Lima Ola

201H EXEMPTION APPLICATION FOR LIMA OLA WORKFORCE HOUSING DEVELOPMENT ELEELE, KAUAI, HAWAII TMK (4) 2-1-001:27

Applicant: County of Kauai Housing Agency
Kanani Fu, Housing Director

Contact Information: Keith Perry
Piikoi Building
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Holo Holo 2020
Growing Kaua'i responsibly.

Exhibit 4

Preface

The County of Kauai Housing Agency proposes to expedite the development of Lima Ola Workforce Housing, consisting of approximately 75 acres of land owned by the County of Kauai, identified as Tax Map Key (4) 2-1-001:027. The proposed development of Lima Ola is planned in four phases with the focus on commencing Phase 1 in 2017.

This application encompasses the off-site and on-site infrastructure associated with Lima Ola Phase 1. Buildout of Phase 1 will allow for 149 residential units consisting of 38 single-family and 111 multi-family units, designed with green sustainable energy efficiency features, community center/park, vegetated drainage swales, landscaped areas, bike and pedestrian paths, and an on-site water detention basin. All residential units will be offered as affordable as defined by the County of Kauai, Chapter 7A, Kauai County Code.

The future build out of the remaining three phases of Lima Ola may consist of an additional 401 new residential units. Development plans for Phases 2, 3 and 4 will be consistent with the design of Phase 1, but may be subject to change as future market demand and housing needs are determined.

The proposed project is being processed under Section 201H-38, Hawaii Revised Statutes (HRS). Section 201H-38, HRS promotes the delivery of affordable housing by allowing the exemption of qualified projects from:

> *...all statutes, ordinances, charter provisions, and rules of any government agency relating to planning, zoning, construction standards for subdivisions, development and improvement of the land and the construction of units thereon.*

The 201H Exemption Application and exhibits accompanying have been reviewed by applicable State and County Departments.

201H EXEMPTION APPLICATION CHECKLIST

(To be completed and signed by the Applicant and returned with the Application.)

PROJECT NAME: Lima Ola Workforce Housing Development

	Enclosed
For eligibility determination, provide 1 original and 3 copies. (If determined eligible, provide an additional 15 copies)	☒

Complete Application

1. 201H Exemption Application Checklist (completed and signed)	☒
2. 201H Exemption Application Form	☒
3. Index of Exhibits (all applicable documents)	☒
4. Attachment A-Funding Summary	☒
5. Attachment B-Development Budget	☒
6. Attachment C-Pro Forma Operating Budget (to be determined later by developer)	☒
7. Certifications and Assurances	☒

Applications must be complete in accordance with this checklist. Incomplete applications shall be returned to the Applicant without further action.

PRIOR TO DEVELOPMENT AGREEMENT

The following documents are required prior to execution of the development agreement. These items are not due with this application.

1. State of Hawaii and Federal Tax Clearance Certificate
2. State of Hawaii Certificate of Good Standing
3. Certification of Compliance with Labor and Industrial Relations

Applicant: County of Kauai Housing Agency

Applicant Representative: Kanani Fu, Housing Director
(Print name, Title)

Kani Fu. 08/01/2014
(Signature, Date)

KAUAI COUNTY HOUSING AGENCY

201H EXEMPTION APPLICATION FORM

I. Applicant Information and Project Name

APPLICANT NAME:	**County of Kauai Housing Agency**
PROJECT NAME:	**Lima Ola Workforce Housing Development (Lima Ola)**

II. Project Affordability Information

A) Project Units

Questions	Yes	No
Does the Project have a minimum of 20 affordable units?	☒	☐
Is the Project being developed solely for persons with special living needs?	☐	☒

Complete the table below

Proposed Amount of Affordable Units		
Restricted at % of KMHI*	**Number of units**	**Percent of total units**
<80 % of KMHI	385	70%
80% - 100 % of KMHI	55	10%
100%-120 % of KMHI	55	10%
120%-140 % of KMHI	55	10%
Total Affordable Units	550**	100%
Market Rate Units	0	0%
Total Number of Units	**550**	100%

*KMHI = Kauai Median Household Income

** The Applicant commits to provide 100% of the units to be affordable as defined by Chapter 7A, Kauai County Code (KCC), as amended. Unit count among income groups is subject to change based on the most current housing market needs data and financing restrictions at the time of development.

B) Length of Affordability Commitment

How long will your project commit to affordability restrictions and program compliance for rental units and/or for sale units?

The affordability commitment will comply with the minimum requirements of Chapter 7A, KCC and financing restrictions that are imposed at the time of development.

III. Development Team

A) Applicant Information

Applicant Name: Kauai County Housing Agency	
Applicant Tax ID Number: 99-6000658	
Applicant Contact Name, Title: Kanani Fu, Housing Director	**Phone Number:** 241-4444
Applicant Address: 4444 Rice Street, Suite 330 Lihue, HI 96766	**Fax Number:** 241-5118
	E-Mail Address: kananifu@kauai.gov

Fill in the information below if Application was prepared by a person or entity different from the Applicant.

Application Preparer Name: N/A	
Application Preparer Contact Name, Title:	**Phone Number:**
Applicant Address:	**Fax Number:**
	E-Mail Address:

C) **Applicant Organization / Entity**

Check the boxes that apply and submit applicable organizational documents as Exhibit 1.

☐	**Non-profit organization** (Qualified, existing 501(c)(3) or (4) organization, as determined by the Internal Revenue Service)				
☐	**Private developer**				
	☐	Limited Partnership		☐	General Partnership
	☐	Corporation		☐	Limited Liability Corporation
	☐	Other:			
			Identify level of government and department		
☒	**Government**		Kauai County Housing Agency		

D) **Applicant Experience**

☒ Applicant has prior experience in developing or owning housing.

Submit documentation of relevant development experience as Exhibit 2.

E) **Project Team Information**

Complete all applicable team member sections below and submit organization, including primary project staff, resumes as Exhibit 3.

Developer:	County of Kauai Housing Agency, Master Planner and Developer (The Developer of housing units within each project phase will be selected through a competitive RFP process)
Contact Person & Title:	Kanani Fu, Housing Director
Mailing Address:	4444 Rice Street, Suite 330 Lihue, HI 96766
Physical Address:	Same as above
Phone Number:	241-4444
Fax Number:	241-5118
Email:	kananifu@kauai.gov
Role & Responsibilities:	Master developer to oversee project entitlements and provide development oversight and coordination, including but not limited to, structuring and securing infrastructure financing, selecting developers for residential construction, and coordinating overall project development, design, and construction.

Consultant:	Community Planning and Engineering, Inc.
Contact Person & Title:	Anson M. Murayama, Chief Executive Officer
Mailing Address:	1286 Queen Emma Street Honolulu, HI 96813
Physical Address:	Same as above
Phone Number:	531-4252
Fax Number:	526-2476
Email:	amurayama@cpe-hawaii.com
Role & Responsibilities:	Provide site/civil engineering services and design, planning, predevelopment, and infrastructure construction services.

Developer:	TBD
Contact Person & Title:	
Mailing Address:	
Physical Address:	
Phone Number:	
Fax Number:	
Email:	
Role & Responsibilities:	Provide development services. Developer will be selected by a competitive process and review of submitted development team proposals.

Architect:	TBD
Contact Person & Title:	
Mailing Address:	
Physical Address:	
Phone Number:	
Fax Number:	
Email:	
Role & Responsibilities:	Provide architectural design services for residential buildings, preparation of exhibits, drawings, and specifications for applicable permit approvals and construction monitoring. Architect will be identified as part of the development team.

Property Manager:	TBD
Contact Person & Title:	
Mailing Address:	
Physical Address:	
Phone Number:	
Fax Number:	
Email:	
Role & Responsibilities:	Provide property management services. Property Manager will be identified as part of the development team.

Legal Counsel:	County of Kauai, Office of the County Attorney
Contact Person & Title:	Mauna Kea Trask, County Attorney
Mailing Address:	4444 Rice Street, Suite 220 Lihue, HI 96766
Physical Address:	Same as above
Phone Number:	241-4930
Fax Number:	241-6319
Email:	countyattorney@kauai.gov
Role & Responsibilities:	Provide legal counsel and document review.

IV. Site Information

A) Location

Complete below and submit project site information (project location, TMK map etc.) as Exhibit 4.

Physical Address: Mahea Road (address to be assigned) Eleele, HI 96705	
Tax Map Key (TMK): (4) 2-1-001:027	**Census Tract(s):** 407
Special design or management districts: N/A	

B) Site Size

75 acres

C) Present Legal Owner of the Project Site

Name: County of Kauai
Address: 4444 Rice Street, Suite 330 Lihue, HI 96766

D) Site Control Status

Check below and submit supporting documents (i.e. Site Control Documents) as Exhibit 5.

☒	Own site - fee simple	
☐	Executed ground lease	Expires on:
☐	Option to purchase	Expires on:
☐	Option to lease	Expires on:
☐	Other	Describe:
		Expires on:

E) Site Special Classification

		Identify:
☐	Slope or Soils Constraint District	N/A
☒	Flood Zone	Classified as Zone X.
☒	Tsunami	Classified as safe zone.
☐	Special Management Area	N/A
☐	Shoreline Protection Area	N/A
☐	Special Treatment or Historic District, or Special Planning Area	N/A
☒	Other (wetlands, Important Agricultural Lands, etc.)	The project site is included in State of Hawaii Agricultural Lands of Importance (ALISH) inventory. However, it is not included in the State of Hawaii Land Evaluation and Site Assessment (LESA) Important Agricultural Lands (IALs).

F) Land Use Classification, General Plan Designation, Project Area Zoning, and Community Consultation

Complete the chart below and:

a) Submit preliminary zoning map and/or preliminary subdivision map and documentation identifying existing site classifications and proposed re-classifications to be requested as Exhibit 6.

b) A list of proposed exemptions/variances by code sections and proposed alternate standards shall be included as Exhibit 7.

c) Describe your consultation with the surrounding community, particularly those who reside within a five mile radius of the proposed project site, and attach as Exhibit 8.

	Current	Proposed
Land Use District:	Agricultural	Urban
General Plan Designation	Agricultural	Residential
Project Area Zoning:	Agricultural	R-1, R-6, Project District

G) Does this project involve any relocation of existing tenants or homeowners? ☒ Yes ☐ No

If yes, please describe any proposed relocation assistance:

The project site is currently being leased to Kauai Coffee Company (tenant) for agriculture purposes. Under a License Agreement with the County, coffee farming on the project site will be phased-out when the development of Lima Ola commences. The County is under no obligation to compensate the tenant for relocation. At the tenant's option, coffee trees can be removed and relocated to nearby coffee fields.

H) Environmental Review Process

Check the boxes that apply and submit applicable documents as Exhibit 9.

☒	A Final Environmental Assessment (FEA), containing a complete list of requested exemptions by code sections and proposed alternate standards, has been accepted pursuant to Chapter 343, Hawaii Revised Statues. ***Attach as Exhibit 9 Finding of No Significant Impact (FONSI) for the FEA.***
☐	A Final Environmental Impact Statement, containing a complete list of requested exemptions by code sections and proposed alternate standards, has been accepted pursuant to Chapter 343, Hawaii Revised Statues. ***Attach as Exhibit 9 Record of Decision (ROD) for the EIS.***
☒	The judicial challenge period for the FEA or the EIS has expired. (The challenge period for the project's FEA will expire on August 8, 2016. The Applicant does not anticipate a judicial challenge.)

E) Preliminary Engineering

Provide a Preliminary Engineering Report for the project as Exhibit 10.

Discussion: Include information on existing infrastructure capabilities and any planned or potential expansion of infrastructure needed to develop this project. Identify the benefits in use or disclose any potential problems associated with your proposed site.

Water - ***If applicable submit Water Master Plan, water studies, or relevant documentation as Exhibit 11.***
Non-potable water is currently brought to the site by local transmission lines for agriculture purposes. Potable water services for Lima Ola will be developed in accordance with the approved Water Master Plan, attached as Exhibit 11.
Sewer
Wastewater from Lima Ola will be serviced by the County of Kauai Wastewater Management Division, Eleele Wastewater Treatment Plant. Lima Ola requires the design and installation of sewer lines on the project site. A 12" sewer mainline connection point is located in close proximity to the project's western boundary. Wastewater generated by Lima Ola is within the treatment capacity of the Eleele Wastewater Treatment Plant.
Drainage
Currently, the only drainage feature at the site is a remnant agricultural ditch (Pump #1 Ditch) that collects and conveys a portion of storm water east into Wahiawa Stream. The development of Lima Ola requires an onsite drainage system. The drainage system proposed includes vegetated drainage swales located along the internal roadways and an onsite detention basin.
Roads, Access to Site, and Traffic Operations -***If applicable submit Traffic Impact Analysis Report (TIAR) as Exhibit 12.***
Currently, a series of dirt roads are utilized at the site to support the ongoing agricultural operations. Access to Phase 1 of Lima Ola will occur from the Mahea Road and Kaumualii Highway intersection. Lima Ola will include a series of paved roadways that provide access to the site. For Phases 1 – 3, one arterial road will provide access to the site from Mahea Road. This arterial road will connect to the interior loop road providing access Lima Ola's community center/park area and housing. Phase 4 includes an additional arterial road that will connect the interior loop to Kaumualii Highway at the Laulea intersection. Traffic impacts will be appraised at each phase of development to verify warrants and considerations given in the TIAR.
Utilities (Electrical, Propane Gas/Natural Gas, Telecommunications, Internet)
Currently, no utilities exist on-site. Utility planning has been initiated and necessary utilities would need to be developed at the site. The development of Lima Ola will include connection of electrical services to the proposed housing units. Electrical service by KIUC is to be extended overhead into the project site from Mahea Road. Overhead electrical and communication lines would transition to underground lines upon entering the project site. Electrical plans will be submitted to KIUC for design, coordination, and approval. The total estimated electrical demand for the Lima Ola development is available from KIUC and would not significantly impact the existing KIUC electrical grid. Lima Ola will provide telecommunication services to the housing units. Telephone and cable

utility lines will follow KIUC's overhead lines into the project site for telecommunications and cable television/internet service. Service requests must be submitted to telephone and cable utility companies for design, coordination, and approval. Lima Ola may propose the use of gas utility for housing units. Gas service requires either the placement of a central tank located onsite with underground distribution lines or individual gas tanks for each housing unit.
Topography and soils
The site has an approximately 4% grade slope from north to south, which would require less grading and site work compared to a site with a steeper slope. The predominate soil type at the project site is Makaweli silty clay loam. This soil type has moderate permeability, slow runoff potential, and a low erosion hazard, which is favorable for site preparation.
Site Improvements
Site improvements are planned to incorporate cost and energy sustainable features within the building design and housing units, include but not limited to, permeable surfaces and drainage, solar energy for photo voltaic systems, and hot water heaters. Natural ventilation and shade features will be incorporated into the community design. The proposed on-site park will serve multi-use purposes for sport activities, gatherings, parties, and other forms of community benefit.

F) Project Development Plan

Submit a Project Development Plan which may include conceptual plans, documentation of product type and unit mix, and/or preliminary building plans and specifications as Exhibit 13.

A) Housing Unit Type(s)

What type of project are you planning? (Check all that apply)

☒ Rentals	☒ For Sale
☒ Fee Simple	☒ Leasehold
☒ Apartment buildings	☐ Condominium Property Regime
☒ Single-Family Detached	☒ Single Family Attached or Duplex
☒ Cluster	☒ Multifamily stacked flats (≥5 units/bldg)
☐ Townhouses	☒ Triplex, fourplex
☒ New Construction	☐ Rehabilitation

B) Project Unit Mix

Fill in the appropriate number in the table below

No. of Units*	**Studios** 64	**1 BR** 164	**2 BR** 167	**3 BR** 118	**4 BR** 37	**Total units** 550
Gross Building Area in square feet	**SF / unit** TBD	**SF / unit**	**SF / unit**	**SF / unit**	**SF / unit**	**Gross Residential Area square feet**
Common Area (in square feet)						TBD
Commercial Space (in square feet)						0.0
Total Area						

If you need more space, attach a separate sheet with the information requested above.

* Project unit mix for Lima Ola is based on the Market Study, attached as Exhibit 15, and is subject to change. Gross building and common area for Lima Ola will be determined with the selection of a developer.

C) Project Amenities

Project amenities for Lima Ola will be determined at the time of developer selection and may include the following, and is subject to change:

The Project will include the following amenities:

- ☒ Maintenance Building
- ☒ Management Office
- ☒ Laundry Room
- ☒ Community Building or Room
- ☒ Elevator
- ☒ Wi-Fi
- ☒ Playground/Tot lot
- ☒ Community Gardens
- ☒ Picnic Area
- ☒ Transit facilities
- ☒ Accessible Walking Paths Throughout
- ☒ Recycling Facilities
- ☐ Other (describe) _____
- ☒ Project will utilize solar water heating.
- ☒ Project will utilize photovoltaic system(s) for energy generation.
- ☒ Project will install Energy Star certified appliances throughout the project.
- ☒ Project will install low flow plumbing fixtures which conserve water.

D) Unit Amenities

Unit amenities for Lima Ola will be determined at the time of developer selection and may include the following, and is subject to change.

What equipment/furnishings will be available in each unit?

For rental units:

☒ Range	☒ Refrigerator	☐ Dishwasher
☒ Washer	☒ Dryer	☐ Disposal
☐ Carpet	☐ Drapes	☐ Furniture
☒ Ceiling Fans	☐ Air Conditioning	☒ Natural Ventilation
☒ Cable TV connection		☒ High speed internet access
☐ Other (describe) _____		

E) Proximity to Services, Schools, Shopping, and Recreational Opportunities

Identify facilities and services located in the vicinity of the project site:

Center/Service	Identify	Distance (in miles):
Eleele Shopping Center	Ace Hardware, Big Save, Eleele Laundromat, First Hawaiian Bank, Ichiban Sushi and Bar, Kauai Community Federal Credit Union, Kings Chapel, KoolKutz, Longs Drugs, McBryde Federal Credit Union, McDonald's, Subway, NF Kawamura Store, NO.1 Chinese BBQ, Toi's Thai Kitchen, Twin Design Shop, State of Hawaii-Department of Human Services West IM Unit.	0.8
Port Allen Marina Center	Captain Andy's, Holo Holo Charters, Blue Dolphin Charters, Kauai Chocolate Company, Happy Honu Gifts, A&B Properties, Kauai Sea Tours, McBryde Resources Inc., Tropics Day Spa, Port Allen Bar and Grill, West Side Medical Clinic, Bubbles Below, Inc.,	0.9
Port Allen Industrial Center	Red Dirt Factory Outlet, Kauai Island Brewery, Kalei Steel Works, Eleele Gym, Rainbow Paint and Fishing Supply, Martin Steel, Kauai Automated Fuels, KIUC Port Allen Power Plant,	0.9
Hanapepe	Hanapepe Fire Station, No Ka Oi Plants, Kauai Custom Marine, Hanapepe Armory, Port Allen Airport, Salt Pond Transfer Station, Salt Pond General Store, ReStore Kauai, Restaurants (+12), King's Chapel, Hanapepe Hawaiian Congressional, Hanapepe United Church,	<3

		Hanapepe Church of the Nazareth, Kauai Soto Zen Temple, Hanapepe Hongwanji	
Waimea		Ishihara Market, Big Save, Restaurants (+10), Gas Station, Waimea Library, Waimea Sports Field, Lucy Wright Park, Banks (3), West Side Technology Center, Waimea Fire Station, Waimea Plantation Cottages	<7
Kekaha and West		Pacific Missile Range Facility Makaha Ridge Tracking and Radar Station Kokee Lodge, Museum and Restaurant Kekaha Landfill, Kikaola Boat Harbor	<17
Kalaheo and Lawai		Kalaheo Fire Station, Kalaheo Neighborhood Center, Kalaheo Clinic, Kalaheo Dental Group, Service Stations (2), Restaurants (+10), Lawai Cannery Self Storage, Lawai General Store, Aqua Engineers, post offices (2)	<6
Koloa and Poipu		Hotels/Resorts (+25), restaurants (+50), grocery/general Stores (4), hardware store, clinics (+3), pharmacy, various hospitality related businesses and services	<12
Schools:	**Elementary**	Eleele Elementary Kamehameha School Kaumakani	0.5 3.2
	Middle	Waimea Canyon Middle School	7
	High	Waimea High School	6.6
	College	Kauai Community College	12.9
Child care: **(family projects)**		Family Child Care Homes (Ages NB – 5) Haloalaunula Early Learning Center	0.3 0.65
Public Library & Post Office:		Hanapepe Public Library Eleele Post Office	1.2 1.0
Healthcare/Pharmacy		Kauai Medical Clinic CVS Eleele West Side Pharmacy Kauai Veterans Memorial Hospital	0.8 0.8 1.25 7.1
Community Center/ Activities:		Hanapepe Neighborhood Center, Hanapepe Stadium Hanapepe Bay Salt Pond Beach Park	1.4 1 1.5
Parks/Playgrounds:		Eleele Nani Eleele Park Salt Pond Park	< 0.2 2.5
Banks/Financial Services:		First Hawaiian Bank (Hanapepe-Eleele) Bank of Hawaii-Hanapepe Branch American Savings Bank-Hanapepe Branch Kauai Community Federal Credit Union	0.64 1.2 1.2 0.8

Public Transportation:	County of Kauai Bus Service: East bound services (Kaumualii Hwy) West bound services (Port Allen) West bound services (Kaumualii Hwy) to be added	 <1 0.8 <1
Agribusiness:	Kauai Coffee Factory and Visitor Center DuPont Pioneer Global Ag Services Dow AgroScience BASF Plant Science Syngenta No Ka Oi Plants	1.3 6 6.2 8.2 9 12.9 3.0

F) Project Schedule

Submit a Project Development Schedule as Exhibit 14.

Schedule for Lima Ola, Phase 1:

Milestones	**Date**
Approval of 201H Exemption Application from Council:	October 2016
Approval of 201H Exemption Application from Land Use Commission:	January 2017
Closing of Infrastructure Financing:	May 2017
Infrastructure Construction Start Date:	September 2017
Residential Construction Start Date:	May 2018
Placed in service date[1]:	Phase 1, March 2019

Phases 2-4 development schedule has an anticipated duration of 10 – 15 years.

G) Market Demand

Submit a Market Study for the project as Exhibit 15.

Provide a brief summary of the analysis conducted in the Market Study as it pertains to the market demand of the project.

The Market Study prepared for Lima Ola estimates that the 550 units being proposed can be fully absorbed within 7 to 10 years of offering if a suitable mix of unit/home types are built in a timely manner.

1 If project consists of multiple buildings or phases, please include the date on which each building or phase will be placed in service.

H) Management/Sales Plan

In Exhibit 16, provide a Management/Sales Plan detailing how the project will be managed if "Rental Project" or provide a detailed description of sales plan if "For Sale Project". Include anticipated staffing, marketing programs, etc.

I) Target Population

a. Occupancy Type

Project occupancy type for Lima Ola will be determined before the development of each block lot and will be based on the most current housing market needs data and financing restrictions.

Indicate the number of units allotted for each of the following:

Family	_____	Elderly	_____	Veteran	_____
Disabled	_____	Homeless	_____	Mentally Ill	_____
Farmworker	_____	Other	_____		

Accessible units

Number of Accessible units	_____
Number of Adaptable units	_____

b. Availability

Will all of the residential units be available to the general public? ☒ Yes ☐ No

If you answered no, please qualify which populations the units will be made available to.

G) FUNDING SOURCES AND USES

A) Sponsor Equity

Indicate the funding that the Applicant has secured for the project. Only list project funding that will remain permanently in the project.

Funding secured for Lima Ola Phase 1:

$ 1.3 mil	County HCDRF and HDF
$ 40 k	American Recovery Reinvestment Act Grant
$ 465 k	2010 Build America Bond Issuance (BABS)
$ 8 mil	County Bond Fund
$ 8 mil	Dwelling Unit Revolving Fund (may request up to $13 mil)
$ 2.5 mil	Land
$ 20.3 mil	**Total Sponsor Equity**

Land Value

In 2010, the County purchased the 75 acre project site for $2.5 million. An updated appraisal for the parcel has not been conducted.

In Kind

No in kind funding for Lima Ola has been committed. However, the County continues to seek partnerships with public and private entities to secure in kind funding.

B) Operational Subsidies

Will any low-income units receive Rental Subsidies? ☒ Yes ☐ No

If the Project will utilize rental subsidies, please list them below:

Subsidy Program	# of Units	Term of Commitment	Status
Section 8 Project Based Vouchers	Up to 22 in phase 1	Length of affordability imposed by HUD	Developer will have to apply with the Kauai County Housing Agency to receive Project Based Vouchers
HOME Funds	TBD	Length of affordability imposed by HUD	Expected to receive in FY 2019

CERTIFICATIONS AND ASSURANCES

Whereas, Kauai County Housing Agency (the "Applicant") is applying for the 201H exemption process.

Whereas, the Applicant understands that it is necessary that certain conditions be satisfied as part of the Application requirements.

Therefore, the Applicant certifies as follows:

1. The Applicant agrees to comply with and is responsible to review the applicable federal, state, and county laws and regulations, in the event this Application is approved.

2. The Applicant will minimize displacement as a result of the activities associated with the 201H exemption process and assist persons displaced as a result of such activities.

3. The Applicant will actively market, or require marketing, in an ongoing manner of all housing units and services expedited through the proposed development.

4. The Applicant has the authority pursuant to Chapter 201H-38 and 46-15-1, Hawaii Revised Statutes, to use the 201H exemption process. The makes this Application and certification with full cognizance of its authority under Hawaii Revised Statutes.

5. The Applicant understands that it has the right to contact state or local government officials, representatives of other funding programs, or other individuals to verify or obtain additional information about the proposed development.

6. The Applicant has received, reviewed, and accepts all the documents (e.g. Exhibits, Instructions, etc.) that are attached to the Application and made a part hereof.

7. That the foregoing information and the statements made in this Application are true, complete, accurate, and correct to the best of the Applicant's knowledge, and hereby authorizes the County to obtain further information and to verify any statement made as it deems necessary.

8. The Applicant understands that the completed and accepted Application is subject to Chapter 92F, Hawaii Revised Statutes, and the Uniform Information Practices Act of the State of Hawaii.

In Witness Whereof, the Applicant has caused the document to be executed in its name on the 02 day of August, 2016.

County of Kauai Housing Agency
Applicant

By _____
Its Housing Director

INDEX OF APPLICATION EXHIBITS

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Exhibit 7	Proposed List of Exemptions and Proposed Alternate Standards
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Exhibit 9	Finding Of No Significant Impact Report (FONSI) for the Final Environmental Assessment
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Exhibit 13	Project Development Plan
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Exhibit 16	Management/Sales Plan

Attachment A	Funding Summary
Attachment B	Development Budget
Attachment C	Pro Forma Operating Budget (to be determined later by developer)

Certifications and Assurances

Exhibit 1

ORGANIZATIONAL DOCUMENTS

Sec. 2-1.16 Kaua'i County Housing Agency.

(a) Purpose. A Kaua'i County Housing Agency is hereby established for the purpose of:

(1) Providing housing opportunities for eligible persons and families, including, but not limited to, lower and moderate income persons and families, elderly persons, and handicapped persons;

(2) Providing housing opportunities for eligible persons and families by assisting them to obtain affordable housing;

(3) Acting as the local Public Housing Agency for the County of Kaua'i for the purposes of participating in and implementing federally-aided housing, urban renewal, and community development programs, including, but not limited to, the Federal Housing Assistance Payments Programs;

(4) Acting as the local agency for the County of Kaua'i for the purposes of participating in and implementing the Community Development Block Grant Program; and

(5) Acting as the agency responsible for coordinating the exercise of powers delegated to the counties pursuant to Sections 46-15, 15.1 and 15.2, and Chapter 53 of the Hawai'i Revised Statutes, as amended, and for administering and supervising the programs and projects implemented as a result of the exercise by the County of Kaua'i of such powers.

(b) Definitions. When used in this Section the following words and phrases shall have the following meaning unless it shall be apparent from the context that a different meaning is intended:

(1) "Administrative fee" means all monies and fees received by the Section 8 Program from the State of Hawai'i, HUD, or any other federal sources, including the "Hard to House" fees and other such payments, for the administrative operation of the Section 8 Program.

(2) "CDBG" means the Community Development Block Grant created pursuant to the Housing and Community Development Acts of 1974 and 1980, and the amendments thereto.

(3) "Council" means the Council of the County of Kaua'i.

(4) "County" means the County of Kaua'i.

(5) "Federal Housing Assistance Payments Program" means the program created by Section 8 of the Housing and Community Development Acts of 1974 and 1980, and the amendments thereto.

(6) "Fiscal year" means the fiscal year utilized by the County for its budgetary purposes.

(7) "HUD" means the United States Department of Housing and Urban Development.

(8) "KCHA" means the Kaua'i County Housing Agency.

(9) "Operating reserve account" means the account to which all surplus funds shall be credited. Upon adoption of this ordinance, all funds previously received, retained, earned or generated by the Section 8 Program, wherever situated, which meet the definition of surplus funds as defined herein, shall be transferred into and shall become part of the operating reserve account.

(10) "Operating reserve funds" means all of the funds maintained in the operating reserve account.

(11) "Public Housing Agency" is the term used by HUD to identify local entities eligible to receive HUD housing funds and, as used in regard to the County means the KCHA.

(12) "Rental payment assistance funds" means the funds received by the Section 8 Program to be used for the rental payments of eligible participants in the Section 8 Program's Rental Assistance Program.

(13) "Restrictions on sale or transfer, and use" is the term used to identify the anti-speculative repurchase provision that applies to all real property purchased from the County that has been acquired, financed, developed, constructed, or sold pursuant to this Section.

(14) "Section 8 administrative account" means the account containing the Section 8 Program's administrative fees.

(15) "Section 8 Program" means the division of the KCHA which administers the funds received pursuant to, and supervises the programs resulting from, the Federal Housing Assistance Payments Program.

(16) "Surplus funds" means the amount by which the Section 8 Program's project receipts from the administrative fee payments, together with any remaining carry-over surplus funds from prior fiscal years, exceed the total expenditures for the administration of the Section 8 Program for the just concluded fiscal year.

(c) Kaua'i County Housing Agency. There shall be an agency called the "Kaua'i County Housing Agency" to provide adequate affordable housing and assist in community development in the County of Kaua'i, as the agency may deem necessary and appropriate. The agency shall be under the Office of the Mayor.

(d) Housing Director. There shall be a Housing Director who shall be appointed by the Mayor and shall be under the Mayor's direct supervision and control. The Housing Director shall have the following duties and responsibilities:

(1) To administer the operations of the KCHA and its programs and projects;

(2) To staff the KCHA with necessary personnel to carry out the purposes of the KCHA;

(3) To coordinate the operations and programs of the KCHA with the applicable housing plans and programs of the County, State and Federal governments;

(4) To prepare all programs and contracts with the State and Federal governments to carry out the purposes of the KCHA, and to transmit them to the appropriate County persons or bodies for approval.

(e) Powers, Duties and Responsibilities of the Kaua'i County Housing Agency.

(1) The KCHA shall be responsible for coordinating the exercise by the County of the powers provided in Sections 46-15, 15.1 and 15.2, and Chapter 53 of the Hawai'i Revised Statutes and for administering and supervising the programs and projects implemented as a result of the exercise by the County of such powers.

(2) In order to implement and provide the programs, projects or services resulting from the exercise by the County of the powers enumerated in Paragraph (1) of this Subsection, the KCHA may, subject to applicable County, State, and Federal laws, regulations, and guidelines, do any of the following:

(A) Develop and construct dwelling units, alone or in partnership with developers;

(B) Provide assistance and aid to a public agency or persons in developing and constructing new housing and rehabilitating old housing for the elderly of low income, other persons of low income, persons displaced by any government action, by making long-term mortgage or interim construction loans available;

(C) Contract with any eligible bidders to provide for construction of urgently needed housing;

(D) Enter into agreements with appropriate officials of any agency or instrumentality of the United States in order to induce such official to make, insure, or guarantee mortgage loans under the provisions of the National Housing Act, as amended, with the approval of the KCHA;

(E) Make a direct loan to any qualified buyer for the down payment required by a private lender to be made by the borrower as a condition of obtaining a loan from the private lender in the purchase of residential property;

(F) Sell or lease completed dwelling units;

(G) Assist in the leasing of private and public dwellings;

(H) Acquire and utilize public and private lands for the purposes of this Section;

(I) Provide interim construction loans to partnerships of which it is a partner and to developers whose projects qualify for federally assisted project mortgage insurance, or other similar programs of federal assistance for persons of low income;

(J) Apply for and utilize Federal and State rental payment assistance funds;

(K) Provide County funds for rental payment assistance for private and public dwellings; and

(L) Adopt such rules pursuant to Chapter 91 of the Hawai'i Revised Statutes as are necessary to carry out the purposes of this Section.

(3) When so required by the conditions of a State or Federal grant of funds, the KCHA shall establish a separate account for such funds and no commingling of such funds with other funds shall take place.

(4) All agreements, contracts, documents and other written instruments relating to the operations of the KCHA shall be approved by the Executive on Housing and thereafter signed by the Mayor or the Director of Finance, as provided in the Kaua'i County Charter. When so required by the Kaua'i County Charter or Kaua'i County Code, 1987, Council approval shall also be obtained.

(5) The KCHA shall be responsible for administering, supervising and implementing a Section 8 Program which shall participate in and implement the Federal Housing Assistance Payments Program.

(6) The KCHA shall be responsible for administering, supervising and implementing a CDBG Program for the purposes of obtaining, distributing and utilizing CDBG funds.

(f) Real Property; General Provisions of Restrictions on Sale or Transfer, and Use.

(1) Title and Purpose. The County shall implement an anti-speculative buy-back provision that shall be known as the "Restrictions on Sale or Transfer, and Use." These restrictions shall apply to the sale or transfer of any real property and apply to the use of any real property acquired, financed, developed, constructed, or sold by the County pursuant to this Section and which are sold on the condition that the purchaser accepts the restrictions on the sale or transfer, and use in the real property purchased. The restrictions shall also apply to privately developed real property that is sold to satisfy an affordable housing requirement and which, by mutual agreement between the County and the private developer, requires that such sales be subject to the County's Restrictions on Sale or Transfer, and Use.

(2) Relevance to State Law. The restrictions on sale or transfer, and use are in a form substantially equivalent to the provisions of Sections 201E-221, 222, and 223, Hawai'i Revised Statutes. These restrictions on sale or transfer, and use clarify the intent of various provisions of State law and utilize provisions that are in some cases more stringent.

(3) Severalty. If any part of this Subsection is declared by the Court to be invalid, the same shall not affect the validity of the Subsection as a whole, or any part thereof other than the part so declared invalid.

(4) Duration of Restrictions. Where the restrictions on sale or transfer, and use of property apply for a period of time, the period of time shall not be increased beyond the date calculated from the date of original purchase without the mutual consent of the owner and the Kaua'i County Housing Agency (KCHA). The period of time that the restrictions on sale or transfer, and use shall apply is as follows:

(A) For real property acquired, financed, developed, constructed, or sold by the County through the KCHA, the restrictions shall apply for a period of ten (10) years during which the dwelling unit is occupied by the owner; and

(B) For real property sold by a private developer satisfying an affordable housing requirement that by mutual agreement between the County and the private developer is subject to these restrictions, the restrictions may apply for a period of less than the ten (10) year occupancy period, with the time period of the restriction established either pursuant to adopted policy guidelines or written agreement between the developer and the County.

(5) Modification of Restrictions. No real property owner shall be entitled to modify the restrictions on sale or transfer, and use of the real property, without the written permission of the holder of a duly-recorded first mortgage on the real property and the owner of the fee simple or leasehold interest in the land, unless the holder of the first mortgage or the owner is the County.

(6) Uniformity of Restrictions. Restrictions on sale or transfer, and use of real property shall be made as uniform as possible in application and restrictions shall be conformed with agreement of the owner to reflect change or repeal made by any subsequent ordinance, rule or regulation. Real property owners shall be permitted at their election to sell or transfer real property subject to restrictions in effect at the time of their sale or transfer.

(7) Public Notice of Amendment to Restrictions. The KCHA shall notify owners of any substantial change in restrictions made by ordinance, rule or regulation not more than one hundred eighty (180) days after a

change in restrictions, and such notice shall clearly state the enacted or proposed new provisions, the date or dates upon which they are to be effective, and offer to each owner of real property sold prior to such effective date an opportunity to modify the existing contract or other instrument to incorporate the most recent provisions. The notice shall be published at least three (3) times in a newspaper of general circulation in a County newspaper.

(8) Market-Oriented Real Property. The restrictions on sale or transfer, and use shall not apply to market-priced real property in an economically integrated housing project.

(9) Waiver to Comply to Federal Law or Regulation. The KCHA shall be authorized to waive any of the restrictions on sale or transfer, and use in order to comply with or conform to requirements set forth in Federal laws or regulations governing mortgage insurance or guarantee programs or requirements set forth by federally chartered secondary mortgage market participants. For the purposes of these restrictions, the United States Department of Housing and Urban Development shall be defined as and considered a mortgage holder.

(10) Release of Repurchase Right and Occupancy Requirement. If the real property is financed under a federally subsidized mortgage program and these restrictions would jeopardize the Federal government's ability to recapture any interest credit subsidies that were provided to the owner; or if the real property is in poor condition and the resale of the property, with or without repairs and rehabilitation to correct deficiencies, may be construed to expose the County to an unacceptable amount of economic or liability risk; or if the calculated repurchase price of the real property is comparable to or above the unrestricted market value of the property, the County may decline its first option to purchase the real property subject to the restrictions on sale or transfer, and use; and the owner may then transfer the real property to any subsequent owner or transferee, without buyer, price, or occupancy restriction, and the restrictions on sale or transfer, and use, shall be automatically extinguished and shall not attach in subsequent transfers of title, provided that:

(A) The County will decline its first option to purchase for a period of time not to exceed one (1) year, during which time of the release, the real property owner must sell or transfer title; and

(B) Upon the sale or transfer of the real property, the owner shall be required to pay any amount owing the County, including any mortgage note or other loan, any subsidy or deferred sales price, interest on any amount owing, and the County's share of any net appreciation pursuant to the County's Shared Appreciation Program, if applicable.

(11) Mortgage Consents. The Executive on Housing shall consent to mortgages and liens on the property for the purpose of financing, re-financing, purchase of the fee simple title, repayment of a subsidy or deferred sales price, payment of the County's share of appreciation for real property subject to the County's Shared Appreciation Program, construction of essential or modest capital improvements, or catastrophic household medical expenditures of an emergency or life-threatening nature, provided the total principal balance of all mortgages and liens does not exceed the amount prescribed by Subsection (g)(1)(A) of this Section. However, in the case of re-financing a federally subsidized mortgage, the Executive on Housing shall consent to the re-finance of a loan in excess of the amount prescribed by Subsection (g)(1)(A) and up to a total amount that does not exceed the principal balance of all mortgages and liens that have obtained the County's prior consent and accrued interest credit subsidy. In addition, the Executive on Housing may consent to mortgages or liens in excess of the amount prescribed by Subsection (g)(1)(A) that are created solely for the purpose of enabling the owner to add capital improvements to the real property that are essential or modest and which shall proportionately increase the amount prescribed in Subsection (g)(1)(A) when completed.

(12) The County's interest created by the provisions of these restrictions shall constitute a lien on the real property and shall be superior to any other mortgage or lien, except those mortgages or liens:

(A) Created solely for the purchase of the real property;

(B) Insured or held by a Federal housing agency; or

(C) Created with the written consent of the County.

(13) Subsidy or Deferred Sales Price. In any sale by the County of real property for which a subsidy or deferred sales price was made by the County, as described in Subsection (g)(1)(C)(ii) of this Section, the amount, a description of the cost items, and the conditions of the subsidy or deferred sales price shall be clearly stated at the beginning of the contract document issued by the County.

(14) Application of Restrictions. The provisions of Subsections (f), (g) and (h) of this Section shall be incorporated in any deed, lease, agreement of sale, or other instrument of conveyance, rule or regulation relating to restrictions on sale or transfer, and use of real property purchased from the County through its KCHA or real property privately developed and sold to satisfy an affordable housing requirement and, by mutual agreement between the County and the private developer, is subject to these restrictions.

(g) Real Property; Restrictions on Sale or Transfer, Waiver of Restrictions.

(1) Restrictions on Sale or Transfer. The following restrictions shall apply to the sale or transfer of any real property purchased through the KCHA from the County or real property privately developed and sold to satisfy an affordable housing requirement and, by mutual agreement between the County and the private developer, is subject to these restrictions whether on fee simple or leasehold property.

(A) For a period of ten (10) years after the purchase of a dwelling unit, during the five (5) year construction period after the purchase of a vacant lot, and for a period of ten (10) years from the occupancy of a dwelling unit constructed by or for the owner on a vacant lot, whether ownership of the dwelling unit or vacant lot is from an original or subsequent purchase, and whether by lease, assignment of lease, deed, or agreement of sale, if the owner wishes to sell or to transfer title to the real property or the lease, the County shall have the first option to purchase the real property or lease at a price which shall not exceed the sum of:

(i) The original cost to the owner;

(ii) The cost of any capital improvements added by the owner, provided that for a vacant lot owner, the cost of a dwelling unit constructed by an owner-builder, including a participant in a County sponsored self-help housing project, shall be the initial building assessment value determined by the County's Real Property Tax Division, Department of Finance or the total documented cost of construction, whichever is greater; and

(iii) Simple interest on the original cost to the owner and the cost of capital improvements added to the property by the owner at the rate of one percent (1%) a year.

(B) The County may purchase the unit either free and clear of all mortgages and liens or subject to existing mortgages and liens.

(i) If the real property is conveyed free and clear of all mortgages and liens, it shall be conveyed to the County only after all mortgages and liens are released.

(ii) If the real property is conveyed subject to existing mortgages and liens, the County shall assume the seller's obligation on any first mortgage created for the sole purpose of purchasing the real property and for any other mortgage or lien that the County has consented to in writing. The amount paid by the County to the seller shall be the difference, if any, between the purchase price determined by the provisions in Paragraph (1)(A) of this Subsection and the total of the outstanding principal balances of the mortgages and liens assumed by the County.

(iii) If the real property is financed under a federally subsidized mortgage program, in lieu of the release of these restrictions pursuant to Subsection (f)(10) of this Section, the County, at its sole option, may purchase the property for a sum in excess of the amounts prescribed in Paragraph (1)(A) of this Subsection and equal to the sum of mortgagee's principal balance plus accrued interest credit subsidy.

(C) After the end of the tenth (10th) year from the date of purchase, or execution of an agreement of sale, the owner may sell the real property or assign the property to any person or firm free from any price restrictions; provided that the owner shall be required to pay to the County the sum of:

(i) The balance of any mortgage note, agreement of sale, or other amount owing to the County, including the County's share of any net appreciation on real property subject to the County's Shared Appreciation Program, if applicable;

(ii) Any subsidy or deferred sales price made by the County in the acquisition, financing, development, construction, and sale of real property, and any other amount expended by the County not counted as cost in the original sales price but charged to the real property by good accounting

practice as determined by the KCHA whose books shall be prima facie evidence of the correctness of the costs; and

(iii) Interest on the subsidy and any other amount expended at the rate of seven percent (7%) a year computed as to the subsidy or deferred sales price, from the date of purchase, or execution of the agreement of sale, and as to any amount expended, from the date of expenditure; provided that the computed interest shall not extend beyond thirty (30) years from the date of purchase, or execution of agreement of sale, of the property; and provided that if any proposed sale or transfer will not generate an amount sufficient to pay the County the sum computed under this Paragraph the County shall have the first option to purchase the real property at a price which shall not exceed the sum as computed under Paragraph (1)(A) of this Subsection.

(D) Notwithstanding any provision above to the contrary, pursuant to rules adopted by the KCHA, the subsidy or deferred sales price described in Paragraph (1)(C)(ii) of this Subsection and any interest accrued pursuant to Paragraph (1)(C)(iii) of this Subsection may be paid at any time.

(2) Waiver of Restrictions. The restrictions prescribed in Paragraph (1) of this Subsection may be waived by the Executive on Housing if:

(A) The owner wishes to transfer title to the real property or lease by devise or through the laws of descent to an immediate family member who would otherwise qualify under rules established by the KCHA and who accept the restrictions on sale or transfer, and use, which shall be reinstated with the effective date of the original purchase, and provided that the immediate family member accept reinstatement of the County's Shared Appreciation Program, if applicable; or

(B) The sale or transfer of the real property would be at a price and upon terms that preserve the anti-speculative intent of these restrictions without the necessity of the County to repurchase the real property and that the sale or transfer is to a subsequent owner or transferee determined eligible by the KCHA, provided that the subsequent owner or transferee accept the restrictions on sale or transfer, and use, which shall be reinstated as of the new effective date of the subsequent purchase, and further provided that the subsequent owner or transferee accept reinstatement of the County's Shared Appreciation Program, if applicable.

(3) Foreclosure of Real Property.

(A) The restrictions on sale or transfer, and use shall be automatically extinguished and shall not attach in subsequent transfers of title when a mortgagee or other party becomes the owner of the real property or leasehold interest pursuant to a mortgage foreclosure, foreclosure under power of sale, or a conveyance in lieu of foreclosure after a foreclosure action is commenced or when a mortgage is assigned to a Federal housing agency. Any law to the contrary notwithstanding, a mortgagee under a mortgage covering title or leasehold interest of real property encumbered by the first option to purchase in favor of the County, prior to commencing mortgage foreclosure proceedings, shall notify the County in writing of:

(i) Any default of the mortgagor under the mortgage within ninety (90) days after the occurrence of the default, and

(ii) Any intention of the mortgagee to foreclose the mortgage under Chapter 667, Hawai'i Revised Statutes, provided that the mortgagee's failure to provide such written notice to the KCHA shall not affect such holder's rights under the mortgage.

(B) The County shall be a party to any foreclosure action, and shall be entitled to all proceeds remaining in excess of all customary and actual costs and expenses of transfer pursuant to default, including liens and encumbrances of record; provided that the person in default shall be entitled to an amount which shall not exceed the sum of amounts determined pursuant to Paragraph (1)(A) of this Subsection less any amounts determined to be customary and actual costs and expenses of transfer pursuant to default.

(h) Real Property; Restrictions on Use.

(1) Occupancy Requirements. Real property purchased from the County through its KCHA or real property privately developed and sold to satisfy an affordable housing requirement and, by mutual agreement between

the County and the private developer, is subject to these restrictions requires that the dwelling unit shall be occupied by the owner at all times during the applicable restriction period, except in a hardship circumstance where a temporary occupancy waiver is provided by the Executive on Housing or occupancy is temporarily suspended as a result of a natural disaster that renders the dwelling unit non-habitable.

(A) Dwelling units purchased from the County begin the ten (10) year restriction period from the date of purchase; and

(B) Vacant lots purchased from the County require the owner to build or have built a dwelling unit on the vacant lot and that the dwelling unit shall be completed and shall be occupied by the owner within five (5) years from the date of purchase of the vacant lot. Upon occupancy of the completed dwelling unit, the ten (10) year restrictions on sale or transfer, Subsection (g) of this Section, and the applicable ten (10) year restrictions on use, Subsection (h) of this Section, shall begin.

(2) Verification of Occupancy. From time to time the KCHA may submit a verification of owner-occupancy form to the owner during the restriction period. Failure to respond to the verification in a timely manner or violation of Paragraph (1) of this Subsection shall be sufficient reason for the County, at its option, to purchase the real property as provided by Subsection (g)(1)(A) of this Section.

(3) Release of Repurchase Right or Foreclosure of Real Property. The restrictions prescribed in Paragraph (1) of this Subsection shall be automatically extinguished and shall not attach in subsequent transfers of title as prescribed in Subsection (g)(3) or (4) of this Section.

(4) Waiver of Restrictions. The restrictions prescribed in Paragraph (1) of this Subsection may be temporarily waived by the Executive on Housing for a period of time up to one (1) year for a hardship circumstance, during which time the dwelling unit may be rented or leased, provided that:

(A) The hardship circumstance is an unforeseeable job or military transfer, a temporary educational sabbatical, a serious illness of the owner or a member of the owner's household, or such other hardship circumstance as determined by the KCHA on a case by case basis;

(B) The waiver may be granted only to qualified residents who have paid resident State income taxes during all years in which they occupied the dwelling and who shall continue to pay resident State income taxes during the waiver period;

(C) The term of the Restriction on Sale or Transfer, and Use shall be extended by one (1) day for each day that the owner occupancy requirement is waived;

(D) The term of the waiver may be extended or other waivers may be approved at other time periods provided the total occupancy waiver period may not exceed ten (10) years;

(E) The County may recover all relevant administrative expenses and attorney's fees from the owner; and

(F) Failure to re-occupy the dwelling unit by the owner at the end of the temporary waiver period shall be sufficient reason for the County, at its option, to purchase the real property as provided in Subsection (g)(1)(A) of this Section.

(i) Use of Surplus and Operating Reserve Funds.

(1) Within thirty (30) days after the conclusion of each fiscal year, the Executive on Housing shall determine the amount of surplus funds resulting from the operation of the Section 8 Program from the just concluded fiscal year and shall credit all such funds to the operating reserve account.

(2) The operating reserve funds may be used for any of the following purposes pursuant to the provisions of Subsection (g) of this Section:

(A) For the administration of the Section 8 Program;

(B) For the administration of any other County housing program or project;

(C) For the hiring of additional staff, the purchase of equipment, or the construction of capital improvements for the Section 8 Program or for any other County housing program or project;

(D) For the promotion or implementation of any of the purposes, programs, or projects provided for in this Section;

(E) For the promotion or implementation of any of the powers granted to the County pursuant to Sections 46-15, 15.1 and 15.2 and Chapter 53 of the Hawai'i Revised Statutes; and

(F) For any other housing related purposes, services or activities determined by the Council to be consistent with this Section.

(j) Annual Budget. The Executive on Housing shall prepare an annual budget for the KCHA in the same manner as any other County department. This budget shall include an accounting of all funds to be received from all sources, including County, State and Federal funds, and for all expenditures to be made from such funds. This annual budget shall be furnished to the Director of Finance and the Mayor, who shall submit it as part of the annual budget ordinance of the County to the Council, as provided in the Kaua'i County Charter. Included in the KCHA annual budget shall be all proposed expenditures from all special fund accounts, including but not limited to, the operating reserve account, the housing revolving fund, and the housing and community development revolving fund. No funds shall be expended from such special fund accounts unless authorized by the Council. The use of all Federal funds proposed in the KCHA annual budget shall be subject to all applicable Federal regulations, laws, and restrictions.

(k) Waiver of Provisions. If any of the provisions of this Section jeopardizes the receipt by the County or the KCHA of any Federal or State grant-in-aids or any other Federal or State allotment of money, such provision may, insofar as such fund is jeopardized, be waived by the Council upon the recommendation of the Mayor. (Ord. No. 280, May 5, 1976; Sec. 2-1.16, 1978 Cumulative Supplement; Ord. No. 372, September 19, 1979; Ord. No. 490, June 26, 1986; Ord. No. 557, September 19, 1989; Ord. No. 570, June 26, 1990; Ord. No. 611, November 25, 1992; Ord. No. 676, February 13, 1995; Ord. No. 710, October 14, 1996; Ord. No. 740, July 6, 1999; Ord. No. 802, May 28, 2003; Ord. No. 850, May 24, 2007)

Exhibit 2

APPLICANT/DEVELOPER EXPERIENCE

Development Experience

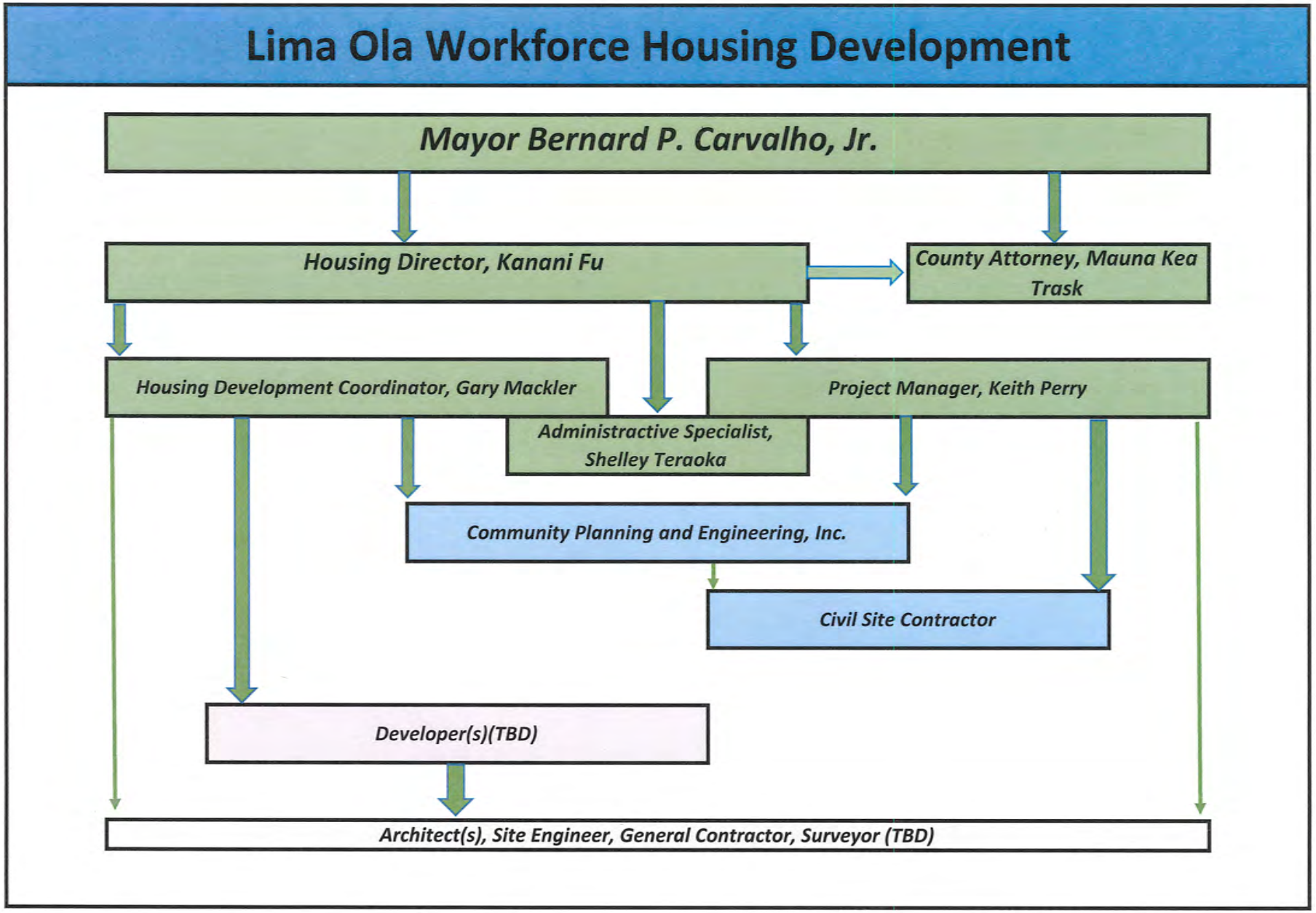
Kauai County Housing Agency (KCHA)

Year Completed	Project Name	Location	Number of Units	Type	Funding	KCHA Role	Contractor
1975	Weliweli Subdivision	Poipu	14	Single Family	HHA	Co-Developer	Kauai Builders
1978	Lihue Town Estates	Lihue	50	Single Family	HHA	Co-Developer	Kauai Builders
1980	Kawaihao Estates	Kawaihao	18	Lots	CoK HRF	Administration	Self-builders
1980	Kapaa Meadows	Kapaa	50	Single Family	CoK HRF	Co-Developer	Jitcahku
1986	Wailele	Kilauea	9	Single Family	CoK HRF	Developer	Matt Deal
1990	Komohana Subdivision	Puhi	13	Single Family	CoK HRF	Developer	Kauai Builders
1993	Eleele Nani S/D II	Eleele	96	Single Family	Private	Administration	Kauai Builders, Self-builders
1994	Paanau Village	Koloa	60	Multi Family	CoK, HUD	Developer	Kauai Builders
1997	Kalepa Village	Hanamalu	60	Multi Family	CoK, Pakui	Developer	Shioi
1998	Hale Kapuna Elderly Housing	Kalaheo	28	Multi Family	CoK, Pakui	Lender	Unlimited
2001	Kapaa Self Help	Kapaa	20	Improved Lots	County HUD	Lender	Self-builders
2004	Kalepa Village II	Hanamalu	40	Mulit Family	HUD, LIHTC	Lessor/Lender	PrimaTech
2007	Kalepa Village III	Hanamalu	40	Multi Family	HUD, State CIP	Lessor/Lender	Unlimited
2009	Kalepa Village IV	Hanamalu	40	Multi Family	HUD, State CIP	Developer	Unlimited
2015	Kanikoo Phase 1	Lihue	60	Mulit Family	HOME, LIHTC	Lessor/Lender	Shioi
2015	Kolopua	Princeville	44	Mutli Family	HOME, LIHTC	Lessor/Lender	Unlimited
2016	Kanikoo Phase 2	Lihue	14	Mutli Family	HOME, LIHTC	Lessor/Lender	Shioi

Exhibit 3

PROJECT TEAM INFORMATION AND RESUMES

ORGANIZATIONAL CHART



KAUAI COUNTY HOUSING AGENCY

LIMA OLA DEVELOPMENT TEAM – KEY STAFF

KANANI FU

Housing Director

EDUCATION

M.A., Organizational Change - Hawaii Pacific University
B.S., Mathematics minor in Physics – Pacific University
High School Diploma – Kamehameha Schools

PROFESSIONAL EXPEREINCE

Housing Director, *03/16– Present* **Kaua'i County Housing Agency**

- Manage Housing Agency Programs – Affordable Residential Development & Asset Management, Housing and Community Services Grants, Residential and Development Loans, HUD Section 8 Rental Assistance, and Fair Housing Advocacy.
- Create, promote, and implement housing policy, planning initiatives, and funding with Federal, State and Local governments.
- Provide community outreach and execute private/public partnerships focused on improving housing availability and conditions.
- Financial responsibility for annual and long term budgeting. Pro-forma evaluation and creation.

Special Assistant to the Housing Director, *11/13– 03/16* **Kaua'i County Housing Agency**

- Manage development contracts for the predevelopment of affordable housing projects for Lima Ola Workforce Housing, Koa'e Workforce Housing and State Scattered Lots set aside.
- Oversee and administer the County's affordable Housing Policy and execute Housing Agreements with applicable parties.
- Lead the marketing efforts for our development projects, coordinate community meetings, build relations and partner with public and private organizations to advance the development of affordable units on Kauai.

Program Specialist, *01/12– 11/13* **County of Kaua'i, Agency on Elderly Affairs**

- Develop and assist in the implementation of Agency policies to become a full functioning Aging and Disability Resource Center.
- Oversee budget and spending approvals of State funds. Reconcile monthly funds being dispersed and ensure Agency spending is on track.
- Collaborate with community and government agencies to provide home health care services to Kaua'i's elderly population.
- Coordinate all case management services assisting Kaua'i's elderly with their long term care needs.
- Monitor the Agency's service provider contracts to ensure compliance and delivery of goods and services.

Executive Director, *03/08 – 01/12* **Hi'ipoi LLC - Makaweli Poi Mill**

- Lead the nonprofit organization in its mission to perpetuate culture through taro and build a successful poi mill.
- Collaborated with Kaua'i taro farmers with various resources ultimately increasing taro supply by 80 % over 2 years.
- Managed Poi Mill operations increasing poi production by 60% and doubling off island distribution

KAUAI COUNTY HOUSING AGENCY

LIMA OLA DEVELOPMENT TEAM – KEY STAFF

GARY MACKLER, HOUSING DEVELOPMENT COORDINATOR

As a long-time Kauai resident and affordable housing advocate, Gary has worked in the Housing Agency's Development Division for over 23 years. Gary holds a Juris Doctor degree from Western State University College of Law, and worked 6 years as a corporate business agent. Since joining the Housing Agency in 1993, Gary has focused on affordable housing programs, federal block grants, project development and coordination, and project planning. As the administrator for the County's HOME Investment Partnerships Program, Gary has administered more than $59 million dollars in HOME funds. A partial list of past project responsibilities include the following:

Paanau Village Phase 1 & 2 (Koloa)
Kalepa Village Phase 1, 2, 3 & 4 (Hanamaulu)
Lihue Theater Elderly Rental
Hale Kupua Elderly Rental (Kalaheo)
Kilauea Estates Subdivision
Eleele Iluna Subdivision
Hanapepe Self-Help Project
Kalaheo Self-Help Project
Puhi Self-Help Project
Rice Camp Senior Housing Phase 1 & 2 (Lihue)
Kolopua (Princeville)
Koae Workforce Housing (Poipu)

KEITH PERRY, PROJECT MANAGER

Born and raised on the south side of Kauai, Keith has managed construction projects for the past 16 years throughout the United States. Working the last 10 years in Hawaii, Keith has been instrumental in providing Value Engineering to projects that have resulted in substantial cost saving and improved products for owners.

Project Experience:

2006	Poipu Sewer System Upgrades	HOH Utilities
2007	Anahola Watertank Landslide Mitigation	DLNR
2008-2009	Kauai Lagoons Mass Grading and Infrastructure	Kauai Lagoons, LLC
2010-2011	Emergency Earthquake Repairs, Hawaii County	HDOT
2012	Warriors in Transition Housing and Infrastructure	ACoE
2013	Wailua and Waipouli Waterlines	DOW
2013-2014	Hokulei Village Mass Grading and Infrastructure	PDC
2014-2015	Pili Mai Residential Housing	Brookfield Home

KAUAI COUNTY HOUSING AGENCY

LIMA OLA DEVELOPMENT TEAM – KEY STAFF

Kanani Fu, Housing Director

- Oversight and Management of Housing Agency Employees
- Secure infrastructure development financing
- Lead community outreach and consultation effort
- Evaluate development partners and consultants
- Coordinate planning and development phases

Gary Mackler, Housing Development Coordinator

- Advise team regarding complex financial acquisition and structuring
- Review compliance with federal grant program requirements
- Evaluate development partners and consultants
- Prepare Development RFP

Keith Perry, Project Manager

- Coordinate planning and development including:
    - Develop project budgets
    - Coordinate with government agencies for planning and permitting
    - Provide Value Engineering and design review
    - Draft and review contracts and amendments
    - Manage construction phases including close-out

Anson M. Murayama, P.E.

Chief Executive Officer/Principal-In-Charge

1286 Queen Emma Street, Honolulu, HI 96813

Education
B.S., Civil Engineering - University of Hawaii at Manoa

Professional Experience
Community Planning & Engineering, Inc. - Chief Executive Officer
Environet, Inc. - Chief Engineer
R.M. Towill Corporation - Project Manager
AMKOR A&E - Chief Civil Engineer
Barrett Consulting Group - Project Manager
M&E Pacific - Project Engineer

Training and Certifications
Registered Professional Engineer, Hawaii, Civil

Career Summary
As CP&E's Chief Executive Officer, Mr. Murayama ensures that staffing and resources are appropriately allocated so that projects move successfully towards completion while remaining on schedule and within budget. He has over three decades of engineering experience managing utilities and infrastructure improvements for military, residential, commercial and industrial properties, designing State and County transportation systems, and completing engineering investigations, feasibility studies, and infrastructure master plans. Having managed performance on individual contracts up to $500 million, Mr. Murayama understands the complexity and importance of successful working relationships with partners, contractors, and reliable subcontractors in delivering high quality, profitable projects and achieving client satisfaction.

Project Experience

Design-Build Construction

- United States Army Corps of Engineers, Far East District, Child Development Center, Yongsan Army Garrison, Yongsan, South Korea

Master Planned Communities

- Department of Hawaiian Home Lands, East Kapolei Master Planned Community Developments, Kapolei, Hawaii
- Waiawa Ridge Master Planned Community, Waiawa, Hawaii

Highway and Roadway Projects

- Department of Hawaiian Home Lands, East-West Road, Kapolei, Hawaii
- Department of Transportation, PM Zipper Lane Extension Feasibility Study, Makakilo, Hawaii
- Department of Transportation, Mililani Interchange Traffic Study, Mililani, Hawaii
- County of Maui, Department of Public Works, Maui Federal-Aid Road Rehabilitation Projects:
    - Wakea Avenue Rehabilitation
    - Kamehameha Avenue & Hina Avenue Rehabilitation
    - Pukalani Street/Lono Avenue Rehabilitation
    - Papa Avenue Pavement Rehabilitation
    - Kokomo Road Pavement Rehabilitation
    - Makawao Road Pavement Rehabilitation

Utility Infrastructure Projects

- City and County of Honolulu, Ala Moana Boulevard Water System Improvements, Phase I
- City and County of Honolulu, Ward Avenue 12-inch and 8-Inch Mains, Honolulu, Hawaii

Construction Management

- Clarence T.C. Ching Sports Complex, University of Hawaii at Manoa Campus, Honolulu, Hawaii
- Sakamaki Hall Renovation, University of Hawaii at Manoa Campus, Honolulu, Hawaii

Frank J. Camacho, P.E.
Project Manager

1286 Queen Emma Street, Honolulu, HI 96813

Education
B.S., Civil Engineering - University of Hawaii at Manoa

Professional Experience
Community Planning & Engineering, Inc. - Project Engineer
Community Planning & Engineering, Inc. - Civil Engineer
Community Planning & Engineering, Inc. - Intern

Training and Certifications
Registered Professional Engineer, Hawaii, Civil

Career Summary
Mr. Camacho has 8 years of civil engineering experience executing a wide variety of civil designs. He has a full range of engineering and project management experience, and is proficient in managing and executing project workload, interdisciplinary coordination, project timeline scheduling, fee proposal and fee negotiations, U.S. and local government and architect/engineer coordination, and preparation of confirmation notices and memoranda. His broad range of engineering experience covers drainage studies and analysis, grading work, infrastructure and utility design, conducting master plans and engineering reports, and management/oversight of multiple of projects involving land development designs. He also has experience with traffic engineering including the design of roadways, traffic control and traffic analyses.

Mr. Camacho has experience working with numerous government and private agencies. His thorough understanding of civil design requirements makes him a significant contributor to the permitting process and achieving construction documents compliance. He has been actively involved with multiple DHHL affordable housing projects, including the Keokea-Waiohuli and Lalamilo Subdivisions.

Project Experience

Master Planned Communities
- Department of Hawaiian Home Lands, East Kapolei Master Planned Community Developments, Kapolei, Hawaii
- Department of Hawaiian Home Lands, Lalamilo Subdivision, Waimea, Island of Hawaii
- Department of Hawaiian Home Lands, Keokea-Waiohuli Subdivision, Maui, Hawaii

Highway and Roadway Projects
- Department of Transportation, PM Zipper Lane Extension Feasibility Study, Makakilo, Hawaii
- Department of Transportation, Mililani Interchange Traffic Study, Mililani, Hawaii
- Department of Hawaiian Home Lands, East Kapolei II Development, East-West Road, Kapolei, Hawaii
- Department of Hawaiian Home Lands, East Kapolei II Development, Road "E", Kapolei, Hawaii

Utility Infrastructure Projects
- U.S. Army Corps of Engineers, Local Drainage Improvement at Susupe, Saipan, Common Wealth of the Northern Mariana Islands
- Naval Facilities Engineering Command, Hawaii, ASW Auxiliary Piping and Repair at Drydock No. 1, Pearl Harbor, Hawaii
- Department of Hawaiian Home Lands, Lalamilo Off-Site Water System, Waimea, Island of Hawaii

Jason K. Sugibayashi, P.E. 1286 Queen Emma Street, Honolulu, HI 96813
Project Engineer

Education
B.S., Civil and Environmental Engineering - University of Hawaii at Manoa

Professional Experience
Community Planning & Engineering, Inc. - Project Engineer
Sam O. Hirata Inc. - Project Engineer
Sato & Associates Inc. - Design Engineer

Training and Certifications
Registered Professional Engineer, Hawaii, Civil

Career Summary
Mr. Sugibayashi has 9 years of civil engineering experience preparing design plans, performing calculations, and submitting permits for site work associated with sewer, water, drainage and grading. He has provided civil engineering services to Federal and State agencies and private clients for a wide variety of projects, including subdivisions, shopping centers, resorts, office and industrial buildings, water systems, and roadways. He is actively involved in the American Society of Civil Engineers (ASCE), and served as president of the ASCE Hawaii Section Younger Member Forum.

Project Experience

Master Planning and Engineering Design Services
- Department of Hawaiian Home Lands, Keokea-Waiohuli Subdivision, Maui, Hawaii
- Kauai County Housing Agency, Lima Ola Subdivision, Kauai, Hawaii
- Grow the Army South Range, Schofield Barracks, Wahiawa, Hawaii
- Kapolei Commons Shopping Center
- Kamakoa Subdivision, Island of Hawaii
- Kohanaiki Resort, Island of Hawaii
- Steeltech New Office Building, Hawaii
- Easter Seals Hawaii New Building, Kapolei, Hawaii

Roadway Projects
- Servco Toyota Mapunapuna Repaving, Hawaii

Utility, Infrastructure, and Facility Design Projects
- Alvah Scott New Water System, Hawaii
- Hawaiian Cement New Water System, Hawaii
- Kalaeloa Solar Farm, Hawaii
- NAVFAC Hawaii, Renovate VOQ Building 926, Joint Base Pearl Harbor-Hickam, Hawaii
- Hawaiian Air Maintenance & Cargo Facility
- HART Maintenance and Storage Facility, Waiau, Hawaii
- P-109 Aircraft Maintenance Hangar, Andersen AFB, Guam
- Leilehua High School New Football Field, Hawaii
- Hardware Hawaii New Storage Yard, Kapolei, Hawaii

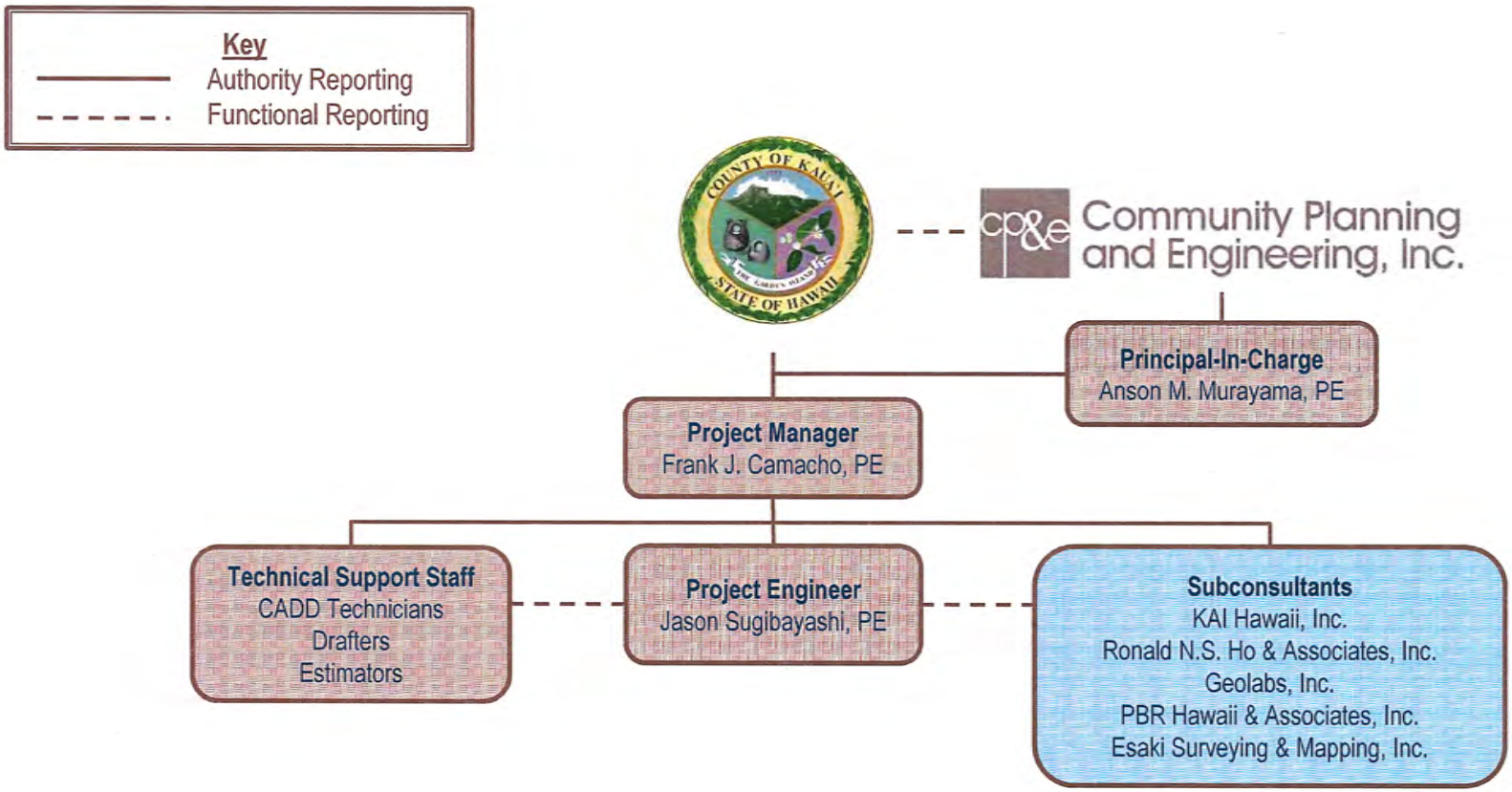

Key
Authority Reporting
Functional Reporting
COUNTY OF KAUAI
STATE OF HAWAII
cp&e
Community Planning and Engineering, Inc.
Principal-In-Charge
Anson M. Murayama, PE
Project Manager
Frank J. Camacho, PE
Technical Support Staff
CADD Technicians
Drafters
Estimators
Project Engineer
Jason Sugibayashi, PE
Subconsultants
KAI Hawaii, Inc.
Ronald N.S. Ho & Associates, Inc.
Geolabs, Inc.
PBR Hawaii & Associates, Inc.
Esaki Surveying & Mapping, Inc.

Exhibit 4

Project Site Information

Project Aerial View

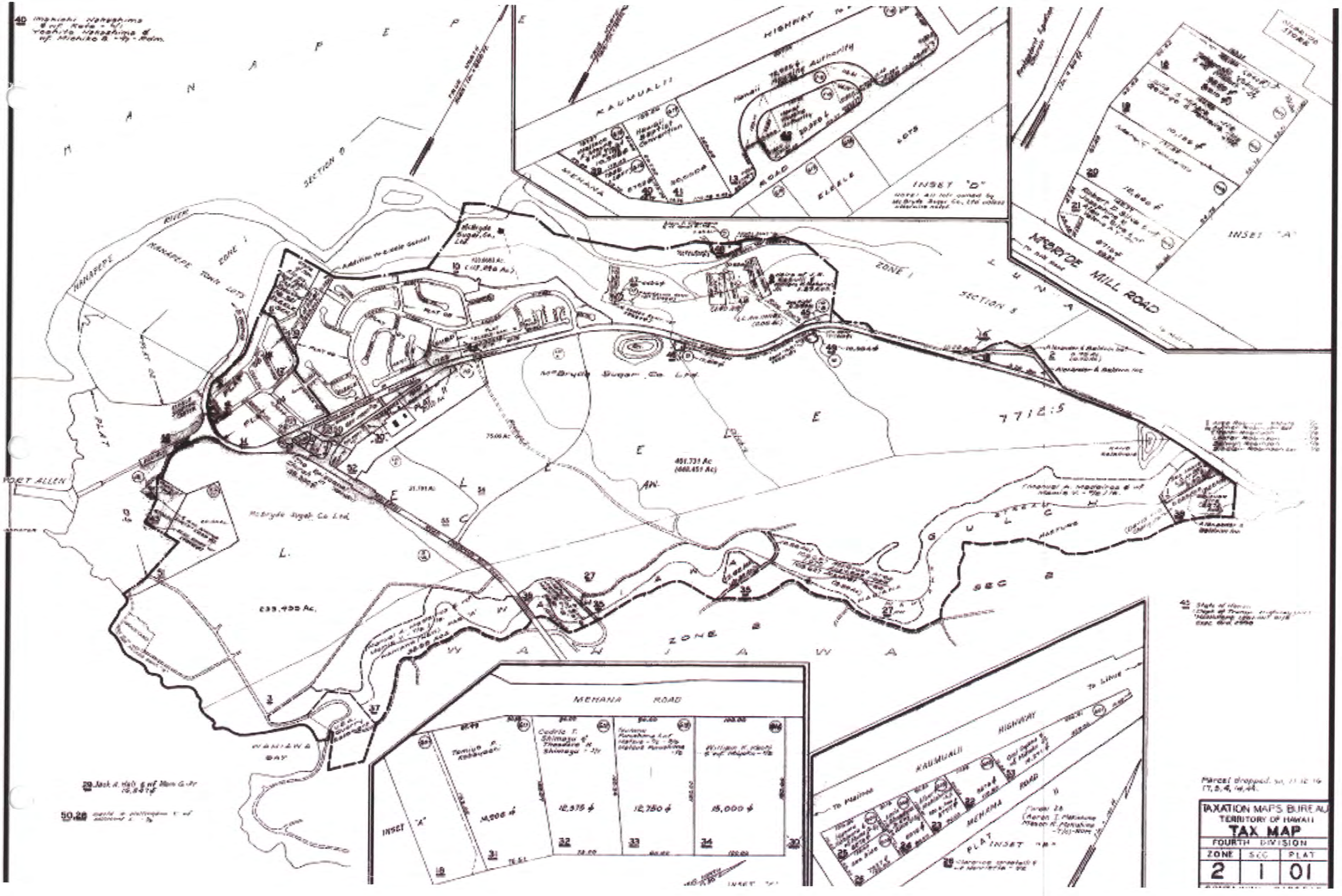
TMK (4) 2-1-001:027

Northeast of Intersection at Kaumualii and Haleweli Road


AWAWA
KO
OHI
PIAI
PUAHAU
KAUMOO
AEWA
KULEA
AKALEI
PUALEI
LEONI
LAULEA
MIMO
ULAULA
KAUMUALII
AHE
KEMANA
HUEHU
HALEWILI
QUARRY
0 250 500 1,000 Feet

Project Tax Map

TMK (4) 2-1-001:027


40 Imakichi Nakashima & wf. Kote
Yoshito Nakashima & wf. Michiko
HANAPEPE
SECTION 9
HANAPEPE RIVER
HANAPEPE ZONE 1
HANAPEPE TOWN LOTS
PORT ALLEN
PLAT
McBryde Sugar Co. Ltd.
McBryde Sugar Co. Ltd.
McBryde Sugar Co. Ltd.
Addition to Eleele School
75.00 Ac
451.731 Ac
(460.451 Ac)
21.191 Ac
235.450 Ac.
WAHIAWA BAY
ZONE 2
WAHIAWA
ZONE 1
SECTION 8
LUNA
SEC 2
GULCH STREAM
PASTURE
Alexander & Baldwin Inc.
Emanuel A. Medeiros & wf. Mamie V.
29 Jack A. Hall & wf. Mon G.
50.28
KAUMUALII HIGHWAY
MEHANA ROAD
ELEELE
LOTS
Hawaii Housing Authority
Hawaii Baptist Convention
INSET "D"
Note: All lots owned by McBryde Sugar Co. Ltd unless otherwise noted.
McBRYDE MILL ROAD
McBRYDE STORE
INSET "A"
MEHANA ROAD
Tomiyo P. Kobayashi
14,000 ¢
Cedric T. Shimazu & Theodore H. Shimazu
12,576 ¢
12,750 ¢
William K. Hashi
15,000 ¢
31
32
33
34
30
INSET "A"
KAUMUALII HIGHWAY
To Waimea
To Lihue
MEHANA ROAD
PLAT INSET "B"
Parcel 26
Aaron T. Makishima
Mason R. Makishima
45 State of Hawaii
Parcel dropped
TAXATION MAPS BUREAU
TERRITORY OF HAWAII
TAX MAP
FOURTH DIVISION
ZONE 2
SEC 1
PLAT 01

Current Zoning Map

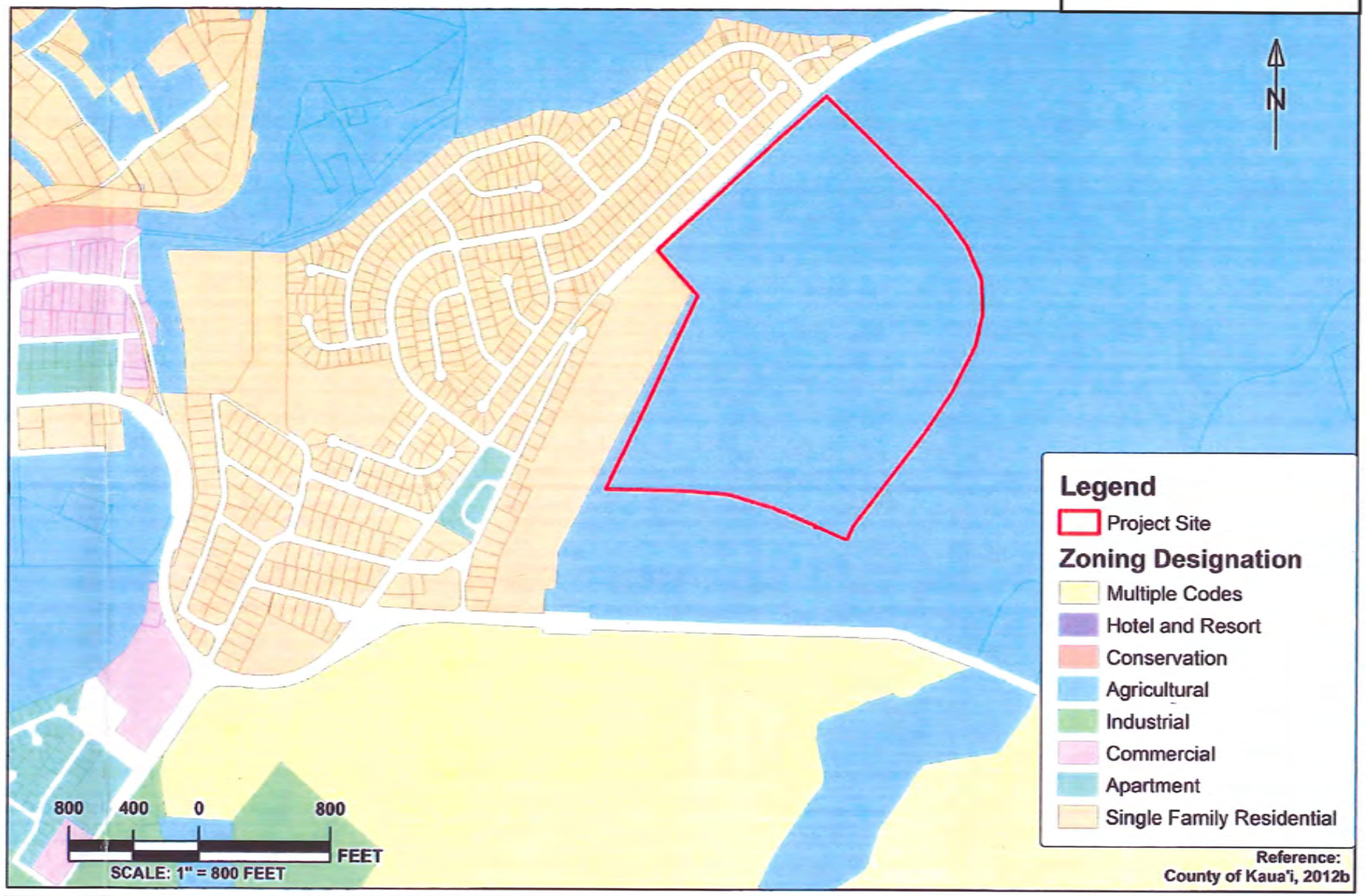
TMK (4) 2-1-001:027

Project area outlined in red

Current County Zoning = Agriculture

Requested County Zoning = Single Family Residential and Project District

Current Zoning = Agriculture



Community Planning and Engineering, Inc.

DRAFT ENVIRONMENTAL ASSESSMENT FOR THE LIMA OLA WORK FORCE HOUSING DEVELOPMENT

COUNTY ZONING DESIGNATION MAP
'ELE'ELE, KAUA'I, HAWAI'I

FIGURE 8

Exhibit 5

SITE CONTROL DOCUMENTS

NC

R-390 STATE OF HAWAII
BUREAU OF CONVEYANCES
RECORDED
FEB 26, 2010 08:01 AM
Doc No(s) 2010-026559

/s/ NICKI ANN THOMPSON
REGISTRAR
CONVEYANCE TAX: $12500.00

20 1/1 Z9

JN

Return by Mail (X) Pickup ( ) To:
ATTN: HOUSING DIRECTOR
COUNTY OF KAUAI
C/O COUNTY HOUSING AGENCY
4444 RICE ST, STE 330
LIHUE, HI 96766

TGOH 200957323
TGES A9-101-4653
BARBARA PAULO

This document contains 17 pages

Tax Map Key No.: (4) 2-1-001:027 (por.)

WARRANTY DEED WITH RESTRICTIONS AND COVENANTS

MCBRYDE SUGAR COMPANY, LIMITED, a Hawaii corporation, of Honolulu, Hawaii hereinafter called the "Grantor", in consideration of the sum of Ten Dollars ($10.00) and other valuable consideration to Grantor paid by **COUNTY OF KAUAI,** a municipal corporation, whose address is c/o County Housing Agency, 4444 Rice Street, Suite 330, Lihue, Kauai, Hawaii 96766, hereinafter called the "Grantee", the receipt of which is hereby acknowledged, does hereby grant, bargain, sell, convey, assign, transfer and set over unto Grantee and its successors and assigns:

> ALL of that certain parcel of land situate, lying and being at Eleele, Koloa, Kauai, State of Hawaii, described in Exhibit "A" attached hereto and made a part hereof (the "Property"), subject, however, to the encumbrances set forth in Exhibit "A";

AND the reversions, remainders, rents, issues and profits thereof, together with all buildings, improvements, tenements, rights, easements, privileges and appurtenances to the same belonging or appertaining or held and enjoyed therewith, and all of the estate, right, title and interest of the Grantor both at law and in equity therein and thereto.

TO HAVE AND TO HOLD the same unto the Grantee and its successors and assigns, absolutely and in fee simple, subject to the encumbrances mentioned in Exhibit "A".

AND for the consideration aforesaid, the Grantor for itself and its successors, hereby covenants with the Grantee, its successors and assigns: THAT Grantor is seised in fee simple of the Property, that the same is free and clear of and from all encumbrances except as reserved by this deed and as set forth in Exhibit "A" attached hereto, that Grantor has good right to sell and convey the Property, and that the Grantor and the Grantor's successors shall forever warrant and defend the same unto the Grantee and the Grantee's successors and assigns, against the lawful claims and demands of all persons whomsoever.

AND Grantee, for themselves, their heirs, personal representatives, successors and assigns, hereby acknowledges, covenants and agrees, perpetually, to and with Grantor, its successors and assigns, as follows:

1. RESTRICTED USE ON PORTION OF PROPERTY.

The Grantee covenants with the Grantor that Grantee is acquiring the Property solely for agricultural purposes or for the purpose of providing Affordable Housing, as defined below (the Grantee's Restricted Use"). Grantee agrees to cause the Property perpetually to be used strictly in accordance with Grantee's Restricted Use and acknowledges that Grantor agreed to transfer the Property to Grantee in part in reliance on Grantee's representation that Grantee shall cause the Property to be used strictly in accordance with Grantee's Restricted Use. Notwithstanding the foregoing, Grantee shall be deemed to be in compliance with Grantee's Restricted Use if Grantee sells portions of the Property as part of Grantee's programs for sales of Affordable Housing and includes in the deeds for such affordable units restrictions on resale of such units consistent with the Grantee's restrictions on resales of other Affordable Housing at the time of sale, whereupon Grantor will agree to terminate this restriction as to such portion of the Property. Grantor and its successors and assigns shall have the right to enforce this restriction on use by any available means, including but not limited to injunctive relief. For purposes hereof, "Affordable Housing" shall mean "Affordable Housing" or "Workforce housing" as defined in Kauai County Ordinance No. 860, effective June 10, 2008, as amended from time to time.

2. NEARBY AGRICULTURAL ACTIVITIES AND DANGEROUS CONDITIONS.

The Grantee, for itself, its successors and assigns, hereby acknowledges covenants and agrees with and to the Grantor, its successors and assigns, as follows:

The Grantee acknowledges that the Property is adjacent to, nearby or in the vicinity of lands being, or which in the future may be, actively used for the growing, harvesting and processing of agricultural products (such growing, harvesting and processing activities being herein collectively called the "Agricultural Activities"), which activities may from time to time bring upon the Property or result in smoke, dust, noise, heat, agricultural chemicals, particulates and similar substances and nuisances (collectively, the "Agricultural By-Products") and that the Property is adjacent to, nearby or in the vicinity of a water reservoir and open water ditch, among other potentially dangerous conditions incident to the Agricultural Activities ("Dangerous Conditions").

The Grantee hereby assumes complete risk of and forever releases the Grantor from all claims for damages (including, but not limited to, consequential, special, exemplary and punitive damages) and nuisances occurring on the Property and arising out of any Agricultural Activities or Agricultural By-Products or Dangerous Conditions; provided, however, Grantee does not assume any risk or release Grantor to the extent the Agricultural Activities, Agricultural By-Products and Dangerous Conditions violate applicable laws, ordinances or regulations. Without limiting the generality of the foregoing, the Grantee hereby, with full knowledge of its rights, forever: (i) waives any right to require the Grantor, and releases the Grantor from any obligation, to take any action to correct, modify, alter, eliminate or abate any Agricultural Activities or Agricultural By-Products or Dangerous Conditions, and (ii) waives any right to file any suit or claim against the Grantor for injunction or abatement of nuisances except to the extent such Agricultural Activities, Agricultural By-Products or Dangerous Conditions violate applicable laws, ordinances or regulations.

Any Agricultural Activities or Agricultural By-Products or Dangerous Conditions, and any claim, demand, action, loss, damage, liability, cost or expense arising therefrom, shall not constitute a breach of any covenant or warranty of the Grantor under this agreement or be the basis for a suit or other claim for injunction or abatement of nuisances, and, except to the extent the Agricultural Activities or Agricultural By-Products or Dangerous Conditions violate applicable laws, ordinances or regulations the Grantee hereby forever waives any right to file any such suit or claim for injunction or abatement of nuisances except to the extent the Agricultural Activities or Agricultural By-Products or Dangerous Conditions violate applicable laws, ordinances or regulations.

As used in this section regarding Agricultural Activities and Dangerous Conditions, all references to the "Grantor" shall mean and include the Grantor and all parent, subsidiary, sister and other affiliated companies of the Grantor, in their respective capacities as the current owner of the Property, the owner of the lands on which the Agricultural Activities or Dangerous Conditions are or may be conducted, and the person conducting or who may conduct the Agricultural Activities or Dangerous Conditions, and all successors and assigns of the Grantor and its parent, subsidiary, sister and affiliated companies.

3. HABITAT FOR HUMANITY EASEMENTS.

Grantor hereby reserves unto itself, for its benefit and for the benefit of Kaua`i Habitat for Humanity, as the owner of property adjacent to the Property, easements for drainage and waterline purposes, including but not limited to, the right and easement to construct, reconstruct, operate, maintain, repair and remove water lines, drain lines and such other appliances and equipment as may be necessary for the transmission of water, as shown on Exhibit "B" attached hereto and made a part hereof, together with a right of entry upon the Property and appurtenant interests, if any, for the aforesaid purposes.

Each of the foregoing covenants, agreements, acknowledgments, waivers and releases shall constitute covenants running with the land. Each such covenant, agreement, acknowledgment, waiver and release shall be binding upon, and all references to "Grantee" shall mean and include, the Grantee, its heirs, personal representatives, successors and assigns, and all persons now or hereafter acquiring any right, title or interest in or to the Property (or any portion

thereof) or occupying all or any portion of the Property. By accepting any right, title or interest in the Property (or any portion thereof) or by occupying all or any portion of the Property, each such person automatically shall be deemed to have made and agreed to, and shall be bound by, observe and be subject to, each of the foregoing covenants, agreements, acknowledgments, waivers and releases.

The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding all of the parties hereto, notwithstanding all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK.]

IN WITNESS WHEREOF, Grantor and Grantee have executed these presents this _____ day of _____, 2010.

MCBRYDE SUGAR COMPANY, LIMITED

By _____
Name: NORBERT M. BUELSING
Title: Vice President

By _____
Name: ALYSON J. NAKAMURA
Title: Secretary

Grantor

COUNTY OF KAUAI

By _____
Name: WALLACE G. REZENTES, JR.
Title: Director of Finance

By _____
Name: PETER A. NAKAMURA
Title: County Clerk

APPROVED AS TO FORM AND LEGALITY

By _____
Name: ALFRED B. CASTILLO, JR.
Title: County Attorney

APPROVAL RECOMMENDED

By _____
Name: EUGENE K. JIMENEZ
Title: Housing Director

Grantee

IN WITNESS WHEREOF, Grantor and Grantee have executed these presents this _____ day of FEB 3 - , 2010.

MCBRYDE SUGAR COMPANY, LIMITED

By _____
Name: NORBERT M. BUELSING
Title: Vice President

By _____
Name: ALYSON J. NAKAMURA
Title: Secretary

Grantor

COUNTY OF KAUAI

By _____
Name: WALLACE G. REZENTES, JR.
Title: Director of Finance

By _____
Name: PETER A. NAKAMURA
Title: County Clerk

APPROVED AS TO FORM AND LEGALITY

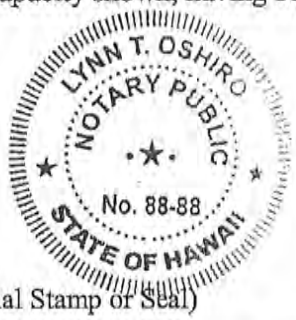
By _____
Name: ALFRED B. CASTILLO, JR.
Title: County Attorney

APPROVAL RECOMMENDED

By Eugene K. Jimenez
Name: EUGENE K. JIMENEZ
Title: Housing Director

STATE OF HAWAII)
) SS:
CITY AND COUNTY OF HONOLULU)

On this 3rd day of February, 2010, before me personally appeared NORBERT M. BUELSING, to me personally known, who, being by me duly sworn or affirmed, did say that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.



(Official Stamp or Seal)

Signature: Lynn T. Oshiro
Name: Lynn T. Oshiro
Notary Public, State of Hawaii

My commission expires: 02-08-2012

NOTARY CERTIFICATION STATEMENT

Document Identification or Description: Warranty Deed With Restrictions and Covenants

Doc. Date: Undated at time of notarization

No. of Pages: 16 Jurisdiction: First Circuit (in which notarial act is performed)

Lynn T. Oshiro 2/3/10
Signature of Notary Date of Notarization and Certification Statement

Lynn T. Oshiro
Printed Name of Notary

(Official Stamp or Seal)

STATE OF HAWAII)
) SS:
CITY AND COUNTY OF HONOLULU)

On this 3rd day of February, 2010, before me personally appeared ALYSON J. NAKAMURA, to me personally known, who, being by me duly sworn or affirmed, did say that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

(Official Stamp or Seal)

Signature: Lynn T. Oshiro
Name: Lynn T. Oshiro
Notary Public, State of Hawaii

My commission expires: 02-08-2012

NOTARY CERTIFICATION STATEMENT

Document Identification or Description: Warranty Deed With Restrictions and Covenants

Doc. Date: Undated at time of notarization

No. of Pages: 16 Jurisdiction: First Circuit (in which notarial act is performed)

Lynn T. Oshiro 2/3/10
Signature of Notary Date of Notarization and Certification Statement

Lynn T. Oshiro
Printed Name of Notary

(Official Stamp or Seal)

STATE OF HAWAII)
) SS:
COUNTY OF KAUAI)

On this ____ day of FEB 3 - 2010, 2010, before me personally appeared WALLACE G. REZENTES, JR., to me personally known, who, being by me duly sworn or affirmed, did say that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

FAY T. RAPOZO NOTARY 82-541 PUBLIC STATE OF HAWAII

(Official Stamp or Seal)

Signature: _____
Name: FAY T. RAPOZO
Notary Public, State of Hawaii

My commission expires: 8-18-2010

NOTARY CERTIFICATION STATEMENT

Document Identification or Description: Warranty Deed With Restrictions and Covenants

Doc. Date: FEB 3 - 2010

No. of Pages: 16 Jurisdiction: 5th Circuit
(in which notarial act is performed)

FAY T. RAPOZO NOTARY 82-541 PUBLIC STATE OF HAWAII

_____ FEB 3 - 2010
Signature of Notary Date of Notarization and Certification Statement

FAY T. RAPOZO
Printed Name of Notary

(Official Stamp or Seal)

STATE OF HAWAII)
) SS:
COUNTY OF KAUAI)

On this 18th day of February, 2010, before me personally appeared PETER A. NAKAMURA, to me personally known, who, being by me duly sworn or affirmed, did say that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

AIDA OKASAKI NOTARY 86-452 PUBLIC STATE OF HAWAII

Signature: _____
Name: Aida Okasaki
Notary Public, State of Hawaii

My commission expires: July 31, 2011

(Official Stamp or Seal)

NOTARY CERTIFICATION STATEMENT

Document Identification or Description: Warranty Deed With Restrictions and Covenants

Doc. Date: Undated at time of notarization

No. of Pages: 17 Jurisdiction: Fifth Circuit (in which notarial act is performed)

_____ 2-18-2010
Signature of Notary Date of Notarization and Certification Statement

Aida Okasaki
Printed Name of Notary

AIDA OKASAKI NOTARY 86-452 PUBLIC STATE OF HAWAII

(Official Stamp or Seal)

LOT A

LAND SITUATED AT ELEELE, KOLOA, KAUAI, HAWAII

Being Portions of Royal Patent 4485, Land Commission Award 7712,
Apana 5 to M. Kekuanaoa

Beginning at the southwest corner of this parcel of land, on the north side of Halewili Road, the coordinates of said point of beginning referred to Government Survey Triangulation Station "Puolo" being 4,722.82 feet North and 10,419.33 feet East, thence running by azimuths measured clockwise from true South:

			along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B), on a curve to the left with a radius of 50.00 feet, the chord azimuth and distance being:
1.	226° 42' 30"	70.71	feet;
2.	181° 42' 30"	100.00	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B);
			thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B), on a curve to the right with a radius of 1,340.00 feet, the chord azimuth and distance being:
3.	189° 33' 14"	365.83	feet;
			thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B), on a curve to the left with a radius of 50.00 feet, the chord azimuth and distance being:
4.	150° 01' 29"	73.58	feet;
5.	102° 39'	317.34	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B);
			thence along the remainder of R.P. 4485, L.A. Aw. 7712:5 (Lot B), on a curve to the left with a radius of 1,645 feet, the chord azimuth and distance being:

EXHIBIT "A"

6.	93° 46'	508.05	feet;
7.	84° 53'	235.26	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B);
			thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot B), on a curve to the right with a radius of 550.00 feet, the chord azimuth and distance being:
8.	100° 44'	300.43	feet;
9.	206° 35'	1,397.79	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot 10);
10.	136° 41'	376.73	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5 (Lot 10);
11.	226° 41'	1,233.27	feet along the southeast side of Kaumualii Highway;
			thence along the southeast side of Kaumualii Highway, on a curve to the right with a radius of 2,470.00 feet, the chord azimuth and distance being:
11.	228° 30' 27"	157.25	feet;
			thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 on a curve to the left with a radius of 50.00 feet, the chord azimuth and distance being:
12.	3° 30'27"	72.93	feet;
13.	316° 41'	600.40	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5;
			thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 on a curve to the right with a radius of 982.00 feet, the chord azimuth and distance being:
14.	351° 38'	1,125.10	feet;

15. 26° 35'	983.25	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5;
		thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 on a curve to the left with a radius of 1,744.00 feet, the chord azimuth and distance being:
16. 14° 08'45"	553.08	feet;
17. 1° 42'30"	100.00	feet along the remainder of R.P. 4485, L.C. Aw. 7712:5;
		thence along the remainder of R.P. 4485, L.C. Aw. 7712:5 on a curve to the left with a radius of 50.00 feet, the chord azimuth and distance being:
17. 316° 42'30"	70.71	feet;
18. 91° 42'30"	156.00	feet along the north side of Halewili Road to the point of beginning and containing an area of 75.000 acres.

SUBJECT, HOWEVER, to Easements D-1 and W-1.

Lihue, Hawaii
January 2010

DESCRIPTION PREPARED BY:
ESAKI SURVEYING & MAPPING, INC.

Dennis M. Esaki
Licensed Professional Land Surveyor
Certificate Number 4383

EXHIBIT "A"

SUBJECT, HOWEVER, to the following:

1. Reservation in favor of the State of Hawaii of all mineral and metallic mines.

2. Roadways, ditches and reservoirs as indicated on tax map.

3. The Wahiawa Stream and the free flowage thereof as indicated on tax map.

4. GRANT

TO	:	CITIZENS UTILITIES COMPANY, whose interest is now held by KAUAI ISLAND UTILITY CO-OP
DATED	:	May 18, 1989
RECORDED	:	Document No. 90-034891
GRANTING	:	a perpetual nonexclusive easement for utility purposes

5. The terms and provisions contained in the following:

INSTRUMENT	:	DECLARATION
DATED	:	January 17, 1991
RECORDED	:	Document No. 91-009980

6. RIGHT-OF-ENTRY

TO	:	CITIZENS UTILITIES COMPANY, whose interest is now held by KAUAI ISLAND UTILITY CO-OP
DATED	:	October 1, 1991
RECORDED	:	Document No. 92-010957
GRANTING	:	a right of entry for utility purposes

7. The terms and provisions contained in the following:

INSTRUMENT	:	AGREEMENT
DATED	:	July 21, 1992
RECORDED	:	Document No. 92-131587
PARTIES	:	A&B PROPERTIES, INC., a Hawaii corporation, and the BOARD OF WATER SUPPLY, COUNTY OF KAUAI, a political subdivision of the State of Hawaii
RE	:	water tank

8. NOTICE OF DEDICATION

DATED	:	Effective July 1, 2005
RECORDED	:	Document No. 2005-020297
BY	:	McBRYDE SUGAR COMPANY, LTD.
RE	:	dedication of land for agriculture purposes
PERIOD	:	10 year

9. The terms and provisions contained in the following:

INSTRUMENT	:	DECLARATION OF IMPORTANT AGRICULTURAL LANDS
DATED	:	March 12, 2009
RECORDED	:	Document No. 2009-038460

EASEMENT W-1
(For Water Purposes)

LAND SITUATED AT ELEELE AND WAHIAWA, KOLOA, KAUAI, HAWAII

Being a Portion of Lot A
Being Also a Portion of Royal Patent 4485,
Land Commission Award 7712, Apana 5 to M. Kekuanaoa

Beginning at the north corner of this parcel of land, on the southeast side of Kaumualii Highway, the coordinates of said point of beginning referred to Government Survey Triangulation Station "PUOLO" being 6,964.57 feet North and 9,525.98 feet East, thence running by azimuths measured clockwise from true South:

1.	316° 41'	222.71	feet along the remainder of Lot A;
2.	46° 41'	10.00	feet along the remainder of Lot A;
3.	136° 41'	222.71	feet along Lot 10;
4.	226° 41'	10.00	feet along the southeast side of Kaumualii Highway, to the point of beginning and containing an area of 2,227 square feet.

DESCRIPTION PREPARED BY:
ESAKI SURVEYING & MAPPING, INC.

Dennis M. Esaki
Licensed Professional Land Surveyor
Certificate Number 4383

Lihue, Hawaii
January 2010

EXHIBIT "B"
Page 1 of 2

EASEMENT D-1
(For Drain Purposes)

LAND SITUATED AT ELEELE AND WAHIAWA, KOLOA, KAUAI, HAWAII

Being a Portion of Lot A
Being Also a Portion of Royal Patent 4485,
Land Commission Award 7712, Apana 5 to M. Kekuanaoa

Beginning at the southwest corner of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "PUOLO" being 5,433.60 feet North and 9,151.65 feet East, thence running by azimuths measured clockwise from true South:

1.	206° 35'	1,302.29	feet along Lot 10;
2.	313° 30'	10.45	feet along the remainder of Lot A;
3.	26° 35'	1,255.22	feet along the remainder of Lot A;
4.	296° 35'	93.85	feet along the remainder of Lot A;
5.	26° 35'	10.00	feet along the remainder of Lot A;
6.	116° 35'	93.85	feet along the remainder of Lot A;
7.	26° 35'	33.94	feet along the remainder of Lot A;
			thence along Lot B, on a curve to the right with a radius of 550 feet, the chord azimuth and distance being:
8.	116° 03' 44"	10.00	feet to the point of beginning and containing an area of 13,943 square feet.

Lihue, Hawaii
January 2010

DESCRIPTION PREPARED BY:
ESAKI SURVEYING & MAPPING, INC.

Dennis M. Esaki
Licensed Professional Land Surveyor
Certificate Number 4383

EXHIBIT "B"
Page 2 of 2

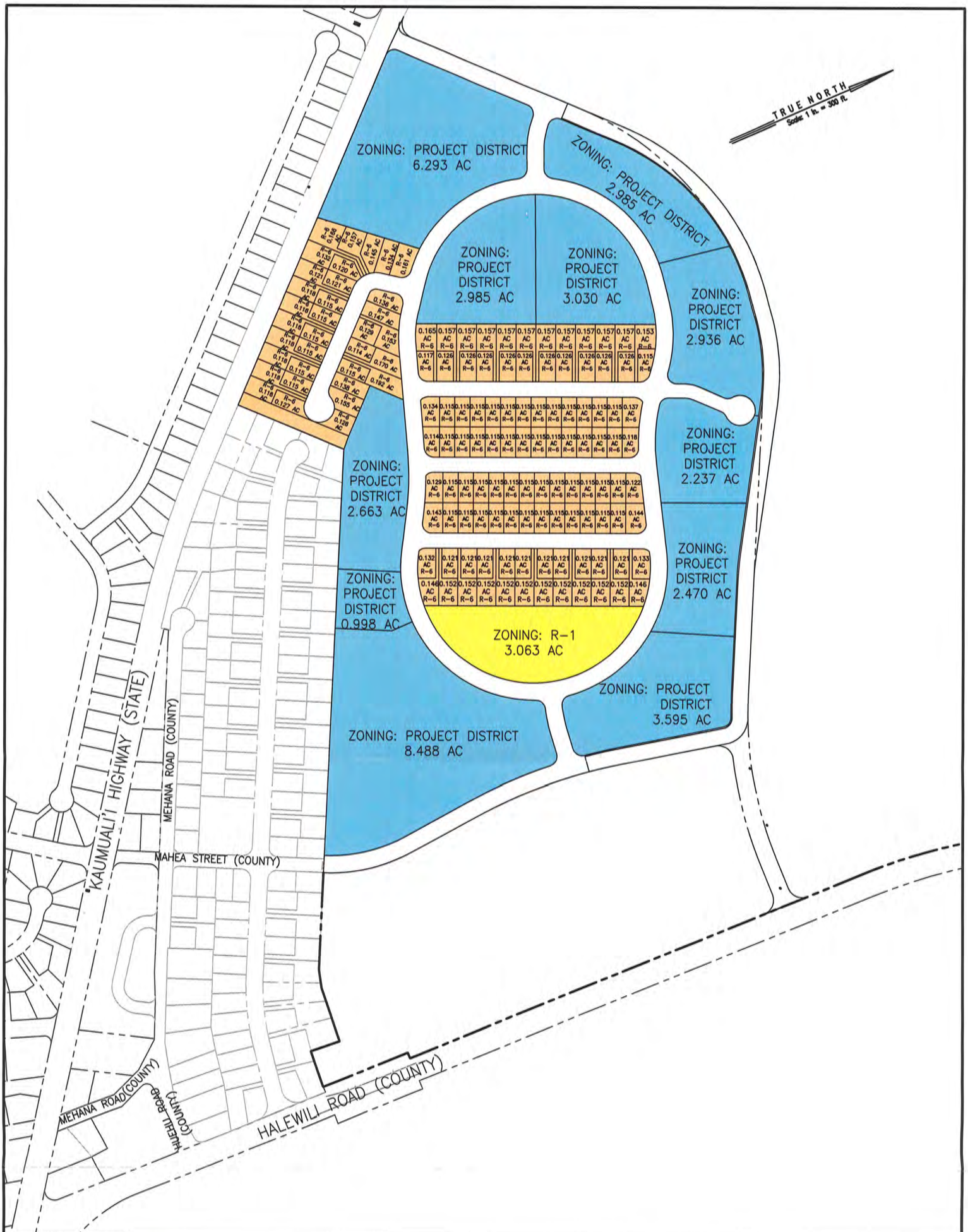
Exhibit 6

PRELIMINARY MAPS

Preliminary Zoning Map

Current Zoning = Agriculture

Proposed Zoning = Mix of Single Family (R-6), Project District (R-20), and R-1 for Multi-Use Park



ZONING LEGEND:

ZONING R-1

ZONING R-6

PROJECT DISTRICT

SLUC: URBAN

FLOOD HAZARD ZONE: ZONE X

LIMA OLA PRELIMINARY ZONING MAP

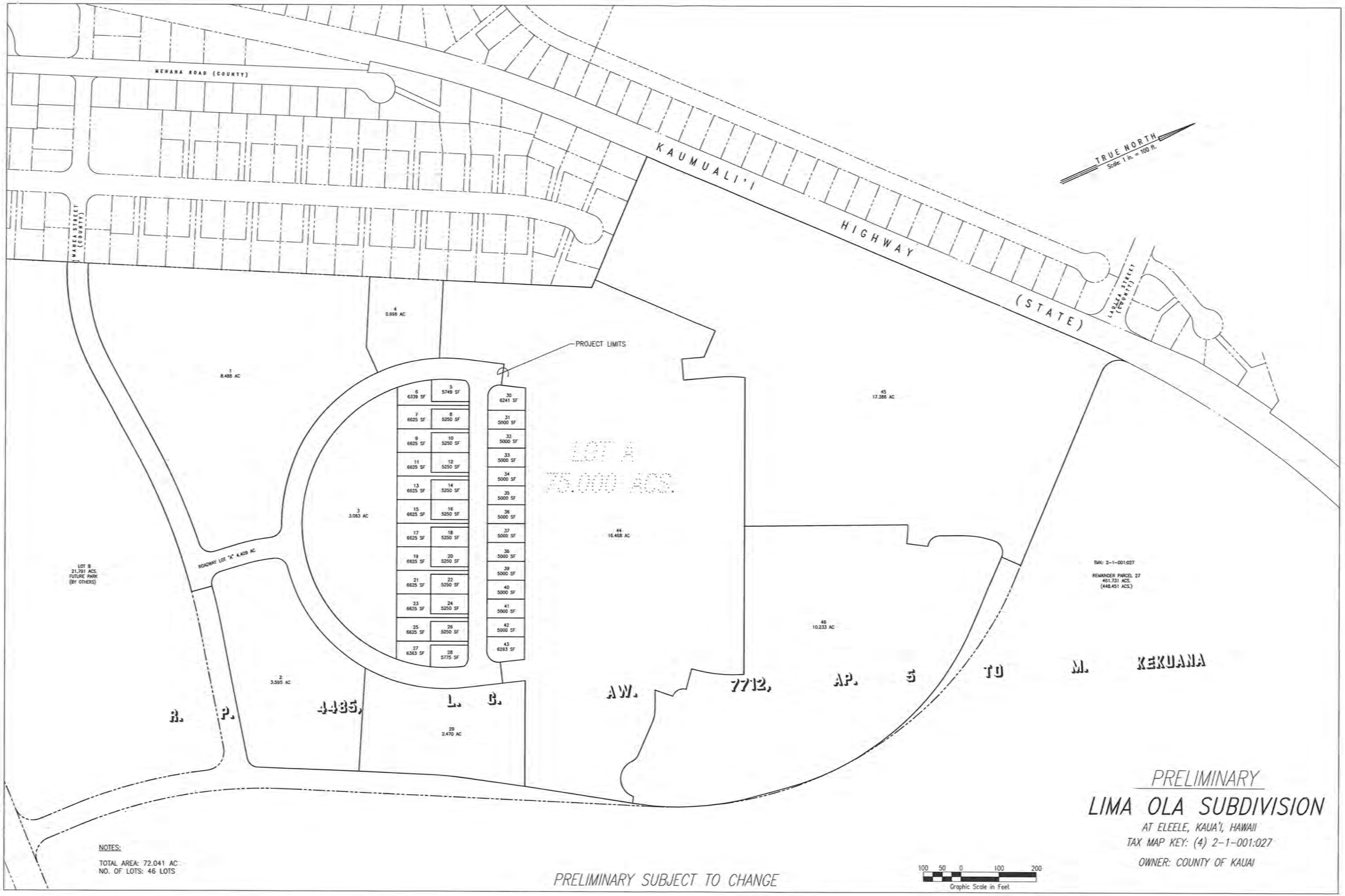
300 150 0 300 600

Horizontal

Preliminary Subdivision Map

Phase 1 = 26 Acres

111 Multi-Family Units
38 Single Family Units
Multi-use Park (3 Acres)



PRELIMINARY

LIMA OLA SUBDIVISION

AT ELEELE, KAUA'I, HAWAII

TAX MAP KEY: (4) 2-1-001:027

OWNER: COUNTY OF KAUAI

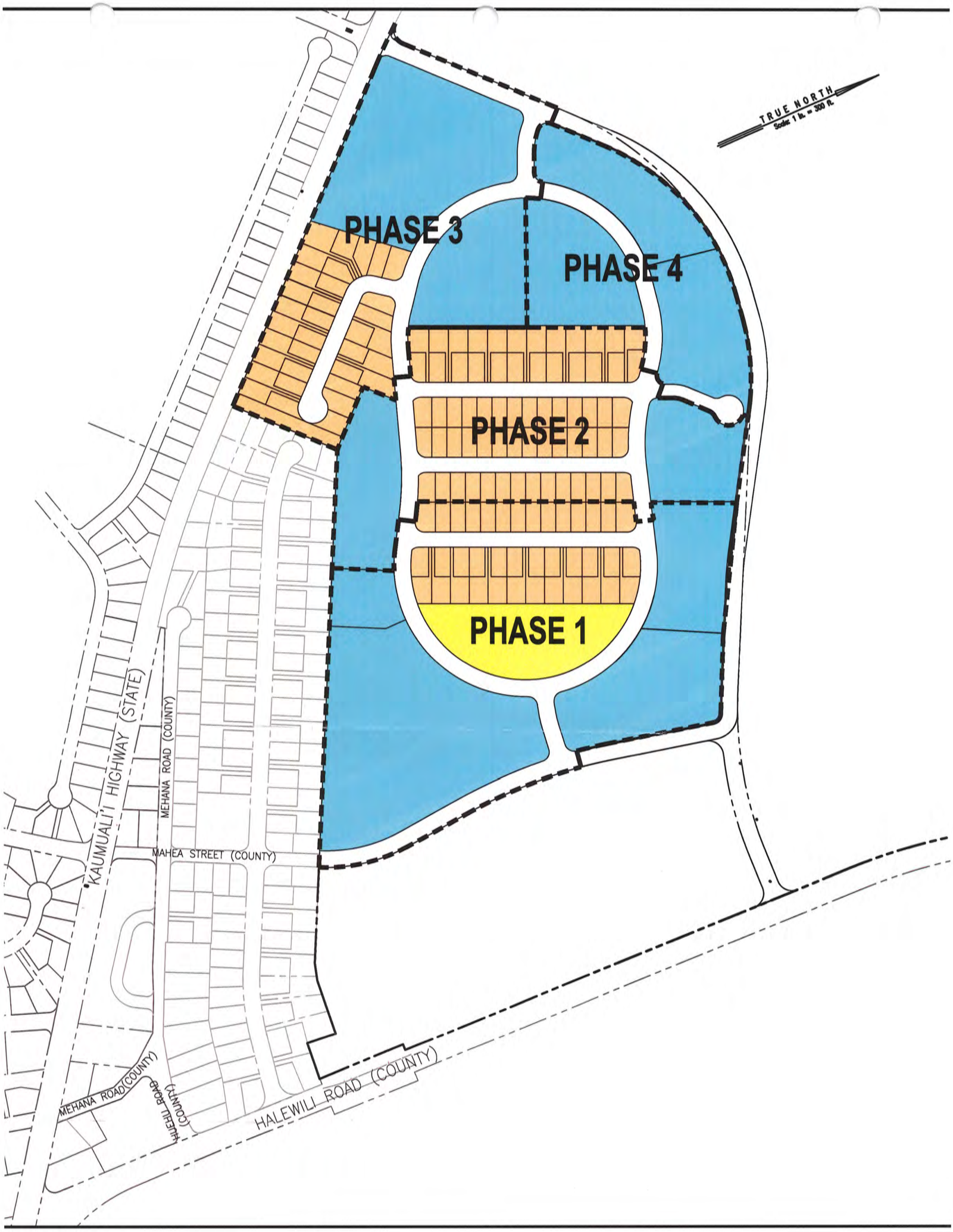
Proposed Phasing Plan

Phase 1 = 26 Acres, 149 Units

Phase 2 = 21 Acres, 172 Units

Phase 3 = 17 Acres, 136 Units

Phase 4 = 11 Acres, 93 Units



ZONING LEGEND:

ZONING R-1

ZONING R-6

PROJECT DISTRICT

SLUC: URBAN

FLOOD HAZARD ZONE: ZONE X

NOTE:

PHASE 1:	*38 SINGLE FAMILY HOMES*	
	111 RESIDENTIAL UNITS	
PHASE 2:	*66 SINGLE FAMILY HOMES*	
	106 RESIDENTIAL UNITS	
PHASE 3:	*34 SINGLE FAMILY HOMES*	
	102 RESIDENTIAL UNITS	
PHASE 4:	*93 RESIDENTIAL UNITS*	
TOTAL:	*550 UNITS*	

Lima Ola Workforce Housing
Preliminary Phasing Plan

300 150 0 300 600

Horizontal

Exhibit 7

PROPOSED LIST OF EXEMPTIONS AND
PROPOSED ALTERNATE STANDARDS

Lima Ola Workforce Housing Development Requested Exemptions

Kauai County Code (KCC) Current Requirement	Requested Exemption	Proposed Alternate Standard	Benefit
Title IV, KCC, Chapter 7, Article 3, Section 7-3.1, General Plan for the County of Kauai	Amendment to the General Plan is required to proceed with change to project area map designation	Project area map designation amended thru 201H-38 process, pursuant to Section 201H-38, HRS	Reduce time and decrease cost
Title IV, KCC, Chapter 8, Article 2, Section 8-2.2 (c), Zoning Maps	Changes in the boundary of any zoning district shall be by ordinance	Project zoned thru 201H-38 process, pursuant to Section 201H-38, HRS	Reduce time, decrease cost, and allow for the building of single-family and multi-family residential units and supporting infrastructure
Title IV, KCC, Chapter 8, Article 2, Section 8-2.4, Uses and Structures in the Agriculture and Residential Zoning Districts That Require a Use Permit	A Use Permit is necessary for proposed community center in either the Agriculture or Residential Zoning Districts	Proceed without Use Permit for proposed community center	Reduce time and decrease cost
Title IV, KCC, Chapter 8, Article 4, Section 8-4.4 (a), Development Standards for Residential Structures Which Involve the Subdivision of Land *Single Family Detached*	1. Minimum Average Lot Size: 6,000 Sq. Ft. 2. No more than 20% of the lots in the proposed subdivision shall be less than 6,000 Sq. Ft. 3. Setback (Rear): Minimum of 15 Ft. 4. Minimum Lot Width: 45 Ft. 5. Pole Section of Flag Lot Width: Minimum of 15 Ft.	1. Minimum Average Lot Size: 5,500 Sq. Ft. 2. No more than 20% of the lots in the proposed subdivision shall be less than 5,000 Sq. Ft. 3. Setback (Rear): Minimum of 5 Ft. 4. Minimum Lot Width: 35 Ft. 5. Pole Section of Flag Lot Width: Minimum of 10 Ft.	Maximize buildable land area
Title IV, KCC, Chapter 8, Article 4, Section 8-4.4 (b) Development Standards for Residential Structures Which Involve the Subdivision of Land *Single Family Attached*	1. Minimum Average Lot Area: 3,000 Sq. Ft. 2. No Lot shall be less than 2,400 Sq. Ft. 3. No more than 40% of the lots in the proposed subdivision shall be less than 3,000 Sq. Ft. 4. Setback (Rear): Minimum of 15 Ft. 5. Minimum Lot Width: 24 Ft. 6. Minimum lot length shall not exceed four times its average width	1. Minimum Average Lot Area: 2,400 Sq. Ft. 2. No lot shall be less than 1,800 Sq. Ft. 3. No more than 40% of the lots in the proposed subdivision shall be less than 2,200 Sq. Ft. 4. Setback (Rear): Minimum of 5 Ft. 5. Minimum Lot Width: 20 Ft 6. Minimum Lot Length: 20 Ft	Maximize buildable land area

Lima Ola Workforce Housing Development Requested Exemptions

Kauai County Code (KCC) Current Requirement	Requested Exemption	Proposed Alternate Standard	Benefit
Title IV, KCC, Chapter 8, Article 4, Section 8-4.4 (c), Development Standards for Residential Structures Which Involve the Subdivision of Land *Multi-Family*	1. Minimum Lot Size: 10,000 Sq. Ft. 2. Setback (Rear): Minimum of 10 Ft. 3. Minimum Lot Width: 80 Ft. 4. Minimum Lot Length: The average length of any lot shall not exceed three times its average width	1. Minimum Lot Size: 8,000 Sq. Ft. 2. Setback (Rear): Minimum of 5 Ft. 3. Minimum Lot Width: 60 Ft. 4. Minimum Lot Length: The average length of any lot shall not exceed five times its average width	Maximize buildable land area
Title IV, KCC, Chapter 8, Article 4, Section 8-4.5 (a) (4), Standards of Development Applicable to all Residential Development	A minimum of two (2) off-street parking spaces per dwelling unit shall be provided	A minimum of one and one (1) off-street parking spaces per dwelling unit shall be provided	Maximize buildable land area and encourage bike and multimodal transportation
Title IV, KCC Chapter 9, Article 3, Section 9-2.3 (e) (3), Streets	Curbs, gutters, sidewalks on all proposed streets within or abutting the subdivision. If the requirement of sidewalks is waived, the developer shall be required to pay a fee in lieu of required sidewalk construction.	Install vegetated swales and pedestrian walkways on all proposed streets within or abutting the subdivision. All applicable fees waived	Cost savings, increase green space, promote green sustainable features, and encourage healthy lifestyles with walkable and bikeable paths.
Title IV, KCC Chapter 9, Article 3, Section 9.3.2 (b), Filing fees for Preliminary Subdivision Map Approval and Section 9-3.7(c) Construction Inspection fee	Required fees	All applicable fees waived	Cost savings
Title IV, KCC Chapter 9, Article 2, Section 9-2.11, Blocks	Maximum block length of four hundred and fifty feet (450') in Residential Districts	Increase maximum block length to eight hundred feet (800') in Residential Districts	Maximize buildable area and cost savings

Exhibit 8

COMMUNITY CONSULTATION

Lima Ola Public Consultation

PRE-DRAFT ENVIRONMENTAL ASSESMENT CONSULTATION

Public Information meetings were held on August 17, September 28, and October 12 of 2011; February 22, 2012; and August 24, 25, and 26 of 2015.

DRAFT EA/201H CONSULTATION

Public Consultation Meetings were held on May 24, 2016 at Hanapepe Library and May 25, 2016 at Eleele School Cafeteria.

Information on meetings noted above can be found be within.

COUNTY AND STATE GOVERNMENT CONSULTATION

The 201H Exemption Application and exhibits for Lima Ola Workforce Housing Development has been reviewed by the State and County Departments listed below. Input received has been incorporated within this Application.

- Kauai Civil Defense
- Transportation Agency
- Planning Department
- Department of Public Works – Building
- Department of Public Works – Engineering
- Department of Public Works – Solid Waste
- Department of Public Works – Wastewater Management
- Department of Parks and Recreation
- Kauai Fire Department
- Kauai Police Department
- Department of Water, Kauai
- Office of Economic Development
- State of Hawaii Department of Transportation – Kauai

Written comments that were submitted by the above departments can be found within.

Lima Ola

Public Meeting Schedule

Hanapēpē Neighborhood Center
May 24, 2016
10 a.m. to 12 p.m.
and
'Ele'ele Elementary
School Library
May 25, 2016
5 p.m. – 8 p.m.

Lima Ola is 100% affordable housing for Kaua'i. The Housing Agency will share what is being proposed in the 201H Application and findings of the Draft Environmental Assessment. View report at:
http://oeqc.doh.hawaii.gov/Shared%20Documents/Environmental_Notice/2016-05-08-TEN.pdf

If you need an ASL Interpreter, materials in an alternate format, or other auxiliary aid support, please call the EEO/ADA Coordinator at 241-4924.

Lima Ola Public Meeting
May 25, 2016
'Ele'ele Elementary School Cafeteria
5 – 6:35 p.m.

Representing County of Kaua'i:
Mayor Bernard P. Carvalho, Jr.
Housing: Kanani Fu, Gary Mackler, Steve Franco, Keith Perry, Shelley Teraoka
Planning: Mike Dahilig
Councilmembers: Mason Chock, JoAnn Yukimura
Legislative: Rep. Dee Morikawa
DOE: Paul Zina, Principal
CPE – Anson Murayama, Max Solmonson

Mayor Carvalho provided welcoming remarks. Kanani and Gary provided power point presentation of the Lima Ola Project. Meeting was then opened for questions from the attendees with Mike Dahilig facilitating.

Summary of Questions/Responses

General

In response to facilitator's question, the majority of people indicated they are attending because of interest in purchasing/renting homes.

Comment:
Representative Morikawa stated that the legislative team supports this project. Also, she reported that this project is being watched statewide and can set the trend of what can happen for affordable housing.

Traffic

Comment:
Concerns expressed about noise level, speed and safety of traffic flow once the project is built. Stated that currently, large trucks traverse the highway and the only quiet time is between 2-3 a.m.

Response:
Traffic Impact Analysis Report (TIAR) has been completed and submitted to Dept. of Transportation (DoT). According to the DoT, traffic mitigation will not be warranted until Phase III. This will focus on the intersection of Mahea/Laulima. DoT does not want to approve mitigation measures until warranted.

Housing has advocated for traffic improvement features at the intersection of Mahea/Laulea. Housing is awaiting final answer from DoT whether can proceed with intersection improvement.

Schools

Question:
Does `Ele`ele School have the capacity to support increased attendance?

Response:
`Ele`ele School principal has indicated there is space for growth; only needs a heads up to accommodate growth. The school is looking forward to growth.

Waimea High School principal welcomes more attendance. Increased attendance = increased funding.

Project Design

Comment:
What are plans for utilities?

Response:
Underground cable, water and electricity are planned for the project. Would like it to be the first neighborhood to hook up with natural gas or propane; however, there are cost barriers to consider.

Comment:
Please explain why swales are replacing curbs.

Response:
Grass swales are considered a "green" feature and reduce the amount of concrete and its associated cost. Swales will capture run off water which is filtered through grass and soil, lessening drainage into the ocean. The park area will also double as a retention site.

Comment:
Like Ele'ele Nani, throws out the opportunity to make house sustainable and green. By compressing lot size, losing green space.

Response:
The request for exemption for minimum lot size is to increase density. The request addresses a reduction in "average" lot size.

The 2011 housing survey included questions regarding smaller lots. Survey results indicated a strong preference for lot reduction because home ownership is the priority. Also, people do want green areas.

Question:
Why is the project starting at this particular area?

Response:
The lower end was selected because of access to sewer lines and available connection to sewer system.

Question:
With trend being walkable communities, how will project tie into `Ele`ele Shopping Center?

Response:
Project is designed to encourage walking and biking; working with other partners to create sidewalks, walkable paths, etc.

Comment:
Bus stops are not conveniently located. The nearest one is at the Port Allen subdivision.

Response:
Improvements are being planned in the future.

Targeted Population

Question:
Will single family residences be sold?

Response:
Yes, affordability terms have not yet been determined.

Question:
Will a contractor come in and build all the houses?

Response:
At the time of development, demand will be assessed. By partnering with a private entity, County can control terms of affordability, can direct and guide certain requirements determined by housing studies and community demands.

Question:
Are there plans to increase the job market in this are?

Response:
PMRF, KVMH, and agriculture companies currently need housing for employees.

Question:
Will funding sources assist in determining who will qualify?

Response:
How the project is financed can determine which population is preferred. The Housing policy is to serve families up to 140% of the median income.

Lima Ola Public Meeting
May 24, 2016
Hanapēpē Neighborhood Center
10 a.m. – 12:00 p.m.

Representing County of Kaua'i:
Mayor Bernard P. Carvalho, Jr.
Housing: Kanani Fu, Gary Mackler, Steve Franco, Keith Perry, Kerri Barros, Shelley Teraoka
Planning: Lea Kaiokaimalie, Marisa Valenciano
CPE – Anson Murayama, Max Solmonson

Mayor provided welcoming remarks. Kanani provided power point presentation of the Lima Ola Project. Meeting was then opened for questions from the attendees.

Summary of Questions/Responses

Comment:
Inadequate information provided; unfair to ask for testimony with short deadline.

Response:
Draft EA is located on website. Comments are accepted up to June 8.
With regard to FONSI finding, disagreements or concerns can be submitted as comments.
(4) Exemptions are being sought in the 201H process:

1. Zoning – requesting exemption to proceed without obtaining an amendment to the General Plan
2. Development Standards –
   a. exemption to allow for less than minimum 5,000 sq. ft. lot
   b. exemption to permit one parking space for elderly housing
3. Subdivision –
   a. exemption from curbs, gutters and sidewalks; allow vegetated swales and pedestrian walkways
   b. exemption from requirement to provide 1.75 acres of land for park/playground per 1,000 persons. Replace with 3.2 acre park.
4. Exemption from maximum block length to twice required length.

Question:
Why go through expedited process? If county works according to residential requirements, should not have to go through expedited process. By cutting down on parking, forcing residents to park outside- creating a slum.

Response:
In developing for affordability, want flexibility to provide smaller lots to increase number of units.

Comment:
These plans to do not seem to include any school designation.

Response:
The project does not include plans for a school. However, principals of neighboring schools, i.e. Waimea High School, Eleele Elementary School have been approached and notified regarding the potential increase in students. Both welcome the potential for increased student enrollment.

Comment:
As taxpayer, concerned that this project may take up more taxpayer money like Eleele Nani (?)

Response:
We are not familiar with the problems that occurred with the project.

Question:
Since there will be different phases and possible different developers who will provide oversight for the entire development?

Response:
The Housing Agency will provide oversight. Developers propose restrictive convenants which are then reviewed by Housing. Oversight is also accomplished through development agreements, provisions to review architectural design.

Question:
What measures will be in place to assure low income affordability?

Response:
The objective of the Housing Agency is to provide and preserve long term affordable housing. Buy back restrictions are imposed to support preservation of affordability.

Question:
Does the County currently have rights to the property?

Response:
Yes, the property was purchased in 2012.

Comment:
Attendee expressed concerns about water and sufficiency of water for the project.

Response:
Phase I does not require any infrastructure update. There is sufficient water capacity for 150 units in Phase I. Existing source is located in Hanapēpē Valley. Development of subsequent phases will involve going back to the Water Department for storage reassessment.

Comment by Tom Shigemoto, A&B:
All land involved in this project was formerly owned by A&B. A&B had planned on developing market housing at this site. However, A&B was approached and approved purchase by then Mayor Bryan Baptiste for affordable housing development.

A&B retained ownership of adjacent land. Plans are to develop 20 acres below this parcel for a regional park.

A&B encourages support of the 201H process. A&B has gone through the regular process numerous times and it takes 8-10 years. If the development of affordable houses were to go through the regular process, those young folks and families needing homes now will be a lot older.

Question:
Is county working on addressing the traffic impact of this project?

Response:
Phase I does not warrant traffic improvement; Phase II will warrant traffic mitigation. Currently the County is working closely with DoT re traffic updates. DoT is cautious, will not install traffic light until warranted.

Question:
Will the park be available for baseball and other activities? Will park be for Lima Ola residents only? Why is the park planned in Phase I?

Response:
Park will be developed as a community park and will be designed by park planners. It will be open to residents of adjoining neighborhoods as well as Lima Ola.
The community park presents an opportunity for public and private partnerships.

Comment/request – Jean Souza
The expedited process lessens the time allowed for public to provide good comments. It is because of bad experiences that public demanded requirements for development. She has significant concerns with the accelerated process.

She suggested that at least 2 copies of the draft EA be available at the Hanapēpē Library.

Requests information on the comparative sizes (acreage, # of units) of Eleele Nani, Cliffside, DHHL on Moi (?) Road.

Response:
Gary will provide information requested on adjacent projects.
Max indicated copies of the draft EA will be made available at the Hanapēpē Library.

Response:
County has been in the process of developing this project for years which involved no less than 20 community meetings. Project design has been changed in response to community suggestions/requests/recommendations.

What is new at this time is the environmental assessment which is being made public. Another comment period is allotted after the final environmental assessment is published.

Question:
What is green swale? Is it possible to get grass crete?

Response:
One of the exemptions requested is for use of pervious material instead of concrete curbs and gutters. The grass will filter the water before it is release into the system.

Question:
Will lots be available for sale where owners can build their own?

Response:
Preference is for turn key sales. That option has not yet been determined for future phases.

Question:
How many multi-family units will be available?

Response:
133 multifamily units are planned; either duplex or four plex.

Question:
How walkable will this project be to Eleele Shopping Center?

Response:
Walk will be approximately ½ mile; anticipate walking route down Mahea, then Eleele.

Notes of Public Information meeting
Lima Ola, Affordable Housing Project
Wednesday, August 26, 2015
Hanapēpē Neighborhood Center Conference Room

Purpose: To update community members about Lima Ola Workforce Housing Development affordable housing project in `Ele`ele, respond to questions, obtain feedback regarding concerns.

The meeting was attended by 15 people. There was an overwhelming support for the project. Many in the audience expressed their desire to purchase a home in Lima Ola and discussed how expensive and difficult it has been to purchase a market rate home. The discussion lead to how these people could qualify. Kamuela and Kanani discussed the Housing Agency's homebuyer loan program. We handed out a program overview and application to all attendees. We discussed various scenarios of home pricing that could be available at Lima Ola and talked a little about improving credit score. As a follow up, 4 people came into the Housing Agency to register in our Homebuyer Loan Program which entails classes and enrollment.

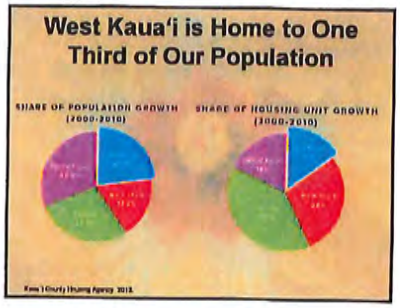
In addition, general questions were asked by the attendees either verbally or by submitting questions on a paper and we provide the following response:

1. Is Lima Ola limited to first-time homeowners only? Response: Possibly for certain units. Restrictions will vary by phase, financing and other factors.
2. Can a person holding interest in property (i.e. an individual interest) apply? Response: Possibly. Income requirements and restrictions to qualify will vary within the development.
3. Will there be a "buy back interest" – owner cannot sell on open market until a certain period of time? Long-term affordability restrictions will apply to all units. The exact terms and conditions will be determined by the specific phase in the development, financing, and other factors.

Powerpoint Slides
8/26/15

LIMA OLA

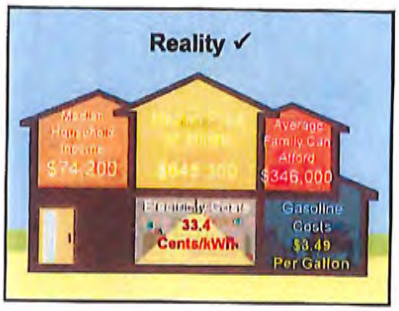
A Master-Planned Community for Kaua'i's 'Ohana, *Keiki to Kupuna*

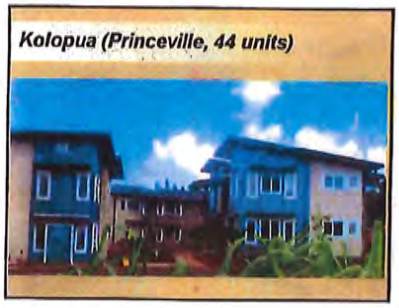


2011 Hawaii Housing Planning Study:

Kaua'i will need more than 1,300 housing units by 2016

1,137 need to be affordable





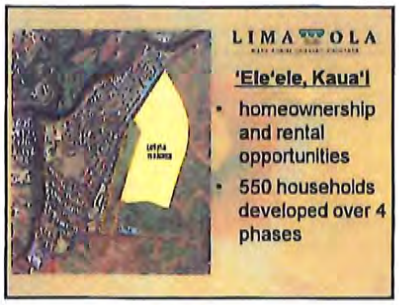
LIMA OLA

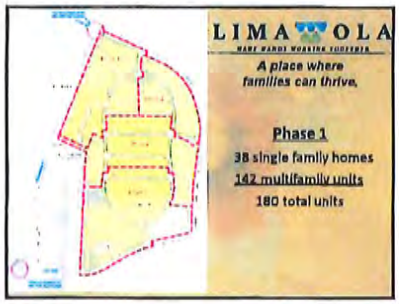
"We need to build communities that are affordable to live in, environmentally responsible and promote a healthy lifestyle.

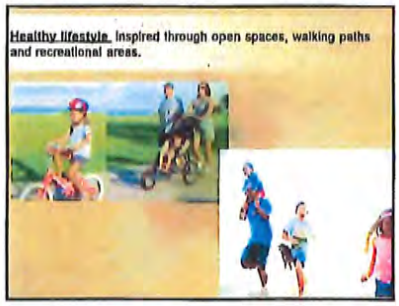
Communities where Kaua'i's 'ohana – keiki to kupuna – can live together and thrive."

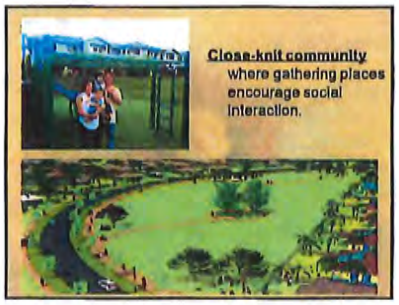
– Mayor Bernard P. Carvalho, Jr.

Powerpoint Slides
8/26/15









Notes of Public Information meeting
Lima Ola, Affordable Housing Project
Tuesday, August 25, 2015
Hanapēpē Library Meeting Room

Purpose: To update community members about Lima Ola Workforce Housing Development affordable housing project in `Ele`ele, respond to questions, obtain feedback regarding concerns.

The meeting was attended by 12 people. Questions and concerns expressed related to sewer capacity and Salt Pond sewer improvements.

Kamuela Cobb-Adams, Housing Director provided the following responses:

1. The Lima Ola Preliminary Engineering Report shows that the `Ele`ele sewer plant has a capacity of 0.8 million gallons per day (MGD) and operates at 50% capacity, leaving a balance of 0.4 MGD of unused capacity. The entire Lima Ola project (550 units) would need only 0.14 million gallons per day which is about 17.5% of the entire sewer plant capacity.

We will be going for subdivision approval and build out for Phase I of Lima Ola which includes a park and 180 housing units. Therefore, Phase I of Lima Ola will need close to 5% of the sewer capacity, leaving a balance of 45% unused capacity after Phase I is built.

Also, the Wastewater Division clarified a few things:

- The proposed amendment to the Department of Health Administrative Rules that would require an upgrade from a cesspool to a septic system or sewer hook-up at property sale or to obtain a building permits was NOT signed by the Governor. Therefore, there is no such requirement.

- The County requires a $3,900 waste water hook-up fee plus monthly sewer fees around $60 should someone like to hook up to the County sewer system. Without the DOH requirement to hook up to sewer, most forego the hook up as their cesspool or septic system generally cost less. The mauka portion of Hanapēpē Heights is on a sewer system. The County has plans but doesn't have any near plans to connect the makai homes of Hanapēpē Heights to the existing sewer main. My assumption is that this could change should there be enough of the Makai Hanapēpē heights Community committed to hooking up to the County Sewer.

2. The Salt Pond Park bathroom is being serviced by a septic system. Public Works has a budget to improve this by adding a pump and connecting the bathroom to the nearest sewer line near the Veterans Cemetery.

In addition, general questions were asked by the attendees either verbally or by submitting questions on a paper and we provide the following response:

1. Is this a condo development? Response: No, this development will consist of 100% affordable units, as defined by the Kauai County Housing Policy.
2. What is the square footage of houses and yards? Response: Lots that will contain single family homes will be approximately 5,000 square feet. This can change, as development plans have not been finalized.
3. Will the roadway be dedicated to the County? Response: yes.
4. Why not dedicate the park tot the County to keep the HOA low? Response: We intend to dedicate the park to the County and working to have a community with no HOA fees.
5. What kind of restrictions will be in place for the residents? Response: i.e. no fruit trees, not outdoor clothes line, no fences.
6. What are the anticipated impacts on coffee farming and how will the negative impacts be mitigated? Response: Kauai Coffee Company may remove and replant trees to other locations that require old growth coffee trees.
7. Have you (County) considered the impacts of increase use of the intersection to this library (Hanapepe Library)? A Traffic Impact Analysis Report was completed by our consultant. The report focused on the four major intersections that would be impacted by the proposed action (Waialo Rd/Kaumualii Hwy, Kaumualii Hwy/Halewili Rd, Kuamualii Hwy/Laulea North, Kaumualii/Laulea South).
8. What are the density proposals? Response: R-1, R-6 and R-20
9. How much did you pay for the land? Response: $2.5 million
10. What are and how will you deal with impacts on Eleele School? The principle of Eleele Elementary School reported that the campus has the room and the land to grow.
11. Is there an obligation/arrangement/connection to support further urban development on other A&B lands? Response: None that KCHA is aware of
12. Is Lima Ola only for first-time home buyers? Response: No
13. Comment: Scale of 550 households is larger than Cliffside, larger than Eleele Nani. Response: Yes. However this is at full buildout of four phases, scheduled over a 15 to 20 year period.

14. What are the walking route to shopping and services in Eleele Shopping Center (Route for seniors/ handicaps scooter route)? Response: Walking routes may vary, but we are anticipating the primary route to be west on Mehea then south on Uliuli Road.
15. What is sewer capacity? Can Housing advocate Eleele Heights sewer? Response: Current sewer capacity is .8 million gallons per day (MGD). Current usage is approximately .4 MGD. As proposed, Lima Ola would generate approximately .14 MGD. Expected total usage (current and Lima Ola) would fall below 60% of the Eleele Waste Water Plant capacity.

16. What are the highway improvements in connection with Lima Ola? Response: A Traffic Impact Analysis has been completed by our (KCHA) consultant. We (KCHA) are working with HDoT on appropriate means to deal with additional traffic brought in by the development of Lima Ola.

8/25/15
Powerpoint Slides

LIMA OLA
MANY HANDS WORKING TOGETHER

A Master-Planned Community for Kaua'i's 'Ohana, *Kelki to Kupuna*

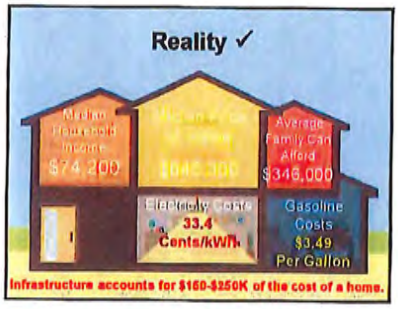
COUNTY OF KAUA'I HOUSING AGENCY

West Kaua'i is Home to One Third of Our Population

2011 Hawaii Housing Planning Study:

Kaua'i will need more than 1,300 housing units by 2016

1,137 need to be affordable



2011 Hawaii Housing Planning Study:

8/25/15
Powerpoint Slides

LIMA OLA
MANY HANDS WORKING TOGETHER

"We need to build communities that are affordable to live in, environmentally responsible and promote a healthy lifestyle.

Communities where Kaua'i's 'ohana – keiki to kupuna – can live together and thrive."

-- Mayor Bernard P. Carvalho, Jr.

LIMA OLA
MANY HANDS WORKING TOGETHER

Environmentally responsible with green sustainable features...

... to lower your cost of energy

LIMA OLA

Phase 1

38 single family homes

142 multifamily units

180 total units

LIMA OLA

'Ele'ele, Kaua'i

550 new homeownership and rental units developed over 4 phases

LIMA OLA
MANY HANDS WORKING TOGETHER

Encourages a healthy lifestyle through open space, walking paths and gathering places...

...increases community

Next Steps On Our Path

What the County will do

- Obtain Permits and Approvals
- Secure Funds for Infrastructure
- Work with partners to develop Lima Ola

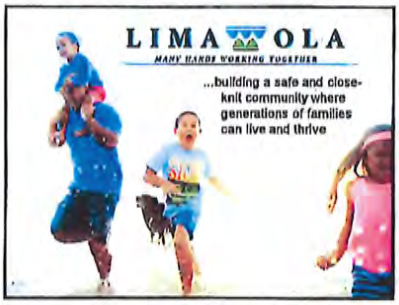
How You Can Help

- Support Lima Ola
- Stay informed by joining our "Keeping In Touch List"
- Participate in Homebuyer Education Classes
- Share the Vision of Lima Ola with others

Affordable with a range of rental and homeownership opportunities for Kaua'i's 'ohana

LIMA OLA
MANY HANDS WORKING TOGETHER

...building a safe and close-knit community where generations of families can live and thrive



Mahalo!

www.limaolakauai.com
(808) 241-4444
www.kauai.gov/Housing

Notes of Meeting #3
Lima Ola: Community Advisory Committee
Wednesday, February 22, 2012, 6:00 p.m.
Hanapepe Public Library

CAC Members
Ed Justus
Keith Nitta
Rose Ceballos

Guest
Dee Crowell, Planning Department

Kauai Housing Agency
Barbara Pendragon
Eugene Jimenez
Gary Mackler
Imai Aiu

Kimura International
Glenn Kimura
Nancy Nishikawa

Purpose of the Meeting: to review the preferred site plan, distribute the draft master plan report, and thank CAC members for their participation in the planning process.

Glenn gave a slideshow presentation of the preferred plan that included illustrative 3D images of future development.

Question: Will street parking affect access by refuse and fire trucks?

Response: There's sufficient width for service vehicles even on the smaller residential streets; however, there may be parking restrictions within the cul-de-sacs.

Question: What is the timeline for implementation?

Response: The first subdivision (Phase 1) should be ready to build by approximately 2021-22. This amount of time is needed to acquire permits, subdivide the lots, and put in on- and off-site infrastructure.

Comment: I like Alternative 3 because there are fewer road intersections to cross.

Comment: Are the unit types and mix set in stone? I see the potential for this project to be a site for demonstrating housing products.

Comment: Although the plan includes a variety of housing types, it doesn't include some types of concepts that were considered, such as the pocket neighborhood.

Comment: It might be possible to increase densities in the makai areas where multi-family rental and elderly rental developments are sited.

Comment: Sketch-up gives the impression that there's a level of precision that might not be appropriate.

Response: The intent of the Sketch-up drawings is to give the public a sense of density which can be helpful for envisioning traffic impacts, infrastructure needs. For clarification, the drawings can be labeled "illustrative."

Comment: I like the mix of single family and duplex units.

Comment: Roadway circulation (pattern) and greenways are critical.

Comment: Unit mix is an essential component—absolutely need to carry forth this concept. Diversity is imperative.

Comment: Marketability is critical. Might not be good—might be dangerous—to get locked in at this point. Possibility of writing in a flexibility clause?

Comment: What's the period in which affordable pricing will be mandated?

Response: It depends on a number of factors. The kinds of funding being drawn in could affect how long restrictions remain. Leasehold or fee ownership? Built by private developer vs. government—it's difficult to impose restrictions on private development.

Comment: With multi-family housing, there could be affordability in perpetuity.

Comment: Is it hazardous to leave court complexes for the last phases?

Comment: Perhaps a preliminary zoning map instead of fixed, precise zoning? Flexible zoning involves "PD" like Kikiola. But the issue with flexibility is that you need to change the entire master plan. With specificity, everybody knows what to expect up front.

Comment: Show stub out at east end of Mahea Road.

Comment: Increase the level of the street that connects to the Community Center—it should have a more prominent street profile.

Comment: Infrastructure systems can be installed in a grid pattern so that if there's a problem at any given location, the increased connectivity will allow service to be re-routed and disruptions to customers minimized.

Comment: The preferred plan was modified based on CAC comments. For example, the number of community centers was reduced from three to one. Instead, we have two simpler pavilions at the mauka and makai ends of the greenway.

Comment: Is a roundabout needed at the Community Center?

Comment: I would like to see retrofitting of the older Eleele neighborhood, such as sidewalks that are not currently available in all places.

Question: How can the elderly single family units stay in elderly use, rather than being passed on to children?

Response: Maybe as rental units.

Response: Maybe the units have to be sold back to a community land trust.

Response: Building homes for rent is hard since they don't yield enough income without a subsidy.

Question: Could a homeowner alter the residence if it's leasehold?

Response: Improvements typically can be made with approval from the lessor.

Question: Why aren't you thinking of doing an EA/FONSI (instead of an EIS)?

Comment: Wouldn't automatically think an EIS is needed. The main opponent might be Habitat. Otherwise, the project seems more of a help to the community than being controversial. The project is not on virgin land.

Question: Will there be a community association with member fees?

Response: This hasn't been determined yet. Fees to cover landscape maintenance costs would be considered.

Comment: The Housing Agency should have projects going concurrently because there are not enough units to meet demand.

DRAFT Notes of Meeting #2
Lima Ola: Community Advisory Committee
Wedenesday, October 12, 2011, 6:00 p.m.
Hanapepe Public Library

CAC Members
Ed Justus
Fred Rose
Keith Nitta
Roy Tamashiro

Guest
Dee Crowell, Planning Department

Kauai Housing Agency
Barbara Pendragon
Eugene Jimenez
Gary Mackler
Imai Aiu

Kimura International
Glenn Kimura
Nancy Nishikawa

Purpose of the Meeting: to review changes to the three alternatives and solicit feedback.

The group gathered around large-scale sheets showing the revised alternatives. Glenn explained changes made to each alternative in an open format that invited immediate discussion.

Keith: What age is considered elderly?

Gary: For projects that designate "elderly" at the outset, elderly is defined as 62 years and older. However, for projects that do not designate "elderly" initially, it is 55 years and older.

Keith: What is the qualifying income?

Gary: If the project is funded by a federal grant, 60% of median and below.

Eugene: Households purchasing property would need to qualify for a home loan.

Gary: Right now, we're just working with a general definition of affordable, which is 80-140% of median.

Barbara: Smaller housing units could be made available to single persons or single-parent families.

Glenn: R.M. Towill has calculated preliminary costs for the Kaumualii Hwy crossing options; no decision yet on a preferred option.

Ed: Stressed the importance of safety as a consideration for decision making.

Alternative 1

Ed: Asked about white symbols on the site plans.

Glenn: Explained that they represent chicanes, speed tables, and other traffic calming features.

Keith: County and State prefer to put crosswalks at intersections, rather than mid block.

Ed: Speed bumps may be needed on straight segments that could turn into speedways.

Glenn: Bulb-outs are another popular design feature to slow down cars and help pedestrians cross the street more safely.

Roy: Is there a requirement to have a second community center? A second one could be put in the district park. One center within the development would be adequate. We've been waiting for a pavilion (for Eleele Nani Park) for 30 years.

Barbara: What are the narrow green strips running east to west?

Glenn: Reserved green spaces for bioswales that will catch storm water runoff.

Barbara: Concerned about the number of small strips.

Glenn: They're intended to be low-maintenance, xeriscaped areas.

Dee: Will there be 10-foot sidewalks on each side of the street? That's a lot of pavement.

Gary: Six-foot sidewalks are being put in as part of the Kaumualii Hwy widening project, but the bases for light poles are located in the middle of the sidewalk.

Dee: Maybe 10-foot sidewalks aren't needed on both sides.

Ed: Likes the circular layout of the court complex.

Dee: Has there been a determination about how many ADA accessible units there will be?

Barbara: We'd like the whole project to have units that are adaptable for handicap access.

Gary: In an 80-unit complex, 3 units would have to be ADA accessible. Five percent of total units must be designed for mobility; 2 percent for sensory accessibility. Ordinarily, purchasers put in accessibility improvements themselves. But if a buyer requests such improvements, the seller must install them (although he can pass on the costs). Given the slope characteristics, the whole site can be made accessible.

Gary: Likes the larger park area surrounding the neighborhood center for the Dept of Parks and Recreation to maintain; and the smaller greenway for the association to maintain.

Glenn: The community center can serve a variety of public functions, such as postal drop off. In informal discussions with A&B, representatives have indicated they would be willing to entertain the possibility of amending the deed to allow limited convenience retail activity. The County should inquire more formally.

Barbara: Suggested moving the community center to a more central location.

Keith: Community center location in Alt 1 is good—like the spacing; balanced at either end. But questions the square footage of surrounding park land and would like multi-family units around the center.

Ed: Suggested moving the court cluster away from the highway—lack of visual appeal.

Glenn: Designed well, court homes can be attractive with varied profiles.

Alternative 2

Glenn: Alt 2 is not fully integrated (in terms of unit types/income levels) to show a true alternative. The EIS will need to include a discussion of alternatives that are different.

Ed: When mentioning agricultural buffer in the previous meeting, I was thinking of a fence or barrier (indicating that the perimeter road would be a suitable buffer).

Keith: What are dimensions of the duplex lots? They seem only slightly smaller than the single-family detached lots—in other words, kind of big. The County Code allows single-family attached lots to be as small as 3,500 SF.

Barbara: Triplexes could be built along the Habitat side where the lots are deeper.

Keith: The project should offer a variety of prices. The question is how the single-family and duplex units will be priced when the lots aren't varied enough?

Glenn: Another variation is the "Z" lot, in which duplex units are offset.

Dee: If you're planning to chunk out lots for a third-party developer, how tightly are you planning to control the mix of unit types? And how will it affect what the next developer does?

Glenn: Achieving economies of scale is a consideration—what's the developer's break point for profitability.

Imai: It might be harder when there is a mixed product concept.

Dee: You also want to allow room for developer creativity.

Glenn: There will always be changes when build-out isn't expected to occur for many years. What's important is maintaining the overall concepts—such as the greenway, connectivity.

Dee: Six connection points to the perimeter road might be too much.

Glenn: Agree, too much connectivity can lead to chaos.

Alternative 3

Keith: This alternative definitely has a lower density.

Ed: Why locate the multi-family rental complex in the corner?

Glenn: We tend to locate higher density units near an amenity. In this case, they're close to the future district park, where public space compensates for the lack of private yard space.

Glenn: This plan includes three community centers.

Imai: Explained that multiple neighborhood centers would be related to phasing.

Glenn: The Dept of Water wants a tank site. The preliminary location is within the greenway.

Keith: Concerned about common cost items; cost of roads that don't service lots. For example, the roadway on the makai end might be just a driveway between the two multi-family developments. If money goes into roads, then need to make up the costs elsewhere or the consumer will end up absorbing the costs.

Dee: Smaller lots and higher density mean more roads and driveways on the street.

Keith: The perimeter road will nullify highway realignment in the future.

Glenn: The perimeter road isn't needed right away.

Dee: Cautioned against doing a reserve—later explaining that neighbors might be opposed to the use when it's time to implement, even though that the intent at the outset.

Keith: Few westbound motorists are likely to use Halewili Rd since they will face a difficult intersection at Halewili and Kaumualii. Most are likely to use the (signalized) intersections on Kaumualii. Let A&B build the perimeter road on their property.

Glenn: The best solution is cost sharing between A&B and the County.

Keith: The key to getting the public ready for new products (e.g., duplexes) is price.

Eugene: Especially for first-time buyers.

Keith: Young people are open to less traditional products.

Comparison among Alternatives

Gary: Asked about preferred alternatives.

Ed: Alt 1—felt that the road layout is more friendly.

Roy: Alt 1—suggested using boulders as a buffer, similar to what was done at the Waipouli Courtyards development.

Keith: Likes Alt 2—the arched road, higher density, more even distribution of product types, and central greenway. But he would want to eliminate the perimeter road—noted roadway costs of $800/LF—and put in a central main street instead.

Fred: Alt 1 or Alt 3—doesn't like Alt 2.

Dee: Alt 1 or Alt 3. Likes the court complex in Alt 3 with the loop road, but Alt 3 contains a lot of pavement, at least visually.

Eugene: Homes with their own yards will make the property more marketable, especially on the Westside.

Keith: Decision makers (on the Council) will ask about need. The keywords are going to be need and price.

Gary: Working on a new housing study which is based, in part, on a survey that asked Kauai respondents if they would trade off lot size and price. Study showed a strong preference to make that trade-off; a growing openness to making such trade-offs. The report is expected to be completed in late November.

Nancy: Asked specifically about shortcomings in Alt 3.

Ed: Alt 3 doesn't seem to have good flow (circulation).

Fred: Potential difficulties with trash collection.

Keith: Density is too low. Alt 3 would be appealing if this were market housing.

Glenn: Probably wouldn't pick up too many additional units even if we were to decrease lot size.

Dee: The scary part is who will maintain the common spaces.

Barbara: Likes that it offers activity spaces.

Keith: Why three community centers?

Imai: Intent was not to build regional-scale neighborhood centers, but smaller facilities.

Dee: Suggested a road around the central park—a single-loaded road with the park on one side. Keep cul-de-sacs off that road.

Roy: The County has a hard time taking care of existing parks. Strongly favored one central neighborhood center.

Keith: Suggested replacing the interior cul-de-sacs with multi-family units.

Nancy: Next step is to bring in cost information.

Gary: R.M. Towill will also provide a phasing plan.

Notes of Public Information Meeting
Lima Ola, Affordable Housing Project
Wedenesday, September 28, 2011, 6:00 p.m.
Hanapepe Public Library

Purpose of the Meeting: To brief community members about the proposed Lima Ola affordable housing project in Eleele, respond to questions, and obtain feedback regarding concerns and preferences.

The meeting was attended by 21 people. Attendance sheets are attached, although some people did not sign in.

Eugene Jimenez opened the meeting with introductions and overview of the project. Imai Aiu explained how the project was named Lima Ola and its meaning. Glenn Kimura presented a slideshow describing the project objectives, site conditions, and three alternative site plans. An open question and answer period followed the presentation.

Comments and Discussion

Question: What kind of landscaping will be planted along the highway buffer?
Response: The landscaping material has not been determined yet. Landscaping alone is not a good sound attenuator; therefore, the buffer might also include berms or mounds. The planned width is 30-40 feet, which is wide enough to include a shared use path and community gardens.

Question: Who will take care of all the common areas?
Response: Most likely a community association supported by fees. Another possibility is self-help, possibly organized by cul-de-sac. Ideally, neighborhoods will take pride in their environment. A good example is Wailua Golf Course where users take it upon themselves to weed the greens while they're waiting. That kind of behavior should be encouraged.

Question: Do you know the minimum or maximum square footage of the houses themselves?
Response: Right now, we're only looking at the lots. Alternative 3 is based on a minimum lot size of 5,000 SF so that homes can be expanded in the future—for example, to accommodate multi-generational households.

Question: Do you have a safe route to walk to the grocery store?
Response: There's an opportunity to put an underpass at the makai end of the proposed district park. A&B has a long-term plan for a town center on the other side of Halewili Road.

Comment: I'm pleased to see consideration for a grade-separated crossing on Kaumualii Highway. It will help make an isolated community more active. It would be good to bring back "free range" children.

Question: Will there be paved on-street parking?
Response: Yes, with curbs and gutters.
Comment: Eleele Nani is not paved, so we depend on homeowners to maintain the areas adjacent to the street where cars park.

Question: Will there be runoff detention on site? Although the area is generally dry, rainfalls can generate tremendous volumes of storm water, but there is no feature such as a park designed as a detention basin.
Response: We anticipate having bioswales throughout the project area, although we still need to make sure there's sufficient catchment area.

Comment: One of the good things about the master plan is that the County will be able to develop in phases. It will be a land bank enabling developers with affordable housing requirements to deliver affordable housing more quickly.

Glenn: One of my pet peeves is cars blocking the sidewalk. The house sites have been laid out so that cars parked in the driveway don't block the sidewalk.

Question: In terms of complete streets, is it possible to face the social part of homes (porches, front doors) on the street, rather than the garage door or driveway?
Response: In Alternatives 1 and 2, the houses in the center part of the development have access from the rear—there are no driveways out front. But this leads to a concern about surplus roads. Alternative 3 facilitates social interaction among neighbors grouped around the cul-de-sac. People who live on through streets tend only to know the neighbors on either side.

Question: Will residential streets be narrowed (as prescribed by "complete streets")?
Response: The roads are laid out with standard 11-foot travel lanes, but they have parking on one side to slow down traffic.

Comment: There's a need for housing products that support multi-generational households, such as houses designed with two kitchens.
Response: That gets into building code and building permit issues. What we don't want is the multiplication of cars per unit that would create a nuisance for neighbors.
Comment: We are considering housing products (such as a three-plex) that would allow some flexibility in accommodating different types of households.

Question: What about a place for teenagers? For example, an actual place where they can repair cars (rather than using driveways and front yards).
Response: Maybe as part of the community center?

Question: Are you going to have covenants (with resident rules and responsibilities)? Who is going to enforce them? You'll need to educate the homeowner's association.
Response: Agree, although associations can sometimes be too rigid.

Comment: When I grew up in Mililani, there was an underpass (under Kamehameha Highway connecting to the high school) that attracted a criminal element and hanging out.
Response: Yet as more people use the paths, there are more eyes to monitor activity and watch out for things like graffiti.

Comment: I sat on the Habitat Board when the land was acquired. A&B didn't have title to the property, but sold it to the County.

DRAFT
Notes of Meeting #1
Lima Ola: Community Advisory Committee
Wedenesday, August 17, 2011, 6:00 p.m.
Hanapepe Public Library

CAC Members
Aletha Kaohi
Bernie Alvarado
Ed Justus
Fred Rose
Keith Nitta
Rose Ceballos
Roy Tamashiro

Kauai Housing Agency
Barbara Pendragon
Eugene Jimenez
Gary Mackler
Imai Aiu

Kimura International
Nancy Nishikawa

Purpose of the Meeting: to provide project information to the CAC, review preliminary alternatives, and solicit feedback.

Eugene gave a brief opening statement and thanked members of the CAC for their participation.

Self-introductions by all CAC and project team members.

Nancy gave a slide presentation, including project background, development goals and objectives, description of site conditions, three alternative site plans, and options for crossing Kaumualii Highway.

Fred: Will take project information back to Dept of Education. There's a long lead time for provision of additional classrooms, if needed.

Rose: Integrating different incomes is important.

Ed: Smaller units on a cul-de-sac would create a small community onto itself.

Ed: Can Alts 1 and 2 be adjusted to include single-family elderly?

Ed: As much as I like going under Kaumualii Highway, a tunnel going under invites problem. There might be a problem with drainage as well.

Fred: Have concerns about crossing at grade. Everyday you hear about accidents (on Oahu).

Gary: It would be possible to have an underground crossing and also make improvements (traffic signal) at grade—give users option; some people may be comfortable using tunnel only during the day.

Fred: Like concept of bike paths in Alt 3, but want to expand bike paths into surrounding neighborhoods.

Ed: Would want to retrofit Eleele Nani with bike paths.

Keith: Asked about the history of the property and condition of sale.

Gary: Why did the County acquire this property? Recap: During Mayor Baptiste's administration, the housing market was hot. There was a surge in private development activity, but little affordable housing for many Kauai residents. The County began looking for ways to bring relief. In 2004, working in collaboration with the Council, an affordable housing resolution was passed. At that point the County did not have much land for housing development. After researching options offered by landowners, Mayor Baptiste selected for purchase the 75-acre site at a cost of $2.5 million. Bernard Carvalho was the Housing Agency director at that time. Prior to this purchase, the last major piece of land acquired was 12 acres at Kalepa for $1.25 million. The County has a license agreement with Kauai Coffee that it vacate the land only when housing development is about to occur.

Ed: This site is a nice place to develop affordable housing; not next to a dump or in the boonies.

Roy: Concerned about single-car garages, especially in cul-de-sacs. Will there be enough parking?

Roy: Will there be another water tank? Underground electrical lines?

Barbara: The Dept of Water wants a new tank. The 75-acre site is at an elevation suitable for servicing areas that are lower down.

Electrical lines are likely to be installed underground because of better protection against extreme weather and aesthetics.

Keith: The street layout is awkward—in part because of the shape of the property. It forces you to do curves, which are not efficient.

Roy: Will there be a traffic light at the Halewili intersection? The Halewili/Kaumualii intersection needs to be improved—it's hard to turn from Halewili onto Kaumualii Hwy.

Aletha: Do you want more or less units?

Eugene: Alt 3 has lot areas with a minimum of 5,000 square feet.

Gary: Can build housing units that are too dense. For example, the Hanapepe self-housing was originally supposed to have 17 units, but ended up with 23 units. Adding just 6 more units tightened everything up.

Aletha: Seems that you have to deal with targeted density first.

Eugene: Density levels are not yet fixed, and can be changed.

Imai: Also need to consider Kauai's lifestyle. Increasing density will mean sacrificing amenities, quality of life.

Eugene: Also remember that this area is surrounded by R-6 zoning with 6,000 square foot lots.

Ed: What is A&B going to develop?

Imai: Can assume that market residential development is not going to be high density.

Gary: Our surveys find that 80-90% of people prefer a single-family (detached) home. But there are lots of variables with home pricing.

Ed: What is the time frame?

Barbara: Probably looking at 30 years for full build-out.

Roy: Concerned about not completing the development objectives. Eleele Nani Park, for example, is still incomplete. A path was finally put in after 28 years. Is the (proposed district) park going to be in 20 years from now? We need to think about issues like this.

Barbara: The linear park may be able to qualify for federal funds.

Ed: Will there be a sidewalk along Halewili Road?

Imai: If this is important, the community needs to say so, and these facilities become a condition of future development projects.

Imai: The function of Kaumualii Highway needs to change if residential development occurs along this stretch of highway.

Everyone agrees that traffic speeds generally exceed the posted 35 mph limit.

Roy: What if Halewili Road becomes the main road?

Aletha: There will still be tourists who want the scenic view.

Aletha: When talking about development increments, how will the phases be developed?

Nancy: The master plan will include phasing, but we first need to get a better handle on costs. We started with the site plans to have something to cost out.

Barbara: Development will most likely start from the bottom (makai section) for easier sewer connection.

Gary: The County will not necessarily be the developer of the site, but we need to establish parameters for what the development outcome should be.

Keith: You should put in plan—so it's not forgotten—that land for a new lookout was given by A&B. The State Dept of Transportation is supposed to make the improvements.

Keith: Like the idea that you're proposing a variety of housing types. Single-family attached housing (duplexes) will be unique to this area. This is a product that Kauai needs and somebody needs to take the initiative to bring it to market. I believe it's a viable product.

Aletha: It enables people to buy a starter house.

Eugene: It's an education process to popularize the concept.

Keith: Can't go strictly by preferences; sometimes you need to go by what people can afford.

Bernie: Even if individual lots are small, the greenway can serve as an extension of private yards.

Ed: Can Alts 1 and 2 incorporate the perimeter path?

Ed: The plan needs to provide a buffer from continuing agricultural production and nuisances, such as dust.

Ed: Will the County be responsible for maintaining the green spaces?

Eugene: We don't know yet, but we're looking at options.

Aletha: Hiring a contractor to maintain common area is one of the basic services of a community association.

Ed: And enforce rules—referring to Roy's earlier comments about neighbors parking multiple cars on the street.

Gary: There are different models for what an association does.

Roy: It's not realistic to expect neighbors to maintain common yard.

Roy: Will there be a buffer between the residences and A&B's reservoir? Possibly a berm?

Barbara: As protection against dam failure? We'll explore the need for Kapa Reservoir.

Keith: When we talk about the reservoir, do we mean access to the reservoir (for fishing, for example) or the reservoir being an attractive nuisance?

Ed: On the sustainability goal, will there be a place for recyclables? a recycling center within the development?

Barbara: Possibly compositing sites. A recycling center would be more appropriate in the industrial/commercial area.

Ed: Like Alt 3—like the mixing of units. But can this be done in Alts 1 and 2 also?

Nancy: Would Eleele be attractive to the workforce in the Poipu resort area? The master plan will need to address proximity to employment centers.

Bernie: A number of employees already live in Eleele/Hanapepe and the concentration of people coming from this area has led to some carpooling arrangements. Other workers are known to take the bus from Waimea.

Keith: Kauai needs three regional service centers, as discussed in the Kauai General Plan. Besides the county seat in Lihue, Kapaa is the satellite service center for the Northshore and Eastside and Hanapepe/Eleele is the service center from the Southshore and Westside. Keith provided traffic analysis zone (TAZ) data for analysis of transportation linkages among land uses in more narrowly defined geographic areas.

Ed: Can foresee one gripe—where people who already live in Eleele might feel left out when they compare the existing development to the snazzy new area. One way to mitigate this is to plan to retrofit the older neighborhood so both sides feel included.

Aletha: Eleele will attract people who like warm weather; climate will make a difference in how quickly new housing is absorbed.

Ed: Like the density in Alts 1 and 2, but straight roads could promote racing. He noted that some people feel that cul-de-sacs do not promote good *feng shui*.

Keith: Alts 1 and 2 have too much roads, as seen in the single-loaded roads, and the street layout could be confusing to navigate. He suggested consulting with the Dept o Public Works, which may find the cul-de-sacs in Alt 3 problematic since refuse trucks will need to turn around frequently, compared with the ease of picking up trash on streets that go straight through.

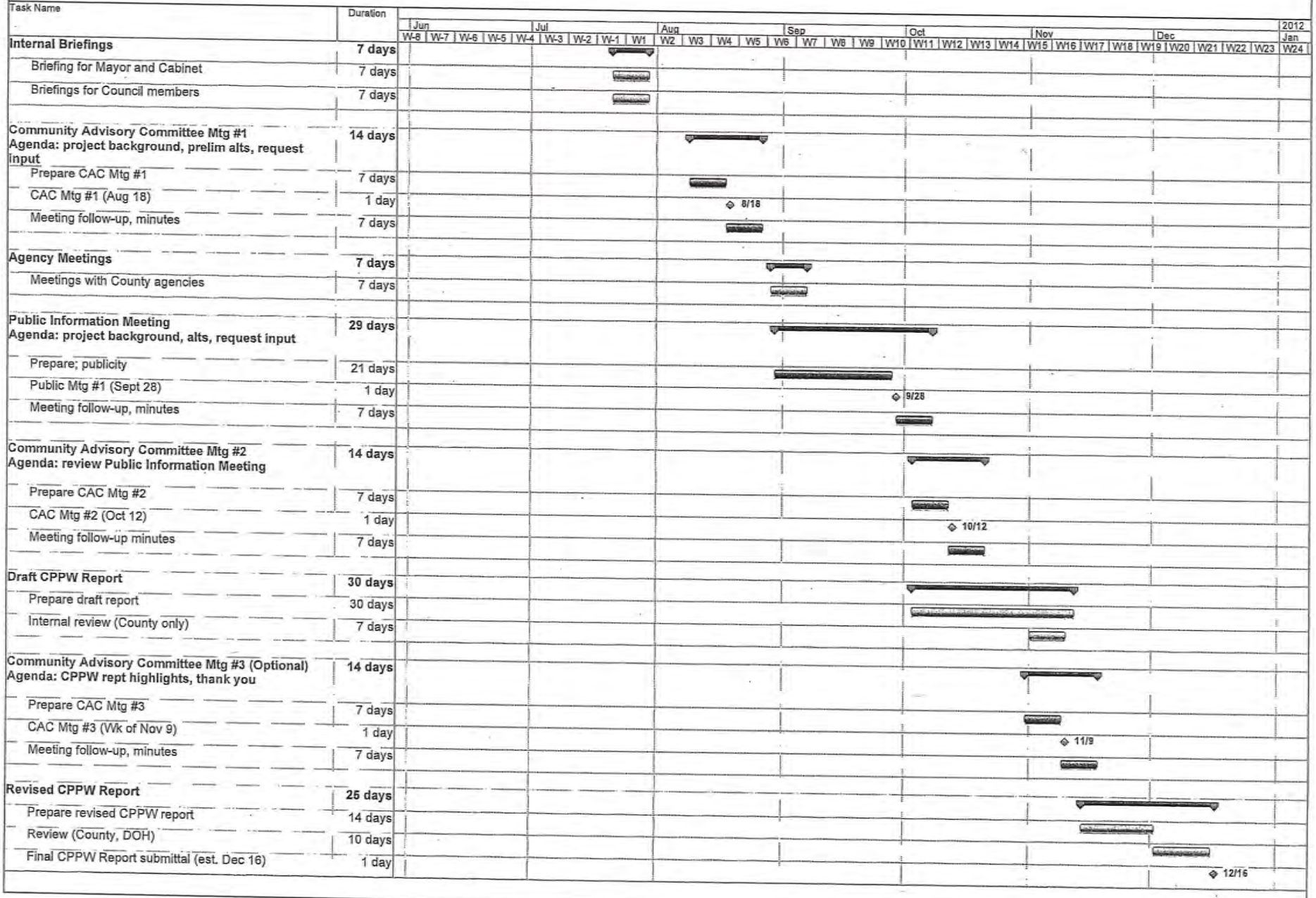
A quick poll was taken to reflect committee member opinions based on the information received so far:

Alternative	**Number**
Alt 3	3
Toss-up Alts 2 and 3	1
Synthesis of all alternatives	2
No preference yet	1

Schedule of Future Meetings

- Wed, September 28: Public information meeting
- Wed, October 12: CAC meeting #2

Lima Ola 75-Acre Affordable Housing Project
Public Involvement Schedule
August 23, 2011 (Subject to Change)



Notes of Meeting [raw]
Councilmember Mel Rapozo
Monday, August 8, 2011, 1:30 p.m.

→Modern roundabouts—facts/statistics on safety, traffic flow improvement

→Comparison of land use by acres—use standard colors

MR: Asked about Mahea/Laulea name difference

MR: Alt 3: like cul de sacs, but does it conform to smart growth principles of connectivity?

Gridiron has a lot of intersections—potential points of conflict (vehicular, vehicular/ped)

MR: Can walk from one cul-de-sac to the other across the greenway?

IA: Cul-de-sacs reduce car connectivity, but encourage bike/ped connectivity

BP: Explain use of utility easement for perimeter bike/ped circulation

MR: What is cost difference among the highway crossing alternatives?

BP: Can have safe refuges in the triangles.

IA: Highway needs to slow down when urbanize

MR: It's high speed now. If can cross safely at grade, would be ideal.

MR: Looks like nice project. Like cul-de-sacs for the reason that it will make for a tighter community. Will need to manage parking (provide adequate amount).

GK: Can call the cul-de-sacs "camp"

MR: Like Alt 2 design, but also like safety. Won't Alt 3 be compromising units?

GK: On the other hand, don't want to overload development with such high density that create a low income enclave.

MR: Wonderful—looks like a nice project. Much needed on the Westside. Can't imagine any problems getting rezoned.

BP/IA: Council would have to approve 201H.

MR: Cool. Was aware of land banking, but not aware that planning was this far along. I introduced resolution for Bryan Baptiste to get land. Let us know if there's anything we can do to help.

Notes of Meeting [raw]
Councilmember Tim Bynum
Monday, August 8, 2011, 2:30 p.m.

TB: Do housing types get mixed up?

GK: Yes, in the plans. Integrate within cul-de-sac (referring to block)

TB: Where is the alley housing?

GK: None. Housing Agency didn't want because of redundant roads.

GK: Loop road traffic would have right-of-way; cross-streets would have stop sign

BP/IA: Can have four-way stops along loop?

GK: Yes, can even have all-way stop at 3-way intersections.

TB: Would have preferred for County to purchase land in Lihue, but it's water under the bridge.

TB: Most disturbing thing is the deed restriction, but again, it's a done deal. Now have land, got to make things happen. Got a great Housing Agency in County of Kauai

TB: When this was proposed, it was a different economy. The whole world has changed (since then). Other landowners might do things differently now.

TB: Doesn't seem like Towill involved in the master plan.

BP: RMT doing other things, such as looking at off-site infrastructure and cost development

TB: Good for now; will have other questions later. Want to know more about deed restrictions—news to me. Did we discuss the deed restriction in Council? Want a copy of the deed restriction. Certainly gives an advantage to the adjacent land owner. Would have wanted mixed commercial that could be used for creative financing, such as tax increment financing.

TB: Like the design. Like that Kimura is involved.

Department of Water
County of Kaua'i

Water has no substitute.....Conserve it

June 3, 2016

Ms. Kanani Fu
Kauai County Housing Agency
4444 Rice Street, Suite 330
Lihue, HI 96766

Dear Ms. Fu:

Subject: 201H Application for Lima Ola Workforce Housing Development,
TMK: 2-1-01:027, Eleele, Kauai

This is in regard to your letter dated May 04, 2016.

The Department of Water (DOW) has no objections to the proposed Lima Ola Workforce Housing Development. Prior to the DOW recommending water meter service, subdivision, or building permit approval, the applicant must construct all necessary water system facilities for this development as required in the approved "Water Master Plan for Lima Ola Workforce Housing dated September 2015" as amended.

The applicant is made aware that the DOW conditionally approved water service for Phase 1. The applicant needs to understand that the DOW will not able to make water allocation commitments for future phases of this project, and the applicant will need to assume the risk that water may not be available in the future. Requests for water service will be dependent on the adequacy of the source, storage, and transmission facilities at that time.

If you have any questions, please contact Mr. Edward Doi at (808) 245-5417.

Sincerely,

Kirk Saiki
Manager and Chief Engineer

RF:mlm
2-1-01-027, T-18259, Fu

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Michael A. Dahilig
Director of Planning

Ka'āina S. Hull
Deputy Director of Planning

PLANNING DEPARTMENT
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite A-473, Līhu'e, Hawai'i 96766
TEL (808) 241-4050 FAX (808) 241-6699

AUG 01 2016

Kanani Fu
Housing Director
Housing Agency
Suite 330
4444 Rice Street
Līhu'e, Hawai'i 96766

RE: 201H Application for the development of the Lima Ola Workforce Housing Development on a parcel located in Eleele, Kaua'i, Hawai'i
Tax Map Key: (4) 2-1-0013:054

Dear Mrs. Fu:

The Planning Department of the County of Kaua'i has reviewed the 201H Application Package for the subject project. The Department has no objections to the following exemptions:

1. An exemption from Kaua'i County Code Chapter 7, Article 3, Section 7.3.1, "General Plan", shall be granted to permit the project to proceed without obtaining an amendment of the General Plan.
2. Exemptions from Kaua'i County Code Chapter 8, "Comprehensive Zoning Ordinance", as listed in the application.
3. Exemptions from Kaua'i County Code, Chapter 9, "Subdivision Code", as listed in the application.

In regards to the General Plan, the Planning Department offers the following comments:

- The General Plan is undergoing a comprehensive update which is not expected to be completed until 2017. Council action on this process will inform the General Plan Update.

- The existing General Plan, updated in 2000, did not anticipate the Lima Ola project, nor support urban expansion to the specific site. Thus, the project site is designated "Agriculture" in the General Plan Land Use Map. However, guidance for future growth is also provided in Section 5.1.2 "Policy for Future Growth." In regards to housing development in the region, in Policy 5.1.2(d), the General Plan calls to plan for additional

residential use on the West Side to meet regional demands for housing. The supply of workforce housing anticipated by Lima Ola would help fulfill regional demand.

- Development of the Lima Ola project site, which is contiguous to Eleele, is consistent with Policy 5.1.2(e).
    - "(e) Expansion contiguous to an existing town or residential community is preferred over a new residential community."
- The Lima Ola project supports the Housing Policy objectives of the General Plan (8.1.10) which state that the County shall:
    - "(a) Increase the supply of affordable rental housing, as indicated by market conditions.
    - (b) Increase opportunities for moderate- and low-income households to become homeowners. Work from the bottom up, serving the 35 percent of residents whose income is 80 percent of the median or less. The intent is to move families out of expensive rental subsidy programs into homeownership, developing housing at a very low cost through self-help programs and reduced-rate mortgage financing.
    - (c) Acquire and bank land and infrastructure improvements for future housing development.
    - (d) Support the development of housing and support services for elderly and special needs groups, including persons with disabilities, the homeless, and other at-risk populations needing shelter and rehabilitation programs."

The Department recommends you consider placing a "Pedestrian Green Belt" in the middle of the subdivision layout to provide a direct connection for developments on the upper plateau to the project's proposed park.

Please contact Ka'āina Hull, Deputy Planning Director, at 241-4050 if you have any questions.

Sincerely,

Michael A. Dahilig
Director of Planning

Keith Perry

From: Celia Mahikoa
Sent: Friday, June 03, 2016 11:06 AM
To: Keith Perry
Cc: Jeremy Lee; Kanani Fu
Subject: Comments re: Lima Ola 201H Application

Aloha Keith,
The Transportation Agency appreciates the opportunity to review and provide comment on the 201H Application for the Lima Ola project.
Pursuant to ongoing discussions held in regards to addressing the project impacts as related to public transit, please note the following:

- Transit's continued inclusion as the project progresses
- Bus Stop to be located on Kaumuali'i Highway, with a bus pull-off, passenger shelter and amenities constructed aligned with current bus stop design standards, and fully accessible as defined by ADA – bus stop location consult with Trans.
- ADA-accessible pedestrian pathways providing user-friendly access to the bus stop from the housing areas.
- ADA-accessible pedestrian pathways providing residents access to curb-side transit vehicle pickups for ADA-eligible paratransit riders.
- Ability for large vehicles to access all housing areas.
- Safety measures taken on Kaumuali'i Highway to address the increase in pedestrian traffic generated by bus stops on both sides of the highway.

Please let me know if you have questions or need clarification.
Mahalo nui,
Celia

Celia Mahikoa
Executive on Transportation

County of Kaua`i
Transportation Agency
3220 Hoolako Street | Lihue, HI 96766
PH: 808.246.8111 | FAX: 808.241.6417
cmahikoa@kauai.gov

Holo Holo 2020
Creating Kaua'i's responsibility

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Kanani Fu
Housing Director

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

July 29, 2016

Ceclia Mahikoa, Executive on Transportation
3220 Hoolako Street
Lihue, HI. 9676

Subject: Lima Ola Workforce Housing Development
TMK No. (4) 2-1-001:054
'Ele'ele, Kaua'i, Hawai'i

Dear Mrs. Mahikoa:

Your comments have been received on the 201H Application dated June 3, 2016. We appreciate your comments and offer the following responses based on the main topics raised in your letter:

Transit's continued inclusion as the project progresses.

Kauai County Housing Agency (KCHA) will continue to work with the County of Kauai Transportation Agency (CTA) at each phase in the development of Lima Ola.

Kaumualii Highway - A bus stop and appurtenances be located on Kaumualii Highway; ADA pathways to bus stop; increased safety measures on both sides of the highway near bus stop.

We have been working closely with the Hawaii Department of Transportation, Highways Division on the installation of a bus stop on Kaumualii highway, as well as enhanced pedestrian safety measures in the area.

Within Lima Ola - Ability for large vehicles to access all housing areas; ADA-accessible pathways for curbside pickup of paratransit riders.

These recommendations have been noted.

Should you have any questions or concerns, please contact Keith Perry at (808) 241-4443.

Sincerely,

Kanani Fu,
Housing Director

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Elton S. Ushio
Emergency Management
Administrator

KAUA'I CIVIL DEFENSE AGENCY
3990 Kaana St., Suite 100, Līhu'e, Hawai'i 96766
TEL (808) 241-1800 FAX (808) 241-1860

TO: Kanani Fu, Housing Director

FROM: Elton Ushio, Emergency Management Administrator

DATE: June 6, 2016

RE: KCDA Comments Regarding 201H Application for Lima Ola, 'Ele'ele, HI

Aloha!

Upon review of the 201H materials, it appears that my predecessors did not provide written comments. I apologize for the prior oversight. That said, I'm providing two general areas of comment:

1. Exhibit 4 Project Site Information (map), Exhibit 9 Draft Environmental Assessment4.2.4.1 Existing Conditions/Surface Water, Figure 5 – Flood Hazard Map, 4.2.4.2 Potential Impacts and Mitigation, and Exhibit 3 – FEMA Map (FIRM) reference FEMA Flood Zone X and do not capture or note potential concerns and mitigation measures relating to Kapa Reservoir, deemed "High" in Hazard Potential Classification.

   Kapa has a normal storage of 8 million gallons and a maximum of ≈ 16.3 million gallons, with an earthen dam that does not include a spillway safety feature. Evacuation maps and dam information are attached, but please keep these internal, as the source document is CONFIDENTIAL – Not for Public Release.

   My suggestion here would be to either (a) coordinate with Kaua'i Coffee Company to implement enhanced monitoring and control of the water level; or (b) explore the possibility of the owner/operator decommissioning the reservoir if it is not needed for irrigation purposes.

2. Noting the Community Center that is currently proposed under Phase 2A, KCDA recommends that if feasible, this be designed and constructed in a manner that will allow it to serve as a Civil Defense shelter. Also, section 4.3.7.1 Existing Conditions could include the potential and probable demands on existing shelter spaces at 'Ele'ele Elementary School, the nearest public shelter location. 2012 assessment figures rate 'Ele'ele Elementary as having a capacity of 1468. With Lima Ola eventually including 550 units, inclusion of a shelter on-site would mitigate the strain on limited shelter resources.

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Kanani Fu
Housing Director

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

July 29, 2016

Mr. Elton Ushio, Emergency Management Administrator
3990 Kaana Street, Suite 100
Lihue, HI. 96766-1268

Subject: Lima Ola Workforce Housing Development
TMK No. (4) 2-1-001:054
'Ele'ele, Kaua'i, Hawai'i

Dear Mr. Ushio:

Your comments have been received on the 201H Application dated May 5, 2016. We appreciate your comments and offer the following responses based on the main topics raised in your letter:

Kapa Reservoir does not include an emergency spillway feature. It is suggested that (a) coordinate with Kauai Coffee Company to implement enhanced monitoring and control of water level; or (b) explore the possibility of decommissioning Kapa Reservoir.

We have had discussions with Kauai Coffee Company regarding your comments on Kapa Reservoir and offer you the following response: Water level of Kapa Reservoir is monitored daily. The intake, or water entering into the reservoir, is transmitted thru pumps that are regulated by Kauai Coffee Company; therefore water level intake and level is controlled and predictable. Should there be a need to quickly reduce the water level in the reservoir, Kauai Coffee has a procedure in place to flow water into fields in the area thru a network of irrigation ditches and pumps. In lieu of a spillway, Kapa Reservoir has an emergency 24" overflow pipe as a safety feature.

Recommended that if feasible, the proposed Community Center be constructed in a way that would allow it to serve as a Civil Defense Shelter.

This recommendation has been noted.

Should you have any questions or concerns, please contact Keith Perry at (808) 241-4443.

Sincerely,

Kanani Fu,
Housing Director

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Kanani Fu
Housing Director

COUNTY OF KAUAI
HOUSING AGENCY

'16 JUN -1 P1:45

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

FROM: Kanani Fu, Housing Director Date: 5/4/2016

SUBJECT: 201H Application for Lima Ola, Eleele, HI. Tax Map Key (4) 2-1-001:027 = **County of Kauai**

TO:

( )	Department of Transportation - STP	( )	DPW – Engineering
( )	DOT – Highways, Kauai	( )	DPW – Waste Water
( )	DOT – Airports, Kauai (info only)	( )	DPW – Building
( )	DOT – Harbors, Kauai (info only)	( )	DW – Parks & Recreation
( )	State Department of Health	( )	DW – Solid Waste
( )	State Historic Preservation Division	(X)	Fire Department
( )	Planning Department	( )	Police Department
( )	Transportation Agency	( )	Water Department
( )	Kauai Civil Defense	( )	_____

FOR YOUR COMMENTS (pertaining to your department): 6/1/16

Regarding the exemption requests for Lima Ola, the Fire Department will allow for the reduction of widths in the poles of the flag lots to 10 feet each minimum width, **for those that are side by side**. No reduction for the single poles. There shall not be any obstructions in between the poles. We do not condone the 5 foot reduction for the rear setback of the structures. This reduction would result in major exposure issues to surrounding homes, should one of them catch fire.

An e-copy of this submittal is available via Dropbox. Please email klperry@kauai.gov to request access.

If we do not receive your agency comments within thirty (30) days from the date of this request, we will assume there are no objections or comments to this application. Mahalo!

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Kanani Fu
Housing Director

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

July 29, 2016

Mr. Robert Westerman, Fire Chief
4444 Rice Street, Suite 315
Lihue, HI. 96766

Subject: Lima Ola Workforce Housing Development
TMK No. (4) 2-1-001:054
'Ele'ele, Kaua'i, Hawai'i

Dear Chief Westerman:

Your comments have been received on the draft environmental assessment (DEA) and 201H Application dated June 6, 2016. We appreciate your comments and offer the following responses based on the main topics raised in your letter:

The Fire Department will allow for the reduction of widths in the pole lots to a ten (10') foot minimum for those that are side by side and no reduction for single pole lots.

This exception is noted and will be incorporated in the upcoming design.

The Fire Department does not condone the five (5') reduction for the rear setback of structures.

This exception is noted. In previous conversations with the Fire Department it was acknowledged that a reduced rear setback would be acceptable if homes in these lots were equipped with sprinkler system or other means of fire suppression. We will continue to work with your department and seek guidance on acceptable options as we move forward with development.

Should you have any questions or concerns, please contact me at (808) 241-4443.

Sincerely,

Kanani Fu,
Housing Director

POLICE DEPARTMENT
COUNTY OF KAUAI

3990 KAANA STREET, SUITE 200
LIHUE, HAWAII 96766-1268
TELEPHONE (808) 241-1600
FAX (808) 241-1604
www.kauaipd.org

BERNARD P. CARVALHO, JR.
Mayor

NADINE K. NAKAMURA
Managing Director

DARRYL D. PERRY
Chief of Police
dperry@kauai.gov

MICHAEL M. CONTRADES
Deputy Chief of Police
mcontrades@kauai.gov

May 5, 2016

TO: KANANI FU, HOUSING DIRECTOR

VIA: KEITH PERRY, SPECIAL ASSISTANT TO THE HOUSING DIRECTOR

FROM: DARRYL D. PERRY, CHIEF OF POLICE

SUBJECT: LIMA OLA HOUSING DEVELOPMENT ELEELE, HAWAII

Upon completion of the entire Lima Ola Housing Development, there will be a total of 550 Units.

As such, the population in Eleele/Hanapepe will grow by approximately 1,650 – 1,925. Based on Population-Driven Police Force Ratios, I am recommending that cost of six (6) additional police officers be included and that a seven-thousand (7,000 sq.ft.) sub-station be built to address anticipated calls for service, and future growth of the entire area.

Please contact me should you have any questions at 241-1600

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Kanani Fu
Housing Director

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

July 29, 2016

Mr. Darryl D. Perry, Chief of Police
3990 Kaana Street, Suite 200
Lihue, HI. 96766-1268

Subject: Lima Ola Workforce Housing Development
TMK No. (4) 2-1-001:054
'Ele'ele, Kaua'i, Hawai'i

Dear Chief Perry:

Your comments have been received on the 201H Application dated May 5, 2016. We appreciate your comments and offer the following responses based on the main topics raised in your letter:

Six (6) additional police officers are needed for service when using Population-Driven Police Force Ratios for Lima Ola's 550 new units.

The expected full build out of an anticipated 550 units of Lima Ola will occur over a 15 – 20 year span. The Kauai County Housing Agency will continue to work closely with your department as well as the Administration in planning for the additional resources requested.

To address the anticipated calls for service, and future growth of the area a seven-thousand (7,000 sq.ft.) sub-station be built.

This recommendation has been noted. However, please note that due to deed restrictions, the Lima Ola parcel can only be used for providing Affordable Housing or agricultural purposes.

Should you have any questions or concerns, please contact Keith Perry at (808) 241-4443.

Sincerely,

Kanani Fu,
Housing Director

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Lyle Tabata
Acting County Engineer

COUNTY OF KAUAI
HOUSING AGENCY

16 JL -1 P1 :06

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

June 30, 2016

Kanani Fu
Housing Director
Kauai County Housing Agency
4444 Rice Street Suite 330
Lihue, HI. 96766

Subject: Lima Ola Workforce Housing Development
201H Application and Draft Environmental Assessment
TMK No. (4) 2-1-001:054
'Ele'ele, Kaua'i, Hawai'i

Dear Ms. Fu:

We have reviewed Kauai County Housing Agency's 201H application for the Lima Ola Workforce Housing Development. We appreciate the opportunity to provide comments and input for this project.

Previous to the Draft Environmental Assessment the County of Kauai Department of Public Works has been able to work with the Housing Agency to address any concerns during preliminary meetings held.

After review of the Application and Draft Environmental Assessment we have no comment to provide.

Should you have any questions or concerns, please contact me at 241-4996.

Sincerely,

Lyle Tabata
Acting County Engineer

Exhibit 9

FINDING OF NO SIGNIFICANT IMPACT

(FONSI)

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Kanani Fu
Housing Director

KAUA'I COUNTY HOUSING AGENCY
County of Kaua'i, State of Hawai'i
Pi'ikoi Building 4444 Rice Street Suite 330 Līhu'e Hawai'i 96766
TEL (808) 241-4444 FAX (808) 241-5118

June 24, 2016

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

Dear Mr. Glenn:

With this letter, the County of Kaua'i Housing Agency hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the proposed Lima Ola Workforce Housing Development situated at TMK (4) 2-1-1:54, in 'Ele'Ele on the island of Kaua'i for publication in the next available edition of the Environmental Notice.

The County of Kaua'i Housing Agency has included copies of comments and responses that it received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI).

Enclosed is a completed OEQC Publication Form, one copy of the FEA-FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word.

If there are any questions, please contact the County of Kaua'i Housing Director, Kanani Fu at (808) 241-4444.

Sincerely,

Kanani Fu
Housing Director
County of Kaua'i Housing Agency

Office of Environmental Quality Control

FILE COPY

February 2016 Revision

AGENCY PUBLICATION FORM

Project Name:	**Lima Ola Work Force Housing Development**
Project Short Name:	N/A
HRS §343-5 Trigger(s):	Use of County Lands
Island(s):	Kaua'i
Judicial District(s):	Kōloa
TMK(s):	(4) 2-1-001:054
Permit(s)/Approval(s):	NPDES Construction Permit; Grading Permit; Grubbing Permit; Stockpiling permit; Building Permit; Road Permit; Electrical Permit, Plumbing Permit.
Proposing/Determining Agency:	County of Kauai Housing Agency
Contact Name, Email, Telephone, Address	Kanani Fu, Kananifu@kauai.gov, (808) 241-4444 4444 Rice Street, Suite 330 Līhu'e, Kaua'i, Hawai'i 96766
Accepting Authority:	N/A
Contact Name, Email, Telephone, Address	N/A
Consultant:	Community Planning and Engineering, Inc.
Contact Name, Email, Telephone, Address	Frank Camacho, FCamacho@cpe-hawaii.com, (808) 531-4252, Ext. 1040

Status (select one)	**Submittal Requirements**
___ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
__X__ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
___ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
___ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
___ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
___ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
___ FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
___ Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and

	determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

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

The purpose of the proposed project is to satisfy the need for affordable housing on the island of Kauai. The Kauai County Housing Agency mission is to provide the much needed affordable housing to families on Kauai, as the population of Kauai residents is increasing. Facilitating affordable housing opportunities for Kauai residents is one of the county's top priorities. In order to address a housing shortage in the county, the Kauai County Council helped to pass a resolution in 2004 to acquire land for affordable housing. The proposed project site was acquired as a suitable location to provide the needed affordable housing to Kauai residents.

The County of Kauai Housing Agency is proposing to build an affordable housing project. The proposed project would include approximately 550 residential units (single family, multi-family and senior resident units) at final buildout. The project would be designed with roadways, green sustainable energy efficiency features, a park, vegetated drainage swales, landscaped areas, a water storage tank, and bike and pedestrian paths. The proposed development would be located directly mauka of the intersection of Halewili Road and Kaumualii Highway in the town of Eleele on the west side of Kauai.

Exhibit 10

PRELIMINARY ENGINEERING REPORT

Preliminary Engineering Report

Lima Ola Work Force Housing Development

Prepared for:
Kauai County Housing Agency

Prepared by:
Community Planning and Engineering, Inc.

August 2014

RICHARD Y. SANTO
LICENSED PROFESSIONAL ENGINEER
No. 8955-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
LICENSE EXPIRATION DATE: 04/30/16

I. PURPOSE

The purpose of this report is to describe the engineering methodology for the Lima Ola Affordable Housing project in Eleele on the island of Kauai.

II. BACKGROUND

A. Project Location

The project site is located on the west side of the island of Kauai approximately seven miles southeast of Waimea Town and directly northeast of Eleele Town. The project site is located directly landward of the intersection of Halewili Road and Kamualii Highway, and includes approximately 75 acres of land within Tax Map Key (TMK) (4) 2-1-001:054. See Exhibits 1, 2 and 3 for the Site Location/Vicinity Map, Conceptual Site Plan and Phasing Plan, respectively, for the Lima Ola Development.

B. Present Environmental Resources

The Environmental Assessment titled "Lima Ola Work Force Housing Development", prepared by Community Planning and Engineering, Inc., provides a complete evaluation of the project's environmental impacts.

C. Growth Area and Population Trends

Based on the United States (U.S.) Census Bureau data, Kauai had a population of 69,512 in 2013. The population of Kauai grew 3.6 percent between April 1, 2010 and July 1, 2013. The project is located in the Hanapepe-Eleele area on Kauai. The Hanapepe-Eleele area has a 2020 projected population of 5,678 and 2050 projected population of 7,951 based on the County of Kauai Department of Water (DOW) Water Plan 2020.

III. ALTERNATIVES CONSIDERED

The following alternatives were considered for the Lima Ola Development. A description of the two alternatives considered for this project is provided below.

A. Alternative 1 – No Action

Under the No Action Alternative, the proposed affordable housing development would not be constructed. There would be no disturbance to the existing environment within the project site under the No Action Alternative, however the County of Kauai would not have sufficient land to provide affordable housing needed by Kauai residents.

B. Alternative 2 – Lima Ola Development

Alternative 2 includes the Lima Ola Development which consists of 550 residential units (single family, multi-family and senior resident units) designed with green features.

EXHIBIT 1

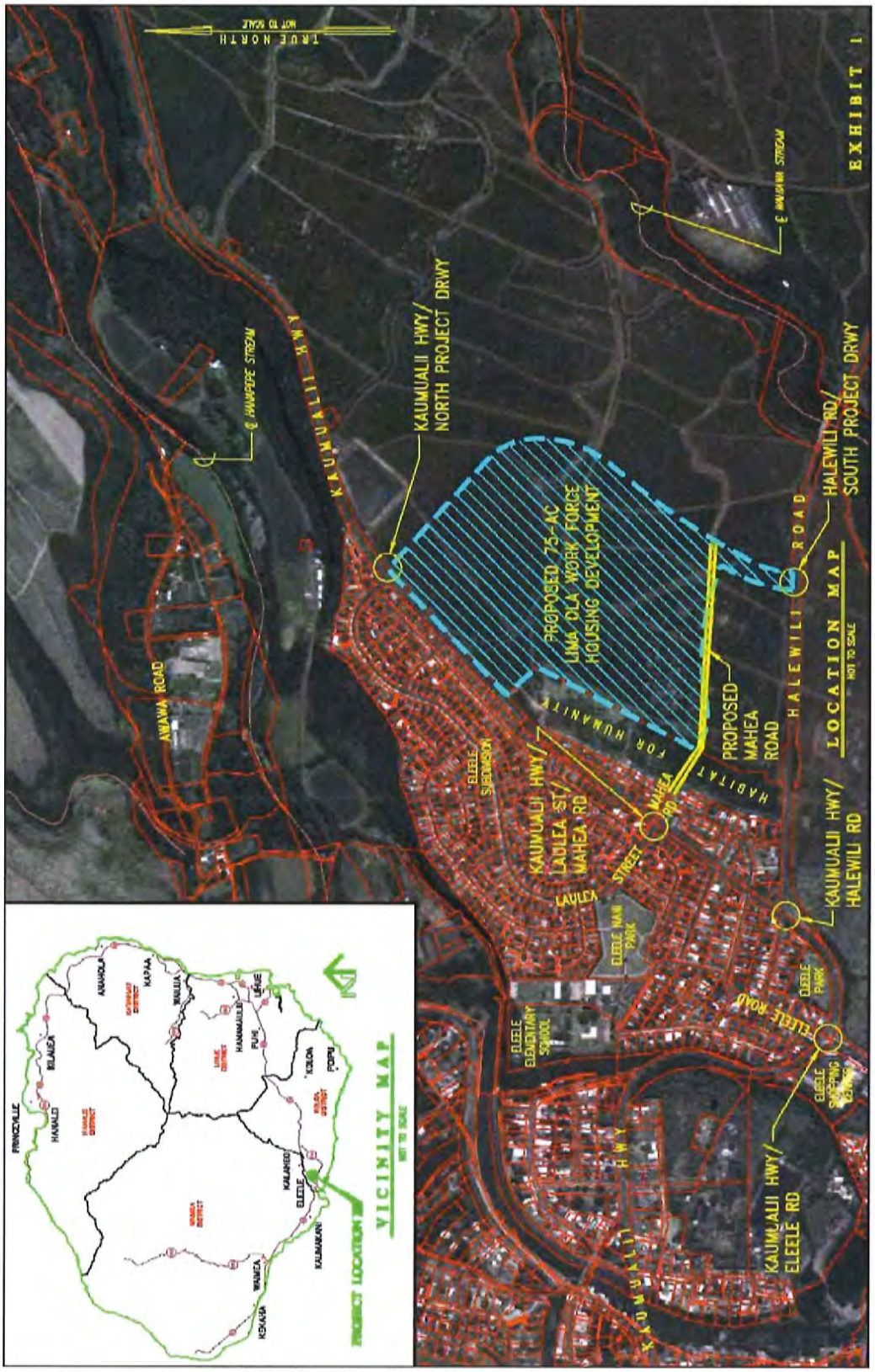
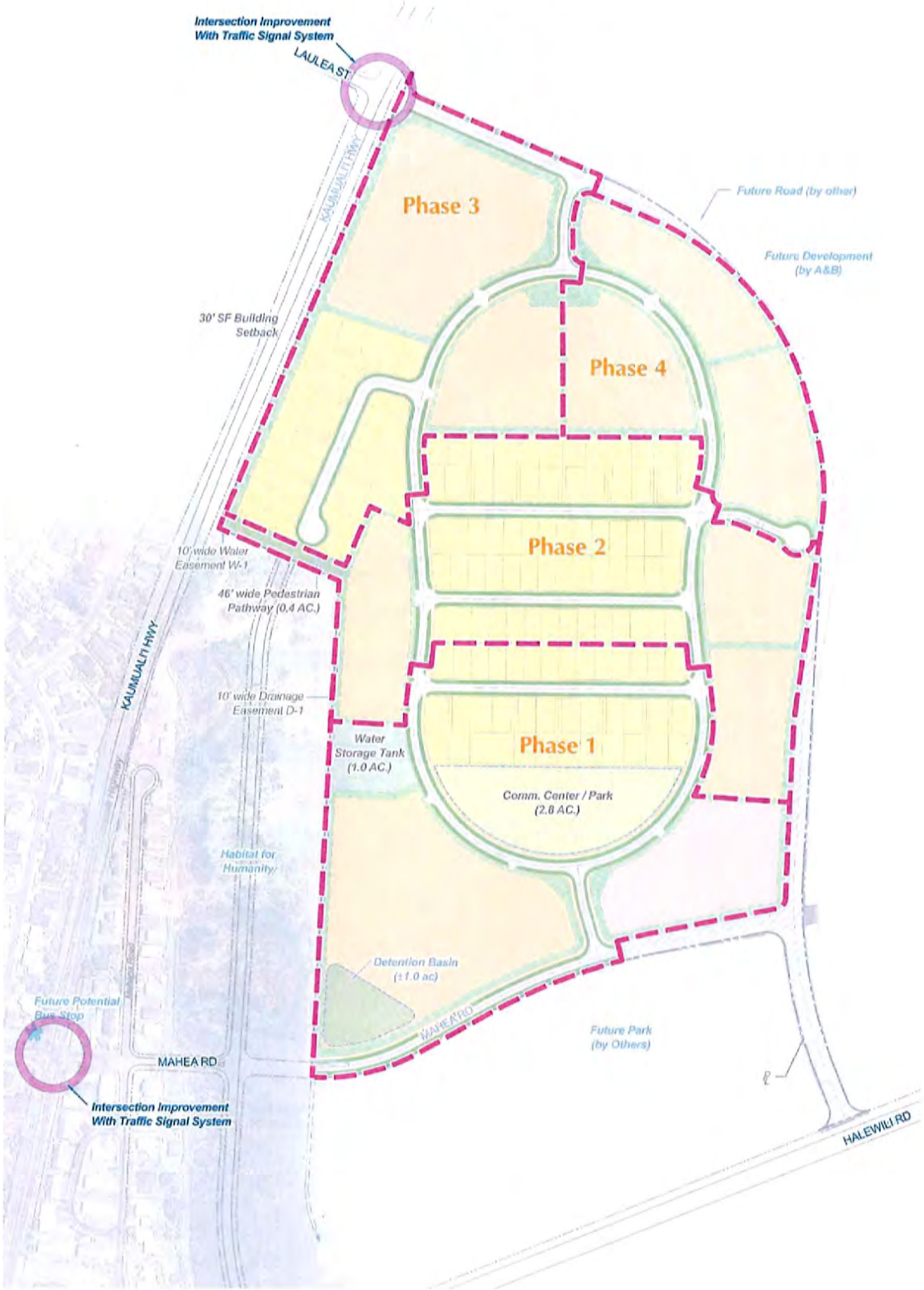


EXHIBIT 1
LOCATION MAP
NOT TO SCALE
TRUE NORTH
NOT TO SCALE
KAUMUALII HWY/
NORTH PROJECT DRWY
HALEWILI RD/
SOUTH PROJECT DRWY
PROPOSED 75-AC
UNA OLA WORK FORCE
HOUSING DEVELOPMENT
PROPOSED
MAHEA
ROAD
HALEWILI ROAD
KAUMUALII HWY/
LAOLEA ST/
MAHEA RD
KAUMUALII HWY/
HALEWILI RD
KAUMUALII HWY/
ELEELE RD
ANAHOLA ROAD
KAUMUALII HWY
ELEELE SCHOOL
ELEELE MAIN PARK
ELEELE PARK
ELEELE SHOPPING CENTER
LAOLEA STREET
ANAHOLA STREAM
VICINITY MAP
NOT TO SCALE
PROJECT LOCATION
PRINCEVILLE
HANALEI
WAIMEA
KEKAHA
KALAHEO
ELEELE
KAUMAKANI
WAILUA
KAPAA
ANAHOLA

EXHIBIT 2


Intersection Improvement With Traffic Signal System
LAULEA ST
Project Limits
County Major Perimeter Road Mauka (0.8 AC.)
* Future Road Reserve (0.4 AC.)
Future Road (by other)
Future Development (by A&B)
KAUMUALI'I HWY
MF (6.3 AC.)
MF (2.8 AC.)
30' SF Building Setback
SF (3.3 AC.)
MF (3.0 AC.)
MF (3.0 AC.)
MF (2.9 AC.)
SF (1.6 AC.)
SF (3.4 AC.)
10' wide Water Easement W-1
46' wide Pedestrian Pathway (0.4 AC.)
SF (3.2 AC.)
MF (2.2 AC.)
MF (2.7 AC.)
SF (3.3 AC.)
Project Limits
10' wide Drainage Easement D-1
SF (3.2 AC.)
MF (2.5 AC.)
Water Storage Tank (1.0 AC.)
Comm. Center / Park (2.8 AC.)
Habitat for Humanity
MF Elderly (3.6 AC.)
MF (7.5 AC.)
* Future Road Reserve (2.5 AC.)
Detention Basin (±1.0 ac)
Future Potential Bus Stop
MAHEA RD
Future Park (by Others)
Intersection Improvement With Traffic Signal System
HALEWILI RD

EXHIBIT 3


Intersection Improvement
With Traffic Signal System
LAULEA ST
KAUMUALII HWY
Phase 3
Future Road (by other)
Future Development
(by A&B)
30' SF Building
Setback
Phase 4
Phase 2
10' wide Water
Easement W-1
46' wide Pedestrian
Pathway (0.4 AC.)
KAUMUALII HWY
10' wide Drainage
Easement D-1
Water
Storage Tank
(1.0 AC.)
Phase 1
Comm. Center / Park
(2.8 AC.)
Habitat for
Humanity
Detention Basin
(±1.0 ac)
Future Potential
Bus Stop
MAHEA RD
Future Park
(by Others)
MAHEA RD
Intersection Improvement
With Traffic Signal System
HALEWILI RD

IV. SELECTION OF AN ALTERNATIVE

In picking an alternative, a cost analysis would normally be performed but alternative one is a no cost option, therefore, the selection of an alternative was based on mitigating the rising housing costs on Kauai. Alternative 2 will help resolve the problem of high housing prices in Kauai to an extent. Comparing the No Action Alternative to Alternative 2, the decision of not developing the Lima Ola subdivision does not provide the community of Kauai with affordable housing. Therefore, Alternative 2 – Lima Ola Development is considered the only feasible project alternative.

V. ENGINEERING APPROACH FOR THE LIMA OLA DEVELOPMENT

Site Work

The proposed development will be graded sloping south towards Mahea Road. The slopes within the development will be as following:

- Single Family Housing: 1% to 2% slope towards roadway and terraced at approximately 2 feet.
- Multi Family Housing: 2% to 4% slope, terraced at 4 feet to 6 feet within multifamily housings, and 5 feet to 8 feet to adjoining facilities.
- Water Source Tank: 0% for mass grading, with swales at 2% slope for drainage.
- Asphalt Concrete (AC) Roadways
    - Perimeter Road: less than 4%
    - Loop Collector Road: less than 5.5%
    - Minor Roads: less than 3%
    - Entry Roads: less than 6.5%
    - Mahea Road: less than 5%
- Community Park : 3% to 4%

Drainage

The project site is currently being leased for coffee farming by the Kauai Coffee Company. Elevations within the project site range from 175 feet to 275 feet at approximately 4% slope. The existing drainage surface runoff path flows from north to south direction. The subsurface soils at the project site vary from stiff to very stiff clayey silt and silty clays with low expansion potential. An irrigation ditch exists on the northern side of the project site, which was created in 1908 as part of the McBryde's irrigation system that provided non-potable water for cane land between Eleele and Lawai.

The Lima Ola Development would require approximately 4,650 linear feet (LF) of 36-inch reinforced concrete pipe (RCP) and 1,110 LF of 24-inch RCP. The Proposed Action will also

require the construction of an on-site Detention Basin. The on-site Detention Basin will have a maximum storage capacity of 2.7 AC-FT (acre-feet) and will be designed for a 2-year design storm based on a drainage area of approximately 87 acres. The biggest advantage of the on-site detention basin is that no additional land would need to be purchased. The proposed drainage system will consist of RCPs, drain inlets and drain manholes. The Detention Basin and will be designed in accordance with the County of Kauai, Department of Public Works Standards. The proposed development will also include grass swales along the roadways to treat the surface water runoff and reduce the flow velocities.

Water

The DOW has four (4) well sources in the Hanapepe-Eleele water system. Two (Hanapepe A and Hanapepe B) of the four wells are situated in the Hanapepe Valley. Hanapepe A was drilled in 1974 and has a pumping capacity of 500 GPM. The existing ground elevation at Hanapepe A is 98 feet above mean sea level (MSL). Hanapepe B was drilled in 1980 and has a pumping capacity of 900 GPM. The existing ground elevation at Hanapepe B is 99 feet MSL. The two other wells (Hanapepe 25-1 and Hanapepe 4) that are part of the Hanapepe-Eleele system are located on the west side of the Hanapepe Valley. Hanapepe 25-1 was drilled in 1966 and has a pumping capacity of 150 GPM. Hanapepe 25-1 has been abandoned in place and is no longer being used by the DOW due to a pump/motor problem (Lima Ola Feasibility Study, R.M. Towill Corporation, January 2013). The existing ground elevation at Hanapepe 25-1 is 78 feet MSL. Hanapepe 4 was drilled in 1993 and has a pumping capacity of 700 GPM. The existing ground elevation at Hanapepe 4 is 463 feet MSL.

The DOW has three (3) water storage tanks located along Kaumualii Highway, two-0.4 MG steel tanks with 340-foot spillway elevations and one (1) 0.2 MG concrete tanks with a 402-foot spillway elevation. Delivery of water from any of the wells into the storage tanks is accomplished by two 750 GPM Eleele booster pumps in Hanapepe Valley and a 27-inch pipe up the valley wall to the steel tanks at the 340-foot elevation. A smaller 120 GPM booster pump delivers water from the 340-foot tanks to the 402-foot tanks.

Consumption Guidelines

The proposed preliminary engineering report utilizes the State of Hawaii, Water System Standards (2002). The criteria used in the development of this report are as follows:

The average daily demands were obtained from the consumption guidelines. Table 1 summarizes these guidelines for the County of Kauai.

Table 1: Kauai County Consumption Guidelines

Zoning Designation	Average Daily Demand
Single Family or Duplex	500 gallons / unit
Multi-Family Low Rise	350 gallons / unit
Commercial Only	3000 gallons / acre
Schools, Parks	4000 gallons / acre or 60 gallons / student

Demand Factors

The demand factors which calculate the maximum daily demand and peak hour demand are summarized in Table 2.

Table 2: Demand Factors

Maximum Daily Demand	Peak Hour
1.5 x Average Day	3.0 x Average Day

Fire Flow Requirements

The fire flow requirements for the Kauai County are summarized in Table 3.

Table 3: Fire Flow Requirements

Land Use	Flow Gallons per Minute (GPM)	Duration (Hours)	Fire Hydrant Spacing (Feet)
Single Family (R-10)	1,250	2	350

Pipeline Sizing

Pipelines need to be designed to meet the following requirements:

- Maximum daily flow plus fire flow with a residual pressure of 20 pounds per square inch (psi) at the critical fire hydrant.
- Peak hour flow with a minimum residual pressure of 40 psi.
- "C" factors as shown in Table 4.

Table 4: "C" Factors

Pipe Diameter	"C"
8", 12"	110

- Maximum velocity in the distribution main (without fire flow) is 6 feet per second (fps).
- Maximum static or pumping pressure, whichever is greater, shall not exceed 125 psi.

Reservoir (Tank) Capacity

Reservoirs (tanks) need to be designed to meet the following requirements:

- Meet maximum day consumption. Reservoir (tank) full at the beginning of the 24-hour period with no source input to the reservoir (tank).

- Meet maximum day rate plus fire flow for duration of fire. Reservoir (tank) ¾ full at start of fire, with credit for incoming flow from pumps, one maximum size pump out of service.

- Minimum size reservoir (tank) shall be 0.1 million gallon (MG). The standard sizes for reservoirs (tanks) are 0.1 MG, 0.2 MG, 0.25 MG, 0.3 MG, 0.5 MG, 1.0 MG, and 0.5 MG increments thereafter.

Where there are two or more reservoirs (tanks) serving the same system, the design shall be made on the basis of combined protection provided by all facilities available.

Total Pump Capacity

The system is deemed to have adequate pumping capacity if it meets the maximum day demand with an operating time of 24 hours.

The pumping capacity of the Hanapepe-Eleele water system was analyzed with two wells (Hanapepe A and Hanapepe 4) as water sources. Based on the County of Kauai's Water System Standards, the largest pumping unit in the system pump is considered out of service (on standby). Therefore, Hanapepe B being the well with the largest capacity (900 GPM) in the Hanapepe-Eleele water system was considered out of service.

Total Pumping Capacity of Well 'Hanapepe A' = 500 GPM

Total Pumping Capacity of Well 'Hanapepe 4' = 700 GPM

Total Pumping Capacity of the Hanapepe-Eleele System = 1,200 GPM

= 1,728,000 Gallons per Day (GPD)

The pumping capacity of the existing system was analyzed for two (2) different scenarios.

Scenario 1: The first scenario uses the maximum water demand of the Hanapepe-Eleele water system based on water consumption data provided by the DOW for the 2013 calendar year and the projected demand for the Lima Ola Development based on the Water System Standards, 2002.

Average Daily Demand for Hanapepe-Eleele Water System (2013 DOW Data) = 692,466 GPD

Maximum (Max) Factor = 1.5

Max Demand = 1.5 x 692,466 GPD

= 1,038,700 GPD

Calculated Max Demand for Lima Ola (Phase I) = 129,450 GPD

Calculated Max Demand for Lima Ola (Phase II) = 113,100 GPD

Calculated Max Demand for Lima Ola (Phase III) = 82,050 GPD

Calculated Max Demand for Lima Ola (Phase IV) = 55,875 GPD

Total Max Demand for Lima Ola = 380,475 GPD

Total Demand of the Hanapepe-Eleele Water System = 1,419,175 GPD

Total Max Demand is less than Total Pumping Capacity. Therefore, pumping capacity is adequate.

Scenario 2: The second scenario is based on the projected demand in the DOW's Water Plan 2020 for the Hanapepe-Eleele water system.

Hanapepe-Eleele Forecasted Demand = 1,361,000 GPD

Total Max Demand is less than Total Pumping Capacity. Therefore, pumping capacity is adequate.

The maximum daily demand of the proposed development was analyzed to investigate the additional water storage capacity that would be required to support the Lima Ola development. The water demand analysis was performed separately for the four separate phases of the development. According to the water demand analysis, the proposed Lima Ola development would require two 300,000-gallon tanks. One 300,000-gallon tank will be constructed on-site at the 212-foot elevation to replace the existing 340-foot tank that provides water to the lower elevations in Eleele and Port Allen. The construction of the 212-foot tank will provide water that used to be serviced by one of the existing 340-foot tanks. The construction of this on-site 212-foot tank will allow Phase 1 of the Lima Ola Development to utilize the water in the existing 340-foot tank. In addition, the on-site 212-foot tank will eliminate the need of an existing PRV located on Port Allen Road. The second 300,000-gallon tank will be constructed next to the existing 402-foot tank to service Phases 2, 3 and 4 of the Lima Ola Development.

Phase 1

Case 1
Meet maximum day consumption. Tank is full at the beginning of the 24-hour period with no source input to the tank.

Maximum day consumption = 129,450 GPD

Therefore, the tank must have a 129,450-gallon capacity.

Case 2
Meet the maximum day rate plus fire flow for duration of fire. Tank is ¾ full at the start of fire, with credit for incoming flow from pumps, one maximum size pump out of service.

$$\frac{\left[\frac{129{,}450\ \text{GPD}}{24\ \frac{\text{hr}}{\text{day}} \times 60\ \frac{\text{min}}{\text{hr}}} + 1{,}250\ \text{GPM}\right] \times 120\ \text{min}}{0.75} = 214{,}383\ \text{gallons}$$

Therefore, the tank must have a 214,383-gallon capacity.

Case 2 governs. A 300,000-gallon tank is being proposed for this phase of development.

Phases 2, 3 and 4

Case 1
Meet maximum day consumption. Tank is full at the beginning of the 24-hour period with no source input to the tank.

Maximum day consumption = 251,025 GPD

Therefore, the tank must have a 251,025-gallon capacity.

Case 2
Meet the maximum day rate plus fire flow for duration of fire. Tank is ¾ full at the start of fire, with credit for incoming flow from pumps, one maximum size pump out of service.

$$\frac{\left[\frac{251{,}025\ \text{GPD}}{24\ \frac{\text{hr}}{\text{day}} \times 60\ \frac{\text{min}}{\text{hr}}} + 1{,}250\ \text{GPM}\right] \times 120\ \text{min}}{0.75} = 227{,}892\ \text{gallons}$$

Therefore, the tank must have a 227,892-gallon capacity.

Case 2 governs. A 300,000-gallon tank is being proposed for this phase of development.
A water model was developed for the Hanapepe-Eleele water system with the aid of Bentley WaterCAD, version 2013. Based on the water model analysis, the proposed Lima Ola development would require approximately 10,800 linear feet (LF) of 8-inch waterline and 4,200 LF of 12-inch waterline is required for the proposed Lima Ola Development. Another major cost for the water infrastructure improvements is the two (2) 300,000-gallon water storage tanks that will be built to support the Lima Ola Development. The water model results confirm that the proposed infrastructure improvements conform to the State of Hawaii, Water System Standards (2002). The cost of the proposed water infrastructure improvements is approximately $5.1 million. A detailed breakdown of the cost is provided in Table 5.

Table 5: Cost for the Water System Design of the Lima Ola Development

Item	Unit Count	Unit	Unit Cost	Total Cost
8" Waterline (including gate valves, bends etc.)	10,785	LF	$210	$2,264,850
12" Waterline (including gate valves, bends etc.)	4,158	LF	$220	$914,760
Fire Hydrant	16	EA	$4,500	$72,000
Water Lateral	165	EA	$1,800	$297,000
Chlorination and Testing	1	LS	$50,000	$50,000
Connection to Existing System	4	EA	$10,000	$40,000
300,000 Gallon Water Tanks	2	EA	$700,000	$1,400,000
			Total	**$5,038,610 (say $ 5.1 million)**

Wastewater

The wastewater collection, treatment and disposal system, i.e., Eleele Wastewater Treatment Plant servicing the Eleele area is owned and operated by the County of Kauai. Currently, the Eleele Wastewater Treatment Plant has a wastewater treatment capacity of 0.8 million gallons per day (MGD) with a current usage of approximately 0.4 MGD.

The Lima Ola development would require approximately 8,400 linear feet (LF) of 8-inch and 1,200 LF of 10-inch sewer lines. The wastewater generated by the Lima Ola Development will gravity flow downwards towards the connection point, i.e., an existing 12-inch polyvinyl chloride (PVC) sewer line on Halewili and Mahea Road. The proposed development would generate an average flow of 0.14 MGD which is well within the treatment capacity of the Eleele Wastewater Treatment Plant, see Table 6 for the sewer capacity calculations for Lima Ola Development. Therefore, the County of Kauai, Wastewater Management Division concurred that the Proposed Action will not require additional upgrades to their system.

Table 6: Sewer Demands for the Lima Ola Development

Building Type	Units	Capita/Unit	Capita	Average Gallons per Capita per Day (gpcd)	Average Flow (MGD)
Single Family	165	4	660	80	0.053
Multi Family	385	2.8	1078	80	0.086
				Total	**0.139**

Electrical

The existing Kauai Island Utility Cooperative (KIUC) electrical distribution system in the area is run overhead on wooden utility poles. The existing service must be extended into the Lima Ola development.

Three-phase electrical service by KIUC will be extended overhead into the Lima Ola development from Mahea Road. The electrical overhead service will transition to underground upon entering the development. KIUC will likely require easements for their facilities and access to their equipment, which may include switchgear and transformers. Electrical plans and a service request must be submitted to KIUC for design coordination and approval.

Conduit stubs will be provided to extend KIUC primary service to the multi-family parcels, elderly housing parcel, court complex parcel and the Community Center. KIUC pad mounted transformers are to be used to provide secondary service for each of these development parcels. For single family lots, KIUC secondary conduit stubs will be provided from single phase transformers to the property lines of the residential lots for future electrical service.

The estimated electrical demand for the Lima Ola development based on the latest development design is 1,150 KW, or 843,000 kWh/month. Initial discussions with key KIUC personnel suggest this electrical demand will not impact the existing KIUC grid.

Table 7: Cost for the Electrical Load Demand for the Lima Ola Development

Electrical Load Demand Calculation				
Item No.	**Housing Type**	**Quantity**	**Unit Electrical Load (kW/Unit)**	**Total Electrical Load (kW)**
1	Single Family	194	3.00	582
2	Multi Family	353	1.50	530
3	Elderly	32	1.25	40
ELECTRICAL LOAD DEMAND TOTAL (kW)				1152
ELECTRICAL LOAD DEMAND PER MONTH (kWh/month)				843,000

Telephone

Hawaiian Telcom (HT) telephone service will follow KIUC's overhead lines from Mahea Road into the Lima Ola development to provide telephone service. The HT overhead lines will transition to underground upon entering the development. An underground system of telephone manholes, handholes and ducts will be provided along the roadways to act as the main distribution system. Conduit stubs will be provided from the main distribution system to the property lines of the residential and community center lots for future telephone service. Electrical plans must be submitted to HT for design coordination and approval.

Cable Television (CATV)

Oceanic Time Warner (OTWC) cable television service will follow KIUC's overhead lines from Mahea Road into the Lima Ola development to provide telephone service. The OTWC overhead lines will transition to underground upon entering the development. An underground system of

CATV manholes, handholes and ducts will be provided along the roadways to act as the main distribution system. Conduit stubs will be provided from the main distribution system to the property lines of the residential and community center lots for future CATV service. Electrical plans must be submitted to OTWC for design coordination and approval.

Street Lighting

A new street lighting system will be provided along the roadways of the Lima Ola development and follow the Kauai County street light standards. The typical street light standard will consist of a steel pole, steel bracket arm, and "cobra head" luminaire that will have full cutoff optics to minimize glare, light trespass and sky glow. Electrical service to the lights will provided by an underground system consisting of pullboxes and ducts.

VI. COST ANALYSIS

This section includes a cost comparison between the proposed development project and the previously proposed development. Table 8 shows that the cost per unit based in this proposal is less than half of the cost per unit of the previously proposed development.

Table 8: Total Estimated Cost for the Water System of the Lima Ola Development

Description of Items	Based on the Proposed Layout				Based on RM Towill's Layout			
	Unit Count	Unit	Unit Cost	Total Cost	Unit Count	Unit	Unit Cost	Total Cost
Clearing and Grubbing	75	Acre	$,8,000	$600,000	111	Acre	$8,000	$888,000
Site Earthwork	75	Acre	$139,255	$10,444,124	75	Acre	$139,255	$10,444,124
Erosion Control	75	Acre	$17,118	$1,283,880	75	Acre	$17,118	$1,283,880
Roads	10,479	LF	$518	$5,433,016	14006	LF	$518	$7,261,706
Private Driveways-Parking Lots	165	Housing Units	$3,354	$553,490	156	Housing Units	$3,354	$523,300
Water System	14,943	LF	$337	$5,038,610	16,040	LF	$337	$5,408,506
Sewer System	9,600	LF	$470	$4,512,950	15,348	LF	$470	$7,215,079
Storm Drainage System	5,760	LF	$422	$2,428,670	13,379	LF	$422	$5,641,176
Electrical System	29,313	LF	$209	$6,140,725	36,782	LF	$209	$7,705,392
Landscaping	7.0	Acre	$102,055	$714,384	12.8	Acre	$102,055	$1,306,302
Utility Connection Fees	550	Housing Units	$4,600	$2,530,000	400	Housing Units	$4,600	$1,840,000
Intersection Improvements	-	-	-	$1,675,000	-	-	-	$1,675,000
Low Impact Development (LID) Improvements	-	-	-	$143,814	-	-	-	$143,814
Offsite Water System	-	-	-	0	-	-	-	$12,969,000
Total (550 Units)	-	-	-	**$41,498,663**	-	-	-	**$64,305,279**
10% Contingency	-	-	-	**$4,149,866**	-	-	-	**$6,430,528**
			Total	**$45,648,529**			**Total**	**$70,735,807**
			Cost/Unit	**$82,997**			**Cost/Unit**	**$176,840**

VII. CONCLUSIONS AND RECOMMENDATIONS

The Lima Ola Development is needed to solve the problem of rising housing costs on Kauai. Lima Ola Development will provide 550 affordable housing units to the people of Kauai, thereby improving the economic condition of the region.

Exhibit 11

WATER MASTER PLAN

Department of Water
County of Kaua'i

Water has no substitute.....Conserve it

June 3, 2016

Ms. Kanani Fu
Kauai County Housing Agency
4444 Rice Street, Suite 330
Lihue, HI 96766

Dear Ms. Fu:

Subject: 201H Application for Lima Ola Workforce Housing Development,
TMK: 2-1-01:027, Eleele, Kauai

This is in regard to your letter dated May 04, 2016.

The Department of Water (DOW) has no objections to the proposed Lima Ola Workforce Housing Development. Prior to the DOW recommending water meter service, subdivision, or building permit approval, the applicant must construct all necessary water system facilities for this development as required in the approved "Water Master Plan for Lima Ola Workforce Housing dated September 2015" as amended.

The applicant is made aware that the DOW conditionally approved water service for Phase 1. The applicant needs to understand that the DOW will not able to make water allocation commitments for future phases of this project, and the applicant will need to assume the risk that water may not be available in the future. Requests for water service will be dependent on the adequacy of the source, storage, and transmission facilities at that time.

If you have any questions, please contact Mr. Edward Doi at (808) 245-5417.

Sincerely,

Kirk Saiki
Manager and Chief Engineer

RF:mlm
2-1-01-027, T-18259, Fu

Exhibit 12

TRAFFIC IMPACT ANALYSIS REPORT

Hatch Mott MacDonald
Delivering Solutions

LIMA OLA WORKFORCE HOUSING PROJECT

ELEELE, HAWAII

TRAFFIC IMPACT ANALYSIS

Final Report

Prepared For

Community Planning and Engineering, Inc.
Honolulu, Hawaii

March 24, 2014
Revised October 28, 2014

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EXECUTIVE SUMMARY

The proposed Lima Ola Workforce Housing project would be located to the east of Kaumualii Highway (Route 50) in Eleele, Hawaii, a community on the island of Kauai, Hawaii. The project site is currently in agricultural production. The proposed project would construct approximately 550 affordable residential units of various densities.

Scope of Work:

In total, this traffic study includes a traffic impact analysis of operations at four intersections during typical weekday AM and PM peak hours. The following intersections were analyzed in this study:

1. Waialo Road (Route 541)-Eleele Road / Kaumualii Highway (Route 50);
2. Kaumualii Highway (Route 50) / Halewili Road (Route 540);
3. Kaumualii Highway (Route 50) / Laulea Street (South) / Mahea Road; and
4. Kaumualii Highway (Route 50) / Laulea Street (North).

The specific traffic scenarios evaluated as part of this traffic study are:

- Existing Traffic Conditions;
- Future without Project Conditions (Year 2040);
- Future with Project Conditions (Year 2040); and

In addition, a shorter-term analysis scenario – Future with Project Phases 1 and 2 Conditions – was also evaluated at the sole project access to Kaumualii Highway (Route 50) that would be open under the first two phases of the project.

An evaluation of potentially significant project impacts has also been performed for all modes of travel (vehicle, pedestrian, bicycle and transit).

Analysis Assumptions:

The traffic analysis is based upon the methodologies within the 2010 *Highway Capacity Manual*. The software package Synchro (version 8) was used to perform the intersection analysis within this report.

For the purposes of this report and analysis, Kaumualii Highway (Route 50) near the study project site (i.e. Study Intersections 1 through 3) will be referred to as in a north-south alignment, with all of its cross streets being referred to as in east-west alignments at their respective intersections, and Waialo Road (Route 541) and Eleele Road will be referred to as in a north-south alignment at their mutual intersection (Study Intersection 1) with east-west Kaumualii Highway (Route 50). These conventions will be used throughout this report and analysis.

Existing Conditions:

Existing conditions utilize existing traffic volumes at the study intersections. Existing traffic volume data was collected in January 2014.

Traffic Operations:

Under Existing conditions, two of the stop-controlled intersections – Kaumualii / Halewili and Kaumualii / Laulea (South) - Mahea – currently operate at an overall LOS A with side-street operations of LOS C (AM) and LOS E (PM). The other stop-controlled intersection – Kaumualii / Laulea (North) – currently operates at an overall LOS A with side-street operations of LOS C.

The signalized intersection under Existing conditions – Waialo – Eleele / Kaumualii – currently operates at LOS C (AM) and LOS E (PM).

Future without Project Conditions:

Future Growth Forecasts:

A growth rate above existing volumes of 1% per year over twenty-six years (i.e. 1% per year for the twenty-six years between 2014 and 2040), or 26% total, was applied to the through volumes along the two regional highways within the study area – Kaumualii Highway (Route 50) and Halewili Road (Route 540) – and to the turning movements at their mutual intersection, as approved by Hawaii Department of Transportation staff. A growth rate of 0.25% per year for twenty-six years, or 6.5% total, was applied to the remaining turning movements at the other study intersections.

Anticipated vehicle traffic from the approved housing subdivision, Eleele Iluna, was also incorporated into this analysis, as taken from the report *Traffic Impact Assessment Report for Eleele I Luna*, prepared by Pacific Planning and Engineering in November 1997.

Traffic Operations:

Under Future without Project conditions, the Kaumualii / Halewili intersection would operate at an overall LOS A with side-street operations of LOS E (AM) and LOS F (PM). The Kaumualii / Laulea (South) - Mahea intersection would also operate at an overall LOS A with side-street operations of LOS D (AM) and LOS F (PM). The other stop-controlled intersection – Kaumualii / Laulea (North) – would operate at an overall LOS A with side-street operations of LOS D (AM) and LOS C (PM).

The signalized study intersection – Waialo – Eleele / Kaumualii – would operate at LOS D (AM) and LOS F (PM) under Future without Project conditions.

Future with Project Conditions:

Scenario Definition:

Future with Project Condition volumes are the sum of the Future without Project Condition volumes with the new project traffic.

Project Definition:

The proposed project includes 150 single-family homes, 365 multi-family units, and 35 "elderly" multi-family units (i.e. reserved for senior citizens only), plus a community center and park. The project would be split into four construction phases around the project site, progressing from south to north in a clockwise pattern.

The project also includes a new east-west pedestrian pathway that would connect the community park to Kaumualii Highway (Route 50) in the vicinity of a proposed new bus stop for Route 100.

Vehicular project access would be via two access points:

- Southerly access via an easterly extension of Mahea Road (further extension beyond the Eleele Iluna subdivision);
- Northerly access via an easterly extension of Laulea Street (North) along the northerly border of the project site.

The southerly access point (i.e. Mahea Road extension) would be built as part of Phase 1 of the project, while the other access point would not be built until Phase 3 of the project.

Project Trip Generation:

The trip generation estimate uses trip rates published in 2012 by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition. See **Appendix D** for excerpts of this publication that were used in this analysis.

The project is estimated to generate 3,577 daily vehicle trips, with 276 trips (61 in, 215 out) during the AM peak hour and 347 trips (222 in, 125 out) during the PM peak hour. This total is after accounting for trip reductions due to the anticipated pedestrian/bicycle (5%) and transit use (5%) by project residents.

Project Trip Distribution and Assignment:

Trip distribution for the project has been derived based upon the relative level of existing traffic on the surrounding street network. The project trips were then assigned along the study street network using that distribution. See Section 4.4 for more details regarding the project trip distribution.

Traffic Operations:

Under Future with Project conditions, the Kaumualii / Halewili intersection would continue to operate at an overall LOS A with side-street operations of LOS E (AM) and LOS F (PM). The Kaumualii / Laulea (South) - Mahea intersection would operate at an overall LOS E with side-street operations of LOS F. The other stop-controlled intersection – Kaumualii / Laulea (North) – would operate at an overall LOS E (AM) and LOS B (PM) with side-street operations of LOS F.

The signalized study intersection – Waialo – Eleele / Kaumualii – would continue to operate at LOS D (AM) and LOS F (PM) under Future with Project conditions.

Future with Project Phases 1 and 2 Conditions:

Scenario Definition and Derivation:

Traffic projections for the Future with Project Phases 1 and 2 Condition were developed in a similar manner to the Future with Project Condition traffic projections, except that the growth has been scaled back to the Year 2030. More specifically, the differences include the following:

1) The same growth rates of 1% per year and 0.25% per year were again applied to the Existing volumes, but now only for a sixteen-year span (versus twenty-six years as under Future without Project and Future With Project conditions).

2) Only Project Phases 1 and 2 are open and occupied, with all project traffic using the Mahea Road extension to access the project site.

3) Traffic forecasts were only derived for one study intersection – Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road

Note: It is assumed that the approved Eleele Iluna subdivision would be fully built and occupied by the Year 2030; thus all of its potential traffic was again incorporated into this traffic forecast.

Definition – Phases 1 and 2:

Phases 1 and 2 of the project comprise approximately 113 single-family homes, 182 multi-family units, and 35 "elderly" multi-family units (i.e. reserved for senior citizens only), plus a community center and park. Project access would only be via an easterly extension of Mahea Road. The proposed east-west pedestrian pathway would be connected to Kaumualii Highway (Route 50) under this scenario.

Trip Generation – Phases 1 and 2:

Project Phases 1 and 2 are estimated to generate 2,166 daily vehicle trips, with 167 trips (38 in, 129 out) during the AM peak hour and 211 trips (134 in, 77 out) during the PM peak hour.

Trip Distribution and Assignment – Current Zoning:

Trip distribution for project Phases 1 and 2 would be identical to the distribution for the full project. See Section 5.4 for more details regarding the project trip distribution.

Traffic Operations:

Under Future with Project Phases 1 and 2 Conditions, the Kaumualii (Route 50) / Laulea (South) – Mahea intersection would operate at an overall LOS D with side-street operations of LOS F.

Project Impacts and Recommended Improvements:

Note: See **Exhibit ES-1** for a summary of the recommended improvements described below.

Traffic Operations:

Improvements are recommended all four of the study intersections:

Waialo Road (Route 541) – Eleele Road / Kaumualii Highway (Route 50)

- Add a second westbound Kaumualii Highway (Route 50) left turn lane;
- Add a second southbound through lane on Waialo Road (Route 541) leaving the intersection (i.e. between Kaumualii Highway (Route 50) and the Eleele Shopping Center driveway).

This improvement would require modification of the existing traffic signal and likely the relocation of the existing Port Allen welcome sign.

Kaua'i County would be responsible for implementation of this improvementImplementation of this improvement is not recommended until the westbound left turn lane on Kaumualii Highway (Route 50) exceeds 300 vehicles during the AM or PM peak hour traffic periods (7:00 – 8:00 AM and 4:00 – 5:00 PM, respectively) for two consecutive years. Verification of this situation should begin after Phase 1 of the project is built and occupied.

Kaumualii Highway (Route 50) / Halewili Road (Route 540)

- Add a southbound median acceleration lane along Kaumualii Highway.
- Add a southbound left turn lane along Kaumualii Highway (Route 50) at this intersection.

Kaua'i County would be responsible for implementation of this improvement. Implementation of this improvement is not recommended until delays on the Halewili Road (Route 540) approach at Kaumualii Highway (Route 50) exceed 200 seconds during the PM peak hour (4:00 – 5:00 PM). Verification of this situation should begin after Phases 1 and 2 of the project are built and occupied.

Note: The recommended median acceleration lane could be channelized to lead directly into one of the two westbound Kaumualii Highway (Route 50) left turn lanes at Waialo Road (Route 541). If implemented, channelizers should be added along at least part of the acceleration lane stripe separating it from the mainline southbound through lane, in order to prevent traffic from merging into the acceleration lane too early.

Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road

- Signalize intersection; and
- Lengthen the existing southbound Kaumualii Highway (Route 50) left turn lane to provide a minimum of 100 feet of vehicle storage.

Kaua'i County would be responsible for implementation of this improvement. Implementation of the improvements at this intersection are not recommended until traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Verification of this situation should begin after Phase 1 of the project is built and occupied.

Kaumualii Highway (Route 50) / Laulea Street (North)

- Signalize intersection; and
- Convert the existing northbound median acceleration lane on Kaumualii Highway (Route 50) into a southbound left turn lane.

Kaua'i County would be responsible for implementation of this improvement. Implementation of the median acceleration lane into a left turn lane should be implemented with the fourth intersection approach under Phase 3. Implementation of the traffic signal is not recommended until traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Verification of this situation should begin after Phase 3 of the project is built and occupied.

Pedestrian Circulation:

All of the access roadways leading to and internal roadways within the project site will have either sidewalks or joint pedestrian/bicycle paths. These features, along with the proposed pedestrian pathway connection to Kaumualii Highway (Route 50) will provide a complete pedestrian circulation network within the project site.

Existing gaps in the pedestrian infrastructure external to the project site will affect the ability of pedestrians to access the project site. A sidewalk or pedestrian/bicycle pathway should be constructed along the northern frontage of Mahea Road between the project site and Kaumualii Highway (including through the Eleele Iluna project). This improvement will require coordination with the Eleele Iluna project to ensure that this improvement is constructed within that project. Kaua'i County would be responsible for implementation of this improvement, along with the cooperation of the project applicant for the Eleeele Iluna project. Implementation is recommended before Phase 1 of the project is built and occupied.

Consideration should also be made to address the gaps in the pedestrian network at the northern primary access and the secondary access. This would include a westerly extension of the existing sidewalk along Laulea Street (North) to Kaumualii Highway (Route 50) – an extension of one block – and the addition of either a sidewalk or pedestrian/bicycle pathway along the internal north-south roadway within the Eleele Iluna project (specifically between Mahea Road and the secondary access into the study project site).
The following pedestrian-related improvements should be incorporated into the signal improvements at the Kaumualii Highway (Route 50) intersections with Laulea Street (South) – Mahea Road and Laulea Street (North).

- Add pedestrian crossing phases and countdown pedestrian signal heads;
- Add pedestrian crosswalks across specific approaches to the interesections:
    - Kaumualii (Route 50) / Laulea (South) – Mahea: north and east approaches of the intersection;
    - Kaumualii (Route 50) / Laulea (North): south and west approaches of the intersection

Kaua'i County would be responsible for implementation of this improvement. These improvements would be incorporated into the traffic signal designs at each intersection.

There may be a period of time when portions of the proposed project are built and occupied but the recommended traffic signals are not yet implemented. The Hawaii Department of Transportation (HDOT) has expressed a desire that the Kawa'i County Housing Authority (KCHA) integrate safety measures at these two intersections when the situation arises prior to traffic signal warrants being met at either intersection.

There are a number of potential interim improvements that can be implemented prior to a traffic signal. Community Planning and Engineering (CPE) prepared a report summarizing the potential improvement options at both intersections, including the benefits and drawbacks of each; it is included within **Appendix I**. Other improvements are also being considered by KCHA.

It is recommended that the County of Kaua'i evaluate these options and implement at least one of them prior to construction and occupation of Phase 1 of the project.

Bicycle Circulation:

The proposed pedestrian pathways within the project site, in concert with the internal project roadway system, would provide sufficient bicycle circulation throughout the project site and into/out of the project site. The level of bicycle activity generated by the project would not require any additional bicycle lanes or paths in the project vicinity.

Transit Usage:

The new bus stop along northbound Kaumualii Highway (Route 50) proposed by the project would fill an major gap in transit service to the community, as currently there is no eastbound bus stop in western Eleele. The new bus stop would also better facilitate access to transit for residents within the project site, especially in combination with the proposed pedestrian pathway. The level of transit demand added by project residents and visitors would not rise to the level that would require any increase in transit service to the project area.

The County of Kaua'i should consider adding new bus stops for Routes 100 and 200 along Waialo Road (Route 541) in the vicinity of the Eleele Shopping Center.

Project Access:

The recommended improvements at the Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road intersection under Future with Project Phases 1 and 2 (Year 2030) conditions would be the same as under both Future with Project (Year 2040) conditions. The aforementioned pedestrian crosswalk, signal timing and signal infrastructure improvements at this intersection are also recommended under both scenarios.

The County of Kaua'i should consider monitoring the quality-of-life concerns of residents along Mahea Road and the future internal north-south roadway through the Eleele Iluna site due to project traffic, in order to determine if any further improvements are necessary to address these concerns. Potential improvements could include, for example, various traffic calming improvements. Monitoring is recommended after Phase 1 of the project is built and occupied.

Category	Potential Impact	Recommendation	Responsibility	Implementation Trigger
Traffic Operations	Waialo (Route 541) - Eleele/ Kaumualii (Route 50)	1) Add second westbound Kaumualii left turn lane; 2) Add second southbound through lane on Waialo south of intersection.	Kaua'i County	Westbound Kaumualii Highway (Route 50) left turn lane exceeds 300 vehicles during the AM or PM peak hour traffic periods (7:00 – 8:00 AM and 4:00 – 5:00 PM, respectively) for two consecutive years. Verify after Phase 1 of the project is built and occupied.
	Kaumualii (Route 50)/ Halewili (Route 540)	1) Add southbound Kaumualii median acceleration lane; 2) Add southbound Kaumualii left turn lane; 3) Consider extending median acceleration lane to meet westbound Kaumualii left turn lane (including use of channelizers)	Kaua'i County	Delays on Halewili Road (Route 540) approach to Kaumualii Highway (Route 50) exceed 200 seconds during the PM peak hour (4:00 – 5:00 PM). Verify after Phases 1 and 2 of the project are built and occupied
	Kaumualii (Route 50)/ Laulea (South) - Mahea	1) Signalize intersection; 2) Lengthen southbound Kaumualii left turn lane to 100 feet of vehicle storage.	Kaua'i County	Traffic volumes meet a minimum of two of the three MUTCD volume-based signal warrants. Verify after Phase 1 of the project is built and occupied.
	Kaumualii (Route 50)/ Laulea (North)	1) Signalize intersection; 2) Convert existing northbound Kaumualii median acceleration lane into a southbound left turn lane.	Kaua'i County	Traffic Signal: Traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Left turn lane: Implement with the fourth intersection approach under Phase 3. Verify both after Phase 3 of the project is built and occupied.
Pedestrian Circulation	Discontinuous sidewalks between project site and remainder of Eleele community	1) Construct a sidewalk or pedestrian/bicycle pathway along the northern frontage of Mahea Road between the project site and Kaumualii Highway (including through the Eleele Iluna project); 2) Consider extending the existing sidewalk along Laulea Street (North) one block east to Kaumualii; 3) Consider constructing a sidewalk or pedestrian pathway along the north-south internal roadway within the Eleele Iluna project (between project scecondary access and Mahea Road).	Kaua'i County, in coordination with project applicant for Eleele Iluna project	Before Phase 1 of the project is built and occupied
	Increased pedestrian crossing demand across Kaumualii (Route 50)	1) Add pedestrian signal phases and countdown signals (north and east approaches) and missing crosswalk (east approach) at Kaumualii (Route 50)/Laulea (South) - Mahea. 2) Add pedestrian signal phases and countdown signals (south and west approaches) and missing crosswalks (north and west approaches) at Kumualii (Route 50)/Laulea (North). 3) Before implementation of traffic signals, implement pedestrian crossing improvement(s).	Kaua'i County	Signals: Incorporate into signal design. Pedestrian Improvements: Before Phase 1 of the project is built and occupied.
Bicycle Circulation	None	None	None	None
Transit Usage	Lack of transit access to Eleele Shopping Center	Consider adding new Route 100 and 200 bus stops on Waialo Road (Route 541) near Eleele Shopping Center.	Kaua'i County	None
Project Access	Shorter-Term operations of project access	Implement above recommended improvements at Kaumualii (Route 50)/ Laulea (South) - Mahea.	Kaua'i County	See Above
	Potential quality-of-life concerns of existing Mahea Road and residents and future Eleele Iluna residents due to project traffic	Monitor resident concerns within existing neighborhoods and Eleele Iluna project with regards to project traffic	Kaua'i County	After Phase 1 of the project is built and occupied

EXHIBIT ES-1
Summary of Recommended Improvements

1 INTRODUCTION

The proposed Lima Ola Workforce Housing project would be located to the east of Kaumualii Highway (Route 50) in Eleele, Hawaii, a community on the island of Kauai, Hawaii. The project site is currently in agricultural production. The proposed project would construct approximately 550 affordable residential units of various densities. **Exhibit 1** shows the location of the study project, while **Exhibit 2A** shows the proposed project site plan.

The purpose of this Traffic Impact Analysis (TIA) is to evaluate the potential traffic impacts that may result from the study project; this includes potential impacts to multiple modes of transportation – vehicular travel, pedestrian, bicycle, and transit. The TIA presents the results from a series of analyses performed to determine the existing traffic conditions and how traffic conditions would change with the implementation the study project and future traffic growth.

1.1 Project Description

The project would include 150 single-family homes, 365 multi-family units, and 35 "elderly" multi-family units (i.e. reserved for senior citizens only), plus a community center and park. The project would be split into four construction phases around the project site, progressing from south to north in a clockwise pattern. **Exhibit 2B** shows the proposed project phasing plan.

Project access to the project site would be through the easterly extensions of two existing streets adjacent to the project site – Mahea Road and Laulea Street. These access points would open with different phases of the project; see Section 4.2 for more information regarding the project phasing.

1.2 Project Area

The project site is bordered by Kaumualii Highway (Route 50) to the northwest, a approved residential development to the southwest ("Habitat for Humanity" project – see Section 3.1 for more information), and existing agricultural fields to the north, south and west. Refer to **Exhibit 1** for details of the local access road network serving the study project site.

1.3 Scope of Work

The scope of work for this traffic study was developed in conjunction with staff at the State of Hawaii Department of Transportation to identify the potential traffic impacts that may be associated with the development of the study project. Intersections were selected for analysis based on the potential for the project to impact the facility. The purpose of this analysis is therefore to verify if the project would represent a significant impact upon any of the study intersections, and if so, what level of improvement would be required to mitigate that impact.

The intersections comprising the analyzed study area were identified in conjunction with staff at the State of Hawaii Department of Transportation. Beyond the limits of the study area, the project trips disperse onto multiple local streets. As the distance from the project increases the number of trips considered reduces and the distribution assumptions are less reliable.

In total, this traffic study includes a traffic impact analysis of operations at four intersections during typical weekday AM and PM peak hours. Recommendations for improvements have been made where warranted by identified potential transportation-related impacts.

The following intersections were analyzed in this study:

1. Waialo Road (Route 541)-Eleele Road / Kaumualii Highway (Route 50);
2. Kaumualii Highway (Route 50) / Halewili Road (Route 540);
3. Kaumualii Highway (Route 50) / Laulea Street (South) / Mahea Road; and
4. Kaumualii Highway (Route 50) / Laulea Street (North).

Note: Laulea Street intersects Kaumualii Highway (Route 50) at two consecutive intersections approximately one half-mile apart. To better differentiate the two intersections, this report uses the terms "Laulea Street (North)" to refer to the northern intersection and "Laulea Street (South)" to refer to the southern intersection.

The traffic scenarios evaluated in this traffic study were selected to test the potential traffic impacts from the project itself. These evaluations also include projected future traffic growth from local and regional sources within the Eleele region that would add traffic to the study intersections. See Chapter 3 for more information regarding the derivation of the future traffic growth within the study area.

The specific traffic scenarios evaluated as part of this traffic study are:

- Existing Traffic Conditions;
- Future without Project Conditions (Year 2040); and
- Future with Project Conditions (Year 2040).

In addition, a shorter-term analysis scenario – Future with Project Phases 1 and 2 Conditions – was also evaluated at the sole project access to Kaumualii Highway (Route 50) that would be open under the first two phases of the project.

Traffic forecasts for this study were developed based upon the study area street system, including the location of the project access points upon the street system and the prevalence of impediments to quick and efficient vehicle travel (including stop signs and other traffic controls, posted speed limits, and conflicting pedestrian and bicycle traffic). Peak hour trips generated by each of the projects are estimated using trip generation rates published by the Institute of Transportation Engineers (ITE), 9th Edition.

1.4 Traffic Operation Evaluation Methodologies

The following paragraphs describe the methodologies utilized in this analysis to evaluate the operations of all of the study intersections and roadway segments. All of the analysis is based upon the *2010 Highway Capacity Manual* methodologies.

1.4.1 Intersection Operational Analysis

Intersection traffic operations were evaluated based on the Level of Service (LOS) concept. LOS is a qualitative description of an intersection and roadway's operation, ranging from LOS A to LOS F. Level of service "A" represents free flow un-congested traffic conditions. Level of service "F" represents highly congested traffic conditions with what is commonly considered unacceptable delay to vehicles on the road segments and at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes.

Intersection operations were evaluated using technical procedures documented in the *2010 Highway Capacity Manual (HCM)*. These procedures vary, depending upon the type of intersection control (traffic signal, all-way stop, one- and two-way stop, etc.) For signalized intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent on a number of factors including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. **Appendix A1** shows the relationship between vehicle delay and the signalized intersection level of service categories. The Synchro software program (version 8) was utilized to model the traffic impact of the different development scenarios and to calculate signalized and un-signalized intersection levels of service.

At one-way stop controlled intersections, the operating efficiency of vehicle movements that must yield to through movements are analyzed. The level of service for vehicle movement on the controlled approaches is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps. The methodology assumes the frequency and size of these gaps is random; no credit is provided for gaps created by the operations of upstream traffic signals. **Appendix A2** shows the relationship between the vehicle delay and level of service for two-way stop controlled intersections. The *2010 HCM* calculates the level of service of the minor street approaches. Using this data, an overall intersection level of service was calculated. Both are reported in this study because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and are the most critical in terms of delay.

1.4.2 Modeling of Right Turns

The signalized study intersection – Waialo-Eleele / Kaumualii – allows right turns on red (RTOR), and these right turns can have an effect on the intersection LOS calculations. However, the *2010 HCM* methodologies do not directly incorporate RTOR operations. Therefore, to be conservative, this analysis does not include any RTOR at any of the signalized study intersections. The results of the intersection analyses can thus be seen as reflecting a "worst case" scenario, as the effect of vehicles turning right on red on the intersection operations were not directly accounted for.

1.5 Assumptions regarding Cardinal Geometry in Analysis

As can be seen from **Exhibit 1**, not all of the study street system within the Eleele area is oriented in any of the four cardinal directions. For example, Kaumualii Highway (Route 50) near the project site is oriented approximately 45 degrees clockwise from true north. In addition, streets such as Kaumualii Highway (Route 50) change direction within the study area. For the purposes of this report and analysis, Kaumualii Highway (Route 50) near the study project site (i.e. Study Intersections 1 through 3) will be referred to as in a north-south alignment, with all of its cross streets being referred to as in east-west alignments at their respective intersections, and Waialo Road (Route 541) and Eleele Road will be referred to as in a north-south alignment at their mutual intersection (Study Intersection 1) with east-west Kaumualii Highway (Route 50). These conventions will be used throughout this report and analysis.

2 EXISTING TRAFFIC CONDITIONS

This chapter presents a description of the existing road network, existing traffic volumes, intersection levels of service, and an overview of traffic flow conditions within the study area under existing traffic conditions.

2.1 Existing Traffic Network

Regional access to the study project site is provided by Kaumualii Highway (Route 50). Other area streets include Mahea Road, Laulea Street, Halewili Road (Route 540), Waialo Road (Route 541) and Eleele Road. A brief description of each street in the study road network follows, in alphabetical order.

Eleele Road is a two-lane residential street within western Eleele. No bicycle lanes are provided along this street, and sidewalks are only provided along a one-block section east of Uliuli Road. Parking is allowed in both directions of the street. Eleele Road is the primary access into and out of the residential neighborhood that it serves. This includes Eleele Elementary School, which can be accessed off of roadways that intersect with Eleele Road. The posted speed limit on Eleele Road is 25 MPH.

Halewili Road (Route 540) is a two-lane, east-west state highway leading into and out of western Eleele. It connects to Kaumualii Highway (Route 50) at each end – the western intersection is in Eleele, and the eastern intersection is just west of Kalaheo. No bicycle lanes or sidewalks are provided along this roadway, although it does have a narrow paved shoulder. Parking is allowed in both directions of the roadway on the adjacent unpaved shoulder. The speed limit on Halewili Road (Route 540) is 50 MPH.

Kaumualii Highway (Route 50) is a two-lane state highway within Eleele. This roadway is the primary highway along the southern coast of the island of Kaua'i, extending between roughly Waimea to the west and Lihue to the east. There are no bicycle lanes or sidewalks along Kaumualii Highway (Route 50), although unpaved shoulders with both low-level and high foliage are present along both sides of the highway within Eleele. Parking is allowed along the highway within the unpaved shoulders. The speed limit on Kaumualii Highway (Route 50) within Eleele (including the study area) is 35 MPH.

Laulea Street is a two-lane residential street within northwestern Eleele. The roadway forms a loop, connecting with Kaumualii Highway (Route 50) at consecutive intersections spaced roughly a half-mile apart. Parking is permitted on both sides of the street within unpaved shoulders. No bicycle lanes are present along Laulea Road. A sidewalk is present along the outside edge of Laulea Road (i.e. along the eastbound frontage at its southern end and along the westbound frontage at its western end), with the sole exception of the first block immediately west of its northern intersection with Kaumualii Highway (Route 50). The speed limit on Laulea Street is 25 MPH.

Mahea Road is a two-lane, east-west residential street within western Eleele. It provides primary access to a small residential neighborhood to the east of Kaumualii Highway. No sidewalks or bicycle lanes are present along Mahea Road. On-Street parking is allowed within unpaved shoulders along both sides of the street. There is no posted speed limit on Mahea Road; the presumed speed limit is 25 MPH.

Waialo Road (Route 541) is a two- to four-lane, north-south state highway within southeastern Eleele. The highway provides access to a number of different land uses, including the community's only shopping center, an industrial park, a power plant, visitor-oriented commercial, residential neighborhoods, and Port Allen, a harbor for marine tours of Kaua'i. Immediately south of Kaumualii Highway (Route 50), Waialo Road (Route 541) is four lanes wide (two lanes in each direction); the roadway narrows to two lanes (one lane in each direction) approximately 1,000 feet south of Kaumualii Highway (Route 50). No sidewalks or bicycle lanes exist along Wailalo Road. Parking is not formally prohibited on Waialo Road (Route 541), but the ability to park is limited in portions of the northbound direction due to narrow shoulders. The speed limit on Waialo Road is 35 MPH.

2.2 Existing Transit Systems

The County of Kaua'i Transportation Agency operates The Kaua'i Bus, the public transit system within the county. Two bus routes traverse the study area – Routes 100 and 200. Route 100 travels eastbound between Kekaha and Lihue via Eleele, while Route 200 travels the westbound along the same route. Both routes operate every half-hour between roughly 5:30 AM and 11:00 PM on weekdays, and every two hours during the same time periods on weekends and holidays.

The lone bus stop within the study area is located along Southbound Kaumualii Highway (Route 50), just south of Laulea Street (south). This stop is only serviced by Route 200; there is no bus stop for Route 100 in the vicinity of the project site.

2.3 Existing Traffic Data

To establish existing traffic flow conditions, new traffic counts were conducted at the four study intersection on Tuesday, January 7 and Wednesday, January 8, 2014 during the weekday AM (i.e. 6:30 – 8:30 am – Wednesday only) and PM (i.e. 3:30 – 5:30 pm – Tuesday only) peak hours. From the peak period traffic counts, the AM and PM peak hour turning movement volumes were identified, then balanced between adjacent intersections to account for minor variations in the count volumes. The existing peak hour traffic volumes are presented on **Exhibit 3**.

2.4 Existing Conditions Intersection Operations

Existing conditions AM and PM intersection levels of service are summarized on **Exhibit 4**. The LOS calculation sheets for existing traffic conditions can be found in **Appendix B**.

One of the four study intersections is currently signalized, while the other three are one- or two-way stop-controlled. All four study intersections were analyzed under Existing conditions. Please refer to **Exhibit 4** for detail of the type of traffic control at each intersection.

Under Existing conditions, two of the stop-controlled intersections – Kaumualii / Halewili and Kaumualii / Laulea (South) - Mahea – currently operate at an overall LOS A with side-street operations of LOS C (AM) and LOS E (PM). The other stop-controlled intersection – Kaumualii / Laulea (North) – currently operates at an overall LOS A with side-street operations of LOS C.

The signalized intersection under Existing conditions – Waialo – Eleele / Kaumualii – currently operates at LOS C (AM) and LOS E (PM).

3 FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2040)

This section describes the analysis results of the study intersection operations under Future traffic conditions without the study project developed. The Future without Project traffic condition is defined as traffic conditions roughly twenty-six years beyond existing conditions, or the Year 2040.

3.1 Derivation of Future Traffic Volumes

Traffic projections for the Future without Project Condition were developed using both growth rates and previously quantified trip activity for an approved project adjacent to the project site.

A growth rate above existing volumes of 1% per year over twenty-six years (i.e. 1% per year for the twenty-six years between 2014 and 2040), or 26% total, was applied to the through volumes along the two regional highways within the study area – Kaumualii Highway (Route 50) and Halewili Road (Route 540) – and to the turning movements at their mutual intersection, as directed by Hawaii Department of Transportation staff. A growth rate of 0.25% per year for twenty-six years, or 6.5% total, was applied to the remaining turning movements at the other study intersections.

The site of an approved housing subdivision, Eleele Iluna, is located adjacent to the project site, sandwiched between the project site and an existing neighborhood along Mehana Road. This development, comprising approximately 100 single-family homes on a long but narrow property, is currently scheduled to break ground in 2014. Roadway infrastructure within the Eleele Iluna subdivision includes a short easterly extension of Mahea Road and a new internal north-south road. The report *Traffic Impact Assessment Report for Eleele I Luna*, prepared by Pacific Planning and Engineering in November 1997, contains the projected trip assignment for this residential subdivision; this assignment was used to account for the increased traffic from the Eleele Iluna project, including extrapolation of these trips through all four of the study intersections.

Exhibit 5 contains the Future without Project traffic volumes at the study intersections.

3.2 Future without Project Traffic Conditions

Exhibit 4 tabulates corresponding morning and evening peak hour levels of service, the details of which are presented in **Appendix C**.

Under Future without Project conditions, the Kaumualii / Halewili intersection would operate at an overall LOS A with side-street operations of LOS E (AM) and LOS F (PM). The Kaumualii / Laulea (South) - Mahea intersection would also operate at an overall LOS A with side-street operations of LOS D (AM) and LOS F (PM). The other stop-controlled intersection – Kaumualii / Laulea (North) – would operate at an overall LOS A with side-street operations of LOS D (AM) and LOS C (PM).

The signalized study intersection – Waialo – Eleele / Kaumualii – would operate at LOS D (AM) and LOS F (PM) under Future without Project conditions.

4 FUTURE WITH PROJECT CONDITIONS (YEAR 2040)

This section describes the analysis results of the study intersection operations under Future with Project traffic conditions. The Future with Project scenario is defined as traffic conditions roughly twenty-six years beyond existing conditions, or the Year 2040, and includes trips from the study project.

4.1 Derivation of Future with Project Traffic Volumes

Future with Project volumes include both the future growth projected under Future without Project conditions (see Chapter 3 for more information), plus the trips generated by the study project (see below).

4.2 Project Definition and Access

The proposed project includes 150 single-family homes, 365 multi-family units, and 35 "elderly" multi-family units (i.e. reserved for senior citizens only), plus a community center and park. The project would be split into four construction phases around the project site, progressing from south to north in a clockwise pattern.

The project also includes a new east-west pedestrian pathway that would connect the community park to Kaumualii Highway (Route 50) in the vicinity of a proposed new bus stop for Route 100.

Project access would be via two access points. The southerly access would be via an easterly extension of Mahea Road, further extending the roadway beyond the short extension being built by the aforementioned Eleele Iluna subdivision. The northerly access would be via an easterly extension of Laulea Street (North) along the northerly border of the project site.

Exhibit 2B depicts the project phasing of the access roadways. The southerly access point (i.e. Mahea Road extension) would be built as part of Phase 1 of the project, while the other two access points would not be built until Phase 3 of the project.

4.3 Project Trip Generation

Exhibit 6 summarizes the estimated project trip generation. This estimate uses trip rates published in 2012 by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition. See **Appendix D** for excerpts of this publication that were used in this analysis.

The trip generation estimate for the multi-family uses was derived using trip rates for "Apartment." The multi-family elderly units were derived using trip rates for "Senior Adult Housing – Attached." In addition, the project trip generation includes trip reductions due anticipated pedestrian/bicycle (5%) and transit (5%) usage by project residents.

Note that the community center and park are not anticipated to generate any vehicular trips to/from outside of development. These uses expected to only be used by residents residing within the project site, and thus would not generate traffic outside of the project site. As such, these uses were not included within trip gen estimate.

As cited within **Exhibit 6**, the project is estimated to generate 3,577 daily vehicle trips, with 276 trips (61 in, 215 out) during the AM peak hour and 347 trips (222 in, 125 out) during the PM peak hour.

4.4 Project Trip Distribution and Assignment

Trip distribution defines the origins and destinations of all trips to and from a project site. Trip distribution for the project has been derived based upon the relative level of existing traffic on the surrounding street network.

The trip distribution for the project is shown on **Exhibit 7**, alongside the project trip assignment, and is also repeated below:

The project trip distribution would be as follows:

To/From North:	0%
To/From South: Waialo Road (Route 541) – 15% (AM), 25% (PM)	15% (AM), 25% (PM)
To/From East: Kaumualii Highway (Route 50) – 50%	50%
To/From West: Kaumualii Highway (Route 50) – 25% Laulea Street (South) – 10% (AM), 0% (PM)	35% (AM), 25% (PM)
TOTAL:	100%

Vehicular project access to the site would be via one of two roadway extensions into the project site – Mahea Road and Laulea Street (North). The project trip assignment reflects use of both access points.

Note: As previously discussed, the three project access points will be opened in phases. For example, only the Mahea Road connection would be open during Phases 1 and 2 of the project. See Chapter 5 for more information about how the phasing of the project access points may affect the short-term operations of the study street network.

4.5 Future with Project Traffic Conditions

The traffic that would be generated by the study project was added to the Future without Project volumes to create Future with Project traffic conditions. Future with Project morning and evening peak hour turning volumes are illustrated on **Exhibit 8**. **Exhibit 4** tabulates corresponding morning and evening peak hour levels of service, the details of which are presented in **Appendix E**.

Under Future with Project conditions, the Kaumualii / Halewili intersection would continue to operate at an overall LOS A with side-street operations of LOS E (AM) and LOS F (PM). The Kaumualii / Laulea (South) - Mahea intersection would operate at an overall LOS E with side-street operations of LOS F. The other stop-controlled intersection – Kaumualii / Laulea (North) – would operate at an overall LOS E (AM) and LOS B (PM) with side-street operations of LOS F.

The signalized study intersection – Waialo – Eleele / Kaumualii – would continue to operate at LOS D (AM) and LOS F (PM) under Future with Project conditions.

5 FUTURE WITH PROJECT PHASES 1 AND 2 CONDITIONS (YEAR 2030)

This section describes the analysis results of traffic operations under Future with Project Phases 1 and 2 traffic conditions. The Future with Project Phases 1 and 2 scenario is defined as traffic conditions roughly sixteen years beyond existing conditions, or the Year 2030, and includes only Phases 1 and 2 of the project and a single project access via Mahea Road. This scenario focuses on the operations of the Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road intersection, which would connect to the sole project access under Project Phases 1 and 2.

5.1 Derivation of Future with Project Phases 1 and 2 Traffic Volumes

Traffic projections for the Future with Project Phases 1 and 2 Condition were developed in a similar manner to the Future with Project Condition traffic projections, except that the growth has been scaled back to the Year 2030. More specifically, the differences include the following:

1) The same growth rates of 1% per year and 0.25% per year were again applied to the Existing volumes, but now only for a sixteen-year span (versus twenty-six years as under Future without Project and Future With Project conditions).

2) Only Project Phases 1 and 2 are open and occupied, with all project traffic using the Mahea Road extension to access the project site.

3) Traffic forecasts were only derived for one study intersection – Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road

Note: It is assumed that the approved Eleele Iluna subdivision would be fully built and occupied by the Year 2030; thus all of its potential traffic was again incorporated into this traffic forecast.

5.2 Project Definition and Access

Phases 1 and 2 of the project comprise approximately 113 single-family homes, 182 multi-family units, and 35 "elderly" multi-family units (i.e. reserved for senior citizens only), plus a community center and park.

Note: The proposed east-west pedestrian pathway would be constructed along the park frontage under Project Phase 2, and thus would connect to Kaumualii Highway (Route 50) under this scenario.

Again, project access under Project Phases 1 and 2 would solely be via an easterly extension of Mahea Road, further extending the roadway beyond the short extension being built by the aforementioned Eleele Iluna subdivision.

5.3 Trip Generation – Project Phases 1 and 2

Exhibit 9 summarizes the estimated trip generation for Project Phases 1 and 2. As with the full project trip generation, this estimate uses trip rates published in 2012 by the Institute of Transportation Engineers in *Trip Generation Manual*, 9th Edition. Credit has again been taken for pedestrian/bicycle (5%) and transit (5%) trips by residents of the project site, all of which would reduce the potential overall vehicular trip generation of the project.

As cited within **Exhibit 9**, Project Phases 1 and 2 are estimated to generate 2,166 daily vehicle trips, with 167 trips (38 in, 129 out) during the AM peak hour and 211 trips (134 in, 77 out) during the PM peak hour.

5.4 Trip Distribution and Assignment – Project Phases 1 and 2

The trip distribution for Project Phases 1 and 2 would be identical to that previously described for the project as a whole. However, as previously discussed, all project traffic under Project Phases 1 and 2 would utilize a single project access point – a westward extension of Mahea Road. **Exhibit 10** depicts the project trip distribution and assignment for Project Phases 1 and 2.

5.5 Future with Project Phases 1 and 2 Traffic Conditions

Future with Project Phases 1 and 2 morning and evening peak hour turning volumes are illustrated on **Exhibit 10**. **Exhibit 11** tabulates corresponding morning and evening peak hour levels of service, the details of which are presented in **Appendix F**.

Note that most study intersections would experience fewer vehicle delays under Future with Project Phases 1 and 2 Conditions, compared to Future with Project Conditions, as the latter scenario contains more project trip activity. However, due to the concentration of project traffic on Mahea Road under Project Phases 1 and 2, one intersection – Kaumualii Highway (Route 50) / Laulea Street (South) - Mahea Road -- could experience additional short-term impacts that may not be as acute as under full buildout of the project or with the additional project access points open. Hence, only the Kaumualii (Route 50) / Laulea (South) - Mahea intersection was analyzed under this scenario.

Under Future with Project Phases 1 and 2 Conditions, the Kaumualii (Route 50) / Laulea (South) – Mahea intersection would operate at an overall LOS D with side-street operations of LOS F.

6 PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS

The following sections summarize the potential project impacts to the area circulation system and the corresponding recommended improvements. See **Exhibit 12** for a summary of the recommended improvements.

6.1 Potential Project Impacts and Recommended Improvements – Traffic Operations

As summarized in the preceding sections of this report, all four study intersections would operate at LOS F (overall and/or side-street operations); hence, roadway improvements are recommended at all four study intersections. The following paragraphs of this section address the recommended improvements at each of these intersections to offset the study project's impact. The recommended improvements are also summarized within **Exhibit 12**.

Waialo Road (Route 541) – Eleele Road / Kaumualii Highway (Route 50)

This intersection would experience overall operations of LOS D (AM) and LOF F (PM) with implementation of the study project. It is recommended that a second westbound Kaumualii Highway (Route 50) left turn lane be added at this intersection, along with a second southbound through lane on Waialo Road (Route 541) leaving the intersection (i.e. between Kaumualii Highway (Route 50) and the Eleele Shopping Center driveway). This improvement would require modification of the existing traffic signal and likely the relocation of the existing Port Allen welcome sign. Kaua'i County would be responsible for implementation of this improvement.

Note: Implementation of this improvement is not recommended until the westbound left turn lane on Kaumualii Highway (Route 50) exceeds 300 vehicles during the AM or PM peak hour traffic periods (7:00 – 8:00 AM and 4:00 – 5:00 PM, respectively) for two consecutive years. Verification of this situation should begin after Phase 1 of the project is built and occupied.

Kaumualii Highway (Route 50) / Halewili Road (Route 540)

This intersection would experience overall operations of LOS A with side-street operations of LOS E (AM) and LOS F (PM) with implementation of the study project. The largest amount of delay at this intersection would be experienced by vehicles attempting to turn left from Halewili Road (Route 540) onto Kaumualii Highway (Route 50). Signalization of this intersection is not recommended because the Manual on Uniform Traffic Control Devices (MUTCD) signal warrants would not be met at this intersection. (See **Appendix G** for the signal warrant worksheets at this intersection.) It is instead recommended that a southbound median acceleration lane be added along Kaumualii Highway at this intersection, which will allow left-turning traffic from Halewili Road (Route 540) to turn onto Kaumualii Highway (Route 50) in two stages as gaps in northbound Kaumualii Highway (Route 50) traffic appear, rather than the current condition where left-turning traffic must wait for less frequent simultaneous gaps in both

directions of Kaumualii Highway (Rotue 50) traffic. Kaua'i County would be responsible for implementation of this improvement.

As part of this improvement, it is also recommended that a southbound left turn lane be added along Kaumualii Highway (Route 50) at this intersection, in order to prevent the formation of southbound Kaumuali Highway (Route 50) vehicle queues waiting behind traffic attempting to turn left onto Halewili Road (Route 540). Kaua'i County would be responsible for implementation of this improvement.

Note 1: The recommended median acceleration lane could be channelized to lead directly into one of the two westbound Kaumualii Highway (Route 50) left turn lanes at Waialo Road (Route 541). If this were to be implemented, it is also recommended that channelizers be added along at least part of the acceleration lane stripe separating it from the mainline southbound through lane, in order to prevent traffic from merging into the acceleration lane too early; otherwise, the speed differential between vehicles could create localized traffic congestion.

Note 2: Implementation of this improvement is not recommended until delays on the Halewili Road (Route 540) approach at Kaumualii Highway (Route 50) exceed 200 seconds during the PM peak hour (4:00 – 5:00 PM). Verification of this situation should begin after Phases 1 and 2 of the project are built and occupied.

Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road

This intersection would experience side-street operations of LOS F with implementation of the project. The MUTCD signal warrant #3 (Peak Hour) was found to be met under Future with Project conditions. (See **Appendix G** for the signal warrant worksheets at this intersection.) It is therefore recommended that the following improvements be implemented at this intersection:

- Signalize intersection; and
- Lengthen the existing southbound Kaumualii Highway (Route 50) left turn lane to provide a minimum of 100 feet of vehicle storage. (See **Appendix H** for a conceptual layout of this improvement.)

Kaua'i County would be responsible for implementation of this improvement.

Note: Implementation of the improvements at this intersection are not recommended until traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Verification of this situation should begin after Phase 1 of the project is built and occupied.

Kaumualii Highway (Route 50) / Laulea Street (North)

This intersection would experience side-street operations of LOS F with implementation of the project. The MUTCD signal warrant #3 (Peak Hour) was found to be met under Future with Project conditions. (See **Appendix G** for the signal warrant worksheets at this intersection.) It is therefore recommended that the following improvements be implemented at this intersection (see next page):

- Signalize intersection; and
- Convert the existing northbound median acceleration lane on Kaumualii Highway (Route 50) into a southbound left turn lane. (See **Appendix H** for a conceptual layout of this improvement.)

Kaua'i County would be responsible for implementation of this improvement.
Note: Implementation of the median acceleration lane into a left turn lane should be implemented with the fourth intersection approach under Phase 3. Implementation of the traffic signal is not recommended until traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Verification of this situation should begin after Phase 3 of the project is built and occupied.

6.2 Potential Project Impacts and Recommended Improvements – Pedestrian Facilities

All of the access roadways leading to and internal roadways within the project site will have either sidewalks or joint pedestrian/bicycle paths. These features, along with the proposed pedestrian pathway connection to Kaumualii Highway (Route 50) will provide a complete pedestrian circulation network within the project site.

External to the site, there will be gaps in the pedestrian infrastructure where both project access points meet either the adjacent proposed Eleele Iluna project or the existing roadway network. For example, there is currently no sidewalk or pathway along Mahea Road between Kaumualii Highway (Route 50) and the project site, nor are any sidewalks or pathways proposed within the Eleele Iluna project. As Mahea Road would be the sole project access under Project Phases 1 and 2, and would also be the most direct path for students walking to Eleele Elementary School (in conjunction with the existing sidewalk along Laulea Street (South)), these gaps in the pedestrian infrastructure will affect the ability of pedestrians to access the project site. It is therefore recommended that either a sidewalk or pedestrian/bicycle pathway be constructed along the northern frontage of Mahea Road between the project site and Kaumualii Highway (including through the Eleele Iluna project). This improvement will require coordination with the Eleele Iluna project to ensure that this improvement is constructed within that project. Kaua'i County would be responsible for implementation of this improvement, along with the cooperation of the project applicant for the Eleele Iluna project. Implementation is recommended before Phase 1 of the project is built and occupied.

Consideration should also be made to address the gaps in the pedestrian network at the northern access, specifically a westerly extension of the existing sidewalk along Laulea Street (North) to Kaumualii Highway (Route 50) – an extension of one block.

The proposed traffic signals at the Kaumualii Highway (Route 50) intersections with Laulea Street (South) – Mahea Road and Laulea Street (North) will provide controlled pedestrian crossings across the highway. It is recommended that pedestrian crossing phases and pedestrian crosswalks be implemented as part of both signal improvements. At the Kaumualii (Route 50) / Laulea (South) – Mahea signal, crosswalks should be added across the north and east approaches of the intersection (i.e. across

southbound Kaumualii Highway (Route 50) and eastbound Laulea Street (South)), in order to connect the recommended sidewalk/pathway on Mahea Street with the existing sidewalk along Laulea Street (South). At the Kaumualii (Route 50) / Laulea (North) intersection, crosswalks are recommended across the south and west approaches (i.e. across northbound Kaumualii Highway (Route 50) and the westbound Laulea Street (North) extension). Both signals should also use countdown pedestrian signal heads. All of these components should be incorporated into the design of both traffic signals.

As implied earlier in this report, there may be a period of time when portions of the proposed project are built and occupied but the recommended traffic signals at Kaumualii (Route 50) / Laulea (South) – Mahea and Kaumualii (Route 50) / Laulea (North) are not yet implemented. The Hawaii Department of Transportation (HDOT) has expressed a desire that the Kawa'i County Housing Authority (KCHA) integrate safety measures at these two intersections when the situation arises prior to traffic signal warrants being met at either intersection.

There are a number of potential interim improvements that can be implemented prior to a traffic signal. Community Planning and Engineering (CPE) prepared a report summarizing the potential improvement options at both intersections, including the benefits and drawbacks of each; it is included within **Appendix I.** This document includes the following potential improvement options:

- Option 1 – Installation of Traffic Signal Lights. This is the improvement that was previously recommended at both intersections for eventual implementation.

- Option 2 – Installation of Pedestrian Hybrid Beacons (PHB). This is a pedestrian-activated improvement that stops conflicting highway traffic so that pedestrians can cross.

- Option 3 – Installation of Flashing Pedestrian Crossing and Rumble Strips. This is a combination of two improvements. The first improvements implements white Bott's Dots along the pavement to slow approaching vehicles. The second improvement adds in-street flashing lights across the entire crosswalk that are pedestrian activated. They are paired with flashing crosswalk signs on both ends of the crosswalk.

An additional option currently being considered by KCHA is the addition of a flashing beacons and median pedestrian refuge island at each intersection. The flashing beacons could be installed atop each existing pedestrian crossing sign assembly (W11-2 and W16-7P) next to the crosswalks at each intersection, and the median refuge island would allow pedestrians to cross each direction of Kaumualii Highway (Route 50) separately, while waiting within the median island between crossings.

It is recommended that the County of Kaua'i evaluate these options and implement at least one of them prior to construction and occupation of Phase 1 of the project.

6.3 Potential Project Impacts and Recommended Improvements – Bicycle Facilities

The proposed pedestrian pathways within the project site would also allow use by bicyclists. These pathways, in concert with the internal project roadway system, would provide sufficient bicycle circulation throughout the project site and into/out of the project site. The level of bicycle activity generated by the project would not require any additional bicycle lanes or paths in the project vicinity.

6.4 Potential Project Impacts and Recommended Improvements – Transit

The two transit routes nearest the project site – Routes 100 and 200 – provide regular transit service to the area throughout most of the day on weekdays and weekends. The new bus stop along northbound Kaumualii Highway (Route 50) proposed by the project would fill a major gap in transit service to the community, as currently there is no eastbound bus stop in Eleele. The new bus stop would also better facilitate access to transit for residents within the project site, especially in combination with the proposed pedestrian pathway. The level of transit demand added by project residents and visitors would not rise to the level that would require any increase in transit service to the project area.

The County of Kaua'i should consider adding new bus stops for Routes 100 and 200 along Waialo Road (Route 541) in the vicinity of the Eleele Shopping Center. This improvement would help to reduce vehicular demand to and from the shopping center, including to and from the project site. Currently, there are no bus stops within a five-minute walk of the shopping center.

6.5 Potential Project Impacts and Recommended Improvements – Project Access

The side-street operations of the Kaumualii Highway (Route 50) / Laulea Street (South) – Mahea Road intersection under both Future with Project (Year 2040) and Future with Project Phases 1 and 2 (Year 2030) conditions would be LOS F. The recommended improvements for both scenarios are also the same, namely:

- Signalize intersection; and
- Lengthen the existing southbound left turn lane to provide 100 feet of vehicle storage.

The aforementioned pedestrian crosswalk, signal timing and signal infrastructure improvements at this intersection identified under Section 6.1 are also recommended under both scenarios.

The fact that some of the project traffic would need to travel through the Eleele Iluna and existing Mahea Road neighborhoods could lead to future quality-of-life concerns from current and future residents along Mahea Road and within the Eleele Iluna site. The County of Kaua'i should consider monitoring the concerns of residents in this area in order to determine if any further improvements are necessary to address these concerns. These potential improvements could include, for example, various traffic calming improvements. Monitoring is recommended after Phase 1 of the project is built and occupied.

7 REFERENCES

7.1 List of References

1. The Kaua'i Bus web site, http://www.kauai.gov/Transportation. Accessed January 15, 2014.
2. Pacific Planning and Engineering, *Traffic Impact Assessment Report for Eleele I Luna*, November 1997.
3. Institute of Transportation Engineers, *Trip Generation Manual*, 9th Edition, 2012.
4. United States Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2009 Edition, December 2009.
5. *Traffic/Pedestrian Signalization Options for Lima Ola Workforce Housing Development,* Community Planning and Engineering, October 2014.

7.2 List of Contacts

1. Richard Santo, PE, Community Planning and Engineering, Honolulu, Hawaii.
2. Stephen L. Spears, Kauai Habitat for Humanity, Eleele, Hawaii.
3. Fred Reyes, PE, Hawaii Department of Transportation, Kauai, Hawaii.
4. Donald Smith, PE, Hawaii Department of Transportation, Kauai, Hawaii.
5. Goro Sulijoadikusumo, Hawaii Department of Transportation, Honolulu, Hawaii.

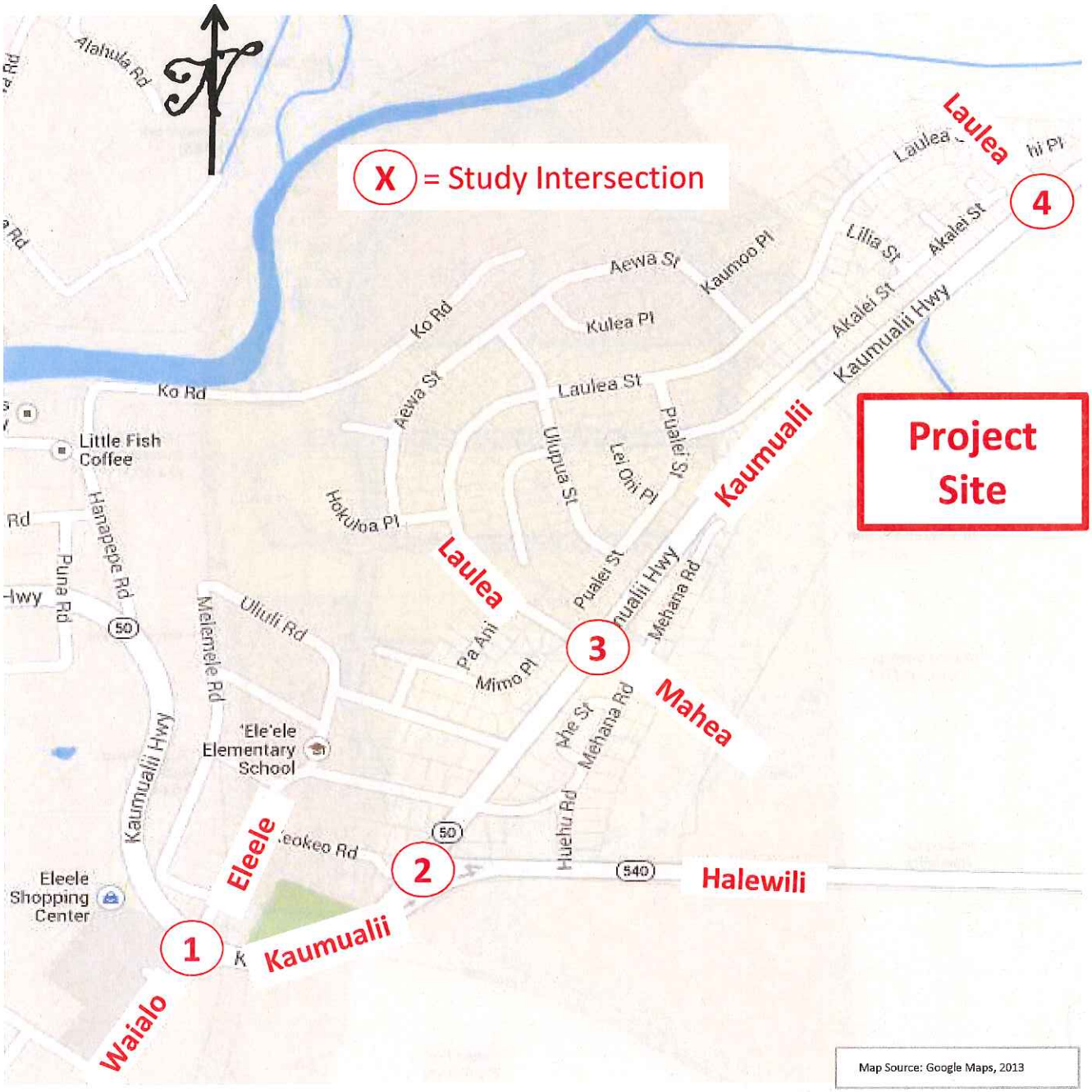

EXHIBIT 1
Project Location Map

Source: PBR Hawaii & Associates, February 2014.

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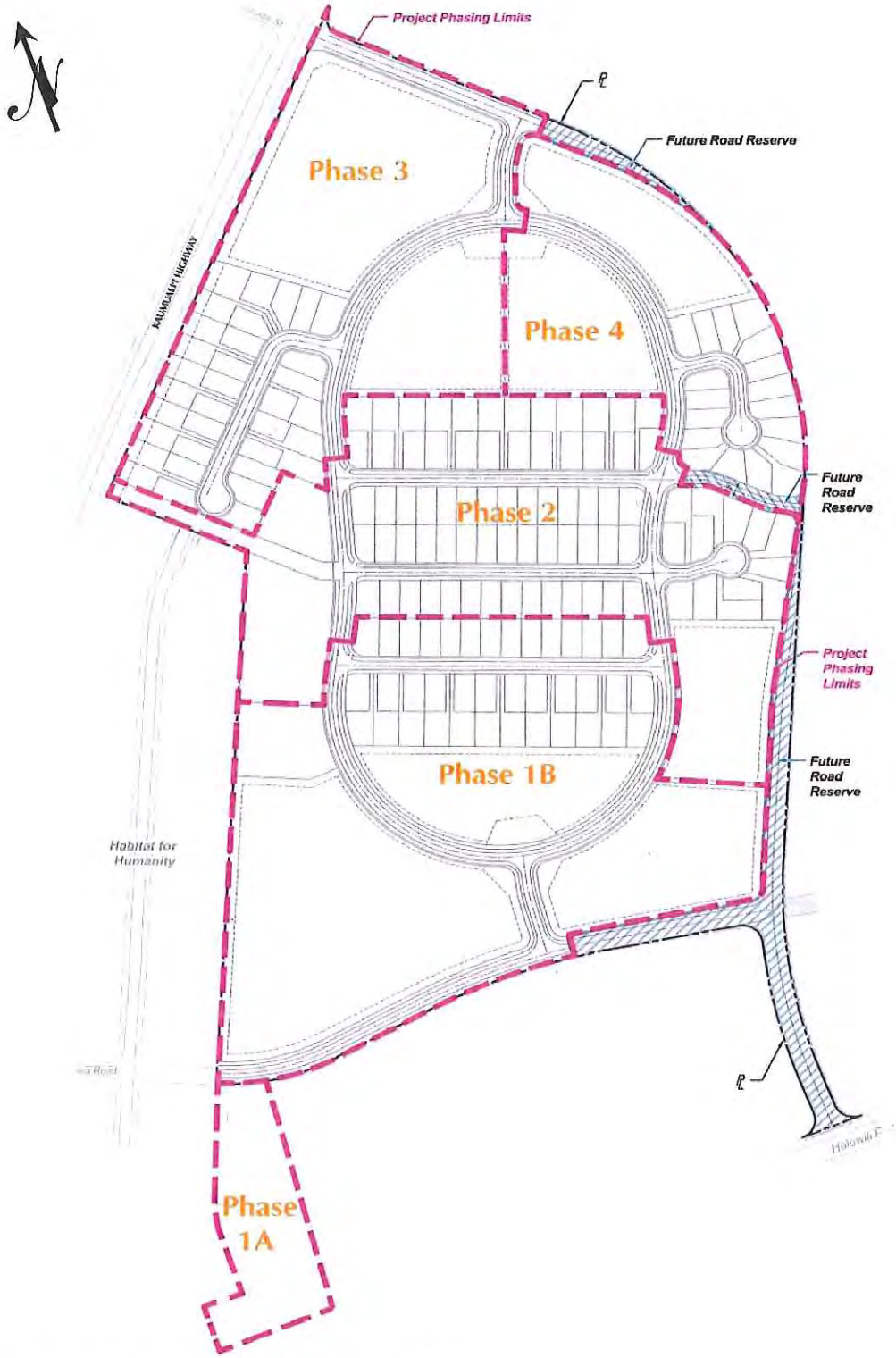
334377 Exhibits.xls - Site Plan

EXHIBIT 2A

Project Site Plan



Source: PBR Hawaii & Associates, March 2014.

EXHIBIT 2B
Project Phasing Plan

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334377 Exhibits.xls - Phasing Plan

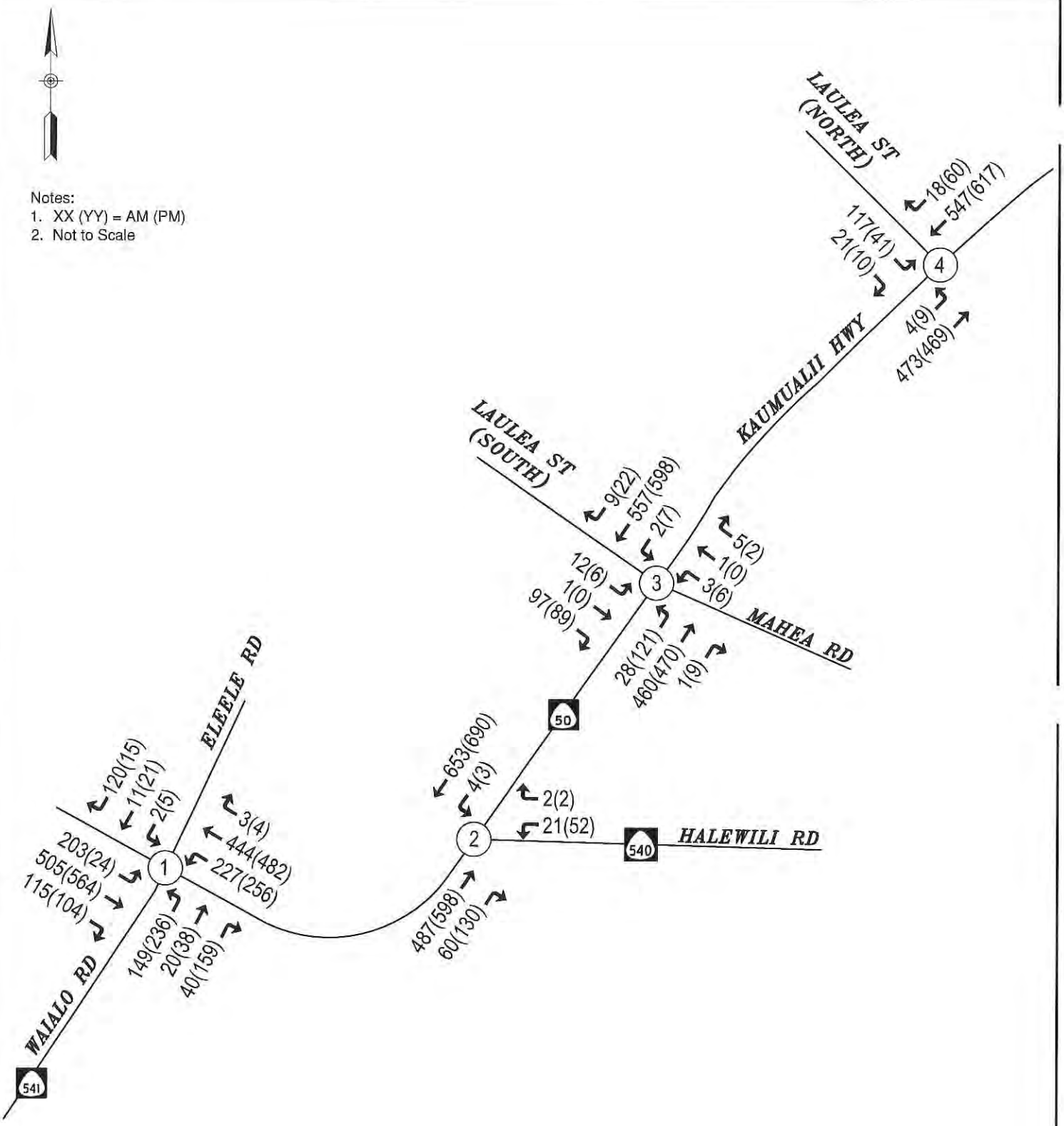

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EXHIBIT 3
Existing Conditions
AM & PM Peak Hour Volumes

	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Existing Conditions (Year 2014)				Future without Project Conditions (Year 2040)				Future with Project Conditions (Year 2040)			
					AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr		AM Peak Hr		PM Peak Hr	
					Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Waialo Road (Route 541) - Eleele Road	Kaumualii Highway (Route 50)	NB 1-L/T, 1-R SB 1-L/T/R EB 1-L, 1-T, 1-R WB 1-L, 1-T/R	Signal	25.4	C	56.0	E	42.2	D	91.1	F	50.8	D	113.5	F
				With Improvement									*36.9*	*D*	*70.8*	*E*
2	Kaumualii Highway (Route 50)	Halewili Road (Route 540)	NB 1-T, 1-R SB 1-L/T WB 1-L, 1-R	One-Way Stop (Side Street)	0.5 24.5	A C	1.7 47.5	A E	0.8 38.6	A E	6.1 163.2	A F	0.9 46.9	A E	9.6 282.1	A F
				With Improvement									*0.4* *21.1*	*A* *C*	*1.2* *35.7*	*A* *E*
3	Kaumualii Highway (Route 50)	Laulea Street (South) - Mahea Road	NB 1-L, 1-T/R SB 1-L, 1-T, 1-R EB 1-L/T, 1-R WB 1-L/T/R	Two-Way Stop (Side Street)	1.8 22.0	A C	2.2 43.8	A E	2.7 26.7	A D	3.7 59.6	A F	43.4 442.4	E F	45.1 803.1	E F
				With Improvement									*11.0*	*B*	*11.7*	*B*
4	Kaumualii Highway (Route 50)	Laulea Street (North)	NB 1-L, 1-T SB 1-T, 1-R EB 1-L, 1-R	One-Way Stop (Side Street)	2.2 18.4	A C	0.8 16.4	A C	2.6 25.8	A D	0.8 21.1	A C	46.3 491.7	E F	11.7 284.3	B F
				With Improvement									*11.1*	*B*	*9.5*	*A*

NOTES:
1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. Analysis performed using 2010 Highway Capacity Manual methodologies.
4. "With Improvement" operations include the recommended improvement. See **Exhibit 12** for a summary of all recommended improvements.

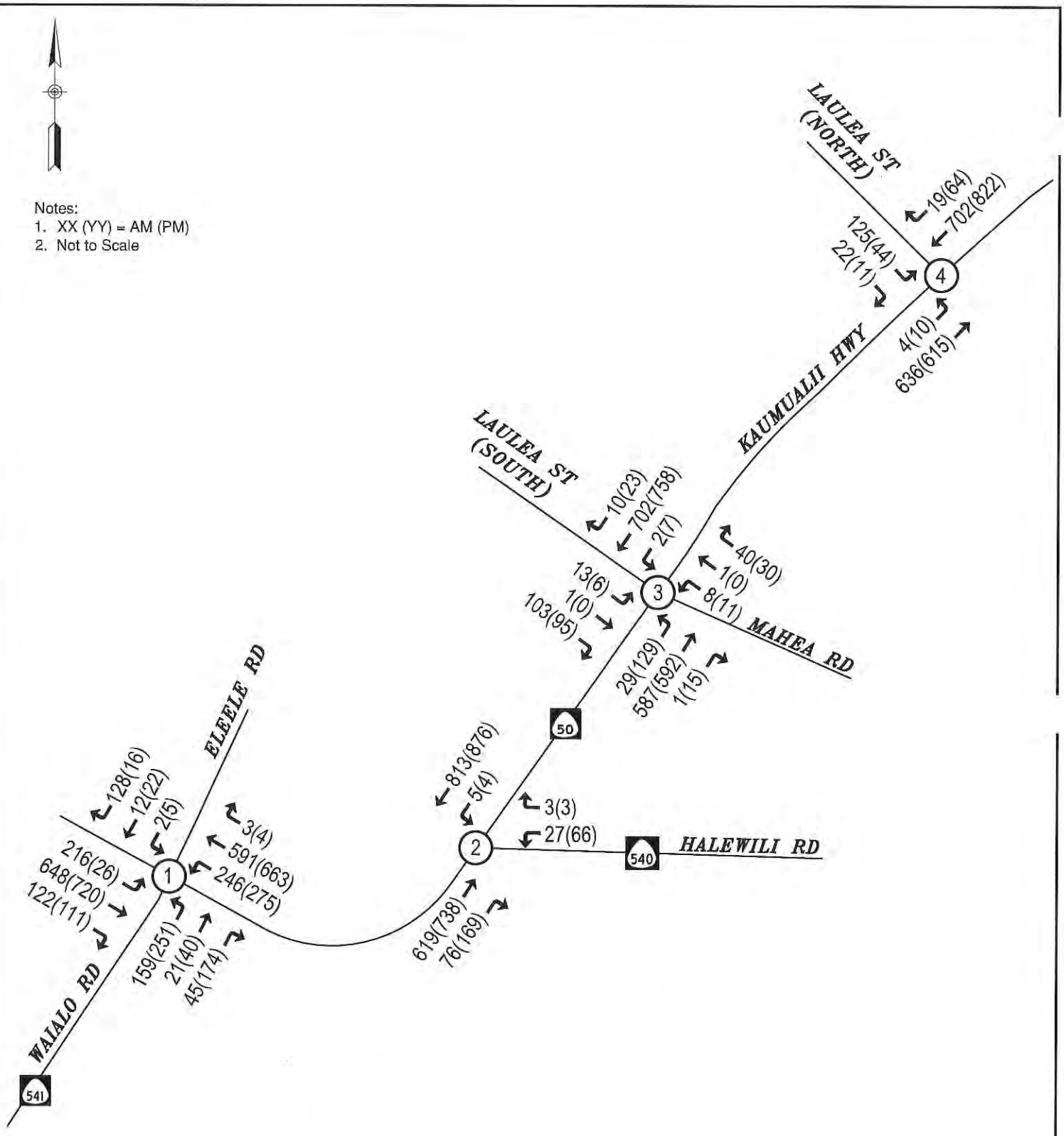

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EXHIBIT 5
Future without Project Conditions
AM & PM Peak Hour Volumes

Project Trip Generation

TRIP GENERATION RATES	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR PEAK HOUR RATE	AM % OF ADT	AM % IN	AM % OUT	PM PEAK HOUR PEAK HOUR RATE	PM % OF ADT	PM % IN	PM % OUT
Single-Family Detatched Housing (per dwelling unit)	210	9.52	0.75	8%	25%	75%	1.00	11%	63%	37%
Apartment (per dwelling unit)	220	6.65	0.51	8%	20%	80%	0.62	9%	65%	35%
Senior Adult Housing - Attached (per dwelling unit)	252	3.44	0.20	6%	34%	66%	0.25	7%	54%	46%

GENERATED TRIPS	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR PEAK HOUR TRIPS	AM % OF ADT	AM TRIPS IN	AM TRIPS OUT	PM PEAK HOUR PEAK HOUR TRIPS	PM % OF ADT	PM TRIPS IN	PM TRIPS OUT
Proposed Uses										
Single-Family Housing	150 Units	1,428	113	8%	28	85	150	11%	95	55
Multi-Family Housing (Apartments)	365 Units	2,427	186	8%	37	149	226	9%	147	79
Multi-Family Elderly Housing (Senior Adult Housing)	35 Units	120	7	6%	2	5	9	8%	5	4
Subtotal (Proposed Uses):		**3,975**	**306**		**67**	**239**	**385**		**247**	**138**
Pedestrian/Bicycle Trip Reduction (5%):[2]		-199	-15		-3	-12	-19		-12	-7
Transit Trip Reduction (5%):[3]		-199	-15		-3	-12	-19		-13	-6
Total Net Project Trip Generation:		**3,577**	**276**		**61**	**215**	**347**		**222**	**125**

Notes:

1. Trip generation rates from Institute of Transportation Engineers, "Trip Generation Manual," 9th Edition, 2012, unless otherwise noted. See **Appendix D** for document excerpts used within this estimate.
2. Pedestrian/Bicycle Trip Reduction accounts for the estimated portion of project site traffic being made on foot or on a bicycle (5%).
3. Transit Trip Reduction accounts for the estimated portion of project site traffic being made via mass transit (5%).

EXHIBIT 6
Project
Trip Generation

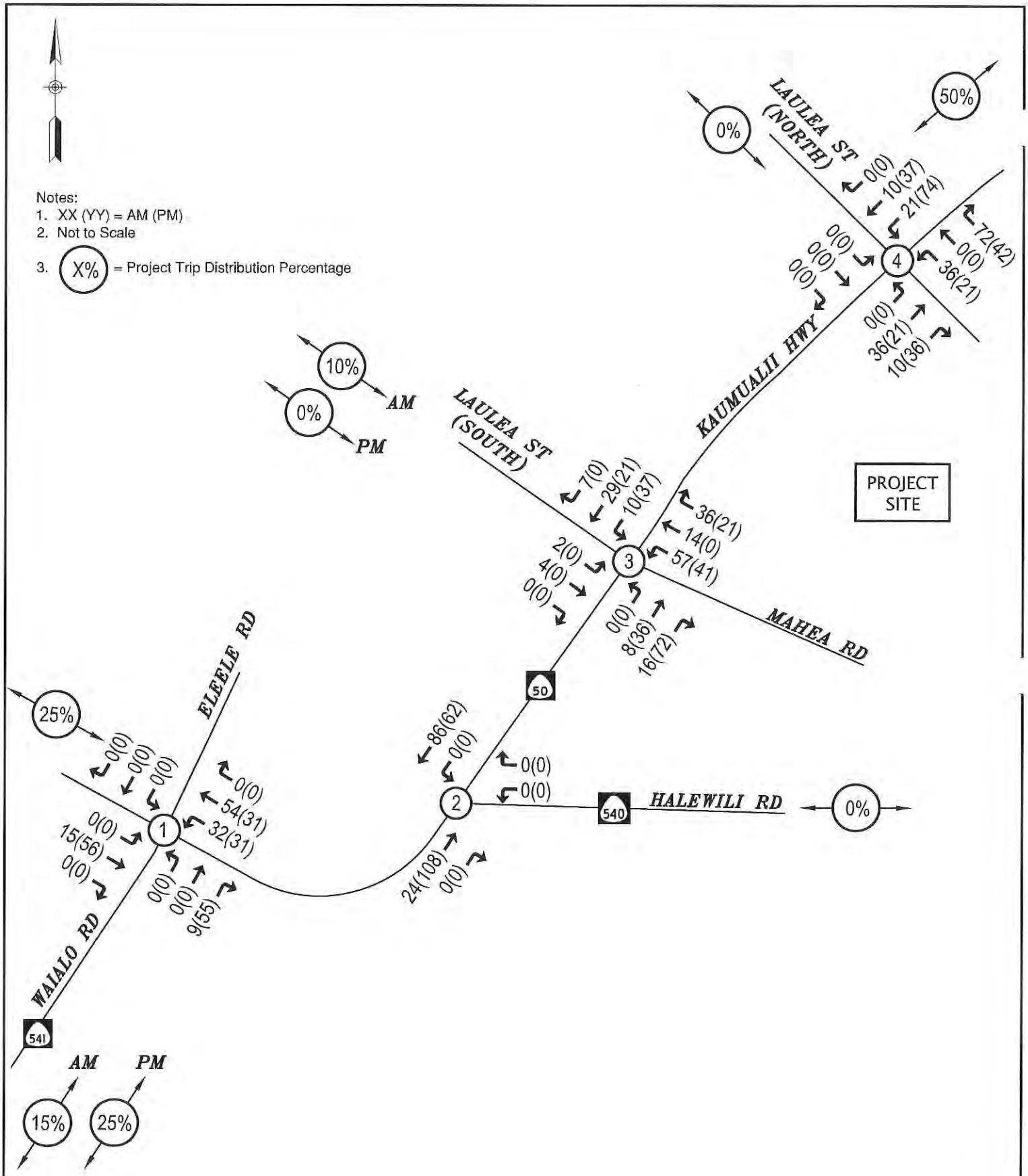

EXHIBIT 7
Project Trip Distribution & Assignment
AM & PM Peak Hour Volumes

Hatch Mott MacDonald

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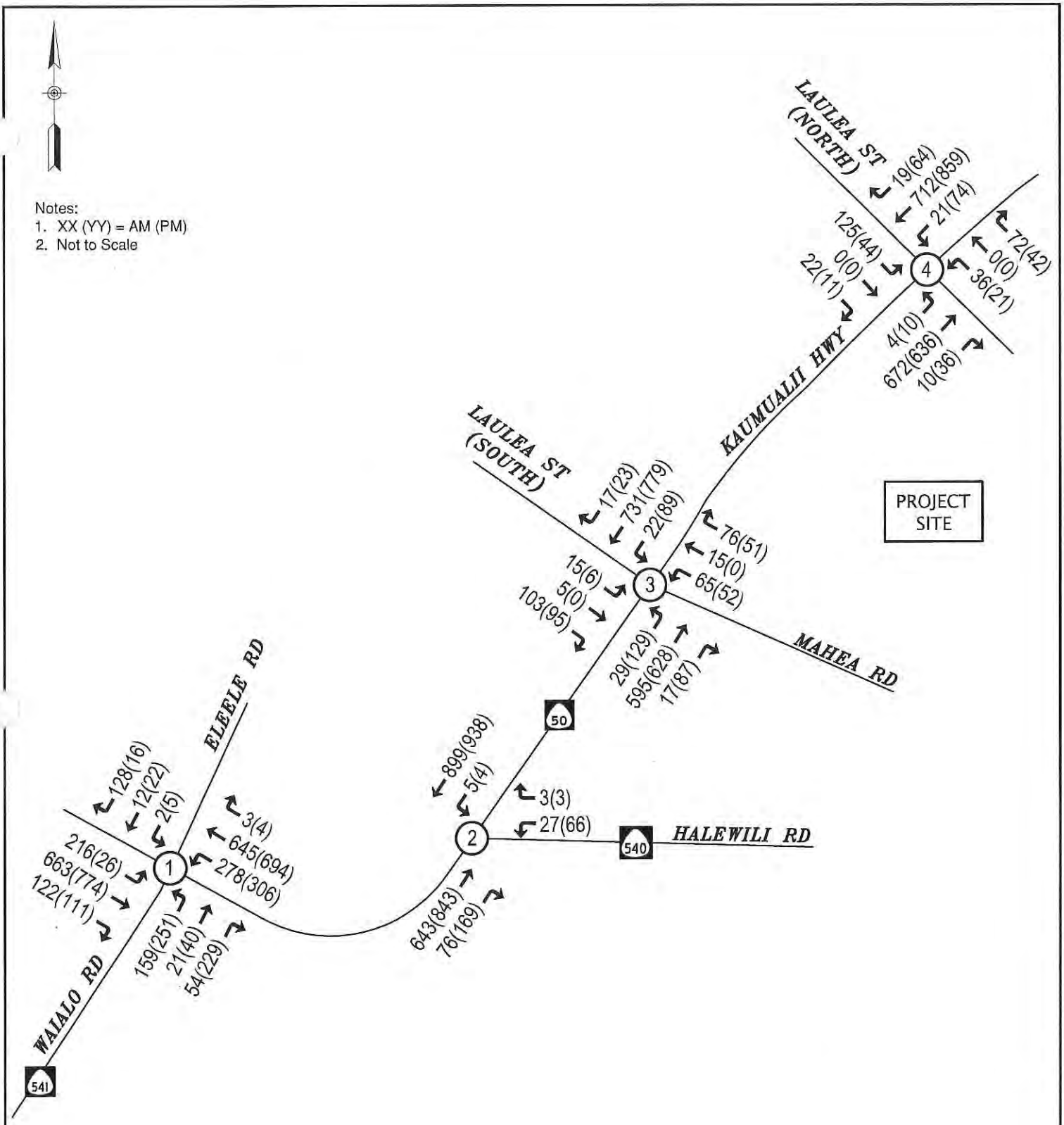

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EXHIBIT 8
Future with Project Conditions
AM & PM Peak Hour Volumes

Project Trip Generation - Phases 1 and 2

TRIP GENERATION RATES	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR PEAK HOUR RATE	AM PEAK HOUR % OF ADT	AM PEAK HOUR % IN	AM PEAK HOUR % OUT	PM PEAK HOUR PEAK HOUR RATE	PM PEAK HOUR % OF ADT	PM PEAK HOUR % IN	PM PEAK HOUR % OUT
Single-Family Detatched Housing (per dwelling unit)	210	9.52	0.75	8%	25%	75%	1.00	11%	63%	37%
Apartment (per dwelling unit)	220	6.65	0.51	8%	20%	80%	0.62	9%	65%	35%
Senior Adult Housing - Attached (per dwelling unit)	252	3.44	0.20	6%	34%	66%	0.25	7%	54%	46%

GENERATED TRIPS	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR PEAK HOUR TRIPS	AM PEAK HOUR % OF ADT	AM PEAK HOUR TRIPS IN	AM PEAK HOUR TRIPS OUT	PM PEAK HOUR PEAK HOUR TRIPS	PM PEAK HOUR % OF ADT	PM PEAK HOUR TRIPS IN	PM PEAK HOUR TRIPS OUT
Proposed Uses										
Single-Family Housing	113 Units	1,076	85	8%	21	64	113	11%	71	42
Multi-Family Housing (Apartments)	182 Units	1,210	93	8%	19	74	113	9%	73	40
Multi-Family Elderly Housing (Senior Adult Housing)	35 Units	120	7	6%	2	5	9	8%	5	4
Subtotal (Proposed Uses):		**2,406**	**185**		**42**	**143**	**235**		**149**	**86**
Pedestrian/Bicycle Trip Reduction (5%):[2]		-120	-9		-2	-7	-12		-7	-5
Transit Trip Reduction (5%):[3]		-120	-9		-2	-7	-12		-8	-4
Total Net Project Trip Generation:		**2,166**	**167**		**38**	**129**	**211**		**134**	**77**

Notes:

1. Trip generation rates from Institute of Transportation Engineers, "Trip Generation Manual," 9th Edition, 2012, unless otherwise noted. See **Appendix D** for document excerpts used within this estimate.
2. Pedestrian/Bicycle Trip Reduction accounts for the estimated portion of project site traffic being made on foot or on a bicycle (5%).
3. Transit Trip Reduction accounts for the estimated portion of project site traffic being made via mass transit (5%).

EXHIBIT 9
Project Trip Generation - Phases 1 and 2

Notes:
1. XX (YY) = AM (PM)
2. Not to Scale

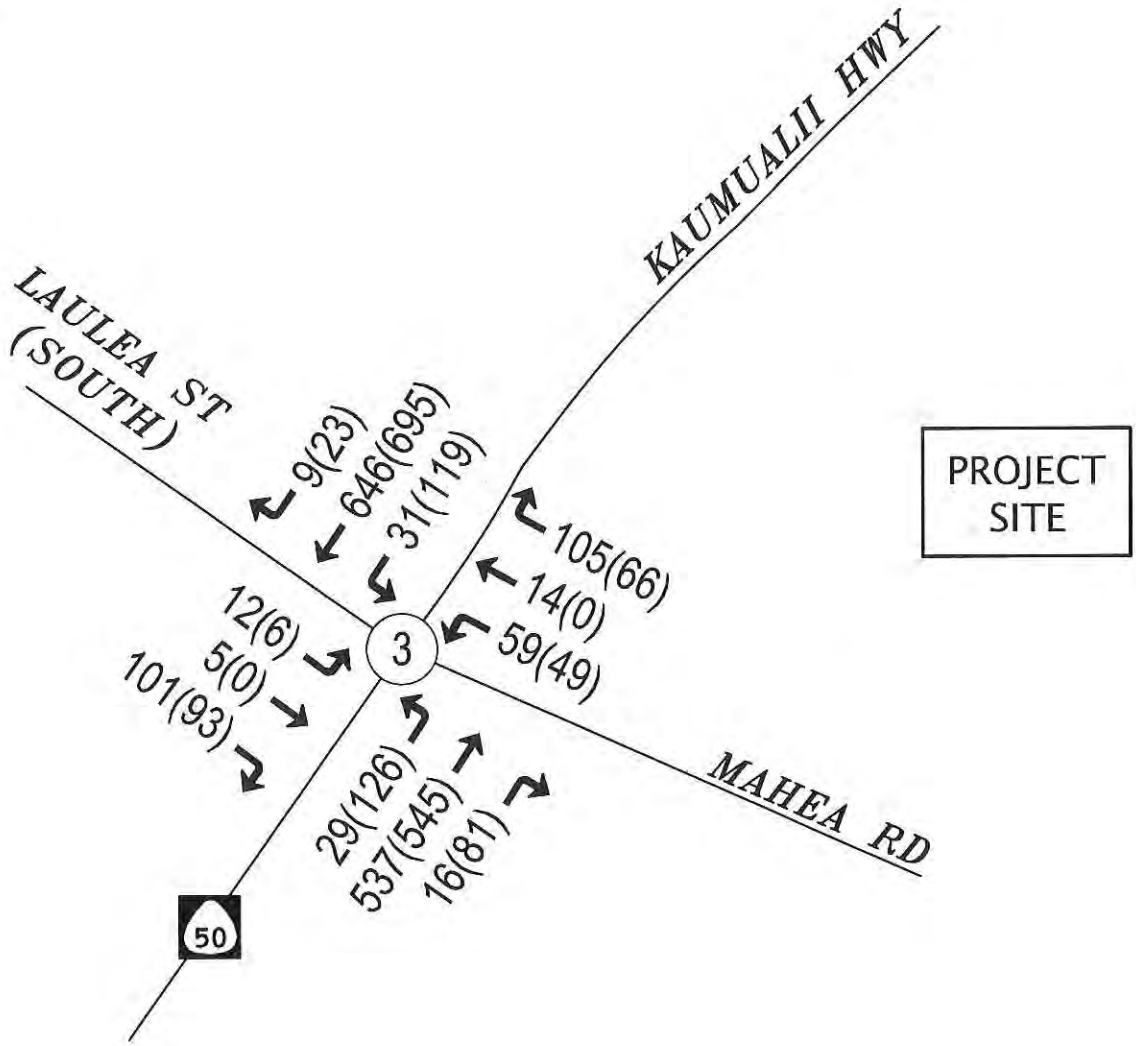

EXHIBIT 10
Future with Project Phases 1 and 2 Conditions
AM & PM Peak Hour Volumes

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	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Future with Project Phases 1-2 Conditions (Year 2030)			
					AM Peak Hr		PM Peak Hr	
					Delay (sec)	LOS	Delay (sec)	LOS
3	Kaumualii Highway (Route 50)	Laulea Street (South) - Mahea Road	NB 1-L, 1-T/R SB 1-L, 1-T, 1-R EB 1-L/T, 1-R WB 1-L/T/R	Two-Way Stop (Side Street)	28.0 227.6	D F	34.0 494.1	D F
				With Improvement	*11.0*	*B*	*12.2*	*B*

NOTES:
1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. Analysis performed using 2010 Highway Capacity Manual methodologies.
4. "With Improvement" operations include the recommended improvement. See **Exhibit 12** for a summary of all recommended improvements.

EXHIBIT 11
Intersection Levels of Service - Project Phases 1 and 2

Category	Potential Impact	Recommendation	Responsibility	Implementation Trigger
Traffic Operations	Waialo (Route 541) - Eleele/ Kaumualii (Route 50)	1) Add second westbound Kaumualii left turn lane; 2) Add second southbound through lane on Waialo south of intersection.	Kaua'i County	Westbound Kaumualii Highway (Route 50) left turn lane exceeds 300 vehicles during the AM or PM peak hour traffic periods (7:00 – 8:00 AM and 4:00 – 5:00 PM, respectively) for two consecutive years. Verify after Phase 1 of the project is built and occupied.
	Kaumualii (Route 50)/ Halewili (Route 540)	1) Add southbound Kaumualii median acceleration lane; 2) Add southbound Kaumualii left turn lane; 3) Consider extending median acceleration lane to meet westbound Kaumualii left turn lane (including use of channelizers)	Kaua'i County	Delays on Halewili Road (Route 540) approach to Kaumualii Highway (Route 50) exceed 200 seconds during the PM peak hour (4:00 – 5:00 PM). Verify after Phases 1 and 2 of the project are built and occupied
	Kaumualii (Route 50)/ Laulea (South) - Mahea	1) Signalize intersection; 2) Lengthen southbound Kaumualii left turn lane to 100 feet of vehicle storage.	Kaua'i County	Traffic volumes meet a minimum of two of the three MUTCD volume-based signal warrants. Verify after Phase 1 of the project is built and occupied.
	Kaumualii (Route 50)/ Laulea (North)	1) Signalize intersection; 2) Convert existing northbound Kaumualii median acceleration lane into a southbound left turn lane.	Kaua'i County	Traffic Signal: Traffic volumes at this intersection meet a minimum of two of the three MUTCD volume-based signal warrants. Left turn lane: Implement with the fourth intersection approach under Phase 3. Verify both after Phase 3 of the project is built and occupied.
Pedestrian Circulation	Discontinuous sidewalks between project site and remainder of Eleele community	1) Construct a sidewalk or pedestrian/bicycle pathway along the northern frontage of Mahea Road between the project site and Kaumualii Highway (including through the Eleele Iluna project); 2) Consider extending the existing sidewalk along Laulea Street (North) one block east to Kaumualii; 3) Consider constructing a sidewalk or pedestrian pathway along the north-south internal roadway within the Eleele Iluna project (between project scecondary access and Mahea Road).	Kaua'i County, in coordination with project applicant for Eleele Iluna project	Before Phase 1 of the project is built and occupied
	Increased pedestrian crossing demand across Kaumualii (Route 50)	1) Add pedestrian signal phases and countdown signals (north and east approaches) and missing crosswalk (east approach) at Kaumualii (Route 50)/Laulea (South) - Mahea. 2) Add pedestrian signal phases and countdown signals (south and west approaches) and missing crosswalks (north and west approaches) at Kumualii (Route 50)/Laulea (North). 3) Before implementation of traffic signals, implement pedestrian crossing improvement(s).	Kaua'i County	Signals: Incorporate into signal design. Pedestrian Improvements: Before Phase 1 of the project is built and occupied.
Bicycle Circulation	None	None	None	None
Transit Usage	Lack of transit access to Eleele Shopping Center	Consider adding new Route 100 and 200 bus stops on Waialo Road (Route 541) near Eleele Shopping Center.	Kaua'i County	None
Project Access	Shorter-Term operations of project access	Implement above recommended improvements at Kaumualii (Route 50)/ Laulea (South) - Mahea.	Kaua'i County	See Above
	Potential quality-of-life concerns of existing Mahea Road and residents and future Eleele Iluna residents due to project traffic	Monitor resident concerns within existing neighborhoods and Eleele Iluna project with regards to project traffic	Kaua'i County	After Phase 1 of the project is built and occupied

EXHIBIT 12
Summary of Recommended Improvements

Appendix A

Level of Service Descriptions:

A1. Signalized Intersections

A2. Unsignalized Intersections with Two-Way Stop Control

APPENDIX A1

LEVEL OF SERVICE (LOS) DESCRIPTION
SIGNALIZED INTERSECTIONS

The capacity of an urban street is related primarily to the signal timing and the geometric characteristics of the facility as well as to the composition of traffic on the facility. Geometrics are a fixed characteristic of a facility. Thus, while traffic composition may vary somewhat over time, the capacity of a facility is generally a stable value that can be significantly improved only by initiating geometric improvements. A traffic signal essentially allocates time among conflicting traffic movements that seek to use the same space. The way in which time is allocated significantly affects the operation and the capacity of the intersection and its approaches.

The methodology for signalized intersection is designed to consider individual intersection approaches and individual lane groups within approaches. A lane group consists of one or more lanes on an intersection approach. The outputs from application of the method described in the HCM 2010 are reported on the basis of each lane. For a given lane group at a signalized intersection, three indications are displayed: green, yellow and red. The red indication may include a short period during which all indications are red, referred to as an all-red interval and the yellow indication forms the change and clearance interval between two green phases.

The methodology for analyzing the capacity and level of service must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and details of intersection signalization. The methodology addresses the capacity, LOS, and other performance measures for lane groups and the intersection approaches and the LOS for the intersection as a whole.

Capacity is evaluated in terms of the ratio of demand flow rate to capacity (v/c ratio), whereas LOS is evaluated on the basis of control delay per vehicle (in seconds per vehicle). The methodology does not take into account the potential impact of downstream congestion on intersection operation, nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation.

LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS
(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	<10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

APPENDIX A2

LEVEL OF SERVICE (LOS) DESCRIPTION
UNSIGNALIZED INTERSECTIONS WITH TWO-WAY STOP CONTROL (TWSC)

TWSC intersections are widely used and stop signs are used to control vehicle movements at such intersections. At TWSC intersections, the stop-controlled approaches are referred to as the minor street approaches; they can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are referred to as the major street approaches. A three-leg intersection is considered to be a standard type of TWSC intersection if the single minor street approach (i.e. the stem of the T configuration) is controlled by a stop sign. Three-leg intersections where two of the three approaches are controlled by stop signs are a special form of unsignalized intersection control.

At TWSC intersections, drivers on the controlled approaches are required to select gaps in the major street flow through which to execute crossing or turning maneuvers on the basis of judgment. In the presence of a queue, each driver on the controlled approach must use some time to move into the front-of-queue position and prepare to evaluate gaps in the major street flow. Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction.

Thus, the capacity of the controlled legs is based on three factors:

- the distribution of gaps in the major street traffic stream;
- driver judgment in selecting gaps through which to execute the desired maneuvers; and
- the follow-up time required by each driver in a queue.

The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incident, control, traffic or geometric delay. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation and referred to as level of service.

LEVEL OF SERVICE (LOS) CRITERIA FOR TWSC INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	**0 - 10**
B	**>10 - 15**
C	**>15 - 25**
D	**>25 - 35**
E	**>35 - 50**
F	**>50**

Appendix B

Intersection
Level of Service
Calculations

Existing
Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	203	505	115	227	444	3	149	20	40	2	11	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	269	670	569	297	702	4	328	32	328	65	33	319
Arrive On Green	0.15	0.36	0.00	0.17	0.38	0.38	0.21	0.21	0.00	0.21	0.21	0.21
Sat Flow, veh/h	1756	1844	1568	1792	1868	12	1004	153	1568	7	157	1525
Grp Volume(v), veh/h	221	549	0	247	0	486	184	0	0	144	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1879	1156	0	1568	1690	0	0
Q Serve(g_s), s	7.0	15.5	0.0	7.6	0.0	12.5	7.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.0	15.5	0.0	7.6	0.0	12.5	12.0	0.0	0.0	4.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.88		1.00	0.01		0.90
Lane Grp Cap(c), veh/h	269	670	569	297	0	706	360	0	328	417	0	0
V/C Ratio(X)	0.82	0.82	0.00	0.83	0.00	0.69	0.51	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	337	708	601	344	0	721	360	0	328	417	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.5	16.6	0.0	23.1	0.0	15.1	24.8	0.0	0.0	19.7	0.0	0.0
Incr Delay (d2), s/veh	10.0	8.4	0.0	12.3	0.0	3.6	0.5	0.0	0.0	0.2	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 Back of Q (50%), veh/ln	3.5	7.5	0.0	4.1	0.0	5.6	2.6	0.0	0.0	1.7	0.0	0.0
Lane Grp Delay (d), s/veh	33.5	25.0	0.0	35.5	0.0	18.6	25.3	0.0	0.0	19.9	0.0	0.0
Lane Grp LOS	C	C		D		B	C			B		
Approach Vol, veh/h		770			733			184			144	
Approach Delay, s/veh		27.4			24.3			25.3			19.9	
Approach LOS		C			C			C			B	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	12.8	26.8		13.5	27.5			17.0			17.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	11.0	22.0		11.0	22.0			12.0			12.0	
Max Q Clear Time (g_c+I1), s	9.0	17.5		9.6	14.5			14.0			6.4	
Green Ext Time (p_c), s	0.1	3.3		0.1	5.2			0.0			0.6	
Intersection Summary												
HCM 2010 Ctrl Delay			25.4									
HCM 2010 LOS			C									
Notes												

Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	21	2	487	60	4	653
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	2	518	64	4	695
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1222	520	0	0	519	0
Stage 1	519	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	198	556	-	-	1047	-
Stage 1	597	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	196	555	-	-	1046	-
Mov Capacity-2 Maneuver	196	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	488	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.5	0	0.1
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	196	555	1046	-
HCM Control Delay, s	-	-	25.7	11.5	8.456	0
HCM Lane V/C Ratio	-	-	0.11	0.00	0.00	-
HCM Lane LOS	-	-	D	B	A	A
HCM 95th-tile Q, veh	-	-	0.4	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	1	97	3	1	5	28	460	1	2	557	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Yield	Yield	Yield	None	None	None	None	None	None	Yield	Yield	Yield
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1	104	3	1	5	30	495	1	2	599	10
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1162	1159	599	1159	1158	495	599	0	0	496	0	0
Stage 1	603	603	-	555	555	-	-	-	-	-	-	-
Stage 2	559	556	-	604	603	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	172	196	502	152	172	559	978	-	-	1068	-	-
Stage 1	486	488	-	485	483	-	-	-	-	-	-	-
Stage 2	513	513	-	454	457	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	165	190	502	117	166	559	978	-	-	1068	-	-
Mov Capacity-2 Maneuver	165	190	-	117	166	-	-	-	-	-	-	-
Stage 1	471	487	-	470	468	-	-	-	-	-	-	-
Stage 2	491	497	-	358	456	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	22	0.5	0
HCM LOS	C	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	978	-	-	318	502	222	1068	-	-
HCM Control Delay, s	8.798	-	-	18.4	13.3	22	8.378	-	-
HCM Lane V/C Ratio	0.03	-	-	0.15	0.14	0.04	0.00	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	0.5	0.5	0.1	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	117	21	4	473	547	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	None	None	Yield	Yield
Storage Length	0	90	270			275
Median Width	12			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	22	4	503	582	19
Number of Lanes	1	1	1	1	1	1

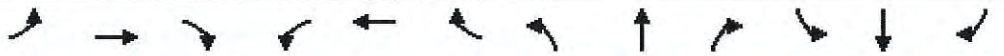
Major/Minor			Major 1		Major 2	
Conflicting Flow All	1094	582	582	0	-	0
Stage 1	582	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	237	513	992	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	236	513	992	-	-	-
Mov Capacity-2 Maneuver	372	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0.1	0
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Cap, veh/h	992	-	372	513	-	-
HCM Control Delay, s	8.645	-	19.5	12.3	-	-
HCM Lane V/C Ratio	0.00	-	0.34	0.04	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th-tile Q, veh	0.0	-	1.4	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	564	104	256	482	4	236	38	159	5	21	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	35	697	592	319	998	9	414	55	435	79	284	184
Arrive On Green	0.02	0.38	0.00	0.18	0.54	0.54	0.28	0.28	0.00	0.28	0.28	0.28
Sat Flow, veh/h	1756	1844	1568	1792	1863	16	1222	198	1568	122	1021	663
Grp Volume(v), veh/h	29	680	0	308	0	586	330	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1879	1420	0	1568	1806	0	0
Q Serve(g_s), s	1.5	32.7	0.0	15.4	0.0	18.9	23.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	32.7	0.0	15.4	0.0	18.9	25.0	0.0	0.0	1.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.86		1.00	0.12		0.37
Lane Grp Cap(c), veh/h	35	697	592	319	0	1006	469	0	435	547	0	0
V/C Ratio(X)	0.83	0.98	0.00	0.97	0.00	0.58	0.70	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	98	697	592	319	0	1006	469	0	435	547	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.9	27.6	0.0	36.7	0.0	14.1	107.8	0.0	0.0	24.1	0.0	0.0
Incr Delay (d2), s/veh	16.3	28.3	0.0	41.2	0.0	1.4	4.0	0.0	0.0	0.0	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 Back of Q (50%), veh/ln	0.8	19.5	0.0	10.3	0.0	8.0	0.5	0.0	0.0	0.8	0.0	0.0
Lane Grp Delay (d), s/veh	60.3	55.9	0.0	77.9	0.0	15.5	111.8	0.0	0.0	24.2	0.0	0.0
Lane Grp LOS	E	E		E		B	F			C		
Approach Vol, veh/h		709			894			330			49	
Approach Delay, s/veh		56.1			37.0			111.8			24.2	
Approach LOS		E			D			F			C	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	5.8	40.0		20.0	54.2			30.0			30.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	5.0	34.0		16.0	45.0			25.0			25.0	
Max Q Clear Time (g_c+I1), s	3.5	34.7		17.4	20.9			27.0			3.9	
Green Ext Time (p_c), s	0.0	0.0		0.0	15.5			0.0			1.5	
Intersection Summary												
HCM 2010 Ctrl Delay			56.0									
HCM 2010 LOS			E									
Notes												

Intersection	
Intersection Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	52	2	598	130	3	690
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	2	680	148	3	784
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1472	681	0	0	681	0
Stage 1	681	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	140	450	-	-	912	-
Stage 1	503	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	139	450	-	-	912	-
Mov Capacity-2 Maneuver	139	-	-	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	444	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	47.5	0	0
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	139	450	912	-
HCM Control Delay, s	-	-	48.8	13	8.962	0
HCM Lane V/C Ratio	-	-	0.42	0.01	0.00	-
HCM Lane LOS	-	-	E	B	A	A
HCM 95th-tile Q, veh	-	-	1.9	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	89	6	0	2	121	470	9	7	598	22
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Yield	Yield	Yield	None	None	None	None	None	None	Yield	Yield	Yield
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	91	6	0	2	123	480	9	7	610	22
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1360	1364	613	1359	1359	487	612	0	0	491	0	0
Stage 1	626	626	-	733	733	-	-	-	-	-	-	-
Stage 2	734	738	-	626	626	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	126	148	492	108	128	565	967	-	-	1072	-	-
Stage 1	472	477	-	380	393	-	-	-	-	-	-	-
Stage 2	412	424	-	440	445	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	112	128	491	79	111	564	966	-	-	1071	-	-
Mov Capacity-2 Maneuver	112	128	-	79	111	-	-	-	-	-	-	-
Stage 1	411	473	-	331	342	-	-	-	-	-	-	-
Stage 2	358	369	-	356	441	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	43.8	1.9	0.1
HCM LOS	C	E	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	966	-	-	313	491	101	1071	-	-
HCM Control Delay, s	9.272	-	-	18	13.4	43.8	8.384	-	-
HCM Lane V/C Ratio	0.13	-	-	0.12	0.12	0.08	0.01	-	-
HCM Lane LOS	A	-	-	C	B	E	A	-	-
HCM 95th-tile Q, veh	0.4	-	-	0.4	0.4	0.3	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	41	10	9	469	617	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	None	None	Yield	Yield
Storage Length	0	90	270			275
Median Width	12			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	11	10	510	671	65
Number of Lanes	1	1	1	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow All	1200	671	671	0	-	0
Stage 1	671	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	204	456	919	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	202	456	919	-	-	-
Mov Capacity-2 Maneuver	340	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	585	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.4	0.2	0
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Cap, veh/h	919	-	340	456	-	-
HCM Control Delay, s	8.959	-	17.2	13.1	-	-
HCM Lane V/C Ratio	0.01	-	0.13	0.02	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th-tile Q, veh	0.0	-	0.4	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix C

Intersection
Level of Service
Calculations

Future without Project
Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	216	648	122	246	591	3	159	21	45	2	12	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	282	682	580	316	721	3	306	25	316	63	32	308
Arrive On Green	0.16	0.37	0.00	0.18	0.39	0.39	0.20	0.20	0.00	0.20	0.20	0.20
Sat Flow, veh/h	1756	1844	1568	1792	1871	9	950	126	1568	6	158	1525
Grp Volume(v), veh/h	235	704	0	267	0	645	196	0	0	154	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1880	1076	0	1568	1690	0	0
Q Serve(g_s), s	7.7	22.0	0.0	8.6	0.0	19.1	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.7	22.0	0.0	8.6	0.0	19.1	12.0	0.0	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.88		1.00	0.01		0.90
Lane Grp Cap(c), veh/h	282	682	580	316	0	724	331	0	316	402	0	0
V/C Ratio(X)	0.83	1.03	0.00	0.85	0.00	0.89	0.59	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	325	682	580	331	0	724	331	0	316	402	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.2	18.7	0.0	23.7	0.0	17.1	32.2	0.0	0.0	20.9	0.0	0.0
Incr Delay (d2), s/veh	13.2	42.9	0.0	16.3	0.0	13.9	1.9	0.0	0.0	0.2	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 Back of Q (50%), veh/ln	4.1	16.9	0.0	5.0	0.0	10.3	0.2	0.0	0.0	1.9	0.0	0.0
Lane Grp Delay (d), s/veh	37.4	61.7	0.0	40.0	0.0	31.0	34.1	0.0	0.0	21.2	0.0	0.0
Lane Grp LOS	D	F		D		C	C			C		
Approach Vol, veh/h		939			912			196			154	
Approach Delay, s/veh		55.6			33.7			34.1			21.2	
Approach LOS		E			C			C			C	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	13.6	28.0		14.5	28.9			17.0			17.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	11.0	22.0		11.0	22.0			12.0			12.0	
Max Q Clear Time (g_c+I1), s	9.7	24.0		10.6	21.1			14.0			7.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	0.8			0.0			0.6	
Intersection Summary												
HCM 2010 Ctrl Delay			42.2									
HCM 2010 LOS			D									
Notes												

Intersection	
Intersection Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	27	3	619	76	5	813
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	3	659	81	5	865
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1536	661	0	0	660	0
Stage 1	660	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	128	462	-	-	928	-
Stage 1	514	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	127	461	-	-	927	-
Mov Capacity-2 Maneuver	127	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	403	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.6	0	0.1
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	127	461	927	-
HCM Control Delay, s	-	-	41.4	12.9	8.906	0
HCM Lane V/C Ratio	-	-	0.23	0.01	0.01	-
HCM Lane LOS	-	-	E	B	A	A
HCM 95th-tile Q, veh	-	-	0.8	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	1	103	8	1	40	29	587	1	12	702	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		Yield			None			None			Yield	
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	1	111	9	1	43	31	631	1	13	755	11
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1497	1476	755	1475	1475	632	755	0	0	632	0	0
Stage 1	781	781	-	694	694	-	-	-	-	-	-	-
Stage 2	716	695	-	781	781	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	101	126	409	89	107	464	855	-	-	951	-	-
Stage 1	388	405	-	401	411	-	-	-	-	-	-	-
Stage 2	421	444	-	356	372	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	87	120	409	62	102	464	855	-	-	951	-	-
Mov Capacity-2 Maneuver	87	120	-	62	102	-	-	-	-	-	-	-
Stage 1	374	399	-	386	396	-	-	-	-	-	-	-
Stage 2	367	428	-	255	367	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	26.7	0.4	0.1
HCM LOS	C	D	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	855	-	-	200	409	218	951	-	-
HCM Control Delay, s	9.37	-	-	29.2	15.7	26.7	8.838	-	-
HCM Lane V/C Ratio	0.04	-	-	0.26	0.18	0.24	0.01	-	-
HCM Lane LOS	A	-	-	D	C	D	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	1.0	0.7	0.9	0.0	-	-

Notes

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Intersection	
Intersection Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	125	22	4	636	702	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	None	None	Yield	Yield
Storage Length	0	90	270			275
Median Width	12			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	23	4	677	747	20
Number of Lanes	1	1	1	1	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1432	747	747	0	-	0
Stage 1	747	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	148	413	861	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	147	413	861	-	-	-
Mov Capacity-2 Maneuver	287	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.8	0.1	0
HCM LOS	D	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Cap, veh/h	861	-	287	413	-	-
HCM Control Delay, s	9.202	-	27.9	14.2	-	-
HCM Lane V/C Ratio	0.01	-	0.46	0.06	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th-tile Q, veh	0.0	-	2.3	0.2	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	720	111	275	663	4	251	40	174	5	22	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	38	697	592	319	997	6	414	54	435	75	288	183
Arrive On Green	0.02	0.38	0.00	0.18	0.53	0.53	0.28	0.28	0.00	0.28	0.28	0.28
Sat Flow, veh/h	1756	1844	1568	1792	1868	12	1224	194	1568	111	1035	660
Grp Volume(v), veh/h	31	867	0	331	0	804	350	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1879	1418	0	1568	1806	0	0
Q Serve(g_s), s	1.6	34.0	0.0	16.0	0.0	31.4	23.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	34.0	0.0	16.0	0.0	31.4	25.0	0.0	0.0	2.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.86		1.00	0.12		0.37
Lane Grp Cap(c), veh/h	38	697	592	319	0	1004	468	0	435	546	0	0
V/C Ratio(X)	0.82	1.24	0.00	1.04	0.00	0.80	0.75	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	98	697	592	319	0	1004	468	0	435	546	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.9	28.0	0.0	37.0	0.0	17.1	109.1	0.0	0.0	24.2	0.0	0.0
Incr Delay (d2), s/veh	14.9	121.9	0.0	61.0	0.0	5.4	5.8	0.0	0.0	0.0	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 Back of Q (50%), veh/ln	0.8	38.1	0.0	12.4	0.0	14.2	0.8	0.0	0.0	0.9	0.0	0.0
Lane Grp Delay (d), s/veh	58.8	149.9	0.0	98.0	0.0	22.4	114.9	0.0	0.0	24.2	0.0	0.0
Lane Grp LOS	E	F		F		C	F			C		
Approach Vol, veh/h		898			1135			350			52	
Approach Delay, s/veh		146.7			44.5			114.9			24.2	
Approach LOS		F			D			F			C	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	5.9	40.0		20.0	54.1			30.0			30.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	5.0	34.0		16.0	45.0			25.0			25.0	
Max Q Clear Time (g_c+I1), s	3.6	36.0		18.0	33.4			27.0			4.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	10.4			0.0			1.6	

Intersection Summary	
HCM 2010 Ctrl Delay	91.9
HCM 2010 LOS	F

Notes

Intersection	
Intersection Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	66	3	738	169	4	876
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	3	839	192	5	995
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1845	840	0	0	840	0
Stage 1	840	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	82	365	-	-	795	-
Stage 1	424	-	-	-	-	-
Stage 2	354	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	81	365	-	-	795	-
Mov Capacity-2 Maneuver	81	-	-	-	-	-
Stage 1	424	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	163.2	0	0
HCM LOS	F	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	81	365	795	-
HCM Control Delay, s	-	-	169.9	15	9.554	0
HCM Lane V/C Ratio	-	-	0.93	0.01	0.01	-
HCM Lane LOS	-	-	F	C	A	A
HCM 95th-tile Q, veh	-	-	4.9	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	95	11	0	30	129	592	15	52	758	23
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		Yield			None			None			Yield	
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	97	11	0	31	132	604	15	53	773	23
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1774	1767	776	1759	1759	615	775	0	0	621	0	0
Stage 1	882	882	-	877	877	-	-	-	-	-	-	-
Stage 2	892	885	-	882	882	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	65	84	397	54	70	475	841	-	-	960	-	-
Stage 1	341	364	-	311	332	-	-	-	-	-	-	-
Stage 2	337	363	-	309	330	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	51	67	396	34	56	474	840	-	-	959	-	-
Mov Capacity-2 Maneuver	51	67	-	34	56	-	-	-	-	-	-	-
Stage 1	287	343	-	262	279	-	-	-	-	-	-	-
Stage 2	265	305	-	220	311	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.6	59.6	1.8	0.6
HCM LOS	C	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	840	-	-	191	396	106	959	-	-
HCM Control Delay, s	10.08	-	-	28.5	15.9	59.6	8.974	-	-
HCM Lane V/C Ratio	0.16	-	-	0.20	0.16	0.40	0.06	-	-
HCM Lane LOS	B	-	-	D	C	F	A	-	-
HCM 95th-tile Q, veh	0.6	-	-	0.7	0.6	1.6	0.2	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	44	11	10	615	822	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	None	None	Yield	Yield
Storage Length	0	90	270			275
Median Width	12			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	12	11	668	893	70
Number of Lanes	1	1	1	1	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1583	893	893	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	120	340	759	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	118	340	759	-	-	-
Mov Capacity-2 Maneuver	254	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.1	0.2	0
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Cap, veh/h	759	-	254	340	-	-
HCM Control Delay, s	9.812	-	22.4	16	-	-
HCM Lane V/C Ratio	0.01	-	0.19	0.04	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th-tile Q, veh	0.0	-	0.7	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix D

Excerpts from
Trip Generation Manual, 9th Edition,
Institute of Transportation Engineers, 2012

TRIP GENERATION MANUAL

9th Edition • Volume 2: Data

Trip Generation Rates, Plots and Equations

- Port and Terminal (Land Uses 000–099)
- Industrial (Land Uses 100–199)
- Residential (Land Uses 200–299)
- Lodging (Land Uses 300–399)
- Recreational (Land Uses 400–499)

ite
Institute of Transportation Engineers

Land Use: 210
Single-Family Detached Housing

Description

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Additional Data

The number of vehicles and residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it was usually readily available, easy to project and had a high correlation with average weekday vehicle trip ends.

This land use included data from a wide variety of units with different sizes, price ranges, locations and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed between the late 1960s and the 2000s throughout the United States and Canada.

Source Numbers

1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 16, 19, 20, 21, 26, 34, 35, 36, 38, 40, 71, 72, 84, 91, 98, 100, 105, 108, 110, 114, 117, 119, 157, 167, 177, 187, 192, 207, 211, 246, 275, 283, 293, 300, 319, 320, 357, 384, 435, 550, 552, 579, 598, 601, 603, 611, 614, 637, 711, 735

Single-Family Detached Housing
(210)

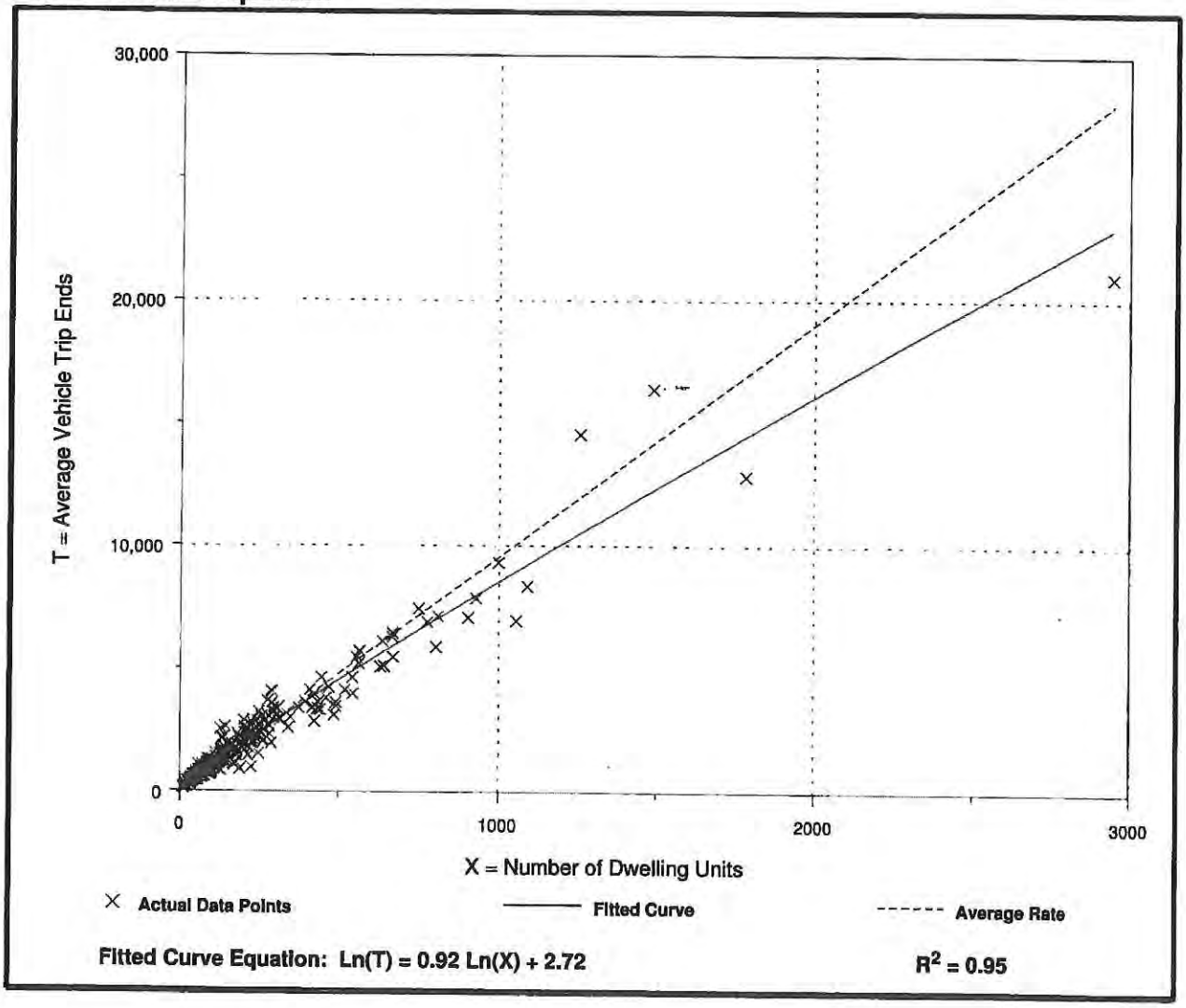
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.72

R^2 = 0.95

Single-Family Detached Housing
(210)

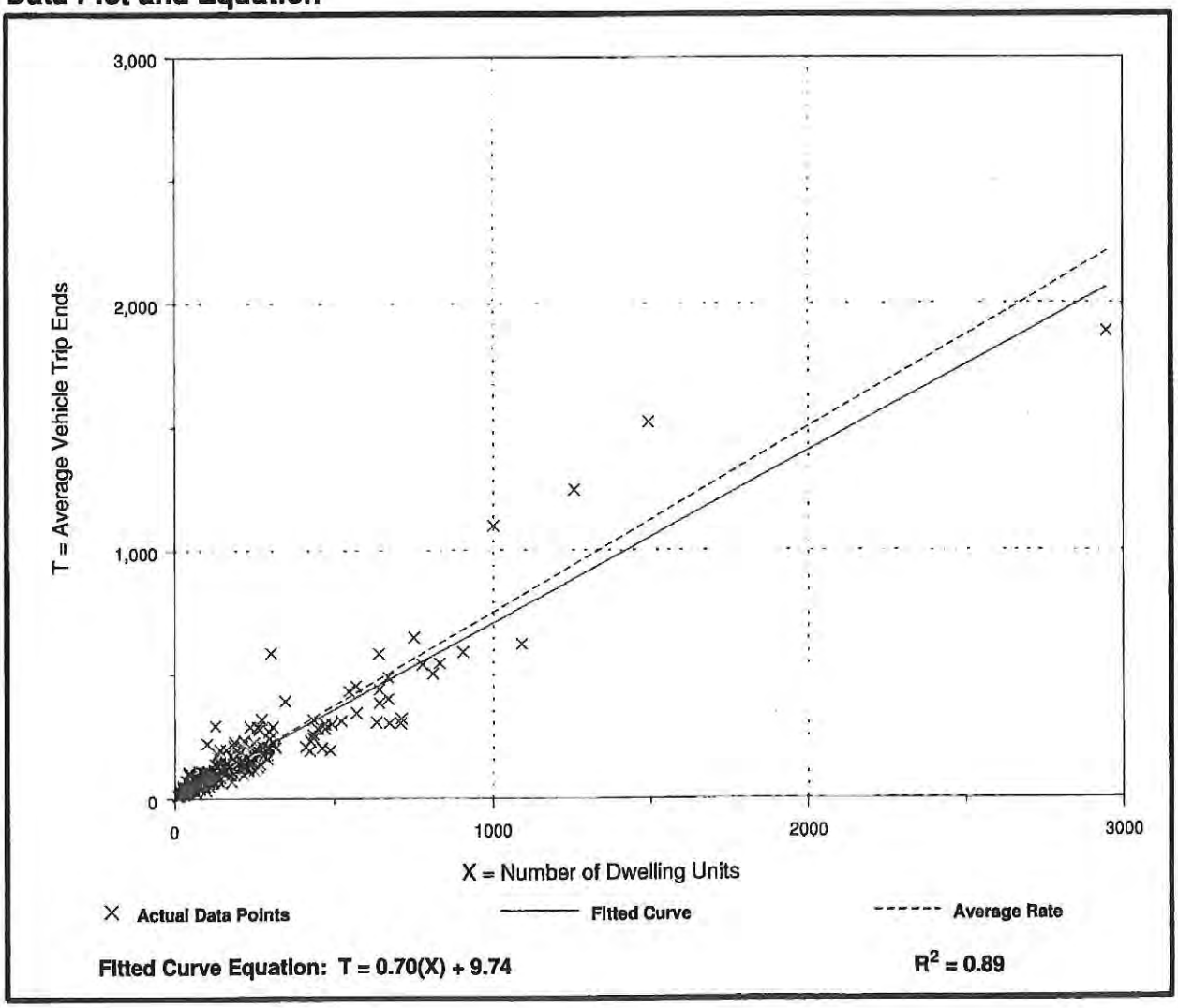
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 292
Avg. Number of Dwelling Units: 194
Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Fitted Curve Equation: T = 0.70(X) + 9.74

R^2 = 0.89

Single-Family Detached Housing
(210)

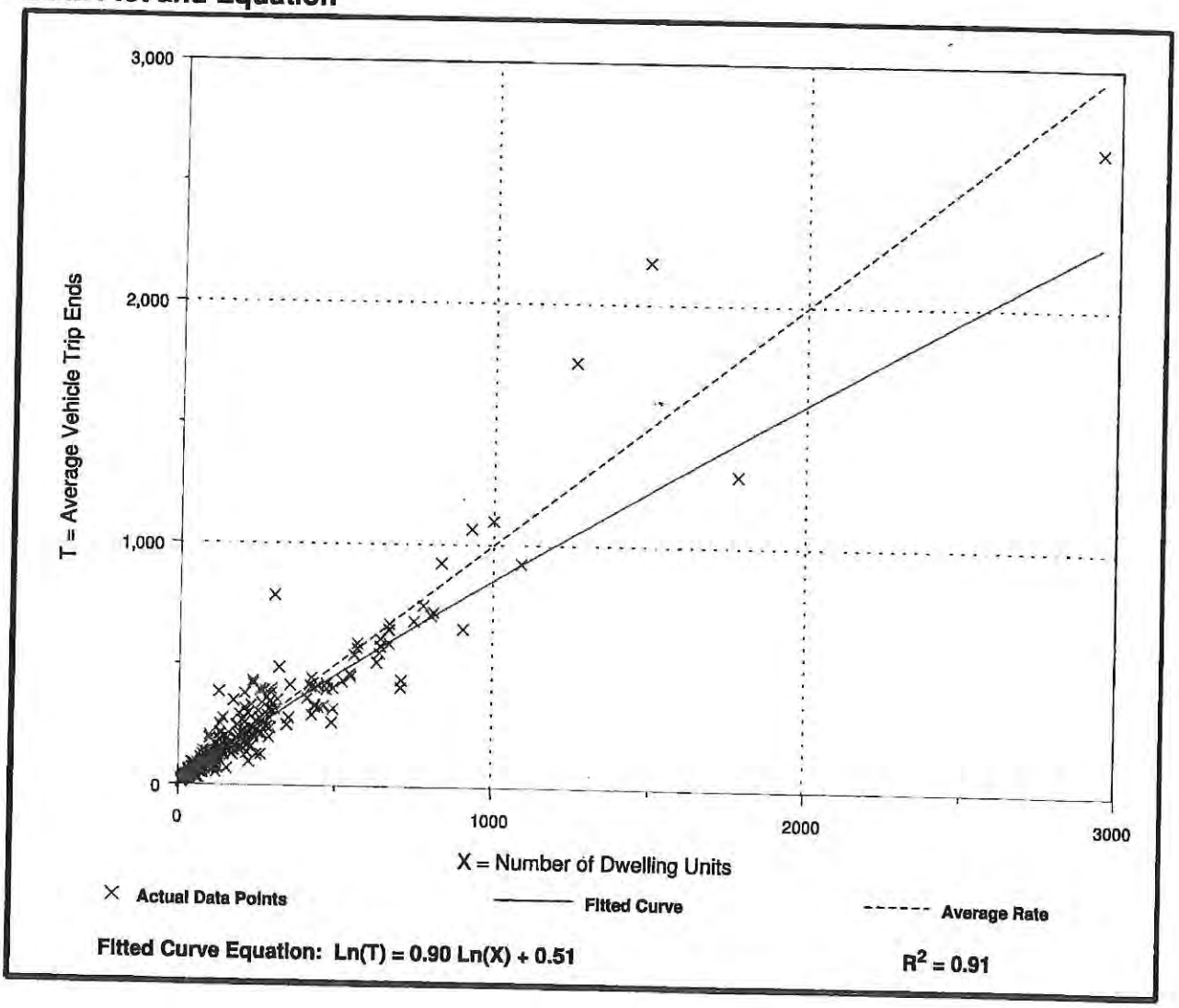
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 321
Avg. Number of Dwelling Units: 207
Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.00	0.42 - 2.98	1.05

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.90 Ln(X) + 0.51

R^2 = 0.91

Land Use: 220
Apartment

Description

Apartments are rental dwelling units located within the same building with at least three other dwelling units, for example, quadraplexes and all types of apartment buildings. The studies included in this land use did not identify whether the apartments were low-rise, mid-rise, or high-rise. Low-rise apartment (Land Use 221), high-rise apartment (Land Use 222) and mid-rise apartment (Land Use 223) are related uses.

Additional Data

This land use included data from a wide variety of units with different sizes, price ranges, locations and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed between the late 1960s and the 2000s throughout the United States and Canada.

Many of the studies included in this land use did not indicate the total number of bedrooms. To assist in the future analysis of this land use, it is important that this information be collected and included in trip generation data submissions.

Source Numbers

2, 4, 5, 6, 9, 10, 11, 12, 13, 14, 16, 19, 20, 34, 35, 40, 72, 91, 100, 108, 188, 192, 204, 211, 253, 283, 357, 436, 525, 530, 579, 583, 638

Apartment
(220)

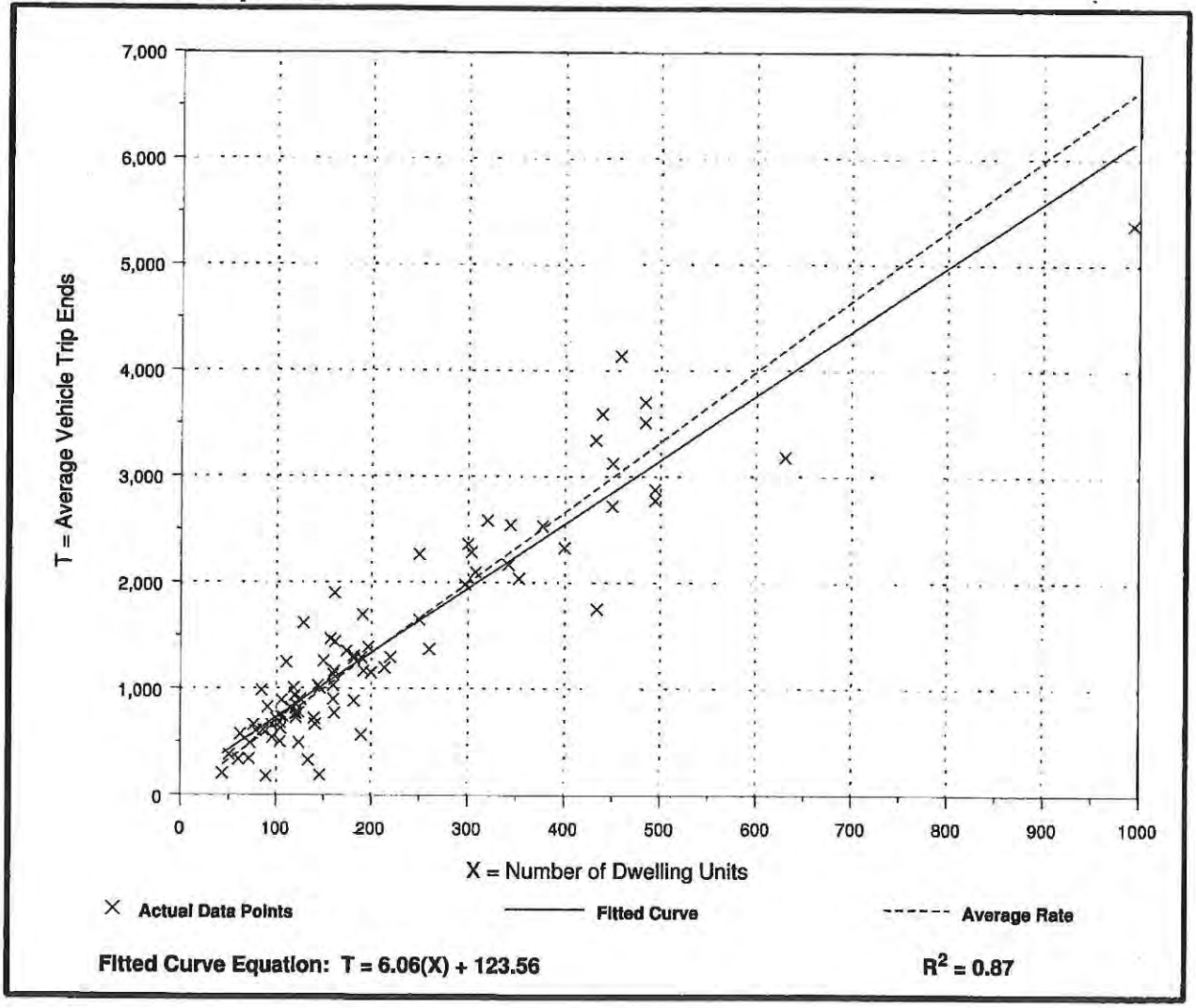
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 88
Avg. Number of Dwelling Units: 210
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.65	1.27 - 12.50	3.07

Data Plot and Equation



Fitted Curve Equation: T = 6.06(X) + 123.56

R^2 = 0.87

Apartment
(220)

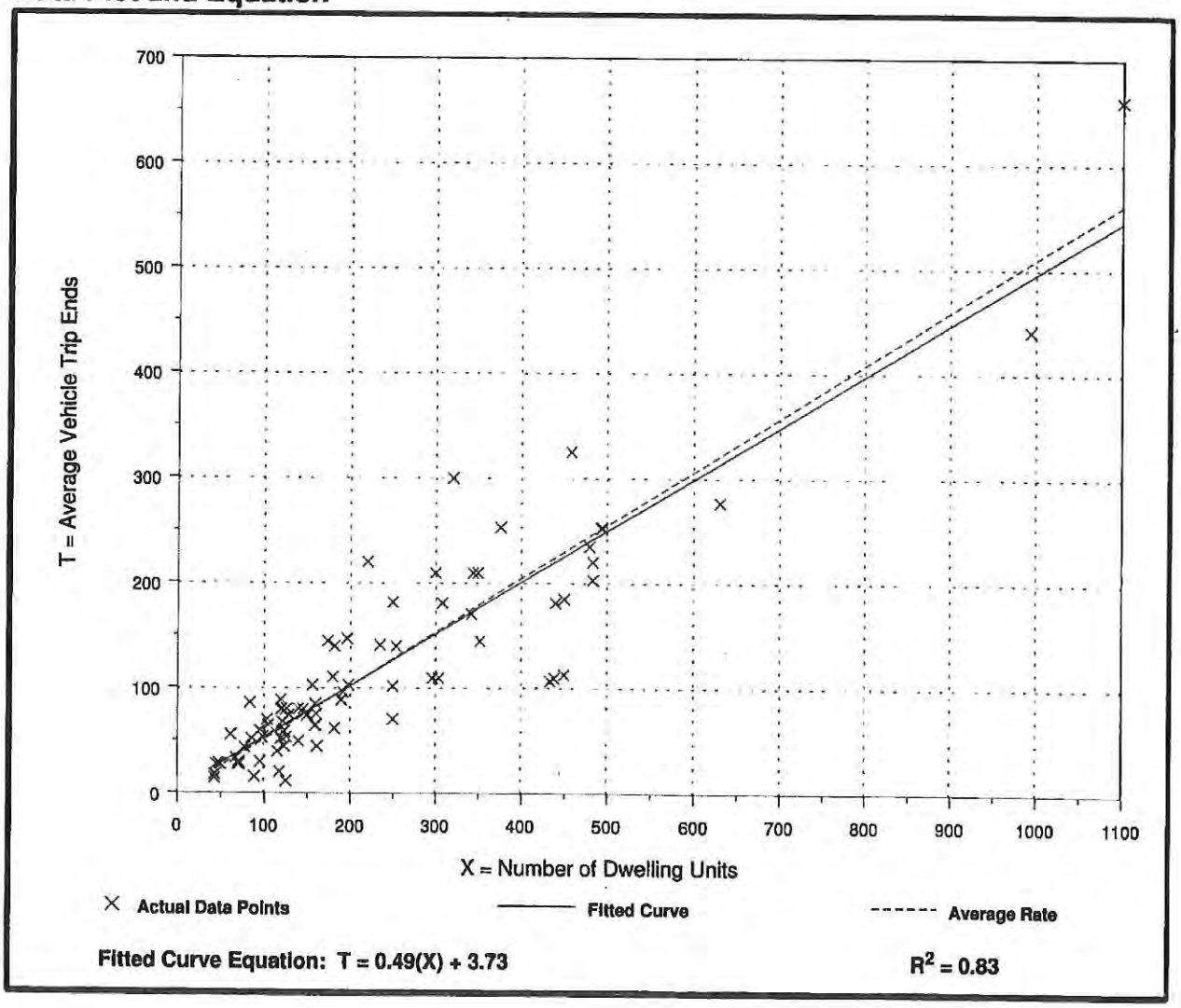
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 78
Avg. Number of Dwelling Units: 235
Directional Distribution: 20% entering, 80% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.10 - 1.02	0.73

Data Plot and Equation



Fitted Curve Equation: T = 0.49(X) + 3.73

R^2 = 0.83

Apartment
(220)

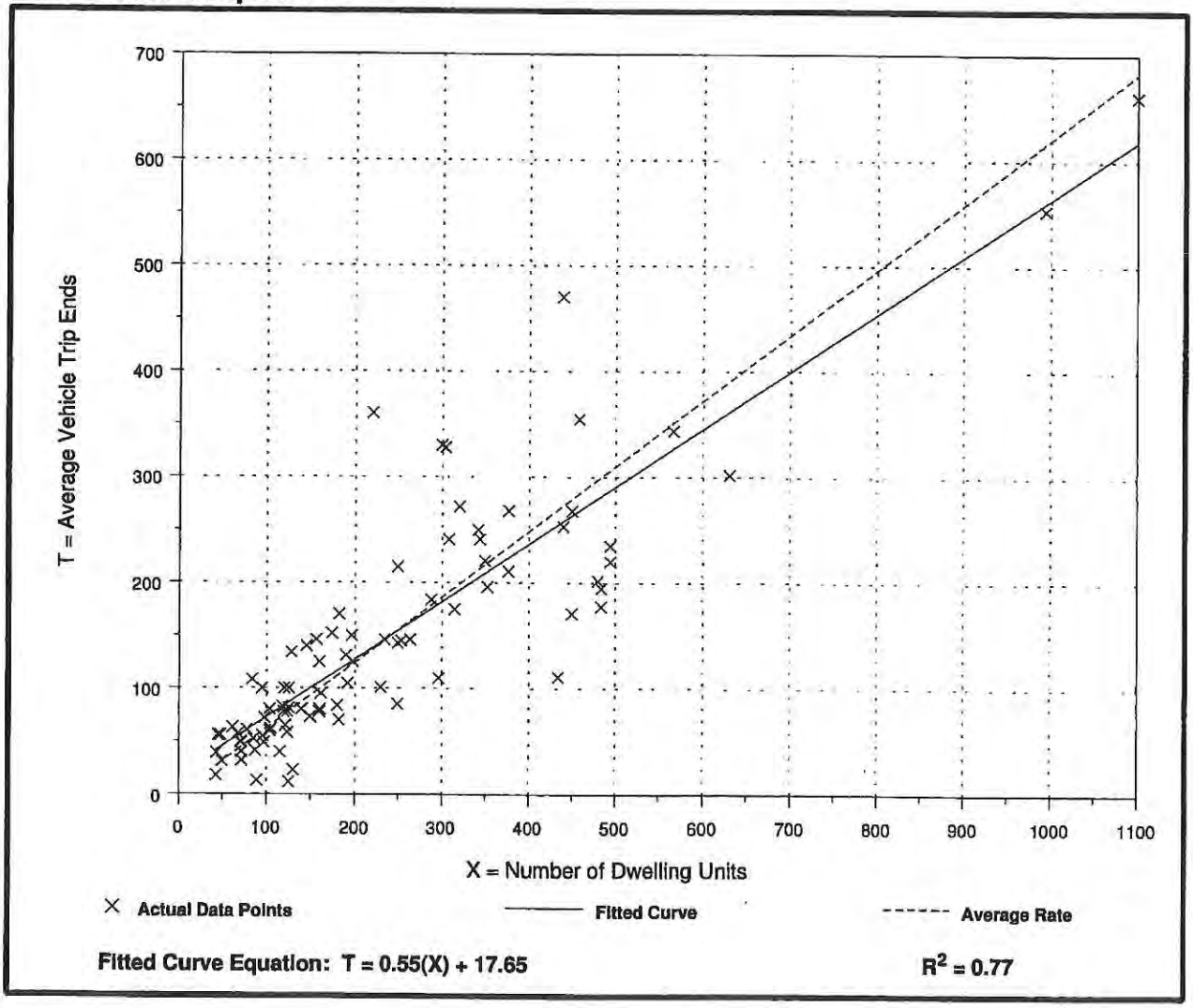
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 90
Avg. Number of Dwelling Units: 233
Directional Distribution: 65% entering, 35% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.10 - 1.64	0.82

Data Plot and Equation



Fitted Curve Equation: T = 0.55(X) + 17.65

R^2 = 0.77

Land Use: 252
Senior Adult Housing—Attached

Description

Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing and active adult communities. These developments may include limited social or recreational services. However, they generally lack centralized dining and on-site medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired. Senior adult housing—detached (Land Use 251), congregate care facility (Land Use 253) and continuing care retirement community (Land Use 255) are related uses.

Additional Data

The peak hour of the generator typically did not coincide with the peak hour of the adjacent street traffic. The A.M. peak hour of the generator typically ranged from 8:30 a.m. to 12:00 p.m. and the P.M. peak hour of the generator typically ranged from 1:00 p.m. to 6:00 p.m. **It should also be noted that in some cases, because of the limited sample size and variation in the data received, the projected trip generation estimate for the independent variable "dwelling units" exceeds the trip generation estimate for the independent variable "occupied dwelling units". By definition, this is impossible; therefore, knowledge of the project site and engineering judgment should be used to select the appropriate trip generation approximation.**

The sites were surveyed between the 1980s and the 2000s in California, Illinois, Maryland, New Hampshire, New Jersey, Pennsylvania and Canada.

Source Numbers

237, 272, 501, 576, 602, 703, 734, 741

Senior Adult Housing - Attached
(252)

Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

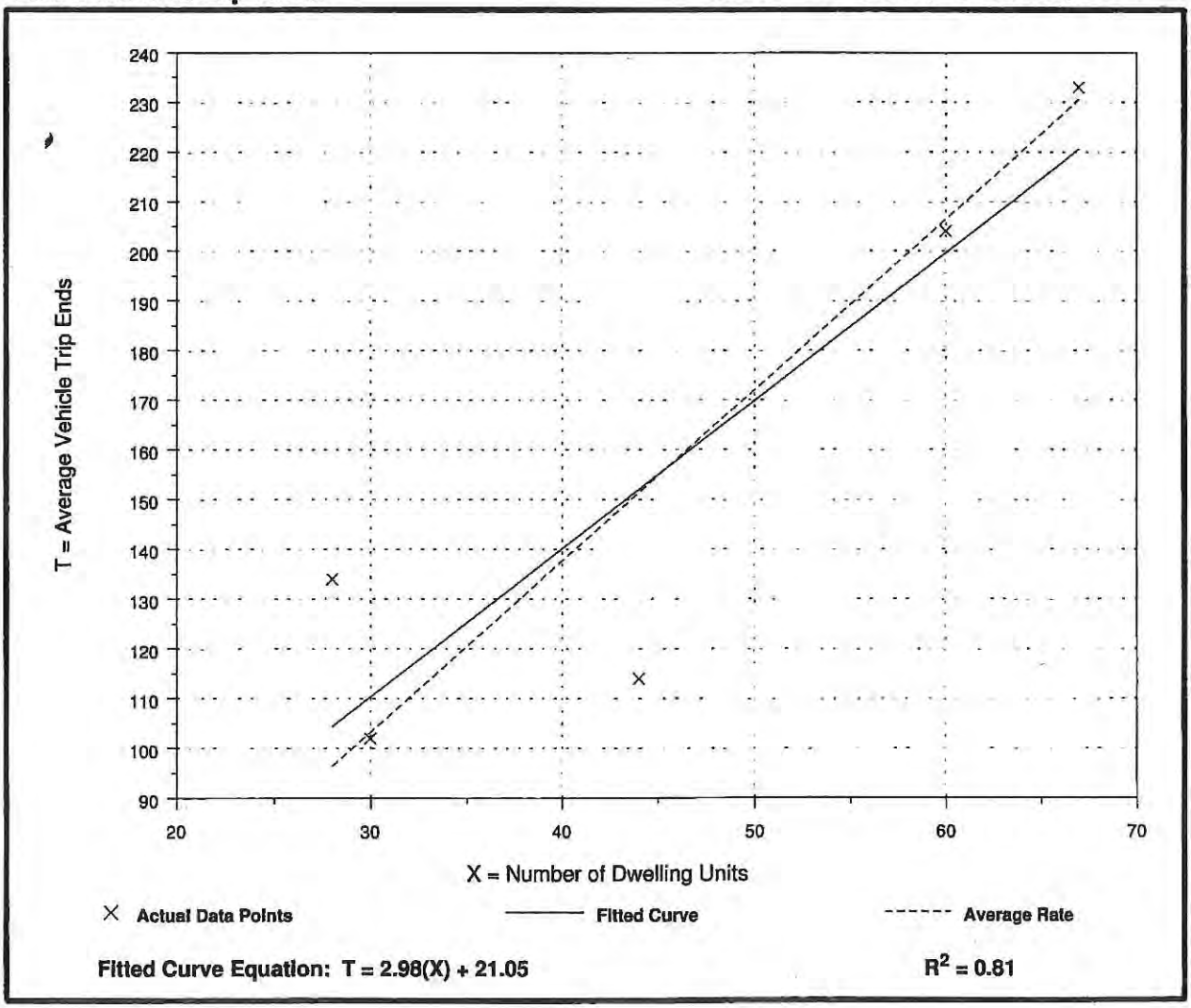
Number of Studies: 5
Avg. Number of Dwelling Units: 46
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.44	2.59 - 4.79	1.93

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: T = 2.98(X) + 21.05

R^2 = 0.81

Senior Adult Housing - Attached
(252)

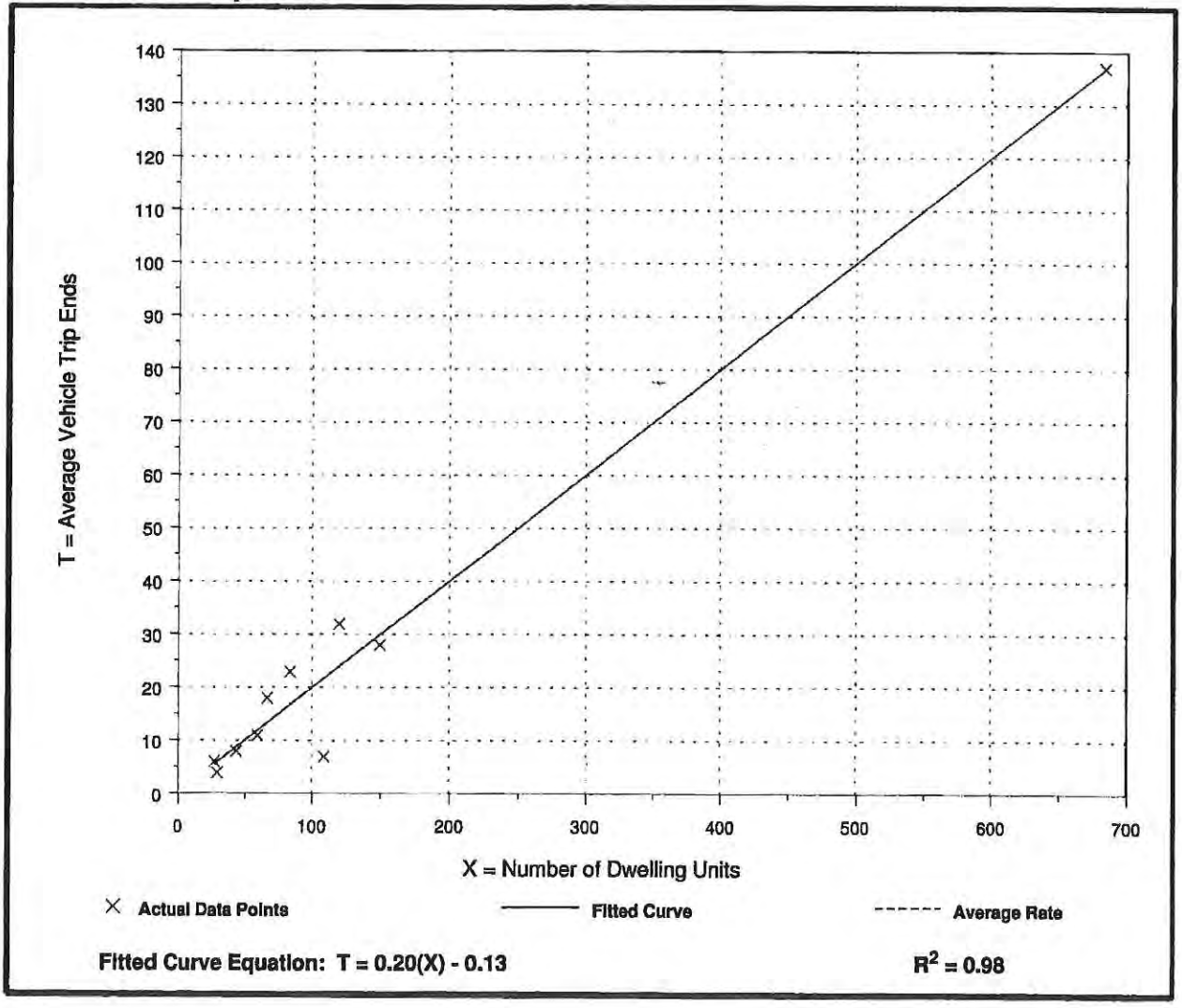
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 10
Avg. Number of Dwelling Units: 138
Directional Distribution: 34% entering, 66% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.06 - 0.27	0.45

Data Plot and Equation



Fitted Curve Equation: T = 0.20(X) - 0.13

R^2 = 0.98

Senior Adult Housing - Attached
(252)

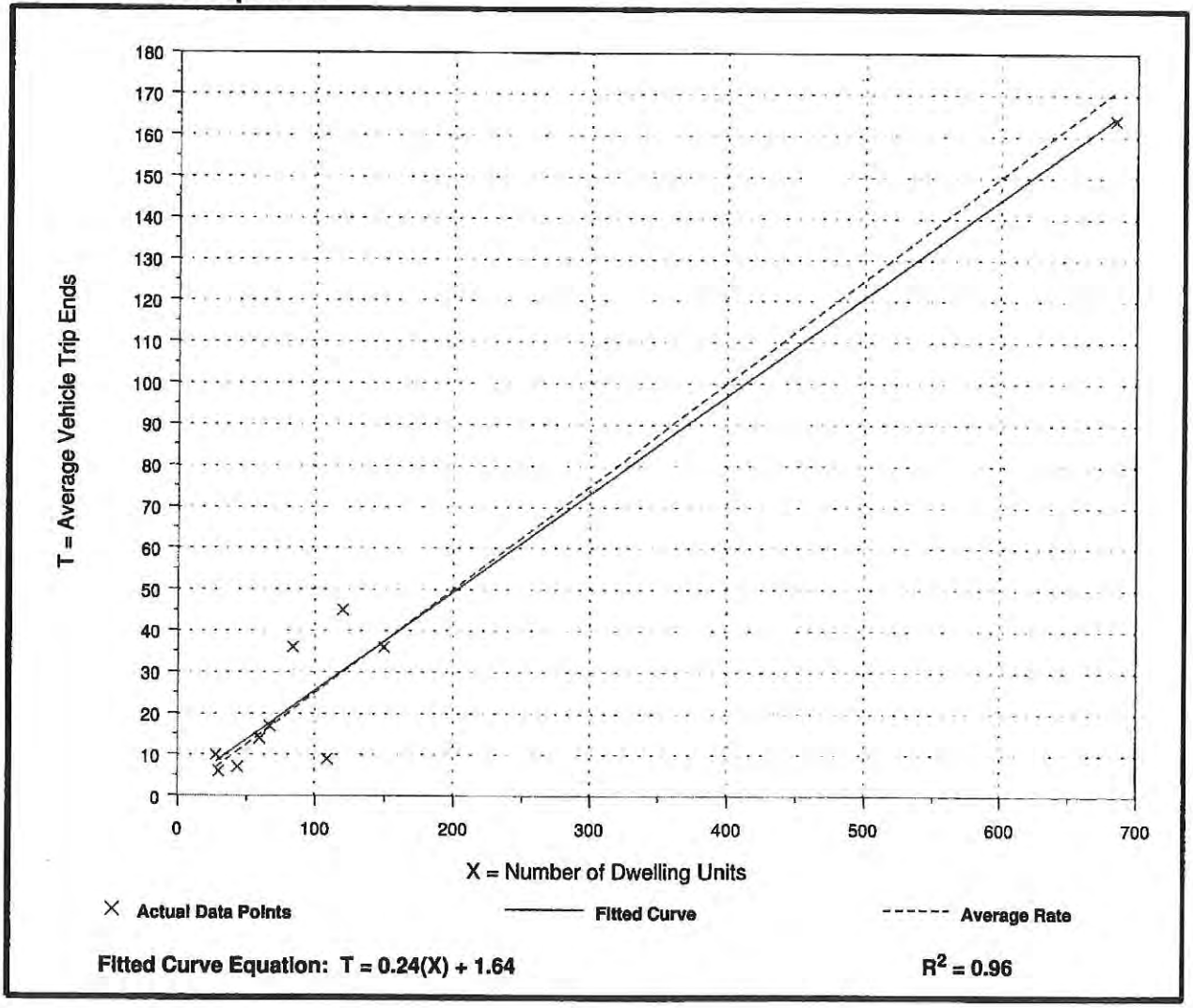
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 10
Avg. Number of Dwelling Units: 138
Directional Distribution: 54% entering, 46% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.25	0.08 - 0.43	0.50

Data Plot and Equation



Fitted Curve Equation: T = 0.24(X) + 1.64

R^2 = 0.96

Appendix E

Intersection
Level of Service
Calculations

Future with Project
Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	216	663	122	278	645	3	159	21	54	2	12	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	282	676	575	328	729	3	302	25	314	62	32	305
Arrive On Green	0.16	0.37	0.00	0.18	0.39	0.39	0.20	0.20	0.00	0.20	0.20	0.20
Sat Flow, veh/h	1756	1844	1568	1792	1872	8	945	126	1568	6	158	1526
Grp Volume(v), veh/h	235	721	0	302	0	704	196	0	0	154	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1880	1070	0	1568	1690	0	0
Q Serve(g_s), s	7.8	22.0	0.0	9.9	0.0	21.9	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.8	22.0	0.0	9.9	0.0	21.9	12.0	0.0	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.88		1.00	0.01		0.90
Lane Grp Cap(c), veh/h	282	676	575	328	0	732	327	0	314	399	0	0
V/C Ratio(X)	0.83	1.07	0.00	0.92	0.00	0.96	0.60	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	322	676	575	328	0	732	327	0	314	399	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.4	19.0	0.0	24.1	0.0	17.9	33.2	0.0	0.0	21.2	0.0	0.0
Incr Delay (d2), s/veh	13.6	53.6	0.0	29.4	0.0	24.4	2.1	0.0	0.0	0.2	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 Back of Q (50%), veh/ln	4.2	18.5	0.0	6.7	0.0	13.6	0.2	0.0	0.0	2.0	0.0	0.0
Lane Grp Delay (d), s/veh	38.0	72.6	0.0	53.5	0.0	42.3	35.3	0.0	0.0	21.4	0.0	0.0
Lane Grp LOS	D	F		D		D	D			C		
Approach Vol, veh/h		956			1006			196			154	
Approach Delay, s/veh		64.1			45.6			35.3			21.4	
Approach LOS		E			D			D			C	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	13.6	28.0		15.0	29.4			17.0			17.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	11.0	22.0		11.0	22.0			12.0			12.0	
Max Q Clear Time (g_c+I1), s	9.8	24.0		11.9	23.9			14.0			7.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0			0.0			0.6	
Intersection Summary												
HCM 2010 Ctrl Delay			50.8									
HCM 2010 LOS			D									
Notes												

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	27	3	643	76	5	899
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	3	684	81	5	956
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1652	686	0	0	685	0
Stage 1	685	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	108	447	-	-	908	-
Stage 1	500	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	107	446	-	-	907	-
Mov Capacity-2 Maneuver	107	-	-	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	46.9	0	0
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	107	446	907	-
HCM Control Delay, s	-	-	50.6	13.1	8.993	0
HCM Lane V/C Ratio	-	-	0.27	0.01	0.01	-
HCM Lane LOS	-	-	F	B	A	A
HCM 95th-tile Q, veh	-	-	1.0	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	43.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	5	103	65	15	76	29	595	17	22	731	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		Yield			None			None			Yield	
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	5	111	70	16	82	31	640	18	24	786	18
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1593	1553	786	1547	1544	649	786	0	0	658	0	0
Stage 1	833	833	-	711	711	-	-	-	-	-	-	-
Stage 2	760	720	-	836	833	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	86	113	392	78	97	453	833	-	-	930	-	-
Stage 1	363	384	-	392	403	-	-	-	-	-	-	-
Stage 2	398	432	-	329	350	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	58	106	392	# 51	91	453	833	-	-	930	-	-
Mov Capacity-2 Maneuver	58	106	-	# 51	91	-	-	-	-	-	-	-
Stage 1	349	374	-	377	388	-	-	-	-	-	-	-
Stage 2	301	416	-	227	341	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.7	$ 442.4	0.4	0.3
HCM LOS	D	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	833	-	-	138	392	97	930	-	-
HCM Control Delay, s	9.49	-	-	49	16.3	$ 442.4	8.972	-	-
HCM Lane V/C Ratio	0.04	-	-	0.42	0.19	1.73	0.03	-	-
HCM Lane LOS	A	-	-	E	C	F	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	1.9	0.7	13.5	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	46.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	125	0	22	36	0	72	4	672	10	21	712	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		Yield			None			None			Yield	
Storage Length	0		90	0		0	270		0	0		275
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.92	0.94	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	133	0	23	39	0	78	4	715	11	23	757	20
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1571	1537	757	1532	1532	720	757	0	0	726	0	0
Stage 1	803	803	-	729	729	-	-	-	-	-	-	-
Stage 2	768	734	-	803	803	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	# 90	116	408	95	117	428	854	-	-	877	-	-
Stage 1	377	396	-	414	428	-	-	-	-	-	-	-
Stage 2	394	426	-	377	396	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 71	110	408	86	111	428	854	-	-	877	-	-
Mov Capacity-2 Maneuver	# 71	110	-	86	111	-	-	-	-	-	-	-
Stage 1	375	378	-	412	426	-	-	-	-	-	-	-
Stage 2	320	424	-	339	378	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 491.7	53.8	0.1	0.3
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	854	-	-	74	408	184	877	-	-
HCM Control Delay, s	9.237	-	-	$ 53.8	14.2	53.8	9.215	0	-
HCM Lane V/C Ratio	0.01	-	-	1.90	0.04	0.64	0.03	-	-
HCM Lane LOS	A	-	-	F	B	F	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	12.6	0.1	3.7	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	774	111	306	694	4	251	40	229	5	22	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Cap, veh/h	38	697	592	319	998	6	414	54	435	75	288	183
Arrive On Green	0.02	0.38	0.00	0.18	0.53	0.53	0.28	0.28	0.00	0.28	0.28	0.28
Sat Flow, veh/h	1756	1844	1568	1792	1868	11	1224	194	1568	111	1035	660
Grp Volume(v), veh/h	31	933	0	369	0	841	350	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1792	0	1879	1418	0	1568	1806	0	0
Q Serve(g_s), s	1.6	34.0	0.0	16.0	0.0	34.0	23.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	34.0	0.0	16.0	0.0	34.0	25.0	0.0	0.0	2.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.86		1.00	0.12		0.37
Lane Grp Cap(c), veh/h	38	697	592	319	0	1004	468	0	435	546	0	0
V/C Ratio(X)	0.82	1.34	0.00	1.16	0.00	0.84	0.75	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	98	697	592	319	0	1004	468	0	435	546	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.9	28.0	0.0	37.0	0.0	17.7	109.1	0.0	0.0	24.2	0.0	0.0
Incr Delay (d2), s/veh	14.9	162.3	0.0	100.6	0.0	7.0	5.8	0.0	0.0	0.0	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 Back of Q (50%), veh/ln	0.8	45.9	0.0	15.9	0.0	15.7	0.8	0.0	0.0	0.9	0.0	0.0
Lane Grp Delay (d), s/veh	58.8	190.3	0.0	137.6	0.0	24.7	114.9	0.0	0.0	24.2	0.0	0.0
Lane Grp LOS	E	F		F		C	F			C		
Approach Vol, veh/h		964			1210			350			52	
Approach Delay, s/veh		186.0			59.1			114.9			24.2	
Approach LOS		F			E			F			C	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	5.9	40.0		20.0	54.1			30.0			30.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	5.0	34.0		16.0	45.0			25.0			25.0	
Max Q Clear Time (g_c+I1), s	3.6	36.0		18.0	36.0			27.0			4.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	8.4			0.0			1.6	
Intersection Summary												
HCM 2010 Ctrl Delay			113.5									
HCM 2010 LOS			F									
Notes												

Intersection	
Intersection Delay, s/veh	9.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	66	3	843	169	4	938
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	3	958	192	5	1066
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2034	959	0	0	959	0
Stage 1	959	-	-	-	-	-
Stage 2	1075	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 63	312	-	-	717	-
Stage 1	372	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 62	312	-	-	717	-
Mov Capacity-2 Maneuver	# 62	-	-	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	322	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	282.1	0	0
HCM LOS	F	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	62	312	717	-
HCM Control Delay, s	-	-	294.2	16.7	10.053	0
HCM Lane V/C Ratio	-	-	1.21	0.01	0.01	-
HCM Lane LOS	-	-	F	C	B	A
HCM 95th-tile Q, veh	-	-	6.2	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	45.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	95	52	0	51	129	628	87	89	779	23
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Yield	Yield	Yield	None	None	None	None	None	None	Yield	Yield	Yield
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	97	53	0	52	132	641	89	91	795	23
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1955	1974	798	1929	1929	688	797	0	0	732	0	0
Stage 1	979	979	-	950	950	-	-	-	-	-	-	-
Stage 2	976	995	-	979	979	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	48	62	386	# 40	54	430	825	-	-	873	-	-
Stage 1	301	328	-	281	305	-	-	-	-	-	-	-
Stage 2	302	323	-	270	294	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	34	46	385	# 24	40	429	824	-	-	872	-	-
Mov Capacity-2 Maneuver	34	46	-	# 24	40	-	-	-	-	-	-	-
Stage 1	252	293	-	236	256	-	-	-	-	-	-	-
Stage 2	223	271	-	181	263	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.4	$ 803.1	1.6	1
HCM LOS	C	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	824	-	-	146	385	45	872	-	-
HCM Control Delay, s	10.198	-	-	38.2	16.2	$ 803.1	9.608	-	-
HCM Lane V/C Ratio	0.16	-	-	0.26	0.17	2.34	0.10	-	-
HCM Lane LOS	B	-	-	E	C	F	A	-	-
HCM 95th-tile Q, veh	0.6	-	-	1.0	0.6	11.1	0.3	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	44	0	11	21	0	42	10	636	36	74	859	64
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Yield	Yield	Yield	None	None	None	None	None	None	Yield	Yield	Yield
Storage Length	0		90	0		0	270		0	0		275
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	0	12	23	0	46	11	691	39	80	934	70
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1850	1847	934	1828	1828	711	934	0	0	730	0	0
Stage 1	1095	1095	-	733	733	-	-	-	-	-	-	-
Stage 2	755	752	-	1095	1095	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	57	75	322	59	77	433	733	-	-	874	-	-
Stage 1	259	290	-	412	426	-	-	-	-	-	-	-
Stage 2	401	418	-	259	290	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 42	58	322	47	60	433	733	-	-	874	-	-
Mov Capacity-2 Maneuver	# 42	58	-	47	60	-	-	-	-	-	-	-
Stage 1	255	229	-	406	420	-	-	-	-	-	-	-
Stage 2	353	412	-	197	229	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	284.3	73.2	0.1	0.7
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	733	-	-	45	322	116	874	-	-
HCM Control Delay, s	9.985	-	-	$ 73.2	16.5	73.2	9.536	0	-
HCM Lane V/C Ratio	0.01	-	-	1.15	0.03	0.59	0.09	-	-
HCM Lane LOS	A	-	-	F	C	F	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	4.9	0.1	2.9	0.3	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	216	663	122	278	645	3	159	21	54	2	12	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	2	1	0	0	1	1	0	1	0
Cap, veh/h	273	882	750	354	795	3	298	28	359	48	36	347
Arrive On Green	0.16	0.48	0.00	0.10	0.42	0.42	0.23	0.23	0.00	0.23	0.23	0.23
Sat Flow, veh/h	1756	1844	1568	3476	1872	8	924	123	1568	5	158	1517
Grp Volume(v), veh/h	235	721	0	302	0	704	196	0	0	154	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1738	0	1880	1047	0	1568	1680	0	0
Q Serve(g_s), s	10.3	26.3	0.0	6.7	0.0	27.1	11.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.3	26.3	0.0	6.7	0.0	27.1	18.0	0.0	0.0	6.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.88		1.00	0.01		0.90
Lane Grp Cap(c), veh/h	273	882	750	354	0	799	326	0	359	431	0	0
V/C Ratio(X)	0.86	0.82	0.00	0.85	0.00	0.88	0.60	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	290	915	778	354	0	813	326	0	359	431	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.4	17.6	0.0	34.7	0.0	20.8	64.2	0.0	0.0	25.8	0.0	0.0
Incr Delay (d2), s/veh	20.1	6.5	0.0	17.2	0.0	11.8	2.2	0.0	0.0	0.2	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 Back of Q (50%), veh/ln	5.8	12.4	0.0	3.7	0.0	14.1	0.2	0.0	0.0	2.5	0.0	0.0
Lane Grp Delay (d), s/veh	52.5	24.1	0.0	51.9	0.0	32.6	66.4	0.0	0.0	26.0	0.0	0.0
Lane Grp LOS	D	C		D		C	E			C		
Approach Vol, veh/h		956			1006			196			154	
Approach Delay, s/veh		31.1			38.4			66.4			26.0	
Approach LOS		C			D			E			C	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	16.2	43.6		12.0	39.4			23.0			23.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	13.0	39.0		8.0	34.0			18.0			18.0	
Max Q Clear Time (g_c+I1), s	12.3	28.3		8.7	29.1			20.0			8.4	
Green Ext Time (p_c), s	0.0	8.8		0.0	4.3			0.0			1.0	

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	27	3	643	76	5	899
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	0	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	3	684	81	5	956
Number of Lanes	1	1	1	1	0	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	1652	686	0	0	685	0
Stage 1	685	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	108	447	-	-	908	-
Stage 1	500	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	107	446	-	-	907	-
Mov Capacity-2 Maneuver	240	-	-	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	0
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	240	446	907	-
HCM Control Delay, s	-	-	22	13.1	8.993	0
HCM Lane V/C Ratio	-	-	0.12	0.01	0.01	-
HCM Lane LOS	-	-	C	B	A	A
HCM 95th-tile Q, veh	-	-	0.4	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	5	103	65	15	76	29	595	17	22	731	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	184.4	184.4	184.4	184.4	184.4	184.4	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	288	73	262	197	48	133	49	1005	28	40	1039	883
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.17	0.03	0.56	0.56	0.02	0.56	0.00
Sat Flow, veh/h	945	440	1583	555	290	805	1756	1785	50	1774	1863	1583
Grp Volume(v), veh/h	21	0	0	168	0	0	31	0	658	24	786	0
Grp Sat Flow(s),veh/h/ln	1385	0	1583	1650	0	0	1756	0	1835	1774	1863	1583
Q Serve(g_s), s	3.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	11.8	0.6	15.6	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	4.5	0.0	0.0	0.8	0.0	11.8	0.6	15.6	0.0
Prop In Lane	0.76		1.00	0.42		0.49	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	361	0	262	379	0	0	49	0	1034	40	1039	883
V/C Ratio(X)	0.06	0.00	0.00	0.44	0.00	0.00	0.63	0.00	0.64	0.59	0.76	0.00
Avail Cap(c_a), veh/h	361	0	262	379	0	0	145	0	1368	147	1388	1180
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.66	71088.63	0.06	71088.66	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	0.0	0.0	18.7	0.0	0.0	23.2	0.0	7.2	23.4	8.2	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	12.3	0.0	0.7	13.1	1.7	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 Back of Q (50%), veh/ln	0.2	0.0	0.0	1.8	0.0	0.0	0.5	0.0	3.8	0.4	5.3	0.0
Lane Grp Delay (d), s/veh	17.2	0.0	0.0	19.5	0.0	0.0	35.5	0.0	7.8	36.5	9.9	0.0
Lane Grp LOS	B			B			D		A	D	A	
Approach Vol, veh/h		21			168			689			810	
Approach Delay, s/veh		17.2			19.5			9.1			10.7	
Approach LOS		B			B			A			B	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		12.0			12.0		5.4	31.2		5.1	31.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		8.0			8.0		4.0	36.0		4.0	36.0	
Max Q Clear Time (g_c+I1), s		10.0			6.5		2.8	13.8		2.6	17.6	
Green Ext Time (p_c), s		0.0			0.1		0.0	10.4		0.0	9.4	

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	125	0	22	36	0	72	4	672	10	21	712	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	400	0	280	180	32	212	8	979	15	39	1030	875
Arrive On Green	0.18	0.00	0.00	0.18	0.00	0.18	0.00	0.53	0.53	0.02	0.55	0.00
Sat Flow, veh/h	1359	0	1583	417	182	1199	1774	1830	28	1774	1863	1583
Grp Volume(v), veh/h	133	0	0	117	0	0	4	0	726	23	757	0
Grp Sat Flow(s),veh/h/ln	1359	0	1583	1798	0	0	1774	0	1858	1774	1863	1583
Q Serve(g_s), s	5.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	13.5	0.6	13.8	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	2.8	0.0	0.0	0.1	0.0	13.5	0.6	13.8	0.0
Prop In Lane	1.00		1.00	0.33		0.67	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	400	0	280	425	0	0	8	0	994	39	1030	875
V/C Ratio(X)	0.33	0.00	0.00	0.28	0.00	0.00	0.52	0.00	0.73	0.58	0.74	0.00
Avail Cap(c_a), veh/h	400	0	280	425	0	0	157	0	1275	157	1279	1087
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.63	71088.63	0.06	71088.63	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	16.4	0.0	0.0	22.4	0.0	8.0	21.9	7.6	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.3	0.0	0.0	45.3	0.0	1.6	13.0	1.7	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 Back of Q (50%), veh/ln	1.4	0.0	0.0	1.1	0.0	0.0	0.1	0.0	4.7	0.4	4.7	0.0
Lane Grp Delay (d), s/veh	18.7	0.0	0.0	16.8	0.0	0.0	67.7	0.0	9.6	34.8	9.3	0.0
Lane Grp LOS	B			B			E		A	C	A	
Approach Vol, veh/h		133			117			730			780	
Approach Delay, s/veh		18.7			16.8			9.9			10.1	
Approach LOS		B			B			A			B	
Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		12.0			12.0		4.2	28.2		5.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		8.0			8.0		4.0	31.0		4.0	31.0	
Max Q Clear Time (g_c+I1), s		10.0			4.8		2.1	15.5		2.6	15.8	
Green Ext Time (p_c), s		0.0			0.4		0.0	8.7		0.0	8.6	
Intersection Summary												
HCM 2010 Ctrl Delay			11.1									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	774	111	306	694	4	251	40	229	5	22	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Adj Sat Flow veh/h/ln	184.4	184.4	184.4	188.1	188.1	188.1	184.4	184.4	184.4	188.1	188.1	188.1
Lanes	1	1	1	2	1	0	0	1	1	0	1	0
Cap, veh/h	39	936	796	374	1108	7	372	51	422	66	275	178
Arrive On Green	0.02	0.51	0.00	0.11	0.59	0.59	0.27	0.27	0.00	0.27	0.27	0.27
Sat Flow, veh/h	1756	1844	1568	3476	1868	11	1191	189	1568	131	1020	663
Grp Volume(v), veh/h	31	933	0	369	0	841	350	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	1756	1844	1568	1738	0	1879	1380	0	1568	1814	0	0
Q Serve(g_s), s	2.3	65.5	0.0	13.8	0.0	42.8	32.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	65.5	0.0	13.8	0.0	42.8	35.0	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.86		1.00	0.12		0.37
Lane Grp Cap(c), veh/h	39	936	796	374	0	1115	423	0	422	519	0	0
V/C Ratio(X)	0.80	1.00	0.00	0.99	0.00	0.75	0.83	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	54	936	796	374	0	1115	423	0	422	519	0	0
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	63.3	31.9	0.0	57.9	0.0	19.5	173.6	0.0	0.0	35.8	0.0	0.0
Incr Delay (d2), s/veh	29.3	28.5	0.0	42.5	0.0	3.5	12.0	0.0	0.0	0.0	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 Back of Q (50%), veh/ln	1.4	36.2	0.0	8.3	0.0	19.6	1.4	0.0	0.0	1.3	0.0	0.0
Lane Grp Delay (d), s/veh	92.6	60.4	0.0	100.4	0.0	23.0	185.6	0.0	0.0	35.8	0.0	0.0
Lane Grp LOS	F	E		F		C	F			D		
Approach Vol, veh/h		964			1210			350			52	
Approach Delay, s/veh		61.5			46.6			185.6			35.8	
Approach LOS		E			D			F			D	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	6.9	72.0		18.0	83.1			40.0			40.0	
Change Period (Y+Rc), s	4.0	6.0		4.0	6.0			5.0			5.0	
Max Green Setting (Gmax), s	4.0	66.0		14.0	76.0			35.0			35.0	
Max Q Clear Time (g_c+I1), s	4.3	67.5		15.8	44.8			37.0			4.9	
Green Ext Time (p_c), s	0.0	0.0		0.0	25.9			0.0			1.7	
Intersection Summary												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			E									
Notes												

Intersection	
Intersection Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	66	3	843	169	4	938
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Yield	Yield	Free	Free	None	None
Storage Length	0	50		180	100	
Median Width	12		12			12
Grade, %	0%		4%			-4%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	3	958	192	5	1066
Number of Lanes	1	1	1	1	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2034	959	0	0	959	0
Stage 1	959	-	-	-	-	-
Stage 2	1075	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 63	312	-	-	717	-
Stage 1	372	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 63	312	-	-	717	-
Mov Capacity-2 Maneuver	187	-	-	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	326	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.7	0	0
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	187	312	717	-
HCM Control Delay, s	-	-	36.6	16.7	10.053	-
HCM Lane V/C Ratio	-	-	0.40	0.01	0.01	-
HCM Lane LOS	-	-	E	C	B	-
HCM 95th-tile Q, veh	-	-	1.8	0.0	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	0	95	52	0	51	129	628	87	89	779	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		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
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	184.4	184.4	184.4	184.4	184.4	184.4	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	271	0	116	188	0	67	169	946	131	115	1053	895
Arrive On Green	0.07	0.00	0.00	0.07	0.00	0.07	0.10	0.60	0.60	0.06	0.57	0.00
Sat Flow, veh/h	1524	0	1583	931	0	913	1756	1585	220	1774	1863	1583
Grp Volume(v), veh/h	6	0	0	105	0	0	132	0	730	91	795	0
Grp Sat Flow(s),veh/h/ln	1524	0	1583	1844	0	0	1756	0	1805	1774	1863	1583
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	3.3	0.0	12.4	2.3	14.6	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.5	0.0	0.0	3.3	0.0	12.4	2.3	14.6	0.0
Prop In Lane	1.00		1.00	0.50		0.50	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	271	0	116	255	0	0	169	0	1077	115	1053	895
V/C Ratio(X)	0.02	0.00	0.00	0.41	0.00	0.00	0.78	0.00	0.68	0.79	0.75	0.00
Avail Cap(c_a), veh/h	271	0	140	277	0	0	272	0	1356	196	1317	1119
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.63	71088.63	0.06	71088.63	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.5	0.0	0.0	20.6	0.0	0.0	20.0	0.0	6.2	20.9	7.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.1	0.0	0.0	7.7	0.0	1.0	11.5	2.0	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 Back of Q (50%), veh/ln	0.1	0.0	0.0	1.2	0.0	0.0	1.6	0.0	3.5	1.3	4.8	0.0
Lane Grp Delay (d), s/veh	19.5	0.0	0.0	21.7	0.0	0.0	27.7	0.0	7.1	32.4	9.4	0.0
Lane Grp LOS	B			C			C		A	C	A	
Approach Vol, veh/h		6			105			862			886	
Approach Delay, s/veh		19.5			21.7			10.3			11.8	
Approach LOS		B			C			B			B	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		7.3			7.3		8.4	31.0		6.9	29.6	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		4.0			4.0		7.0	34.0		5.0	32.0	
Max Q Clear Time (g_c+I1), s		5.3			4.5		5.3	14.4		4.3	16.6	
Green Ext Time (p_c), s		0.0			0.0		0.0	10.4		0.0	8.9	

Intersection Summary		
HCM 2010 Ctrl Delay	11.7	
HCM 2010 LOS	B	

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	0	11	21	0	42	10	636	36	74	859	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	284	0	133	145	8	103	20	1059	60	101	1214	1032
Arrive On Green	0.08	0.00	0.00	0.08	0.00	0.08	0.01	0.61	0.61	0.06	0.65	0.00
Sat Flow, veh/h	1576	0	1583	518	92	1220	1774	1747	99	1774	1863	1583
Grp Volume(v), veh/h	48	0	0	69	0	0	11	0	730	80	934	0
Grp Sat Flow(s),veh/h/ln	1576	0	1583	1830	0	0	1774	0	1845	1774	1863	1583
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	12.2	2.1	16.6	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	1.7	0.0	0.0	0.3	0.0	12.2	2.1	16.6	0.0
Prop In Lane	1.00		1.00	0.33		0.67	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	284	0	133	255	0	0	20	0	1119	101	1214	1032
V/C Ratio(X)	0.17	0.00	0.00	0.27	0.00	0.00	0.55	0.00	0.65	0.79	0.77	0.00
Avail Cap(c_a), veh/h	284	0	133	255	0	0	149	0	1437	261	1568	1333
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.63	71088.63	0.06	71088.63	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.5	0.0	0.0	20.7	0.0	0.0	23.4	0.0	6.1	22.1	5.8	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.6	0.0	0.0	20.9	0.0	0.7	12.8	1.8	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 Back of Q (50%), veh/ln	0.5	0.0	0.0	0.8	0.0	0.0	0.2	0.0	3.5	1.2	4.8	0.0
Lane Grp Delay (d), s/veh	20.8	0.0	0.0	21.3	0.0	0.0	44.3	0.0	6.8	35.0	7.6	0.0
Lane Grp LOS	C			C			D		A	C	A	
Approach Vol, veh/h		48			69			741			1014	
Approach Delay, s/veh		20.8			21.3			7.3			9.7	
Approach LOS		C			C			A			A	
Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		8.0			8.0		4.5	32.8		6.7	35.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		4.0			4.0		4.0	37.0		7.0	40.0	
Max Q Clear Time (g_c+I1), s		6.0			3.7		2.3	14.2		4.1	18.6	
Green Ext Time (p_c), s		0.0			0.0		0.0	12.8		0.0	12.3	
Intersection Summary												
HCM 2010 Ctrl Delay			9.5									
HCM 2010 LOS			A									
Notes												

Appendix F

Intersection
Level of Service
Calculations

Future with Project Phases 1 and 2
Traffic Conditions

Intersection	
Intersection Delay, s/veh	28

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	5	101	59	14	105	29	537	16	31	646	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		Yield			None			None			Yield	
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	5	109	63	15	113	31	577	17	33	695	10
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1473	1418	695	1412	1409	586	695	0	0	595	0	0
Stage 1	761	761	-	648	648	-	-	-	-	-	-	-
Stage 2	712	657	-	764	761	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	105	137	442	99	118	494	901	-	-	981	-	-
Stage 1	398	414	-	427	434	-	-	-	-	-	-	-
Stage 2	423	462	-	364	380	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	69	128	442	69	110	494	901	-	-	981	-	-
Mov Capacity-2 Maneuver	69	128	-	69	110	-	-	-	-	-	-	-
Stage 1	384	400	-	412	419	-	-	-	-	-	-	-
Stage 2	304	446	-	262	367	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.2	227.6	0.5	0.4
HCM LOS	C	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	901	-	-	175	442	149	981	-	-
HCM Control Delay, s	9.139	-	-	34.6	14.7	227.6	8.799	-	-
HCM Lane V/C Ratio	0.04	-	-	0.31	0.16	1.28	0.03	-	-
HCM Lane LOS	A	-	-	D	B	F	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	1.3	0.6	11.5	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	34

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	93	49	0	66	126	545	81	119	695	23
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Yield	Yield	Yield	None	None	None	None	None	None	Yield	Yield	Yield
Storage Length	0		50	0		0	110		0	50		100
Median Width		0			0			12			12	
Grade, %		0%			2%			2%			0%	
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	95	50	0	67	129	556	83	121	709	23
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1844	1852	712	1811	1811	600	711	0	0	641	0	0
Stage 1	954	954	-	857	857	-	-	-	-	-	-	-
Stage 2	890	898	-	954	954	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	58	74	432	50	64	484	888	-	-	943	-	-
Stage 1	311	337	-	320	340	-	-	-	-	-	-	-
Stage 2	337	358	-	280	303	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	40	55	431	# 31	48	483	887	-	-	942	-	-
Mov Capacity-2 Maneuver	40	55	-	# 31	48	-	-	-	-	-	-	-
Stage 1	265	293	-	273	290	-	-	-	-	-	-	-
Stage 2	248	305	-	190	264	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.5	$ 494.1	1.6	1.3
HCM LOS	C	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Cap, veh/h	887	-	-	167	431	67	942	-	-
HCM Control Delay, s	9.745	-	-	32.7	14.8	$ 494.1	9.386	-	-
HCM Lane V/C Ratio	0.14	-	-	0.23	0.15	1.75	0.13	-	-
HCM Lane LOS	A	-	-	D	B	F	A	-	-
HCM 95th-tile Q, veh	0.5	-	-	0.8	0.5	10.5	0.4	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	5	101	59	14	105	29	537	16	31	646	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	184.4	184.4	184.4	184.4	184.4	184.4	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	302	94	291	187	48	180	50	909	27	54	953	810
Arrive On Green	0.18	0.18	0.00	0.18	0.18	0.18	0.03	0.51	0.51	0.03	0.51	0.00
Sat Flow, veh/h	867	512	1583	416	259	979	1756	1782	53	1774	1863	1583
Grp Volume(v), veh/h	18	0	0	191	0	0	31	0	594	33	695	0
Grp Sat Flow(s),veh/h/ln	1379	0	1583	1654	0	0	1756	0	1835	1774	1863	1583
Q Serve(g_s), s	3.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	10.2	0.8	12.6	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	4.6	0.0	0.0	0.8	0.0	10.2	0.8	12.6	0.0
Prop In Lane	0.72		1.00	0.33		0.59	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	396	0	291	414	0	0	50	0	936	54	953	810
V/C Ratio(X)	0.05	0.00	0.00	0.46	0.00	0.00	0.61	0.00	0.63	0.62	0.73	0.00
Avail Cap(c_a), veh/h	396	0	291	414	0	0	162	0	1265	204	1327	1128
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.63	71088.63	0.06	71088.63	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.8	0.0	0.0	16.4	0.0	0.0	20.9	0.0	7.7	20.8	8.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	11.5	0.0	0.7	10.9	1.3	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 Back of Q (50%), veh/ln	0.2	0.0	0.0	1.8	0.0	0.0	0.5	0.0	3.3	0.5	4.2	0.0
Lane Grp Delay (d), s/veh	14.8	0.0	0.0	17.2	0.0	0.0	32.4	0.0	8.4	31.7	9.6	0.0
Lane Grp LOS	B			B			C		A	C	A	
Approach Vol, veh/h		18			191			625			728	
Approach Delay, s/veh		14.8			17.2			9.6			10.6	
Approach LOS		B			B			A			B	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		12.0			12.0		5.2	26.2		5.3	26.2	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		8.0			8.0		4.0	30.0		5.0	31.0	
Max Q Clear Time (g_c+I1), s		10.0			6.6		2.8	12.2		2.8	14.6	
Green Ext Time (p_c), s		0.0			0.2		0.0	8.0		0.0	7.6	

Intersection Summary			
HCM 2010 Ctrl Delay		11.0	
HCM 2010 LOS		B	

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	0	93	49	0	66	126	545	81	119	695	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		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
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	184.4	184.4	184.4	184.4	184.4	184.4	186.3	186.3	186.3
Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Cap, veh/h	320	0	155	199	3	103	165	819	122	155	960	816
Arrive On Green	0.10	0.00	0.00	0.10	0.00	0.10	0.09	0.52	0.52	0.09	0.52	0.00
Sat Flow, veh/h	1475	0	1583	751	33	1051	1756	1568	234	1774	1863	1583
Grp Volume(v), veh/h	6	0	0	117	0	0	129	0	639	121	709	0
Grp Sat Flow(s),veh/h/ln	1475	0	1583	1836	0	0	1756	0	1803	1774	1863	1583
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	2.9	0.0	10.8	2.7	12.2	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	2.5	0.0	0.0	2.9	0.0	10.8	2.7	12.2	0.0
Prop In Lane	1.00		1.00	0.43		0.57	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	320	0	155	305	0	0	165	0	941	155	960	816
V/C Ratio(X)	0.02	0.00	0.00	0.38	0.00	0.00	0.78	0.00	0.68	0.78	0.74	0.00
Avail Cap(c_a), veh/h	320	0	155	305	0	0	300	0	1188	303	1228	1044
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.06	71088.63	71088.63	0.06	71088.63	71088.63
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.8	0.0	0.0	17.8	0.0	0.0	18.2	0.0	7.3	18.3	7.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	7.8	0.0	1.1	8.2	1.8	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 Back of Q (50%), veh/ln	0.1	0.0	0.0	1.1	0.0	0.0	1.5	0.0	3.3	1.4	3.8	0.0
Lane Grp Delay (d), s/veh	16.8	0.0	0.0	18.6	0.0	0.0	26.0	0.0	8.4	26.5	9.5	0.0
Lane Grp LOS	B			B			C		A	C	A	
Approach Vol, veh/h		6			117			768			830	
Approach Delay, s/veh		16.8			18.6			11.3			12.0	
Approach LOS		B			B			B			B	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		8.0			8.0		7.8	25.4		7.6	25.1	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		4.0			4.0		7.0	27.0		7.0	27.0	
Max Q Clear Time (g_c+I1), s		6.0			4.5		4.9	12.8		4.7	14.2	
Green Ext Time (p_c), s		0.0			0.0		0.1	7.4		0.1	6.9	

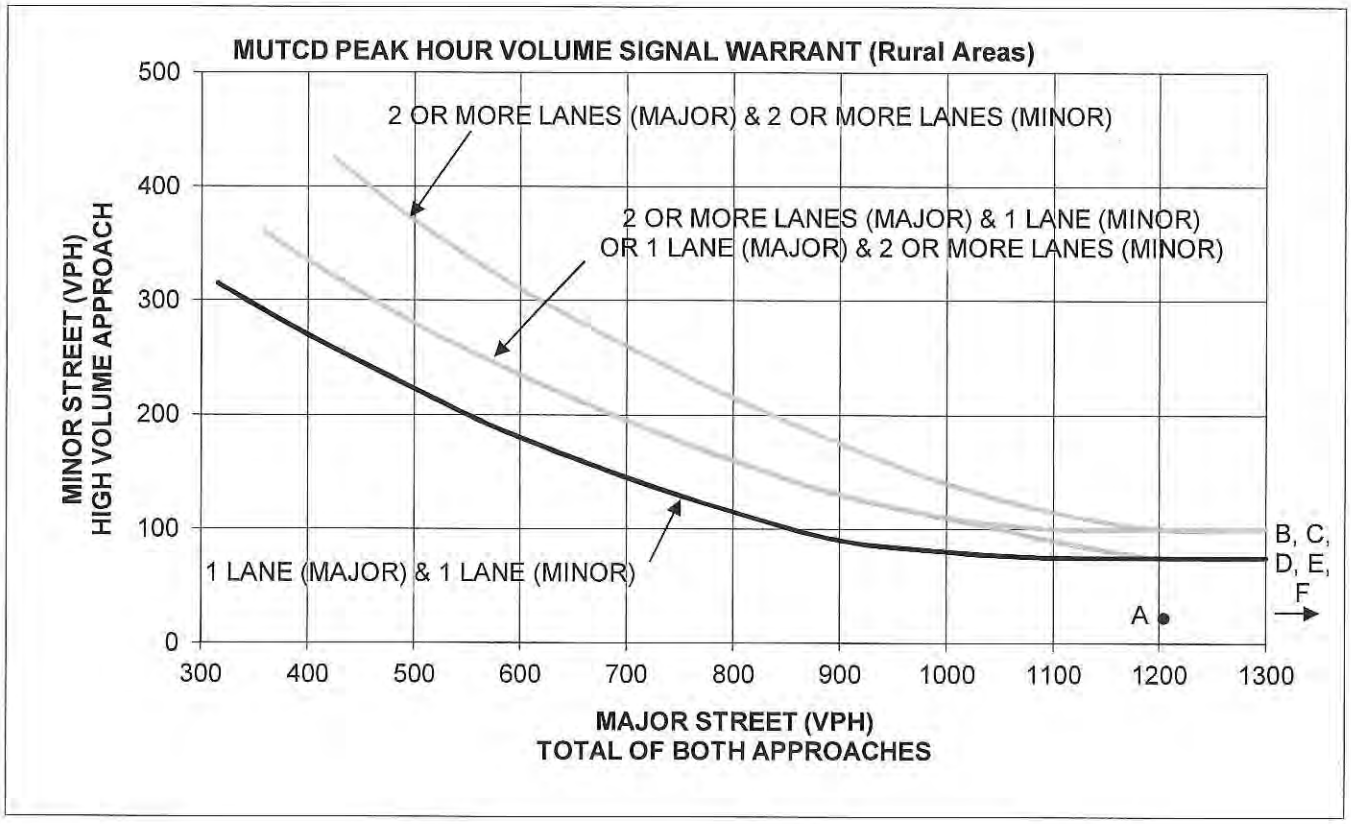
Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

Appendix G

Signal Warrant
Worksheets

Warrant 3A - Peak-Hour Warrant



Scenario	Kaumualii North/South	Halewili East/West	Warrant Met?
A. Existing AM	1204	23	No
B. Existing PM	1421	54	No
C. FutureNoPro AM	1513	30	No
D. FutureNoPro PM	1787	69	No
E. FutureYesPro AM	1623	30	No
F. FutureYesPro PM	1954	69	No

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3 (Part B) - Peak Hour Delay
Kaumualii Highway (Route 50) / Halewili Road (Route 540)

Number of Approaches to Intersection: 3 approaches **Minimum Entering Vehicles:** **650**

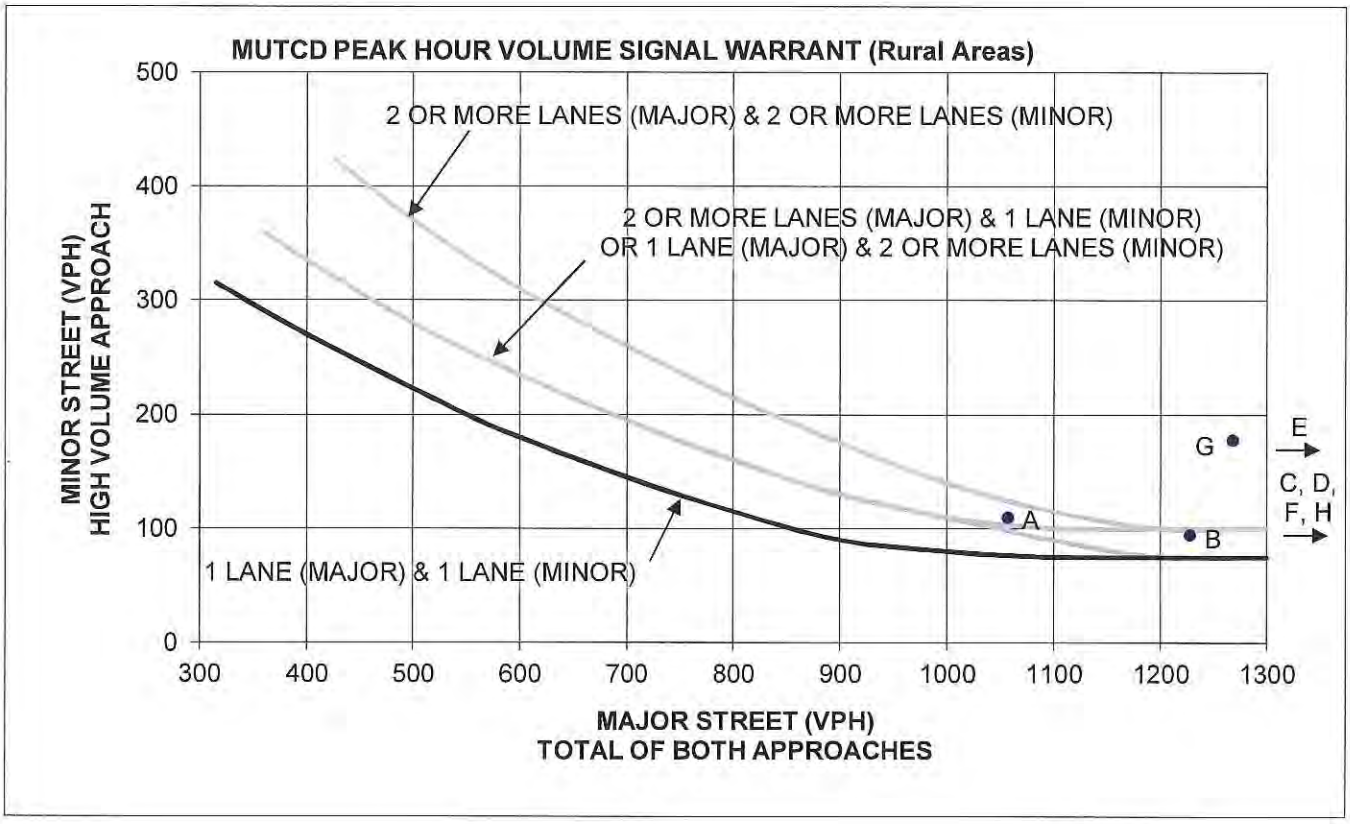
Total Entering Volumes:

Existing AM:	1227 vehicles
Existing PM:	1475 vehicles
FutureNoPro AM:	1543 vehicles
FutureNoPro PM:	1856 vehicles
FutureYesPro AM:	1653 vehicles
FutureYesPro PM:	2023 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 650 Veh? (Intersection)	Warrant Met?
Halewili	WB	Existing	AM	23	24.5	564	0.16	NO	NO	Yes	**NO**
Halewili	WB	Existing	PM	55	47.5	2613	0.73	NO	NO	Yes	**NO**
Halewili	WB	FutureNoPro	AM	30	38.6	1158	0.32	NO	NO	Yes	**NO**
Halewili	WB	FutureNoPro	PM	69	163.2	11261	3.13	NO	NO	Yes	**NO**
Halewili	WB	FutureYesPro	AM	30	46.9	1407	0.39	NO	NO	Yes	**NO**
Halewili	WB	FutureYesPro	PM	69	282.1	19465	5.41	Yes	NO	Yes	**NO**

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.

Warrant 3A - Peak-Hour Warrant



Scenario	Kaumualii North/South	Laulea-Mahea East/West	Warrant Met?
A. Existing AM	1057	110	Yes
B. Existing PM	1227	95	Yes
C. FutureNoPro AM	1341	117	Yes
D. FutureNoPro PM	1569	101	Yes
E. FutureYesPro AM	1411	156	Yes
F. FutureYesPro PM	1735	103	Yes
G. FutYesProP1-2 AM	1268	178	Yes
H. FutYesProP1-2 PM	1589	115	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3 (Part B) - Peak Hour Delay
Kaumualii Highway (Route 50) / Laulea Street (South) - Mahea Road

Number of Approaches to Intersection: 4 approaches **Minimum Entering Vehicles:** **800**

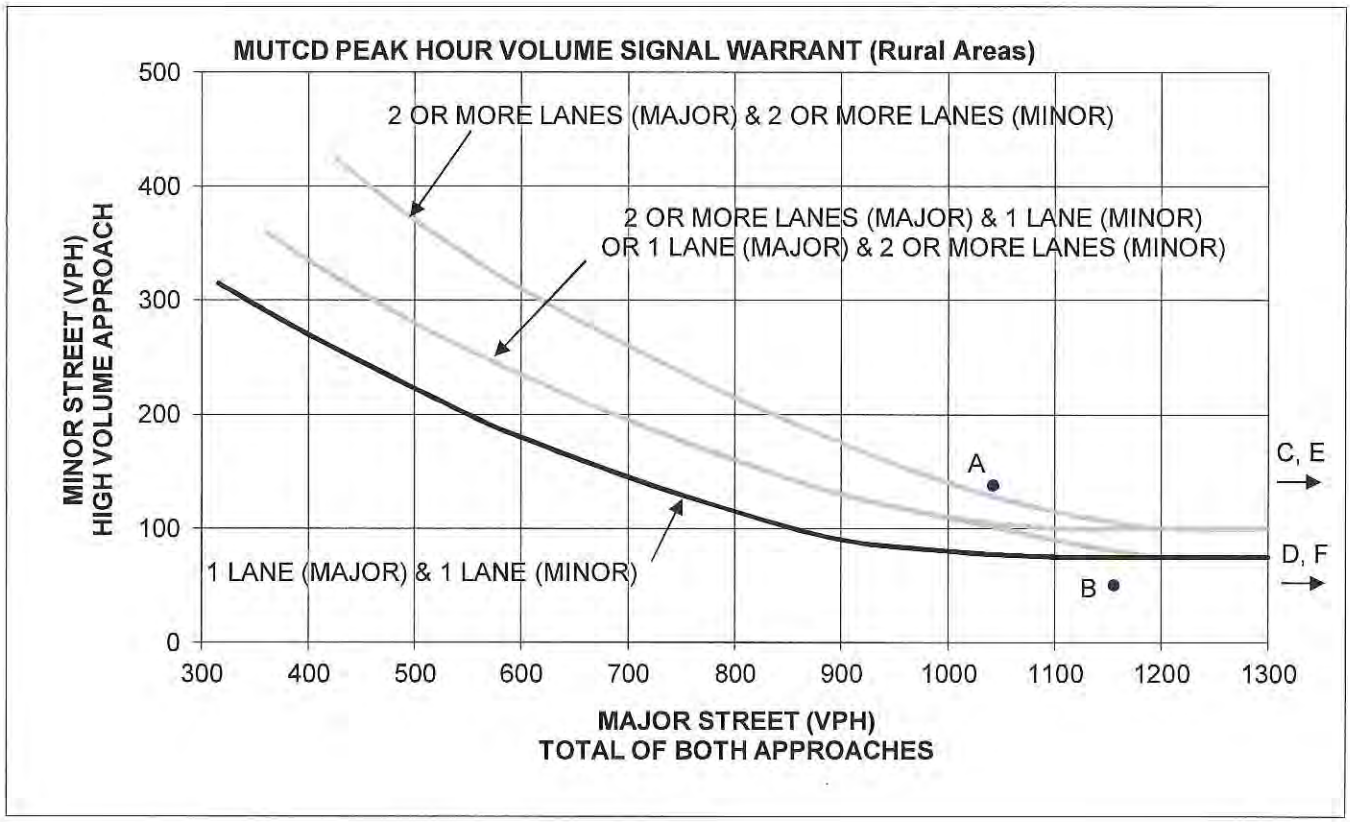
Total Entering Volumes:

Existing AM:	1176 vehicles
Existing PM:	1330 vehicles
FutureNoPro AM:	1507 vehicles
FutureNoPro PM:	1711 vehicles
FutureYesPro AM:	1690 vehicles
FutureYesPro PM:	1939 vehicles
FutYesProP1-2 AM:	1564 vehicles
FutYesProP1-2 PM:	1803 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 800 Veh? (Intersection)	Warrant Met?
Laulea (S)	EB	Existing	AM	110	15.4	1694	0.47	NO	Yes	Yes	**NO**
Mahea	WB	Existing	AM	9	22.0	198	0.06	NO	NO	Yes	**NO**
Laulea (S)	EB	Existing	PM	95	15.1	1435	0.40	NO	NO	Yes	**NO**
Mahea	WB	Existing	PM	8	43.8	350	0.10	NO	NO	Yes	**NO**
Laulea (S)	EB	FutureNoPro	AM	117	21.3	2492	0.69	NO	Yes	Yes	**NO**
Mahea	WB	FutureNoPro	AM	49	26.7	1308	0.36	NO	NO	Yes	**NO**
Laulea (S)	EB	FutureNoPro	PM	101	20.6	2081	0.58	NO	Yes	Yes	**NO**
Mahea	WB	FutureNoPro	PM	41	59.6	2444	0.68	NO	NO	Yes	**NO**
Laulea (S)	EB	FutureYesPro	AM	123	30.7	3776	1.05	NO	Yes	Yes	**NO**
Mahea	WB	FutureYesPro	AM	156	442.4	69014	19.17	Yes	Yes	Yes	**Yes**
Laulea (S)	EB	FutureYesPro	PM	101	24.4	2464	0.68	NO	Yes	Yes	**NO**
Mahea	WB	FutureYesPro	PM	103	803.1	82719	22.98	Yes	Yes	Yes	**Yes**
Laulea (S)	EB	FutYesProP1-2	AM	118	23.2	2738	0.76	NO	Yes	Yes	**NO**
Mahea	WB	FutYesProP1-2	AM	178	227.6	40513	11.25	Yes	Yes	Yes	**Yes**
Laulea (S)	EB	FutYesProP1-2	PM	99	21.5	2129	0.59	NO	NO	Yes	**NO**
Mahea	WB	FutYesProP1-2	PM	115	494.1	56822	15.78	Yes	Yes	Yes	**Yes**

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.

Warrant 3A - Peak-Hour Warrant



Scenario	Kaumualii North/South	Laulea (N) East/West	Warrant Met?
A. Existing AM	1042	138	Yes
B. Existing PM	1155	51	No
C. FutureNoPro AM	1361	147	Yes
D. FutureNoPro PM	1466	55	No
E. FutureYesPro AM	1438	147	Yes
F. FutureYesPro PM	1679	63	No

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3 (Part B) - Peak Hour Delay
Kaumualii Highway (Route 50) / Laulea Street (North)

Number of Approaches to Intersection: 3 approaches **Minimum Entering Vehicles:** **650**

Total Entering Volumes:

Existing AM:	1180 vehicles
Existing PM:	1206 vehicles
FutureNoPro AM:	1508 vehicles
FutureNoPro PM:	1521 vehicles
FutureYesPro AM:	1693 vehicles
FutureYesPro PM:	1797 vehicles

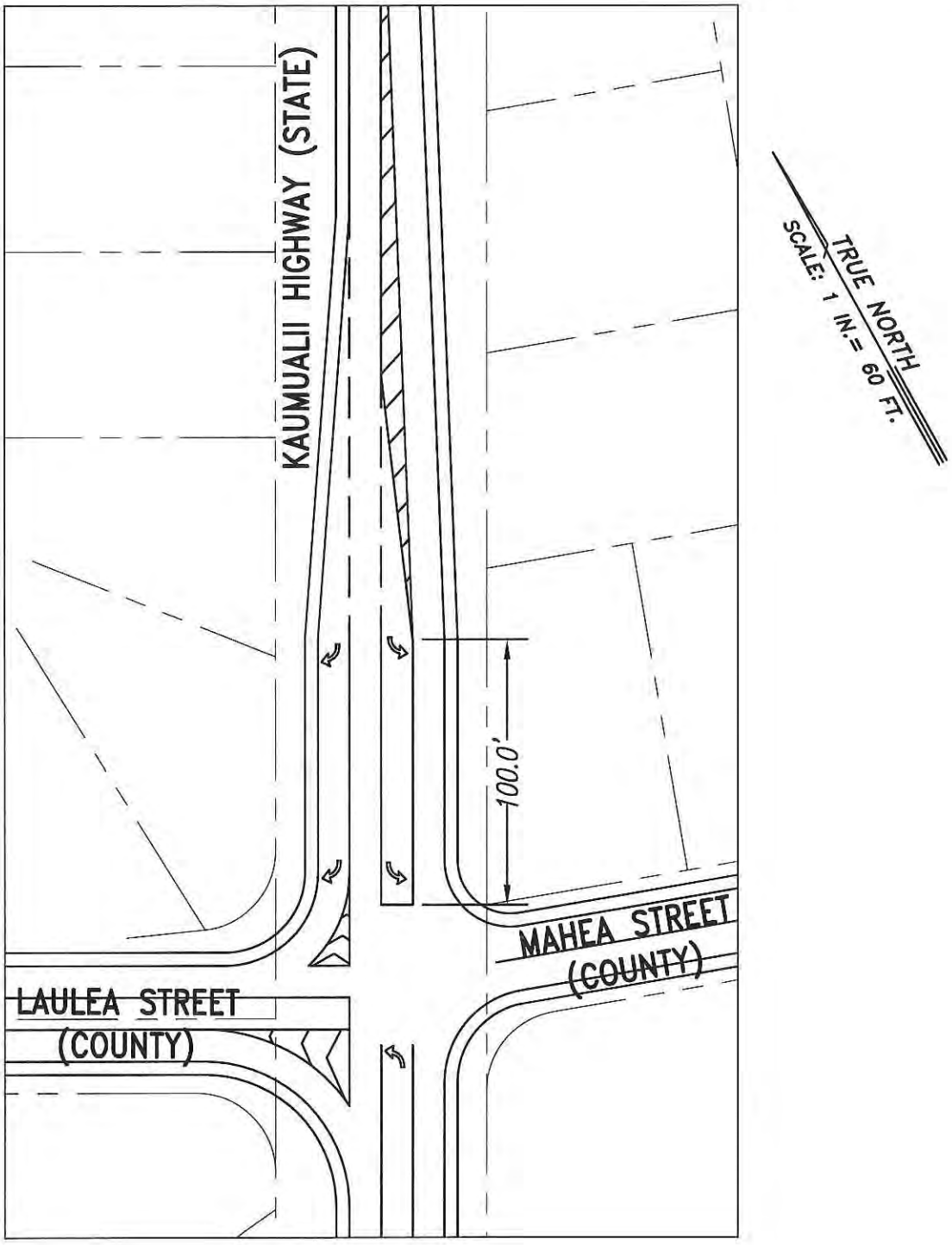
Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 650 Veh? (Intersection)	Warrant Met?
Laulea (N)	EB	Existing	AM	138	18.4	2539	0.71	NO	Yes	Yes	**NO**
Laulea (N)	EB	Existing	PM	51	16.4	836	0.23	NO	NO	Yes	**NO**
Laulea (N)	EB	FutureNoPro	AM	147	25.8	3793	1.05	NO	Yes	Yes	**NO**
Laulea (N)	EB	FutureNoPro	PM	55	21.1	1161	0.32	NO	NO	Yes	**NO**
Laulea (N)	EB	FutureYesPro	AM	147	491.7	72280	20.08	Yes	Yes	Yes	**Yes**
Laulea (N)	WB	FutureYesPro	AM	108	53.8	5810	1.61	NO	Yes	Yes	**NO**
Laulea (N)	EB	FutureYesPro	PM	55	284.3	15637	4.34	Yes	NO	Yes	**NO**
Laulea (N)	WB	FutureYesPro	PM	63	73.2	4612	1.28	NO	NO	Yes	**NO**

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.

Appendix H

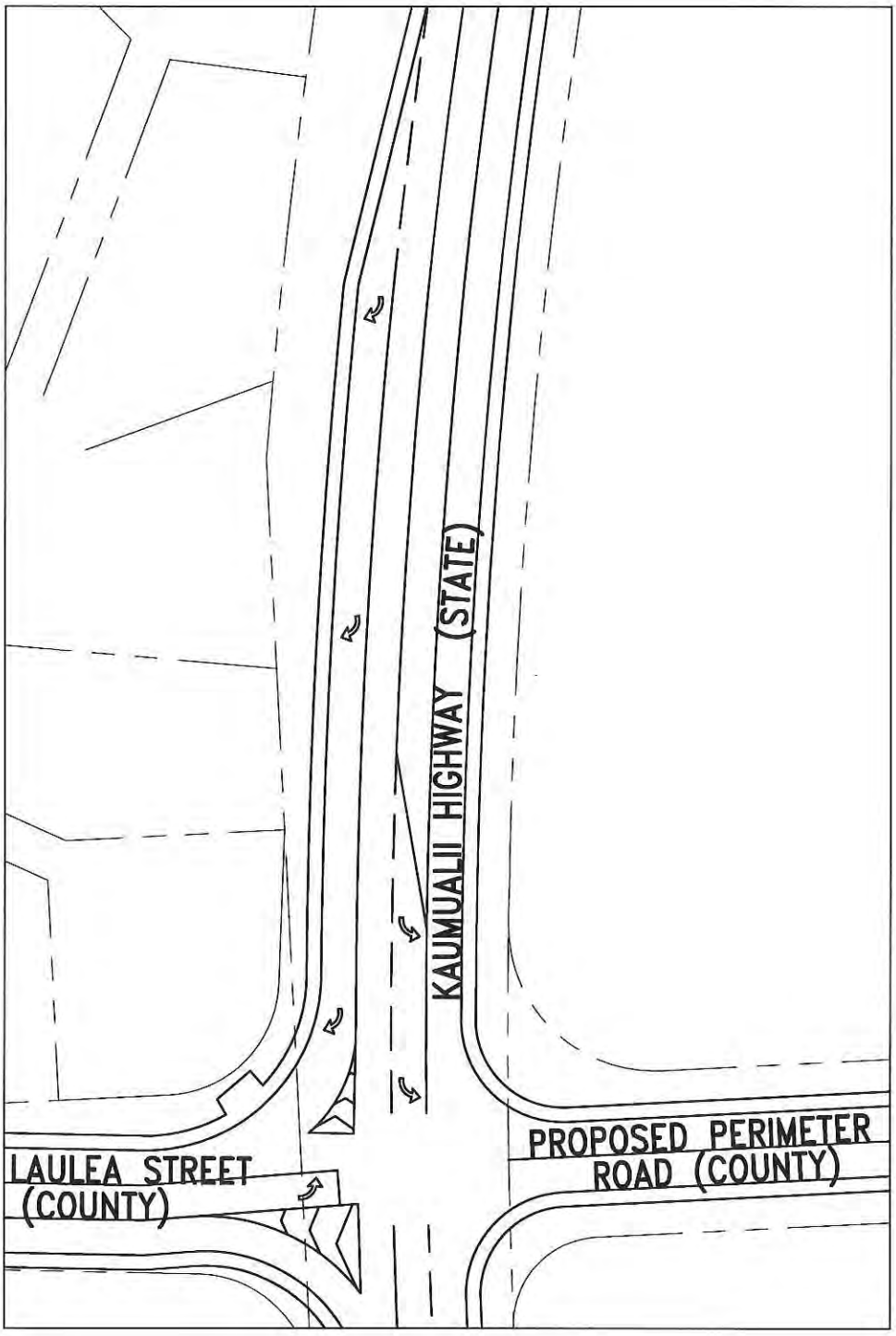
Conceptual Improvement
Drawing

Southbound Kaumualii Highway (Route 50)
Left Turn Lane Extension



KAUMUALII HIGHWAY (ROUTE 50) / LAULEA STREET (SOUTH) - MAHEA ROAD

SCALE 1:60



KAUMUALII HIGHWAY (ROUTE 50) / LAULEA STREET (NORTH)

SCALE 1:60

Appendix I

Traffic/Pedestrian Signalization Options for Lima Ola Workforce HousingDevelopment,
Community Planning and Engineering,
October 2014

Traffic/Pedestrian Signalization Options

for

Lima Ola

Workforce Housing Development

Eleele, Kauai, Hawaii

Prepared For:

County of Kauai
Housing Agency

Prepared By:

Community Planning and Engineering, Inc.

October 2014

INTRODUCTION

The purpose of this report is to address the future issue of pedestrian safety at the Mahea Road and Kaumualii Highway Intersection, adjacent to the Lima Ola subdivision. It has been observed that vehicles coming from the east of the intersection travel above the posted 35 mph speed limit. The following options have been considered with the intent to calm traffic as they approach the intersection and crosswalk.

I. OPTIONS CONSIDERED

A. Option 1 - Installation of Traffic Signal Lights

Option 1 provides the safest alternative to both traffic and pedestrian safety. It is expected that traffic along the Mahea Road and Kaumualii Highway Intersection will increase upon completion of the Lima Ola subdivision. Implementation of traffic signal lights is the optimal alternative in providing orderly movement of vehicles and pedestrians for this increase in traffic.

With an estimated construction cost of $1,000,000 and the need to install numerous devices regulating traffic from all directions, Option 1 will be the most expensive and labor intensive alternative.

B. Option 2 – Installation of Pedestrian Hybrid Beacons (PHB)

Option 2 addresses the need of providing pedestrian protection at the crosswalk. The Pedestrian Hybrid Beacon (PHB) system is actuated only when pedestrians are present. This allows for more free movement of traffic during non-peak pedestrian hours. To prevent vehicles from congesting during pedestrian peak hours, the system can be programmed with a delay in-between crossing sequences.

When actuated, th sequence is performed to give ample time for the pedestrian to cross and also the opportunity for vehicles to proceed when the crosswalk is clear (as seen on Figure 1). This system also benefits from the use of red lights that give drivers a better prompt to "Stop". The estimated duration from "Dark" to "Dark" is 33 seconds, with 26 seconds allotted for pedestrians to cross.

A 2010 FHWA before-and-after study of PHB systems have shown reductions of pedestrian-related crashes and roadway crashes by 69% and 29%, respectively. The District of Columbia Department of Transportation reported a compliance rate of 97.1%

Lack of knowledge and confusion towards this new system will be a concern. If Option 2 is implemented, funding into public education should be considered by use of media and pamphlets. Estimated construction cost is $750,000.

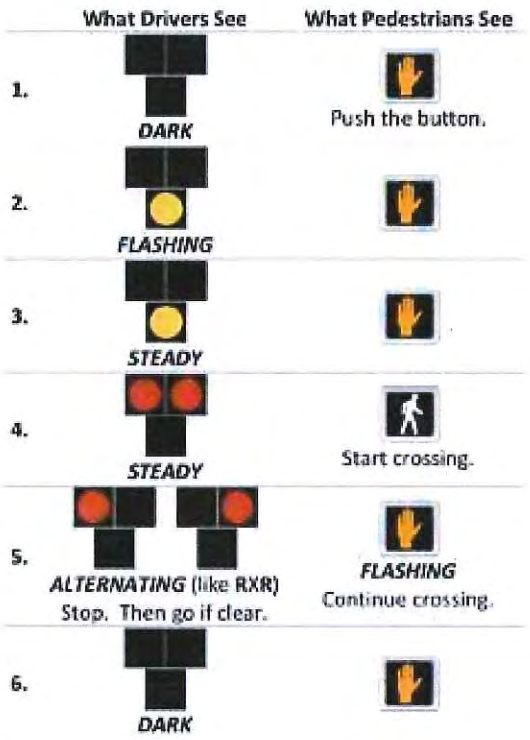


Figure 1: PHB Sequence

Figure 2: PHB Crossing

C. Option 3 – Installation of Flashing Pedestrian Crossing and Rumble Strips

Option 3 is a combination of two traffic calming methods.

The first is the installation of rumble strips that consist of white Bott's Dots aligned in rows within the traveling lane, as seen on Figure 5. The vibration and sound produced when driving over these strips will prompt vehicles to slow down. Because of consideration to noise affecting the homes, an option is to install these strips before the Kapa Water Tanks, approximately 4000 feet northeast of the intersection. A 35 mph sign is located at this location and would be supplemented by the addition of rumble strips. By reducing vehicle speeds prior to entering the residential area, drivers will have safer approaches when traveling toward the crosswalk and intersection. The construction cost for installing the rumble strips alone is $12,500.

Drawbacks to the use of rumble strips include deterioration and maintenance. Over time the Bott's Dots experience wear and its effectiveness in slowing traffic lessens, as shown in Figure 4.

Installation of flashing beacons at the crosswalk will address the issue of pedestrian safety. This system is pedestrian-activated and consists of flashing in-street LED lights that run parallel to both sides of the crosswalk. Additionally, flashing crosswalk signs on both ends of the crosswalk are installed.

This system of flashing lights warns drivers of the presence of pedestrians. Studies in California and Washington have shown that drivers yield to pedestrians 80% more frequently when the warning lights are flashing.

Option 3 is the least costly alternative of the three. The estimated total construction cost for installing flashing beacons and rumble strips is $250,000.

However, flashing beacons provide the least protection due to the lack of a definite stop signal such, as a red light. And as with PHBs, public education is recommended if Option 3 is considered.

Figure 3: Flashing Beacons

Figure 4: Rumble Strips on Pali Hwy, Oahu

Figure 5: Bott's Dots

Exhibit 13

PROJECT DEVELOPMENT PLAN

LIMA OLA WORKFORCE HOUSING DEVELOPMENT PLAN

A. PURPOSE:

The Development Plan sets forth the development of the Lima Ola parcel in a manner consistent with the Kauai County Housing Agency's (KCHA) goals, including the timely delivery of housing inventory to help meet Kauai's future affordable housing needs. The Development Plan provides guidance to KCHA staff for implementation of the Lima Ola development.

The following parameters are established for this Development Plan:

- The Lima Ola parcel may only be used for workforce housing. Workforce housing is defined in Ordinance 860 as, "a lot, single-family dwelling unit, or multiple-family dwelling unit that may be rented or sold at price levels that are affordable to households that earn from eighty percent (80%) and below the Kaua'i median household income to one hundred forty (140%) of the Kaua'i median household income."
- Lima Ola will provide a mix of housing product, including rental, for-sale, multi-family, & single-family units consistent with market analysis and housing needs.
- Site work and building design will include sustainable features that help to reduce the cost of living for owners and tenants.
- Affordability periods for both for-sale and rental units must conform to the minimum standards of Chapter 7A of Kauai County Code.

B. GOALS

The County's goals for the Lima Ola parcel are the following:

- Affordable Housing Costs – Provide affordable single-family and multi-family housing at sales prices and rents that accommodate a range of households and are affordable to income groups ranging from 50% to 140% of Kaua'i median household income.
- Long-Term Preservation of Affordable Housing Stock – Maximize public subsidy to provide a mix of affordable housing opportunities (homeownership and rentals) to Kauai's residents for the longest affordability periods possible.
- Energy Efficient Design – Use energy efficient design features that enhance affordability, such as solar hot water heating systems, water efficient fixtures, Energy Star appliances, natural ventilation, and optimized building orientation.
- Healthy Living – Incorporate healthy living initiatives and connectivity that can provide opportunities for public recreation and social interaction, such as safe walking and bicycling, safe routes to school, and a community park area.

C. DISCUSSION

Project Description - Lima Ola is a 75-acre Master Planned Community (Project) that is located in Eleele, Kauai, TMK (4) 2-1-001:27. The Project is designed for maximum density of 550 residential units, 1 community resource park, and a water reservoir/utility lot. Lima Ola is planned for various multi-family units and single-family residences and will be developed incrementally in four (4) phases. Proposed zoning, preliminary subdivision, and phasing is shown on the Lima Ola Preliminary Zoning Map, Preliminary Subdivision Map, and Phasing Map (Application Exhibit 6). Planning tasks, land entitlements, and infrastructure design will be coordinated by KCHA to insure that the infrastructure is developed in a well-timed and consistent manner for future housing delivery. Lima Ola is expected to be built-out over a 15 to 20 year span. Phase 1 is slated for completion by 2019. Further refinement of the Development Plan may be necessary prior to the start of each development phase.

1. Development Concept

a. KCHA will entitle the Lima Ola parcel with appropriate zoning, land use and necessary exemptions as allowed through 201H-38, HRS.
   i. Phase 1 consists of single-family lots zoned as R-6, multi-family zoned as Project Development (which allows up to R-20), and community resource park zoned R-1.
   ii. Phases 2 consists of single-family lots zoned as R-6, multi-family lots zoned as Project Development, a water tank, and additional water system infrastructure.
   iii. Phase 3 consists of single-family lots zoned as R-6 and multi-family lots zoned as Project Development.
   iv. Phase 4 is zoned as Project Development.

b. KCHA shall complete an environmental assessment under Chapter 343, HRS, for the entire project area;
c. KCHA shall complete market studies prior to development of each phase in order to confirm the best possible mix of housing types and income targets;
d. KCHA shall coordinate the design of off-site and on-site infrastructure for all phases to align with the Phasing Plan;
e. KCHA shall assist private developers in developing a mix of for-sale housing and rental units priced for households ranging from 50% to 140% of area median income (AMI);
f. KCHA shall procure private developers that can offer the best combination of organizational capacity, housing experience, and development quality.
g. KCHA shall enter into development agreements with private developers to establish the conditions and requirements for financing, design, construction, marketing, and management of for-sale and rental housing.

2. Project Financing (Phase 1)

a. Summary – The cost of housing on Kauai generally exceeds what most Kauai households with incomes at or below 140% of the AMI can afford without subsidized financing, rental assistance, or development subsidies. Lima Ola presents a unique opportunity to utilize HRS 201H-38 to expedite land entitlements resulting in significant cost savings when compared to the acquisition of entitled lands. These cost savings can used to allow for lower per unit housing costs and offer greater affordability to low and moderate-income households. In

addition, KCHA plans to pursue development subsidies through government programs, philanthropy initiatives and partnering with private and public entities. Upon the completion of entitlements, design approvals, and financing of infrastructure, KCHA intends to commence with Phase 1.

b. Land, Planning, & Design - KCHA will coordinate and fund the cost of land, master planning, entitlements, and preliminary engineering for the entire project. On-site and off-site design shall also be coordinated for Phase 1 by KCHA. Future infrastructure design and coordination for Phases 2, 3, and 4 shall be coordinated at future dates.

c. Infrastructure - KCHA shall secure funding to finance the on-site and off-site infrastructure for Phase 1, which is estimated at approximately $17.8 million. Phase 1 infrastructure will be funded with a State of Hawaii DURF Loan and County of Kauai CIP funds. KCHA is finalizing a Memorandum of Agreement with the Hawaii Housing Finance and Development Corporation (HHFDC) for DURF funding, and intends to apply to HHFDC for DURF financing.

   Infrastructure financing of Phases 2, 3, and 4 will be developed over a 15-20 year period and the timing of each phase will be determined based on Kauai's housing needs and financing programs available for development.

d. Housing Development – All indirect and direct costs of residential construction shall be borne by the private developers of each phase. Developers shall also complete site and home construction, marketing, sales, and management of respective housing product types.

3. Development Budget (Phase 1)

a. Total Budget - $17.8 million
b. Pre-Development – Environmental Assessment Report, planning and feasibility studies, and marketing ($1.8M)
c. Off-site Infrastructure – Kaumuali'i Hwy/Mahea/Laulea intersection improvements ($1.5M)
d. On-Site Infrastructure – Grading, roads, utilities, water, and sewer improvements ($14.5).
e. Residential Building Costs
   - TBD by developer.

4. Implementation (Phase 1)

a. Site Development
   i. Community Planning and Engineering, Inc. is under contract with KCHA to support the entitlement process and to complete design of the Lima Ola project in 4 phases. Phase 1 design is currently funded by KCHA.
   ii. Required zoning and land use approvals shall be coordinated by KCHA through the 201H-38, HRS, process established by the Administrative Rules for Chapter 7A, KCC.
   iii. Upon completion of zoning/land use approvals, and tentative subdivision approval through 201H, design and construction of phase 1 infrastructure improvements will commence.
   iv. Construction of Phase 1 off-site and on-site infrastructure shall be funded by the County of Kauai and HHFDC

b. Housing Development – Private developers will be selected for each block lot through a Request for Proposals. Selection will be based on the following selection criteria. Additional selection criteria may be added to further the County's goals and objectives.
   i. Qualifications and experience of the development team (developer, architect, engineer, etc.);
   ii. Financial feasibility for development, as reflected in the development budget, operating pro forma budget, profit and loss statement, and sources and uses of funds for construction and permanent financing.
   iii. Employing achievable strategies for long-term affordability;
   iv. Utilization of materials, technology and building design that is energy efficient, sustainable, and "green";
   v. Site concept plan and the degree to which the design utilizes the site effectively with regard to functional layout, accessibility, livability in exterior spaces, mobility features that encourage connectivity and activity within interior pathways, as well as links to public spaces; and
   vi. Development schedule.

c. Marketing & Sales – TBD by Developer and County.
d. Project Financing – TBD by Developer.

5. Schedule (Detailed in Application Exhibit 14)

Task	Start Date	Duration
Entitlement	July 2016	8 Months
Infrastructure Design	November 2016	6 Months
Permits	April 2017	3 Months
Civil Site Work	September 2017	10 Months
Developer Procurement	September 2017	4 Months
Vertical Buildout	May 2018	13 Months

Exhibit 14

PROJECT DEVELOPMENT SCHEDULE

LIMA OLA WORKFORCE HOUSING

ID	Task Name	Duration	Start	Finish
1	**Lima Ola Phase 1 Development Phase**	**747 days**	**Fri 7/8/16**	**Mon 5/20/19**
2	**Land Use and Zoning**	**186 days**	**Fri 7/8/16**	**Fri 3/24/17**
3	**201H & Council**	**67 days**	**Fri 7/8/16**	**Mon 10/10/16**
4	Publish FONSI and 30D Review	22 days	Fri 7/8/16	Mon 8/8/16
5	Prep to Submit 201H Application to council	23 days	Fri 7/8/16	Tue 8/9/16
6	Place on Council Agenda	1 day	Wed 8/10/16	Wed 8/10/16
7	Council Meeting (8/24)	9 days	Thu 8/11/16	Tue 8/23/16
8	Council Action Time (45 Calendar Days)	34 days	Wed 8/24/16	Mon 10/10/16
9	**LUC**	**185 days**	**Mon 7/11/16**	**Fri 3/24/17**
10	LUC Consultation	60 days	Mon 7/11/16	Fri 9/30/16
11	Prep for LUC Review	90 days	Mon 10/3/16	Fri 2/3/17
12	LUC Review (45 Calendar Days)	34 days	Mon 2/6/17	Thu 3/23/17
13	LUC Action	1 day	Fri 3/24/17	Fri 3/24/17
14	**Design Phase 1**	**225 days**	**Tue 10/11/16**	**Mon 8/21/17**
15	Prep Subdvision Plat Map	45 days	Tue 10/11/16	Mon 12/12/16
16	Prep Grading and Utility Plan	45 days	Tue 12/13/16	Mon 2/13/17
17	Finalize Subdivision Plat Map	45 days	Tue 12/13/16	Mon 2/13/17
18	Finalize Grading and Utility Plans and Specs	45 days	Tue 2/14/17	Mon 4/17/17
19	Permits	90 days	Tue 4/18/17	Mon 8/21/17
20	**Buildout Phase 1**	**724 days**	**Wed 8/10/16**	**Mon 5/20/19**
21	Procure Construction Manager	60 days	Mon 3/27/17	Fri 6/16/17
22	Procure Civil Contractor	60 days	Tue 4/18/17	Mon 7/10/17
23	Civil Site Contractor Prep	45 days	Tue 7/11/17	Mon 9/11/17
24	Civil Site Construction	9 mons	Tue 9/12/17	Mon 5/21/18
25	Civil Site Complete	1 day	Tue 5/22/18	Tue 5/22/18
26	Procure/Contract Developer	90 days	Tue 9/12/17	Mon 1/15/18
27	Developer Prep	90 days	Tue 1/16/18	Mon 5/21/18
28	Buildout Vertical	13 mons	Tue 5/22/18	Mon 5/20/19
29	Site Control to HHFDC	120 days	Tue 9/12/17	Mon 2/26/18
30	Financing	10 mons	Wed 8/10/16	Tue 5/16/17

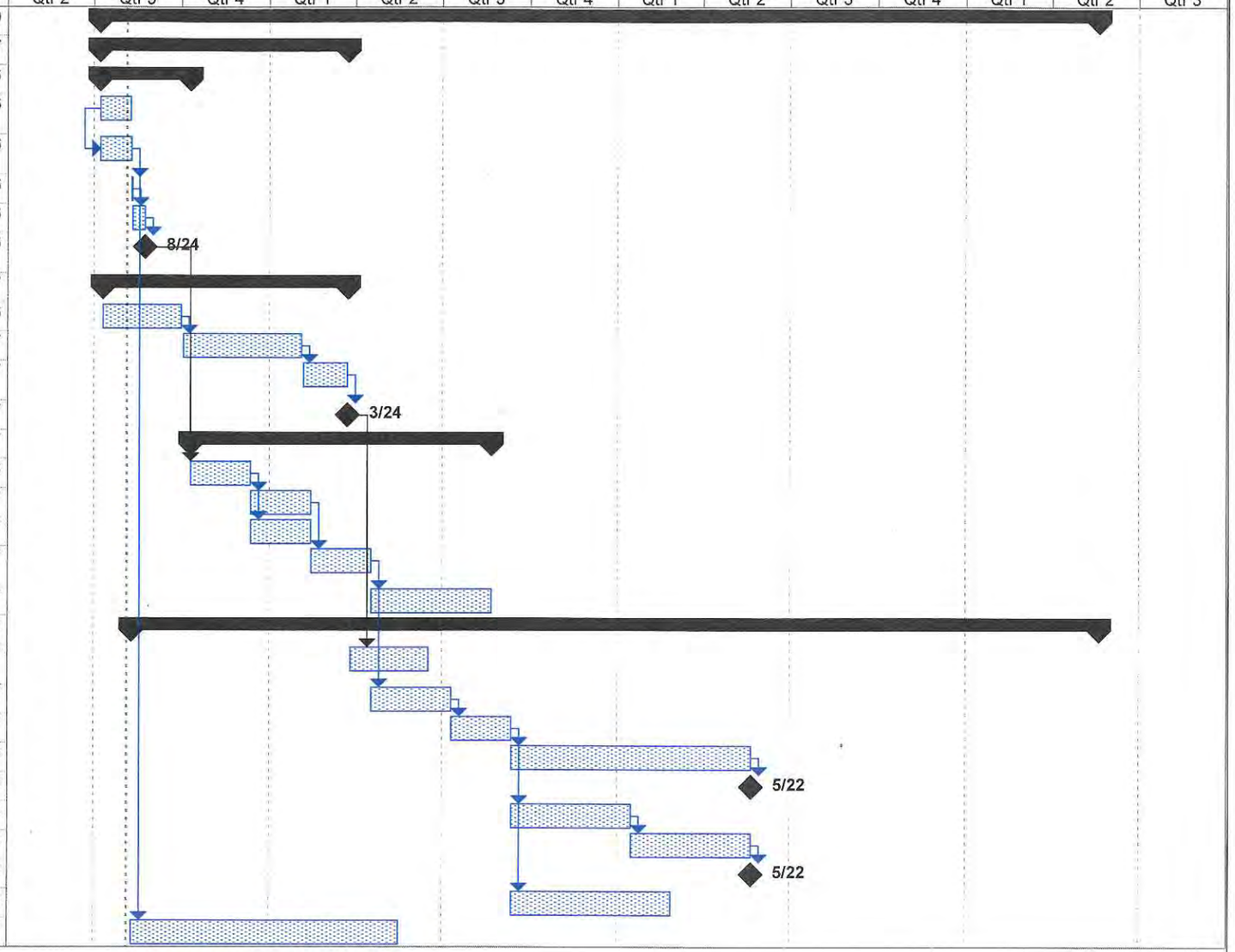


Exhibit 15

MARKETING STUDY

Market Study of the Proposed

LIMA OLA
WORKFORCE HOUSING
DEVELOPMENT

Eleele, Kauai, Hawaii

THE HALLSTROM GROUP INC.
REAL ESTATE
CONSULTANTS
& APPRAISERS

July 28, 2014

Mr. Richard Y. Santo
Project Manager
Community Planning and Engineering, Inc.
1286 Queen Emma Street
Honolulu, Hawaii 96813

Email: rsanto@cpe-hawaii.com

Market Study of the Proposed Lima Ola Workforce Housing Development Eleele, Kauai, Hawaii

Dear Mr. Santo:

At your request, we have completed a market study assessing the demand, appropriate unit type/mix, and pricing and absorption levels for the proposed 550 housing units to be built within Lima Ola, a master planned workforce and elderly housing residential community to be located on 75 acres fronting the east side of Kaumualii Highway, adjacent to Eleele Iluna (a Kauai Habitat for Humanity project), just south of Kapa Reservoir, on the easterly outskirts of Eleele Village, Kauai, Hawaii.

The project will incorporate community gardens, mini-parks, pathways and open space buffers. The proposed inventory will all be affordably-priced according to County of Kauai guidelines for households with incomes ranging from "less than 80 percent" up to "140 percent" of the median household income on the island.

The property is identified on State of Hawaii Tax Maps as Fourth Division, 2-1-1, Parcel 27 (portion). The holding has a central location on the west side of Kauai, favorable access characteristics, desirable climate, mauka and makai (limited) view potentials, and is a natural expansion of the existing Eleele community.

The purpose of our assignment was to provide current market data and context in order to:

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- Quantify the demand for affordable housing units in the study area (Lihue to Kekaha);
- Identify existing and proposed competitive supply in the region;
- Determine the type of units and mix most appropriate for development at Lima Ola;
- Estimate product pricing parameters; and
- Estimate the absorption period required to sell the units.

The pertinent results from our studies are presented in the following report describing our salient conclusions. The addendum contains the tabular presentation of our data, analysis and modeling for each aspect of the assignment.

As part of our investigation program, we have: visited the subject property and its environs; researched the Lihue-Kekaha residential real property sector; interviewed knowledgeable parties active in the regional economy; reviewed government statistics, policies and publications; accessed on-line databases; and compiled materials from our files and published and private sources.

All conclusions presented herein are subject to the limiting conditions, assumptions and certifications of The Hallstrom Group, Inc., in addition to any others specifically set forth in the text. All work has been completed in conformance with the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice (USPAP).

Based on our investigation and analysis of the proposed Lima Ola Workforce Housing Development and regional residential housing market, our primary conclusions are:

- We project demand for 9,038 additional housing units (mid-point) in the Lihue-Kekaha study area between 2014 and 2040, of which about 67 percent (6,056 units) will be for units priced to be affordable for households making 140 percent or less of the Kauai median income. A reasonable portion of this demand would consider Eleele as a potential housing location.

  Excluding Lima Ola, there are some 5,921 additional units proposed for the region; an insufficient supply to meet demand. It is anticipated more than a third of the planned units will be in developments oriented towards visitors and vacation/second-home buyers or with inventory at such high price points as to be unaffordable to virtually all Kauai resident households.

- Within the specific Eleele-Hanapepe study area demand for circa 760 additional housing units is forecast by 2040 based on allocations from the on-going General Plan update studies (prepared by SMS). Apart from Lima Ola, there are only 308 other units proposed for the community; a significant shortfall in supply relative to demand.

- The subject property is an appropriate location for the project and has the physical and locational attributes necessary to support the development.

- The master plan is representative of the highest and best use of the site and will provide competitive residential inventory within the regional market.

- Seniors (55 and over) will comprise an increasing share of the total regional population trending upward from the current level of circa 30 percent to 32.5 percent over the coming 25 years, with about 42 percent of senior households being in the "low income" segment (80 percent or less of the Kauai median). The large majority of the expanding Kauai senior population will be existing residents with in-place housing; however, their housing needs will change over time.

  Relocating these smaller, aging households from larger, more costly housing into appropriately-sized and stable "priced" units is a major need for this demographic and will in turn free-up inventory required by, and more suitable for, younger, growing households.

- Based on our analysis the following unit inventory and tenure mix is indicated for the Lima Ola Development.

PROPOSED LIMA OLA UNIT INVENTORY MIX

	Rental Units*		For Sale Units		
Type/Tenure	Elderly	General	Multifamily	Single Family	Total
Number of Units	90	125	210	125	**550**
Percent of Total	16.4%	22.7%	38.2%	22.7%	**100.0%**
Household Income Levels	Less than 80% of Median	Up to 120% of Median	80% to 120% of Median	80% to 140% of Median	
Household Size (Persons)	One to Three	One to Five	Two to Five	Two to Six	

* All "Rental Units" would be in multifamily projects.

- The subject unit product types indicated within this inventory mix are as shown below.

PROPOSED LIMA OLA UNIT INVENTORY MODEL TYPES

Type/Tenure	Rental Units (1)		For Sale Units		Total
	Elderly	General	Multifamily	Single Family (2)	
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Percent of Total	50%	15%			12%
Avg. Size in Sq. Ft.	500	500			
One Bedroom	36	44	84		**164**
Percent of Total	40%	35%	40%		30%
Avg. Size in Sq. Ft.	700	700	800		
Two Bedroom	9	50	95	13	**167**
Percent of Total	10%	40%	45%	10%	30%
Avg. Size in Sq. Ft.	900	900	1,050	1,300	
Three Bedroom		12	31	75	**118**
Percent of Total		10%	15%	60%	21%
Avg. Size in Sq. Ft.		1,050	1,250	1,700	
Four Bedroom				37	**37**
Percent of Total				30%	7%
Avg. Size in Sq. Ft.				2,100	

(1) All "Rental Units" would be in multifamily projects.
(2) Average lot size of 5,000 square feet.

- The current monthly rents and selling prices for the indicated Lima Ola units and homes are as follows. For some product types the upper-end of the calculated affordability range is near/at competitive market level pricing; these are marked with an asterisk.

PROPOSED LIMA OLA UNIT INVENTORY PRICING

Type/Tenure	Rental Units (1)		For Sale Units		Total Units/ % of Total
	Elderly (2)	General (3)	Multifamily (4)	Single Family	
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Pricing	$550 to $812	$812 to $1,233*			12%
One Bedroom	36	44	84		**164**
Pricing	$637 to $935	$935 to $1,417*	$130,000 to $280,000*		30%
Two Bedroom	9	50	95	13	**167**
Pricing	$679 to $1,016	$1,016 to $1,557*	$170,000 to $350,000*	$200,000 to $410,000*	30%
Three Bedroom		12	31	75	**118**
Pricing		$1,160 to $1,786	$199,000 to $418,000	$240,000 to $480,000*	21%
Four Bedroom				37	**37**
Pricing				$270,000 to $540,000	7%

* Figures marked with asterisk where affordability guideline prices are near/at average market pricing levels.
(1) Monthly net rents, exclusive of utilities.
(2) Rental range shown for households income between 50% and 80% of median.
(3) Rental range shown for households income between 80% and 120% of median.
(3) Price range shown for households income between 80% and 140% of median.
(4) Price range shown for households income between 80% and 140% of median.

- We estimate the 550 subject units can be fully absorbed within seven to ten years of offering if a suitable mix of unit/home types are built in a timely manner.

We appreciate the opportunity to be of service to the Lima Ola development team in regards to this proposed workforce housing community.

Respectfully submitted,

THE HALLSTROM GROUP, INC.

Tom W. Holliday

/as

THE HALLSTROM GROUP INC.

REAL ESTATE
CONSULTANTS
& APPRAISERS

Market Study of the

PROPOSED LIMA OLA

WORKFORCE HOUSING DEVELOPMENT

Located at

Eleele, Kauai, Hawaii

Prepared for

Mr. Richard Y. Santo
Community Planning and Engineering, Inc.

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As of

July 2014

OVERVIEW AND ASSIGNMENT

The Subject Project

The proposed Lima Ola master planning area encompasses approximately 75 of undeveloped, agriculturally-classified lands located easterly of Eleele village, extending from frontage along Kaumualii Highway to north of Halewili Road, in the Koloa District, County of Kauai, Hawaii, approximately 18 miles from Lihue Airport in the central area of the southwesterly Kauai coastline.

The site is adjacent to the in-construction 125 unit Eleele Iluna (Habitat for Humanity) project, approximately one-half mile from the Eleele Shopping Center and across the Highway from the majority of residential neighborhoods comprising Eleele. It is within a secondary urban area comprised of Eleele, Hanapepe and Port Allen, which currently has some 6,275 residents, 2,360 housing units and commercial (limited) and light industrial uses.

The Lima Ola site, previously long-used for sugar cane production but now cultivated with coffee trees, has an nominally undulating, level to slightly sloping (to makai), terrain, and elevations between circa 175 to 275 feet above sea level. It is presently within a larger parcel of 463 acres which will be subdivided prior to subject development. There are mauka and/or makai views available from many points on the site, but development will limit the panoramas available from many interior units.

The property is currently within the "Agricultural District" on State Land Use Maps and is shown as "Agriculture" on the Kaloa-Poipu-Kalaheo Planning District Land Use Map (County General Plan). These classifications must be changed to "Urban" and "Residential Community" to support Lima Ola. However, it abuts existing urban and residential designated lands and is close by an identified "Urban Center".

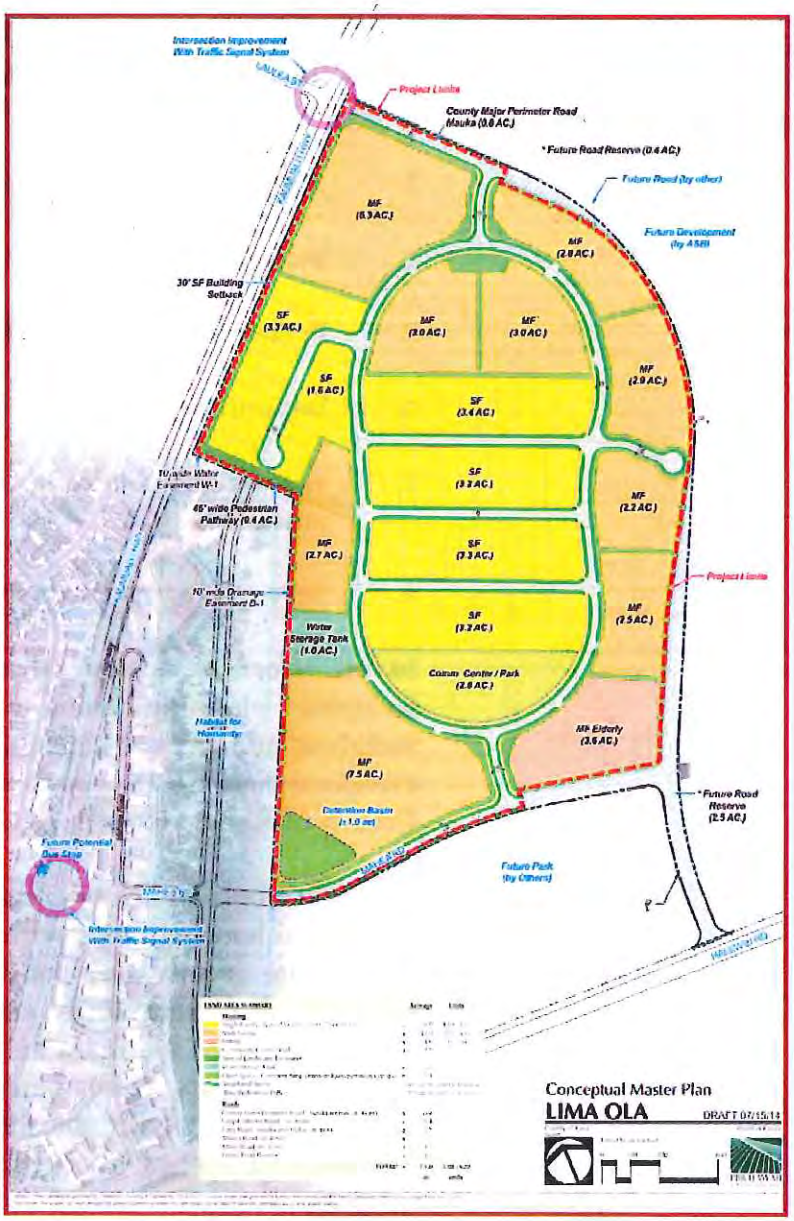
The County of Kauai identified six primary design and development goals (each with numerous objectives) to establish a framework for the Lima Ola master plan:

1. Provide a range of affordable housing options.
2. Incorporate smart growth principles.
3. Foster social interaction and a spirit of aloha.
4. Support healthy living initiatives.
5. Allows for building "green" and is environmentally sustainable.
6. Serves as a prudent public investment to Kauai.

In an effort to achieve these objectives, Kauai formed an inclusive planning team of public agencies, community members and private consultants, culminating in the *Lima Ola Workforce Housing Development – Master Plan*, published by the County of Kauai Housing Agency in March 2012.

The development was initially envisioned for circa 400 residential housing units, with multifamily projects at either end of the site (north and south), and single family homes in between, all surrounding a central community center. Primary access would be via main entrance parkways along Kaumualii Highway, across from Laulea Street, and extending from Halewili Road, with secondary access available from an extension of Mahea Road (through the Habitat for Humanity project).

Subsequent refinements, led by Community Planning and Engineering, Inc., have resulted in the current master plan shown below.



At present, it is anticipated the project will be developed in four phases, requiring up to three decades. The total unit count may range from 530 to 620; however, for purposes of this study it was assumed there would be 550 total units.

Scope of Assignment and Methodology

The Hallstrom Appraisal Group, Inc.'s assignment was to analyze the proposed Lima Ola Workforce Housing Development master plan from a real estate market perspective in light of competitive, regional, prevailing and forecast trends to answer five basic study questions:

1. Is the site and master plan appropriate for the proposed project within a market context and will it have the characteristics necessary to be competitive/desirable?

2. Is there sufficient demand to absorb the various components of the subject community during a reasonable exposure period given competing developments and projected regional demographic and market trends?

3. What should comprise the unit types, mixes and prices of the finished inventory?

4. What is the estimated absorption period of the product?

5. What other market issues should be considered?

These items were addressed through a comprehensive research and inquiry process utilizing data from market investigation, the Lima Ola development team, governmental agencies, various Hawaii-based media, industry spokespersons/sources, on-line databases, published public and private documents, and our files.

Our primary study region is the southwesterly portion of Kauai, extending from Lihue to Kekaha, as shown on the following map.

The pertinent results of our study are highlighted in the following report, which contains a concise narrative and tabular synopsis of our conclusions. Additional materials, contained in market data tables and projection models, are presented in the Addenda.

Our narrative presentation is divided into four sections:

1. **Appropriateness of the Site for the Proposed Development**

2. **Market Study of the Proposed Lima Ola Project**

3. **Subject Unit Mix, Types, Pricing and Absorption**

4. **Other Market Issues**

Source Data and Materials

Primary source information regarding the subject community used in our study included:

- Maps, master plans, unit counts, descriptions and background materials provided by Community Planning & Engineering Inc., Environet Inc., and other members of the development/consultant team.

- Resident population and housing projections, Lima Ola Master Plan, affordability pricing guidelines, proposed

regional developments, General Plan Update technical studies (SMS) and other data from the Kauai County Planning and Housing Departments.

- The United States Census, 2010 results and subsequent data updates.
- Rent, Sales and listing data from the Kauai Board of Realtors, Zillow, Hawaii Information Service and other on-line services.
- Data from our files.

The Lima Ola site and environs have been viewed by our firm on numerous occasions and specifically for this assignment.

The overall study period extended from October 2013 to June 2014, with rentals tracked daily in the general market area for six months from October 2013 through March 2014 and sales from November 2011 through May 2014. The effective date of the report is July 1, 2014.

APPROPRIATENESS OF THE SITE FOR THE PROPOSED DEVELOPMENT

The Site

The Lima Ola vision will transform a property that is:

- Currently underutilized and provides nominal housing, economic or lifestyle benefit to the region.
- Centrally-located within the west Kauai corridor between Koloa-Poipu and Wamea-Kekaha.
- Has frontage/access along the two major thoroughfares in the area (Kamualii Highway and Halewili Road).
- Adjacent/proximate to existing urban (commercial and industrial) and residential uses, with available infrastructure systems and service.

- The most suitable location for the long-term expansion of the Eleele community given the physical constraints of the Hanapepe River, ocean, other water courses/wetlands, topographical limitations, and the Port Allen industrial area; without creating isolated, new urban sprawl.

- Limited in alternative Highest and Best Use(s).

The Master Plan

Actualization of the Lima Ola master plan will create a regional asset providing:

- Needed affordably-priced housing to a broad-spectrum of qualifying households.

- A diversity of inventory types reflecting specific demographic needs integrated into a single project.

- Targeted, appropriately scaled, efficient housing for seniors; a high-demand, short-supply sector.

- Support for existing area business and enhanced demand for "neighborhood" commercial and industrial services; allowing for the moderate expansion of in-place and new businesses and helping to create a critical mass which will attract needed new services to the region.

- Substantial spending from the thousand-plus new residents which will benefit the larger community by stabilizing and increasing employment and economic activity in the Eleele-Hanapepe-Port Allen area and island-wide.

- Significant "worker years" of employment for west Kauai contractors and tradespeople; many of whom otherwise must commute meaningful distances to job sites.

- An expanded real property and other tax base.

- A 2.8 acre centrally-located community center/park facility; a venue for neighborhood events and interaction among residents and guests.

- A relatively comprehensive, sustainable "village" complementary with the existing Eleele community.

The Market Context

From a market overview perspective, the proposed development will have the necessary attributes to be compatible with, and competitive within, the west/south Kauai real estate sector:

- *It will offer product types at affordable prices which are in limited supply in the study area.* Given the average price of homes, scarcity of resident-oriented multifamily inventory, and the increasing demand for senior (specialized) housing in west Kauai, the Lima Ola units will appeal to a large number of resident households which comprise the broadest (base) portion of the housing demand pyramid.

- *It is within a market area which has had limited new major residential development in recent years (apart from the in-process Eleele Iluna Habitat for Humanity project).* Most residential construction in Eleele-Hanapepe in the past decade-plus has been individual/custom homes on existing lots, or in minor projects.

  This has resulted in an aging housing inventory, estimated at an average of some 20 years, that is increasingly costly to maintain, fails to meet the evolving demographic needs of area households, and does not reflect modern design/planning and materials standards. Further, as older homes are comprehensively renovated or expanded and larger more expensive newer homes are built, neighborhoods become dichotomous; a condition being experienced in many communities throughout the islands and not universally considered a positive outcome.

- *Its central location in west Kauai will be desirable within the regional market.* The resident population of the Koloa-Poipu to Kaheka corridor is anticipated to increase by nearly 10,000 persons over the next quarter century. While a significant share of housing demand in the area will be focused towards Koloa-Poipu, where much of the regional employment growth and many of the new units will be built in coming years, the high price of market inventory coupled with demand from non-resident purchasers, will preclude many resident households from obtaining units in close proximity to their jobs. And, the relatively high cost of land limits the potentials for either private or public affordably-priced projects.

  The Lima Ola site, at about 10 miles distant, is meaningfully closer to the Poipu visitor-driven job market than reasonable alternative sites, such as might be available in Lihue (15 miles). Additionally, the commute times for project residents to Koloa-Poipu jobs, and their impact upon traffic movement, will be significantly less than from a Lihue location.

  In addition to a favorable (dry) climate, an Eleele location provides ease of access to many South and West Kauai beaches, parks and recreational/outdoor activities.

- *In concert with market trends.* Multi-product, larger, master-planned developments have been part of the Hawaii real estate market for many decades, and they have generally provided higher-quality, more desirable housing and lifestyle opportunities than in standard subdivisions. Such major master planned projects in the State and on Kauai have been traditionally been oriented towards resort and upper-end development; however, there are newer projects in-construction and proposed on the neighbor islands which are seeking to provide more diverse product types at lower costs to better service households in the moderate income range.

Lima Ola represents the evolving edge of such master planning by coupling a fairly comprehensive community design with a total workforce/affordable housing orientation; a rare and progressive concept which will provide low to moderate income households with quality lifestyle opportunities typically reserved for higher earning households and market-priced homes.

- *Maximize the reasonable development potentials of a well-located parcel.* Given the locational and access attributes of the subject property, within the context of long-term expansion of Eleele, and the housing and economic benefits which will flow to Kauai from the project, the proposed master plan is a reasonable confluence of market and general community objectives.

Appropriateness Conclusion

Our market-based analysis regarding the proposed Lima Ola project indicates:

- The subject site is an appropriate location.
- The master plan will result in a community offering a desirable lifestyle.
- Its finished inventory can be competitive in and well-received by the market.
- It is representative of the highest and best use of the property.
- There are no reasonable economic alternative mid to long-term uses evident.

While there may be locations elsewhere on Kauai which are currently in closer proximity to a greater availability of in-place commercial development, services, facilities and amenities, the de-centralization of such social/lifestyle "infrastructure" from the Lihue-Kapaa corridor is an inevitable need for Kauai over the long-term as:

- The existing "excess capacity" of businesses, services and facilities will likely be substantially absorbed by the demands associated with the circa 15,000 new residents expected in Lihue and East Kauai over the next 25 years, and new opportunities/capacity will be needed regardless of where the 550 subject units are located.

- The increasing congestion of the Lihue-Kapaa corridor over the mid to long-term will somewhat render moot the benefits of reduced travel time and ease of access associated with a more "central" location on the island.

MARKET STUDY OF THE PROPOSED LIMA OLA PROJECT

The tables containing the contributory data, analysis models, and results, excerpts from which are presented and summarized in this section, are contained in the Addenda.

Residential Unit Demand in the General Study Area

The study area of our assignment stretches from Lihue to Kekaha, a 30-mile near-coastal and lower elevation corridor along the southerly and westerly shorelines of Kauai. It includes residential, agricultural, visitor-oriented, and commercial/industrial development, with Lihue being the largest and most urbanized community in the region.

In 2010, the census counted 38,187 residents in the study area, or 56.9 percent of the county total. By the beginning of 2014, the estimated population of the region had grown to 40,575 persons and 57.9 percent of the island total.

Based on the State of Hawaii Department of Business Economic Development and Tourism "2040 Series" population projections, historic trending, and anticipated economic expansions we forecast that by 2040 (our projection horizon), the total number of residents from Lihue to Kekaha will reach between 56,950 and 59,374 and comprise between 61.2 percent and 63.8 percent of the Kauai population.

As previously stated, our projections extend to 2040, or circa 25.5 years from the study date, to coincide with the Lima Ola Development master plan which speaks to the project requiring up to three decades before build-out.

Our population forecasts for the general study area are at to slightly above those made in the "Kauai General Plan Update: Socioeconomic Analysis and Forecasts" completed for the County Planning Department by SMS (February 2014), with a planning horizon to 2035, as compared below.

STUDY AREA RESIDENT POPULATION FORECAST LIHUE TO KEKAHA	
Forecast	2035
The Hallstrrom Goup, Inc.	
Minimum	**53,700**
Percent of County	60.5%
Maximum	**55,500**
Percent of County	62.5%
County Technical Studies (SMS)	**53,971**
Percent of County	61.3%

At present there is an estimated 16,578 total housing units in the study area, with 84 percent used by full-time resident households and 16 percent for non-full time residents and visitors; with the latter percentage showing continuing growth in recent decades.

We have projected the housing demand which will be associated with the expanding regional population to 2040 based on the:

- Anticipated declining average household size from a current level of 2.88 persons to between 2.71 and 2.75 over the next quarter-century;

- An increasing share of units being used by non-full time residents and visitors, moving upwards to between 17 and 20 percent of total demand; and

- The inclusion of a nominal "vacancy allowance" of 2 to 3 percent, to provide for household movement, units closed for rehabilitation, and promote market stability.

Our forecast model estimates demand for new housing units in the Lihue-Kekaha corridor will range from 7,886 to 10,191 units by 2040, with a mid-point of 9,038 units.

Again, our figures for 2035 are generally consistent with the County/SMS technical study output.

STUDY AREA HOUSING DEMAND FORECAST LIHUE TO KEKAHA	
Forecast	2035
The Hallstrom Goup, Inc.	
Minimum	**6,270**
Maximum	**8,156**
County Technical Studies (SMS)	**7,206**

Having established there will be demand for significant number so new housing units in the study area, we striated the demand across several characteristics: pricing, unit mix and tenure. We also analyzed demand within the senior household demographic.

1. Unit Pricing

   We have allocated the demand for housing units at various price points based on:

   - County/HUD "affordability" criteria for households making 140 percent or less of the median Kauai household income.

- Conventional financing standards for other households.
- Analysis of the proposed supply.
- Historic and forecast trends in the ratio between Kauai household income and housing prices.
- Acknowledgement of the impact of non-resident purchasers on market pricing.

New housing units in the Lihue to Kaheka region will need to be priced as shown following (in 2014 dollars and first quarter interest rates) in order to address forecast demand.

HOUSING UNIT DEMAND BY PRICE IN THE LIHUE-KEKAHA CORRIDOR

	2014-2040
1. Minimum Demand Forecasts	
Less Than $200,000 (1)	**2,918**
Percent of Total Demand	37.01%
$200,000 to $480,000 (2)	**2,602**
Percent of Total Demand	32.99%
$480,000 to $1,000,000	**1,577**
Percent of Total Demand	20.00%
Over $1,000,000	**789**
Percent of Total Demand	10.00%
Total Market Demand	**7,886**
	100.00%
2. Maximum Demand Forecasts	
Less Than $200,000 (1)	**3,774**
Percent of Total Demand	37.04%
$200,000 to $480,000 (2)	**3,359**
Percent of Total Demand	32.96%
$480,000 to $1,000,000	**2,038**
Percent of Total Demand	20.00%
Over $1,000,000	**1,019**
Percent of Total Demand	10.00%
Total Market Demand	**10,191**
	100.00%

(1) Price considered as "affordable" to households earning less than 80% of Kauai median.
(2) "Affordable" to households earning 80 to 140% median.

We recognize that many low income households, earning less than 80 percent of the County median, may not have the opportunity to purchase an appropriately-priced unit but would be long-term renters. We anticipate a slight downward movement in this income group over time as the economy of Kauai expands and begins to diversify resulting increasing wages.

The median sales prices for housing units in selected communities within the greater study area during the first quarter of 2014 were as shown.

First Quarter 2014 MLS Median Sale Prices			
	Residential	**Condo**	**Land**
Waimea	$330,000	$0	$75,000
Koloa	$503,500	$535,000	$275,000
Lihue	$392,500	$152,250	$289,900

In general, outside of the Koloa market area, which includes many expensive/upscale units oriented towards non-resident purchasers and visitor use, the regional market serves the median (100% income households) and gap group (up to 140% of County median) reasonably functionally. However, inventory is limited for those families earning below the median level.

Unit rental "prices" were also based on County/HUD criteria for households with incomes less than 140 percent of the median for Kauai, as shown.

MONTHLY AFFORDABLE NET RENT GUIDELINES FOR KAUAI COUNTY
BY UNIT SIZE AND PERCENTAGE OF MEDIAN FAMILY INCOME

Percent of Median Income	Unit Size By Number of Bedrooms					
	Studio	1 BR	2 BR	3BR (1)	4 BR	5 BR (1)
30%	$233	$273	$271	$300	$318	$352
50%	$550	$637	$679	$772	$845	$933
80%	$812	$935	$1,016	$1,160	$1,278	$1,410
100%	$986	$1,134	$1,240	$1,419	$1,566	$1,729
120%	$1,233	$1,417	$1,557	$1,786	$1,976	$2,181
140%	$1,724	$1,970	$2,216	$2,560	$2,856	$3,152

Note: Affordable Rents are based on 30% of gross monthly household income less utility allowance.

(1) Average rent for unit based on two occupancy assumptions.

We completed a rental survey of the Lihue-Kekaha region over six months (October 2013 through March 2014). During that time there were 65 different units listed for long-term residential tenancy on Craigslist and PadMapper, or only 0.4 percent of the total residential housing stock, as follows.

RECENT MONTHLY HOUSING RENTS IN THE LIHUE-KEKAHA CORRIDOR

	Rental Units
Number of Units	**65**
Studios	13
Percent of Total	20.0%
Average Rent	$1,034
One Bedroom	14
Percent of Total	21.5%
Average Rent	$1,176
Two Bedroom	12
Percent of Total	18.5%
Average Rent	$1,529
Three Bedroom	23
Percent of Total	35.4%
Average Rent	$1,938
Four Bedroom	3
Percent of Total	4.6%
Average Rent	$2,283

With the exception of the one-bedroom product, the average market rents are "affordable" only to households making more than 100 percent of the county median.

2. Unit Mix

Presently, about 68 percent of the housing stock from Lihue to Kekaha is in single family homes and 32 percent is multifamily units; with the majority of the latter concentrated in Lihue and Poipu.

It is anticipated that as land costs increase, housing prices continue rising, the population ages, and newer master planned developments are planned built-out (as at Lima Ola) more of the new housing inventory will be multifamily, as shown.

HOUSING UNIT DEMAND BY TYPE IN THE LIHUE-KEKAHA CORRIDOR	2014-2040
1. Using Minimum Demand Projections	
Single Family Homes	**4,945**
Percent of Total	63%
Multifamily Units	**2,940**
Percent of Total	37%
Total	**7,886**
	100%
2. Using Maximum Projections	
Single Family Homes	**6,404**
Percent of Total	63%
Multifamily Units	**3,787**
Percent of Total	37%
Total	**10,191**
	100%

3. Unit Tenure

Currently, about 60 percent of the resident housing units in the study area are owner-occupied and 40 percent are renter-occupied. With increasing housing costs, and high levels of non-resident and investor ownership, the percentage of renters in the regional market is anticipated to increase, as shown.

HOUSING UNIT DEMAND BY TENURE IN THE LIHUE-KEKAHA CORRIDOR	2014-2040
1. Using Minimum Demand Projections	
Owner-Occupied Units	**4,575**
Percent of Total	58%
Renter-Occupied Units	**3,311**
Percent of Total	42%
Total	**7,886**
	100%
2. Using Maximum Projections	
Owner-Occupied Units	**5,918**
Percent of Total	58%
Renter-Occupied Units	**4,272**
Percent of Total	42%
Total	**10,191**
	100%

Senior Unit Demand in the Study Area

Among the factors contributing to our projection of senior housing demand in the study area were:

- Approximately 30 percent of the study area resident population is above 55 years old, at or approaching senior status. This ratio will increase in coming years as persons live longer and more retirees in-migrate to the island.

- About 31 percent of all households on Kauai have seniors, of which some 79 percent are living with their spouse and no other residents, or living alone. These households contain some 81 percent of the total senior population on the island.

- The average size of senior-only households in the Lihue-Kekaha region is currently estimated at 1.74 persons, a figure that is also expected to grow in coming years as men live longer.

- Some 42 percent of senior households have incomes at 80 percent or less of the Kauai median.

There are currently an estimated 5,670 senior households in the study area, and with a vacancy allowance of two to three percent, they theoretically will comprise about 34 percent of the total demand for residential units in the region.

As shown in the summary chart following, senior households will represent demand for between 2,922 and 3,325 total units by 2040. And, from 1,227 to 1,396 of this unit demand will be for affordably-priced, low income inventory.

However, senior demand is, for the most part, not "new", is already substantially in-place (apart from retiree in-migration) and is currently housed. They are not necessarily requiring additional units to be constructed unlike, the "natural growth" of population and resident household creation on-going in the region, and from in-migrating non-senior persons.

In this context, developing dedicated senior housing in the study area, and particularly units for low income senior households, provides a service to both seniors and the larger community.

Senior households, especially low income ones, typically have near-fixed (and sometimes declining) incomes, often with a substantial portion of household wealth tied up in their home.

A well-designed, efficient, appropriately-scaled unit is a requirement if the lifestyle of the household is to be kept from declining both economically and physically as the cost and effort to maintain their existing home can be arduous. Yet, due to a lack of available alternative stable housing opportunities seniors may be forced to remain in inappropriate units (large, costly and difficult to maintain).

Commensurately, younger, expanding households which need larger units and have the necessary (growing) income and energy to utilize and maintain a home, often have few alternatives due to the competition for affordable/reasonably-priced units and that units in new projects are too costly or being purchased by higher income in-migrants and non-resident buyers.

In many instances, providing a senior household with an alternative, appropriate unit "frees up" an existing appropriate home for another household in need. Thus, for the cost of a smaller efficient new senior unit, a larger, now more readily-maintained, home is effectively added to the regional inventory that is needed to house natural and in-migration population growth, while enhancing the lifestyle of a senior household.

Development of appropriately-sized and located senior units is beneficial to a larger spectrum of households and also inhibits urban sprawl.

PROJECTED SENIOR UNIT HOUSING DEMAND IN THE LIHUE-KEKAHA CORRIDOR

	Current	2040	Total 2014-2040
1. Using Minimum Demand Projections			
Total Study Area Population (1)	40,600	56,950	
Resident Senior Population (2)	12,180	18,509	
Percent of Total Population	30.0%	32.5%	
In Senior-Only Households	9,866	15,362	
Percent of Senior Population	81.0%	83.0%	
Average Senior Household Size	1.74	1.8	
Regional Senior Housing Demand	5,670	8,535	
Vacancy Allowance (2%)	113	171	
Total Senior Housing Units Required	**5,783**	**8,705**	**2,922**
Percent of Total Study Area Demand	34.5%	35.3%	
Percent Low Income Senior Households	42%	42%	
Low Income Senior Housing Unit Demand	**2,429**	**3,656**	**1,227**
Percent of Total Study Area Demand	14.5%	14.8%	
2. Using Maximum Demand Projections			
Total Study Area Population (1)	40,600	59,375	
Resident Senior Population (2)	12,180	19,297	
Percent of Total Population	30.0%	32.5%	
In Senior-Only Households	9,866	16,016	
Percent of Senior Population	81.0%	83.0%	
Average Senior Household Size	1.74	1.8	
Regional Senior Housing Demand	5,670	8,898	
Vacancy Allowance (3%)	170	267	
Total Senior Housing Units Required	**5,840**	**9,165**	**3,325**
Percent of Total Study Area Demand	33.7%	34.0%	
Percent Low Income Senior Households	42%	42%	
Low Income Senior Housing Unit Demand	**2,453**	**3,849**	**1,396**
Percent of Total Study Area Demand	14.1%	14.3%	

Residential Unit Supply in the General Study Area

Based on preliminary/unofficial data from the Kauai Planning Department, our market investigation, and our files, we have identified a total of 6,481 potential units in 21 major projects, as shown below.

There are numerous considerations in assessing the potential supply:

- Not all will be constructed as master plans invariably evolve over time and are often built out to less than maximum allowable densities.
- Infrastructure systems (including water and access) may not be available to support development of all of the holdings in a timely manner.
- Some of the projects have been long-proposed but with little forward movement in years as the market, investor/ownership and developer interests change.
- Many lack appropriate entitlements.

MAJOR IN-DEVELOPMENT AND PROPOSED PROJECTS IN THE LIHUE-KEKAHA CORRIDOR

District	Project Description	No. of Units Proposed or Yet Unbuilt
Lihue	D.R. Horton Residential Subdivision	444
Lihue	"Pikake" Subdivision	146
Lihue	Grove Farm Wailani Residential	1,450
Lihue	Koamalu	220
Lihue	Rice Camp Elderly	84
Lihue	Kauai Lagons	400
Poipu	Kiahuna Golf Course	800
Poipu	Koloa Landing	210
Poipu	Village at Poipu	128
Poipu	Weliweli Expansion	400
Koloa	Brydeswood Ranch (A&B)	24
Koloa	Kōloa Creekside	72
Koloa	Kukui'ula Employee Housing	75
Koloa	Kukui'ula	750
Koloa	The Village at Kōloa Town	34
Koloa	Kōloa Camp - Waihononu	50
Eleele	Eleele Iluna (Habitat for Humanity)	107
Eleele	A&B Eleele Residential	201
Eleele	Lima Ola - County (Affordable)	550
Waimea	Kikiaola Mauka	270
Waimea	Kikialoa - Field 14	56
	Proposed Units INCLUDING Lima Ola	**6,471**
	Proposed Units EXCLUDING Lima Ola	**5,921**

= Subject Property

SUBJECT UNIT MIX, TYPES, PRICING AND ABSORPTION

Subject Unit Mix

In assessing the appropriate mix for the 550 "affordable" workforce units proposed for Lima Ola we have focused on:

- Market needs which are quantifiable;

- Reasonableness in density;
- Diversity of product types; and
- Providing units best servicing the demand segments unmet by the market.

Based on our analysis we conclude the following product mix at Lima Ola is indicated.

PROPOSED LIMA OLA UNIT INVENTORY MIX

	Rental Units*		For Sale Units		
Type/Tenure	Elderly	General	Multifamily	Single Family	Total
Number of Units	90	125	210	125	**550**
Percent of Total	16.4%	22.7%	38.2%	22.7%	**100.0%**
Household Income Levels	Less than 80% of Median	Up to 120% of Median	80% to 120% of Median	80% to 140% of Median	
Household Size (Persons)	One to Three	One to Five	Two to Five	Two to Six	

* All "Rental Units" would be in multifamily projects.

At 16.4 percent of the total number of proposed subject inventory, the 90 unit low-income senior housing component is marginally larger than the percentage of demand they currently represent in the overall regional market (14-plus percent). However, we expect this segment to expand as a ratio to the whole market in coming years, there is strong market support for a larger senior housing component, and as noted it provides a service to the overall market by freeing-up existing homes for expanding, younger families.

To the extent the number of units is increased at Lima Ola above the 550 used as a basis in this study (with a count of up to 630 being discussed), we would recommend an increase in the number of senior housing units.

The "general" (all ages and household types) rental component of 125 units was based on our projection that 40 to 42 percent of all demand in the Lihue-Kekaha area of the island would be for rental units, most of which would be oriented towards the affordably-priced end of the overall market range. In

conjunction with the senior units, the affordable rentals at Lima Ola will total 215 units, or 39.1 percent of the total inventory.

These units would have rents priced as affordable for households making up to 120 percent of the Kauai median income primarily as at that point "affordable" rents begin to merge with market levels (i.e. a gap group household at between 120 percent and 140 percent of median income has alternative rental opportunities in the open market).

The "for sale" single family component of 150 homes, or 22.7 percent of the total subject inventory, was based on market indicators and initial master planning for Lima Ola.

Our analysis indicated that 63 percent of demand for additional residential units in the study area through 2040 would be for single family homes, and demand for units in the 80 percent to 140 percent of median income pricing segment would be 33 percent during the same period. Multiplication of these factors results in support for 20.8 percent of the subject units being affordably-priced, for sale single family units.

Further, reiterations of the master plan have variously called for single family homes at Lima Ola to range from 21 percent (135 out of 630 total units) to 31 percent (125 out of a 400 total).

The for sale multifamily component unit count was placed at 210 units, or 38.2 percent of the total, on a residual basis after the other uses had been calculated.

Development of for sale single family homes and multifamily units for households with incomes less than 80 percent of the County median is not a reasonable expectation given the economics/subsidy involved and the difficulty these households may have in obtaining even the minor down-payment required under Kauai standards (five percent).

Subject Model Types

Based on our analyses of the Kauai and other island's markets, we have determined appropriate inventory model types for the unit mix identified foregoing. All of the units would have square footages at or above the middle of the market range for similar (non-resort) inventory, as shown following. While the

PROPOSED LIMA OLA UNIT INVENTORY MODEL TYPES

	Rental Units (1)		For Sale Units		
Type/Tenure	Elderly	General	Multifamily	Single Family (2)	Total
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Percent of Total	50%	15%			12%
Avg. Size in Sq. Ft.	500	500			
One Bedroom	36	44	84		**164**
Percent of Total	40%	35%	40%		30%
Avg. Size in Sq. Ft.	700	700	800		
Two Bedroom	9	50	95	13	**167**
Percent of Total	10%	40%	45%	10%	30%
Avg. Size in Sq. Ft.	900	900	1,050	1,300	
Three Bedroom		12	31	75	**118**
Percent of Total		10%	15%	60%	21%
Avg. Size in Sq. Ft.		1,050	1,250	1,700	
Four Bedroom				37	**37**
Percent of Total				30%	7%
Avg. Size in Sq. Ft.				2,100	

(1) All "Rental Units" would be in multifamily projects.
(2) Average lot size of 5,000 square feet.

Half of the inventory within the senior/elderly housing component would be studios, as many senior households have a single person and/or the units would be large enough at 500 square feet for a couple. Further these units would be less costly to fully furnish and upkeep, and have lowered common area maintenance impacts which would help keep cost low over the long-term; a major consideration for low income senior households.

A handful of two-bedroom units would be provided to support communal (not limited to spouse) households.

For similar reasons, studios would comprise a portion of the general rentals, as low income singles and couples can have difficulty locating affordable units of any size, and are often in transition as families expand and incomes change.

The greatest diversity of model types would be in this component as it has potentially the largest range of household types in need of affordable housing, with our rental survey indicating the highest demand would be for one and two-bedroom units.

Four bedroom rental units in a multifamily project can prove impracticable to design into a development and are exceptionally rare in the marketplace.

Data indicates one and two-bedroom for sale multifamily units are in highest demand, and were allocated 85 percent of the inventory for that component of Lima Ola. Similarly, three and four-bedroom single family homes comprise the large majority of the regional market and would make up 90 percent of the subject component.

Subject Unit Pricing

The table below summarizes the current pricing indicated for the proposed Lima Ola housing inventory.

PROPOSED LIMA OLA UNIT INVENTORY PRICING

Type/Tenure	Rental Units (1) Elderly (2)	Rental Units (1) General (3)	For Sale Units Multifamily (4)	For Sale Units Single Family	Total Units/ % of Total
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Pricing	$550 to $812	$812 to $1,233*			12%
One Bedroom	36	44	84		**164**
Pricing	$637 to $935	$935 to $1,417*	$130,000 to $280,000*		30%
Two Bedroom	9	50	95	13	**167**
Pricing	$679 to $1,016	$1,016 to $1,557*	$170,000 to $350,000*	$200,000 to $410,000*	30%
Three Bedroom		12	31	75	**118**
Pricing		$1,160 to $1,786	$199,000 to $418,000	$240,000 to $480,000*	21%
Four Bedroom				37	**37**
Pricing				$270,000 to $540,000	7%

* Figures marked with asterisk where affordability guideline prices are near/at average market pricing levels.
(1) Monthly net rents, exclusive of utilities.
(2) Rental range shown for households income between 50% and 80% of median.
(3) Rental range shown for households income between 80% and 120% of median.
(3) Price range shown for households income between 80% and 140% of median.
(4) Price range shown for households income between 80% and 140% of median.

In virtually every case, the "market" price which could be obtained for a new unit of that type exceeds the County-directed" affordable" pricing structure based on household income. However, in some instances (as marked by an asterisk) the top of the affordable pricing range is near/at competitive market pricing levels. But given the recovering Kauai real estate market, this may not hold true over the long-term.

Subject Unit Absorption

We have estimated the probable market acceptance levels and resulting absorption of the residential components of the Lima Ola master plan using three methodologies.

- Gross Demand/Supply Comparison -- This technique assumes that if there is insufficient existing and planned supply to meet projected market gross demand levels during the projection period there is rational support for the subject units.

- The Residual Method -- In this technique, the competitive inventory planned for the study area over the projection

period is placed on a time-line depicting their combined anticipated rates of absorption or assuming a reasonable market share. To the extent this periodic supply of units falls short of the forecast periodic demand for product in Lihue-Kaheka, an undersupply situation is present and there is "residual" demand remaining for the Lima Ola inventory. This method is considered the most conservative as it allows the proposed competitive product to achieve their absorption potential before the residual demand flows to absorb the subject.

- The Market Shares Method -- This approach accounts for the probable competitiveness of the subject inventory regardless of the total level of product being otherwise offered on the market. In essence, it is an estimate of how much of the total forecast demand in the study region the subject could expect to capture on an annual basis in light of its location, product type, estimated pricing, perceived competitiveness, and amenity/ lifestyle characteristics.

Gross Demand for additional housing units in the study area will exceed supply between 2014 and 2040, with an anticipated shortfall in supply of between 1,865 (minimum) to 4,170 units (maximum), with a mid-point shortfall of some 3,017 units. There is solid support for the Lima Ola product during its proposed development period on a gross demand basis.

Even if all 5,921 proposed/unbuilt units in the region achieve reasonable development speed and absorption velocities, and the circa 100 standing yet unsold units are accounted for, there will still remain substantial unmet Residual Demand (mid-point) for both single family homes and multi-family units in every five-year projection period from 2014 through 2040.

PROJECTION OF POTENTIAL SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON TOTAL DEMAND FOR RESIDENTIAL UNITS IN THE LIHUE-KAHEKA STUDY AREA

Segment	TOTAL UNITS PROPOSED Excluding Subject	Sales Period 2014-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
All Residential Unit Types								
Identified Supply (1)	6,021	259	875	1,000	1,125	1,250	1,512	6,021
Percentage of Total Supply		4%	15%	17%	19%	21%	25%	100%
Regional Housing Unit Demand (mid-point)	9,038	404	1,649	1,732	1,678	1,750	1,825	9,038
Shortage or (Excess) Supply	3,017	145	774	732	553	500	313	3,017
Potential Residual Subject Unit Demand								
at 75% Capture Rate	2,263	109	581	549	415	375	235	2,263
at 50% Capture Rate	1,509	72	387	366	276	250	157	1,509

(1) Includes allowance of 100 unsold units in completed projects not included within the identified inventory supply.

Using mid-point demand estimates, the residual demand available will be sufficient to absorb the subject units in a timely manner within a 5 to 8-year exposure period (pre-sale to sell-out).

Given the desirable location, its master-planned amenities, anticipated pricing, and lifestyle envisioned for Lima Ola, it will achieve a solid market standing and prove strongly competitive in the regional housing market; able to garner a significant share of demand even though there may be large numbers of competing units proposed.

We estimate the subject could readily achieve an average Market Shares (or "Capture") Rate of between 15 and 20 percent (or up to just 20 percent) of the total Lihue-Kaheka demand for new housing units.

A total absorption period for the subject residential product of between about 6-plus years and 12 years is indicated by this analysis, assuming pre-sales start in 2017, as shown.

SUMMARY OF SUBJECT PROJECTED DEMAND LEVELS USING THE MARKET SHARES METHOD

Scenario One: Using Minimum Demand Assumptions

Sales Year		Total Regional	Effective Subject	Indicated Total Subject
Date	Period	Demand	Share	Absorption
2017	1	280	20.00%	56
2018	2	280	18.00%	50
2019	3	280	16.00%	45
2020	4	280	15.00%	42
2021	5	295	15.00%	44
2022	6	295	15.00%	44
2023	7	295	15.00%	44
2024	8	295	15.00%	44
2025	9	295	15.00%	44
2026	10	303	15.00%	46
2027	11	303	15.00%	46
2028	12	303	14.50%	44
Totals		**3,507**	**15.68%**	**550**

Scenario Two: Using Maximum Demand Assumptions

Sales Year		Total Regional	Effective Subject	Indicated Total Subject
Date	Period	Demand	Share	Absorption
2017	1	379	25.00%	95
2018	2	379	22.00%	83
2019	3	379	20.00%	76
2020	4	379	20.00%	76
2021	5	398	20.00%	80
2022	6	398	20.00%	80
2023	7	398	15.25%	61
Totals		**2,710**	**20.28%**	**550**

We conclude the 550 proposed units of the Lima Ola master plan will achieve full absorption within approximately seven to ten-years of initial pre-sale offerings.

The General Plan Update technical studies (by SMS) also support the absorption of the Lima Ola inventory during its probable marketing period. They forecast demand for an additional 760 units specifically in Hanapepe-Eleele by 2035; or some 970 if extrapolated for our entire projection period to 2040.

Without the subject product, there are only 308 units projected to be added in major projects (107 remaining homes at Eleele Iluna and 201 proposed, but unentitled, by A&B), a shortfall of some 662 units in the community.

If demand was strictly limited to this local context, the absorption of Lima Ola would lengthen to circa 15 to 20 years. However, renters and purchasers will be drawn from the Lihue-Kekaha regional market and affect a quicker absorption.

OTHER MARKET ISSUES

Secondary Market Considerations

- The impact of possible imposition of resale limitations/exactions ("profit sharing") on absorption, is not an issue for the rental component and should not meaningfully hamper sales velocity for the lower-priced "for sale" units, as there is limited alternative housing available in their affordability range.

  However, those in the upper-end of the "gap group" income households (between 120 percent and 140 percent of Kauai median income) have more alternatives available as they have the ability to compete for more market homes whose prices began to merge with the top-end of the Lima Ola inventory.

  In some respects the implementation of this concept inhibits those in the 80 percent to 120 percent of median income range from acquiring equity; a group in need of building-up household wealth.

- Lima Ola will have minor impacts on the socio-economic aspects of the surrounding community that relate to real estate issues.

  1. The proposed residential components will be generally compatible and contextually consistent with existing and planned nearby housing developments.

2. Property values in the region are largely driven by external, cyclical economic factors within an existing (and expanding) cumulative mass, not any single new project. Lima Ola will not, in itself, drive regional market values or real property assessments of nearby real estate.

3. It is not expected there will be any in-migration to Kauai as a direct result of the project.

4. The subject residential inventory will meet Kauai County workforce housing guidelines, providing new, competitively-priced inventory across a broad-spectrum of purchaser demographics; contribute to the local and regional economy through discretionary household expenditures.

/as/5408_R01

ADDENDA

LIST OF TABLES

TABLE 1

HISTORIC, CURRENT AND PROJECTED RESIDENT POPULATION TOTALS FOR THE STATE, COUNTY AND LIHUE TO KEKAHA STUDY AREA 2010 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	2010	Current	2015	2020		2025	2030	2035	2040
State Total	**1,363,621**	**1,407,000**	**1,418,250**	**1,481,240**		**1,543,240**	**1,602,340**	**1,657,500**	**1,708,920**
Average Annual Change in Persons		10,845	11,250	12,598		12,400	11,820	11,032	10,284
Average Annual Percent Growth		0.8%	0.8%	0.9%		0.8%	0.8%	0.7%	0.6%
Kauai County	**67,226**	**70,500**	**71,380**	**75,640**	(1)	**80,000**	**84,380**	**88,730**	**93,020**
Percent of State Total	4.9%	5.0%	5.0%	5.1%		5.2%	5.3%	5.4%	5.4%
Average Annual Change in Persons		819	880	852		872	876	870	858
Average Annual Percent Growth		1.2%	1.2%	1.2%		1.2%	1.1%	1.0%	1.0%
Study Area (Lihue to Kekaha)									
1. Minimum Perspective	**38,187**	**40,600**	**41,200**	**44,250**		**47,350**	**50,500**	**53,700**	**56,950**
Percent of County Total	56.8%	57.6%	57.7%	58.5%		59.2%	59.8%	60.5%	61.2%
Average Annual Change in Persons		603	600	610		620	630	640	650
Average Annual Percent Growth		1.6%	1.5%	1.5%		1.4%	1.3%	1.3%	1.2%
2. Maximum Perspective	**38,187**	**40,600**	**41,250**	**44,625**		**48,125**	**51,750**	**55,500**	**59,375**
Percent of County Total	56.8%	57.6%	57.8%	59.0%		60.2%	61.3%	62.5%	63.8%
Average Annual Change in Persons		603	650	675		700	725	750	775
Average Annual Percent Growth		1.6%	1.6%	1.6%		1.6%	1.5%	1.4%	1.4%

(1) The Kauai County General Plan (2000) projected the total resident population of Kauai in 2020 would be between 65,260 ("Low") and 74,320 ("High") persons.

Source: DBEDT "2040 Series", US 2010 Census, STDBonline, and The Hallstrom Group, Inc.

TAB 4

QUANTIFICATION OF HOUSING UNIT DEMAND FOR THE LIHUE-KEKAHA STUDY AREA 2014 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	2014	2015	2020	2025	2030	2035	2040	Additional Units Required by 2040
Scenario One: Minimum								
Resident Population	40,600	41,200	44,250	47,350	50,500	53,700	56,950	
Average Household Size (1)	2.88	2.87	2.85	2.83	2.80	2.78	2.75	
Total Resident Units Required	14,097	14,355	15,526	16,761	18,036	19,351	20,709	
Vacancy Allowance (2 % of resident unit demand)	282	287	311	335	361	387	414	
Non-Resident Purchaser Allowance (2) (17% of resident unit demand)	2,397	2,440	2,639	2,849	3,066	3,290	3,521	
TOTAL MARKET UNIT DEMAND	**16,776**	**17,083**	**18,476**	**19,946**	**21,463**	**23,028**	**24,644**	**7,886**
Scenario Two: Maximum Based on Planning Department Historical "High" Population Forecasts (Unadjusted)								
Resident Population	40,600	41,250	44,625	48,125	51,750	55,500	59,375	
Average Household Size (1)	2.88	2.86	2.83	2.80	2.77	2.74	2.71	
Total Resident Units Required	14,097	14,423	15,769	17,188	18,682	20,255	21,910	
Vacancy Allowance (3% of resident unit demand)	423	433	473	516	560	608	657	
Non-Resident Purchaser Allowance (2) (20% of resident unit demand)	2,819	2,885	3,154	3,438	3,736	4,051	4,382	
TOTAL MARKET UNIT DEMAND	**17,340**	**17,740**	**19,395**	**21,141**	**22,979**	**24,914**	**26,949**	**10,191**

CONCLUDED HOUSING UNIT DEMAND RANGE

	Existing	2014-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Totals
MINIMUM DEMAND								
Periodic	18	307	1,393	1,469	1,517	1,566	1,616	7,886
Cumulative	18	310	1,711	3,188	4,705	6,270	7,886	
Average Annual Demand (3)		155	280	295	303	313	323	
MAXIMUM DEMAND								
Periodic	582	401	1,655	1,745	1,839	1,935	2,035	10,191
Cumulative	582	498	2,395	4,383	6,221	8,156	10,191	
Average Annual Demand (3)		249	379	398	368	387	407	
MID-POINT DEMAND								
Periodic	300	354	1,524	1,607	1,678	1,750	1,825	9,038
Cumulative	300	404	2,053	3,785	5,463	7,213	9,038	
Average Annual Demand (3)		202	330	346	336	350	365	

(1) Census reported average resident household size for Primary Study Area in 2010 was 2.88 persons.
(2) There were 15,562 total "housing units" in the Study Area in 2010; 13,182 were used by resident households (84.7%) and 2,380 were used by non-residents/visitors. Current estimates there are 16,758 housing units in Study Area, with 84.0 percent used be resident households and 16.0 percent used by non-residents/visitors.
(3) Existing (or latent) demand is assumed absorbed evenly from 2014 though 2025.

Source: US Census, County of Kauai, STDB, and The Hallstrom Group, Inc.

TABLE 3

ESTIMATE OF SINGLE FAMILY HOME AFFORDABILITY PRICING PARAMETERS FOR KAUAI HOUSEHOLDS
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Assuming Three-Bedroom House, 4.5 Percent Mortgage Interest Rate

1. Based on HUD/Kauai County Criteria for Three-Bedroom Single Family House

Grouping Household Income as a Percent of County Median	Low Income 80% or less	Below-Moderate to Moderate Income 81% to 120%	Gap Group Income 121% to 140%
Gross Household Monthly Income, Using Maximum for Category (1)	$4,687	$7,030	$8,202
Amount Available for Debt Service (2)	$1,156	$1,859	$2,211
Maximum Mortgage Amount (3)	$228,150	$366,894	$455,707
Down payment at 5% of Sales Price	$12,008	$19,310	$23,985
Total Affordable Purchase Price, Maximum for Category	**$240,158**	**$386,204**	**$479,692**
Indicated Affordable Price Range for Category (Rounded)	**Up to $240,000**	**$240,000 to $386,000**	**$386,000 to $480,000**
Estimated Pricing Guidelines for Other Single Family House Sizes (Rounded to Nearest $1,000)			
Studio	$150,000	$250,000	$310,000
One Bedroom House	$170,000	$270,000	$330,000
Two Bedroom House	$200,000	$330,000	$410,000
Three Bedroom House	**$240,000**	**$386,000**	**$480,000**
Four Bedroom House	$270,000	$440,000	$540,000
Five Bedroom House	$300,000	$480,000	$600,000

2. Based on Conventional Financing Criteria

Grouping	Low Income	Below-Moderate to Moderate Income	Above-Moderate to Gap Group Income
Gross Household Monthly Income	$4,687	$7,030	$8,202
Maximum Allowable Housing Expense (4)	$1,312	$1,968	$2,296
Maximum Mortgage Amount (5)	$258,938	$388,407	$453,141
Down payment at 20% of Sales Price (6)	$64,735	$97,102	$113,285
Total Affordable Purchase Price	**$323,673**	**$485,509**	**$566,426**
Indicated Affordable Price Range for Category (Rounded)	**Up to $324,000**	**$324,000 to $486,000**	**$486,000 to $566,000**

THE BANK OF HAWAII INTEREST RATE ON A STANDARD 30-YEAR FIXED MORTGAGE DURING REPORT PREPARATION WAS 4.125% APR with 1.625 points or 4.250% with .750 points.

Note: Total Purchase Price estimate excludes any points associated with financing.

(1) Based on estimated 2014 median household income for Kauai of $70,300.
(2) Based on Kauai County mortgage affordability criteria with payments at 30% of gross income, $250 tax, insurance & mortgage insurance for single family homes.
(3) Assuming 4.5% annual interest and 30 year mortgage with 5% down payment, no discount points.
(4) Conventional financing with maximum monthly mortgage payment at 28% of gross income, apart from any reserves.
(5) Assuming 4.5% annual interest and 30 year mortgage, with 20% down payment.
(6) Conventional financing standard.

Source: Kauai County Housing Agency, Bank of Hawaii, and The Hallstrom Group, Inc.

TABLE 4

ESTIMATE OF MULTIFAMILY HOME AFFORDABILITY PRICING PARAMETERS FOR KAUAI HOUSEHOLDS
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Assuming Three-Bedroom Unit, 4.5 Percent Mortgage Interest Rate

1. Based on HUD/Kauai County Criteria for Multifamily ("Condo/CPR")

Grouping Household Income as a Percent of County Median	Low Income 80% or less	Below-Moderate to Moderate Income 81% to 120%	Above-Moderate to Gap Group Income 121% to 140%
Gross Household Monthly Income, Using Maximum for Category (1)	$4,687	$7,030	$8,202
Amount Available for Debt Service (2)	$956	$1,659	$2,011
Maximum Mortgage Amount (3)	$188,677	$327,422	$396,893
Down payment at 5% of Sales Price	$9,930	$17,233	$20,889
Total Affordable Purchase Price, Maximum for Category	**$198,607**	**$344,655**	**$417,782**
Indicated Affordable Price Range for Category (Rounded)	**Up to $199,000**	**$199,000 to $345,000**	**$345,000 to $418,000**
Estimated Pricing Guidelines for Other Multifamily Unit Sizes (Rounded to Nearest $1,000)			
Studio	$120,000	$210,000	$250,000
One Bedroom Unit	$130,000	$230,000	$280,000
Two Bedroom Unit	$170,000	$290,000	$350,000
Three Bedroom Unit	**$199,000**	**$345,000**	**$418,000**
Four Bedroom Unit	$220,000	$390,000	$470,000
Five Bedroom Unit	$250,000	$440,000	$530,000

2. Based on Conventional Financing Criteria

Grouping	Low Income	Below-Moderate to Moderate Income	Above-Moderate to Gap Group Income
Gross Household Monthly Income	$4,687	$7,030	$8,202
Maximum Allowable Housing Expense (4)	$1,312	$1,968	$2,296
Maximum Mortgage Amount (5)	$258,938	$388,407	$453,141
Down payment at 20% of Sales Price (6)	$64,735	$97,102	$113,285
Total Affordable Purchase Price	**$323,673**	**$485,509**	**$566,426**
Indicated Affordable Price Range for Category (Rounded)	**Up to $324,000**	**$324,000 to $486,000**	**$486,000 to $566,000**

THE BANK OF HAWAII INTEREST RATE ON A STANDARD 30-YEAR FIXED MORTGAGE DURING REPORT PREPARATION WAS 4.125% APR with 1.625 points or 4.250% with .750 points.

Note: Total Purchase Price estimate excludes any points associated with financing.

(1) Based on estimated 2014 median household income for Kauai of $70,300.
(2) Based on Kauai County mortgage affordability criteria with payments at 30% of gross income, $450 tax, insurance, mortgage insurance & assoc. fees on Condo/CPU units.
(3) Assuming 4.5% annual interest and 30 year mortgage with 5% down payment, no discount points.
(4) Conventional financing with maximum monthly mortgage payment at 28% of gross income, apart from any reserves.
(5) Assuming 4.5% annual interest and 30 year mortgage, with 20% down payment.
(6) Conventional financing standard.

Source: Kauai County Housing Agency, Bank of Hawaii, and The Hallstrom Group, Inc.

TABLE 5

MONTHLY AFFORDABLE NET RENT GUIDELINES FOR KAUAI COUNTY
BY UNIT SIZE AND PERCENTAGE OF MEDIAN HOUSEHOLD INCOME
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Percent of Median Income	Unit Size By Number of Bedrooms					
	Studio	1 BR	2 BR	3BR (1)	4 BR	5 BR (1)
30%	$233	$273	$271	$300	$318	$352
50%	$550	$637	$679	$772	$845	$933
80%	$812	$935	$1,016	$1,160	$1,278	$1,410
100%	$986	$1,134	$1,240	$1,419	$1,566	$1,729
120%	$1,233	$1,417	$1,557	$1,786	$1,976	$2,181
140%	$1,724	$1,970	$2,216	$2,560	$2,856	$3,152
160%	$1,969	$2,250	$2,531	$2,926	$3,263	$3,601
180%	$2,215	$2,531	$2,848	$3,291	$3,670	$4,050

Note: Affordable Rents are based on 30% of gross monthly household income less utility allowance.

(1) Average rent for unit based on two occupancy assumptions.

Source: Kauai County Housing Agency, and The Hallstrom Group, Inc.

TABLE 6

STRIATED PROJECTIONS OF HOUSING UNIT DEMAND
BY SELLING PRICE IN THE LIHUE-KEKAHA STUDYAREA 2014 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Expressed in Constant 2014 Dollars

Period	Periodic Demand 2014 to 2015	2016 to 2020	2021 to 2025	2026 to 2030	2031 to 2035	2036 to 2040	Total Demand 2014-2040
1. Minimum Demand Forecasts							
Less Than $200,000 (1)	**118**	**532**	**554**	**561**	**571**	**582**	**2,918**
Percent of Total Demand	38.00%	38.00%	37.50%	37.00%	36.50%	36.00%	37.01%
$200,000 to $480,000 (2)	**99**	**448**	**480**	**501**	**524**	**549**	**2,602**
Percent of Total Demand	32.00%	32.00%	32.50%	33.00%	33.50%	34.00%	32.99%
$480,000 to $1,000,000	**62**	**280**	**295**	**303**	**313**	**323**	**1,577**
Percent of Total Demand	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Over $1,000,000	**31**	**140**	**148**	**152**	**157**	**162**	**789**
Percent of Total Demand	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Total Market Demand	**310**	**1,401**	**1,477**	**1,517**	**1,566**	**1,616**	**7,886**
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
2. Maximum Demand Forecasts							
Less Than $200,000 (1)	**189**	**721**	**745**	**680**	**706**	**732**	**3,774**
Percent of Total Demand	38.00%	38.00%	37.50%	37.00%	36.50%	36.00%	37.04%
$200,000 to $480,000 (2)	**159**	**607**	**646**	**607**	**648**	**692**	**3,359**
Percent of Total Demand	32.00%	32.00%	32.50%	33.00%	33.50%	34.00%	32.96%
$480,000 to $1,000,000	**100**	**379**	**398**	**368**	**387**	**407**	**2,038**
Percent of Total Demand	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Over $1,000,000	**50**	**190**	**199**	**184**	**193**	**203**	**1,019**
Percent of Total Demand	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Total Market Demand	**498**	**1,897**	**1,988**	**1,839**	**1,935**	**2,035**	**10,191**
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

First Quarter 2014 MLS Median Sale Prices

	Residential	Condo	Land
Waimea	$330,000	$0	$75,000
Koloa	$503,500	$535,000	$275,000
Lihue	$392,500	$152,250	$289,900

(1) This price is considered "affordable" for households earning 80% of the median county household income ("Low Income").
(2) This price is considered "affordable" for households earning from 81% to 140% of county median (includes "Below Moderate" to "Gap Income" categories).

Source: Kauai County, DBEDT, MLS and The Hallstrom Group, Inc.

TABLE 7

DIVISION OF PROJECTED DEMAND BY UNIT TYPE
FOR HOUSING UNITS IN LIHUE-KEKAHA STUDY AREA 2014 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	Periodic Demand (1)						Total
	2014 to 2015	2016 to 2020	2021 to 2025	2026 to 2030	2031 to 2035	2036 to 2040	Demand 2014-2040
1. Using Minimum Demand Projections							
Single Family Homes	211	925	945	940	955	969	4,945
Percent of Total	68%	66%	64%	62%	61%	60%	63%
Multifamily Units	99	476	532	576	611	646	2,940
Percent of Total	32%	34%	36%	38%	39%	40%	37%
Total	**310**	**1,401**	**1,477**	**1,517**	**1,566**	**1,616**	**7,886**
	100%	100%	100%	100%	100%	100%	100%
2. Using Maximum Projections							
Single Family Homes	338	1,252	1,272	1,140	1,180	1,221	6,404
Percent of Total	68%	66%	64%	62%	61%	60%	63%
Multifamily Units	159	645	716	699	755	814	3,787
Percent of Total	32%	34%	36%	38%	39%	40%	37%
Total	**498**	**1,897**	**1,988**	**1,839**	**1,935**	**2,035**	**10,191**
	0%	0%	0%	0%	0%	0%	0%
Mid-Point							
Single Family Homes	275	1,088	1,109	1,040	1,068	1,095	**5,675**
Multifamily Units	129	561	624	638	683	730	**3,364**
Total	**404**	**1,649**	**1,732**	**1,678**	**1,750**	**1,825**	**9,038**

Source: The Hallstrom Group, Inc.

TABLE 8

DIVISION OF PROJECTED DEMAND BETWEEN ONWER-OCCUPANTS AND RENTALS FOR HOUSING UNITS IN LIHUE-KEKAHA STUDY AREA 2014 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	Periodic Demand (1)						Total Demand 2014-2040
	2014 to 2015	2016 to 2020	2021 to 2025	2026 to 2030	2031 to 2035	2036 to 2040	
1. Using Minimum Demand Projections							
Owner-Occupied Units	186	840	871	880	892	905	4,575
Percent of Total	60%	60%	59%	58%	57%	56%	58%
Renter-Occupied Units	124	560	605	637	673	711	3,311
Percent of Total	40%	40%	41%	42%	43%	44%	42%
Total	**310**	**1,401**	**1,477**	**1,517**	**1,566**	**1,616**	**7,886**
	100%	100%	100%	100%	100%	100%	100%
2. Using Maximum Projections							
Owner-Occupied Units	299	1,138	1,173	1,066	1,103	1,139	5,918
Percent of Total	60%	60%	59%	58%	57%	56%	58%
Renter-Occupied Units	199	759	815	772	832	895	4,272
Percent of Total	40%	40%	41%	42%	43%	44%	42%
Total	**498**	**1,897**	**1,988**	**1,839**	**1,935**	**2,035**	**10,191**
	100%	100%	100%	100%	100%	100%	100%
Mid-Point							
Owner-Occupied Units	242	989	1,022	973	998	1,022	**5,247**
Renter-Occupied Units	162	660	710	705	753	803	**3,792**
Total	**404**	**1,649**	**1,732**	**1,678**	**1,750**	**1,825**	**9,038**

Source: The Hallstrom Group, Inc.

TABLE 9

PROJECTED SENIOR HOUSING DEMAND
FOR UNITS IN LIHUE-KEKAHA STUDY AREA 2014 TO 2040
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	Current	Periodic Demand (1) 2014 to 2015	2016 to 2020	2021 to 2025	2026 to 2030	2031 to 2035	2036 to 2040	Total Demand 2014-2040
1. Using Minimum Demand Projections								
Total Study Area Population (1)	40,600	41,200	44,250	47,350	50,500	53,700	56,950	
Resident Senior Population (2)	12,180	12,360	13,496	14,679	15,908	17,184	18,509	
Percent of Total Population	30.0%	30.0%	30.5%	31.0%	31.5%	32.0%	32.5%	
In Senior-Only Households	9,866	10,012	10,999	12,036	13,124	14,263	15,362	
Percent of Senior Population	81.0%	81.0%	81.5%	82.0%	82.5%	83.0%	83.0%	
Average Senior Household Size	1.74	1.75	1.76	1.77	1.78	1.79	1.8	
Regional Senior Housing Demand	5,670	5,721	6,250	6,800	7,373	7,968	8,535	
Vacancy Allowance (2%)	113	114	125	136	147	159	171	
Total Senior Housing Units Required	**5,783**	**5,835**	**6,375**	**6,936**	**7,520**	**8,127**	**8,705**	**2,922**
Percent of Total Study Area Demand	34.5%	34.2%	34.5%	34.8%	35.0%	35.3%	35.3%	
Percent Low Income Senior Households	42%	42%	42%	42%	42%	42%	42%	
Low Income Senior Housing Unit Demand	**2,429**	**2,451**	**2,677**	**2,913**	**3,159**	**3,413**	**3,656**	**1,227**
Percent of Total Study Area Demand	14.5%	14.3%	14.5%	14.6%	14.7%	14.8%	14.8%	
2. Using Maximum Demand Projections								
Total Study Area Population (1)	40,600	41,250	44,625	48,125	51,750	55,500	59,375	
Resident Senior Population (2)	12,180	12,375	13,611	14,919	16,301	17,760	19,297	
Percent of Total Population	30.0%	30.0%	30.5%	31.0%	31.5%	32.0%	32.5%	
In Senior-Only Households	9,866	10,024	11,093	12,233	13,449	14,741	16,016	
Percent of Senior Population	81.0%	81.0%	81.5%	82.0%	82.5%	83.0%	83.0%	
Average Senior Household Size	1.74	1.75	1.76	1.77	1.78	1.79	1.8	
Regional Senior Housing Demand	5,670	5,728	6,303	6,912	7,555	8,235	8,898	
Vacancy Allowance (3%)	170	172	189	207	227	247	267	
Total Senior Housing Units Required	**5,840**	**5,900**	**6,492**	**7,119**	**7,782**	**8,482**	**9,165**	**3,325**
Percent of Total Study Area Demand	33.7%	33.3%	33.5%	33.7%	33.9%	34.0%	34.0%	
Percent Low Income Senior Households	42%	42%	42%	42%	42%	42%	42%	
Low Income Senior Housing Unit Demand	**2,453**	**2,478**	**2,727**	**2,990**	**3,268**	**3,562**	**3,849**	**1,396**
Percent of Total Study Area Demand	14.1%	14.0%	14.1%	14.1%	14.2%	14.3%	14.3%	
Mid-Point								
Total Senior Housing Unit Demand	**5,812**	**5,868**	**6,433**	**7,028**	**7,651**	**8,305**	**8,935**	**3,123**
Low Income Senior Housing Unit Demand	**2,441**	**2,464**	**2,702**	**2,952**	**3,213**	**3,488**	**3,753**	**1,312**

(1) End of period figure.
(2) Full-Time Residents over the age of 55.

Source: The Hallstrom Group, Inc.

TABLE 10

MAJOR IN-DEVELOPMENT AND PROPOSED PROJECTS IN THE LIHUE-KAHEKA STUDY AREA
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

District	Project Description	No. of Units Proposed or Yet Unbuilt	Status	Notes
Lihue	D.R. Horton Residential Subdivision	444	Submitted 2013 status report	Awaiting construction plan approval from DOW
Lihue	"Pikake" Subdivision	146	Lots are for sale	Buildout of Subdivision with 180 lots (assume 20% or 36 units constructed)
Lihue	Grove Farm Wailani Residential	1,450	Unknown	Residential
Lihue	Koamalu	220	Submitted annual status report (2/14/12)	220 Unit Condo Incl. 66 Affordable Housing Units
Lihue	Rice Camp Elderly	84	Ongoing	Subject to award of LIHTC, 60 units in Phase 1, 24 units in Phase II
Lihue	Kauai Lagons	400	In-Development	Total remaining unit count subject to change. Many units may be timeshare.
Poipu	Kiahuna Golf Course	800	In-Development	191-Unit Pali Mai MF project in pre-sales. 190 subdivided unsold lots. Total unit count may drop.
Poipu	Koloa Landing	210	In-Development	7 of 20 buildings completed/in-construction of multifamily resort-residential community.
Poipu	Village at Poipu	128	On-Hold	Project unable to obtain access, future unknown.
Poipu	Weliweli Expansion	400	On-Hold	Long-planned expansion of existing County/State subdivision.
Koloa	Brydeswood Ranch (A&B)	24	Unknown	24 lots, but density not known.
Koloa	Kōloa Creekside	72	Ongoing	County lost developer's lawsuit over height limit imposed by Commission in 2008
Koloa	Kukui'ula Employee Housing	75	Submitted annual status report (10/11/11)	Will be constructed within 10 years
Koloa	Kukui'ula	750	Final subdivision map approval for parcels M1, M4, Y	Total of 123 lots subdivided already
Koloa	The Village at Kōloa Town	34	Unknown	Mixed Use on 5.38 acres
Koloa	Kōloa Camp - Waihononu	50	Underway	2 & 3 bedroom single family
Eleele	Eleele Iluna (Habitat for Humanity)	107	Underway	125 total lot/homes for households at 30% to 60% of median. 18 finished to date.
Eleele	A&B Eleele Residential	201	Unknown	Units are estimated based on max density (21.1834 acres * R-10)
Eleele	Lima Ola - County (Affordable)	550	Master Plan complete	Proposed County Affordable Housing Project - NO SLUD NO GP, March 2013
Waimea	Kikiaola Mauka	270	Unknown	270 estimated in General Plan Appendix
Waimea	Kikialoa - Field 14	56	Not constructed	56 Dwelling, Single Family Detached/ / (TMK: 1-6-008:006)

Proposed Units INCLUDING Lima Ola	**6,471**
Proposed Units EXCLUDING Lima Ola	**5,921**

= Subject Property

Source: Preliminary/Unofficial Kauai County Planning Department list, and The Hallstrom Group, Inc.

TABLE 11

PROJECTION OF POTENTIAL SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON TOTAL DEMAND FOR RESIDENTIAL UNITS IN THE LIHUE-KEKAHA STUDY AREA
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Segment	TOTAL UNITS PROPOSED Excluding Subject	Sales Period 2014-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
All Residential Unit Types								
Identified Supply (1)	**6,021**	259	875	1,000	1,125	1,250	1,512	**6,021**
Percentage of Total Supply		4%	15%	17%	19%	21%	25%	100%
Regional Housing Unit Demand (mid-point)	**9,038**	**404**	**1,649**	**1,732**	**1,678**	**1,750**	**1,825**	**9,038**
Shortage or (Excess) Supply	**3,017**	**145**	**774**	**732**	**553**	**500**	**313**	**3,017**
Potential Residual Subject Unit Demand								
at 75% Capture Rate	2,263	109	581	549	415	375	235	**2,263**
at 50% Capture Rate	1,509	72	387	366	276	250	157	**1,509**

(1) Includes allowance of 100 unsold units in completed projects not included within the identified inventory supply.

Source: The Hallstrom Group, Inc.

TABLE 12

PROJECTED SUBJECT INVENTORY ABSORPTION
USING THE MARKET SHARES METHOD
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Scenario One: Using Minimum Demand Assumptions

Sales Year		Total Regional	Effective Subject	Indicated Total Subject
Date	Period	Demand	Share	Absorption
2017	1	280	20.00%	56
2018	2	280	18.00%	50
2019	3	280	16.00%	45
2020	4	280	15.00%	42
2021	5	295	15.00%	44
2022	6	295	15.00%	44
2023	7	295	15.00%	44
2024	8	295	15.00%	44
2025	9	295	15.00%	44
2026	10	303	15.00%	46
2027	11	303	15.00%	46
2028	12	303	14.50%	44
Totals		**3,507**	**15.68%**	**550**

Scenario Two: Using Maximum Demand Assumptions

Sales Year		Total Regional	Effective Subject	Indicated Total Subject
Date	Period	Demand	Share	Absorption
2017	1	379	25.00%	95
2018	2	379	22.00%	83
2019	3	379	20.00%	76
2020	4	379	20.00%	76
2021	5	398	20.00%	80
2022	6	398	20.00%	80
2023	7	398	15.25%	61
Totals		**2,710**	**20.28%**	**550**

ANALYSIS MID-POINT			
9.3 Years	**3,109**	**17.68%**	**550**

Source: The Hallstrom Group, Inc.

TABLE 13

PROJECTION OF POTENTIAL SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON
TOTAL DEMAND FOR RESIDENTIAL UNITS IN THE HANAPEPE-ELEELE COMMUNITY
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Based on Proposed Units Identified by Planning Department, Using Kauai County Housing Demand Projections

Segment	TOTAL UNITS PROPOSED Excluding Subject	Sales Period 2014-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
All Residential Unit Types								
Identified Supply								
Eleele Iluna	**107**	20	87					**107**
Percentage of Total Demand		100%	59%					100%
A&B Project	**201**		60	141				**201**
Percentage of Total Demand			41%	100%				188%
Total Regional Housing Supply	**308**	**20**	**147**	**141**	**0**	**0**	**0**	**308**
Regional Housing Unit Demand	**970**	**32**	**171**	**175**	**183**	**199**	**210**	**970**
Shortage or (Excess) Supply	**863**	**12**	**84**	**175**	**183**	**199**	**210**	**863**
Potential Residual Subject Unit Demand								
at 90% Capture Rate	**777**	11	76	158	165	179	189	**777**
at 80% Capture Rate	**690**	10	67	140	146	159	168	**690**

Source: Kauai County & The Hallstrom Group, Inc.

TABLE 14

PROPOSED LIMA OLA UNIT INVENTORY MIX
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

	Rental Units*		For Sale Units		
Type/Tenure	Elderly	General	Multifamily	Single Family	Total
Number of Units	90	125	210	125	**550**
Percent of Total	16.4%	22.7%	38.2%	22.7%	**100.0%**
Household Income Levels	Less than 80% of Median	Up to 120% of Median	80% to 120% of Median	80% to 140% of Median	
Household Size (Persons)	One to Three	One to Five	Two to Five	Two to Six	

* All "Rental Units" would be in multifamily projects.

Source: The Hallstrom Group, Inc.

TABLE 15

PROPOSED LIMA OLA UNIT INVENTORY MODEL TYPES
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Type/Tenure	Rental Units (1)		For Sale Units		
	Elderly	General	Multifamily	Single Family (2)	Total
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Percent of Total	50%	15%			12%
Avg. Size in Sq. Ft.	500	500			
One Bedroom	36	44	84		**164**
Percent of Total	40%	35%	40%		30%
Avg. Size in Sq. Ft.	700	700	800		
Two Bedroom	9	50	95	13	**167**
Percent of Total	10%	40%	45%	10%	30%
Avg. Size in Sq. Ft.	900	900	1,050	1,300	
Three Bedroom		12	31	75	**118**
Percent of Total		10%	15%	60%	21%
Avg. Size in Sq. Ft.		1,050	1,250	1,700	
Four Bedroom				37	**37**
Percent of Total				30%	7%
Avg. Size in Sq. Ft.				2,100	

(1) All "Rental Units" would be in multifamily projects.
(2) Average lot size of 5,000 square feet.

Source: The Hallstrom Group, Inc.

TABLE 16

PROPOSED LIMA OLA UNIT INVENTORY PRICING
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Type/Tenure	Rental Units (1)		For Sale Units		Total Units/ % of Total
	Elderly (2)	General (3)	Multifamily (4)	Single Family	
Number of Units	**90**	**125**	**210**	**125**	**550**
Studios	45	19			**64**
Pricing	$550 to $812	$812 to $1,233*			12%
One Bedroom	36	44	84		**164**
Pricing	$637 to $935	$935 to $1,417*	$130,000 to $280,000*		30%
Two Bedroom	9	50	95	13	**167**
Pricing	$679 to $1,016	$1,016 to $1,557*	$170,000 to $350,000*	$200,000 to $410,000*	30%
Three Bedroom		12	31	75	**118**
Pricing		$1,160 to $1,786	$199,000 to $418,000	$240,000 to $480,000*	21%
Four Bedroom				37	**37**
Pricing				$270,000 to $540,000	7%

* Figures marked with asterisk where affordability guideline prices are near/at average market pricing levels.
(1) Monthly net rents, exclusive of utilities.
(2) Rental range shown for households income between 50% and 80% of median.
(3) Rental range shown for households income between 80% and 120% of median.
(3) Price range shown for households income between 80% and 140% of median.
(4) Price range shown for households income between 80% and 140% of median.

Source: The Hallstrom Group, Inc.

TABLE 17

HISTORIC, CURRENT AND PROJECTED RESIDENT POPULATION TOTALS FOR THE STATE, COUNTY AND SUBJECT PLANNING AREAS 2010 TO 2040
FROM THE GENERAL PLAN UPDATE TECHNICAL STUDIES
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Current, 2015, 2025 and 2040 are extrapolations from the forecasted years.

	2010	Current	2015	2020	2025	2030	2035	2040
State Total	**1,363,621**	**1,407,000**	**1,418,250**	**1,481,240**	**1,543,240**	**1,602,340**	**1,657,500**	**1,708,920**
Average Annual Change in Persons		10,845	11,250	12,598	12,400	11,820	11,032	10,284
Average Annual Percent Growth		0.8%	0.8%	0.9%	0.8%	0.8%	0.7%	0.6%
Kauai County	**67,091**	**70,100**	**70,800**	**74,693**	**79,000**	**83,328**	**88,013**	**93,020**
Percent of State Total	4.9%	5.0%	5.0%	5.0%	5.1%	5.2%	5.3%	5.4%
Average Annual Change in Persons		752	700	779	861	866	937	1,001
Average Annual Percent Growth		1.1%	1.0%	1.1%	1.2%	1.1%	1.1%	1.1%
Study Area (Lihue to Kekaha)								
Lihue	**14,683**	**16,050**	**16,400**	**18,017**	**19,750**	**21,595**	**23,456**	**25,500**
Percent of County Total	21.9%	22.9%	23.2%	24.1%	25.0%	25.9%	26.7%	27.4%
Average Annual Change in Persons		342	350	323	347	369	372	409
Average Annual Percent Growth		2.3%	2.2%	2.0%	1.9%	1.9%	1.7%	1.7%
Koloa-Poipu-Kaleheo	**11,696**	**12,500**	**12,700**	**13,623**	**14,650**	**15,737**	**16,855**	**18,000**
Percent of County Total	17.4%	17.8%	17.9%	18.2%	18.5%	18.9%	19.2%	19.4%
Average Annual Change in Persons		201	200	185	205	217	224	229
Average Annual Percent Growth		1.7%	1.6%	1.5%	1.5%	1.5%	1.4%	1.4%
Hanapepe-Eleele	**6,157**	**6,275**	**6,305**	**6,463**	**6,650**	**6,860**	**7,094**	**7,350**
Percent of County Total	9.2%	9.0%	8.9%	8.7%	8.4%	8.2%	8.1%	7.9%
Average Annual Change in Persons		30	30	32	37	42	47	51
Average Annual Percent Growth		0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%
Waimea	**5,651**	**5,750**	**5,775**	**5,901**	**6,100**	**6,323**	**6,566**	**6,825**
Percent of County Total	8.4%	8.2%	8.2%	7.9%	7.7%	7.6%	7.5%	7.3%
Average Annual Change in Persons		25	25	25	40	45	49	52
Average Annual Percent Growth		0.4%	0.4%	0.4%	0.7%	0.7%	0.8%	0.8%
TOTAL STUDY AREA	**38,187**	**40,575**	**41,180**	**44,004**	**47,150**	**50,515**	**53,971**	**57,675**
Percent of County Total	56.9%	57.9%	58.2%	58.9%	59.7%	60.6%	61.3%	62.0%
Average Annual Change in Persons		597	605	565	629	673	691	741
Average Annual Percent Growth		1.6%	1.5%	1.4%	1.4%	1.4%	1.4%	1.4%

Source: Kauai County General Plan Update Technical Studies prepared by SMS, and The Hallstrom Group, Inc.

TABLE 18

HISTORIC, CURRENT AND PROJECTED HOUSING DEMAND TOTALS FOR THE COUNTY AND SUBJECT PLANNING AREAS 2010 TO 2040
FROM THE GENERAL PLAN UPDATE TECHNICAL STUDIES
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii
Current, 2015, 2025 and 2040 are extrapolations from the forecasted years.

	2010	Current	2015	2020	2025	2030	2035	2040
Kauai County	**29,793**	**31,293**	**31,668**	**33,553**	**35,503**	**37,519**	**39,569**	**41,669**
Average Annual Change in Units		375	375	377	390	403	410	420
Average Annual Percent Growth		1.3%	1.2%	1.2%	1.2%	1.1%	1.1%	1.1%
Study Area (Lihue to Kekaha)								
Lihue	**5,296**	**5,896**	**6,046**	**6,916**	**7,866**	**8,846**	**9,900**	**11,000**
Percent of County Total	17.8%	18.8%	19.1%	20.6%	22.2%	23.6%	25.0%	26.4%
Average Annual Change in Units		150	150	174	190	196	211	220
Average Annual Percent Growth		2.8%	2.5%	2.9%	2.7%	2.5%	2.4%	2.2%
Koloa-Poipu-Kaleheo	**5,764**	**6,144**	**6,244**	**6,748**	**7,258**	**7,766**	**8,292**	**8,842**
Percent of County Total	19.3%	19.6%	19.7%	20.1%	20.4%	20.7%	21.0%	21.2%
Average Annual Change in Units		95	100	101	102	102	105	110
Average Annual Percent Growth		1.6%	1.6%	1.6%	1.5%	1.4%	1.4%	1.3%
Hanapepe-Eleele	**2,240**	**2,360**	**2,392**	**2,563**	**2,738**	**2,921**	**3,120**	**3,330**
Percent of County Total	7.5%	7.5%	7.6%	7.6%	7.7%	7.8%	7.9%	8.0%
Average Annual Change in Units		30	32	34	35	37	40	42
Average Annual Percent Growth		1.3%	1.4%	1.4%	1.4%	1.3%	1.4%	1.3%
Waimea	**2,262**	**2,358**	**2,382**	**2,506**	**2,551**	**2,599**	**2,652**	**2,712**
Percent of County Total	7.6%	7.5%	7.5%	7.5%	7.2%	6.9%	6.7%	6.5%
Average Annual Change in Units		24	24	25	9	10	11	12
Average Annual Percent Growth		1.1%	1.0%	1.0%	0.4%	0.4%	0.4%	0.5%
TOTAL STUDY AREA	**15,562**	**16,758**	**17,064**	**18,733**	**20,413**	**22,132**	**23,964**	**25,884**
Percent of County Total	52.2%	53.6%	53.9%	55.8%	57.5%	59.0%	60.6%	62.1%
Average Annual Change in Units		299	306	334	336	344	366	384
Average Annual Percent Growth		1.9%	1.8%	2.0%	1.8%	1.7%	1.7%	1.6%
Total Housing Unit Demand 2014 Through 2040							**9,126**	
Average Annual Demand in Units							**351**	

Source: Kauai County General Plan Update Technical Studies prepared by SMS, and The Hallstrom Group, Inc.

TABLE 19

RESIDENTIAL UNIT RENTAL LISTINGS IN THE LIHUE-KEKAHA AREA
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

Location	Sub Location	Type	Subtype	Bed	Baths	Asking Rent	Utilities	Date Posted	Address	Listing #
Lihue	Lihue	House	Single Family	3	1	$1,550	No	10/20/2013	Ohia PL. at Laukona	4141470024
Lihue	Lihue	Apartment	Apartment	1	1	$950	Water	10/21/2013	4230 Rice Street	4143070669
Kekaha	Kehaka	House	Single Family	3	1	$1,500	No	10/22/2013	4586 Io Road at Kekaha	4145989735
Kekaha	Kehaka	House	Cottage	2	1	$1,500	No	10/22/2013		4146094616
Koloa	Poipu	House	Single Family	1	1	$1,650	Cable, WIFI	10/22/2013	Lawai Rd at Hoona Rd	4145266040
Lihue	Lihue	House	Single Family	3	1	$1,550	No	10/23/2013	4836 Ohia Pl	4147496650
Waimea	Waimea	Apartment	Apartment	2	1	$1,500	Water	10/23/2013	9890 Kahakai Road	4147408844
Kalaheo	Kalaheo	House	Cottage	1	1	$1,250	No	10/28/2013	Palama at Papalina	4157882357
Koloa	Koloa	Apartment	Apartment	1	1	$1,500	Yes	11/2/2013	Waikomo at Koloa	4167429564
Hanapepe	Hanapepe	House	House	4	2	$1,600	No	11/3/2013	5200 kaunaloa street	4170182288
Kalaheo	Kalaheo	Apartment	Studio	0	1	$950	Yes	11/5/2013	KUA at KAUMUALII HWY	4174588455
Lihue	Lihue	Apartment	Apartment	2	2	$1,500	No	11/5/2013	2930 Kress Street	4174335259
Lihue	Lihue	House	House	3	2	$1,800	Yes	11/11/2013	3684 Lala rd	4184396984
Hanapepe	Eleele	House	Home	3	2	$2,000	No	11/12/2013		4188483705
Lihue	Lihue	House	Single Family	3	2	$1,800	No	11/12/2013	ELIMA at EHIKU	4187467119
Koloa	Poipu	Apartment	Apartment	2	1	$1,495	Water	11/16/2013	4539 Piko Rd	4196388668
Hanapepe	Hanapepe	House	Home	3	2	$2,250	No	12/5/2013	4437 Iona Road	4230018092
Kalaheo	Kalaheo	Apartment	Loft	1	1	$975	Yes	12/7/2013	Lae Rd at Puuwai Rd	4233782952
Kalaheo	Kalaheo	Apartment	Apartment	3	1	$2,390	No	1/7/2014	Kai Ikena Dr. at Papalina	4277370279
Kekaha	Kehaha	House	Duplex	2	1	$1,400	No	1/7/2014	MENEHUNE ROAD	4277616719
Koloa	Poipu	Apartment	Apartment	0	1	$1,100	Yes	1/7/2014	2375 Kipuka st	4276833720
Kekaha	Omao	Apartment	Studio	0	1	$1,100	Yes	1/8/2014	Omao Rd. at Koloa Rd	4278951696
Kalaheo	Kaleheo	House	Duplex	2	1	$1,100	No	1/11/2014	4567 KULI ROAD	4283282677
Kalaheo	Lawai	Apartment	Studio	0	1	$1,000	Yes	1/15/2014	3962 Kiani st	4289178500
Kalaheo	Lawai	Apartment	Studio	0	1	$850	Yes	1/15/2014	4031 koloa rd	4288145471
Waimea	Waimea	House	Home	4	2	$3,250	No	1/18/2014	Waimea Rd at Alawai Rd	4294217172
Kalaheo	Lawai	Apartment	Studio	0	1	$850	Yes	1/19/2014	4031koloa Rd	
Kalaheo	Kalaheo	Apartment	Condo	3	2	$1,750	No	1/21/2014	4460 Ikena Place	4298738571
Kalaheo	Kalaheo	House	Cottage	1	1	$1,000	No	1/24/2014	3950 Niho Road	4302784960
Kekaha	Kekaha	House	Home	3	2	$2,400	No	1/27/2014	4517 Pueo Rd	4307176422
Waimea	Waimea	Apartment	Apartment	1	1	$1,395	No	2/8/2014	9639 MAULE Road	4325512190
Kekaha	Kekaha	House	Duplex	1	1	$950	Water	2/11/2014		4328548624
Lihue	Lihue	House	House	3	2	$2,300	No	2/13/2014	Aukoi at AheAhe	4332290635
Koloa	Poipu	Apartment	Studio	0	1	$1,350	Water	2/14/2014	5061 Lawai Road	4328105762
Kekaha	Kekaha	House	House	3	1	$1,300	No	2/16/2014	4620 A Pae Ko Place	
Kalaheo	Kalaheo	House	Home	3	2	$2,275	No	2/17/2014	3767 Nanakai Road	
Lihue	Lihue	Apartment	Apartment	1	1	$1,250	No	2/17/2014	3411 Wilcox Road	4338544552
Hanapepe	Eleele	House	House	3	1	$2,000	No	2/22/2014	HANA ROAD at KAUMUALII HIGI	4341661049
Kekaha	Omao	Apartment	Studio	0	1	$1,000	Yes	2/22/2014	Omao Rd. at Koloa Rd.	4346769249
Kekaha	Omao	Apartment	Studio	0	1	$850	Yes	2/24/2014	4266 punee road	4348460650
Kalaheo	Kaleheo	House	Home	2	1	$1,150	No	2/25/2014	LAE ROAD at PUUWAI ROAD	4348995099
Kekaha	Omao	House	House	2	1	$2,050	No	2/26/2014	4057 Atoni Place	4351805088
Kalaheo	Kaleheo	Apartment	Apartment	1	1	$1,350	No	2/28/2014	3798 Nanakai Rd.	4356161433
Kalaheo	Kaleheo	House	House	1	1	$1,200	No	2/28/2014	4544 C Kuli Rd.	4355671558
Lihue	Lihue	Apartment	Condo	2	2	$1,800	No	2/28/2014	4121 Rice St	4357159465
Hanapepe	Eleele	House	Home	3	2	$1,900	Yes	3/6/2014	4374 Manawanui Crt	4362710478
Kehaka	Kehaka	House	House	2	1	$1,250	No	3/7/2014	Puaiohi Place	4364413748
Koloa	Koloa	House	House	4	2	$2,000	No	3/9/2014	POIPU ROAD at KOLOA ROAD	4367732829
Kekaha	Kehaka	House	House	3	2	$1,850	No	3/13/2014	8055 Kekaha Road	4374039401
Hanapepe	Eleele	Apartment	Apartment	3	1	$1,600	Yes	3/15/2014	4713 Hokuloa Place	4377090143
Kalaheo	Kaleheo	Apartment	Apartment	0	1	$1,095	No	3/15/2014	Kai ikena drive at Papalina	4377075930
Lihue	Lihue	Apartment	Room	0	1	$1,250	Yes	3/15/2014	4145 koaki Place	4377134244
Koloa	Koloa	Apartment	Apartment	0	1	$1,300	Electricity	3/16/2014	4122 Koloa Rd	4367942469
Lihue	Lihue	House	Townhouse	3	2	$2,000	No	3/16/2014	Rice at hoolaka	4377705452
Kekaha	Kehaka	Apartment	Apartment	1	1	$1,000	No	3/17/2014	7980 Ulili Rd	4380002304
Kalaheo	Kaleheo	House	House	3	2	$1,950	Water	3/17/2014	Puuwai Road	4384422748
Kekaha	Kehaka	House	Duplex	1	1	$900	Water	3/18/2014	Nene at Kam Hwy	4380844480
Kalaheo	Kaleheo	Apartment	Condo	3	2	$2,000	No	3/18/2014	4370 Kalaheo Dr	4380839573
Kekaha	Kehaka	House	House	3	1	$1,600	No	3/18/2014	4586 'Io Road	4381724726
Lihue	Lihue	House	Townhouse	3	2	$3,000	Yes	3/18/2014	2110 Kaneka St.	4381276365
Lihue	Lihue	House	Townhouse	3	2	$1,800	Water	3/20/2014	Kaneka Street	4384449966
Lihue	Lihue	Apartment	Apartment	1	1	$1,100	Yes	3/21/2014	Waa Street at Rice Street	4381227963
Kalaheo	Kaleheo	Apartment	Studio	0	1	$750	Yes	3/31/2014	kaloke Rd	4401807623
Kalaheo	Kaleheo	House	Cottage	2	1	$2,000	No	3/16/2014	Kalaheo Drive at Papalina	4378175328
Koloa	Poipu	House	Duplex	2	1	$1,600	No	3/30/2014	Pee Road	4375313677

Source: Residential Listings on Target Area posted on various websites compiled by PadMapper.com from 10/13/2013, and THe Hallstrom Group.Inc

Table 20

Row Labels	Count of Asking Rent
Hanapepe	6
Kalaheo	19
Kekaha	14
Koloa	8
Lihue	14
Waimea	3
Kehaka	1
Grand Total	**65**

RESIDENTIAL RENTAL SUPPLY IN STUDY AREA BY NUMBER OF UNITS (Oct 2013 - Mar 2014)
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii

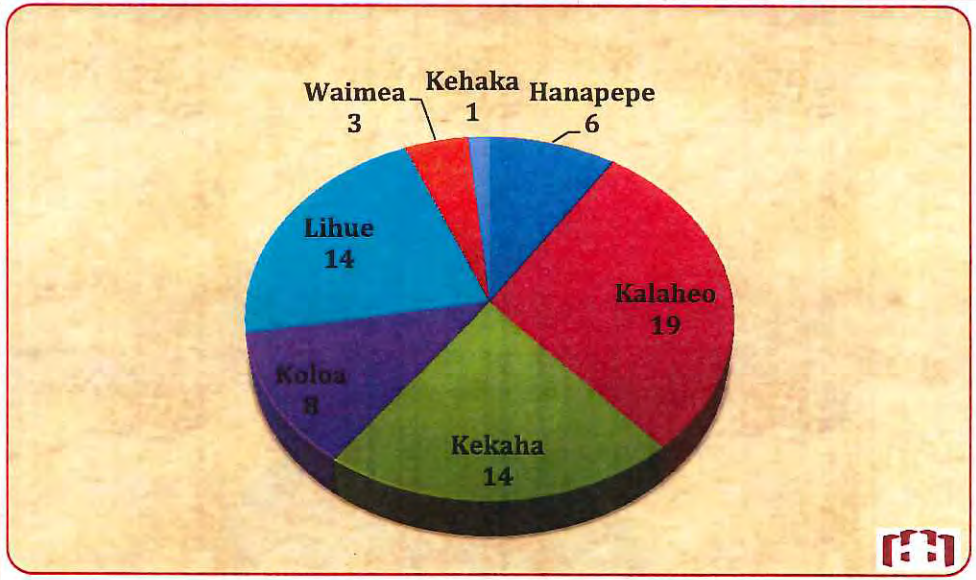
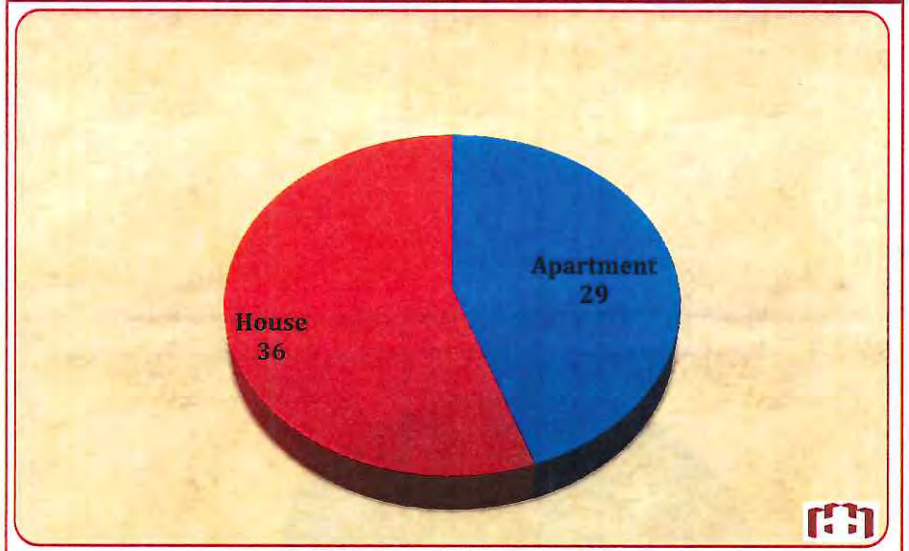


Table 20

Row Labels	Count of Asking Rent
Apartment	29
House	36
Grand Total	**65**

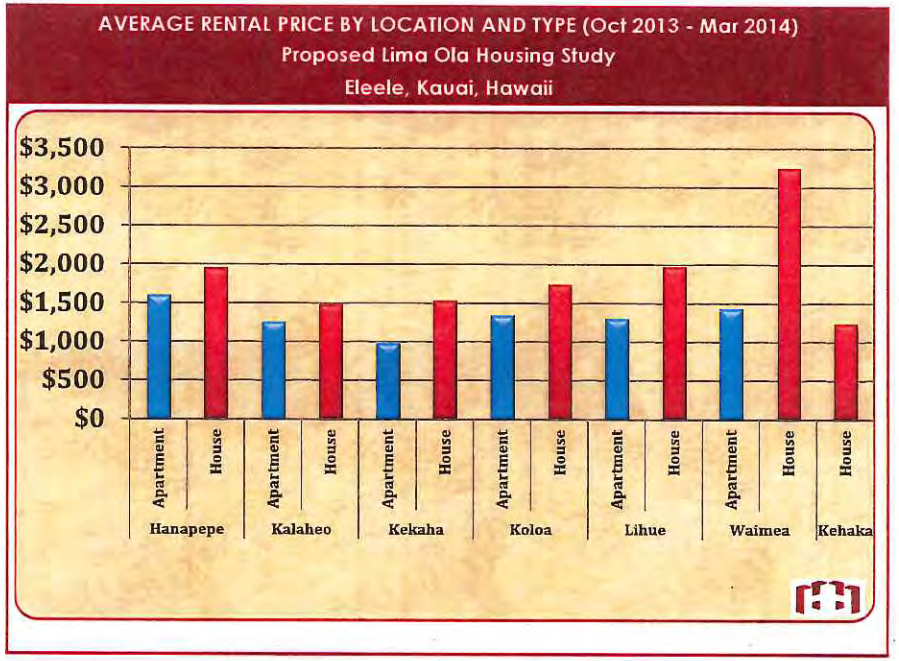
RESIDENTIAL RENTAL SUPPLY IN STUDY AREA BY UNIT TYPE (Oct 2013 - Mar 2014)
Market Study of the Proposed Lima Ola Community
Eleele, Kauai, Hawaii



Definitions	
Apartment	**House**
Apartment	House
Condo	Cottage
Studio	Home
Room	Duplex
Upstairs	Townhouse
Loft	

Table 21

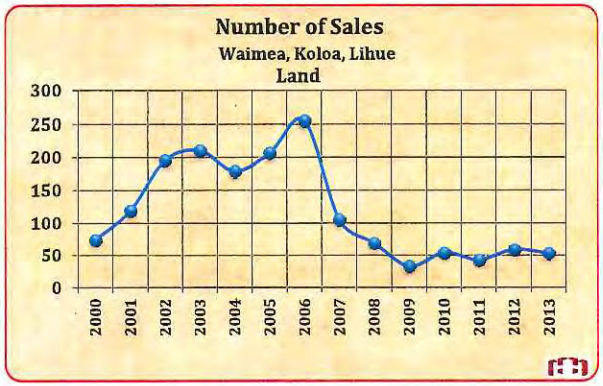
Row Labels	Average of Asking Rent
Hanapepe	**$1,892**
Apartment	$1,600
House	$1,950
Kalaheo	**$1,362**
Apartment	$1,269
House	$1,491
Kekaha	**$1,386**
Apartment	$988
House	$1,545
Koloa	**$1,499**
Apartment	$1,349
House	$1,750
Lihue	**$1,689**
Apartment	$1,308
House	$1,975
Waimea	**$2,048**
Apartment	$1,448
House	$3,250
Kehaka	**$1,250**
House	$1,250
Grand Total	**$1,533**

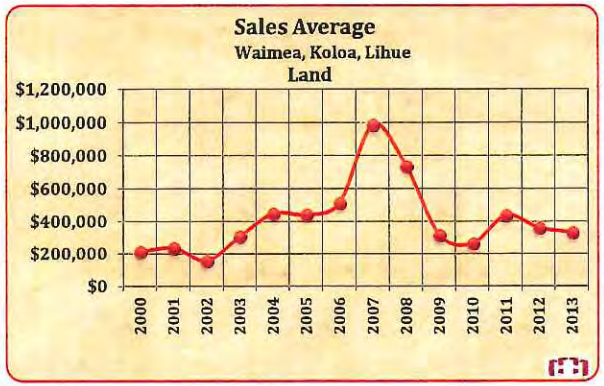


Definitions	
Apartment	**House**
Apartment	House
Condo	Cottage
Studio	Home
Room	Duplex
Upstairs	Townhouse
Loft	

Definitions					
Hanapepe	**Kaleheo**	**Kekaha**	**Koloa**	**Lihue**	**Waimea**
Eleele	Kaleheo	Kekaha	Koloa	Lihue	Waimea
Hanapepe	Lawai	Omao	Poipu		

SUMMARY OF SUBJECT AREA MARKET ACTIVITY
Market Study of the Proposed Lima Ola Housing
Kauai, Hawaii

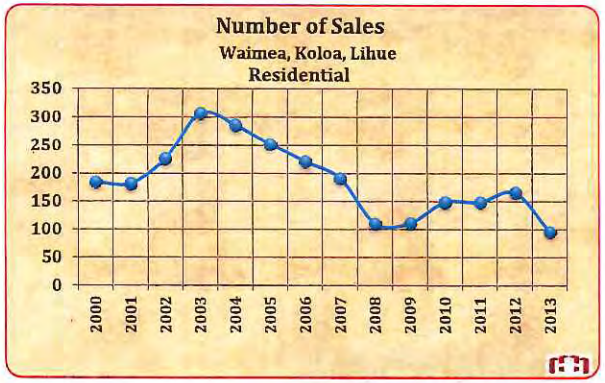


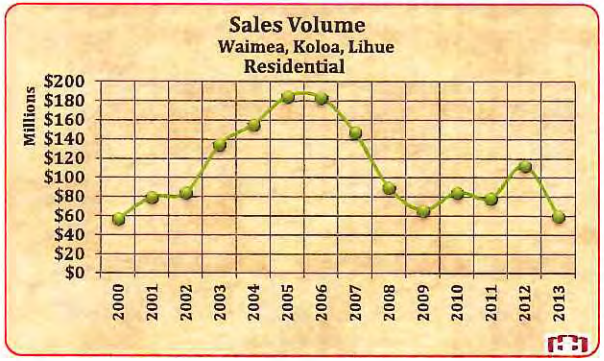


	MLS STATISTICS		
Years	Number of Sales	Sales Average	Sales Volume
2000	74	$209,541	$15,506,000
2001	119	$233,615	$27,800,215
2002	196	$155,278	$30,434,454
2003	211	$305,989	$64,563,696
2004	179	$446,560	$79,934,268
2005	207	$439,425	$90,960,983
2006	256	$511,278	$130,887,225
2007	105	$987,037	$103,638,834
2008	69	$736,138	$50,793,525
2009	33	$314,594	$10,381,600
2010	54	$263,847	$14,247,750
2011	43	$434,986	$18,704,381
2012	59	$359,346	$21,201,400
2013	53	$331,455	$17,500,808

2013 Number of Sales and Sales Volume annualized based on data through October 31, 2013
Source: Hawaii Information Service and The Hallstrom Group Inc., as of November 5, 2013.

SUMMARY OF SUBJECT AREA MARKET ACTIVITY
Market Study of the Proposed Lima Ola Housing
Kauai, Hawaii

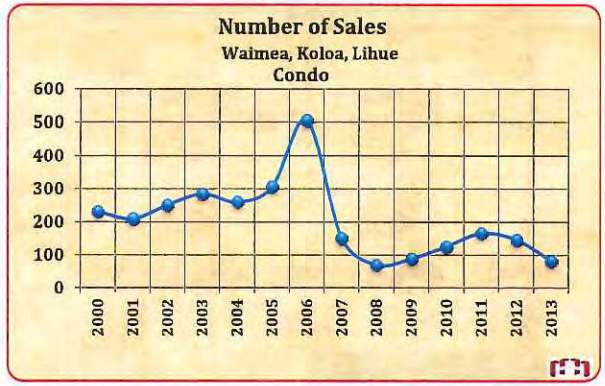


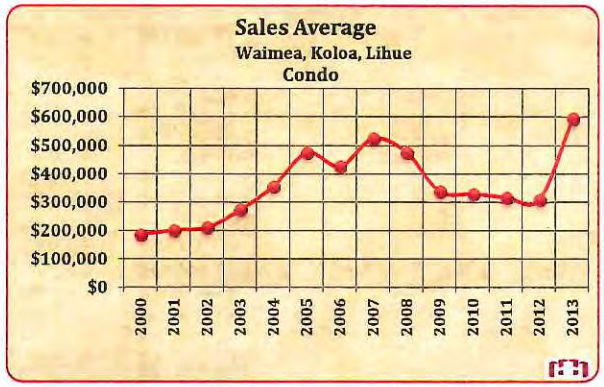


	MLS STATISTICS		
Years	Number of Sales	Sales Average	Sales Volume
2000	185	$307,923	$56,965,717
2001	182	$436,221	$79,392,177
2002	227	$369,401	$83,853,934
2003	307	$438,522	$134,626,288
2004	287	$541,851	$155,511,138
2005	253	$730,840	$184,902,588
2006	222	$828,550	$183,938,098
2007	192	$765,818	$147,037,084
2008	111	$806,562	$89,528,361
2009	112	$590,379	$66,122,500
2010	149	$566,727	$84,442,363
2011	149	$527,126	$78,541,825
2012	166	$679,100	$112,730,632
2013	96	$626,999	$60,191,881

2013 Number of Sales and Sales Volume annualized based on data through October 31, 2013
Source: Hawaii Information Service and The Hallstrom Group Inc., as of November 5, 2013.

SUMMARY OF SUBJECT AREA MARKET ACTIVITY
Market Study of the Proposed Lima Ola Housing
Kauai, Hawaii





	MLS STATISTICS		
Years	Number of Sales	Sales Average	Sales Volume
2000	230	$186,843	$42,973,820
2001	208	$201,902	$41,995,644
2002	250	$211,848	$52,962,079
2003	284	$272,171	$77,296,435
2004	259	$356,960	$92,452,749
2005	305	$475,539	$145,039,251
2006	507	$427,750	$216,869,254
2007	150	$526,474	$78,971,073
2008	69	$477,442	$32,943,475
2009	88	$337,945	$29,739,187
2010	125	$330,025	$41,253,090
2011	165	$317,701	$52,420,600
2012	146	$310,321	$45,306,935
2013	82	$595,799	$48,617,208

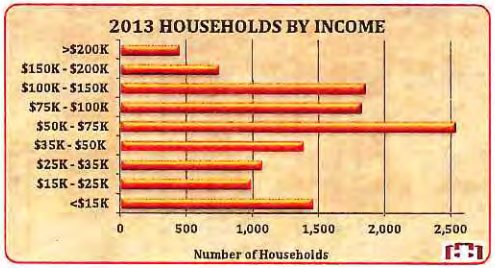
2013 Number of Sales and Sales Volume annualized based on data through October 31, 2013
Source: Hawaii Information Service and The Hallstrom Group Inc., as of November 5, 2013.

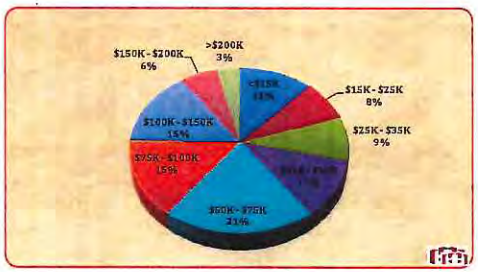
POPULATION AND HOUSEHOLDS
Market Study of the Lima Ola Housing Development
South Kauai
2005 - 2009

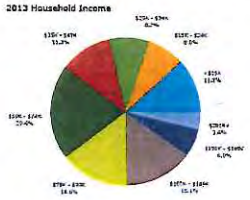
	2000	ACS Estim	2010	2013	2018
Total Population	29,595	32,394	33,599	35,161	37,386
% Householders 55 Years Old +			50.90%	53.30%	56.10%
55 Years Old +			10,316	11,356	12,832
% 55 years old +			31%	32%	34%
Total Households	10,442	11,602	11,684	12,268	13,073
Owner Occupied Housing Units	6,480		7,187	7,439	7,988
Renter Occupied Housing Units	3,962		4,497	4,829	5,085
Median Age			41.8	42.2	42.5

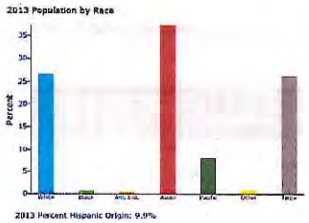
INCOME CHARACTERISTICS
Market Study of the Lima Ola Housing Development
South Kauai

	2013		2018	
Households by Income	Number	Percent	Number	Percent
<$15K	1,452	11.80%	1,413	10.80%
$15K - $25K	984	8.00%	778	6.00%
$25K - $35K	1066	8.70%	932	7.10%
$35K - $50K	1,381	11.30%	1,208	9.20%
$50K - $75K	2,531	20.60%	2,519	19.30%
$75K - $100K	1,821	14.80%	2,393	18.30%
$100K - $150K	1,849	15.10%	2,253	17.20%
$150K - $200K	741	6.00%	1,032	7.90%
>$200K	442	3.60%	547	4.20%
Median Household Income	$59,816		$70,742	
Average Household Income	$75,607		$85,975	
Per Capita Income	$26,619		$30,259	



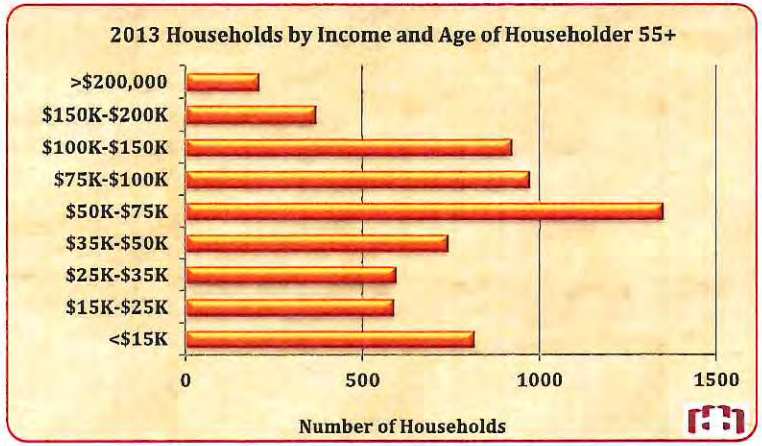






	2010		2013		2018	
Housing Units by	Number	Percent	Number	Percent	Number	Percent
Total Housing	14,037	100.00%	14,537	100.00%	15,358	100.00%
Occupied	11,684	83.20%	12,268	84.40%	13,073	85.10%
Owner	7,187	51.20%	7,439	51.20%	7,988	52.00%
Renter	4,497	32.00%	4,829	33.20%	5,085	33.10%
Vacant	2,353	16.80%	2,269	15.60%	2,285	14.90%

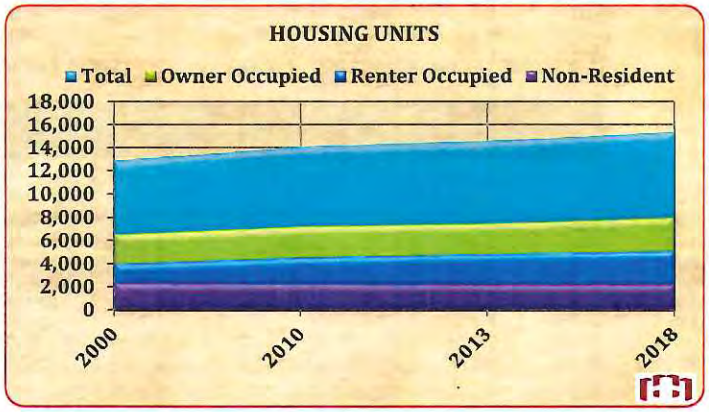
2013 HOUSEHOLDS BY INCOME AND AGE OF HOUSEHOLDER 55+ Market Study of the Lima Ola Housing Development South Kauai		
Households by Income	**Number**	**Percent**
Total	6,537	100%
<$15K	813	12.40%
$15K-$25K	586	9.00%
$25K-$35K	592	9.10%
$35K-$50K	740	11.30%
$50K-$75K	1,347	20.60%
$75K-$100K	970	14.80%
$100K-$150K	919	14.10%
$150K-$200K	367	5.60%
>$200,000	206	3.20%
Median Household Income	$57,615	
Average Household Income	$72,575	

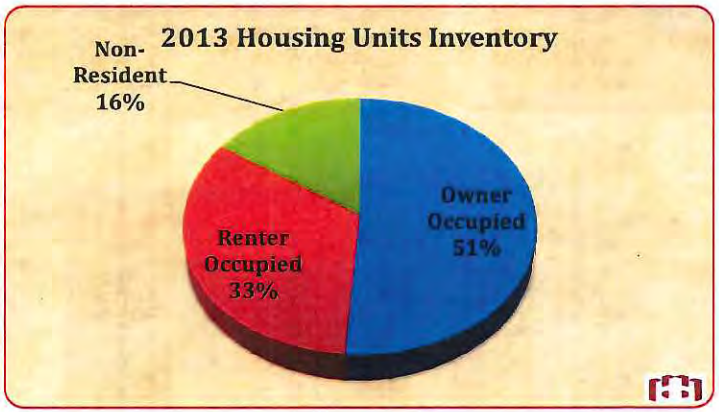


HOUSING UNITS Market Study of the Lima Ola Housing Development South Kauai				
	2000	**2010**	**2013**	**2018**
Owner Occupied	6,480	7,187	7,439	7,988
Renter Occupied	3,962	4,497	4,829	5,085
Non-Resident	2,373	2,353	2,269	2,285
Total	**12,815**	**14,037**	**14,537**	**15,358**

Ratios			
2000	**2010**	**2013**	**2018**
51%	51%	51%	52%
31%	32%	33%	33%
19%	17%	16%	15%
100%	100%	100%	100%

Source: STDBonline compiled from U.S. Census Bureau. Esri forecasts for 2013 and 2018 for market area.





THE HALLSTROM GROUP INC.

REAL ESTATE
CONSULTANTS
& APPRAISERS

PROFESSIONAL BACKGROUND AND SERVICES

The Hallstrom Group, Inc. is a Honolulu based independent professional organization that provides a wide scope of real estate consulting services throughout the State of Hawaii with particular emphasis on valuation studies. The purpose of the firm is to assist clients in formulating realistic real estate decisions. It provides solutions to complex issues by delivering thoroughly researched, objective analyses in a timely manner. Focusing on specific client problems and needs, and employing a broad range of tools including after-tax cash flow simulations and feasibility analyses, the firm minimizes the financial risks inherent in the real estate decision making process.

The principals and associates of the firm have been professionally trained, are experienced in Hawaiian real estate, and are actively associated with the Appraisal Institute and the Counselors of Real Estate, nationally recognized real estate appraisal and counseling organizations.

The real estate appraisals prepared by The Hallstrom Group accomplish a variety of needs and function to provide professional value opinions for such purposes as mortgage loans, investment decisions, lease negotiations and arbitrations, condemnations, assessment appeals, and the formation of policy decisions. Valuation assignments cover a spectrum of property types including existing and proposed resort and residential developments, industrial properties, high-rise office buildings and condominiums, shopping centers, subdivisions, apartments, residential leased fee conversions, special purpose properties, and vacant acreage, as well as property assemblages and portfolio reviews.

Market studies are research-intensive, analytical tools oriented to provide insight into investment opportunities and development challenges, and range in focus from highest and best use determinations for a specific site or improved property, to an evaluation of multiple (present and future) demand and supply characteristics for long-term, mixed-use projects. Market studies are commissioned for a variety of purposes where timely market information, insightful trends analyses, and perceptive conceptual conclusions or recommendations are critical. Uses include the formation of development strategies, bases for capital commitment decisions, evidence of appropriateness for state and county land use classification petitions, fiscal and social impact evaluations, and the identification of alternative economic use/conversion opportunities.

ARBITRATION
VALUATION AND
MARKET STUDIES

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PROFESSIONAL QUALIFICATIONS OF THOMAS W. HOLLIDAY

Business Affiliation

Senior Analyst/ Supervisor	The Hallstrom Group, Inc. Honolulu, Hawaii Since 1980
Former Staff Appraiser	Davis-Baker Appraisal Co. Avalon, Santa Catalina Island, California

Education

- California State University, Fullerton (Communications/Journalism)
- SREA Course 201- Principles of Income Property Appraising
- Expert witness testimony before State of Hawaii Land Use Commission and various state and county boards and agencies since 1983.
- Numerous professional seminars and clinics.
- Contributing author to Hawaii Real Estate Investor, Honolulu Star Bulletin

On January 1, 1991, the American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated, forming the Appraisal Institute (AI).

Recent Neighbor Island Assignments

- Market Study, Economic Impact Analyses and Public Costs/ Benefits (Fiscal Impact) Assessments

Maui
- Maui Research & Tech Park (Mixed-Use Community)
- Maui Lani (Mixed-Use Community)
- Honuaula (Mixed-Use Community)
- Makena Beach Resort
- Maui Business Park, Phase II (Industrial/Commercial)
- Kapalua Mauka (Master Planned Community)
- Hailiimaile (Mixed-Use Master Planned Community)
- Pulelehua (Master Planned Community)
- Westin Kaanapali Ocean Villas Expansion (Resort/ Timeshare)
- Upcountry Town Center (Mixed-Use Project)

Big Island
- Kamakana Villages (Mixed-Use Residential Development)
- W.H. Shipman Ltd, Master Plan (Various Urban Uses)
- Nani Kahuku Aina (Mixed-Use Resort Community
- Kona Kai Ola (Mixed-Use Resort Community)
- Waikoloa Highlands (Residential)
- Waikoloa Heights (Mixed-Use Residential Development)

Kauai
- Hanalei Plantation Resort (Resort/Residential)
- Kukuiula (Resort/Residential)
- Waipono/Puhi (Mixed-Use Planned Development)
- Eleele Commercial Expansion (Commercial)
- Village at Poipu (Resort/Residential)
- Ocean Bay Plantation (Resort/Residential)

Professional Qualifications of Thomas W. Holliday (continued)

- Major Neighbor Island Valuation Assignments

  -- Mauna Lani Bay Hotel
  -- Courtyard Kahului Airport Hotel
  -- Maui Oceanfront Days Inn
  -- Holiday Inn Express - Kona Hotel (proposed)
  -- Keauhou Beach Hotel
  -- Courtyard King Kamehameha Kona Beach Hotel
  -- Aloha Beach Resort
  -- Coco Palms Resort
  -- Grand Hyatt Kauai
  -- Islander on the Beach
  -- Waimea Plantation Cottages
  -- Coconut Beach Resort
  -- Sheraton Maui Hotel
  -- Outrigger Wailea Resort Hotel
  -- Maui Lu Hotel
  -- Coconut Grove Condominiums
  -- Palauea Bay Holdings
  -- Wailea Ranch
  -- Maui Coast Hotel
  -- Westin Maui Hotel
  -- Maui Marriott Hotel
  -- Waihee Beach
  -- Kapalua Bay Hotel and The Shops at Kapalua

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Exhibit 16

MANAGEMENT/SALES PLAN

Lima Ola Management/Sales Plan Narrative

Rental Housing – Multi-family rental projects will be managed by a professional management company selected by the developer. Generally, the management company is either a nonprofit or for-profit organization and is responsible for the day-to-day operation and maintenance of the rental project. In addition, management is also responsible for marketing and leasing up the rental units while following income and rent restrictions during affordability periods. Rental projects are affirmatively marketed in a variety of ways, including print material, radio, internet, and community notices. Due to the high demand for housing, rental projects on Kauai have been very successful in leasing up. According to the Market analysis conducted for Lima Ola, this trend is expected to continue and rental housing should have a favorable absorption rate.

Homeownership – The financing restrictions and Housing Policy, Ordinance No. 860, will determine the terms and conditions for housing units that are offered for-sale. The Housing Agency intends to preserve long-term affordability through lease-hold sales. However, in partnering with developers, the tenure of ownership and long term restrictions associated with each homeownership project may vary. Homeownership will be offered at affordable home-sale prices in accordance with the Housing Policy, Ordinance No. 860.

Attachment A

FUNDING SUMMARY

Lima Ola Workforce Housing Funding Summary

Item	Phase 1 and Pre-Development	Building America Bond	HCDRF (211)	ARRA Grant	HDF (512)	County Bond Fund	State of HawaiiDurf	Other	Funded Total	Funds to be Determined
Land Acquisition (Acquired by County of Kauai 2010 for $2,500,000)	$0								$0	$0
Planning & Feasibility	$232,239	$192,239		$40,000					$232,239	$0
Preliminary Engineering and Entitlements	$541,402		$541,402						$541,402	$0
Engineering and Design	$961,980	$273,547	$688,433						$961,980	$0
Intersection Improvements	$1,512,000						$1,512,000		$1,512,000	$0
Marketing	$64,123		$50,000		$14,123				$64,123	$0
On-Site Development	$14,519,530					$8,000,000	$6,519,530		$14,519,530	$0
Total Cost	**$17,831,274**	$465,786	$1,279,835	$40,000	$14,123	$8,000,000	$8,031,530		$17,831,274	**$0**

Attachment A

Attachment B

DEVELOPMENT BUDGET

Lima Ola Workforce Housing

Estimated Project Infrastructure Cost Breakdown

Units Per Phase Single Family (SF), Multi-Family (MF)	38 SF, 111 MF 149 Total	75 SF, 97 MF 172 Total	34 SF, 102 MF 136 Total	18 SF, 75 MF 93 Total
Item	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**
Land Acquisition (2010 Purchase of $2,534,723)				
Planning & Feasibility	$232,239			
Preliminary Engineering & Entitlements	$541,402			
Engineering Design	$961,980	$477,000	$568,500	$378,400
Marketing Consultant	$64,123	$65,000	$65,000	$65,000
Off-Site Work and Utilities*	$1,512,000	$4,387,500		$1,065,600
On-Site Work and Utilities**	$14,519,530	$11,120,697	$6,732,246	$8,753,567
Totals	**$17,831,274**	**$16,050,197**	**$7,365,746**	**$10,262,567**

* Off-Site work: Phase 1 Kaumualii Intersection Improvements at Mahea; Phase 2 Water Tank; Phase 4 Laulea Intersection Improvements

**On-Site work: site grading, roads, mainline utilities, hardscape, landscaping, and community center,

Attachment B

References:

1. Conceptual Master Plan Site Layout by PBR Hawaii dated February 10, 2014

2. Preliminary Engineering Report by CPE, Inc. dated August 2014

Attachment C

OMITTED

(Pro Forma Operating Budget to be determined by developer at later date)