs from 120–180 cmbs and contains 2% basalt gravel. Layer VII has a smooth, gradual boundary with Layer VIII below. Layer VIII runs from 160 270 cmbs to the base of excavation and contains 2% basalt gravel. Layers VIII is archaeologically sterile and crosses the water table, where digging was halted. The stratigraphy encountered in TR 14 is very similar to that of TR 12 and TR 13. Interestingly, TR 14 is the only trench in the project area where Layer III occurred. Layer III was the only clayish soil encountered during the trenching.

TR 15 also exhibits the more variable stratigraphy of the southern and eastern portions of the project area (Figure 46). TR 15 is located just west of the eastern parking lot. TR 15 reaches a depth of 260 cmbs and includes Layers II, V, VI, and VIII (Figure 47). In TR 15, Layer II runs from the surface to 40 cmbs and contains 1% basalt gravel and 90% fine roots. Layer II has a smooth, diffuse boundary with Layer V below. Layer V runs from 10–120 cmbs and contains 5% basalt gravel. Layer V has a smooth, clear boundary with Layer VIII below and envelopes Layer VI with a smooth abrupt boundary. Layer VI runs from 60–80 cmbs and contains 2% basalt gravel and 10% fine roots. Layer VIII runs from 110 cmbs to the base of excavation and contains 5% basalt gravel. Layers VIII is archaeologically sterile and crosses the water table, where digging was halted. The stratigraphy encountered in TR 15 appears to be a transitionary area of the site in which a portion of the buried topsoil is visible, intermixed with Layer V. Notably, this portion of Layer VI appears to be out of

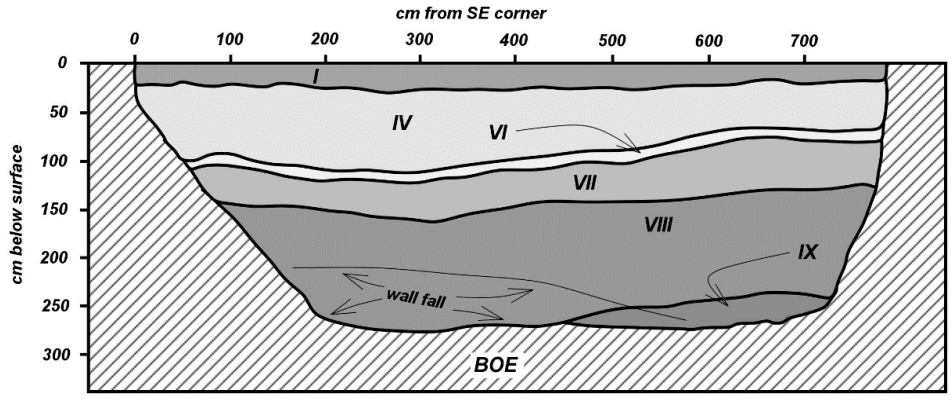

Figure 40. Profile drawing of TR 12, facing south.



Figure 41. Profile photo of TR 12, facing south.

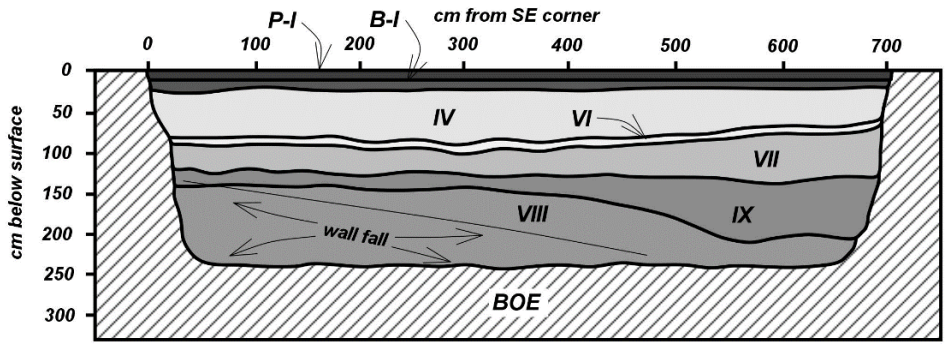

Figure 42. Profile drawing of TR 13, facing south.



Figure 43. Profile photo of TR 13, facing south.

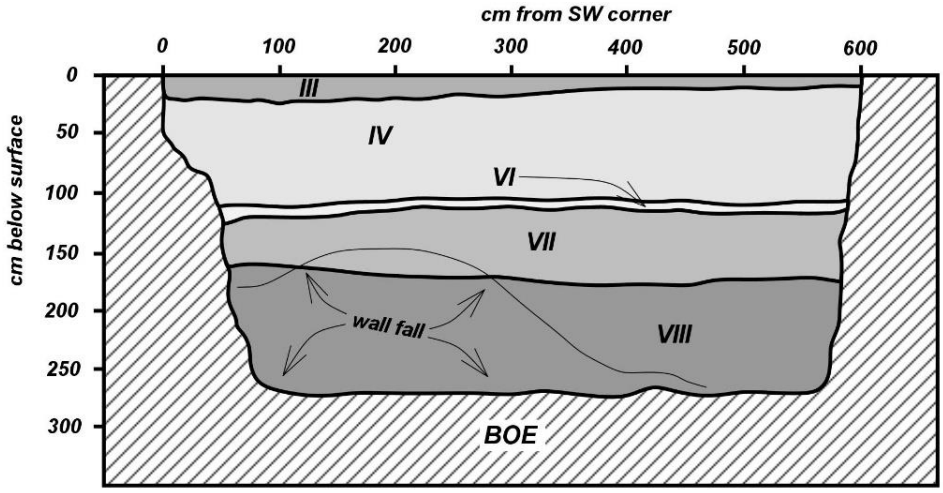

Figure 44. Profile drawing of TR 14, facing west.



Figure 45. Profile photo of TR 14, facing west.

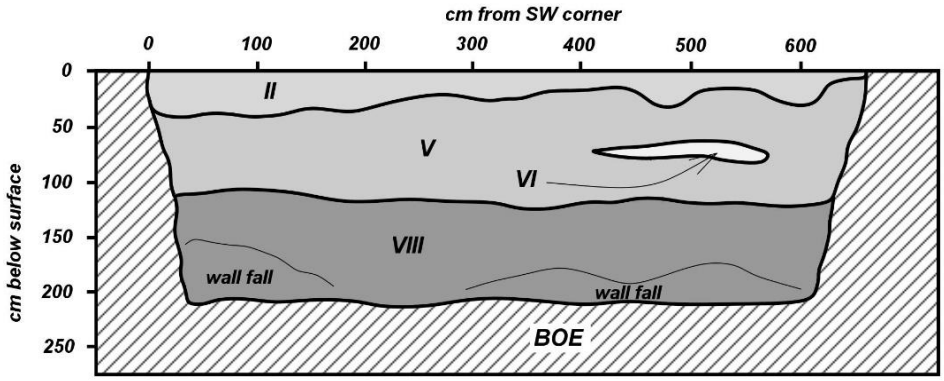

Figure 46. Profile drawing of TR 15, facing west.



Figure 47. Profile photo of TR 15, facing west.

context. It is possible that a spoils pile containing Layer VI is near TR 15, and this trench was excavated at the edge of it. Also of note, this is the only excavation through Layer II, a very root-heavy topsoil, that would likely be found in the wider vicinity of TR 15 where there is more dense underbrush.

TR 16 also exhibits the more variable stratigraphy of the southern and eastern portions of the project area (Figure 48). TR 16 is located in the southern corner of the eastern parking lot. TR 16 reaches a depth of 190 cmbs and includes Layers P-II, IV, VII, and VIII (Figure 49). In TR 16, Layer P-II is a compacted gravel pavement that runs from the surface to 30 cmbs and contains 90% basalt gravel. Layer P-II has a smooth, diffuse boundary with Layer IV below. Layer IV runs from 30–100 cmbs and contains 5% basalt gravel. Layer IV has a smooth, clear boundary, with Layer VII below. Layer VII runs from 90–160 cmbs and contains 2% basalt gravel. Layer VIII runs from 140 cmbs to the base of excavation and contains 3% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

The stratigraphy encountered in TR 16 and TR 17 are very similar, with Layer P-II over Layer IV over Layer VII over Layer VIII. Layer P-II, the surface pavement in this area, is a very compact gravel pavement. TR 17 exhibits the more variable stratigraphy of the southern and eastern portions of the project area (see Figure 48). TR 17 is located in the northern corner of the eastern parking lot. TR 17 reaches a depth of 180 cmbs and includes Layers P-II, IV, VII, and VIII. In TR 17, Layer P-II is a compacted gravel pavement that runs from the surface to 20 cmbs and contains 90% basalt gravel. Layer P-II has a smooth, diffuse boundary with Layer IV below. Layer IV runs from 20–60 cmbs and contains 5% basalt gravel. Layer IV has a smooth, clear boundary, with Layer VII below. Layer VII runs from 50–100 cmbs and contains 2% basalt gravel. Layer VIII runs from 90 cmbs to the base of excavation and contains 5% basalt gravel. Layer VIII is archaeologically sterile and crosses the water table, where digging was halted.

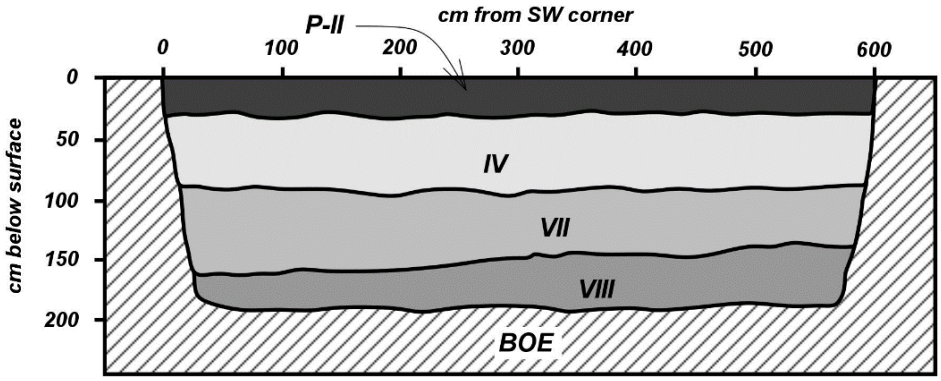

Figure 48. Profile drawing of TR 16, facing west.



Figure 49. Profile photo of TR 16, facing west.

Table 3. Stratigraphy of Representative Profiles

Profile	Layer	Min Depth	Max Depth	Boundary Character / Distinctness	Contents
TR 1	I	0	30	Smooth / Gradual	Acc. 1, a glass bottle fragment (25 cmbs), abandoned utilities, 1% gravel, 25% fine roots
	V	30	180	Smooth / Clear	4x4 wooden beam (120 cmbs), concrete jacket, abandoned utilities, 2% gravel
	VIII	165	290	Base of Excavation	3% Cobbles
TR 2	V	0	150	Smooth / Gradual	2% Gravel, 5% fine–coarse roots
	VIII	120	240	Base of Excavation	Broken naturel marine shells, 2% Gravel
TR 3	I	0	40	Smooth / Gradual	Concrete rubble, 1% gravel, 1% fine roots
	V	30	190	Smooth / Clear	1% Gravel, 1% fine–coarse roots
	VIII	160	290	Base of Excavation	Natural marine shells, 1% gravel, 2% coral cobbles

Table 3. (continued)

Profile	Layer	Min Depth	Max Depth	Boundary Character / Distinctness	Contents
TR 4	I	0	40	Smooth / Clear	Rebar (16 cmbs), 5% gravel, 25% fine–medium roots
	V	30	100	Smooth / Clear	Abandoned utility (43 cmbs), 10% gravel–stone sized rocks, 5% fine roots
	VIII	100	170	Base of Excavation	5% Gravel
TR 5	I	0	30	Smooth / Gradual	5% Gravel 25% Fine–medium roots
	V	30	80	Smooth / Clear	Rebar (44 cmbs), concrete rubble, abandoned utilities, 5% gravel–cobble sized rocks, 5% fine roots
	VIII	70	190	Base of Excavation	5% Gravel
TR 6	I	0	30	Smooth / Gradual	5% Gravel, 25% fine–medium roots
	V	30	70	Smooth / Clear	Rebar (37 cmbs), concrete rubble, abandoned utilities, 10% gravel–stone sized rocks, 5% fine roots
	VIII	60	150	Base of Excavation	1% Gravel
TR 7	I	0	30	Smooth / Gradual	5% Gravel, 10% fine–medium sized roots
	V	20	90	Smooth / Clear	Abandoned utilities, concrete rubble, 10% gravel–cobble sized rocks, 5% Fine roots
	IX	60	110	Smooth / Gradual	90% Waterworn cobbles
	VIII	80	150	Base of Excavation	
TR 8	I	0	20	Smooth / Gradual	Abandoned utilities, 5% gravel, 20% fine roots
	V	10	90	Smooth / Clear	Concrete rubble, 2% gravel, 5% fine roots
	VIII	90	160	Base of Excavation	2% Gravel

Table 3. (continued)

Profile	Layer	Min Depth	Max Depth	Boundary Character / Distinctness	Contents
TR 9	I	0	20	Smooth / Gradual	5% Gravel, 20% fine roots
	V	10	110	Smooth / Clear	10% Gravel–cobble sized rocks, 5% fine–medium sized roots
	IX	80	110	Smooth / Gradual	90% Waterworn cobbles
	VIII	100	170	Base of Excavation	5% Gravel
TR 10	I	0	20	Smooth / Gradual	5% Gravel, 20% fine roots
	V	20	90	Smooth / Clear	10% Gravel–cobble sized rocks, 5% fine roots
	VIII	80	160	Base of Excavation	5% Gravel
TR 11	I	0	10	Smooth / Gradual	5% Gravel, 20% fine roots
	V	10	80	Smooth / Clear	10% Gravel–cobble sized rocks, 5% fine roots
	VIII	70	170	Smooth / Gradual	2% Gravel
	IX	150	170	Base of Excavation	90% Waterworn cobbles
TR 12	I	0	30	Smooth / Clear	Large metal pipe (15 cmbs), 5% gravel, 20% fine roots
	IV	20	110	Smooth / Clear	5% Gravel, 5% fine roots
	VI	70	120	Smooth / Clear	30% Medium–coarse sized roots
	VII	70	160	Smooth / Gradual	10% Gravel–cobble sized rocks
	VIII	130	250	Smooth / Clear	2% Gravel
	IX	250	270	Base of Excavation	90% Waterworn cobbles

Table 3. (continued)

Profile	Layer	Min Depth	Max Depth	Boundary Character / Distinctness	Contents
TR 13	P-I	0	10	Smooth / Very Abrupt	
	B-I	10	20	Smooth / Gradual	
	IV	20	90	Smooth / Clear	
	VI	70	100	Smooth / Clear	5% Fine roots
	VII	80	140	Smooth / Gradual	5% Gravel, 5% medium roots
	IX	130	210	Smooth / Diffuse	90% Waterworn cobbles
	VIII	140	240	Base of Excavation	5% Gravel
TR 14	III	0	20	Smooth / Diffuse	1% Gravel, 30% fine roots
	IV	10	110	Smooth / Clear	5% Gravel, 5% fine roots
	VI	110	120	Smooth / Clear	5% Gravel, 5% fine roots
	VII	120	180	Smooth / Gradual	2% Gravel
	VIII	160	270	Base of Excavation	2% Gravel
TR 15	II	0	40	Smooth / Diffuse	1% Gravel, 90% fine roots
	V	10	120	Smooth / Clear	5% Gravel
	VI	60	80	Smooth / Abrupt	2% Gravel, 10% fine roots
	VIII	110	260	Base of Excavation	5% Gravel

Table 3. (continued)

Profile	Layer	Min Depth	Max Depth	Boundary Character / Distinctness	Contents
TR 16	P-II	0	30	Smooth / Diffuse	90% Gravel
	IV	30	100	Smooth / Clear	5% Gravel
	VII	90	160	Smooth / Clear	2% Gravel
	VIII	140	190	Base of Excavation	3% Gravel
TR 17	P-II	0	20	Smooth / Diffuse	90% Gravel
	IV	20	60	Smooth / Clear	5% Gravel
	VII	50	100	Smooth / Clear	2% Gravel
	VIII	90	180	Base of Excavation	5% Gravel

Laboratory Analysis

A total of two artifacts were encountered during the archaeological inventory survey (Table 4). The artifacts consisted of a fragmentary glass bottle finish (Acc. 1) and a fragment of ceramic whiteware (Acc. 2). Acc. 1, the glass bottle finish, was found in Layer 1 of TR 1 at 25 cmbs. Acc. 2, the ceramic sherd, was found on the surface near TR 6. Both artifacts are likely 20th century in origin.

Acc. 1 is a crown-style glass bottle finish, with mold seams visibly crossing the lip of the bottle (Figure 50). These mold seams are definitive evidence that this is part of a machine-made glass bottle produced after 1908 (Lindsey 2021).

Acc. 2 is a white ceramic fragment, identified as a piece of whiteware (Figure 51). This style of ceramic vessel was first produced in 1820 and remains popular to this day (Aultman 2014).

It is notable that the two artifacts discussed above, the only ones encountered during the survey, are an item encountered in the first 30 cm of excavation and another found on the surface. This indicates that despite the relatively common occurrence of construction debris (concrete rubble, abandoned piping, and rebar) during trenching, the project area itself appears mostly archaeologically sterile. The limited evidence that we do have points to a 20th century occupation of Layer I, the uppermost stratigraphic layer found throughout the northern yard area.

Table 4. Artifact Data

Acc.	Description	Depth (cmbs)	Layer	Size (cm)	Weight (g)	Estimated Age	Notes
1	Colorless Glass Bottle Finish	25	I	5.5 x 2.0 x 0.5	34	Post-1908	Seams running over finish. Found in TR 1, Layer I, 25 cmbs.
2	Whiteware Fragment	50	Surface	1.5 x 1.7 x 0.4	7	Post-1840	White fragment of whiteware. Found on surface near TR 6.

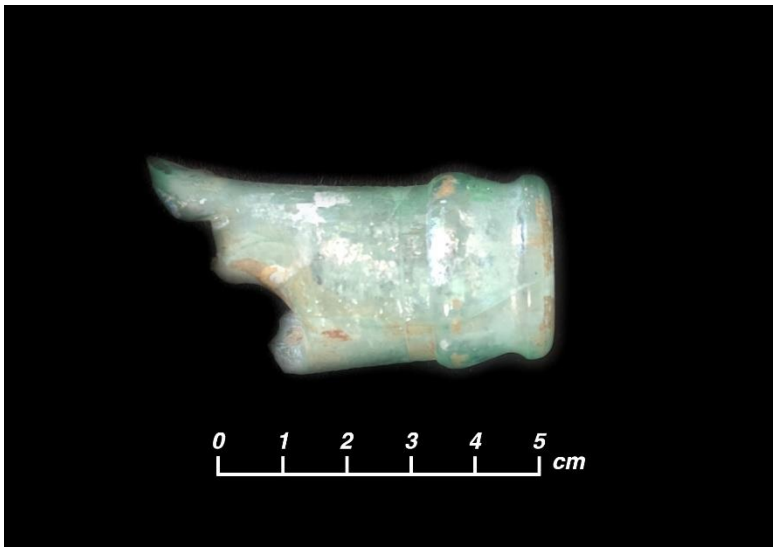

Figure 50. Acc. 1, a crown-style glass bottle finish.

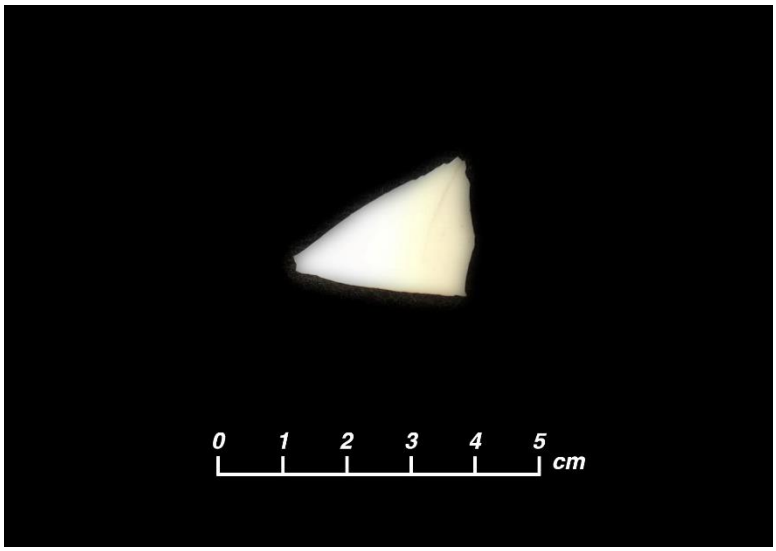

Figure 51. Acc. 2, a white ceramic fragment.

Summary of Results

An archaeological inventory survey on a portion of TMK: (2) 3-7-004:003 identified one archaeological site, a historic wall. The excavation of 17 exploratory trenches did not find any subsurface deposits or features. Two historic artifacts were collected: a glass bottle fragment dating to post-1908 and a ceramic sherd dating to post-1820. Three historic buildings are located on the property; a historic architectural report is being prepared for the buildings.

The stratigraphy in the area can be divided between the northern lot and the remainder of the project parcel. The stratigraphic sequence in the northern lot is quite simple, with 20th century topsoil (Layer I) over a historic fill layer (Layer V), over a natural sedimentary layer (Layer VIII) containing a buried streambed or remnant of the old coastline (Layer IX). The stratigraphy in the remainder of the site is more complex, with varied surface layers (Layers P-I, P-II, I, II, and III) over one of two historic fill layers (Layer IV and V), over a buried topsoil lens (Layer VI), over two natural sedimentary layers (Layers VII and VIII) and the buried streambed or remnant coastal deposit (Layer IX). While the upper layers vary according to the surface use, the lower layers are consistent throughout the project area, indicating that they are naturally occurring. Aside from this, the most notable, anthropogenic data we can derive from the stratigraphic sequence is that the buried topsoil was almost completely absent from the northern lot. This is indicative of a bulldozing event at some point in the past.

SUMMARY AND RECOMMENDATIONS

An archaeological inventory survey was conducted at TMK: (2) 3-7-004:003 (por.) in Wailuku Ahupua'a, Wailuku District, on the island of Maui for the proposed Kahului Civic Center Mixed-Use Complex Project. The AIS included a pedestrian survey that covered 100% of the 1.91 ha (4.72 ac.) project area, as well as test excavations consisting of 17 trenches. One archaeological site was identified. This consists of a historic wall that serves as a boundary on the north side of the property. Two historic artifacts were recovered, not in association with the wall. Three historic buildings are located on the property; a historic architectural report is being prepared for the buildings.

The limited size of the artifact collection hindered any intensive analysis but may be indicative of 20th century use of the northern yard area. This analysis is consistent with the 1939 construction date of the wall and now-demolished school annex building. Stratigraphy in the area can be divided between the northern yard and the remainder of the project parcel, with the northern yard exhibiting simpler stratigraphy. While the upper layers vary according to the surface use, the lower layers are consistent throughout the project area, indicating that they are naturally occurring. Whereas the buried topsoil was almost completely absent from the northern yard, this area may have been impacted by past bulldozing.

Both of the research questions posed earlier have been answered in the negative. No evidence was found of subsurface cultural deposits or human burials within the survey area. And no subsurface remnants of the Kahului Railroad were found. The only vestiges of historic use of the property consist of the 1939 wall and the three historic buildings still standing within the project area.

Site Significance Evaluation

To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a". Be associated with events that have made important contribution to the broad patterns of our history;

2. Criterion "b". Be associated with the lives of persons important in our past;

3. Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

4. Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history;

5. Criterion "e". Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts – these associations being important to the group's history and cultural identity. [HAR 13-275-6(b)]

Integrity is defined as the authenticity of a property's historic identity, as evidenced by the survival of physical characteristics it possessed in the past, and its capacity to convey information about a culture or people, historic patterns, or architectural or engineering design or technology. The aspects of integrity are: location, design, setting, materials, workmanship, feeling, and association. Location refers to the place where an event occurred or a property was constructed. Design considers elements such as plan, form, and style of a property. Setting is the physical environment of the property.

Materials refer to the physical elements used to construct the property. Workmanship refers to the craftsmanship of the creators of a property. Feeling is the property's ability to convey its historic time and place. Association refers to the link between the property and a historic event or person.

The Kahului School Campus is significant under criterion a, for its association with efforts to restore the economy after the Great Depression (Table 5). The site is also significant under criterion c, because the various structures on the campus are characteristic of Territorial-era construction in Hawai‘i. The site is not significant under criterion e because it is not important to a specific ethnic group and is not associated with cultural practices. A cultural impact assessment for the property with the local community did identify the cultural practice of gathering plumeria from the project area (Duhaylonsod et al. 2021), however the features of SIHP 50-50-04-08872 are not associated with this practice. Consultation with the CRC and SHPD identified the following mitigation recommendations:

- The Feature 1 wall should be preserved as much as possible; particularly in the sections where the plaques are located.
- If sections of the wall must be partially dismantled, they could be moved to a nearby location on the property or their rocks incorporated in the design of the building(s) with accompanying interpretive signage.
- Options to either reuse or move the Feature 2 Administration Building should be considered.
- If the Administration Building and cafeteria must be demolished, a Historic American Buildings Survey (HABS) should be completed.
- Low-density buildings with wide setbacks from property lines are preferred, to fit in with the character of the Kahului Historic District. Additionally, air flow throughout the Site should be considered.

The essential elements of Feature 1 are the basalt-and-mortar construction, the plaques inset along the wall, and its prominence as a boundary demarcation. All three of these aspects are visible and convey their significance at a glance. Additionally, Feature 1 is associated with the Works Progress Administration, which was very important during the Great Depression. And finally, the wall has partially maintained its integrity of feeling, remaining largely unchanged from its 1939 construction, with only the character of the road to the north dramatically changing in the last century. Overall, Feature 1 has retained its integrity of feeling (partial), location, materials, design, workmanship, and association. Feature 1 is a contributing resource to Kahului School Campus, and the Kahului Historic District. Considering the structure's close association with the Kahului School Campus in feeling and setting, it is recommended that Feature 1 be considered an integral feature to the site. While the wall will be partially impacted by the project, the majority of this feature will be preserved. Mitigation measures are currently being discussed with SHPD.

The essential physical aspects of the Feature 2 MCSA building are the complex building plan and roofline, broad eaves, high single-story edifice and internal breezeway, quality craftsmanship and materials, relieved sharp-edged clapboard, and large-scale fenestration. All of these features are visible to the casual viewer and contribute to the building's integrity of design, materials, and workmanship. Feature 2 has not retained its integrity of feeling, as parking lots surround the building, and the majority of the Kahului School Campus around the building have been demolished, leaving the area largely unrecognizable from its heyday. Overall, the building has retained its integrity of location, design, materials, workmanship, and association. Feature 2 is an example of the characteristic building style of 1920s Hawai‘i. It is recommended that the building be considered as a contributing resource to the Kahului School Campus site, although it will be demolished for the new construction.

Table 5. Significance Determination

SIHP #	Description	Function	Integrity	Criteria	Justification	Historic Kahului District Contribution	Recommendation
50-50-04-08872	Rock and Mortar Wall, Three Buildings	Boundary, School Building, School Cafeteria, Utility Shed	Feeling (partial), location, materials, design, workmanship, association	a, c	Associated with efforts to restore the economy after the Great Depression; characteristic of Territorial-era construction in Hawai‘i	Prominent wall with Territorial-era charm (Fe. 1), building characteristic of Territorial-era construction (Fe. 2)	Partial preservation of Fe. 1 wall (the wall will either be moved to a nearby location on the property or the rocks incorporated in the design of the building(s) with accompanying interpretive signage); HABS or similar documentation for the Fe. 2 Administration Building and Fe. 3 cafeteria (all buildings will be demolished) further mitigation commitments based on consultation with SHPD and CRC

The essential physical aspects of Feature 3 cafeteria building would have been the building's elevated T-plan design, construction materials, and workmanship. Unfortunately, today the building has fallen into disrepair and is partially collapsed. The materials and workmanship from the building's initial construction have deteriorated over the years and no longer retain their integrity. The cafeteria does retain its association with the larger Kahului School Campus, but offers little in terms of contributing to the campus feeling or setting. Overall, Feature 3 retains integrity of association (partial), and location. Due to the building's lack of integrity, and general disrepair, Feature 3 does not contribute to the Kahului Historic District or Kahului School Campus. The poor condition of the building has stripped away any of its integrity of design, materials, or workmanship that would have associated it with the historic district and school campus. No further work is recommended for this feature.

Feature 4 does not have any physical features that differentiate it from other modern utilitarian structures. Neither materials, nor craftsmanship of the shed are particularly notable. Also, it is unclear if the structure retains integrity of location as the shed could have been built elsewhere and relocated here any time in the last 50 years. The utility shed is associated with the Kahului School Campus but would not be considered integral to the overall feeling or setting. Overall, Feature 4 only retains a tenuous integrity of association. Due to the structure's common utilitarian nature, Feature 4 does not contribute to the Kahului Historic District or the Kahului School Campus. The utilitarian nature and simple construction of the building makes any historical or archaeological significance dubious. Furthermore, there is no definitive evidence linking this utility shed to the Territorial era on Maui, which is the era of significance for the Kahului Historic District. No further work is recommended for this feature.

The project effect determination is "Effect, with proposed mitigation commitments." Recommendations for mitigation are as follows:

- Partial preservation of Feature 1 wall: the wall will either be moved to a nearby location on the property or the rocks incorporated in the design of the building(s) with accompanying interpretive signage
- HABS or similar documentation for the Feature 2 Administration Building and Feature 3 cafeteria, as all buildings will be demolished
- Further mitigation commitments may be developed based on consultation with SHPD and CRC

In sum, an AIS of a portion of TMK: (2) 3-7-004:003 identified one archaeological site, the Kahului School Campus. This site is comprised of three historic buildings and a wall, and as a whole the site contributes to the Kahului Historic District. No subsurface features or deposits were identified. The property has been disturbed by modern use, including probable bulldozing in the northern yard, although three historic buildings remain, in addition to the 1939 wall. A historic resource evaluation report has been prepared for the buildings. Plans for construction should address concerns discussed during consultation where possible.

GLOSSARY

ahupuaʻa Traditional Hawaiian land division usually extending from the uplands to the sea.

ala loa Highway, belt road around island.

aliʻi Chief, chiefess, monarch.

ʻaumakua Family or personal gods. The plural form of the word is ʻaumākua.

heiau Place of worship and ritual in traditional Hawaiʻi.

ʻili Traditional land division, usually a subdivision of an ahupuaʻa.

ʻiliʻili Waterworn cobbles often used in floor paving.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kamaʻāina Native-born.

kuhina nui Prime minister or premier. Kaʻahumanu was the first kuhina nui. The position was abolished in 1864.

konohiki The overseer of an ahupuaʻa ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

lauaʻe A fragrant fern, *Microsorium scolopendria*, when crushed, it fragrance suggests that of maile.

lei Garland, wreath; necklace of flowers.

loʻi, loʻi kalo An irrigated terrace or set of terraces for the cultivation of taro.

Māhele The 1848 division of land.

manaʻo Thoughts, opinions, ideas.

mōʻī King.

moʻolelo A story, myth, history, tradition, legend, or record.

naupaka The native shrub *Scaevola* sp., varieties of which are found both in the uplands and by the sea.

noni *Morinda citrifolia*, the Indian mulberry, a tree or shrub known for its medicinal value in traditional Hawaiʻi.

ʻokana Subdivision or district, usually consisting of several ahupuaʻa.

ʻōlelo noʻeau Proverb, wise saying, traditional saying.

palapalai *Microlepia strigosa*, ferns can grow up to 4 to 5 ft in height. Used traditionally to decorate hula altars. Indigenous to Hawaiʻi.

plumeria Ornamental trees of the genus *Plumeria*, widely used in landscaping, especially at temples and graveyards.

post-contact After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

pre-contact Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

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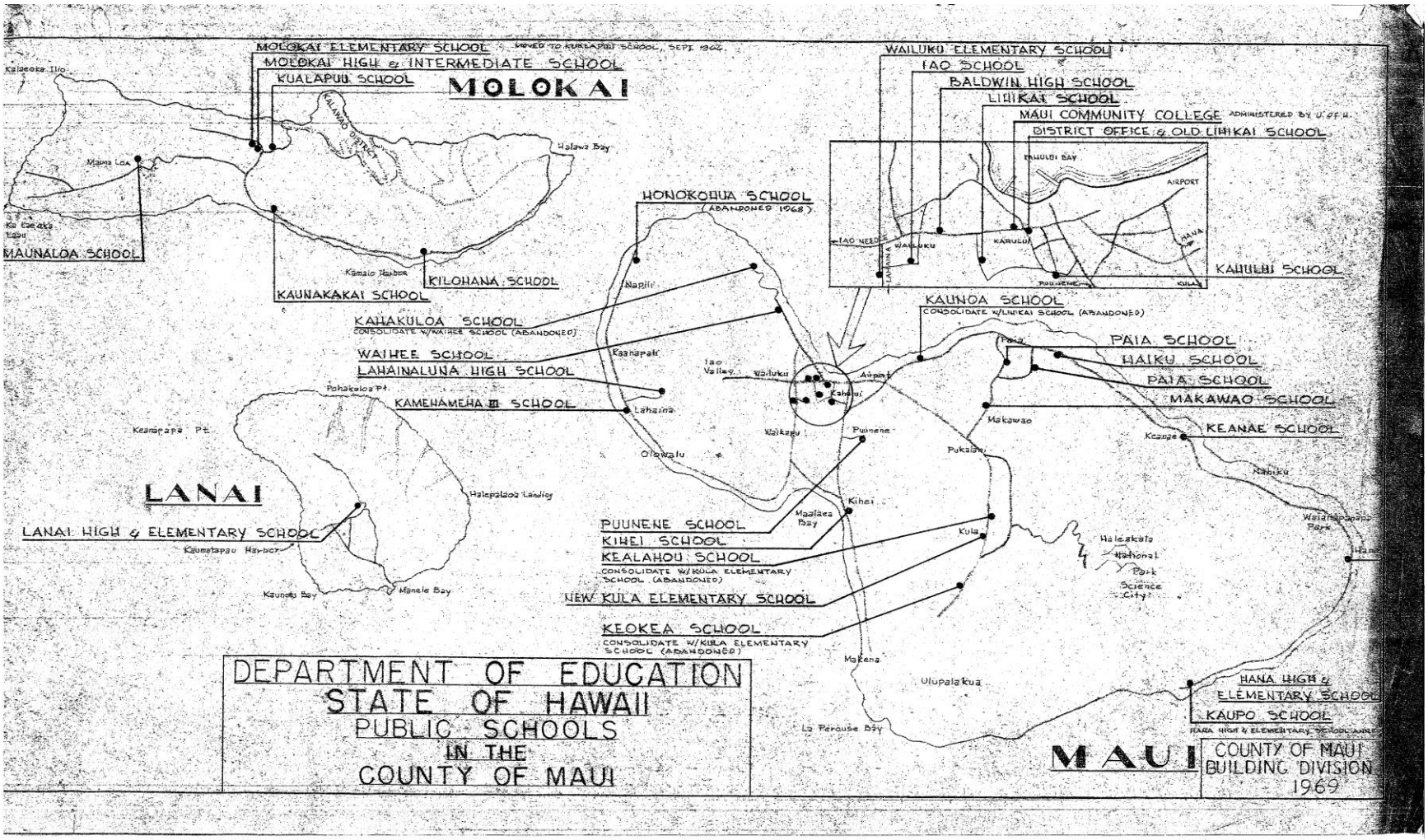
APPENDIX: KAHULUI SCHOOL INFORMATION (COURTESY OF ANNALISE KEHLER)


MOLOKAI ELEMENTARY SCHOOL
MOLOKAI HIGH & INTERMEDIATE SCHOOL
KUALAPUU SCHOOL
MOLOKAI
MAUNALOA SCHOOL
KAUNAKAKAI SCHOOL
KILOHANA SCHOOL
HONOKOHUA SCHOOL
(ABANDONED 1968)
KAHAKULOA SCHOOL
CONSOLIDATE W/WAIHEE SCHOOL (ABANDONED)
WAIHEE SCHOOL
LAHAINALUNA HIGH SCHOOL
KAMEHAMEHA III SCHOOL
LANAI
LANAI HIGH & ELEMENTARY SCHOOL
WAILUKU ELEMENTARY SCHOOL
IAO SCHOOL
BALDWIN HIGH SCHOOL
LIHIKAI SCHOOL
MAUI COMMUNITY COLLEGE
DISTRICT OFFICE & OLD LIHIKAI SCHOOL
KAHULUI SCHOOL
KAUNOA SCHOOL
CONSOLIDATE W/LIHIKAI SCHOOL (ABANDONED)
PAIA SCHOOL
HAIKU SCHOOL
PAIA SCHOOL
MAKAWAO SCHOOL
KEANAE SCHOOL
PUUNENE SCHOOL
KIHEI SCHOOL
KEALAHOU SCHOOL
CONSOLIDATE W/KULA ELEMENTARY SCHOOL (ABANDONED)
NEW KULA ELEMENTARY SCHOOL
KEOKEA SCHOOL
CONSOLIDATE W/KULA ELEMENTARY SCHOOL (ABANDONED)
HANA HIGH & ELEMENTARY SCHOOL
KAUPO SCHOOL
MAUI
DEPARTMENT OF EDUCATION
STATE OF HAWAII
PUBLIC SCHOOLS
IN THE
COUNTY OF MAUI
COUNTY OF MAUI
BUILDING DIVISION
1969

ALPHABETICAL LIST

PUBLIC SCHOOLS COUNTY OF MAUI

TERRITORY OF HAWAII

1.	Haiku School		16.	Keahua School		31.	Nahiku School	
2.	Halawa School		17.	Kealahou School		32.	Paia School	
3.	Halehaku School		18.	Keanae School		33.	Puukolii School	
4.	Hamakuapoko School		19.	Keokea School		34.	Puunene School	
5.	Hana School		20.	Kihei School		35.	Spreckelsville School	
6.	Honokohua School		21.	Kilohana School		36.	Ulupalakua School	
7.	Honokowai School		22.	Kipahulu School		37.	Waihee School	
8.	Huelo School		23.	Lahainaluna High School		38.	Waikapu School	
9.	Kahakuloa School		24.	Lanai City School		39.	Wailuku Elementary School	
10.	Kahului School		25.	Makawao School		40.	Wailuku Intermediate School (IAO SCHOOL)	
11.	Kamehameha III School		26.	Maui High School				
12.	Kaunakakai School		27.	Maui Vocational School				
13.	Kaupoa School		28.	Maunaloa School				
14.	Kaupakalua School		29.	Molokai Intermediate School				
15.	Kaupo School		30.	Molokai Standard School				

PUBLIC SCHOOLS OF THE COUNTY OF MAUI

The public schools of the County of Maui, including the islands of Molokai and Lanai, consist of forty separate school plants, varying in size from Nahiku school, with its one-classroom and cottage building on an acre of ground, to Lahainaluna school with its numerous classrooms, shops, library, gymnasium, dormitories, cottages and incidental structures, its spacious grounds and gardens, and school property totalling in all 433.20 acres.

Classrooms, shop buildings, home-making buildings, cafeterias in the County total 129 structures. Teachers cottages, dwellings and dormitories number 69 buildings. Miscellaneous small structures and improvements of land such as garages, water tanks, toilets, etc., total 92.

The original cost of all structures and improvements (taking estimated replacement cost where the original figures are not available) amounts to $1,209,290.00. Based upon a yearly depreciation of 5% for wood-frame buildings, 4% for stucco and 3% for concrete structures, and assuming a residual value of 25% of the original cost on all buildings in use, irrespective of age, the present worth of the school buildings and supplementary structures is placed at $609,983.20 as of December 31, 1935.

School equipment, according to 1935 school inventories, is listed at $315,177.63 and materials and supplies at $27,006.10.

On the following pages, in alphabetical order, are detailed descriptions of the individual school plants, illustrated with photographs of the principal buildings. Maps showing the area of the school sites and location of buildings and structures, accompany the detailed data for each school.

K A H U L U I S C H O O L

The Kahului School, located conveniently at the cure of the Beach Road leading from Kahului to Wailuku and at the lower end of the new Wailuku-Kahului Federal Highway, consists of a modern two story building of reinforced concrete and frame, a home making cottage, supervising principals' office, shop, and modern sanitary toilets for boys and girls. Additional structures and improvements to land consist of driveway fountains, fence and flagpole.

The original cost of this plant was $49,915.00 and the present (1935) value is $37,793.25. The land, acquired by purchase, is listed at $926.00. Equipment is listed at $5540.10 and materials and supplies at $1033.18, in the 1935 school inventory.

A map, showing the school grounds, location of buildings, etc., together with constructional data, illustrated with photographs, follows:

10

K A H U L U I S C H O O L

KAHULUI, MAUI, T.H.

Area: School Lot 3.35 Acres

MAIN SCHOOL BUILDING

Contract Price: $41,965.00. Built In: 1927.
Reinforced concrete and frame structure classroom building; two stories; mineral surfaced roofing over 1"x8" shiplap; entrance porches on three sides of first floor; two fire escape ladders on each end of building; celotex walls and ceilings; maple floor.

First Floor: Area: 8,053 square feet.
Nine 25'x26' classrooms; one 12'x17' principal's office; one 13'x25' entrance hallway and stairwell; one 4'x9' men's toilet; one 8'x9' women's toilets; one 7'x132' hallway.

Second Floor: Area: 5,356 square feet.
Six 24'x26' classrooms; balconies on both ends of building; one 9'-8"x72' hallway running lengthwise of building; seven foot hallway from second story wall to each balcony through first story attic.

HOME-MAKING COTTAGE

Contract Price: $1057.00. Built In: 1932. Job#199.
Frame; T&G floor; rustic siding over 1½"x6" T&G exterior walls; 1½"x6" partitions; canec ceiling; mineral surfaced roofing over1"x8" shiplap sheathing; 1200 square feet; one 20'x24' lunch room; one 6'x9' bathroom; one 12'x17' kitchen; one 9'x11' bedroom; one 13'x24' living and dining room; one 5'x13' stoop.

SUPERVISING PRINCIPALS' OFFICE Move To Kihei School 1966

Contract Price: $2240.00. Built In: 1932. Job #186.
Frame; T&G floor; rustic siding over 1½"x6" T&G exterior walls; 1½"x6" T&G partitions; canec ceiling; mineral surfaced roofing over 1"x8" shiplap sheathing; 1872 square feet; one 22'x52' supply room; one 14'x20' secretary's office; two 14'x16' office; one 4'x6' toilet; one 4'x10' back porch; one 6'x10' stoop.

BOYS' TOILET

Contract Price: $2884.00 including Girls' Toilet.
Built In: 1929.
Frame; T&G siding; concrete foundation and floor; mineral surfaced roofing over 1"x8" shiplap sheathing; 775 square feet; 18 compartments with sanitary toilets; five 5-foot urinals; one shower room with two shower heads.

GIRLS' TOILET

Contract Price: (See above)
Frame; concrete foundation and floor; T&G siding; mineral surfaced roofing over 1"x8" shiplap sheathing; 682 square feet; 18 compartments with sanitary toilets; one shower room with two shower heads.

SHOP

Contract Price: Built In: 1930.
Frame; T&G floor and siding; shingle roof; 400 square feet; one 20'x20' shop.

DRINKING FOUNTAIN

Concrete base with six drinking faucets.

FLAGPOLE

Concrete base; 35 feet high.

LAWN AND PLAYGROUND

Good. Maniania and nut grass.

KAHULUI SCHOOL

WATER SUPPLY

Good. From the Wailuku Waterworks System.

FENCE

Two 4"x4" rails in front and on one side; galvanized wire fence with redwood posts on two sides.

PAINT AND COLOR

Main Building

Red roof; coral plaster finish; natural celotex finish; varnished wainscoting interior walls; cream ceiling.

Supervising Principals' Office

Red roof; sanded exterior; natural celotex ceiling with green moulding; lettuce green interior; forest green floor.

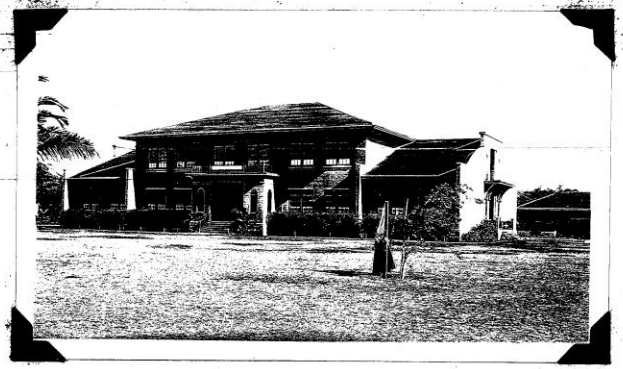
Home-Making Cottage
Red roof; sanded exterior.

Boys' and Girls' Toilets
Red roof; coral finish exterior; cream interior.

Shop
Red roof; coral finish exterior; cream interior.

Flagpole
White.

KAHULUI SCHOOL



CLASSROOM BUILDING
(MAIN)



SUPERVISING PRINCIPALS' OFFICE

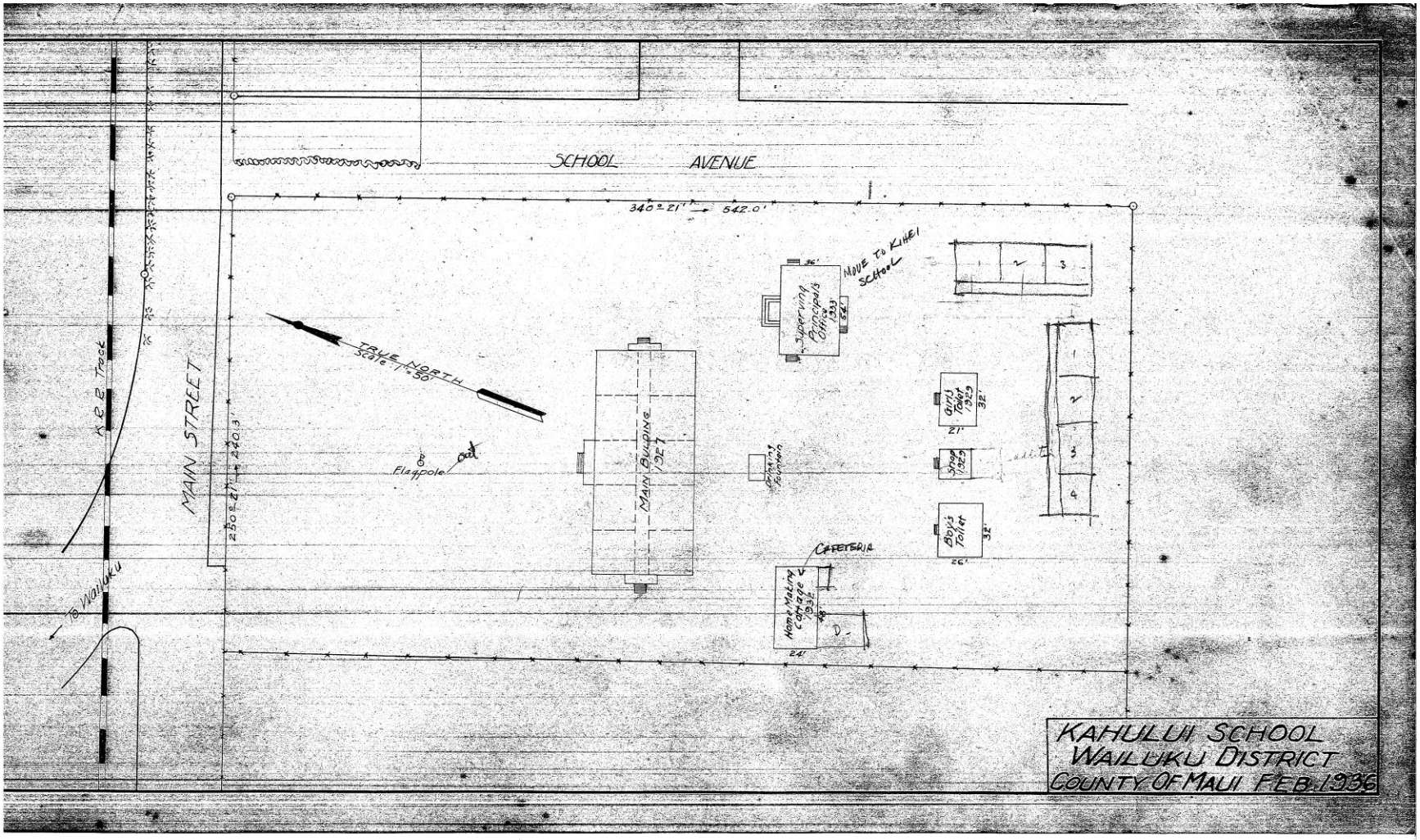
KAHULUI SCHOOL



CLASSROOM BUILDING
(MAIN)



SUPERVISING PRINCIPALS' OFFICE

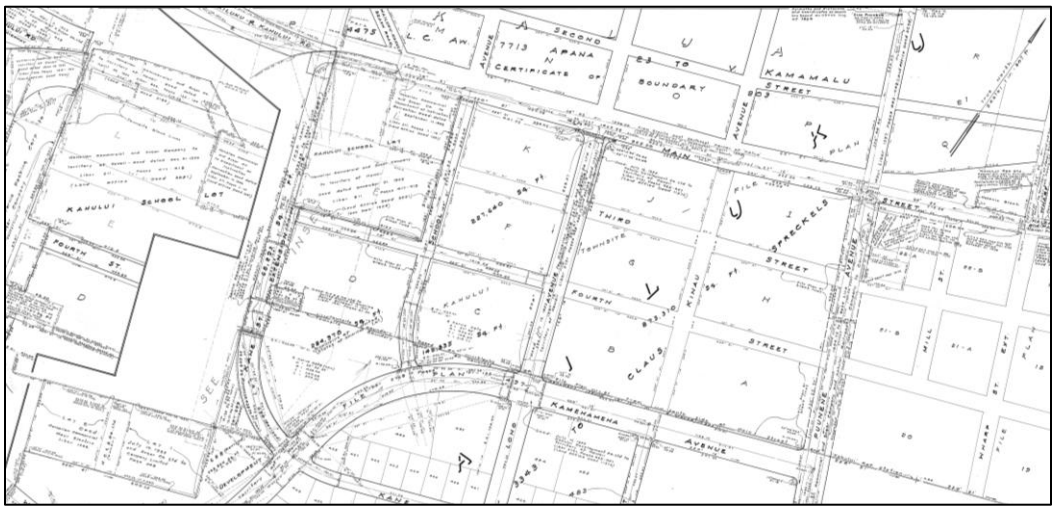

SCHOOL AVENUE
340° 21' 542.0'
MAIN STREET
250° 21' 240.3'
K.E.E. Track
TO WAILUKU
TRUE NORTH
Scale 1" = 50'
Flagpole
MAIN BUILDING 1927
Supervising Principal's Office 1933
MOVE TO KIHEI SCHOOL
Girl's Toilet 1929
Shop 1929
Boy's Toilet
CAFETERIA
Home Making Cottage 1936
KAHULUI SCHOOL
WAILUKU DISTRICT
COUNTY OF MAUI FEB. 1936

Appendix L

Cultural Impact Assessment

REVISED FINAL— Cultural Impact Assessment for the Kahului Civic Center and Mixed-Use Complex Project, Wailuku Ahupua‘a, Wailuku District, Island of Maui, Hawai‘i

TMK: (2) 3-7-004:003 (por.)



Prepared For:

G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

January 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāne‘ohe, HI 96744 ● Phone 808.381.2361

REVISED FINAL— Cultural Impact Assessment for the Kahului Civic Center and Mixed-Use Complex Project, Wailuku Ahupua‘a, Wailuku District, Island of Maui, Hawai‘i

TMK: (2) 3-7-004:003 (por.)

Prepared For:

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Windy Keala McElroy, PhD
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January 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāne‘ohe, HI 96744 ● Phone 808.381.2361

MANAGEMENT SUMMARY

A Cultural Impact Assessment was conducted for the proposed Kahului Civic Center and Mixed-Use Complex Project in Wailuku Ahupua‘a, Wailuku District, on the island of Maui. This is located at 153 W. Ka‘ahumanu Avenue on a portion of TMK: (2) 3-7-004:003. The current study took the form of background research and an ethnographic survey consisting of three interviews with community members, all of which are included in this report.

The background research synthesizes traditional and historic accounts and land use history for the Wailuku/Kahului region. Community consultations were performed to obtain information about the cultural significance of the subject property and the surrounding area, as well as to address possible concerns of community members regarding the effects of the proposed project on places of cultural or traditional importance.

As a result of this work, the cultural significance of the project vicinity has been made clear. Portions of the current city of Wailuku were built atop former agricultural terraces with its well-watered location, and Wailuku was afflicted by warfare through much of its history. In the post-contact era, sugar interests took the forefront of the Wailuku and Kahului economy, and cane fields, mills, ditches, a railroad, and other infrastructure forever changed the landscape. Vestiges of the sugar industry still remain, particularly the Kahului Railroad, which is not far north from the project area. The closest archaeological studies to the project mostly identified historic artifacts and intact portions of the Kahului Railroad infrastructure. In addition, intact sand deposits have been observed and it has been noted that the possibility of identifying human burials remains high in the vicinity.

Interviews with individuals knowledgeable about the project lands produced information on its rich cultural history. The interviewees had several recommendations for the project, consisting of the following:

- Have a cultural monitor on site during construction;
- Allow access to the facilities for all community members rather than a members-only facility;
- Keep open communication with the community regarding the project;
- Plant useful foliage on the property such as plumeria, laua‘e, palapalai, noni, kalo, and naupaka for the community to gather, and to hold cultural classes on the property, such as lei-making, to make good use of the plants;
- Use native plants instead of invasives for landscaping on the grounds;
- If any trees on the property are being cut down, consult the community to see if the trees can be utilized by community members.

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INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting a Cultural Impact Assessment (CIA) for the proposed Kahului Civic Center and Mixed-Use Complex Project in Wailuku Ahupuaʻa, Wailuku District, on the island of Maui. This is located at 153 W. Kaʻahumanu Avenue on a portion of TMK: (2) 3-7-004:003. The CIA study was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed construction.

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. The next section presents methods and results of the ethnographic survey. Project results are summarized, and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary at the end of the report . Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

Project Location and Natural Environment

The project area is located in Kahului, approximately 300 m (.2 mi.) inland from the coast at Kahului Harbor (Figure 1) on 1.91 ha (4.72 ac.) of TMK: (2) 3-7-004:003 (Figure 2). TMK: (2) 3-7-004:003 is a 2.26-ha (5.572-ac.) property owned by the State of Hawaiʻi located at 153 W. Kaʻahumanu Avenue. The property is bounded by W. Kaʻahumanu Avenue to the north, Kane Street to the west, Vevau Street to the south, and private parcels to the east.

The property currently houses the Maui Community School for Adults, which includes two buildings that were constructed in 1920. Topography is relatively flat, and there is little to no vegetation on the properties. The project area lies at roughly 2 m (7 ft.) above mean sea level (amsl), and rainfall averages approximately 42 cm (17 in.) per year (Giambelluca et al. 2013).

The island of Maui was created by two separate shield volcanoes, Haleakalā in the east and Puʻu Kukui in the west. The two land masses are connected by an isthmus when "lavas of Haleakala banked against the already existing West Maui volcano" (Macdonald et al. 1983:380). The project area is located in the large ahupuaʻa of Wailuku in West Maui. Wailuku consists of Kahului Bay, from Paūkukalo to Kapukaulua; ʻĪao Valley; and the northern part of the island's isthmus, which includes Waikapū, Waiehu, Waiheʻe, Kahakuloa, and Pulehunui. Wailuku is bordered by the ahupuaʻa of Kaʻanapali and Lahaina to the west, and Hamakuapoko to the east.

The isthmus on which the majority of Wailuku lies has soils composed of "alluvial fans of outwashed silts and gravels, overlain by coralline sands blown inland from the coast. The lower levels have become firmly lithified, forming a soft rock known as colianite" (Stearns 1966:10). The lithified sand dunes occur on the alluvial fans along the coast and farther inland from Kahului to Waiheʻe. Some of these dunes reach heights as great as 60 m (197 ft.) (Macdonald et al. 1983:388; Carlquist 1980:60).

Soils in the southwest half of the project area consist of Puuone sand 7–30% slopes (PZUE) (Figure 3). These soils are located on dunes near the coast and are often used for pasture and housing (Foote et al. 1972:117). The northeast half of the parcel lies on Fill land (Fd). This soil type consists mainly of lands that have been filled with bagasse and slurry from sugar mills, although some areas are filled with dredged material (Foote et al. 1972:31). As the project area is very close to Kahului Harbor, it is likely that the fill material here derived from dredging of the harbor.

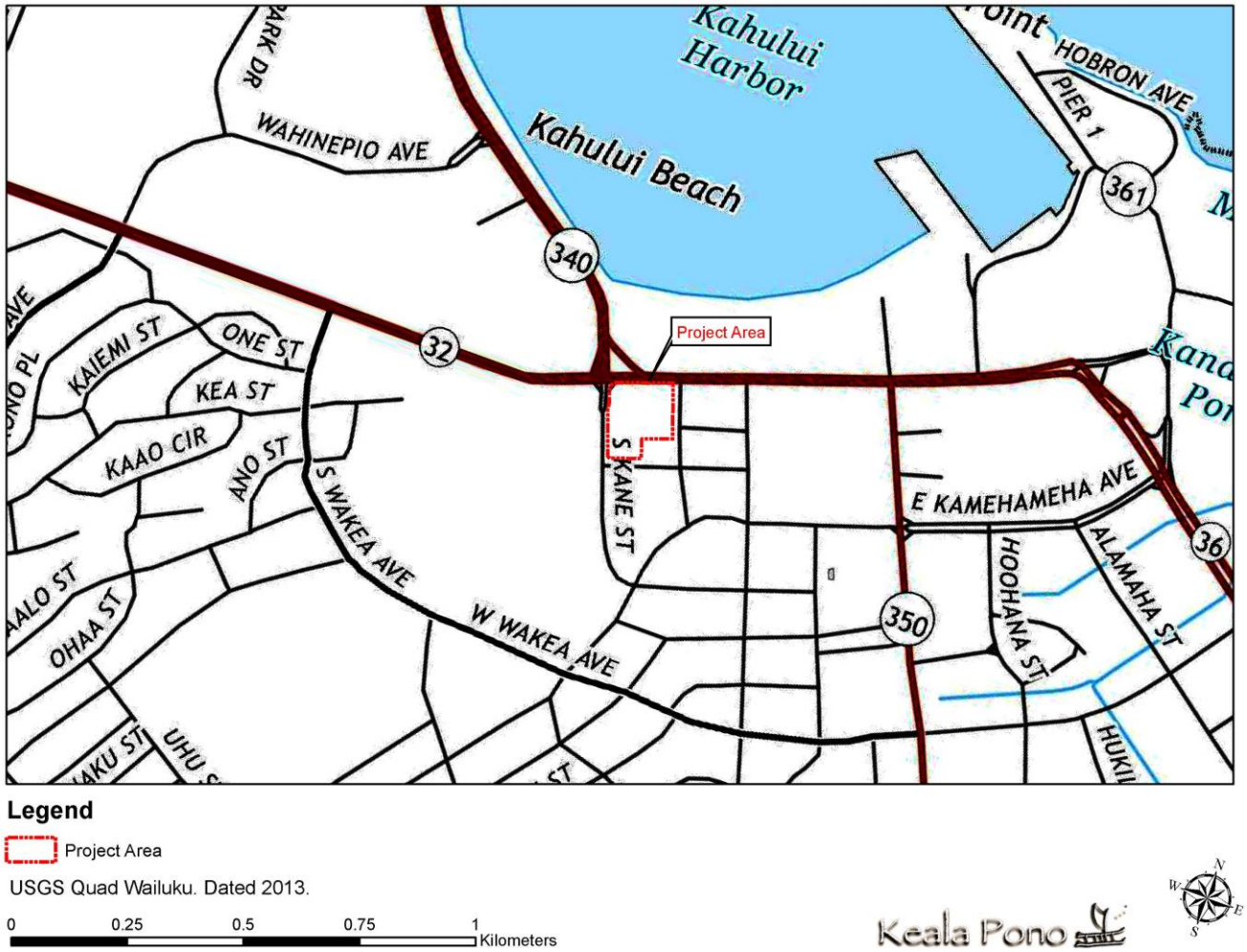

Figure 1. Project area on a 7.5 minute Wailuku quadrangle map (USGS 2013).

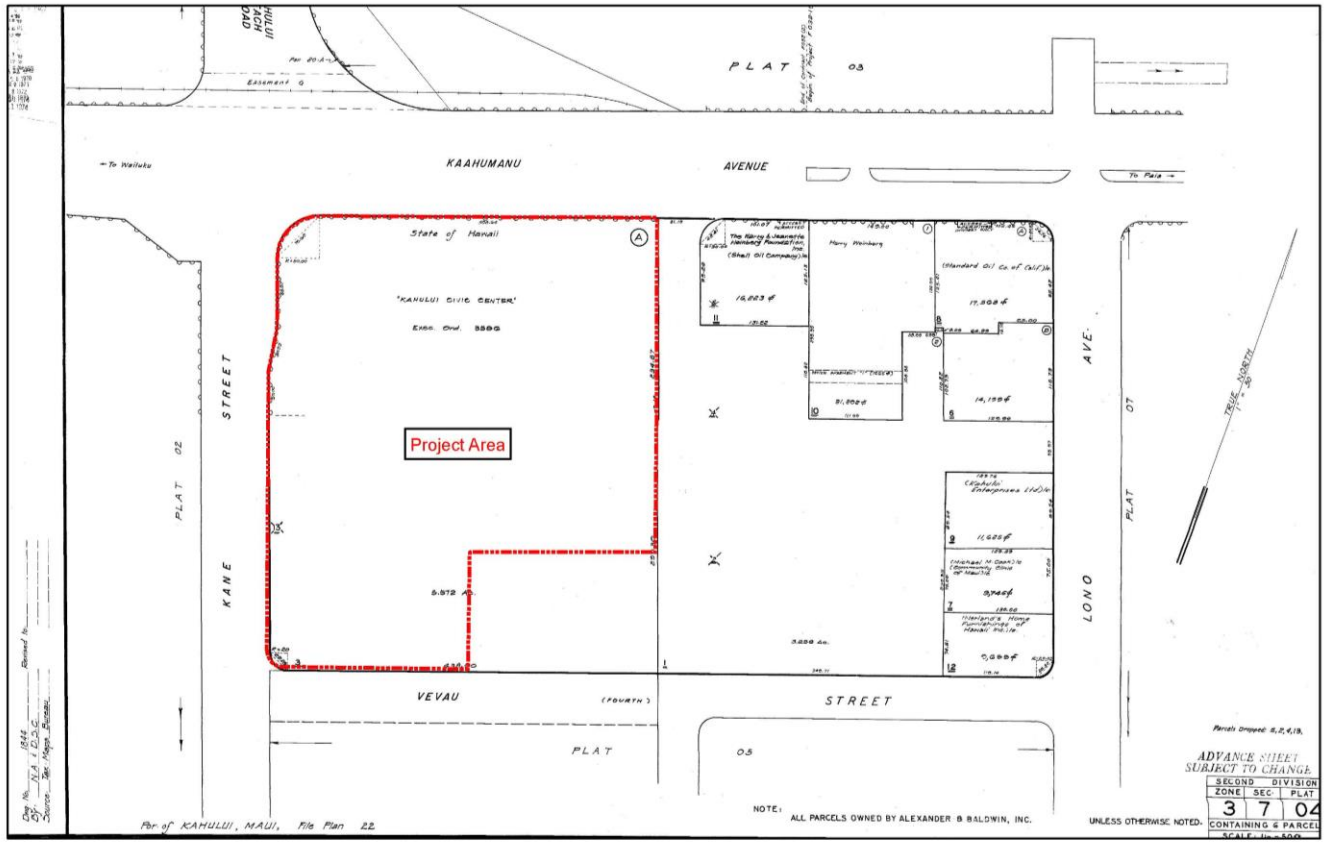

Figure 2. Project area on a TMK plat map (State of Hawai‘i 1974).

Project Description

The State of Hawai‘i, Department of Business and Economic Development and Tourism (DBEDT), Hawai‘i Housing, Finance, and Development Corporation (HHFDC) are proposing to undertake the “Kahului Civic Center and Mixed-Use Complex Project” (“Project”). The Project is a collaborative effort between the HHFDC and State Department of Accounting and General Services. The State, via Executive Order No. 4590 (July 29, 2019), set aside the Project parcel [TMK: (2) 3-7-004:003] to the HHFDC for the purpose of developing the Project.

The Project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center). The multi-family housing buildings and Civic Center will provide a total of approximately 381,000 SF of floor area and approximately 596 parking spaces. Approximately 300 multi-family dwelling units (mixture of 1-, 2- and 3-bedroom units) will be provided in two buildings (both roughly six stories); and approximately 414 parking spaces will be provided in two three-level parking podiums for the multi-family housing. The preliminary program for the Civic Center (roughly four stories) includes space for State offices, the State Department of Education’s McKinley Community School for Adults, and the Kahului Public Library. A parking deck built over a surface parking lot will provide approximately 182 parking spaces for the Civic Center. Community-oriented commercial space may be included in either the multi-family housing building(s) or the Civic Center. The Civic Center program spaces may be adjusted due to the needs and priorities of State agencies and availability of funding. Existing structures on the Project parcel to be demolished include the Department of Education’s McKinley Community School for Adults building (one-story), a lawnmower maintenance building (one-story), a collapsed building (one-story) and a parking lot with 21 parking spaces.

The County’s new Transit Hub is currently being constructed on the southwest portion (0.85 acres) of the Project parcel along Vevau Street. The County’s new Transit Hub is not a part of this Project. The County’s new Transit Hub will replace the existing Transit Hub, located at the Queen Ka‘ahumanu Center.



Figure 3. Soils in the project area (data from Foote et al. 1972).

CULTURAL BACKGROUND

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the project lands. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD library, and online on the Office of Hawaiian Affairs website (OHA n.d.) and the Department of Accounting and General Services (DAGS n.d.), Waihona Aina (n.d.), Avakonohiki (n.d.), and Ulukau (n.d.) databases. Archaeological reports, historical reference books, and historic maps were among the materials examined.

Wailuku in Traditional Times

Place names often shed light on traditional views of an area and can provide important contextual information. Wailuku literally means "water of destruction" (Pukui et al. 1974:225) due to the battles that took place there, most notably the battle at ʻĪao Valley between Kamehameha the Great and Kahekili. Wailuku is also referred to as Nā Wai ʻEhā, which translates to "the four waters," after the four streams that run through its valleys: Waiehu, Waikapū, Wailuku, and Waiheʻe. The old ʻokana (land division) named Nā Wai ʻEhā comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Puʻu Kukui and the ridges radiating from it.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names "usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history" (Pukui et al. 1974:xii).

Place names associated with the study area are listed in the *Place Names of Hawaii* (Pukui et al. 1974), along with the meanings of the names and/or comments about the specific locales:

> Halekiʻi...Alternate name for the *heiau* at Pihana, Maui. *Lit,*. image house. (Pukui et al. 1974:37)
>
> ʻĪao. Stream, valley, peak (2,250 feet high), park, and one-time sacred burying place of chiefs, Wai-luku qd....Maui....*Lit*., cloud supreme. (Pukui et al. 1974:55)
>
> Kaʻahumanu. Church, Wai-luku, Maui...Named for Queen Kaʻahumanu, favorite wife of Ka-mehameaha I, who was later *kuhina nui* (executive officer), and who died a Christian in 1832...*Lit*., the bird [feather] cloak. (Pukui et al. 1974:59)
>
> Kaʻākaupōhaku. Ancient surfing area, Wai-luku qd., Maui. (Finney 1950b:345) *Lit*., the north (or right-hand) stone. (Pukui et al. 1974:60)
>
> Kahului. Town, elementary school, port, bay, railroad, and surfing area known as Kahului Breakwater (Finney 1959a:108), Maui. Probably *Lit*., the winning. (Pukui et al. 1974:67)
>
> Kaleholeho. Ancient surfing area, Ka-halui area, Maui. *Lit*., the callus. (Pukui et al. 1974:76)

> Kanahā. Wildlife sanctuary and pond near Ka-halui, Maui, said to have been built by Chief Kiha-a-Piʻilani, brother-in-law of ʻUmi (HM387) who lived about A.D. 1500. Nearly 500 native Hawaiian stilts (āeʻo) have been counted here at one time, about a third of the known total. Some 50 kinds of birds have been seen here, including herons, geese, ducks, owls, plovers, sand pipers, tattlers, coots, pheasants, and doves...*Lit.*, the shattered [thing]. (Pukui et al. 1974:83)
>
> Kepaniwai. Park, Wailuku, Maui. *Lit.*, the water dam (Wai-luku Stream was choked with human bodies after the slaughter there). (Pukui et al. 1974:109)
>
> Kinihāpai. Stream, Wai-luku qd., Maui. *Lit.*, carry multitudes. (Pukui et al. 1974:112)
>
> Māniaina. Ditch, Wailuku qd., Maui...*Lit.*, a shuddering sensation. (Pukui et al. 1974:145)
>
> Nākalaloa. Stream, Wailuku qd., Maui. *Lit.*, the long [house] gables. (Pukui et al. 1974:161)
>
> Nehe. Point. Wai-luku qd., Maui...*Lit.*, rustle. (Pukui et al. 1974:164)
>
> Paukūkalo. Homesteads, coastal area, and surfing area, Ka-halui, Maui. *Lit.*, taro piece. (Pukui et al. 1974:181)
>
> Wailuku...land division...city, point, sugar company, and stream, West Maui; site of the battle in the late eighteenth century in which the army of Ka-lani-ʻōpuʻu was nearly annihilated by Ka-hekili of Maui. *Lit.*, water [of] destruction. (Pukui 1974:225)

Subsistence and Traditional Land Use

Wailuku was a gathering place and home to important chiefs and their attendants (ʻĪʻī 1959:135). Handy et al. (1991:272) assert that there were five centers of population on the island of Maui, one of which was the part of West Maui, "where four deep valley streams watered four areas of taro land spreading fanwise to seaward: the Four Waters (Na-wai-ʻeha) famed in song and story–Waiheʻe, Waiehu, Wailuku, and Waikapu."

Wailuku is the third of the four streams that flows from the uplands of Puʻu Kukui's ridges and down through ʻĪao Valley. Portions of the current city of Wailuku were built on old agricultural terraces (Handy et al. 1991:497):

> Along the broad stream bed of ʻIao Valley, extending several miles up and inland, the carefully leveled and stone-encased terraces may be seen. In the lower section of the valley these broad terraces served, in 1934, as sites for Camps 6 and 10 of Wailuku Sugar Plantation, being utilized for houses, gardens, playgrounds, and roads. A little farther up, neat private homes and vegetable and flower gardens covered these old taro terraces; while at their upper limit the terraces were submerged in guava thickets. Here a few wild taros were found, but we saw no terraces in ʻIao or Wailuku being used as flooded taro patches. It is significant that here, as at Waiheʻe, the old terraces were adapted to market gardening (Chinese bananas, vegetables, and flowers) by Japanese and Portuguese gardeners. (Handy et al. 1991:497)

The waters of Waikapū Stream were once diverted to feed loʻi systems, and its overflow was discharged on the dry plains on the isthmus between East and West Maui (Handy et al. 1991:496).

These abundant waters were later tapped for sugarcane irrigation (see Historic Wailuku section). Cheever commented on the loʻi of Wailuku in the mid-19th century:

> As you get into the valley and vega of Wailuku, you see numerous remains of old kihapais, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people than now…The whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it. (Cheever 1851 in Sterling 1998:75)

In addition to agricultural cultivation, fishponds were constructed in the region, near Kahului. Two major ponds are thought to have been constructed around AD 1500 during the rule of Kiha-a-Piʻilani (Kamakau 1992:42; Pukui et al. 1974:83). The ponds were named Kanahā and Mauʻoni. Kiha-a-Piʻilani also built the ala loa, a trail that circled the entire island. Another source states that the fishponds were constructed by Kapiʻioho'okalani, an aliʻi of Oʻahu and Molokaʻi, and that the walls were built by men passing stones from one to another in a line that extended from Makawela to Kanahā (Puea-a-Makakaualii in Sterling 1998:87).

A number of heiau have been identified within the ahupuaʻa of Wailuku, with Halekiʻi and Pihana located approximately two kilometers northeast of the current study area. An annual publication by T.G. Thrum, the *Hawaiian Almanac and Annual for 1909* briefly describes some of the heiau found in Wailuku:

> Pihana- Wailuku, near end of coral and sand ridge, one-half mile from the sea; about 300x120 ft. in size; walls in complete ruins showing foundations massive.
>
> Halekii- Wailuku, some 300 ft. to N.E. of Pihana and about 100 ft. square in size.
>
> Kalui- Wailuku, at Puu-o-hala; repaired in time of Kahekili; Kaleopuupuu its priest.
>
> Malumaluakua-Keahuku-Olokua-Olopio-Malena- Wailuku. No Particulars gathered of these heiaus further than nearly all of the Wailuku temples, with the Kapokea one in Waihee are named among those consecrated by Liho-liho during a year's stay en route to Oahu, preceding the peleleu fleet. (Thrum 1909:38)

Moʻolelo

The island of Maui was named after the legendary demigod Māui (Pukui et al. 1974), known for his trickiness. Legends tell of how he stole fire, raised the sky and snared the sun, trapped winds, and changed landscapes. Among all of the moʻolelo, one of his biggest accomplishments was fishing land out of the ocean and creating the Hawaiian Islands. Earlier accounts share that the name of the island was once called Ihikapalaumaewa in ancient times, prior to Papa and Wākea and before their child Māui became famous (Sterling 1998).

The wind name for Wailuku is Makani-lawe-malie, or "the wind that takes it easy" (Nuuhiwa in Sterling 1998:62). And it is said that the aliʻi of the area spent much time surfing (Kamakau 1992:82).

The plains of Kamaʻomaʻo in Wailuku were a place of wandering souls:

> There are many who have died and have returned to say that they had no claim to an ʻaumakua {realm} (kuleanaʻole). These are the souls, it is said, who only wander upon the plain of Kamaʻomaʻo on Maui or on the plain at Puʻuokapolei on Oahu. Spiders and moths are their food. (Kamakau 1991:29)

A final moʻolelo concerns the appearance of foreigners in Wailuku in the mid-13th century, long before the first written record of foreigners arriving in the islands (Fornander 1969 [1878–1885]: 80–82). A chief named Wakalana governed the windward side of Maui and lived in Wailuku. At this time, a ship called Mamala came to Wailuku. The ship's captain was named Kaluikia-Manu, and other men and women on board were named Neleike, Malaea, Haakoa, and Hika. Nelieke later became Wakalana's wife, and together they bore fair skinned children with bright, shining eyes (Fornander 1969 [1878–1885]:81). Their descendants intermarried with other Hawaiians and many of them lived in Waimalu and Honouliuli on Oʻahu. Fornander posits that the moʻolelo may refer to a Japanese fishing vessel that was blown off course, as Europeans were not near Hawaiian waters at that time (1969 [1878–1885]:81).

ʻŌlelo Noʻeau

Wailuku's connection with its distinguished coast is preserved in many traditional proverbs and wise sayings. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter reminds us that if we know these proverbs and wise sayings well, then we will know Hawaiʻi well (Pukui 1983). Four ʻōlelo noʻeau were found that speak of Wailuku. They provide further insight to the traditional landscape and history of the region.

> **Kei nu aku la paha aʻu ʻĀlapa I ka wai o Wailuku.**
>
> *My ʻĀlapa warriors must now be drinking the water of Wailuku.*
>
> Said when an expected success has turned into failure. This was a remark made by Kalaniōpuʻu to his wife Kalola and son Kiwalaʻō, in the belief that his selected warriors, the ʻĀlapa, were winning in their battle against Kahekili. Instead they were utterly destroyed. (Pukui 1983:184)

> **Na wai ʻehā.**
>
> *The four* wai.
>
> A poetic term for these places on Maui: Wailuku, Waiehu, Waiheʻe, Waikapū, each of which has a flowing water (*wai*). (Pukui 1983:251)

> **Pili ka hanu o Wailuku.**
>
> *Wailuku holds its breath.*
>
> Said of one who is speechless or petrified with either fear or extreme cold. There is a play on *luku* (destruction). Refers to Wailuku, Maui. (Pukui 1983:290)

> **Wailuku I ka malu he kuawa.**
>
> *Wailuku in the shelter of the valleys.*
>
> Wailuku, Maui, reposes in the shelter of the clouds and the valley. (Pukui 1983:290)

War and Conquest in Wailuku

Maui's ahupuaʻa of Wailuku was wrought with warfare through much of its known history, including what some would term as a 100 years' war. Many stories and accounts have been passed down. Rev. Cheever, in his book, *Life in the Sandwich Islands: or, The Heart of the Pacific, As It Was and Is*, wrote of how the various wars had an effect on how each stream in Wailuku was named:

> There are in this region four streams in succession from the different gorges of the mountain, significantly named, it is thought, from the events of battles which have transpired upon them. Waikapu—The water where the conch was blown, and the engagement began.

> Waiehu—The water where the combatants smoked with dust and perspiration. Wailuku—The water of destruction, where the battle began to be fierce and fatal. Waihee—The water of total rout and defeat, where the army melted away. (Cheever 1851:59)

One of the earliest battles was that between owls and men: "The owls retaliated against an act committed by a cruel man by flocking to Wailuku and descending upon him" (Silva n.d). Another mention of this battle refers to the origin of the ahupua'a's name: "The cruel man was punished, and the battle place still bears the name Wailuku, Water-of-killing" (Pukui and Curtis 1974:179).

In addition to the battles with owls, many battles were fought between chiefs. In the 16th century, the 15th mō'ī of Maui, Pi'ilani, united the island's districts through war, and gave his daughter to marry the current mō'ī of Hawai'i Island. Due to this marriage, there was peace between the two kings of each island, until Pi'ilani died and a rivalry sparked between his two sons, Lono-a-Pi'ilani and Kiha-a-Pi'ilani (Speakman 1978). The eldest son, Lono, had inherited Maui and he sought to kill his brother Kiha, who then escaped to Hāna and met a young chiefess, Koleamoku. They fell in love and secretly married, even though she had been promised to Lono. The couple moved to Hawai'i Island, where Kiha's sister was still living with 'Umi, to avoid being captured by Lono. 'Umi took the side of Kiha and launched a war with Maui. Lono was defeated and 'Umi took partial control of the island of Maui, in Hāna, and peace was once again observed until the 17th century.

In the early 18th century, Kekaulike united the kingdom of Maui through war. While there were times of peace after this, things got worse for Maui by the end of the century with many wars with Hawai'i Island's king, Alapa'i who was trying to gain control of it. Kekaulike perished when fleeing to Wailuku:

> When Ke-kau-like heard that the ruling chief of Hawaii was at Kohala on his way to war against Maui, he was afraid and fled to Wailuku in his double war canoe named Ke-aka-milo. He sailed with his wives and children…his officers, war leaders, chiefs, and fighting men, including warriors, spearmen, and counselors. Some went by canoe and some overland, and the fleet landed at Kapa'ahu at the pit of 'Ai-hako'ko in Kula. Here on the shore the chiefs prepared a litter for Ke-kau-like and bore him upland to Halekii in Kukahua. There Ke-kau-like died, and sound of lamentation for the dead arose. (Kamakau 1992:69)

In an important battle, Kalani'ōpu'u was defeated in Wailuku (Kamakau 1992:85–91). It was in 1776 that Kalani'ōpu'u returned to war with Maui and was overthrown by Kahekili's army. It is said that Kalani'ōpu'u's forces "were slain like fish enclosed in a net," and the slaughter was known as *Ahulau ka Pi'ipi'i Kakanilua*, or Slaughter of the Pi'ipi'i at Kakanilua (Kamakau 1992:86). Unthwarted, however, Kalani'ōpu'u prepared for another assault. Kahahana, the ali'i of O'ahu and Moloka'i, came to assist Kahekili. This battle was fought in the area between Wailuku and Waikapū. Again, Kalani'ōpu'u's forces were surrounded and killed.

Afflicted by war, Maui became impoverished, and Vancouver mentioned during his visit in 1793 that King Kahekili was having trouble finding enough provisions for his own ship (Speakman 1978). Kahekili was the last king of Maui and was able to rule Moloka'i, Lana'i, and O'ahu during his reign but was unable to conquer Hawai'i Island.

Foreigners increasingly visited Hawai'i after Captain Cook arrived at Kahului Bay in the late 18th century, and this was happening as Kamehameha was rising to power. Kamehameha, armed with a cannon he acquired by foreigners, went to battle in Wailuku.

> The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skillful warriors of Maui took part, but

> Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was a great slaughter. Had they fought face-to-face and hand-to-hand, as the custom was, they would have been equally matched. But the defensive was drawn up in a narrow pass in ʻIao , and the offensive advanced from below and drew up the cannon as far as far as Kawelowelo‘ula and shot from there into ʻIao and the hills about, and the men were routed. The victors pursued them and slew the vanquished as they scrambled up the cliffs. There was a great slaughter, but mostly among the commoners; no important chief was killed in the battle. “Clawed off the cliff” (Ka ʻuwa‘u-pali) and “The damming of the waters” (Ka-pani-wai) this battle was called.” (Kamakau 1992:148–149)

After winning the battle on Maui, Kamehameha moved on to conquer the remaining islands of Moloka‘i, O‘ahu, and Kaua‘i.

Historic Wailuku: The 19th and 20th Centuries

In 1832, missionaries began arriving in Maui and established a girls’ school in Wailuku. Around that time, the sugar industry was introduced, greatly affecting Wailuku. The Hungtai Sugar Works company, founded in 1828 by two Chinese merchants, was the first location of sugar production on the island. King Kamehameha had a sugar mill built in Wailuku in the 1840s, which much of the initial sugar industry had developed around. The abundance of water supply and accessible land in Wailuku allowed for the sugar industry to develop and become profitable within a short time period. In addition, the mills built in the early 1960s were among the most advanced, being steam powered. The arrival of over 100 foreign laborers to work on the plantations began to greatly change the population composition of the region, along with the decline in native population. The Wailuku Sugar Company was established in 1862 and later took over the Waihe‘e Plantation to the north. By 1867, 2,250 acres of land was planted with sugar in Wailuku. Much of the sugarcane cultivation took place in the western portion of Wailuku until 1876 when industry advancements enabled expansion to other dryer areas (Wilcox 1996, MacLennan 1997:102).

In the second half of the 19th century, the sugar industry in Hawaii greatly expanded as a result of the 1876 Reciprocity Treaty between the U.S. and the Hawaiian Kingdom, which gave the U.S. market free access to Hawai‘i’s land for sugar and other products. A major player in the Hawaiian sugar industry, Claus Spreckels, a German immigrant to the United States, had first established a major sugar refinery in San Francisco. He initially opposed the 1876 Reciprocity Treaty between the United States and Hawai‘i as he believed it would cause insurmountable competition in the sugar industry. However, in order to keep up with potential competition, Spreckels traveled to Maui in 1878 where he later founded the Hawaiian Commercial & Sugar Company (HC&S). He purchased and leased 40,000 acres of eastern Wailuku, including the Wailuku Commons. After obtaining the Wailuku Commons in 1882, Spreckels gained water and transport rights for his crops, creating a thriving sugar industry and plantation town named for himself–Spreckelsville. HC&S was incorporated in 1884 by Spreckels using $10 million in capital; his sugar empire on Maui included four sugar mills, 35 miles of railway (including equipment), a water reservoir, and a canal system built by a fellow German-American engineer which was highly advanced for its time (Spiekermann 2019:5). Spreckels’ Waihe‘e Ditch was the center of conflict at that time, with the Wailuku Sugar Company objecting that Spreckels did not have a right-of-way through their land or rights to waters of Waihe‘e Stream. Spreckels eventually lost control of HC&S and a new ditch was constructed. By the 1900s, a complicated system of ditches wove its way through both East and West Maui (Figure 4).

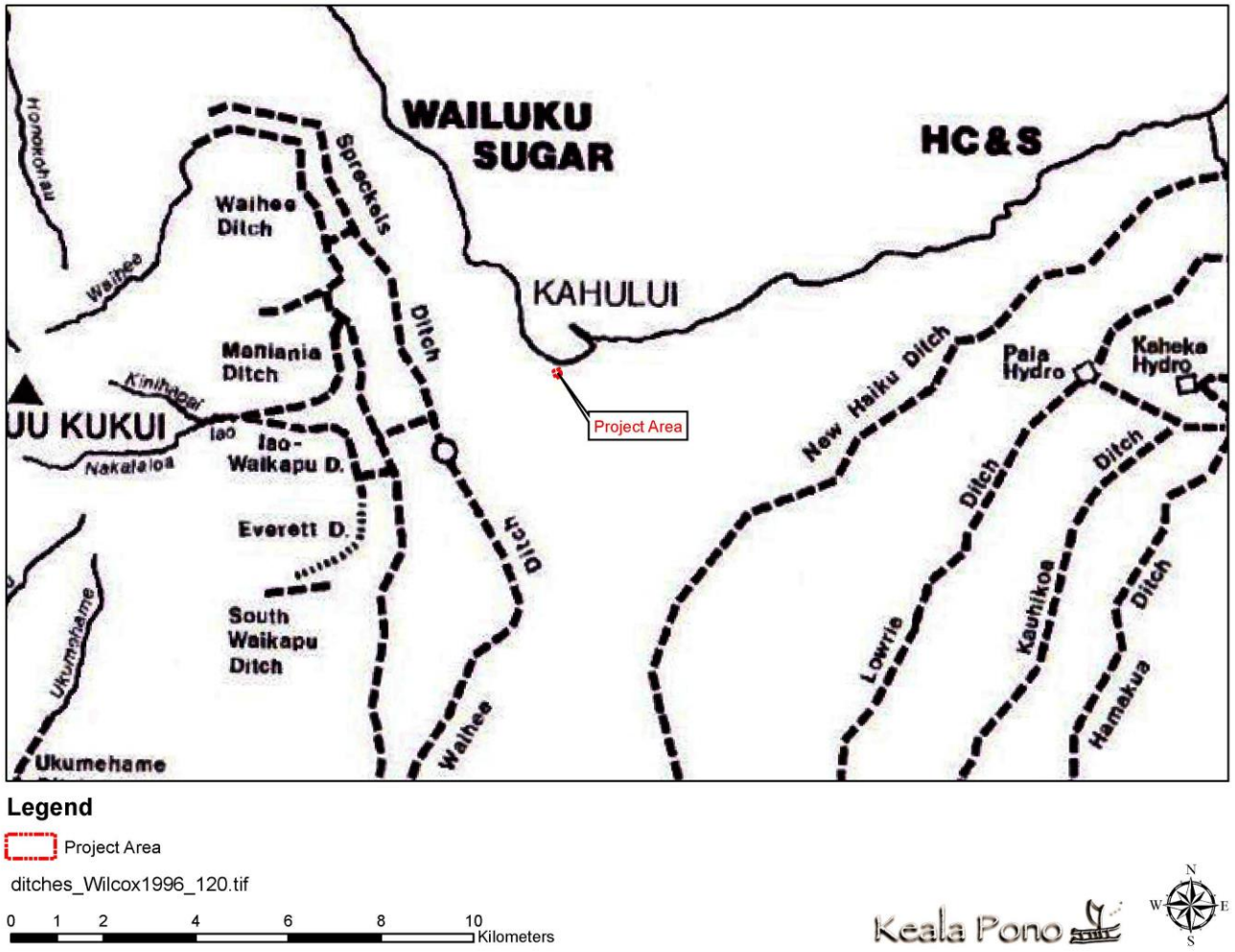

Figure 4. Major sugarcane irrigation ditches on the island of Maui (Wilcox 1996:120).

With the rise of the sugar industry in Wailuku, Kahului, and continuing on further east to Spreckelsville and Pā‘ia, it was apparent that a railroad was needed to transport sugar to be exported to the U.S. The Kahului Railroad was first organized under the partnership between Thomas H. Hobron, William O. Smith, and William H. Baily. The first section of the railroad that extended from Wailuku to Kahului was completed by 1879. Hobron also operated a general merchandising business on Bay Street in Kahului, which later became the headquarters for the railroad. Construction began in 1880 of the railroad sections east of Kahului to Pā‘ia and Spreckelsville. The three partners then sold the company to Samuel G. Wilder upon completion of the eastern section in 1884. In 1899, the railroad was then sold to HC&S Company–which by then was owned by Henry P. Baldwin and Associates. By 1913, the railroad extended east to the cannery in Hā‘iku. The main railroad terminal in Kahului was expanded in the 1920s to encompass a 219-acre facility. In 1923, a new railroad general office was constructed (today, the general office is located just northeast of the current project area). By this time, a total of 34 miles of the main line, nine miles of a secondary line, ten steam locomotives and 265 cars were in service. However, the depression of the 1930s and World War II of the 1940s saw a reduction in general service. The gradual introduction of motor busses starting in 1936 largely replaced locomotive transportation service in Kahului and by the end of the 1960s, the railroad had ended all services (Ramsay 1960).

The burgeoning sugar industry in Wailuku and Kahului also contributed to the increased use of Kahului Harbor as a major trade port. According to Burns (1991:47), by 1840, a small jetty may have been located at what is now the Maui Beach Hotel (formerly the Maui Palms Hotel), just north of the project area. In the 1870s, T.H. Hobron operated the *Ka Moi*, a schooner that ran between Kahului and Honolulu (Thomas 1983). A small commercial landing was opened in 1879 for the purposes of the sugar trade. Soon thereafter, Spreckels began operating Oceanic Steamship Lines between Kahului and North America out of the Kahului Harbor, making it the main shipping point for sugar from all of the Maui plantations. Samuel Wilder built the first breakwater wall and had part of the harbor dredged in 1904. The dredging fill was used to fill in the areas where the main business section is now located (Burns 1991:48).

The 20th century saw the project area developed into the Maui Community School, and one historic building from this era still stands. The structure is known as Building 5, and it was constructed in 1920. It is a one-story structure, built of Concrete Masonry Unit (CMU) walls with a wood and steel frame. In addition to the historic building, a rock and mortar wall is known to be located within the project area. The wall dates to 1939.

Māhele Land Tenure

The change in the traditional land tenure system in Hawai‘i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kama‘āina totaling only about 30,000 acres and recorded in ten large volumes.

In the mid-1900s, the majority of the Wailuku Ahupua‘a was marked as Crown Land. And in 1872, when Kamehameha V died, his sister Princess Ruth Ke‘elikōlani inherited the land. She owned part, while 743.4 acres in the ‘ili of Owa in Wailuku was granted to Kamehameha’s steward Kuihelani. Princess Ruth eventually sold half of the Crown Lands in 1882 to Claus Spreckels even though he already held a lease for 16,000 acres in Wailuku.

The entirety of the current study area was encompassed by LCA 7713:23, awarded to Princess Victoria Kamāmalu. The LCA constituted 391 acres of the former ‘ili of Kula which consisted of lands from Wailuku to the portion of Kahului that borders the bay. Located just south of the current study area, was an area referred to as the Wailuku Commons and designated Crown Lands.

Historic Maps

Historic maps help to paint a picture of Wailuku in years past and illustrate the many changes that have taken place in the region. This section presents a selection of four maps from the 19th and 20th centuries that provide insight to the project area. Note that names are spelled as they are written on each map.

The first map depicts the lands of Wailuku and Kahului by W.D. Alexander in 1881 (Figure 5). No structures are present within the Wailuku vicinity, but buildings can be seen near Kahului Harbor and the Kahului Railroad interchange and yard. The railway from Kahului, west to Wailuku and east to Spreckelsville and Pā‘ia, is depicted just north of the current project area.

The next map, drawn in 1885, shows several interesting features in Wailuku (Figure 6). Sand hills are depicted, extending almost as far inland as Waiale Pond. The project area vicinity appears to be within “GRANT 3433 C. SPRECKELS” and “Hawaiian Commercial and Sugar Co.” which at the time was owned by Claus Spreckels. The Kahului Railroad is depicted to the north and a trail that runs west to Wailuku is located just north of the project area.

A map by Hugh Howell from 1896 depicts the growing town of Kahului, which is based around the Kahului Railroad (Figure 7). The railroad is depicted heading west toward Wailuku from the Kahului town center. Roads are also depicted extending from Kahului toward Wailuku and heading north along the coastline.

The final map by surveyor James M. Dunn offers a closer look at the project area within the town of Kahului from 1953 (Figure 8). This map shows the project area is bound by Main, Kane, School, and Fourth Streets, with Third Street bisecting the subject lot in half. This map depicts the Kahului town site showing various deeds and boundaries, and indicates that most of the project area was deeded to the Territory of Hawaii from HC&S Company on December 21, 1925. It also shows that the northeast corner of the subject property was deeded to the Department of Instruction/Correction of the Territory of Hawaii on September 17, 1908.

Previous Archaeology

Many archaeological studies have been conducted in Wailuku. The following discussion provides information on archaeological investigations that have been carried out within approximately 1 km of the project area, based on reports found in the SHPD library in Kapolei, Hawai‘i (Figure 9 and Table 1). Projects are summarized below in chronological order. State Inventory of Historic Places (SIHP) numbers are prefaced by 50-50-04.

Some of the earliest archaeological surveys and descriptions of Maui were done by Thrum in 1909 and Winslow Walker in 1928–1929. Thrum published the *Hawaiian Almanac and Annual for 1909* where he listed and described eight heiau in Wailuku. These are Pihana, Halekii, Kaluli,

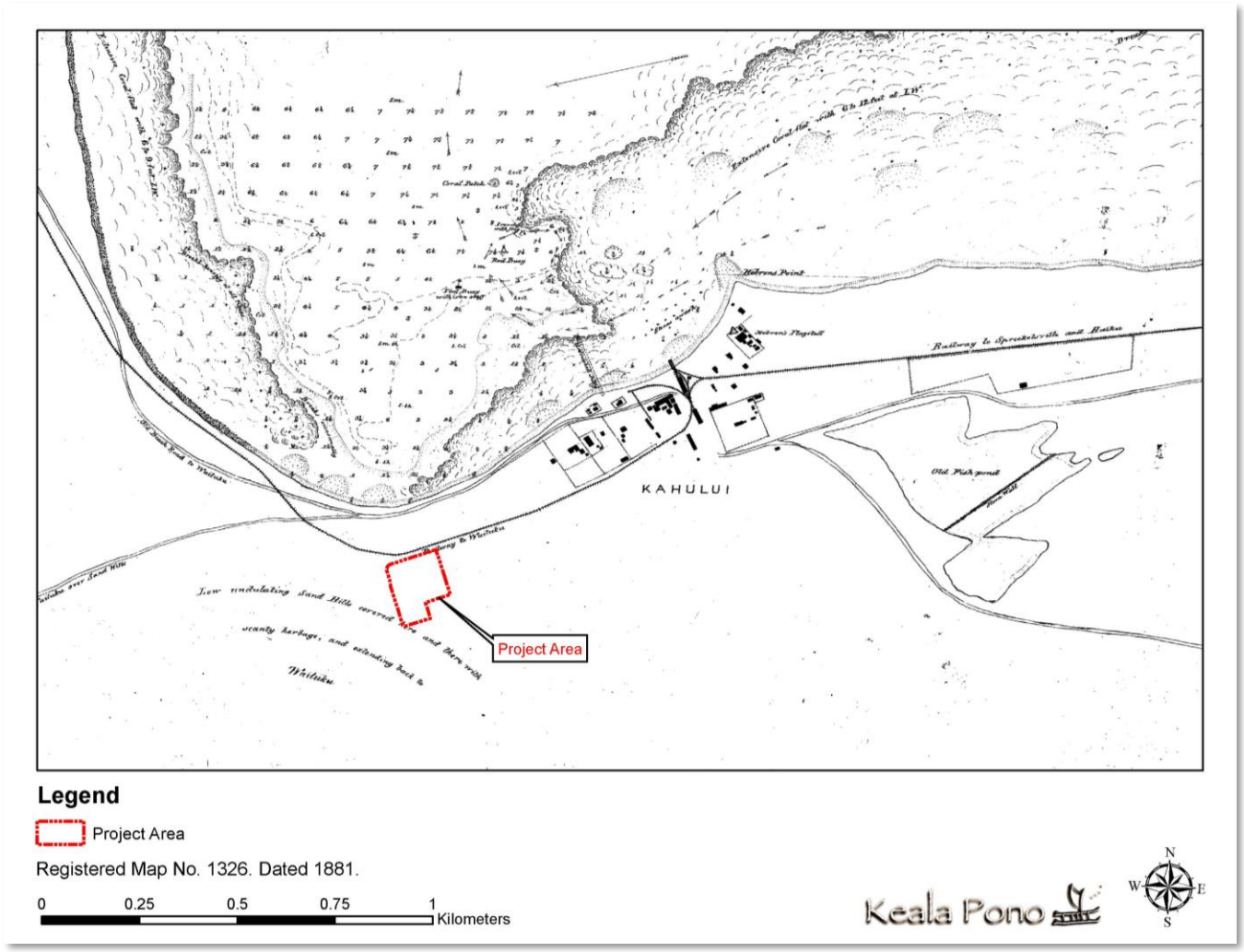

Figure 5. Portion of a map of Wailuku area, including Kahului (Alexander 1881).

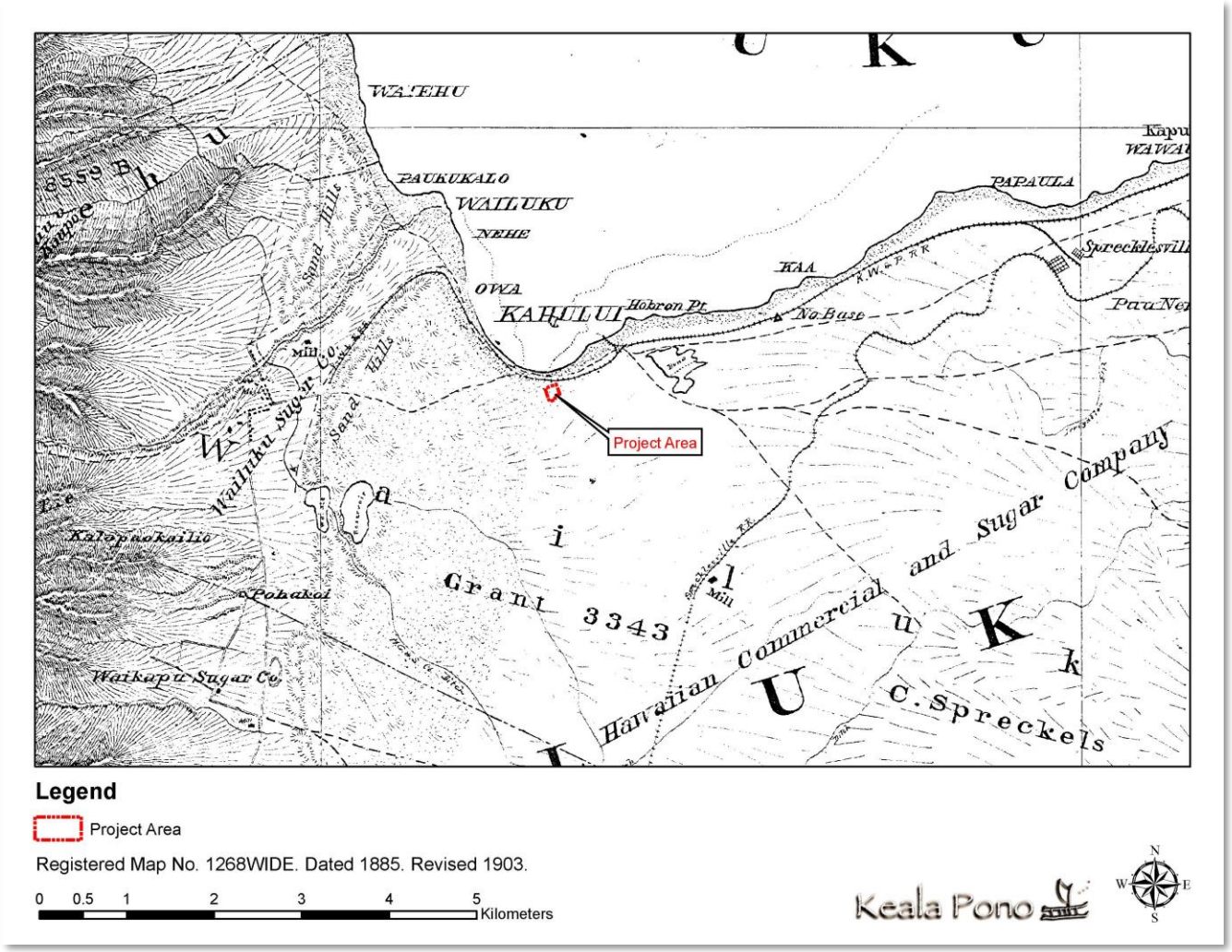

Figure 6. Portion of a map of Maui (Dodge 1885).

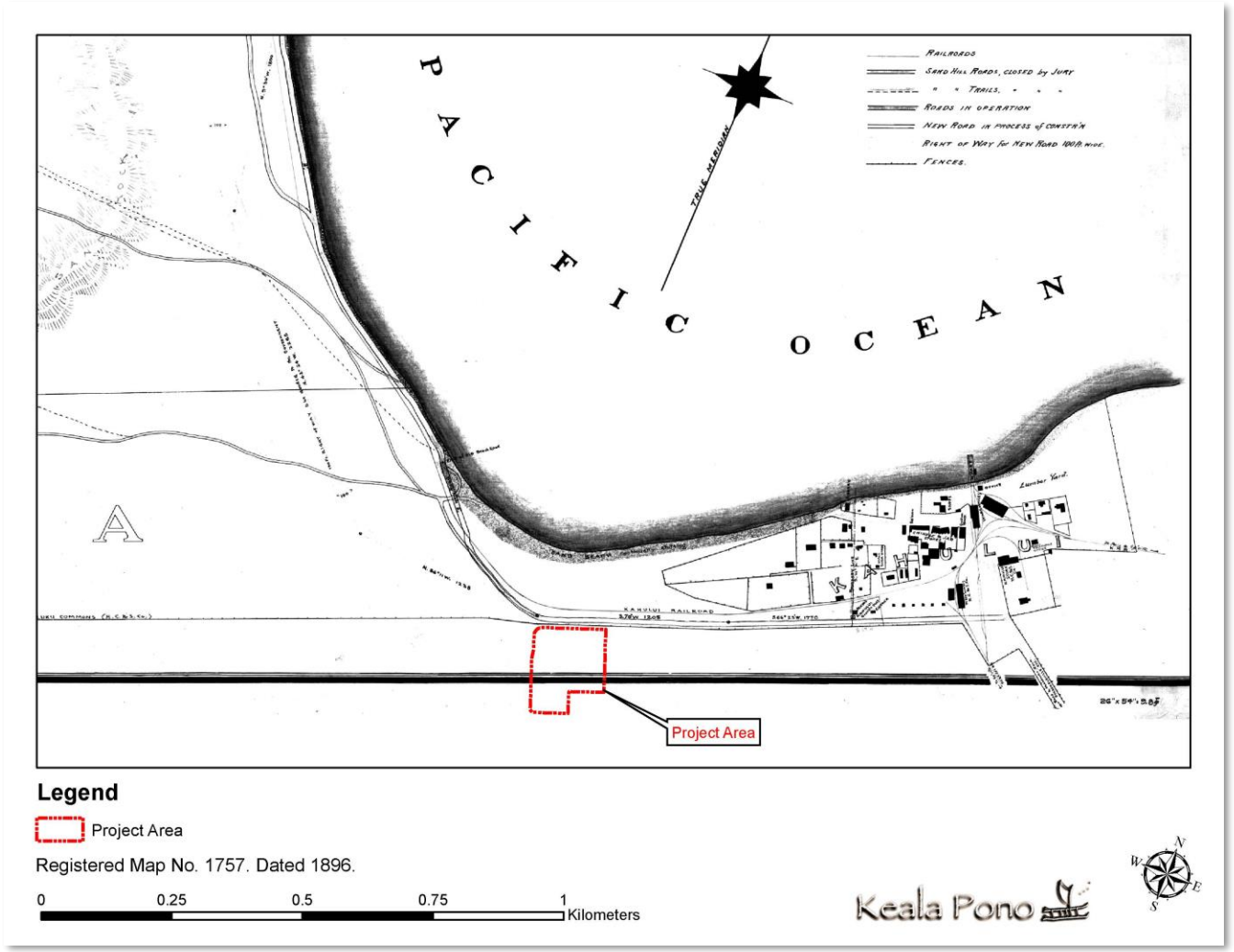

Figure 7. Portion of a map of Kahului and Kahului Harbor (Howell 1896).

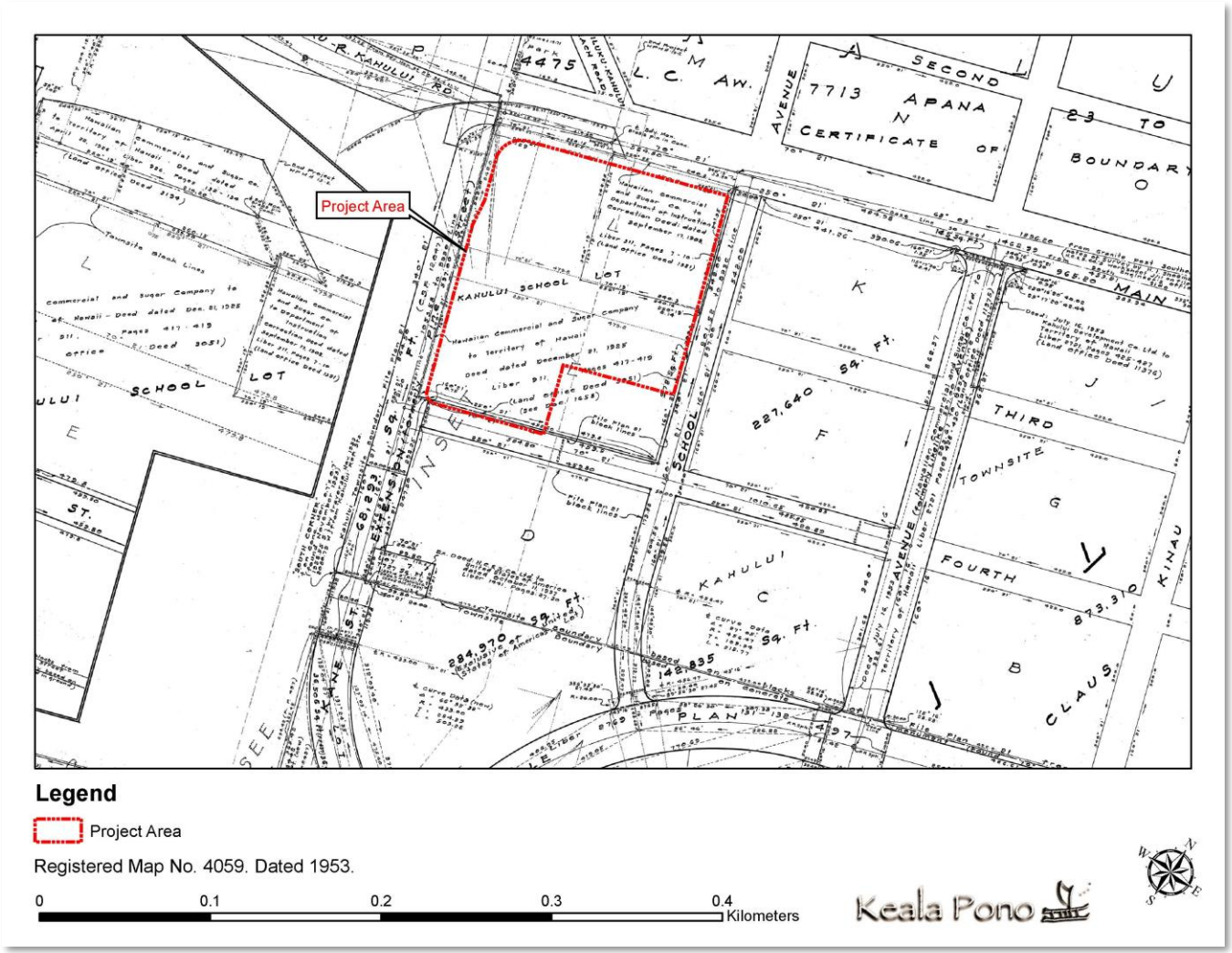

Figure 8. Portion of a map of the town of Kahului with a close up inset of the subject property (Dunn 1953).

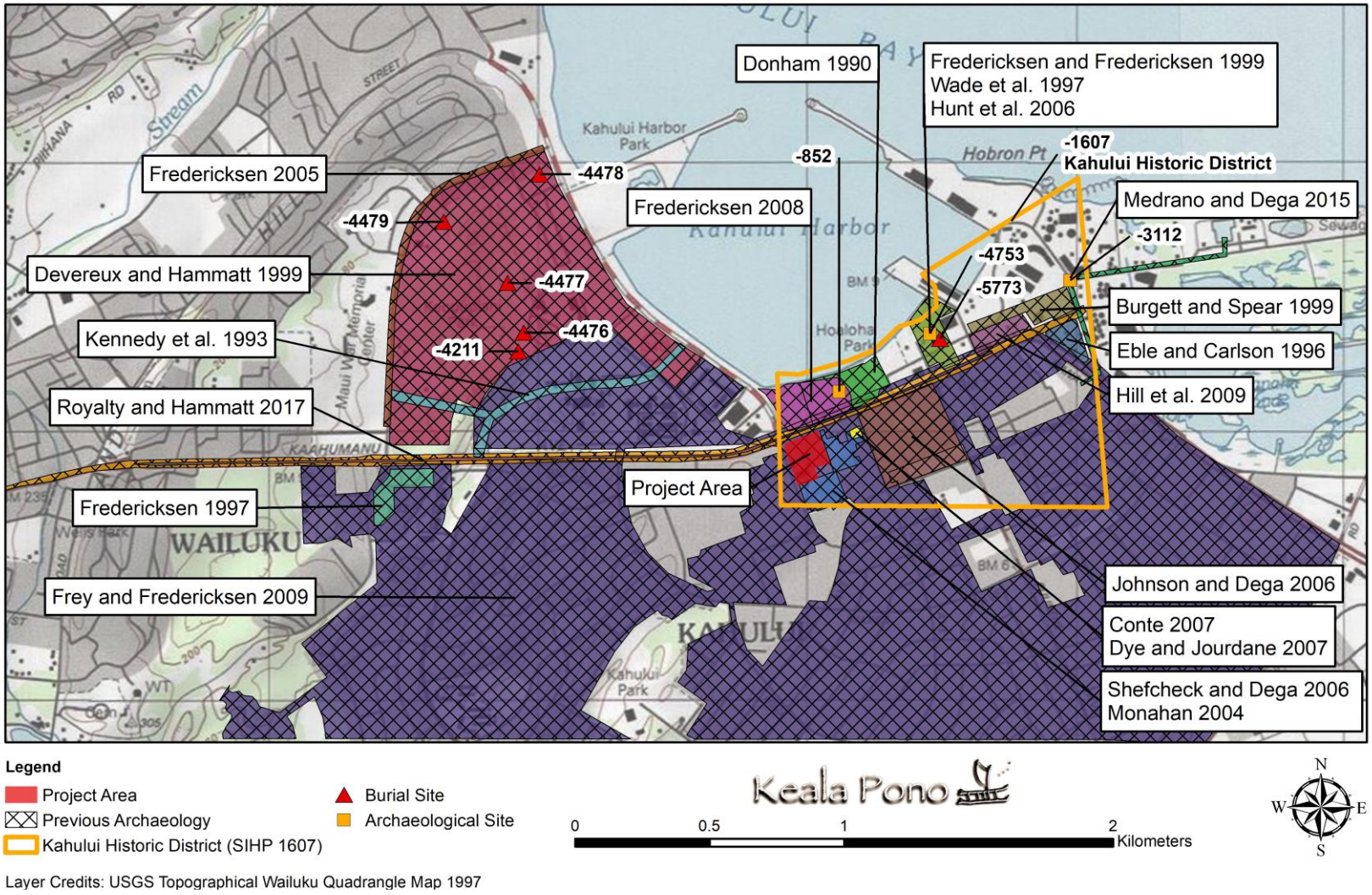

Figure 9. Previous archaeological studies and known archaeological sites in the vicinity of the project area.

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Author/Year	Location	Work Completed	Findings
Thrum 1909	Island-Wide	Heiau Documentation	Noted eight heiau in Wailuku, none in the project vicinity.
Walker 1928–1929	Island-Wide	Survey	Noted ten heiau in Wailuku but could not locate them; none are in the project vicinity.
Donham 1990	Maui Palms Hotel	Archaeological Inventory Survey	Identified SIHP 852, consisting of surface and subsurface historic artifacts and faunal remains.
Kennedy et al. 1993	Wahinepio Ave.	Archaeological Inventory Survey	No historic properties identified.
Eble and Carlson 1996	Hobron Triangle	Archaeological Inventory Survey	No historic properties identified.
Fredericksen 1997	Mahalani St.	Archaeological Monitoring	No historic properties identified.
Wade et al. 1997	Kahului Harbor	Archaeological Inventory Survey	No historic properties identified.
Fredericksen and Fredericksen 1999	Kahului Harbor Barge Terminal	Archaeological Monitoring	Identified SIHP 4753, a subsurface deposit of historic artifacts with an underlying ʻiliʻili pavement.
Burgett and Spear 1999	Kahului Harbor	Archaeological Monitoring	No significant historic properties identified, but did document what was thought to be a pit related to historic harbor activities.
Devereux and Hammatt 1999	Keōpūolani Regional Park	Archaeological Monitoring	Identified four burial sites (SIHP 4476–4479). Two sets of human remains stored at SHPD were reinterred along with a previously recorded burial (SIHP 4211) that was partially preserved.
Monahan 2004	TMK: (2) 3-7-004:001; 3-7-005:003, 011, 023	Archaeological Inventory Survey	No historic properties identified.
Fredericksen 2005	Kanaloa Ave.	Archaeological Monitoring	Documented two previously disturbed human burials (SIHP 5471 and 5472), four pre-contact burials (SIHP 5495), and two pre-contact habitation sites (SIHP 5496 and 5660).
Johnson and Dega 2006	Kahului Shopping Center	Archaeological Inventory Survey	Recorded historic artifacts in a secondary context, no significant historic properties were identified.
Shefcheck and Dega 2006	TMK: (2) 3-7-004:001; 3-7-005:003, 011, 023	Archaeological Monitoring	Recorded historic artifacts in a secondary context, no significant historic properties were identified.
Hunt et al. 2006	Puʻunene Container Yard	Archaeological Inventory Survey	Documented one burial (SIHP 5773) and isolated artifacts added to the Kahului Historic District (SIHP 1607).

Table 1. (continued)

Author/Year	Location	Work Completed	Findings
Conte 2007	Ka‘ahumanu Ave.	Archaeological Inventory Survey	Observed three faunal bone fragments; no significant historic properties were identified.
Dye and Jourdane 2007	Lono Ave.	Historic Properties Assessment	No surface historic properties identified.
Fredericksen 2008	Maui Beach Hotel	Archaeological Inventory Survey	No historic properties identified.
Frey and Fredericksen 2009	Kahului coastal region	Archaeological Monitoring	No historic properties identified.
Hill et al. 2009	Kahului Harbor	Archaeological Literature Review and Field Inspection	Identified three historic buildings and a park associated with Kahului Railroad and HC&S Plantation infrastructure.
Medrano and Dega 2015	Kahului Harbor	Archaeological Monitoring	Identified intact remnants of the Kahului Railroad and its infrastructure, SIHP 3112.
Royalty and Hammatt 2017	Main St. and Ka‘ahumanu Ave.	Archaeological Monitoring	Documented four previously identified historic properties listed on the National Register of Historic Places (SIHP 1633, 1541, 1630, and 1607). SIHP 8498, a historic structural remnant was newly documented. None of these sites are near the current project area.

Malumaluakua, Keahuku, Olokua, Olopio, and Malena. Walker never published his work, but wrote a manuscript which is cited in works such as Sterling’s *Sites of Maui* (1998). Walker noted ten heiau for Wailuku (Keahuku, Olokua, Olopio, Malena, Pohakuokahi, Lelemako, Kawelowelo, Kaulupala, Palamaihiki, and Oloolokalani), but could not find any of them (Walker in Sterling 1998:79). In addition to these, Walker also described Kaluli Heiau, Pihana Heiau, and Haleki‘i Heiau for Wailuku. None of these heiau are located in the vicinity of the project area, however.

After this early work, no archaeological studies were conducted in the project vicinity until 1990, when archaeology started being conducted due to legal requirements. An archeological inventory survey for the former Maui Palms Hotel (now the Maui Seaside Hotel) produced significant findings (Donham 1990). Located just north of the current project area, along the Kahului Harbor, midden and various artifacts were found eroding out of a sand embankment on the hotel property. The site, SIHP 852, was found to be of historic origin based on the artifact types found and the lack of pre-contact artifacts. Hand-powered auger cores were excavated as part of the inventory survey. Observed surface and subsurface materials included clear, green, amber bottle glass, plastic, metal fragments, brick, ceramics, charcoal, shell, fish bones, and butcher-cut faunal remains. No further work was recommended for the site prior to the onset of construction activities, but archaeological monitoring was recommended during construction for this project.

An archaeological survey with subsurface testing north of the former Maui Community College Campus produced no significant findings (Kennedy 1993). A surface survey did not identify any archaeological resources. Subsequently, 54 trenches were excavated and two features were recorded. These consisted of an in-situ wooden post, and a trash pit, both of which were determined to be of modern origin. These features were not recommended for preservation or any further work and no SIHP numbers were assigned.

An archaeological inventory survey was completed for the Kahului Barge Terminal Improvements Project (Wade et al. 1997). No historic properties were identified and the fieldwork was reported as an archaeological assessment. Due to the presence of deep undisturbed sand deposits, archaeological monitoring was recommended. Two years later, archaeological monitoring was conducted for the same project at the Kahului Harbor (Fredericksen and Fredericksen 1999). While it was apparent that the majority of the project area had undergone extensive ground disturbance, one subsurface site was located, SIHP 4753, at the northwestern boundary of the project area. The site consisted of modern and historic materials at the upper level, a mix of modern/historic and pre-contact materials in the middle level and the bottom layer was described as a pavement of water-worn pebbles (ʻiliʻili) up to 22 cm thick. Beneath the pavement was culturally sterile sand. The pavement extended over an area 10 m in length and an indeterminate width. It was recommended that additional work would be needed in order to determine the site extent, age, and function.

Archaeological monitoring for the construction of storage yard improvements at Kahului Harbor produced no significant findings (Burgett and Spear 1999). While no definitive cultural resources were encountered, an unusual rock and soil-filled pit was documented. Its purpose and age were not determined, but the authors speculated that it may have been associated with historic harbor facilities formerly in the area.

Construction of the 110-acre Keōpūolani Regional Park in 1999 required archaeological monitoring (Devereux and Hammatt 1999). During grubbing and grading activities, four human burials were encountered (SIHP 4476–4479). A prior study of the property in 1996 uncovered a human burial that was partially preserved (SIHP 4211). Another two sets of human remains were being held by SHPD and reinterred with SIHP 4211.

Human burials were identified during archaeological monitoring for improvements to Kanaloa Avenue (Fredericksen 2005). This included four pre-contact burials assigned SHIP 5495 and two previously disturbed human burials (SHIP 5471 and 5472). The disturbed remains were reinterred with the SIHP 5495 burials. In addition to the human remains, two habitation sites dating to the pre-contact era were also documented (SIHP 5496 and 5660).

Archaeological monitoring for the Puʻunene Container Yard covered the Fredericksen and Fredericksen (1999) Barge Terminal project area (Hunt et al. 2006). A post-contact burial was identified during monitoring and designated as SIHP 5773. Traditional and historic artifacts associated with the burial included glass and shell beads, basalt and shell sinkers, a basalt core, an octopus lure, a worked basalt cobble, a poi pounder, basalt hammer stones, and a chopping stone. These artifacts were included with SIHP 1607, the Kahului Historic District.

In 2004, an archaeological inventory survey was completed for the Maui Community College Lono Avenue Student Housing Project located on two contiguous parcels adjacent to the current project area to the south and east (Monahan 2004). The fieldwork did not identify historic properties, however due to the proximity to documented burials and archaeological sites, archaeological monitoring was recommended. Archaeological monitoring did not identify traditional Hawaiian cultural material or sites, but a large quantity of historic bottles was collected from throughout both properties (Shefcheck and Dega 2006). No SIHP numbers were assigned, even though a significance assessment was included in the report, based on artifacts identified. It was recommended that an archaeological monitor should be on site for any further excavations within the project area and its immediate vicinity.

An archaeological assessment for the proposed development of the Kahului Shopping Center was conducted at a property located just east and adjacent to the current project area (Johnson and Dega 2006). A total of 16 trenches were excavated, and while modern and historic artifacts dating from

the 1920s were identified, it was concluded that they were from a secondary context, having been brought in with fill and deposited in that location. However, due to the possibility of identifying human remains during construction, it was recommended to have an archaeological monitor on site during any further excavation on the property.

An archaeological assessment for the installation of a cell tower at a property along Kaʻahumanu Avenue, located to the east and adjacent to the current project area had minimal findings (Conte 2007). Within the three test trenches that were excavated, only two fragments of machine cut cow bone and one chicken bone fragment were identified. While it was determined that nothing of cultural significance was found, archaeological monitoring was recommended for all excavations related to the cell tower project due to the presence of undisturbed sand deposits.

A historic properties assessment was conducted for a property just west of the current project (Dye and Jourdane 2007). It was determined that the installation of telecommunications equipment would have no effect on historic properties, yet an archaeological inventory survey was recommended because of the subsurface archaeological sites that have been identified nearby.

An archaeological literature review and field inspection at two parcels adjacent to the Kahului Harbor identified four surface historic properties (Hill et al. 2009). These consist of three historic buildings and a historic-era park that is associated with the HC&S sugar enterprise and the Kahului Railroad. Additional work was recommended to establish significance and mitigation recommendations for each property. No SIHP numbers were assigned at the time of the study.

Archaeological monitoring for the Kahului and Wailuku Force Main Project further documented the Kahului Railroad, SIHP 3112 (Medrano and Dega 2015). Additional components of the railroad infrastructure were recorded, with intact remnants of the railroad found directly beneath the modern road pavement. Isolated historic artifacts (modern debris, a bottle, and railroad ties, spikes, and rail wheel) were also recorded during monitoring. It was recommended that any additional work in the vicinity should proceed with an archaeological monitoring program.

In 2017, archaeological monitoring was conducted for the Main Street and Kaʻahumanu Avenue resurfacing project from High Street to Hobron Avenue (Royalty and Hammatt 2017). Four previously identified historic properties were recorded during monitoring. The Waiale Drive Bridge (SIHP 1633), Kaʻahumanu Avenue-Naniloa Drive Overpass (SIHP 1541), Baldwin High School (SIHP 1630), and the Kaʻahumanu Church (SIHP 1607) are all listed on the National Register of Historic Places, however none of these sites are located near the current project area. A historic concrete structural foundation (SIHP 8498) was also documented.

Additionally, two archaeological inventory surveys (Eble and Carlson 1996, Frederickson 2008) and two archaeological monitoring studies (Frey and Fredericksen 2009, Fredericksen 1997) had no significant findings during fieldwork.

Summary of Background Research

Several archaeological implications can be made based on the background research presented above. The southern end of the current project area is the location for the Maui Community School for Adults, while the north end of the lot is a landscaped field. In pre-contact times, the Wailuku region was one of five population centers on the island of Maui (Handy et al. 1991), as well as an area of chiefly residence (ʻĪʻī 1959). Portions of the current city of Wailuku were also built atop former agricultural terraces with its well-watered location (Handy et al. 1991). However, Wailuku was afflicted by warfare through much of its history [with the meaning of Wailuku being ‘water of destruction] (e.g., Kamakau 1992, Pukui et al. 1974).

In the post-contact era, sugar interests took the forefront of the Wailuku and Kahului economy, and cane fields, mills, ditches, a railroad, and other infrastructure forever changed the landscape. According to historic maps, the vicinity surrounding the current project area was not under heavy development or cultivation until at least the mid-20th century. Vestiges of the sugar industry still remain, particularly the Kahului Railroad, which is not far north from the project area. A historic building constructed in 1920 and a rock wall built in 1939 are located within the project area.

Archaeological studies conducted near the project area can help inform on the kinds of subsurface archaeological resources that may be found. The closest archaeological studies to the project identified historic artifacts and intact portions of the Kahului Railroad infrastructure. In the areas just outside the immediate vicinity of the project area, traditional Hawaiian artifacts and human burials have been identified.

ETHNOGRAPHIC SURVEY

There are some things that cannot be found in the archives, in textbooks, or at the library, but are instead preserved through the knowledge, experiences and stories of our kūpuna, kamaʻāina, and other community members. Through these experiential narratives, we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of the Kahului area, ethnographic interviews were conducted with community members who are knowledgeable about the project area.

Methods

This Cultural Impact Assessment was conducted between January and February, 2021. Guiding documents for this work include The Hawaiʻi Environmental Council's Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawaiʻi). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting, and Dietrix Duhaylonsod, BA, Ethno-historian.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or G70; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Three individuals participated in the current study (Table 2). Manaʻo and ʻike shared during these interviews are included in this report.

Due to the Covid-19 restrictive proclamations, written or telephone interviews were substituted for in-person interviews. Each interviewee was provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he/she was most comfortable.

A copy of the interview transcript was sent to each interviewee, along with the Transcript Release Form (Appendix C). The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document. When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in one interview via phone, one interview via email, and a summary of a telephone conversation discussing the project (see Table 2). The following section includes background information for each interviewee, in their own words. This includes information on the interviewee's ʻohana and where the interviewee was born and raised. The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include connections to the project lands, moʻolelo and archaeological sites, gathering practices, change through time, and concerns and recommendations for the project. Transcripts are presented at the end of this report in Appendices D–F.

Table 2. List of Individuals Involved in the Cultural Impact Assessment

Name	Affiliation	Result of Contact
Paul Luʻuwai	Hawaiian Canoe Club	No reply
Papaikaniʻau Kaiʻanui	UH Maui College	No reply
Colsen Kanei	Kawaianuhealehua	No reply
Kamaka Kukona	Ka Hanu Lehua	No reply
Kaponoʻai Molitau	Na Hanona Kulike O Piʻilani	Participated in phone discussion with summary writeup
Ualani Smith	Halau Hula I Kona Mau Lima	Passed away
Keopuolani Salvador	Keala Kahinano O Puna	No reply
Kanoelani Kamaliʻi-Ligsay	KS Maui	No reply
Moani Kekahuna	KS Maui	No reply
Kalani Au	Lokelani Intermediate School	Interview Complete
Hokulani Holt Padilla	Paʻu O Hiʻiaka	Interview not conducted; recommended Clifford Naeʻole
Kealiʻi Reichel	Kealaokamaile	Declined Interview
Roselle Bailey	Ka ʻImi Naʻauao O Hawaiʻi Nei	Recommended Kurt Kawachi
Kurt Kawachi	Kanaha Fishpond	Recommended Aiau Koa
Aiau Koa	Kahului-Wailuku Resident & Cultural Practitioner	Interview Complete

Interviewee Backgrounds

The following section includes background information for each interviewee, in their own words. This includes information on their ʻohana and where the interviewee was born and raised. The interviewees are Aiau Koa, Kalani Au, and Kumu Kaponoʻai Molitau.

Aiau Koa

My name is Henry Aiau Kauka Koa. I was born and raised on the island of Oʻahu, born in Waiʻanae, but the last place I lived on Oʻahu was Waipahu, went to Pearl City Elementary, Pearl City Intermediate, Pearl City High School, and moved to Maui, 1979, 1980, around that time. I grew up mainly in the Pearl City section, the Waipahu section of Oʻahu. My family, my dad is actually from Maui. He's from Honokōhau Valley. My mom is from Oʻahu. She's from Papakōlea.

My father, his name was Francis Lono Koa, born and raised on the island of Maui. My mom, her name is Leilani Bertha Parker, born and raised on Oʻahu.

My background, I'm actually a hula dancer. I danced hula with Kealiʻi Reichel for like twenty-something years.

Kalani Au

Charles Kalani Au. Born on Oʻahu (1976). I grew up in Kahaluʻu. Graduated from Kamehameha (Kapālama). My ʻohana is mainly from the Koʻolauloa area of Oʻahu with previous connections to Maui (Hāna, Koʻolau).

Kumu Kapono‘ai Molitau

Kumu Kapono‘ai Molitau. I live and work on Maui [as a] kumu hula.

Topical Breakouts

The following sections are extended quotations from the interviews, organized by topic. Interviewees provided information on connections to the project lands, mo‘olelo and archaeological sites, gathering practices, change through time, and concerns and recommendations for the proposed Kahului Civic Center and Mixed-Use Complex project.

Connections to the Project Area

The Adult School is connected with the Department of Education, who I currently work for as an administrator. There were some occasions when I participate in meetings [that] are there. [Kalani Au]

That area that I looked at and we spoke about, which is across of Ka‘ahumanu Shopping Center, which if you face the front part of Ka‘ahumanu Shopping Center, then that section is actually on the right hand side, if you’re facing out towards Ka‘ahumanu Avenue. And it’s bordered by Kahului Beach Road and Ka‘ahumanu Avenue. That area that it’s actually on, it’s on the right hand side, I know that area because I used to work in that area. There’s a place that was called Maui Economic Opportunity, and it was a non-profit organization to help out families on Maui, from the senior citizens to lower income families, even our children for Head Start. I started working there, I think when I was like about 17 or 18 years old. I worked there. So that area that they’re proposing, I’ve seen it. I worked there for maybe 8, 9 years, maybe 10 years. [Aiau Koa]

Mainly I learned about the area because of working there. We worked there every day, and there were buildings there that are no longer there. There was a two-story concrete building that housed students from the college. It was an old style building made out of concrete, and it was in front, bordering the Ka‘ahumanu Avenue. It was facing outwards. And the building that I was working in was right behind and on the side of it. We had different wooden buildings that were there. And that area also housed DAGS, the State of Hawai‘i Department of Accounting and General Services, they had their offices there, besides MEO, Maui Economic Opportunity. [Aiau Koa]

…They also housed the bus transportation base yard there. After about 2 or 3 years working at the farmer’s market, then I moved up to become a bus driver. We had a base yard there with about 20 buses, and we would go around Maui County, from Hāna to Lāhaina to Kula, Kīhei, to pick up senior citizens and take them to their luncheon… [Aiau Koa]

Mo‘olelo and Archaeological Sites

There used to be sand dunes throughout the area in the past. This gives a strong likelihood that iwi kupuna are present within the proposed project footprint. [Kumu Kapono‘ai Molitau]

Well, I don’t know of any [archaeological sites] on that site, but from what I do know, there was a fishpond across of there where Maui Beach is actually housed at right now, Maui Beach Hotel. That’s adjacent to the harbor. So if you look out there, you’ll see rock formations, and I believe that was fishponds back then. [Aiau Koa]

…So that area, that property of the Kahului complex [current project area], I don’t know of any cultural sites or archaeological things that I would think would have, but…I wouldn’t pass it that it wouldn’t have. The only reason being, I’ve been at the harbor police for about thirty-something years now, and we have done some projects at the harbor, when they did the expansion of the harbor out towards Ka‘ahumanu Avenue side, we have found

human remains. So I'm quite sure that might have, but I cannot say for certain. I'd be surprised if they wouldn't have any. [Aiau Koa]

Yeah, it could be a possibility [archaeological sites], because Kahului Harbor, when we did the expansion of Pier 2 container yard, which would be expansion out to Puʻunēnē and Kaʻahumanu Avenue, they have found some iwi kūpuna. [Aiau Koa]

Kahului refers to a battle formation used by warriors in the past. Historical accounts make a reference to Hawaiʻi island warriors under Kamehameha landing their canoes in the area to attack Maui. Another reference was made to Kakanilua a famous battle near the area that resulted in many lives lost. Lastly, there were many puʻuone (sand dunes) in the area where many loved ones were interred. [Kalani Au]

To my knowledge, I do not know of any [archaeological sites in the project area]. [Kalani Au]

Gathering Practices

I think that gathering practices should be continued, but I don't see any plants or things that I know on that property…the only thing that had over there was plumeria trees. And every hula dancer came there to pick the plumeria trees. [Aiau Koa]

Some of ʻem are still there [plumeria trees], but there were a lot. And of course, we was part of that group picking flowers for hula. But there was no other native trees, like lehua, or ʻaʻaliʻi, or any other kind of plants that I think we could have gathered. I don't see any other trees or plants. [Aiau Koa]

Change Through Time

I have been in Maui for 20 years and in just my time here, I have seen the area change a lot. [Kalani Au]

[There has been] lots of development all over Maui. [Kumu Kaponoʻai Molitau]

So MEO, Maui Economic Opportunity, was the main company, or non-profit organization, that was housed there…And that whole place started to change only because everything got bigger, more buses, more residents, so eventually they had to move to a bigger place, a bigger facility. And those [old] buildings were all wooden buildings, kind of like you know the portable buildings for schools? [Aiau Koa]

[The area] They're proposing, it's where I spent most of my time there. I worked long hours there. I just knew that area, and now, how it's run down, and they tore that big building down that was in front there. And it's a big wide open field area, and now there's more homeless people around that area, in the back. It's still a nice place when you drive by. You can see a big open area, but now you see homeless around that area. [Aiau Koa]

Concerns and Recommendations

I don't see any [adverse effects on any cultural practices or cultural sites]. Yeah, I can't foresee any, but if they could plant more plumeria trees [laughs], then we can gather more… Or plant lauaʻe. Plant some lauaʻe there so we can make lauaʻe leis, maybe some palapalai, if you guys like. [Aiau Koa]

Yeah because if they going have a complex and community center, what if they have a lei-making class or different stuff where they can use native plants there, so that they could use it to teach the younger generation. The kūpuna could say, "These are plants that we use for medicine right here, the noni plant, the kalo plant." So planting native stuff that could educate our younger generation would help, and the reason why is it's right in town. [Aiau Koa]

> Cultural concerns…No, I can't think of any. But if it's for the community, if it's proposed for the community, then make it accessible to the community, not so much it's a member-only kind of community, like you have to belong to this to get in. I feel that if it's for the community, then the community, of course you have to have some kind of protocol, but not so much a gated community place. That's one thing I hate when I see gates put up by the community. I understand the gate when you don't want crime to come through your area, but it feels like it [the gate] separates us. So the community complex, make it accessible to the community. [Aiau Koa]
>
> If any construction was to move forward, a cultural monitor should be present at all times to help with any inadvertent disturbances. [Kumu Kapono'ai Molitau]
>
> Outside of the promise to provide housing, which is more often than not unaffordable, there needs to be culturally responsible development. For example, during previous construction in the area, so many kupuna trees were recklessly chopped down. This was very irresponsible and wasteful. These kumu niu were of value, and the community should have been consulted prior so they could use them. [Kumu Kapono'ai Molitau]
>
> It could [affect places of cultural significance], because many iwi (bones) were known to be interred in this area. [Kalani Au]
>
> Ensure there is communication with the public on the impact as well as positive intentions of the development to service the community. [Kalani Au]
>
> Besides being culturally cognizant, the developer and planners should maximize current footprints. What's the use of constructing new buildings when we already have empty buildings not being used? Pointing to the Maui Marketplace as well as the old Sports Authority, leaving abandoned buildings around is like people leaving their rubbish for others to take care of. [Kumu Kapono'ai Molitau]

Summary of Ethnographic Survey

The interviewees have extensive knowledge of Wailuku and the area around the proposed Kahului Civic Center and Mixed-Use Complex project. One of them grew up on Maui and two have familial connections to Maui and are longtime residents themselves. One informant shared about a battle in the area associated with Kamehameha's arrival. Archaeological sites noted for the region include human remains as well as traditional rock formations and fishponds nearby. It was noted that the area was once a sand dune landscape (a common environment for human burials in the past), and that human remains have already been encountered during other construction projects nearby. Also noted was the traditional gathering practice of hula hālau picking the plumerias from trees in the project area.

The interviewees voiced their concerns and recommendations for the project. It was noted that there may be iwi kūpuna found on the property and that a cultural monitor should be on site during construction. Allowing access to the facilities for all community members rather than having a members-only facility was also mentioned, as well as keeping open communication with the community regarding this project. It was recommended to plant useful foliage on the property such as plumeria, laua'e, palapalai, noni, kalo, and naupaka for the community to gather, and to hold cultural classes on the property, such as lei-making, to make good use of the plants. Another suggestion was to use native plants instead of invasives for landscaping on the grounds. It was also recommended that if any trees on the property are being cut down, the construction team should consult the community to see if the trees can be utilized by community members. And finally, one community member emphasized responsible development, questioning the definition of "affordable" in affordable housing, and also, recommending the repurposing of buildings currently not in use rather than constructing new buildings alongside abandoned ones.

SUMMARY AND RECOMMENDATIONS

This study highlights the unique history of Wailuku and demonstrates the importance of this place to the community. Three community members were interviewed to share their mana‘o and to help identify any potential cultural resources or practices that might be affected by the proposed project.

Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study revealed that Wailuku was a culturally significant area with many of the natural resources which supported traditional subsistence activities. The region was a gathering place and home to chiefs as well as the location for a number of heiau.

Previous archaeological studies have identified a range of historic properties in the region. The closest studies to the project area identified historic artifacts and intact portions of the Kahului Railroad infrastructure. In the areas just outside the immediate vicinity of the project area, traditional Hawaiian artifacts and human burials have been documented.

In the historic period, most activity in the region and on Maui as a whole was focused on the sugar industry. A historic building dating to 1920 and a rock wall dating to 1939 are currently located within the project area.

The discussions revealed that hula hālau continue to gather plumeria from trees in the project area today. Archaeological sites discussed during the interviews focused on nearby human remains and the possibility of human burials within the project area as well as the need for cultural monitoring.

Potential Effects of the Proposed Project

The interviewees had different opinions on whether or not the proposed project would affect any places of cultural significance. One interviewee believed that no cultural sites would be affected, while another asserted that “it could [affect places of cultural significance], because many iwi (bones) were known to be interred in this area.”

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, no sensitive or confidential information was discovered or revealed, therefore, no confidential information was withheld.

Conflicting Information

No conflicting information was obvious in analyzing the gathered sources. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources.

Recommendations/Mitigations

Recommendations for the project include the following:

- Have a cultural monitor on site during construction;
- Allow access to the facilities for all community members rather than a members-only facility;

- Keep open communication with the community regarding the project;
- Plant useful foliage on the property such as plumeria, laua‘e, palapalai, noni, kalo, and naupaka for the community to gather, and to hold cultural classes on the property, such as lei-making, to make good use of the plants;
- Use native plants instead of invasives for landscaping on the grounds;
- If any trees on the property are being cut down, consult the community to see if the trees can be utilized by community members.

Summary and Conclusion

In sum, background research and oral history interviews identified several archaeological resources within and near to the project area, although it is unclear if they may be affected by the proposed project. An archaeological inventory survey is recommended to determine if any surface or subsurface cultural resources remain on the property with special care to look out for any inadvertent discoveries of iwi kūpuna. The community should be kept informed on the construction plans, and their concerns and recommendations should be considered during all phases of the proposed work. The area is clearly significant in both the past and present.

GLOSSARY

‘a‘ali‘i *Dodonaea viscosa*, the fruit of which were used for red dye, the leaves and fruits fashioned into lei, and the hard, heavy wood made into bait sticks and house posts.

‘ae Yes, to say yes, or to agree, approve, or consent.

ae‘o The Hawaiian stilt *Himantopus mexicanus knudseni*, endemic and formerly common on the main Hawaiian Islands, but now endangered.

ahupua‘a Traditional Hawaiian land division usually extending from the uplands to the sea.

ala loa Highway, belt road around island.

ali‘i Chief, chiefess, monarch.

aloha Love, affection, compassion, sympathy, kindness, greeting.

‘a‘ole No, never, not; to have none.

‘aumakua Family or personal gods. The plural form of the word is ‘aumākua.

e kala mai ia‘u I’m sorry; excuse me.

hālau Meeting house for hula instruction or long house for canoes.

heiau Place of worship and ritual in traditional Hawai‘i.

hula The hula (traditional Hawaiian dance), a hula dancer; to dance the hula.

‘ike To see, know, feel; knowledge, awareness, understanding.

‘ili Traditional land division, usually a subdivision of an ahupua‘a.

‘ili‘ili Waterworn cobbles often used in floor paving.

iwi Bone.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kali A martial art from the Philippine Islands

kama‘āina Native-born.

kīhāpai Small land division; cultivated garden, patch, orchard, or field; parish of a church.

kuhina nui Prime minister or premier. Ka‘ahumanu was the first kuhina nui. The position was abolished in 1864.

konohiki The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kumu hula Hula teacher/master.

kupuna Grandparent, ancestor; kūpuna is the plural form.

laua‘e A fragrant fern, *Microsorium scolopendria*, when crushed, it fragrance suggests that of maile.

lehua	The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments; a taro variety that makes red poi.
lei	Garland, wreath; necklace of flowers.
liʻiliʻi	Small, little; here and there; a little at a time.
loʻi, loʻi kalo	An irrigated terrace or set of terraces for the cultivation of taro.
mahalo nui loa	Thank you very much.
Māhele	The 1848 division of land.
maikaʻi	Good, well, fine, beautiful, good health.
mālama	To care for, preserve, or protect.
mālama pono	To take care.
manaʻo	Thoughts, opinions, ideas.
mele	Song, chant, or poem.
mōʻī	King.
moʻolelo	A story, myth, history, tradition, legend, or record.
naupaka	The native shrub *Scaevola* sp., varieties of which are found both in the uplands and by the sea.
noni	*Morinda citrifolia*, the Indian mulberry, a tree or shrub known for its medicinal value in traditional Hawaiʻi.
ʻohana	Family.
ʻokana	Subdivision or district, usually consisting of several ahupuaʻa.
oli	Chant.
ʻōlelo Haole	English language
ʻōlelo noʻeau	Proverb, wise saying, traditional saying.
palapalai	*Microlepia strigosa*, ferns can grow up to 4 to 5 ft in height. Used traditionally to decorate hula altars. Indigenous to Hawaiʻi.
pilikia	Trouble.
plumeria	Ornamental trees of the genus *Plumeria*, widely used in landscaping, especially at temples and graveyards.
post-contact	After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
pre-contact	Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
puʻe one	Sand dune or sand bar.

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APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Cultural Impact Assessment for the Kahului Civic Center and Mixed-Use Complex Project
Dietrix J. U. Duhaylonsod, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) for the proposed Kahului Civic Center and Mixed-Use Complex in the Kahului area of Maui (herein referred to as "the Project"). The Assessment is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of G70. The ethnographer will explain the purpose of the Assessment, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Assessment is written below. Feel free to ask the ethnographer questions if the procedures need further clarification. If you decide to participate, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about the Property in the Kahului area of Maui through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, mo'olelo, mele, or oli associated with this area. The goal of this Assessment is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices within the Project area. This Assessment will also attempt to identify any effects that the proposed development may have on cultural resources present, or once present within the Property area.

Procedures

After agreeing to participate in the Assessment and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Assessment may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Assessment will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in the Assessment material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

Consent Form

I, _____, am a participant in the Cultural Impact Assessment for the Kahului Civic Center and Mixed-Use Complex Project on Maui (herein referred to as "Project"). "). I understand that the purpose of the Assessment is to conduct oral history interviews with individuals knowledgeable about the Project and the surrounding area of Kahului on Maui Island. I understand that Keala Pono Archaeological Consulting and/or G70 will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Keala Pono and Element Environmental LLC ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Keala Pono and Element Environmental LLC my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Keala Pono and Element Environmental LLC and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and Element Environmental LLC may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature **Date**

Print Name **Phone**

Address

Thank you for participating in this valuable study.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, _____, am a participant in the Cultural Impact Assessment for the Kahului Civic Center and Mixed-Use Complex Project on Maui (herein referred to as "Project") and was interviewed for the Project. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading "CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS."

I agree that Keala Pono Archaeological Consulting and/or Element Environmental LLC may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Consultant Signature **Date**

Print Name **Phone**

Address

APPENDIX D: INTERVIEW WITH KALANI AU

TALKING STORY WITH

KALANI AU

Oral History for the Kahului Civic Center and Mixed-Use Complex project completed by email.
For Keala Pono 1/19/21

1) To start please tell us about yourself…Name? Where/When you were born? Where you grew up? Where you went to school?

Charles Kalani Au. Born on Oʻahu (1976). I grew up in Kahaluʻu. Graduated from Kamehameha (Kapālama).

2) Could you tell us about your ʻohana/family background?

My ʻohana is mainly from the Koʻolauloa area of Oʻahu with previous connections to Maui (Hāna, Koʻolau).

3) What is your association to the subject property (family land, work place, etc.)?

The Adult School is connected with the Department of Education, who I currently work for as an administrator. There were some occasions when I participate in meetings are there.

4) What are the ways you have acquired special knowledge of this area (from your ʻohana, personal research, specific sources)?

Through personal research and word of mouth.

5) Could you share your manaʻo relevant to the Wailuku-Kahului area and the surrounding region (personal anecdotes, moʻolelo, mele, oli, place names, etc.)?

Kahului refers to a battle formation used by warriors in the past. Historical accounts make a reference to Hawai'i island warriors under Kamehameha landing their canoes in the area to attack Maui. Another reference was made to Kakanilua a famous battle near the area that resulted in many lives lost. Lastly, there were many pu'uone (sand dunes) in the area where many loved ones were interred.

6) As far as you remember and your experiences, how has the area changed? Could you share how it was when you were young and how it's different now?

I have been in Maui for 20 years and in just my time here, I have seen the area change a lot.

7) Do you know of any traditional sites or historically significant buildings which are or were located on the Property site--for example: cultural sites, archaeological sites, historic structures and/or burials? Please elaborate.

To my knowledge, I do not know of any.

8) Do you think the proposed development would affect any place of cultural significance or access to a place of cultural significance? Please elaborate.

It could, because many iwi (bones) were known to be interred in this area.

9) Are you aware of any traditional gathering practices at the Property area and/or within the surrounding areas both past and ongoing?

To my knowledge, no.

10) While development of the area continues, what could be done to lessen the adverse effects on any current cultural practices in the area?

Ensure there is communication with the public on the impact as well as positive intentions of the development to service the community.

11) Are you aware of any other cultural concerns the community might have related to cultural practices within or in the vicinity of the Property site and its surrounding areas?

To my knowledge, no.

12) Do you know of any other kūpuna, kamaʻāina, cultural/lineal descendants, or other knowledgeable people who might be willing to share their manaʻo of the Wailuku-Kahului area?

One person comes to mind, Kapono'ai Molitau.

APPENDIX E: INTERVIEW WITH KUMU KAPONO‘AI MOLITAU

TALKING STORY WITH

KUMU KAPONO‘AI MOLITAU

Oral History for the Kahului Civic Center and Mixed-Use Complex project completed by email.
For Keala Pono 1/20/21

1) To start please tell us about yourself…Name? Where/When you were born? Where you grew up? Where you went to school?

Kumu Kapono‘ai Molitau

2) Could you tell us about your ‘ohana/family background?
[Did not reply.]

3) What is your association to the subject property (family land, work place, etc.)?

Lives and works on Maui

4) What are the ways you have acquired special knowledge of this area (from your ‘ohana, personal research, specific sources)?

Kumu Hula

5) Could you share your mana‘o relevant to the Wailuku-Kahului area and the surrounding region (personal anecdotes, mo‘olelo, mele, oli, place names, etc.)?

There used to be sand dunes throughout the area in the past. This gives a strong likelihood that iwi kupuna are present within the proposed project footprint. If any construction was to move forward, a cultural monitor should be present at all times to help with any inadvertent disturbances.

6) As far as you remember and your experiences, how has the area changed? Could you share how it was when you were young and how it’s different now?

Lots of development all over Maui.

7) Do you know of any traditional sites or historically significant buildings which are or were located on the Property site--for example: cultural sites, archaeological sites, historic structures and/or burials? Please elaborate.
[Did not reply.]

8) Do you think the proposed development would affect any place of cultural significance or access to a place of cultural significance? Please elaborate.
[Did not reply.]

9) Are you aware of any traditional gathering practices at the Property area and/or within the surrounding areas both past and ongoing?
[Did not reply.]

10) While development of the area continues, what could be done to lessen the adverse effects on any current cultural practices in the area?

Outside of the promise to provide housing, which is more often than not unaffordable, there needs to be culturally responsible development. For example, during previous construction in the area, so many kupuna trees were recklessly chopped down. This was very irresponsible and wasteful. These kumu niu were of value, and the community should have been consulted prior so they could use them.

Besides being culturally cognizant, the developer and planners should maximize current footprints. What's the use of constructing new buildings when we already have empty buildings not being used? Pointing to the Maui Marketplace as well as the old Sports Authority, leaving abandoned buildings around is like people leaving their rubbish for others to take care of.

11) Are you aware of any other cultural concerns the community might have related to cultural practices within or in the vicinity of the Property site and its surrounding areas?
[Did not reply.]

12) Do you know of any other kūpuna, kamaʻāina, cultural/lineal descendants, or other knowledgeable people who might be willing to share their manaʻo of the Wailuku-Kahului area?

Recommending Noelani Ahia if a cultural monitor is needed.

APPENDIX F: INTERVIEW WITH AIAU KOA

TALKING STORY WITH

AIAU KOA (AK)

Oral History for the Kahului Civic Center and Mixed-Use Complex project by Dietrix Duhaylonsod (DD)

For Keala Pono 2/14/2021

DD: Today is Sunday, February 14, 202, and we are going to be talking story with Aiau Koa from Maui. Currently I am in Honokai Hale, Oʻahu, but we are doing this interview by way of phone. We are going to be talking about the proposed Kahului Civic Center and Mixed Use Complex in Kahului, and before we go any further, we want to say, "Mahalo nui loa," to Aiau for taking the time to talk story with us, so mahalo and aloha.

AK: Aloha, ʻaʻole pilikia.

DD: If we could start, maybe you could say a little bit about yourself, where/when you were born, where you grew up, where you went to school, just a little background?

AK: Ok, sure. My name is Henry Aiau Kauka Koa. I was born and raised on the island of Oʻahu, born in Waiʻanae, but the last place I lived on Oʻahu was Waipahu, went to Pearl City Elementary, Pearl City Intermediate, Pearl City High School, and moved to Maui, 1979, 1980, around that time. I grew up mainly in the Pearl City section, the Waipahu section of Oʻahu. My family, my dad is actually from Maui. He's from Honokōhau Valley. My mom is from Oʻahu. She's from Papakōlea.

DD: Ah, ok, did you say Kaʻau Koa or Kaʻai Koa, e kala mai iaʻu.

AK: Kauka.

DD: Oh Kauka.

AK: Henry Aiau Kauka Koa, named after my grandfather. My official name.

DD: Oh ok.

AK: My father, his name was Francis Lono Koa, born and raised on the island of Maui. My mom, her name is Leilani Bertha Parker, born and raised on Oʻahu.

DD: Ok, mahalo, oh wait, are you related to Mikiʻala Pescaia, she's Aiau yeah?

AK: Well see, get different Aiaus, get plenty Henry Aiaus, the last name is Kauka, the middle name is Aiau, and it's spelled a-i-a-u. I met a lot of cousins named Henry Aiau, all the watermen, all the ocean guys.

DD: ʻAe, right, right on, mahalo for sharing some background.

So we're gonna be talking about the Kahului area, and I sent you a map, you can see it's across the street from the Kaʻahumanu Shopping Center. Could you kind of share how you're associated with that area?

AK: Sure. That area that I looked at and we spoke about, which is across of Kaʻahumanu Shopping Center, which if you face the front part of Kaʻahumanu Shopping Center, then that section is actually on the right hand side, if you're facing out towards Kaʻahumanu Avenue. And it's bordered by Kahului Beach Road and Kaʻahumanu Avenue. That area that it's actually on, it's on the right hand side, I know that area because I used to work in that area. There's a place that was called Maui Economic Opportunity, and it was a non-profit organization to help out families on Maui, from the senior citizens to lower income families, even our children for Head Start. I started working there, I think when I was like about 17 or 18 years old. I worked there. So that area that they're proposing, I've seen it. I worked there for maybe 8, 9 years, maybe 10 years.

DD: That's quite some time that you've been over there. Are there any other ways that you may have gotten manaʻo about the area?

AK: Mainly I learned about the area because of working there. We worked there every day, and there were buildings there that are no longer there. There was a two-story concrete building that housed students from the college. It was an old style building made out of concrete, and it was in front, bordering the Kaʻahumanu Avenue. It was facing outwards. And the building that I was working in was right behind and on the side of it. We had different wooden buildings that were there. And that area also housed DAGS, the State of Hawaiʻi Department of Accounting and General Services, they had their offices there, besides MEO, Maui Economic Opportunity.

DD: I see.

AK: So I learned a lot by working there. That place, a lot of the community came there back in the day. We would distribute food from the government. Back then was cheese, we would have containers all full of cheese parked out on the front lawn. The community would come, and we would distribute all of that food, the cheese and milk, to the community. And I remember working there extensively to help the community.

When I first started, we would set up like a farmer's market. Myself and another local boy by the name of Jerome Kikiwi, we would set up vegetables and farm stuff on tables, and set it up so the senior citizens would come there and purchase vegetables very cheap for them. So I started up working as a farmer's market helper to help the community through MEO.

DD: Some good programs out of that property.

AK: Yes. A lot of the community would come there seeking help, and MEO was always helping.

They also housed the bus transportation base yard there. After about 2 or 3 years working at the farmer's market, then I moved up to become a bus driver. We had a base yard there with about 20 buses, and we would go around Maui County, from Hāna to Lāhaina to Kula, Kīhei, to pick up senior citizens and take them to their luncheon. We would take some of them to their adult day care centers. So our job started early in the morning picking up senior citizens from all of Maui and dropping them off so they could have lunch and do other projects. And then later in the afternoon, we'd pick all of them up and take them all home. We would take them to each one of their homes. So driving buses made me know Maui a lot because we had to actually go to each person's house, not go to one area and everyone waits there. We had addresses to go to. So I know the roads of Maui, from the back roads, the sugarcane roads, every road, that people don't even know. I remember picking people up in Hāna. We would pick people up in Hāna and take them to Lāhaina.

DD: Hū, that's far!

AK: To Lāhaina, they would have luncheon or whatever excursion that they made, and then I would take them back to Lāhaina later that day, come back out. I would always volunteer to do that route because I love picking up older Hawaiians from Hāna and talking story with me on the way out, got a lot of manaʻo from them, just to talk story with them. A lot of them, they love to share, and I love to listen.

DD: Oh, priceless.

AK: Oh I loved it, I loved it. Some houses that I did go to in the Puʻunēnē, or the sugar mill district of Kahului, some of their houses were like old, old plantation homes, and in their garages they would have old cars from the 1930s, '20s, and the car was like with wooden wheels. The kind you had to crank, they still would have those cars in there, and I would look at them. And they would talk story, and I was very blown away by meeting all these wonderful old Filipino, Japanese, Portuguese, Hawaiian, all mixed race, senior citizens. Everyone was very nice and happy to you, you know?

DD: Yeah, wow, what another era.

AK: Yeah, definitely another era, very respectful, very respectful senior citizens to everyone around them.

DD: Ah nice, right on. So you mentioned the programs, and the buildings that were over there, is there anything else you can say about how that particular parcel has changed through the years, how it's different now? What are your thoughts on that?

AK: So MEO, Maui Economic Opportunity, was the main company, or non-profit organization, that was housed there. At that time, the boss for MEO was Joe Souki. He was the boss back when I started. And then when I left, about 10 years later, Miss Gladys Baisa, she was the director of MEO at that time. And that whole place started to change only because everything got bigger, more buses, more residents, so eventually they had

to move to a bigger place, a bigger facility. And those [old] buildings were all wooden buildings, kind of like you know the portable buildings for schools?

DD: Yeah, yeah, ok

AK: Yeah, those style, but bigger and longer, and they were all wooden structures back then. And when they moved out, they moved up to the Wailuku area, the Cameron Center it's called, and with modern concrete and stuff like that. But that place started to change because now no one was using that area. Unfortunately it started to get run down, and more homeless people started using that area because that area got all these old buildings or older portables. And they even moved out the bus transportation base yard from there. It's because they started acquiring more buses for more people. And now I believe they're up to over a hundred buses in their base yard now, servicing Maui from wheelchairs to non-ambulatory patients.

At one time I was part of the non-emergency ambulance service which means we would pick up people from their homes that were actually paraplegic, and they were bed-ridden. So we had a second ambulance with a gurney, who would pick them up, put them on the gurney, and just take them to their medical appointments, doctor's medical appointment or any kind of procedures, you know, not an emergency like an ambulance or EMT. So I was one of only two that was certified to do this kind of transportation. I loved it. We got to know the patients and take care of them. And to mālama those people, it gave a lot of relief for the family to know that we cared about picking them up and transporting. We made sure we take care of them whether they still have an IV in them or if they have oxygen [tank]. Buses that we had was just like an ambulance, so we could do everything and transport them safely. So that was one of the last things that I worked at MEO before I moved on in my career. But that was one of the most fulfilling to do because you could see there was no service for these people to get to any place, and they're bedridden. So we were really busy and trying to help Maui county out.

So that's that area of the transportation, where we talked about that property that houses those special buses, that's right where the complex is gonna be. They're proposing, it's where I spent most of my time there. I worked long hours there. I just knew that area, and now, how it's run down, and they tore that big building down that was in front there. And it's a big wide open field area, and now there's more homeless people around that area, in the back. It's still a nice place when you drive by. You can see a big open area, but now you see homeless around that area.

I remember one time, sorry, I'm gonna tell you a story.

DD: Mmhmm.

AK: I'm not sure if you're familiar with the Vietnam Wall. It's in Washington, D.C. They have this wall, that when you go to Washington, has every single name of the person who died in Vietnam on this wall. A lot of people go to visit. But they have a

traveling wall that they go around the country, and this wall, they brought it to Maui. And they were looking for volunteers to set it up, and I volunteered. And that whole area that is proposed, they had containers that came with panels to put together of all the names of the Vietnam people that died. I volunteered. And that wall stretched from one end of that property, and it went all the way to the other end. It was that long. And we set it up for about a week. And we stayed there 24 hours to watch the wall. So everybody would want to come and see it and pay their respects. And there were a lot of Vietnam veterans in Hawai‘i that came to that wall, and they just stayed there. They actually camped there.

DD: Wow, that must have been a lot of casualties for the wall to stretch from one side [of the property] to the other.

AK: Yeah, the panels weren't short. It was taller than me. I'm six feet, and it was way taller than me, and it stretched all the way over. It kind of tripped me out that guys came out from all over. These guys came from Kaupō, came from Hāna, came from places like you wouldn't think. And a lot of them were dressed in their old Vietnam uniform. And the whole week, they stayed there. They camped there.

DD: When was that, do you remember what year it was maybe?

AK: I would say maybe like it might be 1983 to 1986. Maybe that time. It blew me away.

There's an old newscaster from KGMB, I can't remember his name, but he flew over, and he started talking about the wall. But then he stayed, and then he came back, and he had his uniform on. He was in Vietnam. I remember, he stayed. He stayed there. And there was a lot of people that was hurt and crying. And I was blown away by that. But that was an honor to volunteer and help out with that, and that's one thing I will never forget about that place that housed the Vietnam wall. I think that would be the only place that could do it because it was so big. But then it was right on the main road of Ka‘ahumanu that everyone could see, and people would stop.

DD: That must have been something to see.

AK: Yeah, for me it was. I mean, I was just blown away. I was just happy that I could volunteer, me and couple of my friends who were actually other bus drivers, and as soon as we heard about it, we said, "Brah, we going volunteer. We going do this." That's one thing that I always remember about that one place more than anything else.

DD: Wow, you have a history of service to the community, volunteering to make this happen for the Vietnam vets, and then taking the kūpuna around, and especially with the special services also, taking care of those that needed to get to their appointments. Especially when families are working, they know that people will help them out with their family members.

AK: I really enjoy that. And they sent us to Oklahoma for training. We had to go to Oklahoma. And they had everyone who would do this job description had to be trained, Passenger Assisted Techniques, that's what it was called. So after you pass the certification, they give you a patch that you wear, and it says, "P-A-T", and there's a symbol that you have on there, the Department of Transportation. And then it says that you are actually trained and certified to assist handicapped people as well as ambulatory people. So I did it. I did it because I wanted to volunteer, because they ask for volunteers, who would be willing. It wasn't a job description that we gonna have this job, so they asked for volunteers, who would do this training. So myself and another lady, a Hawaiian lady, we volunteered to do it. And they sent us to training in Oklahoma.

DD: Wow, awesome.

AK: That all happened at that place where they propose. So that's why that area where they're proposing is a special place for me, because I feel like that was my home for at least 10 years. And I still remember that day when I had to leave, well not I had to leave, but I took a job for the State of Hawai'i, and sorry, I going share this story with you if you don't mind?

DD: All good, definitely.

AK: MEO had their awards ceremony, which they have every year. Most of us always attend. And they had their Employee of the Year award. And we always know that Employee of the Year is usually always the management staff, but then that night, the Employee of the Year was me. They called my name, and I kinda like, I was taken away. And the reason why, I was like, "No, no, no," like, "I cannot, I cannot," is because the next day, I was telling Gladys Baisa, who was the boss at that time, that I was resigning, because I was giving my two weeks' notice, 'cause I got the job at the State of Hawai'i Harbor Police. So the night of the banquet, I found out I won the Employee of the Year, and the next day I was telling her that I was leaving. I was up on stage and shaking hands and looking at everyone, and my wife at that time, she was like, "Ohhh." And I was like, "Oh my God, I don't know what to say."

DD: [laughs] Auwe, the timing.

AK: And I'm looking at Gladys Baisa, she's such a good boss, I mean, really, really good. And the next day, I walked into her office, and I just looked at her, and she go, "You alright?" I neva know what for say, and she just said, "What's wrong?" And I just kinda like, "I don't know how to say this," and I started to cry, and she said, "What's wrong, what's wrong?" And I told her, "Please don't be mad." And when I told her, she just looked at me, and the only thing she said was, "You're doing the right thing. You're securing a job for yourselves and your family."

DD: Ah, that's nice.

AK: Yeah. And then she said, "But I still mad at you, you know." [laughs]

DD: [laughs] Because they neva like lose you. But it was well-deserved that you got the award.

AK: [laughs] No, but I was like, "The timing couldn't be any worse. Nah, I good, I good. Give this to somebody else." And yeah, the State went ask me when could I start. I was like, "I gotta put my two weeks in." They was like, "Ok." And I was actually happy that I got it and the whole thing, but when that happened that night, I was blown away. So that's why, that area, that proposed area has a lot of meaning in my life.

DD: Yes, I see.

AK: In the beginning of my life as an adult, I spent most of it there working and getting to know the community, and getting to know senior citizens, kupunas, like I was around them more than my age group. And I enjoyed being with them and talking to them. They were very knowledgeable. Especially Mr. Oliveira was his name, he was actually from, going out Nahiku side, he was a hunter, ah? I go, "You so knowledgeable about the dog, the plants," and he tell me, "You know what one old wise man once told me?" I go, "No, Mr. Oliveira." He go, "The old man said, 'I was young and dumb too, you know. But when I got older, I realized all the young and dumb stuff that I did was lessons of life.'" I always remember him saying that.

DD: Wowww, that's heavy.

AK: Yeah. So now, I say the same thing to the young ones, "All the stuff you go through is the lessons of life."

Ok sorry, I'm done.

DD: No, all good, mahalo for sharing about your connection to the place there. And it gives us an insight as to what went on at the property over there prior to this. And now there's homeless around the area.

AK: Yes.

DD: Do you know if the homeless are on the property still?

AK: I think, more around now, our Mayor on Maui, he tried to get some of the people into homes. So they have a program up in Wailuku where they built small little studios all over the place, and they can get in there. You gotta do a background check and do stuff. Part of my job when I patrol, I patrol around the harbor towards the beach side, where there's a lot of homeless. So we talk to them. The Mayor, Mike Victorino, he actually comes down himself, and he talks to them. He actually gives them his card, and he tells them, "Call me. I can help you. I can get you out of this van. I can get you into someplace, but you have to call me. I cannot help you unless you actually tell me you need help." And he give 'em his personal cell phone. I've seen this with him, and he goes around and does that.

DD: Wow, terrific.

AK: Yeah, so some of them, when I talk to them later, "Did you call the Mayor's office?" They go, "Aw, I was busy." I go, "Doing what? Busy what? He can help you get out of what you doing here." That's why, the Mayor, he tries, and he tries. He only can help someone who wants the help. And he does. So the homeless people in that area now, they tried to clean it up with the Maui Police Department, with the community relations officers always talking to them. They try to move them along and get them into a better place. Some of them do work, a lot of them I talk to, they work. They just don't make enough money to get a house. And that's the story. I've seen them work. I see them. But the homeless, they're trying to move them out in that area. I know that area that they propose, right next to the apartment complex, if I'm not mistaken, that apartment complex there, that was actually for our college, Maui Community College, that area was for the student housing, which is right next, adjacent to that property.

DD: I see. And what about when speaking to all the kūpuna you'd meet, by any chance, did any of them share any moʻolelo, mele, or old place names of the surrounding area of that parcel?

AK: Not that I can recall any kūpuna speaking of that area. Mainly they spoke of the area that they lived in. Because that area, that parcel right there, I guess it's not so much of a place where people actually lived, meaning like had housing there or stuff like that.

DD: Right, I see, because these kupunas going basically talk about where they grew up, and I guess by that time, it already wasn't residential for a long time.

AK: No. It wasn't. It was not a residential area. I think anything close to the harbor, like Kahului, everything's built around the harbor and goes out, because that's where everything came in from. So anything closer to the harbor was mainly all industrial, or something related to the maritime and the railroad building, the railroad tracks. Everything else was pushed out for housing, outside of the harbor. So that area really didn't have housing that I know of, or even the kupunas that talked of that area.

DD: That makes a lot of sense, because it kind of gives us a timeline perspective, especially with the harbor being in use, and our islands being maritime, it would've been at an earlier time that residences would start moving out. As they started building out from the harbor, the residence would be pushed out to the inland, away from the harbor itself. That makes sense.

So I guess then, would there be any cultural sites or archaeological sites or burials or historic buildings within that property? What are your thoughts on that?

AK: Well, I don't know of any on that site, but from what I do know, there was a fishpond across of there where Maui Beach is actually housed at right now, Maui Beach Hotel. That's adjacent to the harbor. So if you look out there, you'll see rock formations, and I believe that was fishponds back then. But the area across Kaʻahumanu Avenue is what separates that property that we're talking about, the Kahului complex, that

Kaʻahumanu Avenue separates Maui Beach Hotel from Seaside Hotel, which is directly on the harbor's waterfront. So that area, that property of the Kahului complex, I don't know of any cultural sites or archaeological things that I would think would have, but [pause] I wouldn't pass it that it wouldn't have. The only reason being, I've been at the harbor police for about thirty-something years now, and we have done some projects at the harbor, when they did the expansion of the harbor out towards Kaʻahumanu Avenue side, we have found human remains. So I'm quite sure that might have, but I cannot say for certain. But I wouldn't doubt it, that it wouldn't have. I'd be surprised if they wouldn't have any.

DD: That's a good point. You're saying that across the street, there are remains of fishponds from the ancient days, and in the past they have inadvertently discovered iwi kūpuna, and so there is a possibility, there might also be iwi on the property. Is that correct?

AK: Yeah, it could be a possibility, because Kahului Harbor, when we did the expansion of Pier 2 container yard, which would be expansion out to Puʻunēnē and Kaʻahumanu Avenue, they have found some iwi kūpuna. Of course we did all the protocols, called the agency that needed to be called, and the construction company, they did everything that needed to be done. And then they proceeded with every protocol that had to be done. So in my own mind, I would think that if we have [iwi] here, I cannot see not having somewhere else close to the area.

DD: Right. That's a really good point because these boundary lines, like the road itself, it's just a visual boundary line, but in the old days, it was a different landscape.

AK: Yes, I mean, we both know a lot of iwi kūpuna were buried in sand. My background, I'm actually a hula dancer. I danced hula with Kealiʻi Reichel for like twenty-something years.

DD: Oh wow.

AK: I've done a lot of Hawaiian cultural stuff, and I'm a musician too. I still play music. I played music with Kealiʻi when we first started. And then recently I stopped playing with Kealiʻi, and I play with this other guy named Kalani Peʻa. I have a lot of experience in Hawaiian protocols, and I love to chant, I'm an avid oli practitioner, so if we go to the mountain or to the ocean, we do some chanting, just to show respect. We go places that we've never been before, and we always ask permission, speaking ʻōlelo Hawaiʻi so that maybe they're [the kūpuna] more familiar to hear the Hawaiian language, better than speaking ʻōlelo Haole, I have a soft spot for a lot of our Hawaiian people and Hawaiian at heart, just wanted to say that.

DD: Yes, it's apparent, not only from your years spending time with the kūpuna, but also from your years of training, you have a lot of ʻike and manaʻo, so mahalo for sharing.

AK: Small kine liʻiliʻi.

DD: [laughs] I think more than that.

AK: But my daughter, her name is Ora, Oralani Koa, she's a cultural specialist. And that's what she does, she works for the Westin Maui. And recently within the past several months, they have found iwi kūpuna, and she's part of that iwi kūpuna protocol, and the Burial Council comes, and just help her. She goes down and retrieve some of the iwi kūpuna, and she only ʻōlelo Hawaiʻi and puts it in a safe place and do other protocols they need. My daughter surprised me with her knowledge of she knows. I was really taken away by her vast knowledge of doing what she does. She graduated UH in Hawaiian Studies.

DD: Oh ok, over there or in Mānoa?

AK: In Mānoa.

DD: I can see she was probably following in your footsteps, probably inspired by you.

AK: I don't know. [laughs] I think inspired by all the uncles and aunties, from the hālau and everybody else.

DD: [laughs] Well if I could ask you about traditional gathering practices, are you aware of any traditional gathering practices at the property, either now or before? What are your thoughts on gathering practices in that area?

AK: I think that gathering practices should be continued, but I don't see any plants or things that I know on that property that would, the only thing that had over there was plumeria trees. And every hula dancer came there to pick the plumeria trees.

DD: Are the trees still there?

AK: Some of 'em are still there, but there were a lot. And of course, we was part of that group picking flowers for hula. But there was no other native trees, like lehua, or ʻaʻaliʻi, or any other kind of plants that I think we could have gathered. I don't see any other trees or plants.

DD: Ok, well maybe an extension of that question would be regarding adverse effects on any cultural practices or cultural sites. So correct me if I'm wrong, but the only cultural practice for that property itself would be the gathering of flowers for lei-making. So how do you see any adverse effects on this cultural practice or any other culturally related things on that property, if I may ask, any adverse effects from this proposed project?

AK: I don't see any. Yeah, I can't foresee any, but if they could plant more plumeria trees [laughs], then we can gather more.

DD: Right.

AK: Or plant laua‘e. Plant some laua‘e there so we can make laua‘e leis, maybe some palapalai, if you guys like.

DD: Yeah, that’s a good idea, as far as future plants and trees that can be used for lei making, yeah, I see.

AK: Yeah because if they going have a complex and community center, what if they have a lei-making class or different stuff where they can use native plants there, so that they could use it to teach the younger generation. The kūpuna could say, “These are plants that we use for medicine right here, the noni plant, the kalo plant.” So planting native stuff that could educate our younger generation would help, and the reason why is it’s right in town. We don’t have to drive up in the mountain. We don’t have to go Hāna. I’m not saying that we don’t wanna go Hāna, but for those that can’t go to Hāna, or different places that might not be accessible to these people, they can go to the Kahului Complex and say, “Eh, there it is. This is what the naupaka looks like.” You know what I mean?

DD: Yeah, that’s a really good use of the landscape, that’s a really good idea.

AK: So don’t bring in foreign plants. We need our native plants that we have here. We have ginger. You know, I don’t have to explain that it’s a good thing to use our native plants here. That’s exactly what my daughter did at the Westin. She said, “I think we need native plants. All these other plants, I’m not saying that they’re not beautiful, but they have no connection to Hawai‘i.” So they did. They brought in palapalai all in the front. They replanted. They did a lot of different stuff there. So yeah, if they could somehow work that in their plan, they would have a section or an area. Sometimes plumeria are the most beautiful ones, very useful for everyone, from small kids to kupunas.

DD: Good point, I’ll make sure to pass that on. Thank you for sharing that.

AK: I’m not talking too much?

DD: No, it’s all maika‘i.

AK: Ok, ok.

DD: No, mahalo. Are there any other cultural concerns the community might have related to this property that we haven’t mentioned yet?

AK: [pause] Cultural concerns. [pause] No, I can’t think of any. But if it’s for the community, if it’s proposed for the community, then make it accessible to the community, not so much it’s a member-only kind of community, like you have to belong to this to get in. I feel that if it’s for the community, then the community, of course you have to have some kind of protocol, but not so much a gated community place. That’s one thing I hate when I see gates put up by the community. I understand the gate when you don’t want crime to come through your area, but it feels like it [the gate] separates

us. So the community complex, make it accessible to the community. Eh, hula classes, oli classes, any kind of classes, Filipinos too, because I'm an avid martial artist too. I always tell all the different ethnic groups on Maui --- Filipino, Japanese, everybody --- "Learn part of your culture. I no care what it is, whether it's language, whether it's fighting." They go, "Fighting?" I go, "Yeah, you know fighting teaches you discipline? It doesn't teach you to fight all the time. It teaches you why you have to learn this. And it teaches you discipline on training, discipline and respect."

DD: True.

AK: And I love Filipino style of fighting, kali. And I always tell the boys, Filipino boys, even the guys at work, I start showing them a little, and I say, "Learn. Learn from your kupunas. They know. They just no talk about it. But if you sit down and actually talk story with them, and they see your sincerity, they going open up. They will."

DD: Nice, right on, mahaaalo.

Ok, so I'll be sure to pass on the point of making sure the place is accessible. If it's a community center, you're right, it should be accessible. It shouldn't be a members-only thing. It should be accessible to the community. And also, your other point about utilizing native Hawaiian plants into the landscape of the project area, those are really good points. Thank you for sharing them.

So I guess the last question is if you know of any other kūpuna, kamaʻāina, any other descendants of the area, or knowledgeable people who might be willing to share their manaʻo of the place?

AK: Aw man, I wish I knew you earlier. My mother-in-law just passed away.

DD: Oh, I'm sorry to hear that.

AK: No, no, she passed away maybe about 4 or 5 months ago. But she knows that area, she knows that area exactly. Yeaaaah, it was my mother-in-law who got me the job. She worked there, and she helped the community. She was an outreach counselor that helped everybody there. She knew everybody, and everybody knew her. She helped everyone. She knew that parcel like the back of her hand.

DD: What was her name?

AK: Her name was Ora Latham. Latham was her married name.

DD: Latham?

AK: Latham. L – a – t – h – a – m. Her maiden name was Souza. Yeah, Patricia Ora Souza.

DD: I guess your daughter was named after her?

AK: Yeah, yeah. And they both the same, always helping the community. My mother-in-law, she had a Portuguese father and a Japanese mom.

Oh, you know who would know? It's Gladys Baisa. She just retired from the council. She was in the City Council for Maui over hea for like long time. She just retired. She knows the area.

DD: How do you spell her last name?

AK: Baisa. B – a – i – s – a.

DD: Oh ok, Baisa.

AK: Yeah, she was the Director for MEO in that area. She would probably know more stories about that area because MEO stayed there for as long as I know. And all the people I know that used to work there, they are no longer living. You know why? I was a young kid, das why, when I first got there. I was the youngest kid, 17 years old, so everybody was older. Everybody was good to me. Gladys Baisa was so good to me and my family, super good, that's why I had a hard time leaving.

DD: Right.

AK: But if I can think of any other person other than Gladys Baisa, I'll definitely hit you up.

DD: Ok, yeah, and anything else that comes to mind, just let me know. Otherwise I'll go type this up, and I'll send it back to you for review. And I remember you said earlier that you have a Sunday date with your wife, so I don't want to take up any more of your time. I appreciate you taking the time. Mahalo nui loa.

AK: [laughs] Easy.

DD: [laughs] No, mahalo for making the time, I know you busy. Thank you for today and sharing your manaʻo and ʻike about this area, I really appreciate it. Mahalo nui loa.

AK: Sorry I talk too much.

DD: No, it's all good, and I appreciate it, so thank you so much.

AK: Ok, thank you my braddah, take care now.

DD: Mālama pono, aloha.

AK: Aloha.

Appendix M

Early Consultation Package

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October 6, 2020

Subject: Early Consultation Request for a
Hawai'i Revised Statutes, Chapter 343 Environmental Assessment for the
Kahului Civic Center and Mixed-Use Complex Project located at
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Participant:

On behalf of the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), G70 is undertaking the preparation of an Environmental Assessment, pursuant to Hawai'i Revised Statutes, Chapter 343, and Hawai'i Administrative Rules (HAR) Chapter 11-200.1 for the proposed Kahului Civic Center and Mixed-Use Complex Project ("Project") located in Kahului, Maui, Hawai'i.

Pursuant to HAR Chapter 11-200.1-18, the HHFDC (proposing agency) is conducting early consultation with agencies, organizations, and individuals who may be interested in the environmental review of this Project. Enclosed in this transmittal is an Early Consultation Handout with a Project description and location map for your review and comment. Please provide comments via U. S. mail or email to the contact indicated below, no later than November 5, 2020.

G70
111 S. King Street, Suite 170
Honolulu, HI 96813
Attn: Mr. Jeff Overton
Phone: (808) 523-5866
Email: KahuluiEAcomments@g70.design

Thank you for your participation in the early consultation for this Project.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Mr. Jeff Overton, AICP, LEED AP
Principal

Enclosure: Early Consultation Handout

This Early Consultation Handout has been prepared in accordance with the requirements of Hawai'i Revised Statutes (HRS), Chapter 343 (as amended), and Hawai'i Administrative Rules (HAR), Chapter 11-200.1, which sets forth the requirements for the preparation of environmental assessments.

1.1 PROJECT INFORMATION SUMMARY

Type of Document:	Draft Environmental Assessment (DEA)
Project Name:	Kahului Civic Center and Mixed-Use Complex
Proposing Agency:	State of Hawai'i (State) Department of Business, Economic Development & Tourism (DBEDT) Hawaii Housing Finance & Development Corporation (HHFDC) 677 Queen Street, Suite 300 Honolulu, HI 96813
Accepting Authority:	State DBEDT, HHFDC 677 Queen Street, Suite 300 Honolulu, HI 96813
HRS, Chapter 343 Trigger:	HRS §343-5(a)(1), use of state lands and funds HRS §343-5(a)(6), for potential amendments to an existing County general plan for 201H exemptions pursuant to HRS §201H-38
Project Location:	153 West Ka'ahumanu Avenue Kahului, HI 96732 *(Figure 1: Project Location)*
Tax Map Key (TMK) Parcel and Recorded Fee Owner:	TMK: (2) 3-7-004:003 (por.) – State
Project Area:	Approximately 4.72 acres (Project parcel is 5.57 acres)
State Land Use District:	Urban District
County Zoning:	B-2 – Business-Community
Wailuku-Kahului Community Plan (2002):	B – Business/Commercial
Special Management Area (SMA):	Within SMA
Flood Zone:	Zone X – Determined to be outside the 500-year flood plain
Anticipated Determination:	Finding of No Significant Impact (FONSI)

1.2 OVERVIEW OF PROPOSED PROJECT

The State, DBEDT, HHFDC is proposing to undertake the "Kahului Civic Center and Mixed-Use Complex Project" ("Project"). The State, via Executive Order No. 4590 (July 29, 2019), set aside the Project parcel (TMK: (2) 3-7-004:003) to the HHFDC for the purpose of developing the Project.

The Project involves the demolition of existing structures and the construction of approximately 200 to 400 residential dwelling units (mixture of 1-, 2- and 3-bedroom units); approximately 38,000 square feet (SF) of State office space; approximately 7,000 SF of classroom and support space for the State Department of Education's (DOE) McKinley Community School for Adults; approximately 5,000 SF of commercial space; approximately 16,000 SF for the Kahului Public Library; up to 6,000 SF for a community center; and parking spaces.

The County's new Transit Hub is currently being constructed on the southwest portion (0.85 acres) of the Project parcel along Vevau Street. The County's new Transit Hub is not a part of this Project and is not covered under this EA. A Final EA and FONSI was published for the "Transit Hub Relocation Project" on October 8, 2019. The County's new Transit Hub will replace the existing Transit Hub, located at the Queen Ka'ahumanu Center.

1.3 PROJECT SITE

The Project site is approximately 4.72 acres and is located on TMK: (2) 3-7-004:003 (por.) at 153 West Ka'ahumanu Avenue in Kahului, on the island of Maui *(Figure 1: Project Location)*. The Project site is located within the "Urban" State Land Use District, the "B-2 – Business-Community" zoning district and is designated for "B – Business/Commercial" use per the County's *Wailuku-Kahului Community Plan* (2002).

Existing structures on the Project parcel (to be demolished) include the DOE's McKinley Community School for Adults building (one-story), a lawnmower maintenance building (one-story), a collapsed building (one-story) and a parking lot with 21 parking spaces.

The Project site is surrounded by a mix of commercial, residential, and resort uses. North of the Project site is the Maui Beach Hotel, and west of the Project site is the Queen Ka'ahumanu Center, a shopping center with a variety of retailers. The Waterfront Apartments at Kahului are east of the Project site, and south is currently being developed for Kahului Lani, an affordable senior housing complex.

1.4 PURPOSE OF ENVIRONMENTAL ASSESSMENT

On behalf of the HHFDC, G70 is undertaking the preparation of a DEA, pursuant to HRS, Chapter 343, and HAR, Chapter 11-200.1 for the proposed Project. This Project triggers a need for an environmental review under HRS §343-5(a)(1), as it proposes the use of state lands and funds; and under HRS §343-5(a)(6), as it potentially involves an amendment to the existing County general plan for zoning exemptions pursuant to HRS §201H-38. The DEA will include a description of the proposed action and alternatives considered; a description of the existing environment; identification and analysis of potential impacts of the Project; and proposed mitigation measures. This DEA is expected to result in a FONSI.



Figure 1: Project Location

Appendix N

Early Consultation Comments and Responses

Early Consultation Comments and Responses

Federal Agencies

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
01EPIF00--2021-TA-0024

October 26, 2020

Mr. Jeff Overton
Principal
Group 70 International, Inc.
111 S. King Street, Suite 170
Honolulu, Hawai'i 96813

Subject: Technical Assistance for Proposed Kahului Civic Center and Mixed-Use Complex in Kahului, Maui

Dear Mr. Overton:

Thank you for your letter of October 13, 2020 requesting early consultation for the proposed Kahului Civic Center and Mixed-Use Complex Project in Kahului, Maui. The work involves the demolition of existing structures, including the McKinley Community School for Adults, a lawnmower maintenance building, a collapsed building, and a parking lot with 21 spaces. Proposed construction consists of approximately 200 to 400 residential dwelling units; approximately 38,000 square feet (SF) of State office space; approximately 16,000 SF for the Kahului Public Library; up to 6,000 SF for a community center; and parking spaces. The project site is approximately 4.72 acres and is located on TMK: (2) 3-7-004:003 at 153 West Ka'ahumanu Avenue in Kahului. The project parcel is within the "Urban" State Land Use District, the "B-2 – Business-Community" zoning district, and is designated for "B-Business/Commercial" use per the County's 2020 Wailuku-Kahului Community Plan. This letter has been prepared under the authority of, and in accordance with, provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) as amended (ESA).

We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species in accordance with section 7 of the ESA. Our data indicate the following federally listed species may occur or transit through the vicinity of the proposed project area: the endangered Hawaiian hoary bat *(Lasiurus cinereus semotus)*, Blackburn's sphinx month (*Manduca blackburni*), Hawaiian yellow-faced bees (*Hylaeus anthracinus, H. assimulans, H. facilis, H. hilaris,* and *H. longiceps*), Hawaiian petrel (*Pterodroma sandwichensis*), Hawai'i distinct population segment (DPS) of the band-rumped storm-petrel (*Oceanodroma castro*), Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulca alai*), and Hawaiian duck (*Anas wyvilliana*), and the federally threatened Newell's shearwater (*Puffinus auricularis newelii)* and Hawaiian goose (*Branta sandvicensis*). The Hawaiian petrel, band-rumped storm-petrel, and Newell's shearwater will hereafter collectively be referred to as "Hawaiian

seabirds". The Hawaiian stilt, Hawaiian coot, and Hawaiian duck will hereafter collectively be referred to as "Hawaiian waterbirds".

Hawaiian hoary bat

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet (ft.) or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or move away from disturbance. Additionally, Hawaiian hoary bats forage for insects from as low as 3 ft. to higher than 500 ft. above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered Hawaiian hoary bat we recommend you incorporate the following applicable measures into your project description:

- Do not disturb, remove, or trim woody plants greater than 15 ft. tall during the bat birthing and pup-rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

Blackburn's sphinx moth

The Blackburn's sphinx moth is known from the islands of Hawai'i, Maui, Lāna'i, and Kaho'olawe, and may be in the vicinity of any proposed project on these islands if host plants are present. Adult moths feed on nectar from native plants, including *Ipomoea pes-caprae* (beach morning glory), *Plumbago zeylanica* ('ilie'e), and *Capparis sandwichiana* (maiapilo). Blackburn's sphinx moth larvae feed on *Nicotiana glauca* (non-native tree tobacco) and native 'aiea (*Nothocestrum* spp.). Moth eggs and larvae are most commonly found feeding on the leaves of native 'aiea and non-naïve tree tobacco. To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.

We offer the following survey recommendations to assess whether the Blackburn's sphinx moth is within the project area:

- A biologist familiar with the species should survey areas of proposed activities for the Blackburn's sphinx moth and its larval host plants prior to work initiation.
- Surveys should be conducted during the wettest portion of the year (usually November – April or several weeks after a significant rain) and within 4-6 weeks prior to construction.
- Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).
- If moths or the native 'aiea or tree tobacco over 3 feet tall are found during the survey, please contact the Service for additional guidance to avoid take.

If no Blackburn's sphinx moth, 'aiea, or tree tobacco are found during pre-construction surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host for the Blackburn's sphinx moth.

We therefore recommend that you:

- Remove any tree tobacco less than 3 feet tall.
- Monitor the site every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity.
- Monitoring for tree tobacco can be completed by any staff, such as a groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Hawaiian yellow-faced bees
Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with *Scaevola taccada* (naupaka) and *Heliotropium foertherianum* (tree heliotrope) with native vegetation, landscaped vegetation, non-native kiawe (*Prosopis pallida*), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, and do not occur on sandy beaches or inland, or on landscaped native plants on hotel grounds. Documented nectar and pollen plants include naupaka, *Sida fallax* ('ilima), *Chamaesyce* spp. ('akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope. Female bees collect pollen from a variety of native plants and nonnative tree heliotrope.

Threats to yellow-faced bees include habitat destruction and modification from land use change, nonnative plants, ungulates, and fire, along with predation by nonnative ants and wasps.

To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project description:

- If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.
- For coastal species, protect all coastal strand habitat from human disturbance, including:
    - No fires or wood collecting
    - Leave woody debris in place
    - Restrict vehicles to existing roads and trails
    - Post educational signs to inform people of the presence of sensitive species.

Hawaiian sea birds
Hawaiian sea birds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures, or they may land on the ground. 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 avoid and minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project plan:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

Hawaiian waterbirds
Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro (*Colocasia esculenta*) lo'i or patches, irrigation ditches, sewage treatment ponds, and in the case of the Hawaiian duck, montane streams and marshlands. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Hawaiian ducks are also subject to threats from hybridization with introduced mallards.

Based on the project details provided, your project may result in the creating of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. Therefore, we recommend you work with our office during project planning so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project description:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design (see enclosure).
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
  - Contact the Service within 48 hours for further guidance.
  - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
  - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

Hawaiian goose

Hawaiian geese are predominately found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i. They may be observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

To avoid and minimize potential project impacts to Hawaiian geese we recommend you incorporate the following applicable measures into your project plan:

- Do not approach, feed, or disturb Hawaiian geese.
- If Hawaiian geese are observed loafing or foraging within the project area during the breeding season (September through April), halt work and have a biologist familiar with the nesting behavior of Hawaiian geese survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins.

- In areas where Hawaiian geese are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of threatened species on-site.

Measures to Avoid the Spread of Invasive Species
All activities, including site surveys, risk introduction of nonnative species into project areas. Specific attention needs to be made to ensure that all equipment, personnel, and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering project areas.

If this potential project should receive federal funding, federal permits, or any federal authorization, it will require a Section 7 consultation with the Service. The Service only conducts Section 7 consultations with the federal action agency or their designated representative. If there is no federal action agency, but take of listed species cannot be avoided, further coordination with us pursuant to compliance with the ESA is necessary.

If you have any questions, please contact me at Christina_Richards@fws.gov or by telephone at 808-792-9450. When referring to this project, please include this reference number: 01EPIF00-2020-TA-0024

Sincerely,

Aaron Nadig

Digitally signed by Aaron Nadig
Date: 2020.10.26 11:51:56 -10'00'

Island Team Manager
Pacific Islands Fish and Wildlife Office

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. Aaron Nadig
Island Team Manager
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Nadig,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 26, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *This letter has been prepared under the authority of, and in accordance with, provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) as amended (ESA).*
   We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species in accordance with section 7 of the ESA. Our data indicate the following federally listed species may occur or transit through the vicinity of the proposed project area: the endangered Hawaiian hoary bat (Lasiurus cinereus semotus), Blackburn's sphinx month (Manduca blackburni), Hawaiian yellow-faced bees (Hylaeus anthracinus, H. assimulans, H. facilis, H. hilaris, and H. longiceps), Hawaiian petrel (Pterodroma sandwichensis), Hawai'i distinct population segment (DPS) of the band-rumped storm-petrel (Oceanodroma castro), Hawaiian stilt (Himantopus mexicanus knudseni), Hawaiian coot (Fulca alai), and Hawaiian duck (Anas wyvilliana), and the federally threatened Newell's shearwater (Puffinus auricularis newelii) and Hawaiian goose (Branta sandvicensis). The Hawaiian petrel, band-rumped storm-petrel, and Newell's shearwater will hereafter collectively be referred to as "Hawaiian seabirds". The Hawaiian stilt, Hawaiian coot, and Hawaiian duck will hereafter collectively be referred to as "Hawaiian waterbirds."

HHFDC appreciates the US Department of the Interior, Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office's information regarding federally-listed species that may occur or transit through the Project site. A Flora and Fauna survey will be conducted for the Project site to determine if any federally-listed species are present at or in the vicinity of the Project site.

2. ***Hawaiian hoary bat****: The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet (ft.) or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or move away from disturbance. Additionally, Hawaiian hoary bats forage for insects from as low as 3 ft. to higher than 500 ft. above the ground and can become entangled in barbed wire used for fencing. To avoid and minimize impacts to the endangered Hawaiian hoary bat we recommend you incorporate the following applicable measures into your project description:*
    - *Do not disturb, remove, or trim woody plants greater than 15 ft. tall during the bat birthing and pup-rearing season (June 1 through September 15).*
    - *Do not use barbed wire for fencing.*

A Flora and Fauna survey will be completed to determine whether the Hawaiian Hoary Bat is present at or in the vicinity of the Project site.

If applicable, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

3. *Blackburn's sphinx moth: The Blackburn's sphinx moth is known from the islands of Hawai'i, Maui, Lāna'i, and Kaho'olawe, and may be in the vicinity of any proposed project on these islands if host plants are present. Adult moths feed on nectar from native plants, including Ipomoea pes-caprae (beach morning glory), Plumbago zeylanica ('ilie'e), and Capparis sandwichiana (maiapilo). Blackburn's sphinx moth larvae feed on Nicotiana glauca (non-native tree tobacco) and native 'aiea (Nothocestrum spp.). Moth eggs and larvae are most commonly found feeding on the leaves of native 'aiea and non-native tree tobacco. To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.*

    We offer the following survey recommendations to assess whether the Blackburn's sphinx moth is within the project area:
    - *A biologist familiar with the species should survey areas of proposed activities for the Blackburn's sphinx moth and its larval host plants prior to work initiation.*
    - *Surveys should be conducted during the wettest portion of the year (usually November – April or several weeks after a significant rain) and within 4-6 weeks prior to construction.*
    - *Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).*
    - *If moths or the native 'aiea or tree tobacco over 3 feet tall are found during the survey, please contact the Service for additional guidance to avoid take.*

    If no Blackburn's sphinx moth, 'aiea, or tree tobacco are found during pre-construction surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately

6 weeks. If it grows over 3 feet, the plants may become a host for the Blackburn's sphinx moth. We therefore recommend that you:

- *Remove any tree tobacco less than 3 feet tall.*
- *Monitor the site every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity.*
- *Monitoring for tree tobacco can be completed by any staff, such as a groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.*

A Flora and Fauna survey will be completed to determine whether the Blackburn's Sphinx Moth, native 'aiea and/or tree tobacco (over 3 ft. tall) are present at or in the vicinity of the Project site. If Blackburn's Sphinx Moth, native 'aiea and/or tree tobacco are found during the survey, the Fish and Wildlife Service (FWS) will be contacted for additional guidance. If Blackburn's Sphinx Moth, native 'aiea and/or tree tobacco are not found during the survey, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

4. ***Hawaiian yellow-faced bees****: Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with Scaevola taccada (naupaka) and Heliotropium foertherianum (tree heliotrope) with native vegetation, landscaped vegetation, non-native kiawe (Prosopis pallida), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, and do not occur on sandy beaches or inland, or on landscaped native plants on hotel grounds. Documented nectar and pollen plants include naupaka, Sida fallax ('ilima), Chamaesyce spp. ('akoko), Argemone glauca (pua kala), Myoporum sandwicense (naio), and tree heliotrope. Female bees collect pollen from a variety of native plants and nonnative tree heliotrope.*
   Threats to yellow-faced bees include habitat destruction and modification from land use change, nonnative plants, ungulates, and fire, along with predation by nonnative ants and wasps.
   To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project description:
   - *If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.*
   - *For coastal species, protect all coastal strand habitat from human disturbance, including:*
     - *No fires or wood collecting*
     - *Leave woody debris in place*
     - *Restrict vehicles to existing roads and trails*
     - *Post educational signs to inform people of the presence of sensitive species.*

A Flora and Fauna survey will be completed to determine whether Hawaiian yellow-faced bees and associated habitats are present at or in the vicinity of the Project site. If the Project occurs in or adjacent to a known occupied habitat, the FWS will be contacted for guidance on an appropriate buffer area around the habitat.

5. ***Hawaiian sea birds****: Hawaiian sea birds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures, or they may land on the ground. 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 avoid and minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project plan:*
    - *Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.*
    - *Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*
    - *Avoid nighttime construction during the seabird fledging period, September 15 through December 15*.

A Flora and Fauna survey will be completed to determine whether Hawaiian sea birds are present at or in the vicinity of the Project site. If applicable, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

6. ***Hawaiian waterbirds****: Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro (Colocasia esculenta) lo'i or patches, irrigation ditches, sewage treatment ponds, and in the case of the Hawaiian duck, montane streams and marshlands. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Hawaiian ducks are also subject to threats from hybridization with introduced mallards.*
   Based on the project details provided, your project may result in the creating of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. Therefore, we recommend you work with our office during project planning so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).
   To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project description:
    - *In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.*

- *If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design (see enclosure).*
- *Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:*
    - *Contact the Service within 48 hours for further guidance.*
    - *Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.*
    - *Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.*

A Flora and Fauna survey will be completed to determine whether Hawaiian waterbirds and associated habitats are present at or in the vicinity of the Project site. Surveys will also be repeated within 3 days of initiation of construction and after any subsequent delay of work of 3 or more days.

If applicable, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

7. ***Hawaiian goose****: Hawaiian geese are predominately found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i. They may be observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes. To avoid and minimize potential project impacts to Hawaiian geese we recommend you incorporate the following applicable measures into your project plan:*
    - *Do not approach, feed, or disturb Hawaiian geese.*
    - *If Hawaiian geese are observed loafing or foraging within the project area during the breeding season (September through April), halt work and have a biologist familiar with the nesting behavior of Hawaiian geese survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).*
    - *Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins.*
    - *In areas where Hawaiian geese are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of threatened species on-site.*

A Flora and Fauna survey will be completed to determine whether Hawaiian geese are present at or in the vicinity of the Project site.

If applicable, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

8. ***Measures to Avoid the Spread of Invasive Species****: All activities, including site surveys, risk introduction of nonnative species into project areas. Specific attention needs to be made to ensure that all equipment, personnel, and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering project areas.*
   If this potential project should receive federal funding, federal permits, or any federal authorization, it will require a Section 7 consultation with the Service. The Service only conducts Section 7 consultations with the federal action agency or their designated representative. If there is no federal action agency, but take of listed species cannot be avoided, further coordination with us pursuant to compliance with the ESA is necessary.

Movement of plant or soil material between worksites will be avoided throughout construction. Equipment, materials, and personnel will be cleaned of excess soil and debris to minimize the risk of spreading weed seeds, organic matter, or other contaminants before entering Project areas.

The HHFDC acknowledges that ESA Section 7 consultation with the FWS will be required if the Project involves federal funding, permits, or authorization. Additionally, if take of a listed species cannot be avoided, further coordination with the FWS pursuant to ESA Section 7 will be required.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Early Consultation Comments and Responses

State of Hawai‘i Agencies

DAVID Y. IGE
GOVERNOR OF HAWAII

ELIZABETH A. CHAR, 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:

October 13, 2020

Mr. Jeff Overton
Group 70 International, Inc.
111 S. King Street, Suite 170
Honolulu, HI 96813
KahuluiEAcomments@g70.design

Dear Mr. Overton:

Thank you for your submittal requesting comments to the Early Consultation Request for Hawaii Revised Statutes, Chapter 343 Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project located at Tax Map Key: (2) 3-7-004: 003, Kahului, Island of Maui.

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

- Chapter 11-46 Community Noise Control
- Chapter 11-501 Asbestos Requirements
- Chapter 11-503 Fees for Asbestos Removal & Certification
- Chapter 11-504 Asbestos Abatement Certification Program

Should you have any questions, please contact me at (808) 586-4700.

Sincerely,

Jeffrey M. Eckerd
Program Manager
Indoor and Radiological Health Branch

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. Jeffrey M. Eckerd
Program Manager
State of Hawaii
Department of Health
Indoor and Radiological Health Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Eckerd,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 13, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Project activities shall comply with the following Administrative Rules of the Department of Health:*
    - *Chapter 11-46 Community Noise Control*
    - *Chapter 11-501 Asbestos Requirements*
    - *Chapter 11-503 Fees for Asbestos Removal & Certification*
    - *Chapter 11-504 Asbestos Abatement Certification Program*

The Project will comply with Hawai'i Administrative Rules, Chapters 11-46, 11-501, 11-503 and 11-504 as applicable.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

From: Aragon, Michelle <michelle.aragon@doh.hawaii.gov>
Sent: Thursday, October 15, 2020 3:46 PM
To: HHFDC Kahului Civic Center - Kahului
Subject: Comments
Attachments: STANDARD COMMENTS.pdf

Aloha,

Attached is our standard comments for the kahului civic center for the early consultation request.

Thank you,

Solid and Hazardous Waste Branch
State of Hawaii | Department of Health
2827 Waimano Home Road, #100, Pearl City, HI 96782
Phone Number: (808) 586-4226 | Fax Number: (808) 586-7509

Solid and Hazardous Waste Branch
Standard Comments

November 26, 2018

The Solid and Hazardous Waste Branch administers programs in the areas of:

1) Management of hazardous waste;
2) Management of solid waste; and
3) Regulation of underground storage tanks.

Our general comments on projects are below. For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226. All chapters of the Hawaii Revised Statutes (HRS) are at https://www.capitol.hawaii.gov/hrscurrent/.

Hazardous Waste Program

- The state regulations for hazardous waste and used oil are in chapters 11-260.1 to 11-279.1, Hawaii Administrative Rules (HAR) [http://health.hawaii.gov/shwb/hwrules/]. These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste and used oil. Generators, transporters and treatment, storage, and disposal facilities of hazardous waste and used oil must adhere to these requirements. Violations are subject to penalties under chapter 342J, HRS.

Solid Waste Section

- The Solid Waste Section (SWS) enforces laws and regulations contained in chapters 342H and 342I, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [http://health.hawaii.gov/shwb/solid-waste/].

- The purpose of the rules is to establish minimum standards governing the design, construction, installation, operation, and maintenance of solid waste disposal, recycling, reclamation and transfer systems.

- All facilities that accept solid wastes are required to obtain a solid waste management permit from the SWS. Examples of the types of facilities governed by these regulations include landfills, transfer stations and convenience centers, recycling facilities, composting facilities, and salvage facilities. Medical waste, infectious waste, and foreign waste treatment facilities are also included.

- Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.

Solid and Hazardous Waste Branch Standard Comments

Office of Solid Waste Management

- The Office of Solid Waste Management (OSWM) administers statewide integrated solid waste management planning activities, which apply to the counties, as well as various recycling programs, e.g. the Glass Advance Disposal Fee (ADF) and Deposit Beverage Container (DBC) Programs. Management of the DBC Program is conducted pursuant to chapter 342G, HRS, which contains compliance and enforcement provisions, and chapter 11-282, HAR, "Deposit Beverage Recycling" [http://health.hawaii.gov/hi5/rules-regulations-additional-links/]. OSWM is also responsible for limited enforcement and compliance of solid waste management facilities that operate primarily as certified DBC redemption centers pursuant to chapter 342H, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [http://health.hawaii.gov/shwb/solid-waste/]. Authority for the integrated solid waste management planning and ADF programs is contained in chapter 342G, HRS.

- Glass Advance Disposal Fee Program: Businesses that import glass containers into Hawaii are required to register with the Department of Health and pay a 1.5 cent per container fee. Fee revenue is distributed to the counties for the operation of glass recycling programs.

- Deposit Beverage Container Program: Business that manufacture or import deposit beverage containers into Hawaii are required to register with the Department of Health and pay the five cent deposit and one cent container fee on each deposit container. Deposits and fees are deposited into a special fund and are used to reimburse DBC redemption center refunds paid to consumers; and to pay handling fees to redemption/recycling companies to process and recycle collected deposit beverage containers; and to pay program administrative costs.

- The Department of Health reimburses and pays an associated handling fee for the redemption of deposit beverage containers (DBC). These transactions are conducted only with certified redemption centers. Certification requires obtaining a solid waste management permit from the SWS (which addresses environmental issues) and a certification from the DBC program (which standardizes the redemption process).

- Chapter 342G, HRS, encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. Businesses, property managers and developers, and government entities are highly encouraged to develop solid waste management plans to ensure proper handling of wastes and divert recyclables from being landfilled.

- Solid waste management plans seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226.

Underground Storage Tank Program

- The state's underground storage tank (UST) regulations, found in chapter 11-280.1, HAR [http://health.hawaii.gov/shwb/underground-storage-tanks/], include specific requirements that UST owners and operators must meet when installing, operating, and permanently closing their UST systems and addressing releases from USTs. Violations are subject to penalties under chapter 11-280.1, HAR, and chapter 342L, HRS.

- A permit is required prior to the installation and operation of a UST. Any new UST system that will be installed must have secondary containment with interstitial monitoring. Refer to subchapters 2, 3, 4, and 12 of chapter 11-280.1, HAR. The installation permit expires 1 year from the date of issuance. The operation permit expires 5 years from the date of issuance.

- §11-280.1-50, HAR, requires owners and operators of USTs or tank systems to notify DOH within twenty-four (24) hours and follow the procedures in §11-280.1-52, HAR, if any of the following occur, with specific exceptions found in the rules:
  1) The discovery by any person of evidence of regulated substances which may have been released at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, or nearby surface water);
  2) Unusual UST system operating conditions observed or experienced (such as the erratic behavior of product dispensing equipment, the sudden loss of product from the UST, or an unexplained presence of water in the tank); or
  3) Monitoring results from a release detection method required under §§11-280.1-41 or 11-280.1-42 indicate a release may have occurred.

- For release response actions, responsible parties and their consultants and contractors should follow the applicable guidance in the Department of Health Hazard Evaluation Emergency (HEER) Office Technical Guidance Manual, HEER Environmental Action Level (EAL) guidance, and other guidance documents on the DOH HEER Office website [http://eha-web.doh.hawaii.gov/eha-cma/Org/HEER/], including those pertaining to Multi-Increment Sampling of soil, low flow groundwater sampling, soil vapor sampling, and Environmental Hazard Evaluations (EHE)/Environmental Hazard Management Plans (EHMP).

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Honolulu, HI 96813
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www.g70.design

March 31, 2021

Ms. Michelle Aragon
State of Hawaii
Department of Health
Solid and Hazardous Waste Branch
2827 Waimano Home Road, #100
Pearl City, HI 96782

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Aragon,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 15, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Attached is our standard comments for the Kahului Civic Center for the early consultation request.*

The HHFDC has reviewed the DOH, Solid and Hazardous Waste Branch's Standard Comments (dated November 26, 2018). The HHFDC will comply with Hawai'i Revised Statues, Chapters 342H and 3421; and Hawai'i Administrative Rules, Chapters 11-260.1 to 11-279.1, 11-58.1, and 11-280.1 as applicable.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR

CURT T. OTAGURO
COMPTROLLER

AUDREY HIDANO
DEPUTY COMPTROLLER

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

(P)20.173

OCT 22 2020

RECEIVED
OCT 26 2020
G70

Mr. Jeff Overton, Principal
G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

Subject: Early Consultation Request for a
HRS, Chapter 343 Environmental Assessment for the
Kahului Civic Center and Mixed-Use Complex Project
Kahului, Maui, Hawaii
TMK No. (2)3-7-004:003

Thank you for the opportunity to comment on the subject project. This project requires the Department of Accounting and General Services' collaboration and input. Therefore, we request to be informed of any progress and review of future developments.

If you have any questions, your staff may call Ms. Dora Choy of the Planning Branch at 586-0488.

Sincerely,

CHRISTINE L. KINIMAKA
Public works Administrator

DC:mo
c: Mr. Wade Shimabukuro, DAGS-MDO

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Ms. Christine L. Kinimaka
Public Works Administrator
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, HI 96810-0119

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Kinimaka,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 22, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *This project requires the Department of Accounting and General Services' collaboration and input. Therefore, we request to be informed of any progress and review of future developments.*

The HHFDC is pleased to be collaborating with the Department of Accounting and General Services (DAGS) and will continue to consult with DAGS throughout the EA and future development process.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0939
STP 8.3070

October 29, 2020

RECEIVED
NOV 04 2020
G70

Mr. Jeff Overton, AICP, LEED AP
Principal
G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

Subject: Early Consultation for Environmental Assessment (EA)
Kahului Civic Center and Mixed-Use Complex Project
Kahului, Maui, Hawaii
Tax Map Key: (2) 3-7-004:003

The State of Hawaii Department of Transportation (HDOT) has reviewed the subject request and understands the State of Hawaii Department of Business Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC) is proposing to demolish existing structures and construct approximately 200 to 400 residential dwelling units; approximately 38,000 square feet (SF) of State office space; approximately 7,000 SF of classroom and support space for the State of Hawaii Department of Education's McKinley Community School for Adults; approximately 5,000 SF of commercial space; approximately 16,000 SF for the Kahului Public Library; up to 6,000 SF for a community center; and parking spaces. The project will be developed on an approximately 4.72-acre site located south of Kaahumanu Avenue (State Route 32) in Kahului.

HDOT has the following comments:

Airports Division (HDOT-A)

1. The Kahului Civic Center and Mixed-Use Complex Project site is approximately 1.8 miles from Kahului Airport. All projects within 5 miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at the following link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf.

2. Federal Aviation Administration (FAA) regulation requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction

equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

3. Due to the proximity to the airport, HHFDC should be aware of potential single event noise from aircraft operations. In addition, there is also a potential for fumes, smoke, vibrations, odors, etc., that may result from occasional aircraft flight operations over the project location.

Highways Division (HDOT-HWY)

1. A traffic assessment should be prepared by a licensed engineer and be included in the Draft EA. The assessment should address any impacts to Kaahumanu Avenue. The traffic assessment should include:

    a. Description of existing trip generation at the site, existing traffic conditions and multimodal routes in the study area.

    b. Forecasted traffic and multimodal conditions in the horizon year (year at full project build-out) without the project and with the project.

    c. Analysis of existing and future safety conditions.

    d. Recommend mitigation measures for direct or indirect impacts to State roadways.

2. The Draft EA should include the location of existing and proposed site access driveways. Vehicular access to the project site should remain from Kane Street or Vevau Street.

3. The Draft EA should identify any infrastructure to be removed or constructed within the HDOT-HWY right-of-way (ROW). Construction plans for all work done within HDOT-HWY ROW must be submitted to HDOT-HWY's Maui District Engineer for review and approval.

4. HDOT-HWY requests a roadway setback of 30 feet from the existing Kaahumanu Avenue ROW for future roadway improvements.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

JADE T. BUTAY
Director of Transportation

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. Jade T. Butay
Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Butay,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 29, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Airports Division: The Kahului Civic Center and Mixed-Use Complex Project site is approximately 1.8 miles from Kahului Airport. All projects within 5 miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at the following link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf*

The HHFDC appreciates the provision of the TAM which provides guidance for development activities that may require further review and permits.

2. *Airports Division: Federal Aviation Administration (FAA) regulation requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp*

The Project does not meet any of the requirements to file FAA Form 7460-1 according to the 14 CFR Part 77.9. Project constructions will not occur within 20,000 feet of a public use airport which exceeds a 100:1 surface from any point on the runway of the airport with its longest runway more than 3,200 feet.

3. *Airports Division: Due to the proximity to the airport, HHFDC should be aware of potential single event noise from aircraft operations. In addition, there is also a potential for fumes, smoke, vibrations, odors, etc., that may result from occasional aircraft flight operations over the project location*.

The HHFDC acknowledges that the proximity to the Kahului Airport may result in noise, fumes, smoke, vibrations, and odors from the occasional aircraft flight over the Project site.

4. *Highways Division: A traffic assessment should be prepared by a licensed engineer and be included in the Draft EA. The assessment should address any impacts to Kaahumanu Avenue. The traffic assessment should include:*
    - *Description of existing trip generation at the site, existing traffic conditions and multimodal routes in the study area.*
    - *Forecasted traffic and multimodal conditions in the horizon year (year at full project build-out) without the project and with the project.*
    - *Analysis of existing and future safety conditions.*
    - *Recommend mitigation measures for direct or indirect impacts to State roadways.*

A traffic impact assessment report (TIAR) is being prepared by a licensed engineer for the project and will be included in the Draft EA. The TIAR will include a description of existing trip generation at the site, existing traffic conditions and multimodal routes, forecasted traffic and multimodal conditions in the horizon year, an analysis of existing and future safety conditions and mitigation measures for potential impacts to State roadways.

5. *The Draft EA should include the location of existing and proposed site access driveways. Vehicular access to the project site should remain from Kane Street or Vevau Street*.

The Draft EA will include a discussion on existing and proposed site access driveways.

6. *The Draft EA should identify any infrastructure to be removed or constructed within the HDOT-HWY right-of-way (ROW). Construction plans for all work done within HDOT-HWY ROW must be submitted to HDOT-HWY's Maui District Engineer for review and approval*.

The Draft EA will identify any infrastructure to be removed or constructed within the HDOT-HWY right-of-way (ROW). Construction plans for work done within HDOT-HWY ROW will be submitted to HDOT-HWY's Maui District Engineer for review and approval.

7. *HDOT-HWY requests a roadway setback of 30 feet from the existing Kaahumanu Avenue ROW for future roadway improvements*.

Per a follow-up telephone communication with the HDOT-HWY in November 2020, it was confirmed that a roadway setback of 30 feet from the existing Ka'ahumanu Avenue ROW is not applicable to the project.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

DISABILITY AND COMMUNICATION ACCESS BOARD

1010 Richards Street, Room 118 • Honolulu, Hawaii 96813
Ph. (808) 586-8121 • TTY (808) 586-8162 • Fax (808) 586-8129

November 4, 2020

RECEIVED
NOV 06 2020
G70

Mr. Jeff Overton, AICP, LEED AP
Principal
GROUP 70 INTERNATIONAL, INC., dba G70
111 South King Street
Suite 170
Honolulu, HI 96813

Regarding: Draft Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project

Dear Mr. Overton:

The Disability and Communication Access Board (DCAB) would like to thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project. The purpose of this review is to ensure that this project will take into account accessibility design requirements for persons with disabilities.

Because this project is being constructed on State land, it is covered by §103-50, Hawaii Revised Statutes (HRS). New construction of the Kahului Civic Center and Mixed-Use Complex Project is required to comply with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design (2010 Standards) http://www.ada.gov/2010ADAstandards_index.htm. To be consistent with the DOJ's standard, DCAB adopted the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAG) as of January 1, 2011 and passed interpretive opinions consistent with the 2010 ADA Standards. All new Interpretive Opinions can be viewed or downloaded at http://health.hawaii.gov/dcab/facility-access/interpretive-opinions/.

If this project is receiving federal funds, it will also have to comply with the requirements under Section 504 of the Rehabilitation Act, but this is not included in the DCAB review process. If you have any questions regarding your obligations under Section 504 of the Rehabilitation Act, you should contact the federal agency that is providing federal funds for your project.

In addition to the 2010 Standards, the dwelling units will be required to comply with the Fair Housing Act. DCAB's document review includes a review to the Fair Housing Act Accessibility Guidelines.

Projects with construction documents that are covered by §103-50, HRS, are required to be submitted to DCAB for a formal document review.

Beyond DCAB's review process, program access obligations must be met under the ADA Title II provisions. This obligation may require additional means to provide access, especially where full compliance with the 2010 Standards cannot be achieved.

The above reflects DCAB's staff review and comments concerning the Draft Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project.

Should you have any further questions, please feel free to contact Duane Buote, Facility Access Coordinator at (808) 586-8121.

Sincerely,



KIRBY L. SHAW
Executive Director

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. Kirby L. Shaw
Executive Director
State of Hawaii
Disability and Communication Access Board
1010 Richards Street, Room 118
Honolulu, HI 96813

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Shaw,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated November 4, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The purpose of this review is to ensure that this project will take into account accessibility design requirements for persons with disabilities.*
   Because this project is being constructed on State land, it is covered by §103-50, Hawaii Revised Statutes (HRS). New construction of the Kahului Civic Center and Mixed-Use Complex Project is required to comply with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design (2010 Standards) http://www.ada.gov/2010ADAstandards_index.htm. To be consistent with the DOJ's standard, DCAB adopted the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAG) as of January 1, 2011 and passed interpretive opinions consistent with the 2010 ADA Standards. All new Interpretive Opinions can be viewed or downloaded at http://health.hawaii.@Ov/dcab/facility-access/interpretive-opinions/.

The HHFDC will comply with the DOJ 2010 ADA Standards for Accessible Design and will review Disability and Communication Access Board's (DCAB) interpretive opinions consistent with the 2010 ADA Standards, to ensure that the Project incorporates design requirements for persons with disabilities.

2. *If this project is receiving federal funds, it will also have to comply with the requirements under Section 504 of the Rehabilitation Act, but this is not included in the DCAB review process. If you have any questions regarding your obligations under Section 504 of the Rehabilitation Act, you should contact the federal agency that is providing federal funds for your project*.

HHFDC acknowledges your comment that the Project will also be subject to Section 504 of the Rehabilitation Act, if the Project receives federal funding.

3. *In addition to the 2010 Standards, the dwelling units will be required to comply with the Fair Housing Act. DCAB's document review includes a review to the Fair Housing Act Accessibility Guidelines*.

The HHFDC will comply with the Fair Housing Act.

4. *Projects with construction documents that are covered by §103-50, HRS, are required to be submitted to DCAB for a formal document review*.

The Project is a public facility and will be subject to requirements under Hawai'i Revised Statues, Chapters 103-50. The Project construction documents will be submitted to DCAB for a formal document review.

5. *Beyond DCAB's review process, program access obligations must be met under the ADA Title II provisions. This obligation may require additional means to provide access, especially where full compliance with the 2010 Standards cannot be achieved*.

The Project will comply with the ADA Title II provisions.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

November 10, 2020

G70
111 S. King Street, Suite 170
Honolulu, HI 96813
Attn: Mr. Jeff Overton

Dear Mr. Overton:

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your inquiry regarding the early consultation request for a Hawai'i Revised Statutes, Chapter 343 Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project located in Kahului, Maui, TMK: (2) 3-7-004:003. The proposed project consists of: demolishing existing structures; constructing approximately 200 to 400 residential dwelling units; approximately 38,000 square feet of office space; approximately 7,000 square feet of classroom and support space for the State Department of Education; 5,000 square feet of commercial space; approximately 16,000 square feet for the Kahului Library; up to 6,000 square feet for a community center; and parking spaces.

The State listed Blackburn's Sphinx Moth (BSM; *Manduca blackburni*) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (*Nicotiana glauca*) which grows in disturbed soil. We recommend contacting our Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of these plants they must be checked thoroughly for the presence of eggs and larvae.

The State listed Hawaiian Hoary Bat or ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Maui Invasive Species Committee at (808) 573-6472 in planning, design, and construction of the project to learn of any high-risk

invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (https://sites.google.com/site/weedriskassessment/home). We recommend that you refer to www.plantpono.org for guidance on selection and evaluation for landscaping plants.

Although no tree removal was clearly described in the scope of work, DOFAW would like to emphasize the value of trees—green infrastructure -- in our urban social-ecological systems where we live, work, and play. Our communities rely on trees for our wellbeing and survival.

Clean Air: In addition to creating oxygen, essential for all life on Earth, trees clean the air by removing carbon dioxide and other air pollutants. One hundred large street trees can remove 19 tons of carbon dioxide and 372 pounds of other air pollutants annually.

Health & Well-being: Tree-filled neighborhoods are safer, reduce mental and physical stress, and encourage people to spend more time outdoors, including transportation (i.e., walking and biking vs. driving). Tree-lined streets encourage slower driving and promote pedestrian safety.

Energy Cost Savings: Trees provide shade and cooling, greatly reducing energy costs. Trees save more than $622,000 per year (based on 2013 rates of $.32/kwh for 43,000 inventoried street trees in Honolulu.)

Watershed Protection: Trees cost-effectively filter and improve water quality by reducing stormwater runoff and flooding. Trees in Honolulu intercept more than 35 mil. gallons of stormwater per year. This contribution is valued at more than $350,000 annually.

Reef Protection: A healthy urban forest reduces erosion and filters pollutants significantly reducing runoff and the destruction of our valuable reefs.

☐ **Proposed disturbance of area:**
- Scope of work should include a tree protection plan and be supervised by a certified arborist
- Install green infrastructure for rehabilitated areas post-disturbance

☐ **Proposed tree root & crown pruning:**
- Scope of work should include a tree protection plan and be supervised by a certified arborist

☐ **Proposed repaving:**
- Consider permeable pavement or other permeable surface to allow for absorption of groundwater

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible.

If you have any questions, please contact Koa Matsuoka, Protected Species Habitat Conservation Planning Associate at (808) 587-4149 or koa.matsuoka@hawaii.gov. For questions pertaining to urban green infrastructure should be referred to Heather McMillen, Urban & Community Forester, heather.l.mcmillen@hawaii.gov.

Sincerely,

DAVID G. SMITH
Administrator

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. David G. Smith
Administrator
State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, HI 96813

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai‘i

Dear Mr. Smith,

On behalf of the Proposing Agency, the State of Hawai‘i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated November 10, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project (“Project”). The following responses are offered regarding your comments (*italicized* below).

1. *The State listed Blackburn’s Sphinx Moth (BSM; Manduca blackburni) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (Nicotiana glauca) which grows in disturbed soil. We recommend contacting our Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of these plants they must be checked thoroughly for the presence of eggs and larvae*.

A Flora and Fauna survey will be completed to determine whether the Blackburn’s Sphinx Moth or the tobacco tree is present at or in the vicinity of the Project site.

If applicable, the above-listed mitigation measures will be incorporated into the DEA and implemented during construction.

2. *The State listed Hawaiian Hoary Bat or ‘Ōpe‘ape‘a (Lasiurus cinereus semotus) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6*

meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

A Flora and Fauna survey will be completed to determine whether the Hawaiian Hoary Bat is present at or in the vicinity of the Project site. Site clearing will avoid the Hawaiian Hoary Bat birthing and pup rearing season (June 1 through September 15) or if this is not possible DOFAW will be consulted.

3. *DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g., Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g., Little Fire Ants), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Maui Invasive Species Committee at (808) 573-6472 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species*.

Movement of plant or soil material between worksites will be avoided throughout construction. Equipment, materials, and personnel will be cleaned of excess soil and debris to minimize the risk of spreading fungal pathogens (e.g. Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts.

4. *DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e., climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawaiʻi-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (https://sites.google.com/site/weedriskassessment/home). We recommend that you refer to www.plantpono.org for guidance on selection and evaluation for landscaping plants.*

Native plant species will be used for Project landscaping to the extent possible, per Hawaii Revised Statutes §103D-408. The HHFDC will consult with the Hawaiʻi-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project and for guidance on the selection of landscaping plants.

5. *Although no tree removal was clearly described in the scope of work, DOFAW would like to emphasize the value of trees—green infrastructure -- in our urban social-ecological systems where we live, work, and play. Our communities rely on trees for our wellbeing and survival*.

The HHFDC acknowledges the value of trees in the urban social-ecological system, and on our communities' wellbeing and survival. Mature trees on the Project site will be preserved as much as practicable. If trees are proposed for removal, relocation and/or replacement trees will be provided.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Early Consultation Comments and Responses

County of Maui Agencies

POLICE DEPARTMENT
COUNTY OF MAUI

MICHAEL P. VICTORINO
MAYOR

OUR REFERENCE

YOUR REFERENCE

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

October 14, 2020

RECEIVED
OCT 19 2020
G70

Mr. Jeff Overton, AICP, LEED AP
Principal
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Re: Early Consultation Request for a Hawaii Revised Statutes, Chapter 343 Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project located at TMK: (2) 3-7-004:003 Kahului, Island of Maui, Hawaii

Dear Mr. Overton:

This is in response to your letter dated October 6, 2020 requesting comments on the preparation of an Environmental Assessment for the proposed Kahului Civic Center and Mixed-Use Complex Project.

In review of the submitted documents, we would like to recommend the project manager take into account any effects on vehicular and pedestrian movement once construction begins. The area of the proposed project is very busy throughout the day with vehicular traffic. During construction, we recommend steps should be taken to control noise levels, dust, and run off to minimize any inconvenience to neighboring businesses and surrounding roadways.

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

Sincerely,

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

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Tivoli S. Faaumu
Chief of Police
Police Department
County of Maui
55 Mahalani Street
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Chief Faaumu,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 14, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *In review of the submitted documents, we would like to recommend the project manager take into account any effects on vehicular and pedestrian movement once construction begins. The area of the proposed project is very busy throughout the day with vehicular traffic. During construction, we recommend steps should be taken to control noise levels, dust, and run off to minimize any inconvenience to neighboring businesses and surrounding roadways*.

The contractor will be required to comply with applicable federal, state and county regulations and implement Best Management Practices during construction to mitigate impacts on existing vehicular traffic, pedestrian movements, noise conditions, air quality and water quality.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

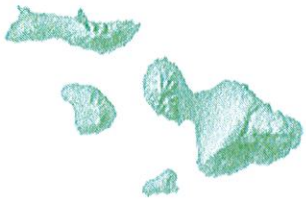
Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

LORI TSUHAKO
Director

LINDA R. MUNSELL
Deputy Director



DEPARTMENT OF HOUSING
& HUMAN CONCERNS
COUNTY OF MAUI
2200 MAIN STREET, SUITE 546
WAILUKU, MAUI, HAWAII 96793
PHONE: (808) 270-7805

RECEIVED
OCT 26 2020
G70

October 15, 2020

Mr. Jeff Overton, AICP, LEED AP
Principal
G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Subject: **Early Consultation Request for a Hawaii Revised Statutes, Chapter 343 Environment Assessment (EA) for the Kahului Civic Center and Mixed-Use Complex Project located at: TMK (2) 3-7-004:003, Kahului, Maui, Hawaii**

Dear Mr. Overton:

The Department has reviewed the Draft EA handout for the above subject project. Based on our review, we have determined that the project is subject to Chapter 2.96, Maui County Code. The owner will be required to execute a Residential Workforce Housing Agreement.

Please call Mr. Buddy Almeida of our Housing Division at 270-7355 if you have any questions.

Sincerely,

C. BUDDY ALMEIDA
Housing Administrator

cc: Lori Tsuhako, Director of Housing and Human Concerns

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. C. Buddy Almeida
Housing Administrator
Department of Housing & Human Concerns
County of Maui
2200 Main Street, Suite 546
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Almeida,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 15, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Based on our review, we have determined that the project is subject to Chapter 2.96, Maui County Code. The owner will be required to execute a Residential Workforce Housing Agreement.*

The HHFDC will comply with Maui County Code Chapter 2.96. Before the issuance of a building permit, the developer will enter into a Residential Workforce Housing Agreement with the County of Maui.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAIʻI 96793
www.mauiwater.org

October 15, 2020

Mr. Jeff Overton
G70
via email: ~~WailukuEAcomments@g70.design~~ KahuluiEAcomments@g70.design

Dear Mr. Overton:

SUBJECT: EARLY CONSULTATION REQUEST FOR HRS, CHAPTER 343 EA
KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX PROJECT
TMK: (2) 3-7-004:003, Wailuku, Maui, Hawaii

Thank you for the opportunity to review and comment on the subject project, which includes the construction of approximately 200 to 400 residential dwelling units (mixture of 1-, 2- and 3-bedroom units); approximately 38,000 square feet of State office space; approximately 7,000 square feet of classroom and support space for the State Department of Education's McKinley Community School for Adults; approximately 5,000 square feet of commercial space; approximately 16,000 square feet for the Kahului Public Library; and up to 6,000 square feet for a community center.

The Department's records indicate there is an existing 2-inch water meter along Kaahumanu Avenue. Assuming no existing water demand, the existing 2-inch water meter's capacity is 160 gallons per minute (gpm).

As defined in Maui County Code (MCC) 14.01.040, subdivisions are **also** defined as "the construction of a building or group of buildings, other than a hotel, on a single lot, parcel, or site which will contain, result, or be divided into four or more dwelling units." Since the project is proposing 200 to 400 residential dwelling units, the project is defined as a subdivision and shall be subject to subdivision requirements as indicated in MCC 14.05 and the Department's standards to provide an adequate water system for fire protection, domestic and irrigation service. Requirements may include the construction of water system improvements for adequate fire protection, domestic and irrigation service.

Other requirements, include, but are not limited to the following:

- State claims jurisdiction over Kaahumanu Avenue, therefore any proposed work within Kaahumanu Avenue will require their review and approval as well.
- Should the domestic and irrigation calculations show that the demand is exceeding the capacity of the property's existing water meter, a larger meter to meet the added demands would be required. However, even if the meter may not need to be upsized, the property's existing water meter box and possibly the water service lateral shall be upgraded to current

Department's standards. This would involve the submittal of construction plans (24"x36"), signed and stamped by a licensed engineer for our review and approval prior to construction.

- If a larger meter is required, the project will need to meet the criteria for water service outlined in the Administrative Rules (Title 16, Chapter 201), that took effect on 1/29/2018 and amended on 12/12/2019. However, if the entire project is considered a County, state, or federal public facility project, as defined in section 19.04.040, Maui County Code, the water service requested for the proposed project is exempt from the Administrative Rules, provided that the Central Maui water system has adequate capacity.
- The reduced pressure backflow preventer (RPBP) should be functioning properly, if not it should be repaired, retested by a certified tester, and a satisfactory test report must be submitted to the Department.

Please be aware that the 2020 Central Maui water system's current estimated three-year forecast for water usage is 94.2 percent of the maximum reliable capacity. This means that an applicant may request up to 3,000 gallons per day of new or additional water service for a parcel. The Department's three-year forecast and percentage of maximum reliable capacity are updated at the beginning of each year. Please refer to the Department's Administrative Rules at https://www.mauicounty.gov/205/Rules-Regulations. .

Please contact Tammy Yeh of our Engineering Division at (808) 270-7835 or by email at tammy.yeh@mauicounty.gov to notify us if you will be proceeding or if you have any questions.

Sincerely,



WENDY TAOMOTO, P.E.
Engineering Program Manager

TY

cc: DWS Water Resources Division, Attn: Marti Buckner, via email: marti.buckner@mauicounty.gov

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Ms. Wendy Taomoto, P.E.
Engineering Program Manager
Department of Water Supply
County of Maui
200 South High Street
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Taomoto,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 15, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department's records indicate there is an existing 2-inch water meter along Kaahumanu Avenue. Assuming no existing water demand, the existing 2-inch water meter's capacity is 160 gallons per minute (gpm).*
   *As defined in Maui County Code (MCC) 14.01.040, subdivisions are **also** defined as "the construction of a building or group of buildings, other than a hotel, on a single lot, parcel, or site which will contain, result, or be divided into four or more dwelling units." Since the project is proposing 200 to 400 residential dwelling units, the project is defined as a subdivision and shall be subject to subdivision requirements as indicated in MCC 14.05 and the Department's standards to provide an adequate water system for fire protection, domestic and irrigation service. Requirements may include the construction of water system improvements for adequate fire protection, domestic and irrigation service*.

The HHFDC acknowledges that the Project is subject to Maui County Code Sections 14.01.040 and 14.05. Adequate water system for fire protection, domestic and irrigation service will be provided.

2. *Other requirements include, but are not limited to the following: State claims jurisdiction over Kaahumanu Avenue, therefore any proposed work within Kaahumanu Avenue will require their review and approval as well*.

The HHFDC acknowledges that proposed work within Ka'ahumanu Avenue will require the State's review and approval.

3. *Should the domestic and irrigation calculations show that the demand is exceeding the capacity of the property's existing water meter, a larger meter to meet the added demands would be required. However, even if the meter may not need to be upsized, the property's existing water meter box and possibly the water service lateral shall be upgraded to current Department's standards. This would involve the submittal of construction plans (24"x36"), signed and stamped by a licensed engineer for our review and approval prior to construction*.

The existing water meter box and water service lateral(s) will be upgraded to current Department of Water Supply's (DWS) standards. Construction plans (24"x36") signed and stamped by a licensed engineer will be submitted to the DWS for review and approval prior to construction.

4. *If a larger meter is required, the project will need to meet the criteria for water service outlined in the Administrative Rules (Title 16, Chapter 201), that took effect on 1/29/2018 and amended on 12/12/2019. However, if the entire project is considered a County, state, or federal public facility project, as defined in section 19.04.040, Maui County Code, the water service requested for the proposed project is exempt from the Administrative Rules, provided that the Central Maui water system has adequate capacity*.

The HHFDC's requested water service for the Project is exempt from the Administrative Rules (Title 16, Chapter 201), as it is a "public facility" project, as defined in Maui County Code §19.04.040; and is exempt under §16-201-03 (g)(1-2), as it is an affordable or "workforce housing" project, as defined in Maui County Code §2.86.140 and 2.96.

5. *The reduced pressure backflow preventer (RPBP) should be functioning properly, if not it should be repaired, retested by a certified tester, and a satisfactory test report must be submitted to the Department*.

The HHFDC will ensure that the reduced pressure backflow preventer is functioning properly.

6. *Please be aware that the 2020 Central Maui water system's current estimated three-year forecast for water usage is 94.2 percent of the maximum reliable capacity. This means that an applicant may request up to 3,000 gallons per day of new or additional water service for a parcel. The Department's three-year forecast and percentage of maximum reliable capacity are updated at the beginning of each year. Please refer to the Department's Administrative Rules at https://www.mauicounty.gov/205/Rules-Regulations*.

The HHFDC's requested water service for the Project is exempt from the Administrative Rules (Title 16, Chapter 201), as it is a "public facility" project, as defined in Maui County Code §19.04.040; and is exempt under §16-201-03 (g)(1-2), as it is an affordable or "workforce housing" project, as defined in Maui County Code §2.86.140 and 2.96.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

DAVID C. THYNE
Fire Chief

BRADFORD K. VENTURA
Deputy Fire Chief

DEPARTMENT OF FIRE & PUBLIC SAFETY
FIRE PREVENTION BUREAU
COUNTY OF MAUI
313 MANEA PLACE
WAILUKU, HI 96793

October 20, 2020

G70
Attn: Jeff Overton
111 S. King Street, Suite 170
Honolulu, HI 96813

SUBJECT: Early Consultation Request for Hawaii Revised Statutes, Chapter 343 Environmental Assessment
Kahului Civic Center and Mixed-Use Complex Project; Kahului Maui
TMK: (2) 3-7-004:003

Dear Jeff,

Thank you for allowing our office to provide comment on the subject proposed project. As per your request, comments are provided below:

- At this time, there are no comments in regards to the proposed Early Consultation Request for a Hawaii Revised Statutes, Chapter 343 Environmental Assessment for the proposed Kahului Civic Center and Mixed-Use Complex Project.

- Our office does reserve the right to comment on the proposed project during the building permit review process should detailed plans for this project be routed to our office for review. At that time, fire department access, water supply for fire protection, and fire and life safety requirements will be addressed.

If there are any questions or comments, please feel free to contact me at (808) 876-4693 or by email at paul.haake@mauicounty.gov.

Sincerely,

Paul Haake

Paul Haake
Captain - Fire Prevention Bureau

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Paul Haake, Captain
Fire Prevention Bureau
Department of Fire & Public Safety
County of Maui
313 Manea Place
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Captain Haake,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 20, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *At this time, there are no comments in regard to the proposed Early Consultation Request for a Hawaii Revised Statutes, Chapter 343 Environmental Assessment for the proposed Kahului Civic Center and Mixed-Use Complex Project.*
   Our office does reserve the right to comment on the proposed project during the building permit review process should detailed plans for this project be routed to our office for review. At that time, fire department access, water supply for fire protection, and fire and life safety requirements will be addressed.

The HHFDC acknowledges that the Department of Fire & Public Safety has no comments at this time and may comment on the Project during the building permit review process, to ensure that fire department access, water supply for fire protection, and fire and life safety requirements are addressed.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

MARC I. TAKAMORI
Director

MICHAEL B. DU PONT
Deputy Director



DEPARTMENT OF TRANSPORTATION
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE: (808) 270-7511
FAX: (808) 270-7505



October 30, 2020

G70
Attn: Mr. Jeff Overton
111 S. King Street, Suite 170
Honolulu, HI 96813
via email: KahuluiEAcomments@g70.design

SUBJECT: Early Consultation Request for a Hawai'i Revised Statutes, Chapter 343 Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project located at Tax Map Key: (2) 3-7-004:003 Kahului, Island of Maui, Hawaii

Dear Mr. Overton,

Thank you for the opportunity to provide comments on this early consultation request for the Kahului Civic Center and Mixed-Use Complex Project.

The County of Maui Department of Transportation will be operating its Transit Center on the same parcel as this proposed project. The Department looks forward to working with the State and is excited to be a part of this proposed Kahului Civic Center and Mixed-Use Complex.

As public transportation is a vital service for many residents of Maui, please consider ways transit riders, bicyclists, pedestrians and future residents, would access this project by having a welcoming and convenient interconnected pedestrian network with ample lighting in the evening to promote walkability.

As construction commences, should the project require either the closure of Vevau Street and/or Kane Street, the Department would like to be notified at least one month prior to the road closure so a detour can be planned and affected bus riders can be notified should the closure affect bus operations. The Department isn't expecting any closure to the Transit Hub during the project's construction period.

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

Sincerely,

For Marc Takamori
Director

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Mr. Marc Takamori, Director
Department of Transportation
County of Maui
200 South High Street
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Takamori,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 30, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The County of Maui Department of Transportation will be operating its Transit Center on the same parcel as this proposed project. The Department looks forward to working with the State and is excited to be a part of this proposed Kahului Civic Center and Mixed-Use Complex.*

   As public transportation is a vital service for many residents of Maui, please consider ways transit riders, bicyclists, pedestrians and future residents, would access this project by having a welcoming and convenient interconnected pedestrian network with ample lighting in the evening to promote walkability.

The HHFDC looks forward to working with the Department of Transportation (DOT) and will consider ways to promote walkability and accessibility between the Project and the Transit Center.

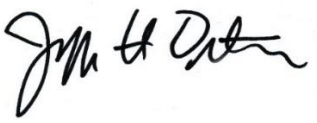
2. *As construction commences, should the project require either the closure of Vevau Street and/or Kane Street, the Department would like to be notified at least one month prior to the road closure so a detour can be planned and affected bus riders can be notified should the closure affect bus operations. The Department isn't expecting any closure to the Transit Hub during the project's construction period.*

The HHFDC will notify the DOT at least one month prior if the Project requires the closure of Vevau Street and/or Kane Street. Construction of the Project is not anticipated to require closure of the Transit Center.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

KARLA H. PETERS
Director

MARY A. KIELTY
Deputy Director



DEPARTMENT OF PARKS AND RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawai'i 96793
Main Line (808) 270-7230 / Facsimile (808) 270-7942

November 2, 2020

Jeff Overton, Principal
Group 70 International, Inc., dba G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: EARLY CONSULTATION REQUEST FOR A HAWAII REVISED STATUTES, CHAPTER 343 ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX PROJECT; TMK: (2) 3-7-004:003; KAHULUI, MAUI, HAWAII

Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation has no comment at this time.

Should you have any questions, please feel free to contact me or Samual Marvel, Chief of Planning and Development at samual.marvel@co.maui.hi.us or (808) 270-6173.

Sincerely,

KARLA H. PETERS
Director of Parks and Recreation

c: Samual Marvel, Chief of Planning and Development

KHP:SM:csa

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Ms. Karla H. Peters, Director
Department of Parks and Recreation
County of Maui
700 Hali'a Nakoa Street, Unit 2
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Peters,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated November 2, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department of Parks and Recreation has no comment at this time.*

The HHFDC acknowledges that the Department of Parks and Recreation (DPR) has no comments at this time and will continue to consult with the DPR throughout the EA process.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

ROWENA M. DAGDAG-ANDAYA
Director

JORDAN MOLINA
Deputy Director

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

RODRIGO "CHICO" RABARA, P.E.
Engineering Division

JOHN R. SMITH, P.E.
Highways Division

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



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM 434
WAILUKU, MAUI, HAWAII 96793

November 6, 2020



Mr. Jeff Overton, AICP, LEED AP, Principal
Group 70 International, Inc., dba G70
111 South King Street, Suite 170
Honolulu, Hawai'i 96813

Dear Mr. Overton:

SUBJECT: EARLY CONSULTATION REQUEST FOR A HAWAI'I REVISED STATUTES, CHAPTER 343 ENVIRONMENTAL ASSESSMENT FOR THE KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX
TMK: (2) 3-7-004:003

We reviewed the subject early consultation request and have the following comments:

Comments from the Engineering Division:

1. Roadway improvements are required on roadways fronting the parcel. Please coordinate with the Department of Public Works on the requirements.

2. A traffic impact analysis report is required. Study limits and parameters shall be coordinated with the Department of Public Works

Comments from the Development Services Administration, Building Inspection Section:

3. Demolition building permits B2013/0352, B2013/0353 and B2013/0354 have expired, no inspections done.

Comments from the Highways Division:

4. The project site is within the Municipal Separate Storm Sewer System (MS4) boundaries. Please incorporate soil erosion and sediment control Best Management Practices (BMPs) throughout the construction.

5. Any damage to existing pavement due to construction traffic and traffic pattern changes should be the responsibility of the State to return to previous or improved condition.

Please call Jordan Molina at (808) 270-7845 if you have any questions regarding this letter.

Sincerely,

Jordan Molina

FOR ROWENA M. DAGDAG-ANDAYA
Director of Public Works

RMDA:JM:da
xc: Highways Division
Engineering Division
S:\DSA\Engr\CZM\Draft Comments\37004003_ecr_ea_kah_civic_cntr_&_mixed_use_complex.rtf

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Ms. Rowena M. Dagdag-Andaya, Director
Department of Public Works
County of Maui
200 South High Street, Room 434
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Dagdag-Andaya,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated November 6, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Engineering Division: Roadway improvements are required on roadways fronting the parcel. Please coordinate with the Department of Public Works on requirements.*

The HHFDC will coordinate with the Department of Public Works (DPW) on required roadway improvements fronting the subject property.

2. *Engineering Division: A traffic impact analysis report is required. Study limits and parameters shall be coordinated with the Department of Public Works*.

A traffic impact analysis report is being prepared as part of the DEA, which DPW will have an opportunity to review and provide feedback.

3. *Development Services Administration, Building Inspection Section: Demolition building permits B2013/0352, B2013/0353 and B2013/0354 have expired, no inspections done.*

The HHFDC acknowledges that demolition building permits B2013/0352, B2013/0353 and B2013/0354 have expired.

4. *Highways Division: The project site is within the Municipal Separate Storm Sewer System (MS4) boundaries. Please incorporate soil erosion and sediment control Best Management Practices throughout the construction*.

The contractor will be required to incorporate soil erosion and sediment control Best Management Practices during construction.

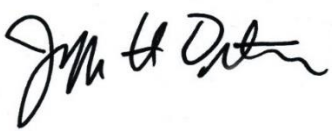
5. *Highways Division: Any damage to existing pavement due to construction traffic and traffic pattern changes should be the responsibility of the State to return to previous or improved condition.*

The HHFDC will return existing pavement to previous or improved condition, if damage occurs as a result of construction-related traffic.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

MICHELE CHOUTEAU MCLEAN, AICP
Director

JORDAN E. HART
Deputy Director



DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAII 96793

November 9, 2020

RECEIVED
NOV 18 2020
G70

Mr. Jeff Overton, AICP, LEED AP
Principal
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX PROJECT, KAHULUI, ISLAND OF MAUI, HAWAII; TMK: (2) 3-7-004:003 (POR.) (EAC 2020/0009)

The Department of Planning (Department) is in receipt of your early consultation request for the Draft Environmental Assessment for the proposed Kahului Civic Center and Mixed-Use Complex Project at TMK (2) 3-7-004:003 in Kahului, Maui, Hawaii. The Department understands that the proposed project will involve the use of State lands and funds and a potential amendment to the County general plan, along with exemptions pursuant to Chapter 201H, Hawaii Revised Statutes (HRS). Therefore, these are "triggers" that require environmental review in accordance with HRS, Chapter 343. Because of the 201H component involved, HHFDC will serve as the accepting authority in this case.

Upon review of the early consultation request, the Department has the following comments:

1) The Department has received State and County funding to develop a Transit Oriented Development (TOD) Corridor Master Plan for 2.5 miles of Kaahumanu Avenue, between the commercial core of Kahului and the civic core of Wailuku. The Plan objective is to connect facilities and land uses that are or can be developed for affordable housing, commerce, commuting to enable better access and connectivity for multimodal transportation. The "Kaahumanu Community Corridor" planning process includes extensive community outreach with residents, business owners and stakeholders, in addition to coordination and collaboration among many county, state and federal agencies and departments. The Kahului Civic Complex is a critical asset, located within the study area for the TOD masterplan, for the Kaahumanu Community Corridor (KCC).

2) For plan development, please engage with the community to garner their feedback, and include vicinity residents within the TOD Corridor areas. For the Special Management Area (SMA) Use Permit process, the Notice of Public Hearing is typically mailed out to neighbors within 500 feet of the property boundary. Because the number of dwelling units within 500 feet is limited in this area, we encourage the Applicant to expand the outreach beyond the 500 foot limits. We note that the KCC has conducted many focus groups, given presentations to community associations and civic groups, and has established a social media presence and interactive web site (www.kaahumanucommunitycorridor.org). Perhaps they can share information that they have to aid in your community outreach efforts.

3) For the TOD Corridor Master Plan, the buildings must have mixed uses in order to create a vibrant community with easy access to jobs, housing, stores and services. Lower floors at street-level must be reserved for active uses, which will help to create an interesting and inviting streetscape for pedestrians and transit riders. Ground floors should include transparent windows along active frontages to create interesting façades, and improve the pedestrian experience. Primary building entrances must face the street or a public place. Doors and windows should clearly demarcate the public and private realm. Building designs must prioritize pedestrians by providing convenient access to commercial spaces and residential lobbies along pedestrian routes. Access to entrances must not be a barrier for pedestrians. Upper floors should be for offices and/or dwellings, which will act as "eyes on the street" security to provide greater safety, and convenient access to a variety of surrounding uses, including the neighboring Central Maui Transit Hub. The proposed mixed-use project concept is consistent with the TOD Corridor Master Plan design objectives and embodies Smart Growth principles, as they relate to land use. We note that this proposed facility is located across the street from a major retail shopping mall, across the street from and next to affordable rentals and densely populated residential areas.

4) Please develop the project with an appropriate scale, in consideration of existing, surrounding developments. Because the parcel is so small, it is difficult to envision what the proposed scope of work will look like when fully built-out. In order to be consistent with the TOD Corridor Master Plan, please use appropriate massing to make the buildings relatable to pedestrians. A Site Plan should be developed that promotes the use of smaller "blocks" and offers opportunities for pedestrian connections from adjacent streets.

5) Buildings should be set back from the street to enable a continuation of the open landscaped buffer at Queen Kaahumanu Mall and Maui Beach Hotel. Please design yards and setbacks so that it is more aesthetically-pleasing experience to passersby, similar to Maui Beach Hotel. The landscaping and open spaces will offer visual relief. In addition to landscaping, setback area improvements can include: hardscape and pedestrian amenities, such as publicly accessible seating, shade trees, portable planters, trash and recycling bins, and bicycle facilities.

6) Please provide green infrastructure like planted swales and shade trees for heat mitigation and storm water management.

7) Please engage with the adjacent Waterfront Apartment owners, Robert and Mark Day Company LLC, TMK (2) 3-7-004:001 to explore a collaborative operation with regard to vehicle access from 3rd Street to Lono Avenue, extending 3rd Street through the project site connecting Lono Avenue to Kane Street, as well as establishing access from 3rd Street to Kaahumanu Avenue for the proposed project.

8) Please submit a Zoning and Flood Confirmation Form to the County of Maui Department of Planning Zoning Administration and Enforcement Division for completion. We noticed that the Maui Island Plan designations were not included in your Project Information Summary, and it should be for the Draft EA. Please also address how the project implements the Maui Island Plan.

9) For 201H projects, there are circumstances that would require an EA and we note that the affordable housing component seems to fit those circumstances; but, HHFDC is requiring one, and this should be discussed in the Draft EA.

10) Regarding the mix of uses on site, please give thorough consideration to the volume of existing commercial space in the vicinity. The proposed concept involves approximately 5,000 square feet of commercial space. Should commercial space still be a part of the proposed scope of work, for the Draft EA, please elaborate on the type of commercial enterprises to occupy the space. For B-2 Community Business District zoning, some commercial enterprises require planning commission approval, so it would be helpful for the Department to know the specific type of enterprises proposed to determine whether they are a permitted use, or require additional permit approvals.

11) The relationship of the Kahului Civic Complex to the adjacent Central Maui Transit Hub is critical. Public transit will be best supported through

the proposed mix of uses, which will prioritize access via alternative modes of transportation, and incorporate design features meant to foster pedestrian activity. The proposed project design should consider the way bus transit riders will interface with the Kahului Civic Complex project. If the proposed mixed use project is designed with ground-floor commercial uses, the transit hub will be more convenient and comfortable, and result in the creation of inviting pedestrian spaces, so that the two areas flow seamlessly together. In addition, active ground floor uses with residential uses above the ground floor will result in on-site activity 24-hours per day and this will provide greater security for the Transit Hub. For the proposed development, please consider the installation of regular entrances, transparent windows, and wayfinding signs that help to prioritize alternative transportation options over private vehicle use. Please create pedestrian paths and sidewalks that are safe and directly lead to the Transit Hub. Provide integrated, delineated, and well-lit pedestrian paths that create a safe and efficient pedestrian experience and encourage walking. In addition to appropriate scale, texture and amenities, such as seating and public art or sculpture, will help to create pleasant and thoughtfully designed environment for those who choose to use alternative modes of transportation.

12) Because pedestrians, bicyclists, and transit riders should be the design priority, reducing or eliminating the visual, environmental, and economic impacts of parking lots and structures is of the utmost importance. Please design parking so that it can be used for other purposes like offices or community space in the future, like the Wailuku Civic Center parking structure.

13) Please provide onsite, convenient short- and long-term bicycle parking. Please locate short-term bicycle parking in a visible area and within close proximity to an entrance. Long-term bicycle parking should be provided within a structure. Please ensure that bike parking does not interfere with pedestrian movement or Americans with Disabilities Act (ADA) accessibility.

14) For the proposed development, please note that sidewalks in the TOD areas should be wider and must have a clear pedestrian path no less than five-feet wide. Street furniture, shade trees, bicycle parking, and other amenities should also be considered for project incorporation to support healthy pedestrian environments.

15) Please provide street trees with canopies for shade and heat mitigation. When street trees are not feasible, we encourage awning installation along the frontage.

16) For the SMA Use Permit, please analyze visual impacts from Kaahumanu Avenue toward Haleakala and Kahului Harbor. The building heights should not impact the views, so please locate taller buildings at the rear of the property away from Kaahumanu Avenue and sidewalk frontages.

Thank you for the opportunity to comment on this project. Should you have any questions about the comments in this letter, please contact Staff Planner Tara Furukawa by email at tara.furukawa@mauicounty.gov or by phone at (808) 270-7520.

Sincerely,

MICHELE MCLEAN, AICP
Planning Director

xc: Jordan E. Hart, Deputy Director (PDF)
Clayton I. Yoshida, Planning Program Administrator, AICP (PDF)
John S. Rapacz, Planning Program Administrator (PDF)
Kathleen Aoki, Planning Program Administrator (PDF)
Pam Eaton, Planning Program Administrator (PDF)
Tara Furukawa, Staff Planner (PDF)
Project File

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March 31, 2021

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

Mr. Clayton I. Yoshida, AICP
Planning Program Administrator
Department of Planning
County of Maui
2200 Main Street, Suite 315
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Mr. Yoshida,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated November 9, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department has received State and County funding to develop a Transit Oriented Development (TOD) Corridor Master Plan for 2.5 miles of Kaahumanu Avenue, between the commercial core of Kahului and the civic core of Wailuku. The Plan objective is to connect facilities and land uses that are or can be developed for affordable housing, commerce, commuting to enable better access and connectivity for multimodal transportation. The "Kaahumanu Community Corridor" planning process includes extensive community outreach with residents, business owners and stakeholders, in addition to coordination and collaboration among many county, state and federal agencies and departments. The Kahului Civic Complex is a critical asset, located within the study area for the TOD masterplan, for the Kahului Community Corridor (KCC).*

The HHFDC acknowledges that the Project is a critical asset within the Kahului Community Corridor (KCC) study area for the Transit Oriented Development (TOD) Corridor Master Plan.

2. *For plan development, please engage with the community to garner their feedback and include vicinity residents within the TOD Corridor areas. For the Special Management Area (SMA) Use Permit process, the Notice of Public Hearing is typically mailed out to neighbors within 500 feet of the property boundary. Because the number of dwelling units within 500 feet is limited in this area, we encourage the Applicant to expand the outreach beyond the 500 foot limits. We note that the KCC has conducted many focus groups, given presentations to community associations and civic groups, and has established a social media presence and interactive website (www.kaahumanu*

communitycorridor.org). Perhaps they can share information that they have to aid in your community outreach efforts.

The HHFDC will consider expanding the Notice of Public Hearing outreach for the Special Management Area (SMA) Use Permit process beyond the 500-foot limits. The HHFDC will coordinate with the KCC in the Project's community outreach efforts.

3. *For the TOD Corridor Master Plan, the buildings must have mixed uses in order to create a vibrant community with easy access to jobs, housing, stores and services. Lower floors at street-level must be reserved for active uses, which will help to create an interesting and inviting streetscape for pedestrians and transit riders. Ground floors should include transparent windows along active frontages to create interesting facades, and improve the pedestrian experience. Primary building entrances must face the street or a public place. Doors and windows should clearly demarcate the public and private realm. Building deigns must prioritize pedestrians by providing convenient access to a commercial space and residential lobbies along pedestrian routes. Access to entrances must not be a barrier for pedestrians. Upper floors should be for offices and/or dwellings, which will act as "eyes on the street" security to provide greater safety, and convenient access to a variety of surrounding sues, including the neighboring Central Maui Transit Hub. The proposed mixed-use project concept is consistent with the TOD Corridor Master Plan design objectives and embodies Smart Growth principles, as they relate to land use. We note that this proposed facility is located across the street from a major retail shopping mall, across the street from and next to affordable rentals and densely populated residential areas*.

The HHFDC acknowledges that the Project's mixed-use concept is consistent with the TOD Corridor Master Plan design objectives and embodies Smart Growth principles, as they relate to land use. The HHFDC will further take the design recommendations into consideration to ensure that the Project aids in the creation of a vibrant community in consistent with the TOD Corridor Master Plan principles.

4. *Please develop the project with an appropriate scale, in consideration of existing, surrounding developments. Because the parcel is so small, it is difficult to envision what the proposed scope of work will look like when fully built-out. In order to be consistent with the TOD Corridor Master Plan, please use appropriate massing to make the buildings relatable to pedestrians. A Site Plan should be developed that promotes the use of smaller "blocks" and offers opportunities for pedestrian connections from adjacent streets*.

The HHFDC will consider the scale and massing of the Project design and connectivity, as it relates to existing surrounding developments and the pedestrian experience.

5. *Buildings should be set back from the street to enable a continuation of the open landscaped buffer at Queen Kaahumanu Mall and Maui Beach Hotel. Please design yards and setback so that it is more aesthetically pleasing experience to passersby, similar to Maui Beach Hotel. The landscaping and open spaces will offer visual relief. In addition to landscaping, setback area improvements can include: hardscape and pedestrian amenities, such as publicly accessible*

seating, shade trees, portable planters, trash and recycling bins and bicycle facilities.

The HHFDC will consider maintaining the open, landscaped buffer and incorporating aesthetically-pleasing pedestrian amenities to match the open, landscaped buffer at Queen Kaʻahumanu Mall and Maui Beach Hotel.

6. *Please provide green infrastructure like planted swales and shade trees for heat mitigation and storm water management*.

The HHFDC will incorporate green infrastructure in the Project design.

7. *Please engage with the adjacent Waterfront Apartment owners, Robert and Mark Day Company LLC, TMK (2) 3-7-004:001 to explore a collaborate operation with regard to vehicle access from 3rd Street to Lono Avenue, extending 3rd street through the project site connecting Lono Avenue to Kane Street, as well as establishing access from 3rd Street to Kaahumanu Avenue for the proposed project.*

The HHFDC has reached out to The Waterfront Apartment owners through their property management company, Cirrus Asset Management Inc. to discuss the above-mentioned potential access connections. Per email correspondence (dated February 9, 2021), the owners' representative clarified that 3rd street is a gated parking lot driveway. The owners are not interested in creating any access connections between the two properties, which would create significant safety and operations problems, as well as significantly reduce the value of the property.

8. *Please submit a Zoning and Flood Confirmation Form to the County of Maui Department of Planning Zoning Administration and Enforcement Division for completion. We noticed that the Maui Island Plan designations were not included in your Project Information Summary, and it should be for the Draft EA. Please also address how the project implements the Maui Island Plan*.

During the SMA Use Permit process a Zoning and Flood Confirmation Form will be submitted to the Department of Planning, Zoning Administration and Enforcement Division. The Maui Island Plan will be identified in the Project Information Summary and an extended discussion will be included in the Plans and Policies section of the DEA.

9. *For 201H projects, there are circumstances that would require an EA and we note that the affordable housing component seems to fit those circumstances; but, HHFDC is requiring one, and this should be discussed in the Draft EA*.

A discussion regarding the Project's requirement to prepare an EA according to the 201H requirement, in addition to compliance with Hawaiʻi Revised Statutes, Chapter 343 will be discussed in the DEA.

10. *Regarding the mix of uses on site, please give thorough consideration to the volume of existing commercial space in the vicinity. The proposed concept involves approximately 5,000 square feet of commercial space. Should*

commercial space still be a part of the proposed scope of work, for the Draft EA, please elaborate on the type of commercial enterprises to occupy the space. For B-2 Community Business District zoning, some commercial enterprises require planning commission approval, so it would be helpful for the Department to know the specific type of enterprises proposed to determine whether they are a permitted use, or require additional permit approvals.

The HHFDC acknowledges the existing commercial spaces in the Project vicinity. The HHFDC also acknowledges that certain commercial uses in the B-2 Community Business District zoning designation require planning commission's approval. The HHFDC is proposing to incorporate community-service oriented businesses in the Project. The DEA will elaborate on the proposed community-service oriented businesses.

11. *The relationship of the Kahului Civic Complex to the adjacent Central Maui Transit Hub is critical. Public transit will be best supported through the proposed mix of uses, which will prioritize access via alternative modes of transportation, and incorporate design features meant to foster pedestrian activity. The proposed project design should consider the way bus transit riders will interface with the Kahului Civic Complex project. If the proposed mixed-use project is designed with ground-floor commercial uses, the transit hub will be more convenient and comfortable, and result in the creation of inviting pedestrian spaces, so that the two areas flow seamlessly together. In addition, active ground floor uses with residential uses above the ground floor will result in on-site activity 24-hours per day and this will provide greater security for the Transit Hub. For the proposed development, please consider the installation of regular entrances, transparent windows, and wayfinding signs that help to prioritize alternative transportation options over private vehicle use. Please create pedestrian paths and sidewalks that are safe and directly lead to the Transit Hub. Provide integrated, delineated, and well-lit pedestrian paths that create a safe and efficient pedestrian experience and encourage walking. In addition to appropriate scale, texture and amenities, such as seating and public art or sculpture, will help to create pleasant and thoughtfully designed environment for those who choose to use alternative modes of transportation.*

The HHFDC is coordinating with the Department of Transportation to promote walkability and accessibility to and through the Project site from the Central Maui Transit Hub. The HHFDC will consider design features that will encourage multi-modal transportation and foster a safe and efficient pedestrian experience.

12. *Because pedestrians, bicyclists, and transit riders should be the design priority, reducing or eliminating the visual, environmental, and economic impacts of parking lots and structures is of the utmost importance. Please design parking so that it can be used for other purposes like offices or community space in the future, like the Wailuku Civic Center parking structure*.

The HHFDC will consider designing the proposed parking lot/structure to reduce potential visual impacts and to be utilized for other purposes such as offices or community space in the future.

13. *Please provide onsite, convenient short- and long-term bicycle parking. Please locate short-term bicycle parking in a visible area and within close proximity to an entrance. Long-term bicycle parking should be provided within a structure. Please ensure that bike parking does not interfere with pedestrian movement or Americans with Disabilities Act (*The*) accessibility*.

The HHFDC will provide onsite, convenient short- and long-term bicycle parking, which complies with Americans with Disabilities Act requirements.

14. *For the proposed development, please note that sidewalks in the TOD areas should be wider and must have a clear pedestrian path no less than five-feet wide. Street furniture, shade trees, bicycle parking, and other amenities should also be considered for project incorporation to support healthy pedestrian environments.*

The HHFDC will consider designing wider pedestrian paths (at least five-feet wide) and incorporating pedestrian amenities to support a healthy pedestrian environment.

15. *Please provide street trees with canopies for shade and heat mitigation. When street trees are not feasible, we encourage awning installation along the frontage*.

The HHFDC will consider providing street trees with canopies for shade and heat mitigation or the installation of awnings along the frontages where trees are not feasible.

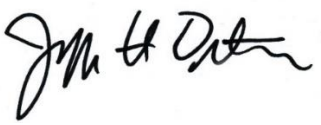
16. *For the SMA Use Permit, please analyze visual impacts from Kaahumanu Avenue toward Haleakala and Kahului Harbor. The building heights should not impact the views, so please locate taller buildings at the rear of the property away front Kaahumanu Avenue and sidewalk frontages*.

The HHFDC will consider locating taller buildings at the rear of the property away from Kaʻahumanu Avenue and sidewalk frontages. The SMA Use Permit will analyze visual impacts from Kaʻahumanu Avenue toward Haleakalā and Kahului Harbor.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

KA'AHUMANU AVE
COMMUNITY CORRIDOR

County of Maui
One Main Plaza
2200 Main Street, Suite 315
Wailuku, Maui, Hawai'i 96793

June 28, 2021



Mr. Jeff Overton
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

We appreciate the opportunity to review and discuss the Kahului Civic Center Mixed-Use Complex conceptual site plan. Thank you for meeting with the Project Management Team for the Ka'ahumanu Avenue Community Corridor Project on June 1, 2021 to coordinate planning for the two initiatives. The County is currently engaged in the development of recommendations in support of a vision for a transit-oriented future for Ka'ahumanu Avenue and surrounding areas. The Civic Center Mixed-Use Complex and adjacent County Transit Hub present an opportunity to catalyze a more transit-oriented, pedestrian-friendly future for Central Maui. The comments below are provided by Maui County staff in response to the Kahului Civic Center Mixed-Use Complex conceptual site plan. The comments communicate requested modifications to the site plan in support of the County's multimodal vision for the future.

Key Issues

During initial discussions with County staff, HHFDC staff, and members of the design team several key issues were raised related to site access, circulation, and urban design best practices. Concerns regarding the site design of the Kahului Civic Center Mixed Use Complex and County Transit Hub are organized into the eight issues below.

Issue 1: Lack of clarity regarding pedestrian-level ground-floor transparency

The larger issue here is how the first floor of the buildings along Kaahumanu Ave. creates an engaging public space. In addition to providing eyes on the street, this is an opportunity to provide a gathering place for people from the project's structures, people walking by, and for those who travel from outside the project area. If the building is setback is large enough, there could be both open lawn areas and plaza space for outdoor dining and other organized activities.

Please clarify which building frontages will include ground-floor transparency, and how much transparency is provided? At the pedestrian level, a predominance of glass that provides transparency between inside buildings and pedestrian activity outside on the streets and sidewalks is very important to the vitality of the pedestrian environment.

Glass should be used on the street level to ensure visibility for pedestrian interest and assure obvious "eyes on the street" or a sense of security resulting from indoor and outdoor activity being readily visible. The placement of landscaping or other exterior features immediately adjacent to entrances and window openings should not substantially diminish visibility into or out of buildings. In addition to street frontages, a high level of ground floor transparency should be provided in the DAGS building facing the County Transit Hub/parking deck.

Issue 2: Lack of clarity regarding location of building entrances

Where are building entrances located, both for the multi-family affordable housing buildings and the DAGS offices/library/adult school and ground-floor retail building? Buildings should include entrances on Kane Street and Ka'ahumanu Avenue. Pedestrian paths should connect from sidewalks directly to building entrances.

It would be very helpful to see sections through the site to understand the scale of the structures and how they relate to the streets, sidewalks, and other features in the public realm. Our comments are based mostly on examining the site plan, which does not provide sufficient information about the scale, size, and massing of the structures. As a result, our comments are somewhat limited in scope.

Issue 3: Insufficient pathways for pedestrian circulation

The site plan identifies a series of pedestrian pathways within the site that reveal multiple important gaps in pedestrian connectivity, including the lack of pedestrian connection in the following locations:

- The "greenway' needs to link Kaahumanu Ave. to Vevau St., especially because pedestrians would have to walk through the parking lot, as it is now shown.
- There is only one building entrance access point identified connecting one of the mixed-use buildings to Kane Street. Where are the other entrances located along Ka'ahumanu Avenue, Kane Street, or the internal east-west street within the site?
- There is no sidewalk connection along the eastern edge of the site/School Street. What is the treatment for the eastern edge of the site? Will the eastern edge of the site allow for pedestrian connections through to School Street?
- There are no pedestrian or vehicular connections indicated linking the site to 3rd Street.
- There are no walkways identified through the parking deck to the County Transit Hub or DAGS building. Please clarify the pedestrian connections and access points between the facilities.
- The sidewalk is discontinuous on south side of the new east-west street within the site. Sidewalks should be continuous and complete on both sides of this new internal street.
- There is a lack of clarity regarding sidewalk widths throughout the site. Please provide sidewalk width information for all locations. Minimum recommended width for all street edges is a total of 12 feet, including an 8-foot clear zone and 4-foot furnishing zone.

Issue 4: Large block size and lack of connection to adjacent streets

The distance between Ka'ahumanu Avenue and Vevau Street is approximately 550 feet, and the distance between Kane Street and School Street is approximately 500 feet; these lengths create a super block with no pedestrian connections through the site to access adjacent streets. Every effort should be made to design the site to allow for an east-west connection to 3rd Street to reduce the size of the super block and improve circulation.

Issue 5: Wide driveways and long crossing distances for both access points to the County Transit Hub on Vevau Street

The wide driveways into the County Transit Hub, as shown in the site plan below, present a pedestrian safety issue. The westernmost driveway into the transit center appears to be located within 15 feet of the driveway entry of the DAGS office building, functionally creating a very long pedestrian crossing for pedestrians traveling on the north side of the street. There is a lack of clarity around the location and presence of sidewalks on either side of Vevau Street in the site plan. The driveways appear to have wide

turning radii, creating wide crossing distances for pedestrians and increasing the risk of pedestrian-vehicle collisions at the entrances to the County Transit Hub.

Issue 6: Lack of clarity regarding bicycle circulation and bicycle parking

The site plan does not identify any consideration for bicycle facilities, paths, or bicycle parking within the site. Has bicycle circulation and bike parking been considered? If so, please identify the location of the paths. What is the width of the greenway path between the two mixed-use buildings? Is the path wide enough (15'+) to accommodate both bicycles and pedestrians? Where will bicycle parking be located?

Issue 7: Restricted access to the County Transit Hub created by the property's perimeter fence

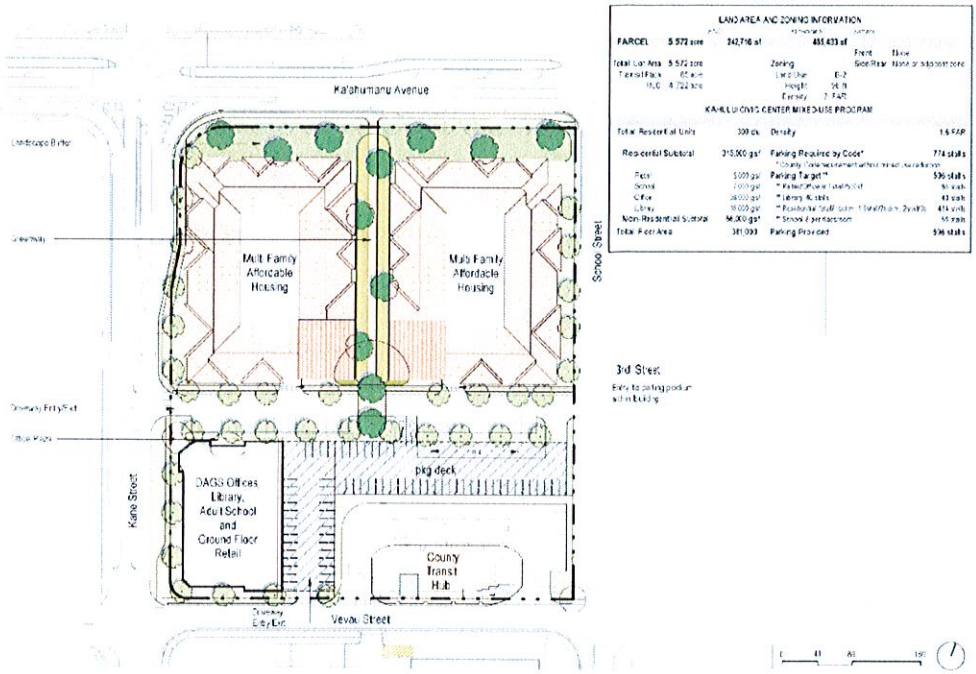
We understand that the perimeter fence of the County Transit Hub is required in a memorandum of understanding (MOU) between Maui County and the State of Hawai'i. We are concerned that a perimeter fence around the transit hub would significantly hamper pedestrian connectivity and depress transit ridership. With the addition of a perimeter fence, people walking, biking, or rolling to the transit hub would be limited to accessing the Hub via Vevau Street.

We question if a perimeter fence surrounding the transit hub is warranted. Best practices for Crime Prevention Through Environmental Design (CPTED) have shown that superfluous reinforcements of this type can lead to the types of crime they are intended to prevent. We suggest supporting the modification of the MOU between Maui County and the State of Hawai'i to remove the current request for perimeter fencing around the County Transit Hub.

Additionally, pedestrian connections should be provided and encouraged through inclusion of pedestrian pathways north through the parking deck, west to connect to the DAGS building, and through sidewalks of 12' minimum along the north side of Vevau Street, in keeping with minimum standards for high-use pedestrian-oriented walkways.

Issue 8: Lack of clarity regarding green infrastructure best practices

There is a lack of clarity regarding the provision of green infrastructure on the site including electric vehicle charging stations and best practices for the infiltration of storm water. We would like to understand how the team is addressing these current and future needs on the site.



Kahului Civic Center Mixed-Use Complex

Thank you for the opportunity to comment. If you have questions or would like to discuss any of the comments provided, please contact Pam Eaton at (808-270-7214), or Pam.Eaton@co.maui.hi.us.

Sincerely,

Pamela Eaton
Project Manager
Ka`ahumanu Community Corridor

CC: Michele McLean, Director, Planning Department
Marc Takamori, Director, Maui Department of Transportation
Linda Munsell, Deputy Director, Department of Housing & Human Concerns
David Yamashita, Senior Planner, Department of parks & Recreation
Phil Andersen, Department of Housing & Human Concerns
Robin Shishido, Hawaii Department of Transportation
Lauren Armstrong, Executive Director, Maui MPO
Dean Minikami, HHFDC
Randy Chu, HHFDC
Stanley Fujimoto, HHFDC
Sergut Berhanu, HHFDC

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

January 12, 2022

Ms. Pamela Eaton, Project Manager
County of Maui
Kaʻahumanu Avenue Community Corridor
One Main Plaza, 2200 Main Street, Suite 315
Wailuku, HI 96793

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Maui, Hawaiʻi

Dear Ms. Eaton,

On behalf of the Proposing Agency, the State of Hawaiʻi, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated June 28, 2021 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project").

The HHFDC acknowledges and greatly appreciates the urban design principles and best practices that are advocated by the Kaʻahumanu Avenue Community Corridor Maui County staff. The HHFDC plans to issue a Request for Proposals (RFP) to seek an eligible developer for the design phase of the Project. The RFP may require these recommended urban design principles and best practices to be considered and implemented by the developer and vetted by the community.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Jeff Overton (G70 Principal) via email: jeff@g70.design or phone (808) 523-5866 if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

Early Consultation Comments and Responses

Organizations and Individuals

NELSON
NYGAARD

October 30, 2020

G70
Attn: Jeff Overton, Principal
111 S. King Street
Suite 170
Honolulu, HI 96813

Mr. Overton,

This letter provides a response to the Early Consultation Request for the Wailuku State Building and the Kahului Civic Complex. Both project sites are located within the study area for the Ka‘ahumanu Ave Community Corridor (KCC), and both projects were submitted to Maui County for Early Consultation on October 6, 2020. Nelson\Nygaard is pleased to support the County of Maui on the KCC planning process, leading the consultant team and working in partnership with the County-led project management team.

The Ka‘ahumanu Ave Community Corridor process includes broad and inclusive community engagement of business owners, residents, and stakeholders. In February 2021, the KCC planning team will host a public event to learn from stakeholders and to inform the development of a community-supported plan for land use and transportation within the study area.

The following response identifies design and redevelopment considerations for G70’s use in developing proposals for the sites located within the KCC study area. We offer our team’s help to develop site concept plans for these redevelopment parcels, and we look forward to working with your team and with the Maui County team to plan for a walkable, connected, and resilient future.

KA‘AHUMANU AVE COMMUNITY CORRIDOR

The Ka‘ahumanu Ave Community Corridor project is an 18-month planning process, which began in June 2020, to study transit-oriented development opportunities along Ka‘ahumanu Avenue and Main Street, as well as for surrounding areas in Central Maui. Ka‘ahumanu Avenue carries 50,000 vehicles a day and connects the county seat in Wailuku with the commercial core of Kahului and the airport. The corridor is challenged to provide an accessible, comfortable environment that serves the island’s growing population and meets Maui’s changing travel needs.

The KCC project will:

- Identify opportunities to connect people to jobs and affordable housing
- Study market potential to improve economic development and redevelopment
- Identify opportunities to increase public transit ridership
- Develop a walking, rolling, and biking network
- Provide greater access to public transit, jobs, nearby medical services (Maui Memorial Medical Center and Kaiser Permanente clinics), schools (UH-Maui College and Baldwin High School), and government services (County, State, and Federal offices)

This study, to be completed in late 2021, will result in a clear framework for funding and implementation to achieve Maui County’s objectives to integrate land use and infrastructure planning, increase the supply of affordable housing, and provide safe mobility options.

- **Street-Facing Frontages and Mixed Uses:** Street-facing building frontages should include transparent ground floor materials and allow for a mix of uses. Locate primary building entrances on the street-facing frontage of the building. Secondary entrances may face parking lots.
- **Opportunities for Activation:** Anticipate the need for additional sidewalk width to accommodate sidewalk furnishing zones and allow for outdoor seating or dining.

Kahului Civic Complex

The site edges are too long to create visual interest as a single building. Any buildings with front facades longer than 200 feet should be designed to appear as several distinct buildings with distinct architectural character.

Buildings should form a nearly continuous edge facing the three surrounding streets: Ka'ahumanu Ave, Kane St, and Vevau St, with the buildings fronting the streets. This could mean that there is a single U-shaped building or multiple buildings with gaps between them, forming a U. All surface parking should then be located toward the center of the block, reaching to its eastern (non-street) edge.

All front doors must face the surrounding streets, with rear doors to the parking allowed. The rear doors may be no more prominent than the front doors, and the front doors must be unlocked whenever the rear doors are unlocked. The front sidewalks and landscape must make the front doors appear to be the primary access to the building.

Sidewalks on Ka'ahumanu Ave, Kane St, and Vevau St should include an outer planting zone that is 6 feet to 10 feet deep with deciduous canopy trees planted at 40 feet minimum on center, and a clear paved walking zone of at least 10 feet on Ka'ahumanu Ave and at least 6 feet on the side streets.

Wailuku State Building

There is an established deep setback that you may want to respect, and you may want to consider connecting the front parking lot on the adjacent District Court site onto this site directly. That is not the ideal solution: both this building and the District Court should have lawn in front, not parking. But since the parking lot already exists, and is only one bay deep, matching it on the Wailuku State Building site would be acceptable. It would need to be heavily landscaped and detailed like a head-in parking street, not a parking lot, but rather lined with sidewalk and street trees to its east.

The alternative would be to pull the building to the street and place parking behind. This should be studied as well. Given that the site is not large enough to provide more than a fraction of the parking it will require, we would recommend exploring zero parking on site, and satisfying the demand elsewhere with a district-wide parking strategy.

Thank you for the opportunity to comment. We look forward to working closely with you as we advance the Ka'ahumanu Ave Community Corridor.

Sincerely,



Jennifer Wieland
Principal & Project Manager

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

March 31, 2021

Ms. Jennifer Wieland
Principal & Project Manager
Nelson/Nygaard
811 First Avenue, Suite 610
Seattle, WA 98104

Subject: Early Consultation for Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex Project
Tax Map Key: (2) 3-7-004:003
Kahului, Island of Maui, Hawai'i

Dear Ms. Wieland,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated October 30, 2020 concerning the Draft Environmental Assessment (DEA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The site edges are too long to create visual interest as a single building. Any buildings with front facades longer than 200 feet should be designed to appear as several distinct buildings with distinct architectural character.*

   Buildings should form a nearly continuous edge facing the three surrounding streets: Ka'ahumanu Ave, Kane St, and Vevau St, with the buildings fronting the streets. This could mean that there is a single U-shaped building or multiple buildings with gaps between them, forming a U. All surface parking should then be located toward the center of the block, reaching to its eastern (non-street) edge.

   All front doors must face the surrounding streets, with rear doors to the parking allowed. The rear doors may be no more prominent than the front doors, and the front doors must be unlocked whenever the rear doors are unlocked. The front sidewalks and landscape must make the front doors appear to be the primary access to the building.

   Sidewalks on Ka'ahumanu Ave, Kane St, and Vevau St should include an outer planting zone that is 6 feet to 10 feet deep with deciduous canopy trees planted at 40 feet minimum on center, and a clear paved walking zone of at least 10 feet on Ka'ahumanu Ave and at least 6 feet on the side streets.

The HHFDC will consider the recommended design concepts, landscape design, and architectural treatments during the design phase of the Project.

Your comment letter and this response will be included in the DEA. Thank you for your participation in the environmental review process. Please contact Vi Verawudh, Senior Planner at (808) 523-5866 or via email: viv@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Appendix O

Draft EA Notification

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

January 21, 2022

Subject: Chapter 343, Hawai'i Revised Statutes, DEA-AFNSI
Kahului Civic Center Mixed-Use Complex
Kahului, Island of Maui, Hawai'i
Tax Map Key: (2) 3-7-004:003 (por.)

Aloha:

On behalf of the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawai'i Housing Finance & Development Corporation, we are writing to inform you that the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Kahului Civic Center Mixed-Use Complex Project will be published on **January 23, 2022** in the Office of Planning and Sustainable Development, Environmental Review Program's (ERP) semi-monthly publication, *The Environmental Notice*. A 30-day comment period will commence on **January 23, 2022** and end on **February 22, 2022**.

A PDF copy (searchable) of the DEA-AFNSI will be available via ERP's website on **January 23, 2022** – http://oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf. Hardcopies of the DEA-AFNSI will also be available for viewing at the Hawai'i State Public Library – Hawai'i Documents Center and the Kahului Public Library.

If you would like to provide comments, please send via U.S. mail or email to the G70 contact indicated below, no later than **February 22, 2022**.

G70
Attn: Jeff Overton
111 S. King Street, Suite 170
Honolulu, HI 96813
Email: KahuluiEAcomments@g70.design

Should you have any questions or require additional information, please contact Michele Leong (G70 Planner) via email: michelel@g70.design or phone: (808) 441-1625.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

Appendix P

Draft EA Comments and Responses

Federal Agencies

From: Asman, Lindsy <Lindsy_Asman@fws.gov>
Sent: Wednesday, February 2, 2022 6:04 AM
To: HHFDC Kahului Civic Center - Kahului
Subject: USFWS Comments re: HRS Chapter 343, DEA-AFNSI, Kahului Civic Center Mixed-Use Complex
Attachments: 2020-TA-0047_Hokuula Affordable Housing Development Makawao, Maui Signed.pdf

Good morning,

We have reviewed the draft EA and AFONSI. We provided avoidance and minimization measures for federally listed species in October, 2020 (please see attached). We thank you for including our recommended avoidance and minimization measures for Hawaiian hoary bat, seabirds, and Blackburn's sphinx moth.

Our guidance suggested some measures also be implemented should listed Hawaiian waterbirds be attracted to the site during construction. These birds (i.e., Hawaiian ducks, stilts, coots, gallinule, or geese) can be attracted to areas of standing water when rainfall accumulates in construction areas. Our letter recommended measures be taken to avoid adverse effects to these waterbirds during construction. However, these measures were not included in the EA/AFONSI (see page 3-16 for Potential Impacts and Mitigation Measures).

Please feel free to reach out to me with any questions, or if I can be helpful in any way. Thank you, we appreciate your effort to conserve listed species.

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Attn: Lindsy Asman
Mr. Aaron Nadig, Island Team Manager
Pacific Islands Fish and Wildlife Office
U.S. Department of the Interior, Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Nadig,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 2, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *We provided avoidance and minimization measures for federally listed species in October 2020 (please see attached). We thank you for including our recommended avoidance and minimization measures for Hawaiian hoary bat, seabirds, and Blackburn's sphinx moth. Our guidance suggested some measures also be implemented should listed Hawaiian waterbirds be attracted to the site during construction. These birds (i.e., Hawaiian ducks, stilts, coots, gallinule, or geese) can be attracted to areas of standing water when rainfall accumulates in construction areas. Our letter recommended measures be taken to avoid adverse effects to these waterbirds during construction. However, these measures were not included in the EA/AFONSI (see page 3-16 for Potential Impacts and Mitigation Measures).*

HHFDC appreciates the Pacific Islands Fish and Wildlife Office's information regarding avoidance and minimization measures for federally-listed species that may occur or transit through the Project site. The Final EA will include recommended measures to avoid adverse effects to Hawaiian waterbirds (i.e., Hawaiian ducks, stilts, coots, gallinule, or geese) during construction.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

State of Hawai‘i Agencies

`DAVID Y. IGE
GOVERNOR

CATHY BETTS
DIRECTOR

JOSEPH CAMPOS II
DEPUTY DIRECTOR

RECEIVED
FEB 07 2022
G70

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
BENEFIT, EMPLOYMENT AND SUPPORT SERVICES DIVISION
1010 Richards Street, Suite 512
Honolulu, Hawaii 96813

Re: 22-0035

February 3, 2022

Mr. Jeff Overton
Principal
G70
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

Subject: Chapter 343, Hawaii Revised Statutes, DEA-AFNSI
Kahului Civic Center Mixed-Use Complex
Kahului, Island of Maui, Hawaii
Tax Map Key (2) 3-7-004:003 (por.)

This is in response to your letter dated January 21, 2022 requesting the Department of Human Services (DHS) review and comment on the above-named project.

The DHS has reviewed the project. At this time, DHS has no comments.

If you should have any questions regarding this matter, please contact Ms. Lisa Galino, Child Care Program Specialist at (808) 586-5712.

Sincerely,

Scott Nakasone
Assistant Division Administrator

c: Cathy Betts, Director

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Scott Nakasone, Assistant Division Administrator
State of Hawaii
Department of Human Services
Benefit, Employment and Support Services Division
1010 Richards Street, Suite 512
Honolulu, HI 96813

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Nakasone,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 3, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The DHS has reviewed the project. At this time, DHS has no comments.*

The HHFDC acknowledges that the Department of Human Services (DHS), Benefit, Employment and Support Services Division has no comments at this time and will continue to consult with the DHS as necessary.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Directors
ROSS M. HIGASHI
EDUARDO P. MANGLALLAN
PATRICK H. MCCAIN
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0105
STP 8.3352

February 18, 2022

VIA EMAIL: KahuluiEAcomments@g70.design

Mr. Jeff Overton
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

Subject: Draft Environmental Assessment (EA)
Kahului Civic Center Mixed Use Complex
Kahului, Maui, Hawaii
Tax Map Key: (2) 3-7-004: 003 (Portion)

Thank you for your email on January 23, 2022 notifying the State of Hawaii Department of Transportation (HDOT) of the availability of the subject Draft EA for review and comment. HDOT understands the State of Hawaii Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation with the State of Hawaii Department of Accounting and General Services is proposing to develop 300 multi-family units in two roughly six-story buildings, and an approximately 66,000-square foot Civic Center on an approximately 4.72-acre site.

The project site is located adjacent to Kaahumanu Avenue (State Route 32). Vehicular access to the site will be via Kane Street (County) and Vevau Street (Private portion).

Airports Division (HDOT-A)

The HDOT-A has reviewed the subject Draft EA which included early consultation comments which were provided in letter STP 8.3070 dated October 29, 2020. HDOT-A has determined that HDOT-A's comments in that letter remain valid and applicable to the proposed housing development.

Highways Division (HDOT-HWY)

1. HDOT-HWY has determined that based on the Mobility Analysis Report dated December 2021, it appears that the project will not have any significant impacts on our State Highway facilities. The project has also satisfactorily addressed the preferred

access locations mentioned in HDOT-HWY's early consultation comments provided in the letter STP 8.3070.

2. HDOT-HWY's previously requested a roadway setback along Kaahumanu Avenue, however HDOT-HWY's confirms that the roadway setbacks will no longer be requested due to budgetary and feasibility constraints for the potential widening of Kaahumanu Avenue.

3. All drainage/discharge/connection permit applications will be required to be submitted for review and approval by the HDOT-HWY's Maui District Engineer.

4. Construction plans for work done within HDOT-HWY Right-of-Way must be submitted for review and permit approval by the HDOT-HWY, Maui District Engineer.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

JADE T. BUTAY
Director of Transportation

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Jade T. Butay
Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Butay,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 18, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

Airports Division (HDOT-A)

1. *The HDOT-A has reviewed the subject Draft EA which included early consultation comments which were provided in letter STP 8.3070 dated October 29, 2020. HDOT-A has determined that HDOT-A's comments in that letter remain valid and applicable to the proposed housing development.*

The HHFDC acknowledges the HDOT-A's early consultation comments sent in letter STP 8.3070 dated October 29, 2020.

Highways Division (HDOT-HWY)

2. *HDOT-HWY has determined that based on the Mobility Analysis Report dated December 2021, it appears that the project will not have any significant impacts on our State Highway facilities. The project has also satisfactorily addressed the preferred access locations mentioned in HDOT-HWY's early consultation comments provided in the letter STP 8.3070.*

The HHFDC appreciates the HDOT-HWY's determination that the Project will not have any significant impacts on State Highway facilities, and that HDOT-HWY's early consultation comments regarding Project site access locations were satisfactorily addressed.

3. *HDOT-HWY previously requested a roadway setback along Kaahumanu Avenue, however HDOT-HWY confirms that the roadway setbacks will no longer be requested due to budgetary and feasibility constraints for the potential widening of Kaahumanu Avenue.*

The HHFDC acknowledges that a roadway setback of 30 feet from the existing Ka‘ahumanu Avenue Right-of-Way (ROW) is no longer requested by the HDOT-HWY.

4. *All drainage/discharge/connection permit applications will be required to be submitted for review and approval by the HDOT-HWY's Maui District Engineer.*

The HHFDC acknowledges that drainage/discharge/connection permit applications are required to be submitted for review and approval by the HDOT-HWY, Maui District Engineer.

5. *Construction plans for work done within HDOT-HWY Right-of-Way must be submitted for review and permit approval by the HDOT-HWY, Maui District Engineer.*

The HHFDC acknowledges that construction plans for work done within HDOT-HWY ROW must be submitted for review and approval by the HDOT-HWY, Maui District Engineer.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

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

February 22, 2022

G70
Attention: Mr. Jeff Overton
111 South King Street, Suite 170
Honolulu, Hawaii 96813

via email: KahuluiEAcomments@g70.design

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment (AFNSI) for the Proposed **Kahului Civic Center Mixed-Use Complex** located at Kahului, Island of Maui; TMK: (2) 3-7-004:003 (por.) on behalf of HHFDC

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's 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 contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
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

Jan 27, 2022

MEMORANDUM

FROM:

~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_ Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

TO:

~~FROM:~~ Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Draft Environmental Assessment (AFNSI) for the Proposed **Kahului Civic Center Mixed-Use Complex**
LOCATION: Kahului, Island of Maui; TMK: (2) 3-7-004:003 (por.)
APPLICANT: G70 on behalf of HHFDC

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on January 23, 2022 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf

Please submit any comments by **February 18, 2022**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at darlene.k.nakamura@hawaii.gov. Thank you.

BRIEF COMMENTS:

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
(✓) Comments are included/attached.

Signed: *CSC*
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Feb 14, 2022

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Draft Environmental Assessment (AFNSI) for the Proposed Kahului Civic Center Mixed-Use Complex
Location: Kahului, Island of Maui
TMK(s): (2) 3-7-004:003 (por.)
Applicant: G70 on behalf of HHFDC

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 Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR, Chapter 1, Subchapter B, part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency 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) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

The applicant should include water demands and infrastructure required to meet project needs. Please note that all State projects requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: Feb 14, 2022

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Carty S. Chang, Chief Engineer
State of Hawaii
Department of Land and Natural Resources
Engineering Division
P.O. Box 621
Honolulu, HI 96809

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Chang,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 14, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *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 Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR, Chapter 1, Subchapter B, part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.*

   The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT) could also be used to research flood hazard information.

   If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:
   - *Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.*

The Project will comply with 44CFR and local flood ordinances as applicable. The Project site is within Flood Zone X, an area determined to be of minimal flood risk, and outside of the 0.2% annual chance or 500-year floodplain.

2. *The applicant should include water demands and infrastructure required to meet project needs. Please note that all State projects requiring water service from*

their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

Estimated water demands and infrastructure required for the Project are discussed in the Final EA, Section 3.81, Potable Water. The HHFDC acknowledges that a resource development charge and Water System Facilities Charges will be required for resource development, transmission, and daily storage.

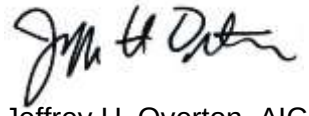
3. *The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.*

Project-related water demands, and calculations will be provided to the DLNR, Engineering Division so it can be included in the State Water Projects Plan Update projections.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR

KEITH T. HAYASHI
INTERIM SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF FACILITIES AND OPERATIONS

February 22, 2022

TO: Denise Iseri-Matsubara
Executive Director
Hawaii Housing Finance and Development Corporation

FROM: Roy Ikeda
Interim Public Works Manager
Planning Section, Facilities Development Branch

SUBJECT: **Draft Environmental Assessment for the Kahului Civic Center Mixed-Use Complex, Kahului, Maui, Hawaii, TMK (2)3-7-004:003 por.**

The Hawaii State Department of Education (Department) has the following comments on the draft environmental assessment for the proposed Kahului Civic Center Mixed-Use Complex (Project).

Schools currently serving the Project area are Kahului Elementary, Maui Waena Intermediate, and Maui High. The Department anticipates approximately 66 public school students will reside in the Project. Both Kahului Elementary and Maui Waena Intermediate are currently operating at capacity and will continue to operate at capacity over the next five years. Maui High School is currently operating over capacity and is anticipated to be operating at capacity over the next five years. However, the Department will be adjusting Maui High School's projected operating capacity to reflect the delayed opening of the new Kihei High School.

The Department's current enrollment projections for Maui High School is based upon the assumption that the new Kihei High School would open to grade nine in the 2023-2024 school year and phase in one grade per year. However, in October 2021, the State Land Use Commission voted to require a grade-separated pedestrian walkway when the new Kihei High School opens. At this time, an opening date has not been determined, students residing in Kihei will continue to attend Maui High.

The proposed Project is located within the Central Maui School Impact Fee District with a fee amount of $2,371. Chapter 302A-1606, Hawaii Revised Statutes, requires that residential development with 50 or more units, execute an agreement with the Department prior to the issuance of any building permit. This agreement sets forth how and when

payments will occur. The developer is encouraged to meet with the Department early on to execute this agreement.

Thank you for the opportunity to comment. Should you have questions, please contact Robyn Loudermilk, School Lands and Facilities Specialist with the Facilities Development Branch, Planning Section, at (808) 784-5093 or by email at robyn.loudermilk@k12.hi.us.

RI:rll

c: Jaimie Yap, Complex Area Superintendent, Baldwin/Kekaulike/Maui Complex

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Roy Ikeda
State of Hawaii
Department of Education
Planning Section, Facilities Development Branch
P.O. Box 2360
Honolulu, HI 96804

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Ikeda,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 22, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Schools currently serving the Project area are Kahului Elementary, Maui Waena Intermediate, and Maui High. The Department anticipates approximately 66 public school students will reside in the Project. Both Kahului Elementary and Maui Waena Intermediate are currently operating at capacity and will continue to operate at capacity over the next five years. Maui High School is currently operating over capacity and is anticipated to be operating at capacity over the next five years. However, the Department will be adjusting Maui High School's projected operating capacity to reflect the delayed opening of the new Kihei High School.*

   The Department's current enrollment projections for Maui High School is based upon the assumption that the new Kihei High School would open to grade nine in the 2023-2024 school year and phase in one grade per year. However, in October 2021, the State Land Use Commission voted to require a grade-separated pedestrian walkway when the new Kihei High School opens. At this time, an opening date has not been determined, students residing in Kihei will continue to attend Maui High.

   The proposed Project is located within the Central Maui School Impact Fee District with a fee amount of $2,371. Chapter 302A-1606, Hawaii Revised Statutes, requires that residential development with 50 or more units, execute an agreement with the Department prior to the issuance of any building permit. This agreement sets forth how and when payments will occur. The developer is encouraged to meet with the Department early on to execute this agreement.

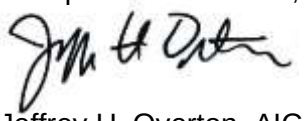
The HHFDC acknowledges that the Project is located within the Central Maui School Impact Fee District. The developer will comply with Hawaii Revised Statutes, Chapter

302A-1606 and execute an agreement with the State Department of Education prior to the issuance of building permits.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Standard Comments for Land Use Reviews
Clean Air Branch
Hawaii State Department of Health

If your proposed project:

Requires an Air Pollution Control Permit

You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

Includes construction or demolition activities that involve asbestos

You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.

Has the potential to generate fugitive dust

You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does *not* require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.

You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

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

If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

Clean Air Branch (808) 586-4200 cab@doh.hawaii.gov	Indoor Radiological Health Branch (808) 586-4700

April 1, 2019

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

State of Hawaii
Department of Health
Clean Air Branch
Email: cab@doh.hawaii.gov

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Clean Air Branch,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 23, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *If your proposed project:*

   Requires an Air Pollution Control Permit
   You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

   Includes construction or demolition activities that involve asbestos
   You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.

   Has the potential to generate fugitive dust
   You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does not require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.
   Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.
   You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

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

The Project does not require an Air Pollution Control Permit from the Department of Health, Clean Air Branch. An Asbestos Abatement Work Plan will be prepared and submitted to the DOH, Indoor and Radiological Health Branch, Asbestos Abatement Office for approval before demolition work commences. The Contractor will comply with Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust and will implement best management practices to control the generation and dispersion of airborne, visible fugitive dust during the various phases of construction. The Contractor may develop a dust control management plan.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

STATE OF HAWAII
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR

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: https://planning.hawaii.gov/

Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Program

DTS 202202091059NA

March 2, 2022

To: Denise Iseri-Matsubara, Executive Director
Hawai'i Housing Finance and Development Corporation

From: Mary Alice Evans, Director
Office of Planning and Sustainable Development

Mary Alice Evans

Attention: Sery Berhanu, Project Manager
Hawai'i Housing Finance and Development Corporation

Subject: Reference 22:DEV/003, Hawai'i Revised Statutes Chapter 343, DEA-AFONSI, Kahului Civic Center Mixed-Use Complex Kahului, Maui, Tax Map Key: (2) 3-7-004: 003 (por)

Thank you for the opportunity to provide comments on the Draft Environmental Assessment (Draft EA) for the proposed Kahului Civic Center Mixed-Use Complex (Project) in Kahului. The dual Draft EA announcement and public meeting notification memo was received by our office on February 9, 2022.

The Project entails the construction of approximately 300 units of affordable and market-rate multi-family housing, a 66,000 square foot civic center building, and approximately 600 parking spaces on a 5.6-acre parcel at 153 West Ka'ahumanu Avenue, Kahului. The civic center building is proposed to provide space for classroom and support services for adult education, other State agency services, and a relocated Kahului Public Library. The Project could include 5,000 square feet of community-oriented commercial space on the site. Approximately .85 acres of the parcel is leased to the County of Maui for the construction and operation of the Central Maui Transit Hub, which is not included in this Project assessment.

OPSD notes that the Kahului Civic Center Mixed-Use Complex is one of the priority catalytic transit-oriented development (TOD) projects in the *State Strategic Plan for Transit-Oriented Development* issued by the Hawai'i Interagency Council for Transit-Oriented Development.

OPSD offers the following general and specific comments on the Draft EA.

General Comments

The Draft EA sufficiently describes potential impacts and mitigation measures for areas of concern to OPSD programs. With respect to Coastal Zone Management Act (CZMA) matters, the Draft EA adequately discusses the Proposed Action in relation to CZM objectives and policies in Hawai'i Revised Statutes (HRS) Chapter 205A-2 and states the requirement for a Special Management Area (SMA) permit as the property lies within the County's SMA.

Comments on Specific Sections and Clarifications for Text

a. Page 3-22, Potable Water. This section should include a summary of the County Department of Water Supply (DWS) comments as to current system capacity in their pre-consultation comment letter and subsequent discussions with DWS regarding water availability with DWS on pages 11-12 of the Final Preliminary Engineering Report. While the Project may be exempt from limits imposed on new or additional water service requests, the final EA should acknowledge that potable water availability is an issue for development on Maui, including potentially the Project.

b. Permits and approvals. The list of permits and approvals should include approvals from the State Department of Transportation for work that may be conducted in the Ka'ahumanu Avenue right-of-way.

c. Page 3-4, Sea Level Rise (SLR). Please provide the full name of the Climate Commission at this first reference. This section does not identify whether it is known if groundwater upwelling due to SLR might occur in this area.

d. Page 3-5, Reference to HRS §196-9. A brief description providing a high-level summary of the building and energy requirements for State projects and procurements should be provided at the first reference to HRS §196-9.

e. Page 3-24, Drainage. As noted in the finding on this page, the Project will result in a fairly large increase in impervious surface area, and it seems counter to first state that the increases in runoff will be negligible. This conclusion might be reframed to state that the increase in runoff will be mitigated by the proposed onsite retention system and other LID features as needed. Other green infrastructure measures could be considered to offset the increase in impermeability, including the potential for installation of green roofs.

f. Pages3-31 – 3-32, Parking, Transit, Pedestrian and Bicycle Facilities. OPSD notes that right-sizing parking for the Project and the quality of transit service and the pedestrian and bicycle facilities on- and off-site are all critical to mitigating the impacts of additional residential density and increased number of mix of

customers and visitors to the site. We appreciate that shared parking is being proposed as a mitigation measure and that the number of parking spaces is proposed to be significantly reduced from what would otherwise be required by code. OPSD supports measures to minimize parking and adoption of other measures, including car share that promote a shift from reliance on individual auto trips to transit, micromobility, and walking and biking to get around.

g. Pages 3-35 – 3-36, Impact on existing schools. The final EA should identify the number of school-age residents anticipated at Project buildout and existing school enrollment capacity to support the finding that the Project will not have an impact on existing schools in the vicinity.

h. Page 5-1, Hawai'i State Plan. HRS Chapter 226, commonly referred to as the Hawai'i State Plan, is not a static document and has been amended frequently since 1991. OPSD recommends deletion of the phrase, "recently revised in 1991."

i. Section 5.3, Hawai'i 2050 Sustainability Plan. The 2050 Sustainability Plan published in 2008 discussed in this section has been substantially revised and reissued by OPSD as of June 2021. This section should be updated for the final EA.

OPSD Approval of TOD Conceptual Development Plans. HRS § 225M-2(b)(10) designates OPSD as the lead agency for coordinating and advancing State smart growth and TOD planning statewide. Under HRS § 225M(b)(10)(H), OP is responsible for approving State agency development plans (conceptual land use plans) for parcels along the rail transit corridor. As noted earlier, the Kahului Civic Center Mixed-Use Complex is a priority catalytic project for the State, with the potential to create a vibrant TOD community anchored by the civic center and possible new library co-located with affordable housing and the Central Maui Transit Hub.

By this memorandum, OPSD concurs with publication of a Final Environmental Assessment with a Finding of No Significant Impact for the Project, conditioned by adherence to applicable code requirements and use of best practices and proposed mitigation measures in the implementation of the Project. Pursuant to our TOD lead agency responsibilities, OPSD hereby approves the HHFDC/DAGS Conceptual Master Plan and its program elements for the Kahului Civic Center Mixed-Use Project to guide the procurement of facility design and development services. We acknowledge that the plan is conceptual in nature and that many of the plan elements may change as the Project evolves. We encourage the incorporation of proposed mitigation measures in Project procurement, design, and construction and would appreciate continued communication and updates from HHFDC and DAGS on further planning and implementation of the proposed facilities.

Thank you again for the opportunity to review and provide comments on the Draft EA. If you have any questions, please contact Ruby Edwards, Land Use Division, (808) 587-2817.

c: Jeff Overton, G70

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Mary Alice Evans, Director
State of Hawaii
Office of Planning & Sustainable Development
P.O. Box 2359
Honolulu, HI 96804

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Ms. Evans,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated March 2, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. <u>General Comments</u>
   The Draft EA sufficiently describes potential impacts and mitigation measures for areas of concern to OPSD programs. With respect to Coastal Zone Management Act (CZMA) matters, the Draft EA adequately discusses the Proposed Action in relation to CZM objectives and policies in Hawai'i Revised Statutes (HRS) Chapter 205A-2 and states the requirement for a Special Management Area (SMA) permit as the property lies within the County's SMA.

The HHFDC appreciates the OPSD's determination that the Draft EA sufficiently described potential impacts and mitigation measures for areas of concern to OPSD's programs, including CZM objectives and policies pursuant to HRS Chapter 205A-2.

2. <u>Comments on Specific Sections and Clarifications for Text</u>
   a. <u>Page 3-22, Potable Water</u>. *This section should include a summary of the County Department of Water Supply (DWS) comments as to current system capacity in their pre-consultation comment letter and subsequent discussions with DWS regarding water availability with DWS on pages 11-12 of the Final Preliminary Engineering Report. While the Project may be exempt from limits imposed on new or additional water service requests, the final EA should acknowledge that potable water availability is an issue for development on Maui, including potentially the Project.*

The Final EA will include a summary of the County Department of Water Supply's comments regarding system capacity and potable water availability on Maui.

b. *Permits and approvals. The list of permits and approvals should include approvals from the State Department of Transportation for work that may be conducted in the Ka'ahumanu Avenue right-of-way.*

The Final EA will list permits and approvals required from the State Department of Transportation for work that may be conducted in the Ka'ahumanu Avenue right-of-way.

c. *Page 3-4, Sea Level Rise (SLR). Please provide the full name of the Climate Commission at this first reference. This section does not identify whether it is known if groundwater upwelling due to SLR might occur in this area.*

The Final EA will include the full name of the Hawai'i Climate Change Mitigation and Adaptation Commission. The Final EA will include a discussion on groundwater upwelling due to SLR in the Project vicinity.

d. *Page 3-5, Reference to HRS §196-9. A brief description providing a high-level summary of the building and energy requirements for State projects and procurements should be provided at the first reference to HRS §196-9.*

The Final EA will include a brief description of the building and energy requirements for State projects, pursuant to HRS §196-9.

e. *Page 3-24, Drainage. As noted in the finding on this page, the Project will result in a fairly large increase in impervious surface area, and it seems counter to first state that the increases in runoff will be negligible. This conclusion might be reframed to state that the increase in runoff will be mitigated by the proposed onsite retention system and other LID features as needed. Other green infrastructure measures could be considered to offset the increase in impermeability, including the potential for installation of green roofs.*

Section 3.8.3, Drainage of the Final EA will be updated to clarify that the increase in Project-related stormwater runoff will be sufficiently mitigated by the proposed onsite retention system and other LID features as needed.

f. *Pages 3-31 - 3-32, Parking. Transit, Pedestrian and Bicycle Facilities. OPSD notes that right-sizing parking for the Project and the quality of transit service and the pedestrian and bicycle facilities on- and off-site are all critical to mitigating the impacts of additional residential density and increased number of mix of customers and visitors to the site. We appreciate that shared parking is being proposed as a mitigation measure and that the number of parking spaces is proposed to be significantly reduced from what would otherwise be required by code. OPSD supports measures to minimize parking and adoption of other measures, including car share that promote a shift from reliance on individual auto trips to transit, micromobility, and walking and biking to get around.*

The HHFDC acknowledges that the OPSD supports mitigation measures that right-sizing parking for the Project and that promote a shift from reliance on individual auto trips.

g. *Pages 3-35 — 3-36, Impact on existing schools. The final EA should identify the number of school-age residents anticipated at Project buildout and existing school enrollment capacity to support the finding that the Project will not have an impact on existing schools in the vicinity.*

The Final EA will include an approximate number of school-age residents anticipated at Project buildout and existing school enrollment capacity.

h. *Page 5-1, Hawai'i State Plan. HRS Chapter 226, commonly referred to as the Hawai'i State Plan, is not a static document and has been amended frequently since 1991. OPSD recommends deletion of the phrase, "recently revised in 1991."*

The Final EA will be updated to remove the phrase, "recently revised in 1991."

i. *Section 5.3, Hawai'i 2050 Sustainability Plan. The 2050 Sustainability Plan published in 2008 discussed in this section has been substantially revised and reissued by OPSD as of June 2021. This section should be updated for the final EA.*

The Final EA will include an updated discussion of the *2021* Hawai'i 2050 Sustainability Plan.

3. *OPSD Approval of TOD Conceptual Development Plans. HRS § 225M-2(b)(10) designates OPSD as the lead agency for coordinating and advancing State smart growth and TOD planning statewide. Under HRS § 225M(b)(10)(H), OP is responsible for approving State agency development plans (conceptual land use plans) for parcels along the rail transit corridor. As noted earlier, the Kahului Civic Center Mixed-Use Complex is a priority catalytic project for the State, with the potential to create a vibrant TOD community anchored by the civic center and possible new library co-located with affordable housing and the Central Maui Transit Hub.*

   By this memorandum, OPSD concurs with publication of a Final Environmental Assessment with a Finding of No Significant Impact for the Project, conditioned by adherence to applicable code requirements and use of best practices and proposed mitigation measures in the implementation of the Project. Pursuant to our TOD lead agency responsibilities, OPSD hereby approves the HHFDC/DAGS Conceptual Master Plan and its program elements for the Kahului Civic Center Mixed-Use Project to guide the procurement of facility design and development services. We acknowledge that the plan is conceptual in nature and that many of the plan elements may change as the Project evolves. We encourage the incorporation of proposed mitigation measures in Project procurement, design, and construction and would appreciate continued communication and updates from HHFDC and DAGS on further planning and implementation of the proposed facilities.

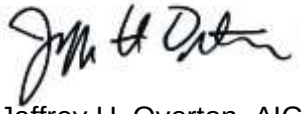
The HHFDC acknowledges that OPSD is designated as the lead agency for coordinating and advancing State smart growth and TOD planning statewide, per HRS § 225M-2(b)(10).

The HHFDC appreciates the OPSD's approval of the Conceptual Site Plan and concurrence with the publication of a Final Environmental Assessment with a Finding of No Significant Impact for the Project. Proposed best practices and mitigation measures listed in the Final EA will be incorporated and implemented in Project procurement, design, and construction phases. The HHFDC and DAGS will continue to communicate and coordinate with OPSD as necessary.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

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

Mar 4, 2022

G70
Attention: Mr. Jeff Overton
111 South King Street, Suite 170
Honolulu, Hawaii 96813

via email: KahuluiEAcomments@g70.design

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment (AFNSI) for the Proposed **Kahului Civic Center Mixed-Use Complex** located at Kahului, Island of Maui; TMK: (2) 3-7-004:003 (por.) on behalf of HHFDC

Thank you for the opportunity to review and comment on the subject matter. In addition to our previous comments dated February 22, 2022, enclosed are comments from the Division of Forestry & Wildlife on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
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

Jan 27, 2022

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_ Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Draft Environmental Assessment (AFNSI) for the Proposed **Kahului Civic Center Mixed-Use Complex**
LOCATION: Kahului, Island of Maui; TMK: (2) 3-7-004:003 (por.)
APPLICANT: G70 on behalf of HHFDC

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on January 23, 2022 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf

Please submit any comments by **February 18, 2022**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at darlene.k.nakamura@hawaii.gov. Thank you.

BRIEF COMMENTS:

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
(☑) Comments are included/attached.

Signed: DGS
Print Name: DAVID G. SMITH, Administrator
Division: Division of Forestry and Wildlife
Date: Mar 3, 2022

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

March 3, 2022

MEMORANDUM *Log no. 3503*

TO: RUSSELL Y. TSUJI, Land Administrator
Land Division

FROM: DAVID G. SMITH, Administrator
Division of Forestry and Wildlife

SUBJECT: **Division of Forestry and Wildlife Comments for the Draft Environmental Assessment (DEA) and Anticipated Findings of No Significant Impact (AFNSI) for the Proposed Kahului Civic Center Mixed-Use Complex on Maui**

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments regarding DEA-AFNSI for the proposed Kahului Civic Center mixed-use complex project located at the intersection of West Kaʻahumanu Avenue and Kane Street on the island of Maui, TMK: (2) 3-7-004:003 (por.). The proposed project consists of the development of 300 multi-family dwelling units with approximately 414 parking spaces and a 66,000 square foot Civic Center with approximately 182 parking spaces. The Civic Center will include State office space, classroom and support space for the State Department of Education (DOE) McKinley Community School for Adults (MCSA) – Maui Campus, and space for a new Kahului Public Library. Approximately 5,000 square feet of community-oriented commercial space may be included in either the multi-family housing building(s) or the Civic Center. The Project will also include new landscaping, site improvements, and off-site vehicular and pedestrian facilities improvements. Demolition of existing buildings and structures and partial removal of a stone wall will be required to accommodate the project.

We appreciate and concur with mitigation measures included in the DEA-AFNSI that are intended to avoid construction and operational impacts to State-listed species such as the Hawaiian Hoary Bat or ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*), Blackburn's Sphinx Moth (BSM; *Manduca blackburni*), and seabirds. Please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf for illustrations and further guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawaiʻi. We also appreciate the measures outlined to use native plant species and to minimize the movement of soil and plant material to prevent the spread of invasive species. DOFAW provides the following additional comments on the potential of the proposed work to affect listed species in the vicinity of the project area.

State-listed waterbirds such as the Hawaiian Duck (*Anas wyvilliana*), Hawaiian Stilt (*Himantopus mexicanus knudseni*), Hawaiian Coot (*Fulica alai*), and Hawaiian Goose or Nēnē (*Branta sandvicensis*) could potentially occur in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction activities, all activities within 100 feet (30 meters) should cease, and the bird should not be approached. Work may continue after the bird leaves the area of its own accord. If a nest is discovered at any point, please contact the Maui Branch DOFAW Office at (808) 984-8100.

DOFAW is concerned about attracting vulnerable birds to areas that may host nonnative predators such as cats, rodents, and mongoose. Additionally, the development of a community park is likely to increase the number of users and may generate more trash. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 295-1123 or paul.m.radley@hawaii.gov.

Sincerely,

DAVID G. SMITH
Administrator

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

David G. Smith, Administrator
State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 621
Honolulu, HI 96809

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Smith,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated March 3, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *We appreciate and concur with mitigation measures included in the DEA-AFNSI that are intended to avoid construction and operational impacts to State-listed species such as the Hawaiian Hoary Bat or 'Ōpe'ape'a (Lasiurus cinereus semotus), Blackburn's Sphinx Moth (BSM; Manduca blackburni), and seabirds. Please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf for illustrations and further guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i. We also appreciate the measures outlined to use native plant species and to minimize the movement of soil and plant material to prevent the spread of invasive species. DOFAW provides the following additional comments on the potential of the proposed work to affect listed species in the vicinity of the project area.*

   State-listed waterbirds such as the Hawaiian Duck (Anas wyvilliana), Hawaiian Stilt (Himantopus mexicanus knudseni), Hawaiian Coot (Fulica alai), and Hawaiian Goose or Nēnē (Branta sandvicensis) could potentially occur in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction activities, all activities within 100 feet (30 meters) should cease, and the bird should not be approached. Work may continue after the bird leaves the area of its own accord. If a nest is discovered at any point, please contact the Maui Branch DOFAW Office at (808) 984-8100.

The HHFDC acknowledges that State-listed waterbirds may potentially occur in the vicinity of the Project site. If any State-listed waterbirds are present during construction, all activities within 100 feet (30 meters) will cease, and the bird(s) will not be approached. If a nest is discovered during construction, the DLNR-DOFWAW, Maui Branch Office will be contacted.

2. *DOFAW is concerned about attracting vulnerable birds to areas that may host nonnative predators such as cats, rodents, and mongoose. Additionally, the development of a community park is likely to increase the number of users and may generate more trash. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.*

   We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible.

The Project does not involve the development of a community park at this time. The HHFDC will contact the DLNR-DOFWAW should the scope of the Project change significantly.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

County of Maui Agencies

MICHAEL P. VICTORINO
Mayor

LORI TSUHAKO
Director

LINDA R. MUNSELL
Deputy Director



DEPARTMENT OF HOUSING
& HUMAN CONCERNS
COUNTY OF MAUI
2200 MAIN STREET, SUITE 546
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7805

January 25, 2022

G70
Attn: Jeff Overton
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: HRS CHAPTER 343, DEA-AFONSI – KAHULUI CIVIC CENTER MIXED-USE COMPLEX TMK: (2) 3-7-004:003 (POR.) LOCATED ON THE CORNER OF W. KA'AHUMANU AVENUE AND KANE STREET, KAHULUI, MAUI, HAWAII

The Department has reviewed the information submitted for the above subject project. Based on our review, we have determined that the project is not subject to Chapter 2.96, Maui County Code, and does not require a residential workforce housing agreement. At the present time, the Department has no additional comments to offer.

Please contact Mr. Buddy Almeida, Housing Administrator, at (808) 270-7351 if you have any questions.

Sincerely,

LORI TSUHAKO, LSW, ACSW
Director of Housing and Human Concerns

xc: Buddy Almeida, Housing Administrator

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Ms. Lori Tsuhako, LSW, ACSW, Director
Department of Housing & Human Concerns
County of Maui
2200 Main Street, Suite 546
Wailuku, HI 96793

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Ms. Tsuhako,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated January 25, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department has reviewed the information submitted for the above subject project. Based on our review, we have determined that the project is not subject to Chapter 2.96, Maui County Code, and does not require a residential workforce housing agreement. At the present time, the Department has no additional comments to offer.*

The HHFDC acknowledges the County Department of Housing & Human Concerns' determination that the Project is not subject to Maui County Code Chapter 2.96, and thus will not require a Residential Workforce Housing Agreement.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

MICHELE CHOUTEAU MCLEAN, AICP
Director

JORDAN E. HART
Deputy Director



DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAII 96793

RECEIVED
MAR 11 2022
G70

February 21, 2022

G70
Attn: Mr. Jeff Overton
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: COMMENTS ON DEA-AFONSI FOR THE PROPOSED KAHULUI CIVIC CENTER AND MIXED-USE COMPLEX PROJECT; TMK: (2) 3-7-004:003 (POR.) (EAC 2022/0003)

The Department of Planning (Department) is in receipt of the proposed Kahului Civic Center and Mixed-Use Complex Project's Draft Environmental Assessment - Anticipated Finding of No Significant Impact (DEA-AFONSI). The proposed project is to be located near the intersection of Kaahumanu Avenue and Kane Street in Kahului, and described as: approximately 300 multi-family dwelling units in two six story buildings (roughly) and two three level parking podiums (roughly) to provide approximately 414 parking spaces; and, an approximately 66,000 square foot civic center (roughly four stories) and a parking deck built over a surface parking lot to provide for approximately 182 parking spaces.

The Department provided Early Consultation comments on November 9, 2020. We note that many of our outstanding concerns were noted in that correspondence.

The Department offers the following comments for incorporation and analysis in the Project's Final Environmental Assessment (FEA):

1. The Department is supportive of a Kahului Civic Center project as it will provide much needed affordable housing and space for government offices in the heart of Kahului.

2. The Department is supportive of the Option 3 – Alternative Site Layout" for adaptive use of historic structures including the historic wall and maintaining existing mature trees and open space.

3. Some open space should remain at the north end of the project site to preserve the longstanding character of the location, to function as a recreational resource for the large number of residents anticipated, for the preservation of exiting mature trees and to assist in the mitigation of impacts to important mauka views from Kaahumanu Avenue.

4. Being a State Housing Project located on the Kaahumanu Transit Oriented Development (TOD) Corridor and abutting the County Transit Hub the design must improve circulation through the site. Please emphasize pedestrian and multiuse access throughout the property. Please provide a visually and physically direct pedestrian link from Kaahumanu Avenue to Vevau Street through the middle of the property, or at the east edge of the property into the County Transit Hub. The flow of nonvehicle traffic between the Project and the County transit hub needs to be planned for and coordinated with the County Department of Transportation.

5. Please emphasize the analysis of the following objectives and policies from the Hawaii State Planning Act in the FEA:

   A. *226-4 (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.*

   B. *226-6 (19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.*

   C. *226-11 (3) Take into account the physical attributes of areas when planning and designing activities and facilities.*

   D. *226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources. (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources. (b) To achieve the scenic, natural beauty, and historic resources objectives, it shall be the policy of this State to: (1) Promote the preservation and restoration of significant natural and historic resources. . . . (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 Hawai'i's ethnic and cultural heritage. (5) Encourage the design of developments and activities that complement the natural beauty of the islands.*

6. The project would also benefit from consultation with the Cultural Resources Commission as it is located within Kahului Historic District, which is listed in the State Inventory of Historic Places (though not formally listed in the Hawai'i or National Registers of Historic Places).

7. In the FEA, please emphasize and analyze HRS 226-19, through architectural design in fostering a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.

8. In the FEA, please emphasize and analyze HRS 226-13 by discussing how the Project proposes to reduce the threat to life and property from erosion, flooding, tsunamis,

hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.

9. In the FEA, please emphasize and analyze HRS 226-26 by discussing how the Project will provide the assurance of public safety and adequate protection of life and property for all people.

Thank you for the opportunity to comment on this project. Should you have any questions about the comments in this letter, please contact Scott Forsythe at (808) 270-8205.

Sincerely,

Jordan E. Hart
Deputy Director

xc: Clayton I. Yoshida, Planning Program Administrator, AICP (PDF)
Jackie Takakura, Acting Planning Program Administrator (PDF)
Kathleen Aoki, Planning Program Administrator (PDF)
Pam Eaton, Planning Program Administrator (PDF)
Scott Forsythe, Staff Planner (PDF)
Project File

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111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Mr. Jordan E. Hart, Deputy Director
Department of Planning (DP)
County of Maui
2200 Main Street, Suite 315
Wailuku, HI 96793

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Hart,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 21, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department is supportive of a Kahului Civic Center project as it will provide much needed affordable housing and space for government offices in the heart of Kahului*.

The HHFDC appreciates the County DP's support of the Project.

2. *The Department is supportive of the Option 3 Alternative Site Layout" for adaptive use of historic structures including the historic wall and maintaining existing mature trees and open space.*

Alternative D: Option 3 – "Alternative Site Layout" involves developing a program similar to the Project (approximately 300 dwelling units and 66,000 SF of civic space), while altering the siting and massing of buildings and parking areas, and/or modifying the open space and circulation pattern within the Site. Unfortunately, it is unfeasible to develop a program similar to the Project, preserve/adaptively use the historic structures on Site, and maintain the existing mature trees and open space on Site.

The HHFDC, DAGS and G70 consulted the HHF on March 18, 2022. As a result of the consultation, the Final EA includes the analysis of an Alternative E or a "Historic Properties Retention" alternative, which involves the consideration of two options whereby HHFDC and DAGS would prioritize the retention of existing historic properties. Alternative E: Option 1 would involve site development which prioritizes the in-situ preservation/retention of the existing 10,000 SF Administration Building and would result in an approximately 40% (or 114 unit) reduction of dwelling units and approximately 30% (or 13,000 SF) reduction of State office space in the Civic Center than the Proposed

Action. Alternative E: Option 2 would involve developing a program which mirrors the Proposed Action and would retain the Administration Building by making it available for relocation off-site.

A Draft AIS has been prepared for the Project in accordance with Hawai‘i Revised Statutes (HRS) §6E-8 and Hawai‘i Administrative Rules (HAR) §13-275, which includes proposed mitigation commitments for the historic buildings and structures on Site, which were vetted by Annalise Kehler of the Maui County (County) Cultural Resource Commission and Janet Six, County Archaeologist. The Draft AIS and proposed mitigation commitments will require review and approval by the Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD). As the Project moves through the entitlement process, the selected developer will comply with HRS §6E-8 and HAR §13-275 and abide by mitigation commitments approved by the DLNR SHPD.

The RFP will include a provision for the selected developer to consider preserving/relocating existing mature trees on Site where possible. Additionally, the Project involves the installation of significant new landscaping and trees which will border and be interspersed throughout open spaces on the Site.

3. *Some open space should remain at the north end of the project site to preserve the longstanding character of the location, to function as a recreational resource for the large number of residents anticipated, for the preservation of exiting mature trees and to assist in the mitigation of impacts to important mauka views from Kaahumanu Avenue.*

As conceptually designed, the Project involves the installation of a wide landscaped setback fronting West Ka‘ahumanu Avenue (north end of the Site). The proposed landscaped setback matches the landscape setback fronting the Queen Ka‘ahumanu Center to provide visual continuity along West Ka‘ahumanu Avenue, and will preserve mauka views along West Ka‘ahumanu Avenue. The Site is not within a designated view corridor and the Project will not impact visual resources identified in the *Maui Island Plan.* The RFP will include a provision for the selected developer to consider preserving/relocating existing mature trees on Site where possible.

4. *Being a State Housing Project located on the Kaahumanu Transit Oriented Development (TOD) Corridor and abutting the County Transit Hub the design must improve circulation through the site. Please emphasize pedestrian and multiuse access throughout the property. Please provide a visually and physically direct pedestrian link from Kaahumanu Avenue to Vevau Street through the middle of the property, or at the east edge of the property into the County Transit Hub. The flow of nonvehicle traffic between the Project and the County transit hub needs to be planned for and coordinated with the County Department of Transportation.*

The RFP will include a provision for the selected developer to promote pedestrian and multiuse access to and throughout the Site.

The HHFDC, DAGS and G70 coordinated with the County, Department of Transportation (MDOT) in 2019 to suggest the design of a shared driveway which would have facilitated direct pedestrian access to the Transit Hub. The MDOT decided it was necessary to provide a perimeter fence surrounding the Transit Hub to secure the site after operating hours; therefore, a direct pedestrian link to the Transit Hub is not feasible at this time.

5. *Please emphasize the analysis of the following objectives and policies from the Hawaii State Planning Act in the FEA:*
    A. *226-4 (2) A desired physical environment, characterized by beauty, cleanliness, quiet, table natural systems, and uniqueness, that enhances the mental and physical well-being of the people.*
    B. *226-6 (19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.*
    C. *226-11 (3) Take into account the physical attributes of areas when planning and designing activities and facilities.*
    D. *226-12 Objective and policies for the physical environment—scenic, natural beauty, and historic resources. (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources. (b) To achieve the scenic, natural beauty, and historic resources objectives, it shall be the policy of this State to: (1) Promote the preservation and restoration of significant natural and historic resources. . . . (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, structure, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage. (5) Encourage the design of developments and activities that complement the natural beauty of the islands.*

The Final EA will further elaborate on the Project's consistency with the above-listed objectives and policies of the *Hawai'i State Plan,* as applicable.

6. *The project would also benefit from consultation with the Cultural Resources Commission as it is located within Kahului Historic District, which is listed in the State Inventory of Historic Places (though not formally listed in the Hawai'i or National Registers of Historic Places).*

The HHFDC, DAGS and G70 met with Annalise Kehler of the County Cultural Resource Commission and Janet Six, County Archaeologist in December 2021, to discuss proposed mitigation commitments included in the Draft AIS prepared for the Project per HRS §6E-8 and HAR §13-275. The Draft AIS and proposed mitigation commitments will require review and approval by the DLNR, SHPD.

7. *In the FEA, please emphasize and analyze HRS 226-19, through architectural design in fostering a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.*

The Final EA will further elaborate on the Project's consistency with HRS 226-19, as applicable.

8. *In the FEA, please emphasize and analyze HRS 226-13 by discussing how the Project proposes to reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.*

The Final EA will further elaborate on the Project's consistency with HRS 226-13, as applicable.

9. *In the FEA, please emphasize and analyze HRS 226-26 by discussing how the Project will provide the assurance of public safety and adequate protection of life and property for all people.*

The Final EA will further elaborate on the Project's consistency with HRS 226-26, as applicable.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

MARC I. TAKAMORI
Director

MICHAEL B. DU PONT
Deputy Director



DEPARTMENT OF TRANSPORTATION
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

TELEPHONE: (808) 270-7511
FAX: (808) 270-7505

February 22, 2022

G70
Attn: Mr. Jeff Overton
111 S. King Street, Suite 170
Honolulu, HI 96813
via email: KahuluiEAcomments@g70.design

SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Kahului Civic Center Mixed-Use Complex Project; TMK: (2) 3-7-004:003; Kahului, Maui, Hawaii

Dear Mr. Overton,

Thank you for the opportunity to review and comment on the subject project. The Department of Transportation has no comment at this time.

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

Sincerely,

Marc Takamori
Director

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Mr. Marc Takamori, Director
Department of Transportation
County of Maui
200 South High Street
Wailuku, HI 96793

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Takamori,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 22, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The Department of Transportation has no comment at this time.*

The HHFDC acknowledges that the County Department of Transportation (DOT) has no comments at this time and will continue to consult with the DOT as necessary.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793

February 24, 2022

Jeff Overton
G70
via email: KahuluiEAcomments@g70.design

Dear Jeff Overton:

SUBJECT: KAHULUI CIVIC CENTER MIXED-USE COMPLEX
Draft Environmental Assessment and Anticipated Finding of No Significant Impact
TMK: (2) 3-7-004:003, Kahului, Maui, Hawaii

Thank you for the opportunity to comment on the subject project, which includes the construction of approximately 300 multi-family dwellings with 50% being affordable, a civic center comprised of State office space, commercial space, classroom and support space for the MCSA, and a new Kahului Library on approximately 4.722-acres of the 5.572-acre property.

As defined in Maui County Code (MCC) 14.01.040, subdivisions are **also** defined as "the construction of a building or group of buildings, other than a hotel, on a single lot, parcel, or site which will contain, result, or be divided into four or more dwelling units." Since the project is proposing 300 multi-family dwellings, the project is defined as a subdivision and shall be subject to subdivision requirements as indicated in MCC 14.05 and the Department's standards to provide an adequate water system for fire protection, domestic and irrigation service.

The subdivider shall comply with all rules, regulations, and procedures, as amended, of the Department of Water Supply, including, but not limited to the following:

- Maui County Code, Chapter 14.04 – Water Services
- Maui County Code, Chapter 14.05 – Subdivision Water System Requirements
- Maui County Code, Chapter 14.07 – Water System Development Fees
- Administrative Rules
- Water System Standards 2002

MCC, Chapter 14.05 – Subdivision Water System Requirements

- MCC 14.05.020 – Reservoirs/storage tanks, as amended. For "B-2 Business-Community" districts, storage capacity shall be determined on the basis of fire flow duration, maximum daily flow or 1,000 gallons per lot, whichever basis is greater. The maximum daily flow governs, requiring approximately 265,000 gallons of storage, which the 1,350,000-gallon Kahului Tank can provide.

- MCC 14.05.060 – Laterals, as amended. Provide a water service lateral from the water main.
  - Department records indicate that the property is served by an existing 2-inch water meter (Account #9166534192). The report indicates an anticipated water demand of 171,000 gallons per day and proposes a new 4-inch water meter. Water system improvements will be assessed based on the domestic and irrigation water demand calculations submitted during the building permit process. If a 4-inch water meter is warranted, cut and plug of the existing water meter lateral at the main for the 2-inch water meter shall be required.
  - Transit Hub project is under construction, which involves installation of a new 1-inch water meter to service the facility.

- MCC 14.05.090 – Fire Protection, as amended. For "B-2 Business-Community" districts, install fire hydrants spaced at 250 feet along the existing roadways. The minimum required fire flow for "B-2 Business-Community" districts is 2,000 gallons per minute (gpm) and shall not exceed the maximum velocity of 10 feet per second, in accordance with Section 111.06 – Pipeline Sizing of the Water System Standards 2002.
  - Kaahumanu Avenue: The existing 12-inch waterline along Kaahumanu Avenue is able to provide the fire protection to the portion of the property fronting Kaahumanu Avenue. However, in addition to the existing fire hydrant 2, a new fire hydrant shall be installed to meet the 250-foot spacing.
  - Kane and Vevau Street: The existing 8-inch waterline along Kane and Vevau Street are looped and therefore able to provide the fire protection to the portion of the property fronting Kane and Vevau Street. However, in addition to the existing fire hydrant 119 and 118 along Kane Street and the two fire hydrants installed for the Kahului Lani 1 project along Vevau Street, a new fire hydrant along Kane Street shall be installed to meet the 250-foot spacing.

- MCC 14.05.120 – Construction plans, as amended. Prior to commencement of construction, all water system improvements require submittal of construction plans (24"x36") stamped and signed by a licensed engineer for the Department's review and approval, in accordance with Section 112 – Construction Plans of the Water System Standards 2002. Construction work shown on the approved plans shall be completed by a licensed contractor at the property owner's expense.

- Prior to acceptance of the water system improvements, the subdivider shall enter into an agreement and provide a 15% surety bond/security to insure repair and replacement of the improvements for a period of one year.

- MCC 14.05.170 – Ownership of installed water system improvements, as amended. Deliver to our department perpetual easements required for all portions of the water system improvements installed in other than publicly owned real property (i.e., waterlines, fire hydrants). We will prepare the necessary documents after the following are provided from the subdivider:
  - Metes and bounds description and a map of the easement area on 8-1/2"x11" paper, both prepared and stamped by a surveyor licensed in the State of Hawaii.
  - Current Title Report for the subject property to verify current ownership.
  - Mailing Address
  - Name and title of person signing the agreement

Administrative Rules, Title 16, Chapter 201 – Relating to Water Service

The project will need to meet the criteria for water service outlined in the Administrative Rules, as amended. The Administrative Rules clarify large quantity of water usage and the tiers for an applicant's request for new or additional water service from the Department. The 2022 Central Maui Water System currently allows an applicant to request up to 120,000 gallons per day (gpd) of new or additional water service. Please be advised that the requested amount is updated at the beginning of each year.

- Affordable Housing Units: These units may qualify as an exception to the Administrative Rules by submitting to the Department a copy of an executed, recorded, and valid residential workforce housing agreement between the developer and the County.

- As defined in MCC 19.04.040, county, state, or federal public facilities may qualify as an exception to the Administrative Rules.

Administrative Rules, Title 16, Chapter 202 – Relating to Water Meter Reservation

You may reserve an allocation of water ("water meter reservation") if all required land use entitlements have been obtained. Meter size shall be verified based on the Department's Water Meter Sizing Worksheet. If approved, the following shall be required:

- Reservation of Available Service Capacity form, completed and signed by the property owner.
- Payment of a deposit equal to the Water System Development Fee for the water meter(s).
- You will need to complete the water system improvements, including approval of construction plans and final inspection within the 5-year reservation period. If you have not completed the foregoing within the 5-year reservation period, the water meter reservation shall expire, and the deposit paid by the applicant shall be forfeited, with no credit of any kind toward any future application.

You also have the option to proceed without a water meter reservation, in which case, review and approval of a new water meter(s) will be based on the availability of water and the Department's rules and regulations in effect at the time you have passed final inspection by our Department.

Building Permit Requirements

Building permit requirements include, but are not limited to the following:

- The Department of Fire and Public Safety (DFPS) has jurisdiction during the building permit process. We will work with them on verifying that the existing water system is adequate to provide the required fire flow to the property.

- Submit "domestic and irrigation water demand calculations" or base calculations for the property. Domestic and irrigation water demand calculations are represented by the Non-Residential Water Meter Sizing Worksheet, prepared, signed, and stamped by a licensed (State of Hawaii) professional engineer or architect. Please be advised that the worksheet shall include all water-using fixtures being added, to remain and or/removed that are serviced by the affected meter and to provide a separate sheet for each structure (e.g. Building 1, Building 2).

- Based on the height of the proposed building (six stories), there is likely inadequate on-site pressure. Therefore, an elevation agreement will need to be executed. This agreement states

that the owner understands that the property is situated at such an elevation that it cannot be assured a dependable supply of water and the owner accepts such water pressure as the department is able to provide.

- We will not approve the building permit until the water system improvements have been completed and accepted, along with any other applicable requirements, including construction, final inspection, and full closeout documents (easements, as-builts, repair and replacement agreement and surety bond, payment of fees and deposits, etc.).

If you have any questions, please contact Tammy Yeh of our Engineering Division at (808) 270-7682 or at tammy.yeh@co.maui.hi.us. Engineering Division's main number is (808) 270-7835.

Sincerely,

WENDY TAOMOTO, P.E.
Engineering Program Manager

TY

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Ms. Wendy Taomoto, P.E., Program Manager
Department of Water Supply
County of Maui
200 South High Street
Wailuku, HI 96793

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Ms. Taomoto,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 24, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *As defined in Maui County Code (MCC) 14.01.040, subdivisions are <u>also</u> defined as "the construction of a building or group of buildings, other than a hotel, on a single lot, parcel, or site which will contain, result, or be divided into four or more dwelling units." Since the project is proposing 300 multi-family dwellings, the project is defined as a subdivision and shall be subject to subdivision requirements as indicated in MCC 14.05 and the Department's standards to provide an adequate water system for fire protection, domestic and irrigation service*.

The HHFDC acknowledges that the Project is subject to MCC Sections 14.01.040 and 14.05. Adequate water system for fire protection, domestic and irrigation service will be provided.

2. *The subdivider shall comply with all rules, regulations, and procedures, as amended, of the Department of Water Supply, including, but not limited to the following:*

- *Maui County Code, Chapter 14.04 – Water Services*
- *Maui County Code, Chapter 14.05 – Subdivision Water System Requirements*
- *Maui County Code, Chapter 14.07 – Water System Development Fees*
- *Administrative Rules*
- *Water System Standards 2002*

The developer will comply with all rules, regulations, and procedures, as amended, of the County Department of Water Supply.

3. *MCC, Chapter 14.05 – Subdivision Water System Requirements*
   - *MCC 14.05.020 – Reservoirs/storage tanks, as amended. For "B-2 Business-Community" districts, storage capacity shall be determined on the basis of fire flow duration, maximum daily flow or 1,000 gallons per lot, whichever basis is greater. The maximum daily flow governs, requiring approximately 265,000 gallons of storage, which the 1,350,000-gallon Kahului Tank can provide.*
   - *MCC 14.05.060 – Laterals, as amended. Provide a water service lateral from the water main.*
     - *Department records indicate that the property is served by an existing 2-inch water meter (Account #9166534192). The report indicates an anticipated water demand of 171,000 gallons per day and proposes a new 4-inch water meter. Water system improvements will be assessed based on the domestic and irrigation water demand calculations submitted during the building permit process. If a 4-inch water meter is warranted, cut and plug of the existing water meter lateral at the main for the 2-inch water meter shall be required.*
     - *Transit Hub project is under construction, which involves installation of a new 1-inch water meter to service the facility.*
   - *MCC 14.05.090 – Fire Protection, as amended. For "B-2 Business-Community" districts, install fire hydrants spaced at 250 feet along the existing roadways. The minimum required fire flow for "B-2 Business-Community" districts is 2,000 gallons per minute (gpm) and shall not exceed the maximum velocity of 10 feet per second, in accordance with Section 111.06 – Pipeline Sizing of the Water System Standards 2002.*
     - *Kaahumanu Avenue: The existing 12-inch waterline along Kaahumanu Avenue is able to provide the fire protection to the portion of the property fronting Kaahumanu Avenue. However, in addition to the existing fire hydrant 2, a new fire hydrant shall be installed to meet the 250-foot spacing.*
     - *Kane and Vevau Street: The existing 8-inch waterline along Kane and Vevau Street are looped and therefore able to provide the fire protection to the portion of the property fronting Kane and Vevau Street. However, in addition to the existing fire hydrant 119 and 118 along Kane Street and the two fire hydrants installed for the Kahului Lani 1 project along Vevau Street, a new fire hydrant along Kane Street shall be installed to meet the 250-foot spacing.*
   - *MCC 14.05.120 – Construction plans, as amended. Prior to commencement of construction, all water system improvements require submittal of construction plans (24"x36") stamped and signed by a licensed engineer for the Department's review and approval, in accordance with Section 112 – Construction Plans of the Water System Standards 2002. Construction work shown on the approved plans shall be completed by a licensed contractor at the property owner's expense.*
   - *Prior to acceptance of the water system improvements, the subdivider shall enter into an agreement and provide a 15% surety bond/security to insure repair and replacement of the improvements for a period of one year.*

- *MCC 14.05.170 – Ownership of installed water system improvements, as amended. Deliver to our department perpetual easements required for all portions of the water system improvements installed in other than publicly owned real property (i.e., waterlines, fire hydrants). We will prepare the necessary documents after the following are provided from the subdivider:*
  - *Metes and bounds description and a map of the easement area on 8-1/2"x11" paper, both prepared and stamped by a surveyor licensed in the State of Hawaii.*
  - *Current Title Report for the subject property to verify current ownership.*
  - *Mailing Address*
  - *Name and title of person signing the agreement*

The developer will comply with MCC Chapter 14.05, *Subdivision Water System Requirements*. Per MCC §14.05.090, one new fire hydrant shall be installed on West Ka'ahumanu Avenue and one new fire hydrant shall be installed along Kane Street, to meet the 250-foot spacing requirement.

4. *Administrative Rules, Title 16, Chapter 201 – Relating to Water Service*
   The project will need to meet the criteria for water service outlined in the Administrative Rules, as amended. The Administrative Rules clarify large quantity of water usage and the tiers for an applicant's request for new or additional water service from the Department. The 2022 Central Maui Water System currently allows an applicant to request up to 120,000 gallons per day (gpd) of new or additional water service. Please be advised that the requested amount is updated at the beginning of each year.
   - *Affordable Housing Units: These units may qualify as an exception to the Administrative Rules by submitting to the Department a copy of an executed, recorded, and valid residential workforce housing agreement between the developer and the County.*
   - *As defined in MCC 19.04.040, county, state, or federal public facilities may qualify as an exception to the Administrative Rules.*

The developer will comply with Hawai'i Administrative Rules, Title 16, Chapter 201, *Relating to Water Service*. The HHFDC acknowledges that the Project may be exempt per MCC §19.04.040.

5. *Administrative Rules, Title 16, Chapter 202 – Relating to Water Meter Reservation*
   You may reserve an allocation of water ("water meter reservation") if all required land use entitlements have been obtained. Meter size shall be verified based on the Department's Water Meter Sizing Worksheet. If approved, the following shall be required:
   - *Reservation of Available Service Capacity form, completed and signed by the property owner.*
   - *Payment of a deposit equal to the Water System Development Fee for the water meter(s).*
   - *You will need to complete the water system improvements, including approval of construction plans and final inspection within the 5-year*

reservation period. If you have not completed the foregoing within the 5-year reservation period, the water meter reservation shall expire, and the deposit paid by the applicant shall be forfeited, with no credit of any kind toward any future application.

You also have the option to proceed without a water meter reservation, in which case, review and approval of a new water meter(s) will be based on the availability of water and the Department's rules and regulations in effect at the time you have passed final inspection by our Department.

The developer will comply with Hawai'i Administrative Rules, Title 16, Chapter 202, *Relating to Water Meter Reservation*.

6. *Building Permit Requirements*
   Building permit requirements include, but are not limited to the following:
   - *The Department of Fire and Public Safety (DFPS) has jurisdiction during the building permit process. We will work with them on verifying that the existing water system is adequate to provide the required fire flow to the property.*
   - *Submit "domestic and irrigation water demand calculations" or base calculations for the property. Domestic and irrigation water demand calculations are represented by the Non-Residential Water Meter Sizing Worksheet, prepared, signed, and stamped by a licensed (State of Hawaii) professional engineer or architect. Please be advised that the worksheet shall include all water-using fixtures being added, to remain and or/removed that are serviced by the affected meter and to provide a separate sheet for each structure (e.g. Building 1, Building 2).*
   - *Based on the height of the proposed building (six stories), there is likely inadequate on-site pressure. Therefore, an elevation agreement will need to be executed. This agreement states that the owner understands that the property is situated at such an elevation that it cannot be assured a dependable supply of water and the owner accepts such water pressure as the department is able to provide.*
   - *We will not approve the building permit until the water system improvements have been completed and accepted, along with any other applicable requirements, including construction, final inspection, and full closeout documents (easements, as-builts, repair and replacement agreement and surety bond, payment of fees and deposits, etc.).*

The developer will coordinate with the County DWS and Department of Fire and Public Safety throughout the Building permit application process. The developer will submit a Non-Residential Water Meter Sizing Worksheet (with domestic and irrigation water demand calculations) and an elevation agreement to the County, as necessary.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Organizations and Individuals

Institute for Astronomy
Office of the Director

UNIVERSITY of HAWAI'I MĀNOA

February 18, 2022

Via email:

State of Hawai'i, Hawaii Housing Finance & Development Corporation (HHFDC)
677 Queen Street, Suite 300
Honolulu, HI 96813

Attention: Ms. Sery Berhanu (Sergut.berhanu@hawaii.gov)

Re: Kahului Civic Center Mixed-Use Complex—Draft EA (AFNSI)
TMK: (2) 3-7-004:003 (por.)
Wailuku District, Island of Maui

Dear Ms. Berhanu:

Thank you for the opportunity to comment on the draft environmental assessment (EA) for the proposed Kahului Civic Center Mixed-Use Complex project (published January 23, 2022), specifically with respect to issues and concerns regarding light pollution.

The University of Hawai'i Institute for Astronomy (IfA) conducts research in astronomy using telescopes located on Haleakalā and Maunakea and operated by IfA and our partner institutions. Both Haleakalā and Maunakea are among the best sites in the world for astronomical facilities because of their elevation, clear skies, favorable atmospheric conditions, and low levels of light pollution. Hawai'i-based observatories have played major roles in the advancement of astronomy and astrophysics for over 50 years and are well positioned to remain at the forefront of astronomical research for decades to come.

Because of the outstanding quality and productivity of these facilities, IfA is acutely concerned about negative impacts on astronomy from increased light pollution. Our work to combat light pollution has also brought us into contact with parties concerned about light pollution for other reasons, including impacts on wildlife (particularly seabirds) and on human health. While IfA's comments focus on the impacts of light pollution on astronomy, appropriate mitigation measures also help to reduce non-astronomy impacts.

With that background, we offer the following comments:

Any new or additional artificial light at night has an adverse effect on astronomical observations by increasing the night sky brightness. All observations performed by the Pan-STARRS observatories, the ATLAS telescope, and the Faulkes telescope on Haleakalā are sky-background limited. This means that there is a natural sky brightness coming from airflow and zodiacal light. Artificial light increases the sky brightness, thereby decreasing the sensitivity of the telescopes.

2680 Woodlawn Drive
Honolulu, Hawai'i 96822
An Equal Opportunity/Affirmative Action Institution

Some of the observations performed by the Air Force telescopes atop Haleakalā are also sky-background limited, so those observations, performed for national defense purposes, will also be adversely affected.

Appropriate steps to reduce the impact on the observatories would include:

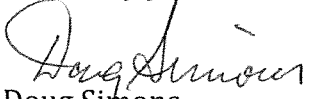
1. The minimum possible amount of outdoor lighting should be used. This should be specified objectively as opposed to comparing to nearby buildings' brightness. IfA understands that the project site is located in an urban area where nighttime lighting is already prevalent, and also appreciates the draft EA's note that exterior lights used for this proposed project will not result in light spillage.
2. Any outdoor lighting must follow the Maui County lighting ordinance: all lighting must be fully shielded, i.e., all lighting fixtures must emit zero light above the horizontal plane. IfA appreciates that the draft EA notes that outdoor/exterior lights will be shielded "to the maximum extent possible". However, this wording could be open to interpretation; a note that outdoor/exterior lighting will be "fully shielded" is less ambiguous.
3. HRS §201-8.5 is insufficient for protection of both migrating seabirds and astronomical observations. This statute allows the use of LEDs with a correlated color temperature (CCT) up to 4000 K; these LEDs emit a large amount of blue light which brightens the night sky more than any other color of light, and is especially damaging for astronomy. Ideally, any white light used for this project would be limited to a CCT of 2700 K or below to minimize the amount of blue light emitted. In general, the use of blue-wavelength light should be limited as much as possible.
4. The best choices for outdoor/exterior lighting are filtered LED lights, or amber LED lights.

We also note that Maui County Council is presently considering Bill 21 (2022) which will revise the Maui County Lighting Ordinance. Among the proposed measures in this bill are restrictions on the amount of blue and green light: specifically, to require that new outdoor lights emit less than 5% of their energy at wavelengths shorter than 550 nm. The outdoor lighting for the new civic center should conform to the new requirements for outdoor lighting on Maui.

Finally, we note that there is a strong need for further dialog with the University regarding light pollution in Maui County.

Thank you for your consideration of these comments and attention to IfA's concerns. If you have questions or need further detail regarding these comments, please do not hesitate to contact the undersigned or Richard Wainscoat (rjw@hawaii.edu).

Very truly yours,



Doug Simons
Director

cc: Mr. Jeff Overton, G70 (jeff@g70.design)

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Doug Simons, Director
University of Hawai'i Mānoa
Institute for Astronomy
2680 Woodlawn Drive
Honolulu, HI 96822

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Simons,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 18, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *Any new or additional artificial light at night has an adverse effect on astronomical observations by increasing the night sky brightness. All observations performed by the Pan-STARRS observatories, the ATLAS telescope, and the Faulkes telescope on Haleakalā are sky-background limited. This means that there is a natural sky brightness coming from airflow and zodiacal light. Artificial light increases the sky brightness, thereby decreasing the sensitivity of the telescopes.*

   Some of the observations performed by the Air Force telescopes atop Haleakalā are also sky- background limited, so those observations, performed for national defense purposes, will also be adversely affected.

   Appropriate steps to reduce the impact on the observatories would include:
   - *The minimum possible amount of outdoor lighting should be used. This should be specified objectively as opposed to comparing to nearby buildings' brightness. IfA understands that the project site is located in an urban area where nighttime lighting is already prevalent, and also appreciates the draft EA's note that exterior lights used for this proposed project will not result in light spillage.*
   - *Any outdoor lighting must follow the Maui County lighting ordinance: all lighting must be fully shielded, i.e., all lighting fixtures must emit zero light above the horizontal plane. IfA appreciates that the draft EA notes that outdoor/exterior lights will be shielded "to the maximum extent possible". However, this wording could be open to interpretation; a note that outdoor/exterior lighting will be "fully shielded" is less ambiguous.*
   - *HRS §201-8.5 is insufficient for protection of both migrating seabirds and astronomical observations. This statute allows the use of LEDs with a*

correlated color temperature (CCT) up to 4000 K; these LEDs emit a large amount of blue light which brightens the night sky more than any other color of light, and is especially damaging for astronomy. Ideally, any white light used for this project would be limited to a CCT of 2700 K or below to minimize the amount of blue light emitted. In general, the use of blue-wavelength light should be limited as much as possible.

- *The best choices for outdoor/exterior lighting are filtered LED lights, or amber LED lights.*

The Project will comply with Maui County Code, Chapter 20.35, *Outdoor Lighting*.

2. *We also note that Maui County Council is presently considering Bill 21 (2022) which will revise the Maui County Lighting Ordinance. Among the proposed measures in this bill are restrictions on the amount of blue and green light: specifically, to require that new outdoor lights emit less than 5% of their energy at wavelengths shorter than 550 nm. The outdoor lighting for the new civic center should conform to the new requirements for outdoor lighting on Maui.*

The Project will comply with Maui County Code, Chapter 20.35, *Outdoor Lighting*, as amended by Bill 21 (2022).

3. *Finally, we note that there is a strong need for further dialog with the University regarding light pollution in Maui County.*

The HHFDC acknowledges that further dialog is needed with the University of Hawai'i Mānoa, Institute for Astronomy regarding light pollution in Maui County.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

The Waterfront Apartments at Kahului
50 Vevau Street Kahului, Hawaii 96732

February 21, 2022

Mr. Jeff Overton
Via Email: kahuluieacomments@g70.design

Re: Comments on Draft Environmental Assessment for the Kahului Civic Center and Mixed-Use Complex Project TMK (2) 3-7-004:003

Dear Mr. Overton,

Below please find our comments and concerns with respect to the proposed Kahului Civic Center and Mixed-Use Complex Project ("Project") and the Draft Environmental Assessment ("DEA"). We appreciate the opportunity to clarify how the Project may impact The Waterfront Apartments at Kahului.

1. In general, the DEA and other related documents made available for the Project do not contain adequate information to evaluate the significance of the potential impacts (social, economic, environmental) on the surrounding environment, including impacts to the directly adjacent to Waterfront Apartments.

2. The DEA contains several preliminary site plans identifying "School Street". School Street, however, no longer exists. The Waterfront Apartments occupy the former location of School Street. It is unclear how the absence of the formerly adjacent School Street will affect the site plans, which show one of the two Project residential buildings located very close to the lot line the Project shares with the Waterfront Apartments, and has trees planned that would appear to encroach onto the Waterfront Apartments.

3. The Project's six-story residential buildings will be 50% percent taller than the four-story Waterfront Apartments. The documents provided do not have sufficient details concerning the height of the buildings (or other dimensions) within the Project, and how the buildings will affect the surrounding existing structures, or neighborhood characteristics, including impacts to view planes, sunlight, air quality, and noise at the Waterfront Apartments.

4. Vevau Street, which is to the rear of the Project is narrow and has a significant and recurring number of homeless encampments. A detailed plan concerning contemporaneous improvements to Vevau Street with the Project would be helpful.

5. There is inadequate information about how the Project's addition of approximately 300 apartments will affect water and sewer rates, or other utilities for other utility customers, including the Waterfront Apartments.

We appreciate the opportunity to offer these comments on the DEA and Project, which are provided pursuant to the formal DEA commenting process. We respectfully reserve all rights with regard to the DEA and the Project.

Mahalo for your consideration of the foregoing.

Sincerely,

/s/ Richard Sellers

Asset Manager

Robert and Mark Day Company, LLC

The Waterfront Apartments at Kahului

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Richard Sellers
Asset Manager
The Waterfront Apartments at Kahului
50 Vevau Street
Kahului, HI 96732

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Mr. Sellers,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 21, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *In general, the DEA and other related documents made available for the Project do not contain adequate information to evaluate the significance of the potential impacts (social, economic, environmental) on the surrounding environment, including impacts to the directly adjacent to Waterfront Apartments.*

Chapter 3 of the Final EA describes the existing environmental setting and conditions, evaluates potential impacts, and proposes mitigation measures to diminish and/or resolve potential impacts on identified natural, cultural, and socioeconomic resources. Numerous special studies have been prepared for the Project by qualified consultants; findings and conclusions of the studies are summarized in Chapter 3 of the Final EA, and studies in their entirety are available in the Appendices of the Final EA.

2. *The DEA contains several preliminary site plans identifying "School Street". School Street, however, no longer exists. The Waterfront Apartments occupy the former location of School Street. It is unclear how the absence of the formerly adjacent School Street will affect the site plans, which show one of the two Project residential buildings located very close to the lot line the Project shares with the Waterfront Apartments, and has trees planned that would appear to encroach onto the Waterfront Apartments.*

The HHFDC acknowledges that School Street no longer exists adjacent to Tax Map Key parcels: (2) 3-7-004:001 and (2) 3-7-004:011, and the Conceptual Site Plan has been updated to remove the "School Street" label. The Project will conform to the development standards (including building setbacks) of the B-2, community business district per Maui County Code §19.18.050. The multi-family housing buildings and landscaping will not encroach on the adjacent Waterfront Apartments at Kahului.

3. *The Project's six-story residential buildings will be 50% percent taller than the four-story Waterfront Apartments. The documents provided do not have sufficient*

details concerning the height of the buildings (or other dimensions) within the Project, and how the buildings will affect the surrounding existing structures, or neighborhood characteristics, including impacts to view planes, sunlight, air quality, and noise at the Waterfront Apartments.

The Project will conform to the development standards (including height limits) of the B-2, community business district per Maui County Code §19.18.050. Chapter 3 of the Final EA includes discussion on visual and scenic resources (Section 3.13), air quality (Section 3.6), and noise conditions (Section 3.7). The Project will not obstruct any protected views or designated view corridors as designated in the County Maui Island Plan. Two conceptual aerial oblique views of the Project were prepared for the EA (Figure 2-3 and Figure 2-4); both illustrate views from public thoroughfares to evaluate the proposed height and massing in the context of the surrounding neighborhood. Additional view studies will be prepared for the Special Management Area Use permit application, to be conducted by the selected development partner.

4. *Vevau Street, which is to the rear of the Project is narrow and has a significant and recurring number of homeless encampments. A detailed plan concerning contemporaneous improvements to Vevau Street with the Project would be helpful.*

The Project does not involve improvements within the Vevau Street Right-of-Way (ROW). Improvements of the Vevau Street ROW are being undertaken separately by Catholic Charities Housing Development Corporation, the developer of Kahului Lani.

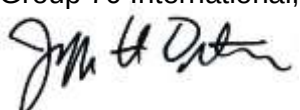
5. *There is inadequate information about how the Project's addition of approximately 300 apartments will affect water and sewer rates, or other utilities for other utility customers, including the Waterfront Apartments.*

Water and sewer rates are determined by the County Department of Water Supply, independent of the Project.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

HISTORIC HAWAIʻI FOUNDATION

680 Iwilei Road Suite 690, Honolulu HI 96817 • (808) 523-2900 • preservation@historichawaii.org • www.historichawaii.org

February 22, 2022

Sery Berhanu
Project Manager
State of Hawaiʻi, Hawaii Housing Finance & Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaiʻi 96813

Via email to: Sergut.berhanu@hawaii.gov

RE: Draft Environmental Assessment - Anticipated Finding of No Significant Impact (DEA-AFNSI)
State of Hawaiʻi, Hawaii Housing Finance & Development Corporation (HHFDC)
Kahului Civic Center Mixed-Use Complex
TMK: (2) 3-7-004:003 (por.)

Dear Sery Berhanu:

Historic Hawaiʻi Foundation (HHF) is providing comments under Chapter 343 of Hawaiʻi Revised Statutes on the draft environmental assessment (DEA) and anticipated finding of no significant impact (AFNSI) for the Kahului Civic Center Mixed-Use Complex.

The Project is a collaborative effort between the HHFDC and State of Hawaiʻi Department of Accounting and General Services. The Project primarily involves the construction of affordable and market-rate multi-family housing (multi-family housing) and a State Kahului Civic Center (Civic Center). Approximately 300 multi-family dwelling units (mixture of 1-, 2-, and 3-bedroom units) with approximately 414 parking spaces will be developed. An approximately 66,000- square foot Civic Center with approximately 182 parking spaces will be developed.

The Project will be implemented through a public-private partnership.

- HHFDC plans to issue a Request for Proposals (RFP), tentatively scheduled in 2022, to seek an eligible (multi-family housing) developer to develop a comprehensive master plan, and for the design, entitlement, construction, and leasehold ownership and operation of the multi-family housing (including ancillary parking) in one or more phases.

- The design, entitlements, and construction of the Civic Center (including ancillary parking) may be developed under a separate RFP.

The project is proposed to include demolition of the historic 1920 Kahului School building currently existing on the property and partial removal of the historic stone wall along W. Kaʻahumanu Avenue.

HHF disagrees with the Anticipated Finding of No Significant Impact and believes that it is premature and not warranted at this time.

As stated in Section 2.2 Description of Proposed Action:

> "It should be noted that the Conceptual Site Plan is conceptual in nature and the site layout, building massing and heights, parking count, and open space and circulation plan may change as the Project evolves. The developer selected through the RFP process will be required to engage the community and State and County agencies to obtain input on the final design of the Project. The feedback received by the developer and conditions imposed as the Project moves through the entitlement process, *may result in changes to the Conceptual Site Plan*" (emphasis added).

The project will have an effect on both historic properties:

- The 1920 School Building would be demolished completely. By definition, demolition of a historically-significant resource in an adverse effect and a significant impact.
- The stone-and-mortar wall exhibits two placards indicating a construction date of 1939 with the inscription "W.P.A.," referring to the Works Progress Administration. The W.P.A. or WPA was a widespread infrastructure and employment program established in 1935 as part of the New Deal, which aimed at restoring the U.S. economy after the Great Depression.

Section 2.2 continues to state that: "To the extent practicable, the Project design will strive to address and implement the urban design principles listed in the Wailuku-Kahului Community Plan (2002). The design will not be finalized until an RFP has been issued and a developer is selected. The RFP may require these urban design principles to be implemented by the developer and vetted by the community:

- Mixed-Uses – Create a vibrant community and live-work neighborhood by integrating a variety of uses within the Site.
- Building Scale – Consider the scale of the existing adjacent buildings and design the Project buildings so that they have a human-scale perspective
- Active Frontages – Create an interesting and inviting streetscape
- Alternative Modes of Transportation – Provide canopy trees, continuous and safe sidewalks, benches, and proper lighting to encourage walking."

Despite this acknowledgement of the effect and options to produce a different concept design, the proposed project does not, in fact, follow through on those options. That is, the DEA states that it is possible, but not that the project will do so.

Because the Project Program fails to include adequate precautionary measures and parameters to avoid adverse effects to historic properties, it is not possible to be assured that the design development will respect the historic character and be consistent with standards and guidelines for the treatment of historic properties.

Therefore, Historic Hawai'i Foundation believes that a Finding of No Significant Impact cannot be justified and is inappropriate.

HHF recommends that the project program, building and site design be revised to include retention, rehabilitation and adaptive use of the historic school building, possibly as a community center, and that avoidance of damage to the stone wall be a project requirement both in the RFP and in the eventual State contract with the selected developer.

If and when these adjustments are taken to revise the program and design, the project would be able to authentically claim to have taken measures to avoid, minimize and mitigate the effects on historic properties. However, if the measures are not taken to protect historic properties, then the effect would be adverse and could not justify a finding of no significant impact.

Thank you for the opportunity to comment. We look forward to working with HHFDC on finding ways to protect, preserve and perpetuate these important historic properties as the planned development is refined.

Very truly yours,

Kiersten Faulkner

Kiersten Faulkner, FAICP
Executive Director

Copies via email

- Jeff Overton, G70 [jeff@g70.design]

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Kiersten Faulkner, FAICP
Executive Director
Historic Hawaii Foundation (HHF)
680 Iwilei Road, Suite 690
Honolulu, HI 96817

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Kiersten Faulkner,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 22, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *HHF disagrees with the Anticipated Finding of No Significant Impact and believes that it is premature and not warranted at this time.*

   As stated in Section 2.2 Description of Proposed Action:
   "It should be noted that the Conceptual Site Plan is conceptual in nature and the site layout, building massing and heights, parking count, and open space and circulation plan may change as the Project evolves. The developer selected through the RFP process will be required to engage the community and State and County agencies to obtain input on the final design of the Project. The feedback received by the developer and conditions imposed as the Project moves through the entitlement process, may result in changes to the Conceptual Site Plan" (emphasis added).

   The project will have an effect on both historic properties:
   - *The 1920 School Building would be demolished completely. By definition, demolition of a historically-significant resource in an adverse effect and a significant impact.*
   - *The stone-and-mortar wall exhibits two placards indicating a construction date of 1939 with the inscription "W.P.A.," referring to the Works Progress Administration. The W.P.A. or WPA was a widespread infrastructure and employment program established in 1935 as part of the New Deal, which aimed at restoring the U.S. economy after the Great Depression.*

   Section 2.2 continues to state that: "To the extent practicable, the Project design will strive to address and implement the urban design principles listed in the Wailuku-Kahului Community Plan (2002). The design will not be finalized until an RFP has been issued and a developer is selected. The RFP may require these urban design principles to be implemented by the developer and vetted by the

community:

- *Mixed-Uses – Create a vibrant community and live-work neighborhood by integrating a variety of uses within the Site.*
- *Building Scale – Consider the scale of the existing adjacent buildings and design the Project buildings so that they have a human-scale perspective*
- *Active Frontages – Create an interesting and inviting streetscape*
- *Alternative Modes of Transportation – Provide canopy trees, continuous and safe sidewalks, benches, and proper lighting to encourage walking."*

Despite this acknowledgement of the effect and options to produce a different concept design, the proposed project does not, in fact, follow through on those options. That is, the DEA states that it is possible, but not that the project will do so.

Because the Project Program fails to include adequate precautionary measures and parameters to avoid adverse effects to historic properties, it is not possible to be assured that the design development will respect the historic character and be consistent with standards and guidelines for the treatment of historic properties.

Therefore, Historic Hawai'i Foundation believes that a Finding of No Significant Impact cannot be justified and is inappropriate.

HHF recommends that the project program, building and site design be revised to include retention, rehabilitation and adaptive use of the historic school building, possibly as a community center, and that avoidance of damage to the stone wall be a project requirement both in the RFP and in the eventual State contract with the selected developer.

If and when these adjustments are taken to revise the program and design, the project would be able to authentically claim to have taken measures to avoid, minimize and mitigate the effects on historic properties. However, if the measures are not taken to protect historic properties, then the effect would be adverse and could not justify a finding of no significant impact.

The HHFDC, DAGS and G70 consulted the HHF on March 18, 2022. As a result of the consultation, the Final EA includes the analysis of an Alternative E or a "Historic Properties Retention" alternative (see **Attachment 1**). Alternative E involves the consideration of two options whereby HHFDC and DAGS would prioritize the retention of existing historic properties. Alternative E: Option 1 would involve site development which prioritizes the in-situ preservation/retention of the existing 10,000 SF Administration Building and would result in an approximately 40% (or 114 unit) reduction of dwelling units and approximately 30% (or 13,000 SF) reduction of State office space in the Civic Center than the Proposed Action. Alternative E: Option 2 would involve developing a program which mirrors the Proposed Action and would retain the Administration Building by making it available for relocation off-site.

The Project will undergo the State historic preservation review process and comply with the Hawai'i Revised Statutes (HRS) §6E-8 and Hawai'i Administrative Rules (HAR) §13-275. A Draft AIS has been prepared for the Project in accordance with HRS §6E-8 and

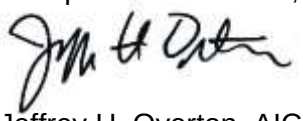
HAR §13-275, which includes proposed mitigation recommendations vetted by Annalise Kehler of the Maui County (County) Cultural Resource Commission and Janet Six, County Archaeologist. The Draft AIS and proposed mitigation commitments will require review and approval by the Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD). As the Project moves through the entitlement process, the selected developer will comply with HRS §6E-8 and HAR §13-275 and abide by mitigation commitments approved by the DLNR SHPD.

Per HAR 11-200.1-14, the proposing agency (HHFDC) shall assess the significance of the Proposed Action's potential impacts, based on HHFDC's judgement and experience. HAR 11-200.1-2 defines "significant effect" as the *sum* of effects on the quality of the environment. HAR 11-200.1-13 includes the full list of significance criteria by which the Proposed Action should be evaluated.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70



Jeffrey H. Overton, AICP, LEED AP
Principal

Attachment 1

Alternative E

4.5 Alternative E – Historic Properties Retention

The Site includes two existing historic properties, consisting of a single-story wooden Administration Building which is currently utilized for the State DOE MCSA, and a low stone and mortar boundary wall ("wall") fronting West Ka'ahumanu Avenue and Kane Street. Alternative E or the "Historic Properties Retention" alternative would involve the consideration of two options whereby HHFDC and DAGS would prioritize the retention of historic properties. Alternative E: Option 1 would preserve/retain the Administration Building on Site and minimize the alteration of the wall. A conceptual site layout configuration was prepared as for Alternative E: Option 1; see *Appendix A, Conceptual Plans and View Studies*. Alternative E: Option 2 would retain the Administration Building by making it available for relocation off-site and slightly alter the wall to facilitate multi-modal and pedestrian circulation.

Alternative E: Option 1 – "Retention and Adaptive Reuse of Historic Properties"

Alternative E: Option 1 would involve site development by HHFDC and DAGS which prioritizes the in-situ preservation of historic properties on Site. The existing 10,000 SF Administration Building, currently being utilized for the State DOE MCSA and lawn mower operations, would be preserved in-situ. The site development constraints affected by the preservation of the Administration Building, and position of the existing Transit Hub would limit the development of the Civic Center to the northwestern portion of the Site and would further limit the development of the multi-family housing buildings to the northeastern portion of the Site.

Under Alternative E: Option 1, the Administration Building would be renovated to conform to County building codes and regulations and modernized to restore space functionality. Approximately 7,000 SF would continue to be utilized by the MCSA, and approximately 3,000 SF would be utilized for State office space or community-oriented commercial space. The alteration of the existing wall fronting West Ka'ahumanu Avenue would be minimized by realigning the pedestrian path to connect to an existing gap in the wall; the existing gap would be widened to 15-FT. Approximately 100-FT of the northwest portion of the wall fronting Kane Street would be removed/relocated to accommodate the multi-use path; the wall will be removed at a natural break where the wall drops off to a lower elevation.

The reduced development program for Alternative E: Option 1 would involve the development of approximately 186 multi-family dwelling units in two 6-story buildings totaling approximately 195,300 SF of floor area. A 6-level parking podium would provide approximately 261 parking spaces for the two buildings. A 3-story Civic Center would provide approximately 43,000 SF of floor area, including approximately 27,000 SF State office space, and approximately 16,000 SF of space for the Kahului Public Library. Access to the Civic Center, Administration Building, and adjoining surface parking lots would be via Kane Street and Vevau Street; approximately 156 shared parking spaces would be provided in the parking lots.

The reduced development program for Alternative E: Option 1 would result in a 3-story Civic Center as compared to a 4-story Civic Center in the Proposed Action; and therefore, would result in a slightly reduced visual impact. Under Alternative E: Option 1, there would be potential short-term, construction-related impacts (e.g., dust generation, vehicular traffic, intermittent noise) similar to the Proposed Action; however, mitigation measures would be implemented, and potential impacts would cease after construction. Under Alternative E: Option 1, there would also be potential long-term, operational impacts to the existing natural environment (e.g., water resources, air quality, and flora/fauna) and existing human environment (e.g., potable water system, wastewater system, traffic conditions, noise conditions, and visual resources). These impacts would generally be similar to the Proposed Action.

The reduced development program for Alternative E: Option 1 would result in an approximately 40% reduction of dwelling units, which is 114 dwelling units less than the 300 units planned in the Proposed Action. Alternative E: Option 1 would not meet the Project's purpose to provide approximately 300 multi-family dwelling units at the Site and meaningfully increase the affordable housing stock on Maui. To address the shortfall of affordable housing units on Maui, the HHFDC would potentially need to develop on land elsewhere (which may or may not have existing support infrastructure) to construct additional multi-family housing units. The need for the State to purchase or lease another suitable property would not be an efficient use of limited State lands and funds.

Alternative E: Option 1 would also result in an approximately 30% reduction State office space in the Civic Center or 13,000 SF less than the Proposed Action, due to the inability to provide sufficient parking stalls required per MCC §19.36B.020. Therefore, Alternative E: Option 1 would fail to provide the needed State office space in Kahului and would not address the State mandate to reduce lease rent expenses. Overall, this would result in public purposed land utilization at a level which would be less than half of the zoning district's allowable FAR limit. Alternative E: Option 1 would not seek to optimize the development potential of an underutilized State property for its highest and best use in an urban area, adjacent to the Transit Hub where infrastructure is readily available. The segmented provision of State office space in the Administration Building and the Civic Center could also result in disjointed State services and inefficiencies that could be gained from co-location.

Additionally, Alternative E: Option 1 would be much less supportive of the County's efforts to grow and energize a vibrant community-focused multimodal Ka'ahumanu Avenue Corridor, within which the Project is a vital catalyst. Under Alternative E: Option 1, the preservation of the Administration Building, and location of the Transit Hub would strictly limit the development of the Civic Center to the northwestern portion of the Site and limit multi-family housing buildings to the northeastern corner. As a result, the location of the Civic Center's surface parking lot fronting West Ka'ahumanu Avenue would create a much less interesting and inviting streetscape for pedestrians. Moreover, the siting of the multi-family housing buildings positions the south-facing dwelling units to abut the Transit Hub; without a buffer from the Transit Hub, residents may potentially experience increased noise, light pollution, and foot traffic.

For these reasons, Alternative E: Option 1 was not considered a viable alternative.

Alternative E: Option 2 – "Retention and Relocation of Historic Property"

Alternative E: Option 2 would involve the development of a program which mirrors the Proposed Action, and also retains the existing Administration Building by making it available for relocation off-site. HHFDC and DAGS would offer the Administration Building to any interested party (i.e., Federal, State, or County agency, non-profit organization, or private entity) to relocate to an appropriate property within the boundaries of the Kahului Historic District and/or Kahului-Wailuku region. For example, the Administration Building could be relocated to the County's 110-acre Ke'Opuolani Regional Park, managed by the Department of Parks & Recreation, and utilized for community recreation programs and activities. The Ke'Opuolani Regional Park is centrally located in Central Maui, is the largest park in the County's parks system, and is adjacent to the Maui Arts and Cultural Center[1]. The Administration Building would be renovated to conform to County building codes and regulations and modernized to restore the space functionality. Funding for relocation and/or renovation of the Administration Building

[1] Source: https://www.mauicounty.gov/facilities/facility/details/Keopuolani-Regional-Park-400

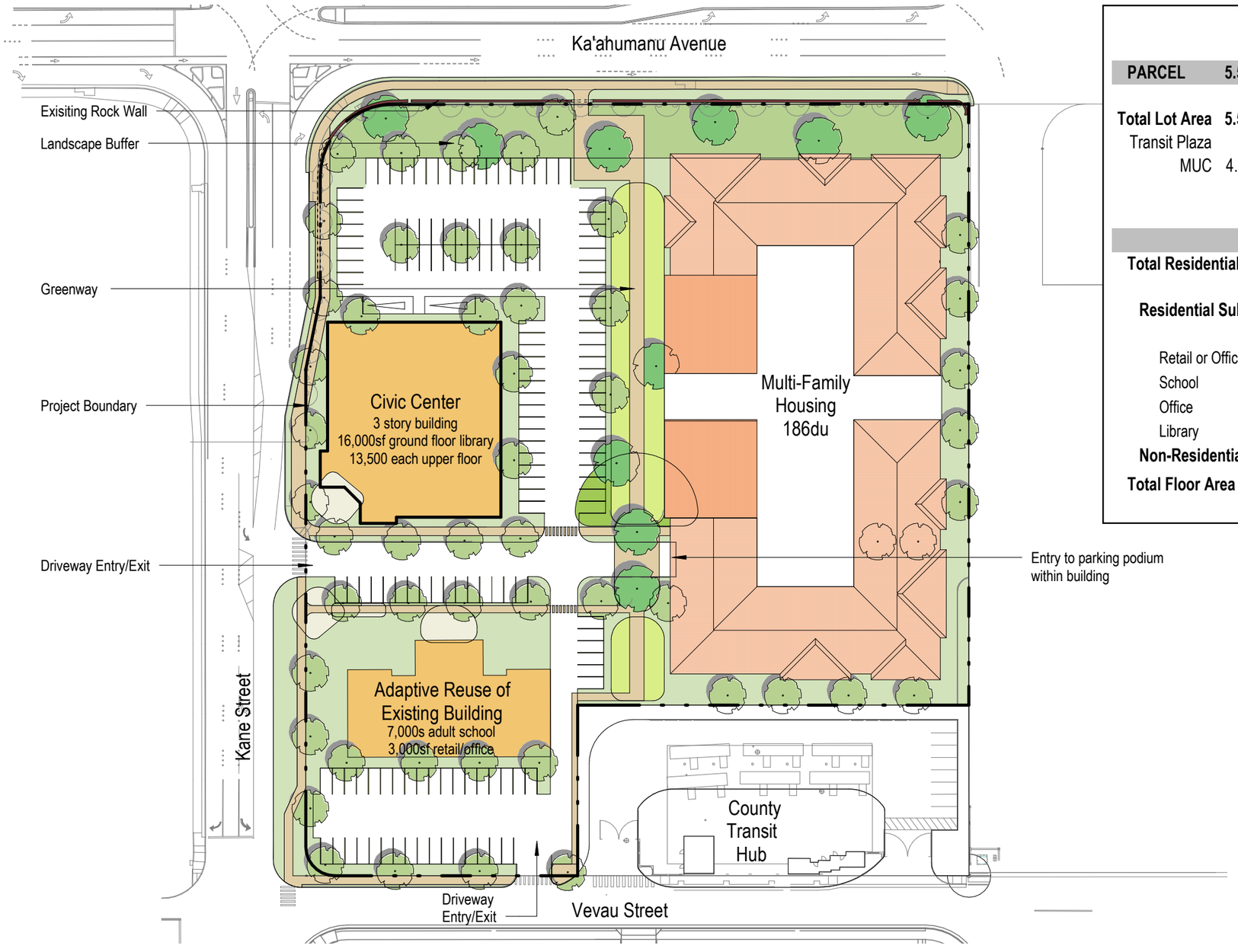
could be sought through the State Legislature and/or a private source. As with the Proposed Action, Alternative E: Option 2 would involve the construction of approximately 300 multi-family dwelling units and an approximately 66,000-SF Civic Center on Site. Like the Proposed Action, portions of the existing wall would be removed/relocated to create an opening near the landscaped greenway and pedestrian path fronting West Ka‘ahumanu Avenue, and to accommodate the multi-use path along Kane Street.

Under Alternative E: Option 2, there would be potential short-term, construction-related impacts (e.g., dust generation, vehicular traffic, intermittent noise) similar to the Proposed Action; however, mitigation measures would be implemented, and potential impacts would cease after construction. Under Alternative E: Option 2, there would also be potential long-term, operational impacts to the existing natural environment (e.g., water resources, air quality, and flora/fauna) and existing human environment (e.g., potable water system, wastewater system, traffic conditions, noise conditions, and visual resources). Alternative E: Option 2 would generally result in the same potential impacts and proposed mitigation measures of the Proposed Action; however, the demolition of the Administration Building would be avoided.

Alternative E: Option 2 would meet the Project’s purpose to meaningfully increase the affordable housing stock on Maui, provide needed State office space in Kahului, and address the State mandate to reduce lease rent expenses. However, there would be unknown costs for those parties responsible for relocating the Administration Building off-site. Due diligence and feasibility studies would be required to minimize the potential risk of damage to the integrity of the Administration Building during relocation. Additional environmental review and entitlement and permitting processes may also be required. Lastly, future tenants would need to be identified for the Administration Building.

Alternative E: Option 2 could be considered a viable alternative, if an interested party identifies a property for the Administration Building relocation, secures funding for the relocation/renovation, undertakes due diligence and feasibility studies, environmental review, and entitlement and permitting as necessary, and identifies tenant(s).

ALTERNATIVE E: OPTION 1 – RETENTION AND ADAPTIVE REUSE OF HISTORIC PROPERTIES



LAND AREA AND ZONING INFORMATION

		LAND	Allowable SF	Setback	
PARCEL	**5.572 acre**	**242,716 sf**	**485,433 sf**		
				Front	None
Total Lot Area	**5.572 acre**		**Zoning**	**Side/Rear**	None or adjacent zone
Transit Plaza	.85 acre		Land Use	B-2	
MUC	4.722 acre		Height	90-ft	
			Density	2. FAR	

KAHULUI CIVIC CENTER MIXED-USE PROGRAM

Total Residential Units	**186 du**	**Density**	**1. FAR**
Residential Subtotal	**195,300 gsf**	**Parking Required by Code***	**546 stalls**
		* County Code requirement without mixed use reduction	
Retail or Office	3,000 gsf	**Parking Target ****	**417 stalls**
School	7,000 gsf	** Retail/Office at 1stall/500sf	60 stalls
Office	27,000 gsf	** Library 40 stalls	40 stalls
Library	16,000 gsf	** Residential 1stall/1bdrm; 1.5stall/2bdrm; 2stall/3bdr	261 stalls
Non-Residential Subtotal	**53,000 gsf**	** School 8 per classroom	56 stalls
Total Floor Area	**248,300**	**Parking Provided**	**417 stalls**

Kahului Civic Center Mixed-Use Complex

0' 40' 80' 160'

OPTION AR

From: Kathleen Tom <kathleen.tom@gmail.com>
Sent: Wednesday, February 23, 2022 12:02 PM
To: HHFDC Kahului Civic Center - Kahului
Subject: Kahului Civic Center

Regarding the Kahului Civic Center: The project is very diverse and has much merit. My concern is adequate parking for the state vehicles, employees and patrons of the 38,000 sq ft. state building.

I am familiar with most of the state agencies who will be occupying the building and know that their employees frequently go in and out of the office during the work day. I am also familiar with the Kahului Library - when it was open I was a frequent patron of the library.

With the Waterfront Apartments and the Senior housing across the street of this project, street parking will be very limited and hard to find. This concern will frustrate the public and employees who will use and work on this site.

Thank you for allowing me to comment, I hope you find these comments helpful.

Sincerely,
Kathleen Tom

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

May 06, 2022

Kathleen Tom
Via Email: kathleen.tom@gmail.com

Subject: Draft Environmental Assessment
Kahului Civic Center Mixed-Use Complex
Tax Map Key: (2) 3-7-004:003 (por.)
Kahului, Island of Maui, Hawai'i

Dear Ms. Tom,

On behalf of the Proposing Agency, the State of Hawai'i, Department of Business, Economic Development & Tourism, Hawaii Housing Finance & Development Corporation (HHFDC), thank you for your comment letter dated February 23, 2022 concerning the Draft Environmental Assessment (EA) for the Kahului Civic Center Mixed-Use Complex Project ("Project"). The following responses are offered regarding your comments (*italicized* below).

1. *The project is very diverse and has much merit.*
   My concern is adequate parking for the state vehicles, employees and patrons of the 38,000 sq ft. state building. I am familiar with most of the state agencies who will be occupying the building and know that their employees frequently go in and out of the office during the work day. I am also familiar with the Kahului Library - when it was open I was a frequent patron of the library. With the Waterfront Apartments and the Senior housing across the street of this project, street parking will be very limited and hard to find. This concern will frustrate the public and employees who will use and work on this site.

The Conceptual Site Plan proposes approximately 182 parking spaces in the Civic Center, as required by Maui County Code, Chapter 19.36B, *Off-Street Parking and Loading*. The State Department of Accounting and General Services, Automotive Management Division will assess how to best assign and control parking spaces for employees and the public and enforce parking rules and regulations at the Civic Center; further information will be included in the Special Management Area Use permit application, to be conducted by the selected development partner.

Your comment letter and this response will be included in the Final EA. Thank you for your participation in the environmental review process. Please contact Michele Leong, Planner at (808) 523-5866 or via email: kahuluieacomments@g70.design if you have any questions or require additional information.

Sincerely,

Group 70 International, Inc., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

Appendix Q

Public Meetings

Public Meeting #1

KAHULUI CIVIC CENTER MIXED-USE COMPLEX
WAILUKU STATE OFFICE BUILDING 3

PUBLIC MEETING

YOU ARE INVITED

On behalf of the State of Hawai'i Housing Finance & Development Corporation (HHFDC), G70 invites you to attend a Public Meeting for the "Kahului Civic Center Mixed-Use Complex Project" ("Kahului Project") and the "Wailuku State Office Building 3 Project" ("Wailuku Project"). The purpose of this meeting is to solicit and incorporate stakeholder input for the planning and preliminary program development of the Projects.

Date: February 25, 2021

Time: 6:30 PM - 8:00 PM

Location: Virtual meeting via Zoom

To attend the meeting, register on Eventbrite:
https://hhfdcmeeting1.eventbrite.com/
A meeting agenda and a link to join the meeting via Zoom will be emailed to you.

For questions about the Public Meeting please contact:

Vi Verawudh,
Associate, Senior Planner
Phone: (808) 441-1624
Email: HHFDCoutreach@g70.design

For questions about the Projects please contact:

Sery Berhanu,
Housing Development Specialist
Phone: (808) 587-0546
Email: Sergut.berhanu@hawaii.gov

ABOUT THE PROJECTS

Kahului Project Overview

Lot Size: 4.72 acres

Tax Map Key: (2) 3-7-004:003 (por.)

Address: 153 West Ka'ahumanu Avenue, Kahului, Maui

Proposed use:

- 150 to 300 affordable rental units (mixture of 1-, 2- and 3-bedroom units)
- 38,000-square foot State office space
- 7,000-square foot State Department of Education's McKinley Community School for Adults
- 16,000-square foot Kahului Public Library
- Up to 6,000-square foot community center
- 5,000-square foot commercial space

Wailuku Project Overview

Lot Size: 0.425 acres

Tax Map Key: (2) 3-4-013:014

Address: 70 South High Street, Wailuku, Maui

Proposed use:

- 74,000-square foot State Office Building 3

For more information visit:
http://dbedt.hawaii.gov/hhfdc/kahului-civic-center-and-wailuku-state-office-bldg-3/


Wailuku Project
Kahului Project
Maui County
Civic Center
Queen
Ka'ahumanu
Center
Halia Nakoa St
Main St
Puuohala Rd
Mokuhau Rd
Kahawai St
Loke St
Nani St
Waiale Rd
Kaahoa St
Nakoa Dr
Keoneloa St
Maui Lani Pkwy
Kanaloa Ave
Keopuolani Pkwy
Wahinepio Ave
Cameron Way
Lelehoku St
Mikohu Loop
Mohalu St
Nihoa St
Imi Dr
Waena St
Kane St
3rd St
Levau St
W Wakea Ave
S Wakea Ave
Kaahumanu Ave
Kaohu St
Malako St
Kaahumanu Ave
Honoapiilani Hwy
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The Maui News



Meeting to cover Central Maui items

LOCAL NEWS

FEB 15, 2021

SHARE TWEET

A public meeting to get input on the planning and preliminary program development of two Central Maui projects will be held on Zoom from 6:30 to 8 p.m. on Feb. 25.

Download PDF (Free)
File size: 487KB. Full Version
PDF Hub Online
Open

The projects include a civic center mixed-used project in Kahului and a state office building project in Wailuku, both initiated by the Hawaii Housing Finance & Development Corporation.

To register for the meeting, visit hhfdcmeeting1.eventbrite.com/.

For more information about the projects, contact Sery Berhanu at 587-0546 or sergut.berhanu@hawaii.gov.

Start Download
Wave Browser

Public Meeting #2

Kahului Civic Center Mixed-Use Complex

Public Meeting #2

YOU ARE INVITED

On behalf of the State of Hawai'i (State), Department of Business, Economic Development & Tourism, Hawai'i Housing Finance & Development Corporation (HHFDC), in collaboration with the State, Department of Accounting and General Services, G70 invites you to attend Public Meeting #2 for the "Kahului Civic Center Mixed-Use Complex" (Project). The Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Project was published on January 23, 2022 in the Office of Planning and Sustainable Development, Environmental Review Program's (ERP) semi-monthly publication, *The Environmental Notice*.

A 30-day comment period commenced on January 23, 2022 and will end on February 22, 2022. The DEA-AFNSI is available via ERP's website: http://oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf. The purpose of Public Meeting #2 is to provide information on the DEA-AFNSI and enhance opportunity for public comment and stakeholder input on the Project.

MEETING INFORMATION

Date / Time: Tuesday, February 15, 2022 at 6:30 PM HST
Location: Virtual meeting held on Zoom. To attend the meeting, please register on Zoom via one of the below links:

- Short link: https://bit.ly/Kahului2
- Long link: https://g70design.zoom.us/meeting/register/tZwkde-rrDsiE9foWMFpUGfk1N4cfHDfseZp

For questions about Public Meeting #2 please contact:
Michele Leong, G70 – Planner
Phone: (808) 441-1625 / Email: HHFDCoutreach@g70.design

For questions about the Project please contact:
Sery Berhanu, HHFDC – Project Manager
Phone: (808) 587-0546 / Email: Sergut.berhanu@hawaii.gov

PROJECT OVERVIEW

Tax Map Key (TMK): (2) 3-7-004:003 (por.)
Project Site: 4.722 acres (TMK parcel is 5.57 acres)
Site Address: 153 West Ka'ahumanu Avenue, Kahului, Maui (See *Project Location Map*)

Proposed Action*:

- Approximately 300 affordable and market-rate multi-family housing (mixture of 1-, 2- and 3-bedroom units) provided in two buildings (both roughly six stories) and approximately 414 associated parking spaces.
- State Kahului Civic Center (roughly four stories) with approximately 66,000-square feet (SF) of floor area and approximately 182 associated parking spaces.
  - Approximately 38,000-43,000 SF of State office space;
  - Approximately 7,000 SF of classroom and support space for the State Department of Education's McKinley Community School for Adults; and
  - Approximately 16,000 SF for the Kahului Public Library.
- Approximately 5,000 SF of community-oriented commercial space may be included in either the multi-family housing building(s) or the State Kahului Civic Center.

***Note:** The preliminary program may be adjusted due to the needs and priorities of State agencies and availability of funding.

For more information, please visit the Project website:
https://storymaps.arcgis.com/stories/2502e660fc614a46928a1f9b4e7a3dbf



Project Location Map

KAHULUI CIVIC CENTER MIXED-USE COMPLEX

PUBLIC MEETING #2

YOU ARE INVITED

On behalf of the State of Hawai'i (State), Department of Business, Economic Development & Tourism, Hawai'i Housing Finance & Development Corporation (HHFDC), in collaboration with the State, Department of Accounting and General Services, G70 invites you to attend the Public Meeting #2 for the "Kahului Civic Center Mixed-Use Complex" (Project). The purpose of Public Meeting #2 is to provide information on the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) and enhance opportunity for public comment and stakeholder input on the Project.

The DEA-AFNSI is available here: http://oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf.

Date: Tuesday, February 15, 2022

Time: 6:30 PM HST

Location: Virtual meeting via Zoom

To attend the meeting, please register on Zoom:

https://g70design.zoom.us/meeting/register/tZwkde-rrDsiE9foWMFpUGfk1N4cfHDfseZp

ABOUT THE PROJECT

Tax Map Key (TMK): (2) 3-7-004:003 (por.)

Project Site: 4.722 acres (TMK parcel is 5.57 acres)

Address: 153 West Ka'ahumanu Avenue, Kahului, Maui

Proposed Action:*

- State Kahului Civic Center
  - Approximately 38,000-43,000 square feet (SF) of State office space;
  - Approximately 7,000 SF of space for the State Department of Education's McKinley Community School for Adults; and
  - Approximately 16,000 SF for the Kahului Public Library.
- Approximately 300 affordable and market-rate multi-family housing (mixture of 1-, 2- and 3-bedroom units).
- Approximately 5,000 SF of community-oriented commercial space may be included.

* Note: The preliminary program may be adjusted due to the needs and priorities of State agencies and availability of funding.

For questions about the Public Meeting #2 please contact:

Michele Leong, *G70 - Planner*

Phone: (808) 441-1625

Email: HHFDCoutreach@g70.design

For questions about the Project please contact:

Sery Berhanu, *HHFDC - Project Manager*

Phone: (808) 587-0546

Email: Sergut.berhanu@hawaii.gov

For more information visit:
https://storymaps.arcgis.com/stories/2502e660fc614a46928a1f9b4e7a3dbf



Project Location Map

G70

HHFDC
HAWAII HOUSING FINANCE & DEVELOPMENT CORPORATION

The Maui News

Meeting to be held on Kahului housing and civic center project

The Maui News

A public meeting on a proposed housing and civic center project in Kahului will be held at 6:30 p.m. Feb. 15.

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ului Civic Center Mixed-Use
ıumanu Ave. It would consist of
ıltifamily housing (a mixture of
a civic center with about 38,000
, about 7,000 square feet for the
y Community School for Adults

and about 16,000 square feet for the new Kahului Public Library. The project may also include 5,000 square feet of community-oriented commercial space.

Plans are subject to change depending on the needs of state agencies and availability of funding.

Estimated at a cost of $192 million, according to project documents, the proposed complex is a collaboration between the Hawaii Housing and Finance Development Corporation and the state Department of Accounting and General Services.

To attend the virtual meeting, which will provide information on the draft environmental assessment released last month, register at g70design .zoom.us/meeting/register/tZwkde-rrDsiE9foWMF pUGfk1N4cfHDfseZp.

To view the report, visit oeqc2.doh.hawaii.gov/Doc_Library/2022-01-23-MA-DEA-Kahului-Civic-Center-Mixed-Use-Complex.pdf.

Public comments on the project can be sent to kahuluiea comments@g70.design. The deadline to submit is Feb. 22.

For questions about the meeting, contact Michele Leong, planner with G70, at (808) 441-1625 or HHFDCOutreach@g70.design.

For questions about the project, contact Sery Berhanu, project manager with the Hawaii Housing and Finance Development Corporation, at (808) 587-0546 or Sergut.berhanu@hawaii.gov.

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