FILE COPY
JUN 08 2015

DAVID Y. IGE
GOVERNOR

CRAIG K. HIRAI
EXECUTIVE DIRECTOR

In reply, refer to:

15:DEV/0069

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

RECEIVED
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OFC. OF ENVIRONMENTAL QUALITY CONTROL

May 27, 2015

Ms. Jessica Wooley
Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Ms. Wooley:

With this letter, the Hawaii Housing Finance & Development Corporation hereby transmits the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI) for the Kapolei Mixed-Use Development situated at Tax Map Key (1) 9-1-088: 021, in the Kapolei District, on the island of Oahu for publication in the next available edition of the Environmental Notice.

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

If there are any questions, please contact Ken Takahashi at (808) 587-0547.

Sincerely,

Craig K. Hirai
Executive Director

Enclosures

C: Coastal Rim Properties

APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JANUARY 2013 REVISION)

Project Name: **Kapolei Mixed-Use Development**
Island: **Oahu**
District: **Kapolei**
TMK: **(1) 9-1-088: 021**
Permits: **Chapter 201H, HRS, Dwelling Unit Revolving Fund (DURF) application; Chapter 343, HRS; ADA Accessibility Requirements; Building permits; Grubbing, Grading/Trenching, Street Usage, and Stockpiling; Sewer Connection; Water Connection; and Water Quality.**

Approving Agency:
Hawaii Housing Finance & Development Corporation
677 Queen Street
Honolulu, HI 96813
Contact: Ken Takahashi, (808) 587-0547

Applicant:
Coastal Rim Properties
1551 S. Beretania Street, 4th floor, Honolulu, HI 96826
Contact: Franco Mola, (808) 744-8072

Consultant:
Hawaii Planning, LLC
1001 Bishop Street
American Savings Bank Tower, Suite 2755
Honolulu, HI 96813
Contact: Dennis Silva, Jr., AICP, 808-521-9418, ext. 1005

Status (check one only):

_X_DEA-AFNSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day comment period ensues upon publication in the periodic bulletin.
__FEA-FONSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov; no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the approving agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov. NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23	

Determination	The approving agency simultaneous transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the applicant. No comment period ensues upon publication in the periodic bulletin.
__Statutory hammer Acceptance	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.
__Section 11-200-27 Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

Kapolei Mixed-Use Development addresses the need for affordable senior housing, middle-market condominiums, and retail within the City of Kapolei. Kapolei is in the midst of a rapid growth trajectory, implying that there is consistent demand for additional residential and commercial development. Due to the focus on single-family housing and town-house development in the Kapolei area, Kapolei Mixed-Use Development addresses a specific market that is relatively under-served. Whereas the focus historically in Kapolei has been on lower-density housing in outlying areas, such as the Villages at Kapolei, development momentum is increasing in the City Center where there is little existing housing stock and where there is a growing demand for retail.

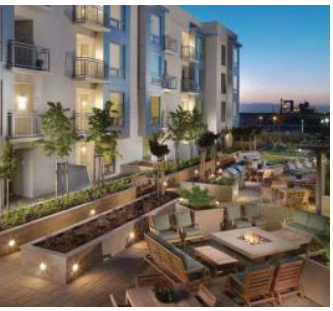
All of Phase 1's units, with the exception of the manager's unit, will be rented in the affordable range for households earning between 30% and 60% of the HUD Area Median Income (AMI) for Honolulu County. Eight (8) units will be rented in the 30% AMI range, 18 units will be rented in the 55% AMI range, and 27 units will be rented in the 60% AMI range.

Phase 2 will consist of 143 condominium units, 72 of which will be restricted at 140% AMI or below. The exact level of restriction (for example, 100% AMI, 120% AMI, or 140% AMI) is yet to be determined.

Phase 3 is comprised of 17,782 net square feet of single story retail and 2,608 net square feet of associated services space.

KAPOLEI MIXED-USE DEVELOPMENT

DRAFT ENVIRONMENTAL ASSESSMENT
1020 WĀKEA STREET, KAPOLEI, HAWAI'I



Chapter 201H Hawai'i Revised Statutes Application
Hawai'i Housing Finance & Development Corporation
April 2015

Prepared by:
Hawai'i Planning LLC
PlanPacific, Inc.

CRP Coastal Rim Properties, Inc.

Kapolei Mixed-Use Development
Kapolei District, Island of Oahu
Tax Map Key: (1) 9-1-088: 021

Draft Environmental Assessment

Prepared by Hawaii Planning LLC pursuant to Chapter 343, Hawaii Revised Statutes (HRS) for review by the Hawaii Housing Finance & Development Corporation

Notice of availability of this document will be made in the Environmental Notice published by the Office of Environmental Quality Control. Written comments regarding this document will be included in the Final Environmental Assessment.

For additional information concerning this document please contact:

Mr. Dennis Silva, Jr., AICP
Hawaii Planning LLC
1001 Bishop Street
ASB Tower, Suite 2755
Honolulu, HI 96813
Phone: (808) 521-9418 ext. 1005
Email: hawaiiplanningllc@gmail.com

A copy of any comments should be made to:

Ms. Janice Takahashi
State of Hawaii
Hawaii Housing Finance & Development Corporation
677 Queen Street, Suite 300
Honolulu, HI 96813

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ACRONYMS

ADA	Americans with Disability Act
AMI	Area Median Income - HUD
BWS	City & County of Honolulu, Board of Water Supply
CRP	Coastal Rim Properties, Inc.
DLNR	State of Hawaii, Department of Land & Natural Resources
DOE	State of Hawaii, Department of Education
DOH	State of Hawaii, Department of Health
DP	Development Plan
DPP	City & County of Honolulu, Department of Planning & Permitting
EA	Environmental Assessment
FAR	Floor Area Ratio
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawaii Administrative Rules
HECO	Hawaiian Electric Company
HHFDC	Hawaii Housing Finance & Development Corporation
HMMF	Hula Mae Multi-Family Revenue Bond Program
HPD	Honolulu Police Department
HRS	Hawaii Revised Statutes
HUD	Department of Housing & Urban Development
LEED	Leadership in Energy and Environmental Design
LIHTC	Low-Income Housing Tax Credit
LUO	City & County of Honolulu, Land Use Ordinance
NRCS	Natural Resource Conservation Service
RHTF	Rental Housing Trust Fund
SHPD	DLNR, State Historic Preservation Division
TMK	Tax Map Key
UDP	City of Kapolei Urban Design Plan
USGBC	United State Green Building Council

OVERVIEW

Coastal Rim Properties, Inc. (CRP) is proposing to design and build a mixed-use residential and retail project in the City of Kapolei to be called the Kapolei Mixed-Use Development. The proposed project consists of three components to be built in three phases, all located on an approximately 3.06 acre site (Site). Phase 1 will be comprised of 154 affordable senior rental units above ground floor commercial retail spaces in a single 13-story tower. Phase 2 will add a second 13 story tower with 143 affordable and market rate condominium dwelling units, as well as more ground floor retail space. Phase 3 will be comprised of additional single story retail facing the remainder of the street frontage and filling out the balance of the Site.

CRP will be processing approvals and entitlements under Chapter 201H, Hawaii Revised Statutes (HRS), which allows for certain exemptions from statutes, ordinances and rules for lower- and moderate-income housing developments. Except for the one manager's unit, one hundred (100)-percent of Phase 1's rental units will be priced in the affordable range for senior households earning between 30% and 60% of the HUD AMI for Honolulu. 72 of Phase 2's 143 units will be restricted to homebuyers in the 140% AMI range or below.

In addition to meeting the content and submittal requirements for an environmental assessment (EA), under Chapter 343, HRS, and Chapter 11-200, Hawaiʻi Administrative Rules (HAR), this EA also serves as the Chapter 201H, HRS application (201H application) agency/public comment document.

1.0 INTRODUCTION

This draft environmental assessment (EA) is prepared in accordance with Chapter 343, HRS. This Introduction chapter is a synopsis of the background and nature of the Project and relevant statutory requirements.

1.1 PROJECT PROFILE

Project Name:	Kapolei Mixed-Use Development
Location:	1020 Wakea Street
Judicial District:	Kapolei
Tax Map Key:	(1) 9-1-088: 021
Project Area:	3.06 acres
Existing Use:	Vacant, formerly agricultural
Recorded Fee Owner:	Goodwill Industries of Hawaii, Inc.
Developer/Applicant:	Coastal Rim Properties 1541 S. Beretania Street, Suite 101 Honolulu, HI 96826
Approving Agency:	Hawai‘i Housing Finance & Development Corporation 677 Queen Street, Suite 300 Honolulu, Hawai‘i 96813
Agent/Preparer(s):	Hawai‘i Planning LLC PlanPacific, Inc. 1001 Bishop Street ASB Tower, Suite 2755 Honolulu, HI 96813 Contact: Dennis Silva, Jr., AICP Lisa Imata, PlanPacific, Inc.

Zoning:

- State Land Use: Urban
- ‘Ewa Development Plan: City of Kapolei (Medium & High Density Residential & Commercial)
- County Zoning: B-2 – Community Business District
- Special District: not in Special District
- Special Management Area (SMA): not in SMA

Chapter 343 Action: Use of State Funds, refer to Section 1.2

Anticipated Determination: Finding of No Significant Impact (FONSI)

1.2 COMPLIANCE WITH STATE OF HAWAII ENVIRONMENTAL LAWS

Section 343-5, HRS establishes nine “triggers” that require the preparation of an environmental assessment or environmental impact statement. Use of State lands or funds is one of the triggers that require an environmental assessment. Subject to HHFDC approvals, the Kapolei Mixed-Use Development proposes the use of State funds through the HHFDC’s Rental Housing Trust Fund (RHTF) Project Award Program, and the Dwelling Unit Revolving Fund (DURF). As such, this environmental assessment is prepared in compliance with Chapter 343, HRS, and in accordance with the provisions of Hawaii Administrative Rules (HAR), Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules.

In addition, design and construction of Kapolei Mixed-Use Development may involve or impact State and/or County lands or funds relating to infrastructure improvements for public facilities, roadways, water, sewer, utility, drainage, or other facilities. While the specific nature each improvement and potential impact is not known at this time, this EA is intended to address all current and future actions involving the use of State and/or County lands and funds relating to Kapolei Mixed-Use Development.

2.0 KAPOLEI MIXED-USE DEVELOPMENT DESCRIPTION

2.1 BACKGROUND INFORMATION

2.1.1 Location and Surrounding Area

The Site is located in the City of Kapolei, Hawaii in southern Honolulu County, on the island of O'ahu. Honolulu is the county seat and the county's most populous city. Planned as the second "urban center" on the island of O'ahu, Kapolei is a master planned community that was conceived in the 1950's, though residential construction did not begin in earnest until the late 1980's. The City of Kapolei is within a greater region referred to as 'Ewa or the 'Ewa Plain. Please refer to Figure 1 for a regional location map.

Since its inception, Kapolei has seen significant growth, and has become the center of business in the West O'ahu region. The Kapolei Urban Development Plan (Kapolei UDP) cites studies which project that between 2006 and 2025 the region will add 25,000 residential units and 40,000 jobs.

The Site is located in the developing City Center district of the City of Kapolei and is surrounded by vacant land, commercial office, a private school, a regional park, a public library, and other services and amenities. The Site is comprised of the 3.06-acre, or approximately 132,229 square foot, parcel identified as TMK (1) 9-1-088: 021, which is currently vacant. The rectangular parcel is situated on a city block bordered by Haumea Street to the northwest, Wākea Street to the northeast, Alohikea Street to the southwest, and Ala Kahawai Street (formerly known as Wai Aniani Way) to the southeast. The Phase 1 site will include 41,131 square feet of land, the Phase 2 site will include 44,310 square feet of land, and the Phase 3 site will include 46,788 square feet of land. Figures 2a - Site Plan Phase 1, 2b – Site Plan Phase 2, and 2c – Site Plan Phase 3, provides the site plan; Figure 3 provides the phasing plan; Figure 4 provides an aerial photo of the site and surrounding area; Figure 5 provides a tax map; and

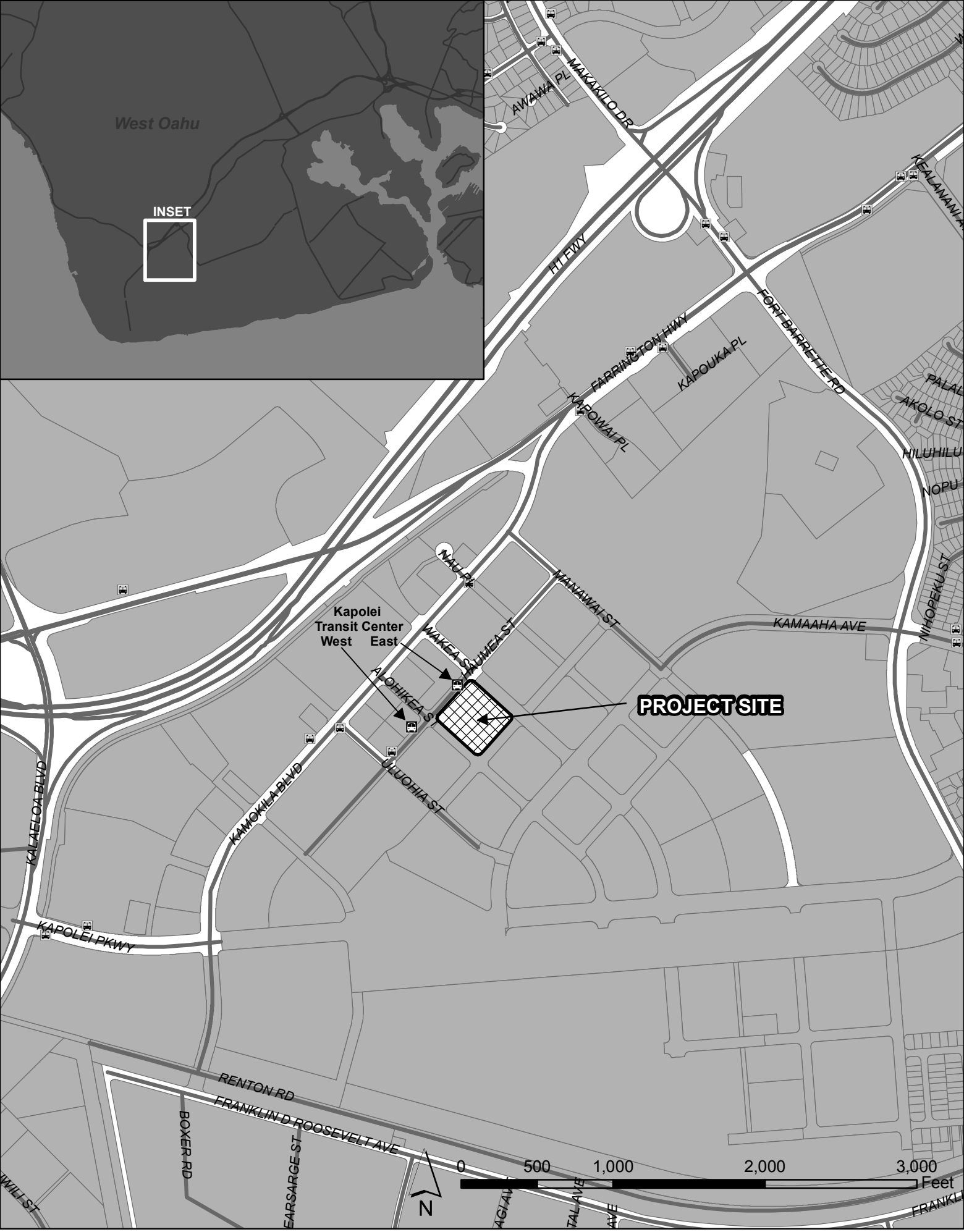
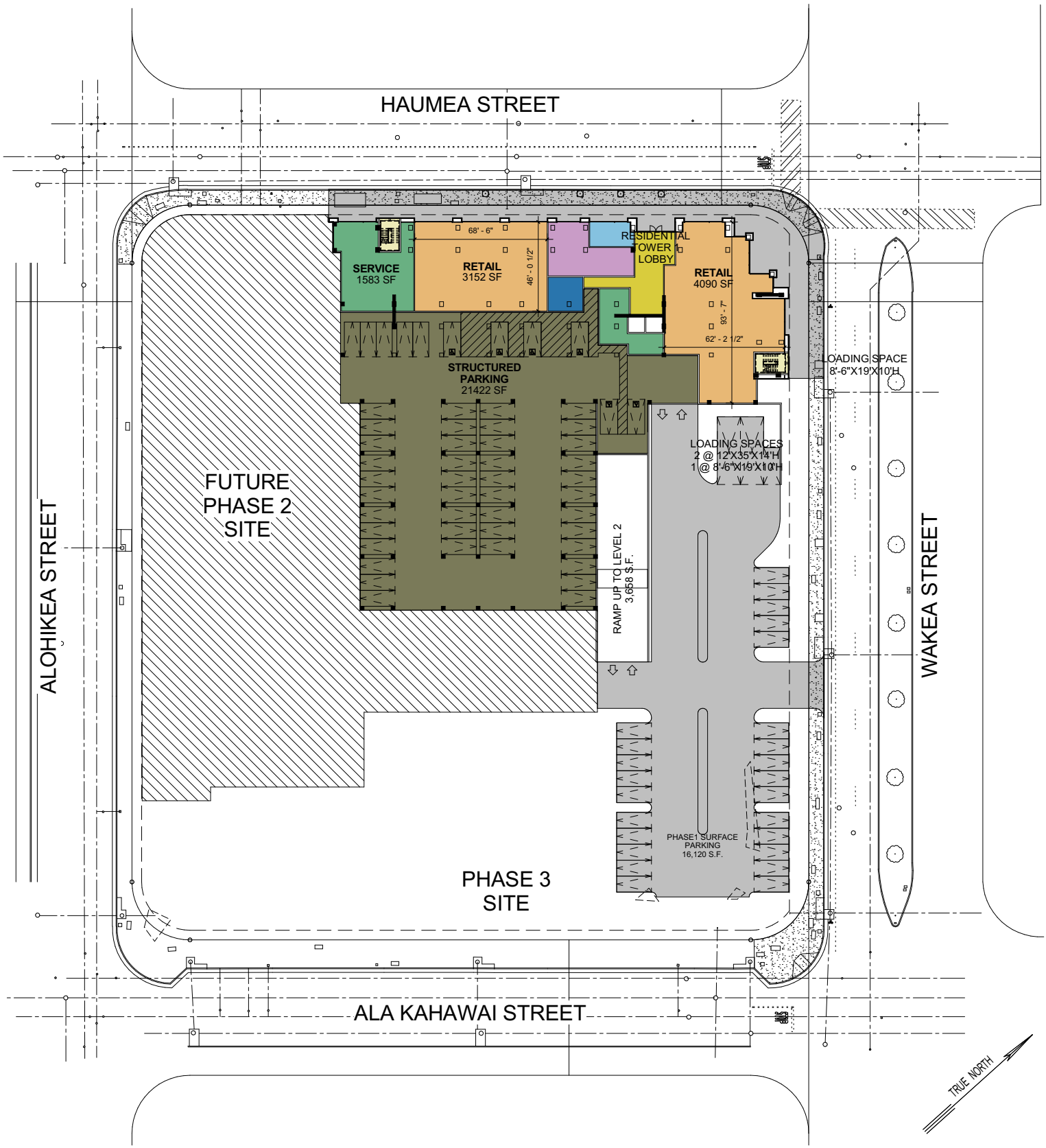


Figure 1: Regional Location Map



LEVEL ONE

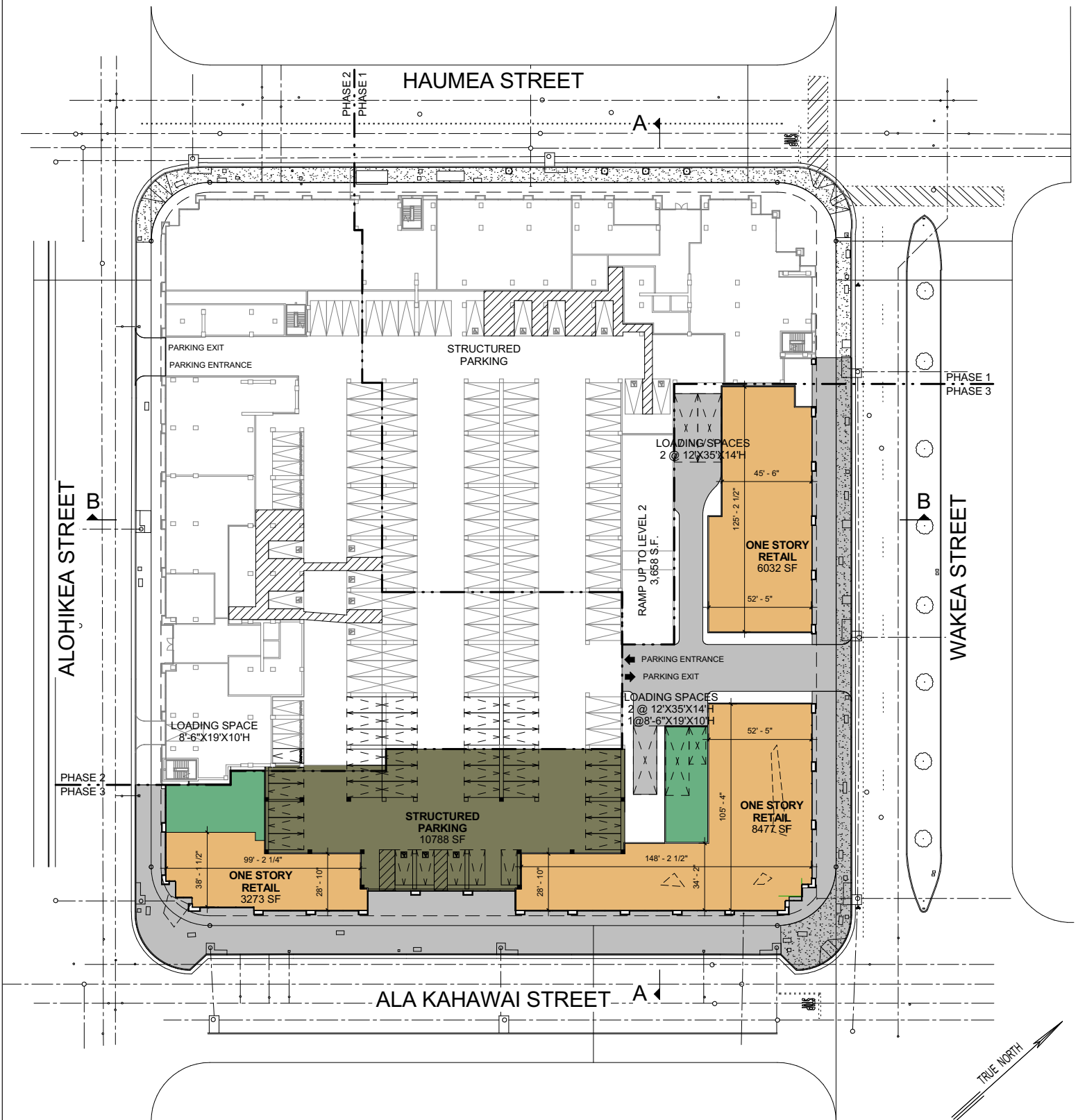
PHASE 1

Figure 2a: Site Plan Phase 1

LEVEL ONE

PHASE 2

Figure 2b: Site Plan Phase 2



LEVEL ONE

PHASE 3

Figure 2c: Site Plan Phase 3

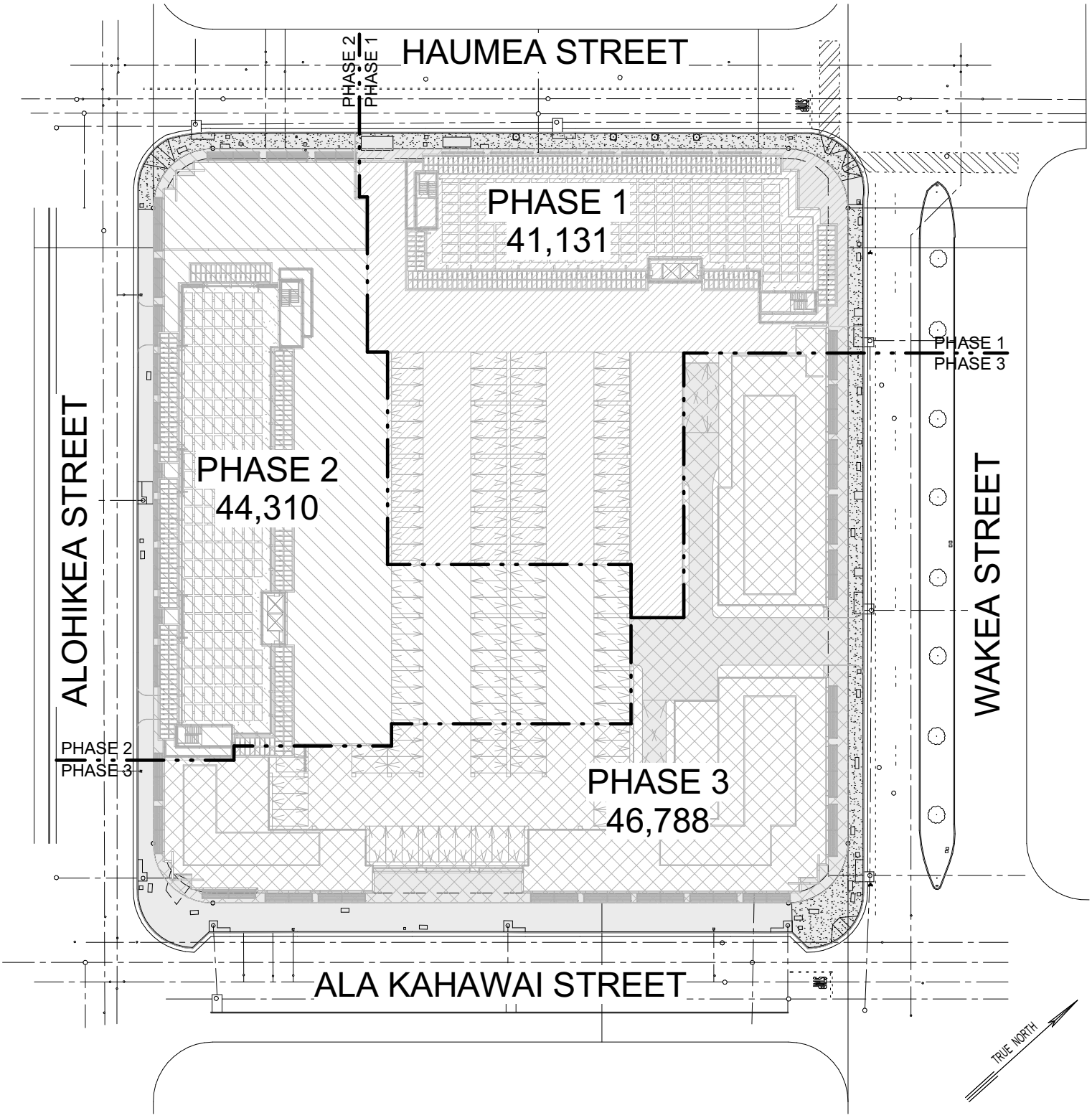


Figure 3: Phase Plan

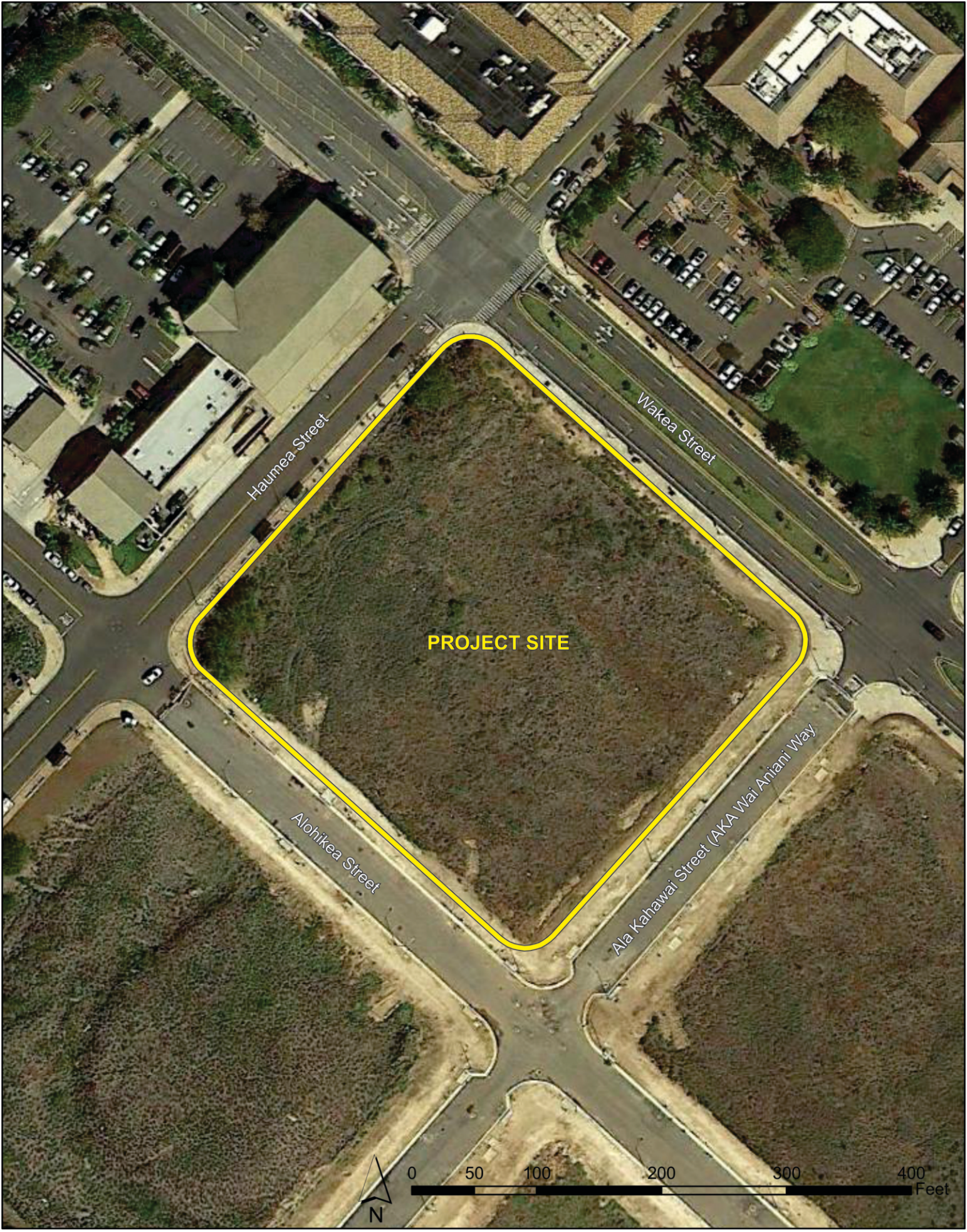


Figure 4: Aerial Photo

Figure 5: Tax Map Key

Figures 6a and 6b provide site photographs of the existing condition of the Site. The Alta Survey for the Site is enclosed as Appendix A.

In the center of the growing City of Kapolei, the Site is within easy walking distance of public transit, shopping, services, and recreation. As the City grows this location will become even more well-served by neighborhood amenities. Table 1 lists a sample of amenities and distances from the Site:

Table 1 - Local Amenities

Service or Amenity	Distance from Kapolei Mixed-Use Development
Kapolei Transit Center East	Adjacent to Site
Kapolei Transit Center West	0.1 Mile
Island Pacific Academy	0.2 Miles
Foodland	0.3 Miles
Cole Academy	0.3 Miles
Kapolei Theaters	0.4 Miles
Kapolei Public Library	0.4 Miles
Kapolei Regional Park	0.4 Miles
Seagull School	0.45 Miles
Kapolei Shopping Center	0.7 Miles
Kapolei Community Park	0.8 Miles
Kapolei High School	0.8 Miles
Kapolei Commons	1.1 Miles

Source: Google Earth and Site Visit

2.1.2 Land Use Designations

The Site falls under several land use designations. State Land Use Districts are established by the Hawaii Land Use Commission and include: Urban, Rural, Agricultural, and Conservation. The State Land Use designation for the site is Urban. Please see Figure 7 – State Land Use District Map.

The entire 650-acre City of Kapolei is zoned through the Revised Ordinances of Honolulu (ROH) Land Use Ordinance (LUO) to reflect commercial, mixed use, and residential uses. A City/County of Honolulu General Plan revision was completed in 1977 and designated Kapolei as a Secondary Urban Center in order to "…relieve developmental pressures in the urban fringe and rural areas". In the early 1980's, The Kapolei Area Long Range Master Plan (Kapolei master plan) was changed to reflect the new City of Kapolei. In 1986, the City/County's 'Ewa Development Plan ('Ewa DP) was amended to include the new City, and the first version of the Kapolei Urban Development Plan was introduced in the early 1990's. The LUO was revised in 1989 to rezone Kapolei to comply with the general plan, 'Ewa Development Plan, and master plan. These planning documents are meant to agree with and support each other. Discussion and analysis of the policies and objectives from the aforementioned long-range plans are included in Chapter 4 – Land Use Conformance in this EA.

The City and County zoning designation is B-2 Community Business which is geared towards commercial uses and does not allow residential uses. Please see Figure 8a – Zoning Map. The 'Ewa Development Plan designates the Site as City of Kapolei - Medium & High Density Residential & Commercial (see Figure 8b – 'Ewa Development Plan Map). The Kapolei UDP designates the site as City Center, the high density core of the City, shown in purple in Figure 8c – Kapolei Urban Design Plan Districts and Building Heights.

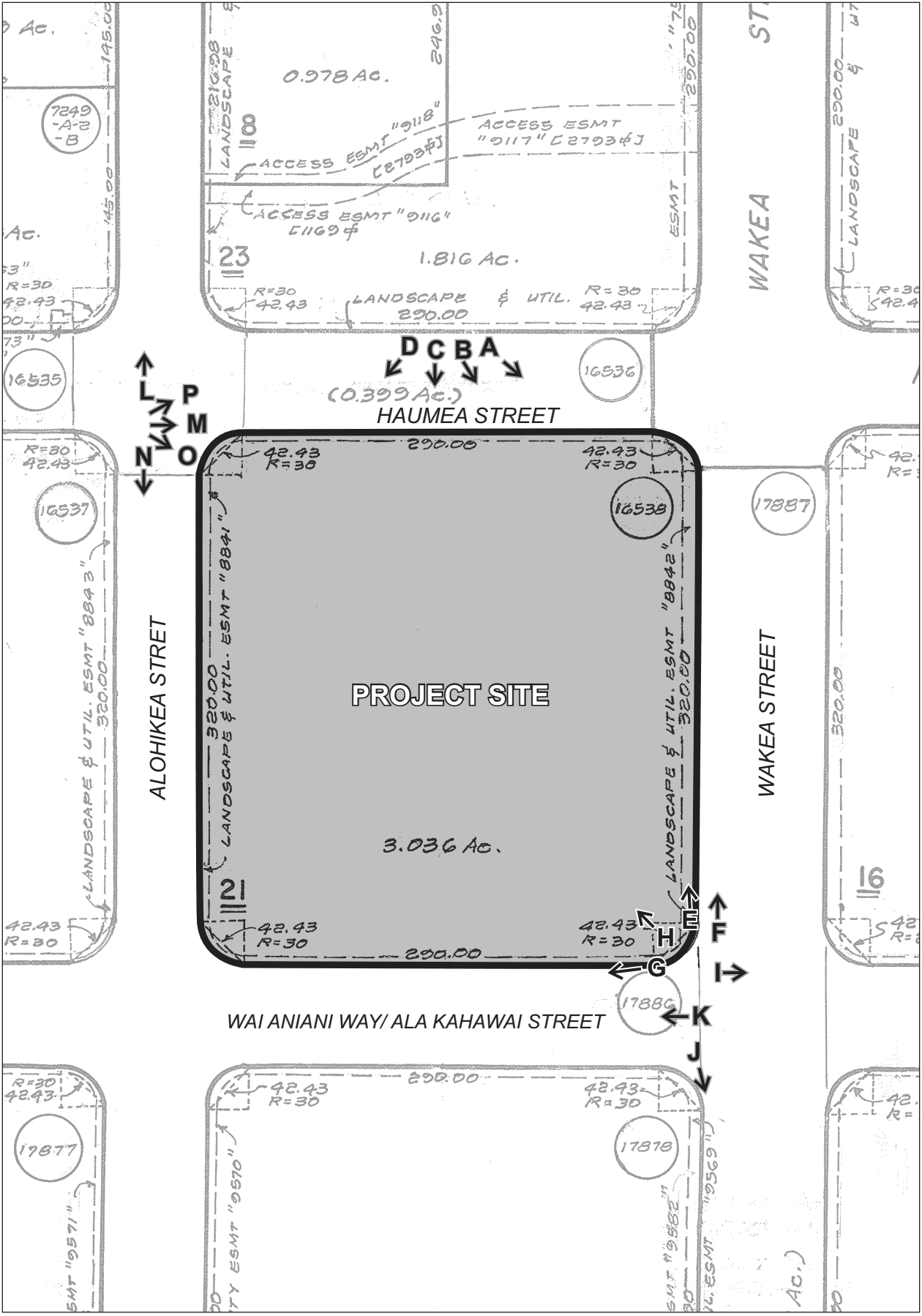


Figure 6a: Site Photos

A. View East from midblock of Haumea St.

B. View East from midblock Haumea St. Bus stop.

C. View South East. Kapolei Transit Center East.

D. View South. Corner of Haumea St. and Alohikea St.

Figure 6b: Site Photos

E. View North from Wakea St. and Wai Aniani Way/Ala Kahawai St..

F. View North of Wakea Street.

G. View South West from Wai Aniani Way/Ala Kahawai St.

H. View of subject property from Wakea and Wai Aniani Way/Ala Kahawai St.

I. View North East from Wakea and Wai Aniani Way/Ala Kahawai St.

J. View South East from Wakea and Wai Aniani Way/Ala Kahawai St.

K. View South West of unfinished Wai Aniani Way/Ala Kahawai St.

L. View North West from Alohikea St. and Haumea St.

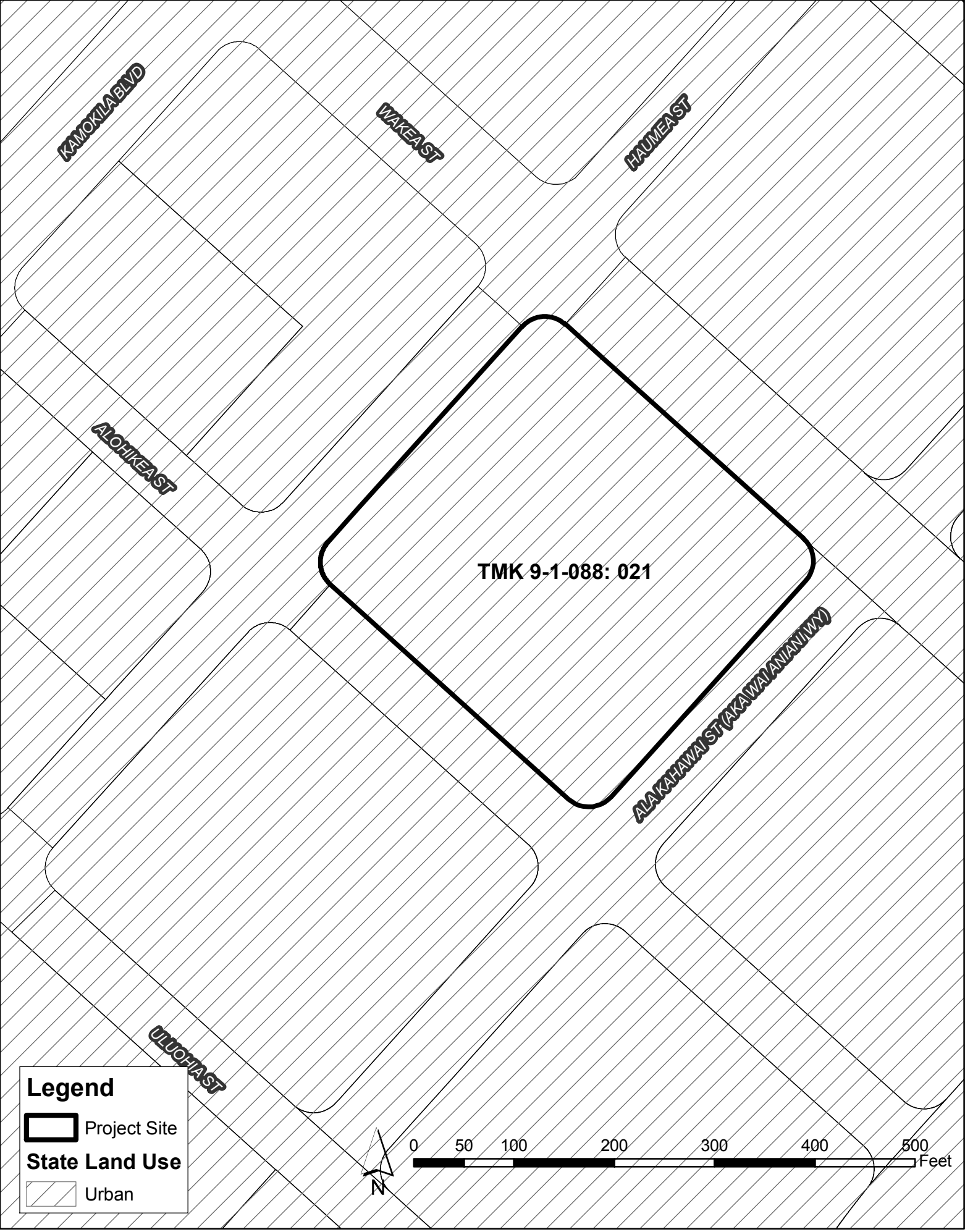


Figure 7: State Land Use

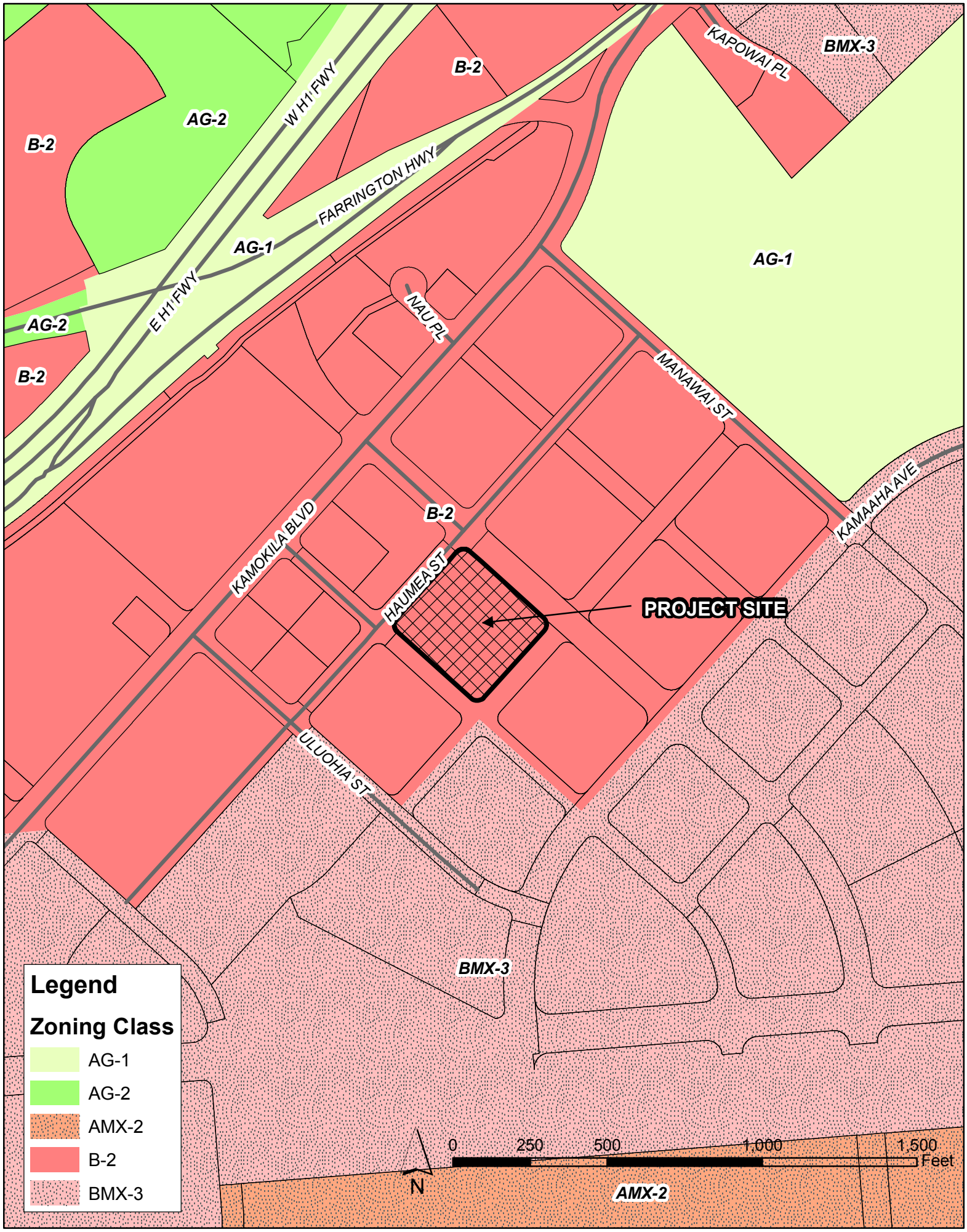


Figure 8a: Zoning Map

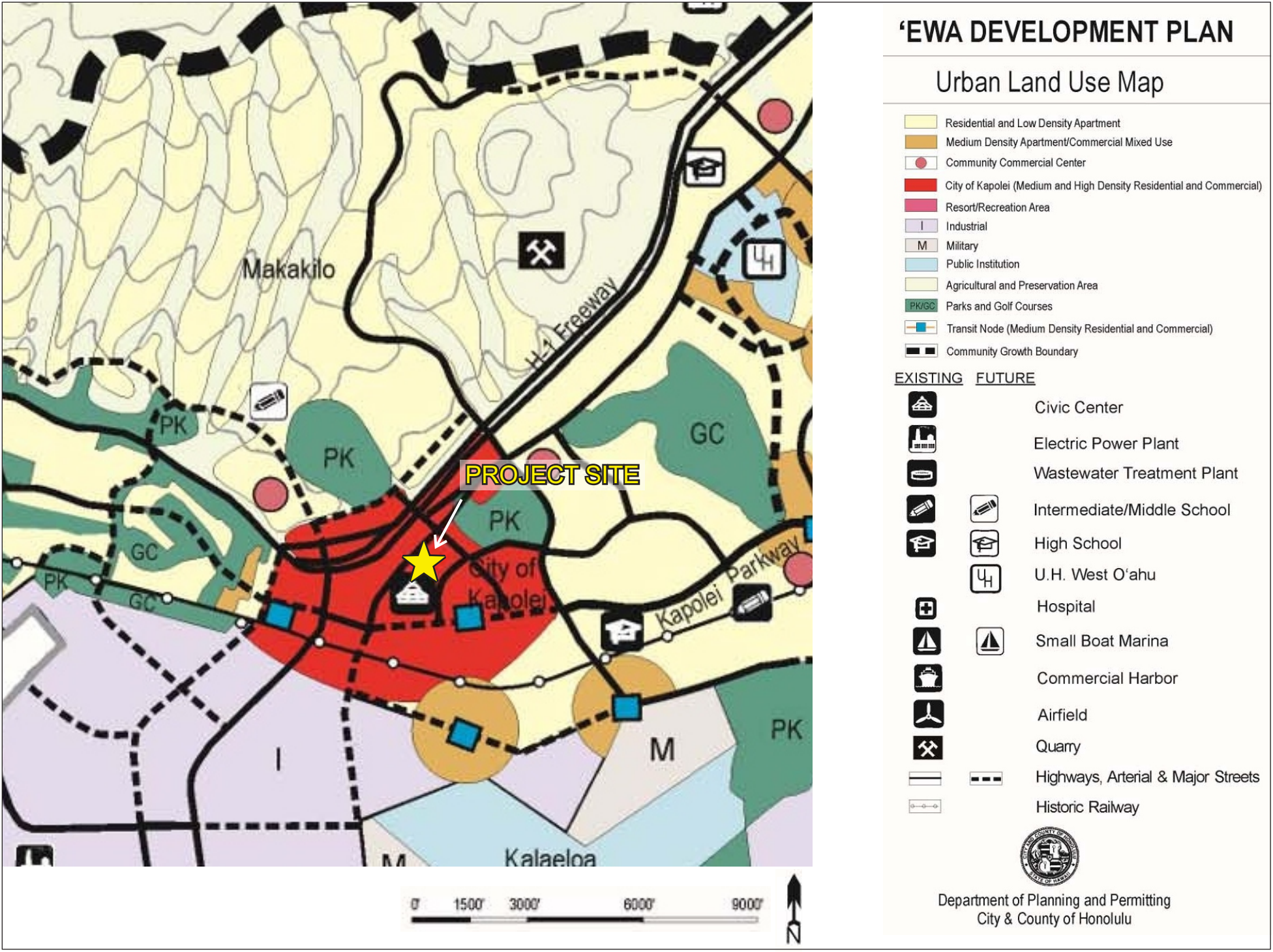


Figure 8b: Ewa Development Plan

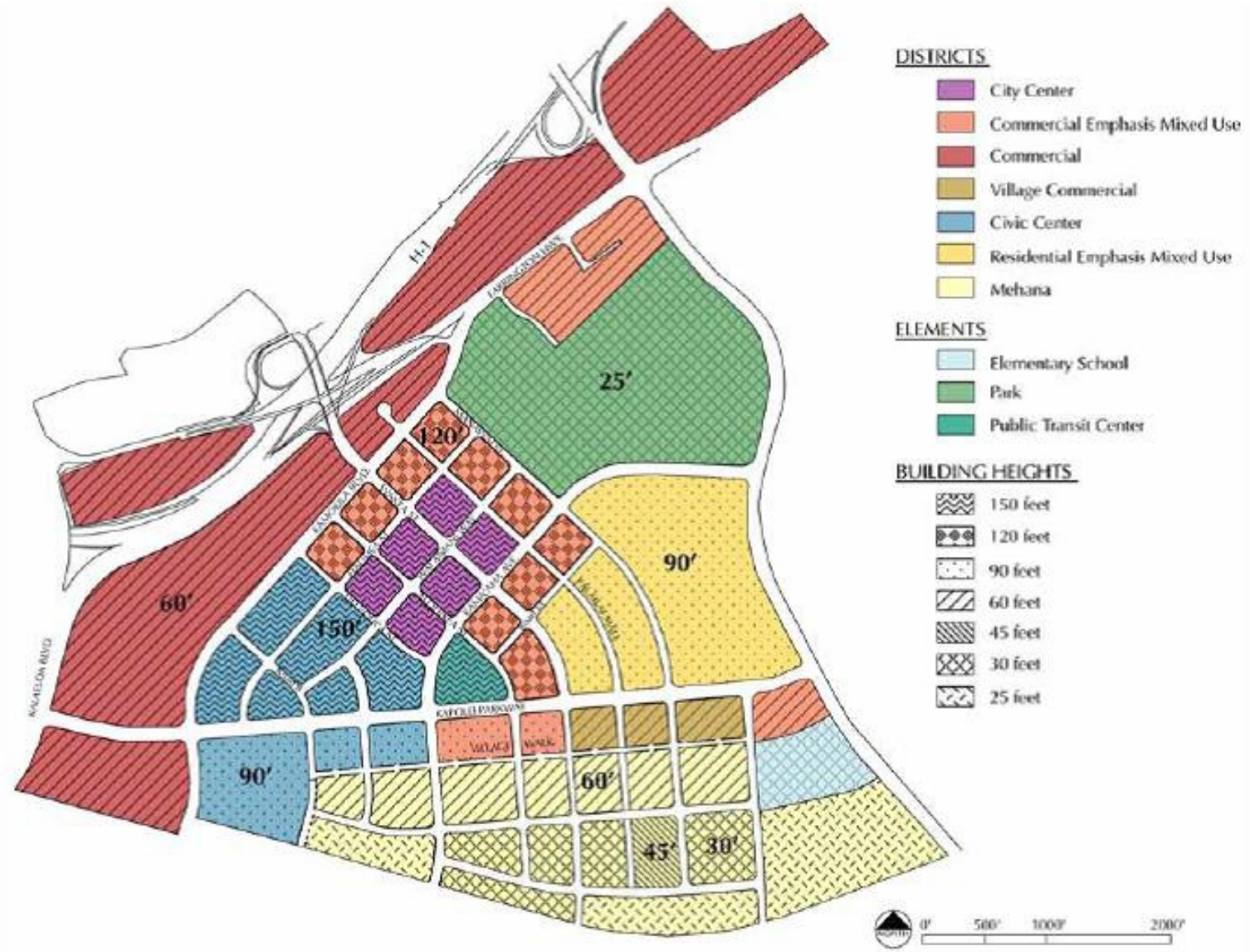


Figure 8c: Kapolei UDP District & Building Heights

A summary of the current land use designations for the Site are as follows:

- State Land Use: Urban
- County Zoning: B-2 Community Business
- ‘Ewa Development Plan: City of Kapolei - Medium & High Density Residential & Commercial
- Kapolei UDP: City Center District, 150-foot Height Limit
- Special District: none
- Special Management Area (SMA): not in SMA

2.2 DESCRIPTION OF KAPOLEI MIXED-USE DEVELOPMENT

2.2.1 Statement of Purpose and Need for Kapolei Mixed-Use Development

Kapolei Mixed-Use Development addresses the need for affordable senior housing, middle-market condominiums, and retail within the City of Kapolei. Kapolei is in the midst of a rapid growth trajectory, implying that there is consistent demand for additional residential and commercial development. Due to the focus on single-family housing and town-house development in the Kapolei area, Kapolei Mixed-Use Development addresses a specific market that is relatively under-served. Whereas the focus historically in Kapolei has been on lower-density housing in outlying areas, such as the Villages at Kapolei, development momentum is increasing in the City Center where there is little existing housing stock and where there is a growing demand for retail.

Strong demand for affordable senior rental housing within the ‘Ewa area is evidenced in the Phase 1 market study by Lesher Chee Stadlbauer, dated March 20, 2014 (Appendix B). The subject location is considered desirable to seniors. Comparable developments in the greater community generally have very low vacancy and maintain waitlists. Of the five comparable communities featured in the market study within the primary market area, all five maintain waitlists from 1-2 years or 150-200 households. This indicates strong demand for the proposed senior rental housing product.

The condominium development in Phase 2 is designed with compact, efficient units and moderate amenities to keep prices aimed at the middle market as opposed to the luxury market. The Phase 2 Market Study by Novogradac and Company LLP, included as Appendix C, compares the Phase 2 high-rise condominium development with current housing available in the Kapolei area. The comparables are all located in neighborhoods that are of good quality, but are not considered to be pedestrian-friendly. The market study asserts that the Project's location will offer a significant competitive advantage. Moreover, the market study asserts that the high-rise design will be marketable as the density and scale of the Project will foster a synergy with the surrounding retail, office, and recreational uses. As further discussed in Section 3.12.1 of this document, both market studies assert that there is adequate demand to support the proposed development.

2.2.2 Affordability

All of Phase 1's units, with the exception of the manager's unit, will be rented in the affordable range for households earning between 30% and 60% of the HUD Area Median Income (AMI) for Honolulu County. Eight (8) units will be rented in the 30% AMI range, 18 units will be rented in the 55% AMI range, and 27 units will be rented in the 60% AMI range.

Table 2 – Phase 1, 2014 Income Limits illustrates the income limits for various household sizes by percentage of AMI, based on HUD's 2014 data.

Table 2 – Phase 1, 2015 Income Limits

AMI Percentage	1 Person Household	2 Person Household	3 Person Household	4 Person Household
30%	$20,130	$23,010	$25,890	$28,740
40%	$26,840	$30,680	$34,520	$38,320
50%	$33,550	$38,350	$43,150	$47,900
55%	$36,905	$42,185	$47,465	$52,690
60%	$40,260	$46,020	$51,780	$57,480

Source: Department of Housing and Urban Development (HUD)

Table 3 – HUD Income Classifications illustrates HUD income classifications as they relate to percentage of AMI.

Table 3 – HUD Income Classifications

Income Classification	Percent of AMI
Extremely Low Income	<30%
Very Low Income	<50%
Low Income	<80%
Moderate Income	<120%

Source: www.huduser.org

HHFDC releases annual income, rent, and affordable sale price guidelines based on HUD income limits. Table 4 – Phase 1 Proposed Rents versus Market Rents, lists the proposed AMI restriction, the correlating 2014 affordable rents, and the comparable market rents as determined in the Phase 1 market study. Note that affordable rents shown are 2014 maximums, and the current maximums will be used as the Project is placed in service and beyond. Proposed rents for Phase 1 are between 14% and 59% below market rate.

Table 4 – Phase 1 Proposed Rents vs. Market Rents

Unit Type	Affordability	2014 HHFDC Max. Gross Rent	Utility Allowance	2014 Max. Net Rent	Market Rent	Percentage Below Market Rate
Studio	30% AMI	$503	--	$503	$1,075	53%
1-Bedroom	30% AMI	$539	--	$539	$1,300	59%
2-Bedroom	30% AMI	$647	--	$647	$1,575	59%
Studio	55% AMI	$922	--	$922	$1,075	14%
1-Bedroom	60% AMI	$1,078	--	$1,078	$1,300	17%
2-Bedroom	60% AMI	$1,294	--	$1,294	$1,575	18%

Phase 2 will consist of 143 condominium units, 72 of which will be restricted at 140% AMI or below. The exact level of restriction (for example, 100% AMI, 120% AMI, or 140% AMI) is yet to be determined. For the purposes of this document it is assumed that the units are restricted at 140% AMI. This is the minimum level of affordability which: qualifies Phase 2 to use DURF as a construction source of funding (greater than 50% of the Phase 2 units must be restricted at 140% AMI or less); satisfies the minimum requirements for a 201H application (greater than 50% of the total units must be restricted at 140% AMI or less); and satisfies the minimum requirements for the General Excise Tax exemption (greater than 60% of the total units must be restricted at 140% AMI or less). Table 5 – AMI Levels and Unit Distribution shows the proposed affordability levels for Phase 1 and Phase 2 together.

Table 5 – AMI Levels and Unit Distribution

AMI Level	Phase 1 Units	Phase 2 Units	Total Units	Percent of Total Units (%)
30%	8		8	2.7%
55%	18		18	6.1%
60%	127		127	42.8%
140%		72	72	24.2%
Unrestricted Market		71	71	23.9%
Unrestricted –	1		1	0.3%
Total Units	154	143	297	100%
Total Restricted Units	153	72	225	75.8%

Regarding the affordability levels for Phase 2's 72 restricted units, the relevant income limits are:

Table 6 - Phase 2, 2015 Income Limits

AMI Percentage	1 Person	2 Person	3 Person	4 Person	5 Person
140%	$93,940	$107,380	$120,820	$134,120	$144,900

HHFDC uses the following occupancy guidelines for for-sale units:

Studio: 1 person
1-bedroom: 2 persons
2-bedroom: 3 persons
3-bedroom: 4 persons

As previously stated, specific affordability levels have not yet been determined, but for reference, sample affordable unit prices by AMI level and unit type are shown below. These figures are based on a maximum housing expense of 28% for households buying with a 5% down payment and interest rate of 4.5% on a 30 year mortgage.

Table 7 - 2015 Affordable Sale Prices by AMI

	90% AMI	100% AMI	110% AMI	120% AMI	130% AMI	140% AMI
studio	$292,007	$324,452	$356,897	$389,342	$421,787	$454,233
1-bedroom	$333,784	$370,871	$407,958	$445,045	$482,133	$519,220
2-bedroom	$375,562	$417,291	$459,020	$500,749	$542,478	$584,207
3-bedroom	$416,904	$463,226	$509,549	$555,872	$602,194	$648,517

CRP will be processing approvals for the Project under Chapter 201H, HRS, which allows for certain exemptions from statutes, ordinances, and rules to facilitate the development of affordable housing. Flexibility concerning design standards and exemption from certain fees results in lower development cost, which in turn results in lower pricing for the occupants. Details on the 201H application and requested exemptions can be found in Chapter 5 of this document.

2.2.3 Proposed Project

CRP proposes to address the need for low and moderately priced housing in the City Center while keeping retail as the primary ground floor use on the Site. A showcase in sustainability, Phase 1 will attain the LEED Platinum standard, and the remaining two phases will be LEED certifiable to the basic level. Please refer to Appendix D for architectural plans and Figure 9 for a project rendering.

Phase 1 consists of one 13-story building, 150-feet in height, which will include 154 studio, one-bedroom, and two-bedroom units. Phase 1 includes a lobby, community laundry area, 926 square foot community center, a 9,800 square foot recreation deck, circulation, services space, and 7,241 square feet of ground floor retail. The gross building floor area will be approximately 128,312 square feet not including the parking structure. The phase 1 lot size is 41,131 square feet or .94 acres with a building floor area ratio (FAR) of 3.12 not including the parking structure. The parking structure gross area is approximately 55,890 square feet and includes 154 stalls, 53 on the first level

Figure 9: Rendering

and 101 on the second level. The gross building area including the parking structure is 184,202 square feet. 25 surface parking stalls will be provided for the Phase 1 retail on the future Phase 3 site, for a total of 179 parking stalls provided for Phase 1. The 25 surface stalls will be replaced in structured parking when Phase 3 is developed. During Phase 3 construction (estimated to take 12 months), temporary offsite parking will be provided for the 25 displaced stalls. Since the 25 displaced stalls are retail parking stalls, no residential stalls will be displaced.

Phase 2 consists of one 13-story building, 150-feet in height, which includes 143 studio, one-bedroom, two-bedroom, and three-bedroom condominium units, a lobby, a 2,052 square foot community center, a 14,700 square foot recreation deck, circulation, services space, and 7,038 square feet of ground floor retail. The gross building floor area will be approximately 148,023 square feet not including the parking structure. The phase 3 lot size is 44,310 square feet or 1.02 acres with a building floor area ratio (FAR) of 3.34 not including the parking structure. The parking structure gross area is approximately 61,757 square feet. 176 parking stalls are provided, 58 on level one and 118 on level two. Twelve (12) of the parking stalls are created by striping a drive isle of Phase 1, and the area of these stalls is not included in the area of the Phase 2 parking structure. The gross building area of Phase 2 including the parking structure is 209,780 square feet.

Phase 3 is comprised of 17,782 net square feet of single story retail and 2,608 net square feet of associated services space. The total gross building area is estimated to be 20,390 square feet. The Phase 3 lot size is 46,788 square feet or 1.07 acres with an FAR of .45. The parking structure gross area is approximately 21,300 square feet. 25 surface parking stalls benefitting Phase 1 will be removed in Phase 3, and 85 parking stalls will be added, 41 on level one and 44 on level two. Therefore, 60 stalls will be provided for Phase 3. 27 of the parking stalls are created by striping a drive isle of Phase 2, and the area of these stalls is not included in the area of the Phase 3 parking

structure. The gross building area of Phase 3 including the parking structure is 63,306 square feet.

Table 8 provides a building summary for all three phases.

Table 8 – Kapolei Mixed-Use Development - Building Summary

Phase 1 – Affordable Senior Rentals and Retail				
Bedroom/Bath	**Number of Units**	**Size (sq. ft.)**	**Number of Floors**	13
Studio/1	22	360	**Building Height**	150-feet
1/1	110	534	**Parking**	179 stalls
2/2	22	765	**Loading**	3 stalls
Total Units	154		**Elevators**	2
Retail		7,241		
Phase 2 – Condominium and Retail				
Bedroom/Bath	**Number of Units**	**Size (sq. ft.)**	**Number of Floors**	13
Studio/1	11	360	**Building Height**	150-feet
1/1	44	534	**Parking**	176 stalls
2/2	77	765	**Loading**	1 stall
3/2	11	990	**Elevators**	2
Total Units	**143**			
Retail		7,038		
Phase 3 – Retail and Service Area				
Phase 2	**Size (sq. ft.)**		**Number of Floors**	1
Retail	17,782		**Building Height**	22-feet
Service Area	2,608		**Parking**	60 stalls
			Loading	2 Stalls

2.2.4 Access and Parking

The primary vehicular access to the Kapolei Mixed-Use Development will be via a driveway on Wākea Street. A secondary access will be added in Phase 2 off of Alohikea Street. Table 9 – Required versus Provided Parking per Phase lists the provided parking compared to the required parking per the City and County of Honolulu, Land Use Ordinance (LUO). According to the LUO, 1 parking stall is required for dwelling units of 600 sf or less; 1.5 stalls are required for dwelling units of 600-800 sf; 2

stalls are required for units over 800 sf; 1 guest stall is required for every 10 residential stalls; and 1 parking stall is required for every 300-400 square feet of retail space, depending on the type. Americans with Disability Act (ADA) accessible stalls in compliance with City and County of Honolulu requirements will be provided.

Table 9 – Required versus Provided Parking by Phase

	Required Retail	Provided Retail	Required Residential	Provided Residential	Total Required	Total Provided	Exemption
Ph. 1-Senior	25	25	181	154	206	179	-27
Ph. 2-Condo	24	24	208	152	232	176	-56
Ph. 3 – Retail	60	60	0	0	60	60	0
Total	109	109	389	306	498	415	-83

Table 9 illustrates that there will be a 1:1 ratio of parking stalls to residential units. Section 5.2 of this document discusses in detail the requested parking exemption and rationale. The retail component will be parked to code.

2.3 DEVELOPMENT TIMETABLE

Construction will commence when all approvals are granted from the pertinent State of Hawaii or City and County of Honolulu agencies. All three phases are anticipated to be constructed approximately simultaneously. The proposed development timeframe is as follows:

Table 10 – Development Timeframe

Process	Dates	Duration
Entitlement	**April 2014 to July 2015**	**15 months**
Design Development/Permitting	July 2015 to January 2016	6 months
Construction	January 2016 to July 2018	30 months

2.4 PROJECT COST

Table 11 shows a breakdown of the estimated development costs.

Table 11 – Estimated Development Costs

Project Cost	Phase 1	Phase 2	Phase 3	Total
Land and Buildings	2,179,454	2,480,552	825,124	5,485,130
Site Work	1,564,585	2,290,770	1,233,020	5,088,375
Rehabilitation and New Construction	30,947,450	34,737,735	5,595,280	71,280,465
Contingency	1,960,925	2,804,283	491,415	5,256,623
Permits and Fees	1,241,837	1,833,149	161,211	3,236,197
Architectural and Engineering Fees	1,461,835	1,667,784	1,632,784	4,762,403
Interim Costs	2,985,871	1,496,009	245,637	4,727,517
Interim Financing Fees and Expenses	670,000	3,434,762	166,038	4,270,800
Permanent Financing Fees and Expenses	137,500	--	71,746	209,246
Soft Costs	619,059	397,000	123,000	1,139,059
Developer's Fees	2,694,952	1,500,000	500,000	4,694,952
Project Reserves	1,193,069	-	40,000	1,233,069
Syndication	110,000	-	-	110,000
TOTAL	47,766,536	52,642,044	11,085,255	111,493,835

3.0 ASSESSMENT OF THE AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

This chapter describes the existing environmental conditions (physical, natural, and human) of the project area, Potential impacts that may result from the proposed development, and mitigation measures that may be implemented.

3.1 TOPOGRAPHY

The City of Kapolei is located on the 'Ewa Plain and is set at the foot of the Wai'anae Mountain Range. Pu‘u Pālailai (height 492 feet) lies about one-half mile mauka, while Pu‘u Kapolei (height 166 feet) anchors the east end of the City and is its most important physiographic feature; these are two hills located within the relatively flat terrain of the ‘Ewa Plain. Except for Pu‘u Kapolei, the land of the City of Kapolei is level or very gently sloping. Cultivated with sugar cane for many decades, the land is generally devoid of topographical features. The Site is typical for the area – it is level, overgrown with grass, and is without notable topographical features.

Pu'u Kapolei provides a major organizing influence for the urban core of the City of Kapolei. It is also the namesake of the City of Kapolei (Kapo-lei, lit. beloved Kapo, sister of Pele, from Pukui, Place Names of Hawaii, 1984). Pu'u Kapolei is integrated into the Kapolei Regional Park, which is within short walking distance to the Site.

Potential Impacts and Mitigation Measures

The proposed improvements will not require any major alterations to the topography of the land and no significant impacts are anticipated.

3.2 SOILS

Encompassing much of the southwestern area of O'ahu, the ‘Ewa Plain is underlain by an elevated coral reef partially covered by alluvium. Honolulu Series lava flows are interbedded with reef deposits suggesting that the two were formed simultaneously (Soils International, 1985). The United States Department of Agriculture (USDA),

Natural Resource Conservation Service (NRCS) classifies the Kapolei Mixed-Use Development site as HxA – Honouliuli clay, 0 to 2 percent slopes. The soil is derived from basic igneous rock and occurs on alluvial flats where the mean annual precipitation is 18 to 30 inches. The Site is well drained, with moderate water capacity and frequency of flooding or ponding is rare (please see Figure 10 – Soil Survey).

Potential Impacts and Mitigation Measures

Soils on site will be disturbed during construction. While much of the Site will merely be grubbed and graded, some excavation will be required underneath the Phase 1 and 2 towers. The excavation will require that soil is removed, and if not usable onsite, it will be moved offsite. A disturbed construction site is more susceptible to erosion, either by wind or rain, than an undisturbed site. No post-construction impacts are anticipated.

All grading operations will be conducted in full compliance with dust, erosion control, and other requirements of the City Grading Ordinance. In addition, LEED requires an erosion and sedimentation control plan for all construction activities associated with the Project. The goal of the plan is to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust. The plan must conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit or local standards and codes, whichever is more stringent. The plan must describe the measures implemented to accomplish the following objectives:

- To prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- To prevent sedimentation of storm sewers or receiving streams.
- To prevent pollution of the air with dust and particulate matter.

After construction, impermeable surfaces (i.e., walkways and parking areas) and landscaping will mitigate the potential for soil erosion.

Soil Map—Island of Oahu, Hawaii

Map Scale: 1:1,270 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Figure 10: Soil Survey

3.3 NATURAL RESOURCES

3.3.1 Floodplain Management

A floodplain is any land area that is susceptible to being inundated by water from any source. Executive Order 11988, "Floodplain Management," places special importance on floodplains and directs Federal agencies to avoid conducting, allowing, or supporting actions on a floodplain. Floodplain management is a set of strategies and actions that reduce flood risk and restore, enhance and maintain the natural functions and resources of floodplains.

Based on the Flood Insurance Rate Maps published by the Federal Emergency Management Agency, the site is located in flood hazard Zone D, as shown in Figure 11 – Flood Zone Map. Zone D is defined as the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

Potential Impacts and Mitigation Measures

It is unknown whether the Site is within a floodplain or not. If the Site were determined to be in a floodplain, an analysis would be required including the following:

- Evaluate any risk to or risk resulting from the Project;
- Evaluate any effects on natural and beneficial floodplain values;
- Measures to minimize harm;
- Measures to restore and preserve the natural and beneficial floodplain values affected by the Project.

3.3.2 Wetland Protection

According to HAR Chapter 11-54 – Water Quality Standards, HAR 11-54-2 – Classification of State Waters, subsection (b)(1)(C) – Wetlands, the classification of wetlands are as follows: (i) Elevated wetlands (bogs, marshes, swamps, and associated ponds); and (ii) Low wetlands (marshes, swamps, and associated ponds).

Potential Impacts and Mitigation Measures

The Site is not located in a wetland area as classified above. Therefore, no impacts to wetland areas will result from development of the Project.

3.3.3 Unique Natural Features

There are no unique natural features onsite and therefore no impact.

3.3.4 Hurricanes, Earthquakes, and Tsunamis

Hurricanes are one type of tropical cyclone affecting Hawaii (others include tropical storms and tropical depressions). Hurricanes are tropical storms with winds equal to or greater than 74 miles per hour.

Between 1970 and 1992, 105 tropical cyclones were identified in the central Pacific region resulting in an average of 4.5 storms per year. Not all of these storms directly passed thru the State, and actual hurricane strikes on the Hawaiian Islands are relatively rare in the modern record. More commonly, near-misses that generate large swells and moderately high winds causing varying degrees of damage are the result of hurricanes passing close to the islands (USGS 2002).

A hazard mitigation report prepared by the Federal Emergency Management Agency (FEMA) determined that nine hurricanes approached within 300 nautical miles (about one day's travel time) of the Hawaiian Islands' coastlines between 1970 and 1992 (FEMA 1993). Most hurricanes affecting the islands have focused on Kaua'i. Based upon a tracking of hurricanes since 1950, there appears to be no geographical or meteorological reason why hurricanes miss other islands and tend to steer toward Kaua'i (FEMA 1993).

An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. At the Earth's surface, earthquakes manifest themselves by shaking and sometimes displacement of the ground. When the epicenter of a large

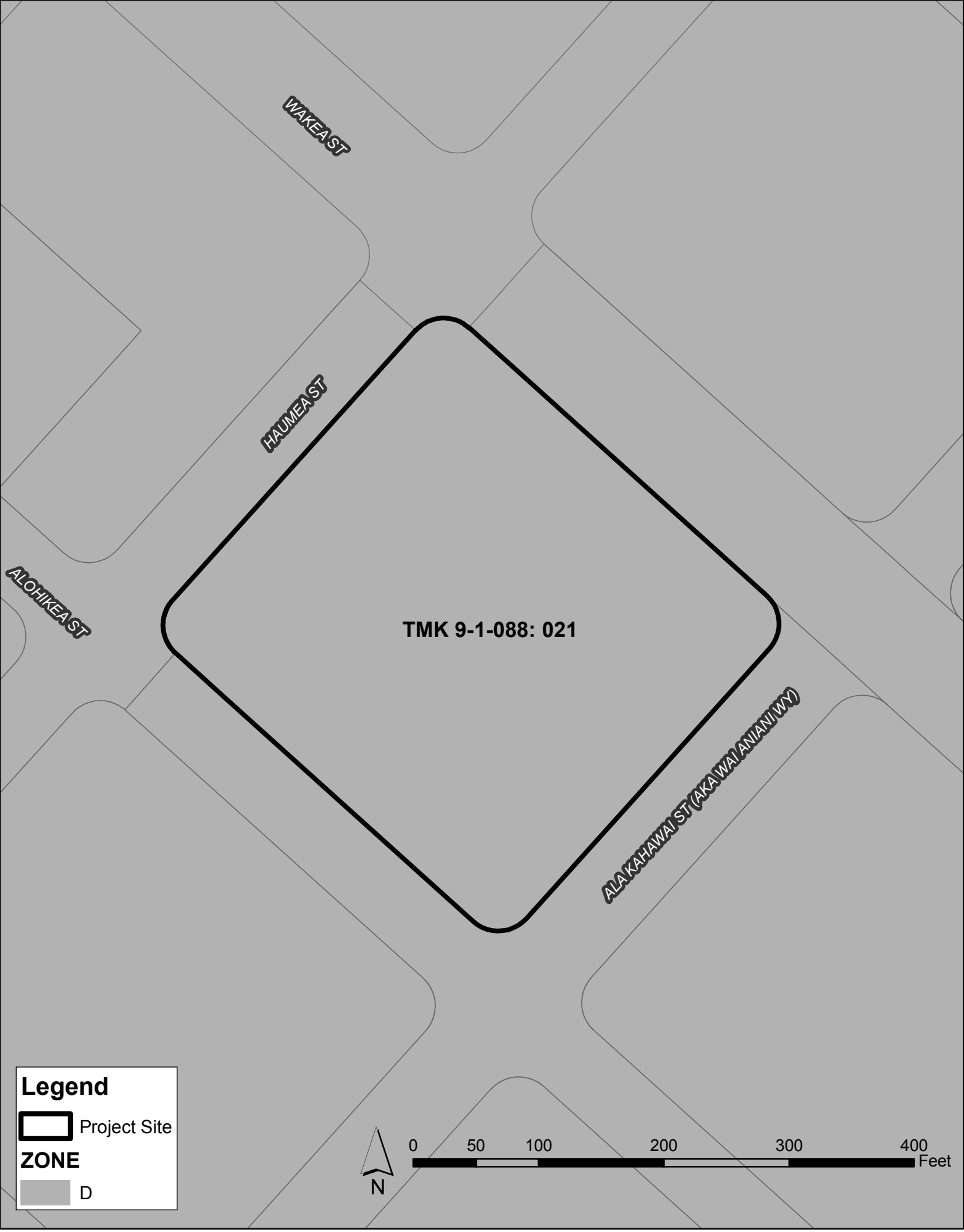


Figure 11: Flood Zone

earthquake is located offshore, the seabed may be displaced sufficiently to cause a tsunami. Earthquakes can also trigger landslides, and occasionally volcanic activity.

Tsunamis are caused by a sudden movement of the seafloor that generates a series of waves which travel across the ocean until they reach a coastline. Seafloor movements may include faulting, landslides, or submarine volcanic eruptions. Landslides originating either under the sea or above sea level and then sliding into the water may also generate a tsunami. Tsunamis manifest themselves as either large breaking waves, often largest around headlands where they are concentrated by wave refraction, or as rapidly rising sea level like a flooding tide. The high degree of volcanism and seismic instability in and around the Pacific Ocean has contributed to a history of tsunami occurrences.

The coastline of the Hawaiian Island is thus under the continuous threat of tsunami inundation because this region is one of the most geologically active regions on Earth. The geography of the shoreline often plays an important role in the form of the tsunami. Tsunami waves may be very large in an embayment, actually experiencing amplification in long funnel-shaped bays. Fringing and barrier reefs appear to have a mitigating influence on tsunamis by dispersing the wave energy (USGS 2002).

Potential Impacts and Mitigation Measures

According to the USGS information cited above, actual hurricane strikes on the Hawaiian Islands are relatively rare in the modern record, and according to the FEMA information cited above, most hurricanes affecting Hawaii track toward Kaua'i. The risk of hurricanes directly affecting Kapolei Mixed Use Development is therefore small. Indirect impacts, such as moderately strong winds and ocean swells, will have minimal impact due to the Project's construction to modern building code and distance from the ocean, respectively. The nearest hurricane shelter in proximity to the Project site is Kapolei Elementary School. The Project site is located outside the Tsunami inundation zone.

According to the USGS, most of the earthquakes that have occurred in the past on Hawaii have been volcanic-related and occur on the Big Island, causing little or no damage to the other islands. Therefore, the likelihood of an earthquake impacting the Project is small. In addition the construction of the Project will comply with current seismic building codes to ensure a structurally-sound building.

3.3.5 CLIMATE

The State of Hawai'i climate is relatively moderate throughout the island chain, although, some differences in conditions may occur from one location to another due to the mountainous topography associated with each island. Annual and daily variation in temperature depends to a large degree on elevation above sea level, distance inland, and exposure to the trade winds. On O'ahu, the Ko'olau and Wai'anae mountain ranges are oriented almost perpendicular to the trade winds, which account for much of the variation in local climatology.

O'ahu's temperatures have small seasonal variation such that the temperature range averages only 7 degrees between the warmest months (August to September) and the coolest months (January and February) and about 12 degrees between day and night. Based upon historic data from a recording station in Waikiki, average annual temperatures range from a low of 69 to a high of 85 degrees Fahrenheit throughout the year. Monthly rainfall varies from a low of generally less than 1 inch of rainfall during the summer (June to August), and less than 4 inches during winter periods (November to January) (WRCC 2010).

Winds are predominantly "trade winds" from the east-northeast except for occasional periods when "Kona" storms generate strong winds from the south, or when the trade winds are weak and land breeze to sea breeze circulations develop. Wind speeds typically vary between 5 and 15 miles per hour providing relatively good ventilation much of the time. Lower velocities (less than 10 mph) occur frequently when the usual

northeasterly trade winds tend to fall, giving way to light, variable wind conditions through the winter and into early spring.

Potential Impacts and Mitigation Measures

The development and operation of the Project will not individually affect the climate. However, Global Warming theory postulates that human activities cumulatively affect the climate through the creation of greenhouse gasses. Greenhouse gasses will be produced in the construction and operation of the Project. Though, under LEED the Project's "carbon footprint" is mitigated through careful selection of recycled, recyclable, durable, and rapidly renewable materials. During property operations, the greenhouse effect is also mitigated through highly efficient energy use strategies, including using natural as opposed to mechanical ventilation in Phase 1, as well as use of renewable onsite energy generation.

Microclimates can be affected on a local scale. The urban heat island effect is when the built environmental causes urban areas to be warmer than surrounding areas. The main cause of the urban heat island effect is from the modification of land surfaces with materials that effectively store short-wave radiation, such as pavement and dark, flat rooftops. Waste heat generated by energy usage is a secondary contributor. Under LEED's criteria, the Project has committed to reducing the heat island effect by implementing such strategies as shading parking areas and using light colored roofing with solar photovoltaic collectors. During operations the Project will also mitigate the heat island effect by energy efficient operations and efficient onsite power generation including an onsite "cogeneration" system which uses fossil fuel to create electricity while capturing the byproduct heat to heat domestic hot water. Efficient systems such as these reduce electrical loads and heat byproduct from building systems.

3.4 FLORA AND FAUNA

The Kapolei Mixed-Use Development site and surrounding neighborhood and area consists of urban uses, structures, and the landscaped environment does not provide

habitat for any rare, threatened, or endangered species. The Kapolei Town Center Final Environmental Impact Statement, August 1988, states that there are two endangered plants in the ‘Ewa Plains area, ‘akoko (Euphorbia skottbergii var. kalaeloana) and Achvranthes rotundata, are commonly known nearby the former Barbers Point Naval Air Station, present-day Kalaeloa area. However, none of these plants were found in the Kapolei Town Center area where the Site is located.

Char and Balakrishnan (1979), during their comprehensive survey of the ‘Ewa Plains area, also did not find any plants considered rare, threatened or endangered (Fosberg and Herbst 1975, U.S. Fish and Wildlife Service 1980) within the Kapolei Town Center area.

Potential Impacts and Mitigation Measures

No impacts to flora or fauna are expected.

3.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

A Preliminary Archaeological Reconnaissance, field inspection was conducted by Paul H. Rosendahl, Ph. D, Inc. on November 5, 1986 for the Kapolei Town Center Environmental Impact Statement completed in August 1988. The Kapolei Town Center project area encompassed the Kapolei Mixed-Use Development project site. The basic objectives of the archaeological reconnaissance were four-fold: 1) to locate previously identified sites; 2) to determine the presence or absence of any previously unidentified sites; 3) to assess the potential significance of identified sites; and 4) to recommend any further archaeological work that might be necessary or appropriate.

The Preliminary Archaeological Reconnaissance states that no archaeological remains are known to exist within the project area (879-acres). A tentative evaluation of the archaeological significance of sites identified within the project area, made on the basis of the preliminary reconnaissance survey field inspection findings, indicates that all are of minimal research, cultural, or interpretive significance, primarily because they all

appear to be less than 50 years old (from the time of the archeological reconnaissance date). The Preliminary Archaeological Reconnaissance stated that no further archaeological work is recommended.

Potential Impacts and Mitigation Measures

The Kapolei Town Center Final Environmental Impact Statement concluded that the Kapolei Town Center will have no effect on significant historic or archaeological sites. By letter dated April 11, 1988 (p. 11-38), the DLNR notes that, based on a review of the archaeological reconnaissance survey, "…we believe that the project will have 'no effect' on significant historic sites."

Notwithstanding this finding, in the event that any previously unidentified sites or remains are encountered during construction and site work phases, work in the immediate area will cease until the SHPD has been notified and is able to assess the impact and make further recommendations for mitigation, if warranted.

3.6 CULTURAL RESOURCES

Generally, the Counties have the primary authority and duty to develop and maintain public access to and along the shorelines. (HRS §46-6.5 – Public Access, and HRS § 115-5 – Beach Transit Corridor, defined). Native Hawaiian gathering rights are addressed in HRS § 7-1 – Building materials, water, etc.; landlords' titles subject to tenants' use.

HRS §46-6.5 – Public Access

(a) Each county shall adopt ordinances which shall require a subdivider or developer, as a condition precedent to final approval of a subdivision, in cases where public access is not already provided, to dedicate land for public access by right-of-way or easement for pedestrian travel from a public highway or public streets to the land below the high-water mark on any coastal shoreline, and to dedicate land for public access by right of way from a public highway to areas in the mountains where there are existing facilities

for hiking, hunting, fruit-picking, ti-leaf sliding, and other recreational purposes, and where there are existing mountain trails.

The Project will comply with the aforementioned HRS provision pertaining to public access.

HRS § 115-5 – Beach Transit Corridor, defined

(a) The right of transit shall exist seaward of the shoreline and this area shall be defined as a beach transit corridor. For purposes of this section, "shoreline" shall have the same meaning as in section 205A-1 – Coastal Zone Management.

The Project will comply with the above referenced provision related to the beach transit corridor. This Project is not located near the coastline, however, the island of O;ahu can be classified as a CZM area as classified in HRS §205A-1.

§ 7-1 – Building materials, water, etc.; landlords' titles subject to tenants' use

Where the landlords have obtained, or may hereafter obtain, allodial titles to their lands, the people on each of their lands shall not be deprived of the right to take firewood, house-timber, aho cord, thatch, or ki leaf, from the land on which they live, for their own private use, but they shall not have a right to take such articles to sell for profit. The people shall also have a right to drinking water, and running water, and the right of way. The springs of water, running water, and roads shall be free to all, on all lands granted in fee simple; provided that this shall not be applicable to wells and watercourses, which individuals have made for their own use.

The Project will comply with the HRS provisions stated above pertaining to gathering rights.

Potential Impacts and Mitigation Measures

Since the Kapolei Mixed-Use Development is an urban infill project, and provided that there are no cultural remains found, it is anticipated that there will be no cultural impacts from the Project. In consultation with the Office of Environmental Quality Control

(OEQC), it was determined that the requirement for a Cultural Impact Assessment (CIA) is at the discretion of the State Historic Preservation Division – DLNR (SHPD).

As stated in Section 3.5 – Archaeological and Historic Resources, in the event that any previously unidentified sites or remains of cultural significance are encountered during the construction and site work phases, work in the immediate area will cease until the SHPD has been notified and is able to assess the impact and make further recommendations for mitigation, if warranted.

3.7 ROADWAYS AND TRAFFIC

The Site is located in a developing area where not all planned roads, transit support, bicycle lanes, and pedestrian walkways have been built. Of the four streets that surround and define the site, only Haumea and Wākea streets are fully completed, including curbs and sidewalks, and are being used.

Despite the undeveloped nature of the immediate area, the project site is in a busy region served by Kamokila Boulevard just one block away. A study of the existing traffic and circulation, as well as calculations of the Project's anticipated impacts was conducted by Hatch Mott MacDonald. The Traffic Impact Analysis Report (TIAR) enclosed as Appendix E is based on a more intensive development program than that proposed. The subject of the TIAR includes 583 multifamily units, 22,300 square feet of commercial space, and 589 parking stalls (the "Study Project"). With 286 fewer multifamily units, 9,761 more square feet of retail, and 174 fewer parking stalls, it is assumed that the impact of the proposed project is equal to or less than the impact of the Study Project.

Existing Conditions

Roadway Network:

Regional access to the project site is provided by Interstate H1, Kamokila Boulevard, and Wākea Street. Other area streets include Manawai Street, Alohikea Street, Nau

Place, Haumea Street, and Ala Kahawai Street. A brief description of each street in the study road network follows:

Interstate H1 is an east-west state freeway within the island of O'ahu and the City and County of Honolulu, connecting the eastern and western ends of the island via downtown Honolulu and Honolulu International Airport. Interchanges near the project site include Makakilo Drive/Fort Barrette Road (Route 901) (Exit #2), Wākea Street (Exit #1B) and Kalaeloa Parkway (Route 95) (Exit #1/1A/1E). In the vicinity of the project, Interstate H1 is a six-lane freeway with a speed limit of 60 miles per hour (60 MPH).

Kamokila Boulevard is a four-lane, east-west arterial-street within the Kapolei area. Parking is prohibited on both sides of the street. There is a raised concrete median present along the entirety of Kamokila Boulevard within the study area, with breaks in the median at each intersected roadway. Existing land uses along Kamokila Boulevard in the project vicinity are primarily commercial, including restaurants, gasoline stations, and other retail space. Additional uses include a private university, a city police station, a state government office building, and a community park. More regional commercial businesses, such as supermarkets, fast-food chains and discount superstores, are located within one mile to the east and west of the study area along the Kamokila Boulevard corridor. Note that just east of Manawai Street, Kamokila Boulevard changes its name to Farrington Highway. The speed limit on Kamokila Boulevard is 25 MPH.

Wākea Street is a four-lane, north-south arterial roadway with bicycle lanes within the Kapolei area. Parking is prohibited along both sides of the street. A striped median is present along Wākea Street between Kamokila and Haumea Streets, while a raised concrete median is present south of Haumea Street, with breaks at each intersection. North of Kamokila Boulevard, Wākea Street connects to Farrington Highway, which is a frontage road to the north of Interstate H1, as well as eastbound on and off-ramps connecting directly to Interstate H1. The speed limit on Wākea Street is 25 MPH.

Manawai Street is a two-lane, north-south roadway within the Kapolei area. The street provides access to a number of different land uses, including commercial, a city library, a regional park, a pre-school and a private school. Parking is allowed on both sides of the street. The speed limit on Manawai Street is 25 MPH.

Alohikea Street is a two-lane, north-south street within a partially-developed mixed-use area south of Kamokila Boulevard. Parking is allowed in both directions of the street. Although the concrete curb lines and gutters are in place along the entirety of this street, the roadway is not currently open to traffic south of Haumea Street. North of Kamokila Boulevard, Alohikea Street becomes an entrance into a small commercial area anchored by a movie theater complex. The speed limit on Alohikea Street is 25 MPH.

Nau Place is a two-lane, north-south roadway within the Kapolei area. It is a dead-end street off of Kamokila Boulevard between Wākea and Manawai Streets, serving both commercial businesses and the community police station. On-street parking is now allowed on either side of the street. There is no posted speed limit on Nau Place; the presumed speed limit is 25 MPH.

Haumea Street is a two-lane, east-west street within a partially-developed mixed-use residential neighborhood south of Kamokila Boulevard. Parking on Haumea Street is only allowed east of Wākea Street; west of Wākea Street, the street frontage is reserved solely for bus stops. The speed limit on Haumea Street is 25 MPH.

Ala Kahawai Street (also known as Wai Aniani Way) is a two-lane, east-west street within a partially developed mixed-use area south of Kamokila Boulevard within central Kapolei. Parking is allowed in both directions of the street. Although the concrete curb lines and gutters are in place along the entirety of this street, the roadway is not currently open to traffic west of Wākea Street. Prominent existing land uses along Ala Kahawai Street include two private schools – Island Pacific Academy, a Junior Kindergarten-through-12th Grade school whose sole vehicular access is off of Haumea

Street near Wākea Street, and The Cole Academy, a pre-school whose sole vehicular access is off of Ala Kahawai Street near Manawai Street. There is no posted speed limit on Ala Kahawai Street; the speed limit is presumed to be 25 MPH.

On-Street Parking:

There are several streets within two blocks of the Site that allow for on-street parking. The Traffic Impact Report Analysis included as Appendix E of the DEA states that the following on-street parking is available in the immediate neighborhood. Ala Kahawai Street (aka Wai Aniani Way) is adjacent to the Site to the south, and parking will be allowed in both directions once the street is completed. Alohikea Street is adjacent to the Site to the west, and parking is allowed in both directions. Haumea Street runs east-west adjacent to the site; parking on Haumea Street is only allowed east of Wākea Street. Nau Place is a two-lane north-south roadway dead-end street off of Kamokila Boulevard between Wākea and Manawai Streets; parking is allowed in both directions. Manawai Street runs north-south two blocks (.15 mile) east of the Site, and parking is allowed in both directions.

Public Transit Systems:

The City and County of Honolulu, in conjunction with O'ahu Transit Services, Inc., operates TheBus, the public transit system within the city. A number of local and regional bus routes traverse the study area.

Bus stops within the study area include the following locations:

- Westbound Kamokila Boulevard, just west of Alohikea Street – Routes 411, 412.
- Eastbound Kamokila Boulevard, just west of Wākea Street – Route 413
- Eastbound Kamokila Boulevard, just west of Nau Place – Lines 40, 41, 411, 412, 414, 415.
- Westbound Kamokila Boulevard, just west of Nau Place – Lines 40, 414, 415, "C" (a.k.a. Country Express).
- Kapolei Transit Center (Haumea Street between Uluohia and Wākea Streets):

- Eastbound Haumea Street, between Uluohia and Alohikea Streets – Lines 411, 412.
- Westbound Haumea Street, between Uluohia and Alohikea Streets – Lines 40, 413, 414, 415, “C”.
- Eastbound Haumea Street, in front of the project site, between Alohikea and Wākea Streets – Lines 40, “C”.

These routes provide connections to various destinations along western and southern O’ahu, including downtown Honolulu and the greater Kapolei area. Routes C and 40, which run just in front of the project site, both operate twice per hour on both weekdays and weekends. Route 41 operates roughly every 30-40 minutes on weekdays and every 45 minutes on Saturdays, with no Sunday service. Route 411 has a run frequency of roughly every 15-45 minutes on weekdays and approximately every hour on weekends. Route 412 operates twice per hour on weekdays and every 45 minutes on weekends. Route 413 operates twice per hour on weekday early mornings and mid-afternoons only. Route 414 provides hourly service on weekdays and weekends. Finally, Route 415 operates only three morning and three evening runs on weekdays and weekends.

Pedestrian:

The following streets have sidewalks along both sides:

- Kamokila Boulevard
- Wākea Street
- Manawai Street
- Nau Place
- Alohikea (north of Haumea)
- Haumea Street
- Ala Kahawai Street (east of Wākea)

Where sidewalks are currently provided along Ala Kahawai Street, they are nearly double the width of the sidewalks along other surrounding streets (e.g. approximately 14 feet wide on Ala Kahawai versus approximately eight feet on other roadways).

Bicycle:

The Kapolei Area Bikeway Plan (KABP), published by Campbell Estate in 1991, established a comprehensive bikeway network to serve the 'Ewa Plain. The network includes 56 miles of bikeway facilities, including bike paths (separated from the roadway), bike lanes (four- to six-foot lanes) and bike routes (shared curbside vehicle lane, with minimum 12-foot width). The KABP is part of The City of Kapolei Urban Design Plan. Related studies include: the State's Bike Plan Hawaii (2003); the O'ahu Bike Plan; and the 'Ewa Roadway Connectivity Study (2009). The 'Ewa Development Plan includes all projects found in these other studies and shows major bike paths running along the OR&L right-of way, Kapolei Parkway, the Kualaka'i Parkway, and Fort Weaver Road. It also states that bikeways should also be incorporated into other major roadways, and there should be an extensive network of bike lanes within the City of Kapolei. More specifically, the 'Ewa DP directs that the City of Kapolei should, "provide exclusive bike lanes along major roadways within the City which are connected to the region's bikeway system," and, "encourage pedestrian and bicycle travel, particularly to reach neighborhood destinations." The 'Ewa DP and Kapolei UDP also require bicycle friendly design and bicycle storage as part of the design for commercial centers, residential developments, and transit facilities. Currently, bicycle lanes are present along both sides of Kamokila Boulevard and Wākea Street.

Potential Impacts and Mitigation Measures

The TIAR evaluates the potential traffic impacts that may result from the Study Project, including potential impacts to multiple modes of transportation – pedestrian, bicycle, public transit, and vehicular. Input from the State Department of Transportation, City Department of Transportation Services, and City Traffic Review Branch guided the study. The TIAR presents the results from a series of vehicle counts and analyses

performed to determine the existing traffic conditions and how traffic conditions would change with the implementation of the Study project and future traffic growth.

The roadway intersections selected for analysis were those with the most potential to be affected by the proposed project. They include the intersections of:

1. Alohikea Street / Kamokila Boulevard;
2. Wākea Street / Kamokila Boulevard;
3. Nau Place / Kamokila Boulevard;
4. Manawai Street / Kamokila Boulevard;
5. Alohikea Street / Haumea Street;
6. Wākea Street / Haumea Street;
7. Alohikea Street / Ala Kahawai Street (future scenarios only[1]); and
8. Wākea Street / Ala Kahawai Street.

The TIAR describes three scenarios for a better understanding of the Study Project's impacts. Scenario 1, Future Without Project Conditions (Year 2020), describes the changes in traffic conditions that would occur without the project, due to normal growth. This scenario serves as a baseline for comparison. Scenario 2, Future With Project Conditions (Year 2020), details the changes in traffic that is expected to occur with the Study Project's full build-out. Scenario 3, Future With Current Zoning Conditions (Year 2020), assumes that the project is not built, but instead is replaced by a hypothetical project that would be allowed by right under the existing zoning and current standards. The assumed development under Scenario 3 is multi-story office buildings of approximately 463,000 square feet of gross floor area with an internal parking garage. This is estimated to be the maximum size of commercial building allowable under the existing zoning with open space bonus (maximum FAR of 3.5). Trip generation analyses were performed for Scenarios 2 and 3. The trip generation analysis indicates the number of trips per day, and the number of trips during AM and PM peak traffic

[1] The Alohikea Street / Ala Kahawai Street intersection was not counted, as it is currently closed to traffic because it has yet to be paved (despite being laid out with full curb and gutter). This intersection was not analyzed under existing conditions.

hours, generated by each scenario. Results are summarized below, and Appendix E-TIAR contains detailed calculations and results.

Vehicle:

Project Trip Generation, Study Project vs. B-2 Compliant Project

According to the TIAR, the Study Project would generate an estimated 3,136 daily trips, with 218 trips during the AM peak hour (76 in, 142 out) and 216 trips during the PM peak hour (122 in, 94 out). As a comparison, maximum build out of the alternative B-2 compliant project is estimated to generate a net 3,579 daily vehicle trips, with 555 trips (488 in, 67 out) during the AM peak hour and 508 trips (86 in, 422 out) during the PM peak hour. The result is that the Study Project is anticipated to generate about 12% less daily traffic, 60% less morning peak hour and 57% less evening peak hour traffic than would the B-2 compliant project.

Project trip generation for the proposed Project is mitigated by proposing reduced parking, providing bicycle facilities, and locating near a public transit node. Encouraging end-users to use public transit as opposed to driving reduces traffic.

Freeway Access, Study Project vs. B-2 Compliant Project

There are three interchanges along Interstate H1 in the vicinity of the project site, 1) Makakilo Drive (Route 901) (Exit #2), 2) Wākea Street (Exit #1B), and 3) Kalaeloa Parkway (Route 95) (Exit #1/1A/1E). Exhibit 13 of the TIAR depicts the locations of these interchanges with respect to the project site.

For the Makakilo Drive (Exit #2) interchange, as much as 20% of the project trips would utilize this interchange. The Study Project would only add 43 AM and 44 PM trips through the interchange, which would constitute less than 1% of the total existing traffic. As a comparison, if 20% of the B-2 compliant project's trips used the interchange, it would add 111 AM and 102 PM trips. The TIAR concludes that the Study Project will not impact operations at this interchange.

For the Wākea Street (Exit #1B) interchange, the directional nature of the ramps means that the project traffic would not need to stop prior to exiting or entering these ramps; hence the nearest intersection of note traversed by project traffic is the Wäkea Street / Kamokila Boulevard intersection (study intersection #2 in this analysis). The impacts to the Exit #1B interchange are therefore minimal.

For the Kalaeloa Parkway interchange, this particular on-ramp served 7,600 vehicles per day in 2009, with peak hour volumes of 621 vehicles/hour (AM) and 1,078 vehicles/hour (PM). The Study Project would add only 7 AM and 5 PM peak hour trips to this ramp, representing approximately 1% of the total ramp traffic. As a comparison, if the same proportion of project trips were applied to the B-2 compliant project, it would add 18 AM and 12 PM peak hour trips on this interchange. The TIAR concludes that the Study Project will not impact operations of this interchange.

Vehicular Project Access

Exhibit 8 of the TIAR depicts the projected traffic at the Study Project driveways during the AM and PM peak hours. As the level of through traffic on both Haumea and Alohikea Streets is relatively low, operations of the Study Project driveways are expected to be acceptable. Careful design of the project driveways will ensure that there is adequate sight distance for cross traffic (including vehicles, pedestrians and bicyclists) at the Project's entrances. This will assist in maintaining smooth traffic flow and reduce hazard potential.

Level of Service

The level-of-service analysis from the TIAR indicates the level of congestion at the study intersections. Given development of the Study Project, operations of the majority of the study intersections would be at overall LOS A, B, or C with side-street operations of no worse than LOS D. No improvements would be necessary at these intersections. However, three of the study intersections – Alohikea / Kamokila, Wākea / Kamokila and Wakea / Haumea – will operate at lower levels of service in the future. These lower

levels of service would occur with or without the Study Project and therefore, would not necessarily be a project impact. Despite this, section 6.1 of the TIAR provides specific recommendations for correcting the situations. The recommended improvements are also summarized within Exhibit 12 of the TIAR.

On Street Parking:

The availability of on-street parking within the immediate neighborhood partially mitigates the need for on-site parking. Generally, vacant on-street parking stalls can easily be found both during the day and at the earlier evening hours.

Public Transit:

The TIAR concludes that transit demand added by project residents and visitors will not rise to the level that will require any increase in transit service to the area or any additional transit infrastructure.

Pedestrian:

Neither Alohikea nor Ala Kahawai Streets currently have sidewalks on the Project's side of the street. Construction of the Project will include completion of the sidewalks adjacent to the Site. Pedestrian amenities such as street canopy trees will be installed and pedestrian oriented design (entrances and façade treatment) at the ground floor will help mitigate the building mass and create a more pleasing pedestrian experience.

Bicycle:

The Project will comply with Kapolei UDP and 'Ewa DP's requirements for incorporating bicycle facilities in the design, including conveniently located bicycle racks at a minimum equal to 10% of the number of required parking stalls. The TIAR concludes that the level of bicycle activity generated by the Study Project would not be sufficient enough to necessitate any new bicycle lanes, paths or routes in the vicinity.

Impact Fees:

Revised Ordinances of Honolulu, Chapter 33A – Impact Fees for Traffic and Roadway Improvements in ‘Ewa, sets forth an automatic and institutional measure to further insure that new developments proposed in the ‘Ewa area provide mitigation in the form of a highway impact fee. The fee is calculated by land use. The proposed Project as a whole would be assessed an estimated $507,567. The impact fee is based on Table 33A-1.4 – Impact Fees by Land Use; Multi-family = $1,245 x 297 units, Retail = $4,053/1,000 sf (proposed 32,061 sf of retail).

3.8 NOISE

The State of Hawai’i Department of Health, Indoor and Radiological Health Branch and the U.S. Environmental Protection Agency have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. The Site is located in an urban environment where certain levels of environmental noise are acceptable.

Potential Impacts and Mitigation Measures

Short-term noise impacts from construction activities and related equipment are expected during the construction period and will have an impact on nearby residents and businesses. Construction noise will be short-term and limited to daylight hours. Proper mitigation measures will be implemented to minimize noise impacts, and all work will comply with the State Department of Health (DOH) noise limits. All construction activities will be monitored to ensure compliance with the DOH Administrative Rules, Chapter 11-46, “Community Noise Control.”

3.9 AIR QUALITY

Air quality in the vicinity of the Site is primarily affected by construction activities (i.e. fugitive dust) and by vehicular emissions generated along surrounding streets. Among the various air pollutants for which State and National standards have been established,

carbon monoxide level is the primary concern in areas near heavy traffic flow. According to the DOH Clean Air Branch, Kapolei Station located at the Kapolei Business Park on Lauwiliwili Street, the air quality is in the green (good) range.

Potential Impacts and Mitigation Measures

It is anticipated that no State or Federal air quality standards will be violated during or after the development of the Project. Construction activities such as site clearing and grading will be temporary, and all construction activities will comply with the provisions of Chapter 11-60.1, HAR, Section 11-60.1-33, Fugitive Dust. An effective dust control plan will be implemented as necessary. Measures to control dust during various phases of construction include:

- Providing an adequate water source at the site prior to start-up construction activities.
- Irrigating the construction site during periods of drought or high winds.
- Controlling dust debris being hauled away from the project site.
- Providing adequate dust control measures during weekends, after hours, and before daily start-up of construction activities.
- Installing silt screening in the areas of disturbance.

In the long term, the Kapolei Mixed-Use Development is not anticipated to generate significant enough volumes of traffic to degrade air quality in the area. Adjacent to the Kapolei Transit Center and featuring reduced parking, the Project exhibits the key features of transit oriented development, which has less impact on air quality than conventional development. As a LEED Platinum project, Phase 1 will include designated parking for low-emission and fuel efficient vehicles.

3.10 MAN-MADE HAZARDS

A Phase I Environmental Site Assessment (ESA) was conducted in June 2004 by EKNA Services, Inc. A copy of the report of findings, dated July 2004, can be found in Appendix F. The Phase I ESA concludes that:

- No apparent environmentally adverse or detrimental effects were detected as a result of past or present use of the Site.
- There was no direct evidence of petroleum hydrocarbon and/or hazardous substance/waste contamination at the properties.
- There was no direct evidence that subsurface contaminants from nearby facilities have migrated to the soils and ground water beneath the assessed properties to cause adverse environmental conditions.
- At the time of the site inspection, the property was vacant and overgrown with grass. There were indications that the site may have been used for construction staging and for stockpiling/disposal of surplus soils from adjacent construction projects. Although there were no apparent environmentally adverse impacts as a result of this use, there is a small degree of uncertainty with respect to the interior of the soil piles present at the site.
- The usage of pesticides and herbicides in sugar cultivation were generally limited to short durations during the growing season. Considering the elapsed time period since the site was last cultivated, there should be little if any, residual impacts.

Potential Impacts and Mitigation Measures

No hazards requiring mitigation were identified. Impacts due to past use will be minimal if any.

3.11 VISUAL RESOURCES

The Kapolei Mixed-Use Development is located in the ‘Ewa Development Plan area and the B-2 Community Business District. The ‘Ewa Development Plan discusses the impacts of development on views and visual resources: *“Design and site all structures,*

where feasible, to reflect the need to maintain and enhance available views of significant landmarks and vistas. Whenever possible, relocate or place underground overhead utility lines and poles that significantly obstruct public views, under criteria specified in State law."

Below are significant views and vistas listed in the ‘Ewa Development Plan:

SIGNIFICANT VIEWS AND VISTAS

1. *Distant vistas of the shoreline from the H-1 Freeway above the ‘Ewa Plain;*
2. *Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waiʻanae Development Plan Area;*
3. *Views of the Waiʻanae Range from H-1 Freeway between Kunia Road and Kaloʻi Gulch, and from Kunia Road;*
4. *Views of Nā Puʻu at Kapolei, Pālailai, and Makakilo;*
5. *Mauka and makai views; and*
6. *Views of central Honolulu and Diamond Head, particularly from Puʻu O Kapolei, Puʻu Pālailai, and Puʻu Makakilo.*

Potential Impacts and Mitigation Measures

The Project will provide the first high-rise in the City Center district in Kapolei. At 150-feet high, the Project will be in compliance with the maximum building height in the B-2 – Community Business district. Importantly, the Kapolei Town Center Final Environmental Impact Statement (EIS), completed in August 1988, evaluated the impact on views of the entire Kapolei Area Long Range Master Plan. The general plan, LUO zoning code, the ‘Ewa Development Plan, and Kapolei UDP all reflect a clear indication that the intended use for the City Center district is high rise construction of up to 150 feet in height. Given that context, impacts on the significant views are discussed below.

1) Distant vistas of the shoreline from the H-1 Freeway above the ‘Ewa Plain could potentially be impacted by the proposed development, as shown in Figure 12 – Potential View Impact Area From H-1 above ‘Ewa Plain.
2) Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waiʻanae Development Plan Area – no impact. Views of the Waiʻanae Range from H-1 Freeway between Kunia Road and Kaloʻi Gulch, and from Kunia Road – no impact.
3) *Views of Kaloʻi Gulch and from Kunia Road – no impact.*
4) Views of Nā Puʻu at Kapolei, Pālailai, and Makakilo. Views of Puʻu O Kapolei, Puʻu Pālailai, and Puʻu Makakilo could potentially be impacted by the proposed development, as shown in Figures 13 – Pu’u O Kapolei Potential View Impact Area, 14 – Pu'u Pāla'ila'i Potential View Impact Area, and 15 – Pu'u Makakilo Potential View Impact Area.
5) Mauka and makai views could potentially be impacted by the proposed development.
6) Views of central Honolulu and Diamond Head, particularly from Puʻu O Kapolei, Puʻu Pāla’ila’i, and Puʻu Makakilo. As shown in Figure 16 – Potential View Impact Towards Central Honolulu and Diamond Head there is a potential view impact area, but there will be no impact on the view from the three Pu’u.

For numbers 1 and 4 above, there is a potential impact area as shown in Figures 12, 13, 14 and 15. For number 5, there is a potential impact area, but it is not shown in a figure since it would encompass a majority of the City. Whether there actually is an impact, and if so to what degree the impact is, depends on two things: 1) distance from the Project and 2) relative elevations. Generally, the further the vantage point is from the Site, the less of an impact there will be. Relative elevations of the viewpoint, the project envelope, and the subject are also important, since the project envelope must be between the viewpoint and the subject for there to be an impact. The Project complies with the height limits in the City of Kapolei master plan, the LUO, the UDP, and the ‘Ewa Development Plan.

There are sample perspectives of the development in Figure 17 – View from Wākea Street – Pedestrian Perspective and Figure 18 – View from Haumea Street – Pedestrian Perspective. These figures illustrate that, as the first high rise in the City Center district, there is significant visual impact from vantage points surrounding the project site. Figure 17 illustrates a partial impact of the view towards Pu'u Pāla'ila'i. Figure 18 illustrates an impact of the view toward the Kapolei Public Library, Island Pacific Academy, and Pu'u Kapolei.

3.12 SOCIO-ECONOMIC CHARACTERISTICS

3.12.1 Community Profile

The Phase 1 and Phase 2 market studies, included in Appendix B and C, respectively, each select a primary trade area (PTA)/primary market area (PMA), an area from which residents are most likely to be drawn, or in other words the community most likely to be impacted by the Project. The Market Study for Phase 1 (Appendix B) delineates the PTA shown in Figure 19 – Primary Trade Area. The Market Study for Phase 2 (Appendix C) illustrates the PMA in Figure 20 – Primary Market Area. Note that these delineated PTA and PMA designations are not identical but are similar, and represent the areas of Kapolei, 'Ewa, 'Ewa Beach, the coast up to Makaha, and Waipahu. Generally, in some areas, residents are "neighborhood-oriented" and are reluctant to move from the area where they have grown up, which results in a smaller PMA. In other areas, residents are more mobile and will relocate to a completely new area, especially if there is an attraction such as affordable housing at below market rents. The rate of residents drawn from outside the PMA is referred to as the "leakage rate;" the Phase 1 market study estimates the leakage rate at 20%-40%, and the Phase 2 market study estimates 25%. There is, therefore, some impact outside of the PMA. In this case the larger community is referred to as the Metropolitan Statistical Area (MSA) which is the entire island of O'ahu.

Figure 12: Potential View Impact Area from H-1 above 'Ewa Plain

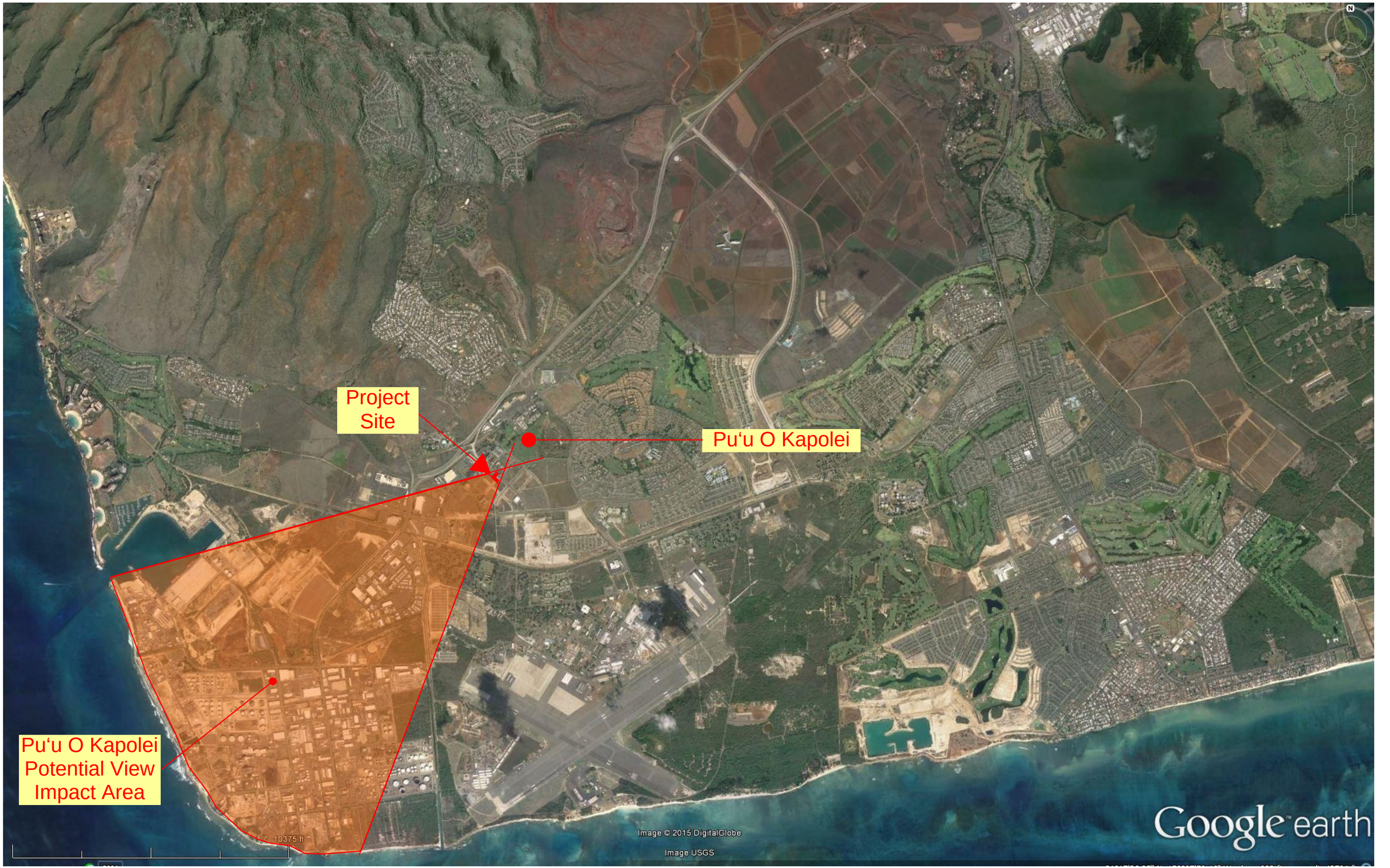


Figure 13: Pu'u O Kapolei Potential View Impact Area

Figure 14: Pu'u Pala'ila'i Potential View Impact Area

Figure 15: Pu'u Makakilo Potential View Impact Area

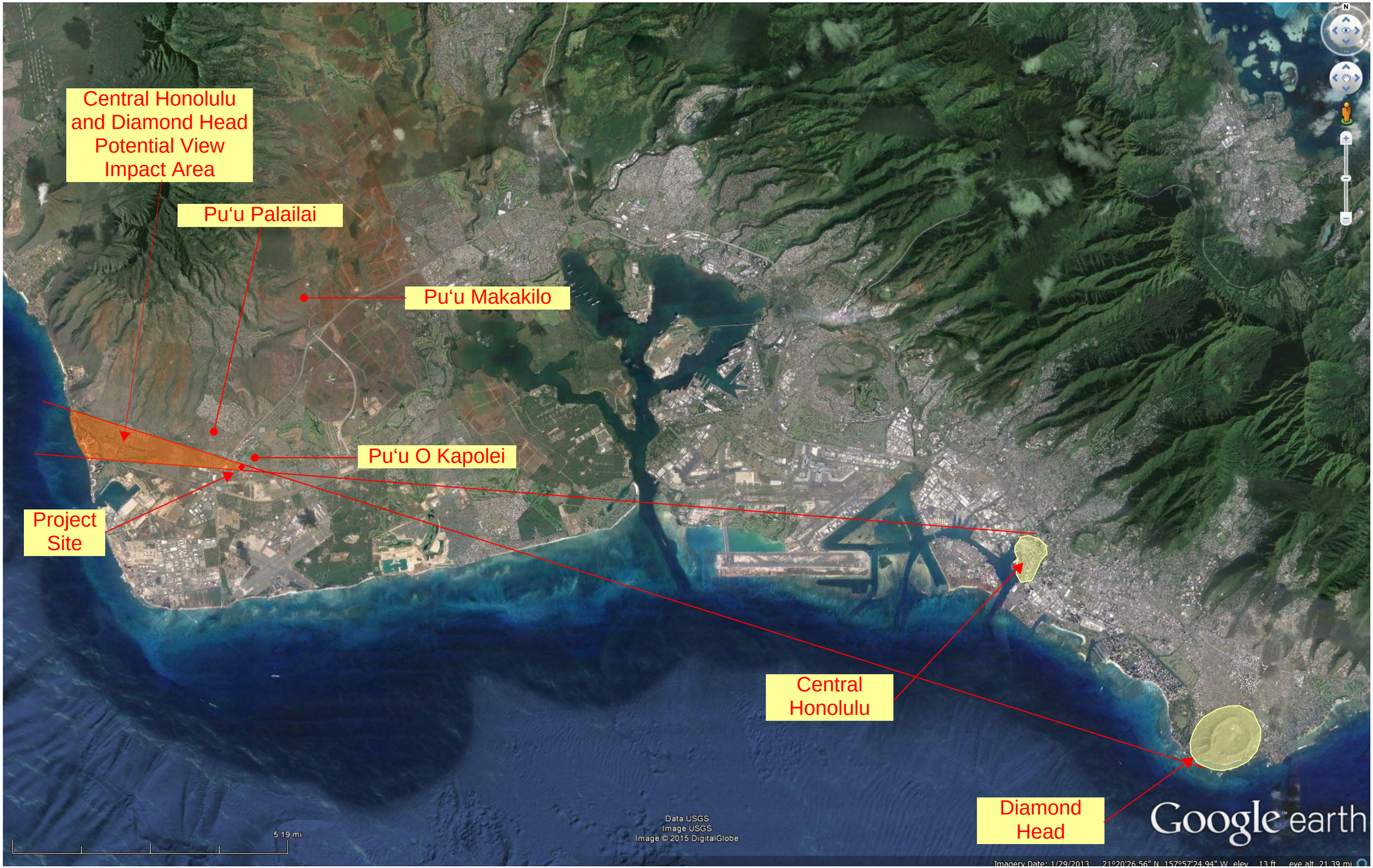


Figure 16: View from central Honolulu and Diamond Head

Figure 17: View from Wakea, Pedestrian Perspective

Figure 18: View from Haumea, Pedestrian Perspective

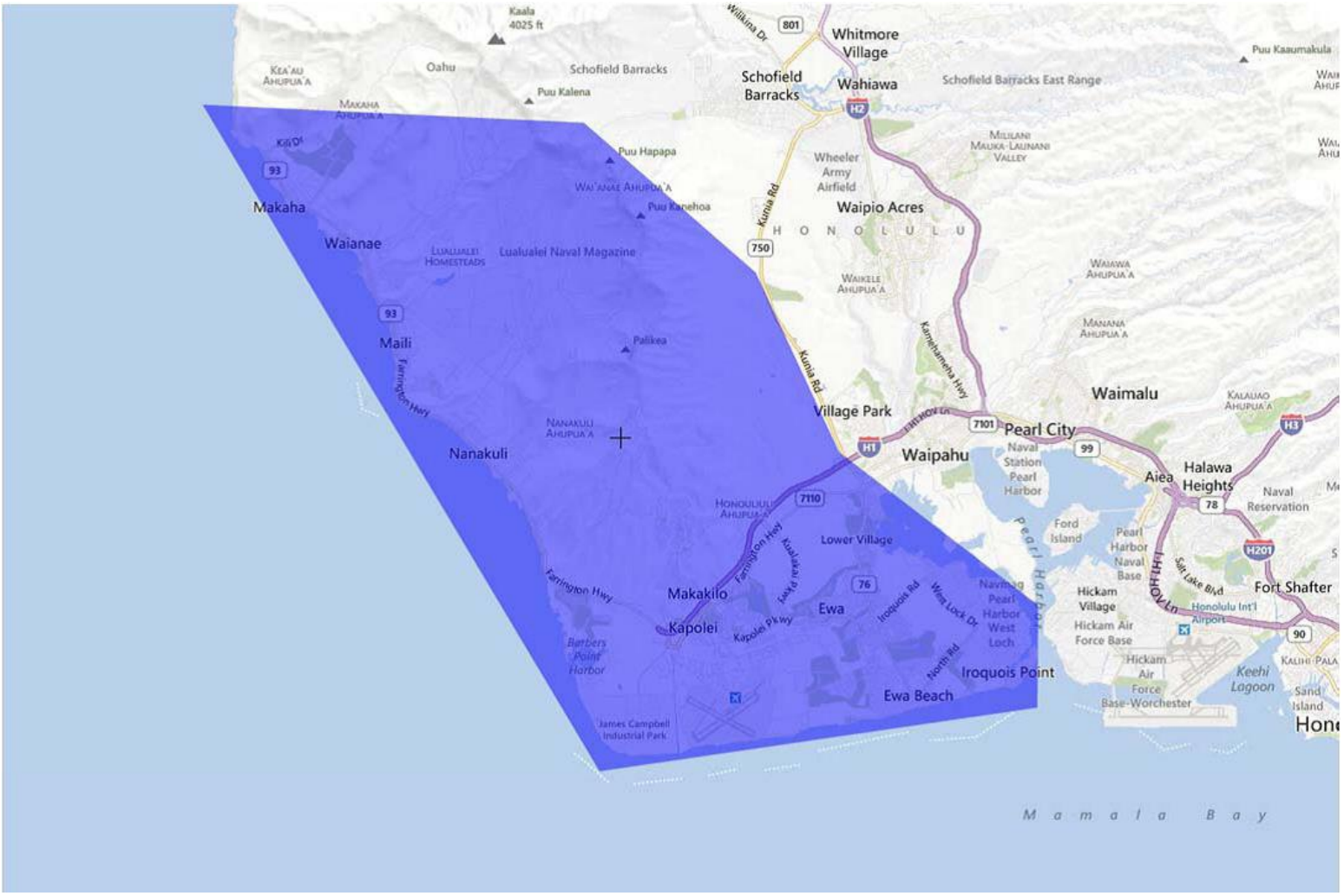


Figure 19: Primary Trade Area

Kapolei, HI

NOVOGRADAC & COMPANY LLP
www.novoco.com

Figure 20: Primary Market Area

Overall Demographics

The Phase 1 market study provides the following information about the PMA:

Table 12 — PMA Demographics

Category	Census 2010	2013	2018 Projection	O'ahu 2013
Population	152,498	158,798	169,223	969,468
Households (HH)	40,923	42,704	45,571	316,867
Mean HH Size	3.66	3.65	3.65	2.95
Population 50+	37,365	41,361	46,264	NA
% of Householders 55+	33.1%	35.1%	38%	NA
Owner Occupied HHs	26,593	27,229	29,410	172,841
Renter Occupied HHs	14,330	15,476	16,161	144,026
Median HH Income	NA	$75,510	$83,338	$69,667
Mean HH Income	NA	$85,568	$97,130	$86,680
Per Capita Income	NA	$23,564	$26,672	$29,501
Median Age	32.2	32.4	32.8	37.8

SOURCE: STDB Online

The PMA's mean household size is significantly larger than the County's mean household size. This is a function of younger families within the PMA and multigenerational households that are common for this region. Median household income in the region is higher than in the County. However, this is skewed upward by the larger household sizes, so per capita income in the PMA is slightly lower than in the MSA. The demographic data demonstrate that the PMA and MSA are forecast for a steady increase in population and households through 2018 with proportionately more residents in the 55+ age bracket.

Overall, the PMA is expected to gain 1,652 owner-occupied households and 585 renter-occupied households through 2017. The relatively high percentage of owner-occupied

households in the PMA is primarily a function of the more affordable home pricing in this area. Based on home sales during February 2014, the median sales price for a single family home in the City and County of Honolulu was reported to be ~$679,000, compared to ~$490,000 for the PMA.

Household Income Distribution

The Phase 1 market study presents the following income distribution for the PMA:

Table 13 – PMA Household Income Distribution

Households by Income	2013 Number	2013 Percentage	2018 Number	2018 Percentage
<$15,000	2,654	6.2%	2,651	5.8%
$15,000-$24,999	1,756	4.1%	1,508	3.3%
$25,000-$34,999	2,841	6.7%	2,088	4.6%
$35,000-$49,999	5,189	12.2%	4,267	9.4%
$50,000-$74,999	8,690	20.3%	8,056	17.7%
$75,000-$99,999	7,682	18%	10,011	22%
$100,000-$149,999	9,891	23.2%	11,543	25.3%
$150,000-$199,999	2,625	6.1%	3,730	8.2%
$200,000+	1,377	3.2%	1,717	3.8%

Source: Phase 1 Market Study

Potential Impacts and Mitigation Measures

Senior Housing

The residents of Phase 1 will be restricted to households with one or more members over 55 years of age. There are 22 studios, 110 1-bedrooms, and 22 2-bedrooms. The target market is singles (sometimes widowed), couples, and small families. 1-2 person households will comprise the majority of residents, and the demand for this cohort is discussed in detail below. As discussed in Section 2.2.2 of this document, the

maximum income level for 1-2 person households at 60% of AMI is $46,020. The table below shows the population segment within the PMA that can potentially qualify for the proposed housing[2].

Table 14 – Senior Housing: Households by Income Bracket

Households by Income	Age 55-64	Age 65-74	Age 75+	Total
<$15,000	519	283	418	1,220
$15,000-$24,999	270	227	290	787
$25,000-$34,999	421	363	290	1,074
$35,000-$46,020	630	613	273	1,517
Total	**1,840**	**1,486**	**1,271**	**4,598**

Source: Phase 1 Market Study

This shows that 4,598 households in the PMA could potentially qualify. Of these, 36% are estimated to be renters, which results in approximately 1,655 eligible households. While eight units are targeted to 30% AMI households with incomes of less than $25,000 per year, the vast majority of Phase 1's units (145 of them) will be targeted to households earning a maximum of 55%-60% of AMI with maximum incomes in the $37,000 to $46,000 per year range, the largest demographic segment from Table 14. The Phase 1 market study defines the capture rate as the ratio of the number of proposed units (153) to the qualifying households within the PMA (1,655) – the capture rate is therefore 8.76% which represents a moderate level of risk. However, it is worth noting the capture rate is calculated conservatively. Firstly, it is assumed that all households have 1-2 members when in fact some households will have more members with higher income limits, and this widens the potential pool of renters. Secondly, the capture rate needs to be reduced by the leakage factor, in this case estimated to be

[2] Does not include 3+ person households

20%-40%. Thirdly, the study assumes that only existing renters comprise the target market segment, when in fact 585 new renter households are expected through 2017. In all, the market study concludes that there is adequate demand for the proposed age and income restricted rental housing.

Condominium Housing

The target market for Phase 2 will also be singles, couples, and small families. 72 units will be restricted at 140% AMI or below, while the remaining 71 units will be unrestricted. It is reasonable to assume that the unrestricted units will sell to households with incomes over 140% AMI.

The Phase 2 market study calculates the minimum income needed to qualify for each unit type based on industry standards of mortgage origination. In Table 15 – Minimum Income to Qualify vs. Maximum Allowable Income, this "minimum income to qualify" is compared to the 140% AMI income limit for each unit type. Buyers of the restricted units will likely have incomes between these figures.

Table 15 – Minimum Income to Qualify vs. Maximum Allowable Income

Unit Type	Minimum Income to Qualify	2014 Maximum Allowable Income
Studio	$59,394	$96,040
1 BR	$80,762	$109,760
2 BR	$105,402	$123,480
3 BR	$123,860	$148,120

Data from the Phase 2 market study is used to estimate demand for the restricted and unrestricted units in Table 16 – Estimated Demand and Capture Rate for Condominiums.

Table 16 – Estimated Demand and Capture Rate for Condominiums

	140% AMI	Unrestricted
Minimum Income	$61,214	$61,214
Maximum Income	$148,120	NA
Number of Income Qualified Renters	8,571	9,670
% of Renters Becoming Homeowners	5%	5%
Estimated Income Qualified First Time Homeowners	429	484
Number of Income Qualified Owners	23,821	30,470
% of Owners Moving to a New Home	5%	5%
Estimated Income Qualified Owners Transferring	1,191	1,524
Portion Originating from PMA	75%	75%
Total Income Qualified Households	2,159	2,676
Number of Homes Yet To be Absorbed	894	894
Net Income Qualified Households	1,265	1,782
Proposed Subject Units	72	71
Overall Annual Capture Rate	5.7%	4.0%

As indicated in Table 16, a proportion of homebuyers are anticipated to be first time homebuyers from the renter pool and a proportion are anticipated to be from the ownership pool. The demand analysis takes into account the 25% leakage rate from outside the PMA, as well as the pipeline of homes yet to be absorbed. The capture rates of 5.7% for the restricted units and 4% for the unrestricted units are good and achievable and indicate moderate risk. Further, these rates do not take population growth into account. As previously noted, the PMA is expected to gain 1,652 owner-occupied households by 2017.

3.12.2 Economy

O'ahu Economy

The State of Hawaii, and O'ahu in particular, is a consistently strong performer economically. Local economics in Kapolei are heavily influenced by the economics of Honolulu, by far the largest city in Hawaii with a population of 337,256 according to 2010 Census data. The unemployment rate in the MSA is consistently below the national average. As of July 2013 it was 4.2 percent versus 7.7 percent nation-wide. While the O'ahu economy was impacted by the Great Recession in terms of unemployment and job growth, it fared far better than the nation as a whole.

Table 17 – Honolulu MSA Unemployment Trends

EMPLOYMENT & UNEMPLOYMENT TRENDS (NOT SEASONALLY ADJUSTED)								
	Honolulu, HI MSA				USA			
Year	Total Employment	% Change	Unemployment Rate	Change	Total Employment	% Change	Unemployment Rate	Change
2002	412,897	-	3.9%	-	136,485,000	-	5.8%	-
2003	417,519	1.1%	3.7%	-0.2%	137,736,000	0.9%	6.0%	0.2%
2004	419,506	0.5%	3.1%	-0.6%	139,252,000	1.1%	5.5%	-0.5%
2005	427,632	1.9%	2.7%	-0.4%	141,730,000	1.8%	5.1%	-0.4%
2006	430,852	0.8%	2.4%	-0.3%	144,427,000	1.9%	4.6%	-0.5%
2007	430,553	-0.1%	2.5%	0.1%	146,047,000	1.1%	4.6%	0.0%
2008	430,589	0.0%	3.6%	1.1%	145,362,000	-0.5%	5.8%	1.2%
2009	418,139	-2.9%	5.8%	2.2%	139,877,000	-3.8%	9.3%	3.5%
2010	425,915	1.9%	5.7%	-0.1%	139,064,000	-0.6%	9.6%	0.3%
2011	434,073	1.9%	5.6%	-0.1%	139,869,000	0.6%	8.9%	-0.7%
2012	434,339	0.1%	5.2%	-0.4%	142,469,000	1.9%	8.1%	-0.8%
2013 YTD Average*	435,178	0.2%	4.4%	-0.8%	143,644,875	0.8%	7.7%	-0.4%
Jul-2012	430,994	-	5.5%	-	143,126,000	-	8.6%	-
Jul-2013	430,809	0.0%	4.2%	-1.3%	145,113,000	1.4%	7.7%	-0.9%

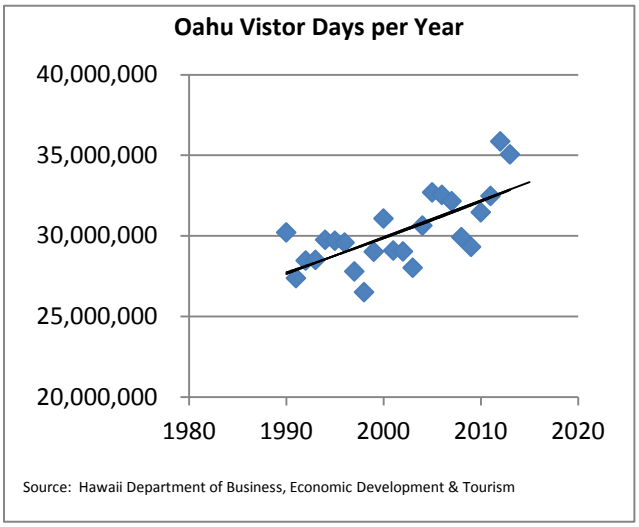
Source: U.S. Bureau of Labor Statistics, October 2013

*2013 data is through Jul

The largest employer in the MSA is the federal, state, and local government. Hickam Air Force Base and Pearl Harbor are located approximately four miles and one mile east of the Site, respectively. Together, they account for approximately 40,000 jobs. The largest non-governmental employers in the MSA are concentrated in the healthcare and accommodations industries. Hawaii enjoys special status as an international destination for tourists and part-time residents. Visitors and visitor spending trend

upward in the long-run, as shown in Figure 21, and this is a large influence on the Hawaiian economy. China's quickly growing economy and Hawaii's growing popularity with the Chinese is likely to play an increasing role in this growth.

Figure 21 – O'ahu Visitors and Visitor Spending Trend



Kapolei Regional Economy

The local economy in the Kapolei region is robust as well. A central goal of creating a Second Urban Center on O'ahu is to provide employment for West O'ahu's growing population. The Kapolei UDP states that as of 2006, more than 800 companies, agencies, and organizations accounted for nearly 25,000 jobs in the region (defined as the DPP 'Ewa Development Plan area) and that 40,000 additional jobs are expected to be created by 2025. Many of these jobs will be added in the City of Kapolei. The UDP also states that as of 2005, the City of Kapolei provided 25% of the region's jobs. By 2025, jobs in the City of Kapolei are projected to total over 22,000, or 34% of the regional total.

James Campbell Industrial Park is southwest of the City of Kapolei. Its 1,380 acres are completely developed, sold or leased. Located between the Industrial Park and the City is the 140-acre Kapolei Business Park. It is also rapidly developing. Kalaeloa Barbers Point Harbor is located on the coast to the west of the Industrial Park. It is the State of

Hawai‘i’s second busiest commercial port after Honolulu Harbor. East of the harbor are 70 acres of land planned for the Kapolei Maritime Industrial Park, and an additional 350 acres of land planned for general industrial use known as Kapolei Harborside. Just north of Kalaeloa Barbers Point Harbor lies Ko ‘Olina, a 620 acre master-planned destination resort and residential community. Ko ‘Olina includes over 1,100 visitor units, 1,100 housing units, 330-slip marina, a championship 18-hole golf course, and four sandy lagoons. Total build-out of Ko ‘Olina is projected to include over 9,000 visitor and housing units, plus additional amenities.

Potential Impacts and Mitigation Measures

Commercial Towers versus Proposed Project Economic Impact

If the Site were developed with office use instead of the Project (as discussed in Alternative #1 in Section 6.2), a similar number of jobs would be created for construction, but more permanent jobs would be created with an office development. Assuming a build-out to the maximum 2.5 FAR, the gross square footage of a code-compliant office development would be approximately 330,000. With an assumed 70% efficiency rate, net leasable area would be 231,000 square feet. Generic commercial space can be estimated to generate 1 job per 200 square feet, resulting in 1,155 permanent jobs. Using a slightly lower ratio of 1 employees per 250 square feet equates to 924 jobs; using a ratio of 1 employee per 333 square feet equates to 770 jobs; and using a ratio of 1 employee per 666 square feet equates to 347 jobs. The Project will provide approximately 166 permanent jobs, calculated using a ratio of 1 employee per 200 square feet for the retail and assuming 6 full time employees for property management.

However, while the site may be zoned for commercial use, the ‘Ewa Development Plan and the Kapolei Urban Design Plan both clearly encourage residential mixed use in the City Center district of Kapolei (see Sections 4.2.2 and 4.2.3 of this document). Therefore, the proposed development does not displace an intended use but rather conforms with it. Also, it is worth noting that sites for commercial development are not a

scarce resource in central Kapolei. The City Center district is comprised of 6 city blocks, each able to accommodate approximately four towers, for a total of 24 sites. The 'Ewa Development Plan also encourages "Commercial Emphasis Mixed Use" in the 10 city blocks adjacent to the City Center – this potentially provides an additional 40 sites.

3.13 INFRASTRUCTURE

3.13.1 Water

Domestic

Based on the Appendix G - Preliminary Engineering Report, prepared by Sato & Associates, construction plans for streets surrounding the project site show 12-inch water lines bordering the project site at Haumea and Wäkea Streets, as well as on Alohikea and Ala Kahawai Streets. Currently, there is no water meter provided on the site.

A sample calculation of water fixture units for residential uses in Phases 1 and Phase 2 follows (the actual type and number of fixtures to be installed at each unit type has not been determined). The amount of proposed retail use has increased by approximately 11,000 s.f. since Table 18 was generated, so the table will need to be updated but serves as a good approximation of the Project's needs.

Table 18 – Approximate Water Use Calculations, Phases 1-3

Phase 1: Studio, One- and Two-Bedroom Units		
Lavatory	1.2	
Tub/Shower	1.6	
Water Closet (Tank)	1.7	
Kitchen Sink	1.6	
Washing machine	2.0	
	8.1 FU	
2 Studios x 11 Floors x 8.1 FU =		178.2
2 One-Bedroom Units x 11 Floors x 8.1 FU		178.2
10 Two Bedroom units x 11 Floors x 8.1		891.0
		1,247.4

Phase 1 Retail and Office (assumed)		
2 Lavatory x 1.2 =		2.4
4 Water Closet (Tank) x 1.7 =		6.8
2 Urinal x 1.7 =		3.4
		12.6
Total Phase 1 =		**1,260.0 FU**
Phase 2: One-, Two- and Three-Bedroom Units		
Lavatory x 1.2	1.2	
Tub/shower x 1.6	1.6	
Water Closet (Tank) x 1.7	1.7	
Kitchen Sink x 1.6	1.6	
Washing machine	2.0	
	8.1 FU	
1 Studio x 11 Floors x 8.1 FU =		89.1
4 One-Bedroom units x 11 Floors x 8.1 FU		356.4
7 Two-Bedroom units x 11 Floors x 8.1 FU		623.7
1 Three-Bedroom units x 11 Floors x 8.1		89.1
		1,158.3
Retail, office and Recreation Center (assumed)		
2 Lavatory x 1.2 x 4		9.6
4 Water Closet (Tank) x 1.7 x 4		27.2
2 Urinal x 1.7 x 4		13.6
		50.4
Total Phase 2 =		**1,208.7 FU**
Phase 3: Retail 21,000 sf (assumed, 10 Lessees)		
2 Lavatory x 1.2 x 10 lessees		24
4 Water Closet (Tank) x 1.7 x 10 lessees		68
2 Urinal x 1.7 x 10 lessees		34
Total Phase 3 =		**126 FU**
Total, Phases 1 to 3 =		
1260.0 + 126 + 1,208.7 =		**2,594.7 FU**
		= 400 gpm

*FU = Fixture Unit, equal to one cubic foot of water per minute.

Source: Appendix G – Kapolei Mixed-Use Development Preliminary Engineering Report

A 4-inch compound meter, rated by BWS for 321 to 500 gmp, will be sufficient for water service to the planned project. BWS stated (see letter enclosed as Figure 5 in Appendix G) a 9,000 gallons per day (gpd) water commitment to the project site. The current project proposal contemplates a total of 297 units with commercial and other uses. Additional water commitments beyond the present 9,000 gpd will have to be obtained from Kapolei Property Development LLC.

Water system adequacy and availability of water must be confirmed at the time of Building Permit application.

Fire Protection

Water system distribution maps from BWS show eight fire hydrants around the site, either on the block to be developed or immediately across the perimeter streets (Figure 4, Potable and Nonpotable Water, Appendix G).

The Uniform Fire Code requires fire apparatus access for every portion of a building when any portion of the building is located more than 150 feet from and approved accessway. Based on fire protection coverage afforded by existing fire hydrants in Figure 4, at least one additional onsite hydrant will be needed to afford protection to the project interior.

The Uniform Fire Code also requires onsite fire hydrants when any portion of the building is located more than 150 feet from a fire water supply, although the distance may be extended to 450 feet if the building is provided with fire sprinklers. Based on fire hydrant locations shown in Figure 4, fire sprinklers will be required in each building, connected to a new detector check meter. Sizing of the meter should be evaluated as the mechanical plans are developed.

Irrigation

As-built plans show a 12” reclaimed irrigation water main along Haumea Street, and 8-inch reclaimed water mains along Wäkea Street, Ala Kahawai Street and Alohikea

Street. A stubout and meter box for a ¾" meter is provided from the main in Haumea Street (Figure 4, Potable and Nonpotable Water, Appendix G).

The recycled water system is not yet energized. Currently it is a pumped, on-demand system, fed with potable water from a fire hydrant. Flow and pressure are variable. Availability of water will be evaluated when a Building Permit application is made (Figure 6, BWS letter dated Sept. 11, 2013, Appendix G).

Potential Impacts and Mitigation Measures

Based on the calculation provided in the Preliminary Engineering Report, a 4-inch compound meter will be adequate to service the proposed Kapolei Mixed-Use Development, although it may be considered to be upsized if future improvements will draw through the same meter. The total fixture unit count for all uses will be refined during design, and the meter size re-examined at that time.

The Uniform Fire Code also requires onsite fire hydrants when any portion of the building is located more than 150 feet from a fire water supply, although the distance may be extended to 450 feet if the building is provided with fire sprinklers. Based on fire hydrant locations shown in Figure 4 (Appendix G), fire sprinklers will be required in the building, connected to a new detector check meter. Sizing of the meter should be evaluated as the mechanical plans are developed, with consideration for future building expansion.

Connection to the BWS water system will require a backflow preventer installed immediately downstream of the water meter and within private property, prior to any branches or tees. Size of the backflow preventer will be determined when the domestic meter size, building piping system size and allowable pressure drop is ascertained.

In consultation with BWS on the connection fees for other Chapter 201H projects, the applicant's approach is to defer these connection fees until the construction loan is funded. The BWS connection fees are determined during the construction plan and building permit phase of the project.

3.13.2 Wastewater

As-built plans show 8" and 15" gravity sewer mains along Haumea Street, a 10" main along Ala Kahawai Street and an 8-inch sewer line stubout to the undedicated portion of Alohikea Street. Two 6" laterals run onsite, one from a manhole on Haumea Street and another from the main along Ala Kahawai Street (Figure 7, Existing Sanitary Sewer System, Appendix G). Figure 8, Sewer Connection Application in Appendix G is an approved SCA for the 297 residential units.

The average daily wastewater generation for each phase of the proposed project is calculated[3] in Table 19 – Approximate Daily Wastewater Generation. The amount of proposed retail use has increased by approximately 11,000 s.f. since Table 18 was generated, so the table will need to be updated but serves as a good approximation of the Project's needs.

Table 19 – Approximate Daily Wastewater Generation

Phase 1:		
Residential:	Studio/One-Bedroom	
	143 units x 2.0 person/unit x 80 gpcd =	22,880 gpd
	Two Bedroom	
	11 units x 2.8 persons/unit x 80 gpcd =	2,464 gpd
Retail:	(7,348 sf) x (1 employee/350 sf) x 15 gpcd =	315
Office:	(2,573 sf) x (1 employee/200 sf) x 13 gpcd =	167
Community Center:	(935 sf)	
	Total Phase 1 average daily wastewater flow =	25,826 gpd
Phase 2:		
Residential:	Studio/One-Bedroom	
	55 units x 2.0 persons/unit x 80 gpcd =	8,800 gpd
	Two-Bedroom	
	77 units x 2.8 persons/unit x 80 gpcd =	17,248 gpd
	Three-Bedroom	
	11 units x 4.0 persons/unit x 80 gpcd =	3,520 gpd

[3] Sewage generation flow rates based on *"Design Standards of the Department of Wastewater Management*", City and County of Honolulu, (1993), and Metcalf and Eddy (1991) *Wastewater Engineering, Treatment and Reuse,* G. Tchobanoglous, Burton and Stensel (Eds.)

Retail:	(1,966 sf) x (1 employee/350 sf) x 15 gpcd =	84
Office:	(3,935 sf) x (1 employee/200 sf) x 13 gpcd =	255
Recreation Center:	(4,532 sf) x 50 gal/100 sf =	2,266
	Total Phase 3 average daily wastewater flow =	32,173 gpd
Total (Full Development) Wastewater Flow		
Residential:	25,344 + 29,568 =	54,912 gpd
Retail:	315 + 950 + 84 =	1,349
Office:	167 + 255 =	422
Recreation Center		2,266
Phase 3:		
Retail:	(22,156 sf) x (1 employee/350 sf) x 15 gpcd =	950 gpd
	Total =	**58,949 gpd**

Source: Preliminary Engineering Report - Appendix G

Potential Impacts and Mitigation Measures

A Sewer Connection Application (2014/SCA-0915, Figure 8, Appendix G) was approved by the City, DPP, Wastewater Branch, based on 297 residential units (33 studio, 66 one-bedroom, 182 two-bedroom, 11 three-bedroom) plus retail.

There is, therefore, existing sewer capacity for the residential phases of this project as shown in Figure 8, Appendix G. For the retail phase, the City approved sewer capacity to accommodate 16,623 square feet of retail space (which was the planned retail area at the time of application), see Appendix G. It is anticipated that the additional wastewater generated by the 5,533 square feet difference can be accommodated. A Sewer Connection Application will be sought to cover this difference.

3.13.3 Drainage

The existing condition at the site is vacant land. Two catch basins fronting the site are connected to a 36” culvert along Haumea Street with an 18” drain stubout from one catch basin terminating within the project site. Three catch basins are connected to 18” and 30” culverts along Wäkea Street. Three catch basins are connected to 66” culverts along Ala Kahawai Street with an 18” drain stubout from one catch basin terminating within the project site. Two catch basins are connected to 18” culverts along Alohikea Street with a drain stubout from one catch basin terminating within the project site (Figure 9, Existing Storm Drainage System, Appendix G).

Potential Impacts and Mitigation Measures

The project will be required to comply with the City and County of Honolulu storm drainage and runoff water quality requirements. The anticipated rainfall volume to be retained on site is calculated as follows:

WQV = P x C x A x 3,630, where

P = Water Quality Design Storm Depth (1" = 0.0833 foot)
C = Runoff Coefficient = 0.9 (assumed, for fully impervious developed surfaces)
A = Area in Acres

WQV = 272.25 x A

<u>Phase 1:</u> WQV = 272.25 x 1.66 = 452 ft^3

<u>Phases 1 and 3:</u> WQV = 452 + 272.25 x 0.92 = 702 ft^3

<u>Phases 1, 2 and 3:</u> WQV = 702 + 272.25 x 0.46 = 827 ft^3

Phases 1 and 2 may dispose of storm runoff to undeveloped portions of the site. Bio-filtration with appropriate low impact development measures will be required to be implemented for runoff leaving the site. Approved storm runoff treatment methods include:

- Vegetated bio-filter,
- Green Roof,
- Enhanced swale,
- Vegetated swale,
- Vegetated buffer strip,
- Tree box filters,
- Infiltration chambers.

3.13.4 Solid Waste

Waste generated by site preparation will primarily consist of vegetation, rocks, and debris from clearing, grubbing, and grading. Construction waste will consist of waste

lumber, concrete, and other building materials. After construction the Kapolei Mixed-Use Development will produce solid waste from the residents and tenants on site. Retail solid waste volume depends on the type of retail use, which at this time is unknown. The residential towers will contain a centralized trash chute for solid waste disposal from each floor. A private refuse company will be contracted to haul away solid waste that cannot be recycled on a weekly basis.

On O'ahu, most residential and general commercial trash is disposed of at H-POWER (Honolulu Program of Waste Energy Recovery), the City's waste-to-energy plant located at Campbell Industrial Park. The facility processes up to 3,000 tons per day of municipal solid waste, generating up to 90 megawatts of energy for Hawaiian Electric Company (HECO) — enough to meet nearly 8 percent of O'ahu's energy needs. HPOWER also recovers thousands of tons of ferrous (steel) and non-ferrous (aluminum alloy) metal for recycling each year. The electricity generated is bought under a purchase power agreement with HECO. Ash and nonprocessibles are transported and buried at the Waimānalo Gulch Landfill.

The Waimānalo Gulch Landfill is located on the western side of O'ahu. The land is owned by the City and the landfill is operated by Waste Management, Inc. The landfill accepts ash and residue from the H-POWER waste-to-energy facility, industrial wastes, and non-combustible construction and demolition debris.

Potential Impacts and Mitigation Measures

A solid waste management plan will be prepared in accordance with guidelines provided by the City Department of Facility Maintenance. All waste generated by Kapolei Mixed Use Development will be disposed of in a manner and at appropriate sites designated by the City.

The Kapolei Mixed-Use Development will comply with applicable requirements of the State DOH and the City Department of Facility Maintenance. The Kapolei Mixed-Use Development will also comply with the program goals and objectives of the Integrated

Solid Waste Management Act, Chapter 342G, HRS, and the City's approved integrated solid waste management plans.

During construction, a job-site waste management and recycling program will be implemented to maintain a clean construction site, maximize material recycling, and minimize disposal truck traffic impacts. This recycling program will incorporate the "Three Rs" of effective construction waste management:

- Reduce: by preventing waste before it happens through efficient design.
- Reuse: by using materials removed during demolition (such as rocks and concrete) on site.
- Recycling: by separating recyclable materials from non-recyclable materials and supplying these recyclable materials to a recycler for use as new products.

Soil and rocks displaced from grading and clearing will be used as fill within the site as needed. Construction materials that cannot be recycled will be disposed of in the Waimānalo Gulch Landfill. Provisions for recycling, such as collection systems and space for bins for recyclables, will be incorporated into the trash rooms. Phase 1 is anticipated to achieve LEED Platinum, while the remainder of the Project is anticipated to achieve basic LEED certifiable. Phase 1 has committed to divert 75% of construction waste from the landfill. This aggressive goal requires maximal recycling of construction waste and also often requires use of building components engineered or assembled offsite, such as precut lumber.

3.13.5 Electrical and Telecommunications

The 'Ewa Development Plan states, "the Hawaiian Electric Company (HECO) forecasts that increased demand, the need for different types of generation to help reliably integrate additional renewable energy from intermittent sources, and the possible retirement of the Honolulu Power Plant from service will create a need for additional island-wide power generation capacity by 2025."

Potential Impacts and Mitigation Measures

Kapolei Mixed-Use Development proposes solar harvesting on the roof-tops of the buildings as well as use of an onsite microturbine generator which uses propane or diesel fuel to efficiently create electricity and heat domestic hot water ("cogeneration"). These modes of alternative energy will contribute to the reduction in electricity usage and assist Phase 1 in achieving LEED Platinum status. This in turn minimizes the impacts to the electrical systems and grid for the City of Kapolei. The energy goals of this project propose to create a showcase of sustainability in the Kapolei community. Green building design and sustainability goals minimize the impacts on the electric grid from the construction and operation of Kapolei Mixed-Use Development.

3.14 PUBLIC SERVICES

3.14.1 Schools

The Kapolei Mixed-Use Development site is located in the State Department of Education (DOE)'s Kapolei Complex, and is served by Barbers Point Elementary School, Kapolei Elementary School, Makakilo Elementary School, Mauka Lani Elementary School Kapolei Middle School, and Kapolei High School.

Barbers Point Elementary School is located at, 3001 Boxer Road.
Kapolei Elementary School is located at 91-1119 Kamaaha Loop.
Makakilo Elementary School is located at 92-675 Anipeahi Street.
Mauka Lani Elementary School is located at 92-1300 Panana Street.
Kapolei Middle School is located at 91-5335 Kapolei Parkway.
Kapolei High School is located at 91-5007 Kapolei Parkway.

Potential Impacts and Mitigation Measures

Phase 1 is primarily an affordable senior rental development. Therefore, as a senior development, there are minimal school enrollment impacts. There is school impact based on Phase 2's 143 condominium units. In consultation with DOE, the school impact fee for Phase 2 is $4,334.00 per unit for a total school impact fee of

$619,762.00. The applicant drafted an Educational Contribution Agreement which will be executed.

3.14.2 Police

Police protection is provided by the Honolulu Police Department (HPD). HPD's Kapolei Police Station is located at 1100 Kamokila Boulevard.

Potential Impacts and Mitigation Measures

The HPD anticipates an increase in calls for service in and around the area due to the project, but at this time, they have no major concerns. HPD will be notified when the construction phase begins so they may anticipate an increase in calls for service to the area because of traffic complications. Mitigation measures will be implemented to minimize construction-related traffic.

3.14.3 Fire

The East Kapolei Fire Station (Station 43) at 91-1211 Kinoiki Street is the primary response to this area in case of an emergency.

Potential Impacts and Mitigation Measures

There may be occasional demand for firefighting services from the proposed development. To mitigate potential structural fires, Kapolei Mixed-Use Development will be equipped with modern fire control devices, and access for fire apparatus, water supply, and building construction will be in conformance with existing codes and standards.

3.14.4 Medical Facilities

Several healthcare facilities in Honolulu provide primary patient care to adults and children. The nearest hospital that provides 24-hour emergency service is Straub Clinic & Hospital at 599 Farrington Highway. The hospital is approximately five (5) minutes from the East Kapolei Fire Station by ambulance.

Potential Impacts and Mitigation Measures

The Kapolei Mixed-Use Development may increase the need for emergency service, but is not expected to have a long-term adverse impact on emergency medical providers or their ability to service the community. There may be an unavoidable and occasional need for emergency health care services by residents, customers, or employees.

3.14.5 Recreational Facilities

There is an abundance of recreational facilities in Kapolei. The White-Plains Beach Park, Kapolei Regional Park, Kapolei Community Park, Wet n' Wild Water Park, and the future Kapolei Green Neighborhood Park are all located within a four (4) mile radius of the Kapolei Mixed-Use Development site. Figure 22 – Neighborhood Amenities, illustrates the proximity of the Kapolei Mixed-Use Development project site to the public recreational facilities in the City Center district of Kapolei.

The following public recreational facilities are located within 1/4 mile from the Kapolei Mixed-Use Development site.

- Kapolei Regional Park
- Kapolei Community Park – 91-1049 Kama'aha Loop
- Pālailai Mall – Pedestrian Network

Potential Impacts and Mitigation Measures

CRP proposes recreation decks in Phase 1 (9,800 sf) and in Phase 2 (14,700 sf) that will join together to form a contiguous outdoor recreation area of 24,500 sf. Phase 1 includes a 926 square foot community room, and Phase 2 includes a 2,052 square foot Recreation Center. The total indoor and outdoor recreation space is therefore 27,478 square feet. Having significant onsite recreational amenities reduces the impact residents will have on surrounding amenities. The park dedication requirements and requested exemptions pertaining to park dedication are discussed in Chapter 5 of this EA.

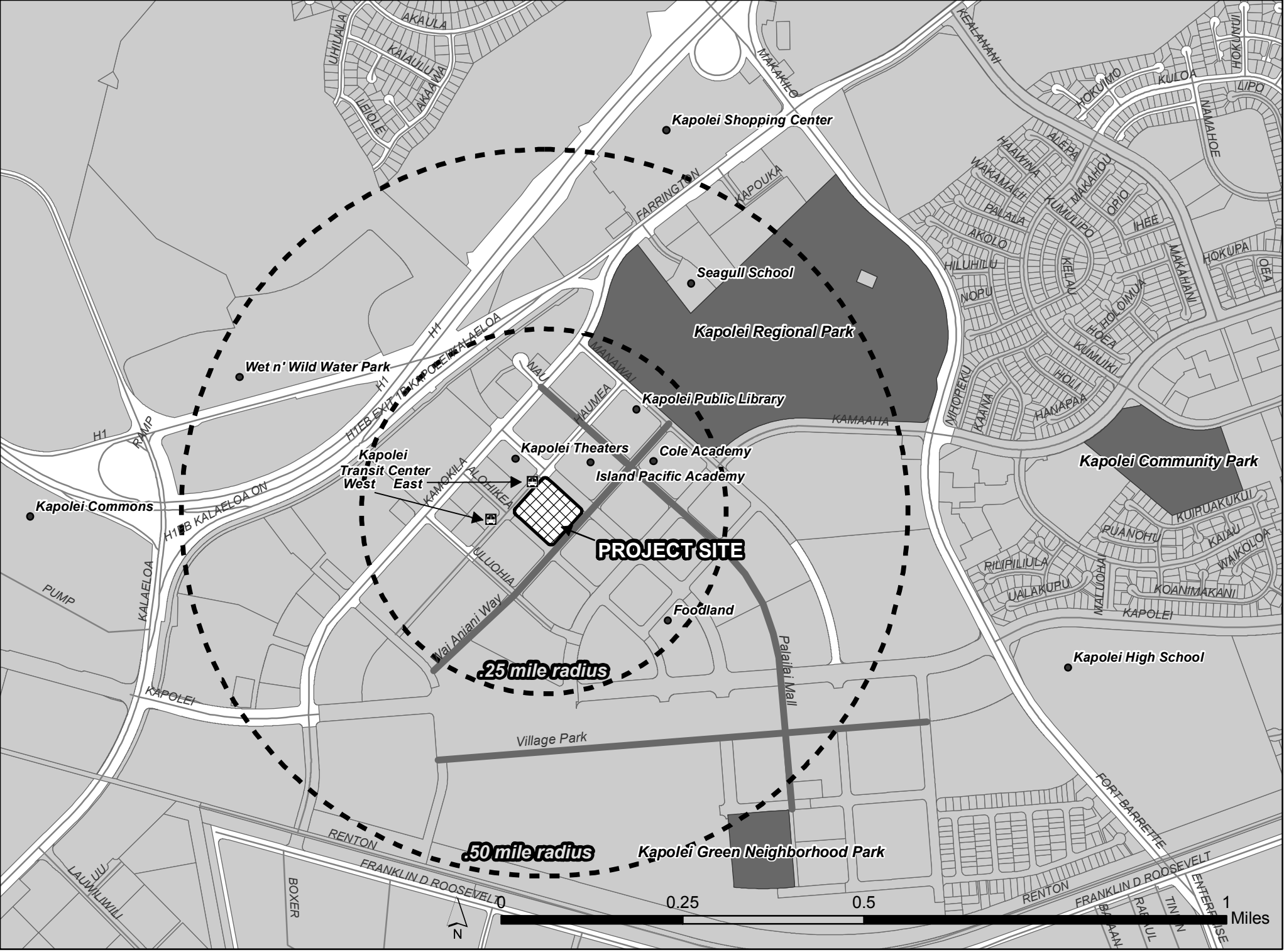


Figure 22: Neighborhood Amenities

4.0 LAND USE CONFORMANCE

4.1 STATE OF HAWAI'I

4.1.1 State Land Use Law (Chapter 205, Hawaii Revised Statutes)

§205-2 Districting and classification of lands.

(a) There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural, and conservation.

(b) Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated.

Discussion: The Kapolei Mixed-Use Development site is located within the State Urban District, and is consistent with the uses allowed in this district.

4.1.2 Hawaii State Plan (Chapter 226, Hawaii Revised Statutes)

§226-3 Overall Theme

Hawaii's people, as both individuals and groups, generally accept and live by a number of principles or values which are an integral part of society. This concept is the unifying theme of the state plan. The following principles or values are established as the overall theme of the Hawaii state plan:

(1) Individual and family self-sufficiency refers to the rights of people to maintain as much self-reliance as possible. It is an expression of the value of independence, in other words, being able to freely pursue personal interests and goals. Self-sufficiency means that individuals and families can express and maintain their own self-interest so long as that self-interest does not adversely affect the general welfare. Individual freedom and individual achievement are possible only by reason of other people in society, the institutions, arrangements and customs that they maintain, and the rights and responsibilities that they sanction.

(2) Social and economic mobility refers to the right of individuals to choose and to have the opportunities for choice available to them. It is a corollary to self-sufficiency. Social and economic mobility means that opportunities and incentives are available for people to seek out their own levels of social and economic fulfillment.

(3) Community or social well-being is a value that encompasses many things. In essence, it refers to healthy social, economic, and physical environments that benefit the community as a whole. A sense of social responsibility, of caring for others and for the well-being of our community and of participating in social and political life, are important aspects of this concept. It further implies the aloha spirit--attitudes of

tolerance, respect, cooperation and unselfish giving, within which Hawaii's society can progress.

One of the basic functions of our society is to enhance the ability of individuals and groups to pursue their goals freely, to satisfy basic needs and to secure desired socio-economic levels. The elements of choice and mobility within society's legal framework are fundamental rights. Society's role is to encourage conditions within which individuals and groups can approach their desired levels of self-reliance and self-determination. This enables people to gain confidence and self-esteem; citizens contribute more when they possess such qualities in a free and open society.

Discussion: The self-sufficiency and self-reliance provisions in the Hawaii State Plan can be viewed as promoting individuals and groups to pursue their goals freely, to satisfy basic needs, and to secure desired socio-economic levels. Kapolei Mixed-Use Development provides this opportunity by offering seniors a place where they can live independently and age in place while being guaranteed affordable rents. This in turn helps residents build the capacity to pursue personal goals. Offering more housing opportunities for a variety of income levels provides social mobility by allowing low income residents to stabilize their lives and by allowing middle-income residents to get a foothold in the competitive housing market. Increased housing choice and affordability promotes social and economic stability in the community.

§226-4 State Goals

In order to guarantee, for present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:

(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life. [L 1978, c 100, pt of §2; am L 1986, c 276, §3]

Discussion: The Project will support a strong economy by spending over $100 million in development costs and creating hundreds of temporary and permanent jobs in the community. Supporting an active, vibrant street front with private and quiet open space for residents above, the Project promotes an environment of beauty, vibrancy, and tranquility.

Affordable housing is sustainable development. In this context, “sustainable” can be defined as social and economic sustainability. Affordable housing provides social mobility and economic opportunities that would not be possible with market-driven and luxury housing prices. Affordable housing and mixed-use developments sustains the social fabric of a community and neighborhood.

§226-19 Objectives and Policies for Socio-Cultural Advancement – Housing
(a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:

(1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaii's population.

(2) The orderly development of residential areas sensitive to community needs and other land uses.

(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.

(b) To achieve the housing objectives, it shall be the policy of this State to:

(1) Effectively accommodate the housing needs of Hawaii's people.

(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.

(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

Discussion: Phase 1 will provide senior affordable rental housing for the underserved lower-income segment of O'ahu's population. Phase 2 will provide homeownership opportunities to middle-income residents. The Kapolei Mixed-Use Development provides a range of affordability, increases housing choices, and is in a desirable location in the City Center with close proximity to open space, recreation, shopping, and other basic need services. This type of development provides greater opportunity and choice for residents of all incomes to secure safe and livable housing in a well-served location.

4.2 CITY AND COUNTY OF HONOLULU

4.2.1 General Plan

The General Plan for the City and County of Honolulu establishes long-range objectives and policies for the general welfare of the public and, together with the City Charter, provides a direction and framework to guide the programs and activities of the City and County of Honolulu.

The General Plan is a guide for all levels of government, private sector, neighborhood and citizen groups, organizations, and individual citizens in eleven (11) areas of concern:

1) population;
2) economic activity;
3) the natural environment;
4) housing;
5) transportation and utilities;
6) energy
7) physical development and urban design;
8) public safety;
9) health and education;
10) culture and education; and
11) government operations and fiscal management.

The Project is in accordance with the following General Plan policies:

I. POPULATION

Objective C: To establish a pattern of population distribution that will allow the people of O'ahu to live and work in harmony.

Policy 2: Encourage development within the secondary-urban center at Kapolei and the 'Ewa and Central O'ahu urban-fringe areas to relieve developmental pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.

Discussion: Affordable, multi-generational housing development provides the opportunity for grandparents and parents to live in proximity to their grandchildren and children. This promotes a healthy pattern of population distribution in line with cultural norms.

The Kapolei Mixed-Use Development is located within the secondary-urban center at Kapolei and provides a housing choice not readily available in the central part of the city.

IV. HOUSING

Objective A: To provide decent housing for all the people of O'ahu at prices they can afford.

Policy 3: Encourage innovative residential development, which will result in lower costs, added convenience and privacy, and the more efficient use of streets and utilities.

Policy 5: Make full use of State and Federal programs that provide financial assistance for low- and moderate-income homebuyers.

Policy 10: Promote the construction of affordable dwellings which take advantage of O'ahu's year-round moderate climate.
Policy 12: Encourage the production and maintenance of affordable rental housing.

Policy 13: Encourage the provision of affordable housing designed for the elderly and the handicapped.

Objective C: To provide the people of O'ahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.

Policy 1: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.

Policy 2: Encourage the fair distribution of low- and moderate-income housing throughout the Island.

Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.

Discussion: With studio to 3-bedroom units and targeting incomes from 30% of AMI to 140% of AMI, the Project serves a variety of household types and income levels. The units are designed to be compact and efficient with moderate amenities, helping to mitigate cost. Several exemptions are being requested through the 201H application that will allow for further reductions in development cost. Kapolei Mixed-Use Development is also applying for State programs that provide financial assistance for low-income renters and moderate-income buyers. The residential component for Phase 1 is all senior rental housing which coincides with Policy 13 of providing "affordable housing designed for the elderly and handicapped."

The Project is within walking distance to public transit, jobs, recreation, services, and shopping. The locational advantage of the Kapolei Mixed-Use Development includes close proximity to the Kapolei Regional Park, the Kapolei Public Library, and commercial amenities. The site offers convenience for residents while the design also offers privacy and security. The Site is in an area where roads and infrastructure are not being used to capacity.

VII. PHYSICAL DEVELOPMENT AND URBAN DESIGN

Objective A: To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well- designed, and appropriate for the areas in which they will be located.

Policy 3: Phase the construction of new developments so that they do not require more regional supporting services than are available.

Policy 5: Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.

Objective C: To develop a secondary urban center in 'Ewa with its nucleus in the Kapolei area.

Policy 2: Encourage the development of a major residential, commercial, and employment center within the secondary urban center at Kapolei.

Objective E: To create and maintain attractive, meaningful, and stimulating environments throughout O'ahu.

Policy 2: Integrate the City and County's urban-design plan into all levels of physical planning and developmental controls.

Policy 4: Require the consideration of urban-design principles in all development projects.

Policy 5: Require new developments in stable, established communities and rural areas to be compatible with the existing communities and areas.

Policy 10: Establish a review process to evaluate the design of major development projects.

Discussion: The Kapolei Mixed-Use Development is consistent with policies to ensure that new developments are timely, well-designed, and appropriate for the areas in which they will be located. The proposed development plan phases the Project, coinciding with the General Plan policy to phase new construction projects that have adequate and available supporting services. However, the Project expeditiously aims to develop the phases more or less concurrently. This allows flexibility while maintaining timeliness.

The Project is consistent with the General Plan policy that encourages major residential and commercial development within the urban center at Kapolei. The City of Kapolei is a strategic location for a walkable, mixed-use development. The Site is adjacent to the Kapolei bus transit center, offering varied transportation choices to future residents. The Project is compatible with the surrounding existing and planned land uses.

The Project carefully follows the policies and design guidelines set forth in The City of Kapolei Urban Design Plan. The design also follows the principals of New Urbanism,

including maximizing density in well served, core locations. The design has been presented to the Kapolei Design Advisory Board for feedback and will also go through the City of Kapolei Design Review Board approval process.

4.2.2 'Ewa Development Plan

The City Department of Planning and Permitting (DPP) has established Development/Sustainable Communities Plans for eight geographic regions that include all areas of O'ahu. These community-oriented plans are intended to help guide public policy, investment, and decision-making through the 2025 planning horizon. The site is located within the 'Ewa Development Plan region.

As stated in the 'Ewa Development Plan, "in 1977, the Honolulu City Council approved a new General Plan, which designated 'Ewa as the location for a Secondary Urban Center for O'ahu to be centered in the Kapolei area."

The 'Ewa Development Plan Land Use Map designates the Site as "City Center" Retail Business (Figure 9, within the 'Ewa Development Plan).

*The **City Center** should be the high-density core of the city. Larger office towers should be the predominant form of development in this district, with shopping and restaurants at ground level. The inclusion of apartments within some of the towers should also be encouraged to establish a more dynamic mix of uses and help to maintain an active urban environment in the area.*

Discussion: With affordable rental housing, mid-market condominiums, and retail, the Project creates a dynamic mix of uses in the City Center. Also in compliance with the Development Plan, the Project is a high density development comprised of high rise towers with retail shopping at ground level.

2.1 Vision Statement

The Vision to 2035 – By 2035, the 'Ewa Development Plan area shown in Exhibit 1.1 will have experienced tremendous growth, and will have made significant progress toward providing a Secondary Urban Center for O'ahu. Population will have grown from

68,700 people in 2000 to over 164,000. Between 2000 and 2035, over 35,000 new housing units will have been built in a series of master planned communities.

Develop the Secondary Urban Center

At the heart of the Secondary Urban Center will be the City of Kapolei with an urban mix of retail, office and residential uses. By 2035, it is projected that the City of Kapolei will house over 8,000 residents and provide work sites for over 17,000 private jobs and 2,400 City and State jobs (located primarily at the City's Civic Center and Judicial Center). The City Center will become a regional commercial center, attracting customers from all parts of O‘ahu.

Build Master Planned Residential Communities That Support Walking, Biking, and Transit Use

These communities must be designed to meet the needs of a wide range of families and age groups. ***Ample housing*** *should be provided for families needing affordable units and starter homes as well as for those seeking large multi-family and single-family units.* ***Housing for persons of all ages*** *will be needed, including students going to school at the UH – West O‘ahu campus, young families seeking their first home, and senior citizens wanting a retirement home close to their grandchildren.*

Discussion: The Kapolei Mixed-Use Development compliments the vision statements by proposing a mixed-use of senior affordable rental housing, market-rate and affordable condominium units (i.e. starter homes), and retail in the heart of the City of Kapolei. Furthering the goal of creating a Secondary Urban Center, the Project adds 297 residences to the City, along with retail that supports job growth and a vital urban atmosphere. The Project also supports walking, biking, and transit use - the Project has fewer parking stalls than code requires, provides ample bike storage, and is adjacent to the Transit Center. These are all characteristics of transit oriented development. The inclusion of senior rental housing specifically provides the opportunity for multiple generations to live in proximity to each other, which solidifies the spirit of ‘ohana or family that is a focal point of Hawaiian culture and lifestyle.

The Kapolei Mixed-Use Development is in accordance with the following ‘Ewa Development Plan policies:

Section 3.6.1 – General Policies

❖ *Allow the City of Kapolei to have a balanced mix of business and residential areas, complimented by the recreational, social and cultural activities of a city. Mixed use should be permitted and encouraged throughout most of the City area, in order to achieve the diversity and intensity of uses that characterize a city.*

❖ *Develop the City of Kapolei as a true city, encompassing a full range of urban land uses, and laid out in small blocks connected by a grid system of public streets. Exhibit 3.3 (in the 'Ewa DP) illustrates the street pattern and the planned land uses by district.*

Section 3.6.2 – Major Themes

❖ ***A Hawai'i Garden City*** *- A city within a garden, in the style of long established Hawai'i communities, is to be created. The garden is distinguished by major parks and boulevards with trees, flowers and abundant ground cover.*

❖ ***Healthy Living*** *- The garden city is to provide the setting for and encourage a healthy, outdoor, and active lifestyle through the interlacing of recreational facilities within the fabric of the entire city. These are to be connected by bike and walking paths.*

❖ ***Easy Access*** *- Within the garden city, attractive paths for walking and biking should allow for convenient access between homes, jobs and recreational areas.*

❖ ***Design Reflecting the Past but Adaptable to the Needs of the Present and Future*** *- Building design in the City of Kapolei should reflect both the charm and more intimate human scale that characterizes the business districts of traditional Hawai'i towns such as Hilo, and the market forces and functional needs that shape the architecture of present-day and future business centers.*

❖ ***Environmental Sensitivity*** *- Resource conservation should be emphasized in the design of both the overall city center and its individual parts. The network of bike and walking paths, combined with the concentration of uses that make urban life convenient, should encourage people to leave their cars at home. Landscaping should be abundant and make extensive use of drought tolerant and native plant materials (xeriscaping) to the extent possible.*

❖ ***Transit Access and Orientation*** *- A transit node should be located near the Civic Center and City Center, and medium density residential uses should be encouraged within a five minute walking distance (about 1,300 feet) of the node. Uses adjoining the node should be designed so that they face toward the node, encouraging pedestrian traffic to flow to and from the node.*

- *As part of the Development Plan vision for a transit corridor linking the City of Kapolei, Waipahū, and the Primary Urban Center, higher density residential and commercial development should be encouraged around the City of Kapolei transit node and the transit corridor on Kapolei Parkway.*

Section 3.6.3 – Guidelines

The following guidelines suggest how the general policies for the City of Kapolei should be implemented:

Section 3.6.3.1 – Urban Form

- *Keep block lengths relatively short (300 to 400 feet) in order to provide for flexible, interesting and reasonably direct pedestrian routes between work places, restaurants and shops. Short blocks will encourage people to walk for these trips.*

- *Permit heights for each of the districts of the City as specified in the The City of Kapolei Urban Design Plan (2008) and shown in the Table below.*

Height Guidelines for the City of Kapolei	
District	***Height***
City Center	*150-feet*
Civic Center	*150-feet mauka of Kapolei Parkway* *90-feet makai of Kapolei Parkway*
Mixed Use Districts	*120 to 60-feet*
Commercial Districts	*60-feet*
Village Center District	*60-feet*
Mehana District	*60 to 25-feet*

Source: The City of Kapolei Urban Design Plan (November 2007) adopted by Res. 07-372 (January 2008). 'Ewa Development Plan (2013)

Section 3.6.3.2 – Natural Environment and Landscaping

- Use non-potable water features and automated irrigation systems wherever possible.
- Use xeriscaping (the use of native landscape materials with low water demand), non-potable water for irrigation, and efficient irrigation systems wherever possible to conserve groundwater resources.
- Use landscaping consistent with the City of Kapolei's image as a green and shaded garden city to provide privacy, screening, shade, and comfort.

- Use landscaping to enhance and complement the City's urban form, provide continuity between the various districts, and enhance and preserve view corridors wherever possible.

Discussion: The Kapolei Mixed-Use Development contributes to providing a "full-range of land uses" by providing two different types of housing, along with ground floor retail. The mixed use nature of the Project supports the goals of the 'Ewa DP to encourage mixed use throughout most of the City area in order to achieve the diversity and intensity of uses that characterize a city. The site consists of one (1) city block and meets the policy of keeping block lengths relatively short to promote walkability.

The Project also coincides with the Major Themes listed in the 'Ewa Development Plan. This development promotes the Garden City concept by designing a comprehensive streetscape and landscape program; see Architectural Plans – Appendix D. The streetscape plan will provide shade trees lining the streets surrounding the site. At full build-out, Phases 1-3, the podium and landscape program includes a 24,500 square foot recreation deck. This design program promotes the healthy living concept by providing outdoor recreational areas and linking these on-site areas to the overall pedestrian and recreational network that the City Center district of Kapolei offers. As a LEED development, with Phase 1 achieving the Platinum level, the Project reflects exceptional environmental sensitivity, including direct access to the most well served transit node in Kapolei.

The proposed maximum height for the Project is 150-feet, which complies with the B-2 Community Business district and the 'Ewa Development Plan Height Guidelines for the City Center. The Project uses lush landscaping to provide shade and to promote the image of a garden city, but it also proposes use of low-water, native species and use of non-potable water for all irrigation of Phase 1.

4.2.3 The City of Kapolei – Urban Design Plan

The City of Kapolei Urban Design Plan (UDP) defines the City's design character, sets forth the concepts, standards, and guidelines for its development as the urban core of the greater 'Ewa region.

The development concepts, standards, and guidelines contained in the UDP are general in nature and provide an overall design framework to create compatible developments within the general fabric of the City of Kapolei (UDP, page 1). Relevant sections from the UDP will be listed with a discussion on how the Külana Hale at Kapolei, development complies with these concepts, standards, and guidelines.

Chapter 3.0 – Urban Concept and Themes

Section 3.1 – Development Objectives

- *A city where energy efficient practices such as recycling and water conservation techniques are firmly established.*
- *A city with street connectivity that makes travel more direct, shortens trips and provides a wide variety of travel choices.*

Section 3.3 – Design Concept

- *City – diversity of uses within easy walking distance of each other, relatively high intensities of activity, and ease of bringing people together for both business and social meetings in a variety of public and private places.*
- *Healthy Environment – emphasis on the outdoors with ample attractive environments in which to enjoy a variety of passive and active recreational activities.*
- *Hawaiian Setting – urban density in harmony with the natural environment, a combination of the best urban activities and amenities of Honolulu in the larger regional context of a more relaxed neighbor island lifestyle.*

Section 3.4 – Major Themes
Seven themes support the lifestyle concept, physical form and organization of the City of Kapolei's development.

- *Hawaiian Garden City – A city with a garden setting characterized by major parks and boulevards with trees, flowers and groundcover.*

- *Healthy Living – The garden city is to encourage a healthy, outdoor and active lifestyle through a variety of recreational features and facilities.*

- *Complete Community Services – The theme of healthy living is to be supported by medical/health/fitness services and facilities. The City of Kapolei is also to serve the surrounding region with recreational, cultural and religious facilities, State and County government offices, and quality public and private schools.*

- *Pedestrian Friendly – Within the garden city, an attractive network of paths for walking and biking will allow for convenient access between homes, jobs and community services.*

- *Past/Present/Future – Building styles and forms are to reflect the more intimate human scale of Hawaii's older commercial districts, while recognizing present needs and future market forces which shape city environments.*

- *Sustainability – Resource conservation is to be emphasized. Energy and water conservation measures and the collection of recyclable materials are to be integrated into building designs.*

- *Technology – The latest technology and communication advances will be incorporated for state of the art business transactions and creating a link to worldwide centers of commerce. Kapolei will be a "smart city."*

Section 3.5 – Evolution of the City

As the City matures and development constraints are resolved, densities and the mix of uses are expected to increase. Low density parcels will ideally be redeveloped with higher density developments as market conditions change. This is the pattern witnessed in Honolulu over the past 100 years.

Discussion: Sustainability, including recycling, water conservation, and energy conservation, is an overarching goal of the UDP. The Kapolei Mixed-Use Development will be LEED certifiable and will implement the following LEED Strategies: street trees to mitigate the heat island effect, stormwater management, greywater use, high energy efficiency, and solar power generation. Another emphasized theme, technology, will be addressed by having high speed wireless access throughout many common areas of the Project.

Another strong theme from the UDP is walkability. The Project promotes a relatively high density mix of uses in close proximity to a variety of amenities that increase walkability and overall quality of life – parks and recreation areas; services and shopping; public transportation; cultural and religious facilities; State and County offices; schools; and jobs. The Project's active uses along the street front comply with the UDP and help to promote a walkable, human scale, vibrant street scene that is attractive to pedestrians. The Project's ample bike storage will help encourage biking as an alternate mode of transportation.

Another overarching goal of the UDP is to create the feel of a Hawaiian Garden City or Hawaiian Setting by ensuring that developments are harmonious with nature and promote a relaxing atmosphere while at the same time offering an array of urban amenities. The use of street trees and shade trees throughout the site not only mitigate the heat island effect but also provide a more pleasant aesthetic from within the Project and from the street. The ample 24,500 sf of patio space will be programmed with planters and landscaping which promote harmony with nature and also further the UDP's Healthy Environment and Healthy Living concepts by providing space for active recreation. Kapolei Regional Park is also less than ¼ mile away for more vigorous activity.

Chapter 4.0 – Supporting Themes and Unifying Elements

Thematic building blocks for the City of Kapolei are expressed below as block size, circulation, views, landscaping, and key unifying elements.
Section 4.1 – Block Size

The relatively small block size encourages people to walk between work, restaurants, and shops as their travel route can be flexible, interesting, and reasonably direct.

CITY	*BLOCK SIZE*
City of Kapolei	*350' x 350'*
Downtown Honolulu	*275' x 300'*
Downtown San Francisco	*375' x 375'*

Section 4.2 – Connectivity

Increased connectivity decreases travel distances and increases route options allowing more direct travel between destinations, resulting in routes that are more accessible and resilient.

Smaller block sizes are a primary means to achieve a desirable level of connectivity.

Section 4.3 – Circulation

4.3.3 – Public Transportation

The transit site in the City of Kapolei has been designated in the center of the City. It is a transit hub that integrates buses and park and ride facilities. The transit center has a quarter mile (0.25 mile) walking distance radius to most of the residential and commercial areas in the City of Kapolei.

4.3.4 – Pedestrian and Bikeway Systems

Pedestrian ways and bikeways offer a healthy and environmentally friendly travel alternative thereby reducing automobile use.

Section 4.4 – Views

There are a variety of views within the City of Kapolei including near and distant natural features and mauka/makai views which have traditionally been important in Hawaii. The views to be enhanced and defined by the City's development are diagrammed in Figure 6 (p. 14, UDP).

- *View Corridors*

  Landscaping of major streets and pedestrian malls is done a manner which frames and maintains view corridors.

Section 4.5 – Landscaping

Landscape and streetscape design can heighten visual interest by framing views and providing for a variety of interesting spaces.

4.5.1 – Street Landscaping

Objective:

- *Provide for a unified and coherent landscape pattern on all streets to create a strong sense of place envisioned for the City of Kapolei.*

Specific Provisions:

- *Trees will be planted in accordance with the City of Kapolei Street Tree Master Plan (Figure 8, UDP) and vehicle sight distance safety standards.*

Section 4.6 – Key Unifying Elements

Four key elements link the City's districts together into a distinctive, vibrant city: Kapolei Regional Park, Pālailai Mall, Wai Aniani Way, and the Village Walk (Figure 9, UDP).

4.6.1 – Kapolei Regional Park

The City of Kapolei's major park occupies a 74-acre site at its northeast end. It functions as the City's visual gateway and a focus for outdoor activities. Kapolei Regional Park is to reinforce both the image and reality of Kapolei as a place where people can lead an active, healthy lifestyle.

4.6.2 – Pālailai Mall

Pālailai Mall will cross Wai Aniani Way extending from its existing mauka end at Campbell Square to its makai end in Mehana. The mall is intended to be an inviting linear park with a path for pedestrians.

4.6.3 – Wai Aniani Way

Functioning as the "main street" of Kapolei, Wai Aniani Way extends from Kapolei Regional Park through the City Center district to the Civic Center. Its length is roughly the same as Fort Street Mall in Honolulu. Including setbacks, its landscaped corridor is 80-feet wide.

4.6.4 – Village Walk

Village Walk originates at the Civic Center Judiciary complex, passes along the mauka edge of the Mehana, crosses Pälailai Mall, and terminates at the Mehana school site to the east. It serves as a major pedestrian connector between the Civic Center and Pālailai Mall.

Discussion: The Kapolei Mixed-Use Development block size is consistent with the walkable block sizes specified in the UDP. The compact block size creates a pedestrian-friendly urban environment and increases connectivity between the various uses and services that this district of Kapolei offers. The current location for the Kapolei Transit Center is along Haumea Street, fronting the Site, providing immediate access to the most well-served transit node in the City. The Site is also within ¼ mile of the

proposed transit center at Alohikea and Kama'aha Avenue. The Project's ample bike storage encourages biking as an alternate mode of transport.

Kapolei Mixed-Use Development is located along the View Corridor of Wākea Street, Figure 6 in the UDP. The maximum height for this site is 150-feet. The height of the proposed buildings will be 150-feet, which complies with the height requirements set forth for this district in the City of Kapolei.

The proposed street landscaping will be consistent with the *City of Kapolei Street Tree Master Plan*. Coordination of street tree installations provide a unifying element and a strong sense of place, as stated in the UDP.

Figure 22 – Neighborhood Amenities, illustrates the proximity of the Kapolei Mixed-Use Development to the Key Unifying Elements outlined in the UDP. This project will connect to the open space and pedestrian amenities offered by the City Center district.

Chapter 5.0 – Districts

Each district is a recognizable area with a distinct image. This image is created from a variety of parts including space, form, building type, detailing, use, and streetscape.

Section 5.1 – General Guidelines

5.1.1 – Objectives

- *Ensure that individual projects contribute toward the implementation of this UDP.*
- *Maintain functional and visual continuity in the development of the City.*

Section 5.2 – City Center District

City Center is the high density commercial and office core of the City of Kapolei (Figure 14, UDP). Wai Aniani Way serves as its spine and the "main street" of the City. Office towers, with shopping and restaurants at ground level, are ultimately to be the predominant form of development in the City Center.

5.2.1 - Objectives

- *Create a high-density urban environment that is pleasant and active.*
- *Maintain a comfortable human scale combined with a high degree of vitality at ground level.*
- *Encourage a high level of pedestrian day and night-time activities, especially along Wai Aniani Way.*

5.2.2 – Specific Provisions

5.2.2.1 – Building Envelopes

- *Height*

The maximum building height is 150-feet including the required sloping roof form of up to 25-feet (Figure 14, UDP). Up to 125-feet may be used as occupied floor space.

- *Setbacks*

To maintain continuity and a clearly defined edge to public spaces, uniform building setbacks shall generally be observed along streets except where sidewalk cafes and other activities and open spaces are proposed.

5.2.2.2 – Uses

The predominant uses in this district are to be offices, financial, retail, business support services, personal services, and restaurants. Multi-family dwelling units may be permitted on the upper floors of buildings, subject to obtaining the proper zoning from the City and County.

Discussion: The proposed design complies with the UDP goals of having high density towers be the predominant form of development in the City Center, with active uses such as shopping and restaurants programmed on the street front. The UDP supports residential use on the upper floors with proper permitting. The proposed mix of uses increases activity at street level during the day and at night, the latter in large part due to the inclusion of residential units above.

The Project complies with the 150' height limit in the City Center. Uniform setbacks will be observed to activate the street and promote more pedestrian-oriented activity.

4.2.4 City & County of Honolulu - Land Use Ordinance

All lands within the City & County are zoned into specific districts. According to the Department of Planning and Permitting, the project site is zoned B-2 - Community Business district. According to Sec. 21-3.110 of the Land Use Ordinance (LUO):

Sec. 21-3.110 Business districts – Purpose and intent.

(a) The purpose of the business districts is to set aside areas for commercial and business activities to meet and support the economic growth of the city. The districts provide for the buying and selling of goods and services, the transportation and distribution of commodities and other complementary economic activities. Other uses which are supportive of or compatible with business activities are also permitted. These districts help to ensure a favorable business climate and support the economic and social well-being of city residents.

(c) The intent of the B-2 community business district is to provide areas for community-wide business establishments, serving several neighborhoods and offering a wider range of uses than is permitted in the B-1 district. The intent is to apply this district to areas conveniently accessible by vehicular and pedestrian modes and served by adequate public facilities. Typically, this district would be applied to lots along major streets and in centrally located areas in urban and urban fringe areas.

Discussion: The Project's retail use is permitted by right in the B-2 – Community Business district zone, but the multifamily residential is not permitted. An exemption to allow the multifamily component is being requested through the 201H application. Please see Chapter 5 – Chapter 201H Application and Exemptions for further elaboration on this issue.

4.3 APPROVALS AND PERMITS

Table 20 - Approvals and Permits Summary

Permit/Approval	Responsible Agency
Chapter 201H, HRS	State HHFDC / City & County of Honolulu, City Council
LIHTC, HMMF, RHTF, DURF Applications; Chapter 343, HRS; General Excise Tax Exemption	State HHFDC
Americans with Disability Act (ADA) of 1990 Accessibility Requirements and Federal Fair Housing Act – Accessibility Guidelines	State Disability and Communication Access Board
Building Permit for building, electrical, plumbing, driveway improvements	City & County of Honolulu, Department of Planning and Permitting
Grubbing, Grading/Trenching, Street Usage, and Stockpiling Permit	City & County of Honolulu, Department of Planning and Permitting
Sewer Connection Permits	City & County of Honolulu, Department of Planning and Permitting
Water Connection	Board of Water Supply
Water Quality	State Department of Health

5.0 CHAPTER 201H APPLICATION AND EXEMPTIONS

5.1 INTRODUCTION

CRP will be processing approvals and entitlements for the Kapolei Mixed-Use Development under Chapter 201H, Hawaii Revised Statutes (HRS). HRS Section 201H-38 - "Housing development; exemption from statutes, ordinances, charter provisions, and rules" - allows for eligible Chapter 201H projects to seek exemptions from all statues, ordinances, and rules of any governmental agency relating to planning, zoning, and construction standards that do not negatively affect the health and safety of the general public, in exchange for providing affordable housing. In order to qualify for 201H exemptions, a project must consist primarily of affordable units at no greater than 140% AMI, and the Project meets this standard.

Through discussions and correspondence with the City and County of Honolulu Department of Planning and Permitting (see Appendix H: Department of Planning and Permitting Correspondence) it was determined that HHFDC was the appropriate agency to process the 201H application. While HHDFC will be processing the 201H application, the City and County of Honolulu City Council must approve the application and the requested exemptions. This EA serves as the 201H application agency and public comment document in addition to meeting the content and submittal requirements for an environmental assessment (EA), under Chapter 343, HRS, and Chapter 11-200, Hawaii Administrative Rules (HAR).

The exemptions requested below are required to maintain the financial feasibility of Kapolei Mixed-Use Development. The primary goal of exemptions is to minimize cost and also to maximize the number of units on the site, both of which work in tandem to reduce the overall development cost per unit. Relieving physical and financial barriers, exemptions achieve CRP's and the State of Hawai'i's joint goal of maximizing the number of affordable homes delivered to the public. Below is a detailed description of

the exemptions being requested. A summary of requested exemptions is also included following the detailed description.

5.2 REQUESTED EXEMPTIONS

Exemption from Revised Ordinances of Honolulu, Land Use Ordinance Master Use Table 21-3, B-2 – Community Business district - Use Standards

❖ An exemption from Land Use Ordinance Master Use Table 21-3 , B-2 – Community Business District is sought to allow Kapolei Mixed-Use Development, Phase 1 to develop 154-senior affordable housing units, and Phase 2 to develop 143 multifamily condominium units. Neither is permitted in the B-2 – Community Business district. The retail components of this proposal are consistent with the B-2 zoning district use standards.

Potential Impacts and Mitigation Measures:

The Kapolei UDP states the following about the City Center District: "*The predominant uses in this district are to be offices, financial, retail, business support services, personal services, and restaurants. Multi-family dwelling units may be permitted on the upper floors of buildings, subject to obtaining the proper zoning from the City & County.*"

Mixed-use development is set forth in the recently approved Kapolei UDP and 'Ewa DP as acceptable in the City Center District. The 'Ewa Development Plan states; "*The City Center should be the high-density core of the city. Larger office towers should be the predominant form of development in this district, with shopping and restaurants at ground level. The inclusion of apartments within some of the towers should also be encouraged to establish a more dynamic mix of uses and help to maintain an active urban environment in the area.*" In addition, the 'Ewa DP encourages more residential use near transit nodes as stated in Section 3.6.2 – Major Themes**,** Transit Access and Orientation – "*A transit node should be located near the Civic Center and City Center, and medium density residential uses should be encouraged within a five minute walking*

distance (about 1,300 feet) of the node. Uses adjoining the node should be designed so that they face toward the node, encouraging pedestrian traffic to flow to and from the node." The Site is adjacent to the current Transit Center and within a 5 minute walk of the proposed transit center site at Alohikea and Kama'aha Avenue.

Kapolei Town Center Final EIS:

In 1988, the purpose of the Kapolei Town Center EIS was to: 1) describe the proposed Kapolei Town Center development; 2) discuss the proposed action to amend the City and County of Honolulu's 'Ewa Development Land Use Map; 3) disclose the probable environmental effects of the proposed action; 4) describe measures proposed to minimize adverse effects; and, 5) discuss and analyze alternatives to the proposed action and their effects. Furthermore, in the EIS, the Kapolei Town Center Core consists of 569 acres which encompasses the Project site.

The Kapolei Town Center Final EIS (1988) discusses development objectives in Section 2.2 and states the following:

> *"Major development objectives established by the applicant in designing the Town Center were to create a new city:*
>
> - *which provides a balance between regional employment and housing;*
> - *which minimizes commute trips to and from downtown Honolulu;*
> - *Which provides all public/private shopping services for 'Ewa residents;*
> - *Which provides amenities for the region and its existing population;*
> - *Which provides a place of relocation for business and residents currently in downtown Honolulu;*
> - *with internal circulation systems which minimize the dependence on the private automobile;*
> - *which takes into account the sensitive relationship between land and ocean historically viewed by native Hawaiians."*

Each of these development objectives from the Kapolei Town Center Final EIS will be discussed in context of the Project:

- *balance between regional employment and housing*

Discussion: In urban development it is important to have a balance between employment and housing; commercial and residential development. Although the Site is zoned B-2 Commercial, the proposed mixed-use development exemplifies a balanced approach to city building by providing housing and retail in the city's commercial core.

- *minimize commute trips to and from downtown Honolulu*

Discussion: The Project is in close proximity to private sector and government employment centers located in the City of Kapolei. The Project is also located along major bus lines which travel to downtown Honolulu, also minimizing automobile trips to and from downtown Honolulu.

- *provide all public/private shopping services for 'Ewa residents*

Discussion: The Project is within a half mile of a variety of shopping amenities such as Foodland, Safeway, Costco, K Mart, and Home Depot, among others. The Project also incorporates retail space on the ground floor which will house neighborhood-serving retailers.

- *provides amenities for the region and its existing population*

Discussion: The Project includes 24,500 square feet of open space in the form of a recreation deck; a 2,052 square foot recreation center; and a 926 square foot community room, totaling 27,478 square feet of recreation space for the use of residents. The Project's ground floor retail will add shopping and service amenities for residents and workers of the City Center. As illustrated in Figure 22 – Neighborhood Amenities, the Project is within walking distance to the Kapolei Regional Park, shopping, theatres, and public transit.

- *provide a place of relocation for business and residents currently in downtown Honolulu*

Discussion: The Project will be the first urban style, high rise development in the City of Kapolei. With the goal of providing a place for relocation of downtown Honolulu residents, it is important to offer urban-style living and not just low-density suburban-style housing. The ground floor retail space will create opportunities for small businesses to thrive, whether from downtown Honolulu or elsewhere.

- *minimize the dependence on the private automobile*

Discussion: The Project proposes fewer parking stalls than code requires, provides ample bike storage, is located along public transportation lines, and is also within walking distance to recreational and shopping amenities. These are all characteristics of transit oriented development, the main goal of which is to minimize the use of the automobile.

- *takes into account the sensitive relationship between land and ocean historically viewed by native Hawaiians*

Discussion: The ‘Ewa Development Plan lists significant views and vistas, taking into account the relationship between land and ocean which is historically significant to native Hawaiians. Refer to Figure 13 – Pu‘u o Kapolei, Figure 14 – Pu‘u Pāla‘ila‘i, and Figure 15 – Pu‘u Makakilo for illustrations of the Project in relation to these significant view areas.

Exemption from Revised Ordinances of Honolulu, Land Use Ordinance Table 21-3.4 – Resort, Business and Business Mixed-Use Districts Development Standards, LUO Section 21-3.110-1(c)(4) – Business Uses and Development Standards, and Figure 21-3.7 – Street Setbacks (B-2, BMX-3, I-2, I-3, and IMX Districts)

❖ An exemption from Land Use Ordinance Sec. 21-3.4 – Resort, Business and Business Mixed-Use Districts Development Standards, LUO Section 21-3.110-1(c)(4) and Figure 21-3.7 to allow Kapolei Mixed-Use Development's portions of the upper floors of the residential towers building mass to encroach into the building Height Setback Envelope. See Figure 23 - Street Setback Requested Exemption for a graphic illustration of the requested exemption for the Phase 1 and 2 towers.

Potential Impacts and Mitigation Measures:

The purpose of the building height setback envelope is to maximize open air and daylight associated with the construction of high-rise buildings. The building height setback envelope prescribed in the LUO requires tall buildings' upper stories to step back from the street, which reduces the visual impact of building massing and allows more daylighting and views for the streetscape below. Compliance with the development standard would require costly provisions within the buildings structural systems. The rationale for the proposed exemption is to provide affordable housing units. Although there is daylight and open air impacts from this requested exemption, the two buildings will achieve the maximum building height of 150-feet as allowed by the LUO.

Exemption from Revised Ordinances of Honolulu, Land Use Ordinance Section 21-6.20 (Table 21-6.1), Off-Street Parking Requirements, and Section 21-6.100 Off-Street Loading Requirements

❖ An exemption from the Land Use Ordinance Section 21-6.20 (Table 21-6.1) is sought to allow for less than the minimum required off-street parking spaces. The

requirement is to provide 498 parking stalls as required by LUO Table 21-6.1 – Off-Street Parking Requirements. The required parking stalls per phase are: Phase 1 – 206, and Phase 2 – 232, and Phase 3 – 60. Phase 1 provides 179 parking stalls, Phase 2 provides 176 parking stalls, and Phase 3 provides 60 parking stalls, for a total of 415 stalls. Therefore, the requested exemption is 83 fewer parking stalls than the minimum required.

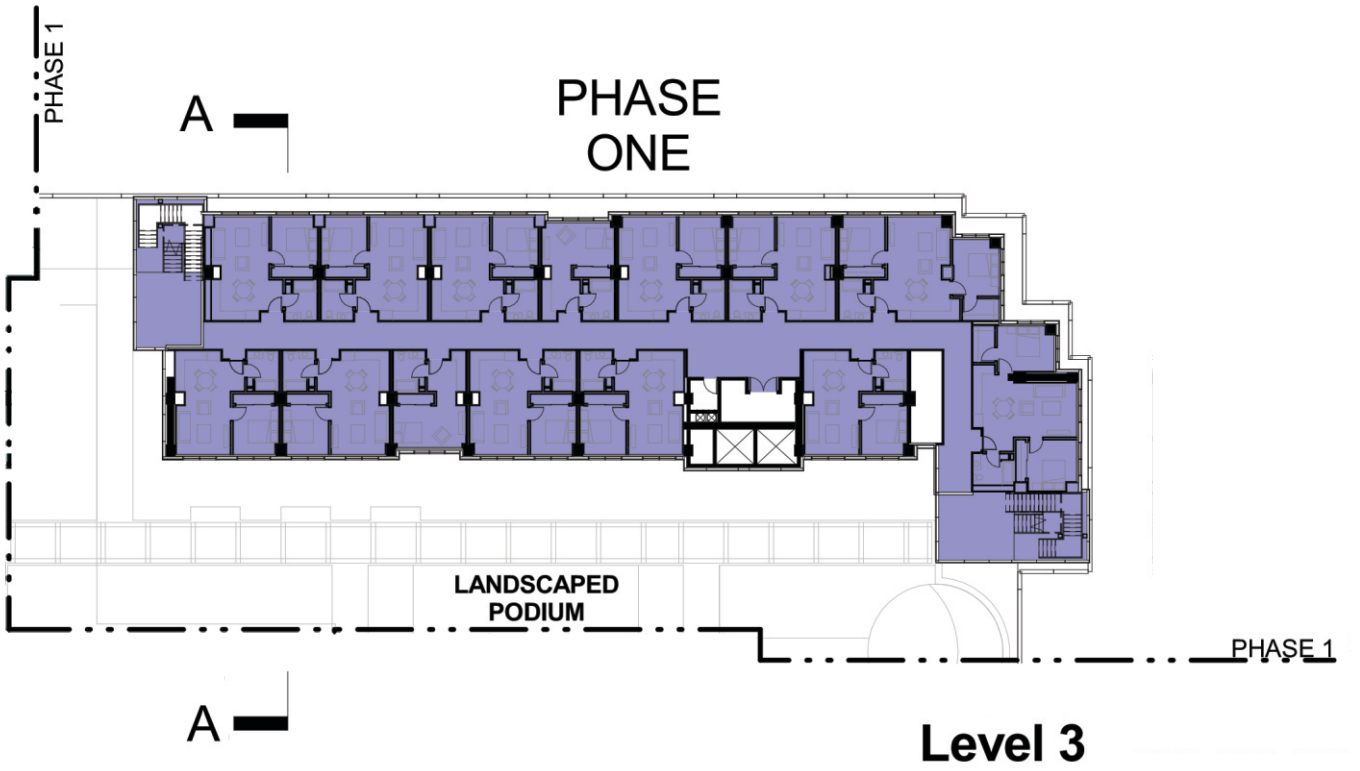
❖ An exemption from the Land Use Ordinance Section 21-6.100 – Off-Street Loading Requirements is sought to allow for less than the minimum off-street loading spaces. The requirement by the LUO is to provide seven (7) loading spaces. Table 20 – Required versus Provided Loading Spaces by Phase shows that the Project is proposing a one (1) loading space exemption.

Table 21 – Required versus Provided Loading Spaces by Phase

	Residential		**Retail**		**Total**	
	Required	Provided	Required	Provided	Required	Provided
Phase 1	2	2	1	1	3	3
Phase 2	1	0	1	1	2	1
Phase 3	0	0	2	2	2	2

Potential Impacts and Mitigation Measures

The rationale for the proposed exemption is to provide affordable housing units. The impact of the exemption is mitigated by the Project's close proximity to the Kapolei Transit Center, which is served by several bus lines and is a well-served hub of public transportation. While Kapolei may generally be a driving culture, as the city center densifies walking and biking will become more attractive. The small block size coupled with sidewalks and close proximity to an array of retail and services promote more walkability in this location.



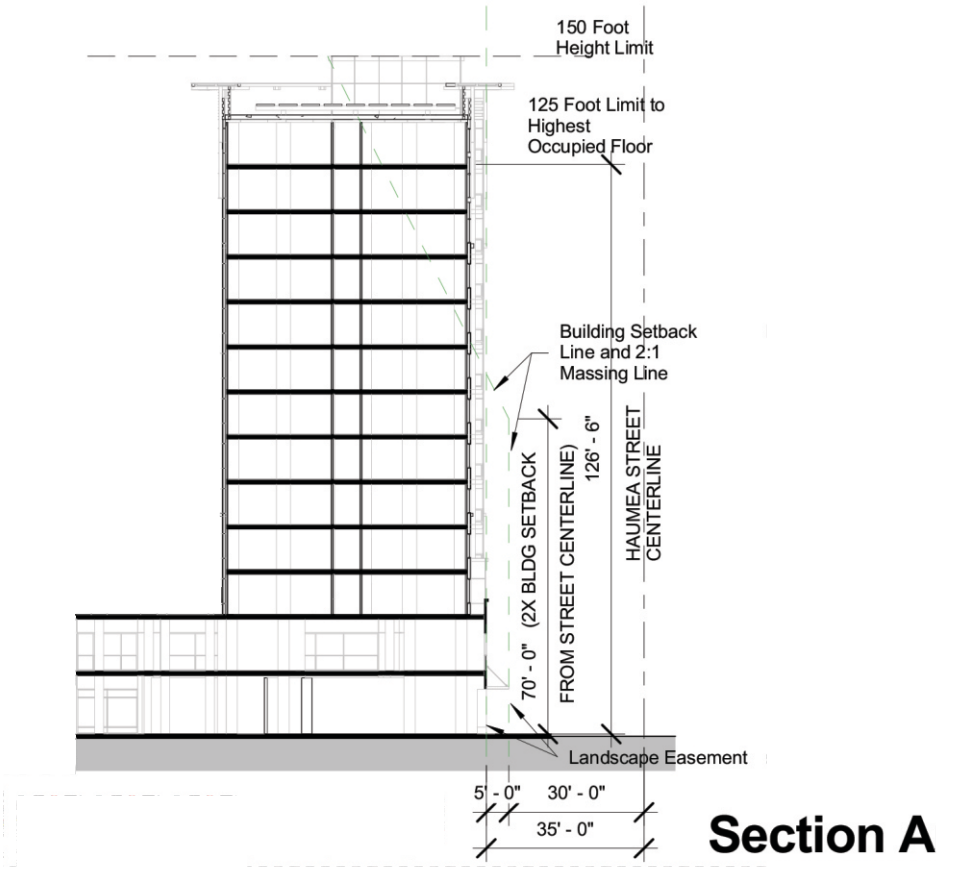
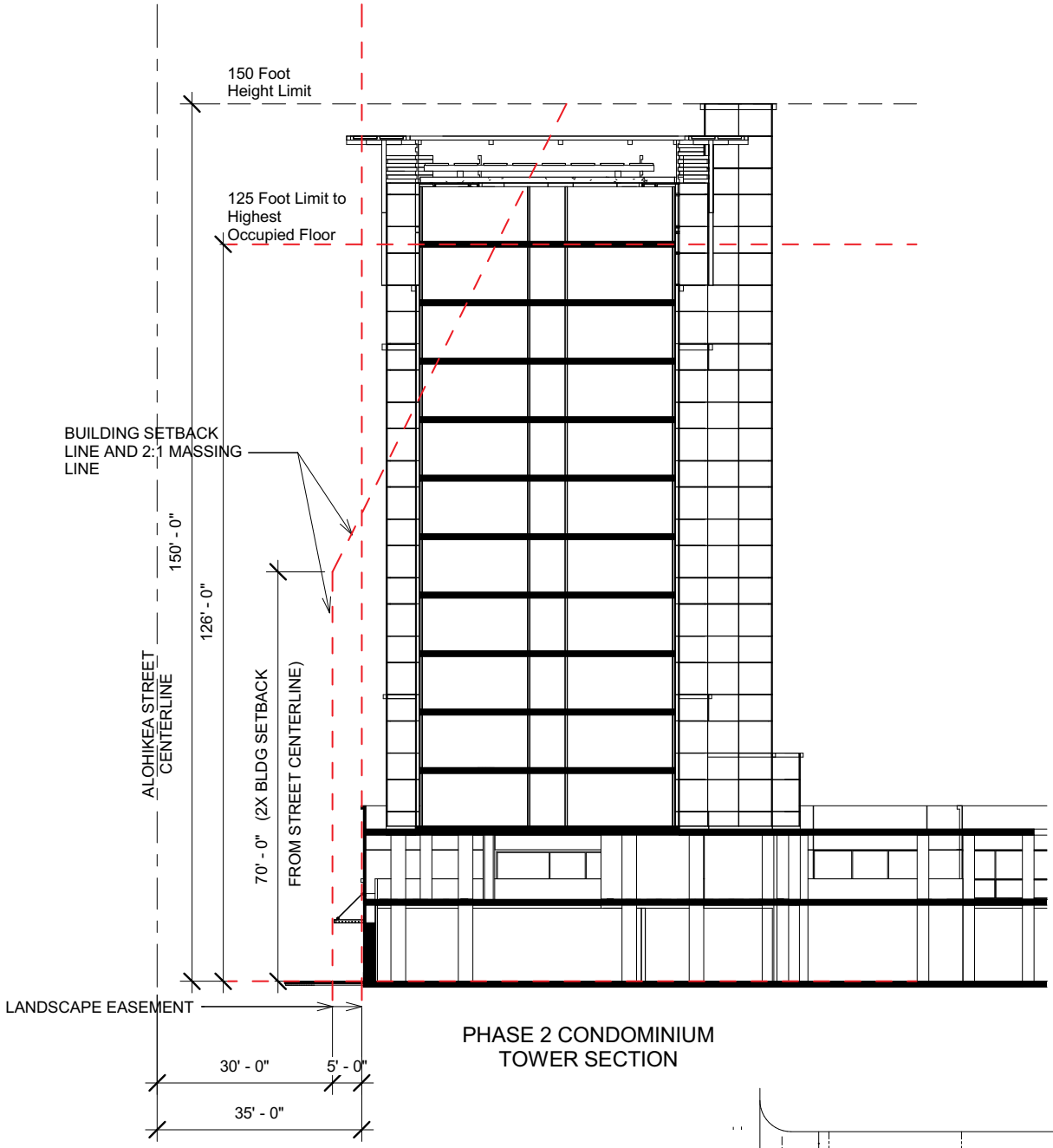


Figure 23: Street Setback Requested Exemption



PHASE 2 CONDOMINIUM
TOWER SECTION

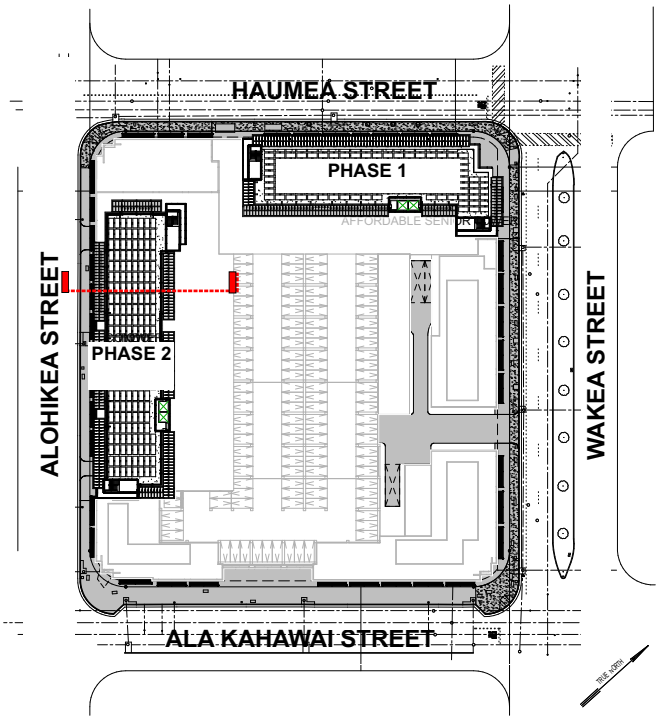


Figure 23 – Street Setback Requested Exemption, Phase 2

There is also street parking nearby, which partially offsets the need for onsite parking. The Traffic Impact Report Analysis included as Appendix E of the DEA states that the following on-street parking is available in the immediate neighborhood.

Ala Kahawai Street (aka Wai Aniani Way) is one block to the south of the site. Parking is allowed in both directions of the street.

Alohikea Street is one block west of the site. Parking is allowed in both directions of the street.

Haumea Street runs east-west adjacent to the site. Parking on Haumea Street is only allowed east of Wākea Street; west of Wākea Street, the street frontage is reserved solely for bus stops.

Nau Place is a two-lane north-south roadway dead-end street off of Kamokila Boulevard between Wākea and Manawai Streets. On-Street parking is now allowed on either side of the street.

Manawai Street runs north-south two blocks (.15 mile) east of the site. Parking is allowed on both sides of the street.

Regarding the loading space exemption, the Phase 2 condo tower will share the loading space that benefits the Phase 2 retail.

The rationale for requesting an exemption for 83 parking stalls is based on the growing body of research showing how reduced parking ratios promote alternative transportation choices. From our consultation with the Blue Planet Foundation, a local non-profit organization committed to ending the use of fossil fuels, there is research from urban and transportation planners that suggests that off-street minimum parking requirements are not only unnecessary, but that they raise the cost of housing, induce greater car

ownership and driving, and reduce the benefits of public investments in transit and bike infrastructure.

"Recent research by parking and urban transportation experts such as Donald Shoup from UCLA and Robert Cervero from the University of California at Berkeley suggests that in most municipalities on-street parking is not being properly managed, that it is generally under-regulated and under-priced. Their research suggests that properly managing on-street parking is far more effective at preventing parking spill-over impacts than minimum off-street parking requirements. They also suggest that allowing developers to assess the true demand for parking and supply accordingly generally leads to more efficient parking supply than blanket requirements mandated at the municipal level. Minimum parking requirements also prevent people who desire a car-free lifestyle from having housing choices that suit them."

Exemption from Revised Ordinances of Honolulu Chapter 22, Article 7, Park Dedication Requirements

❖ An exemption from the Park Dedication requirements as set forth in Chapter 22, Article 7, Revised Ordinances of Honolulu is sought. The required park dedication space is calculated as 297 (units) x 110 (s.f. per unit) = 32,670 square feet.

Potential Impacts and Mitigation Measures

The proposed design includes 24,500 square feet of open space in the form of a recreation deck; a 2,052 square foot recreation center; and a 926 square foot community room, totaling 27,478 square feet of recreation space. The open space plan for this project is illustrated in Architectural Plans – Appendix D.

The park dedication exemption for the remaining 5,192 square feet of private park space is not a significant impact due to the project's internal recreation space and

proximity to recreational amenities within walking distance. The rationale for the proposed exemption is to provide affordable housing units.

Exemption from the Zoning Regulations of the City of Kapolei Urban Design Plan, Sec. 5.2.2.1 – Building Envelopes – Height

❖ An exemption from the City of Kapolei UDP, Sec. 5.2.2.1 – Building Envelopes – Height, which states the elevation of the highest occupied floor shall not exceed 125-feet (125'). Kapolei Mixed-Use Development proposes the height of the highest occupied floor to be 130-feet.

Potential Impacts and Mitigation Measures

As illustrated and discussed in Section 3.11 – Visual Resources, there will be visual impacts on identified landmarks and vistas resulting from the development of the Phase 1 and Phase 2 towers. However, the requested exemption from the Kapolei UDP is 5-feet in height which is minimal.

Building Permit and Plan Review Fees

❖ An exemption from Sections 18-6.1 and 18-6.2, Revised Ordinances of Honolulu is requested, to allow exemption for Phase 1 and Phase 2 from plan review and building permit fees. Estimates of these fees are shown below.

	Building Permit	**Plan Review**
Phase 1	$124,000	$25,000
Phase 2	$130,000	$25,000

Public Works/Infrastructure Fees

❖ An exemption from ROH, Sec. 14-14.4 is sought to exempt Phase 1 and Phase 2 from grading and grubbing permit fees. The grading quantities are not yet determined. The grading permit fee is $550.00 plus $55.00 per each additional 1,000 cubic yards or fraction thereof.

Requested Deferrals – Sewer

❖ For Phase 1 and 2, deferral from ROH Section 14-3.2 – Installation Charges, to allow a deferral of payment of sewer lateral connection and installation charges. Fees for each phase will be paid upon securing a construction loan.

❖ Deferral from ROH Sections 14-6.4 – Sewer Service Charge Schedules and 14-10.3 – Residential wastewater system facility charges, to allow a deferral of payment of wastewater system facilities charge of approximately $633,648.40 for Phase 1 and is estimated to be $588,000.00 for Phase 2. Fees for each phase will be paid upon securing a construction loan.

❖ Exemption from ROH Section 14-12.12 – Connection to City-Owned Separate Storm Sewer System to allow an exemption from private storm drain connection license fees, estimated at $1,000.

Requested Deferrals – Water

❖ Deferral from Sections 1-102 – and 2-202(2) – and 2-202(3) – of the Board of Water Supply Rules and Regulations to allow a deferral of payment of water system facility and installation of water service fees until construction loan is secured. The BWS Water Facilities Charge for Phase 1 is assumed to be approximately the same as for Phase 2.

Potential Impacts and Mitigation Measures

Exemptions and deferrals from fees are requested to provide affordable housing.

5.3 SUMMARY OF REQUESTED EXEMPTIONS

Below is a summary of requested exemptions.

Summary of Requested Exemptions			
Land Use Ordinance			
Development Standard / Item	**Relevant Section / Requirement**	**Proposed Development Standard**	**Rationale for Proposal**
B-2 Community Business District – Use Standards	Sec. 21-3.120-2(b) [Table 21-3] / residential use not permitted	Phase 1:154 - Senior Housing units. Phase 2: 143 condo units	The proposal for mixed-use development and use standards coincide with the 'Ewa DP for the City Center district of Kapolei.
Building Height Setback Envelope	Table 21-3.4 & Sec. 21-3.110-1(c)(4) & Figure 21-3.7	Upper floors of the building will encroach. Refer to Figure 23.	Compliance with the development standard will require costly provisions within the buildings structural systems. Lower costs help subsidize affordability.
Off-Street Parking Requirement			
	LUO Sec. 21-6.20 (Table 21-6.1)		83 less parking stalls provided. Project is near public transit and walkable neighborhood amenities. Seniors who age-in-place have fewer cars per capita.
Residential	358	415 parking stalls provided for Phases 1-3	
Guest	31		
Retail	109		
Total Parking Required	498		
Off-Street Loading Requirement			
	LUO Sec. 21-6.100		
Loading Spaces Required Per LUO	7	6 Loading Spaces Provided	The residential portion of Phase 2 will share the loading stall with the commercial portion of Phase 2. Overall, if all three phases were considered as one project, no exemption would be needed.

Development Standard / Item	Relevant Section / Requirement	Proposed Development Standard	Rationale for Proposal
Park Dedication Requirement			
Park Dedication	Chapter 22, Article 7, Revised Ordinances of Honolulu / 110 x 297 (units) Private park: 32,670 square feet	Providing a total of 27,478 square feet of recreation deck & recreation center.	A sizable amount of open space and indoor community space are provided to mitigate the park dedication requirements.
City of Kapolei Urban Design Plan			
Building Envelopes – Height	Sec. 5.2.2.1 – Building Envelopes – Height of 125-feet	130-feet proposed - highest occupied floor.	Rationale for highest occupied floor exemption is to provide affordable housing.
Permit / Infrastructure / Tax Fees			
Plan Review Fees	ROH Section 18-6.1	Exemption requested	Providing low-income affordable rental housing in Phase 1 and moderate-income affordable for-sale housing in Phase 2.
Building Permit Fees	ROH Section 18-6.2	Exemption requested	Providing low-income affordable rental housing in Phase 1 and moderate-income affordable for-sale housing in Phase 2.
License Fee for Connection to City-Owned Separate Storm Sewer System	ROH Section 14-12.12	Exemption requested	Providing low-income affordable rental housing in Phase 1 and moderate-income affordable for-sale housing in Phase 2.
Grubbing and Grading Permit Fees	ROH Section 14-14.4	Exemption requested	Providing low-income affordable rental housing in Phase 1 and moderate-income affordable for-sale housing in Phase 2.
Sewer Installation and Sewer Lateral Connection Charges	ROH Section 14-3.2	Deferral of payment requested	Deferral is requested until securing construction loan.

Development Standard / Item	Relevant Section / Requirement	Proposed Development Standard	Rationale for Proposal
Liability for Payment	ROH Section 14-6.1	Deferral of payment requested	Deferral is requested until securing construction loan.
Sewer Service Charge Schedules – Wastewater System Facilities Charge	ROH Section 14-6.4	Deferral of payment requested	Deferral is requested until securing construction loan.
Residential Wastewater System Facilities Charge	ROH Section 14-10.3	Deferral of payment requested	Deferral is requested until securing construction loan.
Water System Facilities Charge	BWS Rules and Regulations Section 1-102	Deferral of payment requested	Deferral is requested until securing construction loan.
Installation of Water Service – Installation Charge	BWS Rules and Regulations Section 2-202(2)	Deferral of payment requested	Deferral is requested until securing construction loan.
Installation of Water Service – Water System Facilities Charge	BWS Rules and Regulations Section 2-202(3)	Deferral of payment requested	Deferral is requested until securing construction loan.

6.0 ALTERNATIVES

6.1 NO ACTION ALTERNATIVE

A no action alternative keeps the site vacant and provides no opportunity for housing or retail.

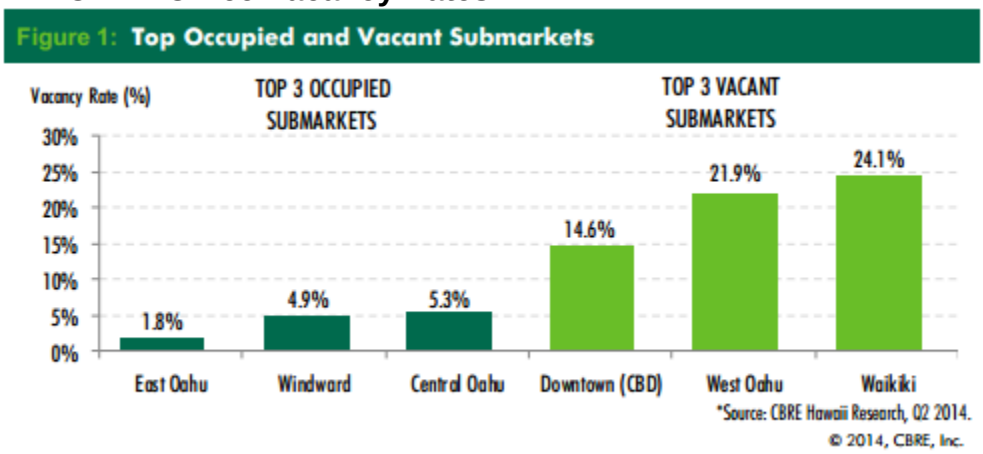
6.2 ALTERNATIVE SITE DEVELOPMENT CONCEPTS

Three (3) alternative site development and design concepts were developed for the Site based on the B-2 Community Business district development standards and other LUO development standards provisions:

1) **Office Towers:** This use would meet the development standards set forth in the LUO and would comply with the ‘Ewa Development Plan and Kapolei UDP. Assuming a build-out to the maximum 2.5 FAR, the gross square footage of code-compliant office towers would be approximately 330,000 s.f. If a 70% efficiency rate is assumed, the net leasable square footage is 231,000 s.f. At 1 parking stall per 400 s.f. this use would require 577 parking stalls. The office towers would likely be developed with open space between to maximize day lighting in the buildings and appeal to office tenants.

While development of office towers conforms with the zoning and underlying development plans, there appears to be little demand for office space in West O‘ahu as of 2014. The Figure below illustrates the high office vacancy rate for West O‘ahu (includes the City of Kapolei). The high office vacancy rates indicate low demand for more office-commercial development in West O‘ahu.

Table 22 – CBRE Office Vacancy Rates



In contrast to the low demand for office space, the Market Studies included in Appendix B and C conclude that there is demand for the proposed rental and condominium units in Kapolei.

2) **Low-Rise Retail and Office**: The second development concept is a low-rise retail and office development. Several similar developments are nearby, including Crossroads at Kapolei and Campbell Square, each of which constitutes an entire city block. Retail is generally provided on the ground floor with office uses above, or the retail may extend to upper floors in an outdoor mall design. This land use concept is not consistent with the Kapolei UDP and Ewa Development Plan's vision for higher-density development in the City Center district of the City of Kapolei. The Kapolei UDP states, "City Center is the high density commercial and office core of the City of Kapolei. Wai Aniani Way serves as its spine and the 'main street' of the City. Office towers, with shopping and restaurants at ground level, are ultimately to be the predominant form of development in the City Center." Low density development in the City Center is therefore not supported by the Kapolei UDP and 'Ewa Development Plan.

3) **School:** The third development concept is a private school campus. Under the B-2 Community Business district, the following types of schools are allowed: business college, elementary, middle, high, vocational, and language. Several private schools

are located nearby including Island Pacific Academy and Seagull Schools, Inc. Private school campuses are typically developed as a series of low-rise buildings with associated open space and can use an entire City block, as does Island Pacific Academy next door. Universities can have the scale to support more intensive land use, such as mid-rise and even high-rise development, but universities are not allowed in the B-2 Community Business district.

To reiterate, the Kapolei UDP and ‘Ewa Development Plan encourage high density development in the City Center. A low density campus clearly does not fulfill this vision, and with one low density campus already located on Wai Aniani way (Island Pacific Academy), support for a second campus would likely be low.

Also development of the City Center with day-uses can lead to lack of activity on the streets in the evenings. The UDP states that the City Center should “Encourage a high level of pedestrian day and night-time activities, especially along Wai Aniani Way.” Activity at night increases pedestrian safety and furthers the UDP and ‘Ewa DP goal of a walkable and pedestrian friendly City Center. Residential mixed use development plays a key role in maintaining vitality at night.

While these three (3) alternatives comply with the B-2 Community Business district use and development standards, each poses serious difficulties. The proposed mixed use development is supported by market data, is financially feasible, and is consistent with the ‘Ewa DP and UDP.

Benefits of mixed-use development include:

- greater housing variety and density, more affordable housing (smaller units), life-cycle housing (starter homes to larger homes to senior housing)
- reduced distances between housing, workplaces, retail businesses, and other amenities and destinations
- more compact development, land-use synergy (e.g. residents provide customers for retail which provide amenities for residents)
- stronger neighborhood character, sense of place
- walkable, bike-able neighborhoods, increased accessibility via transit, both resulting in reduced transportation costs

Source: American Planning Association, "Planning and Community Health Research Center: Mixed Use Development"

The aforementioned benefits of mixed-use development coincide with the objectives, policies and provisions in the General Plan, ‘Ewa Development Plan, and the City of Kapolei Urban Design Plan.

7.0 DETERMINATION, FINDINGS, AND SUPPORTING REASONS FOR DETERMINATION

7.1 SIGNIFICANCE CRITERIA

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

The Kapolei Town Center Final Environmental Impact Statement, completed in August 1988 evaluated existing archaeological and environmental conditions and determined that no known natural or historical or archaeological resources will be lost or destroyed as a result of the future development in the City Center district of Kapolei. The development of Kapolei Mixed-Use Development will adhere to SHPD requirements should there be findings of Hawaiian cultural significance on this site.

B. Curtails the range of beneficial uses of the environment.

Kapolei Mixed-Use Development is consistent with State and City land use designations. Kapolei Mixed-Use Development involves mixed-use development on an Urban use site with uses consistent with the General Plan, ‘Ewa Development Plan, and the City of Kapolei UDP.

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

Kapolei Mixed-Use Development is consistent with the environmental policies, goals, and guidelines as established in Chapter 344, HRS.

One of the policies in Chapter 344, HRS states, “Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation.” Kapolei Mixed-Use Development is consistent with this policy by providing internal opportunities

for recreation and shopping, as well as locating in City Center district in close proximity to other shopping, employment, various services and recreational opportunities.

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

Kapolei Mixed-Use Development will also positively affect the economic and social welfare of the community by providing affordable housing which is in high demand in the community.

Construction of Kapolei Mixed-Use Development will also benefit the community and State economically by creating jobs and increasing sales within the construction industry supply chain. Tax revenues will be generated by the short-term construction work and by the long-term employment and secondary service industry jobs that support the increase in population. It is not anticipated that the Project will have any substantial impacts on cultural practices. The Applicant contacted SHPD on this issue and will comply with any requirements made by SHPD.

E. Substantially affects public health.

Construction and development of Kapolei Mixed-Use Development may pose temporary impacts to noise and air quality levels (i.e., fugitive dust from grading work, noise and exhaust emissions from construction equipment and vehicles). However, these potential impacts will be short-term and are not expected to affect public health significantly. All construction activities will comply with applicable regulations and appropriate mitigation measures will be implemented.

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

The creation of 297 new residential units in the City Center district of Kapolei, will increase the population of Kapolei by approximately 682 persons. This approximation derives from using the HHFDC occupancy guidelines for for-sale units in Section 2.2.2 –

Affordability in this EA. As stated in this EA, public facilities have adequate capacity to serve this development. As stated and illustrated in Section 3.14.1 – Schools, there are minimal school impacts for Phase 1, as the entire unit mix consists of affordable senior rental units. There may be impacts on school enrollment for Phase 2, which consists of 143 multi-family condominium units, and a school impact fee will be levied to mitigate these impacts.

G. Involves a substantial degradation of environmental quality.

Construction activities are anticipated to result in short-term impacts to noise, air quality, and traffic in the immediate vicinity and neighborhood. With the implementation of mitigation measures during the construction period, Kapolei Mixed-Use Development will not result in long-term degradation to environmental quality.

As previously stated in this EA, Kapolei Mixed-Use Development will be LEED certifiable which implements sustainable, green building design elements minimizing natural resources depletion and creating green, sustainable communities.

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

No cumulative effects are anticipated, as Kapolei Mixed-Use Development involves the development of residential uses within the City Center district of the City of Kapolei and is consistent with the General Plan, ‘Ewa Development Plan, and the City of Kapolei UDP. This EA discloses and discusses the cumulative impacts of the full-build-out of Kapolei Mixed-Use Development, Phases 1-3.

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

The Site is in an urbanized area, and there are no known federally protected, threatened, or endangered species of plants or animals onsite.

J. Detrimentally affects air or water quality or ambient noise levels.

Construction activities for the development of Kapolei Mixed-Use Development could temporarily impact noise, air and water quality levels (i.e., fugitive dust from grading work, noise and exhaust emissions from construction equipment and vehicles). However, these potential impacts will be short-term and in the case of air and water quality are not expected to be detrimental. All construction activities will comply with applicable regulations and appropriate mitigation measures will be implemented as necessary and required.

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

Based on the Flood Insurance Rate Maps published by the Federal Emergency Management Agency, the Kapolei Mixed-Use Development site is located in flood hazard Zone D, as shown in Figure 11 – Flood Zone Map. Zone D is defined as the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible. The Site is not located in a tsunami evacuation zone, beach, erosion-prone area, geologically hazardous area, estuary, or near fresh water or coastal waters.

L. Substantially affects scenic vistas and view planes identified in county or state plans or studies.

The ‘Ewa Development Plan discusses the impacts of development on views and visual resources: Design and site all structures, where feasible, to reflect the need to maintain and enhance available views of significant landmarks and vistas. Whenever possible, relocate or place underground overhead utility lines and poles that significantly obstruct public views, under criteria specified in State law.

Below are significant views and vistas listed in the ‘Ewa Development Plan:

SIGNIFICANT VIEWS AND VISTAS

- *Distant vistas of the shoreline from the H-1 Freeway above the ‘Ewa Plain;*
- *Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waiʻanae Development Plan Area;*
- *Views of the Waiʻanae Range from H-1 Freeway between Kunia Road and Kaloʻi Gulch and from Kunia Road;*
- *Views of Nā Puʻu at Kapolei, Pālailai, and Makakilo;*
- *Mauka and makai views; and*
- *Views of central Honolulu and Diamond Head, particularly from Puʻu O Kapolei, Puʻu Pālailai, and Puʻu Makakilo.*

Kapolei Mixed-Use Development will consist of two (2) buildings 150-feet in height and two (2) buildings 22-feet in height. The design of the project may have some impact to the relevant views and vistas listed above. However, the Kapolei Town Center Final Environmental Impact Statement (EIS), completed in August 1988, evaluated the impact on views of the entire City of Kapolei master plan. Subsequently, the City Council amended the City and County of Honolulu’s ‘Ewa Development Plan Land Use Map and adopted revisions to the master plan, changes to the LUO zoning code, changes to the Kapolei UDP. All of these documents reflect a clear indication that the intended use for the City Center district is high rise construction of up to 150 feet in height, implying that the view impact as evaluated in the EIS is acceptable. Section 3.11 – Visual Resources provides more discussion on the view impacts of the Project.

M. Requires substantial energy consumption

There will be short-term substantial energy consumption during the construction phase of the Project, however, in the long-term there will be minimal to normal energy consumption as current construction and design standards are more energy-efficient.

As discussed throughout this EA, Kapolei Mixed-Use Development aims to be LEED certifiable, with Phase 1 achieving the LEED Platinum level. Green building and sustainable elements include: street trees and shade trees to mitigate urban heat island effect, native plants and habitat enhancement, stormwater management, greywater usage, overall energy efficiency, including the installation of energy efficient fixtures and appliances, and solar harvesting.

7.2 ANTICIPATED DETERMINATION

Based on the impacts and mitigation measures examined in this document and analyzed under the above criteria, it is anticipated that Kapolei Mixed-Use Development will not have a significant impact on the local, County, or Statewide physical or human environments. Though the Kapolei Town Center EIS may not have addressed development of residential units in this particular location, the change from commercial use to mixed use with 297 units is not anticipated to create a significant impact. Pursuant to Chapter 343, HRS, the Approving Agency, which for this project is the Hawaii Housing Finance & Development Corporation (HHFDC), is anticipated to issue a Finding of No Significant Impact (FONSI).

As discussed and analyzed in Section 5.2 – Requested Exemptions, the Project coincides with Section 2.2 – Development Objectives from the Kapolei Town Center Final EIS (1988). Therefore, there is no need for a supplemental EIS or a new EIS for this project as the current proposal is consistent with the former EIS's development objectives and the current 'Ewa Development Plan (2013) and Kapolei Urban Design Plan (2007).

8.0 CONSULTATION

CRP initiated public and agency comment to Kapolei Mixed-Use Development through letters and meetings requesting input prior to development of this EA.

8.1 AGENCY PRE-CONSULTATION

The following public agencies were sent pre-consultation letters for the preparation of this EA:

Federal Government

- Pacific Islands Fish & Wildlife Office, U.S. Fish and Wildlife Service

State of Hawaii

- Department of Education*
- Department of Business, Economic Development, Tourism – Office of Planning*
- Department of Hawaiian Homelands*
- Department of Health – Office of Environmental Quality Control
- Department of Health – Environmental Planning Office*
- Department of Health – Wastewater Branch*
- Department of Land & Natural Resources – Historic Preservation Division
- Department of Land & Natural Resources – Land Division*
- Hawaii Housing Finance & Development Corporation
- Department of Transportation*
- Office of Hawaiian Affairs

City & County of Honolulu

- Board of Water Supply*
- Department of Community Services*
- Department of Design and Construction*
- Department of Environmental Services
- Department of Facility Maintenance*
- Department of Parks and Recreation*
- Department of Transportation Services*
- Department of Planning and Permitting*
- Fire Department*

- Police Department*
- Honolulu Authority for Rapid Transportation*

Other Organizations & Individuals

- Hawaiian Electric Company*

Those agencies with an asterisk (*) replied to our letter. The agencies' comments and new information have been incorporated into this EA, as relevant. Copies of the letters sent and received are provided in Appendix I.

8.2 ADDITIONAL CONSULTATION

In addition to pre-consultation letters CRP has also initiated public involvement through meetings, which as of April 2014 have included:

Makakilo/Kapolei/Honokai Hale Neighborhood Board No. 34 [4]

A formal presentation to the neighborhood board was made on July 24, 2013 at the board's regular monthly meeting. A slide show presentation of the conceptual vision and design goals was presented. Coastal Rim Properties representative Franco Mola and planning consultant Colette Sokada of Environet both spoke about the project and the HHFDC 201H process.

On August 21, 2013, architectural consultant Geoff Miasnik of MVE Institutional gave a brief presentation of the project (as it was conceptualized at the time) to the neighborhood board's zoning and planning committee. This committee meeting was advertised in a written piece by the StarAdvertiser newspaper, which resulted in heavy attendance and discussion by the board and the general public. Minutes of this meeting are available at the City and County of Honolulu Neighborhood Boards website. Community concerns included adequate on-site parking, traffic impact and congestion, impacts to nearby businesses and neighboring Island Pacific Academy school, height of the proposed structures, lack of provision of air conditioning, keeping the promise of

[4] The Neighborhood Board and Planning and Zoning committee meetings focused on a four-phased development concept and presentation, of which Külana Hale at Kapolei is Phase 1.

providing affordable units, definition of affordable (vs. workforce housing), and the need for office buildings and office employment in the area.

On September 23, 2013, architectural consultant Geoff Miasnik of MVE Institutional returned to the Makakilo/Kapolei/Honokai Hale Neighborhood Board zoning and planning committee to provide answers to questions gathered at the August 21, 2013 committee meeting. He also answered some new questions from the board committee members and the general public.

CRP addressed questions from the August 21, 2013 meeting with the community; see CRP Memorandum to Planning & Zoning Committee. The memorandum answers eight (8) questions and concerns, and below are summaries of a few of the key points: 1) Chapter 201H application requesting the use exemption; 2) Parking; and 3) FAR. It is worth noting that the design concept was different during this exchange than it is currently.

1) *How does the 201 H process and approval change, if at all, the base B2 zoning of the property? Does the 201 H process actually change the zoning from B2 to BMX or is there simply a variance that will allow for the residential and daycare uses on the B2 property?*

Response: The 201H expedited processing tool provides for greater design flexibility and cost savings for affordable housing projects. Coastal Rim Properties has chosen to pursue the planning and zoning approval required for the project by way of the State of Hawaii's 201H regulations and process. With this approval, which is expected to be processed through the State of Hawaii , Hawaii Housing Finance and Development Corporation (HHFDC), submission of a wide variety of development studies will be required that support residential use on a B-2 (Commercial) zoned property. With a 201H approval for this project, the underlying existing B-2 zone is not changed, but rather a project specific allowance is granted for residential use. Note that a 201H approval for the project provides for additional development requirements of the project, beyond those required otherwise, including, Owner-Occupant Provisions, Owner 10

Year Buy Back and Shared Appreciation Equity with HHFDC, compliance with Davis-Bacon Wage provisions, Performance Bonds and special Insurance Requirements of HHFDC. 201H approval, although reviewed and processed by HHFDC, requires approval of the City Council, as well.

2) *The Project is proposing a quantity of parking stalls that is 20% reduced from current city requirements. It was noted by MVEI that developments with affordable and senior residents often recognize that residents of these types of urban living places, located with access to good transit, own and use less vehicles when compared with other multi-family developments. MVEI noted that there is data to illustrate the success of projects with this type of parking configuration and would be willing to share that with the board members for their information.*

Response: Concern for traffic congestion and overcrowded street parking has led many cities to establish minimum parking requirements calling for developments to provide often excessive amounts of off-street parking. For well over a decade, city and urban planners have studied the actual parking needed for a wide variety of community uses and have realized that a “one-size-fits-all” formula for city parking requirements has considerable negative impacts. Nationwide, in Cities big and small, Los Angeles to Gainesville, as well as recently on O’ahu, City Planners have or are considering changes to their seemingly outdated parking requirements. Reductions to parking required for affordable and seniors housing developments have ranged from 25%-70%. O’ahu, in their recent Transit Oriented Planning are proposing reducing parking for any type of multi-family residence from an average of 1.5 stalls per unit to 1.0, a 30% reduction, in areas with access to transit, with additional considerations to provide relief from parking for affordable housing developments. In comparing the anticipated residents that will live in this Kapolei location, including many who will purchase subsidized affordable and senior living homes, current nationwide statistics indicate that owners of these types of homes are less likely to require the use of more than one parking space, if that at all. It has also been shown that the need for parking has also decrease for residents in areas near transit. This project is located directly on the Kapolei City Center Bus Routes on Haumea Street, with access immediately available,

and is two blocks from the Rail Transit Station site identified in the City of Kapolei's Long Term Master Plan.

Several Important References on this topic include:

• "The Dimensions of Parking" (Fifth Edition 1979-2010) – Published jointly by the Urban Land Institute and the National Parking Association
• "Parking Requirements for Affordable Housing Developers" - (www.scanph.org)
• "Developing Successful Infill Housing" - Urban Land Institute (Catalog No. D105) – (www.uli.org)
• "Affordable Housing Parking Study – City of San Diego 2011 – (http://www.sandiego.gov/planning/programs/transportation/pdf/ahpsfactsheet2.pdf)

3) *What is the rational for the increase density (FAR 4.20 proposed, 3.5 allowed). A 16% percent increase.*

Response: As referenced in question #1, the 201H entitlement process is specifically in place to allow zoning exemptions for affordable housing. This is common practice not only in Hawaii, but elsewhere. Many communities support desirable developments with increases in allowable density (FAR), as well as other exemptions, such as decreased parking in order to effectuate affordability. Zoning exemptions and expedited entitlement processes are all means to help subsidize affordability.

Specifically in the case of the FAR increase, increasing the number of residences helps to spread fixed costs, such as for the land, over a larger number of units, which helps to make a project financially feasible. This is all in consideration of the fact that residents are paying below market rate for their units – with less money coming from the homeowners, the cost to develop must be subsidized in other ways. Public funding, such as the low income housing tax credit, is one way to help subsidize affordability, and zoning exemptions are another.[5]

"2. How does the 201H process and approval change, if at all, the base B-2 zoning of the property? Does the 201H process actually change the zoning from B-2 to BMX or

[5] With design revisions, the proposed FAR is 2.25 which does not require an exemption.

is there simply a variance that will allow for the residential and daycare uses on the B-2 property?"

Response: The 201H expedited processing tool provides for greater design flexibility and cost savings for development projects meeting a certain affordability threshold. Coastal Rim Properties has chosen to pursue the planning and zoning approval required for the proposed project by way of the State of Hawaii's 201H regulations and process. With this approval, which is expected to be processed through the state's Hawaii Housing Finance and Development Corporation (HHFDC), submission of a wide variety of development studies will be required that support residential use on a B2 (Commercial) zoned property. With a 201H approval for this project, the underlying existing B-2 zone is not changed, but rather a project specific allowance is granted for residential use. Note that a 201H approval for the project provides for additional development requirements of the project, beyond those required otherwise , including, Owner Occupant Provisions, Owner 10 Year Buy Back and Shared Appreciation Equity with HHFDC, compliance with Davis-Bacon Wage provisions, Performance Bonds and special Insurance Requirements of HHFDC. 201H approval, although reviewed and processed by HHFDC, requires approval of the City Council, as well.

Hawaii Housing Finance & Development Corporation

A pre-application meeting was held with the Hawai'i Housing Finance and Development Corporation (HHFDC) on October 10, 2013. In attendance on behalf of Coastal Rim Properties were architectural consultant Geoff Miasnik of MVE Institutional, planning consultants from PlanPacific, Inc. and via teleconference, Zen Sawyer of Zen Sawyer Consulting, LLC.

Department of Health – Office of Environmental Quality Control

A meeting with the Office of Environmental Quality Control (OEQC) was held on October 14, 2013, per the advice of the Hawai'i Housing Finance & Development Corporation. The purpose of the meeting was to determine whether or not the project

required an environmental review process and who would be the accepting agency/authority. The OEQC determined that an environmental assessment would be required and since the 201H permit application will be processed by the HHFDC, then the HHFDC would be the approving agency for the environmental assessment.

9.0 REFERENCES

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Appendix A

ALTA Survey Map

ALTA/ACSM LAND TITLE SURVEY
AFFECTING LOT 16538
LAND COURT APPLICATION 1069

AT KAPOLEI, EWA, OAHU, HAWAII

SCALE : 1 IN. = 40 FT.

JANUARY 11, 2013 WALTER P. THOMPSON, INC.

LEGEND

LINEWORK

- PRIMARY BOUNDARY LINE
- TITLE LINE
- SUPPLEMENTARY BOUNDARY LINE
- EASEMENT LINE
- BUILDING LINE
- UNDERGROUND WATER
- UNDERGROUND SEWER
- UNDERGROUND STORM DRAIN
- FENCE LINE
- PARKING/STRIPING LINE
- FLOOD ZONE

SYMBOLS

A.C.	ASPHALTIC CONCRETE
ARV	AIR RELIEF VALVE
BFP	BACK FLOW PREVENTER
CATV	CABLE TELEVISION BOX
CB	CATCH BASIN
CBMH	CATCH BASIN MANHOLE
COMM	COMMUNICATIONS BOX
FH	FIRE HYDRANT
GW	GUY WIRE
HECO	HAWAIIAN ELECTRIC COMPANY
HEMH	HAWAIIAN ELECTRIC MANHOLE
HTCO	HAWAIIAN TELCOM (COMMUNICATIONS)
HTMH	HAWAIIAN TELCOM MANHOLE
ICV	IRRIGATION CONTROL VALVE
LP	LAMP POST
MW	MONITORING WELL
NWMH	NONPOTTABLE WATER MANHOLE
NWV	NONPOTTABLE WATER VALVE
PP	POWER POLE
SDMH	STORM DRAIN MANHOLE
SLB	STREET LIGHT BOX
SMH	SEWER MANHOLE
SP	SIGN POST
STL	STREET LIGHT
TSB	TRAFFIC SIGNAL BOX
UP	UTILITY POLE
WCR	WHEEL CHAIR RAMP
WM	WATER METER
WMH	WATER MANHOLE
WV	WATER VALVE

NOTES

1) FIRM DATA

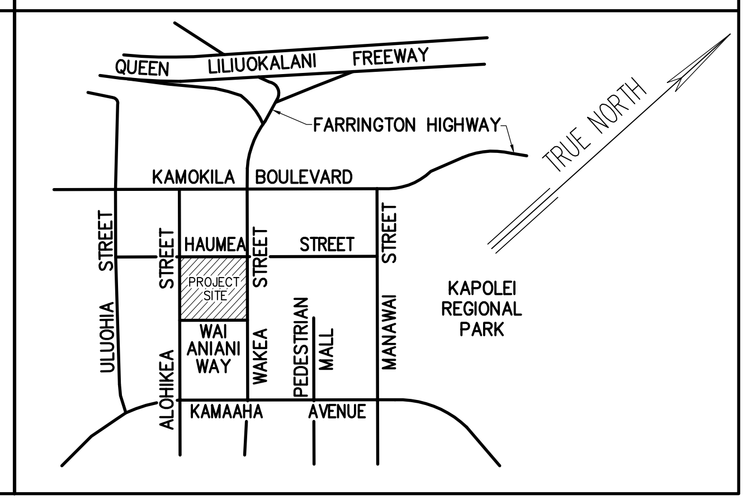
FLOOD ZONE	D
PANEL NO.	310G
COMMUNITY NO.	150001
DATE	1/19/2011

2) BUILDING SETBACKS

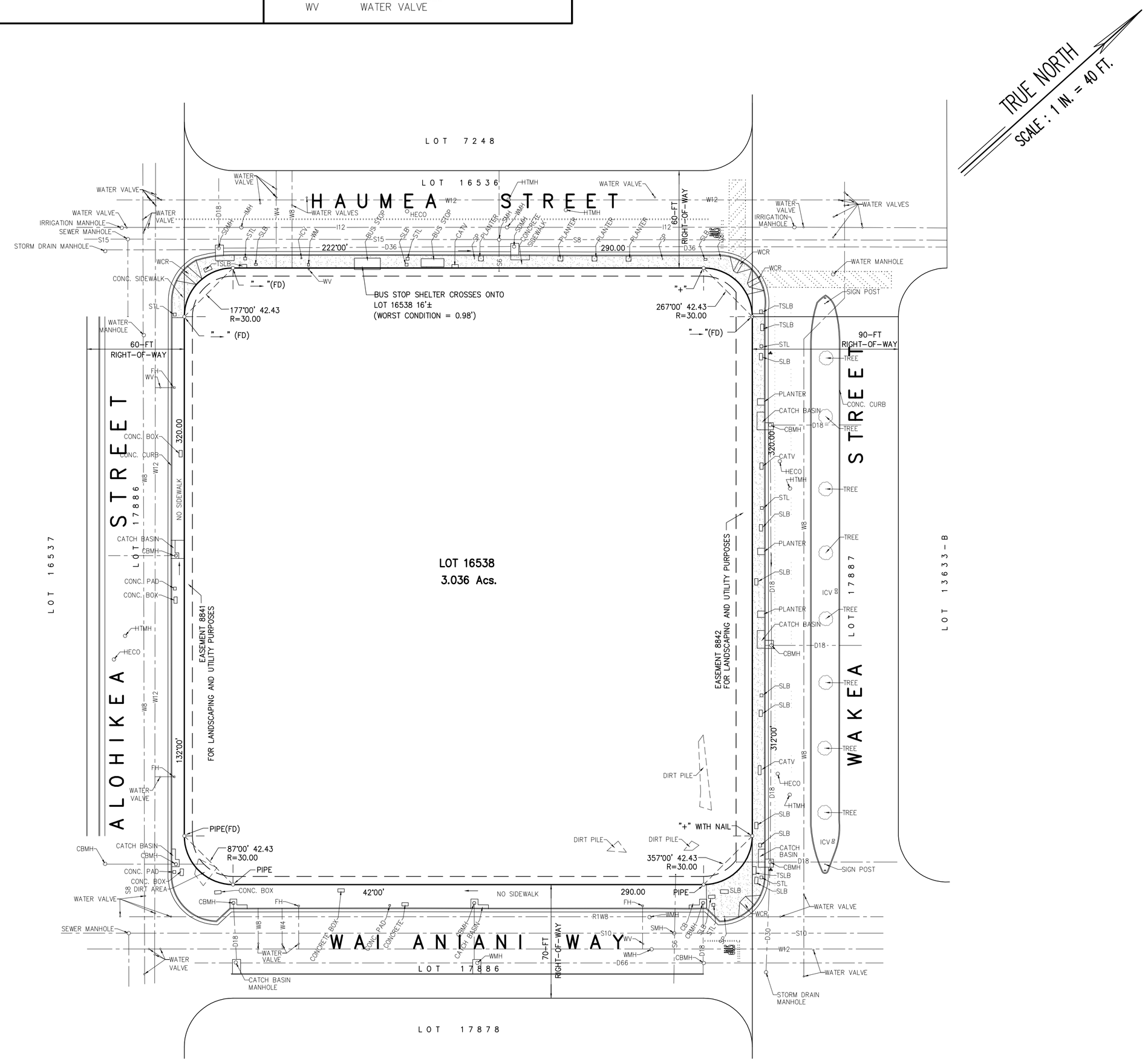
FRONT	5–FT
REAR AND SIDES	0–FT

(TAKEN FROM TABLE 21–3.4, LAND USE ORDINANCE, CITY AND COUNTY OF HONOLULU)

VICINITY MAP NOT TO SCALE



PROPERTY ADDRESS: 1020 WAKEA STREET
KAPOLEI, HAWAII 96707



EXCEPTIONS:

AT THE DATE HEREOF, ITEMS TO BE CONSIDERED AND EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN SAID POLICY FORM WOULD BE AS FOLLOWS:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by Public Records.

2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

6. Property taxes, including any personal property taxes and any assessments collected with taxes, for the fiscal year 2011–2012, Tax Map Key (1)9–1–088–021.

   1st Installment: $27,197.54 paid
   2nd Installment: $27,194.54 open (due February 20, 2012)

7. Terms, provisions, restrictions, covenants, conditions, agreements, obligations, exceptions and reservations as contained in:

   AMENDED DECLARATION LISTING CONDITIONS AND PRECONDITIONS TO RECLASSIFICATION

   Dated: November 14, 1989
   Recorded: in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, Document No. 1684751

   The foregoing Declaration was amended by the following:

   Recorded: September 15, 1995 in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, as Document No. 2260756.

8. UNILATERAL AGREEMENT AND DECLARATION OF CONDITIONAL ZONING

   Dated: February 27, 1990
   Recorded: in the Bureau of Conveyances of the State of Hawaii, Document No. 90–027998

   The foregoing was amended by the following:

   AMENDMENT

   Dated: April 12, 1990
   Recorded: in the Bureau of Conveyances of the State of Hawaii, Document No. 90–053218

9. Terms, provisions, restrictions, covenants, conditions, agreements, obligations, exceptions and reservations contained in:

   CITY OF KAPOLEI DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS

   Dated: November 30, 1993
   Recorded: in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, Document No. 2103428, as amended by Document Nos. 2152082, 2228679, 2228680, 2369693, 2372518, 2376561, 2409507, 2489739, 2506094, 2654911, 2665797, 2665798, 2699380, 2699381, 2710921, 2766063, 2933812, 2933814, 3432142, 3449337, 3681968 and 4018052.

   The foregoing was assigned to CAMPBELL HAWAII INVESTORS, LLC, a Hawaii limited company, by instrument dated January 2, 2002, recorded in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, Document No. 2770829.

10. Terms, provisions, restrictions, covenants, conditions, agreements, obligations, exceptions and reservations, as contained in:

    DECLARATION LISTING CONDITIONS OF ORDER MODIFYING CONDITION

    Dated: September 11, 1995
    Recorded: in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, Document No. 2260756

11. Covenants, conditions and restrictions (deleting therefrom any restrictions indicating any preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin) as set forth in the following:

    Limited Warranty Deed with Use Restrictions

    Dated: January 2, 2002
    Recorded: in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, as Document No. 2766590.

12. Easement(s) "8841" (area 4,932 square feet), for landscaping and utility purposes, as shown on Map 1290, as set forth by Land Court Order No. 166200, filed May 19, 2006

13. Easement(s) "8842" (area 3,734 square feet), for landscaping and utility purposes, as shown on Map 1290, as set forth by Land Court Order No. 166200, filed May 19, 2006.

14. Covenants, conditions and restrictions (deleting therefrom any restrictions indicating any preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin) as set forth in the following:

EXCEPTIONS (CONTINUED):

Limited Warranty Deed with Use Restrictions, Covenants and Reservation of Rights

Dated: July 14, 2006
Recorded: July 14, 2006 in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, as Document No. 3452989.

15. Any and all unrecorded Leases, Subleases and Tenancy Agreements demising a portion of the land herein described, and encumbrances appurtenant thereto, if any.

16. Any claims for mechanics' liens that may be recorded by reason of a recent work of improvement under construction and/or completed at the date hereof.

17. The following qualifying language applies to any and all covenants, conditions and restrictions (CC&R's) set forth in the numbered items above:

    But omitting any covenants or restrictions, if any, based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law.

18. A mortgage to secure an indebtedness as shown below, and any other obligations secured thereby

    Amount: $2,800,000.00
    Dated: July 11, 2006
    Loan No.: none shown
    Mortgagor: Goodwill Industries of Hawaii, Inc., a Hawaii corporation
    Mortgagee: Bank of Hawaii, a Hawaii corporation
    Recorded: July 14, 2006 in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, as Document No. 3452990.

19. Fidelity National Title Insurance Company will require that you provide us with a Corporate Resolution from Goodwill Industries of Hawaii, Inc., a Hawaii corporation, authorizing the sale and or mortgage of said premises and disclosing the parties authorized to execute documents on behalf of said corporation.

    Note: There are no conveyances affecting said land, recorded within six (6) months of the date of this report.

LEGAL DESCRIPTION:

THE LAND REFERRED TO IN THIS REPORT IS SITUATED IN THE COUNTY OF HONOLULU, STATE OF HAWAII, AND IS DESCRIBED AS FOLLOWS:

All that certain parcel of land situate at Honouliuli, District of Ewa, Honolulu, City and County of Honolulu, State of Hawaii, described as follows:

LOT 16538, area 3.036 acres, more or less, as shown on Map 1290, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1069 of the Trustee under the Will and of the Estate of James Campbell, deceased;

TOGETHER WITH access to Kamokila Boulevard (a public road) over Lot 16536 (Map 1290), and over Lot 16013 (Map 1238), and Together With access to Wakea Street and to Haumea Street (both public roads) over Lot 16536 (Map 1290), all as set forth by Land Court Order No. 166200, filed May 19, 2006.

Being all of the land conveyed by the following:

LIMITED WARRANTY DEED WITH USE RESTRICTIONS, COVENANTS AND RESERVATION OF RIGHTS

Grantor: Kapolei Property Development LLC, a Hawaii limited liability company
Grantee: Goodwill Industries of Hawaii, Inc., a Hawaii corporation
Dated: July 14, 2006
Recorded: July 14, 2006, in the Office of the Assistant Registrar of the Land Court of the State of Hawaii, Document No. 3452989.

Being all of the land conveyed by Transfer Certificate of Title No. 813,557.

TMK: (1)9–1–008–021

SURVEYOR'S CERTIFICATE

TO GOODWILL INDUSTRIES OF HAWAII, INC., FIDELITY NATIONAL TITLE AND ESCROW OF HAWAII, INC., AND TO ALL OTHERS INTERESTED IN TITLE TO PREMISES SURVEYED:

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 6, 11(b), 16, 18, and 21 of Table A thereof. The field work was completed on 12/10/12.

JAMES R. THOMPSON LICENSED PROFESSIONAL LAND SURVEYOR No.3627 HAWAII, U.S.A.

James R. Thompson 1/11/13
James R. Thompson, Licensed Professional Land Surveyor No. 3627 Date
Exp. 04/30/14

Walter P. Thompson, Inc.
Surveying & Mapping
P.O. BOX 3351 HONOLULU, HI 96801
PH. (808) 536–2705 FX. (808) 599–4032

12178100.dwg/0000.00/pgsw/011012

TAX MAP KEY : 9 – 1 – 88 : 21

24"x 36" = 6.0 Sq.Ft.

Appendix B

Market Study, Phase 1

Lesher Chee Stadlbauer

Real Estate Valuation & Consulting

MARKET STUDY

Covering

THE PROPOSED
KULANA HALE AT KAPOLEI
AFFORDABLE SENIOR RENTAL
HOUSING PROJECT

Located at

1020 Wakea Street
Kapolei, County of Honolulu,
Island of Oahu, State of Hawaii

Identified as

Tax Map Key:
Division 1, Zone 9, Section 1, Plat 088:
Parcel 21

Prepared for

Mr. Franco Mola, President
COASTAL RIM PROPERTIES
1541 South Beretania Street,
Honolulu, Hawaii 96818

Effective Date of Study
(March 20, 2014)

Report Date:
(March 28, 2014)

Lesher Chee Stadlbauer
Real Estate Valuation & Consulting

Pioneer Plaza, 900 Fort Street, Suite 1500, Honolulu, Hawaii 96813
ph (808) 524-1511 *fax* (808) 524-1606 info@lcs-consulting.com

March 28, 2014

Mr. Franco Mola
President
COASTAL RIM PROPERTIES
1541 South Beretania Street
Honolulu, Hawaii 96813

Re: **MARKET STUDY CONCERNING:**
The Proposed KULANA HALE AT KAPOLEI Affordable Senior Rental Housing Project, Located at 1020 Wakea Street, Kapolei, County of Honolulu, Island of Oahu, State of Hawaii

Dear Mr. Mola:

At your request, we have prepared a study of the multifamily rental market relative to the above-cited affordable senior rental housing development in Kapolei, Oahu, Hawaii. The subject property is further identified by County Tax Map Key as: Division 1, Zone 9, Section 1, Plat 88, Parcel 21.

ASSIGNMENT OVERVIEW

The purpose of this market study is to identify relevant supply and demand characteristics for affordable senior rental housing within the primary trade area as they relate to the proposed subject property.

The following report provides support for the findings of the study and outlines the sources of information and the methodologies used to arrive at our conclusions. This scope of this report meets the requirements of the Hawaii Housing Finance & Development Corporation (HHFDC) for market studies associated with Low Income Housing Tax Credit (LIHTC) applications.

Specifically, the following outlines the steps taken in developing our conclusions:

- Visited the subject site as well as the overall Kapolei city environs.
- Reviewed project design elements and interviewed the client as to intended unit mix, interior finishes, etc. In addition, reviewed information provided by the client relative to proposed sponsor rents and utility allowances for each unit type.
- Conducted research to determine the appropriate primary trade area as described in the accompanying report.
- Demographic analysis was conducted relative to the number of age and income eligible households in the primary trade area.
- Conducted research involving all existing affordable senior rental housing projects in the primary trade area as well as secondary and tertiary trade areas. Telephone interviews were conducted with on-site resident managers and off-site property managers relative to age and income eligibility requirements; occupancy levels; asking rents; wait lists; etc.
- Research was conducted relative to the overall health of the multifamily rental housing market in the primary trade area. This research included review of the number of listings for various rental units similar to the subject, broker interviews as to length of time that units stay on the market, etc. Analysis of factors affecting the rental housing market; i.e., overall economic conditions, employment, sensitivity to deployment of military personnel, etc.
- Market rate rental housing research was conducted relative to occupancy levels, asking and achieved rents for the unit types similar to the subject units, etc.
- Developed our opinion of market rent for the subject units as if unencumbered by age/income restrictions and compared the results to the proposed sponsor rents to measure the rental advantage to the intended age/income eligible senior renters.
- Estimated market penetration and capture rates for the subject units at the proposed sponsor rents and considered these risk measurements in relation to overall absorption risk.

This market study was performed under the Uniform Standards of Professional Appraisal Practice (USPAP 2014/2015 edition) and the Code of Professional Ethics and Certification Standard of the Appraisal Institute. Certain analyses reflect standards adopted by the National Council of Affordable Housing Market Analysts (NCAHMA) and the National Council of Housing Market Analysts (NCHMA). The findings of our research and analyses are reported within the accompanying market study report. The depth of discussion contained in this report is specific to the needs of the client, specifically the HHFDC requirements for market studies have been incorporated herein.

The principals of Lesher Chee Stadlbauer, Inc. (LCS) have been involved in the valuation and analysis of numerous open market and affordable, long-term rental residential housing projects throughout the State of Hawaii. Expertise has been demonstrated in the analysis of specialized affordable housing projects, inclusive of market analysis and valuation assignments involving Low Income Housing Tax Credit (LIHTC) projects, and programs set forth by the U.S. Department of Housing and Urban Development (LIHPRHA, 223(f) and MAP). Refer to the *ADDENDA* Exhibit D for a listing of selected *Specialized Senior Housing and Senior Care Studies* as well as selected *Multifamily Housing Studies*.

LCS has been engaged to complete this market study as an independent market analyst. No principal or employee of LCS has any financial interest whatsoever in the development for which this analysis has been undertaken. We refer the client to the Certification section of the accompanying report.

Thank you for the privilege of assisting you in this study. Should you have any questions or concerns regarding any aspect of this report, please do not hesitate to contact us.

Very Truly Yours,

LESHER CHEE STADLBAUER, INC.

Stephen E. Stadlbauer, CGA
Principal
Hawaii State Certified General Appraiser, CGA-190
Expiration Date 12/31/2015

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LETTER OF TRANSMITTAL

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Continued

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CERTIFICATION

ADDENDA

Exhibit A: Definitions and Terms
Exhibit B: General Assumptions and Limiting Conditions
Exhibit C: Company Profile and Professional Qualifications
Exhibit D: Selected Specialized Senior Housing and Multifamily Studies
Exhibit E: Certificate of Good Standing

MARKET STUDY

PURPOSE

As will be outlined further in following *SECTION A*, the proposed **KULANA HALE AT KAPOLEI** senior rental housing project involves an 11-story high rise affordable elderly housing project offering 22 studio units, 109 one-bedroom units, and 22 two-bedroom units. 8 units (5%) will be reserved for renters at or below the 30% area median income (AMI) threshold while the other 145 units will be rented at or below the 55% AMI (studio units) and 60% AMI (1BR and 2BR units) thresholds.

The focus of this *MARKET STUDY* is to identify general characteristics of demand for multi-family housing (exhibited via submarket demographics, rent structures for open market housing stock and reported occupancy levels for both market rate and affordable rental housing) and potential supply side risk in terms of new development. Taking the preceding into consideration, and for ease of use by the client, the following *MARKET OVERVIEW* will be presented as follows:

SECTION A	Project Summary
SECTION B	Trade Area Supply and Demand Characteristics
SECTION C	Market Supported Rent as Unencumbered by the Subject's Income Restrictions
SECTION D	Market Study Conclusions

SECTION A
PROJECT SUMMARY

PROJECT NAME: **PROPOSED KULANA HALE AT KAPOLEI**

LOCATION: 1020 Wakea Street, Kapolei, Island of Oahu, State of Hawaii

TAX MAP KEY: Division 1, Zone 9, Section 1, Plat 88, Parcel 21

PROJECT: The proposed subject Kulana Hale at Kapolei is the initial phase of the proposed Kapolei Mixed-Use Development, a mixed-use, multi-family project to be situated within the urban core of the City of Kapolei. The proposed senior rental housing component will feature an 11-story high rise affordable elderly housing project with a total of 153 revenue units plus one resident manager one-bedroom unit. The subject's unit mix, income limits, and proposed monthly rents in comparison with HUD's maximum restricted rents are presented in the following table:

SUBJECT'S PROPOSED SPONSOR RENTS:				
No. Bedrooms	**No. Of Units**	**Income Limit (AMI)**	**Proposed Monthly Sponsor Rents** [1]	**HUD's Max. Restricted Rents** [2]
Studio	4	30%	$503	$503
1	3	30%	$539	$539
2	1	30%	$647	$647
Studio	18	55%	$922	$922
1	106	60%	$1,078	$1,078
2	21	60%	$1,294	$1,294

[1] Subject's proposed monthly sponsor gross rents *include* electricity within the unit, water, sewer, and refuse removal costs.

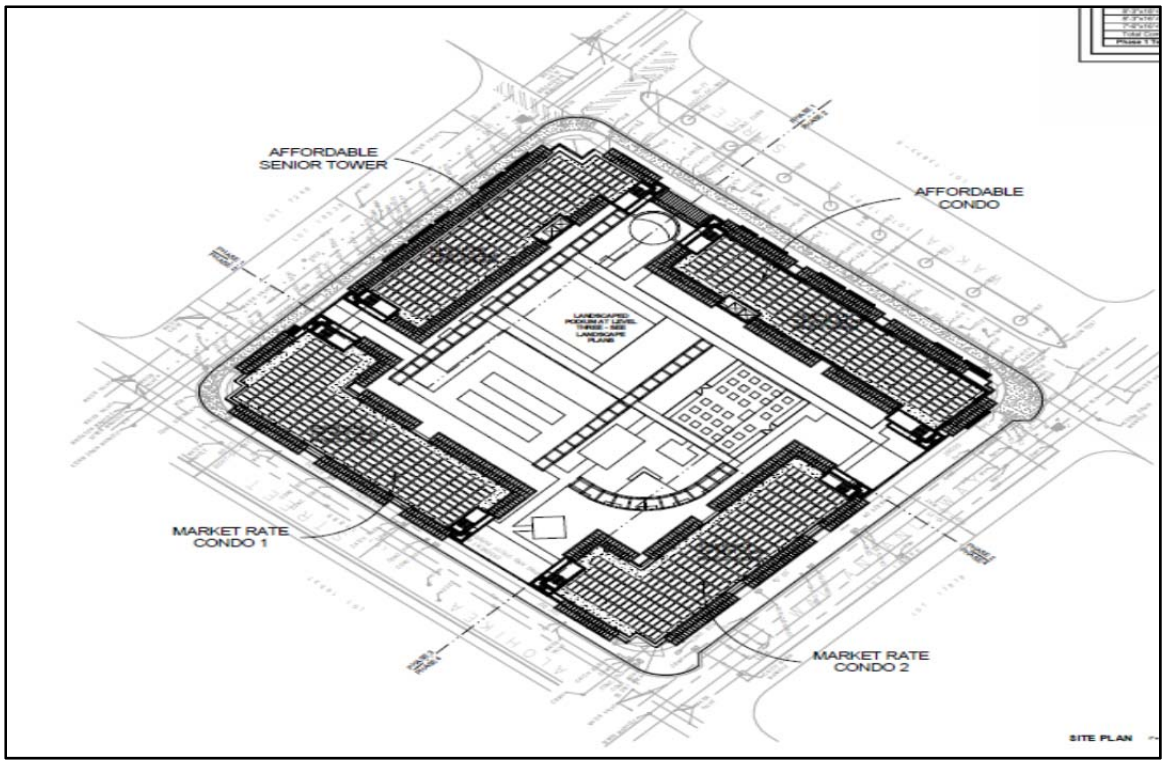
[2] HUD's maximum restricted rents are inclusive of a utility allowance which includes electricity within the unit, water, sewer, and refuse removal.

SUBJECT SITE:

The vacant development site contains a land area of 3.04-acres (~132,422 sf). The square shaped parcel situated on a city block bordered by Haumea Street to the northwest, Wakea Street to the northeast, Alohikea Street to the southwest and Waianani Street to the southeast. The site is zoned B-2, Community Business District.

The proposed subject property will benefit from its location within the City of Kapolei proximate to the City and County's TheBus main transit station in Kapolei, the proposed Kaiser medical office building, newly built Foodland grocery store at the Kapolei Village Center, and State judiciary building. In addition to the foregoing, existing area infrastructure includes numerous shopping venues (inclusive of the area regional mall/power center known as Kapolei Commons, the Costco outlet store, and a WalMart store), medical offices, and numerous other services. Based on our interviews with rental agents and property managers, the subject's location is considered desirable to seniors. An aerial photo depicting the subject's location and its immediate environs is provided on the following page.

Kapolei Regional Park
Police
Zippy's
Library
Religious Institution
Kapolei Theater
Crossroads at Kapolei
Haumea St.
Wakea St.
SUBJECT
Alohikea St.
Waianiani St.
Kmart
Department of Motor Vehicle
Foodland
Kapolei Hale
Proposed City Transit Station
Proposed Kaiser Medical
© 2013 Google


AFFORDABLE SENIOR TOWER
AFFORDABLE CONDO
MARKET RATE CONDO 1
MARKET RATE CONDO 2
SITE PLAN

SECTION B
SUPPLY AND DEMAND CHARACTERISTICS

OVERVIEW

This portion of the market study focuses on the general demographics in the primary trade area for the subject in relation to the existing and pipeline supply of rental housing that compete for a similar target demographic, i.e., senior renters at the defined area median income (AMI) thresholds.

The following table displays the subject project's unit mix, and the number of units per AMI, the proposed sponsor (asking) rents, and HUD's maximum program rental levels.

SUBJECT'S PROPOSED SPONSOR RENTS:				
No. Bedrooms	**No. Of Units**	**Income Limit (AMI)**	**Proposed Monthly Sponsor Rents** [1]	**HUD's Max. Restricted Rents** [2]
Studio	4	30%	$503	$503
1	3	30%	$539	$539
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Studio	18	55%	$922	$922
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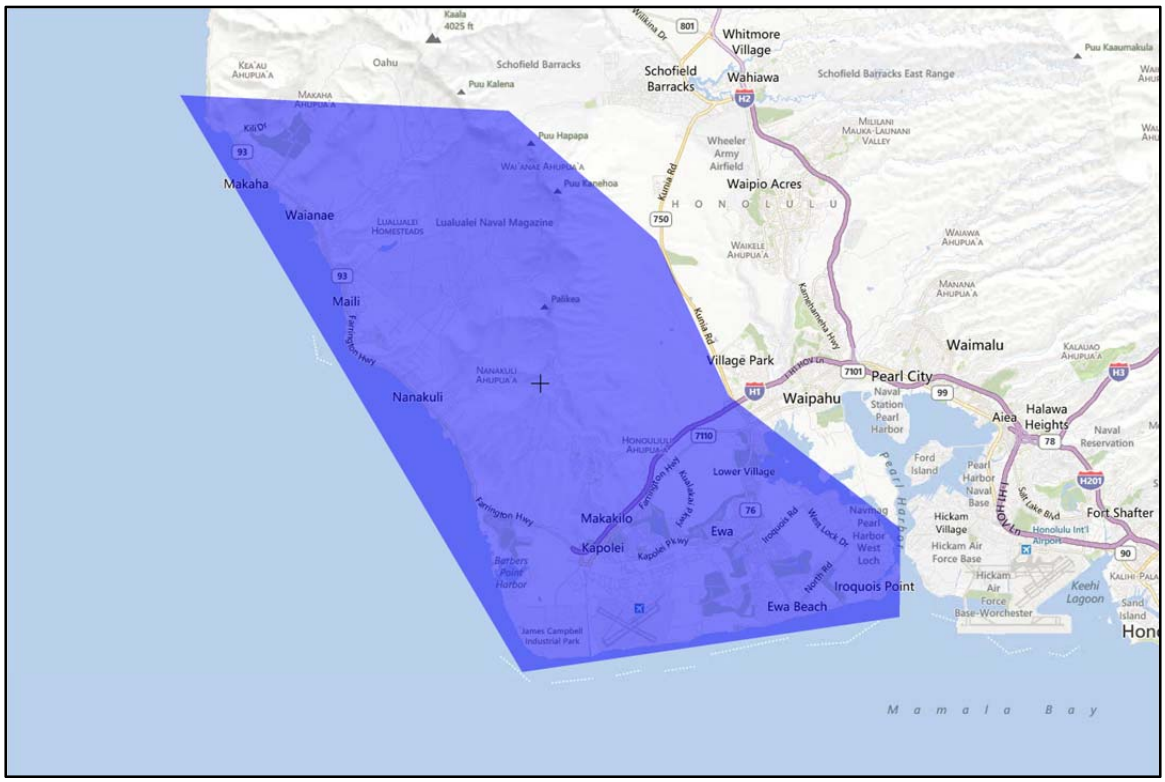
2	21	60%	$1,294	$1,294

[1] Subject's proposed monthly sponsor gross rents *include* electricity within the unit, water, sewer, and refuse removal costs.
[2] HUD's maximum restricted rents are inclusive of a utility allowance which includes electricity within the unit, water, sewer, and refuse removal.

DEMOGRAPHICS

During the course of this assignment we conducted multiple surveys of rental mangers involved with management for age and income restricted rental projects. These surveys indicated a virtually unanimous opinion that age and income restricted projects in the County of Honolulu tend to draw their prospective tenants largely from the areas immediately surrounding their projects; an analysis of recently constructed age and income restricted projects found that typically 60% to 80+% of the qualified renters were from the immediate market area surrounding the project. Based upon our research and interviews, we selected a **primary trade area** for the subject to be best

represented by the **Ewa Plain / Leeward Coast** areas. Since low income housing waivers granted to residents of Honolulu County are useable anywhere in the county, as indicated by the Hawaii Public Housing Authority, and because the subject will logically attract renters who do not currently preside in the identified trade area, we have also included demographic statistics for the County as a whole. The following map displays the subject's primary trade area within the Ewa Plain and Leeward Coast highlighted in purple.



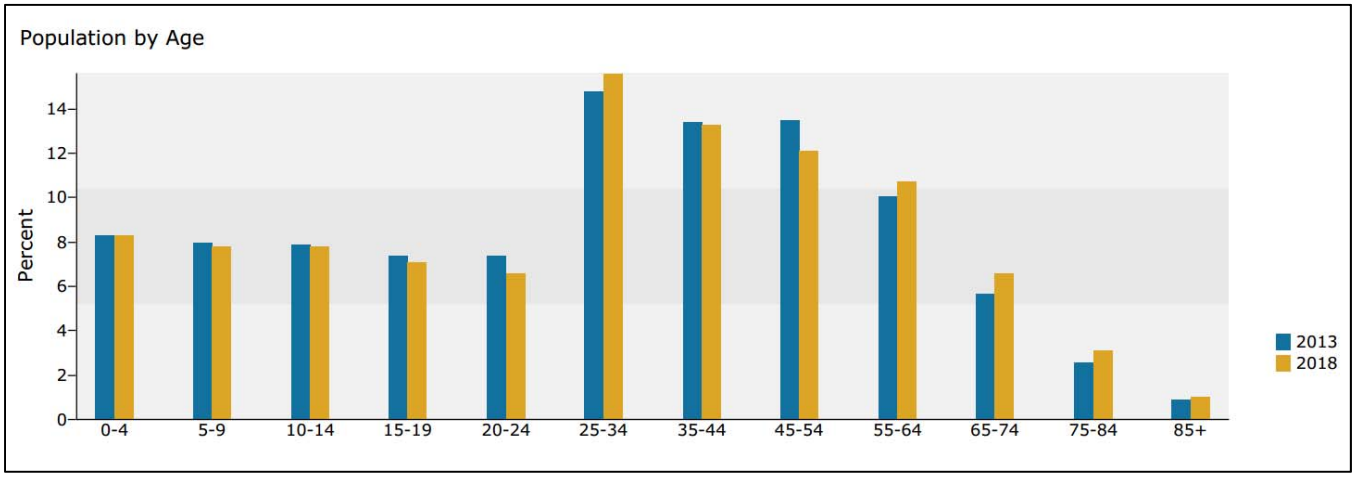
The following table exhibits the most recent demographic, housing tenure, and income statistics for the selected trade area and the County of Honolulu, as provided by STDBonline. As exhibited, the subject's trade area's mean household size is significantly larger than the County's and State's mean household size. This is a function of younger families within the subject's trade area and multigenerational households that are common for this area. Median and mean household income is higher than county and state figures. However, this is potentially skewed upward by the larger household sizes within the trade area. The trade area's per capita income is slightly lower than the county's per capita income.

Trade Area - Ewa Plain and Leeward Coast Demographic Data Census 2010, 2013, 2018				
Category	**Census 2010**	**2013**	**2018 [2]**	**Oahu 2013**
Population	152,498	158,798	169,223	969,468
Households	40,923	42,704	45,571	316,867
Mean Household Size	3.66	3.65	3.65	2.95
Owner-occupied HHs **[1]**	26,593	27,229	29,410	172,841
Renter-occupied HHs **[1]**	14,330	15,476	16,161	144,026
Median Household Income	n/a	$75,510	$83,338	$69,667
Mean Household Income	n/a	$85,568	$97,130	$86,680
Per Capita Income	n/a	$23,564	$26,672	$29,501
Median Age	32.2	32.4	32.8	37.8

SOURCE: STDB ONLINE
[1] Households
[2] Forecasted

Estimated median household income was reported at $75,510 within the trade area ($69,667 for Oahu). In general, households in the trade area tended to involve families who were more likely to earn slightly higher incomes when compared to Oahu as a whole. Income and age statistics for the subject trade area as provided by STDBonline are presented following:

	2013		2018	
Households by Income	Number	Percent	Number	Percent
<$15,000	2,654	6.2%	2,651	5.8%
$15,000 - $24,999	1,756	4.1%	1,508	3.3%
$25,000 - $34,999	2,841	6.7%	2,088	4.6%
$35,000 - $49,999	5,189	12.2%	4,267	9.4%
$50,000 - $74,999	8,690	20.3%	8,056	17.7%
$75,000 - $99,999	7,682	18.0%	10,011	22.0%
$100,000 - $149,999	9,891	23.2%	11,543	25.3%
$150,000 - $199,999	2,625	6.1%	3,730	8.2%
$200,000+	1,377	3.2%	1,717	3.8%



Elderly Demographics and Housing Tenure

Demographic Summary	Census 2010	2013	2018	2013-2018 Change	2013-2018 Annual Rate
Total Population	152,498	158,798	169,223	10,426	1.28%
Population 50+	37,365	41,361	46,264	4,903	2.27%
Median Age	32.2	32.4	32.8	0.4	0.25%
Households	40,923	42,704	45,571	2,867	1.31%
% Householders 55+	33.1%	35.1%	38.0%	2.9	1.60%
Owner/Renter Ratio	1.9	1.8	1.8	0.0	0.00%
Median Home Value	-	$445,987	$555,350	$109,363	4.48%
Average Home Value	-	$463,163	$552,639	$89,476	3.60%
Median Household Income	-	$75,510	$83,338	$7,828	1.99%
Median Household Income for Householder 55+	-	$70,206	$80,787	$10,581	2.85%

Source: STDB ONLINE

The preceding table displays the current (2013) and forecasted (2018) housing tenure demographic data from within the subject trade area for seniors (age 50+). Current data indicates that the Owner/Renter ratio for seniors in this trade area of 1.8. This ratio indicates that for this trade area 64% of all seniors in this area are owners whereas 36% of all seniors are renters. The Owner Renter ratio is not projected to change substantially over the upcoming five years.

The relatively high percentage of owner-occupied households in the subject's trade area is primarily a function of the more affordable home pricing in this area. Based on home sales during February 2014, the median sales price for a single family home in Honolulu County was reported to be ~$679,000, compared to ~$490,000 for the trade area. Notwithstanding, the demographic data indicate an increasing trend in both home prices and household income in this trade area which will put pressure on the age and income qualified renters at the lower income tiers (i.e., increasing demand coupled with limited affordable rental supply options).

AGE AND INCOME RESTRICTED DEMAND

2014 HUD INCOME LEVELS

The following table contains HUD's 2014 County Income Schedule by Family Size for the County of Honolulu. This income table is used to determine at what level a potential renting household may be charged. As displayed, HUD's 2014 median income limits for the Low-Income categories are as follows.

MEDIAN $95,800		1 PERSON	2 PERSON	3 PERSON	4 PERSON	5 PERSON	6 PERSON	7 PERSON	8 PERSON
		LIMITS BY FAMILY SIZE							
Adjustments for family size		0.7000	0.8000	0.9000	1.0000	1.0800	1.1600	1.2400	1.3200
% of Income	10%	$6,710	$7,670	$8,630	$9,580	$10,350	$11,120	$11,880	$12,650
	20%	$13,420	$15,340	$17,260	$19,160	$20,700	$22,240	$23,760	$25,300
	30%	$20,150	$23,000	$25,900	$28,750	$31,050	$33,350	$35,650	$37,950
	40%	$26,840	$30,680	$34,520	$38,320	$41,400	$44,480	$47,520	$50,600
	50%	$33,550	$38,350	$43,150	$47,900	$51,750	$55,600	$59,400	$63,250
	60%	$40,260	$46,020	$51,780	$57,480	$62,100	$66,720	$71,280	$75,900
	70%	$46,970	$53,690	$60,410	$67,060	$72,450	$77,840	$83,160	$88,550
	80%	$53,700	$61,350	$69,000	$76,650	$82,800	$88,950	$95,050	$101,200
	90%	$60,390	$69,030	$77,670	$86,220	$93,150	$100,080	$106,920	$113,850
	100%	$67,100	$76,700	$86,300	$95,800	$103,500	$111,200	$118,800	$126,500
	110%	$73,810	$84,370	$94,930	$105,380	$113,850	$122,320	$130,680	$139,150
	120%	$80,520	$92,040	$103,560	$114,960	$124,200	$133,440	$142,560	$151,800
	130%	$87,230	$99,710	$112,190	$124,540	$134,550	$144,560	$154,440	$164,450
	140%	$93,940	$107,380	$120,820	$134,120	$144,900	$155,680	$166,320	$177,100

SOURCE: Department of Housing and Urban Development (HUD)

Interviews with rental managers of competing age and income restricted rental projects revealed that units are typically occupied by single tenant households, however because the proposed project would include two bedroom units, and the minimum age requirement is lower than other senior projects, we have included two person households in this analysis as well. This was further supported by interviews with property managers having senior rental projects where two-bedroom units were offered; typically two-bedroom occupancies were married couples, senior renter with a caregiver, or single occupant – rarely were there more than two person households. Thus, our capture analysis and conclusions are predicated on the one-person and two-person household income figures (highlighted the preceding table). A one-person household could earn as much as $20,150 and still qualify under the 30% income threshold; whereas a two-person household could earn up to $46,020 and still qualify for a 60% AMI unit. The current median household income (regardless of household size) in the surrounding market area is $75,510, while in Honolulu County it is $69,667.

AGE AND INCOME RESTRICTED POPULATION

Income levels for the subject's trade area by householders aged 55 and over for 2013 are exhibited on the following tables. The demographics that fall within age and income levels that qualify for the subject's age and income restrictions are highlighted in red. *We note that these figures are not categorized by household size, and therefore are not directly comparable to HUD statistics of median income which are dependent on household size.*

Ewa Plain / Leeward Coast Trade Area 2013				
Household Income	**Age 55 - 64**	**Age 65 - 74**	**Age 75+**	**Total**
<$15,000	519	283	418	1,220
$15,000 - $24,999	270	227	290	787
$25,000 - $34,999	421	363	290	1,074
$35,000 - $49,999	788	766	342	1,896
$50,000 - $74,999	1,501	1,030	407	2,938
$75,000 - $99,999	1,369	664	409	2,442
$100,000 - $149,999	2,037	849	328	3,214
$150,000 - $199,999	650	257	53	960
$200,000 +	339	121	15	475
Total	**7,894**	**4,560**	**2,552**	**15,006**

Source: STDB Online

Interviews with STDB personnel indicate that these stats are derived by taking the income of all members of a household that contain at least one resident whose age falls into the age ranges presented on the preceding table.

DEMAND ANALYSIS

Typically, a household should pay no more than 30% to 40% of their monthly adjusted gross income (AGI) for shelter costs. For rental purposes, HUD sets the required out of pocket expense for Section 8 voucher tenants at 30% of monthly AGI. However, given the high cost of living in the state of Hawaii, families often pay a much higher percentage of income for housing. The following table was excerpted from the *Hawaii Housing Planning Study, 2011* prepared for the Hawaii Housing Finance and Development Corporation. As exhibited, 28% of Honolulu County families pay over 40% of their income towards shelter costs.

Table 5: Shelter-to-Income Ratio by County, 2011

Shelter payment as % of HH income	State of Hawai`i	City & County of Honolulu	County of Hawai`i	County of Maui	County of Kaua`i
Less than 30	51.4%	54.1%	49.1%	40.8%	46.0%
30 to 40	10.4%	8.2%	12.5%	18.0%	17.3%
Over 40	27.7%	28.0%	25.1%	30.2%	24.2%

Source: Housing Demand Survey, 2011. Households with no shelter payment and those that did not provide sufficient information to calculate a shelter-to-income ratio are not included. See Table A-9 in the appendix.

The subject's 153 proposed revenue units are targeted for seniors earning between 30% and 60% of Honolulu County's AMI. As stated previously, we believe that family sizes within the proposed subject will typically range between one and two persons. Based on Honolulu County's 2014 income limits, a single person could earn up to $20,150 and qualify for the subject's 30% AMI units, while a family of two could earn up to $46,020

and qualify for the subject's 60% units. *However, we narrowed our potential demand pool as follows to provide a better illustration of true demand for the subject's units*.

- Eight (8) of the subject's 153 revenue units (5.2%) will be reserved for tenants earning up to 30% of the AMI. As exhibited in several other projects, 30% income threshold units pose little threat of not being absorbed as contract rents are substantially lower than market rent. *Occupancy levels for units at or below the 30% AMI in the primary trade area are reported to be 100% with wait lists.*

- Thus our analysis focuses on the subject's 55% and 60% AMI units. In effect, the low-end of household income would be a *single person household* earning up to 55% of AMGI, or $36,905. The developer's proposed sponsor rent for a studio unit at 55% AMGI is $922 per month gross, or $11,064 per year gross.

- Interviews with developers indicate that it is typical to qualify affordable senior renters based on having income of ~2.0 times their monthly rent. If the renter does not meet this requirement, the tenant must have qualified co-signers and/or food stamps to help meet minimum income criteria. We note that the majority of projects we interviewed were typically 9% tax credit projects where the target renter was earning well below the allowed AMI thresholds; accordingly the qualification process for the subject may not follow the same guidelines. For a project such as the subject Kulana Hale at Kapolei senior rental housing project, we would anticipate that much of the demand will come from qualifying senior renters that are likely to be currently housed in market rate projects throughout the primary trade area. The potential rent advantage to these renters at the sponsor rents for a new, secure facility having the locational benefits associated with the urban core of Kapolei would be desirable.

- Based on HUD's income limits, a two person household may earn up to $46,020 and still qualify for the subject's units reserved for families who earn up to 60% AMGI. *Thus we included residents in this trade area who earn less than $46,020 per annum.*

- We eliminated non-seniors (younger than 55). Though it is possible that there will be people living in the project who are not seniors (especially in the two bedroom units), the head of household would need to be at least 55 years old to qualify for the project.

- Our estimate of age/income qualified demand in the primary trade area is illustrated in the schedule on the following page.

TRADE AREA DEMAND ANALYSIS (Ewa Plain / Leeward Coast Trade Area)	
Households 55 & Under (Hhs) by Income	
<$15,000	1,220
$15,000-$24,999	787
$25,000-$34,999	1,074
$35,000-$46,020 [1]	1,517
Total	4,598
Percentage of Renter Occupied Hhs in Trade Area	x 36%
Total Renter Occupied Hhs Earning Between ~<$15,000 and $47,070	1,655
Total Estimated Demand in Trade Area	**1,655**

Data source: STDB Online.
[1] STDB's income segmentation is $35,000 to $49,999. To segment households within the $35,000 to $49,999 bracket, the total number of families in STDB's bracket was multiplied by 80%.

Based on the foregoing, the total number of renter occupied households in the primary trade area that meet the demand requirements for the subject units was estimated to be **1,655 households**.

CURRENT EXISTING AND PIPELINE SUPPLY

EXISTING STOCK OF COMPETITIVE PROPERTIES

The **primary trade area** for the proposed subject Kulana Hale at Kapolei senior rental housing is considered to be composed of the Ewa Plain and Leeward Coast. A total of **498 units** presently exist in this area. The secondary trade area includes projects in the adjacent Waipahu submarket and accounts for a total of 293 units, and the tertiary trade area of Pearl City contains 413 units. The table on the following page labeled *Affordable Senior Rental Housing Inventory* reflects the affordable age and income restricted rental housing projects located within or proximate to the subject's primary trade area. Following the inventory table a location map for the projects in the primary trade area is exhibited. Thereafter, brief descriptions of the affordable senior rental projects and summaries of our discussions with their rental managers are provided.

The penetration analysis discussed in a following subsection of this study will consider existing units in the primary trade area (a total of 498 units). We note the presence of 706 units in nearby trade areas; however these units are not considered directly competitive substitutes for the subject and are not included in our ultimate supply analysis.

AFFORDABLE SENIOR RENTAL HOUSING INVENTORY

Subject Primary Trade Area (Ewa Plain / Leeward Coast) And Surrounding Areas (Secondary and Tertiary Trade Areas)

Project Name	Street Address	City	Total Units
EWA PLAIN / LEEWARD COAST: Primary Trade Area			
Senior Residence at Kapolei	91-1034 Namahoe St.	Kapolei	79
Ewa Village Elderly	91-1295 Renton Road	Ewa	84
West Loch Elderly Village	91-1450 Renton Road	Ewa	150
Franciscan Vistas Ewa	91-1471 Miula Street	Ewa	150
Keola Hoomalu	85-259 Plantation Rd.	Waianae	35
		TOTAL	**498**
WAIPAHU: Secondary Trade Area			
Ho'olulu	94-943 Kau'olu Place	Waipahu	112
Kamalu	94-941 Kau'olu Place	Waipahu	109
Waipahu Hall	94-1060 Waipahu Street	Waipahu	72
		TOTAL	293
PEARL CITY: Tertiary Trade Area			
Hale Mohalu I	800 Third Street	Pearl City	150
Hale Mohalu II	Third Street	Pearl City	163
Hale O'Hauoli	950 Luehu Street	Pearl City	100
		TOTAL	413

Location Map: Senior rental projects in the Primary Trade Area

PRIMARY TRADE AREA SENIOR RENTAL PROJECTS

- **The Senior Residence at Kapolei 1 & 2** is an 80 unit project located on Namahoe Street in Kapolei. Of the 79 affordable units (a single unit is reserved for a resident manager), all of the units are age restricted (62+) and income restricted (30% and 50% AMI). The 79 one bedroom units that range in size between 463 and 500 square feet. The estimated wait list for a unit in this project is ~12 months. The rental fee includes one parking stall as well as water and sewer. *Tenants are responsible for electricity, phone, and cable fees*. A coin-operated laundry room is available for resident use.

- **Ewa Village Elderly** is an 84 unit project located on 91-1295 Renton Road in Ewa Beach. Of the 84 affordable units, all of the units are age restricted (head of house or spouse must be 62+) and income restricted (30%% AMI) The 84 one bedroom units are 600 square feet, and can accommodate up to three people. The estimated wait list for a unit in this project is ~12 months to 24 months. The rental fee includes one parking stall as well as water and sewer. *Tenants are responsible for electricity, phone, and cable fees*. A coin-operated laundry room is available for resident use.

- **West Loch Elderly Village** is an elderly housing rental project that is age restricted to 62 years and over. The project contains 72 units, comprised of a mix of studio and one-bedroom units which rent for $605/mo. and $743/mo. respectively. The project's rental manager reported that while there is a small number of vacant units (approximately 5%), it was noted that this is a function of the two-story building lacking an elevator. Thus, as first floor units become available, second floor tenants apply for and try to obtain residency for these units. It was further reported that while a wait list of approximately 150+ households exists, at least 20 of these are current renters who are seeking a first floor unit.

- **Franciscan Vistas Ewa** is an age and income restricted rental project located in Ewa Beach. The project's 150 units are restricted to renters 62 years and older and are divided between 126 one-bedroom units (6 at 30% AMI and below and 120 at 60% AMI and below) and 23 two-bedroom units (2 at 30% AMI and below and 21 at 60% AMI and below). This rental facility represents one of Oahu's most recently developed facilities, with construction having been completed in the 4th quarter of 2010 and its grand opening in January 2011. The project's asking rents are $451/mo. and $745/mo. for the one-bedroom units and $576/mo. and $885/mo. for its two-bedroom units (with the two "tiers" of rental amounts being the 30% AMI and 60% AMI rental levels, respectively). Following some initial lease-up difficulties, largely associated with location, the project manager reports full occupancy as of the date of this study. The wait list for 2BR units is 200 persons and more for the 1BR units.

- **Keola Hoomalu Elderly** is a senior low-income rental housing project subsidized by HUD and Section 8 rental assistance is accepted. The project is located at 85-259 Plantation Road across from Pililaau Park in the Waianae district of Oahu's Leeward Coast. All units offered for rent are 1BR/1BA units. The project is managed by Urban Management Corp. a division of Urban Real Estate Company. Besides the location of the project, the HUD subsidies would attract a different renter than the proposed subject property. According to the property manager, the 35-unit project has a 1-year wait list.

SECONDARY AND TERTIARY TRADE AREA SENIOR RENTAL PROJECTS

- **Hale Mohalu I** is a 210 unit project located in Pearl City. Of these 210 units, 150 units are age (55+) and income restricted (60% AMI), comprised of a mix of 42 studio and 128 one-bedroom units. The studio units are 420 square feet and rent for $565 per month and reported to be 100% occupied with a 2 – 3 month waitlist. Of the one-bedroom units, 112 are 436 square feet and rent for $595 per month, and the remaining 16 are 670 square feet and rent for $670 per month. It was reported that both sized one-bedroom units are 100% occupied, with waitlists of 3 months and 12 months, respectively. The rental fee includes one parking stall and water, however, it was reported that parking is limited and there are not adequate stalls for all tenants to have a stall. *Tenants are responsible for electricity, phone, and cable fees*. A coin-operated laundry room is available for resident use.

- **Hale O'Hauoli** is a 100 unit project (all units consist of one-bedroom units) located in Pearl City. The affordable rental rate is $853/mo.; however, *tenants are responsible for electricity, phone, and cable fees*. A coin-operated laundry room is available for resident use. Rent includes water, sewer, trash, common area maintenance, and one parking stall if available. Although interview requests with project management went unanswered during the course of this assignment, we are able to report that interviews with Hale O'Hauoli's management during 2009 indicated that the facility was 100% full and had a wait list of 150 parties from across Oahu and including military personnel. At that time, management estimated that the waiting period for members of the wait list was approximately 2 years long. This project is subsidized under the HAP assistance program and is therefore not directly comparable to the subject property. The HAP program subsidies allow this project to charge higher rents for units which are typically occupied by renters at or below the lowest income segments.

- **Ho'olulu & Kamalu** are age restricted public housing projects for renters 62 years and over which contain 112 and 109 units, respectively. The units are comprised of a mix of studio units which currently rent for $170/mo. (not including utilities) and one-bedroom units which rent for $195/mo. (not including utilities). These projects are located adjacent to one another in Waipahu and are operated like a single unit; i.e. they share a rental manager and wait list. The waitlist for these projects was reported to contain more than 200 applicants – an estimated 75% of which are at or below 30% AMI.

- **Waipahu Hall** is an age and income restricted rental project reserved for households and renters where at least one household member is 62 years or older. Inventory of units is comprised of 71 units, all of which are one-bedroom units. According to project data, all 71 units are restricted to households earning a maximum of 60% of AMI. Although interview requests with project management went unanswered during the course of this assignment, we are able to report that interviews with Waipahu Hall's management during 2009 indicated that the facility was 100% full and had a wait list of 48 parties. At that time, management estimated that the waiting period for members of the wait list was between 12 and 16 months long. This project is subsidized under the HAP assistance program and is therefore not directly comparable to the subject property. The HAP program subsidies allow this project to charge higher rents for units which are typically occupied by renters at or below the lowest income segments.

PIPELINE SUPPLY

The development of new affordable rental projects in Hawaii is almost universally dependent upon public subsidy (largely in the form of Low Income Housing Tax Credits). In most years, the demand for LIHTC from developers outpaces supply. Without benefit of LIHTC, a proposed project is unlikely to be developed. Until a project is approved for LIHTC, it cannot legitimately be counted as pipeline supply. Similarly, identifying long term pipeline supply is extremely speculative.

In our search for pipeline supply of proposed income and age restricted rental units we uncovered one proposed project on the Island of Oahu which has been allocated Low Income Housing Tax Credits (LIHTC) and has not completed construction. The proposed Hale Makana O Nanakuli is to be located in Waianae and is proposed for 47 units restricted to renters at or below 30% and 40% AMI levels. Of the project's 47 units, 3 are proposed for the 30% AMI level and 44 are proposed for the 40% AMI level. In addition to providing rental units for elderly households, units will also be available to homeless households and single parents with children. Units will include a mix of studio, one-bedroom, two-bedroom, and three-bedroom units. According to material presented by DHHL this project is anticipated to be constructed around the same time as the subject property.

We identified no other proposed projects that are both age restricted, income restricted, and have been allocated LIHTC which have not already completed construction.

CAPTURE RATE

A capture rate addresses the ratio of the number of proposed units within the subject project to the number of income qualifying households within its market. This is the percentage of income qualified households in the primary market area that the property must capture to achieve a stabilized level of occupancy. Capture rate risk for affordable multifamily housing is often qualified as follows:

- < or = 5%: Project has a good chance to achieve stabilized occupancy and projected rental rates. Risk is characterized as "low."
- 5% to 10%: Still a reasonable chance of success; however, risk is elevated to "moderate."
- >10%+: Chance for failure increases at a significant rate. Above 15%, risk is considered "high."

It should be understood that a particular capture rate is not a guarantee of success or failure. A project's future is greatly influenced by it quality and location, the effectiveness of the marketing campaign, and other factors.

As discussed, we conclude a total demand of 1,655 renter occupied households in the subject's primary trade area that meet the referenced age and income household

specifications. The ratio of subject revenue units (145 total units at 55% to 60% AMI) to qualifying households (1,655) is approximately 8.76%. The indicated capture rate for the subject suggests a moderate level of risk. It should be recognized, however, that the indicated capture rate is predicated solely upon the age and income qualified renter households in the primary trade area only. As there is an expectation that a number of renters will come from areas outside of the primary trade area, the actual capture rate for the subject will be lower.

PENETRATION RATE

A penetration rate addresses the ratio of the overall supply of competitive housing units with the income qualifying households within a market. It is the share of age, size and income qualified renter households in the primary market area that all affordable properties must capture to maintain stabilized occupancy. Supply was estimated to be comprised of the subject revenue units at both 30% and 60% AMI thresholds (153 total units) as well as total existing and pipeline supply of senior rental units. Total supply was estimated to be 545 units (498 existing + 47 pipeline units). By dividing the overall supply of senior rental housing units by income qualifying households within the primary trade area, the resulting penetration rate is 41.7% (690 ÷ 1,655). Excluding the subject's units, the resulting penetration rate is 32.9%. Given our surveys of current occupancy levels at competitive elderly projects, no adjustment for vacancy was applied in the penetration rate analysis. The indicated penetration rate is consistent with housing projects in more urban locations (as opposed to more rural areas such as small neighborhoods on the neighbor islands).

SECTION C
MARKET SUPPORTED RENT
AS UNENCUMBERED BY THE
SUBJECT'S INCOME RESTRICTIONS

ESTIMATE OF MARKET RENT

The subject proposed "affordable" rent for the Studio, 1BR and 2BR units represents the maximum that can be charged for the subject units under the current income guidelines based on the 55% (Studio units) to 60% (1BR and 2BR units) AMI. Ideally, the rental structure for the subject units should also be in conformance with market rental rates, i.e., the proposed sponsor rents should not exceed market rents for competitive open market housing stock. For purposes of checking the reasonability of the contract "affordable" rents, a market rent survey was also conducted, which is discussed following.

SELECTION OF MARKET DATA

Lesher Chee Stadlbauer, Inc. researched rental properties primarily within the subject's primary trade area. We were unable to find a mid to high-rise multi-family project within the Ewa Plain; hence, we have included low-rise townhome-style project as rental indicators. Furthermore, due to the lack of comparables within the primary trade area for studio units, we have expanded our research to include comparables from the Pearl City submarket. Our selected comparables are located on the location map provided on the following page, summarized narratively thereafter, and further analyzed on the ensuing market data adjustment tables labeled: **Table 1** (Studio Apartments), **Table 2** (1BR/1BA Apartments) and **Table 3** (2BR/1BA Apartments).

Pearlridge Square (Studio Comp No. 1) was rented for a monthly net rent of $1,100. This building contains 282 total units inclusive of studio, 1BD and 2BD units. The studio unit within this 43-story high-rise exhibited a 360 sf unit rented with one parking. The selected unit was reported to be in average condition with no major renovations.

Century Park Plaza (Studio Comp No. 2 & 3) featured two units include in our adjustment grid, a unit rented for $1,000 with the tenant responsible for GET, and an asking rent of $1,025. This building contains 607 total units inclusive of studio, 1BD and 2BD units. The studio units within this 47-story high-rise were 360 sf units with one parking stall. The selected units were reported to be in average condition with no major renovations.

Sun Rise (1BR Comp No. 4) was rented for a monthly net rent of $1,150. This project contains 408 total units inclusive of studio, 1BD and 2BD units. This 1 BD unit measured 476 square feet. One open parking stall is included in the rent. The unit was reported to be in average condition.

West Loch Fairways (1BD Comp No. 5 & 6 and 2BD Comp No. 9) the 1BD comparables were rented at monthly rates of $1,250 and $1,350 respectively. The 2BD comparable was rented at $1,600 per month. This project contains 136 total units inclusive of 1BD and 2BD units. 1BD Comparable 5 measured 764 square feet, was reported to be in average condition and was conveyed with a single stall. 1BD Comparable 6 measured only 681 square feet, however it was recently upgraded to "like new" conditions and was conveyed with two parking stalls. The 2BD Comparable 9 rented for $1,600 per month, measured 986 square feet, was conveyed with two parking stalls, and was reportedly in average condition.

Palm Villas II (2BD Comp No. 7) was rented for a monthly net rent of $1,650. This project contains 384 total units inclusive of mostly 1BD and 2BD units. The 2BD unit within this low-rise project exhibited a size of 717 sf. The rent included one covered stall and one open stall The unit was reported to have been recently upgraded and in good condition.

Pae Ko Gardens (2BD Comp No. 8) was rented for a monthly net rent $1,550. This project contains 128 total units inclusive of 1BD, 2BD and 3BD units. The 2BD comparable this low-rise project exhibited a size of 701 sf, and a vast 305 sf lanai. Two open parking stalls are included in the rent. The selected unit was reported to be in average condition with no major renovations.

TABLE 1

PROPOSED KAPOLEI SENIOR HOUSING
STUDIO APARTMENTS
ESTIMATE OF UNENCUMBERED MARKET RENT

DESCRIPTIVE DATA	SUBJECT	1 PEARLRIDGE SQUARE	2 CENTURY PARK PLAZA	3 CENTURY PARK PLAZA
Address	1020 Wakea St.	98-288 Kaonohi St.	1060 Kam. Hwy.	1060 Kam. Hwy.
Location	Kapolei	Pearl Ridge	Pearl City	Pearl City
Ownership	Apartment	Condominium	Condominium	Condominium
Design	Mid/High Rise	High-Rise	High-Rise	High-Rise
Monthly Rental Rate		$1,100	$1,000 + GET	$1,025
Rent Concessions	---	$0	$0	$0
Effective Monthly Rental Rate	---	$1,100	$1,045	$1,025
Lease Date	---	Feb-14	Oct-13	Acitve
Market Conditions Adjustment		100.00%	100.00%	100.00%
Market Conditions Adjusted Rent		$1,100	$1,045	$1,025
Term	---	12 month	12 month	12 month
Living Area in Square Feet	360	360	360	360
Lanai Area in Square Feet	---	0	0	0
Unit Rental Rate (Excluding Lanai)	---	$3.06	$2.90	$2.85
Bedroom/Bath	0/1	0/1	0/1	0/1
Parking	1 [A]	1 (Open)	1 (Open)	1 (Open)
Furniture	Semi-Furnished	Semi-Furnished	Semi-Furnished	Semi-Furnished
Rent Control	Assume Market	None	None	None
Utilities Included In Rent	Water, Sewer, Elec.	Water & Sewer	Water & Sewer	Water & Sewer
Amenities	1, 10	2, 3, 4, 10	2, 3, 4, 10	2, 3, 4, 10
Year Built	Proposed	1980	1984	1984
Condition	Excellent	Average	Average	Average
ELEMENTS OF COMPARISON				
Market Conditions		0.5%	1.8%	0.0%
Term of Lease		0.0%	0.0%	0.0%
Location		-10.0%	-5.0%	-5.0%
Structure/Stories [B]		0.0%	0.0%	0.0%
Age, Condition & Design		5.0%	5.0%	5.0%
Unit Size/Configuration		0.0%	0.0%	0.0%
Parking		0.0%	0.0%	0.0%
Furnishings		0.0%	0.0%	0.0%
View		-2.5%	-2.5%	-2.5%
Amenities		-7.5%	-7.5%	-7.5%
Utilities [C]		11.2%	11.8%	12.0%
Total Adjustments		-3.3%	3.5%	2.0%
Adjusted Rental Rate		$1,064	$1,082	$1,046
Average Monthly Rent	$1,064			
Weighting		30%	35%	35%
Weighted Average	$1,064	$319	$379	$366
Concluded Gross Monthly Rent (Rounded)	**$1,075**			

Notes:

[1] Coin Laundry, [2] Internal Laundry. [3] Air conditioning, [4] Pool, [5] Tennis, [6] Ocean View, [7] Dishwasher, [8] Cable TV, [9] BBQ area / Rec Room, [10] Security

[A] Assumes 1 parking is included. Senior housing ratio based on 1 stall/4-units.
[B] Townhome vs. Mid/High Rise premium was determined to be ~$100.
[C] Based on average of HUD's Utility Allowance for Honolulu and HECO electricity estimate.

SOURCE: LESHER CHEE STADLBAUER

TABLE 2

PROPOSED KAPOLEI SENIOR PROJECT
ONE-BEDROOM/ONE BATH APARTMENTS
ESTIMATE OF UNENCUMBERED MARKET RENT

DESCRIPTIVE DATA	SUBJECT	4 SUN RISE	5 WEST LOCH FAIRWAYS	6 WEST LOCH FAIRWAYS
Address	1020 Wakea St.	91-203 Hanapouli Circle	91-1012 Makaaloa St.	91-1012 Makaaloa St.
Location	Kapolei	Ewa Beach	Ewa Beach	Ewa Beach
Tax Map Key (Division 1)	9-1-88: 21	9-1-61: 41	9-1-66: 72	9-1-66: 72
Ownership	Apartment	Condominium	Condominium	Condominium
Design	Mid/High Rise	Townhome	Townhome	Townhome
Monthly Rental Rate	---	**$1,150**	**$1,250**	**$1,350**
Rent Concessions	---	$0	$0	$0
Effective Monthly Rental Rate	---	$1,150	$1,250	$1,350
Lease Date	---	Mar-14	Nov-13	Nov-13
Market Conditions Adjustment		100.00%	100.00%	100.00%
Market Conditions Adjusted Rent		$1,150	$1,250	$1,350
Term	---	12 month	12 month	12 month
Living Area in Square Feet	534	476	764	681
Lanai Area in Square Feet	0	0	68	0
Unit Rental Rate (Excluding Lanai)	---	$2.42	$1.64	$1.98
Bedroom/Bath	1/1	1/1	1/1	1/1
Parking	1 [A]	1 (Open)	1 (Open)	2 (Open)
Furniture	Semi-Furnished	Semi-Furnished	Semi-Furnished	Semi-Furnished
Rent Control	Assume Market	None	None	None
Utilities Included In Rent	Water, Sewer, Elec.	Water & Sewer	Water & Sewer	Water & Sewer
Amenities	1, 10	2, 3, 4, 7, 9	2, 7	2, 7
Year Built	Proposed	1993	1992	1992
Condition	Excellent	Average	Average	Good
ELEMENTS OF COMPARISON				
Market Conditions		0.3%	1.0%	1.0%
Term of Lease		0.0%	0.0%	0.0%
Location		2.5%	2.5%	2.5%
Structure/Stories [B]		-8.7%	-8.0%	-7.4%
Age, Condition & Design		5.0%	5.0%	2.5%
Unit Size/Configuration		2.5%	-7.5%	-5.0%
Parking		0.0%	0.0%	-5.0%
Furnishings		0.0%	0.0%	0.0%
View		2.5%	2.5%	2.5%
Amenities		-5.0%	-5.0%	-5.0%
Utilities [C]		12.4%	11.4%	10.6%
Total Adjustments		11.5%	1.9%	-3.3%
Adjusted Rental Rate		$1,282	$1,274	$1,305
Average Monthly Rent	$1,287			
Weighting		33%	33%	33%
Weighted Average	$1,287	$427	$425	$435
Concluded Gross Monthly Rent (Rounded)	**$1,300**			

Notes:

[1] Coin Laundry, [2] Internal Laundry. [3] Air conditioning, [4] Pool, [5] Tennis, [6] Ocean View, [7] Dishwasher, [8] Cable TV, [9] BBQ area / Rec Room, [10] Security

[A] Assumes 1 parking is included. Senior housing ratio based on 1 stall/4-units.
[B] Townhome vs. Mid/High Rise premium was determined to be ~$100.

[C] Based on average of HUD's Utility Allowance for Honolulu and HECO electricity estimate.

SOURCE: LESHER CHEE STADLBAUER

TABLE 3

PROPOSED KAPOLEI SENIOR HOUSING
TWO-BEDROOM/ONE-BATH APARTMENTS
ESTIMATE OF UNENCUMBERED MARKET RENT

DESCRIPTIVE DATA	SUBJECT	7 PALM VILLAS II	8 PAE KO GARDENS	9 WEST LOCH FAIRWAYS
Address	1020 Wakea St.	91-1200 Mikohu St	91-1048 Kaiau Ave.	91-1012 Makaaloa St.
Location	Kapolei	Ewa Beach	Ewa Beach	Ewa Beach
Tax Map Key (Division 1)	9-1-88: 21	9-1-61: 34	9-1-16: 63	9-1-66: 72
Ownership	Apartment	Condominium	Condominium	Condominium
Design	Mid/High Rise	Townhome	Townhome	Townhome
Monthly Rental Rate	---	**$1,650**	**$1,550**	**$1,600**
Rent Concessions	---	$0	$0	$0
Effective Monthly Rental Rate	---	$1,650	$1,550	$1,600
Lease Date	---	Apr-14	Dec-13	Feb-14
Market Conditions Adjustment		100.00%	100.00%	100.00%
Market Conditions Adjusted Rent		$1,650	$1,550	$1,600
Term	---	12 month	12 month	12 month
Living Area in Square Feet	765	717	701	986
Lanai Area in Square Feet	0	0	305	40
Unit Rental Rate (Excluding Lanai)	---	$2.30	$2.21	$1.62
Bedroom/Bath	2/1	2/1	2/1	2/2
Parking	1 [A]	2 (Covered/Open)	2 (Open)	2 (Open)
Furniture	Semi-Furnished	Semi-Furnished	Semi-Furnished	Semi-Furnished
Rent Control	Assume Market	None	None	None
Utilities Included In Rent	Water, Sewer, Elec.	Water & Sewer	Water & Sewer	Water & Sewer
Amenities	1, 10	2, 3, 4, 7, 9	2, 3, 4, 7, 9	2, 7
Year Built	Proposed	1991	1995	1992
Condition	Excellent	Good	Average	Average
ELEMENTS OF COMPARISON				
Market Conditions		0.0%	1.0%	0.5%
Term of Lease		0.0%	0.0%	0.0%
Location		2.5%	2.5%	2.5%
Structure/Stories [B]		-6.1%	-6.5%	-6.3%
Age, Condition & Design		0.0%	5.0%	5.0%
Unit Size/Configuration		0.0%	-5.0%	-7.5%
Parking		-7.5%	-5.0%	-5.0%
Furnishings		0.0%	0.0%	0.0%
View		2.5%	2.5%	2.5%
Amenities		-7.5%	-5.0%	-5.0%
Utilities [C]		11.6%	12.4%	12.0%
Total Adjustments		-4.4%	0.9%	-1.8%
Adjusted Rental Rate		$1,577	$1,565	$1,572
Average Monthly Rent	$1,571			
Weighting		33%	33%	33%
Weighted Average	$1,571	$526	$522	$524
Concluded Gross Monthly Rent (Rounded)	**$1,575**			

Notes:

[1] Coin Laundry, [2] Internal Laundry. [3] Air conditioning, [4] Pool, [5] Tennis, [6] Ocean View, [7] Dishwasher, [8] Cable TV, [9] BBQ area / Rec Room, [10] Security

[A] Assumes 1 parking is included. Senior housing ratio based on 1 stall/4-units.

[B] Townhome vs. Mid/High Rise premium was determined to be ~$100.

[C] Based on average of HUD's Utility Allowance for Honolulu and HECO electricity estimate.

SOURCE: LESHER CHEE STADLBAUER

ANALYSIS AND COMPARISON

The rent comparables for the Studio, 1BR/1BA, and 2BR/1BA units were all rented absent of any age and/or income restrictions, thus, are reflective of market rents for open market housing stock. The various units were mostly built in the late-1980s and early-1990s and several feature project amenities such as swimming pools that are superior to the subject. With the exception of these characteristics, the proposed subject units were considered to compare relatively well with the majority of the units in the survey. In particular, the proposed subject property will benefit from its location within the urban core of the City of Kapolei proximate to the City and County's TheBus main transit station in Kapolei, the proposed Kaiser medical office building, newly built Foodland grocery store at the Kapolei Village Center, and State judiciary building. Based on our interviews with rental agents and property managers, the subject's location is judged to be desirable to seniors.

Rent for the proposed subject units would reflect gross rents, i.e., inclusive of electricity; hence, we have considered the necessary adjustment to comparables rented without electricity. The adjustment factor used is based on the current HUD Utility Allowance (UA) schedule (which also includes water and sewer) coupled with specific information obtained via our interviews with Hawaiian Electric Company (HECO). For the purposes of the market analysis report, we have estimated the electricity adjustment to be $123/month, $143/month and $192/month for the Studio, 1BR and 2BR units, respectively (equivalent to the 2014 electrical cost component of the monthly utility allowance for high-rise projects in Honolulu).

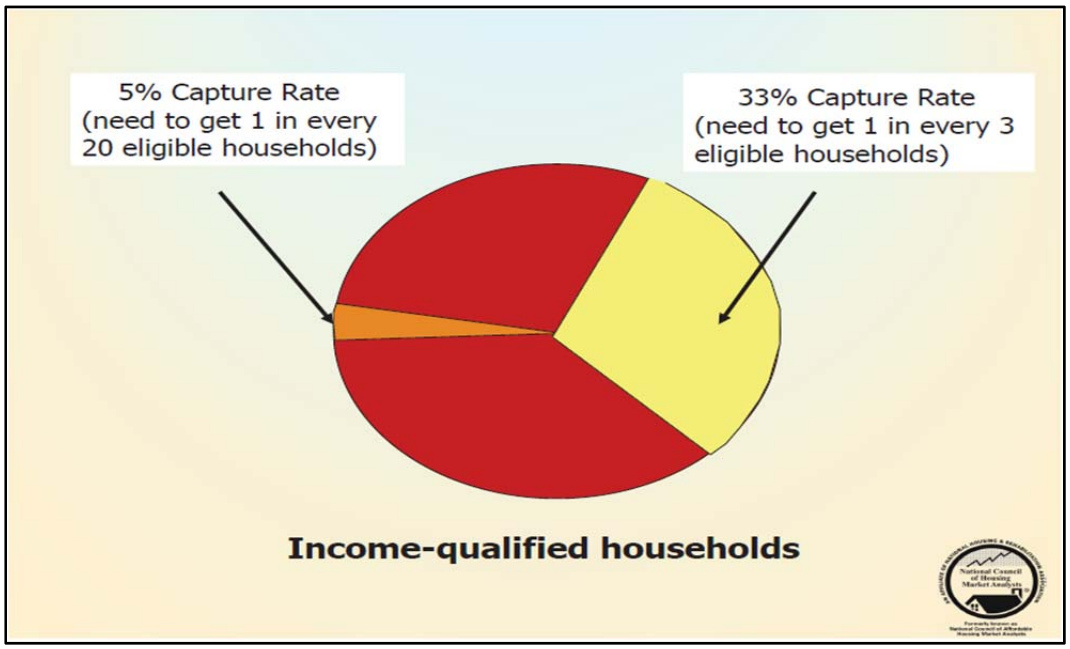
Following the adjustment process, our concluded **market rent** for the subject's units *as if unencumbered by any age/income restrictions*, on a gross basis where the landlord pays for water, sewer and electricity expenses, are as follows:

- Studio units: **$1,075** per month
- 1-bedroom/1-bath units: **$1,300** per month
- 2-bedroom/1-bath units: **$1,575** per month

SECTION D
MARKET STUDY CONCLUSIONS

Based on the foregoing presentation of demographics, published governmental statistics, and surveys and interviews with market participants, it appears that there is currently adequate demand for age and income restricted elderly rental housing in the primary trade area to absorb the subject's 153 revenue units. Our surveys of senior projects indicates that the majority of demand comes from the primary trade area; however, some renters will come from outside the trade area (an analysis of recently constructed age and income restricted projects found that typically 60% to 80+% of the qualified renters were from the immediate market area surrounding the project). Thus there is potential that the project may draw some tenants from the secondary and tertiary markets.

The overall penetration rate for the subject of 41.7% was considered to be within an acceptable range for a project in an urban location. The capture rate of 8.76% is also considered to be acceptable and suggests a moderate level of risk for the project. The rate also assumes stabilized occupancy would be achieved from qualified renters from only the primary trade area. The following graphic illustrates the nature of capture risk:



In the instant case, the subject capture rate of 8.76% suggests that 1 in every 11 to 12 age/income qualified households in the primary market area is needed to achieve stabilized occupancy. It should be noted that the provided capture rate is essentially a weighted average rate reflective of the various unit types, i.e., if sufficient data are available, the capture rate can also be refined to consider the risk associated with filling the various unit types. Demographic data were not available to accurately assign

capture rates for the subject studio, 1BR and 2BR units. From the data, we can intuit that the rate for the studio units would be higher than that for the 1BR and 2BR units, thus, primary capture risk is associated with the lower revenue units in the subject property.

While the capture rate of 8.76% and penetration rate of 41.6% represents a moderate level or risk, we note that our analysis is quite conservative in the determination of the demand pool; i.e., our model considers only qualified seniors residing in the defined primary trade area when, in fact, seniors from anywhere in Hawaii are eligible for the project. Further, we note that in other senior affordable rental projects as many as 20% to 40% of the renters come from outside a given trade area. Therefore, of the 145 units above 30% AMI we assumed that 20% or 29 units would be absorbed by individuals coming outside of the subject's trade area. Hence, we would only need for renters in the trade area to account for 116 units. As discussed, we conclude a total demand of 1,655 renter occupied households in the subject's trade area that meet the referenced age and income household specifications. The ratio of subject revenue units to be satisfied by people within the trade area (116 units) to qualifying households (1,655) is approximately 7.01%. The indicated capture rate for the subject suggests reduced level of risk from the initial rate discussed herein (8.76%). The penetration rate which accounts for the supply of units in the market would not be changed. Therefore our modified capture rate would be **7.01%** while the market penetration rate was estimated to be **41.7%.** As exhibited on the following diagram, the subject would fall within a moderate risk level for projects in the "Urban Markets" classification. This classification recognizes that in more developed markets, penetration rates are higher due to the need to compete against existing and pipeline supply. Capture should ideally be at or below 8% in order to allow greater selectivity in renters.

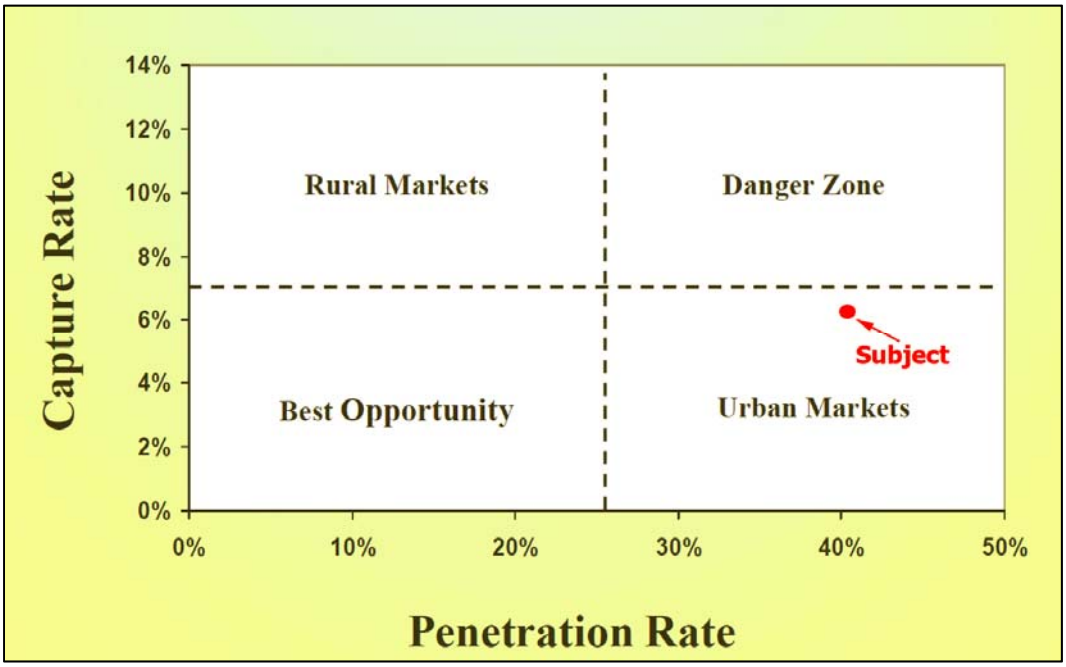


Chart Source: NCHMA 2013 Multifamily Housing Exchange.

Additionally, we noted that the overall Owner/Renter ratio for seniors indicated that only 36% of seniors in this trade area are renters. However, since the seniors we selected have low incomes, it is likely that the percentage of renters amongst income qualified seniors is significantly higher. With this in mind, there is cause to believe that the "true" capture and penetration rates may be lower than stated.

Rental apartments are a needs based form of housing, thus, pre-leasing of units is not the same as for the sale of for-sale housing product. As such, we would anticipate that the developer would begin qualifying renters during the construction process to form a wait list similar to other projects in the market area. Once the certificate of occupancy (CO) was obtained for the subject, rental agreements from this list of pre-qualified renters could be executed and move-in would take place. As adequate demand is believed to be demonstrated for the project, absorption of the rental units would be expected to be achieved within a reasonable time frame after the CO.

Our market research indicates that a demonstrable spread between market rent and the proposed monthly sponsor rents exists – refer to the following summary schedule:

No. Bedrooms	No. Of Units	Income Limit (AMI)	Proposed Monthly Sponsor Rents [1]	CONCLUDED GROSS MONTHLY MARKET RENT
Studio	18	55%	$922	$1,075
Sponsor Rent Advantage Relative to Monthly Market Gross Rent				***$153 Or 14.23%***
1	106	60%	$1,078	$1,300
Sponsor Rent Advantage Relative to Monthly Market Gross Rent				***$197 Or 16.38%***
2	21	60%	$1,294	$1,575
Sponsor Rent Advantage Relative to Monthly Market Gross Rent				***$281 Or 17.84%***

[1] Subject's proposed monthly sponsor gross rents *include* tenant's electricity, water, sewer, and refuse removal costs.
[2] HUD's maximum restricted rents are inclusive of a utility allowance which includes electricity consumption within the unit, water, sewer, and refuse removal.

According to the National Council of Housing Market Analysts (NCHMA), the industry benchmark for the spread between market rents and the maximum allowable rents under the tax credit program (in this case established by HUD rents) is 10%. The spread illustrated in our analysis exceeds that benchmark. Essentially, the spread between open market rent and the sponsor rents is a rental advantage to the age/income qualified renter and would provide an impetus to draw renters at the upper end of the AMI thresholds out of existing market rate housing into the subject project; particularly when the more affordable housing alternative provided represents new construction in a convenient urban location with desirable amenities. Further, the rental advantage provides some insulation to market and operational risk over the long-term.

CERTIFICATION

CERTIFICATION

It is hereby certified that, to the best of the knowledge and belief of the undersigned:

1) The statements of fact contained in this report are true and correct.
2) The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are the personal, impartial, and unbiased professional analyses, opinions, and conclusions of the appraiser.
3) The appraiser has no present or prospective interest in the property that is the subject of this report, and has no personal interest with respect to the parties involved.
4) The appraiser has performed consulting services, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
5) The appraiser has no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
6) The appraiser's engagement in this assignment was not contingent upon developing or reporting predetermined results.
7) The appraiser's compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
8) The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice (USPAP).
9) The reported analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute.
10) Stephen E. Stadlbauer, CGA has made a personal inspection of the property that is the subject of this report as of the retrospective date of valuation.
11) Matthew Balkin and Pomai Jones, Real Property Analysts with Lesher Chee Stadlbauer, Inc. assisted in the gathering and reporting of certain market data utilized within this report. No one, who was not already recognized elsewhere in this report, provided significant real property appraisal assistance to the person signing this certification.
12) The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
13) Stephen E. Stadlbauer, CGA is currently certified under the required continuing education program of the Department of Commerce and Consumer Affairs (*DCCA*) as it pertains to licensing and certification of real estate appraisers in the State of Hawaii.
14) As of the date of this report, Stephen E. Stadlbauer, has completed the Standards and Ethics Education Requirements for Candidates of the Appraisal Institute.

Stephen E. Stadlbauer, CGA
Principal
Hawaii State Certified General Appraiser, CGA-190
Expiration Date 12/31/2015

ADDENDA

EXHIBIT A

General Assumptions and Limiting Conditions

GENERAL ASSUMPTIONS AND LIMITING CONDITIONS

General Assumptions

1) While the appraisal may contain information about the physical items being appraised (including their adequacy, age and/or condition), it should be clearly understood that this information is only to be used as a general guide for property valuation and not as a complete or detailed physical report; particularly if this appraisal is made without benefit of any due diligence studies prepared by an architect, civil, or mechanical engineer. *As the appraiser is not a construction, engineering, environmental, or legal expert, and any statement given on these matters in the report should be considered preliminary in nature. Should information be provided following the delivery of this report that would indicate an adverse condition that could impact the value conclusions as presented herein, the appraisers specifically reserve the right to reanalyze the findings of the appraisal*.

2) No responsibility is assumed for the legal description or for matters including legal or title consideration. Title to the property is assumed to be good and marketable unless otherwise stated.

3) The property is appraised free and clear of any or all liens or encumbrances unless otherwise stated.

4) Responsible ownership and competent property management are assumed.

5) Information furnished by others is believed to be reliable. However, no warranty is given for its accuracy.

6) Certain analyses within this assignment were prepared from information provided by project/property ownership. Our preparation does not include an independent verification of information used.

7) All engineering is assumed to be correct. The plot plans and illustrative material in this appraisal report are included only to assist the reader in visualizing the property.

8) It is assumed that there are no hidden or unapparent conditions of the property, subsoil, or structures that render it more or less valuable. No responsibility is assumed for such conditions or for arranging for engineering studies that may be required to discover them.

9) It is assumed that there is full compliance with all applicable federal, state and local environmental regulations and laws unless noncompliance is stated, defined, and considered in this appraisal report.

10) It is assumed that all applicable zoning and use regulations and restrictions have been complied with, unless a nonconformity has been stated, defined, and considered in this appraisal report.

11) It is assumed that all required licenses, certificates of occupancy, consents, or other legislative or administrative authority from any local, state, or national government or private entity or organization have been, or can be obtained or renewed for any use on which the value estimate contained within this report is based.

12) It is assumed that the utilization of the land and improvements is within the boundaries or property lines of the property described and that there is no encroachment or trespass unless noted, defined, and considered in the appraisal report.

13) Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the property. Maps and exhibits found in this report are provided for reader reference purposes only. No guarantee as to accuracy is expressed or implied unless otherwise stated in this report. No survey has been made for the purpose of this report.

In addition to the preceding ***General Assumptions***, the appraisal report is subject to the following ***Limiting Conditions***.

1) Possession of this report, or a copy thereof, does not carry with it the right of publication. It may not be used for any purpose by any person other than the party to whom it is addressed without written consent of the appraiser, and in any event, only with proper written qualification and only in its entirety.

2) The appraiser, by reason of this appraisal, is not required to give further consultation, testimony, or be in attendance in court with reference to the property in question unless such arrangements have been previously made.

3) Neither all nor any part of the contents of this appraisal report (especially any conclusions as to value, the identity of the appraiser, or the firm with which the appraiser is connected) shall be disseminated to the public through advertising, public relations, news, sales, or other media without the prior written consent and approval of the appraiser.

4) The appraiser's liability regarding the services provided within this assignment is limited solely to the amount of the professional fee and does not extend to third parties.

5) In the appraisal assignment, the existence of potentially hazardous material used in the construction or maintenance of the building, such as the presence of urea-formaldehyde foam insulation, asbestos, and/or the existence of toxic waste, which may or may not be present on the property, was not observed by the appraiser; nor does the appraiser have any knowledge of the existence of such materials on or in the property. The appraiser, however, is not qualified to detect such substances. The existence of urea-formaldehyde insulation or other potentially hazardous waste material may have an effect on the value of the property. We urge the client to retain an expert in this field, if desired. *Should information be provided following the delivery of this report that would indicate an adverse condition that could impact the value conclusions as presented herein, the appraisers specifically reserve the right to reanalyze the findings of the appraisal*.

6) Unless otherwise stated in this report, the subject property is appraised without a specific compliance survey having been conducted to determine if the property is or is not in conformance with the requirements of the Americans with Disabilities Act. The presence of architectural and communications barriers that are structural in nature that would restrict access by disabled individuals may adversely affect the property's value, marketability, or utility. *Should information be provided following the delivery of this report that would indicate an adverse condition that could impact the value conclusions as presented herein, the appraisers specifically reserve the right to reanalyze the findings of the appraisal*.

7) All appraisal reports must state that it is the intention of the appraiser that the report complies with all statute, rules, and regulations prohibiting discrimination on the basis of race, color, religion, sex, or national origin, and marital status.

EXHIBIT B

Definitions and Terms

DEFINITIONS AND TERMS[1]

Throughout this report, the reader will encounter various technical words or phrases necessary for the proper presentation of material and conclusions. In addition, certain Hawaiian words, by common usage, which are a part of the everyday local and business language, will be utilized. We present at this point those most commonly used together with a brief explanation.

MARKET VALUE

Comment: Forming an opinion of market value is the purpose of many real property appraisal assignments, particularly when the client's intended use includes more than one intended user. The conditions included in market value definitions establish market perspectives for development of the opinion. These conditions may vary from definition to definition but generally fall into three categories:

1. the relationship, knowledge, and motivation of the parties (i.e., seller and buyer);
2. the terms of sale (e.g., cash, cash equivalent, or other terms); and
3. the conditions of sale (e.g., exposure in a competitive market for a reasonable time prior to sale).

Appraisers are cautioned to identify the exact definition of market value, and its authority, applicable in each appraisal completed for the purpose of market value.

Market Value[2] means the most probable price, which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated;
2. Both parties are well informed or well advised, and acting in what they consider their own best interests;
3. A reasonable time is allowed for exposure in the open market;
4. Payment is made in terms of cash in U.S. dollars or terms of financial arrangements comparable thereto; and
5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

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[1] Unless otherwise noted, the source for definitions set forth herein is: Appraisal Institute, *The Dictionary of Real Estate Appraisal,* 5th Ed. (*2010*).

[2] Source: 12 CFR, Part 34.42(g); 55 Federal Register 34696, August 24,1 990, as amended at 57 Federal Register 12202, April 9, 1992, and at 59 Federal Register 29499, June 7, 1994; and The Dictionary of Real Estate Appraisal, 5th Edition.

For the purposes of this report, **Market Value "As Is"**[3] is an estimate of the market value of real property in its current physical condition, use, and zoning as of the appraisal's effective date.

The following definition of Market Value has been set forth under the Uniform Standards of Professional Appraisal Practice (USPAP 2012/2013 Edition) as promulgated by the Appraisal Standards Board (ASB) of the Appraisal Foundation:

"a type of value, stated as an opinion, that presumes the transfer of a property (i.e., a right of ownership or a bundle of such rights), as of a certain date, under specific conditions set forth in the definition of the term identified by the appraiser as applicable in an appraisal."

PROSPECTIVE VALUE OPINION

A forecast of the value expected at a specified future date. A prospective value opinion is most frequently sought in connection with real estate projects that are proposed, under construction, or under conversion to a new use, or those that have not achieved sellout or a stabilized level of long-term occupancy at the time the appraisal report is written.

PROSPECTIVE MARKET VALUE [4]

Prospective Market Value Upon Completion of Construction means the prospective future value of a property on the date that construction is completed, based upon market conditions to exist as of the completion date.

Prospective Market Value Upon Achieving Stabilized Occupancy means the prospective future value of a property upon the date that stabilized occupancy is achieved and all costs associated with stabilizing occupancy, i.e., discounted rents or other concessions associated with stimulating initial absorption have been recognized.

HIGHEST AND BEST USE

The reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the highest and best use must meet are legal permissibility, physical possibility, financial feasibility, and maximum profitability.

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[3] FDIC Law, Regulations, Related Acts; 5000 – Statements of Policy, Interagency Appraisal and Evaluation Guidelines, Appendix D – Glossary of Terms (www.fdic.gov/regulations/laws/rules/5000-4800).

[4] *Appraisal Policies and Practices of Insured Institutions and Services Corporation*, Federal Home Loan Bank Board, "Final Rule" 12 CFR Parts 563 and 571, December 21, 1987.

Highest and best use of land or a site as though vacant. Among all reasonable, alternative uses, the use that yields the highest present land value, after payments are made for labor, capital, and coordination. The use of a property based on the assumption that the parcel of land is vacant or can be made vacant by demolishing any improvements.

Highest and best use of property as improved. The use that should be made of a property as it exists. An existing improvement should be renovated or retained as is so long as it continues to contribute to the total market value of the property, or until the return from a new improvement would more than offset the cost of demolishing the existing building and constructing a new one.

OWNERSHIP TENURE

Fee Simple Estate: Absolute ownership unencumbered by any other interest or estate subject only to the four powers of government (*i.e., eminent domain, escheat, police power, and taxation)*.

Leased Fee Interest: An ownership interest held by a landlord with the right of use and occupancy conveyed by lease to others. The rights of the lessor (the leased fee owner) and the lessee are specified by contract terms contained within the lease.

Leasehold Interest: The interest held by the lessee (the tenant or renter) through a lease transferring the rights of use and occupancy for a stated term and under certain conditions.

FLOOR AREA [5]

This concept to measure allowed building density is utilized by the City and County of Honolulu's Land Use Ordinance. It is defined as the area of all floors of a structure excluding unroofed areas, measured from the exterior faces of the exterior walls from the centerline of party walls dividing a structure. The floor area of a structure, or portion thereof, which is not enclosed by exterior walls, shall be the area under the covering, roof or floor above which is supported by posts, columns, partial walls, or similar structural members which define the wall line.

BUILDING AREA TERMS [6]

Gross Building Area: This area is defined as "the total constructed area of a building" which is computed by measuring the outside finished surface of the permanent outer walls. It is generally not used for leasing purposes.

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[5] City and County of Honolulu, *Land Use Ordinance*, (*May 1999*).

[6] *Standard Method for Measuring Floor Area in Office Buildings*, An American National Standard, published by Building Owners and Managers Association (BOMA), 1996.

Building Common Area: Areas of a building that provide services to building tenants but which are not included in the office or store area of any specific tenant. These areas may include, but not be limited to, main and auxiliary lobbies, atrium spaces at the level of the finished floor, concierge areas or security desks, conference rooms, lounges or vending areas, food service facilities, locker or shower facilities, mail rooms, fire control rooms, fully enclosed courtyards outside the exterior walls, and building core and service areas such as fully enclosed mechanical or equipment rooms. Specifically *excluded* from Building Common Areas are Floor Common Areas, parking space, portions of loading docks outside the building line, and major vertical penetrations.

Floor Common Area: Areas on a floor such as washrooms, janitorial closets, electrical rooms, telephone rooms, mechanical rooms, elevator lobbies, and public corridors which are available primarily for the use of tenants on that floor.

Rentable (or Leasable) Area: Rentable area means the "usable area" of an office or store area *plus* its share of floor common areas and building common areas. Rentable area is determined by multiplying "usable area" of an office or store area by the "R/U Ratio". The total of all rentable areas equals the Building Rentable Area for the building.

R/U Ratio: The conversion factor that, when applied to "usable area," gives the "rentable area" of the "office or store area." Essentially, the R/U Ratio distributes the "building common area" among the various office and/or store areas.

Usable Area: The actual occupiable area of an office or store space and is of prime interest to a tenant in evaluating the space offered by a landlord and in allocating the space required to house personnel and furniture.

EFFECTIVE RENT

The rental rate net of financial concessions such as periods of no rent during the lease term; may be calculated on a discounted basis, reflecting the time value of money, or on a simple, straight line-basis. Consistent with the foregoing, effective rent is often used by brokers and other market analysts to describe the rental rate to ownership net of amortized improvement costs (either paid directly or via improvement allowances provided by ownership).

EASEMENT

Easements represent another division of property ownership. An easement is *an interest in real property that conveys use, but not ownership, of a portion of an owner's property*. Access or right-of-way easements may be acquired by private parties or public utilities. Governments dedicate conservation, open space, and preservation easements.

Easements usually permit a specific portion of a property to be used for identified purposes, such as access to an adjoining property or as the location of a certain underground utility. Although surface easements are the most common, subterranean and overhead easements are used for public utilities, subways, and bridges. Other easements may prohibit the owner of the underlying fee simple interest from certain

uses of the property without giving the owner of the easement any possessory interest in the real estate, e.g., scenic easement and facade easements.[7]

CASH EQUIVALENCY ANALYSIS [8]

As the typical definition of *market value* recognizes cash equivalent terms, sales prices of comparable properties that appear to have been sold with non-market financing are investigated to determine whether adjustments are warranted to reflect typical market terms at the time of sale. Cash equivalency analysis is the procedure by which appropriate adjustments for non-market financing are determined. Greatest emphasis should be placed upon market-derived adjustments (inclusive of interviews with the parties involved in the transaction to determine if the negotiated price was affected by the financing terms) as opposed to those derived via calculations alone.

DIRECTIONAL TERMS [9]

The individual islands do not generally lie on a clear north/south axis. Directional terminology therefore, frequently makes reference to location, such as: mauka - (*uka*) inland, upland, towards the mountain; makai - (*kai*) toward the sea; and townside - toward the town.

[7] Appraisal Institute, *The Appraisal of Real Estate*, 12th Ed. *(2001*).
[8] Ibid.
[9] *Hawaiian Dictionary*, Mary Kawena Pukui and Samuel H. Elbert, University of Hawaii Press (*1986*).

EXHIBIT C

Company Profile & Appraiser Qualifications

LESHER • CHEE • STADLBAUER, Inc.

Continuing a tradition of providing real estate valuation and consulting services to Hawaii and the Pacific for over 40-years.

Lesher Chee Stadlbauer, Inc. (LCS) is a full service real estate valuation and consulting practice headquartered in Honolulu, Hawaii and serving the Pacific Basin (Hawaii, Micronesia and the South Pacific) since 1970. The *LCS Valuation Practice* concentrates principally in commercial, industrial, hospitality, residential development (on an entire project basis), and specialty property types. We are also experienced with complex engagements involving partial real estate interests, life estates, leased fee interests and real estate tax credits. Analyses employing modeling software (Argus) are regularly performed with copies via compact disk available at the client's request. The *LCS Consulting Practice* includes market studies, feasibility analysis, highest and best use studies, location analysis, rent studies, appraisal review, arbitration, tax appeal, and litigation support services.

Members of our firm include highly recognized and qualified real estate professionals with extensive experience in assisting land owners, real estate managers, developers, lenders, investors, trusts, attorneys and governmental agencies in the solution of real estate problems requiring objective valuation and evaluation analyses.

Raymond A. Lesher, MAI, CRE (1928 – 2000), our founder, was recognized both in the Pacific and nationally as a practicing appraiser, educator and author during a distinguished 50-year career in the appraisal profession. Following the relocation of his practice to Hawaii from Connecticut in 1970, the focus of Mr. Lesher's practice was in the Hawaiian Islands and Pacific.

The current principals of LCS are **Steven D. Chee, MAI, MRICS** and **Stephen E. Stadlbauer, CGA**. Mr. Chee specializes in valuation and consulting assignments involving residential development, development land, complex income properties, resort and hospitality properties, and leased fee interests. Mr. Chee is the recognized industry leader in the valuation and analysis of large residential developments in the State of Hawaii and has been involved in over 50 engagements involving proposed residential development within the past five years. He is also available for arbitrations and engagements involving testimony as a qualified expert in real estate valuation. Mr. Stadlbauer's diverse income property background includes valuation and consulting involving existing and proposed self storage facilities, specialized elderly housing (inclusive of assisted living facilities and nursing homes) and multi-family housing inclusive of low-income housing tax credit (LIHTC) projects. Mr. Stadlbauer is one of a limited number of appraisers in Hawaii approved by the U. S. Department of Housing and Urban Development (*HUD*) to provide appraisals under Section 223(*f*); Mark-to-Market assignments for OMHAR, and the MAP program. He is also available for arbitrations and engagements involving testimony as a qualified expert in real estate valuation.

Clients are assured that all engagements performed by our practice are led by one of our principals. Under this structure we maintain a consistent level of quality and detail. The principals are assisted by a qualified staff of professionals including:

- **Sidney K. Komatsu, MAI, CCIM** (Vice President) is a graduate of the University of Colorado and holds a Masters Degree in Business Administration from the University of Hawaii. Mr. Komatsu previously held positions at Title Guaranty of Hawaii, JP Morgan Chase.
- **Cliff H. Jhun, CCIM** (Real Property Analyst) is a graduate of University of Hawaii with a degree in finance and business management. Mr. Jhun was previously associated with CB Richard Ellis.
- **Lianne K. S. Poppinga, CRA** (Real Property Analyst) had practiced as an independent fee appraiser for the past ten years prior to joining LCS and is a graduate of the University of Hawaii.
- **Matthew Balkin** (Real Property Analyst) is a graduate of the University of Washington and previously worked as a legislative aid and research analyst in the Hawaii State Senate.
- **Carter Pomai Jones** (Real Property Analyst) previously worked as an analyst for Medusky and Company, another Hawaii based real estate appraisal practice.

We would be delighted to meet with you at your convenience to further discuss our services and how we can be of assistance to you. Following, we have included a sampling of major clients for whom this practice and its principals have completed assignments as well as certain reference sources.

ESTATE AND LAND COMPANIES

Alexander & Baldwin, Inc.
Bernice Pauahi Bishop Estate
C. Brewer & Company
Estate of James Campbell
Grove Farm Land Corporation
Iolani Schools
Knudsen Farms (Kauai)
McCandless Properties
Oceanic Properties
Parker Ranch
Theo H. Davies, Co., Inc.
Victoria Ward, Limited
Amfac, Inc.
Chrysler Realty Corporation
Estate of Samuel M. Damon
First Hawaiian Trust
Grove Farm Properties
Kaneohe Ranch
Liliuokalani Trust
The Nature Conservancy
Bank of Hawaii Trust
The Queen Emma Foundation
Trust for Public Lands
W.H. Shipman, Limited

FINANCIAL INSTITUTIONS

American Savings Bank
Bank of Hawaii
Bank of Tokyo
Citicorp
Chase Manhattan Bank
Finance Factors, Ltd.
First Federal Savings (Arkansas) United
First National Bank of Chicago
Fremont Investment and Loan
GMACCM
Homestreet Financial
Metropolitan Mortgage and Securities
Nippon Credit Bank
Pacific Capital Funding
Sanwa Bank
TRI Capital Corporation
Shinsei Bank
Bank of America
Bank of the West
Bank of the Midwest
Central Pacific Bank
Duetsche Bank
First Federal Savings
First Hawaiian Bank
Fleet Bank
Hawaii National Bank
HSBC
La Jolla Bank
Mitsui Trust & Banking Co., Ltd.
Pacific Guardian Life
Royal Bank of Canada
Transpacific Mortgage
Western Farm Credit Bank
Wells Fargo

BUILDERS AND DEVELOPERS

A & B Properties
Bill Mills
Castle & Cooke Properties, Inc.
Dole Food Company, Inc.
Finance Realty
Gentry Pacific, Ltd.
Graham Murata Russell
Hawaii States Properties
Hawaiian Electric Industries, Inc.
Herbert K. Horita Realty
Andre Tatibouet
BIGI Corp.
CMI Corp.
Coastal Rim Properties
Front Street Properties
Grosvenor International Ltd.
Halekua Development
Hawaiian Dredging
Hawaiian Investment Co., Inc.
Houma Investment

BUILDERS AND DEVELOPERS
(Continued)

The MacNaughton Group
The Maryl Group
Pan-Pacific Development
Pili Hale Associates
Public Storage, Inc.
Rick Rainalter
Stanford Carr Development
West Beach Estates
Waikamilo Properties
Mike Klein
Pacific Construction, Ltd.
Pankow Development Inc.
Princeville Development Corp.
Reynolds + Shidler
Stark Development Co., Ltd.
Toya Real Estate Company
Waitec Development Inc.
WCC Partners

INDUSTRIAL AND COMMERCIAL

AT & T Global Solutions
Better Brands, Ltd.
C. Itoh & Company (America)
Castle & Cooke Terminals, Ltd.
Communications Satellite Corp.
Fisher Hawaii
GTE Hawaiian Telephone
Hawaii Meat Company
Heftel Broadcasting Corp.
Kaiser Permanente
Lockheed Martin
Mitsui Mutual Life Ins. Co.
Pacific Resources, Inc.
Sony Corporation (Hawaii)
Theo H. Davies & Co., Ltd.
Wilcox Memorial Hospital
Barnwell Industries
C. Brewer & Company
California & Hawaiian Sugar Co.
Chevron U.S.A., Inc.
Daiichiya – Love's Bakery
GASPRO
Halekulani Corporation
Hawaiian Electric Co., Inc.
I & F Company (Japan)
Kodak Corporation
Lone Star Hawaii Properties
Northwestern Mutual Life
Shell Oil Company
Texaco, Inc.
Times Supermarkets

FEDERAL GOVERNMENT

Department of the Air Force
Department of the Navy
Federal Aviation Administration (FAA)
Federal Savings & Loan Ins. Corp. (FDLIC)
National Weather Service
U.S. Department of the Interior
U.S. General Services Administration (GSA)
United States Postal Service
Department of the Army
Department of Transportation
FDIC
Internal Revenue Service
U.S. Army Corps of Engineers
U.S. Department of Justice
U.S. Fish & Wildlife

CITY AND COUNTY OF HONOLULU

Department of Budget and Finance
Department of Public Works
HFCDC
Dept. of Corporation Counsel

STATE OF HAWAII

Department of the Attorney General
Department of Land and Natural Resources (DLNR)
Housing and Community Development Corporation of Hawaii (HCDCH)
University of Hawaii
Dept. of Hawaiian Home Lands (DHHL)
Aloha Tower Development Corp (ATDC)
Hawaii Housing Authority (HHA)

Office of State Planning
HCDA

OFF-SHORE

Republic of the Marshall Islands
Marshall Islands Nuclear Claims Tribunal

ATTORNEYS AND ACCOUNTANTS

Alston Hunt Floyd & Ing
Capital Realty Advisors
Carlsmith Ball
Crabtree & Hoshibata
Chun Kerr Dodd Beaman & Wong
Friedman Collard Cutter & Pennetton (CA)
KPMG Peat Marwick
Kobayashi Sugita & Goda
Ning Lilly & Jones
Reinwald O'Connor & Playdon
Bays Deaver Lung Rose & Holma
Ashford & Wriston
Case Bigelow & Lombardi
Pricewaterhouse Coopers
Dwyer Imanaka & Schraff
Goodsill Anderson Quinn & Stifel
Kemper and Watts
McCorriston Miller Mukai MacKinnon
PKF Hawaii
Tam O'Connor Henderson Taira & Yamauchi

SOURCES FOR REFERENCE PURPOSES

A sampling of selected references acknowledging the professional real estate appraisal or consulting services provided by Mr. Stadlbauer, CGA and Mr. Chee, MAI, MRICS as the Principals of **Lesher Chee Stadlbauer, Inc.**, are shown following:

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SOURCES FOR REFERENCE PURPOSES
(Continued)

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deepak@HCDAweb.org

PROFESSIONAL QUALIFICATIONS

OF

STEPHEN E. STADLBAUER, CGA

PROFESSIONAL EXPERIENCE

- Principal, **LESHER CHEE STADLBAUER, Inc.,** Real Estate Appraisal, Arbitration & Consulting, Honolulu, Hawaii, July 2000-Present.
- Principal/President, PRICE STADLBAUER & ASSOCIATES, INC., Real Estate Appraisal and Consulting Services, Honolulu, Hawaii, June 1996-July 2000.
- Owner/President, STADLBAUER & COMPANY, Real Estate Appraisers and Consultants, Honolulu, Hawaii, March 1995-June 1996.
- Independent Contractor, STADLBAUER & ASSOCIATES, Real Estate Appraisers and Consultants, in association with Howell & Associates, Real Estate Appraisers and Consultants, Honolulu, Hawaii, October 1993-March 1995.
- Vice President – Commercial Division, YAMAGUCHI & YAMAGUCHI, INC., Real Estate Appraisers, Honolulu, Hawaii, August 1989-October 1993. In 1993, the appraiser received the "*Commitment to Quality*" award from the firm.
- Associate Appraiser, APPRAISAL RESOURCE (*Formerly Alexander & Alexander*), Real Estate Appraisers, Honolulu, Hawaii, September 1984-August 1989.

PROFESSIONAL ORGANIZATIONS, LICENSES AND INDUSTRY ASSOCIATIONS

- Appraisal Institute – Candidate for the MAI Designation (Comprehensive Examination Passed 2002).
- State of Hawaii Certified General Appraiser, License No. CGA-190, Expiration Date: December 31, 2015.
- Vice President – Honolulu Chapter of the Appraisal Institute, 2014.
- Secretary/Treasurer – Honolulu Chapter of the Appraisal Institute, 2013.
- Director – Honolulu Chapter of the Appraisal Institute, 2010-2012.
- Downtown/Chinatown Task Force, (*Established by Mayor Harris*), 1995.
- Hawaii Chapter of the Appraisal Institute Education Committee Member, 1994-1995.
- Commercial Builders Council of Hawaii (CBC), an Affiliate of the Building Industry Association of Hawaii (BIA). Steering Committee Member of CBC, 1993.

Contributing Author

- *Mini Storage Messenger - (December 2009).*

QUALIFIED EXPERT WITNESS

- Mr. Stadlbauer has been accepted as an expert witness in real estate valuation in various arbitration and mediation proceedings in the State of Hawaii. In addition, Mr. Stadlbauer has also functioned as an arbitrator, both as a panel member and as a sole arbitrator.

Selected Arbitration Panel Appointments:	Waikiki Trade Center – Land Value and Land Rent (Honolulu) Koko Marina Theaters - Space Rent, sole appraiser/arbitrator (Honolulu) Pali Safeway – Land Value and Land Rent (Honolulu) Ceridian Building - Space Rent (Honolulu) Mapunapuna Industrial Subdivision (Tri Palm) – Land Rent (Honolulu) Royal Kona Resort – Land Value (Island of Hawaii) Mapunapuna Industrial Subdivision (Foster Equipment) – Land Rent (Honolulu) Wailua Coconut Grove – Land Rent (Island of Kauai) Gentry Industrial Building - Space Rent, sole arbitrator (Honolulu) Anheuser Busch – Land Rent (Halawa, Honolulu) Aqua Wave Waikiki - Land Value and Land Rent (Honolulu) Halawa Industrial Park – Land Values and Land Rent (Honolulu) Maui Self-Serve & Minit Stop – Space Rent (Maui) Hawaii Pizza Hut – Land Rent (Honolulu) Aina Haina Professional Building – Land Rent (Honolulu)

EDUCATION

- University of Hawaii at Manoa, College of Business Administration, Honolulu, Hawaii (*Major: Real Estate*).
- University of Alaska, Anchorage, College of Business Administration, Anchorage, Alaska (*Major: Real Estate*).

Specialized Appraisal Courses and Examinations

- *Uniform Appraisal Standards for Federal Land Acquisitions (December 2010).*
- In addition, Mr. Stadlbauer has completed all appraisal courses and examinations associated with licensing in the State of Hawaii as well as for designation requirements for the Appraisal Institute.

Comprehensive Examination:	Passed the Comprehensive Examination for the Appraisal Institute, Honolulu, Hawaii, August 2002.

SELECTED VALUATION AND CONSULTING ASSIGNMENTS

As organized by property type, following is a sampling of properties for which Mr. Stadlbauer has had the privilege of providing either valuation or consulting services:

Shopping Centers And Specialized Resort Retail Projects:	*Oahu*: Proposed Kapolei Commons (Regional/Lifestyle Mall); Proposed Kewalo Waterfront Center; Nuuanu Shopping Center; Niu Valley Shopping Center; Manoa Marketplace; Waiakamilo Shopping Center; Liliha Square Shopping Center; Windward City Shopping Center; Proposed Marketplace at Kapolei; Royal Hawaiian Resort Retail Shopping Center (Waikiki); Market City Shopping Center; McCully Shopping Center; Aiea Town Square; Halekuai Center; North Shore Marketplace; Pauahi Block-A Retail Shops; Wahiawa Town Center; Proposed Moanalua Shopping Center; Proposed Kapolei Parkway Shops; Big City Diner – Pearlridge Center Phase III.

Shopping Centers And Specialized Resort Retail Projects (continued)	*Maui*: Banyan Inn Marketplace; The Wharf Cinema Center; Azeka Place Shopping Center I and II; Lipoa Center; Hilo Hattie's at Piilani Village Shopping Center. *Hawaii*: Keeau Town Center; Waiakea Center (WalMart anchor); Proposed Henry Street Shops (Kona); Proposed Resort Retail Shops at Mauna Lani (Mauna Lani Resort). *Kauai*: Kiahuna Shopping Village; Old Koloa Town; Anchor Cove Center; Harbor Shopping Village; Pacific Ocean Plaza; Kapaa Shopping Center; Kukui Grove Shopping Center (Regional Mall).
Office Properties And Mixed-Use Retail/Office Buildings:	*Oahu*: Digital Building; Enchanted Lake Plaza; Kaheka Professional Center; 650 Ala Moana Boulevard; Tan Sing Building (Chinatown); 126 North King Street (Chinatown); Stangenwald Building; Ward Court Commercial Center; Proposed Beretania Shopping Square; 4400 Kalanianaole Highway; Proposed Nimitz Business Center; Lee & Young Building (Chinatown); 51 North Hotel Street (Chinatown); University Square; 1020 Keeaumoku Street; ANA Kalakaua Center (Waikiki); Queens Plaza; Rattan Art Gallery Building; Haleiwa Café Building; Dillingham Business Plaza; 33 South King Street; 610 Ward Avenue; 350 Ward Avenue; Kaneohe Professional Building; Horita Square; 1350 South King Street; 1272 South King Street; 512 Kalihi Street; NCR Building; Scan Design Building; Airport Financial Center; 220 South King Central Pacific Bank Building; Kaimuki Plaza; Kukui Health Building.; Hawaiian Dredging Building. *Maui*: Proposed Halelani Plaza. *Hawaii*: Taketa Office Building; Seahorse Centre; New Kaikoo Office Building; Pacific Building; Courtyard at Crossroads Center; Lyman Museum Building. *Kauai*: Waipouli Plaza; First Insurance Building; Kodani Commercial Center; Veterans Administration Building; Kukui Grove Health Center.
Self Storage Facilities:	*Oahu*: A-American Self Storage (Conversion-Kakaako); Hawaii Self Storage Salt Lake (Purpose Built-Mapunapuna); Akamai Self Storage (Purpose Built-Ewa); Hawaii Self Storage Pearl City (Purpose Built-Pearl City); Aloha Island Self Storage (Purpose Built-Kapolei); Simply Self Storage (Conversion-Iwilei); Hawaii Self Storage Waialae (Purpose Built-Kaimuki); Aloha Island Self Storage Wahiawa (Conversion-Wahiawa); Hawaii Self Storage Kapolei (Purpose Built-Kapolei); Hawaii Self Storage Mililani (Purpose Built-Mililani Technology Park); Dillingham Self Storage (Purpose Built-Iwilei); Hy-Pac Self Storage (Conversion – Kalihi); Waikiki Self Storage (Conversion-Honolulu); Aloha Isalnd Self Storage Kalakaua (Purpose Built-Honolulu); Proposed Naval Exchange Self Storage (Conversion-Ford Island, Honolulu); A-American Self Storage (Conversion, Pearl City); StorSecure Kapolei (Purpose Built – Kapolei); StorSecure Hawaii Kai (Purpose Built, Hawaii Kai). *Maui*: Proposed Maui Lani Self Storage (Purpose Built – Wailuku, Maui); Proposed Wailuku Self Storage (Purpose Built – Mill Yard, Maui); A-American Lipoa Street (Purpose Built – Kihei). *Hawaii*: Power Self Storage (Conversion/Purpose Built – Hilo); Kuawa Self Storage (Purpose Built- Hilo); Shipman Self Storage (Purpose Built-Shipman Ind. Park); A-American Self Storage (Purpose Built-Shipman Ind. Park). *Kauai*: Guardian Self Storage (Purpose Built, Kauai); Kauai Self Storage (Purpose Built – Kauai).
Industrial And Industrial Mixed-Use Properties	*Urban Honolulu (Kakaako through Sand Island)*: Coral Commercial Center; Lagoon View Industrial Center; Marina Commercial Center; Bacon-Universal Sales & Service; Sperry Warehouse; United Recapping Facility (SIBA); Puuhale Warehouse; Mart-Mary Warehouse Complex; Cannery Commercial Center; Hon-Blue facility. *Halawa Ind. Park / Halawa Business Park*: Finlay Testing Laboratory; Marco Warehouse; 1245 Halawa Valley Road; Queen Emma Foundation Warehouse; 99-1233 Halawa Valley Road; 99-1421 Koaha Place. *Pearl City Industrial Park*: Bacon-Universal Warehouse; Hawaiian Housewares Distribution Warehouse Facility; RPM Transportation Warehouse. *Mililani Tech Park*: Various lot valuations. *Gentry Business Park:* C. Lloyd Johnson Distribution Warehouse; Hawaiian Delight Distribution Warehouse; A.C. Kobayashi Warehouse; Carolson Building.

Industrial And Industrial Mixed-Use Properties (continued):	*Mill Town Center Ind. Subdivision*: Various lot valuations; Proposed Jade Foods Building; Proposed Pacific Glove facility. *Waipahu Industrial Subdivision*: Pacific Machinery facility; 94-315 Leonui Whse/Ofc.; Waipahu Industrial Center. *Kapolei*: West Kalaeloa Business Park site valuation (100-acres); Kapolei Business Park II site valuation (~53-acres); Raceway Park site valuation (~68-acres); Various lot valuations; Various existing and proposed industrial facility valuations. *Campbell Ind. Park / Kenai Ind. Park*: Various lot valuations; Hawaiian Welders Facility; Southern Wine & Spirits Distribution Warehouse; S & M Sakamoto Whse.; Goodyear Whse.; 91-165 Kalaeloa Whse.; Mutual Welding Property; Former Grace Pacific property; Proposed Precision Moving; Proposed Pacific Transfer facility; Pacific Allied Products facility; Covan Warehouse. *Outer Island Industrial Districts*: A.C. Kobayashi Warehouse (Maui); Y. Hata Distribution Warehouse (Maui); Sure-Save Distribution Warehouse (Hawaii); Wo Warehouse (Kauai); Lapahoehoe Bus Facility (Kauai); All Pool and Spa Facility (Kauai); Chevron Distribution (Kauai); Hygrade Electric Warehouse (Maui); Kalokohana Business Center (Hawaii); Arzadon Industrial Park Warehouse (Kauai); Kodama Hui properties (Maui); Ashida Ind. Complex Kalanianaole Hwy. (Hawaii); Hilo Industrial Plaza (Hawaii).
Industrial Specialized Cold Storage Facilities:	Proposed Ramar Foods Cold Storage Facility (Kapolei Business Park, Oahu); Former Wilson Foods Facility (Waipahu).
Industrial Condominium Projects:	220 Kalihi Street Industrial Condominium (Kalihi); 2522 Rose Street (Kalihi); Waihona Industrial Center (Pearl City); Proposed Spectrum Business Park Phase I (Kapolei Business Park); Proposed Spectrum Business Park Phase II (Kapolei Business Park); Proposed Kapolei Industrial Condominium (Kapolei Business Park).
Residential Subdivisions:	Koolau Hale (Kaneohe); Pali Kai (Kauai); Ka Ono Ulu-Phases 1 and 2 (Maui); The Heights at Wailuna (Pearl City); Royal Maunalani (Waialae); Pokai Bay Ocean View (Waianae); Puu Lani Ranch Subdivision (Hawaii); Alii Villas (Hawaii).
Multi-FamilyApt./ And Condominium Properties (Includes HUD Section 223(f):	Kewalo Apartments; Lanakila Gardens; Riverside Apartments-Hilo (100 units); Halawa View Apartments; Kilohana Apartments; Proposed Kekuilani Courts; Beretania North-Maunakea Tower; Lee Apartments; Nani-Wai Apartments; Ward-Kinau Apartments; Beretania North-Kukui Tower; Kalani Gardens Apartments; Kilani Village; Village Annex at Waipio (80 units); Kihei Regency (100 units - Maui); Hibiscus Hill Apartments (80 units); Hilo Val Hala Apartments 223(f) (105 units-Hawaii); Jack Hall Memorial (Hawaii); Plumeria Apartments (Hawaii); Barbers Point Housing Complex (516 units); Waipahu Jack Hall (144 units).
Specialized Student Housing Facilities	Kalo Place Student Dormitory; Ena Matoi Building; Ohia Student Suites; Proposed Hilo Student Housing; Waikiki Hana Student Suites; Kalo Terrace Student Suites; University Manor Student Housing.
Specialized Multi-Family Housing – Independent Living (Senior Housing) and LIHTC Facilities:	Proposed Kaluanui Senior Apartments LIHTC (Hawaii Kai); Proposed Palehua Terrace II LIHTC (Makakilo); Proposed Kulana Hale Elderly (Honolulu); Captain Cook Elderly Apartments 223(f) (Kealakekua, HI); Waimanalo Kupuna Senior Housing; Hale Ohana Apartments LIHTC, (Koloa, Kauai); Honokowai Villa Apartments LIHTC, (Honokowai, Maui); Lokenani Hale (Wailuku, Maui), Wilikina Elderly, Hale O' Hauoli Elderly, Hale Mohalu II LIHTC, Imi Ikena LIHTC (Kahului, Maui).
Medical Offices, Surgical Centers, and Specialized Radiology Clinics	Pearl City Medical Building; Kailua Professional Center; Kuakini Physicians Tower; Rajdev Medical Clinic Building (Hilo, Hawaii); Hawaii Family Medical Center (Kauai); Proposed Kona Radiologic Center (Kona, Hawaii).

Skilled Nursing and Assisted Living Facilities:	Aloha Health Care Nursing Facility (120 Beds); Proposed St. Francis Nursing Facility (240 Beds); Liliha Health Care Nursing Facility (92 Beds); Proposed Kulana Hale II Assisted Living Facility (216 Beds); Oahu Care Nursing Facility (72 Beds); Oahu Health Care Skilled Nursing Facility (120 Beds); Proposed Hale Ku'ike (26 Bed Alzheimer's Facility); Roselani Assisted Living Facility (114 beds-Maui); Proposed Wilson Care Home (22 beds); Proposed Hale Kuike 2 (28-bed Alzheimer's facility); Manoa Senior Care (ARCH).
Special Studies:	Royal Hawaiian Shopping Center Space Rent Analysis; Specialized Senior Housing *Market Demand Studies* in Wailuku, Maui, Honokaa, Hawaii, and various locations on Oahu; Nanakuli Self-Help Housing Market Demand Study; Wahiawa Vision Team Consulting; Proposed Kulana Malama Intergenerational Care Facility (Pediatric SNF/Alzheimer's); Ground lease consultation – Piers 5-6 (Honolulu); Long-term ground rent – Kaneohe State Hospital Site.

March 2014

EXHIBIT D

Selected Specialized Senior Housing And Multifamily Studies

SELECTED MULTI-FAMILY HOUSING STUDIES

The principals of **Lesher Chee Stadlbauer, Inc. (LCS)** have been involved in the valuation and analysis of numerous standard and affordable, long-term rental residential housing projects. Expertise has been demonstrated in the analysis of specialized affordable housing projects, inclusive of the valuation of Low Income Housing Tax Credit (LIHTC) projects, and programs set forth by the U.S. Department of Housing and Urban Development (LIHPRHA, 223(f) and MAP).

In aggregate, the analyses prepared by **LCS** represent several thousand housing units throughout Hawaii. Selected projects include the following: [1]

- **STANDARD, LONG-TERM RENTAL RESIDENTIAL HOUSING:**

  KEWALO APARTMENTS (Honolulu); **LANAKILA GARDENS** Affordable Housing Project (Honolulu); **KILOHANA APARTMENTS**; **NANI-WAI APARTMENTS** (Wahiawa); **LEE APARTMENTS** (Honolulu); **WARD-KINAU APARTMENTS** (Condominium Conversion, Honolulu); **KILANI VILLAGE** (Wahiawa); **REGENCY AT POIPU KAI** (Poipu, Kauai); **DATE STREET APARTMENTS** (Honolulu); **KIHEI REGENCY** Apartments (Kihei, Maui); **QUEEN EMMA GARDENS** (Condominium Conversion, Honolulu); **IOLANI REGENT** Apartments (Honolulu); **HAWAIIAN HORIZON HOTEL**; **COCONUT INN** (Napili, Maui); **PARADISE GARDENS** Apartments (Kihei, Maui), **KAILUA BAY RESORT** (Kona, Hawaii); **MAUI PARK** (Honokowai, Maui); Proposed **PIILANI GARDENS**(Honokowai, Maui).

- **SPECIALIZED HUD PROGRAMS:**

  RIVERSIDE APARTMENTS Affordable Housing Project (HUD Title 6 LIHPRHA, Hilo, Hawaii); **HALAWA VIEW** Affordable Housing Project (HUD Title 6 LIHPRHA, Aiea); **BERETANIA NORTH-MAUNAKEA TOWER** (HUD Title 6 LIHPRHA, Honolulu); **BERETANIA NORTH-KUKUI TOWER** (HUD Title 6 LIHPRHA, Honolulu); **KALANI GARDENS** Apartments (HUD Title 6 LIHPRHA, Mililani); **VILLAGE ANNEX** (HUD 223(f) Waipio); **HIBISCUS HILL** (HUD 223(F), Waipio); **HILO VAL HALA** Apartments (HUD MAP, Hilo, Hawaii).

- **AFFORDABLE, LONG-TERM RENTAL HOUSING (INCLUDES LIHTC):**

  Proposed **KEKUILANI COURTS** Affordable Housing Project (Kapolei); **FRONT STREET APARTMENTS** (142 Affordable Units with Low Income Housing Credits, Lahaina, Maui); **TROPICANA VILLAGE** Affordable Housing Project (Waipahu); **HALEKUA GARDENS** and **ROYAL KUNIA GARDENS** Affordable Housing Projects (Royal Kunia); **PALEHUA TERRACE I** Affordable Housing Project (Makakilo); **CAMBRIDGE PARK** Affordable Housing Project (Makakilo); **PALEHUA TERRACE II** Affordable, Rental Apartments for Families (with LIHTC, Makakilo); **Imi Ikena** Affordable, Rental Apartments for Families (with LIHTC, Kahului, Maui);

[1] All projects are on the Island of Oahu unless otherwise noted.

SELECTED SPECIALIZED SENIOR HOUSING AND SENIOR CARE STUDIES

In addition to long-term rental housing projects for families, specific examples of specialized senior housing and care facilities analyzed by the principals of **Lesher Chee Stadlbauer, Inc. (LCS)**, include the following:

1. Valuation of the proposed **KULANA HALE I** Affordable, Independent Senior Rental Apartments (175 Units, Central Honolulu, Oahu).

2. Valuation of the proposed **KALUANUI SENIOR APARTMENTS**, Affordable, Independent Rentals for Qualifying Seniors (31 Units with Low Income Housing Credits, Hawaii Kai, Oahu).

3. The **HAILI ELDERLY** Affordable, Independent Senior Rental Housing Project (Hilo, Hawaii).

4. The proposed **HALE MOHALU** Affordable, Senior Independent Rental Housing Project with LIHTC (Pearl City, Oahu).

5. The **KANEOHE ELDERLY** Affordable, Independent Senior Rental Housing Project (44 Units, Kaneohe, Oahu).

6. Valuation of the proposed **LYMAN GARDENS** Affordable, Independent Senior Community Condominium Project (113 Units, Hilo, Hawaii).

7. Valuation of the **JACK HALL APARTMENTS**, Affordable Family and Independent Senior Rental Housing Project (144 Units, Waipahu, Oahu).

8. Market rental studies for affordable, senior independent rental housing projects such as The **HAUSTEN GARDENS** (Honolulu, Oahu), **JACK HALL APARTMENTS** (Waipahu, Oahu and Kona, Hawaii).

9. Market Demand Study for the proposed **HONOKAA KNOLLS** Affordable, Independent Senior Rental Housing Project (Honokaa, Hawaii).

10. Market Demand Study for a proposed **SENIOR INDEPENDENT RENTAL HOUSING PROJECT** (Wailuku, Maui).

11. Market Demand Study for the proposed **KALUANUI SENIOR APARTMENTS**, an Affordable, Independent Senior Rental Housing Project (Hawaii Kai, Oahu).

12. Market Demand Study for the proposed **NANAIKEOLA SENIOR APARTMENTS** an Affordable, Independent Senior Rental Housing Project (Nanakuli, Oahu).

13. Valuation of the **WAIMANALO KUPUNA APARTMENTS**, an Affordable, Independent Living, Residential Rental Housing Facility for Qualified Seniors (Waimanalo, Oahu).

14. Valuation of the proposed **KULANA HALE II ASSISTED LIVING FACILITY** (204 Beds, Central Honolulu).

15. Valuation of the **ALOHA HEALTH CARE SKILLED NURSING FACILITY** (Kaneohe, Oahu).

16. Valuation of the **LILIHA HEALTH CARE SKILLED NURSING FACILITY** (Lower Nuuanu, Oahu).

17. Valuation of the **OAHU CARE SKILLED NURSING FACILITY** (Central Honolulu).

18. Valuation of the **AIEA HEIGHTS REST HOME** (Aiea, Oahu).

19. Valuation consulting **KAPUNA WAI OLA SKILLED NURSING AND ALZHEIMER'S CARE FACILITY** (120 beds, Kapolei, Oahu).

20. Valuation of the **Proposed Hale Ku'ike Care Home** (Nuuanu, Oahu). This facility represents a renovation and change of use for the former Nuuanu Lani Care Home. The Hale Ku'ike facility provides specialized dementia/Alzheimer's care on a private pay basis.

OTHER SPECIALIZED RESIDENTIAL CARE STUDIES

In response to emerging markets in specialized residential care in Hawaii, **Lesher Chee Stadlbauer, Inc. (LCS)** has developed necessary research and analyses to assist our clients with decision making relative to unique product types such as the following:

1. Market Study for the proposed **PEDIATRIC SKILLED NURSING FACILITY AT KULANA MALAMA** (Ewa, Oahu).

2. Market Study for the proposed **ALZHEIMER CARE FACILITY AT KULANA MALAMA** (Ewa, Oahu).

Dec. 2012

EXHIBIT E

Certificate of Good Standing

Department of Commerce and Consumer Affairs

CERTIFICATE OF GOOD STANDING

I, the undersigned Director of Commerce and Consumer Affairs of the State of Hawaii, do hereby certify that according to the records of this Department,

LESHER CHEE STADLBAUER, INC.

was incorporated under the laws of Hawaii on 12/20/2001 ; and that it is an existing corporation in good standing, and is duly authorized to transact business.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Department of Commerce and Consumer Affairs, at Honolulu, Hawaii.

Dated: March 28, 2014

Director of Commerce and Consumer Affairs

To check the authenticity of this certificate, please visit: http://hbe.ehawaii.gov/documents/authenticate.html
Authentication Code: 210126-COGS_PDF-124372D1

Appendix C

Market Study, Phase 2

NOVOGRADAC & COMPANY LLP®

CERTIFIED PUBLIC ACCOUNTANTS

A MARKET CONDITIONS AND PROJECT EVALUATION SUMMARY OF

KAPOLEI PHASE II

Located At

WAKEA STREET AND ALA KAHAWAI STREET
KAPOLEI, HONOLULU COUNTY, HAWAII

Effective Date: October 29, 2013
Report Date: December 6, 2013

Prepared For

Frank Mola
President
Coastal Rim Properties, Inc.
16601 Gothard Street, Suite F
Huntington Beach, CA 92647

Prepared By

Novogradac & Company LLP
7227 Metcalf Avenue, Suite 250
Overland Park, KS 66204
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NOVOGRADAC & COMPANY LLP®
CERTIFIED PUBLIC ACCOUNTANTS

December 6, 2013

Frank Mola
President
Coastal Rim Properties, Inc.
16601 Gothard Street, Suite F
Huntington Beach, CA 92647

Re: Market Study of proposed Kapolei Phase II
Kapolei, Hawaii

Dear Mr. Mola:

At your request, Novogradac & Company LLP has performed a study of the condominium housing and multifamily rental markets in the Kapolei, Hawaii area.

The purpose of this market study is assess the viability of Kapolei Phase II (Subject), a proposed 143-unit high-rise multifamily development. For the purpose of this analysis, we have analyzed the Subject two ways: as both a for-sale condominium project and as a rental project. The sponsor anticipates restricting all of the proposed condominium units to households earning 140 percent of the area median income (AMI) or below, as required under the Hawaii Housing Finance and Development Corporation (HHFDC) Dwelling Unit Revolving Fund (DURF). As a rental project, the units would not be subject to any income or rent restrictions. It should be noted that we have neither provided a recommendation of which scenario (owner or rental) is more feasible nor analyzed the Subject's highest and best use.

The following report provides support for the findings of the study and outlines the sources of information and the methodologies used to arrive at these conclusions. The scope of this report generally meets the requirements of the HHFDC, including the following:

- Executive Summary
- Project Description
- Regional and Local Market Area Analysis
- Supply Analysis
- Demand Analysis
- Conclusions and Recommendations

The depth of discussion contained in the report is specific to the needs of the client as well as the requirements of HHFDC pursuant to the market study guidelines outlined in Appendix 1 of the 2013/2014 Qualified Allocation Plan. Given the nature of the Subject development, some deviations may be made from the HHFDC market study requirements, as these guidelines are targeted toward affordable rental development, as opposed to owner-occupied or market rate

rental development. Novogradac & Company LLP adheres to market study guidelines promulgated by the National Council of Housing Market Analysts (NCHMA). This report deviates from NCHMA market study guidelines in areas specified in HHFDC market study requirements, and therefore is not in compliance with NCHMA market study guidelines. The report and the conclusions are subject to the *Assumptions and Limiting Conditions* attached.

The ***Government Consulting and Valuation Advisory*** (GoVal) Group of Novogradac provides valuation services including housing needs assessments, appraisal services for market-rate and affordable housing properties, both for sale and rental, market studies, GIS and demographic analysis, feasibility analysis, and rent comparability studies throughout the country. The GoVal Group performs approximately 1,800 market studies and appraisals per year and in the past decade nearly 11,500 market studies and appraisals have been completed nationwide. These reports were completed for developers, lenders, syndicators, investors, or directly for state and local agencies. Reflecting this experience, the firm maintains client relationships with the leading multifamily housing sponsors in the industry.

Coastal Rim Properties, Inc. is the client in this engagement. We understand that they will use this document to assist in obtaining HHFDC DURF and/or other financing, as well as internal investment decisions. Intended users are those transaction participants who are interested parties and have knowledge of the applicable HHFDC program. These could include local housing authorities, state allocating agencies, state lending authorities, as well as construction and permanent lenders. As our client, Coastal Rim Properties, Inc. owns this report and permission must be granted from them before another third party can use this document. We assume that by reading this report another third party has accepted the terms of the original engagement letter including scope of work and limitations of liability. We are prepared to modify this document to meet any specific needs of the potential users under a separate agreement.

K. David Adamescu inspected the Subject property, as well as performed research and an analysis of the Subject property and comparable market data incorporated in this report. Additionally, Mike Anderson and Mariam Abdelhamid provide assistance with the research.

Please do not hesitate to contact us if there are any questions regarding the report or if Novogradac & Company LLP can be of further assistance. It has been our pleasure to assist you with this project.

Respectfully submitted,
Novogradac & Company LLP

Rebecca S. Arthur, MAI
Partner

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Principal

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

- The proposed Subject site is located at the intersection of Wakea Street and Ala Kahawai Street (Wai Aniani Way) in Kapolei, Honolulu County, Hawaii. The proposed Subject will consist of a single 13-story, high-rise structure (11-stories of residential above a two-story podium with parking garage and 7,861 square feet of ground floor retail) housing 143 studio, one, two and three-bedroom units. The construction of the Subject is expected to begin in June 2014, with an estimated completion date of March 2016. Analysis of the commercial space is outside the scope of this engagement.

- For the purpose of this analysis, we have analyzed the Subject two ways: as both a for-sale condominium project and as a rental project. The sponsor anticipates restricting all of the proposed condominium units to households earning 140 percent of the area median income (AMI) or below, as required under the Hawaii Housing Finance and Development Corporation (HHFDC) Dwelling Unit Revolving Fund (DURF). As a rental project, the units would not be income or rent restricted. As summarized below, we believe that both the proposed for-sale condominium and market rate rental concepts are feasible; however, we have neither provided a recommendation of which is more feasible nor analyzed the Subject's highest and best use.

- The proposed Subject will be the second phase of the four-phase Kapolei 'Ohana development. This development will occupy an entire square block within the Kapolei central business district and will be bounded by Haumea Street on the north, Alohikea Street on the west, Wakea Street on the east, and Ala Kahawai Street (formerly known as Wai Anani Street) on the south. Phase I, a proposed affordable senior rental development featuring 154 studio, one and two-bedroom units, is expected to begin construction in May 2014 and will be complete by March 2016. Phases III and IV will be market rate condominium developments that will each consist of 143 studio, one and two-bedroom units. Both phases are expected to commence construction in 2016 and open in 2018. The entire development will consist of similar 13-story structures that will include a two-story podium that will offer parking and ground floor retail and commercial for residents and visitors. Collectively, the four phases will include a retail component of 18,898 square feet.

- Unemployment in the Honolulu Metropolitan Statistical Area (MSA) decreased from 2002 to 2006. However, from 2007 to 2009, the unemployment rate increased from 2.5 to 5.8 percent, which was a result of the recent national recession. The unemployment rate began to decline in 2010, which has continued to present. The 2013 year-to-date average unemployment rate indicates a 0.8 percentage point decrease since year end 2012. Furthermore, the July 2013 unemployment rate is 4.2 percent, compared to 5.5 percent from July 2012. The national recession and mortgage crisis have impacted both the MSA and the nation, which is reflected in the data. However, it appears that the MSA has not been as severely affected as the nation. Additionally, the Honolulu, HI MSA appears to be outperforming the nation in terms of unemployment as the July 2013 unemployment rate was significantly lower than the nation, 4.2 percent versus 7.7 percent, respectively.

  From 2003 to 2006, the MSA and the nation experienced continual employment growth. In fact, the nation continued to experience employment growth in 2007, while the MSA

experienced a slight decrease in total employment. Total employment in the MSA remained flat in 2008 and decreased significantly in 2009, consistent with the recent national recession. In 2010 and 2011 the MSA experienced an increase in total employment; however, the growth in total employment stagnated in 2012 and has remained so through YTD 2013, increasing by 0.1 and 0.2 percent, respectively.

- The demographic data demonstrates that the primary market area (PMA) and MSA are forecast for a steady increase in population and households through 2017. The PMA is expected to gain 1,652 owner-occupied households and 585 renter-occupied households through 2017. The median household income in the PMA is higher than in the MSA and nation. The *Demand Analysis* section will demonstrate a sufficient amount of income-qualified households presently exist for both the condominium and market-rate rental scenarios.

Condominium Housing Summary

- The Subject will be the first condominium development in the market to offer a high-rise design as well as studio size units. As such, we have supplemented our comparable analysis with data from the broader Honolulu metropolitan area where we deemed most appropriate. Additionally, the Subject will be located within the newly developing Kapolei central business district and will offer convenient pedestrian access to numerous amenities including shopping, schools, library, employment and a park. The Subject will be part of a larger mixed-use development that will incorporate commercial retail outlets at the ground floor level. According to walkscore.com, the Subject has a walkscore of 83, Very Walkable, meaning that most errands can be accomplished on foot. The comparables are all located in neighborhoods that are of good quality, but are not considered to be pedestrian-friendly, with walkscores of 43 to 52. We believe that the Subject's location will offer a significant competitive advantage. Moreover, we believe that the Subject's high-rise design will be marketable as the density and scale of the Subject's overall mixed-use community will foster a synergy with the surrounding retail, office, and recreational uses that is unique in the market.

- The Subject will offer a slightly inferior in-unit amenities package in comparison to all of the comparables. All of the in-unit amenities that will be offered at the Subject are offered at all of the comparables, with the exception of walk-in closets, which are not offered at any of the comparables. In contrast, the Subject will not offer balconies/patios, air conditioning, coat closets, or exterior storage which are found at all of the comparable properties. However, we do not believe that the lack of air conditioning will be a disadvantage based on the proposed energy efficient envelope design, operable windows, and regular trade winds in the area. The Subject will offer a similar to slightly superior common area amenities package in comparison to the comparable properties. The Subject will offer a courtyard, elevators, on-site management and recreation areas, which are not offered at the comparables. In contrast, the Subject will not offer a swimming pool, which is offered at three of the comparables. Overall, the Subject is considered slightly inferior to the comparables in terms of in-unit amenities, slightly superior to Awakea at Mehana, Nanala at Mehana, and Pulewa at Mehana in terms of common area amenities, and superior to Kealakai in terms of common area amenities.

- The Subject will be the first high-rise development in Kapolei and views from the outside facing units will be unobstructed, while views from the interior units will be of a professionally landscaped courtyard and additional phases of the Subject development. None of the comparables offer more than three stories in height nor do any offer view premiums. The Subject will offer a 13-story high rise design. Based on the floor and view premiums being achieved at the comparables, as well as considering the Subject's building design and location, we estimate a floor premium of one percent and an additional one percent mountain view premium.

- We were able to obtain pre-sale absorption data from one comparable in Kapolei and closed sale activity from three comparables in Kapolei. None of the latter comparables offered a pre-sale period, as they are townhome and garden designs and construction is generally not contingent on a pre-sale threshold. As the Subject features a high-rise design, we obtained additional pre-sale absorption data from high-rise developments in Honolulu to temper our analysis. The condominium comparables achieved pre-sale absorption ranging from five to 205 units per month, with an average of 94 units per month. Notably, the comparable in the PMA experienced the slowest pre-sale absorption at five units per month. Nonetheless, based upon the strength of the Subject's location, amenities, design, as well as demand estimates, we estimate a pre-sale absorption pace of 12 units per month, which equates to an absorption period of 12 months.

- All of the comparable condominium units operate as a condominium owner's association and owners are assessed maintenance fees to cover the association's shared expenses. All of the maintenance fees of the comparable properties include water, sewer and trash for the residential units, and all utilities, operating expenses and insurance of common areas. Some of the comparable maintenance fees also include broadband internet and cable. These fees are commonly charged on a per-square-foot basis, and may also include a flat fee for membership dues. Due to the fact that maintenance fees vary based on level of service, operating expenses, building design, and utility consumption, comparisons are difficult. The comparables indicated maintenance fees ranging from $0.26 to $0.29 per square foot. Awakea at Mehana, Nanala at Mehana and Pulewa at Mehana feature a townhome design, while Kealakai features a garden design. These configurations are less comparable to the Subject's high-rise design in terms of operating costs. To better understand reasonable maintenance fees for a similar design as the Subject, we obtained maintenance fee information in Honolulu for comparison. We have tempered our estimate utilizing the data obtained from the comparables located in Kapolei. Additionally, we have considered the electricity savings associated with the Subject's solar co-generation system and have concluded to a monthly maintenance fee of $0.50 per square foot. The following table illustrates the concluded maintenance fee by floor plan.

MAINTENANCE FEES

Unit Type	Unit Size (SF)	Maintenance Fee Per Square Foot	Monthly Maintenance Fee
Studio	360	$0.50	$180
1BR / 1BA	534	$0.50	$267
2BR / 1BA	765	$0.50	$383
3BR / 1BA	990	$0.50	$495

- Upon completion, the Subject will offer an excellent quality product with competitive amenities. The primary strengths of the Subject will be its condition, pedestrian-friendly location, and design as the first high-rise condominium building to be constructed in the PMA. Despite generally smaller than average unit sizes, we believe that the Subject's floor plans and overall design will be well-accepted in the market. Based on the price per square foot of comparable properties in the market, we believe the Subject is capable of achieving base pricing on a per square foot basis of $550, $500, $450 and $400 for studio, one, two and three-bedroom units, respectively. Overall, the Kapolei condominium market is considered strong and the Subject should compete well.

ACHIEVABLE FOR-SALE PRICING

Unit Type	Number of Units	Unit Size (SF)	Surveyed Min Price per SF	Surveyed Max Price per SF	Surveyed Average Price per SF	Novoco Achievable Price per SF (Low)	Novoco Achievable Price per SF (High)*	Novoco Achievable Unit Price (Low)	Novoco Achievable Unit Price (High)*
Studio	11	360	$360	$1,038	$666	$550	$670	$198,000	$241,361
1BR / 1BA	44	534	$480	$480	$480	$500	$609	$267,000	$325,472
2BR / 1BA	77	765	$326	$429	$363	$450	$549	$344,250	$419,639
3BR / 1BA	11	990	$264	$375	$308	$400	$488	$396,000	$482,722

*Residential units will occupy floors three through 13; outward facing units will offer mountain views; the 'high' pricing reflects a one percent per floor premium and an additional one percent per foor view premium.

AFFORDABILITY SUMMARY

Unit Type	Household Size	Maximum Allowable Price 140% AMI*	Achievable Unit Price (Low)	Achievable Unit Price (High)	140% AMI Income Limits*	Indicated Minimum Income (Low)	Indicated Minimum Income (High)
Studio	1 Person	$414,400	$198,000	$241,361	$96,040	$59,394	$69,617
1BR / 1BA	2 Person	$473,600	$267,000	$325,472	$109,760	$80,762	$94,547
2BR / 1BA	3 Person	$532,800	$344,250	$419,639	$123,480	$105,402	$123,176
3BR / 1BA	5 Person	$639,100	$396,000	$482,722	$148,120	$123,860	$144,305

*Maximum price and income guidelines are established by HHFDC and are based on household size. Maximum price assumes a 4.5% APR mortgage with a 5% downpayment and an income to mortgage payment ratio of 28%, per HHFDC guidelines.

- Based on our for-sale demand analysis, we believe that there is adequate demand in the primary market area for the Subject property as proposed based on the demographic information. The overall capture rate for the Subject's units is 10.9 percent and is considered good. The Subject's Novoco achievable pricing meets all HHDFC DURF affordability requirements and is also generally in-line with market pricing. Overall, market characteristics indicate adequate demand for the Subject.

Market Rate Rental Summary

- Upon completion of the construction, the Subject will offer a good quality product with competitive amenities. The primary strengths of the Subject will be its good condition, location, and community amenities. Despite some smaller than average unit sizes, we anticipate the Subject's units sizes will be accepted in the market. Average vacancy within the rental market is 2.6 percent, when excluding the outlier, which is underperforming due to a project-specific issue. Two of the five comparable properties maintain waiting lists. Concessions are not common within the market. The Novoco estimated achievable rents for the Subject's studio, one-bedroom, two-bedroom, and three-bedroom units are $900, $1,200, $1,600, and $2,000, respectively. The Novoco estimated achievable rents are slightly above the average rents per square foot for the respective comparable units, which we believe is reasonable given the Subject's new construction quality and competitive amenities. We believe that the Subject's Novoco achievable rents will be well-accepted within the market.

- None of the comparables offer more than three story height nor floor premiums, Waterfront at Puuloa offers view premiums for those units directly along the oceanfront. The Subject will offer a 13-story high-rise design, consisting of 11 residential stories over a two-story podium. High-rise design is unique in the market so we considered view/floor premiums from the Honolulu market. Two Honolulu high-rises offer floor/view premiums, Capitol Place Apartments and Royal Capital Plaza. Each of these offers units at higher floors and with ocean/mountain views at a premium between $200 and $350. These properties are 39 and 40 stories each, respectively. Managers estimated that a rental view premium would be achievable starting on the 15th floor for views oriented toward Diamond Head/ocean. The Subject's location is significantly less dense than Honolulu and views will be unobstructed. Based on our evaluation of the Subject site location, surrounding land uses, building design (including orientation to the other phases of the Subject), we believe that a view premium of $200 would be achievable for units with mountain views.

- None of the rental comparables have been recently built, thus no absorption data is available. Based upon the strength of the Subject's pedestrian-friendly location, relatively low vacancy rates, presence of waiting lists in the market, and our demand calculations, we believe that the Subject will reach a stabilized occupancy of 95 percent within six to seven months. This lease-up period equates to a rate of approximately 22 units per month.

- The effective rental demand in one year is adjusted for income eligibility and renter status, and it is further adjusted by the number of units that are currently in lease-up or planned in the PMA. As such, the calculations generate a capture rate of 8.6 percent, which indicates expected absorption of less than one year.

PROJECT DESCRIPTION

PROJECT DESCRIPTION

SITE DESCRIPTION

The location of a multifamily property can have a substantial negative or positive impact upon the performance, safety and appeal of the project. The site description discusses the physical features of the sites, as well as the layout, access issues and traffic flow.

General: The Subject is located at the intersection of Wakea Street and Ala Kahawai Street (Wai Aniani Way) in Kapolei, Honolulu County, Hawaii.

Shape: The Subject site is generally rectangular.

Size: The Subject will occupy an approximate one-quarter portion of the proposed Kapolei ‘Ohana development, which encompasses a total of approximately 3.0 acres, or 130,680 square feet, containing four phases.

Zoning: The Subject site is zoned B-2, which permits multifamily and commercial uses. The Subject as proposed will be a legal and conforming use.

Frontage: The Subject site has frontage along Wakea Street and Ala Kahawai Street (Wai Anani Way).

Adjoining Land Uses: The Subject site is located in the northern part of the city of Kapolei and is off of Interstate H-1, a predominant highway on the Island of Oahu. Land use to the north, adjacent to the Subject site, consists of Island Pacific Academy (IPA), a private elementary and secondary school. Also north is Grace Pacific LLC, which is a construction company that typically builds and repairs highways and roads. Further north is the Kapolei Police Station and various banks. There is a bus stop adjacent to the Subject site and additionally various other bus stops are within walking distance of the Subject site. Directly northwest of the Subject site are a few eateries and retailers in addition to off street parking. Westward from the Subject is a place of worship and eastward is a variety of retailers and commercial uses, including a Kmart, a movie theatre, restaurants, and the office of the Historic Preservation Division. North of the movie theater is Interstate H-1, which is notably the busiest highway in Hawaii and leads to the southernmost point of Honolulu. South of the Subject site is a Foodland Kapolei (grocery store), Kapolei Hale City Hall, and vacant land. Many local amenities are within walking distance of the Subject site.

Topography and Existing Improvements:

The site is generally level. The site is currently unimproved. Minimal vegetation exists on the site.

Access and Traffic Flow:

The Subject will offer good accessibility from Wakea Street and Ala Kahawai Street (Wai Anani Way). Wakea Street is a two-way main road with generally light traffic flow, while Ala Kahawai Street (Wai Anani Way) is a two-way secondary road also with generally light traffic flow. Wakea Street provides access to Interstate H-1 (located 0.3 miles to the north of the Subject site), Kamokila Boulevard (to the north) and Kapolei Parkway (to the south), which all lead to various retailers and services. Although Wakea Street is only 0.5 miles in distance, it connects several major roads in Kapolei. Interstate H1 is a major highway that provides access throughout the southern region of the island of Oahu.

Visibility/Views:

Visibility is good from all adjacent streets. Views in all directions will be of other commercial structures including the yet to be constructed other phases of the Subject development. Views are considered good.

The Subject will offer a 13-story high rise design. Based on our evaluation of the Subject site location, surrounding land uses, building design (including orientation to the other phases of the Subject), we believe that view or floor premiums are likely achievable.

Soil and Subsoil Conditions:

We were not provided with soil surveys, but the surrounding and existing improvements suggest that the soils are adequate for development.

Flood Plain:

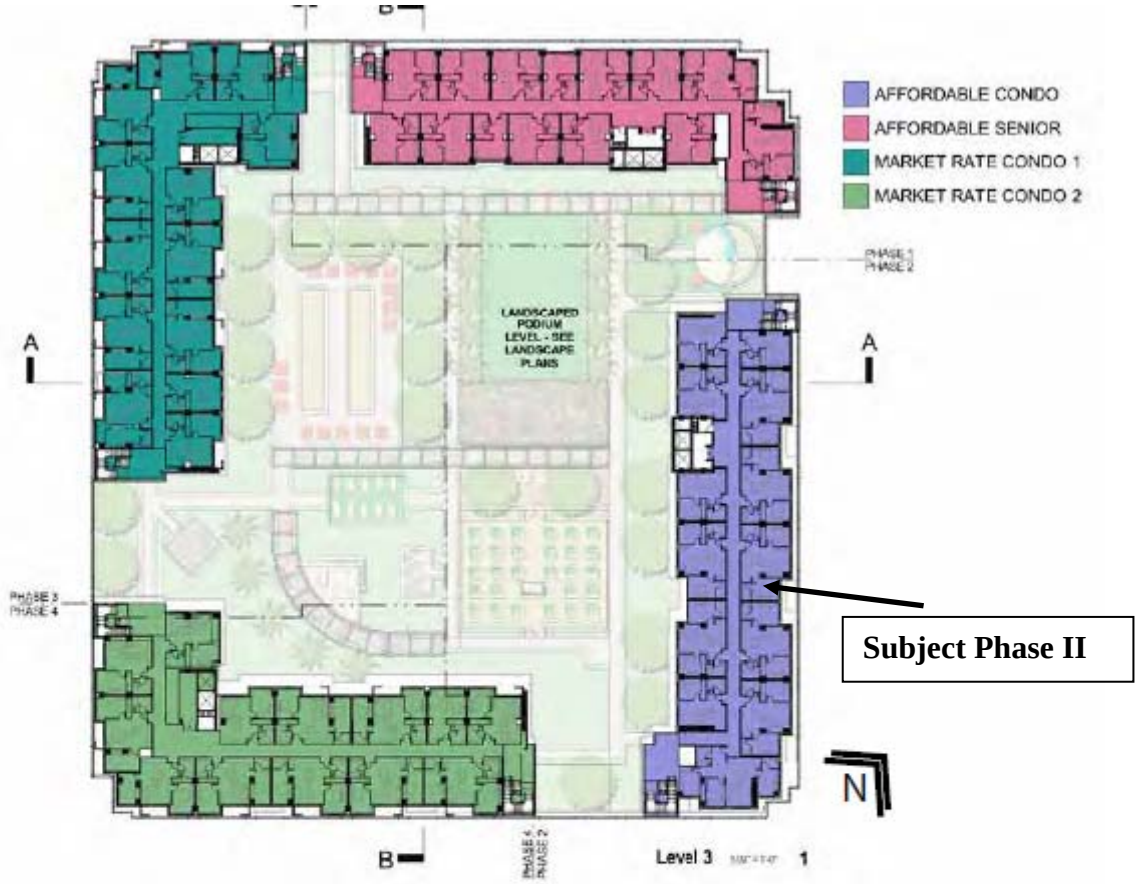
According to www.floodinsights.com Community Panel Number 150001 0310G, dated January 19, 2011, the site is located in Zone X, an area outside of the 100 and 500-year flood zone.

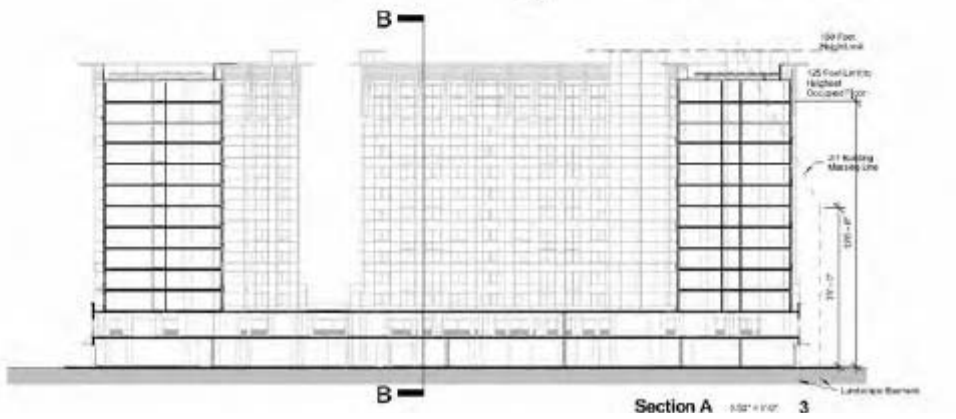
Environmental:

We were not provided with an environmental assessment report. We did not observe any obvious environmental hazards during our site inspections; however, we are not experts within this field.

Detrimental Influences: We are unaware of any detrimental influences that would impact on the value of the Subject.

Conclusion: The Subject site appears physically capable of supporting a variety of legally permissible uses, and is considered a desirable location.





DESCRIPTION OF IMPROVEMENTS

Our description of the improvements is based upon information provided by the developer. We assume that this information is accurate.

Construction Type: The building will consist of steel and concrete frame construction with steel and glass exterior. The roofs will be flat with composite rubber and will incorporate solar panels to generate electricity.

Construction/ Completion Timeline: The construction of the Subject is expected to begin in June 2014, with an estimated completion date of March 2016.

Unit Mix and Size: The proposed unit mix and square footage per unit type is as follows:

UNIT MIX AND SQUARE FOOTAGE

Unit Type	Number of Units	Unit Size (SF)	Total Area
Studio	11	360	3,960
1BR/1BA	44	534	23,496
2BR/2BA	77	765	58,905
3BR/2BA	11	990	10,890
Total	**143**		**97,251**

NLA: 97,251 SF, per the developer.

Proposed Pricing/Rents: The sponsor has not yet established proposed pricing and rents; they intend to consider the conclusions presented in this analysis when developing their pro forma.

Current Rents and Operation: The Subject will be new construction, and therefore has no current rents or operational statistics.

Commercial Space: The Subject will feature a ground floor commercial area of 7,861 square feet along Wakea Street and Ala Kahawai Street. Analysis of the commercial space is outside the scope of this engagement.

Scope of Renovation: Not applicable.

Number of Stories: 13 stories, including a two level concrete podium.

Community Amenities: Upon completion, the Subject will offer a playground/tot lot, picnic area, on-site management, off-street garage parking, community room, and elevators.

Unit Amenities: Upon completion, the Subject's unit amenities will include blinds, a ceiling fan, and a walk-in closet. Appliances will include a refrigerator, electric stove/oven, dishwasher, garbage disposal, and an in-unit washer/dryer.

Parking: Parking will be included in the purchase price or rent. The Subject will offer 235 garage parking spaces, which equates to a total of 1.6 spaces per unit. There is sufficient parking to allow one space per studio and one-bedroom unit and two spaces per two and three-bedroom units (231 spaces required). The proposed parking conforms to the zoning requirements and is deemed reasonable given the target tenancy and the Subject's downtown location within close proximity to public transportation and employment nodes.

Utility Structure: The tenant will pay for all utilities. The buildings will be all electric.

Americans with Disabilities Act of 1990: We assume the property will have no violations of the Americans with Disabilities Act 1990.

Quality of Construction: We assume the property will be constructed in a timely manner consistent with information provided, using good quality materials in a workmanlike manner. In particular, the developer will be seeking LEED Platinum certification.

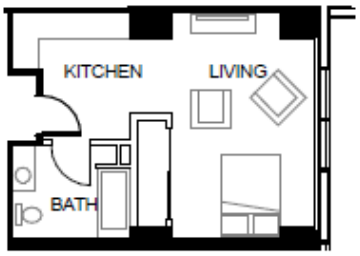
Condition: The Subject will be in excellent condition upon completion.

Functional Utility: We have reviewed the floor plans and determined that the Subject will not suffer from functional obsolescence.

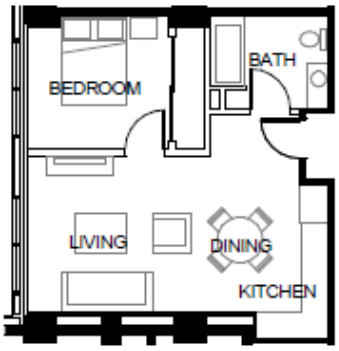
Deferred Maintenance: The Subject will be new construction and not suffer from deferred maintenance.

Conclusion: Upon completion, we anticipate the finished product of the Subject will be comparable or superior to the quality of existing multifamily housing stock in the market area.

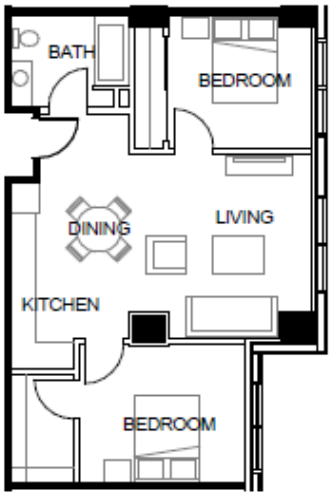
Floor Plans



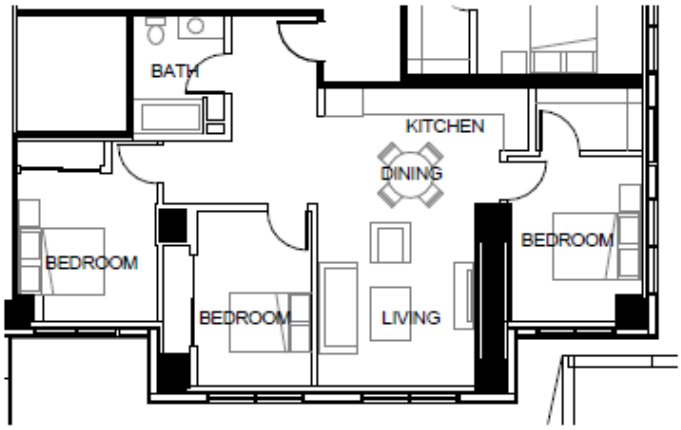
AFFORDABLE CONDO - STUDIO 4



AFFORDABLE CONDO - 1 BEDROOM 3



AFFORDABLE CONDO - 2 BEDROOM 2



AFFORDABLE CONDO - 3 BEDROOM 1

REGIONAL AND LOCAL AREA ANALYSIS

REGIONAL AND LOCAL AREA ANALYSIS

REGIONAL AND LOCAL AREA DESCRIPTION

The Subject is located in Kapolei, Hawaii in southern Honolulu County, on the island of Oahu. Honolulu is the county seat and the county's most populous city. According to 2010 Census data, Honolulu has a population of 337,256. Honolulu County is also known as the Honolulu Metropolitan Statistical Area (MSA). A map of the region is located below.

ECONOMIC ANALYSIS

Employment by Industry

The following chart identifies employment by industry sector within the Subject's PMA, as well as the nation.

2010 EMPLOYMENT BY INDUSTRY				
	PMA		USA	
Industry	Number Employed	Percent Employed	Number Employed	Percent Employed
Retail Trade	11,862	13.1%	15,464,986	11.4%
Health Care/Social Assistance	11,563	12.8%	18,891,157	13.9%
Public Administration	10,257	11.3%	6,916,821	5.1%
Accommodation/Food Services	9,773	10.8%	9,114,767	6.7%
Educational Services	7,324	8.1%	14,168,096	10.4%
Construction	6,235	6.9%	8,872,843	6.5%
Finance/Insurance	4,680	5.2%	6,883,526	5.1%
Transportation/Warehousing	4,646	5.1%	5,487,029	4.0%
Other Services (excl Publ Adm)	3,887	4.3%	6,679,783	4.9%
Admin/Support/Waste Mgmt Srvcs	3,826	4.2%	5,114,479	3.8%
Prof/Scientific/Tech Services	3,635	4.0%	8,520,310	6.3%
Manufacturing	2,675	3.0%	13,047,475	9.6%
Wholesale Trade	2,594	2.9%	4,407,788	3.2%
Real Estate/Rental/Leasing	2,094	2.3%	2,825,263	2.1%
Arts/Entertainment/Recreation	2,033	2.2%	2,628,374	1.9%
Information	1,776	2.0%	3,158,778	2.3%
Utilities	989	1.1%	1,115,793	0.8%
Agric/Forestry/Fishing/Hunting	590	0.7%	1,790,318	1.3%
Mgmt of Companies/Enterprises	107	0.1%	202,384	0.1%
Mining	48	0.1%	723,991	0.5%
Total Employment	**90,594**	**100.0%**	**136,013,961**	**100.0%**

Source: ESRI Demographics 2010, Novogradac & Company LLP, October 2013
*Industry data current as of 2010. Other projections current as of 2012.

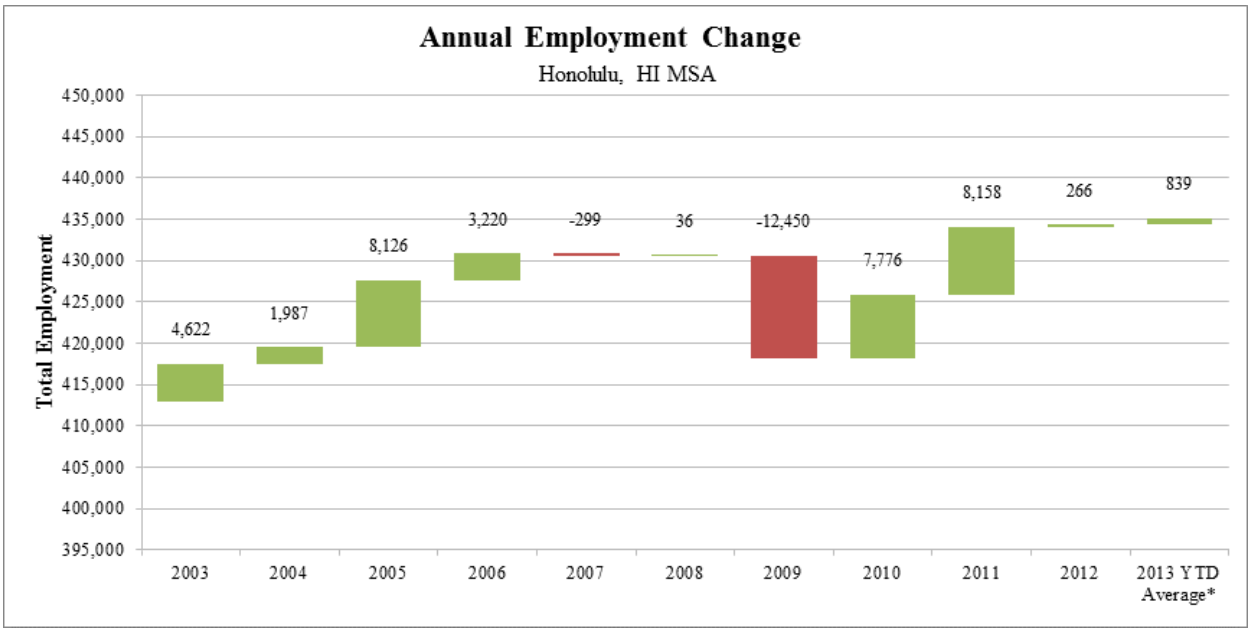
The previous table reflects the workforce for the PMA. The workforce is heavily concentrated in the retail trade, health care/social assistance, public administration, and accommodation/food services industries. There is a larger percentage employed in the PMA within the accommodation/food services, public administration, and retail trade sectors than the nation. The dominance of the retail trade and accommodation/food services sectors can be attributed to the tourism industry, which the area economy is heavily reliant upon. The larger percentage of people employed in the public administration industry is due to the large military presence in the area, as the Subject is in close proximity to Hickam Air Force Base and Pearl Harbor Naval Station. The large percentage employed in the public administration sector within the PMA can also be attributed to workers that are employed by the state government as Honolulu is the state capital. The significant percentage of the workforce employed in the retail trade industry is a sign of economic growth; however, this industry also tends to be volatile, particularly during times when the economy is struggling.

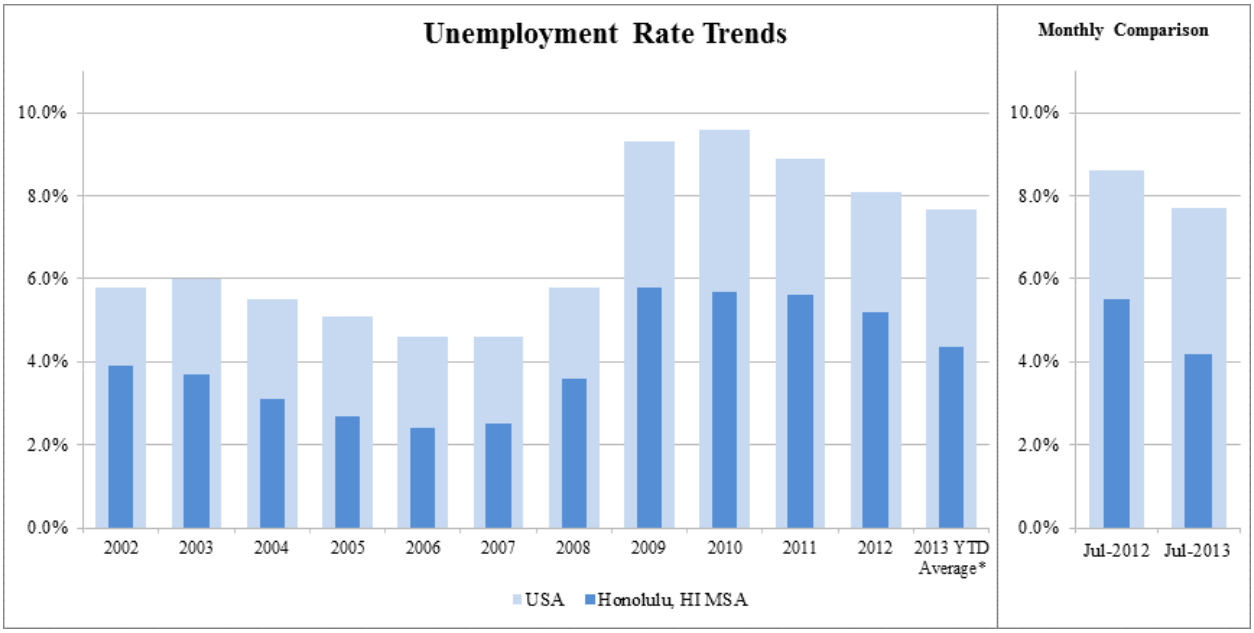
Employment and Unemployment Trends

The following table details employment and unemployment trends for the MSA and the nation from 2002 through July 2013.

EMPLOYMENT & UNEMPLOYMENT TRENDS (NOT SEASONALLY ADJUSTED)								
	Honolulu, HI MSA				USA			
Year	Total Employment	% Change	Unemployment Rate	Change	Total Employment	% Change	Unemployment Rate	Change
2002	412,897	-	3.9%	-	136,485,000	-	5.8%	-
2003	417,519	1.1%	3.7%	-0.2%	137,736,000	0.9%	6.0%	0.2%
2004	419,506	0.5%	3.1%	-0.6%	139,252,000	1.1%	5.5%	-0.5%
2005	427,632	1.9%	2.7%	-0.4%	141,730,000	1.8%	5.1%	-0.4%
2006	430,852	0.8%	2.4%	-0.3%	144,427,000	1.9%	4.6%	-0.5%
2007	430,553	-0.1%	2.5%	0.1%	146,047,000	1.1%	4.6%	0.0%
2008	430,589	0.0%	3.6%	1.1%	145,362,000	-0.5%	5.8%	1.2%
2009	418,139	-2.9%	5.8%	2.2%	139,877,000	-3.8%	9.3%	3.5%
2010	425,915	1.9%	5.7%	-0.1%	139,064,000	-0.6%	9.6%	0.3%
2011	434,073	1.9%	5.6%	-0.1%	139,869,000	0.6%	8.9%	-0.7%
2012	434,339	0.1%	5.2%	-0.4%	142,469,000	1.9%	8.1%	-0.8%
2013 YTD Average*	435,178	0.2%	4.4%	-0.8%	143,644,875	0.8%	7.7%	-0.4%
Jul-2012	430,994	-	5.5%	-	143,126,000	-	8.6%	-
Jul-2013	430,809	0.0%	4.2%	-1.3%	145,113,000	1.4%	7.7%	-0.9%

Source: U.S. Bureau of Labor Statistics, October 2013
*2013 data is through July





Unemployment in the MSA decreased from 2002 to 2006. However, from 2007 to 2009, the unemployment rate increased from 2.5 to 5.8 percent, which was a result of the recent national recession. The unemployment rate began to decline in 2010, which has continued to present. The 2013 year-to-date average unemployment rate indicates a 0.8 percentage point decrease since year end 2012. Furthermore, the July 2013 unemployment rate is 4.2 percent, compared to 5.5 percent from July 2012. The national recession and mortgage crisis have impacted both the MSA and the nation, which is reflected in the data. However, it appears that the MSA has not been as severely affected as the nation. Additionally, the Honolulu, HI MSA appears to be outperforming the nation in terms of unemployment as the July 2013 unemployment rate was significantly lower than the nation, 4.2 percent versus 7.7 percent, respectively.

From 2003 to 2006, the MSA and the nation experienced continual employment growth. In fact, the nation continued to experience employment growth in 2007, while the MSA experienced a slight decrease in total employment. Total employment in the MSA remained flat in 2008 and decreased significantly in 2009, consistent with the recent national recession. In 2010 and 2011 the MSA experienced an increase in total employment; however, the growth in total employment stagnated in 2012 and has remained so through YTD 2013, increasing by 0.1 and 0.2 percent, respectively.

Major Employers
The following table details the state's largest nongovernment employers.

STATE OF HAWAII MAJOR EMPLOYERS		
Employer Name	**Industry**	**Number of Employees**
Altres Medical	Healthcare	10,000
Kapiolani Medical Center	Healthcare	5,000
Kyo-Ya Co Ltd	Accommodations	4,000
Queen's Medical Center	Healthcare	3,500
Hawaii Health Systems Corp	Healthcare	3,400
Tripler Army Medical Center	Healthcare	2,826
Bank of Hawaii	Finance	2,500
St. Francis Healthcare	Healthcare	2,100
Aeko Kula Inc.	Air Cargo	2,090
Towne Realty of Hawaii	Real Estate	2,001
Kaiser Permanente Medical	Healthcare	2,000
Straub Clinic and Hospital	Healthcare	1,900
Oahu Transit Service	Transportation	1,799
Polynesian Cultural Center	Cultural	1,700
Outrigger Enterprises Group	Accommodations	1,600
Hilton-Hawaiian Village Beach	Accommodations	1,500
Honolulu Airport	Air Transportation	1,500
Grand Wailea Resort Hotel	Accommodations	1,400
Roberts Overnighters	Entertainment	1,400
Kuakini Emergency Service	Healthcare	1,300
Hilton-Waikoloa Village	Accommodations	1,200
Kaimuki Toyota/Suzuki	Automotive	1,200

Source: data.hawaii.gov, Novogradac & Co. LLP, October 2013

The largest non-governmental employers in the area are concentrated in the healthcare and accommodations industries. The largest employer in the area is the federal, state, and local government due to the presence of the various military installations and the fact Honolulu is the state capitol. Further employment information regarding government employers within the area was unavailable.

Employment Analysis and Expansion/Contractions
The recent national recession had a considerable negative impact on Hawaii's economy as it is heavily reliant on the tourism industry. However, according to the State of Hawaii Department of Business, Economic Development, and Tourism, total visitor spending for the month of August 2013 increased 5.0 percent from August 2012. Total visitor expenditures for the first eight months of 2013 represented a 3.9 percent increase in visitors from the same time period in 2012. The increase in total expenditures is due to an overall increase of visitors and higher overall daily visitor spending.

Despite the recent recession, it appears that the Hawaiian economy is recovering by the increase in the total number of visitors during 2011 and 2012, according to statistics from the State of Hawaii Department of Business, Economic Development, and Tourism. Additionally, Honolulu County is still working towards a diversified economic base with technology-intensive and knowledge-based enterprises. According to the Oahu Economic Development Board, Honolulu County is still continuing its efforts to further various technology driven sectors including

alternative energy, diversified agriculture, ocean and earth sciences, film and digital media, and satellite tracking. Additionally, the Oahu Economic Development Board indicated that Honolulu is an attractive location for new businesses due to its strategic mid-pacific location, time zone advantage, and well developed infrastructure.

The Chamber of Commerce of Hawaii, the Oahu Economic Development Board, and the State of Hawaii Department of Business, Economic Development, and Tourism could not provide specific information pertaining to new businesses locating to Honolulu County and resulting job growth, or any employment contractions that have occurred within the last six months. Although we were not able to retrieve specific information regarding businesses that have recently expanded or relocated to Honolulu, we were able to gather information on a more macro level from another source with information about the economic climate in the Subject's area. A statistician at the State's Department of Business, Economic Development, and Tourism noted that Hawaii is well known for its sizeable barriers to entry when it comes to development projects (including multifamily), largely in part to scarcity and cost of land and difficult permitting processes. Despite the contact's report on the state of new business development, the contact affirmed the crucial importance of affordable housing programs in the development of multi-family housing projects. He stated that the high cost of land imposes a financial barrier to entry that many developers of affordable multifamily housing cannot overcome without subsidies or other favorable financing.

Hickam Air Force Base and Naval Station Pearl Harbor

Hickam Air Force Base and Pearl Harbor are located approximately four miles and one mile east of the Subject, respectively. Together, they account for approximately 40,000 jobs in the MSA. Hickam Air Force Base consists of 2,850 acres of land and facilities bordering Pearl Harbor and first opened in 1934. During World War II the base was a major center for training pilots and assembling aircraft, as well as serving as the hub of the Pacific aerial network. Today the base remains a launch point of strategic air mobility and operation missions. The air force base was slightly affected by the 2005 BRAC realignment, losing approximately 262 jobs.

Pearl Harbor was established as a U.S. naval base in 1908. Today the base coordinates, schedules, and provides assigned waterfront services to all home-ported and visiting ships and vessels at the Pearl Harbor Naval Complex. The naval station was slightly affected by the 2005 BRAC realignment, losing approximately 290 jobs.

Despite both Hickam Air Force and Base Pearl Harbor losing jobs during the BRAC realignment, both stations continue to have a huge impact on the area today. According to the Chamber of Commerce of Hawaii, the Pearl Harbor Naval Shipyard is the largest industrial employer in Hawaii. Additionally, the U.S. Department of Defense is a major source of revenue to the state, second only to tourism. The Chamber also indicated that the total spending by the armed services in Hawaii in 2007 was $8.2 billion, which resulted in direct and indirect impacts totaling $12.2 billion to Hawaii's economy, in addition to accounting for over hundreds of thousands of jobs and $7.6 billion in household earnings. Both Hickam Air Force Base and Pearl Harbor provide employment and revenue to the state.

Worker Adjustment and Retraining Notification (WARN) notices for companies in Hawaii are available by request from the Department of Labor and Industrial Relations – State of Hawaii. Our emails and phone calls have gone unreturned as of the effective date of this report.

Employment Analysis

The Subject will be located in Kapolei, Hawaii. The Subject site is situated along Wakea Street, south of Interstate H1. Interstate H1 provides access to Honolulu to the east as well as other areas of Oahu. Given the Subject's location, we have focused on the state of Hawaii and HUD's Pacific region in framing our economic analysis. According to Hawaii's list of major employers, the accommodations and health care sectors have historically dominated the local private sector economy, while government and military jobs are prevalent within the public sector in the region.

According to HUD's Regional Market Conditions for the second quarter of 2013 in the Pacific Region, **"Nonfarm payroll growth was positive in all four states in the Pacific region during the second quarter**, despite wide scale job losses from 2008 to 2010. The region added 335,400 jobs in the second quarter of 2013, a 1.8 percent increase compared with the three month average number of jobs recorded for the second quarter of 2012. The same sectors that led overall job growth in the region drove job growth in each state in the region, where the professional and business services sector increased by 81,100 jobs, or 2.9 percent, and the leisure and hospitality sector increased by 84,100 jobs, or 3.6 percent. The government sector declined by 10,600 jobs, or 0.3 percent.

During the twelve months ending July 2013, Hawaii nonfarm payrolls gained 8,000 jobs, or 1.3 percent, compared with a gain of 5,300 jobs, or 0.9 percent, during the twelve months ending June 2012. California gained 256,300 jobs, or 1.8 percent, compared with a gain of 161,200, or 1.2 percent, during the same quarter the previous year. Nonfarm payrolls in Arizona rose by 49,500 jobs, or 2.0 percent, during the second quarter of 2013, compared with the increase of 38,250 jobs, or 1.6 percent, during 2012. Nevada added 21,600 jobs, an increase of 1.9 percent, compared with the addition of 10,700 jobs, a 1 percent increase, during 2012. The average unemployment rate for the region decreased to 8.4 percent from 10.1 percent a year ago.

Single-family homebuilding, home sales, and sales prices increased throughout the region, and sales and rental vacancy rates declined. The number of distressed properties continued to decline throughout the region, but surpluses of distressed properties remain in several areas. Although market conditions appear to be gradually improving, the sales housing market conditions ranged from slightly soft to balanced during the second quarter of this past year, arguably due to high unemployment and tight lending requirements. According to CoreLogic, Inc., new and existing home sales in the region increased 0.2 percent, to 678,400 homes, during the 12 months ending May 2013. In Arizona, sales declined 1.7 percent, to 144,300, and the average home sales price in Phoenix increased 20.6 percent, to $168,400, partially because of a decline in Real Estate Owned (REO) sales. As a percentage of existing home sales, REO sales in Arizona decreased by more than 73 percent during the 12 months ending May 2013.

Increased single-family building activity occurred in all four states of the region, ranging from an increase of 100 homes, or 19 percent, in Hawaii to an increase of 2,375 homes, or 33 percent, in California. In California, the number of new and existing home sales increased by 2.9 percent, to a total of 452,600, during the 12 months ending May 2013. In the San Francisco Bay Area, 54,700 homes sold, a 3.4 percent increase compared with the number sold during the

previous 12 months. During the same period, the average home sales price increased 16.4 percent, to $600,600. **Home sales and average prices both increased in the Hawaii, but in Nevada those factors moved in opposite directions over the course of the same 12 month period ending in May 2013. In Hawaii, new and existing home sales rose by 1.2 percent, to 16,100 homes sold, and the average home sales price in Honolulu increased 9.8 percent, to $530,300.** New and existing home sales in Nevada declined 12.8 percent, to 65,400; however, the average sales price for a house in Las Vegas rose by 20.6 percent, to $168,400, in the span of 12 months ending May 2013.

During the second quarter of 2013, 4.7 percent of home loans in the region were 90 or more days delinquent, were in foreclosure, or transitioned into REO, down from 7.2 percent during the second quarter of 2012 (LPS Applied Analytics). The statewide rates of distressed loans ranged from 3.9 percent in Arizona to 10.5 percent in Nevada, down from 6.6 and 13.5 percent respectively.

Because of improved home sales markets in the Pacific region, single-family construction activity, as measured by the number of single-family homes permitted, rose during the second quarter of 2013. Based on preliminary data, 18,300 single-family homes were permitted in the region, a 22-percent increase over the number permitted during the previous quarter. The greatest percentage increases in home construction occurred in California, where the number of single-family homes permitted increased by 2,375 or 33 percent. **The number of single-family homes permitted in Hawaii increased by 100 homes, or an increase of 19 percent.**

Rental housing markets in the Pacific region varied from soft to tight in the second quarter of 2013. Rental market conditions softened but remained tight in the San Francisco Bay Area. According to Axiometrics Inc., from the second quarter of 2012 to the second quarter of 2013, the apartment rental vacancy rates in the San Francisco MSA declined from 3.9 to 3.7 percent. The rental vacancy rate in Los Angeles declined from 4.9 to 4.8 percent. Average rents rose in all but one of the ten areas and ranged from **a 2.9-percent decrease in Honolulu** to a 7.8 percent increase in San Jose during the second quarter of 2013.

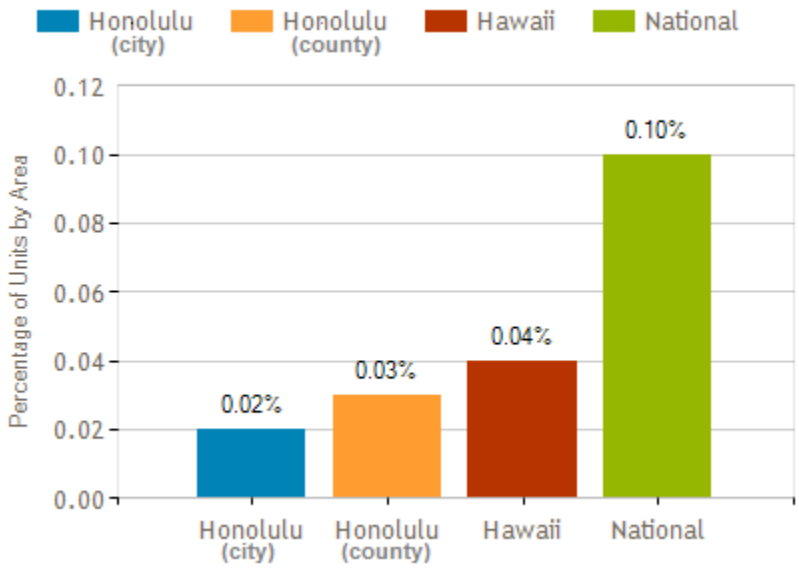
Axiometrics Inc. reported that apartment rental vacancy rates were down from the second quarter of 2012 to the second quarter of 2013 in all of the Pacific region's major metropolitan areas, with the exception of Las Vegas and San Jose. From the second quarter of 2012 to the second quarter of 2013, in the San Francisco-Oakland-Fremont metropolitan statistical area, the apartment vacancy rate declined from 3.9 to 3.7 percent, and, in the Los Angeles-Glendale-Santa Ana metropolitan statistical area, the rate fell from 4.9 to 4.8 percent. In the Phoenix area, the apartment vacancy rate declined from 7.2 percent in the second quarter of 2012 to 6.7 percent in the second quarter of 2013.

The rental housing markets in the metropolitan areas in Arizona were slightly soft but balanced out in the second quarter of 2013. According to Axiometrics Inc., the apartment rental vacancy rate in Phoenix was 6.7 percent, down from 7.2 percent in the second quarter of 2012. Increasing population growth was partially responsible for the decline in vacancy rates. During the second quarter of 2013, the rental housing markets in Nevada remained soft due to slow job growth.

Multifamily construction activity, as measured by the number of multifamily units permitted, increased in three of the four Pacific region states during the second quarter of 2013. Based on preliminary data, 14,300 multifamily units were permitted in the region, a 54 percent increase from the previous quarter. The combination of increased renter demand and declining vacancy rates was the main impetus for the rising number of multifamily permits. During the second quarter of 2013, the number of multifamily units permitted in Arizona increased by 1,425, or 390 percent; by 3,200 units, or 40 percent, in California; and by 900 units, or 255 percent, in Nevada. **The number of multifamily units permitted in Hawaii decreased by 450 units, or a 94 percent slide from the previous quarter."**

Economic Impact of the Mortgage and Credit Crisis

We researched several local, regional, and national data sources and publications in order to ascertain information pertaining to the mortgage crisis and its impact on the local market. Overall, the nation continues to be hit hard by the mortgage crisis. According to www.RealtyTrac.com, within the state of Hawaii, Honolulu County had the lowest rate of foreclosures during September 2013 with a foreclosure rate of 0.02 percent, or 1 in every 3,685 households. Honolulu County had a slightly higher foreclosure rate of 0.03 percent, while the state of Hawaii displayed a 0.04 percent foreclosure rate. The national foreclosure rate in September 2013 was 0.10 percent. Overall, the MSA and state of Hawaii have been impacted by the current national recession to date. However, it appears that the MSA has fared better than the nation as a whole, which is evident by the lower unemployment rate and smaller employment losses during the recent recession. Similarly, the relatively minor impact of the mortgage crisis has lessened the overall negative impact of the recession on the local economy. The graph below illustrates a geographical comparison for the Subject's area by a percentage of units currently in foreclosure.



Source: realtytrac.com, 10/2013

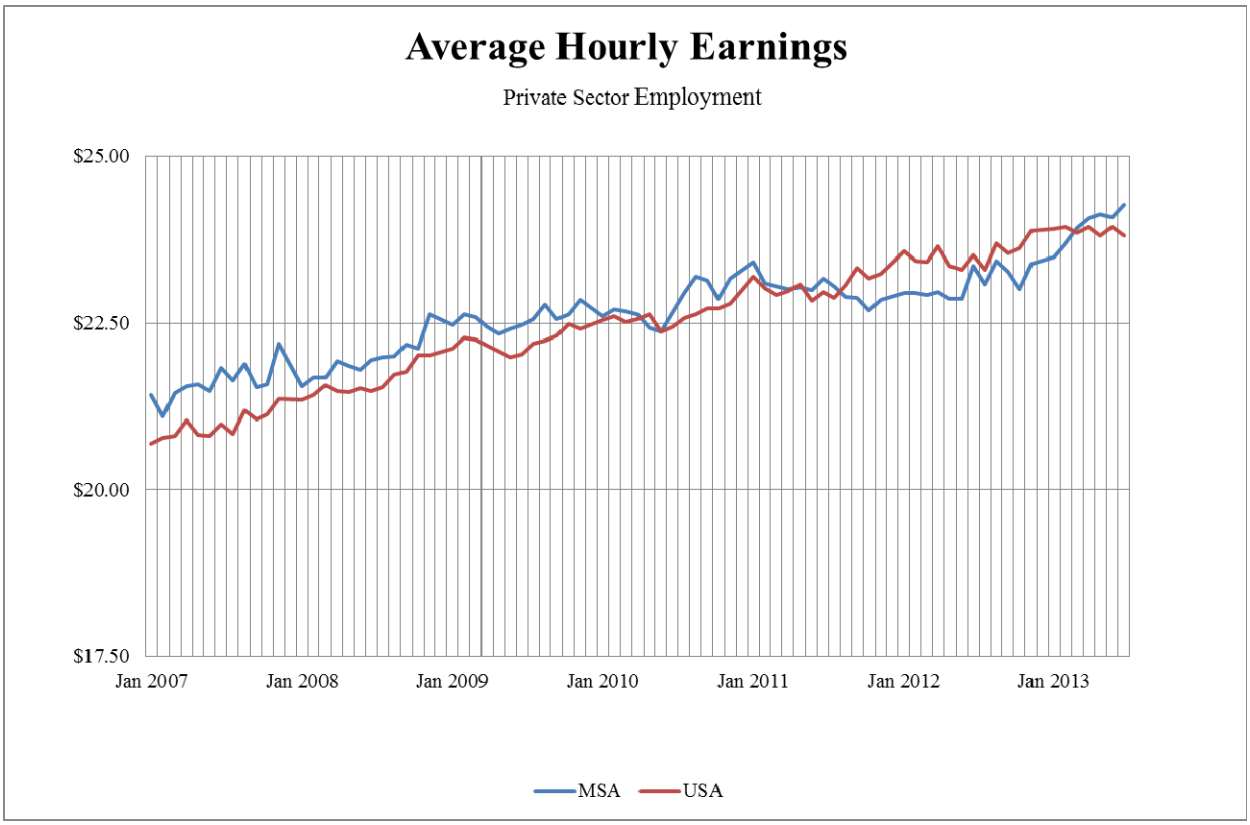
Wages by Occupation

The following table details the wages by occupation in the MSA.

HONOLULU, HI MSA – MAY 2012 AREA WAGE ESTIMATES			
Occupation	**Number of Employees**	**Mean Hourly Wage**	**Mean Annual Wage**
Total all occupations	**433,400**	**$22.24**	**$46,260**
Management Occupations	26,260	$43.06	$89,560
Business and Financial Operations Occupations	21,170	$30.54	$63,530
Computer and Mathematical Occupations	8,340	$33.58	$69,840
Architecture and Engineering Occupations	7,830	$37.08	$77,120
Life, Physical, and Social Science Occupations	4,660	$34.21	$71,150
Community and Social Services Occupations	8,340	$21.35	$44,410
Legal Occupations	3,020	$43.11	$89,660
Education, Training, and Library Occupations	32,880	$23.77	$49,440
Arts, Design, Entertainment, Sports, and Media Occupations	6,840	$22.64	$47,090
Healthcare Practitioners and Technical Occupations	21,180	$40.96	$85,200
Healthcare Support Occupations	11,910	$15.18	$31,580
Protective Service Occupations	15,190	$18.88	$39,260
Food Preparation and Serving-Related Occupations	48,350	$11.53	$23,990
Building and Grounds Cleaning and Maintenance Occupations	20,930	$13.79	$28,690
Personal Care and Service Occupations	11,690	$12.95	$26,940
Sales and Related Occupations	44,520	$16.14	$33,570
Office and Administrative Support Occupations	66,820	$17.16	$35,700
Farming, Fishing, and Forestry Occupations	620	$13.87	$28,840
Construction and Extraction Occupations	18,210	$30.27	$62,960
Installation, Maintenance, and Repair Occupations	16,840	$24.46	$50,890
Production Occupations	10,840	$17.76	$36,940
Transportation and Material Moving Occupations	26,960	$19.24	$40,010

Source: US Bureau of Labor Statistics, effective 5/2012

The previous table illustrates average hourly and annual wages by employment classification. It should be noted that 2013 wage data is not yet available according to the Bureau of Labor Statistics' website. The previous table shows average hourly and annual wages by employment classification. The classification with the lowest average weekly wage is food preparation and serving related occupations, at $11.53 per hour. The highest average hourly wage of $43.11 is legal occupations.



Commuting Patterns

The chart below shows the travel time to work for the PMA according to ESRI data.

COMMUTING PATTERNS

2000 Commuting Time to Work	Number of Commuters	Percentage
Travel Time < 5 min	595	0.74%
Travel Time 5-9 min	3,311	4.14%
Travel Time 10-14 min	6,118	7.66%
Travel Time 15-19 min	8,945	11.19%
Travel Time 20-24 min	10,633	13.31%
Travel Time 25-29 min	4,387	5.49%
Travel Time 30-34 min	15,570	19.48%
Travel Time 35-39 min	2,310	2.89%
Travel Time 40-44 min	4,028	5.04%
Travel Time 45-59 min	11,818	14.79%
Travel Time 60-89 min	9,117	11.41%
Travel Time 90+ min	3,079	3.85%
Average Travel Time	34	-

Source: US Census 2000, Novogradac & Company LLP, October 2013

As shown above, the average travel time for individuals in the PMA is 34 minutes. The majority of commuters, 57.4 percent, have a travel time between 15 and 44 minutes. The large number of

commuters with commute times in that range suggests that workers in the PMA commute throughout the various parts of the Island of Oahu to work.

Conclusion

Total employment in Honolulu County remained relatively unchanged from 2006 to 2008, but as a direct result of the recent national recession, the County experienced a 2.9 percent decrease in total employment in 2009. Although that 2.9 percent decrease amounted to the loss of over 12,000 jobs, this decrease was less than that of the decline in total employment experienced by the nation as a whole, which dropped by 3.8 percent. Between 2010 and 2011, the Honolulu MSA experienced growth in total employment by 1.9 percent in each of the respective years. Although the area experienced slower rates in total employment growth in 2012 and 2013 YTD, total employment was positive in both years, at 0.1 and 0.2 percent respectively. The largest employment sectors in the PMA are health care/social assistance, retail trade, accommodation/food services, and public administration sectors. The large percentage of employment in the retail trade sector can be attributed to Hawaii's large tourism industry. The large percentage of employment in public administration can be attributed to the Subject's close proximity to Hickam Air Force Base and Pearl Harbor Naval Station as well as all of the workers employed by the State of Hawaii, as Honolulu is the state capital. The local economy has suffered due to the national recession as it is heavily reliant on the tourism industry. However, based on the tourism statistics provided by the State of Hawaii Department of Business, Economic Development, and Tourism, the state has experienced a significant increase in the overall number of visitors and visitor spending over the previous two years. The fallout from the mortgage crisis has been moderate in the area. Overall, it appears as if the local economy is well on its way to recovery.

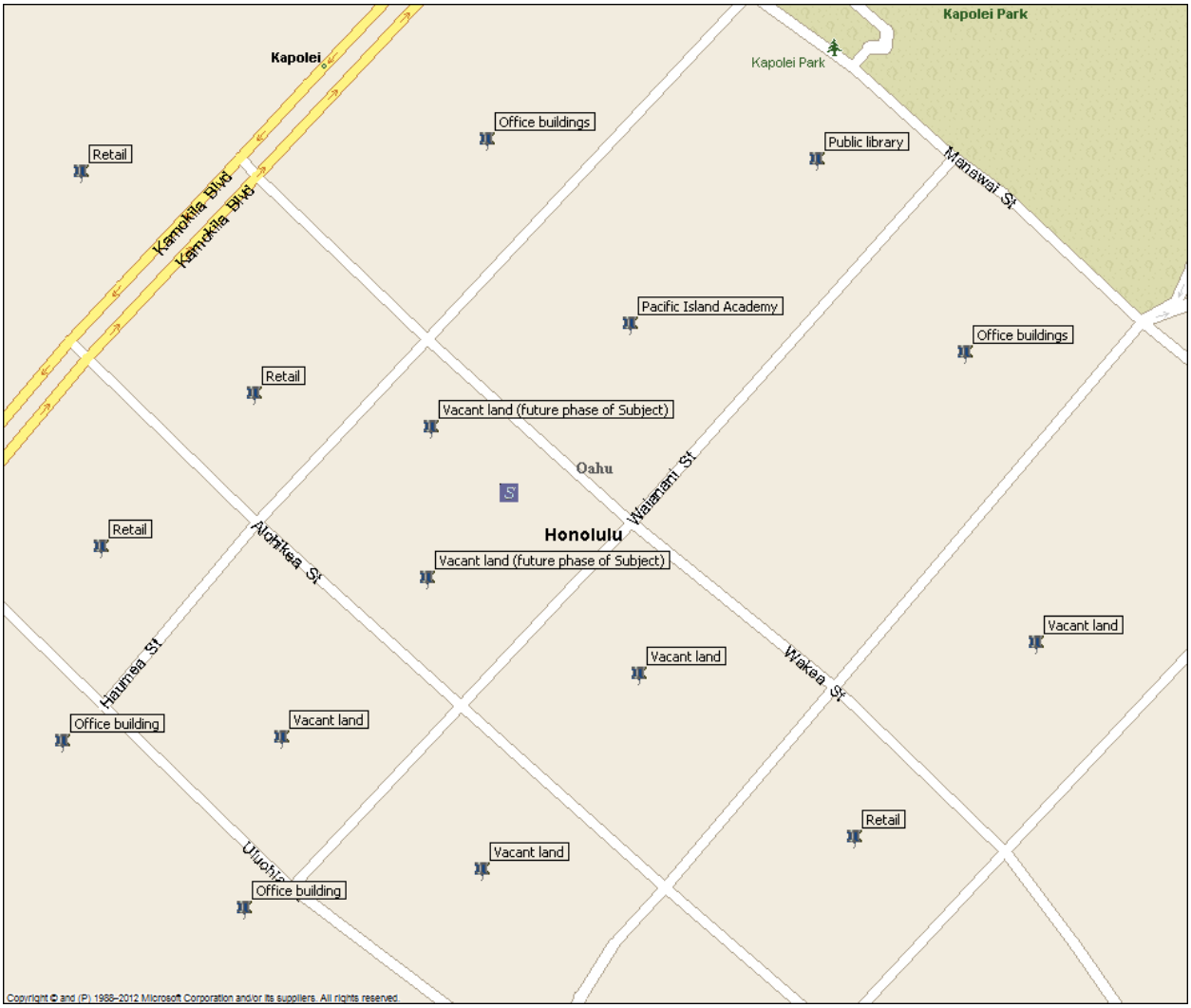
NEIGHBORHOOD DESCRIPTION AND ANALYSIS

Introduction

The neighborhood surrounding an apartment property often impacts the property's status, image, class, and style of operation, and sometimes its ability to attract and properly serve a particular market segment. This section investigates the property's neighborhood and evaluates any pertinent location factors that could affect its rent, its occupancy, and overall profitability.

Location and Boundaries

The Subject site is located within the northern part of the city of Kapolei in Honolulu County. A map of the Subject site within its respective neighborhood follows.



Accessibility

The Subject will offer good accessibility from Wakea Street and Ala Kahawai Street (Wai Anani Way). Wakea Street is a two-way main road with generally light traffic flow, while Ala Kahawai Street (Wai Anani Way) is a two-way secondary road also with generally light traffic flow. Wakea Street provides access to Interstate H-1 (located 0.3 miles to the north of the Subject site), Kamokila Boulevard (to the north) and Kapolei Parkway (to the south), which all lead to various retailers and services. Although Wakea Street is only 0.5 miles in distance, it connects several major roads in Kapolei. Interstate H1 is a major highway that provides access throughout the southern region of the island of Oahu.

Predominant Land Usage

The Subject site is located in the northern part of the city of Kapolei and is off of Interstate H-1, a predominant highway on the Island of Oahu. Land use to the north, adjacent to the Subject site, consists of Island Pacific Academy (IPA), a private elementary and secondary school. Also north is Grace Pacific LLC, which is a construction company that typically builds and repairs highways and roads. Further north is the Kapolei Police Station and various banks. There is a bus stop adjacent to the Subject site and additionally various other bus stops are within walking distance of the Subject site. Directly northwest of the Subject site are a few eateries and retailers in addition to off street parking. Westwards from the Subject is a place of worship and eastwards is a variety of retailers and commercial uses, including a Kmart, a movie theatre, restaurants, and the office of the Historic Preservation Division. North of the movie theater is Interstate H-1, which is notably the busiest highway in Hawaii and leads to the southernmost point of Honolulu. South of the Subject site is a Foodland Kapolei (grocery store), Kapolei Hale City Hall, and vacant land. Many local amenities are within walking distance of the Subject site. According to walkscore.com, the Subject has a walkscore of 83, Very Walkable, meaning that most errands can be accomplished on foot.

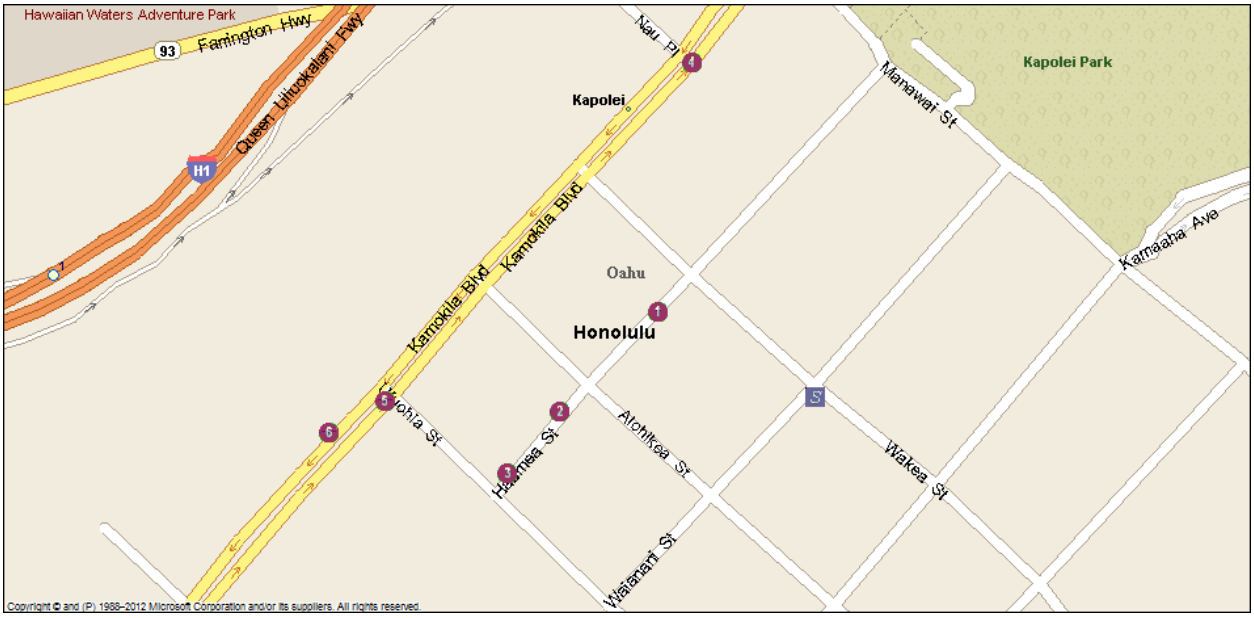
Proximity to Local Services

The following table illustrates the Subjects' proximity to local services. The Subject is located within reasonable proximity to retail, educational, and medical services.

LOCATIONAL AMENITIES		
Map #	**Service or Amenity**	**Miles From Subject**
1	American Savings Bank	0.2 miles
2	7-11 (Gas Station)	0.3 miles
3	Public Library	0.3 miles
4	Post Office	0.3 miles
5	Honolulu Police Department	0.3 miles
6	Retail Center	0.5 miles
7	Kmart Retail and Pharmacy	0.5 miles
8	Safeway Grocery	0.7 miles
9	Kapolei Family Medical Center	0.8 miles
10	Kapolei High School	1.0 miles
11	Makakilo Elementary School	1.2 miles
12	Kapolei Middle School	1.8 miles
13	Fire Department	2.0 miles

Adequacy of Public Transportation

Bus service on the Island of Oahu is available through the Oahu Transit System. Kapolei is served by multiple bus stops. The nearest bus stop is located less than 100 yards from the Subject. A map detailing the location of the Subject in proximity to local bus stops is illustrated below.



PUBLIC TRANSPORTATION		
Map #	**Bus Stop Location**	**Miles From Subject**
1	Kapolei Transit Center East	0.1 miles
2	Kapolei Transit Center West	0.2 miles
3	Haumea St & Uluohia Street	0.2 miles
5	Kamokila Bl & Opp Nau Pl	0.2 miles
4	Kamokila Bl & Uluohia St	0.3 miles
6	Kamokila Bl & Opp Uluohia	0.4 miles

Crime

The following table illustrates crime rates in the PMA and the Honolulu, Hawaii Metropolitan Statistical Area.

2012 CRIME RISK INDICES		
	PMA	**Honolulu, HI MSA**
Total Crime*	21	177
Personal Crime*	8	72
Murder	2	30
Rape	7	96
Robbery	11	97
Assault	16	86
Property Crime*	25	200
Burglary	3	124
Larceny	27	199
Motor Vehicle Theft	54	306

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013
*Unweighted aggregations

For comparison purposes, a crime index below 100 is below the national average, and a crime index above 100 is above the nation's crime index average. Overall crime in the PMA is significantly below the national average and the MSA. Based on the information presented in the above table, personal crime is lower in the PMA and MSA than property crime, which occurs at a higher rate. All categories of crime in the PMA are lower than the national average and the MSA. According to interviews with property managers, crime in the immediate area is not a significant problem; however, the Subject will offer an intercom (buzzer) system as a security feature. Additionally, the parking garage will also be secured.

Conclusion

The Subject will be located within the newly developing Kapolei central business district and will offer convenient pedestrian access to numerous amenities including shopping, schools, library, employment and a park. Additionally, access to public transportation is excellent. The construction of the Subject will create a positive impact upon the neighborhood by providing quality multifamily housing that will be in excellent condition upon completion.

DEMOGRAPHIC ANALYSIS

For the purpose of this study, it is necessary to define the market area, or the area from which potential tenants for the project are likely to be drawn. In some areas, residents are very much "neighborhood oriented" and are generally very reluctant to move from the area where they have grown up. In other areas, residents are much more mobile and will relocate to a completely new area, especially if there is an attraction such as affordable housing at below market rents. The primary market for the Subject generally consists of Kapolei, Ewa, Ewa Beach, and Waipahu.

There are no natural boundaries in Kapolei that would inhibit anyone from relocating to the Subject. The market area boundaries identified are a reasonable approximation regarding the potential rental or for-sale market for the Subject. Housing of all types is in strong demand. Housing in this market is at a premium, with low for-sale inventory and few rental vacancies.

The PMA boundaries and overall market health assessment are based upon analyses of physical boundaries, which include traffic and commute patterns within the area, surveys of existing market rate apartment and condominium projects undertaken by Novogradac & Company LLP, and insights gained from real estate agents, resident managers, area planning staff, and others familiar with the multifamily and condominium markets. The PMA boundaries for the for-sale and rental scenarios are identical. We recognize several sub-markets/neighborhoods exist within this PMA; however, market data demonstrates that a significant amount of the local population considers housing opportunities within these boundaries. Given the opportunity to locate good quality housing, both renters and owners will move within these areas. We anticipate the majority of demand will be generated from this geographic area. Leakage is anticipated from outside the PMA from other parts of Oahu; we will incorporate a leakage estimate of 25 percent to reflect this potential in both the rental and for-sale demand scenarios.

The secondary market area (SMA) for the Subject is considered to be the Honolulu, HI MSA, which consists of Honolulu County. Maps outlining the PMA and SMA can be found on the following pages.

PMA Map

Kapolei, HI

NOVOGRADAC & COMPANY LLP
www.novoco.com

SMA Map

Population and Households

The tables below illustrate population and household trends in the PMA, MSA, and nation from 2000 through 2017.

POPULATION

Year	PMA		Honolulu, HI MSA		USA	
	Number	*Annual Change*	*Number*	*Annual Change*	*Number*	*Annual Change*
2000	171,707	-	876,156	-	281,421,906	-
2012	214,022	2.0%	962,110	0.8%	313,129,017	0.9%
2017	221,973	0.7%	993,240	0.6%	323,986,227	0.7%

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

HOUSEHOLDS

Year	PMA		Honolulu, HI MSA		USA	
	Number	*Annual Change*	*Number*	*Annual Change*	*Number*	*Annual Change*
2000	48,357	-	287,371	-	105,991,193	-
2012	60,350	2.0%	314,221	0.8%	118,208,713	0.9%
2017	62,587	0.7%	324,590	0.7%	122,665,498	0.8%

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

The overall population in the PMA increased between 2000 and 2012 by an annual percentage of 2.0 percent, while it is projected to increase by 0.7 percent annually through 2017. The overall population in the MSA increased by 0.8 percent annually and is projected to continue to increase by 0.6 percent annually over the next five years. Projected general population growth in the PMA is greater than that of the MSA and is equal to the projected growth of the national population through 2017. Similar to the population, the total number of households in the PMA and the MSA are projected to increase at a steady pace over the next five years, with both the PMA and MSA projected to grow by 0.7 percent annually. The number of households in the PMA and MSA are predicted to increase at a slightly lesser rate than the nation as a whole.

Average Household Size

The following table illustrates average household size for all ages in the PMA, MSA, and nation from 2000 to 2017.

AVERAGE HOUSEHOLD SIZE

Year	PMA		Honolulu, HI MSA		USA	
	Number	*Annual Change*	*Number*	*Annual Change*	*Number*	*Annual Change*
2000	3.51	-	2.94	-	2.58	-
2012	3.51	0.0%	2.95	0.0%	2.58	0.0%
2017	3.51	0.0%	2.95	0.0%	2.58	0.0%

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

Average household size in the PMA has remained stable from 2000 to 2012 and is expected to remain as such through 2017. Similarly, the average household size in the MSA and the nation is projected to remain at current levels through 2017.

Median Household Income Levels

The table below illustrates the median household income in the PMA, MSA, and the nation from 2000 through 2017.

MEDIAN HOUSEHOLD INCOME

Year	PMA		Honolulu, HI MSA		USA	
	Amount	*Annual Change*	*Amount*	*Annual Change*	*Amount*	*Annual Change*
2000	$61,690	-	$52,120	-	$42,164	-
2012	$75,330	1.8%	$65,756	2.1%	$50,157	1.5%
2017	$81,949	1.8%	$77,467	3.6%	$56,895	2.7%

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

The median household income in the PMA is higher than that of the MSA and the nation. However, the median household income in the MSA grew at a slightly faster rate than the PMA and the nation between 2000 and 2012. The median household income in the PMA, MSA, and

the nation is projected to continue to increase through 2017 and the MSA will continue to grow at a faster rate than that of the PMA and the nation.

The map below illustrates the annual median household income growth in the state of Hawaii by county:

2000 - 2010 MHI Annual Growth Rate

NOVOGRADAC & COMPANY LLP
www.novoco.com

As the previous map illustrates, median household income grew between 2.06 to 2.07 percent annually from 2000 to 2010, which ranks in the upper half of Hawaii counties during the same time period. Areas of higher MHI growth appear to be concentrated in the major metropolitan area of Honolulu and the northwestern portion of the island chain. Counties with the slowest rate of median income growth are largely concentrated in the central and southeastern portions of the state.

Owner Household Income Distribution

The following table illustrates the projected owner household income distribution for the PMA in 2012 and 2017.

OWNER HOUSEHOLD INCOME PMA

Income Cohort	PMA 2012		PMA 2017		Annual Change 2012 to 2017	
	Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
$0-9,999	792	1.9%	672	1.6%	-24	-3.0%
$10,000-19,999	1,074	2.6%	888	2.1%	-37	-3.5%
$20,000-29,999	1,391	3.4%	1,182	2.7%	-42	-3.0%
$30,000-39,999	1,717	4.2%	1,463	3.4%	-51	-3.0%
$40,000-49,999	2,426	5.9%	2,095	4.9%	-66	-2.7%
$50,000-59,999	2,747	6.6%	2,436	5.7%	-62	-2.3%
$60,000-74,999	4,543	11.0%	4,102	9.5%	-88	-1.9%
$75,000-99,999	8,165	19.7%	7,581	17.6%	-117	-1.4%
$100,000-124,999	7,091	17.2%	7,492	17.4%	80	1.1%
$125,000-149,999	4,748	11.5%	5,592	13.0%	169	3.6%
$150,000-199,999	4,244	10.3%	5,691	13.2%	289	6.8%
$200,000+	2,405	5.8%	3,798	8.8%	279	11.6%
Total	**41,341**	**100.0%**	**42,993**	**100.0%**		

Source: Ribbon Demographics 2013, Novogradac & Company LLP, October 2013

The largest owner income cohort in the PMA is the $75,000-$99,999 bracket, which contains 19.7 percent of the household population in 2012. In the PMA, 82.8 percent of the total owner population in the PMA earns at least $39,999 annually.

Renter Household Income Distribution

The following table illustrates the projected renter household income distribution for the PMA in 2012 and 2017.

RENTER HOUSEHOLD INCOME PMA

Income Cohort	PMA 2012		PMA 2017		Annual Change 2012 to 2017	
	Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
$0-9,999	956	5.0%	843	4.3%	-23	-2.4%
$10,000-19,999	1,133	6.0%	1,003	5.1%	-26	-2.3%
$20,000-29,999	1,615	8.5%	1,387	7.1%	-46	-2.8%
$30,000-39,999	1,678	8.8%	1,561	8.0%	-23	-1.4%
$40,000-49,999	1,999	10.5%	1,753	8.9%	-49	-2.5%
$50,000-59,999	1,662	8.7%	1,667	8.5%	1	0.1%
$60,000-74,999	2,561	13.5%	2,560	13.1%	0	0.0%
$75,000-99,999	3,181	16.7%	3,345	17.1%	33	1.0%
$100,000-124,999	1,939	10.2%	2,256	11.5%	63	3.3%
$125,000-149,999	1,186	6.2%	1,560	8.0%	75	6.3%
$150,000-199,999	658	3.5%	932	4.8%	55	8.3%
$200,000+	441	2.3%	728	3.7%	57	13.0%
Total	**19,009**	**100.0%**	**19,594**	**100.0%**		

Source: Ribbon Demographics 2013, Novogradac & Company LLP, October 2013

The largest renter income cohort in the PMA is the $75,000-$99,999 bracket; it contained 16.7 percent of the household population in 2012. In the PMA, there is a significant concentration of the renter population in the upper income brackets; 61.2 percent of the total renter population in the PMA earns more than $50,000 annually.

Conclusion

The demographic data demonstrates that the PMA and MSA are forecast for a steady increase in population and households through 2017. The PMA is expected to gain 1,652 owner-occupied households and 585 renter-occupied households through 2017. The median household income in the PMA is higher than in the MSA and nation. The *Demand Analysis* section will demonstrate a sufficient amount of income-qualified households presently exist for both the condominium and market-rate rental scenarios.

LOCAL HOUSING TRENDS AND INTERVIEWS

LOCAL HOUSING TRENDS AND INTERVIEWS

Tenure Patterns

The table below illustrates the breakdown by household tenure within the PMA for the years 2000, 2012, and 2017.

TENURE PATTERNS PMA

Year	Owner-Occupied Units	Percentage Owner-Occupied	Renter-Occupied Units	Percentage Renter-Occupied
2000	33,159	68.6%	15,198	31.4%
2012	41,341	68.5%	19,009	31.5%
2017	42,993	68.7%	19,594	31.3%

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

As illustrated above, approximately 68.5 percent of households in the PMA are owner-occupied as of 2012; this percentage is projected to increase slightly through 2017 and the total number of both owner and renter-occupied units is projected to increase.

Building Permits

The table below illustrates the number of permits issued in Honolulu County, Hawaii since 2002. It should be noted that 2013 data is through October.

BUILDING PERMITS: HONOLULU COUNTY - 2002 to 2013

Year	Single-family and Duplex	Three and Four-Family	Five or More Family	Total Units
2002	1,976	67	630	2,673
2003	2,994	12	467	3,473
2004	1,906	108	2,070	4,084
2005	2,079	160	1,749	3,988
2006	1,727	0	879	2,606
2007	566	148	1,158	1,872
2008	588	0	265	853
2009	870	20	146	1,036
2010	889	0	1,002	1,891
2011	734	9	981	1,724
2012	994	35	695	1,724
2013	1,671	0	132	1,803
Total	**16,994**	**559**	**10,174**	**27,727**
Average**	**1,393**	**51**	**913**	**2,357**

*Only includes through October 2013

** Does not include 2013 permits

Building permit information presented in the previous table indicates that the national recession greatly impacted development from 2007 to present, although the year to date number of single-family homes in 2013 indicates gradual recovery. Single-family homes and complexes with five or more units are dominant in Honolulu County. It appears that single-family homes have been more negatively affected by the economic downturn.

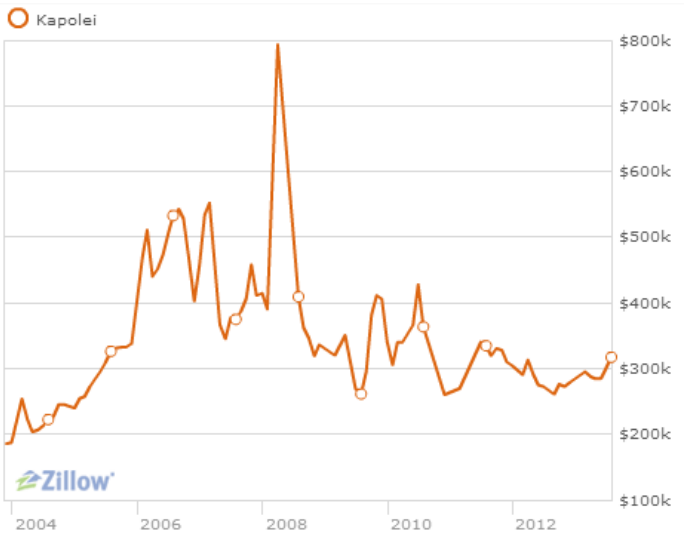
Condominium Housing Activity

The following tables and discussion illustrates the historical performance of the Kapolei condominium market.

Median Sales Price – Condominium/Co-op

City of Kapolei, HI

Source: Zillow.com 11/2013.



The median sales price for condominiums in Kapolei for August 2013 was $317,300. This represents an increase of 11.3 percent, or $32,300, compared to the prior quarter and an increase of 21.6 percent compared to the prior year. Historically, sales prices in Kapolei have remained generally stable over the past two years. The average listing price for Kapolei condominiums for sale on Zillow was $440,000 for the week ending September 1, 2013, which represents an increase of 25.7 percent, or $90,000, compared to the prior month.

Average Price per Square Foot – Condominium/Co-op
City of Kapolei, HI
Source: Zillow.com 11/2013.

The average price per square foot in the city has increased during the past year, overall, after reaching a three-year low in October 2012. The average price per square foot for Kapolei was $357 as of August 2013, an increase of 8.8 percent, year-over-year.

Average List Price – Condominium/Co-op
City of Kapolei, HI
Source: Zillow.com 11/2013.

As illustrated, the average listing price at the beginning of December 2012 was $295,000, which has since increased to $440,000 as of September 1, 2013.

REIS Multifamily Rental Housing Report

According to REIS.com, the vacancy rates have decreased and asking rents have increased slightly in the Honolulu submarket from the second quarter 2013 to the third quarter 2013. The year-to-date average vacancy rate within the Subject's market is lower than that of the Western Region and the United States as a whole.

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Source: REIS, 11/2013

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Source: REIS, 11/2013

LOCAL HOUSING INTERVIEWS

Local Housing Authority

We spoke with Carole Chung-Yokoyama, Operations Manager with the City and County of Honolulu's Department of Community Services - Rental Assistance, regarding the Housing Choice Voucher (HCV) program in the county. Ms. Chung-Yokoyama stated that there are approximately 3,500 vouchers allocated within the city and county of Honolulu, all of which are currently in use. The waiting list had been closed since 2005 until the first quarter of 2012, when the waiting list was last purged. The waiting list is currently closed with the wait for a voucher estimated to be five to seven years.

Additionally, the City and County of Honolulu Housing Authority operates a City Housing Rental Assistance Program (RAP). This program allows rental assistance payments of up to $170 per month on behalf of an eligible participant by the local housing authority. Individuals receiving any other State or Federal assistance are not eligible for this program. Further, the RAP program is project-based. If a tenant moves, the rental assistance for that tenant terminates and the new tenant moving into the vacated unit may receive the RAP assistance if income qualified. Participating projects include Chinatown Gateway (Subject), Harbor Village (Subject), Lani Huli Senior Housing, Manoa Gardens Elderly, Tenney Village Rehab, and West Loch Village. Payment standards for the RAP program and HCV program are the same.

The payment standards for both programs are illustrated in the table following.

PAYMENT STANDARDS	
Unit Type	**Amount**
Studio	$1,112
One-bedroom	$1,202
Two-bedroom	$1,591
Three-bedroom	$2,308
Four-bedroom	$2,583
Five-bedroom	$2,971

The Subject's achievable studio and three-bedroom gross rents would be below the current payment standard, while the achievable one and two-bedroom gross rents would be above.

Recent and Proposed Construction – Condominium Units

We contacted Mike Watkins with the Planning Department at the City and County of Honolulu to determine if any multifamily developments are proposed or under construction within the PMA. The following is a summary of the condominium projects that are planned, proposed, or under construction in the PMA. With the exception of 10 units, all the under construction and planned supply in the PMA is for unrestricted for sale product. Despite the Subject's affordability targeting 140 percent AMI, the comparable analysis indicates that the Subject's achievable pricing is effectively at unrestricted market rate levels. Therefore, we have deducted the appropriate units from the for-sale demand.

Planned and Proposed Condominium Developments

Project Name	Design	Type	Units	Timing	Status
Awakea at Mehana*	Townhome	Affordable/Market	74	Jul-15	Under Construction
Villages at Kapolei	Affordable Townhome	Market	290	N/Av	Proposed
Kapolei Mixed-Use Phase III & IV**	Highrise	Market	286	2018	Proposed
Koa Ridge	Single Family/Townhome	Market	3,500	N/Av	Proposed
Totals					

*Has been examined as a comparable

**Will be developed by the sponsor

- Awakea at Mehana is a townhome development that is being built along Kunehi Street, approximately 1.0 miles south of the Subject. The property will feature 74 units upon completion, and will include the Mehana Recreation Center, which will be shared by the other phases of the Mehana development. There will be a total of 10 affordable units restricted at 140 percent AMI and the remaining units will be unrestricted. Management indicated that these units are priced in-line with the non-affordable units. Construction is in progress, with some units nearing completion and expected to close within the next month. The anticipated final completion date is July 2015. Twenty-five units have been pre-sold. We have included the remaining 49 units in our demand analysis.

- Villages at Kapolei has been in development since 2008 and will total 4,240 units consisting of affordable and market rate single-family homes, condominiums and rental apartments when completed. According to Mr. Watkins, there is currrently a plan to build 290 additional townhome units. Although it has not been formally approved, we

believe that this project will move forward as a multi-phase/multi-year development and have deducted 145 units of demand from our demand calculations anticipating a two-year development process.

- The Subject's Phases III and IV will be market rate condominium developments that will each consist of 143 studio, one and two-bedroom units. Both phases are expected to commence construction in 2016 and open in 2018. Based on the development timetable, we do not anticipate any overlap with the Subject's absorption. Therefore, we have not considered these proposed units in our demand calculations.

- Koa Ridge is a Castle and Cooke master planned community that will offer 3,500 single-family, townhome and condominium homes, a mixed-use village center, community amenities and an elementary school. A timeline for completion and a final mix of housing types has not yet been released and final approval has not been granted. Nonetheless, we believe that this project will move forward as a multi-phase/multi-year development and have deducted 700 units of demand from our demand calculations anticipating a five-year development process.

Recent and Proposed Construction – Rental Units

According to Mr. Watkins there are six multifamily rental properties under construction or planned in the PMA. These developments are summarized below.

Planned and Proposed Rental Developments

Project Name	Design	Type	Units	Timing	Status
Ewa Villages Phase II	Garden	Affordable	76	Dec-14	Under Construction
East Kapolei II	Single-family and townhomes	Affordable	608	Dec-17	Under Construction
Kapolei Mixed-Use Phase I*	Highrise	Affordale Senior	154	Mar-16	Proposed
Franciscan Vistas	Garden	Affordable Senior	143	N/Av	Proposed
Castle and Cooke Townhomes	Townhomes	Affordable	242	N/Av	Proposed
Area H Apartments	Garden	Affordable	192	N/Av	Proposed

*Will be developed by the sponsor

All of the proposed and under construction rental product in the PMA will be affordable and target low to moderate income households. As we have evaluated the Subject as an unrestricted rental community, none of these units have been deducted from demand.

CONDOMINIUM HOUSING ANALYSIS

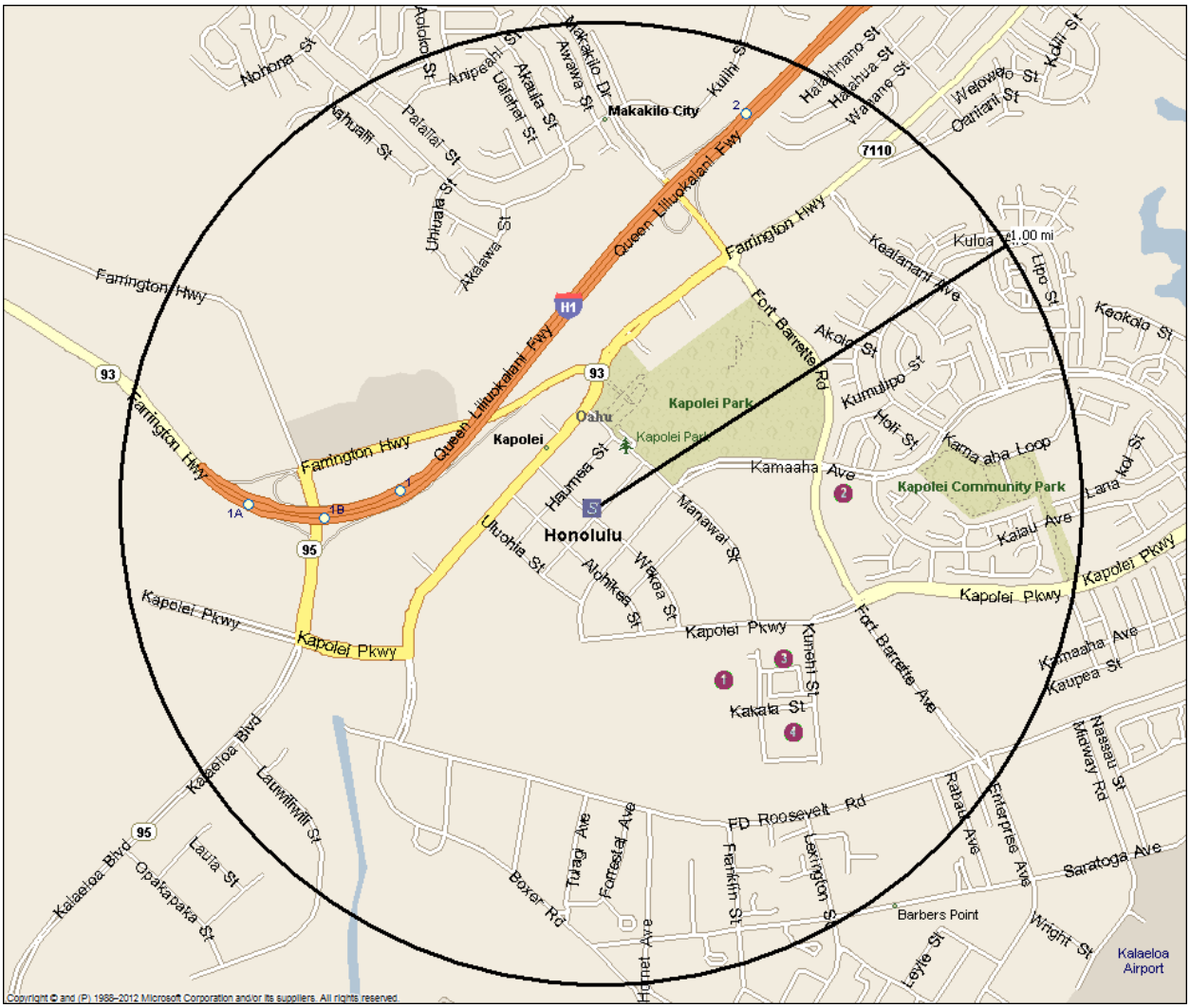
CONDOMINIUM HOUSING ANALYSIS

Comparable properties are examined on the basis of physical characteristics, i.e. building type, age/quality, level of common amenities, absorption, as well as similarity in sales price. We attempted to compare the Subjects to properties from the competing market to provide a picture of the health and available supply in the market.

Description of Property Types Surveyed

To evaluate the competitive position of the Subject, we performed a field survey of currently active new condominium communities as well as recently completed condominiums. The Subject will be the first condominium development in the market to offer a high-rise design as well as studio size units. As such, we have supplemented our comparable analysis with data from the broader Honolulu metropolitan area where we deemed most appropriate. Comparable properties are examined on the basis of physical characteristics, i.e. building type, age/quality, level of common amenities, absorption, as well as similarity in sales price. We attempted to compare the Subject to properties from the competing market area to provide a picture of the health and available supply in the market. The following pages include a summary of comparable properties and individual property profiles. A map of the comparables, in relation to the Subject, is included on the following page as well.

Map of Comparable Condominium Properties



COMPARABLE CONDOMINIUM PROPERTIES

Map #	Property Name	Type	Status*	Year Built	Units	Stories	Distance from Subject
1	Awakea at Mehana**	Affordable/Market	Active	2014	74	2	1.0 mile
2	Kealakai**	Affordable/Market	Completed	2012	140	2	0.8 miles
3	Nanala at Mehana	Market	Competed	2011	96	3	0.9 miles
4	Pulewa at Mehana	Market	Completed	2013	119	2	1.0 mile

*Active projects are pending construction completion and no closed sales have occurred

**Includes units that are restricted to 140% AMI or less

Comparable #1

Awakea at Mehana

Status	Active
Location	478 Kunehi Street Kapolei, HI 96707 Honolulu County
Units	74
Type	Townhome
Stories	2
Marketing Began	Jun-13
Construction Begins	Jun-13
Construction Completes	Jul-15
Percent Sold	34%
Sales Pace/Mo	N/Av
Monthly Maintenance Fee	$0.25 per sqaure foot, plus $25 dues
Contact Name	Ryan
Phone	808-693-8004

Unit Mix

Beds	Baths	Units	Size (SF)	Pricing	Price per Square Foot
2	2	6	1,023 to 1,184	Starting at $350,000	Starting at $342
2	2.5	46	1,068 to 1,087	Starting at $379,000	Starting at $355
3	2.5	6	1,184 to 1,203	Starting at $400,000	Starting at $338
3	3	16	1,870	Starting at $424,000	Starting at $352

Amenities

In-Unit Amenities		**Security**	none
	Balcony/Patio Blinds Carpet Central A/C Coat Closet Dishwasher Ceiling Fan Garbage Disposal Microwave Oven Refrigerator Washer/Dryer Washer/Dryer Hook-Ups		
Property		**Premium**	none
	Community Center Exterior Storage Garage Off-Street Parking Playground Picnic Area Swimming Pool		
Services	none	**Other**	none

Comments

Maintenance fees are anticipated to be approximately $0.25 per square foot and association dues of $25 per unit similar to the other phases of the Mehana development, and will cover water, sewer, trash, operating expenses and common area insurance. According to the contact, approximately 25 units have been pre-sold and are in escrow. These units are expected to close next month. The pre-sale period began in June 2013. The property has 10 two-bedroom units that are income restricted and target households that earn 140 percent AMI or less. Management indicated that these units are priced in-line with the non-affordable units.

Comparable #2

Kealakai

Status	Completed
Location	91-1015 Kamaaha Ave Honolulu, HI 96707 Honolulu County
Units	140
Type	Garden
Stories	2
Year Built / Renovated	2010-2012
Presale Period	No presale period
First Unit Closed	Sep-10
Last Unit Closed	Jul-13
Average Monthly Absorption	4 units per month
Major Competitors	None Identified
Tenant Characteristics	Families from southwestern Oahu
Contact Name	Doreen - Castle & Cooke
Phone	808-548-4811

Unit Mix (face rent)

Beds	Baths	Units	Size (SF)	Average Initial Price	Average Initial Price per Square Foot	Average 2013 Sold Price	Average 2013 Sold Price per Square Foot	Monthly Maintenance Fee	Monthly Maintenance Fee Per Square Foot
1	1	40	500	$239,623	$479	$246,200	$492	$141	$0.28
2	1	60	699	$293,557	$420	$296,525	$424	$197	$0.28
3	2	40	911	$341,069	$374	$353,585	$388	$258	$0.28

Resale Values

According to public records, three units have resold to date. The resale prices were 2.1 to 6.6 percent higher than the initial sale, with an average price increase of 5.1 percent.

Amenities

In-Unit Amenities:

- Balcony/Patio
- Blinds
- Carpet
- Central A/C
- Coat Closet
- Dishwasher
- Ceiling Fan
- Garbage Disposal
- Microwave
- Oven
- Refrigerator
- Washer/Dryer
- Washer/Dryer Hook-Ups

Security:

- Limited Access

Community Amenities:

- Exterior Storage
- Off-Street Parking
- Playground
- Picnic Area

Services:

- None

Comments

This property is restricted to owner-occupants who earn 140 percent of the AMI or less. There was no presale phase to this property; units were closed as they were completed, with the first closing occuring in September 2010 and the last closing occuring in July 2013. Maintenance fees areapproximately $0.28 per square foot and cover water, sewer, common area insurance and operating expenses.

Comparable #3

Nanala at Mehana

Status	Completed
Location	510 Kunehi Street Honolulu, HI 96707 Honolulu County
Units	96
Type	Townhome
Stories	Various
Year Built / Renovated	2008-2011
Presale Period	No presale period
First Unit Closed	Mar-09
Last Unit Closed	Mar-11
Average Monthly Absorption	4 units per month
Major Competitors	None
Tenant Characteristics	Families from southwestern Oahu
Contact Name	Lisa - Hawaiiana
Phone	808-593-6819

Unit Mix (face rent)

Beds	Baths	Units	Size (SF)	Average Initial Price	Average Initial Price per Square Foot	Average 2013 Sold Price	Average 2013 Sold Price per Square Foot	Monthly Maintenance Fee	Monthly Maintenance Fee Per Square Foot
2	2	17	1,040	$387,106	$372	N/A	N/A	$302	$0.29
2	2	17	1,227	$402,088	$328	N/A	N/A	$351	$0.29
2	2.5	8	1,117	$391,718	$351	N/A	N/A	$322	$0.29
3	2	2	1,841	$486,547	$264	N/A	N/A	$515	$0.28
3	2.5	16	1,396	$440,154	$315	$433,000	$310	$396	$0.28
3	2.5	16	1,406	$450,144	$320	$395,000	$281	$399	$0.28
3	3	19	1,780	$489,607	$275	N/A	N/A	$498	$0.28

Resale Values

According to public records, six units have resold to date. On average, the resale prices by unit type are 8.4 percent lower to 1.1 percent higher than the initial sale, with an average price decrease of 2.3 percent. The property manager was unable to comment on this trend.

Amenities

In-Unit Amenities:

- Balcony/Patio
- Blinds
- Carpet
- Central A/C
- Coat Closet
- Dishwasher
- Ceiling Fan
- Garbage Disposal
- Microwave
- Oven
- Refrigerator
- Washer/Dryer
- Washer/Dryer Hook-Ups

Security:

- Limited Access

Community Amenities:

- Clubhouse
- Exterior Storage
- Garage
- Off-Street Parking
- Playground
- Picnic Area
- Swimming Pool

Services:

- None

Comments

The property is approximately 90 percent owner-occupied and has maintainance fees of approximately $0.28 to $0.29 per square foot including association dues of $25 per unit. Maintenance fees cover water, sewer, trash, and maintenance and insurance of common area.

Comparable #4

Pulewa at Mehana

Status	Completed
Location	478 Kunehi Street Honolulu, HI ZIP Honolulu County
Units	119
Type	Townhome
Stories	2
Year Built / Renovated	2011-2013
Presale Period	No presale period
First Unit Closed	Apr-11
Last Unit Closed	Sep-13
Average Monthly Absorption	4 units per month
Major Competitors	None identified
Tenant Characteristics	Families from southwestern Oahu
Contact Name	Carrie - Hawaiiana
Phone	808-593-9100

Unit Mix (face rent)

Beds	Baths	Units	Size (SF)	Average Initial Price	Average Initial Price per Square Foot	Average 2013 Sold Price	Average 2013 Sold Price per Square Foot	Monthly Maintenance Fee	Monthly Maintenance Fee Per Square Foot
2	2	16	734	$314,731	$429	N/A	N/A	$209	$0.28
2	2	8	1,148	$393,835	$343	N/A	N/A	$312	$0.27
2	2.5	8	974	$360,197	$370	N/A	N/A	$269	$0.28
2	2.5	8	995	$363,014	$365	N/A	N/A	$274	$0.28
2	2.5	4	1,065	$354,311	$333	N/A	N/A	$291	$0.27
2	2.5	4	1,139	$371,717	$326	N/A	N/A	$310	$0.27
3	2	16	918	$339,097	$369	N/A	N/A	$255	$0.28
3	2	7	1,458	$416,070	$285	N/A	N/A	$390	$0.27
3	2.5	24	1,393	$410,513	$295	$440,000	$316	$373	$0.27
3	2.5	16	1,409	$409,723	$291	N/A	N/A	$377	$0.27
3	2.5	8	1,471	$431,151	$293	N/A	N/A	$393	$0.27

Resale Values

According to public records, two units have resold to date. The resale prices average 7.0 percent higher than the initial sales price.

Amenities

In-Unit Amenities:

- Balcony/Patio
- Blinds
- Carpet
- Central A/C
- Coat Closet
- Dishwasher
- Ceiling Fan
- Garbage Disposal
- Microwave
- Oven
- Refrigerator
- Washer/Dryer
- Washer/Dryer Hook-Ups

Security:

Limited Access

Community Amenities:

- Clubhouse
- Exterior Storage
- Garage
- Off-Street Parking
- Playground
- Picnic Area
- Swimming Pool

Services:

None

Comments

The property is approximately 90 percent owner-occupied and has maintainance fees of approximately $0.25 per square foot and association dues of $25 per unit. Maintenance fees cover water, sewer, trash, and maintenance and insurance of common area.

PROPERTY CHARACTERISTICS

Following are relevant characteristics of comparable properties surveyed:

Location

The Subject will be located within the newly developing Kapolei central business district and will offer convenient pedestrian access to numerous amenities including shopping, schools, library, employment and a park. All of the comparables are located in Kapolei, within 1.0 mile of the Subject. The Subject will be part of a larger mixed-use development that will incorporate commercial retail outlets at the ground floor level. Additionally, the Subject is located in a pedestrian-friendly neighborhood with excellent access to public transportation and within walking distance of several amenities. According to walkscore.com, the Subject has a walkscore of 83, Very Walkable, meaning that most errands can be accomplished on foot. The following table illustrates the walkscores of the comparable properties.

WALKSCORE

Property	Walkscore	Description
Kapolei II (Subject)	83	Very Walkable
Awakea at Mehana	43	Car-Dependent
Kealakai	46	Car-Dependent
Nanala at Mehana	48	Car-Dependent
Pulewa at Mehana	52	Somewhat Walkable

Source: walkscore.com

The comparables are all located in neighborhoods that are of good quality, but are not considered to be pedestrian friendly. Compared with the comparable properties, the Subject is superior in terms of location.

Size, Age and Condition

The Subject will offer 143 units in a 13-story high-rise structure to be completed in 2016. The comparables range in size from 74 to 140 units, with an average of 107 units. In terms of size, the Subject is slightly above the range of the comparables.

The surveyed properties were constructed or will be constructed between 2011 and 2014. Nanala at Mehana was constructed between 2009 and 2011 and is considered to be in slightly inferior condition compared to the Subject. The remaining comparables are considered to be in excellent condition. The Subject will be new construction, two to six years newer than the comparables.

Unit Size

The following table illustrates the unit sizes of the Subjects and the comparable properties.

UNIT SIZE COMPARISON

Unit Type	Subject	Surveyed Min	Surveyed Max	Surveyed Average	Advantage/ Disadvantage
Studio*	360	313	613	367	-2%
1BR / 1BA	534	500	500	500	7%
2BR / 1BA	765	699	1,227	951	-20%
3BR / 1BA	990	911	1,870	1,016	-3%

*Utilizes recent studio units sold in Honolulu for comparison

As the table illustrates, the Subject's one-bedroom unit is slightly larger than the average. The Subject's two and three-bedroom units are smaller than the surveyed average, but within the range of the comparables. None of the comparables offer a studio unit. To supplement our data, we utilized recent condominiums sold in Honolulu for comparison. The Subject's studio units are similar to the average studio unit sizes surveyed. We have considered the Subject's unit sizes in our achievable for-sale pricing.

Amenities, Security, and Parking Comparison

A detailed description of amenities included in both the Subject properties and the comparable properties can be found in the amenity matrix on the following page.

Subject Amenity Matrix

UNIT MATRIX REPORT

	Kapolei Phase II	Awakea at Mehana	Kealakai	Nanala at Mehana	Pulewa at Mehana
Comp #	Subject	1	2	3	4
Property Information					
Property Type	Highrise (13 Stories)	Townhome (2 Stories)	Garden (2 Stories)	Townhome (3 Stories)	Townhome (2 Stories)
Year Built / Renovated	2016	2015 / n/a	2010-2012	2008-2010	2011-2013
Market (Conv.)/Subsidy Type	Market	Market	@140%	Market	Market
In-Unit Amenities					
Balcony/Patio	no	yes	yes	yes	yes
Blinds	yes	yes	yes	yes	yes
Carpeting/Laminate	yes	yes	yes	yes	yes
Central A/C	no	yes	yes	yes	yes
Coat Closet	no	yes	yes	yes	yes
Dishwasher	yes	yes	yes	yes	yes
Exterior Storage	no	yes	yes	yes	yes
Ceiling Fan	yes	yes	yes	yes	yes
Garbage Disposal	yes	yes	yes	yes	yes
Microwave	yes	yes	yes	yes	yes
Oven	yes	yes	yes	yes	yes
Refrigerator	yes	yes	yes	yes	yes
Walk-In Closet	yes	no	no	no	no
Washer/Dryer	yes	yes	yes	yes	yes
Washer/Dryer hookup	yes	yes	yes	yes	yes
Property Amenities					
Clubhouse/Meeting Room/Community Room	yes	yes	no	yes	yes
Courtyard	yes	no	no	no	no
Elevators	yes	no	no	no	no
Garage	yes	yes	no	yes	yes
Off-Street Parking	yes	yes	yes	yes	yes
On-Site Management	yes	no	no	no	no
Picnic Area	yes	yes	yes	yes	yes
Playground	yes	yes	yes	yes	yes
Recreation Areas	yes	no	no	no	no
Swimming Pool	no	yes	no	yes	yes
Security					
In-Unit Alarm	no	no	no	no	no
Limited Access	yes	yes	yes	yes	yes
Patrol	no	no	no	no	no
Perimeter Fencing	no	no	no	no	no
Video Surveillance	no	no	no	no	no

As the previous table illustrates, the Subject will offer a slightly inferior in-unit amenities package in comparison to all of the comparables. All of the in-unit amenities that will be offered at the Subject are offered at all of the comparables, with the exception of walk-in closets, which are not offered at any of the comparables. In contrast, the Subject will not offer balconies/patios, air conditioning, coat closets, or exterior storage which are found at all of the comparable properties. However, we do not believe that the lack of air conditioning will be a disadvantage based on the proposed energy efficient envelope design, operable windows, and regular trade winds in the area. The Subject will offer a similar to slightly superior common area amenities package in comparison to the comparable properties. The Subject will offer a courtyard, elevators, on-site management and recreation areas, which are not offered at the comparables. In contrast, the Subject will not offer a swimming pool, which is offered at three of the comparables. Overall, the Subject is considered slightly inferior to the comparables in terms of in-unit amenities, slightly superior to Awakea at Mehana, Nanala at Mehana, and Pulewa at Mehana in terms of common area amenities, and superior to Kealakai in terms of common area amenities.

Parking

Parking will be included in the purchase price. The Subject will offer 235 garage parking spaces, which equates to a total of 1.6 spaces per unit. There is sufficient parking to allow one space per studio and one-bedroom unit and two spaces per two and three-bedroom units (231 spaces required). Of the comparables, three include private garages and one includes free surface parking. We believe the Subject's amount and type of parking is sufficient, given the Subject's location in a very walkable neighborhood.

Maintenance Fees

All of the comparable condominium units operate as a condominium owner's association and owners are assessed maintenance fees to cover the association's shared expenses. All of the maintenance fees of the comparable properties include water, sewer and trash for the residential units, and all utilities, operating expenses and insurance of common areas. Some of the comparable maintenance fees also include broadband internet and cable. These fees are commonly charged on a per-square-foot basis, and may also include a flat fee for membership dues. Due to the fact that maintenance fees vary based on level of service, operating expenses, building design, and utility consumption, comparisons are difficult. The comparables indicated maintenance fees ranging from $0.26 to $0.29 per square foot. Awakea at Mehana, Nanala at Mehana and Pulewa at Mehana feature a townhome design, while Kealakai features a garden design. These configurations are less comparable to the Subject's high-rise design in terms of operating costs. To better understand reasonable maintenance fees for a similar design as the Subject, we obtained maintenance fee information in Honolulu for comparison. We have tempered our estimate utilizing the data obtained from the comparables located in Kapolei. Additionally, we have considered the electricity savings associated with the Subject's solar co-generation system and have concluded to a monthly maintenance fee of $0.50 per square foot. The following table illustrates the concluded maintenance fee by floor plan.

MAINTENANCE FEES

Property Name	Location	Year Built	Stories	Amenities	Maintenance Fees
Kapolei II (Subject)	**Kapolei**	**2016**	**13**	**Garage, Elevators, Meeting Rooms, On-site Management, Picnic Area**	**$0.50 per square foot (Novoco estimate)**
801 South Street	Honolulu	2015	46	Elevators, Garage, Meeting Rooms, On-site Management, Picnic Area	$0.48 to $0.51 per square foot
The Cove Waikiki	Honolulu	2014	5	Elevators, Garage, On-site Management, Swimming Pool, Courtyard	$0.64 per square foot
Keola L'ai	Honolulu	2008	43	Clubhouse, Elevators, Garage, Exercise Room, On-site Management, Meeting Rooms, Swimming Pool, Jacuzzi, Picnic Area, Cable, Broadband Internet	$0.67 to $0.75 per squre foot
Capitol Place	Honolulu	2008	39	Clubhouse, Elevators, Garage, Exercise Room, On-site Management, Meeting Rooms, Swimming Pool, Jacuzzi, Picnic Area, Theatre	$0.75 per square foot
Awakea at Mehana*	Kapolei	2015	2	Swimming Pool, Community Center, Playground	$0.26 per square foot
Pulewa at Mehana*	Kapolei	2013	2	Swimming Pool, Community Center, Playground	$0.27 to $0.28 per square foot
Kealakai*	Kapolei	2012	2	Playground, Picnic Area	$0.28 per square foot
Nanala at Mehana*	Kapolei	2011	Various	Swimming Pool, Community Center, Playground	$0.28 to 0.29 per square foot

*Utilized as a comparable

We believe the Subject's maintenance fees will be most similar to The Cove Waikiki and 801 South Street based on the size and amenities offered at these properties. We have tempered our estimate utilizing the data obtained from the comparables located in Kapolei and have concluded to a monthly maintenance fee of $0.50 per square foot. The following table illustrates the concluded maintenance fee by floor plan.

MAINTENANCE FEES

Unit Type	Unit Size (SF)	Maintenance Fee Per Square Foot	Monthly Maintenance Fee
Studio	360	$0.50	$180
1BR / 1BA	534	$0.50	$267
2BR / 1BA	765	$0.50	$383
3BR / 1BA	990	$0.50	$495

Premium Pricing

The Subject will be the first high-rise development in Kapolei and views from the outside facing units will be unobstructed toward mountains, while views from the interior units will be of a professionally landscaped courtyard and additional phases of the Subject development. None of the comparables offer more than three stories in height nor do any offer view premiums. The Subject will offer a 13-story high rise design. Based on our evaluation of the Subject site location, surrounding land uses, building design (including orientation to the other phases of the Subject and surrounding areas) and similar high-rise product in the Honolulu market, we believe that view or floor premiums are likely achievable. The following table summarizes the floor and view premiums at the active condominium projects in Honolulu.

FLOOR/VIEW PREMIUMS

Property Name	Floor Premium	View Premium
801 South Street	$600 to $4,000 per floor	1% Diamond Head View
One Ala Moana	None	Yes, unable to estimate
Symphony Honolulu	Approx. 1% per floor	15% Diamond Head, 10% Ocean
The Collection	Approx. 1% per floor	1% Diamond Head View
The Cove Waikiki	None	None
Waihonua	Yes, unable to estimate	Yes, unable to provide

Condominium units within the PMA exhibit premium pricing by floor level and view. Generally, the price increases by floor and units facing Diamond Head achieve the highest premium. Four of five active high-rise comparables reported floor premiums, with an approximate one percent premium per floor reported as typical. All of the high-rise comparables reported view premiums, with Diamond Head views having the highest premium generally ranging from one to 15 percent. Based on the floor and view premiums being achieved at the comparables, as well as considering the Subject's building design and location, we estimate a floor premium of one percent and an additional one percent mountain view premium.

MARKET CHARACTERISTICS

Following are relevant market characteristics for comparable properties surveyed.

Absorption

We were able to obtain pre-sale absorption data from one comparable in Kapolei and closed sale activity from three comparables in Kapolei. None of the latter comparables offered a pre-sale period, as they are townhome and garden designs and construction is generally not contingent on a pre-sale threshold. As the Subject features a high-rise design, we obtained additional pre-sale absorption data from high-rise developments in Honolulu to temper our analysis

PRE-SALES ACTIVITY

Property	Location	Units	Presales Began	Sold-out Date	Units presold per month	Status
Awakea at Mehana*	Kapolei	74	Jun-13	N/A	5	July 2015 completion
Symphony Honolulu	Honolulu	388	Jun-13	N/A	55	January 2016 completion
The Collection	Honolulu	466	Aug-13	N/A	83	December 2016 completion
801 South Street	Honolulu	616	Mar-13	Jul-13	123	Summer 2015 completion
One Ala Moana	Honolulu	205	Jan-13	Jan-13	205	Late 2014 completion

ABSORPTION - CLOSED SALES

Property	Location	Units	First Closing	Last Closing	Units closed per month
Nanala at Mehana	Kapolei	96	Mar-09	Mar-11	4 units per month
Kealakai*	Kapolei	140	Sep-10	Jul-13	4 units per month
Pulewa at Mehana	Kapolei	119	Apr-11	Sep-13	4 units per month
Awakea at Mehana*	Kapolei	74	N/A	N/A	No units closed.

*Includes units that are restricted to 140% AMI or less

The comparables achieved presale absorption ranging from five to 205 units per month, with an average of 94 units per month. Notably, the comparable in Kapolei reported the slowest pre-sale

absorption rate of five units per month. Additionally, Nanala at Mehana, Kealkai, and Pulewa at Mehana each experienced closed sale absorption rate of approximately four units per month. Of note, none of these comparables offered a pre-sale period, as they are townhome and garden designs and construction is not contingent on a pre-sale threshold. Nonetheless, based upon the strength of the Subject's location, amenities, design, as well as demand estimates, we estimate a pre-sale absorption pace of 12 units per month, which equates to an absorption period of 12 months.

ACHIEVABLE FOR-SALE PRICING

The achievable pricing was determined by comparing the aesthetic quality, amenities, unit sizes, etc. to that of the comparable condominium projects in the area. Novogradac & Company concluded that the Subject will be competitive with the market rate competition and achievable pricing are within the range of closed sales at the comparable properties. Achievable pricing represents net market rate pricing levels that we believe a project of the Subjects' condition and quality could reasonably achieve. Of the condominium comparables surveyed, none offered studio units. According to Mike Watkins, Planner with the Department of Planning and Permitting for the City and County of Honolulu, no recently constructed condominium developments have included studio units in their unit mix. As such, we surveyed recently closed studio units in Honolulu, which is the nearest community with this type of condominium unit offered. The following table details our findings.

RECENTLY SOLD STUDIO UNITS

Property	Unit	Date Sold	Price	Square Footage	Price per SF	Year Built	Amenities
Iolani Court Plaza	702	5/21/2632	$267,500	353	$758	1980	Tennis court, swimming pool, whirlpool, BBQ, recreation room.
Liliuokalani Gardens	1117	9/13/2013	$160,000	333	$480	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Luana Waikiki	1009	8/26/2013	$260,000	313	$831	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Iolani Court Plaza	602	8/12/2013	$265,000	353	$751	1980	Tennis court, swimming pool, whirlpool, BBQ, recreation room.
Liliuokalani Gardens	1905	8/8/2013	$153,000	333	$459	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Sans Souci	1002	8/8/2013	$286,000	359	$797	1960	Beach frontage, recreation area.
Waikiki Landmark	1100	7/24/2013	$405,000	613	$661	1993	Swimming pool, lap pool, hot tub, two spas.
Iolani Court Plaza	1602	7/19/2013	$255,000	353	$722	1980	Tennis court, swimming pool, whirlpool, BBQ, recreation room.
Villa on Eaton Square	1706	6/24/2013	$282,000	462	$610	1974	Swimming pool, sauna, exercise room, BBQ, recreation area.
Iolani Court Plaza	2802	5/30/2013	$265,000	353	$751	1980	Tennis court, swimming pool, whirlpool, BBQ, recreation room.
Sans Souci	702	5/28/2013	$237,000	359	$660	1960	Beach frontage, recreation area.
Luana Waikiki	601	5/16/2013	$229,000	313	$732	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Four Paddle	2503	5/2/2013	$375,000	460	$815	1974	Swimming pool, sauna, picnic and recreation areas.
Sans Souci	302	4/23/2013	$206,000	359	$574	1960	Beach frontage, recreation area.
Luana Waikiki	1102	4/6/2013	$250,000	313	$799	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Luana Waikiki	1110	4/5/2013	$325,000	313	$1,038	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Luana Waikiki	910	4/1/2013	$268,000	313	$856	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Four Paddle	1303	2/27/2013	$340,000	460	$739	1974	Swimming pool, sauna, picnic and recreation areas.
Luana Waikiki	1601	2/22/2013	$275,000	313	$879	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Liliuokalani Gardens	2205	2/15/2013	$120,000	333	$360	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Four Paddle	803	2/6/2013	$359,000	460	$780	1974	Swimming pool, sauna, picnic and recreation areas.
Marco Polo	2015	2/1/2013	$263,800	436	$605	1971	Swimming pool, sauna, tennis court, meeting rooms, recreation area, BBQ.
Sans Souci	206	1/25/2013	$216,000	359	$602	1960	Beach frontage, recreation area.
Liliuokalani Gardens	405	1/1/2013	$140,000	333	$420	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Luana Waikiki	515	12/22/2012	$248,000	313	$792	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Luana Waikiki	802	12/18/2012	$230,000	313	$735	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Luana Waikiki	501	12/5/2012	$194,000	313	$620	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Liliuokalani Gardens	820	11/5/2012	$210,000	321	$654	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Sans Souci	303	5/8/2012	$205,000	359	$571	1960	Beach frontage, recreation area.
Sans Souci	306	3/6/2012	$175,000	359	$487	1960	Beach frontage, recreation area.
Luana Waikiki	415	1/30/2012	$189,500	313	$605	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Sans Souci	402	1/18/2012	$270,000	359	$752	1960	Beach frontage, recreation area.
Liliuokalani Gardens	1019	4/14/2011	$140,000	321	$436	1984	Tennis courts, swimming pool, BBQ, whirlpool.
Luana Waikiki	219	2/17/2011	$145,000	313	$463	1971	BBQ, central laundry, concierge, exercise room, swimming pool.
Marco Polo	1806	11/8/2010	$255,000	436	$585	1971	Swimming pool, sauna, tennis court, meeting rooms, recreation area, BBQ.
Colony Surf	106	3/12/2010	$330,000	540	$611	1960	Beach frontage.
Average			**$244,272**		**$666**		

The following table illustrates the average price per square foot of most recent sales at the comparable properties in comparison with the Subject.

ACHIEVABLE FOR-SALE PRICING

Unit Type	Number of Units	Unit Size (SF)	Surveyed Min Price per SF	Surveyed Max Price per SF	Surveyed Average Price per SF	Novoco Achievable Price per SF (Low)	Novoco Achievable Price per SF (High)*	Novoco Achievable Unit Price (Low)	Novoco Achievable Unit Price (High)*
Studio	11	360	$360	$1,038	$666	$550	$670	$198,000	$241,361
1BR / 1BA	44	534	$480	$480	$480	$500	$609	$267,000	$325,472
2BR / 1BA	77	765	$326	$429	$363	$450	$549	$344,250	$419,639
3BR / 1BA	11	990	$264	$375	$308	$400	$488	$396,000	$482,722

*Residential units will occupy floors three through 13; outward facing units will offer mountain views; the 'high' pricing reflects a one percent per floor premium and an additional one percent per foor view premium.

It is important to note that sales staff at Awakea at Mehana explained that units targeting 140 percent AMI and unrestricted units had no difference in pricing, explaining that the target market is not materially different. Pricing at Awakea at Mehana is in line with the market average. Additionally, the pricing at Kealakai, which is entirely restricted at 140 percent AMI, is above the average of comparables on a per square foot basis (detailed below). Overall, the Subject will be most similar to Kealakai. Compared with Kealakai, the Subject will offer superior community amenities and location, slightly superior condition and unit sizes, and slightly inferior in-unit amenities. Kealaki, however, offers a superior number of baths in the three-bedroom unit type. The following table illustrates the average 2013 selling prices by bedroom type for units at Kealakai in comparison with Novoco achievable pricing at the Subject.

SUBJECT COMPARISON WITH KEALAKAI

Unit Type	Novoco Achievable Price (High)	Unit Size (SF)	Achievable Price per Square Foot (High)	Kealakai 2013 Average Sold Price	Kealakai Size (SF)	Kealakai Price per Square Foot	Subject Price Difference (High)
Studio	$241,361	360	$670	N/A	N/A	N/A	N/A
1BR / 1BA	$325,472	534	$609	$246,200	500	$492	24%
2BR / 1BA	$419,639	765	$549	$296,525	699	$424	29%
3BR / 1BA	$482,722	990	$488	$353,585	911	$388	26%

According to sales data obtained from public records, the price per square foot for units sold in 2013 at Kealakai ranges from $388 to $492, with an average of $435. Overall, the Subject will be superior to Kealakai, and we conclude to an achievable base price per square foot of $550, $500, $450 and $400 for studio, one, two and three-bedroom units, respectively.

Summary Evaluation of the Project

Upon completion, the Subject will offer an excellent quality product with competitive amenities. The primary strengths of the Subject will be its condition, pedestrian-friendly location, and design as the first high-rise condominium building to be constructed in the PMA. Despite generally smaller than average unit sizes, we believe that the Subject's floor plans and overall design will be well-accepted in the market. Based on the price per square foot of comparable properties in the market, we believe the Subject is capable of achieving pricing on a per square

foot basis of $550, $500, $450 and $400 for studio, one, two and three-bedroom units, respectively. Overall, the Kapolei condominium market is considered strong and the Subject should compete well.

CONDOMINIUM DEMAND ANALYSIS

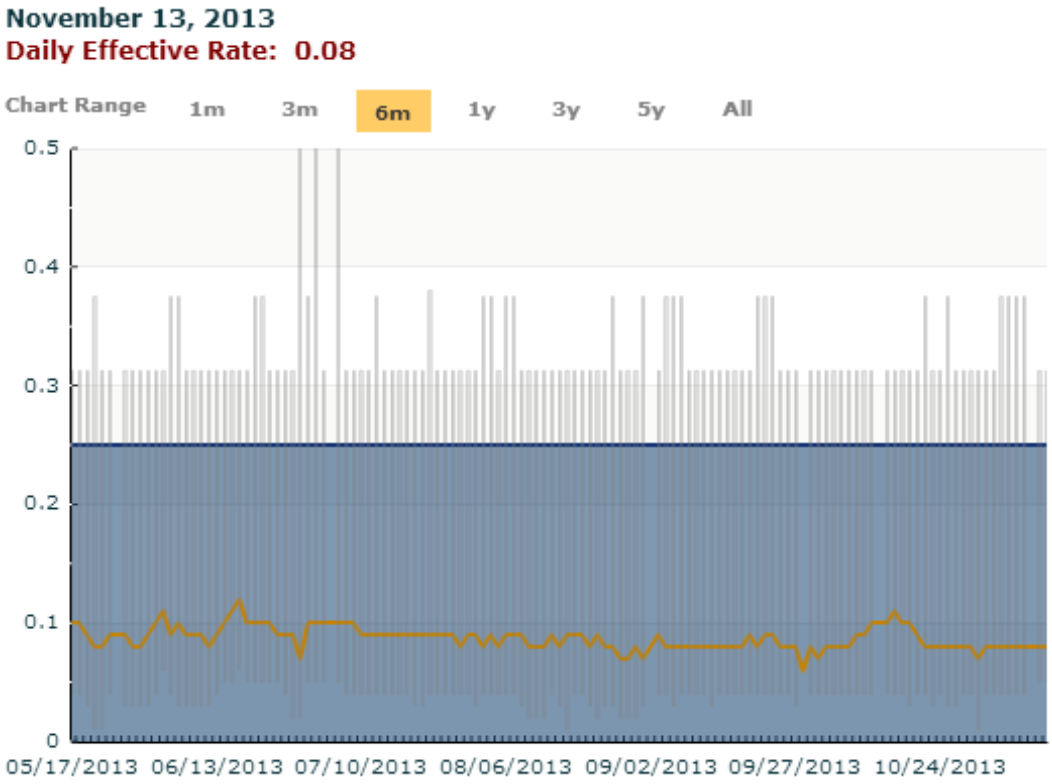
Introduction

The Subject is a proposed development that will offer 143 studio, one, and two-bedroom condominium units in a 13-story high-rise design. The sponsor anticipates restricting all of the proposed condominium units to households earning 140 percent AMI as required under the HHFDC Dwelling Unit Revolving Fund (DURF).

Interest Rate Trends

Realtors indicated that interest rates have remained relatively stable over the past two years in the area. The following charts provided by the Federal Reserve Bank of New York shows the change in the federal funds rate from May 2013 to November 2013. Mortgage interest rates generally move in direct correlation with the funds rate.

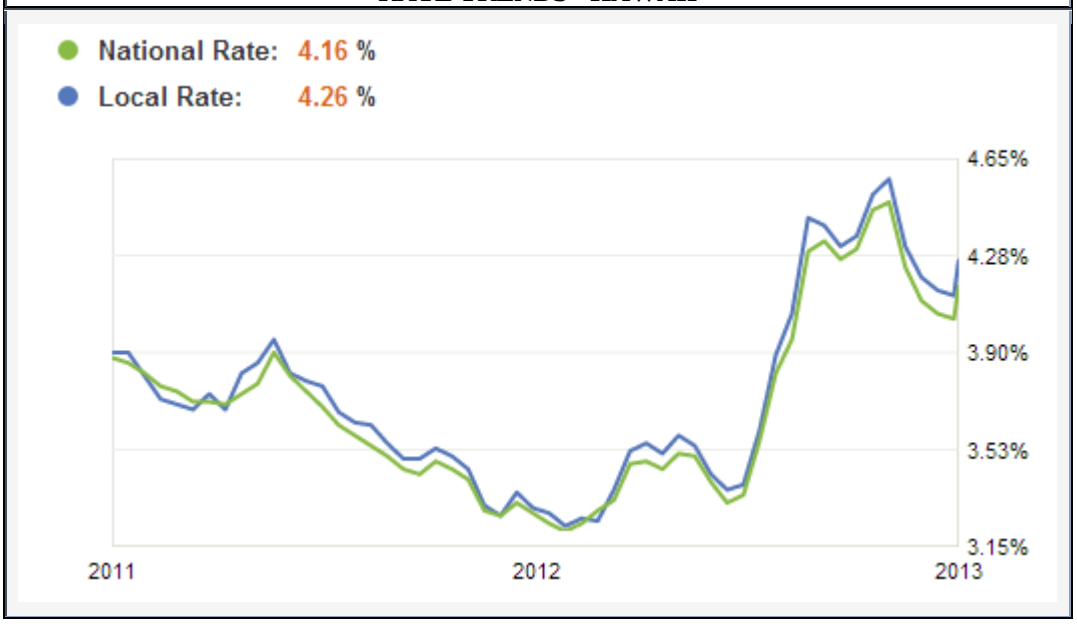
Federal Funds Chart



Source: Federal Reserve Bank of New York, 11/2013.

As the previous chart demonstrates, the daily effective federal funds interest rate has remained between 0.06 and 0.12. The following table, provided by zillow.com, tracks the change in interest rates in Hawaii from November 2011 through November 2013. The average interest rate in Hawaii in November 2013 is approximately 4.26 percent, slightly above the national average.

RATE TRENDS - HAWAII



According to current bankrate.com estimates, interest rates in the Kapolei area generally range from 4.3 to 5.1 percent for households with acceptable credit scores. We will assume an interest rate of 4.5 percent for our analysis.

New Supply

It should be noted that there is some new supply expected to enter the Subject's market. With the exception of 10 units, all the under construction and planned supply in the PMA is for unrestricted for sale product. Despite the Subject's affordability targeting 140 percent AMI, the comparable analysis indicates that the Subject's achievable pricing is effectively at unrestricted market rate levels. Therefore, we have deducted the appropriate units from the demand.

- Awakea at Mehana is a townhome development that is being built along Kunehi Street, approximately 1.0 miles south of the Subject. The property will feature 74 units upon completion, and will include the Mehana Recreation Center, which will be shared by the other phases of the Mehana development. There will be 10 units affordable at 140 percent AMI and the remaining units will be unrestricted. Management indicated that there is no price difference between the affordable and unrestricted units. Construction is in progress, with some units nearing completion and expected to close within the next month. The anticipated final completion date is July 2015. Twenty-five units have been pre-sold. We have including the remaining 49 units in our demand analysis.

- Villages at Kapolei has been in development since 2008 and will total 4,240 units consisting of affordable and market rate single-family homes, condominiums and rental apartments when completed. According to Mr. Watkins, there is currrently a plan to build 290 additional townhome units. Although it has not been formally approved, we believe that this project will move forward as a multi-phase/multi-year development and

have deducted 145 units of demand from our demand calculations anticipating a two-year development process.

- The Subject's Phases III and IV will be market rate condominium developments that will each consist of 143 studio, one and two-bedroom units. Both phases are expected to commence construction in 2016 and open in 2018. Based on the development timetable, we do not anticipate any overlap with the Subject's absorption. Therefore, we have not considered these proposed units in our demand caluations.

- Koa Ridge is a Castle and Cooke master planned community that will offer 3,500 single-family, townhome and condominium homes, a mixed-use village center, community amenities and an elementary school. A timeline for completion and a final mix of housing types has not yet been released and final approval has not been granted. Nonetheless, we believe that this project will move forward as a multi-phase/multi-year development and have deducted 700 units of demand from our demand calculations anticipating a five-year development process.

We have deducted a total of 894 condominium units from the demand calculations.

PURCHASING POWER

We contacted several mortgage brokers regarding the typical income requirements to qualify for condominium mortgages. According to these brokers, buyers will qualify for mortgages as long as total debt to gross income does not exceed 40 to 45 percent. HHFDC's Affordable Sales Price Guidelines are established assuming a 5% down payment where mortgage debt does not exceed 28 percent of monthly gross income. Using a mortgage debt to income ratio of 28 percent, we have estimated the income levels necessary to purchase the Subject's units at an interest rate of 4.5 percent with five percent down payment. The following tables illustrate this analysis.

COST & INCOME ANALYSIS - STUDIO - 4.5% (LOW)

Inputs		Ownership	Notes
Unit Price		**$198,000**	Novoco Achievable Price
Closing Costs	3%	$5,940	
Downpayment	5%	$9,900	
Principal		$188,100	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$953	
Annual Payment		$11,437	
Real Estate Taxes		$693	Taxes based on 100% of value with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$941	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$900	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$2,160	
Total Annual Cost		$16,630	
Total Monthly Cost		$1,386	
Monthly Income Required		$4,950	Assumes a housing expense of 28% of income
Annual Income Required		$59,394	

COST & INCOME ANALYSIS - STUDIO - 4.5% (HIGH)

Inputs		Ownership	Notes
Unit Price		**$241,361**	Novoco Achievable Price
Closing Costs	3%	$7,241	
Downpayment	5%	$12,068	
Principal		$229,293	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$1,162	
Annual Payment		$13,942	
Real Estate Taxes		$845	Taxes based on 100% of value with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,146	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$900	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$2,160	
Total Annual Cost		$19,493	
Total Monthly Cost		$1,624	
Monthly Income Required		$5,801	Assumes a housing expense of 28% of income
Annual Income Required		$69,617	

COST & INCOME ANALYSIS - ONE-BEDROOM - 4.5% (LOW)

Inputs		Ownership	Notes
Unit Price		**$267,000**	Novoco Achievable Price
Closing Costs	3%	$8,010	
Downpayment	5%	$13,350	
Principal		$253,650	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$1,285	
Annual Payment		$15,422	
Real Estate Taxes		$935	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,268	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$1,284	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$3,204	
Total Annual Cost		$22,613	
Total Monthly Cost		$1,884	
Monthly Income Required		$6,730	Assumes a housing expense of 28% of income
Annual Income Required		$80,762	

COST & INCOME ANALYSIS - ONE-BEDROOM - 4.5% (HIGH)

Inputs		Ownership	Notes
Unit Price		**$325,472**	Novoco Achievable Price
Closing Costs	3%	$9,764	
Downpayment	5%	$16,274	
Principal		$309,198	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$1,567	
Annual Payment		$18,800	
Real Estate Taxes		$1,139	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,546	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$1,284	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$3,204	
Total Annual Cost		$26,473	
Total Monthly Cost		$2,206	
Monthly Income Required		$7,879	Assumes a housing expense of 28% of income
Annual Income Required		$94,547	

COST & INCOME ANALYSIS - TWO-BEDROOM - 4.5% (LOW)

Inputs		Ownership	Notes
Unit Price		**$344,250**	Novoco Achievable Price
Closing Costs	3%	$10,328	
Downpayment	5%	$17,213	
Principal		$327,038	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$1,657	
Annual Payment		$19,885	
Real Estate Taxes		$1,205	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,635	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$1,692	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$4,596	
Total Annual Cost		$29,513	
Total Monthly Cost		$2,459	
Monthly Income Required		$8,784	Assumes a housing expense of 28% of income
Annual Income Required		$105,402	

COST & INCOME ANALYSIS - TWO-BEDROOM - 4.5% (HIGH)

Inputs		Ownership	Notes
Unit Price		**$419,639**	Novoco Achievable Price
Closing Costs	3%	$12,589	
Downpayment	5%	$20,982	
Principal		$398,657	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$2,020	
Annual Payment		$24,239	
Real Estate Taxes		$1,469	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,993	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$1,692	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$4,596	
Total Annual Cost		$34,489	
Total Monthly Cost		$2,874	
Monthly Income Required		$10,265	Assumes a housing expense of 28% of income
Annual Income Required		$123,176	

COST & INCOME ANALYSIS - THREE-BEDROOM - 4.5% (LOW)

Inputs		Ownership	Notes
Unit Price		**$396,000**	Novoco Achievable Price
Closing Costs	3%	$11,880	
Downpayment	5%	$19,800	
Principal		$376,200	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$1,906	
Annual Payment		$22,874	
Real Estate Taxes		$1,386	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$1,881	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$2,100	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$5,940	
Total Annual Cost		$34,681	
Total Monthly Cost		$2,890	
Monthly Income Required		$10,322	Assumes a housing expense of 28% of income
Annual Income Required		$123,860	

COST & INCOME ANALYSIS - THREE-BEDROOM - 4.5% (HIGH)

Inputs		Ownership	Notes
Unit Price		**$482,722**	Novoco Achievable Price
Closing Costs	3%	$14,482	
Downpayment	5%	$24,136	
Principal		$458,586	
Interest Rate	**4.50%**		
Amortization period	30		
Monthly Payment		$2,324	
Annual Payment		$27,883	
Real Estate Taxes		$1,690	Taxes based on 100% of average home price with a rate of 0.0035%
Private Mortgage Insurance	0.50%	$2,293	
Homeowner's Insurance		$500	Local Agent Quote for condominium
Utilities		$2,100	Estimated annual utilities not included in maintenance fee
Annual Maintenance Fees		$5,940	
Total Annual Cost		$40,405	
Total Monthly Cost		$3,367	
Monthly Income Required		$12,025	Assumes a housing expense of 28% of income
Annual Income Required		$144,305	

The following table compares the results of the analysis with the guidelines published by Hawaii Housing Finance & Development Corporation.

AFFORDABILITY SUMMARY

Unit Type	Household Size	Maximum Allowable Price 140% AMI*	Achievable Unit Price (Low)	Achievable Unit Price (High)	140% AMI Income Limits*	Indicated Minimum Income (Low)	Indicated Minimum Income (High)
Studio	1 Person	$414,400	$198,000	$241,361	$96,040	$59,394	$69,617
1BR / 1BA	2 Person	$473,600	$267,000	$325,472	$109,760	$80,762	$94,547
2BR / 1BA	3 Person	$532,800	$344,250	$419,639	$123,480	$105,402	$123,176
3BR / 1BA	5 Person	$639,100	$396,000	$482,722	$148,120	$123,860	$144,305

*Maximum price and income guidelines are established by HHFDC and are based on household size. Maximum price assumes a 4.5% APR mortgage with a 5% downpayment and an income to mortgage payment ratio of 28%, per HHFDC guidelines.

Demand Analysis

The following demand analysis assumes that interest rates remain low, around 4.5 percent.

INCOME LIMITS

Unit Type	Minimum Allowable Income	Maximum Allowable Income
140% AMI		
Studio	$59,394	$96,040
1BR / 1BA	$80,762	$109,760
2BR / 1BA	$105,402	$123,480
3BR / 1BA	$123,860	$148,120

RENTER INCOME DISTRIBUTION 2012

Income Cohort	Total Renter Households	140% AMI		
		cohort overlap	*% in cohort*	*# in cohort*
$0-9,999	956			
$10,000-19,999	1,133			
$20,000-29,999	1,615			
$30,000-39,999	1,678			
$40,000-49,999	1,999			
$50,000-59,999	1,662	606	6.06%	101
$60,000-74,999	2,561	14,999	100.00%	2,561
$75,000-99,999	3,181	24,999	100.00%	3,181
$100,000-124,999	1,939	24,999	100.00%	1,939
$125,000-149,999	1,186	23,120	92.48%	1,097
$150,000-199,999	658			
$200,000+	441			
Total	**19,009**		**46.71%**	**8,879**

OWNER INCOME DISTRIBUTION 2012

Income Cohort	Total Owner Households	140% AMI		
		cohort overlap	*% in cohort*	*# in cohort*
$0-9,999	792			
$10,000-19,999	1,074			
$20,000-29,999	1,391			
$30,000-39,999	1,717			
$40,000-49,999	2,426			
$50,000-59,999	2,747	606	6.06%	101
$60,000-74,999	4,543	14,999	100.00%	4,543
$75,000-99,999	8,165	24,999	100.00%	8,165
$100,000-124,999	7,091	24,999	100.00%	7,091
$125,000-149,999	4,748	23,120	92.48%	4,391
$150,000-199,999	4,244			
$200,000+	2,405			
Total	**41,341**		**58.75%**	**24,290**

All of the comparable properties surveyed were questioned about the demand characteristics of an 'average buyer.' Most reported that buyers came from western Oahu and areas around Honolulu County. The PMA boundaries and overall market health assessment are based primarily on surveys of existing and actively pre-selling condominium developments undertaken by Novogradac & Company LLP, and insights gained from realtors active in the area and others familiar with the condominium market. Based on an analysis of demographic data, geographic, social, and political boundaries, including interviews with realtors in the area, the majority of demand will be generated from this geographic area. However, leakage is expected from outside the PMA from other parts of Honolulu County, as well as outside of the state. Other characteristics of buyers are dependent on the housing size, price, and location. Most lower-priced homes attract young families, first-time homebuyers, and retirees.

We contacted several brokers in the area to understand the typical buyer in the local condominium market.

- Jon Mann of Jon S. Mann Real Estate indicated that nearly half of the condominiums that he sold in the past year in the Kapolei area involved buyers who were selling one condominium unit to move into another condominium unit. Additionally, Mr. Mann mentioned that approximately one-third of the condominiums that he sold involved buyers who were first-time home buyers. The remaining buyers purchased units as investments or were moving from single-family homes.

- David Buck of Hawaii Life Realty indicated that approximately one-half of the condominiums sales he was a part in the region (including the entire southern Oahu region) of involved local buyers who were selling condominiums before moving to new condominiums or downsizing to smaller condominiums. Mr. Buck indicated that approximately 10 percent of the buyers he worked for were first-time homeowners and approximately 15 percent of the sales involved buyers who were from outside of Oahu.

- Sales staff at Awakea at Mehana indicated that approximately 60 percent of the units sold at the Mehana Development have been sold to homeowners who are moving to a new home. Approximately 30 percent have been sold to first-time homebuyers, and 10 percent have been sold to investors. Additionally, the sales staff indicated that approximately 75 percent of buyers originated from Kapolei and the surrounding area, with the remaining buyers from elsewhere in Oahu and other parts of the state.

Based on the data that we obtained, we believe a leakage factor of 25 percent for buyers originating from outside of the PMA, including outside of the state, is appropriate. An estimated one-third of buyers are expected to be first-time homeowners and therefore we believe that five percent is a reasonable estimation of annual renter-to-owner conversion. We estimate two-thirds of condominium buyers are current homeowners; therefore, we believe that a five percent annual turnover is reasonable.

The table on the following page illustrates calculation of the Subject's annual capture rate. These estimates are considered conservative as it is based on existing demand only and does not account for household growth between now and the beginning of the sales period.

INCOME ELIGIBLE HOUSEHOLDS	
140% AMI	
Minimum Income	$59,394
Maximum Income	$148,120
Number of Income Qualified Renters	8,879
% of Renters Becoming Homeowners	5%
Estimated Income Qualified First Time Homeowners	444
Number of Income Qualified Owners	24,290
% of Owners Moving to a New Home	5%
Estimated Income Qualified Owners Transferring	1,214
Portion Originating from PMA	75%
Total Income Qualified Households	2,211
Number of Homes Yet To be Absorbed	894
Net Income Qualified Households	**1,317**
Proposed Subject Units	**143**
Overall Annual Capture Rate	**10.9%**

Conclusion

Based on our demand analysis, we believe that there is adequate demand in the primary market area for the Subject property as proposed based on the demographic information. The overall capture rate for the Subject's units is 10.9 percent and is considered good. The Subject's Novoco achievable pricing meets all HHDFC DURF affordability requirements and are also in-line with market pricing. Overall, market characteristics indicate adequate demand for the Subject.

MARKET RATE RENTAL HOUSING ANALYSIS

MARKET RATE RENTAL HOUSING ANALYSIS

SURVEY OF COMPARABLE PROJECTS

Description of Property Types Surveyed

To evaluate the competitive position of the Subject we performed a field survey of market rate apartment properties. The availability of market rate data is considered average and sufficient on which to base our analysis. We visited and surveyed several properties that were excluded from the market survey because they are not considered as comparable to the Subject due to age, unit mix or location, or unwillingness of management to disclose information.

The table below outlines properties located within or near the PMA that were not utilized in the analysis of the competitive rental market.

EXCLUDED PROPERTIES IN THE PMA

Comparable Property	Location	Rent Structure	Reason for Exclusion
Gallegos Care Home*	Ewa Beach	Market	Assisted Living
Kulana Malama*	Ewa Beach	Market	Assisted Living
Olaloa Retirement Community	Ewa Beach	Market	Assisted Living
Plantation Town Apartments	Waipahu	Market	Majority owner occupied condos
Arc of Hawaii Project 12	Ewa Beach	Section 8	Subsidized
Arc of Hawaii Project 8	Waipahu	Section 8	Subsidized
D.E Thompson Village*	Ewa Beach	Section 8	Subsidized
Hale Kuha'o	Waipahu	Section 8	Subsidized
Ewa Beach Apartments	Ewa Beach	Market	Inferior Condition
Jack Hall Waipahu	Waipahu	Section 8	Subsidized
Kekiulani Gardens	Kapolei	USDA	Subsidized
Kalani Garden Apartments	Mililani Town	Section 8	Subsidized
Waipahu Hall Elderly Housing*	Waipahu	Section 8	Subsidized
Waipahu Tower	Waipahu	Section 8	Subsidized
Waipahu Towers Cooperative	Waipahu	Section 8	Subsidized
Ewa Apartments	Ewa Beach	Market	Would not participate

*Age-restricted

Comparable properties are examined on the basis of physical characteristics, i.e. building type, age/quality, level of common amenities, absorption, as well as similarity in rent. We attempted to compare the Subject to properties from the competing market area to provide a picture of the health and available supply in the market. The following pages include a summary of comparable properties and individual property profiles. A map of the comparables, in relation to the Subject, is included on the following page as well.

Map of Comparable Properties

COMPARABLE PROPERTIES				
#	Property Name	City	Type	Distance
1	G & F Apartments	Ewa Beach	Market	7.2 miles
2	Kalaeloa Rental Homes	Kapolei	Market	1.6 miles
3	Palm Villas Rentals	Ewa Beach	Market	3.6 miles
4	Sunrise Apartments	Ewa Beach	Market	4.2 miles
5	Waterfront At Puuloa	Ewa Beach	Market	8.6 miles

SUMMARY MATRIX

Comp #	Project	Distance	Type / Built / Renovated	Market / Subsidy	Units	#	%	Restriction	Rent (Adj.)	Size (SF)	Wait List?	Units Vacant	Vacancy Rate
Subject	Kapolei Phase 2	n/a	Highrise	Market	Studio / 1BA	11	7.70%	Market	N/A	360		N/A	N/A
	Wakea Street		(13 stories)		1BR / 1BA	44	30.80%	Market	N/A	534		N/A	N/A
	Kapolei, HI 96707		2014 / n/a		2BR / 1BA	77	53.80%	Market	N/A	765		N/A	N/A
	Honolulu County				3BR / 1BA	11	7.70%	Market	N/A	990		N/A	N/A
						143	100%					N/A	N/A
1	G & F Apartments	7.2 miles	Garden	Market	2BR / 1BA	30	100.00%	Market	$1,275	900	No	1	3.30%
	91-737 Fort Weaver Road		(3 stories)										
	Ewa Beach, HI 96706		1970's / 2012										
	Honolulu County					30	100%					1	3.30%
2	Kalaeloa Rental Homes	1.6 miles	Duplex	Market	2BR / 1BA	45	8.60%	Market	$1,914	1,168	No	5	11.10%
	4285 Independence Road		(2 stories)		2BR / 1BA	N/A	N/A	Market	$2,202	1,394	No	0	N/A
	Kapolei, HI 96707		1973/1994 / n/a		2BR / 1BA	N/A	N/A	Market	$2,334	1,394	No	0	N/A
	Honolulu County				2BR / 1.5BA	164	31.50%	Market	$2,049	1,126	No	4	2.40%
					2BR / 1.5BA	N/A	N/A	Market	$2,137	1,197	No	0	N/A
					2BR / 1.5BA	N/A	N/A	Market	$2,004	1,267	No	0	N/A
					3BR / 1.5BA	182	34.90%	Market	$2,060	1,368	No	6	3.30%
					3BR / 2BA	30	5.80%	Market	$2,300	1,203	Yes	3	10.00%
					3BR / 2BA	N/A	N/A	Market	$2,463	1,339	No	0	N/A
					3BR / 2BA	N/A	N/A	Market	$2,130	1,453	No	0	N/A
					3BR / 2BA	N/A	N/A	Market	$2,625	1,475	Yes	0	N/A
					3BR / 2.5BA	60	11.50%	Market	$2,485	1,402	No	2	3.30%
					3BR / 2.5BA	N/A	N/A	Market	$2,688	1,453	Yes	0	N/A
					3BR / 2.5BA	N/A	N/A	Market	$2,455	1,504	No	0	N/A
					4BR / 2.5BA	40	7.70%	Market	$2,517	1,535	No	2	5.00%
						521	100%					22	4.20%
3	Palm Villas Rentals	3.6 miles	Garden	Market	Studio / 1BA	8	7.10%	Market	$995	469	Yes	0	0.00%
	91-1049 Puamaeole St		(3 stories)		1BR / 1BA	16	14.30%	Market	$1,095	540	Yes	0	0.00%
	Ewa Beach, HI 96706		1990 / n/a		2BR / 1.5BA	88	78.60%	Market	$1,395	768	Yes	0	0.00%
	Honolulu County					112	100%					0	0.00%
4	Sunrise Apartments	4.2 miles	Garden	Market	Studio / 1BA	36	8.80%	Market	$850	407	No	N/A	N/A
	91-299 Hanapouli Circle		(3 stories)		1BR / 1BA	72	17.60%	Market	$1,050	521	No	0	0.00%
	Ewa Beach, HI 96706		1993 / n/a		2BR / 2BA	300	73.50%	Market	$1,338	821	No	0	0.00%
	Honolulu County					408	100%					5	1.20%
5	Waterfront At Puuloa	8.6 miles	Various	Market	2BR / 1.5BA (One-story)	N/A	N/A	Market	$2,083	1,115	No	N/A	N/A
	5105 Iroquois Ave		1970s / n/a		2BR / 1.5BA (One-story)	N/A	N/A	Market	$2,300	1,140	No	N/A	N/A
	Ewa Beach, HI 96706				2BR / 1.5BA (One-story)	N/A	N/A	Market	$1,865	1,090	No	N/A	N/A
	Honolulu County				3BR / 2BA (One-story)	N/A	N/A	Market	$2,933	1,335	No	N/A	N/A
					3BR / 2BA (One-story)	N/A	N/A	Market	$3,975	1,450	No	N/A	N/A
					3BR / 2BA (One-story)	N/A	N/A	Market	$1,890	1,220	No	N/A	N/A
					4BR / 2BA (Garden)	N/A	N/A	Market	$2,205	1,460	No	N/A	N/A
					4BR / 2BA (One-story)	N/A	N/A	Market	$2,500	1,690	No	N/A	N/A
					4BR / 2BA (One-story)	N/A	N/A	Market	$1,910	1,230	No	N/A	N/A
					4BR / 2.5BA (One-story)	N/A	N/A	Market	$1,910	1,450	No	N/A	N/A
					4BR / 2.5BA (One-story)	N/A	N/A	Market	$1,935	1,450	No	N/A	N/A
					4BR / 2.5BA (One-story)	N/A	N/A	Market	$1,885	1,450	No	N/A	N/A
						1,449	100%					159	11.00%

PROPERTY PROFILE REPORT

Ala Moana Banyan

Effective Rent Date	**10/21/2013**
Location	929 Sheridan Honolulu, HI 96814 Honolulu County
Distance	1.2 miles
Units	56
Vacant Units	0
Vacancy Rate	0.0%
Type	Highrise (8 stories)
Year Built/Renovated	1969 / N/A
Marketing Began	N/A
Leasing Began	N/A
Last Unit Leased	N/A
Major Competitors	None Identified
Tenant Characteristics	Mixed tenancy, many Japanese immigrants
Contact Name	William / Mitzu
Phone	808.955.0650/808.593.1180

Market Information

Program	Market
Annual Turnover Rate	23%
Units/Month Absorbed	N/A
HCV Tenants	0%
Leasing Pace	2 to 3 Weeks
Annual Chg. in Rent	4% decrease of larger studio units
Concession	None

Utilities

A/C	not included -- window
Cooking	not included -- electric
Water Heat	not included -- electric
Heat	not included -- electric
Other Electric	not included
Water	included
Sewer	included
Trash Collection	included

Unit Mix (face rent)

Beds	Baths	Type	Units	Size (SF)	Rent	Concession (monthly)	Restriction	Waiting List	Vacant	Vacancy Rate	Max Rent?	Range
0	1	Highrise (8 stories)	35	307	$800	$0	Market	No	0	0.0%	N/A	None
0	1	Highrise (8 stories)	20	307	$1,200	$0	Market	No	0	0.0%	N/A	None
1	1	Highrise (8 stories)	1	560	$1,950	$0	Market	No	0	0.0%	N/A	None

Unit Mix

Market	Face Rent	Conc.	Concd. Rent	Util.	Adj. Rent
Studio / 1BA	$800 - $1,200	$0	$800 - $1,200	$0	$800 - $1,200
1BR / 1BA	$1,950	$0	$1,950	$0	$1,950

Amenities

In-Unit

Blinds
Ceiling Fan
Refrigerator
Carpeting
Oven
Window A/C

Security

Intercom (Phone)
Limited Access
Perimeter Fencing

Services

None

Property

Elevators
Central Laundry
On-Site Management
Garage
Off-Street Parking

Premium

None

Other

None

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Comments

The contact reported that the studio units that rent for $800 a month do not have a kitchenette. Studio units with a kitchenette (which includes an oven and refrigerator) rent for $1,200 a month. Management stated that basic cable is provided to all units for no additional charge. The contact indicated that they do not have any available units at this time but she anticipated a few units to become available over the next month.

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PROPERTY PROFILE REPORT

Alexander Gardens

Effective Rent Date	**10/23/2013**
Location	1472 Alexander Honolulu, HI 96822 Honolulu County
Distance	2 miles
Units	30
Vacant Units	0
Vacancy Rate	0.0%
Type	Garden (3 stories)
Year Built/Renovated	1957 / 1977
Marketing Began	N/A
Leasing Began	N/A
Last Unit Leased	N/A
Major Competitors	None identified
Tenant Characteristics	Mixed tenancy
Contact Name	Ryan / Venissa
Phone	808.593.6357/808-454-3498

Market Information

Program	Market
Annual Turnover Rate	15%
Units/Month Absorbed	N/A
HCV Tenants	0%
Leasing Pace	1 week
Annual Chg. in Rent	None
Concession	None

Utilities

A/C	not included -- window
Cooking	not included -- gas
Water Heat	not included -- gas
Heat	not included -- gas
Other Electric	not included
Water	not included
Sewer	not included
Trash Collection	not included

Unit Mix (face rent)

Beds	Baths	Type	Units	Size (SF)	Rent	Concession (monthly)	Restriction	Waiting List	Vacant	Vacancy Rate	Max Rent?	Range
0	1	Garden (3 stories)	3	336	$1,200	$0	Market	No	0	0.0%	N/A	None
1	1	Garden (3 stories)	18	446	$1,375	$0	Market	No	0	0.0%	N/A	None
2	1	Garden (3 stories)	9	716	$1,600	$0	Market	No	0	0.0%	N/A	None

Unit Mix

Market	Face Rent	Conc.	Concd. Rent	Util.	Adj. Rent
Studio / 1BA	$1,200	$0	$1,200	$76	$1,276
1BR / 1BA	$1,375	$0	$1,375	$87	$1,462
2BR / 1BA	$1,600	$0	$1,600	$99	$1,699

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Amenities

In-Unit

Balcony/Patio
Carpeting
Exterior Storage
Refrigerator
Washer/Dryer hookup
Blinds
Coat Closet
Oven
Window A/C

Security

Intercom (Buzzer)
Perimeter Fencing

Services

None

Property

Central Laundry
Picnic Area
Swimming Pool
Off-Street Parking
Recreation Areas

Premium

None

Other

None

Comments

The property is a condominium development that is 50 percent occupied by renters.

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PROPERTY PROFILE REPORT

Capitol Place Apartments

Effective Rent Date	**10/31/2013**
Location	1200 Queen Emma Street Honolulu, HI 96813 Honolulu County
Distance	1.3 miles
Units	185
Vacant Units	6
Vacancy Rate	3.2%
Type	Highrise (39 stories)
Year Built/Renovated	2008 / N/A
Marketing Began	N/A
Leasing Began	N/A
Last Unit Leased	N/A
Major Competitors	None Identified
Tenant Characteristics	Retirees, young professionals, families, many military personnel in the three bedroom units
Contact Name	Property Manager/RE Agent (Tammy
Phone	808.695.2000/808.393.8744

Market Information

Program	Market
Annual Turnover Rate	10%
Units/Month Absorbed	N/A
HCV Tenants	0%
Leasing Pace	Two weeks
Annual Chg. in Rent	5%
Concession	None

Utilities

A/C	not included -- central
Cooking	not included -- electric
Water Heat	not included -- electric
Heat	not included -- electric
Other Electric	not included
Water	included
Sewer	included
Trash Collection	included

Unit Mix (face rent)

Beds	Baths	Type	Units	Size (SF)	Rent	Concession (monthly)	Restriction	Waiting List	Vacant	Vacancy Rate	Max Rent?	Range
1	1	Highrise (39 stories)	N/A	689	$2,500	$0	Market	Yes	0	N/A	N/A	HIGH
1	1	Highrise (39 stories)	N/A	689	$2,200	$0	Market	Yes	0	N/A	N/A	LOW
2	1	Highrise (39 stories)	N/A	810	$2,600	$0	Market	Yes	N/A	N/A	N/A	None
2	2	Highrise (39 stories)	N/A	1,093	$3,300	$0	Market	Yes	N/A	N/A	N/A	None
3	2	Highrise (39 stories)	N/A	1,348	$3,500	$0	Market	No	N/A	N/A	N/A	None
3	3	Highrise (39 stories)	N/A	1,500	$4,800	$0	Market	No	N/A	N/A	N/A	None

Unit Mix

Market	Face Rent	Conc.	Concd. Rent	Util.	Adj. Rent
1BR / 1BA	$2,200 - $2,500	$0	$2,200 - $2,500	$0	$2,200 - $2,500
2BR / 1BA	$2,600	$0	$2,600	$0	$2,600
2BR / 2BA	$3,300	$0	$3,300	$0	$3,300
3BR / 2BA	$3,500	$0	$3,500	$0	$3,500
3BR / 3BA	$4,800	$0	$4,800	$0	$4,800

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Amenities

In-Unit

Balcony/Patio
Carpeting
Coat Closet
Exterior Storage
Garbage Disposal
Oven
Washer/Dryer
Blinds
Central A/C
Dishwasher
Ceiling Fan
Microwave
Refrigerator

Security

Limited Access

Services

None

Property

Concierge
Garage
Off-Street Parking
Picnic Area
Swimming Pool
Wi-Fi
Exercise Facility
Jacuzzi
On-Site Management
Playground
Theatre

Premium

Floor
View

Other

None

Comments

Information was collected from property management as well as a real estate agent leasing units at the property. Management reported that of the 394 units at the property, 209 of the units are owner-occupied and 185 units are renter-occupied. Management reported that there are 66 one-bedroom units, 262 two-bedroom units, and 66 three-bedroom units. Management also reported that rents have generally increased over the past year at the property and that the higher the floor, the higher the rent typically is. The real estate agent indicated that the majority of three-bedroom units were rented by military personnel as they are the only ones who can afford the higher rental prices due to their housing allowances. The real estate agent also indicated that there was a high demand for lower priced rentals in Honolulu, as many of the prospective tenants that contact her cannot afford the units in the market. The real estate agent mentioned that internet and basic cable are included in the rents.

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PROPERTY PROFILE REPORT

Liona Apartments

Effective Rent Date	**10/21/2013**
Location	952 Ahana Street Honolulu, HI 96814 Honolulu County
Distance	1.4 miles
Units	55
Vacant Units	1
Vacancy Rate	1.8%
Type	Lowrise (3 stories)
Year Built/Renovated	1962 / 2010
Marketing Began	N/A
Leasing Began	N/A
Last Unit Leased	N/A
Major Competitors	None Identified
Tenant Characteristics	Mixed tenancy
Contact Name	Jason
Phone	808.738.3106/808.738.3100

Market Information

Program	Market
Annual Turnover Rate	15%
Units/Month Absorbed	N/A
HCV Tenants	6%
Leasing Pace	1 to 2 Weeks
Annual Chg. in Rent	Studio increased 2%, 1BR dec. 2%
Concession	None

Utilities

A/C	not included -- none
Cooking	not included -- electric
Water Heat	not included -- electric
Heat	not included -- electric
Other Electric	not included
Water	included
Sewer	included
Trash Collection	included

Unit Mix (face rent)

Beds	Baths	Type	Units	Size (SF)	Rent	Concession (monthly)	Restriction	Waiting List	Vacant	Vacancy Rate	Max Rent?	Range
0	1	Lowrise (3 stories)	44	300	$895	$0	Market	No	1	2.3%	N/A	None
1	1	Lowrise (3 stories)	11	560	$1,150	$0	Market	No	0	0.0%	N/A	None

Unit Mix

Market	Face Rent	Conc.	Concd. Rent	Util.	Adj. Rent
Studio / 1BA	$895	$0	$895	$0	$895
1BR / 1BA	$1,150	$0	$1,150	$0	$1,150

Amenities

In-Unit

Blinds
Ceiling Fan
Oven
Carpeting
Garbage Disposal
Refrigerator

Security

Limited Access
Patrol
Video Surveillance

Services

None

Property

Garage
Off-Street Parking
Central Laundry

Premium

None

Other

None

Comments

Management reported that the property has 30 off-street surface parking spaces which cost $50 a month and 50 garage units which cost $100 a month.

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PROPERTY PROFILE REPORT

Punahou Circle Apartments

Effective Rent Date	**10/09/2013**
Location	1617 South Beretania Street Honolulu, HI 96826 Honolulu County
Distance	2.3 miles
Units	96
Vacant Units	8
Vacancy Rate	8.3%
Type	Highrise (12 stories)
Year Built/Renovated	1963 / N/A
Marketing Began	N/A
Leasing Began	N/A
Last Unit Leased	N/A
Major Competitors	Condominium rentals in the area
Tenant Characteristics	50% families, 50% students
Contact Name	Pete/Tisha
Phone	Property: (808)949-6998/ Property Mgt:

Market Information

Program	Market
Annual Turnover Rate	13%
Units/Month Absorbed	N/A
HCV Tenants	2%
Leasing Pace	Pre-lease to one week
Annual Chg. in Rent	Fluctuated
Concession	None

Utilities

A/C	not included -- central
Cooking	not included -- electric
Water Heat	not included -- electric
Heat	not included -- electric
Other Electric	not included
Water	included
Sewer	included
Trash Collection	included

Unit Mix (face rent)

Beds	Baths	Type	Units	Size (SF)	Rent	Concession (monthly)	Restriction	Waiting List	Vacant	Vacancy Rate	Max Rent?	Range
0	1	Highrise (12 stories)	18	485	$1,100	$0	Market	No	4	22.2%	N/A	None
1	1	Highrise (12 stories)	46	580	$1,150	$0	Market	No	3	6.5%	N/A	None
2	1	Highrise (12 stories)	32	800	$1,850	$0	Market	No	1	3.1%	N/A	None

Unit Mix

Market	Face Rent	Conc.	Concd. Rent	Util.	Adj. Rent
Studio / 1BA	$1,100	$0	$1,100	$0	$1,100
1BR / 1BA	$1,150	$0	$1,150	$0	$1,150
2BR / 1BA	$1,850	$0	$1,850	$0	$1,850

Amenities

In-Unit

Balcony/Patio
Carpeting
Garbage Disposal
Refrigerator
Blinds
Ceiling Fan
Oven

Security

Limited Access

Services

None

Property

Elevators
Central Laundry
Garage
On-Site Management

Premium

None

Other

None

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Comments

Management indicated that approximately half of their tenants are students, which leads to higher during the summer.

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PROPERTY CHARACTERISTICS

Following are relevant characteristics of comparable properties surveyed:

Location

The Subject will be located within the newly developing Kapolei central business district and will offer convenient pedestrian access to numerous amenities including shopping, schools, library, employment and a park. Below is a table of Subjects Walkscore as compared to the five comparables.

WALKSCORE

Property Name	Value	Definition
Subject	**83**	**Very Walkable**
G & F Apartments	43	Car Dependent
Kalaeloa Rental Homes	12	Car Dependent
Palm Villas Rentals	25	Car Dependent
Sunrise Apartments	54	Somewhat Walkable
Waterfront At Puuloa	31	Car Dependent

All of the comparables are located in either Kapolei or Ewa Beach, within 8.6 miles of the Subject site. All of the comparables used in this analysis are within the PMA. With the exception of Waterfront at Puuloa, all of the comparables are generally inferior to the Subject in terms of location. Waterfront at Puuloa does not have many walkable amenities but the property is located near the ocean. Since Waterfront at Puuloa will be slightly inferior to the Subject in terms of location based on amenities but slightly superior to the Subject in terms of location based on vicinity to the waterfront, we have reconciled and determined this property to have a similar location to the Subject site.

Size, Age and Condition

The Subject properties range in size from 30 to 1,449 units, with an average of 504 units. The Subject will have 143 units, most similar to Palm Villas Rentals, which has 112 units. G & F Apartments is the comparable property with 30 units. The remaining three properties, Sunrise Apartments, Kalaeloa Rental Homes, and Waterfront at Puuloa each have 408, 521, and 1,449 units, respectively. Once all phases of the Subject are completed (583 units), however, the Subject will be most similar to Kalaeloa Rental Homes

The surveyed properties were constructed and/or renovated between 1970 and 2012. G & F Apartments underwent a gut rehabilitation in 2012 and is in excellent condition. This property will be considered similar to the Subject. Kalaeloa Rental Homes was renovated in 1994 and Sunrise Apartments was built in 1993, and both have been well maintained and exhibit good condition, yet generally inferior to the Subject. The remaining market rate comparable were constructed between 1970 and 1990 and exhibit average condition, thus they will be considered inferior to the Subject.

Unit Size

The following table illustrates the unit sizes of the Subject and the comparable properties.

UNIT SIZE COMPARISON

Unit Type	Subject	Surveyed Min	Surveyed Max	Surveyed Average	Advantage/ Disadvantage
Studio	360	407	469	418	-14%
1 BR	534	521	540	524	2%
2 BR	765	768	1,394	1,115	-31%
3 BR	990	1,203	1,504	1,382	-28%

As the table illustrates, the Subjects' one-bedroom unit size is within the range of the comparables. The studio, one, and three-bedroom unit sizes will be below the range of comparables. Overall, the Subject's proposed unit sizes have a disadvantage to the majority of the comparables. However, we have reviewed the floor plans and believe that they will be marketable. Additionally, the Subject will offer a pedestrian-friendly location, which is not common in the market. We have considered the Subject's unit sizes in the estimated achievable market rents.

Amenities, Security, and Parking Comparison

A detailed description of amenities included in both the Subject properties and the comparable properties can be found in the amenity matrices following.

UNIT MATRIX REPORT

	Kapolei Phase 2	G & F Apartments	Kalaeloa Rental Homes	Palm Villas Rentals	Sunrise Apartments	Waterfront At Puuloa
Comp #	Subject	1	2	3	4	5
Property Information						
Property Type	Highrise (13 stories)	Garden (3 stories)	Duplex (2 stories)	Garden (3 stories)	Garden (3 stories)	Various
Year Built / Renovated	2014 / n/a	1970's / 2012	1973/1994 / n/a	1990 / n/a	1993 / n/a	1970s / n/a
Market (Conv.)/Subsidy Type	Market	Market	Market	Market	Market	Market
Utility Adjusments						
Cooking	no	no	no	no	no	no
Water Heat	no	no	no	no	no	no
Heat	no	no	no	no	no	no
Other Electric	no	no	no	no	no	no
Water	yes	yes	no	yes	yes	yes
Sewer	yes	yes	no	yes	yes	yes
Trash Collection	yes	yes	yes	yes	yes	yes
In-Unit Amenities						
Balcony/Patio	no	no	yes	yes	yes	yes
Blinds	yes	yes	yes	yes	yes	yes
Carpeting	yes	yes	yes	yes	yes	yes
Central A/C	no	no	yes	no	no	yes
Coat Closet	no	yes	yes	no	yes	yes
Dishwasher	yes	no	yes	yes	no	yes
Exterior Storage	no	no	yes	no	yes	no
Ceiling Fan	yes	yes	no	yes	yes	yes
Garbage Disposal	yes	no	yes	no	yes	yes
Microwave	yes	no	no	no	no	no
Oven	yes	yes	yes	yes	yes	yes
Refrigerator	yes	yes	yes	yes	yes	yes
Walk-In Closet	yes	no	yes	yes	no	no
Wall A/C	no	yes	no	no	no	no
Window A/C	no	no	no	yes	yes	no
Washer/Dryer	yes	no	yes	yes	yes	yes
Washer/Dryer hookup	yes	no	no	no	no	no
Property Amenities						
Basketball Court	no	no	yes	no	no	no
Business Center/Computer Lab	yes	no	no	no	yes	no
Carport	no	no	no	yes	yes	yes
Clubhouse/Meeting Room/Community Room	yes	no	no	yes	yes	yes
Courtyard	yes	no	no	no	no	no
Elevators	yes	no	no	no	no	no
Exercise Facility	no	no	yes	no	no	yes
Garage	yes	no	yes	no	no	no
Central Laundry	no	yes	no	no	no	no
Off-Street Parking	no	yes	yes	yes	yes	yes
On-Site Management	yes	yes	yes	yes	yes	yes
Picnic Area	yes	no	no	no	yes	yes
Playground	yes	no	yes	yes	no	yes
Recreation Areas	yes	no	no	yes	yes	no
Swimming Pool	no	no	no	yes	yes	no
Tennis Court	no	no	yes	no	no	no
Services						
Daycare	yes	no	no	no	no	no
Security						
Intercom (Buzzer)	yes	no	no	no	no	no
Limited Access	no	no	no	no	no	yes
Patrol	no	no	no	no	yes	no
Perimeter Fencing	no	no	no	yes	no	yes
Video Surveillance	no	no	no	no	yes	no
Premium Amenities						
View	no	no	no	no	no	yes
Other Amenities						
Other	n/a	n/a	Baseball field	n/a	n/a	Private Beach, guarded entrance

As the previous table illustrates, the Subject will offer a generally similar to slightly inferior in-unit amenities package and a slightly superior to superior community amenities package in comparison to the majority of the comparable properties. In terms of in-unit amenities, the Subject will offer dishwashers, ceiling fans, garbage disposals, microwaves, walk-in closets, washer/dryers, and washer/dryer hookups, which several of the comparable properties do not offer. Several of the properties, however, do offer a balcony or patio,exterior storage, and coat closets, which the Subject will not offer. Both Waterfront Puuloa and Kalaeloa Rental Homes will be slightly superior to the Subject in terms of in-unit amenities. The remaining three comparables will be considered similar to the Subject in terms of in-unit amenities. The community amenities that will be offered at the Subject but are not offered at several comparables include a computer lab, clubhouse, courtyard, elevator (although some properties would not benefit from this feature), a garage, a picnic area, a playground, and a recreation area. In contrast, the Subject will not offer a central laundry facility (although the presence of in-unit washers/dryers negates that), a swimming pool, and a tennis court, all amenities offered by multiple comparable properties. In terms of community amenities, the Subject is considered superior to G&F Apartments and Kalaeloa Rental Homes, and slightly superior compared to Palm Villas Rentals, Waterfront at Puuloa, and Sunrise Apartments.

MARKET CHARACTERISTICS

Following are relevant market characteristics for comparable properties surveyed.

Absorption

None of the comparables have been recently built, thus no absorption data is available. Based upon the strength of the Subject's pedestrian-friendly location, relatively low vacancy rates, presence of waiting lists in the market, and our demand calculations, we believe that the Subject will reach a stabilized occupancy of 95 percent within six to seven months. This lease-up period equates to a rate of approximately 22 units per month.

Turnover

We obtained annual turnover statistics from the comparable properties, ranging from 12 to 45 percent annually, with an average of 30 percent. Relatively high turnover is common in many parts of Hawaii due to the presence of military families and seasonal workers. We estimate that the Subject will experience a turnover rate of approximately 30 percent or less annually, which is in line with the comparable properties in the area.

TURNOVER

Property name	Rent Structure	Turnover
G & F Apartments	Market	12%
Kalaeloa Rental Homes	Market	40%
Palm Villas Rentals	Market	45%
Sunrise Apartments	Market	20%
Waterfront At Puuloa	Market	33%
Average Turnover		**30%**

Concessions
None of the comparables are currently offering rental concessions. Concessions are consistent with ongoing marketing strategies during periods of high vacancy and increased tenant turnover. According to market participants, concessions within this market are not common given the demand for rental housing of all types. As a newly constructed development, we do not anticipate the Subject will need to offer concessions to remain competitive within the market.

Vacancy Levels
The following table details vacancy levels at comparable properties included in the survey.

OVERALL VACANCY

Property name	Rent Structure	Total Units	Vacant Units	Vacancy Rate
G & F Apartments	Market	30	1	3.3%
Kalaeloa Rental Homes	Market	521	22	4.2%
Palm Villas Rentals	Market	112	0	0.0%
Sunrise Apartments	Market	408	5	1.2%
Waterfront At Puuloa	Market	1,449	159	11.0%
Total		**2,520**	**187**	**7.4%**

Vacancy rates at the comparable properties range from zero to 11 percent, with an overall vacancy rate of 7.4 percent. It should be noted that management at Waterfront At Puuloa indicated that 50 percent of the tenants at this development are military families which accounts for the high vacancy rate, which is a reflection of this specific property's performance and not the overall market. When excluding Waterfront At Puuloa, the overall vacancy rate is 2.6 percent, a strong rate. Taking all of this data into account, we expect the Subject will be able to maintain a vacancy rate of five percent or less upon stabilization.

Waiting Lists
The following table illustrates the existence and length of current waiting lists in the market.

WAITING LISTS

Comparable Property	Type	Waiting Lists
G & F Apartments	Market	None
Kalaeloa Rental Homes	Market	Yes
Palm Villas Rentals	Market	Yes
Sunrise Apartments	Market	None
Waterfront At Puuloa	Market	None

In markets with high housing costs, waiting lists are common. A waiting list indicates a strong market with high occupancy and unmet demand within the market. Currently two the five comparables maintain waiting lists. The property manager at Kalaeloa Rental Homes indicated that there is a short waiting list for their three-bedroom duplex units. Additionally, the property manager at Palm Villas Rentals indicated that they maintain a waiting list that is usually three to six months in length. Currently these properties have vacancy rates of 4.2 and zero percent, respectively. In general, waiting lists do not appear uncommon within the market. Therefore, we believe that the Subject will likely maintain a short waiting list post absorption.

View/Floor Premiums

None of the comparables offer more than three story height nor floor premiums, Waterfront at Puuloa offers view premiums for those units directly along the oceanfront. The Subject will offer a 13-story high-rise design, consisting of 11 residential stories over a two-story podium. High-rise design is unique in the market so we considered view/floor premiums from the Honolulu market. Two Honolulu high-rises offer floor/view premiums, Capitol Place Apartments and Royal Capital Plaza. Each of these offers units at higher floors and with ocean/mountain views at a premium between $200 and $350. These properties are 39 and 40 stories each, respectively. Managers estimated that a rental view premium would be achievable starting on the 15th floor for views oriented toward Diamond Head/ocean. The Subject's location is significantly less dense than Honolulu and views will be unobstructed. Based on our evaluation of the Subject site location, surrounding land uses, building design (including orientation to the other phases of the Subject), we believe that a view premium of $200 would be achievable for units with mountain views.

REASONABILITY OF RENTS

Achievable Market Rent

The achievable market rents were determined by comparing the aesthetic quality, amenities, unit sizes, etc. to that of the market rate projects in the area. Novogradac & Company concluded that the Subject will be competitive with the market rate competition and achievable rents are within than the market rental range. Achievable rents represent net market rate rent levels that we believe a project of the Subjects' condition and quality could reasonably achieve.

The tables below illustrate the market rents, and rents per square foot, being achieved at the comparables and Novoco's estimated achievable market rents (and achievable rents per square foot). Rents have been adjusted for difference in utility structure.

MARKET RENT COMPARISON – ADJUSTED RENT

Property Name	0BR	1BR	2BR	3BR
Waterfront At Puuloa			$1,865 - $2,300	$1,890 - $3,975
Kalaeloa Rental Homes	-	-	$1,914 - $2,334	$2,060 - $2,688
Sunrise Apartments	$850	$1,050	$1,338	-
Palm Villas Rentals	$995	$1,095	$1,395	-
G & F Apartments	-	-	$1,275	-
Average	**$923**	**$1,073**	**$1,908**	**$2,546**
Novoco Achievable Rents	**$900**	**$1,200**	**$1,600**	**$2,000**

MARKET RENT COMPARISON - ADJUSTED RENT PER SQUARE FOOT

Property Name	0BR	1BR	2BR	3BR
Waterfront At Puuloa	-	-	$1.71 - $2.02	$1.55 - $2.74
Kalaeloa Rental Homes	-	-	$1.58 - $1.67	$1.51
Sunrise Apartments	$2.09	$2.02	$1.63	-
Palm Villas Rentals	$2.12	$2.03	$1.82	-
G & F Apartments	-	-	$1.42	-
Average	**$2.11**	**$2.03**	**$1.71**	**$2.00**
Novoco Achievable Rent Per Square Foot	**$2.50**	**$2.25**	**$2.09**	**$2.02**

The most comparable market rate developments to the Subject are Kalaeloa Rental Homes and Sunrise Apartments. None of the market rate comparables are able to match the superior condition of the Subject as it will be new construction. Kalaeloa Rental Homes has an inferior location, slightly inferior condition, superior unit sizes, slightly superior in-unit amenities, and inferior community amenities. Also, Kalaeloa Rental Homes offers one and a half bathrooms in the majority of their two-bedroom units, and two full bathrooms in their three-bedroom units, while the Subject will only offer one full bathroom in the two and three-bedroom units. Sunrise Apartments has a similar location, slightly inferior condition, slightly superior unit sizes, similar in-unit amenities, and slightly inferior property amenities. Also, Sunrise Apartments offers two bathrooms in all of their two-bedroom units, while the Subject will only offer one full bathroom in the two-bedroom units. We believe that the Subject will be able to achieve slightly higher market rents compared to these comparables.

The Novoco estimated achievable rents for the Subject's studio, one-bedroom, two-bedroom, and three-bedroom units are $900, $1,200, $1,600, and $2,000, respectively. The Novoco estimated achievable rents are slightly above the average rents per square foot for the respective comparable units, which we believe is reasonable given the Subject's new construction quality and competitive amenities. We have assumed these achievable rent levels in determining minimum incomes in the demand estimation section that follows.

Summary Evaluation of the Project

Upon completion of the construction, the Subject will offer a good quality product with competitive amenities. The primary strengths of the Subject will be its good condition, location, and community amenities. Despite some smaller than average unit sizes, we anticipate the Subject's units sizes will be accepted in the market. Average vacancy within the rental market is 2.6 percent, when excluding the outlier, which is underperforming due to a project-specific issue. Two of the five comparable properties maintain waiting lists. Concessions are not common within the market. The Novoco estimated achievable rents for the Subject's studio, one-bedroom, two-bedroom, and three-bedroom units are $900, $1,200, $1,600, and $2,000, respectively. The Novoco estimated achievable rents are slightly above the average rents per square foot for the respective comparable units, which we believe is reasonable given the Subject's new construction quality and competitive amenities. We believe that the Subject's Novoco achievable rents will be well-accepted within the market.

MULTIFAMILY RENTAL DEMAND ANALYSIS

PROJECT SPECIFIC DEMAND ANALYSIS

Introduction

Kapolei Phase II is a proposed new construction development. We calculated the number of income-eligible residents in this section of the analysis assuming the achievable market rents were set in place.

Household size is assumed to be 1.5 persons per bedroom type for rent calculation purposes.

To assess the likely number of tenants in the market area eligible to live in the Subject, we used Census information as provided by ESRI Demographics and Ribbon Demographics.

Primary Market Area Defined

For the purpose of this study, it is necessary to define the market area, or the area from which potential tenants for the project are likely to be drawn. In some areas, residents are very much "neighborhood oriented" and are generally very reluctant to move from the area where they have grown up. In other areas, residents are much more mobile and will relocate to a completely new area, especially if there is an attraction such as affordable housing at below market rents. The Subject's PMA has been previously defined. We anticipate that 75 percent of the Subject's tenants are anticipated to originate from the PMA; demand estimates will be adjusted to reflect this potential for "leakage."

Income Eligible Calculations

First, we estimate the Subject's minimum and maximum income levels. For market rate multifamily properties, management companies and landlords typically determine the minimum allowable income by requiring a household to earn at least three times the asking rent. Minimum income levels were calculated based on the rents concluded in the multifamily supply section of the report. Since the income bands by household data presented relates to renter households, we have assumed that any current renter household existing in the market would consider the Subject, if they meet the minimum income requirement. Thus, we have not set a maximum income level.

Secondly, we illustrate the household population segregated by income band in order to determine those who are income-qualified to reside in the Subject property.

Third, we combine the income range with the income distribution analysis in order to determine the number of potential income-qualified renter households. This provides an estimate of the total number of renter households that are income-eligible.

The maximum and minimum eligible household incomes for the Subject's concluded units are as follows:

INCOME LIMITS

Unit Type	Minimum Allowable Income	Maximum Allowable Income
	Market Rate	
Studio	$32,400	-
1BR	$43,200	-
2BR	$57,600	-
3BR	$72,000	-

Income Distribution Table

The following tables illustrate the income distribution of income-qualified renter households in the PMA.

INCOME DISTRIBUTION 2012

Income Cohort	Total Renter Households	Market Rate		
		cohort overlap	*% in cohort*	*# in cohort*
$0-9,999	956			
$10,000-19,999	1,133			
$20,000-29,999	1,615			
$30,000-39,999	1,678	7,599	76.00%	1,275
$40,000-49,999	1,999	9,999	100.00%	1,999
$50,000-59,999	1,662	9,999	100.00%	1,662
$60,000-74,999	2,561	14,999	100.00%	2,561
$75,000-99,999	3,181	24,999	100.00%	3,181
$100,000-124,999	1,939	24,999	100.00%	1,939
$125,000-149,999	1,186	24,999	100.00%	1,186
$150,000-199,999	658	49,999	100.00%	658
$200,000+	441	200,000	100.00%	441
Total	**19,009**		**78.40%**	**14,902**

Based on this analysis, using 2013 income and demographic data, approximately 78.85 percent of renter households within the PMA would be able to afford to live at the Subject based upon the proposed rent levels.

Number of Appropriate Sized Households

In order to determine the number of appropriate sized households at each bedroom type, first we analyzed the number of persons in each household by renter tenure, as detailed in the following table.

PMA RENTER HOUSEHOLD SIZE DISTRIBUTION

	2000		2012		2017	
Household Size	Total Renter Households	Percent	Total Renter Households	Percent	Total Renter Households	Percent
1 person	2,599	17.1%	3,354	17.6%	3,457	17.6%
2 persons	3,476	22.9%	4,661	24.5%	4,778	24.4%
3 persons	3,010	19.8%	3,572	18.8%	3,692	18.8%
4 persons	2,805	18.5%	2,970	15.6%	3,042	15.5%
5+ persons	3,309	21.8%	4,452	23.4%	4,625	23.6%
Total	**15,198**	**100.0%**	**19,009**	**100.0%**	**19,594**	**100.0%**

Source: Ribbon Demographics 2013, Novogradac & Company LLP, October 2013

Second, we made assumptions based on the average household size in the market; to estimate the distribution of households by unit type. Following are these assumptions.

HOUSEHOLD DISTRIBUTION

25%	Of one-person households in studio units
75%	Of one-person households in 1BR units
25%	Of two-person households in 1BR units
75%	Of two-person households in 2BR units
60%	Of three-person households in 2BR units
40%	Of three-person households in 3BR units
75%	Of four-person households in 3BR units
60%	Of five-person households in 3BR units

Third, we multiplied the percentage of renter households at each household size by the distribution of those households within each bedroom type. The sum of these percentages is the appropriate percentage of renter households for each bedroom type.

Appropriate Sized Renter Households						
Studio Unit		17.6%	*	25.0%	=	4.4%
	+	24.5%	*	0.0%	=	0.0%
	+	18.8%	*	0.0%	=	0.0%
	+	15.6%	*	0.0%	=	0.0%
	+	23.4%	*	0.0%	=	0.0%
	=					**4.4%**
One-Bedroom Unit		17.6%	*	75.0%	=	13.2%
	+	24.5%	*	25.0%	=	6.1%
	+	18.8%	*	0.0%	=	0.0%
	+	15.6%	*	0.0%	=	0.0%
	+	23.4%	*	0.0%	=	0.0%
	=					**19.4%**
Two-Bedroom Unit		17.6%	*	0%	=	0.0%
	+	24.5%	*	75%	=	18.4%
	+	18.8%	*	60%	=	11.3%
	+	15.6%	*	15%	=	2.3%
	+	23.4%	*	0%	=	0.0%
	=					**32.0%**
		17.6%	*	0%	=	0.0%
Three-bedroom Unit	+	24.5%	*	0%	=	0.0%
	+	18.8%	*	40%	=	7.5%
	+	15.6%	*	75%	=	11.7%
	+	23.4%	*	60%		14.1%
	=					**33.3%**
Total						**84.7%**

ANNUAL CAPTURE RATE ANALYSIS

This calculation derives an estimated market capture rate based on per annum demand. This is an indication of the percentage of the net demand in one year that a rental property at the Subject site consisting of the 143 units must attract to reach stabilized occupancy. This measure essentially takes the available household demand searching for rentals in the market area and deducts competition to determine net demand available to the Subject. The table following outlines the analysis of this methodology.

ANNUAL DEMAND

Calculation					PMA
Number of Renter Households in 2012					19,009
Increase in Number of Renter Households					585
Number of Renter Households in 2017					19,594
Existing Demand					
Percentage of Income-Qualified Renter Households					78.4%
Number of Income-Qualified Renter Households					14,903
Losses to Inventory via Conversion of Demolition (accounts for frictional vacancy)					8.8%
Existing Income-Qualified Renter Households					**1,312**
New Income-Qualified Demand, Stated Annually					
Increase in Renter Households per Annum					117
Percentage of Income-Qualified Renter Households					78.4%
New Rental Income Qualified Households					**92**
Capture Rate Analysis					
Number of Units in Subject					143
Occupied Units at Subject With Vacancy of:			5%		136
Units Pre-Leased					0
Total Demand (Existing and Growth) from within PMA					1,403
Portion Originating within PMA					75%
Total Demand (Existing and Growth) from within PMA					1,871
Less: Existing Projects in Absorption Process (Number of Units)			0		
Total Demand after Competition (Existing and Growth)			.		**1,871**
Appropraite-Sized Renter Households					
Studio Units	1,871	*	4.4%	=	83
One-bedroom Units	1,871	*	19.4%	=	362
Two-bedroom Units	1,871	*	32.0%	=	599
Three-bedroom Units	1,871	*	33.3%	=	623
Total Demand for Appropriately Sized Renter Households					**1,666**
Capture Rate Analysis - Developer's Unit Mix					
Studio Units	11	/	83	=	13.3%
One-bedroom Units	44	/	362	=	12.1%
Two-bedroom Units	77	/	599	=	12.9%
Three-bedroom Units	11	/	623	=	1.8%
Annual Capture Rate of Appropriately Sized Households	143	/	1,666	=	**8.6%**

The above table illustrates demand for the Subject based on capture rates of income eligible renter households. Total demand, both currently present and moving into the market, is adjusted

for income eligibility and renter status, it is further adjusted by the number of units that are currently in lease-up or planned in the PMA. The demand estimate remaining is the number of units that will be unsatisfied in the market without the Subject. In this case it represents 1,871 units, of which 1,666 are appropriately sized households for the Subject. These un-accommodated units of demand will be forced to leave the market without the addition of multifamily housing units. The capture rate is the percentage that the Subject will capture of this demand. A number below 100 percent is a positive indicator and represents an expected absorption rate of less than one year. A number greater than 100 percent indicates absorption pace longer than one year. The above calculation generates an annual capture rate of 13.3 percent for studio units, 12.1 percent for one-bedroom units, 12.9 percent for two-bedroom units, 1.8 percent for three-bedroom units, and an overall rate of 8.6 percent for appropriately sized renter households, which indicates an expected absorption rate of less than one year. This capture rate is considered good.

The annual demand for rental housing depends upon the following factors:

Existing Demand - Losses to Inventory via Conversion or Demolition (includes factor for frictional vacancy):
Demand from the PMA will stem from several sources in addition to new growth. These sources include demand from renter households that are forced from existing rental housing due to demolition or conversion of the housing units. Further, demand will stem from existing households that live in the area but move to a new home because people are searching for better housing or housing in a desired location (frictional vacancy). The calculation begins by determining the year 2013 base level eligible demand.

This figure is then adjusted for losses of inventory via conversion or demolition (which also accounts for frictional vacancy in the market). To determine an appropriate percentage within the market we utilized/analyzed various housing characteristics.

The following table illustrates age of housing stock within the PMA.

AGE OF HOUSING STOCK IN PMA

Years	Number of Units	Percent of Housing Stock
1999-3/2000	1,398	2.7%
1995-1998	5,304	10.3%
1990-1994	10,149	19.8%
1980-1989	10,865	21.2%
1970-1979	12,561	24.5%
1960-1969	7,585	14.8%
1950-1959	2,252	4.4%
1940-1949	796	1.5%
1939 and Before	458	0.9%
Total	**51,368**	**100.0%**

Source: ESRI Demographics 2012, Novogradac & Company LLP, October 2013

As the table indicates, approximately 21.6 percent of the housing stock was constructed between prior to 1970 in the PMA. It is reasonable to assume that a portion of the existing housing units constructed prior to 1960 will leave the market based upon the loss of functional or physical inadequacies of the units; therefore, we will assume approximately 7.0 percent of these units will leave the market, or 1.5 percent of the total housing supply.

It is also important to recognize demand for new rental housing will come from the market from households in inadequate living situations. According to the most recent census, approximately 1.3 percent of households in the Subject's PMA lack complete plumbing facilities in their housing units.

We have estimated that approximately 1.0 percent or less of the housing units (mostly single-family) are demolished or converted every year within the PMA.

Further, the demand needs to be adjusted for frictional vacancy within the market. According to The Dictionary of Real Estate Appraisal 5th Edition published in 2010 by the Appraisal Institute, frictional vacancy is the amount of vacant space in the market needed for orderly operation. It allows for tenant relocations as leases roll over and expire, and is considered a typical vacancy rate in a given market operating in equilibrium. We believe a frictional vacancy rate of approximately 5.0 percent is appropriate for this market. The following table illustrates our conclusion:

LOSSES TO INVENTORY VIA CONVERSION OR DEMOLITION	
Housing stock older than 1960 to leave market due to functional or physical inadequacies	1.5%
Lacking complete plumbing facilities	1.3%
Demolition or conversion	1.0%
Frictional vacancy	5.0%
Total Percentage	**8.8%**

In order to account for demand created by the previously described factors, we believe that adjusting the demand by 8.8 percent for losses of inventory via conversion or demolition, as well as frictional vacancy is conservative and reasonable.

New Renter Household Growth

Household population change as a result of new renter households moving in or out of the area: This was previously calculated, with the renter household population estimated to increase from 2012 to 2017.

Leakage

Further, it should be noted that it is likely that new renter households will be entering the market due to the lack of existing multifamily housing in excellent condition within the PMA. We have adjusted for this using a leakage factor of 25 percent in the demand.

Summary of Effective Demand in One Year

The effective demand in one year is adjusted for income eligibility and renter status, and it is further adjusted by the number of units that are currently in lease-up or planned in the PMA (of which there are no competitive unrestricted rental inventory). As such, the calculations generate a capture rate of 8.6 percent, which indicates expected absorption of less than one year.

ADDENDUM A

Assumptions & Limiting Conditions

ASSUMPTIONS & LIMITING CONDITIONS

1. In the event that the client provided a legal description, building plans, title policy and/or survey, etc., the consultant has relied extensively upon such data in the formulation of all analyses.

2. The legal description as supplied by the client is assumed to be correct and the consultant assumes no responsibility for legal matters, and renders no opinion of property title, which is assumed to be good and merchantable.

3. All information contained in the report, which others furnished, was assumed to be true, correct, and reliable. A reasonable effort was made to verify such information, but the author assumes no responsibility for its accuracy.

4. The report was made assuming responsible ownership and capable management of the property. The analyses and projections are based on the basic assumption that the apartment complex will be managed and staffed by competent personnel and that the property will be professionally advertised and aggressively promoted

5. The sketches, photographs, and other exhibits in this report are solely for the purpose of assisting the reader in visualizing the property. The author made no property survey, and assumes no liability in connection with such matters. It was also assumed there is no property encroachment or trespass unless noted in the report.

6. The author of this report assumes no responsibility for hidden or unapparent conditions of the property, subsoil or structures, or the correction of any defects now existing or that may develop in the future. Equipment components were assumed in good working condition unless otherwise stated in this report.

7. It is assumed that there are no hidden or unapparent conditions for the property, subsoil, or structures, which would render it more or less valuable. No responsibility is assumed for such conditions or for engineering, which may be required to discover such factors. The investigation made it reasonable to assume, for report purposes, that no insulation or other product banned by the Consumer Product Safety Commission has been introduced into the Subject premises. Visual inspection by the consultant did not indicate the presence of any hazardous waste. It is suggested the client obtain a professional environmental hazard survey to further define the condition of the Subject soil if they deem necessary.

8. A consulting analysis market study for a property is made as of a certain day. Due to the principles of change and anticipation the value estimate is only valid as of the date of valuation. The real estate market is non-static and change and market anticipation is analyzed as of a specific date in time and is only valid as of the specified date.

9. Possession of the report, or a copy thereof, does not carry with it the right of publication, nor may it be reproduced in whole or in part, in any manner, by any person, without the prior written consent of the author particularly as to value conclusions, the identity of the author or the firm with which he or she is connected. Neither all nor any part of the report, or copy thereof shall be disseminated to the general public by the use of advertising, public relations, news, sales, or other media for public communication without the prior written consent and approval of the appraiser. Nor shall the appraiser, firm, or professional organizations of which the appraiser is a member be identified without written consent of the appraiser.

10. Disclosure of the contents of this report is governed by the Bylaws and Regulations of the professional appraisal organization with which the appraiser is affiliated: specifically, the Appraisal Institute.

11. The author of this report is not required to give testimony or attendance in legal or other proceedings relative to this report or to the Subject property unless satisfactory additional arrangements are made prior to the need for such services.

12. The opinions contained in this report are those of the author and no responsibility is accepted by the author for the results of actions taken by others based on information contained herein.

13. All applicable zoning and use regulations and restrictions are assumed to have been complied with, unless nonconformity has been stated, defined, and considered in the appraisal report.

14. It is assumed that all required licenses, permits, covenants or other legislative or administrative authority from any local, state, or national governmental or private entity or organization have been or can be obtained or renewed for any use on which conclusions contained in this report is based.

15. On all proposed developments, Subject to satisfactory completion, repairs, or alterations, the consulting report is contingent upon completion of the improvements in a workmanlike manner and in a reasonable period of time with good quality materials.

16. All general codes, ordinances, regulations or statutes affecting the property have been and will be enforced and the property is not Subject to flood plain or utility restrictions or moratoriums except as reported to the consultant and contained in this report.

17. The party for whom this report is prepared has reported to the consultant there are no original existing condition or development plans that would Subject this property to the regulations of the Securities and Exchange Commission or similar agencies on the state or local level.

18. Unless stated otherwise, no percolation tests have been performed on this property. In making the appraisal, it has been assumed the property is capable of passing such tests so as to be developable to its highest and best use, as detailed in this report.

19. No in-depth inspection was made of existing plumbing (including well and septic), electrical, or heating systems. The consultant does not warrant the condition or adequacy of such systems.

20. No in-depth inspection of existing insulation was made. It is specifically assumed no Urea Formaldehyde Foam Insulation (UFFI), or any other product banned or discouraged by the Consumer Product Safety Commission has been introduced into the appraised property. The appraiser reserves the right to review and/or modify this appraisal if said insulation exists on the Subject property.

21. Acceptance of and/or use of this report constitute acceptance of all assumptions and the above conditions. Estimates presented in this report are not valid for syndication purposes.

ADDENDUM B

Photographs

Subject and Neighborhood Photographs

View of Subject from southeast

View of Subject from east

View north along Wakea Street

View south along Wakea Street

View east along Ala Kahawai Street

View west along Ala Kahawai Street

View north from Subject site across vacant land that will be developed into Phase I toward retail uses

View east from Subject site toward Pacific Island Academy

View south from Subject site toward vacant land

View west from Subject site toward vacant land

Retail to north

Retail to north

Office building to west

Vacant land to west

Retail to northwest

Office building to west

Retail to south

Retail to south

Vacant land to south

Pacific Island Academy to east

Kapolei Park to east

Public Library to east

Office building to northeast

Office building to east

ADDENDUM C

Qualifications of Consultants

STATEMENT OF PROFESSIONAL QUALIFICATIONS
REBECCA S. ARTHUR, MAI

I. Education

University of Nebraska, Lincoln, Nebraska
Bachelor of Science in Business Administration – Finance

Appraisal Institute
Designated Member (MAI)

II. Licensing and Professional Affiliation

Designated Member of the Appraisal Institute (MAI)
Member of Commercial Real Estate Women (CREW) Network
Member of National Council of Housing Market Analysts (NCHMA)

State of Arkansas Certified General Real Estate Appraiser No. CG2682N
State of California Certified General Real Estate Appraiser No. AG041010
State of Hawaii Certified General Real Estate Appraiser No. CGA-1047
State of Iowa Certified General Real Estate Appraiser No. CG03200
State of Kansas Certified General Real Estate Appraiser No. G-2153
State of Michigan Certified General Real Estate Appraiser No. 1201074011
State of Minnesota Certified General Real Estate Appraiser No. 40219655
State of Missouri Certified General Real Estate Appraiser No. 2004035401
State of Texas Certified General Real Estate Appraiser No. TX-1338818-G

III. Professional Experience

Partner, Novogradac & Company LLP
Principal, Novogradac & Company LLP
Manager, Novogradac & Company LLP
Real Estate Analyst, Novogradac & Company LLP
Corporate Financial Analyst, Deloitte & Touche LLP

IV. Professional Training

Forecasting Revenue, December 2012
USPAP Update, May 2012
How to Analyze and Value Income Properties, May 2011
Appraising Apartments – The Basics, May 2011
Business Practices and Ethics, December 2010
HUD MAP Third Party Training, June 2010
HUD LEAN Third Party Training, January 2010
National Uniform Standards of Professional Appraisal Practice, April 2010
MAI Comprehensive Four Part Exam, July 2008
Report Writing & Valuation Analysis, December 2006

Advanced Applications, October 2006
Highest and Best Use and Market Analysis, July 2005
Advanced Sales Comparison and Cost Approaches, April 2005
Advanced Income Capitalization, October 2004
Basic Income Capitalization, September 2003
Appraisal Procedures, October 2002
Appraisal Principals, September 2001

V. Real Estate Assignments

A representative sample of Due Diligence, Consulting, or Valuation Engagements includes:

- In general, have managed and conducted numerous market analyses and appraisals for various types of commercial real estate since 2001, with an emphasis on multifamily housing and land.

- Have managed and conducted numerous market and feasibility studies for multifamily housing. Properties types include Section 42 Low Income Housing Tax Credit (LIHTC) Properties, Section 8, USDA and/or conventional. Local housing authorities, developers, syndicators, HUD and lenders have used these studies to assist in the financial underwriting and design of mulitfamily properties. Analysis typically includes; unit mix determination, demand projections, rental rate analysis, competitive property surveying, and overall market analysis. The Subjects include both new construction and rehabilitation properties in both rural and metro regions throughout the United States and its territories.

- Have managed and conducted numerous appraisals of multifamily housing. Appraisal assignments typically involved determining the as is, as if complete and the as if complete and stabilized values. Additionally, encumbered LIHTC and unencumbered values were typically derived. The three traditional approaches to value are developed with special methodologies included to value tax credit equity, below market financing and Pilot agreements.

- Performed market studies and appraisals of proposed new construction and existing properties under the HUD Multifamily Accelerated Processing (MAP) program. These reports meet the requirements outlined in HUD Handbook 4465.1 and Chapter 7 of the HUD MAP Guide for 221(d)(4) and 223(f) programs, as well as the LIHTC PILOT Program.

- Performed numerous market study/appraisals assignments for USDA RD properties in several states in conjunction with acquisition rehabilitation redevelopments. Documents are used by states, FannieMae, USDA, and the developer in the underwriting process. Market studies are compliant to State, FannieMae, and USDA requirements. Appraisals are compliant to FannieMae and USDA HB-1-3560 Chapter 7 and Attachments.

- Completed numerous FannieMae and FreddieMac appraisals of affordable and market rate multi-family properties for DUS Lenders.

- Managed and Completed numerous Section 8 Rent Comparability Studies in accordance with HUD's Section 8 Renewal Policy and Chapter 9 for various property owners and local housing authorities.

- Managed and conducted various City and County-wide Housing Needs Assessments in order to determine the characteristics of existing housing, as well as determine the need for additional housing within designated areas.

- Performed numerous valuations of the General and/or Limited Partnership Interest in a real estate transaction, as well as LIHTC Year 15 valuation analysis.

VI. Speaking Engagements

A representative sample of industry speaking engagements follows:

Institute for Professional Education and Development (IPED): Tax Credit Seminars
Institute for Responsible Housing Preservation (IRHP): Annual Meetings
National Council of Housing Market Analysts (NCHMA): Seminars and Workshops
Novogradac & Company LLP: LIHTC, Developer and Bond Conferences
AHF Live! Affordable Housing Finance Magazine Annual Conference
Kansas Housing Conference

STATEMENT OF PROFESSIONAL QUALIFICATIONS
RACHEL BARNES DENTON

I. EDUCATION

Cornell University, Ithaca, NY
School of Architecture, Art & Planning, Bachelor of Science in City & Regional Planning

II. LICENSING AND PROFESSIONAL AFFILIATION

Appraisal Institute Candidate for Designation
Member of National Council of Housing Market Analysts (NCHMA)
Member of Commercial Real Estate Women (CREW) Network
- 2011 and 2012 Communications Committee Co-Chair for the Kansas City CREW Chapter
- 2013 Director of Communications for Kansas City CREW

State of California Certified General Real Estate Appraiser No. AG044228
State of Colorado Certified General Real Estate Appraiser No. 100031319
State of Hawaii Certified General Real Estate Appraiser No. CGA1048
State of Illinois Certified General Real Estate Appraiser No. 553.002012
State of Kansas Certified General Real Estate Appraiser No. G-2501
State of Missouri Certified General Real Estate Appraiser No. 2007035992
State of Oregon Certified General Real Estate Appraiser No. C000951

III. PROFESSIONAL EXPERIENCE

Novogradac & Company LLP, Principal
Novogradac & Company LLP, Manager
Novogradac & Company LLP, Senior Real Estate Analyst

IV. PROFESSIONAL TRAINING

Educational requirements successfully completed for the Appraisal Institute:
- Appraisal Principals, September 2004
- Basic Income Capitalization, April 2005
- Uniform Standards of Professional Appraisal Practice, November 2005
- Advanced Income Capitalization, August 2006
- General Market Analysis and Highest & Best Use, July 2008
- Advanced Sales Comparison and Cost Approaches, June 2009
- Advanced Applications, June 2010
- Standards and Ethics (USPAP and Business Practices and Ethics) – Current for 2010 to 2015 Cycle

Completed HUD MAP Training, Columbus, Ohio, May 2010

Have presented and spoken at both Novogradac conferences and other industry events.

V. REAL ESTATE ASSIGNMENTS

A representative sample of Due Diligence, Consulting, or Valuation Engagements includes:

In general, have managed and conducted numerous market analyses and appraisals for various types of commercial real estate since 2003, with an emphasis on affordable multifamily housing.

Conducted and managed appraisals of proposed new construction, rehab and existing Low-Income Housing Tax Credit properties, Section 8 Mark-to-Market properties, HUD MAP Section 221(d)(4) and 223(f) properties, USDA Rural Development, and market rate multifamily developments on a national basis. Analysis includes property screenings, economic and demographic analysis, determination of the Highest and Best Use, consideration and application of the three traditional approaches to value, and reconciliation to a final value estimate. Both tangible real estate values and intangible values in terms of tax credit valuation, beneficial financing, and PILOT are considered. Additional appraisal assignments completed include commercial land valuation, industrial properties for estate purposes, office buildings for governmental agencies, and leasehold interest valuation. Typical clients include developers, lenders, investors, and state agencies.

Managed and conducted market studies for proposed Low-Income Housing Tax Credit, HUD MAP, market rate, HOME financed, USDA Rural Development, and HUD subsidized properties, on a national basis. Analysis includes property screenings, market analysis, comparable rent surveys, demand analysis based on the number of income qualified renters in each market, supply analysis and operating expense analysis. Property types include proposed multifamily, senior independent living, large family, acquisition/rehabilitation, historic rehabilitation, adaptive reuse, and single family developments. Typical clients include developers, state agencies, syndicators, investors, and lenders.

Completed and have overseen numerous Rent Comparability Studies in accordance with HUD's Section 8 Renewal Policy and Chapter 9 for various property owners and local housing authorities. The properties were typically undergoing recertification under HUD's Mark to Market Program.

Performed and managed market studies and appraisals of proposed new construction and existing properties insured and processed under the HUD Multifamily Accelerated Processing (MAP) program. These reports meet the requirements outlined in HUD Handbook 4465.1 and Chapter 7 of the HUD MAP Guide for 221(d)(4) and 223(f) programs.

Performed and have overseen numerous market study/appraisal assignments for USDA RD properties in several states in conjunction with acquisition/rehabilitation redevelopments. Documents are used by states, lenders, USDA, and the developer in the underwriting process. Market studies are compliant to State, lender, and USDA requirements. Appraisals are compliant to lender requirements and USDA HB-1-3560 Chapter 7 and Attachments.

Performed appraisals for estate valuation and/or donation purposes for various types of real estate, including commercial office, industrial, and multifamily assets. These engagements were conducted in accordance with the Internal Revenue Service's Real Property Valuation Guidelines, Section 4.48.6 of the Internal Revenue Manual.

Conducted a Highest and Best Use Analysis for a proposed two-phase senior residential development for a local Housing Authority in the western United States. Completed an analysis of existing and proposed senior supply of all types, including both renter and owner-occupied options, and conducted various demand analyses in order to determine level of need and ultimate highest and best use of the site.

Prepared a three-year Asset Management tracking report for a 16-property portfolio in the southern United States. Data points monitored include economic vacancy, levels of concessions, income and operating expense levels, NOI and status of capital projects. Data used to determine these effects on the project's ability to meet its income-dependent obligations.

Performed a community-wide affordable housing market analysis for a medium-sized city in the Midwest. Analysis included demographic and demand forecasts, interviews with local stakeholders, surveys of existing and proposed affordable supply, and reconciliation of operations at existing supply versus projected future need for affordable housing.

Managed a large portfolio of Asset Management reports for a national real estate investor. Properties were located throughout the nation, and were diverse in terms of financing, design, tenancy, and size. Information compiled included income and expenses, vacancy, and analysis of property's overall position in the market.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
K. DAVID ADAMESCU

I. Education

The Ohio State University, Columbus, OH
Masters of City and Regional Planning
Bachelors of Arts, Economics

II. Professional Experience

Real Estate Analyst, Novogradac & Company LLP
Project Director, VWB Research
Field Analyst, The Danter Company

III. Real Estate Assignments

A representative of assignments relating to research and market feasibility studies includes:

- Written and supervised the production of affordable rental housing market studies for projects located throughout the continental United States as well as Alaska. The preponderance of experience is with the Section 42 Low-income Housing Tax Credit, HUD Section 8, and USDA Rural Development programs.

- Additional experience authoring market feasibility analyses for market-rate rental housing, condominium housing, single-family housing, senior-oriented housing, seasonal housing, retail, office, golf course/marina resorts, and mixed-use developments.

- Assisted in numerous appraisals of proposed LIHTC rental housing, commercial office, and commercial retail properties. Analysis typically includes physical inspection of the property and market, concept analysis, demographic and economic analysis, demand and absorption projections, comparable surveying, supply analysis and rent determination, operating expense analysis to determine cost estimates, capitalization rate determination, valuation utilizing the three approaches to value, insurable value estimation, and LIHTC equity valuation.

- Conducted special research for highest and best use evaluations, the impact of “green” development principals on marketability, and seasonal housing dynamics.

- Reviewed third-party market studies and appraisals for investors in the secondary market.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
MICHAEL ANDERSON

I. Education

The Ohio State University, Columbus, OH
Masters of City and Regional Planning

Middle Tennessee State University, Murfreesboro, TN
Bachelor of Science in Recording Industry Management

II. Professional Experience

Researcher, Novogradac & Company LLP, January 2013 – Present
Graduate Assistant, Columbus Public Health, April 2011 – February 2012
Assistant Property Manager, OMNI Management Services, September 2007 – March 2009

III. Research Assignments

A representative sample of Due Diligence, Consulting, or Valuation Engagements includes:

- Assisted numerous market and feasibility studies for family and senior affordable housing. Local housing authorities, developers, syndicators and lenders have used these studies to assist in the financial underwriting and design of market-rate and Low-Income Housing Tax Credit (LIHTC) properties. Analysis typically includes; unit mix determination, demand projections, rental rate analysis, competitive property surveying and overall market analysis.

- Assisted with numerous appraisals of new construction and existing LIHTC and market-rate properties.

- Performed all aspects of data collection and data mining for web-based rent reasonableness systems for use by local housing authorities.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
MARIAM T. ABDELHAMID

I. Education

Old Dominion University, Norfolk VA
Bachelor of Science in Business Administration – Finance & Decision Sciences (2013)

II. Professional Experience

Novogradac & Company LLP – July 2013 - Present
Real Estate Researcher

Dominion Enterprises – May 2012 - July 2012
SEO Intern

Keel Point Advisors, LLC – May 2011 - August 2011
Investments Intern

III. Real Estate Assignments

A representative sample of work on various types of projects:

ADDENDUM D

Market Analyst Certificate of Good Standing

Department of Commerce and Consumer Affairs

CERTIFICATE OF GOOD STANDING

I, the undersigned Director of Commerce and Consumer Affairs of the State of Hawaii, do hereby certify that

NOVOGRADAC & COMPANY LLP

registered under the laws of California

was duly registered to do business in Hawaii as a foreign limited liability partnership on 05/20/2013 , and that, as far as the records of this Department reveal, has complied with all of the provisions of Chapter 425, Hawaii Revised Statutes, regulating foreign limited liability partnerships.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Department of Commerce and Consumer Affairs, at Honolulu, Hawaii.

Dated: June 20, 2013

Director of Commerce and Consumer Affairs

To check the authenticity of this certificate, please visit: http://hbe.ehawaii.gov/documents/authenticate.html
Authentication Code: 196890-COGS_PDF-2970K6

Appendix D

Kapolei Mixed-Use Development - Architectural Plans

PROJECT INFORMATION

NET AREAS

LOW RISE (LEVELS 1 - 2)

	PHASE 1	PHASE 2	PHASE 3		TOTAL
TOTAL NET AREA	67,873	76,495	41,795		186,163

NET AREA	PHASE 1	PHASE 2	PHASE 3		TOTAL
LEVEL 1					
PARKING	21,422	24,303	10,788		56,513
RETAIL	7,241	7,038	17,782		32,061
LOBBY	896	822			1,718
ELEV/STAIRS	362	811			1,173
OFFICE	280	607			887
LAUNDRY	314				314
COMM CENTER	926				926
REC CENTER		2,052			2,052
SERVICE AREA	2,190	4,255	2,608		9,053
LEVEL 1 TOTAL	33,631	39,888	31,178		104,697

LEVEL 2	PHASE 1	PHASE 2	PHASE 3		TOTAL
PARKING	33,546	35,922	10,617		80,085
LOBBY	131	131			262
STAIRS	524	513			1,037
SERVICE AREA	41	41			82
LEVEL 2 TOTAL	34,242	36,607	10,617		81,466
LOW RISE	67,873	76,495	41,795		186,163

HIGH RISE (LEVELS 3-13)

PHASE 1	AFFORDABLE SENIOR RENTAL			11 STORIES	
Unit Type	UNIT AREA	UNIT/FLOOR	TOTAL UNITS	% OF TOTAL	NET AREA
STUDIO	360	2	22	14.3%	7,920
1 BEDROOM	534	10	110	71.4%	58,740
2 BEDROOM	765	2	22	14.3%	16,830
		14	154		83,490
		CORRIDOR AND LOBBY			18,623
		STAIRS			8,155
		SERVICE			1,991
				TOTAL NET	112,259

PHASE 2	CONDOMINIUM			11 STORIES	
UNIT TYPE	UNIT AREAS	UNIT/FLOOR	TOTAL UNITS	% OF TOTAL	NET AREA
STUDIO	360	1	11	7.7%	3,960
1 BEDROOM	534	4	44	30.8%	23,496
2 BEDROOM	765	7	77	53.8%	58,905
3 BEDROOM	990	1	11	7.7%	10,890
		13	143		97,251
		CORRIDOR AND LOBBY			19,492
		STAIRS			8,216
		SERVICE			1,551
				TOTAL NET	126,510

NET AREAS	PHASE 1	PHASE 2	PHASE 3		NET AREAS
WITH PARKING	180,132	203,005	41,795		424,932
WITHOUT PARKING	125,164	142,780	20,390		288,334

GROSS AREAS

LOW RISE (LEVELS 1 - 2)

Gross Area	PHASE 1		PHASE 2		PHASE 3		TOTAL
	PARKING	REMAINDER	PARKING	REMAINDER	PARKING	REMAINDER	
Level 1	21,502	13,307	24,502	16,947	8,515	23,255	108,028
Level 2	34,388		37,255		14,189		85,832
Total	55,890	13,307	61,757	16,947	22,704	23,255	193,860

HIGH RISE (LEVELS 3-13)

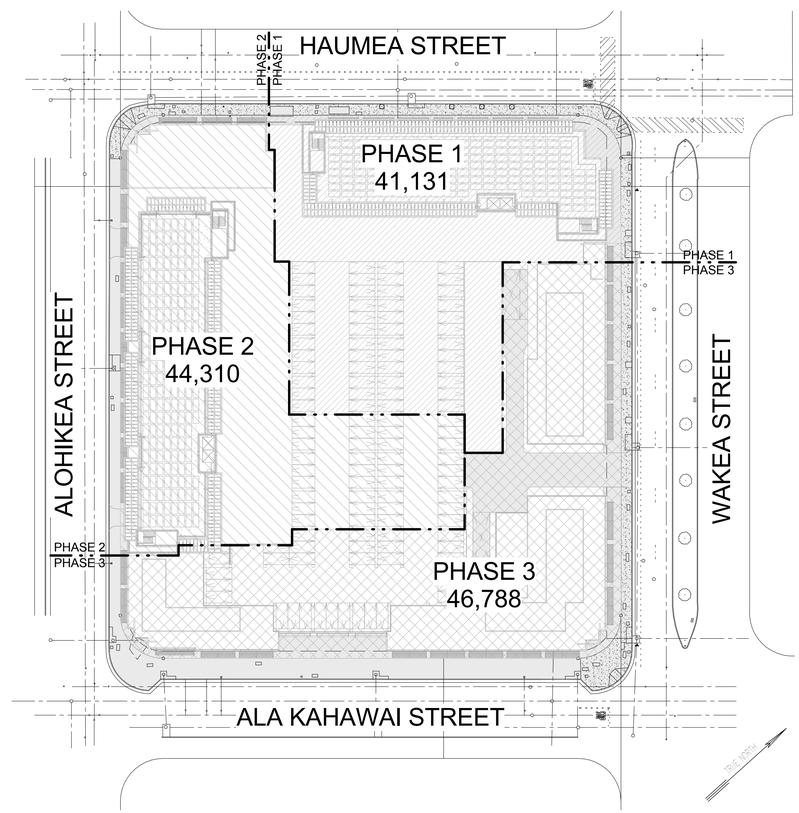
Gross Area		115,005		131,076			246,081
		PHASE 1		PHASE 2		PHASE 3	
TOTAL GROSS W/O PARKING		**128,312**		**148,023**		**23,255**	**299,590**
TOTAL GROSS W/ PARKING		**184,202**		**209,780**		**69,214**	**463,196**

F.A.R. CUMULATIVE PER PHASE ON GROSS AREA

Gross Area	Phase 1	Phase 1 & 2	Phase 1, 2 & 3			SITE AREA
Without Parking	128,312	276,335	299,590			132,229
F.A.R. Without Parking	0.97	2.09	2.27			

F.A.R. PER PHASE ON GROSS AREA

Gross Area	Phase 1	Phase 2	Phase 3			TOTAL
Without Parking	128,312	148,023	23,255			299,590
F.A.R. Without Parking	3.12	3.34	0.50			
SITE AREA	41,131	44,310	46,788			132,229



PHASING PLAN

PROJECT SUMMARY

PHASE 1 - AFFORDABLE SENIOR HOUSING	154	UNITS
PHASE 2 - CONDOMINIUM TOWER	143	UNITS
TOTAL RESIDENTIAL UNITS	297	UNITS
PHASE 1 - RETAIL	7,241	S.F.
PHASE 2 - RETAIL	7,038	S.F.
PHASE 3 - RETAIL	17,782	S.F.
TOTAL RETAIL	32,061	S.F.

REQUIRED PARKING PER PHASE PER LUO

PHASE 1

RESIDENTIAL	AFFORDABLE SENIOR RENTAL			
22	STUDIO		1 PER STUDIO (< 600 S.F.)	22
110	1 BEDROOM		1 PER 1 BDRM (< 600 S.F.)	110
22	2 BEDROOM		1.5 PER 2 BDRM (< 800 S.F.)	33
154	TOTAL UNITS		SUBTOTAL FOR UNITS	165
RESIDENTIAL -VISITOR			1 PER 10 UNITS	16
RETAIL		7,241 SQ.FT.	1 PER 300 SQ. FT.	25
PHASE 1 TOTAL				206

PHASE 2

RESIDENTIAL	CONDOMINIUM			
11	STUDIO		1 PER STUDIO (< 600 S.F.)	11
44	1 BEDROOM		1 PER 1 BDRM (< 600 S.F.)	44
77	2 BEDROOM		1.5 PER 2 BDRM (< 800 S.F.)	116
11	3 BEDROOM		2 PER 3 BDRM (> 800 S.F.)	22
143	TOTAL UNITS		SUBTOTAL FOR UNITS	193
RESIDENTIAL -VISITOR			1 PER 10 UNITS	15
RETAIL		7,038 SQ.FT.	1 PER 300 SQ. FT.	24
PHASE 2 TOTAL				232

PHASE 3

RETAIL		17,782 SQ.FT.	1 PER 300 SQ. FT.	60
				498 TOTAL

REQUIRED VERSUS PROVIDED PARKING

	REQUIRED RETAIL	PROVIDED RETAIL	REQUIRED RESIDENTIAL	PROVIDED RESIDENTIAL	TOTAL REQUIRED	TOTAL PROVIDED	EXEMPTION
PHASE 1	25	25	181	154	206	179	-27
PHASE 2	24	24	208	152	232	176	-56
PHASE 3	60	60		0	60	60	0
TOTAL	109	109	389	306	498	415	-83

PROVIDED PARKING BY LOCATION

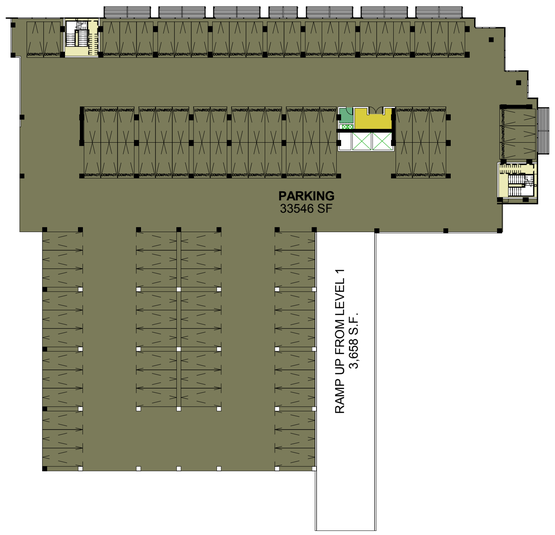
	STURCTURE SPACES		TOTAL	SURFACE	TOTAL
	LEVEL 1	LEVEL 2	STRUCTURE		
PHASE 1	53	101	154	25	179
PHASE 2	58	118	176	0	176
PHASE 3	41	44	85	-25	60
				TOTAL PROVIDED	415

SITE AREAS

PHASE 1 TOTAL	41,131	
PHASE 2 TOTAL	44,310	
PHASE 3 TOTAL	46,788	
TOTAL SITE AREA	132,229	3.036 Acres

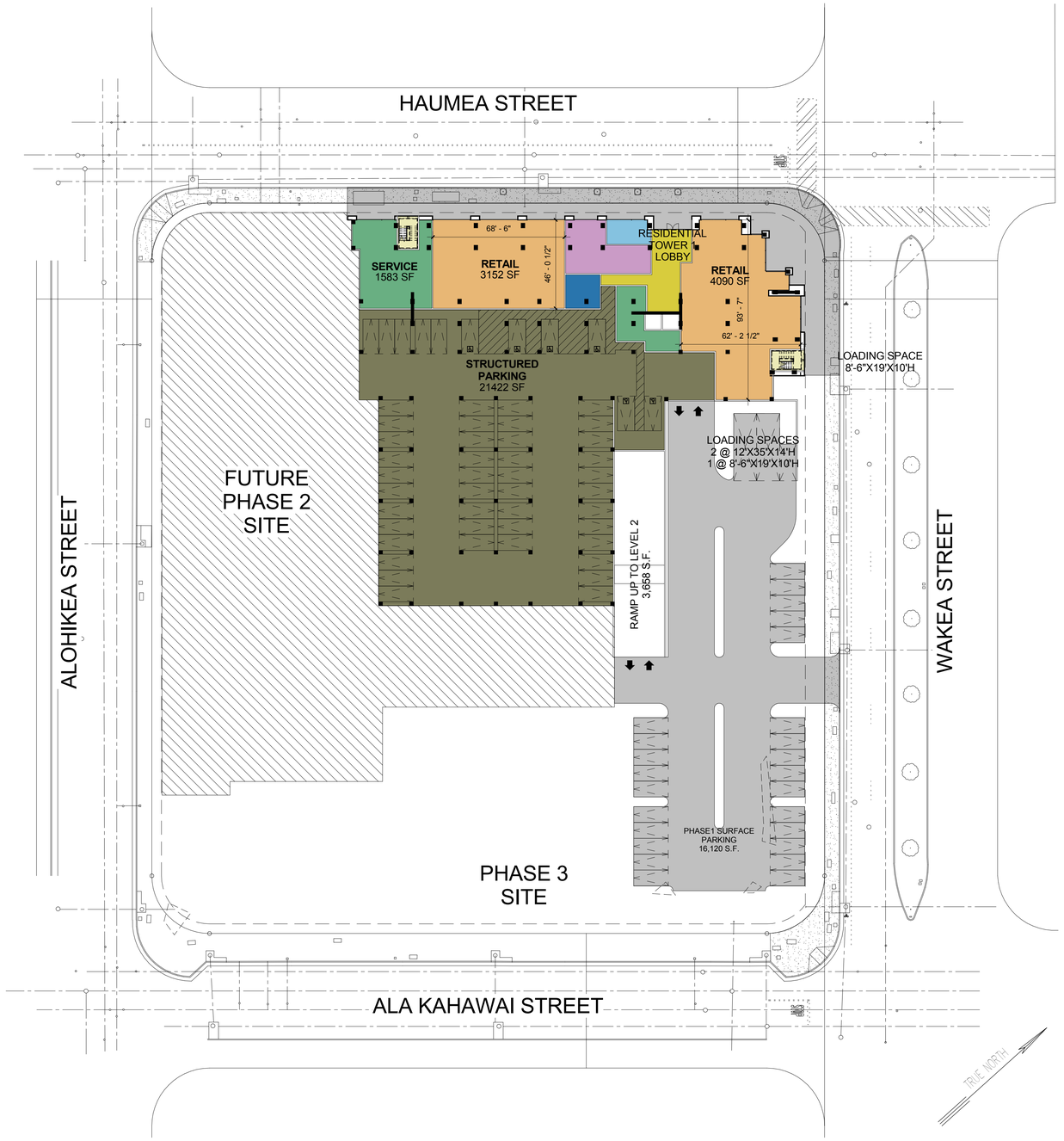
LANDSCAPED PODIUM AREA OPEN SPACE

PHASE 1	9800
PHASE 3	14700
TOTAL	24500



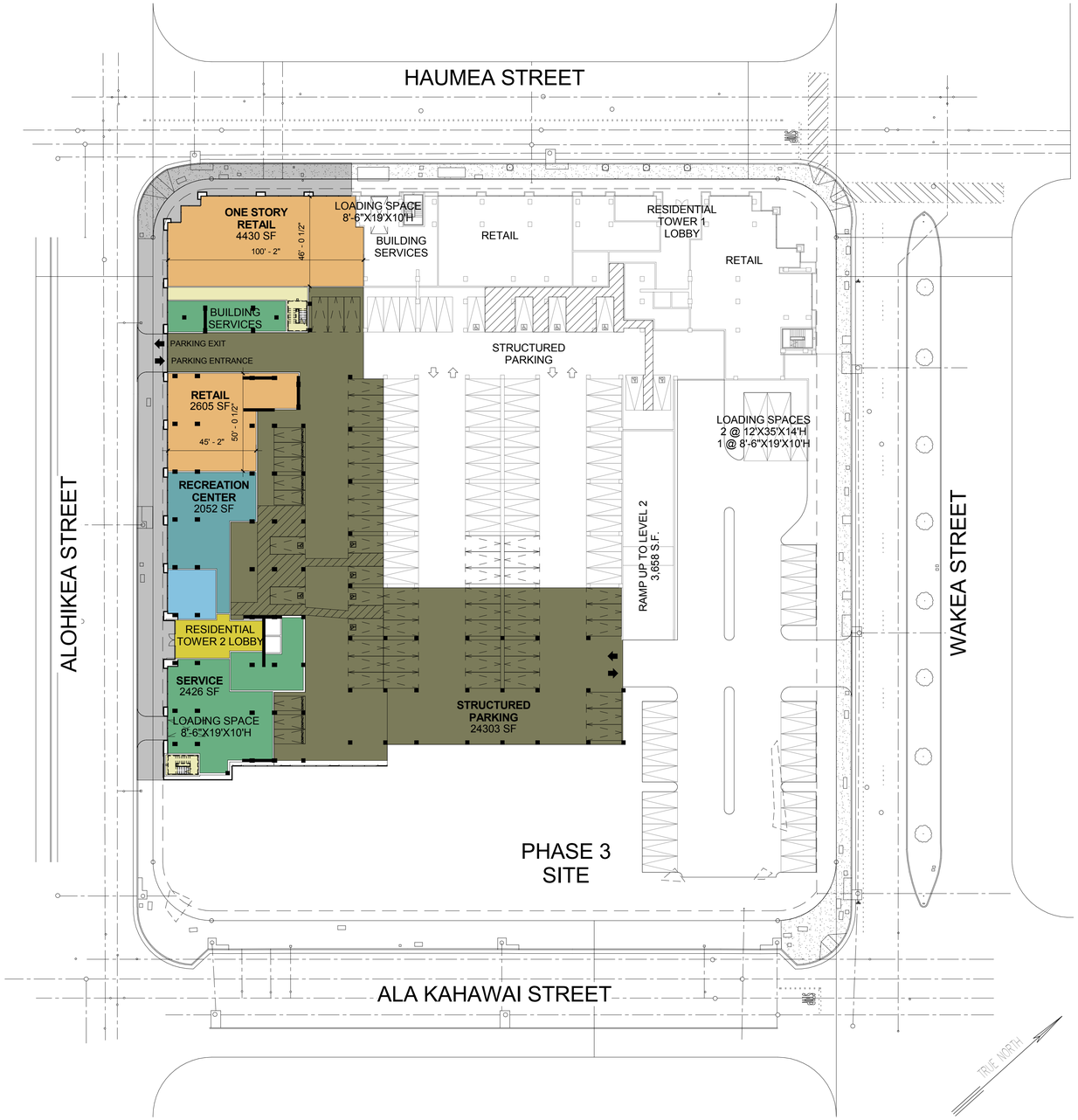
LEVEL TWO

PHASE 1



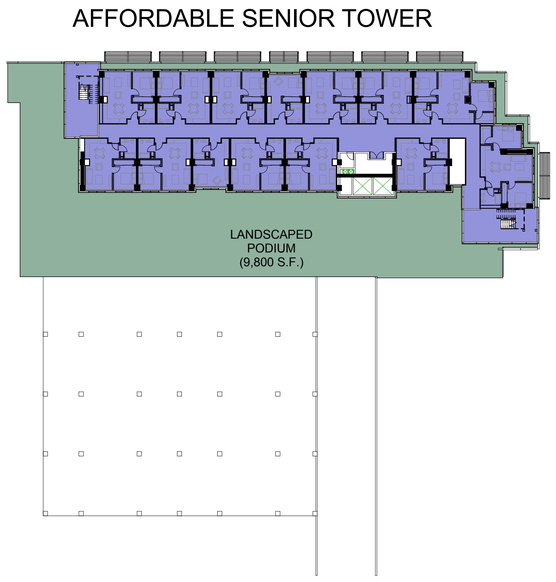
LEVEL ONE

PHASE 1



LEVEL ONE

PHASE 2

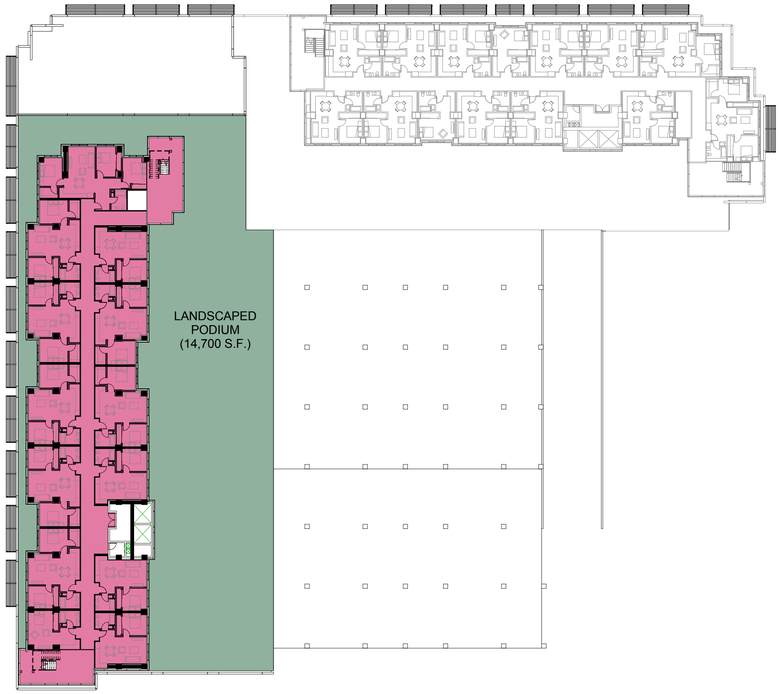


LEVEL THREE

PHASE 1

CRP Coastal Rim Properties, Inc. SVA ARCHITECTS ARCHITECTS·HAWAII LIMITED CADMUS

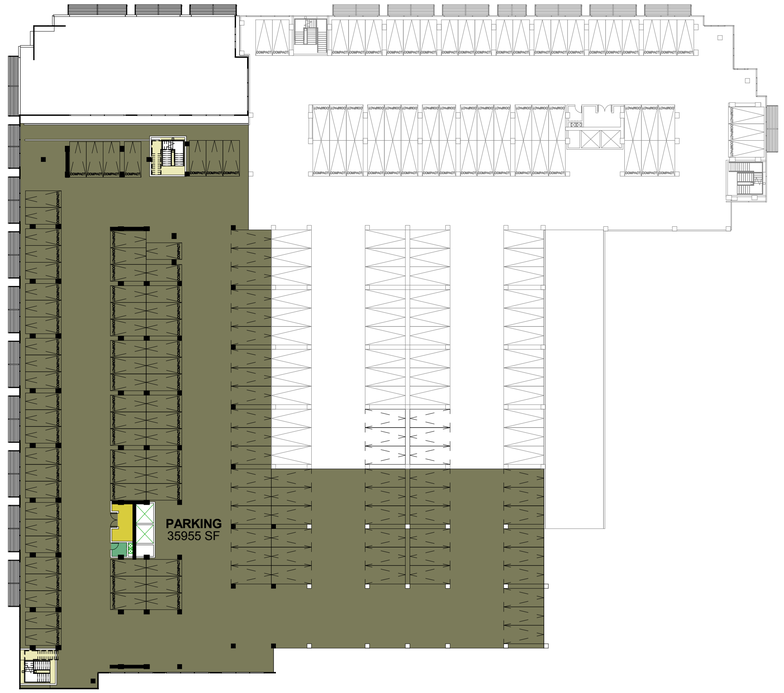
AFFORDABLE SENIOR TOWER



CONDOMINIUM
TOWER

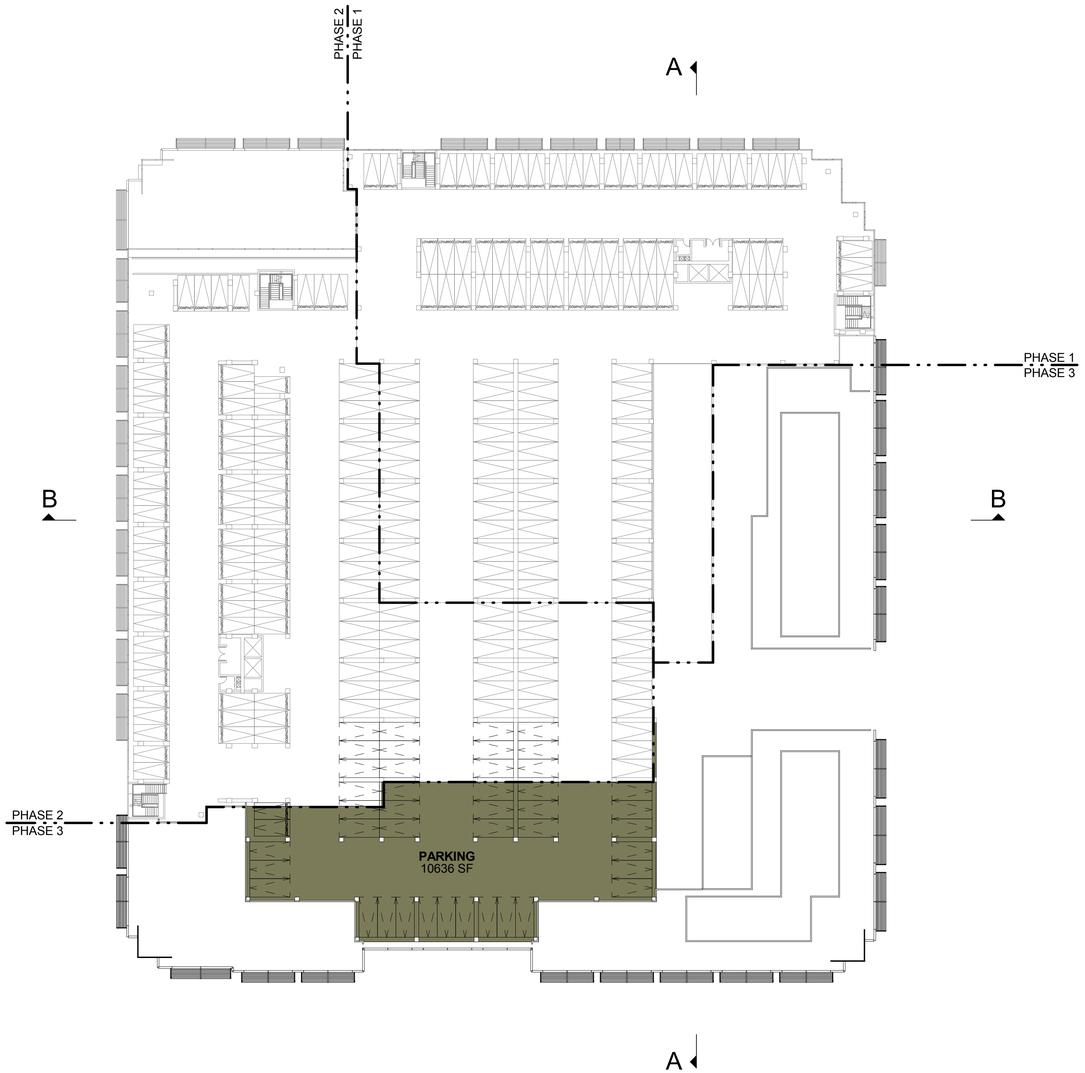
LEVEL THREE

PHASE 2



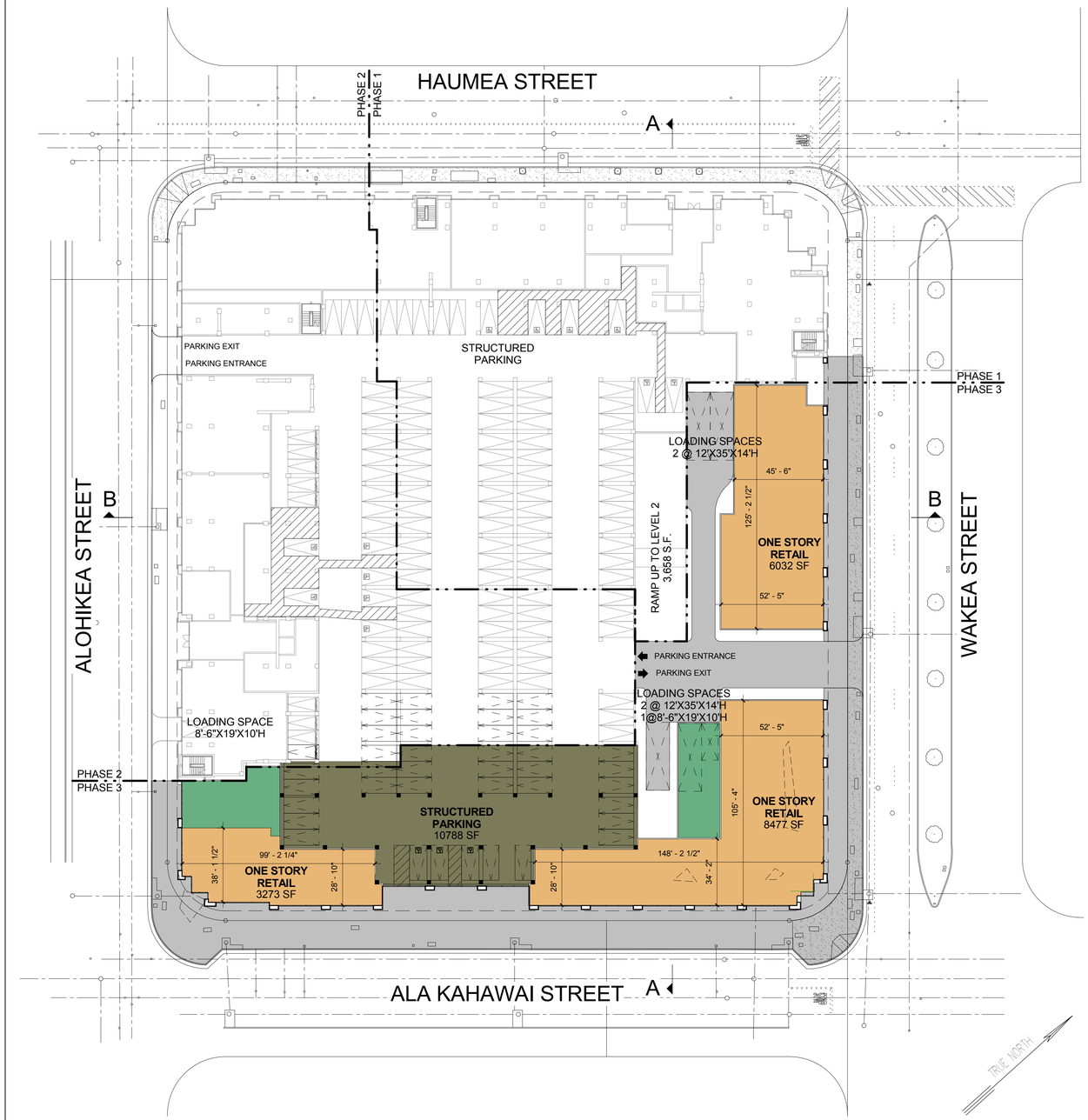
LEVEL TWO

PHASE 2



LEVEL TWO

PHASE 3



LEVEL ONE

PHASE 3

KAPOLEI MIXED-USE DEVELOPMENT

CRP Coastal Rim Properties, Inc.

SVA ARCHITECTS

ARCHITECTS-HAWAII LIMITED

CADMUS

WAKEA STREET ELEVATION

ALA KAHAWAI STREET ELEVATION

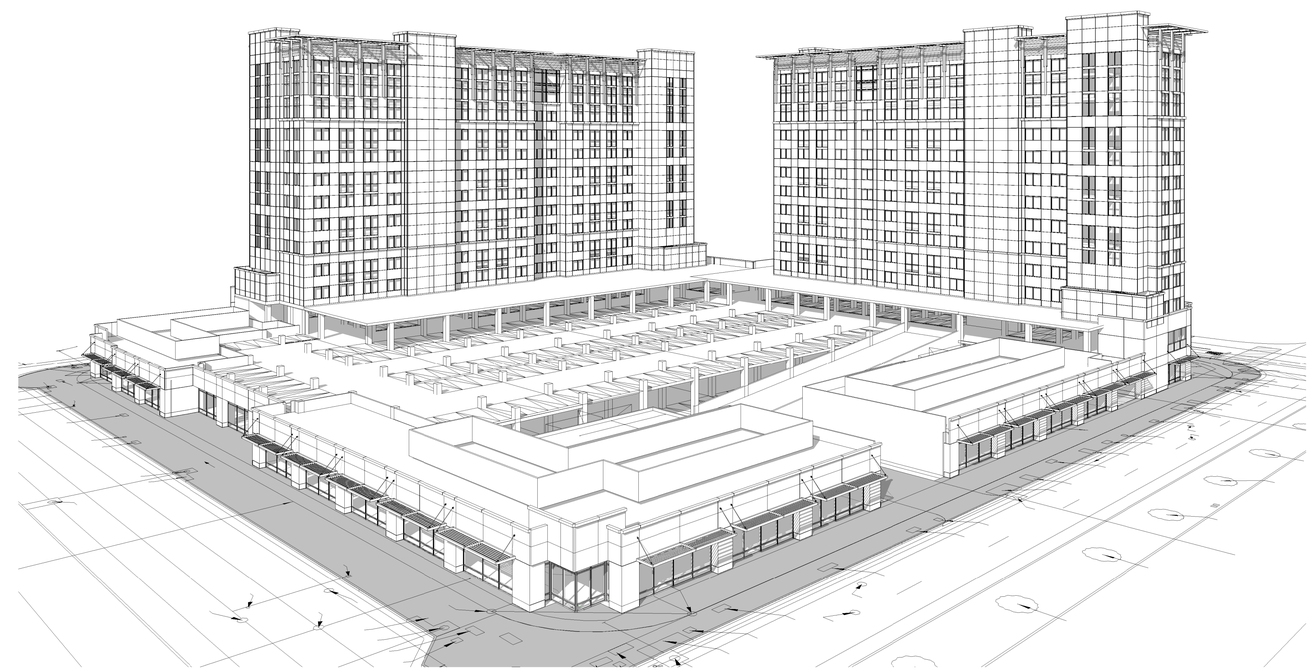
PHASE 3

ALOHIKEA STREET ELEVATION

HAUMEA STREET ELEVATION

PHASE 3

VIEW FROM NORTH



VIEW FROM SOUTH

PHASE 3

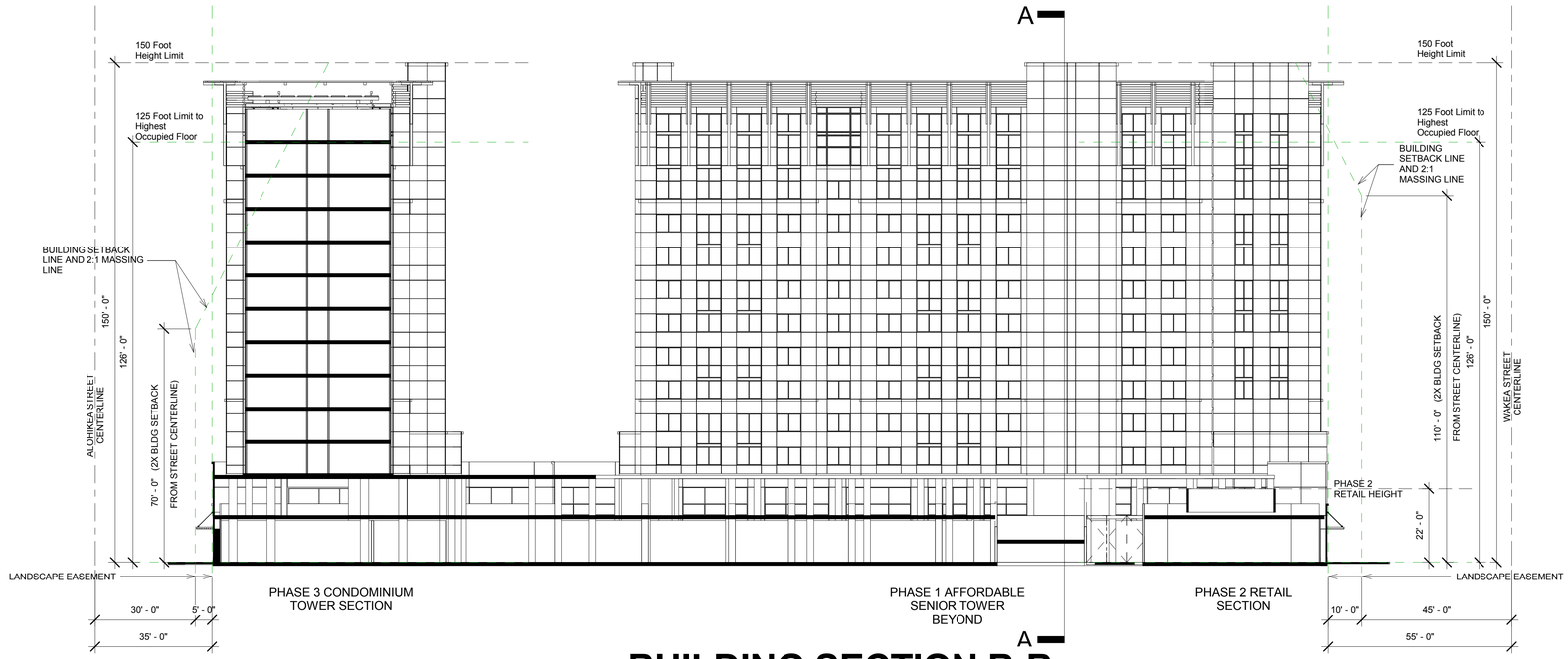
KAPOLEI MIXED-USE DEVELOPMENT

CRP Coastal Rim Properties, Inc.

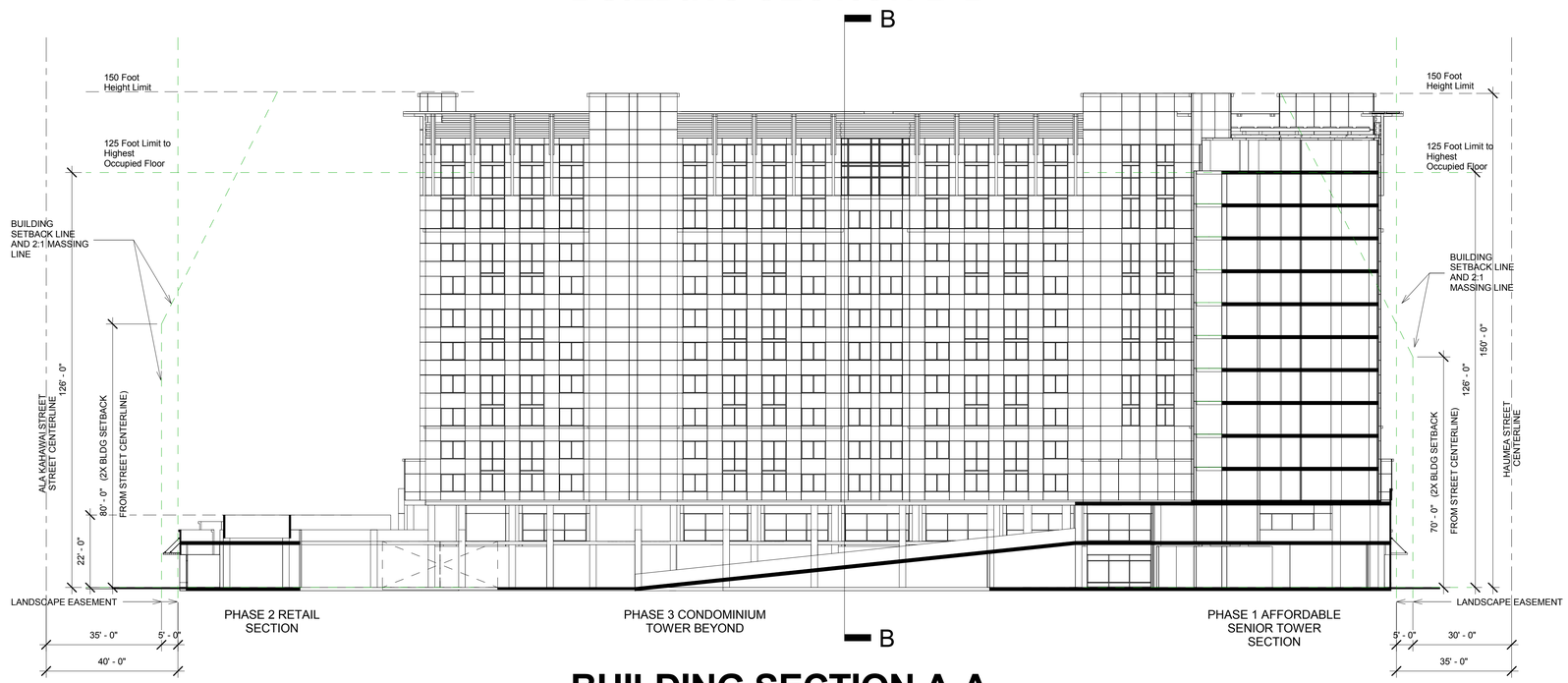
SVA ARCHITECTS

ARCHITECTS·HAWAII

CADMUS



BUILDING SECTION B-B



BUILDING SECTION A-A

PHASE 3

Appendix E

Traffic Impact Analysis Report

KAPOLEI ‘OHANA MIXED-USE PROJECT

KAPOLEI, HAWAII

TRAFFIC IMPACT ANALYSIS

Final Report

Prepared For

Coastal Rim Properties, Inc.
Honolulu, Hawaii

February 14, 2014

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EXECUTIVE SUMMARY

This traffic impact analysis report identifies the potential transportation impacts associated with the proposed Kapolei 'Ohana Mixed-Use project, to be located on the square block bordered by Haumea, Wakea, Ala Kahawai (a.k.a. Wai Aniani Way) and Alohikea Streets in Kapolei, Hawaii. The project site is currently vacant. The proposed project will construct a 583-unit multi-story condominium building, including ground-floor retail space and a parking garage built into the bottom floors of the building.

Scope of Work:

In total, this traffic study includes a traffic impact analysis of operations at eight intersections during typical weekday AM and PM peak hours. The following intersections were analyzed in this study:

1. Alohikea Street / Kamokila Boulevard;
2. Wakea Street / Kamokila Boulevard;
3. Nau Place / Kamokila Boulevard;
4. Manawai Street / Kamokila Boulevard;
5. Alohikea Street / Haumea Street;
6. Wakea Street / Haumea Street;
7. Alohikea Street / Ala Kahawai Street (Future scenarios only); and
8. Wakea Street / Ala Kahawai Street.

The specific traffic scenarios evaluated as part of this traffic study are:

- Existing Traffic Conditions;
- Future without Project Conditions (Year 2020);
- Future with Project Conditions (Year 2020); and
- Future with Current Zoning (Year 2020).

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.

A few adjustments were made to the lane configurations of some study intersections, due to the width of the single approach lane being sufficiently wide enough to allow right turns to be made concurrently with other traffic movements on the same approach. See Section 2.4 and **Exhibit 4** of this report for more information about these adjustments.

Although the study street system is roughly a grid pattern rotated approximately 45 degrees counter-clockwise from true north, this report and analysis considers the Interstate H1 freeway, Kamokila Boulevard, and all streets roughly parallel to them to be oriented in an east-west direction, while Wakea Street, Manawai Street. Alll streets roughly parallel to them are north-south streets. This convention 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 November 2013. For the overall study network, the peak hours were found to be 7:15 – 8:15 AM for the AM peak hour and 4:00 – 5:00 PM for the PM peak hour.

Note: The Alohikea Street / Ala Kahawai Street intersection was not counted or analyzed under Existing Conditions because it is currently closed to traffic. Although the roadway has full curb and gutter, it has yet to be paved.

Traffic Operations:

Two of the four signalized intersections – Nau / Kamokila and Manawai / Kamokila – currently operate at LOS B (AM and PM peak hours). Two of the one-way stop controlled intersections – Alohikea / Haumea and Wakea / Ala Kahawai – currently operate at an overall LOS A with side-street operations of LOS B.

The remaining three analyzed intersections under Existing conditions currently operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection operates at an overall LOS A in both peak hours but with side-street operations of LOS C (AM) and LOS F (PM). The Wakea / Kamokila intersection operates at LOS D (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection operates at LOS B (AM) and LOS E (PM).

Future without Project Conditions:

Future Growth Forecasts:

Future growth (Year 2020) was forecasted using a growth rate of 4% per year over 7 years. This growth rate was applied to the existing volumes to create Future without Project Condition volumes at the study intersections.

It was assumed that Alohikea and Ala Kahawai Streets were open to vehicular traffic under Future without Project Conditions and all subsequent analysis scenarios.

Traffic Operations:

The Nau / Kamokila and Manawai / Kamokila intersections will continue to operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an overall LOS A with side-street operations of LOS B. The now-open Alohikea / Ala Kahawai

intersection will operate at an overall LOS A with side-street operations of LOS A. The Wakea / Ala Kahawai intersection will operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM).

The remaining three analyzed intersections will operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection will continue to operate at an overall LOS A in both peak hours but with side-street operations of LOS C (AM) and LOS F (PM). The Wakea / Kamokila intersection operates at LOS E (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection operates at LOS C (AM) and LOS F (PM).

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 583 condominium units, including 154 senior affordable units (rentals). The balance of the units are condominiums, of which a minimum of 143 units will be affordable. In addition, the project includes over 18,000 square feet of retail space and an approximately 3,385 square-foot child care center. The project will be housed within a single multi-story building with four towers with an open central area built on a one-block wide podium. On-site parking will be included within a parking garage comprising the lower stories of the building, with the apartments on the upper stories. The project will be split into four construction phases, one phase for each tower of residential units.

Project Trip Generation:

The project is estimated to generate 3,136 daily vehicle trips, with 218 trips (76 in, 142 out) during the AM peak hour and 216 trips (122 in, 94 out) during the PM peak hour. This total is after accounting for the internal capture of trips between on-site uses, such as between the residential units and retail space.

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 4.3 for more details regarding the project trip distribution.

Traffic Operations:

The Nau / Kamokila and Manawai / Kamokila intersections will continue to operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an

overall LOS A with side-street operations of LOS B (AM) and LOS C (PM). The Alohikea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS A. The Wakea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM).

The remaining three analyzed intersections will operate at higher average vehicle delays, if not also lower levels of service, under AM, PM or both peak hours. The Alohikea / Kamokila intersection will operate at an overall LOS A (AM) and LOS C (PM) with side-street operations of LOS F during both peak hours. The Wakea / Kamokila intersection will continue to operate at LOS E (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection will continue to operate at LOS C (AM) and LOS F (PM).

Future with Current Zoning Conditions:

Scenario Definition:

Future with Current Zoning Condition volumes are the sum of the Future without Project Condition volumes with traffic from a theoretical building constructed on-site that is consistent with the current site zoning.

Definition – Current Zoning:

The current site zoning by the City and County of Honolulu will allow a multi-story office building of approximately 463,000 square feet. Therefore, the assumed building under this "current zoning" scenario is a multi-story office building of approximately 463,000 square feet of gross floor area with an internal parking garage. For comparative purposes, it is assumed that access to this parking garage could be made from the same streets as the proposed project, namely Haumea and Alohikea Streets.

Trip Generation – Current Zoning:

The "current zoning" building is estimated to generate a net 3,579 daily vehicle trips, with 555 trips (488 in, 67 out) during the AM peak hour and 508 trips (86 in, 422 out) during the PM peak hour. This total is after accounting for a 10% walking/biking trip reduction and a 5% transit trip reduction. The proposed project will generate about 12% less daily traffic, 60% less morning peak hour and 57% less evening peak hour traffic than what is expected from the current zoning.

Trip Distribution and Assignment – Current Zoning:

Trip distribution for the "current zoning" building has been derived based upon the relative level of existing traffic on the surrounding street network and the locations of complementary land uses. The project trips were then assigned along the study street network using that distribution. See Section 5.3 for more details regarding the project trip distribution.

Traffic Operations:

The Nau / Kamokila and Manawai / Kamokila intersections will operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an overall LOS A with side-street operations of LOS B (AM) and LOS C (PM). The Alohikea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS A (AM) and LOS B (PM). The Wakea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM). These are all similar results as under Future with Project conditions.

The remaining three analyzed intersections will operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection will operate at an overall LOS A (AM) and LOS E (PM) with side-street operations of LOS E (AM) and LOS F (PM). The Wakea / Kamokila intersection will operate at LOS F during both peak hours. Finally, the Wakea / Haumea intersection will operate at LOS D (AM) and LOS F (PM). Overall, these operations are somewhat more severe than under Future with Project conditions.

Recommended Improvements:

Note: See **Exhibit ES-1** for a summary of the recommended improvements described below. Each of these improvements is recommended due to an identified project impact.

Intersections:

Improvements are recommended at three of the study intersections:

Alohikea Street / Kamokila Boulevard:
Implement a partial median closure, either through use of new signs or installation of a raised median, which will restrict both Alohikea Street approaches to right turns out only but will preserve the ability to turn left onto Alohikea from Kamokila. The project applicant will be responsible for implementation of this improvement.

Note: As the implementation of this improvement may encourage drivers to make illegal U-turns at both Wakea Street / Kamokila Boulevard (nearest intersection to the east) and Uluohia Street / Kamokila Boulevard (nearest intersection to the west), it is also recommended that the existing U-turn prohibitions along eastbound and westbound Kamokila Boulevard at these two intersections be removed, allowing U-turns to occur at these locations.

It should also be noted that gaps in traffic are created along Kamokila Boulevard by the adjacent traffic signals that appear to create some openings. However, observations in November 2013 found that these openings vary in frequency and duration, and do not always occur simultaneously in both directions of traffic. This explains the poor operational results for side-street traffic at this intersection.

Wakea Street / Kamokila Boulevard:
Optimize the existing traffic signal timing information at this intersection to provide sufficient green time for all traffic movements into the future. The project applicant will be responsible for this improvement, with the City and County of Honolulu being directly responsible for its field implementation.

Wakea Street / Haumea Street
This intersection will experience overall operations of LOS C (AM) and LOS F (PM) with implementation of the project. 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;
- Modify Wakea Street median to add a new northbound Wakea Street left turn lane; and
- Restripe eastbound and westbound Haumea Street to add exclusive eastbound and westbound left turn lanes.

The project applicant will be responsible for this improvement.

Note: Implementation of the eastbound and westbound left turn lanes on Haumea Street may require prohibition of on-street parking near the intersection in order to accommodate the additional lanes. The extent of this prohibition will need to be determined as part of the design of said lanes.

<u>Pedestrian/Bicycle:</u>

Sidewalks are recommended to be added along the project frontages of both Alohikea and Ala Kahawai Streets, in order to facilitate anticipated pedestrian activity generated by the project. Implementation of this recommendation will be the responsibility of the project.

There are no project impacts on the area bicycle network. No new bicycle infrastructure is recommended.

<u>Transit:</u>

The level of transit demand added by project residents and visitors will not rise to the level that will require any increase in transit service to the area or any additional transit infrastructure.

It is recommended that existing bus stop at the proposed Haumea Street project access be relocated; the exact location of this relocation will need to be negotiated with the City and County of Honolulu. The project applicant will be responsible for this improvement.

Project Access:

The project access driveways off of Haumea and Alohikea streets will operate within acceptable levels. It is recommended that adequate sight distance be provided at both driveways. Assurance of this situation is the responsibility of the project applicant.

Freeway Interchanges:

There are three interchanges along Interstate H1 in the vicinity of the project site – 1) Makakilo Drive (Route 901) (Exit #2); 2) Wakea Street (Exit #1B); and 3) Kalaeloa Parkway (Route 95) (Exit #1/1A/1E).

The study project would constitute less than 1% of the total existing traffic at Exit #2, minimizing its effects upon the interchange operations. Therefore, the study project would not impact operations of the Makakilo Drive (Exit #2) interchange.

The directional nature of the ramps at the Wakea Street (Exit #1B) interchange means that the project traffic would not need to stop prior to exiting or entering these ramps; hence the nearest intersection of note traversed by project traffic is the Wakea Street / Kamokila Boulevard intersection (study intersection #2 in this analysis). See the discussion on Page x regarding the potential project impacts at this intersection.

Project traffic en route to westbound Interstate H1/Route 93 would use the westbound on-ramp at the Kalaeloa Parkway (Route 95) (Exit #1/1A/1E) interchange. Only this particular ramp would be used by project traffic. The project would only add approximately 1% of the total ramp traffic, minimizing its effects on the ramp operations. Therefore, the study project would not impact operations of the Kalaeloa Parkway (Route 95) (Exit #1/1A/1E) interchange.

Category	Potential Impact	Recommendation	Responsibility
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	□ a□ea□□amo□ila □will o□erate at □□ □ □F□	□□timi□e e□i□ting □ignal timing	□ro□ect □□□licant□ wit□ a□□i□tance from Cit□and Count□of Honolulu
	□ a□ea□Haumea □will o□erate at □□ □ F and warrant □ignali□ation□	1□□ignali□e inter□ection□ □□□dd new nort□□ound left turn lane □ia median modification□ □□□dd new ea□t□ound and we□t□ound left turn lane□ □ia □a□ement re□tri□ing	□ro□ect □□□licant
□ede□trian Circulation	Di□continuou□ □idewal□□ □ordering □ro□ect	□dd □idewal□□along □ro□ect frontage of □lo□i□ea and □la □a□awai □treet□	□ro□ect □□□licant
□ic□cle Circulation	None	None	None
□ran□it □□age	□ro□ect acce□□ □ro□o□ed at e□i□ting □u□□to□	□elocate e□i□ting □u□□to□	□ro□ect □□□licant
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Freewa□ □nterc□ange□	None	None	None

EXHIBIT ES-1
Summary of Recommended Improvements

1 INTRODUCTION

The proposed Kapolei 'Ohana Mixed-Use project is located within the square block bordered by Haumea, Wakea, Ala Kahawai (a.k.a. Wai Aniani Way) and Alohikea Streets in Kapolei, Hawaii, a region under the jurisdiction of the City and County of Honolulu, Hawaii. The project site is currently vacant. The proposed project includes a 583-unit multi-story condominium building, including ground-floor retail space and a parking garage built into the bottom floors of the building. **Exhibit 1** shows the location of the study project, while **Exhibit 2** 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 will change with the implementation the study project and future traffic growth.

1.1 Project Description

The project will include 583 condominium units, including 154 senior units and 143 affordable units, plus retail space and a child care center, all within a single multi-story building comprising one full block. On-site parking will be included within a parking garage comprising the lower stories of the building, with the apartments on the upper stories. The project will be split into four construction phases, one phase for each tower of residential units.

Project access to the on-site parking garage will be split between Haumea Street to the north (residents only) and Alohikea Street to the west (retail customers only).

1.2 Project Area

The project site is borders Wakea Street to the west and is one block south of Kamokila Boulevard. The eastern half of the Kapolei Transit Center, which is comprised of bus stops along two blocks of Haumea Street, is located along the project's northern border. The Interstate H1 freeway is located approximately one-quarter mile to the north of the project site. The nearest H1 interchanges to the project site are at Makakilo Drive (Exit #2), Wakea Street (Exit #1B) and Kalaeloa Parkway (Exit #1/1A). 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 City and County of Honolulu Department of Planning and Permitting 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 will represent a significant impact upon any of the study intersections, and if so, recommended improvements to mitigate that impact.

The intersections comprising the analyzed study area were identified in conjunction with staff at the City and County of Honolulu. Beyond the limits of the study area, the project trips disperse onto multiple local streets.

In total, this traffic study includes a traffic impact analysis of operations at eight 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. Alohikea Street / Kamokila Boulevard;
2. Wakea Street / Kamokila Boulevard;
3. Nau Place / Kamokila Boulevard;
4. Manawai Street / Kamokila Boulevard;
5. Alohikea Street / Haumea Street;
6. Wakea Street / Haumea Street;
7. Alohikea Street / Ala Kahawai Street (Future scenarios only); and
8. Wakea Street / Ala Kahawai Street.

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 Kapolei region that will 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 2020);
- Future with Project Conditions (Year 2020); and
- Future with Current Zoning (Year 2020).

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.

For all-way (or four-way) stop intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent on a number of factors including the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. **Appendix A2** shows the relationship between vehicle delay and the all-way stop intersection level of service categories.

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 A3** 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.

Note that some of the lane configurations at the study intersections were modified to reflect observed traffic operations. More specific information about these adjustments can be found within Section 2.4 of this report.

1.4.2 Modeling of Right Turns

All of the signalized study intersections allow 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.

In addition, for many of the side streets analyzed herein, the single approach lane is sufficiently wide enough to allow right turns to be made concurrently with other traffic movements on the same approach. This is especially true on approaches that allow on-street parking. Observations within the study area in November 2013 found that, although not officially prohibited by sign or curb striping, drivers rarely parked near intersections, allowing for short distances in which right-turning vehicles can bypass other queued vehicles on approaches and make concurrent movements. See **Exhibit 4** for more details regarding at which intersections this situation was directly accounted for in the operational analysis.

1.5 Assumptions regarding Cardinal Geometry in Analysis

As can be seen from **Exhibit 1**, the study street system within the Kapolei area is roughly a grid pattern rotated approximately 45 degrees counter-clockwise from true north. For the purposes of this report and analysis, the Interstate H1 freeway, Kamokila Boulevard, and all streets roughly parallel to them are considered to be oriented in an east-west direction, while Wakea Street, Manawai Street, and all streets roughly parallel to them are considered north-south streets. This convention 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 Interstate H1, Kamokila Boulevard, and Wakea Street. Other area streets include Manawai Street, Alohikea Street, Nau Place, Haumea Street, and Ala Kahawai Street. A brief description of each street in the study road network follows, with Interstate H1 first, and then the remaining roadways in alphabetical order.

Interstate H1 is an east-west state freeway within the island of Oahu and the City and County of Honolulu, connecting the eastern and western ends of the island via downtown Honolulu and Honolulu International Airport. Interchanges near the project site include Makakilo Drive/Fort Barrette Road (Route 901) (Exit #2), Wakea Street (Exit #1B) and Kalaeloa Parkway (Route 95) (Exit #1/1A/1E). In the vicinity of the project, Interstate H1 is a six-lane freeway with a speed limit of 60 miles per hour (60 MPH).

Ala Kahawai Street (a.k.a. Wai Aniani Way) is a two-lane, east-west street within a partially developed mixed-use area south of Kamokila Boulevard within central Kapolei. No bicycle lanes are provided along this street, and sidewalks are only provided east of Wakea Street. Where sidewalks are currently provided along Ala Kahawai Street, they are nearly double the width of the sidewalks along other surrounding streets (e.g. approximately 14 feet wide on Ala Kahawai versus approximately eight feet on other roadways). Parking is allowed in both directions of the street. Although the concrete curb lines and gutters are in place along the entirety of this street, the roadway is not currently open to traffic west of Wakea Street. Prominent existing land uses along Ala Kahawai Street include two private schools – Island Pacific Academy, a Junior Kindergarten-through-12th Grade school whose sole vehicular access is off of Haumea Street near Wakea Street, and The Cole Academy, a pre-school whose sole vehicular access is off of Ala Kahawai Street near Manawai Street. There is no posted speed limit on Ala Kahawai Street; the speed limit is presumed to be 25 MPH.

Alohikea Street is a two-lane, north-south street within a partially-developed mixed-use area south of Kamokila Boulevard. No bicycle lanes are provided along this street, and sidewalks are only provided north of Haumea Street. Parking is allowed in both directions of the street. Although the concrete curb lines and gutters are in place along the entirety of this street, the roadway is not currently open to traffic south of Haumea Street. North of Kamokila Boulevard, Alohikea Street becomes an entrance into a small commercial area anchored by a movie theater complex. The speed limit on Alohikea Street is 25 MPH.

Haumea Street is a two-lane, east-west street within a partially-developed mixed-use residential neighborhood south of Kamokila Boulevard. Sidewalks are provided along the entirety of this street, but no bicycle lanes are provided. Parking on Haumea Street is only allowed east of Wakea Street; west of Wakea Street, the street frontage is reserved solely for bus stops. The speed limit on Haumea Street is 25 MPH.

Kamokila Boulevard is a four-lane, east-west arterial street within the Kapolei area. Parking is prohibited on both sides of the street. Both sidewalks and bicycle lanes are present along both sides of the street. There is a raised concrete median present along the entirely of Kamokila Boulevard within the study area, with breaks in the median at each intersected roadway. Existing land uses along Kamokila Boulevard in the project vicinity are primarily commercial, including restaurants, gasoline stations, and other retail space. Additional uses include a private university, a city police station, a state government office building, and a community park. More regional commercial businesses, such as supermarkets, fast-food chains and discount superstores, are located within one mile to the east and west of the study area along the Kamokila Boulevard corridor. Note that just east of Manawai Street, Kamokila Boulevard changes its name to Farrington Highway. The speed limit on Kamokila Boulevard is 25 MPH.

Nau Place is a two-lane, north-south roadway within the Kapolei area. It is a dead-end street off of Kamokila Boulevard between Wakea and Manawai Streets, serving both commercial businesses and the community police station. Sidewalks line the entirely of this street, but no bicycle lanes are present. On-Street parking is now allowed on either side of the street. There is no posted speed limit on Nau Place; the presumed speed limit is 25 MPH.

Manawai Street is a two-lane, north-south roadway within the Kapolei area. The street provides access to a number of different land uses, including commercial, a city library, a regional park, a pre-school and a private school. Sidewalks extend along both sides of the street; however, no bicycle lanes are present. Parking is allowed on both sides of the street. The speed limit on Manawai Street is 25 MPH.

Wakea Street is a four-lane, north-south arterial roadway within the Kapolei area. In the vicinity of the project, sidewalks are present both sides of the roadway. Bicycle lanes are also present along both sides of the street. Parking is prohibited along both sides of the street. A striped median is present along Wakea Street between Kamokila and Haumea Streets, while a raised concrete median is present south of Haumea Street, with breaks at each intersection. North of Kamokila Boulevard, Wakea Street connects to Farrington Highway, which is a frontage road to the north of Interstate H1, as well as eastbound on- and off-ramps connecting directly to Interstate H1. The speed limit on Wakea Street is 25 MPH.

2.2 Existing Transit Systems

The City and County of Honolulu, in conjunction with Oahu Transit Services, Inc., operates TheBus, the public transit system within the city. A number of local and regional bus routes traverse the study area.

Bus stops within the study area include the following locations:

- Westbound Kamokila Boulevard, just west of Alohikea Street – Routes 411, 412.
- Eastbound Kamokila Boulevard, just west of Wakea Street – Route 413
- Eastbound Kamokila Boulevard, just west of Nau Place – Lines 40, 41, 411, 412, 414, 415.
- Westbound Kamokila Boulevard, just west of Nau Place – Lines 40, 414, 415, "C" (a.k.a. Country Express).
- Kapolei Transit Center (Haumea Street between Uluohia and Wakea Streets):
    - Eastbound Haumea Street, between Uluohia and Alohikea Streets – Lines 411, 412.
    - Westbound Haumea Street, between Uluohia and Alohikea Streets – Lines 40, 413, 414, 415, "C".
    - Eastbound Haumea Street, between Alohikea and Wakea Streets – Lines 40, "C".

These routes provide connections to various destinations along western and southern Oahu, including downtown Honolulu and the greater Kapolei area.

Routes C and 40 both operate twice per hour on both weekdays and weekends. Route 41 operates roughly every 30-40 minutes on weekdays and every 45 minutes on Saturdays, with no Sunday service. Route 411 has a run frequency of roughly every 15-45 minutes on weekdays and approximately every hour on weekends. Route 412 operates twice per hour on weekdays and every 45 minutes on weekends. Route 413 operates twice per hour on weekday early mornings and mid-afternoons only. Route 414 provides hourly service on weekdays and weekends. Finally, Route 415 operates only three morning and three evening runs on weekdays and weekends.

2.3 Existing Traffic Data

To establish existing traffic flow conditions, new traffic counts were conducted at seven of the eight study intersections on Wednesday, November 20, 2013 during the weekday AM (i.e. 6:30 – 8:30 am) and PM (i.e. 3:30 – 5:30 pm) peak hours. From the peak period traffic counts, the AM and PM peak hour turning movement volumes were identified. Each intersection was analyzed at its individual peak hour. (For the overall study network, the peak hours were found to be 7:15 – 8:15 AM for the AM peak hour and 4:00 – 5:00 PM for the PM peak hour.) The intersection traffic volumes were then balanced between adjacent intersections along the arterial corridors, to account for variations in the count volumes caused by on-street parking, mid-block driveways and other minor variations in traffic. The existing peak hour traffic volumes are presented on **Exhibit 3**.

Note: The Alohikea Street / Ala Kahawai Street intersection was not counted, as it is currently closed to traffic because it has yet to be paved (despite being laid out with full curb and gutter). This intersection was not analyzed under Existing conditions.

2.4 Adjustments for Observed Right-Turn Operations

An adjustment has been made to the lane configurations of five of the eight study intersections. At these intersections, at least one of the approaches to the intersection has a single through lane on an approach. Observations at these intersections in November 2013 found that the single lane in these situations was essentially functioning as two lanes, allowing vehicles to make concurrent right turns while adjacent traffic was making left and/or through movements. Therefore, on these approaches, the operational analysis includes an exclusive right turn lane along with the current striped single lane. This adjustment thus better reflects current operations at these intersections.

The specific approaches and intersections where these intersection adjustments were made are:

- Alohikea Street / Kamokila Boulevard:
  - Northbound Alohikea
- Manawai Street / Kamokila Boulevard:
  - Northbound Alohikea
- Alohikea Street / Haumea Street:
  - All approaches
- Wakea Street / Haumea Street:
  - Eastbound and Westbound Haumea
- Alohikea Street / Ala Kahawai Street:
  - Northbound and Southbound Alohikea

2.5 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**.

Three of the eight study intersections are currently signalized, one is all-way stop controlled, three are one- or two-way stop-controlled, and one is currently not open to traffic (Alohikea / Ala Kahawai) and was thus not analyzed under Existing conditions. In total, seven of the eight study intersections were analyzed under Existing conditions. Please refer to **Exhibit 4** for detail of the type of traffic control at each intersection.

Two of the four signalized intersections – Nau / Kamokila and Manawai / Kamokila – currently operate at LOS B (AM and PM peak hours). Two of the one-way stop controlled intersections – Alohikea / Haumea and Wakea / Ala Kahawai – currently operates at an overall LOS A with side-street operations of LOS B.

The remaining three analyzed intersections under Existing conditions currently operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection operates at an overall LOS A in both peak hours but with side-street operations of LOS C (AM) and LOS F (PM). The Wakea / Kamokila intersection operates at LOS D (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection operates at LOS B (AM) and LOS E (PM).

3 FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2020)

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 seven years beyond existing conditions, or the Year 2020.

3.1 Derivation of Future Traffic Volumes

Traffic projections for the Future without Project Condition were developed using a growth rate above existing volumes of 4% per year over seven years (i.e. between 2013 and 2020), or 28% total, as approved by City staff.

Note: It was assumed that Alohikea and Ala Kahawai Streets were open to vehicular traffic under Future without Project Conditions and all subsequent analysis scenarios; currently, Alohikea is closed south of Haumea Street and Ala Kahawai Street is closed west of Wakea Street. As a result of the assumed opening, Intersection #7 – Alohikea Street / Ala Kahawai Street – is analyzed under all of the "Future" scenarios.

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**.

The Nau / Kamokila and Manawai / Kamokila intersections will continue to operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an overall LOS A with side-street operations of LOS B. The now-open Alohikea / Ala Kahawai intersection will operate at an overall LOS A with side-street operations of LOS A. The Wakea / Ala Kahawai intersection will operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM).

The remaining three analyzed intersections will operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection continues to operate at an overall LOS A in both peak hours but with side-street operations of LOS C (AM) and LOS F (PM). The Wakea / Kamokila intersection operates at LOS E (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection operates at LOS C (AM) and LOS F (PM).

4 FUTURE WITH PROJECT CONDITIONS (YEAR 2020)

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 seven years beyond existing conditions, or the Year 2020, 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 Trip Generation

The proposed project includes 583 condominium units, including 154 senior affordable units (rentals). The balance of the units are condominiums, of which a minimum of 143 units will be affordable. In addition, the project includes over 18,000 square feet of retail space and an approximately 3,385 square-foot child care center. The project will be housed within a single multi-story building with four towers with an open central area built on a one-block wide podium. On-site parking will be included within a parking garage comprising the lower stories of the building, with the apartments on the upper stories. The project will be split into four construction phases, one phase for each tower of residential units.

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, and has been supplemented with trip rates from published in April 2002 by the San Diego Association of Governments (SANDAG) in *San Diego Traffic Generators* where specific rates are not provided in *Trip Generation Manual*. (For example, *Trip Generation Manual* does not include trip rates for retail space during the AM peak hour, in which case rates from *San Diego Traffic Generators* were used instead.)

Note that the trip generation estimate for the non-senior residential uses was derived using trip rates for "High-Rise Apartment." The senior units were derived using trip rates from "Senior Adult Housing – Attached." In addition, the project trip generation includes trip reductions due internal trips between compatible land uses, such as between the residential units and retail space. (See **Appendix D** for the derivation of the internal capture rates used in this analysis.)

As indicated in **Exhibit 6**, the project is estimated to generate 3,136 daily vehicle trips, with 218 trips (76 in, 142 out) during the AM peak hour and 216 trips (122 in, 94 out) during the PM peak hour.

4.3 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 is assumed as follows:

To/From North:	20%
Wakea Street – 20%	
To/From South:	13%
Wakea Street – 10%	
Alohikea Street – 3%	
To/From East:	32%
Kamokila Boulevard – 25%	
Haumea Street – 5%	
Ala Kahawai Street – 2%	
To/From West:	35%
Kamokila Boulevard – 28%	
Haumea Street – 5%	
Ala Kahawai Street – 2%	
TOTAL:	100%

Project access to the site will be via one of two driveways connecting to the internal parking garage. The driveway off of Haumea Street (north side of site) will connect to the resident-only portion of the parking garage, while the driveway off of Alohikea Street (west side of site) will be reserved for customers of the retail space and child care center only. The project trip assignment reflects this split nature of the parking garage.

4.4 Future with Project Traffic Conditions

The traffic that will be generated by the study project was added to the Future without Project volumes to estimate 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**.

The Nau / Kamokila and Manawai / Kamokila intersections will continue to operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an overall LOS A with side-street operations of LOS B (AM) and LOS C

(PM). The Alohikea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS A. The Wakea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM).

The remaining three analyzed intersections will operate at higher average vehicle delays, if not also lower levels of service, under AM, PM or both peak hours. The Alohikea / Kamokila intersection will operate at an overall LOS A (AM) and LOS C (PM) with side-street operations of LOS F during both peak hours. The Wakea / Kamokila intersection will continue to operate at LOS E (AM) and LOS F (PM). Finally, the Wakea / Haumea intersection will continue to operate at LOS C (AM) and LOS F (PM).

5 FUTURE WITH CURRENT ZONING CONDITIONS (YEAR 2020)

This section describes the analysis results of the study intersection operations under Future with Current Zoning traffic conditions. The Future with Current Zoning scenario is defined as traffic conditions roughly seven years beyond existing conditions, or the Year 2020, and includes potential traffic if the project site were to be developed under the current site zoning.

5.1 Derivation of Future with Current Zoning Traffic Volumes

Future with Current Zoning Condition volumes include both the future growth projected under Future Without Project conditions (see Chapter 3 for more information), plus the trips generated by a building on the project site that is allowable under the current site zoning (see below).

5.2 Trip Generation – Current Zoning

The current site zoning by the City and County of Honolulu is "Business Mixed-Use District B-2." The zoning allows for a maximum floor area ratio (FAR) of 3.5; thus, a building with a square footage of 3.5 times its acreage will be the largest building that will be allowed to be constructed on the project site. For the project site, this will be a building of approximately 463,000 square feet.

Although multiple commercial-related uses are allowed on site, the use with one of the greatest trip-generating potential is office space. The assumed building under this "current zoning" scenario is thus a multi-story office building of approximately 463,000 square feet of gross floor area with an internal parking garage. For comparative purposes, it is assumed that access to this parking garage could be made from the same streets as the proposed project, namely Haumea and Alohikea Streets.

Exhibit 9 summarizes the estimated trip generation for the "current zoning." As with the 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 been taken for the likely walking and transit trips by employees and visitors within the building, all of which will reduce the potential overall vehicular trip generation of the project. This includes a 10% overall reduction for walking trips and 5% overall reduction for transit trips.

As cited within **Exhibit 9**, the "current zoning" building is estimated to generate a net 3,579 daily vehicle trips, with 555 trips (488 in, 67 out) during the AM peak hour and 508 trips (86 in, 422 out) during the PM peak hour. As a comparison, the currently proposed project will generate about 12% less daily traffic, 60% less morning peak hour and 57% less evening peak hour traffic than what is expected from the current zoning.

5.3 Trip Distribution and Assignment – Current Zoning

Trip distribution defines the origins and destinations of all trips to and from a site. Trip distribution for the "current zoning" building has been derived based upon the relative

level of existing traffic on the surrounding street network and the location of compatible land uses.
The trip distribution for the "current zoning" building is shown below. Note that it varies from the project trip distribution, due to the differing site land uses.

The "current zoning" building trip distribution will be as follows:

To/From North:	20%
Wakea Street – 20%	
To/From South:	25%
Wakea Street – 20%	
Alohikea Street – 5%	
To/From East:	39%
Kamokila Boulevard – 25%	
Haumea Street – 10%	
Ala Kahawai Street – 4%	
To/From West:	16%
Kamokila Boulevard – 10%	
Haumea Street – 5%	
Ala Kahawai Street – 1%	
TOTAL:	100%

As previously discussed, it is assumed that access to the "current zoning" building will be via one of two driveways connecting to the internal parking garage, located off of Haumea Street (north side of site) and Alohikea Street (west side of site). The project trip assignment reflects use of both driveways.

5.4 Future with Current Zoning Traffic Conditions

The traffic that will be generated by the "current zoning" building was added to the Future without Project volumes to create Future with Current Zoning traffic conditions. Future with Current Zoning 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**. For comparative purposes, **Exhibit 11** also repeats the levels of service under Future with Project conditions.

The Nau / Kamokila and Manawai / Kamokila intersections will operate at LOS B (AM and PM peak hours). The Alohikea / Haumea intersection will continue to operate at an overall LOS A with side-street operations of LOS B (AM) and LOS C (PM). The Alohikea / Ala Kahawai intersection will continue to operate at an overall LOS A with side-street operations of LOS A (AM) and LOS B (PM). The Wakea / Ala Kahawai

intersection will continue to operate at an overall LOS A with side-street operations of LOS C (AM) and LOS D (PM). These are all similar results to the Future with Project scenario.

The remaining three analyzed intersections will operate at lower levels of service under AM, PM or both peak hours. The Alohikea / Kamokila intersection will operate at an overall LOS A (AM) and LOS E (PM) with side-street operations of LOS E (AM) and LOS F (PM). The Wakea / Kamokila intersection will operate at LOS F during both peak hours. Finally, the Wakea / Haumea intersection will operate at LOS D (AM) and LOS F (PM). Overall, these operations are somewhat more severe than under Future with Project conditions.

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 – Intersections

As summarized in the preceding sections of this report, operations of the majority of the study intersections will be at overall LOS A, B, or C with side-street operations of no worse than LOS D. No improvements will be necessary at these intersections. However, three of the study intersections – Alohikea / Kamokila, Wakea / Kamokila and Wakea / Haumea – will operate at lower levels of service under Future with Project conditions. The following paragraphs 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**.

<u>Alohikea Street / Kamokila Boulevard</u>

This intersection will experience side-street operations of LOS F with implementation of the study project. Signalization of this intersection is not recommended because the Manual on Uniform Traffic Control Devices (MUTCD) signal warrants will not be met at this intersection, plus the resulting close spacing between signalized intersections (i.e. 400 feet in each direction of Kamokila Boulevard) may affect vehicle progression. (See **Appendix G** for the signal warrant worksheets at this intersection.) It is instead recommended that a partial median closure be considered at this intersection, either through use of new signs or installation of a raised median, which will restrict both Alohikea Street approaches to right turns out only but will preserve the ability to turn left onto Alohikea from Kamokila. This recommendation will improve side-street operations to LOS A (AM) and LOS B (PM). The project applicant will be responsible for implementation of this improvement.

It should also be noted that gaps in traffic are created along Kamokila Boulevard by the adjacent traffic signals that appear to create some openings. However, observations in November 2013 found that these openings vary in frequency and duration, and do not always occur simultaneously in both directions of traffic. This explains the poor operational results for side-street traffic at this intersection.

Note that implementation of the recommended improvement may encourage drivers to make U-turns at both Wakea Street / Kamokila Boulevard (nearest intersection to the east) and Uluohia Street / Kamokila Boulevard (nearest intersection to the west). U-turns are currently banned at both intersections. Therefore, it is also recommended that the existing U-turn prohibitions along eastbound and westbound Kamokila Boulevard at these two intersections be removed, allowing U-turns to occur at these locations.

Wakea Street / Kamokila Boulevard

This intersection will experience overall operations of LOS E (AM) and LOS F (PM) with implementation of the study project. Some of the traffic congestion projected to occur at this intersection is due to the existing signal timing at the intersection, which does not provide sufficient green time to allow through traffic demand on all approaches to pass through the intersection before transitioning to another signal phase. For example, an increase of just ten seconds of additional green time will be sufficient to improve the traffic throughput along Wakea Street at this intersection. It is therefore recommended that the existing traffic signal timing information at this intersection be optimized to provide sufficient green time for all traffic movements into the future. This recommendation will improve operations to LOS D (AM) and LOS E (PM). The project applicant will be responsible for this improvement, with the City and County of Honolulu being directly responsible for its field implementation.

Wakea Street / Haumea Street

This intersection will experience overall operations of LOS C (AM) and LOS F (PM) with implementation of the project. 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;
- Modify Wakea Street median to add a new northbound Wakea Street left turn lane; and
- Restripe eastbound and westbound Haumea Street to add exclusive eastbound and westbound left turn lanes.

These recommendations will improve operations to LOS C. The project applicant will be responsible for these improvements.

Note that implementation of the eastbound and westbound left turn lanes on Haumea Street may require prohibition of on-street parking near the intersection in order to accommodate the additional lanes. The extent of this prohibition will need to be determined as part of the design of said lanes.

6.2 Potential Project Impacts and Recommended Improvements – Pedestrian and Bicycle Facilities

Neither Alohikea nor Ala Kahawai Streets currently have sidewalks on the project site of the street. This will create an impediment for pedestrians to access the project site. It is recommended that sidewalks be added along the entire project frontage of both streets, in order to facilitate expected pedestrian activity generated by the project. Implementation of this improvement will be the responsibility of the project applicant.

The level of bicycle activity generated by the project will not be sufficient enough to necessitate any new bicycle lanes, paths or routes in the project vicinity.

6.3 Potential Project Impacts and Recommended Improvements – Transit

The eight transit routes nearest the project site – Routes C, 40, 41, 411, 412, 413, 414 and 415 – provide regular transit service to the area throughout most of the day on weekdays and weekends. The transit demand added by project residents and visitors will not rise to the level that will require any increase in transit service to the area or any additional transit infrastructure. However, the project access off of Haumea Street will be located where an existing bus stop is currently located. It is therefore recommended that this bus stop be relocated; the exact location of this relocation will need to be negotiated with the City and County of Honolulu. The project applicant will be responsible for this improvement.

6.4 Potential Project Impacts and Recommended Improvements – Project Access

Vehicular access to the project site will be via two new driveways, one off of Haumea Street and one off of Alohikea Street. **Exhibit 8** depicts the projected project traffic at the project driveways during the AM and PM peak hours. As the level of through traffic on both Haumea and Alohikea Streets is relatively low, operations of the project driveways are expected to be acceptable.

The design of the project driveways should ensure that there is adequate sight distance for cross traffic (including vehicles, pedestrians and bicyclists) on both Haumea and Alohikea Streets. Assurance of this situation will be the responsibility of the project applicant.

6.5 Potential Project Impacts and Recommended Improvements – Freeway Interchanges

As previously described within Section 2.1, there are three interchanges along Interstate H1 in the vicinity of the project site – 1) Makakilo Drive (Route 901) (Exit #2); 2) Wakea Street (Exit #1B); and 3) Kalaeloa Parkway (Route 95) (Exit #1/1A/1E). **Exhibit 13** depicts the locations of these interchanges with respect to the project site.

Exit #2 only provides on-ramps to eastbound Interstate H1 and an off-ramp from westbound Interstate H1. It thus provides the most direct access from the east (i.e. central Oahu) as well as the second-most direct access to the east. As much as 20% of the project trips would to utilize this interchange, including Makakilo Drive between the interchange and Farrington Highway. According to the Hawaii Department of Transportation's Highway Planning Survey Section web site, this section of Makakilo Drive served 48,900 vehicles per day in 2009 along a seven-lane arterial roadway (three lanes southbound and four lanes northbound). Within the peak morning and evening periods of the study area, i.e. 7:00 – 8:00 AM and 3:30 – 4:30 PM, Makakilo Drive serves 5,812 vehicles/hour (AM) and 5,639 vehicles/hour (PM). The study project would only add 43 AM and 44 PM trips through the Makakilo Drive (Exit #2) interchange, which would constitute less than 1% of the total existing traffic, minimizing its effects upon the interchange operations. Therefore, the study project would not impact operations of the Makakilo Drive (Exit #2) interchange.

The Wakea Street (Exit #1B) interchange is also only a partial interchange, with a directional off-ramp from eastbound Interstate H1 and an on-ramp to eastbound Interstate H1. Therefore, this interchange provides the most direct access to the east (i.e. central Oahu) and from the west (i.e. Oahu's western shoreline). The directional nature of the ramps means that the project traffic would not need to stop prior to exiting or entering these ramps; hence the nearest intersection of note traversed by project traffic is the Wakea Street / Kamokila Boulevard intersection (study intersection #2 in this analysis). See Section 6.1 for more information about project impacts at this location.

The other interchange – Kalaeloa Parkway (Route 95) (Exit #1/1A/1E) – is located to the west of the study area. Due to the close proximity of the eastbound Interstate H1 off-ramp at Wakea Street (Exit #1B) to the project site, it is unlikely that any project traffic coming from the west or northwest would use the Kalaeloa Parkway (Route 95) interchange to access the site. Project traffic en route to the west or northwest would use Wakea Street en route to Farrington Highway to access the Kalaeloa Parkway (Route 95) on-ramp to westbound Interstate H1/Route 93. This particular on-ramp served 7,600 vehicles/day in 2009, with peak hour volumes of 621 vehicles/hour (AM) and 1,078 vehicles/hour (PM). The project would add only 7 AM and 5 PM peak hour trips to this ramp, representing approximately 1% of the total ramp traffic, minimizing its effects on the ramp operations. Therefore, the study project would not impact operations of the Kalaeloa Parkway (Route 95) (Exit #1/1A/1E) interchange.

7 REFERENCES

7.1 List of References

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2. Institute of Transportation Engineers, *Trip Generation Manual*, 9th Edition, 2012.
3. San Diego Association of Governments, *San Diego Traffic Generators*, April 2002.
4. Institute of Transportation Engineers, *Trip Generation Handbook*, 2nd Edition, June 2004.
5. United States Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2009 Edition, December 2009.
6. Hawaii Department of Transportation, Highway Planning Survey Section web site, http://hwypgis.dot.hawaii.gov/infostructure/index.htm. Accessed January 29, 2014.

7.2 List of Contacts

1. Dennis Silva, Jr., AICP, Hawaii Planning LLC, Honolulu, Hawaii.
2. Lisa Imata, Hawaii Planning LLC, Honolulu, Hawaii.
3. Zen Sawyer, Zen Sawyer Consulting, LLC, Fairfax, California.
4. Franco Mola, Coastal Rim Properties, Honolulu, Hawaii.
5. Lance Watanabe, City and County of Honolulu Department of Planning and Permitting, Honolulu, Hawaii.
6. Warren Yamamoto, City and County of Honolulu Department of Transportation Services, Honolulu, Hawaii.
7. Goro Sulijoadikusumo, Hawaii Department of Transportation, Honolulu, Hawaii.

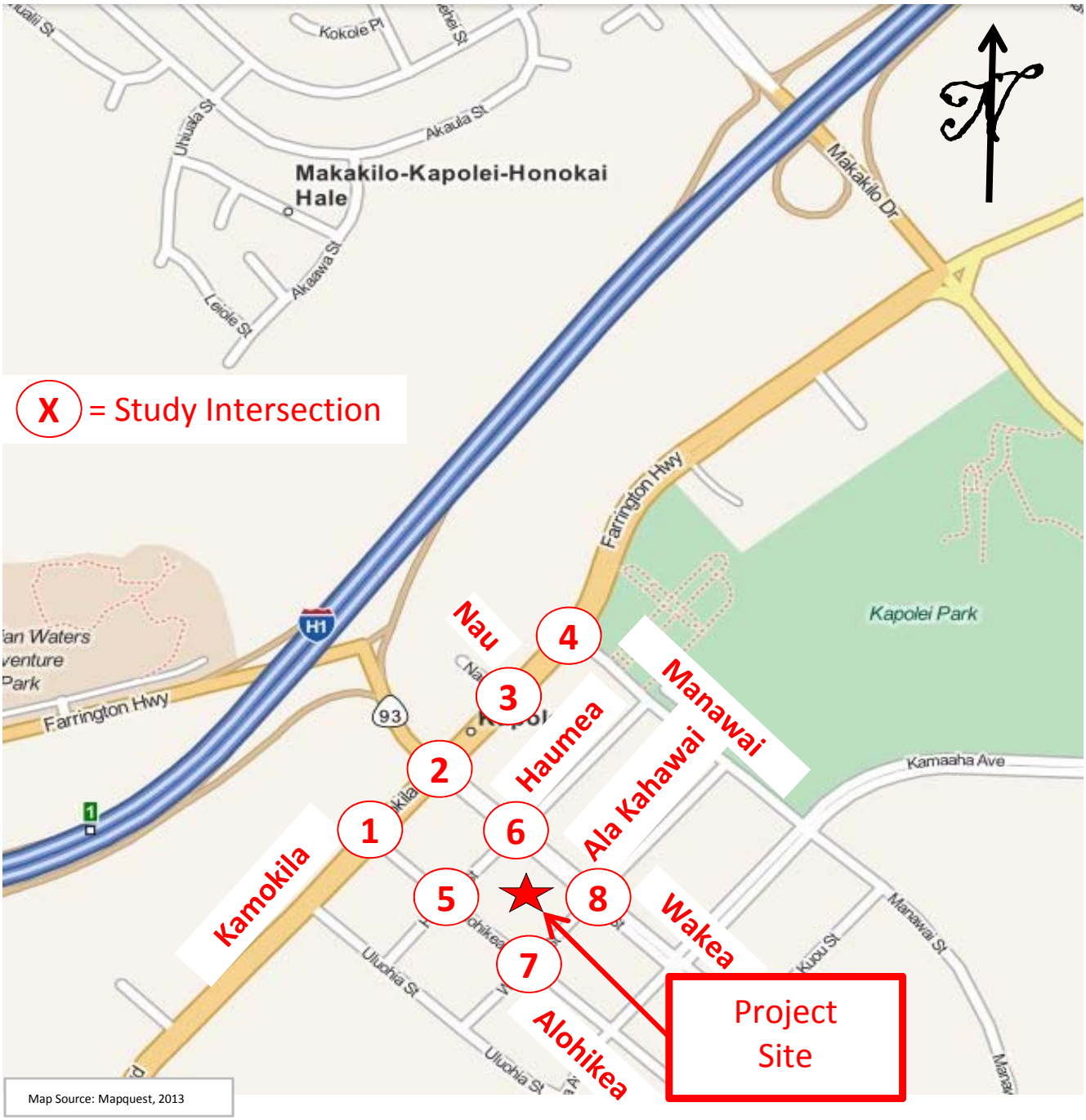

EXHIBIT 1
Project Location Map

Hatch Mott MacDonald 332497 Location Map.xls - Kapolei Map

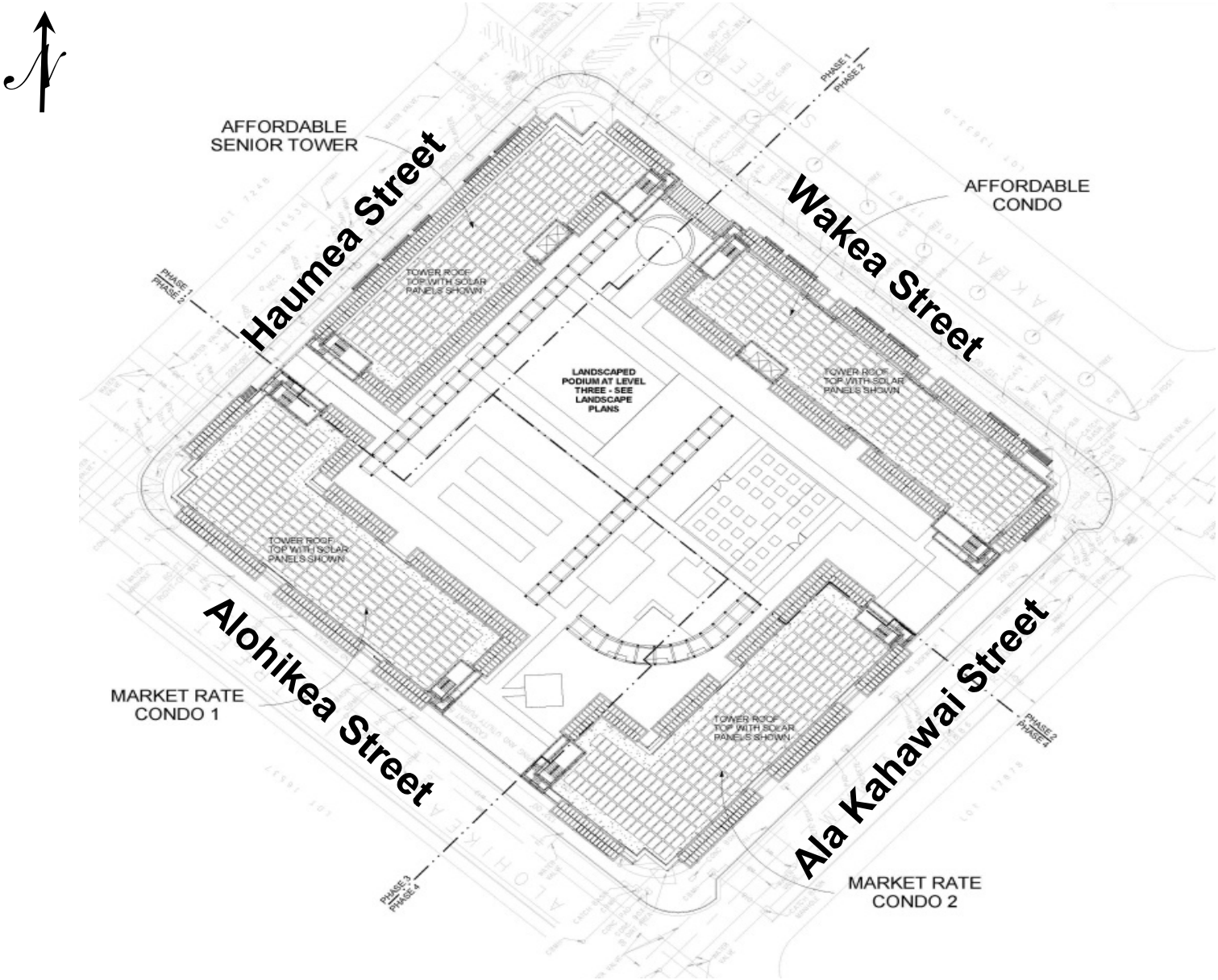

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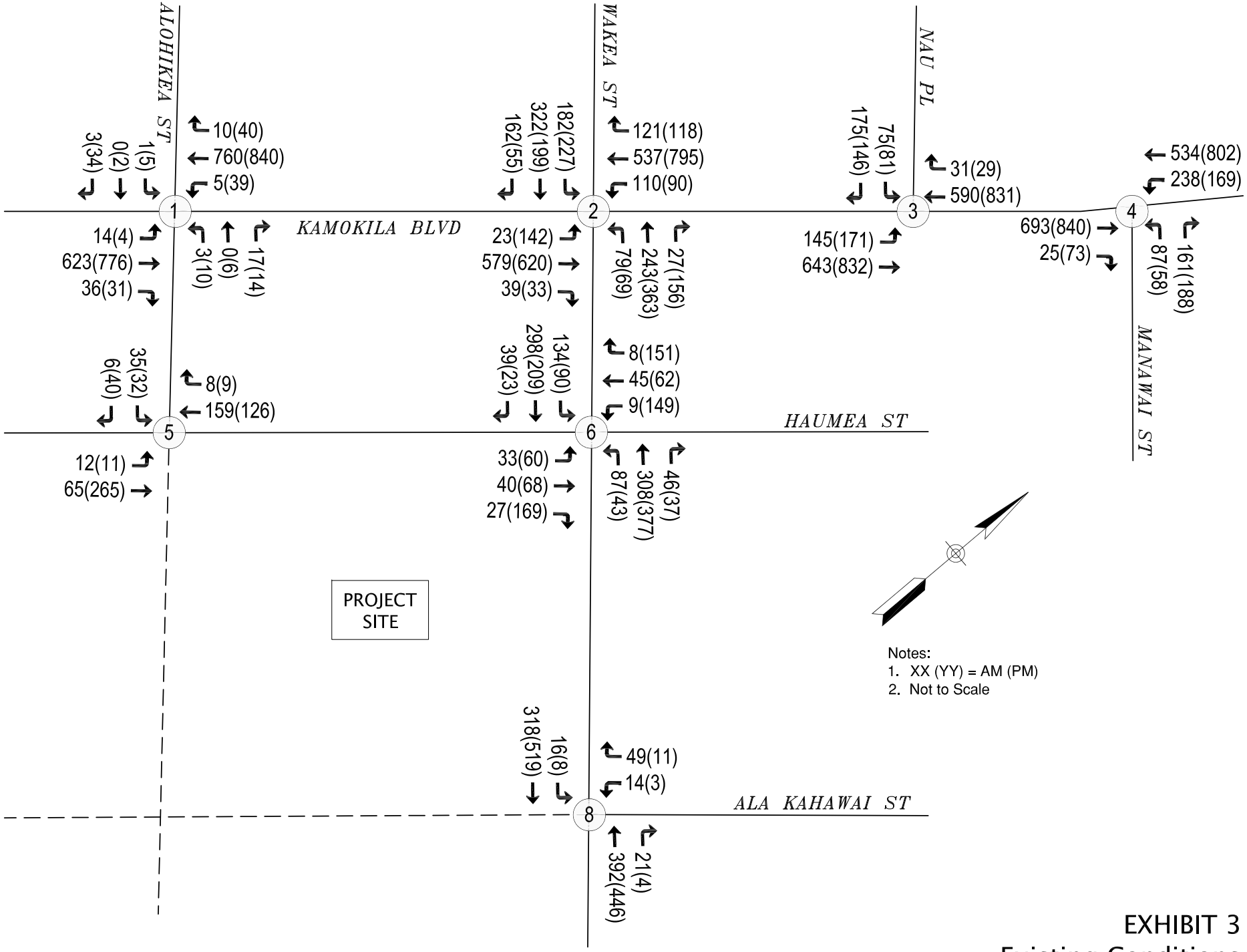
EXHIBIT 2

Project Site Plan



Hatch Mott MacDonald

EXHIBIT 3
Existing Conditions
AM & PM Peak Hour Volumes

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	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Existing Conditions				Future without Project Conditions				Future with Project Conditions			
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EXHIBIT 4
Intersection Levels of Service

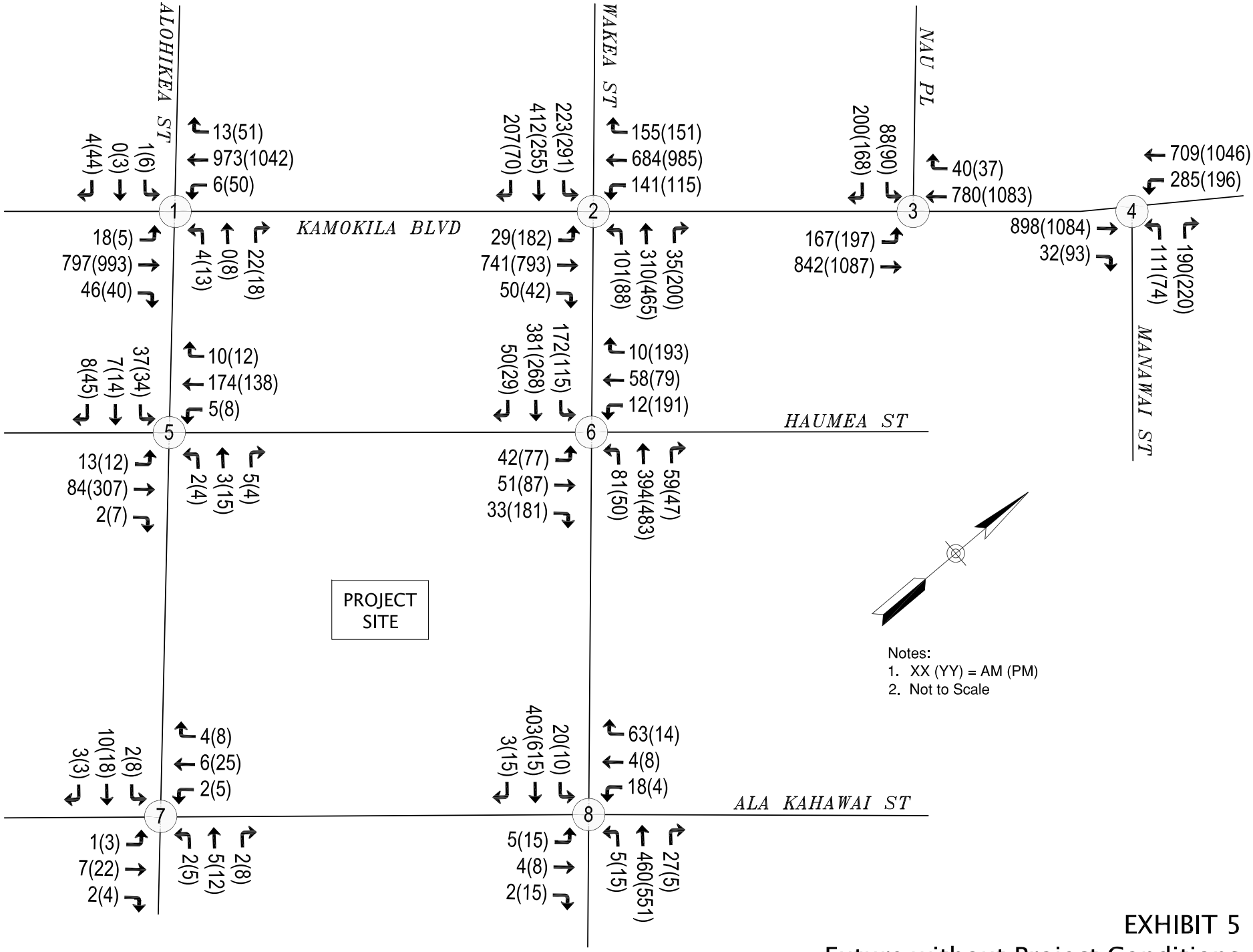

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EXHIBIT 5
Future without Project Conditions
AM & PM Peak Hour Volumes

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Subtotal (Proposed Uses):		**3,484**	**226**		**80**	**146**	**282**		**155**	**127**
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Total Net Project Trip Generation:		**3,136**	**218**		**76**	**142**	**216**		**122**	**94**

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EXHIBIT 6

Project

Trip Generation

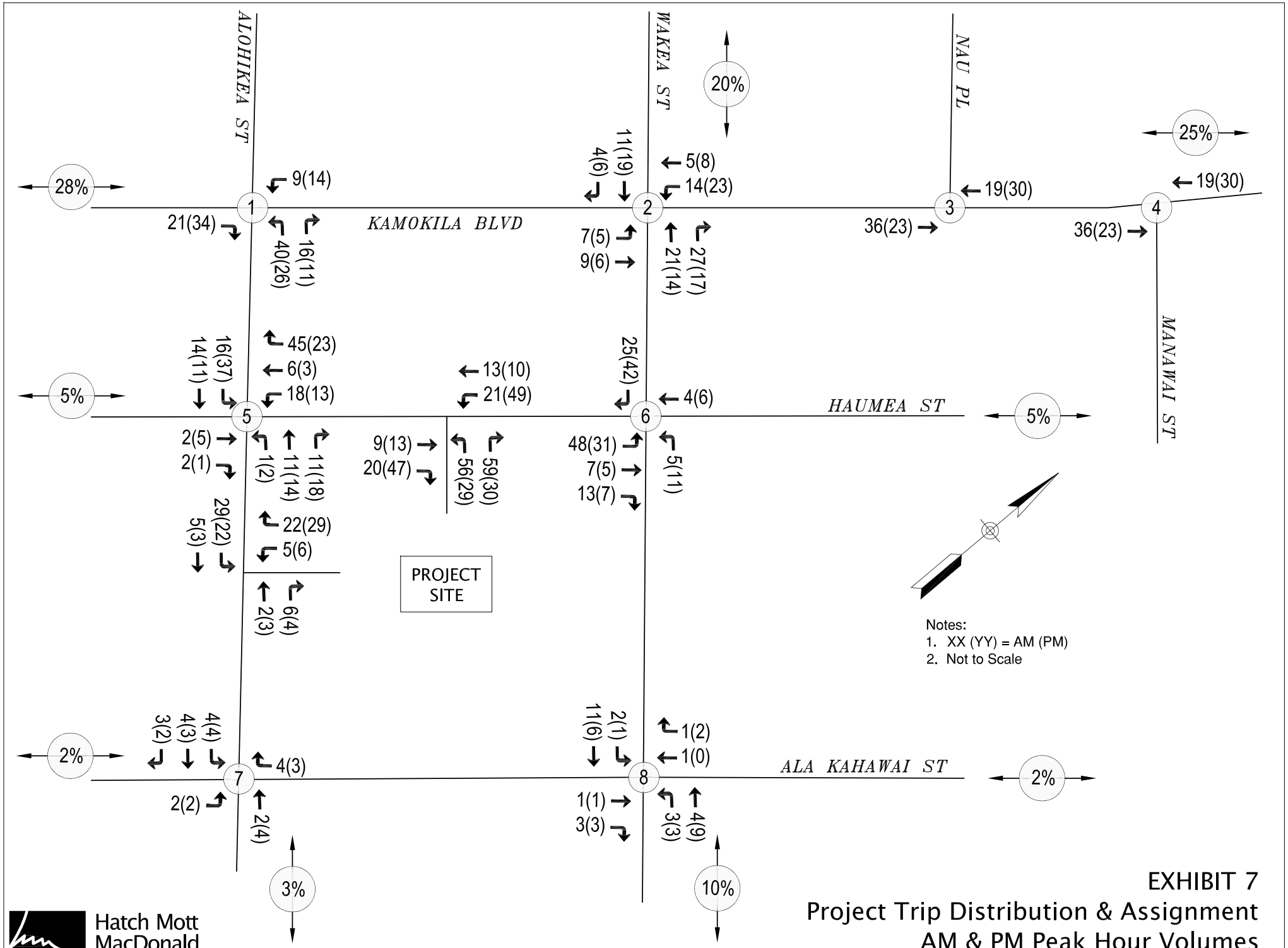

EXHIBIT 7
Project Trip Distribution & Assignment
AM & PM Peak Hour Volumes

Hatch Mott MacDonald

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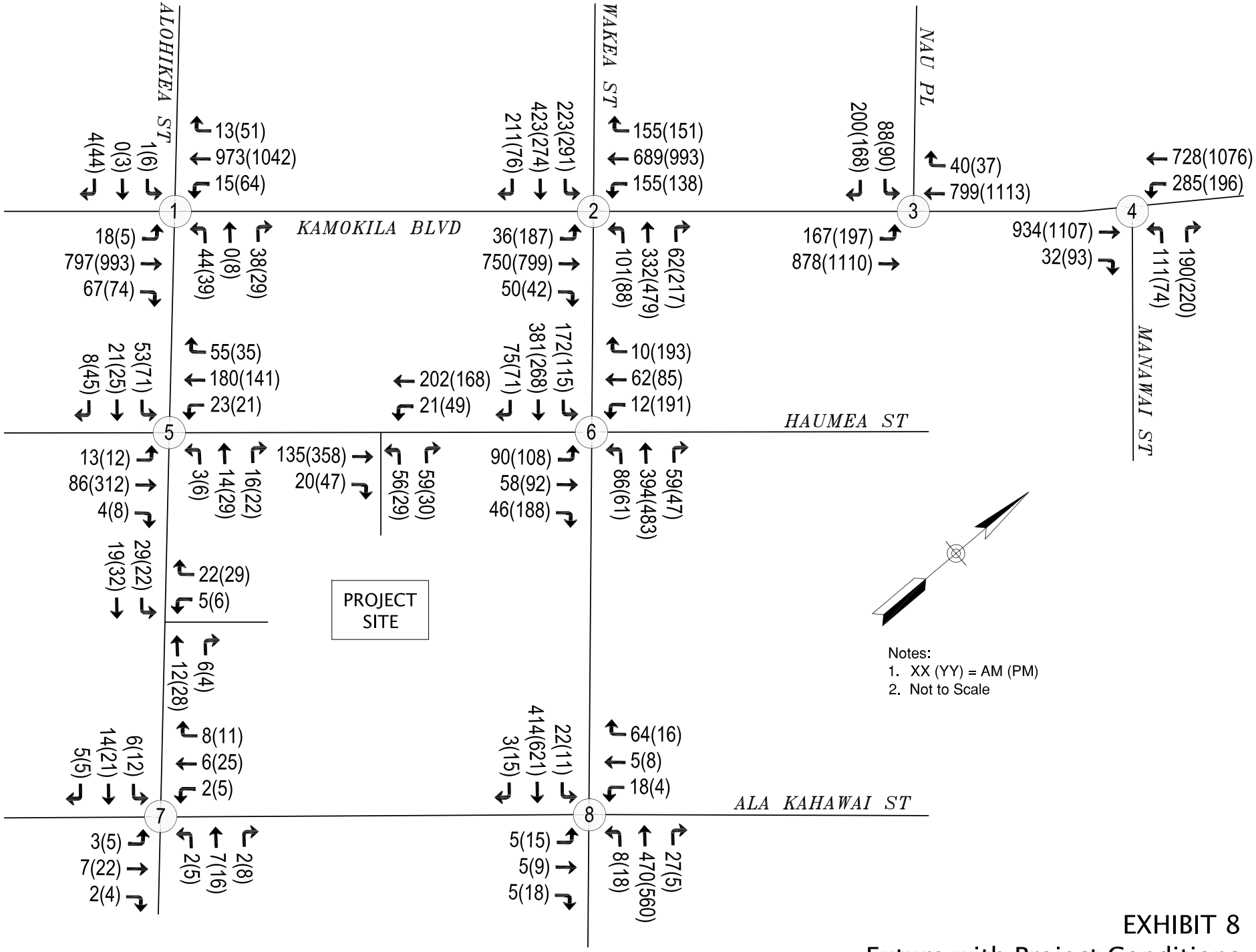

Notes:
1. XX (YY) = AM (PM)
2. Not to Scale

Hatch Mott MacDonald

EXHIBIT 8
Future with Project Conditions
AM & PM Peak Hour Volumes

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Subtotal (Proposed Uses):		**4,211**	**653**		**575**	**78**	**598**		**102**	**496**
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Total Net Project Trip Generation:		**3,579**	**555**		**488**	**67**	**508**		**86**	**422**

Note□:

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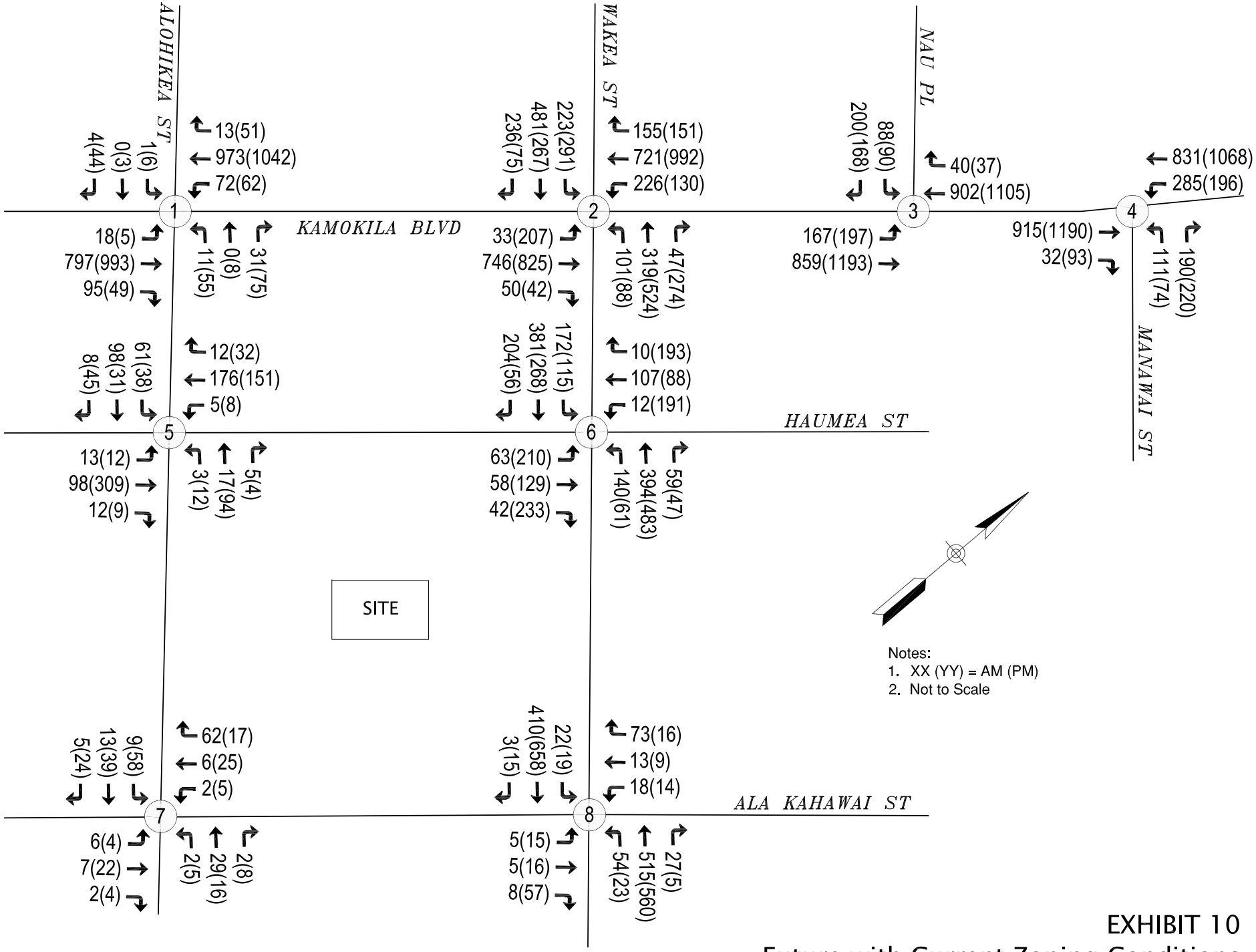
EXHIBIT 9

Site Trip Generation - Current Zoning



Notes:
1. XX (YY) = AM (PM)
2. Not to Scale

Hatch Mott MacDonald

EXHIBIT 10
Future with Current Zoning Conditions
AM & PM Peak Hour Volumes

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□	□lo□□ea □treet	Haumea □treet	□□ 1□□□□1□□□ □□ 1□□□□ □ □ 1□□□1□□□	□ne□□ a□ □to□ □□ide □treet□	□□6 1□□□	□ □	□□□ 1□□□	□ C	□□□ 1□□1	□ □	□□□ 1□□□	□ C
6	□ a□ea □treet	Haumea □treet	N□ 1□□□□1□□□1□□□□ □□ 1□□□□1□□□1□□□□ □□ 1□□□□□1□□□ □ □ 1□□□□□1□□□	□ll□□ a□ □to□	1□□□	C	6□□□	F	□□□□	D	□□□□	F
□	□lo□□ea □treet	□la □a□awai □treet	N□□□	N□□□	□□□ □□1	□ □	□□□ □□□□	□ □	□□□ □□□□	□ □	□□□ 1□□□	□ □
□	□ a□ea □treet	□la □a□awai □treet	N□ 1□□□1□□□□□ □□ 1□□□□□1□□□ □ □ 1□□□□□	□ne□□ a□ □to□ □□ide □treet□	1□□□ 1□□□	□ C	1□□□ □□□□□	□ D	□□□□ □□□□□	□ C	□□□□ □□□□□	□ D

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□□ □nal□□i□ □erformed u□ing □□1□Hig□wa□Ca□acit□Manual met□odologie□□
□□ □nal□□ed lane configuration□reflect actual o□□er□ed o□eration□□ □lt□oug□t□i□a□□roac□i□□tri□ed a□a □ingle lane□rig□t turning □e□icle□
were o□□er□ed turning concurrentl□wit□ad□acent t□roug□and left□turning □e□icle□□
□□ N□□ □Not □□□lical□e □□inter□ection doe□not e□i□t under t□i□□cenario□
turning concurrentl□wit□ad□acent t□roug□and left□turning □e□icle□□
6□ □□ Dela□i□o□er □□□ □econd□□□minute□□

EXHIBIT 11
Intersection Levels of Service Comparison - Proposed Project vs. Current Zoning

Hatch Mott MacDonald

Category	Potential Impact	Recommendation	Responsibility
□nter□ection □raffic □ □eration□	□lo□i□ea□□amo□ila □□ide□□treet will o□erate at □□ □ F□	1□□n□tall □artial median clo□ure□ □□□emo□e e□i□ting □□turn re□triction□at ad□acent inter□ection□	□ro□ect □□□licant
	□ a□ea□□amo□ila □will o□erate at □□ □ □F□	□□timi□e e□i□ting □ignal timing	□ro□ect □□□licant□ wit□ a□□i□tance from Cit□and Count□of Honolulu
	□ a□ea□Haumea □will o□erate at □□ □ F and warrant □ignali□ation□	1□□ignali□e inter□ection□ □□□dd new nort□□ound left turn lane □ia median modification□ □□□dd new ea□t□ound and we□t□ound left turn lane□ □ia □a□ement re□tri□ing	□ro□ect □□□licant
□ede□trian Circulation	Di□continuou□ □idewal□□ □ordering □ro□ect	□dd □idewal□□along □ro□ect frontage of □lo□i□ea and □la □a□awai □treet□	□ro□ect □□□licant
□ic□cle Circulation	None	None	None
□ran□it □□age	□ro□ect acce□□ □ro□o□ed at e□i□ting □u□□to□	□elocate e□i□ting □u□□to□	□ro□ect □□□licant
□ro□ect □cce□□	□ig□t Di□tance at □ro□ect □cce□□	□n□ure ade□uate □ig□t di□tance i□ □ro□ided at □ro□ect acce□□ □oint□	□ro□ect □□□licant
Freewa□□nterc□ange□	None	None	None

EXHIBIT 12
Summary of Recommended Improvements

Map Source: Mapquest, 2014

EXHIBIT 13
Freeway Interchanges in Project Vicinity

Appendix A

Level of Service Descriptions:

A1. Signalized Intersections

A2. Unsignalized Intersections with All-Way Stop Control

A3. 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 ALL-WAY STOP CONTROL (AWSC)

AWSC intersections require every vehicle to stop at the intersection before proceeding. Since each driver must stop, the judgement as to whether to proceed into the intersection is a function of traffic conditions on the other approaches. While giving priority to the driver on the right is a recognized rule in some areas, it is not a good descriptor of actual intersection operations. What happens is the development of a consensus of right-of-way that alternates between the drivers on the intersection approaches, a consensus that depends primarily on the intersection geometry and the arrival patterns at the stop line.

If no traffic is present on the other approaches, a driver can proceed immediately after the stop is made. If there is traffic on one or more of the other approaches, a driver proceeds only after determining that there are no vehicles currently in the intersection and that it is the driver's turn to proceed. Since no traffic signal controls the stream movement or allocates the right-of-way to each conflicting stream, the rate of departure is controlled by the interaction between the traffic streams themselves.

For AWSC intersections, the average control delay (in seconds per vehicle) is used as the primary measure of performance. Control delay is the increased time of travel for a vehicle approaching and passing through an AWSC intersection, compared with a free-flow vehicle if it were not required to slow down or stop at the intersection.

The criteria for AWSC intersections have different threshold values than do those for signalized intersections, primarily because drivers expect different levels of performance from different kinds of traffic control devices (i.e traffic signals, two way stop or all way stop, etc.). The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection and a higher level of control delay is acceptable at a signalized intersection for the same LOS.

For AWSC analysis using the HCM 2010 method, the LOS shown reflects the weighted average of the delay on each of the approaches.

LEVEL OF SERVICE (LOS) CRITERIA FOR AWSC 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 A3

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

Intersection	
Intersection Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	623	36	5	760	10	3	0	17	1	0	3
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	708	41	6	864	11	3	0	19	1	0	3
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	875	0	0	749	0	0	1203	1646	379	1267	1662	443
Stage 1	-	-	-	-	-	-	760	760	-	881	881	-
Stage 2	-	-	-	-	-	-	443	886	-	386	781	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	767	-	-	856	-	-	140	98	619	126	96	562
Stage 1	-	-	-	-	-	-	364	413	-	308	363	-
Stage 2	-	-	-	-	-	-	564	361	-	609	403	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	764	-	-	852	-	-	136	95	616	119	93	560
Mov Capacity-2 Maneuver	-	-	-	-	-	-	136	95	-	119	93	-
Stage 1	-	-	-	-	-	-	356	404	-	302	360	-
Stage 2	-	-	-	-	-	-	554	358	-	575	395	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	14.3	17.6
HCM LOS	-	-	B	C

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	277	616	764	-	-	852	-	-	196	560
HCM Control Delay, s	18.5	11	9.812	-	-	9.254	-	-	23.6	11.5
HCM Lane V/C Ratio	0.04	0.02	0.02	-	-	0.01	-	-	0.01	0.00
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th-tile Q, veh	0.1	0.1	0.1	-	-	0.0	-	-	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)	23	579	39	110	537	121	79	243	27	182	322	162
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		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	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	43	1041	70	102	985	221	85	1205	131	165	857	424
Arrive On Green	0.02	0.31	0.31	0.06	0.34	0.34	0.05	0.37	0.37	0.05	0.37	0.37
Sat Flow, veh/h	1774	3365	226	1774	2874	644	1774	3221	349	3442	2290	1132
Grp Volume(v), veh/h	24	320	330	116	347	345	83	140	144	192	260	250
Grp Sat Flow(s),veh/h/ln	1774	1770	1822	1774	1770	1748	1774	1770	1800	1721	1770	1652
Q Serve(g_s), s	1.4	15.9	15.9	6.0	16.7	16.8	4.9	5.6	5.7	5.0	11.3	11.6
Cycle Q Clear(g_c), s	1.4	15.9	15.9	6.0	16.7	16.8	4.9	5.6	5.7	5.0	11.3	11.6
Prop In Lane	1.00		0.12	1.00		0.37	1.00		0.19	1.00		0.69
Lane Grp Cap(c), veh/h	43	547	564	102	607	599	85	662	674	165	662	618
V/C Ratio(X)	0.56	0.58	0.59	1.14	0.57	0.58	0.98	0.21	0.21	1.16	0.39	0.40
Avail Cap(c_a), veh/h	85	645	664	102	662	654	85	662	674	165	662	618
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	30.3	30.4	49.1	28.0	28.0	49.6	22.2	22.2	49.6	23.9	24.1
Incr Delay (d2), s/veh	11.1	2.1	2.1	130.4	1.9	2.0	89.1	0.7	0.7	120.7	1.8	2.0
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	7.3	7.6	6.4	7.8	7.7	4.3	2.6	2.7	5.0	5.3	5.1
Lane Grp Delay (d), s/veh	61.5	32.5	32.4	179.5	29.9	30.0	138.7	22.9	22.9	170.3	25.7	26.0
Lane Grp LOS	E	C	C	F	C	C	F	C	C	F	C	C
Approach Vol, veh/h		674			808			367			702	
Approach Delay, s/veh		33.5			51.4			49.1			65.4	
Approach LOS		C			D			D			E	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.5	38.3		11.0	41.7		10.0	45.0		10.0	45.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		6.0	39.0		5.0	39.0		5.0	39.0	
Max Q Clear Time (g_c+I1), s	3.4	17.9		8.0	18.8		6.9	7.7		7.0	13.6	
Green Ext Time (p_c), s	0.0	13.8		0.0	13.8		0.0	5.5		0.0	5.2	

Intersection Summary	
HCM 2010 Ctrl Delay	50.2
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	145	643	590	31	75	175
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	224	2502	1792	95	301	269
Arrive On Green	0.13	0.71	1.00	1.00	0.17	0.17
Sat Flow, veh/h	1774	3632	3509	181	1774	1583
Grp Volume(v), veh/h	186	824	392	404	96	224
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1827	1774	1583
Q Serve(g_s), s	9.1	7.9	0.0	0.0	4.2	12.2
Cycle Q Clear(g_c), s	9.1	7.9	0.0	0.0	4.2	12.2
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	224	2502	928	959	301	269
V/C Ratio(X)	0.83	0.33	0.42	0.42	0.32	0.83
Avail Cap(c_a), veh/h	557	2502	928	959	637	568
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.56	0.56	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	38.0	5.0	0.0	0.0	32.5	35.8
Incr Delay (d2), s/veh	1.8	0.2	1.4	1.3	0.6	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.2	3.0	0.4	0.4	1.9	0.5
Lane Grp Delay (d), s/veh	39.8	5.2	1.4	1.3	33.1	42.4
Lane Grp LOS	D	A	A	A	C	D
Approach Vol, veh/h		1010	796		320	
Approach Delay, s/veh		11.6	1.4		39.6	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	16.2	69.0	52.8
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	28.0	63.0	34.0
Max Q Clear Time (g_c+I1), s	11.1	9.9	2.0
Green Ext Time (p_c), s	0.2	32.9	23.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	693	25	238	534	87	161
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1683	60	300	2536	253	226
Arrive On Green	0.97	0.97	0.17	0.72	0.14	0.14
Sat Flow, veh/h	3576	125	1774	3632	1774	1583
Grp Volume(v), veh/h	383	397	259	580	95	175
Grp Sat Flow(s),veh/h/ln	1770	1838	1774	1770	1774	1583
Q Serve(g_s), s	1.0	1.0	11.1	4.3	3.8	8.3
Cycle Q Clear(g_c), s	1.0	1.0	11.1	4.3	3.8	8.3
Prop In Lane		0.07	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	855	888	300	2536	253	226
V/C Ratio(X)	0.45	0.45	0.86	0.23	0.38	0.77
Avail Cap(c_a), veh/h	855	888	409	2536	908	810
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.96	0.96	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.7	0.7	31.6	3.8	30.3	32.3
Incr Delay (d2), s/veh	1.6	1.6	10.5	0.2	0.9	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.6	5.7	1.6	1.7	3.6
Lane Grp Delay (d), s/veh	2.3	2.3	42.1	4.0	31.3	37.9
Lane Grp LOS	A	A	D	A	C	D
Approach Vol, veh/h	780			839	270	
Approach Delay, s/veh	2.3			15.7	35.6	
Approach LOS	A			B	D	

Timer			
Assigned Phs	4	3	8
Phs Duration (G+Y+Rc), s	43.8	18.2	62.0
Change Period (Y+Rc), s	6.0	5.0	6.0
Max Green Setting (Gmax), s	36.0	18.0	56.0
Max Q Clear Time (g_c+I1), s	3.0	13.1	6.3
Green Ext Time (p_c), s	20.1	0.2	25.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	65	0	0	159	8	0	0	0	35	0	6
Conflicting Peds, #/hr	84	0	0	0	0	84	7	0	4	4	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	68	0	0	166	8	0	0	0	36	0	6
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	173	0	0	75	0	0	273	273	159	273	273	257
Stage 1	-	-	-	-	-	-	100	100	-	173	173	-
Stage 2	-	-	-	-	-	-	173	173	-	100	100	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1404	-	-	1524	-	-	679	634	886	679	634	782
Stage 1	-	-	-	-	-	-	906	812	-	829	756	-
Stage 2	-	-	-	-	-	-	829	756	-	906	812	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1306	-	-	1417	-	-	618	620	819	623	620	723
Mov Capacity-2 Maneuver	-	-	-	-	-	-	618	620	-	623	620	-
Stage 1	-	-	-	-	-	-	892	799	-	816	752	-
Stage 2	-	-	-	-	-	-	764	752	-	834	799	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0	0	11
HCM LOS	-	-	A	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	0	0	1306	-	-	1417	-	-	628	723
HCM Control Delay, s	0	0	7.783	0	-	0	-	-	11.1	10
HCM Lane V/C Ratio	-	-	0.01	-	-	-	-	-	0.06	0.01
HCM Lane LOS	A	A	A	A	-	A	-	-	B	B
HCM 95th-tile Q, veh	-	-	0.0	-	-	0.0	-	-	0.2	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	40	27	9	45	8	87	308	46	134	298	39
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	35	43	29	10	48	9	94	331	49	144	320	42
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	11.6	11.5	14.2	12.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	36%	0%	45%	0%	17%	0%	100%	0%	0%
Vol Thru, %	64%	77%	55%	0%	83%	0%	0%	100%	72%
Vol Right, %	0%	23%	0%	100%	0%	100%	0%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	241	200	73	27	54	8	134	199	138
LT Vol	154	154	40	0	45	0	0	199	99
Through Vol	0	46	0	27	0	8	0	0	39
RT Vol	87	0	33	0	9	0	134	0	0
Lane Flow Rate	259	215	78	29	58	9	144	214	149
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.475	0.374	0.17	0.055	0.125	0.017	0.276	0.379	0.256
Departure Headway (Hd)	6.602	6.257	7.775	6.835	7.77	6.973	6.901	6.395	6.196
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	572	459	520	459	509	519	560	577
Service Time	4.368	4.023	5.565	4.624	5.566	4.769	4.667	4.161	3.962
HCM Lane V/C Ratio	0.476	0.376	0.17	0.056	0.126	0.018	0.277	0.382	0.258
HCM Control Delay	15.3	12.8	12.2	10	11.7	9.9	12.3	13.1	11.1
HCM Lane LOS	C	B	B	A	B	A	B	B	B
HCM 95th-tile Q	2.5	1.7	0.6	0.2	0.4	0.1	1.1	1.8	1

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	14	0	49	0	392	21	16	318	0
Conflicting Peds, #/hr	2	0	0	0	0	2	8	0	6	6	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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	0	0	0	15	0	53	0	426	23	17	346	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	597	833	183	650	822	234	348	0	0	451	0	0
Stage 1	382	382	-	440	440	-	-	-	-	-	-	-
Stage 2	215	451	-	210	382	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	387	303	828	354	307	768	1208	-	-	1106	-	-
Stage 1	612	611	-	566	576	-	-	-	-	-	-	-
Stage 2	767	569	-	773	611	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	352	296	821	346	300	762	1200	-	-	1099	-	-
Mov Capacity-2 Maneuver	352	296	-	346	300	-	-	-	-	-	-	-
Stage 1	611	598	-	565	575	-	-	-	-	-	-	-
Stage 2	709	568	-	753	598	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.8	0	0.5
HCM LOS	A	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1200	-	-	0	601	1099	-	-
HCM Control Delay, s	0	-	-	0	11.8	8.328	0.1	-
HCM Lane V/C Ratio	-	-	-	-	0.11	0.02	-	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	-	0.4	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	776	31	39	840	40	10	6	14	5	2	34
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	935	37	47	1012	48	12	7	17	6	2	41
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1060	0	0	972	0	0	1564	2117	487	1611	2112	531
Stage 1	-	-	-	-	-	-	963	963	-	1130	1130	-
Stage 2	-	-	-	-	-	-	601	1154	-	481	982	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	653	-	-	705	-	-	75	50	526	70	50	493
Stage 1	-	-	-	-	-	-	274	332	-	217	277	-
Stage 2	-	-	-	-	-	-	454	270	-	535	325	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	652	-	-	704	-	-	62	46	526	56	46	493
Mov Capacity-2 Maneuver	-	-	-	-	-	-	62	46	-	56	46	-
Stage 1	-	-	-	-	-	-	272	329	-	215	259	-
Stage 2	-	-	-	-	-	-	385	252	-	502	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	61.7	26
HCM LOS	-	-	F	D

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	69	526	652	-	-	704	-	-	118	493
HCM Control Delay, s	84.1	12	10.563	-	-	10.479	-	-	42.4	12.7
HCM Lane V/C Ratio	0.36	0.02	0.01	-	-	0.07	-	-	0.19	0.06
HCM Lane LOS	F	B	B	-	-	B	-	-	E	B
HCM 95th-tile Q, veh	1.4	0.1	0.0	-	-	0.2	-	-	0.7	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)	142	620	33	90	795	118	69	363	156	227	199	55
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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	81	1164	62	81	1053	156	81	887	377	158	1008	273
Arrive On Green	0.05	0.34	0.34	0.05	0.34	0.34	0.05	0.37	0.37	0.05	0.37	0.37
Sat Flow, veh/h	1774	3417	182	1774	3092	458	1774	2421	1029	3442	2753	747
Grp Volume(v), veh/h	154	349	361	98	494	498	75	287	278	247	137	139
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1780	1774	1770	1680	1721	1770	1730
Q Serve(g_s), s	5.0	17.7	17.7	5.0	27.9	27.9	4.6	13.4	13.7	5.0	5.8	6.0
Cycle Q Clear(g_c), s	5.0	17.7	17.7	5.0	27.9	27.9	4.6	13.4	13.7	5.0	5.8	6.0
Prop In Lane	1.00		0.10	1.00		0.26	1.00		0.61	1.00		0.43
Lane Grp Cap(c), veh/h	81	603	623	81	603	607	81	648	615	158	648	634
V/C Ratio(X)	1.90	0.58	0.58	1.21	0.82	0.82	0.92	0.44	0.45	1.57	0.21	0.22
Avail Cap(c_a), veh/h	81	616	637	81	616	620	81	648	615	158	648	634
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	29.6	29.6	52.1	32.9	32.9	51.9	26.2	26.3	52.1	23.8	23.8
Incr Delay (d2), s/veh	445.6	2.2	2.1	165.6	9.6	9.5	74.4	2.2	2.4	283.7	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	12.3	8.1	8.4	6.0	14.0	14.0	3.8	6.4	6.2	8.4	2.7	2.8
Lane Grp Delay (d), s/veh	497.7	31.7	31.7	217.7	42.5	42.5	126.3	28.4	28.6	335.8	24.5	24.6
Lane Grp LOS	F	C	C	F	D	D	F	C	C	F	C	C
Approach Vol, veh/h		864			1090			640			523	
Approach Delay, s/veh		114.8			58.3			40.0			171.6	
Approach LOS		F			E			D			F	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	43.2		10.0	43.2		10.0	46.0		10.0	46.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		5.0	38.0		5.0	40.0		5.0	40.0	
Max Q Clear Time (g_c+I1), s	7.0	19.7		7.0	29.9		6.6	15.7		7.0	8.0	
Green Ext Time (p_c), s	0.0	15.1		0.0	7.2		0.0	5.6		0.0	5.9	

Intersection Summary	
HCM 2010 Ctrl Delay	89.2
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	171	832	831	29	81	146
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	225	2701	2044	72	227	202
Arrive On Green	0.13	0.76	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1774	3632	3578	123	1774	1583
Grp Volume(v), veh/h	192	935	474	493	91	164
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1839	1774	1583
Q Serve(g_s), s	10.7	8.6	0.0	0.0	4.8	10.2
Cycle Q Clear(g_c), s	10.7	8.6	0.0	0.0	4.8	10.2
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	225	2701	1038	1079	227	202
V/C Ratio(X)	0.85	0.35	0.46	0.46	0.40	0.81
Avail Cap(c_a), veh/h	404	2701	1038	1079	563	502
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.42	0.42	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	43.1	3.8	0.0	0.0	40.5	42.8
Incr Delay (d2), s/veh	1.5	0.1	1.4	1.3	1.1	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.9	3.0	0.4	0.4	2.2	0.4
Lane Grp Delay (d), s/veh	44.6	4.0	1.4	1.3	41.6	50.4
Lane Grp LOS	D	A	A	A	D	D
Approach Vol, veh/h		1127	967		255	
Approach Delay, s/veh		10.9	1.3		47.2	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	17.8	83.0	65.2
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	23.0	77.0	49.0
Max Q Clear Time (g_c+I1), s	12.7	10.6	2.0
Green Ext Time (p_c), s	0.2	46.1	35.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	840	73	169	802	58	188
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1793	156	238	2572	298	266
Arrive On Green	1.00	1.00	0.13	0.73	0.17	0.17
Sat Flow, veh/h	3385	286	1774	3632	1774	1583
Grp Volume(v), veh/h	550	563	206	978	71	229
Grp Sat Flow(s),veh/h/ln	1770	1809	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	11.9	10.9	3.6	14.7
Cycle Q Clear(g_c), s	0.0	0.0	11.9	10.9	3.6	14.7
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	964	985	238	2572	298	266
V/C Ratio(X)	0.57	0.57	0.86	0.38	0.24	0.86
Avail Cap(c_a), veh/h	964	985	390	2572	560	500
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.95	0.95	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.3	5.4	37.7	42.3
Incr Delay (d2), s/veh	2.3	2.3	5.8	0.4	0.4	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.6	5.8	4.2	1.7	6.5
Lane Grp Delay (d), s/veh	2.3	2.3	50.1	5.8	38.1	50.3
Lane Grp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1113			1184	300	
Approach Delay, s/veh	2.3			13.5	47.4	
Approach LOS	A			B	D	

Timer			
Assigned Phs	4	3	8
Phs Duration (G+Y+Rc), s	62.9	19.1	82.0
Change Period (Y+Rc), s	6.0	5.0	6.0
Max Green Setting (Gmax), s	48.0	23.0	76.0
Max Q Clear Time (g_c+I1), s	2.0	13.9	12.9
Green Ext Time (p_c), s	38.1	0.2	49.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	265	0	0	126	9	0	0	0	32	0	40
Conflicting Peds, #/hr	56	0	0	0	0	56	12	0	0	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	363	0	0	173	12	0	0	0	44	0	55
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	185	0	0	375	0	0	590	590	431	590	590	241
Stage 1	-	-	-	-	-	-	405	405	-	185	185	-
Stage 2	-	-	-	-	-	-	185	185	-	405	405	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1390	-	-	1183	-	-	419	420	624	419	420	798
Stage 1	-	-	-	-	-	-	622	598	-	817	747	-
Stage 2	-	-	-	-	-	-	817	747	-	622	598	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1325	-	-	1128	-	-	363	406	589	391	406	753
Mov Capacity-2 Maneuver	-	-	-	-	-	-	363	406	-	391	406	-
Stage 1	-	-	-	-	-	-	607	584	-	798	740	-
Stage 2	-	-	-	-	-	-	722	740	-	585	584	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	12.6
HCM LOS	-	-	A	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	0	0	1325	-	-	1128	-	-	455	753
HCM Control Delay, s	0	0	7.748	0	-	0	-	-	14.2	10
HCM Lane V/C Ratio	-	-	0.01	-	-	-	-	-	0.14	0.05
HCM Lane LOS	A	A	A	A	-	A	-	-	B	B
HCM 95th-tile Q, veh	-	-	0.0	-	-	0.0	-	-	0.5	0.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	36
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	60	68	169	149	62	151	43	377	37	90	209	23
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	87	217	191	79	194	55	483	47	115	268	29
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	26.8	38.6	49.5	22.4
HCM LOS	D	E	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	0%	47%	0%	71%	0%	100%	0%	0%
Vol Thru, %	81%	84%	53%	0%	29%	0%	0%	100%	75%
Vol Right, %	0%	16%	0%	100%	0%	100%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	232	226	128	169	211	151	90	139	93
LT Vol	189	189	68	0	62	0	0	139	70
Through Vol	0	37	0	169	0	151	0	0	23
RT Vol	43	0	60	0	149	0	90	0	0
Lane Flow Rate	297	289	164	217	271	194	115	179	119
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.86	0.82	0.51	0.614	0.825	0.531	0.365	0.539	0.352
Departure Headway (Hd)	10.434	10.216	11.182	10.206	10.979	9.882	11.384	10.859	10.677
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	347	356	323	353	330	366	316	332	337
Service Time	8.194	7.976	8.945	7.969	8.74	7.643	9.147	8.623	8.441
HCM Lane V/C Ratio	0.856	0.812	0.508	0.615	0.821	0.53	0.364	0.539	0.353
HCM Control Delay	52.8	46.2	25.1	28	49.5	23.4	20.6	25.7	19.2
HCM Lane LOS	F	E	D	D	E	C	C	D	C
HCM 95th-tile Q	7.9	7.2	2.7	3.9	7.1	3	1.6	3	1.5

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	3	0	11	0	446	4	8	519	0
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	4	4	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	0	13	0	537	5	10	625	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	918	1191	319	876	1189	277	627	0	0	544	0	0
Stage 1	647	647	-	542	542	-	-	-	-	-	-	-
Stage 2	271	544	-	334	647	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	227	186	677	243	187	720	951	-	-	1021	-	-
Stage 1	426	465	-	492	518	-	-	-	-	-	-	-
Stage 2	712	517	-	653	465	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	219	183	674	239	184	716	948	-	-	1018	-	-
Mov Capacity-2 Maneuver	219	183	-	239	184	-	-	-	-	-	-	-
Stage 1	425	457	-	491	517	-	-	-	-	-	-	-
Stage 2	696	516	-	641	457	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.4	0	0.2
HCM LOS	A	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	948	-	-	0	502	1018	-	-
HCM Control Delay, s	0	-	-	0	12.4	8.57	0.1	-
HCM Lane V/C Ratio	-	-	-	-	0.03	0.01	-	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	-	0.1	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix C

Intersection
Level of Service
Calculations

Future without Project
Traffic Conditions

Intersection	
Intersection Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	797	46	6	973	13	4	0	22	1	0	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	906	52	7	1106	15	5	0	25	1	0	5
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow All	1120	0	0	958	0	0	1539	2107	484	1621	2126	565
Stage 1	-	-	-	-	-	-	973	973	-	1127	1127	-
Stage 2	-	-	-	-	-	-	566	1134	-	494	999	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	619	-	-	714	-	-	79	51	529	68	49	468
Stage 1	-	-	-	-	-	-	271	329	-	218	278	-
Stage 2	-	-	-	-	-	-	476	276	-	526	319	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	616	-	-	711	-	-	75	49	527	62	47	466
Mov Capacity-2 Maneuver	-	-	-	-	-	-	75	49	-	62	47	-
Stage 1	-	-	-	-	-	-	262	318	-	211	275	-
Stage 2	-	-	-	-	-	-	465	273	-	483	309	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	19.1	23.1
HCM LOS	-	-	C	C

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	169	527	616	-	-	711	-	-	123	466
HCM Control Delay, s	28.1	12.1	11.045	-	-	10.112	-	-	34.9	12.8
HCM Lane V/C Ratio	0.08	0.03	0.03	-	-	0.01	-	-	0.02	0.01
HCM Lane LOS	D	B	B	-	-	B	-	-	D	B
HCM 95th-tile Q, veh	0.2	0.1	0.1	-	-	0.0	-	-	0.1	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)	29	741	50	141	684	155	101	310	35	223	412	207
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		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	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	50	1122	76	98	1036	234	82	1157	130	159	824	410
Arrive On Green	0.03	0.33	0.33	0.06	0.36	0.36	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3363	228	1774	2868	649	1774	3207	361	3442	2284	1136
Grp Volume(v), veh/h	31	410	423	148	444	439	106	179	184	235	335	317
Grp Sat Flow(s),veh/h/ln	1774	1770	1821	1774	1770	1747	1774	1770	1798	1721	1770	1651
Q Serve(g_s), s	1.9	21.7	21.8	6.0	23.1	23.2	5.0	7.8	7.9	5.0	16.1	16.4
Cycle Q Clear(g_c), s	1.9	21.7	21.8	6.0	23.1	23.2	5.0	7.8	7.9	5.0	16.1	16.4
Prop In Lane	1.00		0.13	1.00		0.37	1.00		0.20	1.00		0.69
Lane Grp Cap(c), veh/h	50	591	608	98	639	631	82	639	649	159	639	596
V/C Ratio(X)	0.62	0.69	0.70	1.50	0.69	0.70	1.29	0.28	0.28	1.48	0.53	0.53
Avail Cap(c_a), veh/h	82	622	640	98	639	631	82	639	649	159	639	596
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	31.2	31.2	51.0	29.4	29.4	51.5	24.6	24.6	51.5	27.2	27.3
Incr Delay (d2), s/veh	12.1	4.3	4.2	271.7	4.2	4.2	196.1	1.1	1.1	244.8	3.1	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	10.3	10.6	10.2	11.1	11.0	6.8	3.7	3.8	7.6	7.7	7.3
Lane Grp Delay (d), s/veh	64.1	35.5	35.4	322.7	33.6	33.7	247.7	25.6	25.7	296.3	30.3	30.7
Lane Grp LOS	E	D	D	F	C	C	F	C	C	F	C	C
Approach Vol, veh/h		864			1031			469			887	
Approach Delay, s/veh		36.5			75.1			75.8			100.9	
Approach LOS		D			E			E			F	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.0	42.1		11.0	45.0		10.0	45.0		10.0	45.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		6.0	39.0		5.0	39.0		5.0	39.0	
Max Q Clear Time (g_c+I1), s	3.9	23.8		8.0	25.2		7.0	9.9		7.0	18.4	
Green Ext Time (p_c), s	0.0	12.1		0.0	11.9		0.0	7.3		0.0	6.5	

Intersection Summary												
HCM 2010 Ctrl Delay			72.0									
HCM 2010 LOS			E									

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	167	842	780	40	88	200
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	242	2464	1726	89	324	289
Arrive On Green	0.14	0.70	1.00	1.00	0.18	0.18
Sat Flow, veh/h	1774	3632	3514	176	1774	1583
Grp Volume(v), veh/h	204	1027	492	508	107	244
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1828	1774	1583
Q Serve(g_s), s	10.2	11.2	0.0	0.0	4.7	13.5
Cycle Q Clear(g_c), s	10.2	11.2	0.0	0.0	4.7	13.5
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	242	2464	893	922	324	289
V/C Ratio(X)	0.84	0.42	0.55	0.55	0.33	0.84
Avail Cap(c_a), veh/h	549	2464	893	922	627	560
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.33	0.33	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	38.1	5.9	0.0	0.0	32.2	35.8
Incr Delay (d2), s/veh	1.0	0.2	2.3	2.3	0.6	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.7	4.2	0.6	0.6	2.2	0.5
Lane Grp Delay (d), s/veh	39.2	6.1	2.3	2.3	32.8	42.5
Lane Grp LOS	D	A	A	A	C	D
Approach Vol, veh/h		1231	1000		351	
Approach Delay, s/veh		11.5	2.3		39.5	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	17.3	69.0	51.7
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	28.0	63.0	34.0
Max Q Clear Time (g_c+I1), s	12.2	13.2	2.0
Green Ext Time (p_c), s	0.2	39.6	27.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	898	32	285	709	111	190
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1544	55	348	2482	290	259
Arrive On Green	0.89	0.89	0.20	0.70	0.16	0.16
Sat Flow, veh/h	3576	125	1774	3632	1774	1583
Grp Volume(v), veh/h	496	515	310	771	121	207
Grp Sat Flow(s),veh/h/ln	1770	1838	1774	1770	1774	1583
Q Serve(g_s), s	5.9	5.9	13.8	6.8	5.0	10.2
Cycle Q Clear(g_c), s	5.9	5.9	13.8	6.8	5.0	10.2
Prop In Lane		0.07	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	785	815	348	2482	290	259
V/C Ratio(X)	0.63	0.63	0.89	0.31	0.42	0.80
Avail Cap(c_a), veh/h	785	815	393	2482	874	780
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.93	0.93	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.9	2.9	31.8	4.6	30.5	32.7
Incr Delay (d2), s/veh	3.6	3.5	18.6	0.3	1.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.9	2.0	7.9	2.6	2.3	4.4
Lane Grp Delay (d), s/veh	6.5	6.3	50.4	5.0	31.5	38.4
Lane Grp LOS	A	A	D	A	C	D
Approach Vol, veh/h	1011			1081	328	
Approach Delay, s/veh	6.4			18.0	35.8	
Approach LOS	A			B	D	

Timer				
Assigned Phs	4		3	8
Phs Duration (G+Y+Rc), s	42.0		20.9	62.9
Change Period (Y+Rc), s	6.0		5.0	6.0
Max Green Setting (Gmax), s	36.0		18.0	56.0
Max Q Clear Time (g_c+I1), s	7.9		15.8	8.8
Green Ext Time (p_c), s	22.6		0.1	33.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	84	2	5	174	10	2	3	5	37	7	8
Conflicting Peds, #/hr	84	0	0	0	0	84	7	0	4	4	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	88	2	5	181	10	2	3	5	39	7	8
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	188	0	0	95	0	0	324	321	179	322	321	272
Stage 1	-	-	-	-	-	-	122	122	-	199	199	-
Stage 2	-	-	-	-	-	-	202	199	-	123	122	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1386	-	-	1499	-	-	629	596	864	631	596	767
Stage 1	-	-	-	-	-	-	882	795	-	803	736	-
Stage 2	-	-	-	-	-	-	800	736	-	881	795	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1289	-	-	1394	-	-	563	580	799	571	580	709
Mov Capacity-2 Maneuver	-	-	-	-	-	-	563	580	-	571	580	-
Stage 1	-	-	-	-	-	-	867	782	-	790	729	-
Stage 2	-	-	-	-	-	-	725	729	-	802	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	10.4	11.6
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	617	799	1289	-	-	1394	-	-	579	709
HCM Control Delay, s	10.9	9.5	7.823	0	-	7.592	0	-	11.8	10.1
HCM Lane V/C Ratio	0.01	0.00	0.01	-	-	0.00	-	-	0.08	0.01
HCM Lane LOS	B	A	A	A	-	A	A	-	B	B
HCM 95th-tile Q, veh	0.0	0.0	0.0	-	-	0.0	-	-	0.3	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	16.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	42	51	33	12	58	10	81	394	59	172	381	50
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	45	55	35	13	62	11	87	424	63	185	410	54
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	13.6	13.3	19.3	15.8
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	29%	0%	45%	0%	17%	0%	100%	0%	0%
Vol Thru, %	71%	77%	55%	0%	83%	0%	0%	100%	72%
Vol Right, %	0%	23%	0%	100%	0%	100%	0%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	278	256	93	33	70	10	172	254	177
LT Vol	197	197	51	0	58	0	0	254	127
Through Vol	0	59	0	33	0	10	0	0	50
RT Vol	81	0	42	0	12	0	172	0	0
Lane Flow Rate	299	275	100	35	75	11	185	273	190
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.608	0.536	0.244	0.077	0.185	0.024	0.39	0.538	0.364
Departure Headway (Hd)	7.328	7.016	8.775	7.829	8.836	8.031	7.596	7.088	6.887
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	493	515	409	457	406	445	473	508	521
Service Time	5.072	4.76	6.533	5.587	6.597	5.791	5.339	4.831	4.63
HCM Lane V/C Ratio	0.606	0.534	0.244	0.077	0.185	0.025	0.391	0.537	0.365
HCM Control Delay	20.8	17.6	14.4	11.2	13.6	11	15.1	17.8	13.5
HCM Lane LOS	C	C	B	B	B	B	C	C	B
HCM 95th-tile Q	4	3.1	0.9	0.2	0.7	0.1	1.8	3.2	1.7

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	7	2	2	6	4	2	5	2	2	10	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	1	8	2	2	7	4	2	5	2	2	11	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	30	25	11	30	25	5	11	0	0	5	0	0
Stage 1	15	15	-	10	10	-	-	-	-	-	-	-
Stage 2	15	10	-	20	15	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	979	868	1070	979	868	1078	1608	-	-	1616	-	-
Stage 1	1005	883	-	1011	887	-	-	-	-	-	-	-
Stage 2	1005	887	-	999	883	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	968	866	1070	969	866	1078	1608	-	-	1616	-	-
Mov Capacity-2 Maneuver	968	866	-	969	866	-	-	-	-	-	-	-
Stage 1	1004	882	-	1010	886	-	-	-	-	-	-	-
Stage 2	993	886	-	987	882	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	8.9	1.6	1
HCM LOS	A	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1608	-	-	910	945	1616	-	-
HCM Control Delay, s	7.242	0	-	9	8.9	7.231	0	-
HCM Lane V/C Ratio	0.00	-	-	0.01	0.01	0.00	-	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.0	0.0	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	4	2	18	4	63	5	460	27	20	403	3
Conflicting Peds, #/hr	2	0	0	0	0	2	8	0	6	6	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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	5	4	2	20	4	68	5	500	29	22	438	3
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	750	1027	231	795	1015	275	443	0	0	531	0	0
Stage 1	485	485	-	528	528	-	-	-	-	-	-	-
Stage 2	265	542	-	267	487	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	300	233	771	278	237	722	1113	-	-	1033	-	-
Stage 1	532	550	-	502	526	-	-	-	-	-	-	-
Stage 2	717	518	-	715	549	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	258	224	765	264	228	716	1106	-	-	1026	-	-
Mov Capacity-2 Maneuver	258	224	-	264	228	-	-	-	-	-	-	-
Stage 1	528	534	-	498	522	-	-	-	-	-	-	-
Stage 2	635	514	-	683	533	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	14.1	0.1	0.5
HCM LOS	C	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1106	-	-	276	489	1026	-	-
HCM Control Delay, s	8.271	0	-	18.6	14.1	8.585	0.1	-
HCM Lane V/C Ratio	0.01	-	-	0.04	0.19	0.02	-	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.7	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	993	40	50	1042	51	13	8	18	6	3	44
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1128	45	57	1184	58	15	9	20	7	3	50
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1242	0	0	1174	0	0	1870	2519	588	1907	2512	622
Stage 1	-	-	-	-	-	-	1163	1163	-	1327	1327	-
Stage 2	-	-	-	-	-	-	707	1356	-	580	1185	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	556	-	-	591	-	-	44	28	452	42	28	430
Stage 1	-	-	-	-	-	-	207	267	-	164	223	-
Stage 2	-	-	-	-	-	-	392	216	-	467	261	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	556	-	-	591	-	-	32	25	452	27	25	430
Mov Capacity-2 Maneuver	-	-	-	-	-	-	32	25	-	27	25	-
Stage 1	-	-	-	-	-	-	205	264	-	162	201	-
Stage 2	-	-	-	-	-	-	307	195	-	426	258	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	182.9	52.1
HCM LOS	-	-	F	F

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	37	452	556	-	-	591	-	-	63	430
HCM Control Delay, s	258.3	13.2	11.542	-	-	11.738	-	-	99.3	14.1
HCM Lane V/C Ratio	0.83	0.03	0.01	-	-	0.10	-	-	0.43	0.08
HCM Lane LOS	F	B	B	-	-	B	-	-	F	B
HCM 95th-tile Q, veh	3.0	0.1	0.0	-	-	0.3	-	-	1.6	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)	182	793	42	115	985	151	88	465	200	291	255	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	81	1181	63	81	1063	162	81	879	376	156	1003	270
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3417	182	1774	3078	470	1774	2416	1033	3442	2757	743
Grp Volume(v), veh/h	198	446	462	125	615	620	96	369	353	316	176	177
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1778	1774	1770	1679	1721	1770	1730
Q Serve(g_s), s	5.0	24.3	24.3	5.0	38.0	38.0	5.0	18.5	18.6	5.0	7.7	8.0
Cycle Q Clear(g_c), s	5.0	24.3	24.3	5.0	38.0	38.0	5.0	18.5	18.6	5.0	7.7	8.0
Prop In Lane	1.00		0.10	1.00		0.26	1.00		0.62	1.00		0.43
Lane Grp Cap(c), veh/h	81	611	632	81	611	614	81	643	611	156	643	629
V/C Ratio(X)	2.46	0.73	0.73	1.55	1.01	1.01	1.19	0.57	0.58	2.02	0.27	0.28
Avail Cap(c_a), veh/h	81	611	632	81	611	614	81	643	611	156	643	629
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	31.5	31.5	52.5	36.0	36.0	52.5	28.1	28.2	52.5	24.7	24.8
Incr Delay (d2), s/veh	690.6	5.4	5.2	299.5	37.9	38.6	160.3	3.7	3.9	480.7	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	17.8	11.6	11.9	9.0	23.2	23.5	5.9	8.8	8.4	12.7	3.6	3.6
Lane Grp Delay (d), s/veh	743.1	36.9	36.8	352.0	73.9	74.6	212.8	31.8	32.1	533.2	25.8	25.9
Lane Grp LOS	F	D	D	F	F	F	F	C	C	F	C	C
Approach Vol, veh/h		1106			1360			818			669	
Approach Delay, s/veh		163.3			99.8			53.2			265.5	
Approach LOS		F			F			D			F	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	44.0		10.0	44.0		10.0	46.0		10.0	46.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		5.0	38.0		5.0	40.0		5.0	40.0	
Max Q Clear Time (g_c+I1), s	7.0	26.3		7.0	40.0		7.0	20.6		7.0	10.0	
Green Ext Time (p_c), s	0.0	11.0		0.0	0.0		0.0	6.8		0.0	7.9	
Intersection Summary												
HCM 2010 Ctrl Delay			136.0									
HCM 2010 LOS			F									
Notes												

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	197	1087	1083	37	90	168
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	254	2652	1945	67	255	227
Arrive On Green	0.14	0.75	1.00	1.00	0.14	0.14
Sat Flow, veh/h	1774	3632	3582	120	1774	1583
Grp Volume(v), veh/h	221	1221	617	642	101	189
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1839	1774	1583
Q Serve(g_s), s	12.5	13.6	0.0	0.0	5.3	11.9
Cycle Q Clear(g_c), s	12.5	13.6	0.0	0.0	5.3	11.9
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	254	2652	987	1025	255	227
V/C Ratio(X)	0.87	0.46	0.63	0.63	0.40	0.83
Avail Cap(c_a), veh/h	397	2652	987	1025	552	493
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.09	0.09	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	43.1	4.9	0.0	0.0	40.0	42.8
Incr Delay (d2), s/veh	0.8	0.1	2.7	2.6	1.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	5.8	4.9	0.7	0.8	2.5	0.5
Lane Grp Delay (d), s/veh	43.9	5.0	2.7	2.6	41.0	50.4
Lane Grp LOS	D	A	A	A	D	D
Approach Vol, veh/h		1442	1259		290	
Approach Delay, s/veh		10.9	2.7		47.1	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	19.7	83.0	63.3
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	23.0	77.0	49.0
Max Q Clear Time (g_c+I1), s	14.5	15.6	2.0
Green Ext Time (p_c), s	0.2	54.7	42.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1084	93	196	1046	74	220
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1729	148	255	2532	321	287
Arrive On Green	1.00	1.00	0.14	0.72	0.18	0.18
Sat Flow, veh/h	3389	283	1774	3632	1774	1583
Grp Volume(v), veh/h	660	678	223	1189	84	250
Grp Sat Flow(s),veh/h/ln	1770	1809	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	13.1	15.3	4.3	16.3
Cycle Q Clear(g_c), s	0.0	0.0	13.1	15.3	4.3	16.3
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	928	949	255	2532	321	287
V/C Ratio(X)	0.71	0.71	0.88	0.47	0.26	0.87
Avail Cap(c_a), veh/h	928	949	384	2532	551	492
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.90	0.90	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.6	6.5	37.4	42.3
Incr Delay (d2), s/veh	4.2	4.1	9.7	0.6	0.4	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.1	1.1	6.6	6.2	2.0	7.3
Lane Grp Delay (d), s/veh	4.2	4.1	54.2	7.1	37.8	50.8
Lane Grp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1338			1412	334	
Approach Delay, s/veh	4.2			14.6	47.5	
Approach LOS	A			B	D	

Timer				
Assigned Phs	4		3	8
Phs Duration (G+Y+Rc), s	61.7		20.3	82.0
Change Period (Y+Rc), s	6.0		5.0	6.0
Max Green Setting (Gmax), s	48.0		23.0	76.0
Max Q Clear Time (g_c+I1), s	2.0		15.1	17.3
Green Ext Time (p_c), s	42.5		0.2	53.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	307	7	8	138	12	4	15	4	34	14	45
Conflicting Peds, #/hr	56	0	0	0	0	56	12	0	0	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	374	9	10	168	15	5	18	5	41	17	55
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow All	180	0	0	386	0	0	624	616	442	625	616	236
Stage 1	-	-	-	-	-	-	416	416	-	200	200	-
Stage 2	-	-	-	-	-	-	208	200	-	425	416	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1396	-	-	1172	-	-	398	406	615	397	406	803
Stage 1	-	-	-	-	-	-	614	592	-	802	736	-
Stage 2	-	-	-	-	-	-	794	736	-	607	592	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1331	-	-	1117	-	-	331	388	580	352	388	758
Mov Capacity-2 Maneuver	-	-	-	-	-	-	331	388	-	352	388	-
Stage 1	-	-	-	-	-	-	599	578	-	783	721	-
Stage 2	-	-	-	-	-	-	679	721	-	548	578	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	14.6	13.9
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	383	580	1331	-	-	1117	-	-	413	758
HCM Control Delay, s	15	11.2	7.735	0	-	8.251	0	-	15.7	10
HCM Lane V/C Ratio	0.07	0.01	0.01	-	-	0.01	-	-	0.19	0.05
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th-tile Q, veh	0.2	0.0	0.0	-	-	0.0	-	-	0.7	0.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	58.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	77	87	181	191	79	193	50	483	47	115	268	29
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	106	221	233	96	235	61	589	57	140	327	35
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	37.1	66.7	85.4	31.1
HCM LOS	E	F	F	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	17%	0%	47%	0%	71%	0%	100%	0%	0%
Vol Thru, %	83%	84%	53%	0%	29%	0%	0%	100%	75%
Vol Right, %	0%	16%	0%	100%	0%	100%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	292	289	164	181	270	193	115	179	118
LT Vol	242	242	87	0	79	0	0	179	89
Through Vol	0	47	0	181	0	193	0	0	29
RT Vol	50	0	77	0	191	0	115	0	0
Lane Flow Rate	355	352	200	221	329	235	140	218	144
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	1	1	0.682	0.695	1	0.713	0.479	0.713	0.466
Departure Headway (Hd)	11.371	11.172	12.269	11.337	11.961	10.911	12.287	11.788	11.617
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	320	327	296	320	306	332	295	307	312
Service Time	9.118	8.92	10	9.069	9.7	8.651	10.021	9.522	9.35
HCM Lane V/C Ratio	1.109	1.076	0.676	0.691	1.075	0.708	0.475	0.71	0.462
HCM Control Delay	85.8	85	37.8	36.4	88.2	36.7	25.8	39.2	24.1
HCM Lane LOS	F	F	E	E	F	E	D	E	C
HCM 95th-tile Q	10.9	11	4.6	4.9	10.6	5.2	2.4	5.1	2.4

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	22	4	5	25	8	5	12	8	8	18	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	3	24	4	5	27	9	5	13	9	9	20	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	79	61	20	75	61	13	20	0	0	13	0	0
Stage 1	37	37	-	24	24	-	-	-	-	-	-	-
Stage 2	42	24	-	51	37	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	910	830	1058	915	830	1067	1596	-	-	1606	-	-
Stage 1	978	864	-	994	875	-	-	-	-	-	-	-
Stage 2	972	875	-	962	864	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	874	823	1058	885	823	1067	1596	-	-	1606	-	-
Mov Capacity-2 Maneuver	874	823	-	885	823	-	-	-	-	-	-	-
Stage 1	975	859	-	991	872	-	-	-	-	-	-	-
Stage 2	931	872	-	926	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9.3	1.5	2
HCM LOS	A	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1596	-	-	854	873	1606	-	-
HCM Control Delay, s	7.263	0	-	9.4	9.3	7.254	0	-
HCM Lane V/C Ratio	0.00	-	-	0.04	0.05	0.01	-	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.1	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	8	15	4	8	14	15	551	5	10	615	15
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	4	4	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	9	17	5	9	16	17	626	6	11	699	17
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	1086	1400	364	1044	1406	322	718	0	0	634	0	0
Stage 1	732	732	-	665	665	-	-	-	-	-	-	-
Stage 2	354	668	-	379	741	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	171	139	633	183	138	674	879	-	-	945	-	-
Stage 1	379	425	-	416	456	-	-	-	-	-	-	-
Stage 2	636	455	-	615	421	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	152	132	630	162	131	671	876	-	-	942	-	-
Mov Capacity-2 Maneuver	152	132	-	162	131	-	-	-	-	-	-	-
Stage 1	367	416	-	403	442	-	-	-	-	-	-	-
Stage 2	588	441	-	572	412	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.8	21.8	0.3	0.2
HCM LOS	D	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	876	-	-	208	244	942	-	-
HCM Control Delay, s	9.191	0.1	-	26.8	21.8	8.868	0.1	-
HCM Lane V/C Ratio	0.02	-	-	0.21	0.12	0.01	-	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th-tile Q, veh	0.1	-	-	0.8	0.4	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix D

Internal Capture Rate Calculations

Analyst Jeff Waller
Date 12/2/13

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt Kapolei Mixed-Use
Time Period AM Peak

LAND USE A Residential

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	43	4	39
Exit	117	0	117
Total	160	4	156
%			

Exit to External: 117
Enter from External: 39

1% 1 Demand
0 Balanced
2% 0 Demand

17% 7 Demand
1 Balanced
14% 1 Demand

1% 1 Demand
0 Balanced
2% 0 Demand

17% 7 Demand
3 Balanced
14% 3 Demand

LAND USE B Retail

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	15	0	15
Exit	10	1	9
Total	25	1	24
%			

Exit to External: 15
Enter from External: 9

0% 0 Demand
0 Balanced
0% 0 Demand

0% 0 Demand
0 Balanced
0% 0 Demand

LAND USE C Day Care Center (Retail)

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	22	0	22
Exit	19	3	16
Total	41	3	38
%			

Enter from External: 22
Exit to External: 16

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	39	15	22	76
Exit	117	9	16	142
Total	156	24	38	218
Single-Use Trip Gen. Est.	160	25	41	226

INTERNAL CAPTURE: 4%

Source: Kaku Associates, Inc.

Analyst Jeff Waller
Date 12/2/13

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt Kapolei Mixed-Use
Time Period PM Peak

LAND USE A Residential

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	113	13	100
Exit	76	20	56
Total	189	33	156
%			

Exit to External: 56
Enter from External: 106

42% 32 Demand — 10 Balanced — 46% 10 Demand
10% 11 Demand — 8 Balanced — 26% 8 Demand
42% 32 Demand — 9 Balanced — 46% 9 Demand
10% 11 Demand — 6 Balanced — 26% 6 Demand

LAND USE B Retail

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	22	10	12
Exit	29	8	21
Total	51	18	33
%			

Exit to External: 21
Enter from External: 12

LAND USE C Day Care Center (Retail)

ITE LU Code _____
Size _____

	Total	Internal	External
Enter	20	9	11
Exit	22	6	16
Total	42	15	27
%			

Enter from External: 11
Exit to External: 16

Demand 0% 0 — Balanced 0 — Demand 0% 0
Demand 0% 0 — Balanced 0 — Demand 0% 0

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	100	12	11	123
Exit	56	21	16	93
Total	156	33	27	216
Single-Use Trip Gen. Est.	184	51	42	282

Source: Kaku Associates, Inc.

INTERNAL CAPTURE 23%

Appendix E

Intersection
Level of Service
Calculations

Future with Project
Traffic Conditions

Intersection	
Intersection Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	797	67	15	973	13	44	0	38	1	0	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	906	76	17	1106	15	50	0	43	1	0	5
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1120	0	0	982	0	0	1572	2140	496	1641	2170	565
Stage 1	-	-	-	-	-	-	985	985	-	1147	1147	-
Stage 2	-	-	-	-	-	-	587	1155	-	494	1023	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	619	-	-	699	-	-	74	48	519	66	46	468
Stage 1	-	-	-	-	-	-	266	324	-	212	272	-
Stage 2	-	-	-	-	-	-	463	269	-	526	311	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	616	-	-	696	-	-	70	45	517	58	43	466
Mov Capacity-2 Maneuver	-	-	-	-	-	-	70	45	-	58	43	-
Stage 1	-	-	-	-	-	-	257	313	-	205	265	-
Stage 2	-	-	-	-	-	-	445	262	-	464	301	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	86.1	24
HCM LOS	-	-	F	C

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	87	517	616	-	-	696	-	-	116	466
HCM Control Delay, s	119.1	12.4	11.045	-	-	10.302	-	-	36.8	12.8
HCM Lane V/C Ratio	0.74	0.06	0.03	-	-	0.02	-	-	0.02	0.01
HCM Lane LOS	F	B	B	-	-	B	-	-	E	B
HCM 95th-tile Q, veh	3.7	0.2	0.1	-	-	0.1	-	-	0.1	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)	36	750	50	155	689	155	101	332	62	223	423	211
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		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	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	56	1126	76	98	1030	232	82	1075	198	159	825	408
Arrive On Green	0.03	0.33	0.33	0.06	0.36	0.36	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3365	226	1774	2872	645	1774	2984	550	3442	2289	1132
Grp Volume(v), veh/h	38	415	427	163	447	441	106	205	209	235	343	324
Grp Sat Flow(s),veh/h/ln	1774	1770	1822	1774	1770	1748	1774	1770	1765	1721	1770	1652
Q Serve(g_s), s	2.3	22.0	22.1	6.0	23.4	23.4	5.0	9.1	9.3	5.0	16.6	16.9
Cycle Q Clear(g_c), s	2.3	22.0	22.1	6.0	23.4	23.4	5.0	9.1	9.3	5.0	16.6	16.9
Prop In Lane	1.00		0.12	1.00		0.37	1.00		0.31	1.00		0.69
Lane Grp Cap(c), veh/h	56	592	610	98	635	627	82	638	636	159	638	595
V/C Ratio(X)	0.68	0.70	0.70	1.66	0.70	0.70	1.29	0.32	0.33	1.48	0.54	0.54
Avail Cap(c_a), veh/h	82	621	640	98	638	630	82	638	636	159	638	595
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	31.3	31.3	51.1	29.8	29.8	51.6	25.0	25.1	51.6	27.5	27.5
Incr Delay (d2), s/veh	13.6	4.4	4.3	336.3	4.4	4.5	196.9	1.3	1.4	245.7	3.2	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.3	10.4	10.7	11.9	11.2	11.1	6.8	4.3	4.4	7.6	8.0	7.6
Lane Grp Delay (d), s/veh	65.5	35.7	35.6	387.4	34.2	34.3	248.5	26.4	26.5	297.3	30.7	31.1
Lane Grp LOS	E	D	D	F	C	C	F	C	C	F	C	C
Approach Vol, veh/h		880			1051			520			902	
Approach Delay, s/veh		36.9			89.0			71.7			100.3	
Approach LOS		D			F			E			F	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.4	42.2		11.0	44.8		10.0	45.0		10.0	45.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		6.0	39.0		5.0	39.0		5.0	39.0	
Max Q Clear Time (g_c+I1), s	4.3	24.1		8.0	25.4		7.0	11.3		7.0	18.9	
Green Ext Time (p_c), s	0.0	12.0		0.0	11.7		0.0	7.8		0.0	6.9	
Intersection Summary												
HCM 2010 Ctrl Delay			75.7									
HCM 2010 LOS			E									
Notes												

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	167	878	799	40	88	200
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	242	2464	1729	87	324	289
Arrive On Green	0.14	0.70	1.00	1.00	0.18	0.18
Sat Flow, veh/h	1774	3632	3519	172	1774	1583
Grp Volume(v), veh/h	204	1071	503	520	107	244
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1829	1774	1583
Q Serve(g_s), s	10.2	11.9	0.0	0.0	4.7	13.5
Cycle Q Clear(g_c), s	10.2	11.9	0.0	0.0	4.7	13.5
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	242	2464	893	923	324	289
V/C Ratio(X)	0.84	0.43	0.56	0.56	0.33	0.84
Avail Cap(c_a), veh/h	549	2464	893	923	627	560
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.32	0.32	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	38.1	6.0	0.0	0.0	32.2	35.8
Incr Delay (d2), s/veh	1.0	0.2	2.5	2.4	0.6	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.7	4.5	0.6	0.6	2.2	0.5
Lane Grp Delay (d), s/veh	39.2	6.2	2.5	2.4	32.8	42.5
Lane Grp LOS	D	A	A	A	C	D
Approach Vol, veh/h		1275	1023		351	
Approach Delay, s/veh		11.5	2.4		39.5	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	17.3	69.0	51.7
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	28.0	63.0	34.0
Max Q Clear Time (g_c+I1), s	12.2	13.9	2.0
Green Ext Time (p_c), s	0.2	40.2	27.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	934	32	285	728	111	190
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1547	53	348	2482	290	259
Arrive On Green	0.89	0.89	0.20	0.70	0.16	0.16
Sat Flow, veh/h	3581	120	1774	3632	1774	1583
Grp Volume(v), veh/h	515	535	310	791	121	207
Grp Sat Flow(s),veh/h/ln	1770	1839	1774	1770	1774	1583
Q Serve(g_s), s	6.4	6.4	13.8	7.0	5.0	10.2
Cycle Q Clear(g_c), s	6.4	6.4	13.8	7.0	5.0	10.2
Prop In Lane		0.07	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	785	815	348	2482	290	259
V/C Ratio(X)	0.66	0.66	0.89	0.32	0.42	0.80
Avail Cap(c_a), veh/h	785	815	393	2482	874	780
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.92	0.92	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.9	2.9	31.8	4.7	30.5	32.7
Incr Delay (d2), s/veh	3.9	3.8	18.6	0.3	1.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.1	2.1	7.9	2.6	2.3	4.4
Lane Grp Delay (d), s/veh	6.9	6.7	50.4	5.0	31.5	38.4
Lane Grp LOS	A	A	D	A	C	D
Approach Vol, veh/h	1050			1101	328	
Approach Delay, s/veh	6.8			17.8	35.8	
Approach LOS	A			B	D	

Timer				
Assigned Phs	4		3	8
Phs Duration (G+Y+Rc), s	42.0		20.9	62.9
Change Period (Y+Rc), s	6.0		5.0	6.0
Max Green Setting (Gmax), s	36.0		18.0	56.0
Max Q Clear Time (g_c+I1), s	8.4		15.8	9.0
Green Ext Time (p_c), s	22.7		0.1	34.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.5
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	86	4	23	180	55	3	14	16	53	21	8
Conflicting Peds, #/hr	84	0	0	0	0	84	7	0	4	4	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	90	4	24	188	57	3	15	17	55	22	8
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow All	195	0	0	97	0	0	377	366	181	373	366	279
Stage 1	-	-	-	-	-	-	124	124	-	242	242	-
Stage 2	-	-	-	-	-	-	253	242	-	131	124	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1378	-	-	1496	-	-	580	562	862	584	562	760
Stage 1	-	-	-	-	-	-	880	793	-	762	705	-
Stage 2	-	-	-	-	-	-	751	705	-	873	793	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1282	-	-	1391	-	-	501	538	797	505	538	703
Mov Capacity-2 Maneuver	-	-	-	-	-	-	501	538	-	505	538	-
Stage 1	-	-	-	-	-	-	864	779	-	748	687	-
Stage 2	-	-	-	-	-	-	655	687	-	771	779	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.7	10.9	13
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	577	797	1282	-	-	1391	-	-	519	703
HCM Control Delay, s	11.5	9.6	7.838	0	-	7.633	0	-	13.2	10.2
HCM Lane V/C Ratio	0.04	0.01	0.01	-	-	0.02	-	-	0.15	0.01
HCM Lane LOS	B	A	A	A	-	A	A	-	B	B
HCM 95th-tile Q, veh	0.1	0.0	0.0	-	-	0.1	-	-	0.5	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	90	58	46	12	62	10	86	394	59	172	381	75
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	97	62	49	13	67	11	92	424	63	185	410	81
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	16.7	14.4	22.9	17.9
HCM LOS	C	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	30%	0%	61%	0%	16%	0%	100%	0%	0%
Vol Thru, %	70%	77%	39%	0%	84%	0%	0%	100%	63%
Vol Right, %	0%	23%	0%	100%	0%	100%	0%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	283	256	148	46	74	10	172	254	202
LT Vol	197	197	58	0	62	0	0	254	127
Through Vol	0	59	0	46	0	10	0	0	75
RT Vol	86	0	90	0	12	0	172	0	0
Lane Flow Rate	304	275	159	49	80	11	185	273	217
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.667	0.579	0.405	0.112	0.211	0.026	0.417	0.577	0.443
Departure Headway (Hd)	7.892	7.572	9.17	8.141	9.556	8.75	8.115	7.604	7.339
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	456	473	391	438	378	412	442	472	489
Service Time	5.669	5.349	6.965	5.936	7.256	6.45	5.89	5.38	5.114
HCM Lane V/C Ratio	0.667	0.581	0.407	0.112	0.212	0.027	0.419	0.578	0.444
HCM Control Delay	25.2	20.3	18.1	12	14.8	11.7	16.6	20.3	15.9
HCM Lane LOS	D	C	C	B	B	B	C	C	C
HCM 95th-tile Q	4.8	3.6	1.9	0.4	0.8	0.1	2	3.6	2.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	7	2	2	6	8	2	7	2	6	14	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	3	8	2	2	7	9	2	8	2	7	15	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	48	40	15	45	40	8	15	0	0	8	0	0
Stage 1	28	28	-	12	12	-	-	-	-	-	-	-
Stage 2	20	12	-	33	28	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	953	852	1065	957	852	1074	1603	-	-	1612	-	-
Stage 1	989	872	-	1009	886	-	-	-	-	-	-	-
Stage 2	999	886	-	983	872	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	936	848	1065	945	848	1074	1603	-	-	1612	-	-
Mov Capacity-2 Maneuver	936	848	-	945	848	-	-	-	-	-	-	-
Stage 1	988	869	-	1008	885	-	-	-	-	-	-	-
Stage 2	983	885	-	969	869	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	8.8	1.3	1.7
HCM LOS	A	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1603	-	-	900	962	1612	-	-
HCM Control Delay, s	7.249	0	-	9.1	8.8	7.242	0	-
HCM Lane V/C Ratio	0.00	-	-	0.01	0.02	0.00	-	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.0	0.1	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	5	18	5	64	8	470	27	22	414	3
Conflicting Peds, #/hr	2	0	0	0	0	2	8	0	6	6	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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	5	5	5	20	5	70	9	511	29	24	450	3
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	779	1061	237	823	1048	280	455	0	0	542	0	0
Stage 1	501	501	-	545	545	-	-	-	-	-	-	-
Stage 2	278	560	-	278	503	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	286	222	764	266	226	717	1102	-	-	1023	-	-
Stage 1	521	541	-	490	517	-	-	-	-	-	-	-
Stage 2	705	509	-	705	540	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	243	212	758	248	215	711	1095	-	-	1016	-	-
Mov Capacity-2 Maneuver	243	212	-	248	215	-	-	-	-	-	-	-
Stage 1	514	523	-	483	510	-	-	-	-	-	-	-
Stage 2	618	502	-	666	522	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.9	14.6	0.1	0.5
HCM LOS	C	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1095	-	-	296	468	1016	-	-
HCM Control Delay, s	8.314	0	-	17.9	14.6	8.629	0.1	-
HCM Lane V/C Ratio	0.01	-	-	0.06	0.20	0.02	-	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.2	0.7	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	18.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	993	74	64	1042	51	39	8	29	6	3	44
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1128	84	73	1184	58	44	9	33	7	3	50
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1242	0	0	1213	0	0	1921	2570	607	1939	2583	622
Stage 1	-	-	-	-	-	-	1182	1182	-	1359	1359	-
Stage 2	-	-	-	-	-	-	739	1388	-	580	1224	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	556	-	-	571	-	-	# 41	26	439	39	25	430
Stage 1	-	-	-	-	-	-	201	262	-	157	215	-
Stage 2	-	-	-	-	-	-	375	208	-	467	250	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	556	-	-	571	-	-	# 29	22	439	22	22	430
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 29	22	-	22	22	-
Stage 1	-	-	-	-	-	-	199	259	-	155	188	-
Stage 2	-	-	-	-	-	-	284	181	-	412	247	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	$ 528.7	65.3
HCM LOS	-	-	F	F

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	33	439	556	-	-	571	-	-	53	430
HCM Control Delay, s	$ 704.5	13.6	11.542	-	-	12.223	-	-	128.8	14.1
HCM Lane V/C Ratio	1.95	0.05	0.01	-	-	0.13	-	-	0.51	0.08
HCM Lane LOS	F	B	B	-	-	B	-	-	F	B
HCM 95th-tile Q, veh	7.3	0.2	0.0	-	-	0.4	-	-	1.9	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)	187	799	42	138	993	151	88	479	217	291	274	76
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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	81	1181	63	81	1064	161	81	863	389	156	999	273
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3419	181	1774	3081	467	1774	2372	1070	3442	2746	752
Grp Volume(v), veh/h	203	449	465	150	619	624	96	388	369	316	190	191
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1779	1774	1770	1673	1721	1770	1729
Q Serve(g_s), s	5.0	24.5	24.5	5.0	38.0	38.0	5.0	19.7	19.8	5.0	8.4	8.7
Cycle Q Clear(g_c), s	5.0	24.5	24.5	5.0	38.0	38.0	5.0	19.7	19.8	5.0	8.4	8.7
Prop In Lane	1.00		0.10	1.00		0.26	1.00		0.64	1.00		0.43
Lane Grp Cap(c), veh/h	81	611	632	81	611	615	81	643	608	156	643	629
V/C Ratio(X)	2.52	0.73	0.73	1.86	1.01	1.02	1.19	0.60	0.61	2.02	0.30	0.30
Avail Cap(c_a), veh/h	81	611	632	81	611	615	81	643	608	156	643	629
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	31.6	31.6	52.5	36.0	36.0	52.5	28.5	28.6	52.5	25.0	25.0
Incr Delay (d2), s/veh	718.1	5.6	5.4	430.5	39.5	40.3	160.3	4.2	4.4	480.7	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	18.4	11.8	12.2	11.9	23.5	23.8	5.9	9.4	8.9	12.7	3.9	3.9
Lane Grp Delay (d), s/veh	770.6	37.2	37.0	483.0	75.5	76.3	212.8	32.7	33.0	533.2	26.1	26.3
Lane Grp LOS	F	D	D	F	F	F	F	C	C	F	C	C
Approach Vol, veh/h		1117			1393			853			697	
Approach Delay, s/veh		170.4			119.7			53.1			256.1	
Approach LOS		F			F			D			F	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	44.0		10.0	44.0		10.0	46.0		10.0	46.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		5.0	38.0		5.0	40.0		5.0	40.0	
Max Q Clear Time (g_c+I1), s	7.0	26.5		7.0	40.0		7.0	21.8		7.0	10.7	
Green Ext Time (p_c), s	0.0	10.9		0.0	0.0		0.0	7.1		0.0	8.5	
Intersection Summary												
HCM 2010 Ctrl Delay			143.1									
HCM 2010 LOS			F									
Notes												

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	197	1110	1113	37	90	168
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	254	2652	1947	65	255	227
Arrive On Green	0.14	0.75	1.00	1.00	0.14	0.14
Sat Flow, veh/h	1774	3632	3586	117	1774	1583
Grp Volume(v), veh/h	221	1247	633	660	101	189
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1840	1774	1583
Q Serve(g_s), s	12.5	14.0	0.0	0.0	5.3	11.9
Cycle Q Clear(g_c), s	12.5	14.0	0.0	0.0	5.3	11.9
Prop In Lane	1.00			0.06	1.00	1.00
Lane Grp Cap(c), veh/h	254	2652	987	1026	255	227
V/C Ratio(X)	0.87	0.47	0.64	0.64	0.40	0.83
Avail Cap(c_a), veh/h	397	2652	987	1026	552	493
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.09	0.09	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	43.1	5.0	0.0	0.0	40.0	42.8
Incr Delay (d2), s/veh	0.8	0.1	2.9	2.8	1.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	5.8	5.0	0.8	0.8	2.5	0.5
Lane Grp Delay (d), s/veh	43.9	5.0	2.9	2.8	41.0	50.4
Lane Grp LOS	D	A	A	A	D	D
Approach Vol, veh/h		1468	1293		290	
Approach Delay, s/veh		10.9	2.9		47.1	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	19.7	83.0	63.3
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	23.0	77.0	49.0
Max Q Clear Time (g_c+I1), s	14.5	16.0	2.0
Green Ext Time (p_c), s	0.2	55.1	43.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1107	93	196	1076	74	220
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1732	146	255	2532	321	287
Arrive On Green	1.00	1.00	0.14	0.72	0.18	0.18
Sat Flow, veh/h	3395	278	1774	3632	1774	1583
Grp Volume(v), veh/h	673	691	223	1223	84	250
Grp Sat Flow(s),veh/h/ln	1770	1810	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	13.1	16.0	4.3	16.3
Cycle Q Clear(g_c), s	0.0	0.0	13.1	16.0	4.3	16.3
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	928	949	255	2532	321	287
V/C Ratio(X)	0.72	0.73	0.88	0.48	0.26	0.87
Avail Cap(c_a), veh/h	928	949	384	2532	551	492
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.90	0.90	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.6	6.6	37.4	42.3
Incr Delay (d2), s/veh	4.4	4.4	9.7	0.7	0.4	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.1	1.2	6.6	6.3	2.0	7.3
Lane Grp Delay (d), s/veh	4.4	4.4	54.2	7.2	37.8	50.8
Lane Grp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1364			1446	334	
Approach Delay, s/veh	4.4			14.5	47.5	
Approach LOS	A			B	D	

Timer				
Assigned Phs	4		3	8
Phs Duration (G+Y+Rc), s	61.7		20.3	82.0
Change Period (Y+Rc), s	6.0		5.0	6.0
Max Green Setting (Gmax), s	48.0		23.0	76.0
Max Q Clear Time (g_c+I1), s	2.0		15.1	18.0
Green Ext Time (p_c), s	42.9		0.2	53.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	312	8	21	141	35	6	29	22	71	25	45
Conflicting Peds, #/hr	56	0	0	0	0	56	12	0	0	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	380	10	26	172	43	7	35	27	87	30	55
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow All	184	0	0	392	0	0	672	657	448	674	657	240
Stage 1	-	-	-	-	-	-	422	422	-	235	235	-
Stage 2	-	-	-	-	-	-	250	235	-	439	422	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1391	-	-	1167	-	-	370	385	611	368	385	799
Stage 1	-	-	-	-	-	-	609	588	-	768	710	-
Stage 2	-	-	-	-	-	-	754	710	-	597	588	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1326	-	-	1113	-	-	294	362	577	297	362	754
Mov Capacity-2 Maneuver	-	-	-	-	-	-	294	362	-	297	362	-
Stage 1	-	-	-	-	-	-	594	574	-	750	684	-
Stage 2	-	-	-	-	-	-	620	684	-	502	574	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.9	15	19.9
HCM LOS	-	-	C	C

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	374	577	1326	-	-	1113	-	-	338	754
HCM Control Delay, s	16.2	11.4	7.745	0	-	8.311	0	-	22.6	10
HCM Lane V/C Ratio	0.14	0.03	0.01	-	-	0.02	-	-	0.40	0.05
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th-tile Q, veh	0.5	0.1	0.0	-	-	0.1	-	-	1.9	0.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	63.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	108	92	188	191	85	193	61	483	47	115	268	71
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	112	229	233	104	235	74	589	57	140	327	87
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	49.9	70.2	87.7	35.6
HCM LOS	E	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	20%	0%	54%	0%	69%	0%	100%	0%	0%
Vol Thru, %	80%	84%	46%	0%	31%	0%	0%	100%	56%
Vol Right, %	0%	16%	0%	100%	0%	100%	0%	0%	44%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	303	289	200	188	276	193	115	179	160
LT Vol	242	242	92	0	85	0	0	179	89
Through Vol	0	47	0	188	0	193	0	0	71
RT Vol	61	0	108	0	191	0	115	0	0
Lane Flow Rate	369	352	244	229	337	235	140	218	196
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	1	1	0.847	0.735	1	0.748	0.494	0.737	0.645
Departure Headway (Hd)	11.94	11.726	12.632	11.666	12.485	11.443	12.681	12.182	11.872
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	306	313	288	312	293	318	286	299	305
Service Time	9.667	9.454	10.332	9.366	10.205	9.163	10.392	9.892	9.583
HCM Lane V/C Ratio	1.206	1.125	0.847	0.734	1.15	0.739	0.49	0.729	0.643
HCM Control Delay	88.1	87.2	58.4	40.8	90.2	41.6	27.2	42.6	33.8
HCM Lane LOS	F	F	F	E	F	E	D	E	D
HCM 95th-tile Q	10.6	10.7	7.2	5.4	10.4	5.7	2.6	5.4	4.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	22	4	5	25	11	5	16	8	12	21	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	5	24	4	5	27	12	5	17	9	13	23	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	97	77	23	91	77	17	23	0	0	17	0	0
Stage 1	49	49	-	28	28	-	-	-	-	-	-	-
Stage 2	48	28	-	63	49	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	885	813	1054	893	813	1062	1592	-	-	1600	-	-
Stage 1	964	854	-	989	872	-	-	-	-	-	-	-
Stage 2	965	872	-	948	854	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	845	804	1054	862	804	1062	1592	-	-	1600	-	-
Mov Capacity-2 Maneuver	845	804	-	862	804	-	-	-	-	-	-	-
Stage 1	961	847	-	986	869	-	-	-	-	-	-	-
Stage 2	922	869	-	910	847	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.4	1.3	2.3
HCM LOS	A	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1592	-	-	836	868	1600	-	-
HCM Control Delay, s	7.269	0	-	9.5	9.4	7.268	0	-
HCM Lane V/C Ratio	0.00	-	-	0.04	0.05	0.01	-	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.2	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	9	18	4	8	16	18	560	5	11	621	15
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	4	4	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	10	20	5	9	18	20	636	6	12	706	17
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1107	1426	367	1067	1432	327	725	0	0	644	0	0
Stage 1	741	741	-	682	682	-	-	-	-	-	-	-
Stage 2	366	685	-	385	750	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	165	134	630	176	133	669	874	-	-	937	-	-
Stage 1	374	421	-	406	448	-	-	-	-	-	-	-
Stage 2	626	447	-	610	417	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	144	126	627	152	125	666	871	-	-	934	-	-
Mov Capacity-2 Maneuver	144	126	-	152	125	-	-	-	-	-	-	-
Stage 1	360	411	-	391	431	-	-	-	-	-	-	-
Stage 2	573	430	-	560	407	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.7	21.9	0.5	0.2
HCM LOS	D	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	871	-	-	206	245	934	-	-
HCM Control Delay, s	9.233	0.2	-	27.7	21.9	8.907	0.1	-
HCM Lane V/C Ratio	0.02	-	-	0.23	0.13	0.01	-	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th-tile Q, veh	0.1	-	-	0.9	0.4	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	797	67	15	973	13	0	0	82	0	0	5
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	906	76	17	1106	15	0	0	93	0	0	6
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1120	0	0	982	0	0	1572	2140	496	1641	2170	565
Stage 1	-	-	-	-	-	-	985	985	-	1147	1147	-
Stage 2	-	-	-	-	-	-	587	1155	-	494	1023	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	619	-	-	699	-	-	74	48	519	66	46	468
Stage 1	-	-	-	-	-	-	266	324	-	212	272	-
Stage 2	-	-	-	-	-	-	463	269	-	526	311	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	616	-	-	696	-	-	70	45	517	52	43	466
Mov Capacity-2 Maneuver	-	-	-	-	-	-	70	45	-	52	43	-
Stage 1	-	-	-	-	-	-	257	313	-	205	265	-
Stage 2	-	-	-	-	-	-	444	262	-	415	301	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	12.7	12.8
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	517	517	616	-	-	696	-	-	466	466
HCM Control Delay, s	12.4	12.9	11.045	-	-	10.302	-	-	12.8	12.8
HCM Lane V/C Ratio	0.06	0.12	0.03	-	-	0.02	-	-	0.00	0.01
HCM Lane LOS	B	B	B	-	-	B	-	-	B	B
HCM 95th-tile Q, veh	0.2	0.4	0.1	-	-	0.1	-	-	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)	36	750	50	155	689	155	101	332	62	223	423	211
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		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	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	48	1068	72	142	1062	239	110	1032	190	214	792	391
Arrive On Green	0.03	0.32	0.32	0.08	0.37	0.37	0.06	0.35	0.35	0.06	0.35	0.35
Sat Flow, veh/h	1774	3365	226	1774	2872	645	1774	2984	550	3442	2289	1132
Grp Volume(v), veh/h	38	415	427	163	447	441	106	205	209	235	343	324
Grp Sat Flow(s),veh/h/ln	1774	1770	1822	1774	1770	1748	1774	1770	1765	1721	1770	1651
Q Serve(g_s), s	2.4	23.6	23.6	9.0	24.0	24.0	6.7	9.7	9.9	7.0	17.7	18.0
Cycle Q Clear(g_c), s	2.4	23.6	23.6	9.0	24.0	24.0	6.7	9.7	9.9	7.0	17.7	18.0
Prop In Lane	1.00		0.12	1.00		0.37	1.00		0.31	1.00		0.69
Lane Grp Cap(c), veh/h	48	561	578	142	654	646	110	612	610	214	612	571
V/C Ratio(X)	0.79	0.74	0.74	1.15	0.68	0.68	0.96	0.34	0.34	1.10	0.56	0.57
Avail Cap(c_a), veh/h	94	596	614	142	654	646	110	612	610	214	612	571
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	34.3	34.3	51.9	30.0	30.0	52.8	27.3	27.4	52.9	29.9	30.0
Incr Delay (d2), s/veh	23.9	5.8	5.7	122.1	3.8	3.8	73.7	1.5	1.5	90.9	3.7	4.0
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	11.4	11.7	8.9	11.4	11.2	5.3	4.5	4.6	5.8	8.5	8.1
Lane Grp Delay (d), s/veh	78.4	40.2	40.0	174.0	33.7	33.8	126.4	28.8	28.9	143.8	33.6	34.1
Lane Grp LOS	E	D	D	F	C	C	F	C	C	F	C	C
Approach Vol, veh/h		880			1051			520			902	
Approach Delay, s/veh		41.7			55.5			48.7			62.5	
Approach LOS		D			E			D			E	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.1	41.8		14.0	47.7		12.0	45.0		12.0	45.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	6.0	38.0		9.0	41.0		7.0	39.0		7.0	39.0	
Max Q Clear Time (g_c+I1), s	4.4	25.6		11.0	26.0		8.7	11.9		9.0	20.0	
Green Ext Time (p_c), s	0.0	10.0		0.0	12.8		0.0	7.7		0.0	6.8	
Intersection Summary												
HCM 2010 Ctrl Delay			52.7									
HCM 2010 LOS			D									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	58	46	12	62	10	86	394	59	172	381	75
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)	0.98		0.97	0.98		0.97	1.00		1.00	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	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	1	1	0	1	1	0	1	2	0	1	2	0
Cap, veh/h	455	265	209	424	433	71	117	917	135	206	1021	200
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.07	0.30	0.30	0.12	0.35	0.35
Sat Flow, veh/h	1284	952	752	1249	1554	255	1774	3095	457	1774	2949	578
Grp Volume(v), veh/h	97	0	111	13	0	78	92	241	246	185	245	246
Grp Sat Flow(s),veh/h/ln	1284	0	1704	1249	0	1809	1774	1770	1782	1774	1770	1757
Q Serve(g_s), s	3.2	0.0	2.6	0.4	0.0	1.7	2.6	5.7	5.8	5.3	5.4	5.5
Cycle Q Clear(g_c), s	4.9	0.0	2.6	3.0	0.0	1.7	2.6	5.7	5.8	5.3	5.4	5.5
Prop In Lane	1.00		0.44	1.00		0.14	1.00		0.26	1.00		0.33
Lane Grp Cap(c), veh/h	455	0	475	424	0	504	117	524	528	206	613	608
V/C Ratio(X)	0.21	0.00	0.23	0.03	0.00	0.15	0.79	0.46	0.47	0.90	0.40	0.41
Avail Cap(c_a), veh/h	793	0	923	753	0	980	182	684	689	206	708	703
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	0.0	14.4	15.6	0.0	14.1	23.8	14.8	14.9	22.6	12.8	12.9
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.1	11.4	1.3	1.4	36.3	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	0.0	1.1	0.1	0.0	0.7	1.5	2.5	2.5	4.3	2.3	2.3
Lane Grp Delay (d), s/veh	16.1	0.0	14.7	15.6	0.0	14.2	35.2	16.2	16.2	58.9	13.7	13.8
Lane Grp LOS	B		B	B		B	D	B	B	E	B	B
Approach Vol, veh/h		208			91			579			676	
Approach Delay, s/veh		15.3			14.4			19.2			26.1	
Approach LOS		B			B			B			C	
Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.4			19.4		8.4	21.3		11.0	23.9	
Change Period (Y+Rc), s		5.0			5.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s		28.0			28.0		5.3	20.0		6.0	20.7	
Max Q Clear Time (g_c+I1), s		6.9			5.0		4.6	7.8		7.3	7.5	
Green Ext Time (p_c), s		1.3			1.4		0.0	7.4		0.0	7.8	
Intersection Summary												
HCM 2010 Ctrl Delay			21.4									
HCM 2010 LOS			C									
Notes												

Intersection	
Intersection Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	993	74	64	1042	51	0	0	76	0	0	53
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1128	84	73	1184	58	0	0	86	0	0	60
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1242	0	0	1213	0	0	1920	2570	607	1935	2583	622
Stage 1	-	-	-	-	-	-	1182	1182	-	1359	1359	-
Stage 2	-	-	-	-	-	-	738	1388	-	576	1224	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	556	-	-	571	-	-	41	26	439	40	25	430
Stage 1	-	-	-	-	-	-	201	262	-	157	215	-
Stage 2	-	-	-	-	-	-	376	208	-	470	250	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	556	-	-	571	-	-	32	22	439	29	22	430
Mov Capacity-2 Maneuver	-	-	-	-	-	-	32	22	-	29	22	-
Stage 1	-	-	-	-	-	-	199	259	-	155	188	-
Stage 2	-	-	-	-	-	-	282	181	-	373	247	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	14.2	14.1
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	439	439	556	-	-	571	-	-	430	430
HCM Control Delay, s	13.8	14.4	11.542	-	-	12.223	-	-	13.8	14.2
HCM Lane V/C Ratio	0.07	0.13	0.01	-	-	0.13	-	-	0.05	0.09
HCM Lane LOS	B	B	B	-	-	B	-	-	B	B
HCM 95th-tile Q, veh	0.2	0.4	0.0	-	-	0.4	-	-	0.1	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)	187	799	42	138	993	151	88	479	217	291	274	76
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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	191	1188	63	175	1043	158	118	712	321	291	873	239
Arrive On Green	0.11	0.35	0.35	0.10	0.34	0.34	0.07	0.30	0.30	0.08	0.32	0.32
Sat Flow, veh/h	1774	3419	181	1774	3081	467	1774	2372	1070	3442	2746	752
Grp Volume(v), veh/h	203	449	465	150	619	624	96	388	369	316	190	191
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1779	1774	1770	1673	1721	1770	1728
Q Serve(g_s), s	14.0	28.9	28.9	10.8	44.0	44.0	6.9	25.6	25.7	11.0	10.7	11.0
Cycle Q Clear(g_c), s	14.0	28.9	28.9	10.8	44.0	44.0	6.9	25.6	25.7	11.0	10.7	11.0
Prop In Lane	1.00		0.10	1.00		0.26	1.00		0.64	1.00		0.43
Lane Grp Cap(c), veh/h	191	615	636	175	599	602	118	531	502	291	562	549
V/C Ratio(X)	1.06	0.73	0.73	0.86	1.03	1.04	0.81	0.73	0.73	1.09	0.34	0.35
Avail Cap(c_a), veh/h	191	615	636	191	599	602	136	531	502	291	562	549
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	37.1	37.1	57.7	43.0	43.0	59.8	40.8	40.9	59.5	33.9	34.0
Incr Delay (d2), s/veh	82.7	5.4	5.2	28.5	45.6	46.5	26.5	8.6	9.2	77.3	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	10.9	13.9	14.3	6.4	27.4	27.7	4.1	12.8	12.2	8.1	5.1	5.1
Lane Grp Delay (d), s/veh	140.7	42.5	42.3	86.2	88.6	89.5	86.4	49.4	50.1	136.8	35.5	35.7
Lane Grp LOS	F	D	D	F	F	F	F	D	D	F	D	D
Approach Vol, veh/h		1117			1393			853			697	
Approach Delay, s/veh		60.2			88.8			53.9			81.5	
Approach LOS		E			F			D			F	

Timer

Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	19.0	51.2		17.8	50.0		13.7	45.0		16.0	47.3	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	14.0	44.0		14.0	44.0		10.0	39.0		11.0	40.0	
Max Q Clear Time (g_c+I1), s	16.0	30.9		12.8	46.0		8.9	27.7		13.0	13.0	
Green Ext Time (p_c), s	0.0	12.3		0.0	0.0		0.0	5.4		0.0	8.3	

Intersection Summary

HCM 2010 Ctrl Delay			72.3									
HCM 2010 LOS			E									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	108	92	188	191	85	193	61	483	47	115	268	71
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		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1	1	0	1	1	0	1	2	0	1	2	0
Cap, veh/h	408	233	477	407	217	490	94	891	86	180	892	234
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.05	0.27	0.27	0.10	0.32	0.32
Sat Flow, veh/h	1030	542	1107	1028	504	1139	1774	3258	315	1774	2770	726
Grp Volume(v), veh/h	132	0	341	233	0	339	74	319	327	140	207	207
Grp Sat Flow(s),veh/h/ln	1030	0	1649	1028	0	1643	1774	1770	1803	1774	1770	1727
Q Serve(g_s), s	6.5	0.0	9.2	13.0	0.0	9.1	2.5	9.9	9.9	4.8	5.5	5.7
Cycle Q Clear(g_c), s	15.7	0.0	9.2	22.2	0.0	9.1	2.5	9.9	9.9	4.8	5.5	5.7
Prop In Lane	1.00		0.67	1.00		0.69	1.00		0.17	1.00		0.42
Lane Grp Cap(c), veh/h	408	0	710	407	0	707	94	484	493	180	570	556
V/C Ratio(X)	0.32	0.00	0.48	0.57	0.00	0.48	0.79	0.66	0.66	0.78	0.36	0.37
Avail Cap(c_a), veh/h	448	0	774	447	0	772	144	630	642	345	831	811
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	12.6	20.6	0.0	12.6	28.9	19.9	19.9	27.1	16.1	16.1
Incr Delay (d2), s/veh	0.5	0.0	0.5	1.5	0.0	0.5	14.7	1.6	1.6	7.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.6	0.0	3.5	3.3	0.0	3.5	1.5	4.3	4.4	2.4	2.3	2.3
Lane Grp Delay (d), s/veh	18.7	0.0	13.1	22.0	0.0	13.1	43.6	21.5	21.5	34.1	16.5	16.5
Lane Grp LOS	B		B	C		B	D	C	C	C	B	B
Approach Vol, veh/h		473			572			720			554	
Approach Delay, s/veh		14.7			16.8			23.8			20.9	
Approach LOS		B			B			C			C	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		30.6			30.6		7.3	20.9		10.3	23.9	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		29.0			29.0		5.0	22.0		12.0	29.0	
Max Q Clear Time (g_c+I1), s		17.7			24.2		4.5	11.9		6.8	7.7	
Green Ext Time (p_c), s		4.4			2.4		0.0	4.6		0.1	6.8	

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

Appendix F

Intersection
Level of Service
Calculations

Future with Current Zoning
Traffic Conditions

Intersection	
Intersection Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	797	95	72	973	13	11	0	31	1	0	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	906	108	82	1106	15	12	0	35	1	0	5
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow All	1120	0	0	1014	0	0	1717	2285	512	1771	2332	565
Stage 1	-	-	-	-	-	-	1001	1001	-	1277	1277	-
Stage 2	-	-	-	-	-	-	716	1284	-	494	1055	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	619	-	-	680	-	-	58	39	507	53	36	468
Stage 1	-	-	-	-	-	-	260	319	-	176	236	-
Stage 2	-	-	-	-	-	-	387	234	-	526	301	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	616	-	-	677	-	-	51	33	505	43	31	466
Mov Capacity-2 Maneuver	-	-	-	-	-	-	51	33	-	43	31	-
Stage 1	-	-	-	-	-	-	252	309	-	170	207	-
Stage 2	-	-	-	-	-	-	335	206	-	471	291	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.8	36.2	28.6
HCM LOS	-	-	E	D

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	90	505	616	-	-	677	-	-	89	466
HCM Control Delay, s	59.1	12.5	11.045	-	-	11.047	-	-	46.7	12.8
HCM Lane V/C Ratio	0.27	0.05	0.03	-	-	0.12	-	-	0.03	0.01
HCM Lane LOS	F	B	B	-	-	B	-	-	E	B
HCM 95th-tile Q, veh	1.0	0.1	0.1	-	-	0.4	-	-	0.1	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)	33	746	50	226	721	155	101	319	47	233	481	236
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		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	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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	53	1127	76	98	1045	224	82	1118	162	159	829	404
Arrive On Green	0.03	0.33	0.33	0.06	0.36	0.36	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3364	227	1774	2899	622	1774	3104	449	3442	2301	1123
Grp Volume(v), veh/h	35	413	425	238	463	459	106	190	195	245	389	365
Grp Sat Flow(s),veh/h/ln	1774	1770	1822	1774	1770	1752	1774	1770	1783	1721	1770	1654
Q Serve(g_s), s	2.1	21.9	21.9	6.0	24.6	24.6	5.0	8.3	8.5	5.0	19.5	19.6
Cycle Q Clear(g_c), s	2.1	21.9	21.9	6.0	24.6	24.6	5.0	8.3	8.5	5.0	19.5	19.6
Prop In Lane	1.00		0.12	1.00		0.36	1.00		0.25	1.00		0.68
Lane Grp Cap(c), veh/h	53	593	610	98	638	631	82	637	642	159	637	596
V/C Ratio(X)	0.66	0.70	0.70	2.42	0.73	0.73	1.29	0.30	0.30	1.54	0.61	0.61
Avail Cap(c_a), veh/h	82	621	639	98	638	631	82	637	642	159	637	596
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	31.2	31.2	51.1	30.0	30.0	51.6	24.8	24.9	51.6	28.4	28.4
Incr Delay (d2), s/veh	12.9	4.3	4.2	669.2	5.1	5.1	197.1	1.2	1.2	272.5	4.3	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	10.3	10.6	21.0	11.8	11.7	6.8	3.9	4.0	8.2	9.4	8.9
Lane Grp Delay (d), s/veh	64.8	35.5	35.4	720.3	35.1	35.1	248.7	26.0	26.1	324.1	32.7	33.1
Lane Grp LOS	E	D	D	F	D	D	F	C	C	F	C	C
Approach Vol, veh/h		873			1160			491			999	
Approach Delay, s/veh		36.7			175.7			74.1			104.3	
Approach LOS		D			F			E			F	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.3	42.3		11.0	45.0		10.0	45.0		10.0	45.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		6.0	39.0		5.0	39.0		5.0	39.0	
Max Q Clear Time (g_c+I1), s	4.1	23.9		8.0	26.6		7.0	10.5		7.0	21.6	
Green Ext Time (p_c), s	0.0	12.2		0.0	10.9		0.0	8.4		0.0	6.9	

Intersection Summary			
HCM 2010 Ctrl Delay		106.9	
HCM 2010 LOS		F	

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	167	859	902	40	88	200
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	242	2464	1740	77	324	289
Arrive On Green	0.14	0.70	1.00	1.00	0.18	0.18
Sat Flow, veh/h	1774	3632	3542	154	1774	1583
Grp Volume(v), veh/h	204	1048	564	585	107	244
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1832	1774	1583
Q Serve(g_s), s	10.2	11.6	0.0	0.0	4.7	13.5
Cycle Q Clear(g_c), s	10.2	11.6	0.0	0.0	4.7	13.5
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	242	2464	893	925	324	289
V/C Ratio(X)	0.84	0.43	0.63	0.63	0.33	0.84
Avail Cap(c_a), veh/h	549	2464	893	925	627	560
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.28	0.28	0.94	0.94	1.00	1.00
Uniform Delay (d), s/veh	38.1	5.9	0.0	0.0	32.2	35.8
Incr Delay (d2), s/veh	0.9	0.2	3.2	3.1	0.6	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.7	4.3	0.8	0.8	2.2	0.5
Lane Grp Delay (d), s/veh	39.1	6.1	3.2	3.1	32.8	42.5
Lane Grp LOS	D	A	A	A	C	D
Approach Vol, veh/h		1252	1149		351	
Approach Delay, s/veh		11.5	3.1		39.5	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	17.3	69.0	51.7
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	28.0	63.0	34.0
Max Q Clear Time (g_c+I1), s	12.2	13.6	2.0
Green Ext Time (p_c), s	0.2	41.9	28.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	915	32	285	831	111	190
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1545	54	348	2482	290	259
Arrive On Green	0.89	0.89	0.20	0.70	0.16	0.16
Sat Flow, veh/h	3578	123	1774	3632	1774	1583
Grp Volume(v), veh/h	505	525	310	903	121	207
Grp Sat Flow(s),veh/h/ln	1770	1838	1774	1770	1774	1583
Q Serve(g_s), s	6.1	6.1	13.8	8.3	5.0	10.2
Cycle Q Clear(g_c), s	6.1	6.1	13.8	8.3	5.0	10.2
Prop In Lane		0.07	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	785	815	348	2482	290	259
V/C Ratio(X)	0.64	0.64	0.89	0.36	0.42	0.80
Avail Cap(c_a), veh/h	785	815	393	2482	874	780
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.93	0.93	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.9	2.9	31.8	4.9	30.5	32.7
Incr Delay (d2), s/veh	3.8	3.6	18.6	0.4	1.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.0	2.0	7.9	3.2	2.3	4.4
Lane Grp Delay (d), s/veh	6.7	6.5	50.4	5.3	31.5	38.4
Lane Grp LOS	A	A	D	A	C	D
Approach Vol, veh/h	1030			1213	328	
Approach Delay, s/veh	6.6			16.8	35.8	
Approach LOS	A			B	D	

Timer				
Assigned Phs	4		3	8
Phs Duration (G+Y+Rc), s	42.0		20.9	62.9
Change Period (Y+Rc), s	6.0		5.0	6.0
Max Green Setting (Gmax), s	36.0		18.0	56.0
Max Q Clear Time (g_c+I1), s	8.1		15.8	10.3
Green Ext Time (p_c), s	23.6		0.1	35.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	98	12	5	176	12	3	17	5	61	98	8
Conflicting Peds, #/hr	84	0	0	0	0	84	7	0	4	4	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	102	13	5	183	13	3	18	5	64	102	8
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	190	0	0	109	0	0	388	337	193	346	337	274
Stage 1	-	-	-	-	-	-	136	136	-	201	201	-
Stage 2	-	-	-	-	-	-	252	201	-	145	136	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1384	-	-	1481	-	-	571	584	849	608	584	765
Stage 1	-	-	-	-	-	-	867	784	-	801	735	-
Stage 2	-	-	-	-	-	-	752	735	-	858	784	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1287	-	-	1377	-	-	444	568	785	539	568	707
Mov Capacity-2 Maneuver	-	-	-	-	-	-	444	568	-	539	568	-
Stage 1	-	-	-	-	-	-	852	770	-	787	728	-
Stage 2	-	-	-	-	-	-	592	728	-	765	770	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.2	11.4	14.1
HCM LOS	-	-	B	B

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	558	785	1287	-	-	1377	-	-	558	707
HCM Control Delay, s	11.7	9.6	7.827	0	-	7.624	0	-	14.2	10.1
HCM Lane V/C Ratio	0.04	0.00	0.01	-	-	0.00	-	-	0.30	0.01
HCM Lane LOS	B	A	A	A	-	A	A	-	B	B
HCM 95th-tile Q, veh	0.1	0.0	0.0	-	-	0.0	-	-	1.3	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	28.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	63	58	42	12	107	10	140	394	59	172	381	204
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	68	62	45	13	115	11	151	424	63	185	410	219
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	17.4	18.2	37	25.7
HCM LOS	C	C	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	42%	0%	52%	0%	10%	0%	100%	0%	0%
Vol Thru, %	58%	77%	48%	0%	90%	0%	0%	100%	38%
Vol Right, %	0%	23%	0%	100%	0%	100%	0%	0%	62%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	337	256	121	42	119	10	172	254	331
LT Vol	197	197	58	0	107	0	0	254	127
Through Vol	0	59	0	42	0	10	0	0	204
RT Vol	140	0	63	0	12	0	172	0	0
Lane Flow Rate	362	275	130	45	128	11	185	273	356
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.867	0.629	0.37	0.116	0.362	0.028	0.446	0.619	0.763
Departure Headway (Hd)	8.61	8.232	10.244	9.253	10.186	9.41	8.673	8.16	7.717
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	420	438	351	387	353	380	416	442	470
Service Time	6.358	5.98	8.011	7.019	7.953	7.177	6.419	5.906	5.463
HCM Lane V/C Ratio	0.862	0.628	0.37	0.116	0.363	0.029	0.445	0.618	0.757
HCM Control Delay	46.8	24	18.9	13.2	18.7	12.4	18.3	23.3	31.4
HCM Lane LOS	E	C	C	B	C	B	C	C	D
HCM 95th-tile Q	8.7	4.2	1.7	0.4	1.6	0.1	2.2	4.1	6.5

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	7	2	2	6	62	2	29	2	9	13	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	7	8	2	2	7	67	2	32	2	10	14	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	107	70	14	75	70	32	14	0	0	32	0	0
Stage 1	34	34	-	36	36	-	-	-	-	-	-	-
Stage 2	73	36	-	39	34	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	872	821	1066	915	821	1042	1604	-	-	1580	-	-
Stage 1	982	867	-	980	865	-	-	-	-	-	-	-
Stage 2	937	865	-	976	867	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	806	815	1066	902	815	1042	1604	-	-	1580	-	-
Mov Capacity-2 Maneuver	806	815	-	902	815	-	-	-	-	-	-	-
Stage 1	981	862	-	979	864	-	-	-	-	-	-	-
Stage 2	869	864	-	960	862	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	8.8	0.4	2.4
HCM LOS	A	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1604	-	-	838	1013	1580	-	-
HCM Control Delay, s	7.247	0	-	9.4	8.8	7.293	0	-
HCM Lane V/C Ratio	0.00	-	-	0.02	0.07	0.01	-	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.2	0.0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	8	18	13	73	54	515	27	22	410	3
Conflicting Peds, #/hr	2	0	0	0	0	2	8	0	6	6	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
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	5	5	9	20	14	79	59	560	29	24	446	3
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow All	903	1206	234	969	1193	305	451	0	0	591	0	0
Stage 1	497	497	-	694	694	-	-	-	-	-	-	-
Stage 2	406	709	-	275	499	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	232	182	768	208	186	691	1106	-	-	981	-	-
Stage 1	523	543	-	399	442	-	-	-	-	-	-	-
Stage 2	593	435	-	708	542	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	174	161	762	182	165	685	1099	-	-	974	-	-
Mov Capacity-2 Maneuver	174	161	-	182	165	-	-	-	-	-	-	-
Stage 1	480	524	-	366	406	-	-	-	-	-	-	-
Stage 2	462	400	-	665	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	19.2	1	0.5
HCM LOS	C	C	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1099	-	-	256	366	974	-	-
HCM Control Delay, s	8.46	0.3	-	20.2	19.2	8.789	0.1	-
HCM Lane V/C Ratio	0.05	-	-	0.08	0.31	0.03	-	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th-tile Q, veh	0.2	-	-	0.2	1.3	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	36.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	993	49	62	1042	51	55	8	75	6	3	44
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	130		0	120		0	0		25	0		0
Median Width		12			12			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1128	56	70	1184	58	62	9	85	7	3	50
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	1242	0	0	1184	0	0	1903	2551	593	1934	2549	622
Stage 1	-	-	-	-	-	-	1168	1168	-	1354	1354	-
Stage 2	-	-	-	-	-	-	735	1383	-	580	1195	-
Follow-up Headway	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Capacity-1 Maneuver	556	-	-	586	-	-	# 42	26	449	40	26	430
Stage 1	-	-	-	-	-	-	206	266	-	158	216	-
Stage 2	-	-	-	-	-	-	377	209	-	467	258	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	556	-	-	586	-	-	# 30	23	449	20	23	430
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 30	23	-	20	23	-
Stage 1	-	-	-	-	-	-	204	263	-	156	190	-
Stage 2	-	-	-	-	-	-	288	184	-	361	255	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	$ 597.7	68.9
HCM LOS	-	-	F	F

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	39	449	556	-	-	586	-	-	51	430
HCM Control Delay, s	$ 929.2	14.2	11.542	-	-	11.981	-	-	136.8	14.1
HCM Lane V/C Ratio	2.56	0.13	0.01	-	-	0.12	-	-	0.53	0.08
HCM Lane LOS	F	B	B	-	-	B	-	-	F	B
HCM 95th-tile Q, veh	11.0	0.4	0.0	-	-	0.4	-	-	2.0	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)	207	825	42	130	992	151	88	524	274	291	267	75
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	1	2	0	1	2	0	1	2	0	2	2	0
Cap, veh/h	81	1183	61	81	1064	162	81	818	427	156	995	276
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.36	0.36	0.05	0.36	0.36
Sat Flow, veh/h	1774	3425	176	1774	3081	468	1774	2249	1175	3442	2737	760
Grp Volume(v), veh/h	225	463	480	141	618	624	96	448	420	316	186	186
Grp Sat Flow(s),veh/h/ln	1774	1770	1831	1774	1770	1779	1774	1770	1654	1721	1770	1727
Q Serve(g_s), s	5.0	25.5	25.5	5.0	38.0	38.0	5.0	23.8	23.8	5.0	8.2	8.5
Cycle Q Clear(g_c), s	5.0	25.5	25.5	5.0	38.0	38.0	5.0	23.8	23.8	5.0	8.2	8.5
Prop In Lane	1.00		0.10	1.00		0.26	1.00		0.71	1.00		0.44
Lane Grp Cap(c), veh/h	81	611	633	81	611	614	81	643	602	156	643	628
V/C Ratio(X)	2.79	0.76	0.76	1.75	1.01	1.01	1.19	0.70	0.70	2.02	0.29	0.30
Avail Cap(c_a), veh/h	81	611	633	81	611	614	81	643	602	156	643	628
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	31.9	31.9	52.5	36.0	36.0	52.5	29.8	29.8	52.5	24.9	25.0
Incr Delay (d2), s/veh	839.0	6.4	6.2	382.7	39.3	40.1	160.3	6.1	6.6	480.7	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	21.1	12.4	12.8	10.9	23.5	23.7	5.9	11.6	10.9	12.7	3.8	3.8
Lane Grp Delay (d), s/veh	891.5	38.4	38.2	435.2	75.3	76.1	212.8	36.0	36.4	533.2	26.0	26.2
Lane Grp LOS	F	D	D	F	F	F	F	D	D	F	C	C
Approach Vol, veh/h		1168			1383			964			688	
Approach Delay, s/veh		202.6			112.3			53.8			259.0	
Approach LOS		F			F			D			F	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	44.0		10.0	44.0		10.0	46.0		10.0	46.0	
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Max Green Setting (Gmax), s	5.0	38.0		5.0	38.0		5.0	40.0		5.0	40.0	
Max Q Clear Time (g_c+I1), s	7.0	27.5		7.0	40.0		7.0	25.8		7.0	10.5	
Green Ext Time (p_c), s	0.0	9.9		0.0	0.0		0.0	6.9		0.0	9.6	
Intersection Summary												
HCM 2010 Ctrl Delay			148.0									
HCM 2010 LOS			F									
Notes												

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	197	1193	1105	37	90	168
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	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
Lanes	1	2	2	0	1	1
Cap, veh/h	254	2652	1946	66	255	227
Arrive On Green	0.14	0.75	1.00	1.00	0.14	0.14
Sat Flow, veh/h	1774	3632	3585	118	1774	1583
Grp Volume(v), veh/h	221	1340	629	655	101	189
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1840	1774	1583
Q Serve(g_s), s	12.5	15.7	0.0	0.0	5.3	11.9
Cycle Q Clear(g_c), s	12.5	15.7	0.0	0.0	5.3	11.9
Prop In Lane	1.00			0.06	1.00	1.00
Lane Grp Cap(c), veh/h	254	2652	987	1026	255	227
V/C Ratio(X)	0.87	0.51	0.64	0.64	0.40	0.83
Avail Cap(c_a), veh/h	397	2652	987	1026	552	493
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.09	0.09	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	43.1	5.2	0.0	0.0	40.0	42.8
Incr Delay (d2), s/veh	0.8	0.1	2.9	2.8	1.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	5.8	5.6	0.8	0.8	2.5	0.5
Lane Grp Delay (d), s/veh	43.9	5.3	2.9	2.8	41.0	50.4
Lane Grp LOS	D	A	A	A	D	D
Approach Vol, veh/h		1561	1284		290	
Approach Delay, s/veh		10.7	2.8		47.1	
Approach LOS		B	A		D	

Timer			
Assigned Phs	7	4	8
Phs Duration (G+Y+Rc), s	19.7	83.0	63.3
Change Period (Y+Rc), s	5.0	6.0	6.0
Max Green Setting (Gmax), s	23.0	77.0	49.0
Max Q Clear Time (g_c+I1), s	14.5	17.7	2.0
Green Ext Time (p_c), s	0.2	54.5	43.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1190	93	196	1068	74	220
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus Adj	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
Lanes	2	0	1	2	1	1
Cap, veh/h	1743	136	255	2532	321	287
Arrive On Green	1.00	1.00	0.14	0.72	0.18	0.18
Sat Flow, veh/h	3416	260	1774	3632	1774	1583
Grp Volume(v), veh/h	718	740	223	1214	84	250
Grp Sat Flow(s),veh/h/ln	1770	1813	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	13.1	15.8	4.3	16.3
Cycle Q Clear(g_c), s	0.0	0.0	13.1	15.8	4.3	16.3
Prop In Lane		0.14	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	928	951	255	2532	321	287
V/C Ratio(X)	0.77	0.78	0.88	0.48	0.26	0.87
Avail Cap(c_a), veh/h	928	951	384	2532	551	492
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	0.88	0.88	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.6	6.6	37.4	42.3
Incr Delay (d2), s/veh	5.5	5.5	9.7	0.7	0.4	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.4	1.5	6.6	6.3	2.0	7.3
Lane Grp Delay (d), s/veh	5.5	5.5	54.2	7.2	37.8	50.8
Lane Grp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1458			1437	334	
Approach Delay, s/veh	5.5			14.5	47.5	
Approach LOS	A			B	D	

Timer			
Assigned Phs	4	3	8
Phs Duration (G+Y+Rc), s	61.7	20.3	82.0
Change Period (Y+Rc), s	6.0	5.0	6.0
Max Green Setting (Gmax), s	48.0	23.0	76.0
Max Q Clear Time (g_c+I1), s	2.0	15.1	17.8
Green Ext Time (p_c), s	43.4	0.2	54.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	309	9	8	151	32	12	94	4	38	31	45
Conflicting Peds, #/hr	56	0	0	0	0	56	12	0	0	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	0		25	0		25	0		25
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	377	11	10	184	39	15	115	5	46	38	55
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	196	0	0	389	0	0	653	634	445	691	634	252
Stage 1	-	-	-	-	-	-	418	418	-	216	216	-
Stage 2	-	-	-	-	-	-	235	216	-	475	418	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1377	-	-	1170	-	-	380	397	613	359	397	787
Stage 1	-	-	-	-	-	-	612	591	-	786	724	-
Stage 2	-	-	-	-	-	-	768	724	-	570	591	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1313	-	-	1115	-	-	301	379	579	253	379	743
Mov Capacity-2 Maneuver	-	-	-	-	-	-	301	379	-	253	379	-
Stage 1	-	-	-	-	-	-	597	576	-	766	710	-
Stage 2	-	-	-	-	-	-	636	710	-	425	576	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	19.8	17.8
HCM LOS	-	-	C	C

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Cap, veh/h	370	579	1313	-	-	1115	-	-	333	743
HCM Control Delay, s	20	11.3	7.773	0	-	8.257	0	-	20.5	10.1
HCM Lane V/C Ratio	0.35	0.01	0.01	-	-	0.01	-	-	0.31	0.05
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th-tile Q, veh	1.6	0.0	0.0	-	-	0.0	-	-	1.3	0.2

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	72.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	210	129	233	191	88	193	61	483	47	115	268	56
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	256	157	284	233	107	235	74	589	57	140	327	68
Number of Lanes	0	1	1	0	1	1	0	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	81.5	72.6	89.3	37.9
HCM LOS	F	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	20%	0%	62%	0%	68%	0%	100%	0%	0%
Vol Thru, %	80%	84%	38%	0%	32%	0%	0%	100%	61%
Vol Right, %	0%	16%	0%	100%	0%	100%	0%	0%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	303	289	339	233	279	193	115	179	145
LT Vol	242	242	129	0	88	0	0	179	89
Through Vol	0	47	0	233	0	193	0	0	56
RT Vol	61	0	210	0	191	0	115	0	0
Lane Flow Rate	369	352	413	284	340	235	140	218	177
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	1	1	1	0.917	1	0.769	0.513	0.767	0.61
Departure Headway (Hd)	12.378	12.165	12.625	11.619	12.799	11.761	13.165	12.665	12.396
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	295	303	289	313	286	308	273	285	291
Service Time	10.078	9.865	10.409	9.403	10.587	9.548	10.954	10.454	10.185
HCM Lane V/C Ratio	1.251	1.162	1.429	0.907	1.189	0.763	0.513	0.765	0.608
HCM Control Delay	89.7	88.9	91	67.7	91.7	45	29.1	47.6	32.9
HCM Lane LOS	F	F	F	F	F	E	D	E	D
HCM 95th-tile Q	10.4	10.5	10.3	8.8	10.2	6	2.7	5.8	3.7

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	22	4	5	25	17	5	16	8	58	39	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		25	0		25
Median Width		0			0			0			0	
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	4	24	4	5	27	18	5	17	9	63	42	26
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	219	196	42	211	196	17	42	0	0	17	0	0
Stage 1	168	168	-	28	28	-	-	-	-	-	-	-
Stage 2	51	28	-	183	168	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	737	699	1029	746	699	1062	1567	-	-	1600	-	-
Stage 1	834	759	-	989	872	-	-	-	-	-	-	-
Stage 2	962	872	-	819	759	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	678	668	1029	698	668	1062	1567	-	-	1600	-	-
Mov Capacity-2 Maneuver	678	668	-	698	668	-	-	-	-	-	-	-
Stage 1	831	728	-	986	869	-	-	-	-	-	-	-
Stage 2	913	869	-	756	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	10	1.3	3.5
HCM LOS	B	B	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	1567	-	-	702	776	1600	-	-
HCM Control Delay, s	7.305	0	-	10.4	10	7.342	0	-
HCM Lane V/C Ratio	0.00	-	-	0.05	0.07	0.04	-	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th-tile Q, veh	0.0	-	-	0.1	0.2	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	16	57	14	9	16	23	560	5	19	658	15
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	4	4	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	18	65	16	10	18	26	636	6	22	748	17
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1179	1497	388	1121	1503	327	767	0	0	644	0	0
Stage 1	801	801	-	693	693	-	-	-	-	-	-	-
Stage 2	378	696	-	428	810	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	146	121	611	161	120	669	842	-	-	937	-	-
Stage 1	344	395	-	400	443	-	-	-	-	-	-	-
Stage 2	616	441	-	575	391	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	123	110	608	117	109	666	839	-	-	934	-	-
Mov Capacity-2 Maneuver	123	110	-	117	109	-	-	-	-	-	-	-
Stage 1	327	378	-	380	421	-	-	-	-	-	-	-
Stage 2	555	419	-	467	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.6	33	0.6	0.4
HCM LOS	D	D	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	839	-	-	244	172	934	-	-
HCM Control Delay, s	9.429	0.2	-	29.6	33	8.946	0.2	-
HCM Lane V/C Ratio	0.03	-	-	0.41	0.26	0.02	-	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th-tile Q, veh	0.1	-	-	1.9	1.0	0.1	-	-

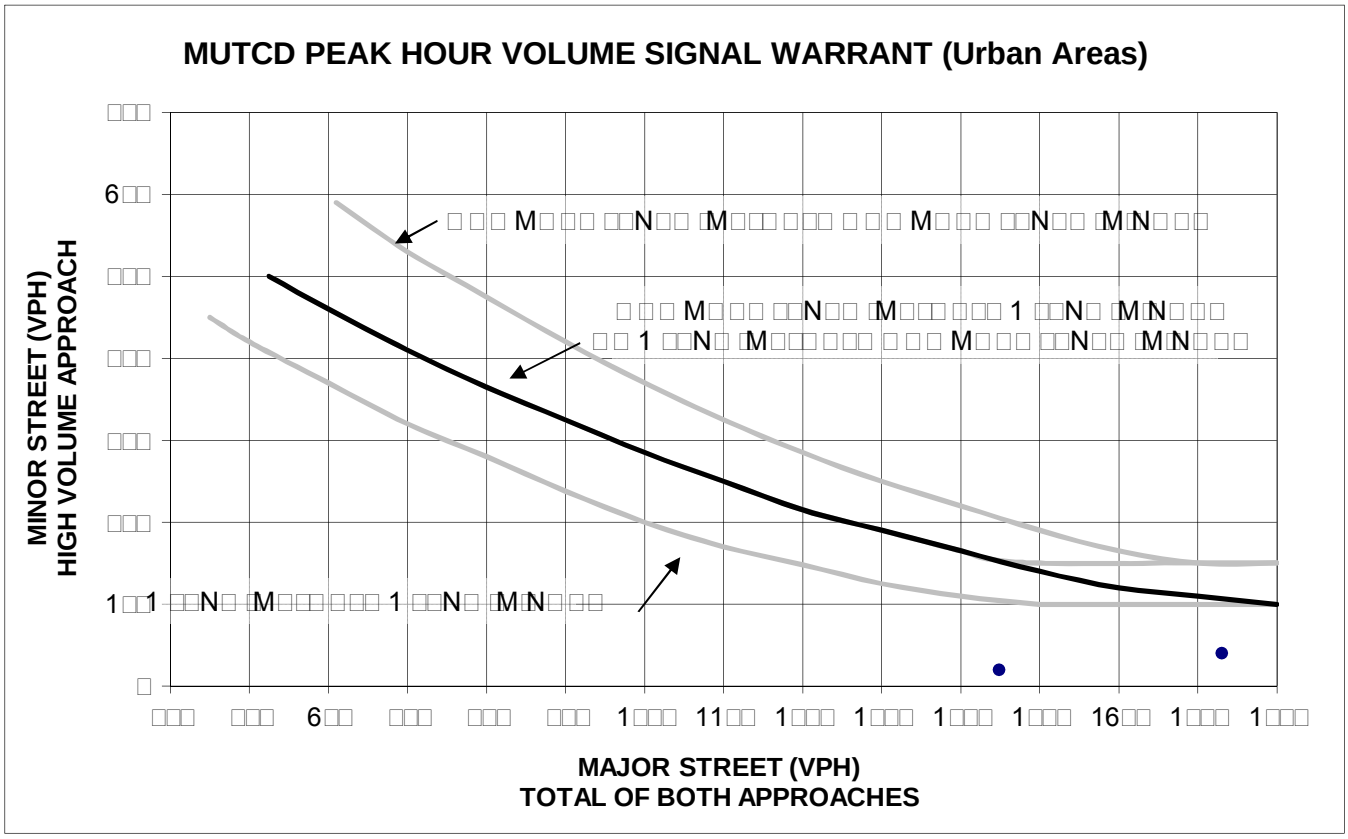
Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix G

Warrant Worksheets

□nter□ection □1 □□lo□i□ea □treet □□amo□ila □oule□ard



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□□ □□i□t □M	1□□□	□□	No
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C□ FutureNo□ro □M	1□□□	□6	No
D□ FutureNo□ro □M	□1□1	□□	No
□□ Future□e□□ro □M	1□□□	□□	No
F□ Future□e□□ro □M	□□□□	□6	No

Note□:

1□ 1□□ V□H a□□lie□a□t□e lower t□re□□old □olume for a minor □treet a□□roac□ wit□ two or more lane□ and 1□□ V□H a□□lie□a□t□e lower t□re□□old □olume for a minor □treet a□□roac□ing wit□ one lane□

□□ □old line a□□lie□to inter□ection geometr□□

Warrant 3 (Part B) - Peak Hour Delay
Alohikea Street / Kamokila Boulevard

Num□er of □□□roac□e□ to □nter□ection: □ a□□roac□e□ **Minimum Entering Vehicles:** **800**

□otal □ntering Volume□:

□□i□ting □M:	1□□□ □e□icle□
□□i□ting □M:	1□□1 □e□icle□
FutureNo□ro □M:	1□□□ □e□icle□
FutureNo□ro □M:	□□□□ □e□icle□
Future□e□□ro □M:	1□□□ □e□icle□
Future□e□□ro □M:	□□□□ □e□icle□

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?
□lo□i□ea	N□	□□i□ting	□M	□□	1□□□	□□6	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	□□	□□i□ting	□M	□	1□□6	□□	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	N□	□□i□ting	□M	□□	□□□□	1□□□	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	□□	□□i□ting	□M	□1	□□□□	1□□1	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	N□	FutureNo□ro	□M	□6	1□□1	□□□	□□1□	N□	N□	□e□	**NO**
□lo□i□ea	□□	FutureNo□ro	□M	□	□□□1	116	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	N□	FutureNo□ro	□M	□□	1□□□□	□1□□	1□□□	N□	N□	□e□	**NO**
□lo□i□ea	□□	FutureNo□ro	□M	□□	□□□1	□□61	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	N□	Future□e□□ro	□M	□□	□6□1	□□6□	1□□6	N□	N□	□e□	**NO**
□lo□i□ea	□□	Future□e□□ro	□M	□	□□□□	1□□	□□□□	N□	N□	□e□	**NO**
□lo□i□ea	N□	Future□e□□ro	□M	□6	□□□□□	□□1□1	11□16	□e□	N□	□e□	**NO**
□lo□i□ea	□□	Future□e□□ro	□M	□□	6□□□	□□61	□□□6	N□	N□	□e□	**NO**

Note□:
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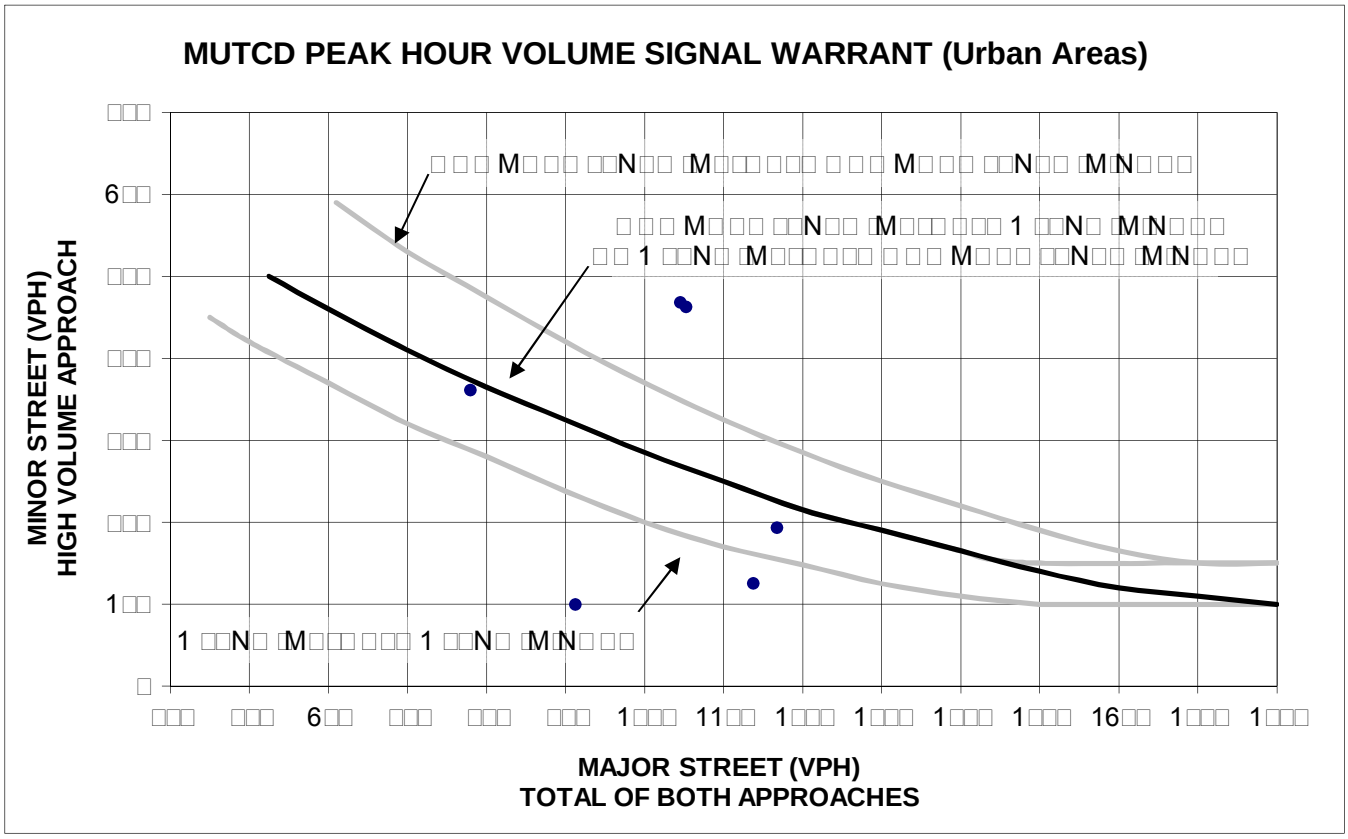
□nter□ection □6 □□ a□ea □treet □Haumea □treet



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□□ □□i□t □M	□1□	1□□	No
□□ □□i□t □M	□□□	□6□	No
C□ FutureNo□ro □M	11□□	1□6	No
D□ FutureNo□ro □M	1□□□	□6□	□e□
□□ Future□e□□ro □M	116□	1□□	No
F□ Future□e□□ro □M	1□□□	□6□	□e□

Note□:

1□ 1□□ V□H a□□lie□a□t□e lower t□re□□old □olume for a minor □treet a□□roac□ wit□ two or more lane□ and 1□□ V□H a□□lie□a□t□e lower t□re□□old □olume for a minor □treet a□□roac□ing wit□ one lane□

□□ □old line a□□lie□to inter□ection geometr□□

Warrant 3 (Part B) - Peak Hour Delay
Wakea Street / Haumea Street

Num□er of □□□roac□e□to □nter□ection: □ a□□roac□e□ **Minimum Entering Vehicles:** **800**

□otal □ntering Volume□:

□□i□ting □M:	1□□□ □e□icle□
□□i□ting □M:	1□□□ □e□icle□
Future wit□out □ro□ect □M□	1□□□ □e□icle□
Future wit□out □ro□ect □M:	1□6□ □e□icle□
Future □lu□□ro□ect □M:	1□□□ □e□icle□
Future □lu□□ro□ect □M:	1□□□ □e□icle□

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?
Haumea	□□	□□i□ting	□M	1□□	11□6	116□	□□□□	N□	□e□	□e□	**NO**
Haumea	□ □	□□i□ting	□M	6□	11□□	□1□	□□□□	N□	N□	□e□	**NO**
Haumea	□□	□□i□ting	□M	□□□	□6□□	□□6□	□□□1	N□	□e□	□e□	**NO**
Haumea	□ □	□□i□ting	□M	□6□	□□6	1□□□□	□□□□	N□	□e□	□e□	**NO**
Haumea	□□	FutureNo□ro	□M	1□6	1□6	1□1□	□□□□	N□	□e□	□e□	**NO**
Haumea	□ □	FutureNo□ro	□M	□□	1□□□	1□6□	□□□□	N□	N□	□e□	**NO**
Haumea	□□	FutureNo□ro	□M	□□□	□□1	1□□□□	□□6	N□	□e□	□e□	**NO**
Haumea	□ □	FutureNo□ro	□M	□6□	66□□	□□□□□	□□□□	□e□	□e□	□e□	**Yes**
Haumea	□□	Future□e□□ro	□M	1□□	16□□	□□□□	□□□□	N□	□e□	□e□	**NO**
Haumea	□ □	Future□e□□ro	□M	□□	1□□□	1□1□	□□□□	N□	N□	□e□	**NO**
Haumea	□□	Future□e□□ro	□M	□□□	□□□□	1□□61	□□□□	□e□	□e□	□e□	**Yes**
Haumea	□ □	Future□e□□ro	□M	□6□	□□□□	□□□□□	□□1□	□e□	□e□	□e□	**Yes**

Note□:
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Appendix F

Phase 1 Environmental Site Assessment

Phase I Environmental Site Assessment
Proposed Goodwill Kapolei
Haumea and Wakea Streets
Kapolei, Oahu, Hawaii 96707
TMK: (1) 9 - 1 - 088: 012 (por.)

PREPARED FOR:

Goodwill Industries of Hawaii
2610 Kilihau Street
Honolulu, Hawaii 96819

Prepared By:

EKNA Services, Inc.
615 Piikoi Street, Suite 300
Honolulu, Hawaii 96814-3139

Project No. 2451-00F
July 2004

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED GOODWILL KAPOLEI
HAUMEA AND WAKEA STREETS
KAPOLEI, OAHU, HAWAII
TMK: (1) 9-1-088: 012, Lot 80004

Executive Summary

A Phase I Environmental Site Assessment was conducted by EKNA Services of the proposed Goodwill Industries facility ("the Site"), an approximately 2.8-acre portion (Lot 80004) of a 22-acre parcel identified as TMK: (1) 9-1-088: 012 in Kapolei, on the island of Oahu, Hawaii.

The purpose of the Phase I Environmental Site Assessment was to determine the presence of petroleum products and other environmentally hazardous substances/wastes, and to identify potential sources of any suspected contaminants at the assessed portion of the subject Site.

This Phase I Environmental Site Assessment (ESA), conducted in June 2004 found that:

- Based on available information, it appears that the property had been used for agricultural purposes, i.e., cultivation of sugar cane, for over 50 years. Cane cultivation was suspended several years ago and the land has lain fallow since that time.
- At the time of the Site inspection, the Site was vacant and overgrown with grass. There were indications that the Site may have been used for construction staging and for stockpiling/disposal of surplus soils from adjacent construction projects.
- There is no evidence of the current or past presence of underground fuel storage tanks (USTs) on the Site (e.g. vent pipes, fill caps, abandoned dispensers, etc.).
- There were no signs of ash, discolored vegetation, grossly stained soils, or other distinct evidence that would indicate contamination by petroleum or other toxic/hazardous agents.
- Precipitation falling onto the Site currently infiltrates into the ground. The nearest permanent body of water is the Pacific Ocean shoreline, approximately 2.3 miles south or southwest of the assessed property.
- The site history and prior land usage suggests that petroleum products and/or hazardous substances/wastes were not stored, used, or generated on the assessed property. Historical land usage included agricultural use, i.e., cultivation of sugar cane, which may have included the use of herbicides and pesticides.
- A review of Federal database (CERCLIS) indicated that no facility within a one (1) mile radius of the Site is currently or formerly under review by the EPA under the NPL program.
- A review of Federal database indicated that no facility within a one (1) mile radius from the Site has been classified by the EPA as facilities that treat, store or dispose of hazardous waste.

- A review of State leaking underground storage tank (LUST) database indicated no facility within an one-half (1/2) mile radius from the Site has reported releases or a leak from underground storage tank(s) to the Hawaii Department of Health.

In view of the above, and based on a review of available information, the following are concluded:

- No apparent environmentally adverse or detrimental effects were detected as a result of past or present use of the Site.
- There was no direct evidence of petroleum hydrocarbon and/or hazardous substance/waste contamination at the property.
- There was no direct evidence that subsurface contaminants from nearby facilities have migrated to the soils and ground water beneath the assessed property to cause adverse environmental conditions.
- The usage of pesticides and herbicides in sugar cultivation were generally limited to short durations during the growing season. Considering the elapsed time period since the Site was last cultivated, there should be little, if any, residual impacts.
- The Site appears to have been used for construction staging and for stockpiling/disposal of surplus soils from adjacent construction projects. Although there were no apparent environmentally adverse impacts as a result of this use, there is a small degree of uncertainty with respect to the interior of the soil piles present at the Site.

Based on the above information and limitations presented in this Phase I ESA report, no further environmental investigations are considered to be necessary at this time.

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED LOT PURCHASE
KAPOLEI, OAHU, HAWAII
TMK: (1) 9-1-088: 012, Lot 80004

1.0 Introduction

A Phase I Environmental Site Assessment has been conducted on a vacant lot adjacent to Haumea Street ("the Site") in June 2004 by EKNA Services, Inc. The assessed Site consists of approximately 2.8 acres (Lot 80004) of a 22-acre parcel identified as TMK: (1) 9-1-088: 012, located in Kapolei on the island of Oahu, Hawaii. This report has been prepared for the use of Goodwill Industries of Hawaii, Inc., their consultants and assigns.

1.1 Purpose

The purpose of this Phase I ESA was to determine the presence of petroleum products and other environmentally hazardous substances/wastes, and to identify potential sources of any suspected contaminants at the assessed Site.

1.2 Involved Parties

The involved parties for this assessment are:

Client Points of Contact:	Mssrs. Roy W. K. Hung and James Fleming Goodwill Industries of Hawaii, Inc.
Through:	Mr. Stephen Nash, AIA Durrant-Media Five
EKNA Project Manager:	Mr. Dayton E. Fraim, PG, PE Senior Engineering Geologist
EKNA Site Assessor:	Mr. Charles G. Schuster, PE Civil Engineer

1.3 Scope of Work

This work has been conducted in general accordance with American Society for Testing and Materials (ASTM) Standard Practice E 1527-00, "Standard Practice for Environmental Site Assessments", accepted industry standards, accepted local practices and a professional standard of care. This Phase I ESA was performed with the objective of developing environmental information about the Site as part of "all appropriate inquiry" under the innocent purchaser/landowner defense.

The scope of work involved two (2) tasks: a review of the history of the property and surrounding areas, and a field survey/inspection of the property and site improvements, surrounding properties and other facilities in the immediate vicinity of the property.

In conducting this assessment, the following efforts were undertaken:

- review of available documents regarding past and present development;

- review of State of Hawaii and U.S. Environmental Protection Agency (EPA) databases of hazardous waste generators, violations, underground storage tank facilities, landfills, and sites currently under investigation;
- review of available U.S. Geological Survey and Hawaii State Department of Health (DOH) documents and maps for pertinent geologic and hydrogeologic conditions;
- interviews with individuals familiar with the Site history, and who have knowledge of activities on adjacent properties that may be pertinent to this assessment;
- a field survey of the subject Site for possible sources of hazardous material contamination, such as petroleum products, electrical equipment containing polychlorinated biphenyls (PCB), and underground storage tanks; and,
- a brief reconnaissance of the surrounding area for possible off-site sources of contamination from neighboring facilities which could impact the Site.

No invasive sampling was undertaken in the conduct of this ESA. Suspected hazardous materials which may be described herein have been identified on the basis of visual observation, public records and reports from previous environmental studies, if available.

Due to the long term agricultural use of the Site and the long period of the Site being vacant since the cessation of agricultural activities, Sanborn© fire insurance maps were not available for the Site. Review of historical aerial photographs was specifically excluded from the scope of this assessment for the same reason.

2.0 General Site Characteristics

2.1 Site Location

The Site is situated adjacent to and south of the intersection of Haumea and Wakea Streets in Kapolei on the island of Oahu, Hawaii (Figures 1 and 2). The Site consists of about 2.8 acres of former agricultural land.

2.2 Adjacent Properties and Vicinity

The Site is bordered by Haumea Street to the northwest. Wakea Street is planned to be extended along the northeast border of the Site. A new street is under construction on the southwest border of the Site, and vacant land to the southeast. The Bank of Hawaii center is diagonally across the intersection of Haumea and Wakea Streets and a new private school (Island Pacific Academy) is being constructed immediately to the northeast (Figure 2).

During a reconnaissance of the vicinity within a one-quarter (1/4) mile radius of the Site, the following businesses and operations were observed:

- a new private school under construction,
- various businesses including the Bank of Hawaii center,
- several retail shopping developments, and

- public buildings including the City and State office buildings, and Kapolei Library.

2.3 Site Description and Current Uses/Operations

The assessed property (Lot 80004) is part of a larger parcel (TMK: 9-1-88:012, 22 acres) and has not at the time of assessment been subdivided from it. The parcel lies on the edge of development in the city of Kapolei on the Island of Oahu, Hawaii. Currently, the Site is vacant. The Site is zoned as B-2 Community Business District by the Department of Planning and Permitting, City and County of Honolulu.

The Site is covered with low dry grass, weeds and shrubs. Several large mounds of soil lie in various areas of the Site, probably from construction excavations for the Bank of Hawaii center across the street.

3.0 Environmental Setting

3.1 Regional Physiographic Conditions

The property is relatively level and at an elevation of approximately 70 feet above mean sea level (MSL).

Precipitation falling onto the Site (18 to 30 inches per year) currently infiltrates into the ground. Storm drainage in the area is provided by County storm sewer systems which discharge into the Pacific Ocean. The nearest permanent body of water is the Pacific Ocean located approximately 2.3 miles to the southeast or southwest of the Site.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), the assessed property is located in an area where flooding has been undetermined (Zone D, see Figure 5).

3.2 Soil Conditions

The surface soils on the southern portion of the Site have been classified by the U.S. Department of Agriculture as *Honouliuli Clay, 0 to 2 percent slopes (HxA)* (see Figure 3). This series consists of well-drained soils on coastal plains on the island of Oahu in the Ewa area, developed in alluvium derived from basic igneous material. Permeability is moderately slow. Runoff is slow, and the erosion hazard is no more than slight. The shrink-swell potential is high.

Underlying the man-made fill is Pleistocene coral-algal limestone which is derived from cemented coral reef material which formed during higher stands of the sea and then was planed to a relatively lower elevation with little topographic relief during higher stands of the sea.

3.3 Regional Geology

The island of Oahu is composed largely of the weathered remnants of two extinct shield volcanoes: Waianae and Koolau. The younger shield, Koolau, was built by the extrusion of lavas of the Koolau volcanic Series and forms the majority two-thirds (2/3) of the island. The Site is situated on the southern flank of the Waianae, on an area known as the Ewa Coastal Plain. The Ewa Coastal Plain is a thick wedge of interbedded

sediments, volcanic and marine deposits built on the southern flank of the Waianae. The base of the stratigraphic section is Waianae Basalt.

3.4 Ground Water Conditions

The Site is situated in an area of ground water discharge. According to aquifer classification records, the property is situated over the Ewa system of the Pearl Harbor aquifer system, as shown in Table 1 (see Appendix D for explanation of codes). The upper, caprock aquifer is unconfined layer or lens of moderately saline water situated on top of a confined low salinity basal lens. Ground water flow in the aquifers is generally towards the south. These ground waters are not currently exploited for drinking water purposes nor are they ecologically important.

Table 1: Aquifer Classification System

Aquifer	**Caprock Aquifer**	**Basal Aquifer**
Aquifer Code	**30204116**	**30204121**
Island Code	3 - Oahu	3 - Oahu
Aquifer Sector	02 - Pearl Harbor	02 - Pearl Harbor
Aquifer System	04 - Ewa	04 - Ewa
Aquifer Type, hydrogeology	1 - Basal	1 - Basal
Aquifer Condition	1 - Unconfined	2 - Confined
Aquifer Type, geology	6 - Sedimentary	1 - Flank
Status Code	**13321**	**13213**
Development Stage	1 - Currently Used	1 - Currently Used
Utility	3 - Not drinking use nor ecologically important	3 - Not drinking use nor ecologically important
Salinity (in mg/L Cl^-)	3 - Moderate (1000-5000)	2 - Low (250 - 1,000)
Uniqueness	2 - Replaceable	1 - Irreplaceable
Vulnerability to Contamination	1 - High	3 - Low

The assessed property is situated upgradient (mauka) of the Underground Injection Control Line (UIC), and accordance with the UIC rules and the Safe Drinking Water Act, ground water underlying the Site is considered an underground source of drinking water.

Based on the Department of Health (DOH) Underground Injection Control Maps for Waipahu (O-9), (see Figure 4), there is one known public drinking water supply well within a one (1) mile radius of the assessed property. The well is located upgradient, approximately 7/8 mile to the north-northeast of the Site. DOH records indicate several individual or municipal disposal wells within a one (1) mile radius of the assessed property.

4.0 Results of Investigation

4.1 Site Inspection Observations

A field reconnaissance of the subject property was conducted to aid in the assessment of Site conditions. This Phase I Environmental Site Assessment, conducted in June 2004, indicates that:

- There were no signs of ash, discolored vegetation, grossly stained soils, or other distinct evidence that would indicate contamination by petroleum or other toxic/hazardous agents.
- There is no evidence of the current or past presence of underground fuel storage tanks (USTs) on the Site (e.g. vent pipes, fill caps, abandoned dispensers, etc.).
- Precipitation falling onto the undeveloped Site infiltrates into the ground. The nearest permanent body of water is the Pacific Ocean located approximately 2.3 miles southeast or southwest (on either side of Barbers Point) of the assessed property.
- The Site consists of former agriculture land that has been vacant for several years and is covered with low dry grasses and shrubs. No drums or other evidence of illegal dumping were noted. Access to the Site is unrestricted by fences or barriers.
- A temporary construction trailer and water standpipe were identified along the northeast boundary of the Site, likely used for construction of a new private school in the adjoining parcel.
- Several large piles of dirt occur on the site. The piles are composed of different soils and some boulders were evident. The Site appears to have been used for construction staging and for stockpiling/disposal of surplus soils from adjacent construction projects.
- County storm drain and sanitary sewers, potable and recyled water utilities are provided in Haumea and Wakea Streets.

4.2 Observations of Adjacent Properties and Vicinity

- Most of the surrounding area is former agricultural land which had been used for the cultivation of sugar cane but is being developed for business use.
- Several properties in the immediate vicinity of the Site are being, or have been, developed for commercial and public uses. Land to the south and east of the Site is vacant.
- There is no indication that land use in the surrounding area has had, or will have, any environmental impact on the Site.

4.3 Results of Regulatory Agency List Review and File Research

Research was undertaken to identify off-site facilities which may present a potential for adverse environmental effects on the assessed property. Table 2 provides a summary of the various facilities on Federal and State environmental database listings within an one (1) mile radius of the assessed property.

A review of Federal database (NPL) indicated no facility within a one (1) mile radius from the Site has been classified or is proposed to be classified by the U.S. Environmental Protection Agency (EPA) as a National Priorities Site (NPL or "Superfund" site).

A review of Federal database (CERCLIS/NFRAP) indicated that no facility within a one (1) mile radius of the Site is currently or formerly under review by the EPA under the NPL program.

A review of Federal database (RCRA-TSD CORRACTS) indicated that no facility within a one (1) mile radius from the Site has been classified by the EPA as a facility that treats, stores or disposes of hazardous waste.

A review of State leaking underground storage tank (LUST) database indicated no facility within a one-half (½) mile radius from the Site has reported a release or a leak from underground storage tank(s) to the Hawaii Department of Health.

A single facility was identified on the Hawaii State Department of Health (SHWS) database, in which the Office of Hazard Evaluation and Emergency Response may have an interest. The site is identified at 1001 Kamokila Boulevard in Campbell Industrial Park, approximately a quarter to half mile west-southwest of the assessed Site. A final EPA Site Inspection Report was filed for five sites including Hawaiian Western Steel, Ltd., Hawaiian Western Steel Dump, Hawaii Metals Recycling Company, Leeward Auto Wreckers, and Brewer Environmental Industries, Inc.

4.4 Results of Site History/Land Use Review

The assessed property (Lot 80004, a portion of TMK: (1) 9-1-88:012) is owned in fee simple by Kapolei Property Development LLC. It is anticipated that the Site will be subdivided and that a new TMK number and street address will be assigned, but this had not occurred at the time of preparation of this report.

Based on available information, the Site has been vacant for 20 years or more and was previously used for the cultivation of sugar cane. There is no record of prior building permits issued for the Site.

Since the Site was formerly used for cultivation of sugar cane, it is likely that pesticides and herbicides were applied at the Site. It is understood that the land has been out of cane production for approximately 20 years.

The Site is currently zoned B-2, Community Business District, similar to lands in the immediate vicinity.

Table 2: Summary of Facilities on Federal and State Environmental Databases Within One (1) Mile Radius of the Assessed Property	
FEDERAL/STATE ENVIRONMENTAL DATABASE	**FACILITIES**
US EPA National Priorities List[1] (NPL)	0
US EPA CERCLIS[2]	0
US EPA RCRA TSD CORRACTS[3]	0
US EPA RCRA CORRACTS (w/o TSD)[4]	0
US EPA Resource Conservation & Recovery Act Generators[5] (RCRA)	0
Emergency Response Notification System[6] (ERNS)	0
Hawaii Department of Health Solid Waste Facilities[7]	1
Hawaii Department of Health Leaking UST (LUST) List[8]	0
Hawaii Department of Health UST List[9]	0
Hawaii Department of Health Spills (SPILL) List[10]	0

1 The US EPA National Priorities List (NPL) is the EPA's database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Federal Superfund Program.

2 The US EPA CERCLIS database is a compilation of sites which have been investigated or are currently under investigation for a release or threatened release of hazardous substances in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund).

3 & 4 The US EPA RCRA CORRACTS databases are the EPA's database of corrective actions under the Resource Conservation and Recovery Act and associated hazardous materials, including Treatment, Storage and Disposal sites.

5 The US EPA RCRA database is a program which identifies and tracks hazardous substances/waste from the point of generation to the point of disposal.

6 The Emergency Response Notification System (ERNS) is a nation-wide database with listings of reported releases/spills of oil and hazardous substances.

7 Hawaii Department of Health's Solid Waste Landfill database.

8 Hawaii Department of Health, Solid and Hazardous Waste Branch, Underground Storage Tank Section's (DOH-SHWB) Leaking Underground Storage Tank (LUST) Listing.

9 Hawaii Department of Health, Solid and Hazardous Waste Branch, Underground Storage Tank Section's (DOH-SHWB) Registered Underground Storage Tank (UST) Listing.

10 Hawaii Department of Health, Hazard Evaluation and Emergency Response Office (HEER) Spills (SPILL) Listing.

Table 3: Property Ownership History: TMK (1) 9 - 1 - 88 :012	
Date	**Owner**
prior to 1949 to May 1968	James Campbell Trust Estate, leased to Ewa Plantation Co. as part of TMK (1) 9-1-16:001
May 1968 - April 1970	James Campbell Trust Estate leased to Ewa Sugar Co., Inc. (merger from Ewa Plantation Co.), as part of TMK (1) 9-1-16:001
April 1970 - June 1998	James Campbell Trust Estate leased to Oahu Sugar Co., Ltd., as part of TMK (1) 9-1-16:001
June 1998 - Dec. 2002	James Campbell Trust Estate
Dec. 2002 - present	Kapolei Property Development LLC

4.5 Previous Environmental Investigations

No previous environmental site assessment is known to have been conducted.

4.6 Site Manager Interview

Mr. Chuck Hill, Vice President of Kapolei Property Development LLC, was contacted by phone to discuss the history of the site. Mr. Hill, who has been with Kapolei Property Development LLC for approximately twelve years, stated the Site was former sugar cultivation land and that no other use was known for the site. He speculated that the dirt piles observed were excess excavation material from construction of the First Hawaiian Bank structure opposite the site across the intersection of Haumea and Wakea Streets.

5.0 Conclusions and Recommendations

In view of the above, and based on a review of available information, the following may be concluded:

- No apparent environmentally adverse or detrimental effects were detected as a result of past or present use of the Site.
- There was no direct evidence of petroleum hydrocarbon and/or hazardous substance/waste contamination at the properties.
- There was no direct evidence that subsurface contaminants from nearby facilities have migrated to the soils and ground water beneath the assessed properties to cause adverse environmental conditions.
- At the time of the Site inspection, the Site was vacant and overgrown with grass. There were indications that the Site may have been used for construction staging and for stockpiling/disposal of surplus soils from adjacent construction projects. Although there were no apparent environmentally adverse impacts as a result of this use, there is a small degree of uncertainty with respect to the interior of the soil piles present at the Site.

- The usage of pesticides and herbicides in sugar cultivation were generally limited to short durations during the growing season. Considering the elapsed time period since the Site was last cultivated, there should be little if any, residual impacts.

Based on the above information and limitations presented in this Phase I ESA report, no further environmental investigations are considered to be necessary at this time.

6.0 Limitations and Conditions

Although this Phase I Environmental Site Assessment provides information on the relative presence or absence of suspected environmental contaminants at the investigated Site, it should not be construed as a final statement regarding environmental conditions at the assessed facility or the subject property. This Phase I ESA was performed with the objective of developing environmental information about the Site as part of "all appropriate inquiry" under the innocent purchaser/landowner defense. A Business Environmental Risk assessment was not performed as part of this investigation.

The ASTM standard provides that the assessment should assign or evaluate the "business risk" associated with acquisition of the assessed property. It is EKNA's opinion that "business risk" involves many more factors than are considered within the scope of an environmental site assessment, such as market forces, interest rates and contractual matters. Therefore, EKNA can not assign any "business risk" other than stated herein.

The information set forth is based solely on the agreed upon scope of services. This information is based on personal observation, researching of public documentation, and data provided by others. The presence of subsurface contamination, asbestos containing materials, lead-based paints, radioactive materials, and biological hazards were not specifically investigated.

Given the often obscure and elusive nature of hazardous substances it is never possible to absolutely dismiss the possibility of site contamination, even with exhaustive sampling and testing. Edward K. Noda and Associates, Inc. expressly disclaim any and all liability representations, expressed, or implied, contained in, or for omissions from this report, or any other written or oral communication which might be interpreted as establishing the total extent of all liability present at the subject property.

Our services have been performed with the usual thoroughness and competence of the consulting profession, in accordance with the standards for professional services at this time. No other warranty or representation, either expressed or implied, is included or intended.

EDWARD K. NODA & ASSOCIATES, INC.

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PROFESSIONAL GEOLOGIST DAYTON EARL FRAIM PG-2990 WYOMING

Charles G. Schuster, P.E.
Civil Engineer

Dayton E. Fraim, P.G., P.E.
Senior Engineering Geologist

References

Published References

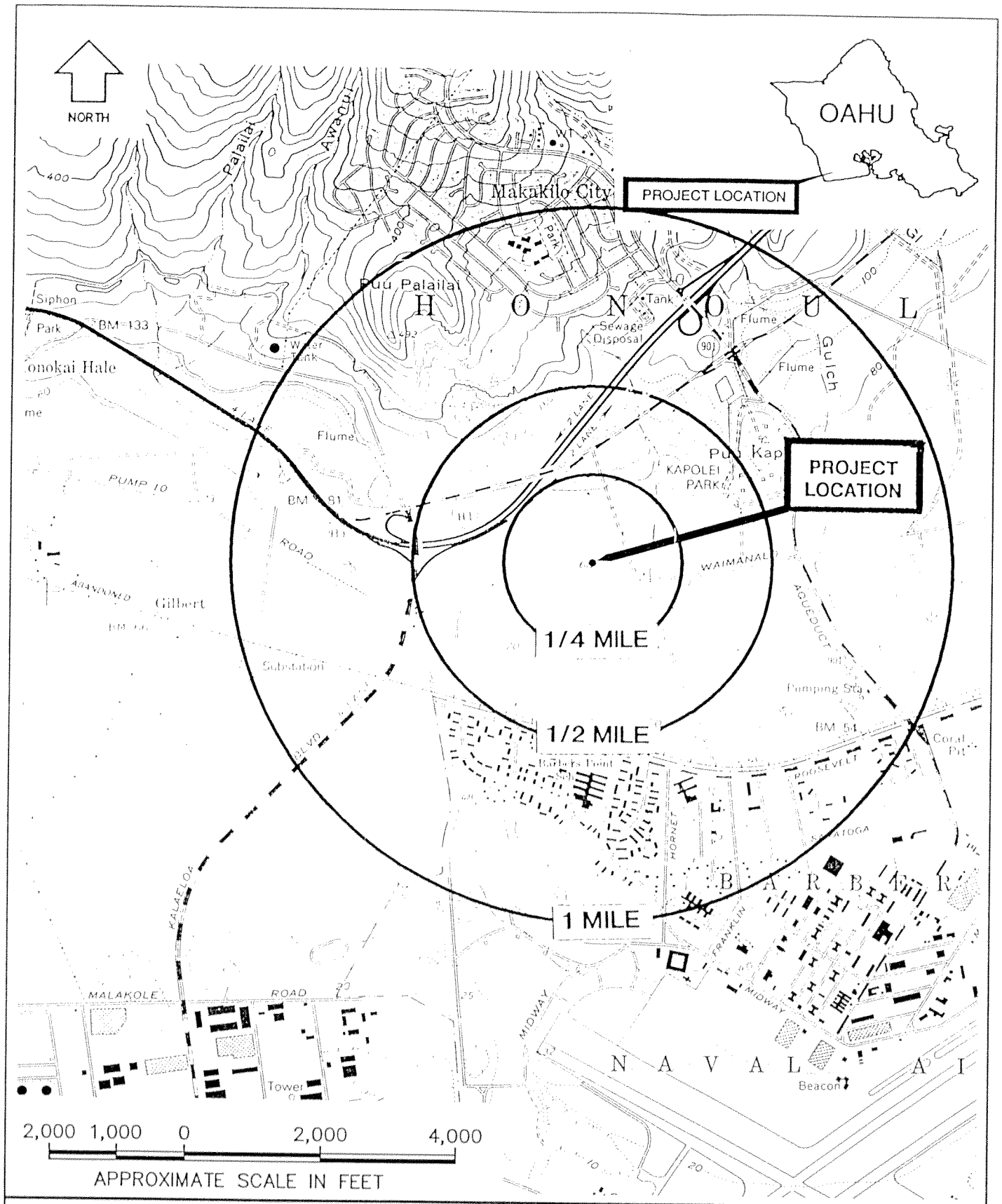
- City and County of Honolulu, Real Property Tax Division, Historical Records for the assessed property.
- State of Hawaii, Department of Health, Solid & Hazardous Waste Branch, List of Permitted Solid Waste Facilities (SWLF), 09/01.
- State of Hawaii, Department of Health, Solid & Hazardous Waste Branch, Underground Storage Tank Section, List of Underground Storage Tank Facilities (UST), 09/03.
- State of Hawaii, Department of Health, Solid & Hazardous Waste Branch, Underground Storage Tank Section, List of Underground Storage Tank Releases (LUST) 09/03.
- U.S. Environmental Protection Agency, CERCLIS Listing, 03/04.
- U.S. Environmental Protection Agency, RCRA-CORRACTS Listing, 03/04.
- U.S. Environmental Protection Agency, Emergency Response Notification System Listing (ERNS), 01/04.
- U.S. Environmental Protection Agency, National Priorities List (NPL), 05/04.
- U.S. Environmental Protection Agency, RCRA Facility Listing (RCRIS)(RCRA-Sm- Gen, RCRA-LgGen and RCRA-TSD), 04/04.
- State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office, Spills Listing (SPILL), 03/04.
- Macdonald, Gordon A., Abbot, Agatin T., and Peterson, Frank L., "Volcanoes in the Sea - The Geology of Hawaii", University of Hawaii Press, 1983, Honolulu.
- Mink, John F. and Lau, Stephen L., "Aquifer Identification and Classification for O'ahu: Ground Water Protection Strategy for Hawai'i, Technical Report No. 179" February 1990, Water Resources Research Center, University of Hawaii at Manoa, Honolulu.

Map and Other Geographical References

- U.S. Geological Survey, "Ewa, Hawaii" Quadrangle, 7.5 Minute Series, Topographic Map, 1983.
- U.S. Department of Agriculture, "Soil Survey of Island of Oahu, State of Hawaii", 1972.
- Department of Health, State of Hawaii, Underground Injection Control Map, Ewa, Hawaii (0-6) Quadrangle, 1983.
- City and County of Honolulu, Department of Land Utilization web site for zoning.
- Federal Emergency Management Agency, Flood Insurance Rate Maps 15003C0305 E and 15003C0310 E.

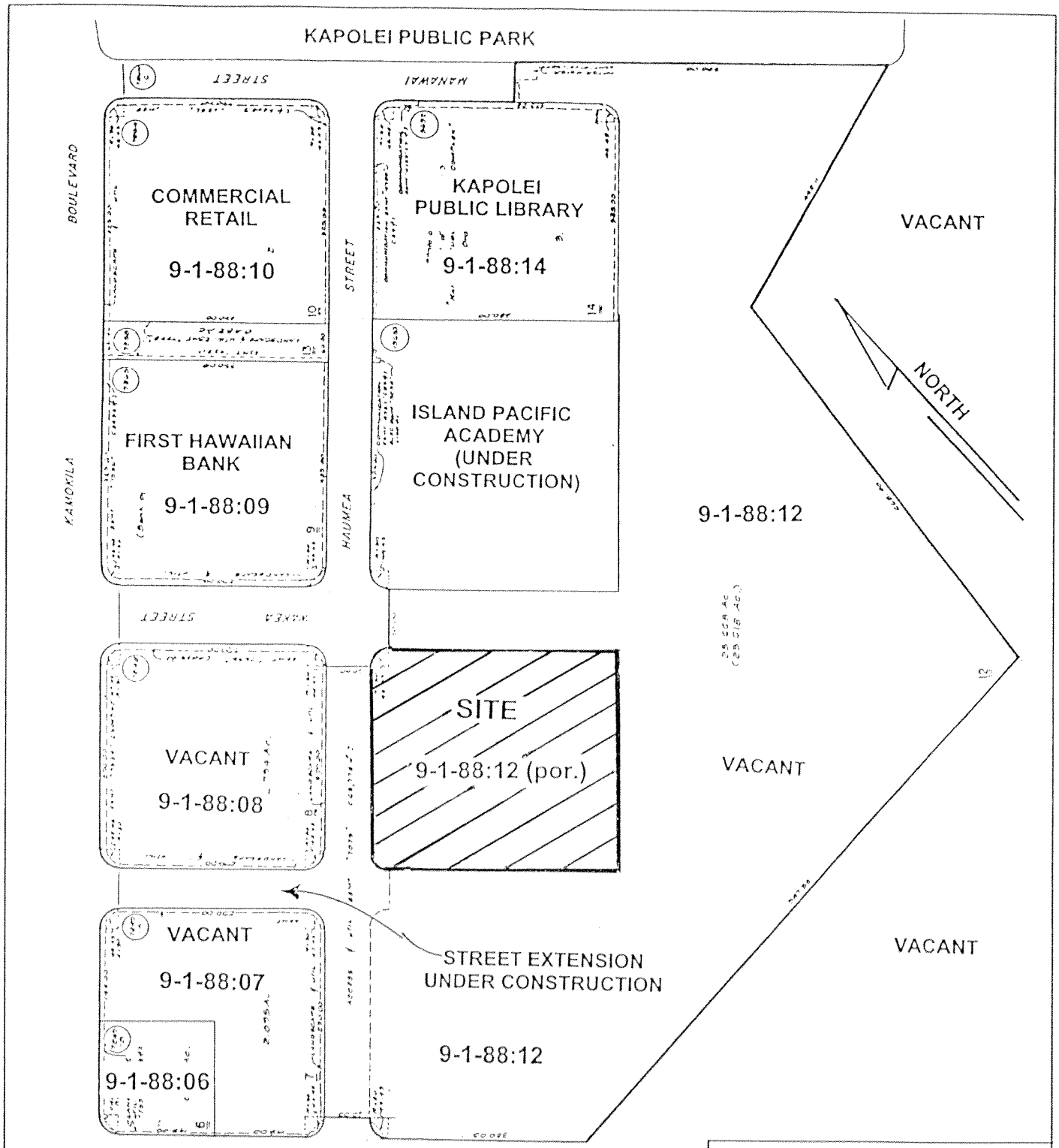
Appendix A - Figures

Figure 1 - Location Map
Figure 2 - TMK Location Map and Site Plan
Figure 3 - Soil Classification Map
Figure 4 - Underground Injection Control/Water Well Map
Figure 5 - Flood Insurance Rate Map



REFERENCE: USGS "Ewa, Hawaii", 7.5 Minute Series, 1983 Topographic Map

PREPARED BY: C. SCHUSTER	FIGURE 1 – LOCATION MAP	EKNA Services, Inc.
PROJECT NUMBER: 2451-00F	DATE: June, 2004	



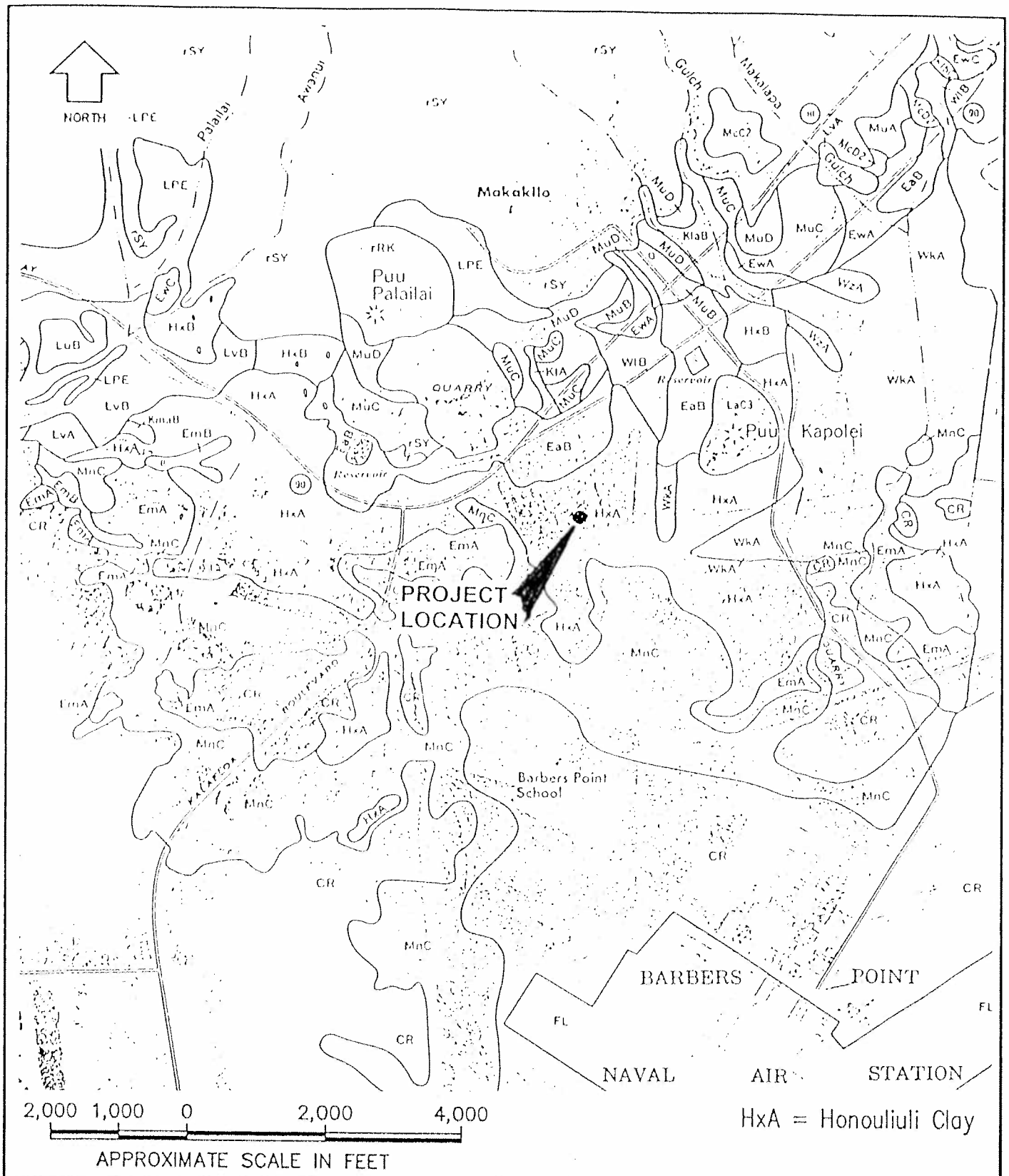
FIRST TAXATION DISTRICT			
ZONE	SEC.	PLAT	PARCEL
9	1	88	12 (por.)

REFERENCE: C&C of Honolulu, Real Property Tax Division, Tax Map For TMK: (1) 9–1–88: 12; C 2003, First American Real Estate Solutions, L.C.

FIGURE 2 – TMK LOCATION MAP AND SITE PLAN

EKNA 2154–00F Prepared by: C. Schuster, June 2004

EKNA Services, Inc.

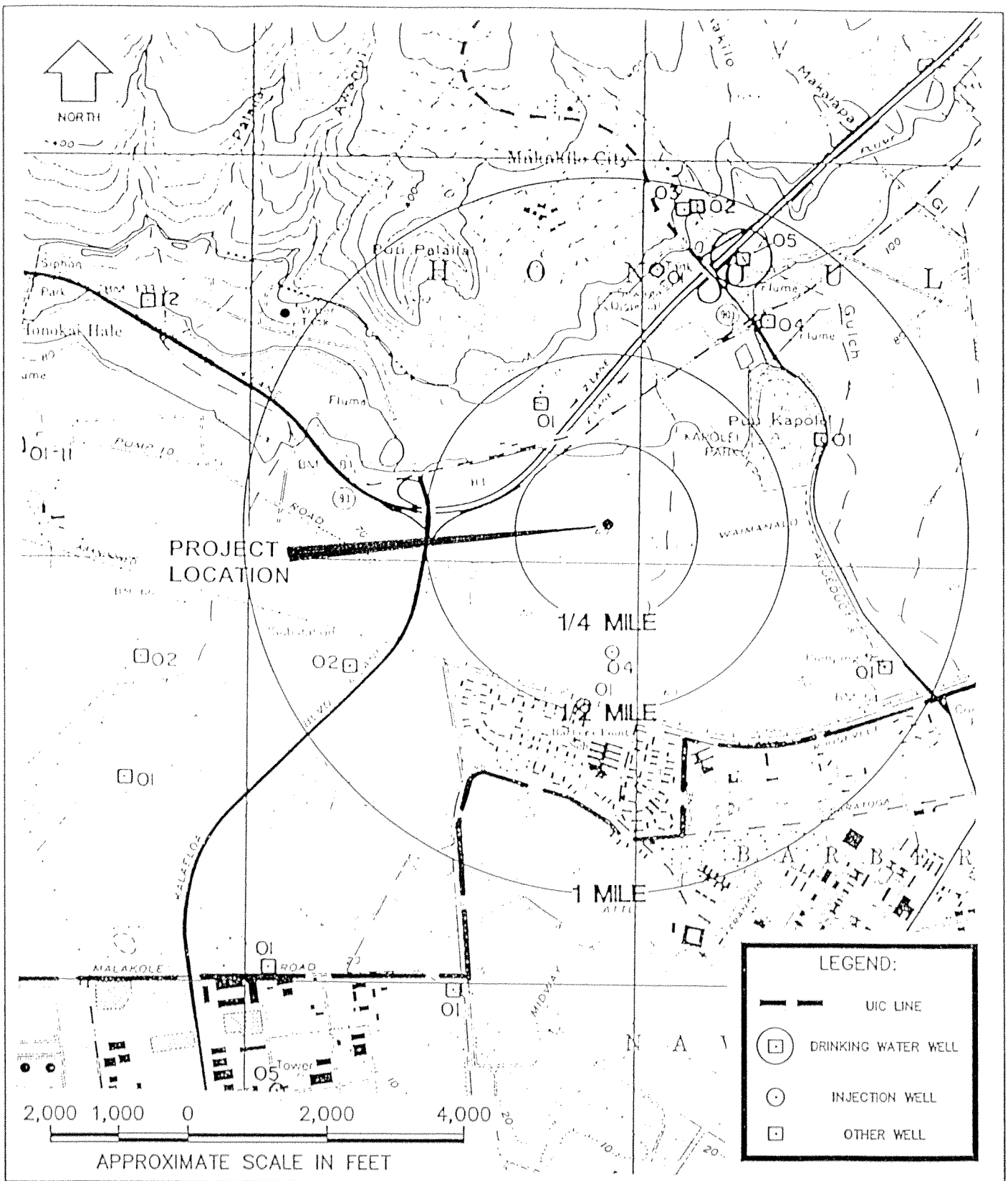


REFERENCE: U.S.D.A., 1972, "SOIL SURVEY OF ISLANDS OF KAUAI, OAHU, MAUI, MOLOKAI and LANAI, STATE OF HAWAII"

FIGURE 3 – SOIL CLASSIFICATION MAP

EKNA 2154-00F Prepared by: C. Schuster, June 2004

EKNA Services, Inc.

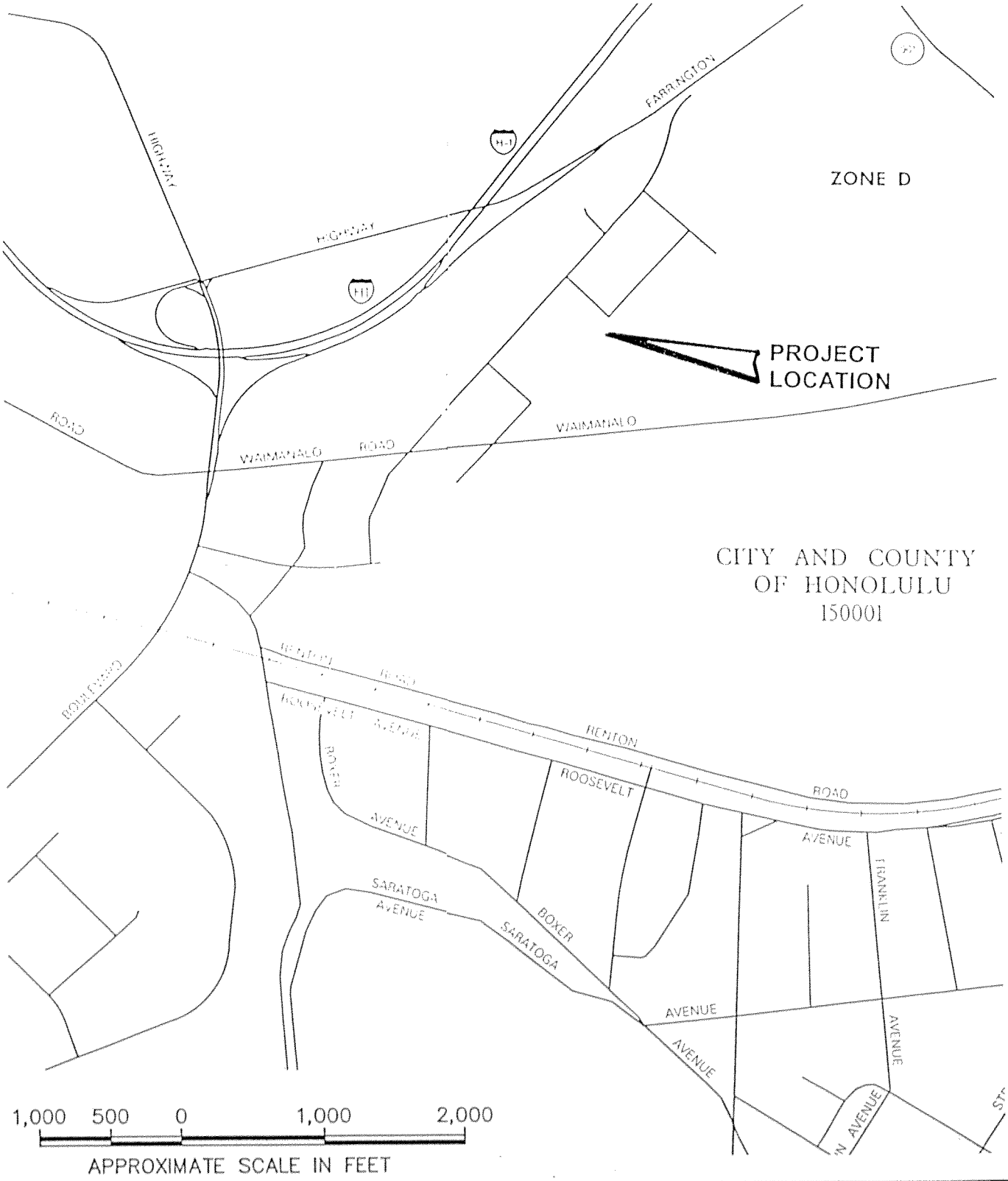


Reference: State of Hawaii, Department of Health, 1983 "Underground Injection Control Map, Waipahu (O-9) Quadrangle,"

FIGURE 4 – UNDERGROUND INJECTION CONTROL MAP

EKNA 2154-00F Prepared by: C. Schuster, June 2004

EKNA Services, Inc.



REFERENCE: Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Panel No. 15003C0305 E and 1503C310 E, November 20, 2000

FIGURE 5 – FLOOD INSURANCE RATE MAP

EKNA 2154–00F Prepared by: C. Schuster, June 2004

EKNA Services, Inc.

Appendix B - Site Photographs

Photo 1: View across site looking south
Photo taken by D. Fraim, June 28, 2004

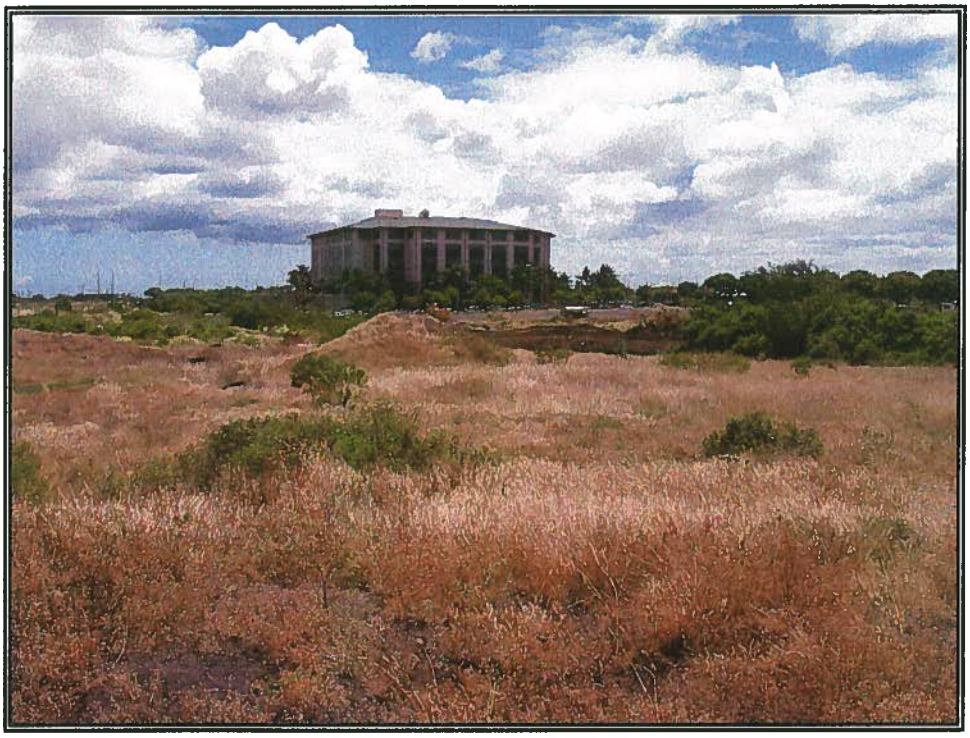


Photo 2: View across site looking southwest
Photo taken by D. Fraim, June 28, 2004

Photo 3: View across site looking east
Photo taken by D. Fraim, June 28, 2004

Photo 4: View across site looking northeast
Photo taken by D. Fraim, June 28, 2004

Photo 5: View to southeast into site from intersection of Wakea and Haumea Streets
Photo taken by D. Fraim, June 28, 2004

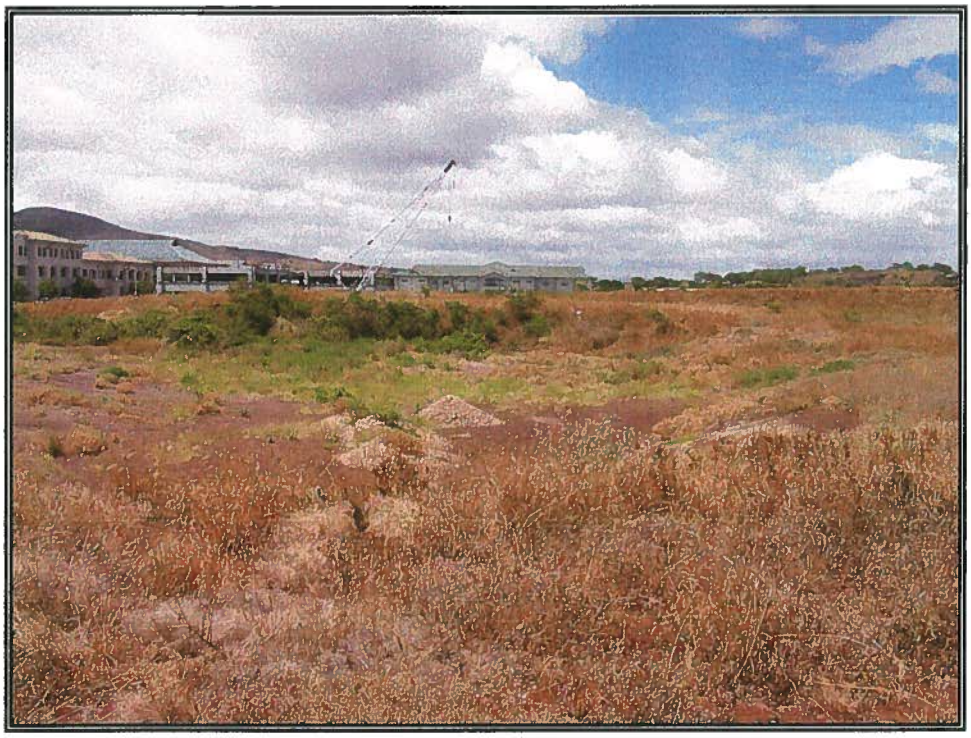


Photo 6: View northwest across site
Photo taken by D. Fraim, June 28, 2004

Appendix C

Sanborn® Map Report

and

Environmental Data Resources, Inc. EDR Radius Map

EDR™ Environmental Data Resources Inc

"Linking Technology with Tradition"

Sanborn® Map Report

Ship To: Charles Schuster
EKNA Services, Inc
615 Pilkoi Street
Honolulu, HI 96814

Order Date: 6/30/2004 **Completion Date:** 7/1/2004
Inquiry #: 1222104.3s
P.O. #: NA
Site Name: Proposed Goodwill Kapolei
Address: Haumea and Wakea Streets
City/State: Kapolei, HI 96707
Cross Streets:

Customer Project: 2154-00F#
6017532MER 808-591-8553

This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

NO COVERAGE

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The EDR Radius Map
with GeoCheck®

Proposed Goodwill Kapolei
Haumea and Wakea Streets
Kapolei, HI 96707

Inquiry Number: 1222104.2s

June 30, 2004

EDR™ Environmental
Data Resources Inc

The Standard in Environmental Risk Management Information

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FORM-MER

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

HAUMEA AND WAKEA STREETS
KAPOLEI, HI 96707

COORDINATES

Latitude (North):	21.332600 - 21˚ 19' 57.4"
Longitude (West):	158.081400 - 158˚ 4' 53.0"
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	595260.4
UTM Y (Meters):	2359097.0
Elevation:	66 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	21158-C1 EWA, HI
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRIS-TSD..... Resource Conservation and Recovery Information System
RCRIS-LQG..... Resource Conservation and Recovery Information System
RCRIS-SQG..... Resource Conservation and Recovery Information System
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

SWF/LF..... Permitted Landfills in the State of Hawaii

EXECUTIVE SUMMARY

LUST..... Leaking Underground Storage Tank Database
UST..... Underground Storage Tank Database
VCP..... Voluntary Response Program Sites

FEDERAL ASTM SUPPLEMENTAL

CONSENT..... Superfund (CERCLA) Consent Decrees
ROD..... Records Of Decision
Delisted NPL..... National Priority List Deletions
FINDS..... Facility Index System/Facility Identification Initiative Program Summary Report
HMIRS..... Hazardous Materials Information Reporting System
MLTS..... Material Licensing Tracking System
MINES..... Mines Master Index File
NPL Liens..... Federal Superfund Liens
PADS..... PCB Activity Database System
UMTRA..... Uranium Mill Tailings Sites
FUDS..... Formerly Used Defense Sites
INDIAN RESERV..... Indian Reservations
US BROWNFIELDS..... A Listing of Brownfields Sites
RAATS..... RCRA Administrative Action Tracking System
TRIS..... Toxic Chemical Release Inventory System
TSCA..... Toxic Substances Control Act
SSTS..... Section 7 Tracking Systems
FTTS INSP..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

SPILLS..... Release Notifications

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS..... A Listing of Brownfields Sites
BROWNFIELDS..... Brownfields Sites
VCP..... Voluntary Response Program Sites

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STATE ASTM STANDARD

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 07/12/2001 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
CAMPBELL INDUSTRIAL PARK 06/24	1001 KAMUKILA BOULEVARD	1/4 - 1/2 WSW	1	6

FEDERAL ASTM SUPPLEMENTAL

Federal Lands: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 10/01/2003 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BARBERS POINT NAVAL AIR STATIO		1/2 - 1 SSW	0	6

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
CHEMWOOD TREATMENT CO, INC.	SHWS
HAWAII PROJECT MANAGEMENT (HPM)/HAW	SHWS
HANUA STREET FUGITIVE OIL	SHWS, SPILLS
TEXACO MALAKOLE STREET PIPELINE EXC	SHWS, SPILLS
DEEP DRAFT HARBOR PIER 5 CRUDE OIL	SHWS
SINGLE BUOY MOORING BARBERS POINT H	SHWS
HAWAII METAL RECYCLING CO	CERCLIS, RCRIS-SQG, FINDS
KANEOHE BAY OIL DIESEL SIGHTED ALON	SWF/LF, SPILLS
WAIMANALO GULCH LANDFILL, EWA	SWF/LF
KAPOLEI CENTRAL OFFICE	FINDS
KAPOLEI STATE BUILDING	SPILLS
KAPOLEI POST OFFICE, POSSIBLE ANTHR	SPILLS

OVERVIEW MAP - 1222104.2s - EKNA Services, Inc

0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

TARGET PROPERTY:	Proposed Goodwill Kapolei	CUSTOMER:	EKNA Services, Inc
ADDRESS:	Haumea and Wakea Streets	CONTACT:	Charles Schuster
CITY/STATE/ZIP:	Kapolei HI 96707	INQUIRY #:	1222104.2s
LAT/LONG:	21.3326 / 158.0814	DATE:	June 30, 2004 1:28 pm

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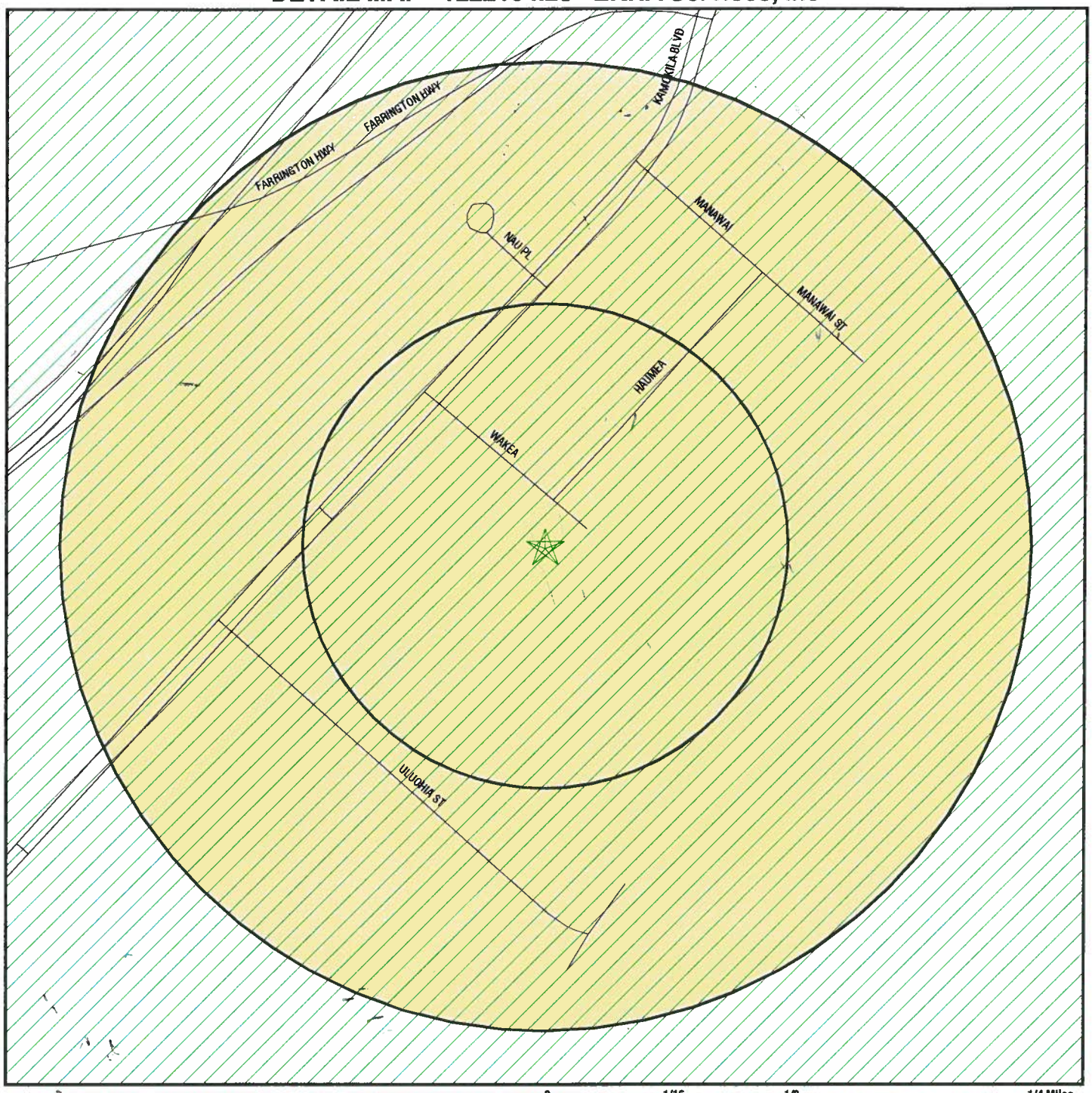
DETAIL MAP - 1222104.2s - EKNA Services, Inc



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

TARGET PROPERTY:	Proposed Goodwill Kapolei	CUSTOMER:	EKNA Services, Inc
ADDRESS:	Haumea and Wakea Streets	CONTACT:	Charles Schuster
CITY/STATE/ZIP:	Kapolei HI 96707	INQUIRY #:	1222104.2s
LAT/LONG:	21.3326 / 158.0814	DATE:	June 30, 2004 1:29 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRIS-TSD		0.500	0	0	0	NR	NR	0
RCRIS Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRIS Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
SHWS		1.000	0	0	1	0	NR	1
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
UST		0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	1	NR	1
RAATS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
SPILLS		TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY HISTORICAL DATABASES								
Coal Gas		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
BROWNFIELDS DATABASES								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
BROWNFIELDS		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Distance (ft.) Elevation	Site	Database(s)	EDR ID Number EPA ID Number

Coal Gas Site Search: No site was found In a search of Real Property Scan's ENVIROHAZ database.

DOD
Region
SSW
1/2-1
2816 ft.

BARBERS POINT NAVAL AIR STATION (CLOSED)
HONOLULU (County), HI

DOD **CDOD048409**
N/A

FEDERAL LANDS:

Feature 1:	Navy DOD
Feature 2:	Not reported
Feature 3:	Not reported
Agency:	DOD
URL:	Not reported
Name 1:	Barbers Point Naval Air Station (Closed)
Name 2:	Not reported
Name 3:	Not reported
State:	HI

1
WSW
1/4-1/2
2119 ft.

CAMPBELL INDUSTRIAL PARK 06/24/94 A
1001 KAMUKILA BOULEVARD
KAPOLEI, HI 96707

SHWS **S104657404**
N/A

Relative:
Higher

Actual:
69 ft.

SHWS:

File Section :	Central
Type :	Private
Department 1 :	Not reported
Department 2 :	Not reported
Department 3 :	Not reported
Table :	Sitelist
Island :	Oahu
Zip :	Not reported
Discovery Assesment and Remediation :	Not reported
Initial Site Screening Team Lead :	Not reported
ISST Assigned :	Not reported
ISST Date :	Not reported
ISST Priority :	Not reported
ISST Letter :	Not reported
Env Justice Eligible :	Not reported
Preliminary Assesment :	Not reported
PA Lead :	Not reported
PA Date :	Not reported
PA Result :	Not reported
Site Investigation :	Not reported
SI Lead :	Not reported
SI Date :	Not reported
SI Result :	Not reported
Remediation Action Planned :	Not reported
VRP :	Not reported
Brownfields :	Not reported
Agreement :	Not reported
Remedial Investigation :	Not reported
RAA :	Not reported
Response Action Memo :	Not reported
REM Lead :	Not reported
REM Date :	Not reported
REM Last Update :	3/12/97
Input By :	TDao

CAMPBELL INDUSTRIAL PARK 06/24/94 A (Continued) **S104657404**

Case :	Not reported
Fed Id :	Not reported
UST :	Not reported
Permits :	Not reported
RCRA :	Not reported
Program :	Not reported
Priority :	Not reported
Lat/Long :	Not reported
Cost :	Not reported
CU QNTY Site :	Not reported
Enforcement :	Not reported
CU Method :	Not reported
Ownership :	Not reported
Tax Map Key :	Not reported
Form :	Not reported
EPCRA :	Not reported
EPCRA FIL :	Not reported
Pathways :	Not reported
Targets :	Not reported
Manager :	Not reported
REM Result :	Not reported
Identifier :	Not reported
Site Code :	Not reported
Event :	Not reported
Event Type :	Not reported
Notes :	Final EPA file copy of Site Inspection Report dated 6/24/94 (for 5 sites at CIP: Hawn Western Steel, Ltd., Hwn. Western Steel Dump, Hw Metals Recycling Co., Leeward Auto Wreckers, & Brewer Envi. Indus. Inc.
Site :	Not reported
Site_ :	Not reported
Operator :	Not reported
Current :	Not reported
Compounds :	Not reported
Oname :	Not reported

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
EWA BEACH	S104534114	CHEMWOOD TREATMENT CO, INC.	91-476 KOMOHANA ST, CAMPBELL INDUS	96707	SHWS
HONOLULU	S104657421	HAWAII PROJECT MANAGEMENT (HPM)/HAW	KAOMI LOOP	96707	SHWS
HONOLULU COUNTY	S103763651	KANEOHE BAY OIL DIESEL SIGHTED ALON	KANEOHE BAY		SWF/LF, SPILLS
KAPOLEI	S105264793	KAPOLEI STATE BUILDING	FARRINGTON HWY, 3RD / 4TH FL.	96707	SPILLS
KAPOLEI	1000860458	HAWAII METAL RECYCLING CO	91 056 HANUA ST CAMPBELL IND	96707	CERCLIS, RCRIS-SQG, FINDS
KAPOLEI	S104534170	HANUA STREET FUGITIVE OIL	HANUA ST	96707	SHWS, SPILLS
KAPOLEI	1006842457	KAPOLEI CENTRAL OFFICE	KAMAHA RD & FT BARRETT RD	96707	FINDS
KAPOLEI	S105264625	KAPOLEI POST OFFICE, POSSIBLE ANTHR	MAIL DISTRIBUTION/SORTING ROOM	96707	SPILLS
KAPOLEI	S104657515	TEXACO MALAKOLE STREET PIPELINE EXC	MALAKOLE ST	96707	SHWS, SPILLS
KAPOLEI	S104657409	DEEP DRAFT HARBOR PIER 5 CRUDE OIL	PIER 5 BARBORS POINT DEEP DRAFT HAR	96707	SHWS
KAPOLEI	S104657510	SINGLE BUOY MOORING BARBERS POINT H	SINGLE BUOY MOORING BARBERS POINT H	96707	SHWS
WAIMANALO GULCH, OAH	S106401346	WAIMANALO GULCH LANDFILL, EWA	94-460 FARRINGTON HWY	96707	SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/04
Date Made Active at EDR: 05/21/04
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 05/04/04
Elapsed ASTM days: 17
Date of Last EDR Contact: 05/04/04

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

Proposed NPL: Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 04/27/04
Date Made Active at EDR: 05/21/04
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 05/04/04
Elapsed ASTM days: 17
Date of Last EDR Contact: 05/04/04

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/26/04
Date Made Active at EDR: 04/02/04
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/22/04
Elapsed ASTM days: 11
Date of Last EDR Contact: 03/22/04

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 02/26/04
Date Made Active at EDR: 04/02/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/22/04
Elapsed ASTM days: 11
Date of Last EDR Contact: 03/22/04

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/15/04
Date Made Active at EDR: 04/15/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 03/25/04
Elapsed ASTM days: 21
Date of Last EDR Contact: 03/08/04

RCRIS: Resource Conservation and Recovery Information System
Source: EPA
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 04/13/04
Date Made Active at EDR: 05/13/04
Database Release Frequency: Varies

Date of Data Arrival at EDR: 04/20/04
Elapsed ASTM days: 23
Date of Last EDR Contact: 04/20/04

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/03
Date Made Active at EDR: 03/12/04
Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/26/04
Elapsed ASTM days: 46
Date of Last EDR Contact: 04/26/04

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01
Database Release Frequency: Biennially

Date of Last EDR Contact: 03/16/04
Date of Next Scheduled EDR Contact: 06/14/04

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ROD: Records Of Decision
Source: EPA
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/08/04
Database Release Frequency: Annually

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/04/04
Date of Next Scheduled EDR Contact: 08/02/04

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/08/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/17/04
Database Release Frequency: Annually

Date of Last EDR Contact: 04/20/04
Date of Next Scheduled EDR Contact: 07/19/04

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/19/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 03/05/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/30/04
Date of Next Scheduled EDR Contact: 06/28/04

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 202-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 03/12/04
Date of Next Scheduled EDR Contact: 05/24/04

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/30/04
Database Release Frequency: Annually
Date of Last EDR Contact: 05/12/04
Date of Next Scheduled EDR Contact: 08/09/04

DOD: Department of Defense Sites
Source: USGS
Telephone: 703-692-8801
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 02/02/04
Date of Next Scheduled EDR Contact: 05/10/04

STORMWATER: Storm Water General Permits
Source: Environmental Protection Agency
Telephone: 202 564-0746
A listing of all facilities with Storm Water General Permits.

Date of Government Version: N/A
Database Release Frequency: Quarterly
Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

INDIAN RESERV: Indian Reservations
Source: USGS
Telephone: 202-208-3710
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 02/02/04
Date of Next Scheduled EDR Contact: 05/10/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 04/14/04
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/15/04
Date of Next Scheduled EDR Contact: 06/14/04

RMP: Risk Management Plans
Source: Environmental Protection Agency
Telephone: 202-564-8600
When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: N/A
Database Release Frequency: N/A
Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

FUDS: Formerly Used Defense Sites
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 10/01/03
Database Release Frequency: Varies
Date of Last EDR Contact: 04/26/04
Date of Next Scheduled EDR Contact: 07/05/04

UMTRA: Uranium Mill Tailings Sites
Source: Department of Energy
Telephone: 505-845-0011
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 04/22/04
Database Release Frequency: Varies
Date of Last EDR Contact: 06/21/04
Date of Next Scheduled EDR Contact: 09/20/04

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 03/08/04
Date of Next Scheduled EDR Contact: 06/07/04

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-566-0250
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/01
Database Release Frequency: Annually
Date of Last EDR Contact: 03/23/04
Date of Next Scheduled EDR Contact: 06/21/04

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Database Release Frequency: Every 4 Years
Date of Last EDR Contact: 03/05/04
Date of Next Scheduled EDR Contact: 06/07/04

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 04/13/04
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-5008
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/01
Database Release Frequency: Annually
Date of Last EDR Contact: 04/19/04
Date of Next Scheduled EDR Contact: 07/19/04

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/13/04
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

STATE OF HAWAII ASTM STANDARD RECORDS

SHWS: Sites List
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 07/12/01
Date Made Active at EDR: 10/16/01
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/24/01
Elapsed ASTM days: 22
Date of Last EDR Contact: 03/25/04

SWF/LF: Permitted Landfills in the State of Hawaii
Source: Department of Health
Telephone: 808-586-4245
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/19/04
Date Made Active at EDR: 06/22/04
Database Release Frequency: Varies
Date of Data Arrival at EDR: 05/20/04
Elapsed ASTM days: 33
Date of Last EDR Contact: 04/26/04

LUST: Leaking Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/01/03
Date Made Active at EDR: 09/17/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/02/03
Elapsed ASTM days: 15
Date of Last EDR Contact: 03/30/04

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/01/03
Date Made Active at EDR: 09/11/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 09/02/03
Elapsed ASTM days: 9
Date of Last EDR Contact: 03/30/04

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/10/03
Date Made Active at EDR: 10/21/03
Database Release Frequency: Varies

Date of Data Arrival at EDR: 10/13/03
Elapsed ASTM days: 8
Date of Last EDR Contact: 03/22/04

STATE OF HAWAII ASTM SUPPLEMENTAL RECORDS

SPILLS: Release Notifications
Source: Department of Health
Telephone: 808-586-4249
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 09/01/00
Database Release Frequency: Varies

Date of Last EDR Contact: 03/25/04
Date of Next Scheduled EDR Contact: 06/21/04

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

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BROWNFIELDS DATABASES

BROWNFIELDS: Brownfields Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/10/03
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/04/03
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: N/A
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

PROPOSED GOODWILL KAPOLEI
HAUMEA AND WAKEA STREETS
KAPOLEI, HI 96707

TARGET PROPERTY COORDINATES

Latitude (North):	21.332600 - 21˚ 19' 57.4"
Longitude (West):	158.081406 - 158˚ 4' 53.1"
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	595260.4
UTM Y (Meters):	2359097.0
Elevation:	66 ft. above sea level

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

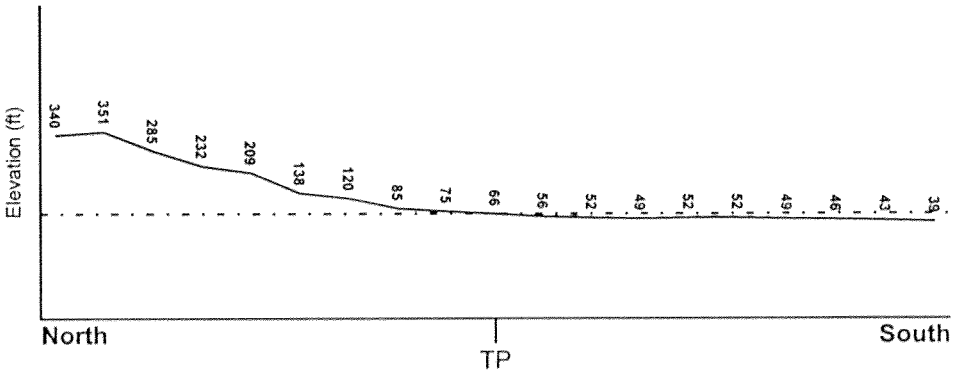
TOPOGRAPHIC INFORMATION

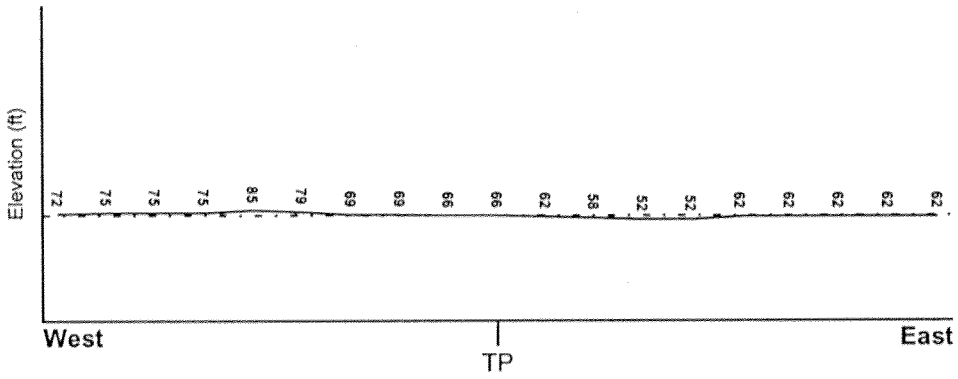
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

USGS Topographic Map:	21158-C1 EWA, HI
General Topographic Gradient:	General SSE
Source:	USGS 7.5 min quad index

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 66 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
HONOLULU, HI	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 1500010130C

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EWA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT		GEOLOGIC AGE IDENTIFICATION	
Era:	-	Category:	-
System:	-		
Series:	-		
Code:	N/A *(decoded above as Era, System & Series)*		

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	LUALUALEI
Soil Surface Texture:	extremely stony - clay
Hydrologic Group:	Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	MODERATE
Depth to Bedrock Min:	> 60 inches
Depth to Bedrock Max:	> 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	10 inches	extremely stony - clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.20 Min: 0.06	Max: 7.30 Min: 6.60
2	10 inches	60 inches	extremely stony - clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.20 Min: 0.06	Max: 7.30 Min: 5.60

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: clay
stony - clay
very stony - clay

Surficial Soil Types: clay
stony - clay
very stony - clay

Shallow Soil Types: No Other Soil Types

Deeper Soil Types: clay
weathered bedrock
stony - clay

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS0224560	1/4 - 1/2 Mile NW
B5	USGS0224437	1/4 - 1/2 Mile South
C7	USGS0224492	1/2 - 1 Mile South
D8	USGS0224555	1/2 - 1 Mile ENE
E10	USGS0224650	1/2 - 1 Mile North
E11	USGS0224651	1/2 - 1 Mile North
E12	USGS0224649	1/2 - 1 Mile North
E13	USGS0224652	1/2 - 1 Mile North
F16	USGS0224589	1/2 - 1 Mile ESE
G17	USGS0224431	1/2 - 1 Mile SW
H21	USGS0224639	1/2 - 1 Mile NNE
22	USGS0224489	1/2 - 1 Mile SSW
G23	USGS0224432	1/2 - 1 Mile SW
26	USGS0224414	1/2 - 1 Mile South
I28	USGS0224427	1/2 - 1 Mile SW
I29	USGS0224425	1/2 - 1 Mile SW
J32	USGS0224430	1/2 - 1 Mile ESE
K33	USGS0224667	1/2 - 1 Mile NNE
K35	USGS0224666	1/2 - 1 Mile NNE
L38	USGS0224429	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
H20	HI0000335	1/2 - 1 Mile NNE

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

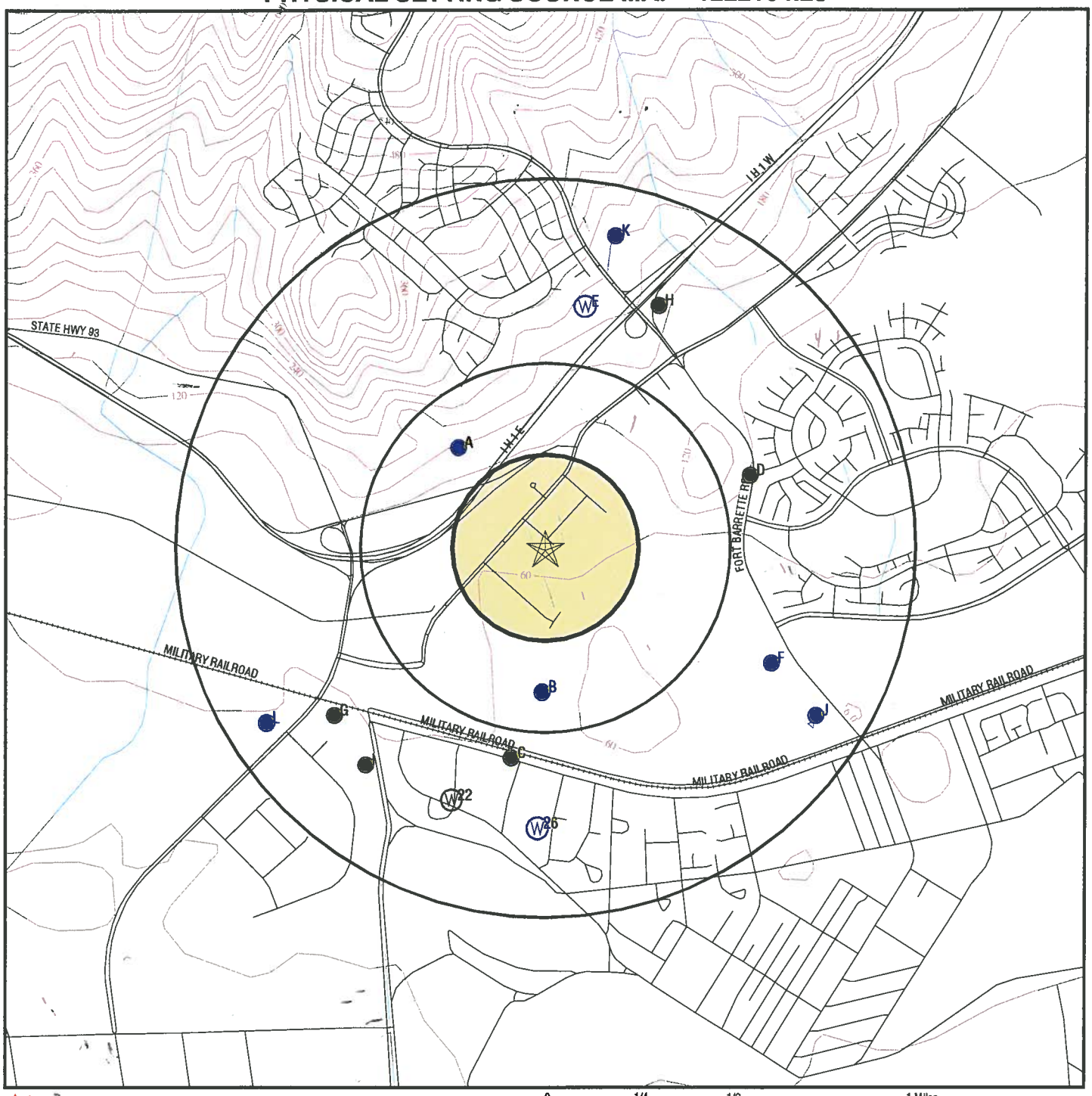
MAP ID	WELL ID	LOCATION FROM TP
A2	3-2005-001	1/4 - 1/2 Mile NW
B3	3-1905-008	1/4 - 1/2 Mile South
B4	3-1905-010	1/4 - 1/2 Mile South
C6	3-1905-003	1/2 - 1 Mile South
D9	3-2004-001	1/2 - 1 Mile ENE
F14	3-1904-003	1/2 - 1 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
F15	3-1904-002	1/2 - 1 Mile ESE
G18	3-1905-004	1/2 - 1 Mile SW
H19	3-2004-004	1/2 - 1 Mile NNE
I24	3-1905-009	1/2 - 1 Mile SW
G25	3-1905-005	1/2 - 1 Mile SW
I27	3-1905-007	1/2 - 1 Mile SW
I30	3-1905-006	1/2 - 1 Mile SW
J31	3-1904-001	1/2 - 1 Mile ESE
K34	3-2004-003	1/2 - 1 Mile NNE
K36	3-2004-002	1/2 - 1 Mile NNE
L37	3-1905-002	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 1222104.2s



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location

TARGET PROPERTY:	Proposed Goodwill Kapolei	CUSTOMER:	EKNA Services, Inc
ADDRESS:	Haumea and Wakea Streets	CONTACT:	Charles Schuster
CITY/STATE/ZIP:	Kapolei HI 96707	INQUIRY #:	1222104.2s
LAT/LONG:	21.3326 / 158.0814	DATE:	June 30, 2004 1:29 pm

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GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **NW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS0224560**

Agency:	USGS	Site ID:	212023158051601
Site Name:	3-2005-01 W275-5 MAK		
Dec. Latitude:	21.33656		
Dec. Longitude:	-158.08503		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	125.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19710101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	170		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2 **NW** **1/4 - 1/2 Mile** **Higher**	**HI WELLS**	**3-2005-001**

Wid:	3-2005-001	Island Code:	3
Island Name:	Oahu	Well no:	2005-01
Well name:	Honouliuli	Old name:	Not Reported
Yr drilled:	1971	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	212023
Longitude:	1580516	UTM:	Y
Gps:	N	Owner/user:	Pac Conc Quar
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	120	Well depth:	142
Solid casing Depth:	105	Perf casing Depth:	120
Use:	SLD	Use Desc:	Sealed
Use year:	77	Water Top Elev:	22
Chloride value:	0	Test date:	Not Reported
Pumping Test rate:	856	Drop in water Lvl:	1.2
Chloride Test:	375	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	TWB	Geology desc:	Tertiary Waianae basalt (lower member)
Installed:	Not Reported	Last Measured:	Not Reported

Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	04/01/1972 00:00:00	Min Cl year:	0
Bot_hole depth:	-22	bot_solid depth:	15
Bot_perf depth:	0	Well Capacity:	713
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:009	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1971 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

B3
South
1/4 - 1/2 Mile
Lower

HI WELLS **3-1905-008**

Wid:	3-1905-008	Island Code:	3
Island Name:	Oahu	Well no:	1905-08
Well name:	Kapolei Irr 1	Old name:	Not Reported
Yr drilled:	1991	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211949
Longitude:	1580502	UTM:	Y
Gps:	N	Owner/user:	Campbell Est
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	65	Well depth:	84
Solid casing Depth:	64	Perf casing Depth:	84
Use:	IRR	Use Desc:	Irrigation
Use year:	94	Water Top Elev:	0
Chloride value:	0	Test date:	04/10/1991 00:00:00
Pumping Test rate:	750	Drop in water Lvl:	6.4
Chloride Test:	545	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	550
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	94	Last Measured:	Not Reported
Max chlorides:	02/28/1997 00:00:00	Max Cl year:	0
Min chlorides:	12/19/1997 00:00:00	Min Cl year:	0
Bot_hole depth:	-19	bot_solid depth:	1
Bot_perf depth:	-19	Well Capacity:	117
Pump Capacity:	.792	Draft (mgd):	Not Reported
Tax map key:	9-1-016:001	Aquifer code:	30208
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	935	Const. Date:	01/01/1991 00:00:00
Pump Inst. Date:	04/01/1994 00:00:00	Surveyor:	ALDEN S KAJIOKA
Transmissivity:	0	Pump intake elev:	-10
Pump depth:	75		

B4
South
1/4 - 1/2 Mile
Lower

HI WELLS **3-1905-010**

Wid:	3-1905-010	Island Code:	3
Island Name:	Oahu	Well no:	1905-10
Well name:	Kapolei Irr 2	Old name:	Not Reported
Yr drilled:	1993	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211949
Longitude:	1580504	UTM:	Y
Gps:	N	Owner/user:	Campbell Est
Old number:	Not Reported	Well_type:	ROT
Type:	Rotary Drill	Casing dia:	14
Ground Elev:	65	Well depth:	94
Solid casing Depth:	54	Perf casing Depth:	94
Use:	IRR	Use Desc:	Irrigation
Use year:	94	Water Top Elev:	1.25
Chloride value:	450	Test date:	08/05/1993 00:00:00
Pumping Test rate:	600	Drop in water Lvl:	9.7
Chloride Test:	470	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	550
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	94	Last Measured:	Not Reported
Max chlorides:	03/11/1996 00:00:00	Max Cl year:	96
Min chlorides:	11/21/1997 00:00:00	Min Cl year:	96
Bot_hole depth:	-29	bot_solid depth:	9
Bot_perf depth:	-29	Well Capacity:	62
Pump Capacity:	.792	Draft (mgd):	Not Reported
Tax map key:	9-1-016:001	Aquifer code:	30208
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	785	Const. Date:	08/20/1993 00:00:00
Pump Inst. Date:	04/01/1994 00:00:00	Surveyor:	ALDEN S KAJIOKA
Transmissivity:	0	Pump intake elev:	-10
Pump depth:	75		

B5
South
1/4 - 1/2 Mile
Lower

FED USGS **USGS0224437**

Agency:	USGS	Site ID:	211947158050401
Site Name:	3-1905.04		
Dec. Latitude:	21.32656		
Dec. Longitude:	-158.0817		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	55.00		
Hydrologic code:	20060000		
Topographic:	local depression		
Site Type:	Ground-water other than Spring		
Const Date:	19800901	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	35.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
C6 **South** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**3-1905-003**

Wid:	3-1905-003	Island Code:	3
Island Name:	Oahu	Well no:	1905-03
Well name:	Barbers Point	Old name:	Not Reported
Yr drilled:	1966	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211939
Longitude:	1580508	UTM:	Y
Gps:	N	Owner/user:	Hawn Tel Co
Old number:	275-4	Well_type:	PER
Type:	Percussion Drill	Casing dia:	8
Ground Elev:	56	Well depth:	70
Solid casing Depth:	Not Reported	Perf casing Depth:	Not Reported
Use:	OTH	Use Desc:	Other
Use year:	74	Water Top Elev:	2.3
Chloride value:	288	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	QLS	Geology desc:	Quaternary limestone deposits
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-14	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:011	Aquifer code:	30208
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1966 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

C7 **South** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224492**	

Agency:	USGS	Site ID:	211939158050801
Site Name:	3-1905.01 -03/W275-4		
Dec. Latitude:	21.32434		
Dec. Longitude:	-158.08281		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	56.00		
Hydrologic code:	20060000		
Topographic:	Flat surface		
Site Type:	Ground-water other than Spring		
Const Date:	19660718	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		

Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	70.0		
Hole depth:	70.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1966-08-05	53.30	

D8
ENE
1/2 - 1 Mile
Higher

FED USGS **USGS0224555**

Agency:	USGS	Site ID:	212019158043201
Site Name:	3-2004-01 W275 MAKIL		
Dec. Latitude:	21.33545		
Dec. Longitude:	-158.07281		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	89.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19330106	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	147		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

D9
ENE
1/2 - 1 Mile
Higher

HI WELLS **3-2004-001**

Wid:	3-2004-001	Island Code:	3
Island Name:	Oahu	Well no:	2004-01
Well name:	Puu Kapolei	Old name:	Not Reported
Yr drilled:	1933	Driller:	MCCANDLESS
Quad_map:	06	Latitude:	212019
Longitude:	1580432	UTM:	Y
Gps:	N	Owner/user:	U S Navy
Old number:	Not Reported	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	12
Ground Elev:	89	Well depth:	147

Solid casing Depth:	96	Perf casing Depth:	102
Use:	OTH	Use Desc:	Other
Use year:	88	Water Top Elev:	19.2
Chloride value:	467	Test date:	Not Reported
Pumping Test rate:	465	Drop in water Lvl:	0.5
Chloride Test:	509	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	TWDC	Geology desc:	Tertiary Waianae basalt dike complex
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-58	bot_solid depth:	-7
Bot_perf depth:	-13	Well Capacity:	930
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:002	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1933 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

E10
North
1/2 - 1 Mile
Higher

FED USGS **USGS0224650**

Agency:	USGS	Site ID:	212043158045702
Site Name:	3-2004.01B		
Dec. Latitude:	21.34212		
Dec. Longitude:	-158.07975		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	160.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19670101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	20.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

E11
North
1/2 - 1 Mile
Higher

FED USGS **USGS0224651**

Agency:	USGS	Site ID:	212043158045703
Site Name:	3-2004.01C		
Dec. Latitude:	21.34212		
Dec. Longitude:	-158.07975		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	160.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19670101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	20.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

E12
North
1/2 - 1 Mile
Higher

FED USGS **USGS0224649**

Agency:	USGS	Site ID:	212043158045701
Site Name:	3-2004.01A		
Dec. Latitude:	21.34212		
Dec. Longitude:	-158.07975		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	160.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19670101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	16.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

E13
North
1/2 - 1 Mile
Higher

FED USGS **USGS0224652**

Agency:	USGS	Site ID:	212043158045704
Site Name:	3-2004.01D		
Dec. Latitude:	21.34212		
Dec. Longitude:	-158.07975		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	160.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19670101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	20.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

F14
ESE
1/2 - 1 Mile
Lower

HI WELLS **3-1904-003**

Wid:	3-1904-003	Island Code:	3
Island Name:	Oahu	Well no:	1904-03
Well name:	Makakilo G C 2	Old name:	Not Reported
Yr drilled:	1992	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211952
Longitude:	1580429	UTM:	Y
Gps:	N	Owner/user:	Puu Makakilo
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	Not Reported	Well depth:	70
Solid casing Depth:	50	Perf casing Depth:	70
Use:	SLD	Use Desc:	Sealed
Use year:	99	Water Top Elev:	0
Chloride value:	0	Test date:	01/07/1992 00:00:00
Pumping Test rate:	425	Drop in water Lvl:	3.5
Chloride Test:	910	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	Not Reported	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	121
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:001	Aquifer code:	30208
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/10/1992 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
F15 **ESE** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**3-1904-002**

Wid:	3-1904-002	Island Code:	3
Island Name:	Oahu	Well no:	1904-02
Well name:	Makakilo G C 1	Old name:	Not Reported
Yr drilled:	1991	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211952
Longitude:	1580429	UTM:	Y
Gps:	N	Owner/user:	Puu Makakilo
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	Not Reported	Well depth:	77
Solid casing Depth:	57	Perf casing Depth:	77
Use:	SLD	Use Desc:	Sealed
Use year:	99	Water Top Elev:	0
Chloride value:	0	Test date:	11/22/1991 00:00:00
Pumping Test rate:	450	Drop in water Lvl:	4.5
Chloride Test:	860	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	Not Reported	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	100
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:001	Aquifer code:	30208
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	11/25/1991 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

F16 **ESE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224589**

Agency:	USGS	Site ID:	211953158042801
Site Name:	3-1904-02 MAKAKILO		
Dec. Latitude:	21.32823		
Dec. Longitude:	-158.0717		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	30.		
Hydrologic code:	20060000		
Topographic:	Flat surface		
Site Type:	Ground-water other than Spring		
Const Date:	19891026	Inven Date:	19891127
Well Type:	Single well, other than collector or Ranney type		

Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	80.		
Hole depth:	80.	Source:	driller
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1989-10-26	50.	

G17
SW
1/2 - 1 Mile
Lower

FED USGS **USGS0224431**

Agency:	USGS	Site ID:	211945158053401
Site Name:	3-1905-04 EWA DESALT PLANT		
Dec. Latitude:	21.32601		
Dec. Longitude:	-158.09003		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	60.		
Hydrologic code:	20060000		
Topographic:	Hillside (slope)		
Site Type:	Ground-water other than Spring		
Const Date:	198712	Inven Date:	19880223
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	380.		
Hole depth:	380.	Source:	other government (other than USGS)
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

G18
SW
1/2 - 1 Mile
Lower

HI WELLS **3-1905-004**

Wid:	3-1905-004	Island Code:	3
Island Name:	Oahu	Well no:	1905-04
Well name:	Ewa Desalt Basal	Old name:	Not Reported
Yr drilled:	1988	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211945
Longitude:	1580534	UTM:	Y
Gps:	N	Owner/user:	State Dowald
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	Not Reported	Well depth:	380

Solid casing Depth:	275	Perf casing Depth:	Not Reported
Use:	UNU	Use Desc:	Unused
Use year:	95	Water Top Elev:	0
Chloride value:	0	Test date:	01/19/1988 00:00:00
Pumping Test rate:	500	Drop in water Lvl:	1.0
Chloride Test:	510	Temperature:	23.3
Units:	C	Pump Capacity:	780
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	06/30/1994 00:00:00	Max Cl year:	94
Min chlorides:	05/04/1995 00:00:00	Min Cl year:	94
Bot_hole depth:	Not Reported	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	500
Pump Capacity:	1.123	Draft (mgd):	Not Reported
Tax map key:	9-1-015:012	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	495	Const. Date:	02/01/1988 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

H19
NNE
1/2 - 1 Mile
Higher

HI WELLS **3-2004-004**

Wid:	3-2004-004	Island Code:	3
Island Name:	Oahu	Well no:	2004-04
Well name:	Makakilo	Old name:	Not Reported
Yr drilled:	1981	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	212043
Longitude:	1580446	UTM:	Y
Gps:	N	Owner/user:	Honolulu Bws
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	14
Ground Elev:	141	Well depth:	268
Solid casing Depth:	188	Perf casing Depth:	Not Reported
Use:	MUN	Use Desc:	Municipal
Use year:	85	Water Top Elev:	14.9
Chloride value:	248	Test date:	04/10/1981 00:00:00
Pumping Test rate:	1118	Drop in water Lvl:	0.8
Chloride Test:	256	Temperature:	23.9
Units:	C	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-127	bot_solid depth:	-47
Bot_perf depth:	Not Reported	Well Capacity:	1398
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-016:	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	04/02/1981 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
H20 **NNE** **1/2 - 1 Mile** **Higher**	**FRDS PWS**	**HI0000335**

PWS ID:	HI0000335	PWS Status:	Not Reported
Date Initiated:	Not Reported	Date Deactivated:	Not Reported
PWS Name:	WAIPAHU-EWA-WAIANAE 87-1070 FARRINGTON HWY WAIANAE, OAHU, HI 96792		

Treatment Objective: ORGANICS REMOVAL
Treatment Process: ACTIVATED CARBON, GRANULAR
Source: Ground water

Addressee / Facility: System Owner/Responsible Party
MR. KAZU HAYASHIDA, MANAGER
BOARD OF WATER SUPPLY
630 SOUTH BERETANIA
HONOLULU, HI 96843

Facility Latitude:	21 3 25.0000	Facility Longitude:	158 10 56.0000
Facility Latitude:	21 20 43.0000	Facility Longitude:	158 4 46.0000
Facility Latitude:	21 23 16.0000	Facility Longitude:	158 2 5.0000
Facility Latitude:	21 23 18.0000	Facility Longitude:	158 2 3.0000
Facility Latitude:	21 23 21.0000	Facility Longitude:	158 1 37.0000
Facility Latitude:	21 23 26.0000	Facility Longitude:	158 3 16.0000
Facility Latitude:	21 24 8.0000	Facility Longitude:	158 2 30.0000
Facility Latitude:	21 24 10.0000	Facility Longitude:	158 2 31.0000
Facility Latitude:	21 24 14.0000	Facility Longitude:	158 0 53.0000
Facility Latitude:	21 24 15.0000	Facility Longitude:	158 0 26.0000
Facility Latitude:	21 27 52.0000	Facility Longitude:	158 12 2.0000
Facility Latitude:	21 28 15.0000	Facility Longitude:	158 10 23.0000
Facility Latitude:	21 28 22.0000	Facility Longitude:	158 11 36.0000
Facility Latitude:	21 28 27.0000	Facility Longitude:	158 9 20.0000
Facility Latitude:	21 28 57.0000	Facility Longitude:	158 12 46.0000
Facility Latitude:	21 29 25.0000	Facility Longitude:	158 8 42.0000
Facility Latitude:	21 29 59.0000	Facility Longitude:	158 11 13.0000
Facility Latitude:	21 30 16.0000	Facility Longitude:	158 10 58.0000
Facility Latitude:	21 30 16.0000	Facility Longitude:	158 11 2.0000
Facility Latitude:	21 30 25.0000	Facility Longitude:	158 10 56.0000
Facility Latitude:	21 30 30.0000	Facility Longitude:	158 10 53.0000
Facility Latitude:	21 36 16.0000	Facility Longitude:	158 2 5.0000
Facility Latitude:	21 38 18.0000	Facility Longitude:	158 2 8.0000
Facility Latitude:	21 57 52.0000	Facility Longitude:	158 12 3.0000
City Served:	EWA BEACH		
City Served:	KUNIA		
City Served:	MAKAKILO		
City Served:	WAIANAE		
City Served:	WAIPAHU		
City Served:	WAIPAHU EWA		
Treatment Class:	Mixed (treated and untreated)	Population:	122166

PWS currently has or had major violation(s) or enforcement: No

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
H21 **NNE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS0224639**

Agency:	USGS	Site ID:	212036158044101
Site Name:	3-2004-04 BWS Makakilo Well Oahu HI		
Dec. Latitude:	21.34217		
Dec. Longitude:	-158.07661		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	140.88		
Hydrologic code:	20060000		
Topographic:	Flat surface		
Site Type:	Ground-water other than Spring		
Const Date:	198103	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	120WNLF		
Aquifer type:	Unconfined single aquifer		
Well depth:	268		
Hole depth:	268	Source:	driller
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1981-03-18	126.00	

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22 **SSW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224489**

Agency:	USGS	Site ID:	211933158051701
Site Name:	3-1905.03A-D		
Dec. Latitude:	21.32268		
Dec. Longitude:	-158.08531		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	50.00		
Hydrologic code:	20060000		
Topographic:	Flat surface		
Site Type:	Ground-water other than Spring		
Const Date:	Not Reported	Inven Date:	Not Reported
Well Type:	Drain dug to water table or potentiometric surface to either lower ground-water level or serve as a water supply		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	40.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
G23 **SW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224432**

Agency:	USGS	Site ID:	211945158053501
Site Name:	3-1905-05 EWA DESALT PLANT		
Dec. Latitude:	21.32601		
Dec. Longitude:	-158.09031		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	60.		
Hydrologic code:	20060000		
Topographic:	Hillside (slope)		
Site Type:	Ground-water other than Spring		
Const Date:	198712	Inven Date:	19880223
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	79.		
Hole depth:	79.	Source:	other government (other than USGS)
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

I24 **SW** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**3-1905-009**

Wid:	3-1905-009	Island Code:	3
Island Name:	Oahu	Well no:	1905-09
Well name:	Caprock 3	Old name:	Not Reported
Yr drilled:	1992	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211940
Longitude:	1580530	UTM:	Y
Gps:	N	Owner/user:	State Dowald
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	54	Well depth:	80
Solid casing Depth:	60	Perf casing Depth:	80
Use:	UNU	Use Desc:	Unused
Use year:	92	Water Top Elev:	2.25
Chloride value:	0	Test date:	10/05/1992 00:00:00
Pumping Test rate:	600	Drop in water Lvl:	5.6
Chloride Test:	900	Temperature:	24.5
Units:	C	Pump Capacity:	780
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	92	Last Measured:	Not Reported

Max chlorides:	08/04/1994 00:00:00	Max Cl year:	94
Min chlorides:	05/19/1994 00:00:00	Min Cl year:	94
Bot_hole depth:	-26	bot_solid depth:	-6
Bot_perf depth:	-26	Well Capacity:	107
Pump Capacity:	1.123	Draft (mgd):	Not Reported
Tax map key:	9-1-015:001	Aquifer code:	30207
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	735	Const. Date:	09/01/1992 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

G25
SW
1/2 - 1 Mile
Lower

HI WELLS **3-1905-005**

Wid:	3-1905-005	Island Code:	3
Island Name:	Oahu	Well no:	1905-05
Well name:	Caprock 1	Old name:	Not Reported
Yr drilled:	1988	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211945
Longitude:	1580536	UTM:	Y
Gps:	N	Owner/user:	State Dowald
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	14
Ground Elev:	Not Reported	Well depth:	80
Solid casing Depth:	52	Perf casing Depth:	80
Use:	UNU	Use Desc:	Unused
Use year:	91	Water Top Elev:	0
Chloride value:	0	Test date:	02/17/1988 00:00:00
Pumping Test rate:	100	Drop in water Lvl:	15.1
Chloride Test:	970	Temperature:	24.4
Units:	C	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	Not Reported	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	7
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-015:012	Aquifer code:	30207
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	02/01/1988 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

26
South
1/2 - 1 Mile
Lower

FED USGS **USGS0224414**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency:	USGS	Site ID:	211929158050401
Site Name:	3-1905.02A-H		
Dec. Latitude:	21.32157		
Dec. Longitude:	-158.0817		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	49.00		
Hydrologic code:	20060000		
Topographic:	Flat surface		
Site Type:	Ground-water other than Spring		
Const Date:	Not Reported	Inven Date:	Not Reported
Well Type:	Drain dug to water table or potentiometric surface to either lower ground-water level or serve as a water supply		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	Not Reported		
Hole depth:	40.0	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

I27
SW
1/2 - 1 Mile
Lower

HI WELLS **3-1905-007**

Wid:	3-1905-007	Island Code:	3
Island Name:	Oahu	Well no:	1905-07
Well name:	Caprock 2	Old name:	Not Reported
Yr drilled:	1991	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211938
Longitude:	1580530	UTM:	Y
Gps:	N	Owner/user:	Honolulu Bws
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	49	Well depth:	78
Solid casing Depth:	48	Perf casing Depth:	78
Use:	UNU	Use Desc:	Unused
Use year:	91	Water Top Elev:	.5
Chloride value:	0	Test date:	02/19/1991 00:00:00
Pumping Test rate:	625	Drop in water Lvl:	1.1
Chloride Test:	690	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	02/23/1993 00:00:00	Max Cl year:	93
Min chlorides:	06/02/1993 00:00:00	Min Cl year:	93
Bot_hole depth:	-29	bot_solid depth:	-1
Bot_perf depth:	-29	Well Capacity:	568
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-015:001	Aquifer code:	30207
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	02/01/1991 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
I28 **SW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224427**

Agency:	USGS	Site ID:	211938158053007
Site Name:	3-1905-07 EWA DESALT PLANT		
Dec. Latitude:	21.32406		
Dec. Longitude:	-158.08892		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	49		
Hydrologic code:	20060000		
Topographic:	Hillside (slope)		
Site Type:	Ground-water other than Spring		
Const Date:	19910119	Inven Date:	19920604
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	78		
Hole depth:	78	Source:	other government (other than USGS)
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1991-01-19	48.5	

I29 **SW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS0224425**

Agency:	USGS	Site ID:	211937158053006
Site Name:	3-1905-06 EWA DESALT PLANT		
Dec. Latitude:	21.32379		
Dec. Longitude:	-158.08892		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	Not Reported		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19901105	Inven Date:	19920604
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	72		
Hole depth:	73	Source:	other government (other than USGS)
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1990-11-05	46	

I30
SW
1/2 - 1 Mile
Lower

HI WELLS **3-1905-006**

Wid:	3-1905-006	Island Code:	3
Island Name:	Oahu	Well no:	1905-06
Well name:	Caprock 1	Old name:	Not Reported
Yr drilled:	1990	Driller:	ROSCOE MOSS
Quad_map:	06	Latitude:	211937
Longitude:	1580530	UTM:	Y
Gps:	N	Owner/user:	Honolulu Bws
Old number:	Not Reported	Well_type:	PER
Type:	Percussion Drill	Casing dia:	12
Ground Elev:	47	Well depth:	72
Solid casing Depth:	44	Perf casing Depth:	72
Use:	SLD	Use Desc:	Sealed
Use year:	92	Water Top Elev:	.4
Chloride value:	0	Test date:	12/03/1990 00:00:00
Pumping Test rate:	500	Drop in water Lvl:	5.3
Chloride Test:	630	Temperature:	24.4
Units:	C	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-25	bot_solid depth:	-3
Bot_perf depth:	-25	Well Capacity:	94
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-015:001	Aquifer code:	30207
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	12/01/1990 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

J31
ESE
1/2 - 1 Mile
Lower

HI WELLS **3-1904-001**

Wid:	3-1904-001	Island Code:	3
Island Name:	Oahu	Well no:	1904-01
Well name:	Ep 31&32	Old name:	Not Reported
Yr drilled:	1965	Driller:	Not Reported
Quad_map:	06	Latitude:	211945
Longitude:	1580422	UTM:	Y
Gps:	N	Owner/user:	Campbell Est
Old number:	DW42-	Well_type:	DUG
Type:	Dug Well	Casing dia:	Not Reported
Ground Elev:	5	Well depth:	8

Solid casing Depth:	Not Reported	Perf casing Depth:	Not Reported
Use:	UNU	Use Desc:	Unused
Use year:	Not Reported	Water Top Elev:	2.2
Chloride value:	405	Test date:	Not Reported
Pumping Test rate:	790	Drop in water Lvl:	2.1
Chloride Test:	415	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	1445	Static Water Lvl:	Not Reported
Geology:	QLS	Geology desc:	Quaternary limestone deposits
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-3	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	376
Pump Capacity:	Not Reported	Draft (mgd):	4.0
Tax map key:	9-1-016:001	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1965 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

J32
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS0224430**

Agency:	USGS	Site ID:	211945158042201
Site Name:	3-1904-01 D 42 BRB P		
Dec. Latitude:	21.32601		
Dec. Longitude:	-158.07003		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	5.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19650101	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	8.0		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

K33
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS0224667**

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Agency:	USGS	Site ID:	212053158045301
Site Name:	3-2004-03 W274-2 MAK		
Dec. Latitude:	21.34489		
Dec. Longitude:	-158.07864		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	175.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19411218	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	190		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

K34
NNE
1/2 - 1 Mile
Higher

HI WELLS **3-2004-003**

Wid:	3-2004-003	Island Code:	3
Island Name:	Oahu	Well no:	2004-03
Well name:	Ft. Barrette	Old name:	Not Reported
Yr drilled:	1941	Driller:	NAT WHITON
Quad_map:	06	Latitude:	212053
Longitude:	1580453	UTM:	Y
Gps:	N	Owner/user:	Chiyoda Pac
Old number:	Not Reported	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	12
Ground Elev:	175	Well depth:	190
Solid casing Depth:	182	Perf casing Depth:	Not Reported
Use:	UNU	Use Desc:	Unused
Use year:	94	Water Top Elev:	16.7
Chloride value:	243	Test date:	Not Reported
Pumping Test rate:	450	Drop in water Lvl:	5.0
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	15.0
Geology:	TWDC	Geology desc:	Tertiary Waianae basalt dike complex
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-15	bot_solid depth:	-7
Bot_perf depth:	Not Reported	Well Capacity:	90
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-2-003:002	Aquifer code:	30204
Latest head mmt:	15	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1941 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
K35 **NNE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS0224666**

Agency:	USGS	Site ID:	212053158045201
Site Name:	3-2004-02 W274-1 MAK		
Dec. Latitude:	21.34489		
Dec. Longitude:	-158.07837		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	174.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19370505	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	200		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

K36 **NNE** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**3-2004-002**

Wid:	3-2004-002	Island Code:	3
Island Name:	Oahu	Well no:	2004-02
Well name:	Makakilo City	Old name:	Not Reported
Yr drilled:	1937	Driller:	MULLIN
Quad_map:	06	Latitude:	212053
Longitude:	1580452	UTM:	Y
Gps:	N	Owner/user:	Campbell Est
Old number:	Not Reported	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	6
Ground Elev:	174	Well depth:	200
Solid casing Depth:	167	Perf casing Depth:	Not Reported
Use:	OTH	Use Desc:	Other
Use year:	88	Water Top Elev:	14
Chloride value:	245	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	TWDC	Geology desc:	Tertiary Waianae basalt dike complex
Installed:	Not Reported	Last Measured:	Not Reported

Max chlorides:	Not Reported	Max Cl year:	Not Reported
Min chlorides:	Not Reported	Min Cl year:	Not Reported
Bot_hole depth:	-26	bot_solid depth:	7
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-2-003:002	Aquifer code:	30204
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1937 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

L37
WSW
1/2 - 1 Mile
Lower

HI WELLS **3-1905-002**

Wid:	3-1905-002	Island Code:	3
Island Name:	Oahu	Well no:	1905-02
Well name:	Campbell Ind Pk	Old name:	Not Reported
Yr drilled:	1957	Driller:	SAMSON-SMOCK
Quad_map:	06	Latitude:	211944
Longitude:	1580545	UTM:	Y
Gps:	N	Owner/user:	Campbell Est
Old number:	T84-	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	10
Ground Elev:	62	Well depth:	90
Solid casing Depth:	3	Perf casing Depth:	Not Reported
Use:	OTH	Use Desc:	Other
Use year:	74	Water Top Elev:	2.1
Chloride value:	795	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	QLS	Geology desc:	Quaternary limestone deposits
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-28	bot_solid depth:	59
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	9-1-015:001	Aquifer code:	30207
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1957 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

L38
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS0224429**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency:	USGS	Site ID:	211944158054501
Site Name:	3-1905-02 T84 BRB PT		
Dec. Latitude:	21.32573		
Dec. Longitude:	-158.09309		
Coord Sys:	NAD83		
State:	HI		
County:	Honolulu County		
Altitude:	62.00		
Hydrologic code:	20060000		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19571125	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	90.0		
Hole depth:	Not Reported	Source:	Not Reported
Project no:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK®- PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96707

Number of sites tested: 7

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.143 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

Ground Water Wells
Source: Department of Land and Natural Resources
Telephone: 808-587-0242

RADON

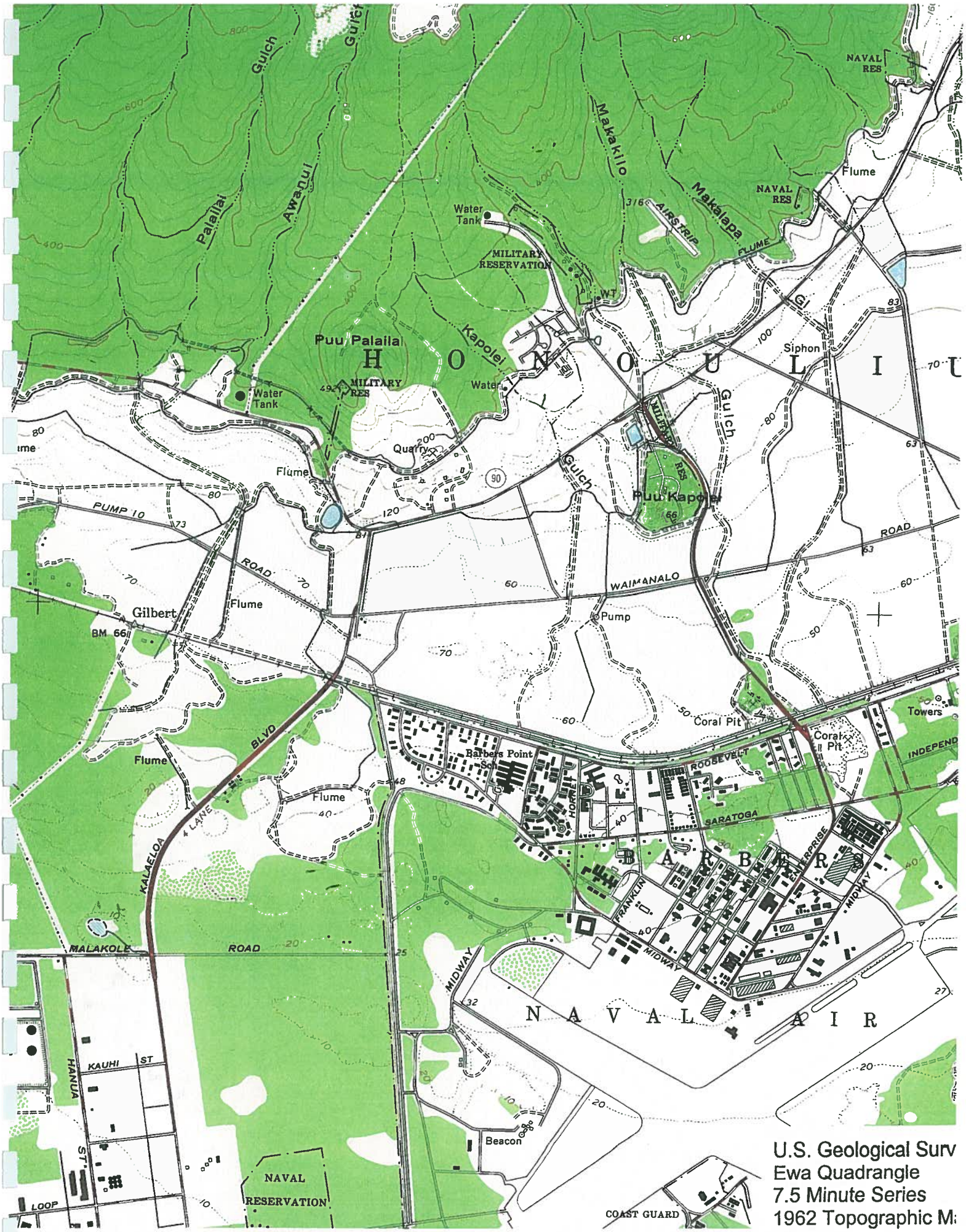
Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

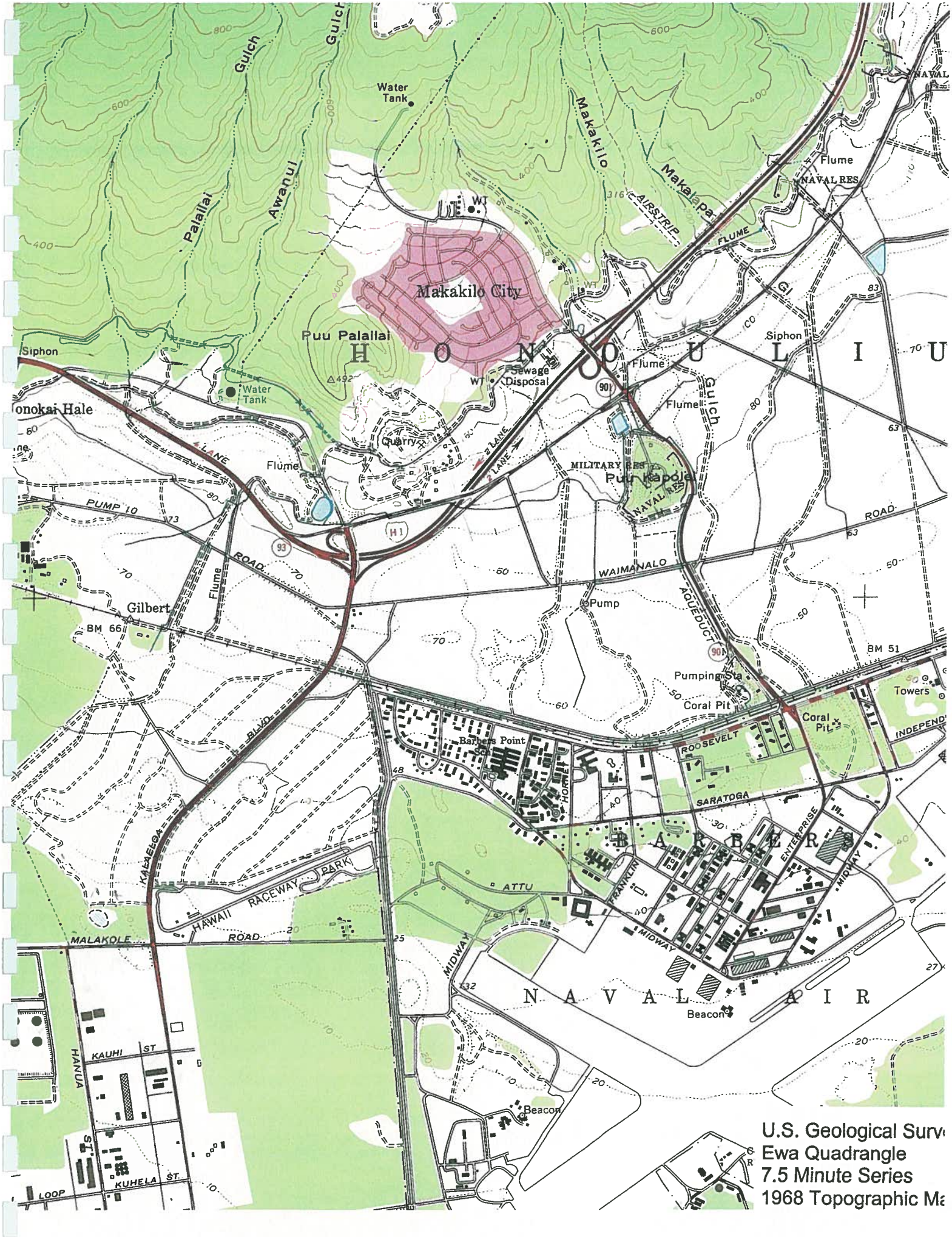
OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

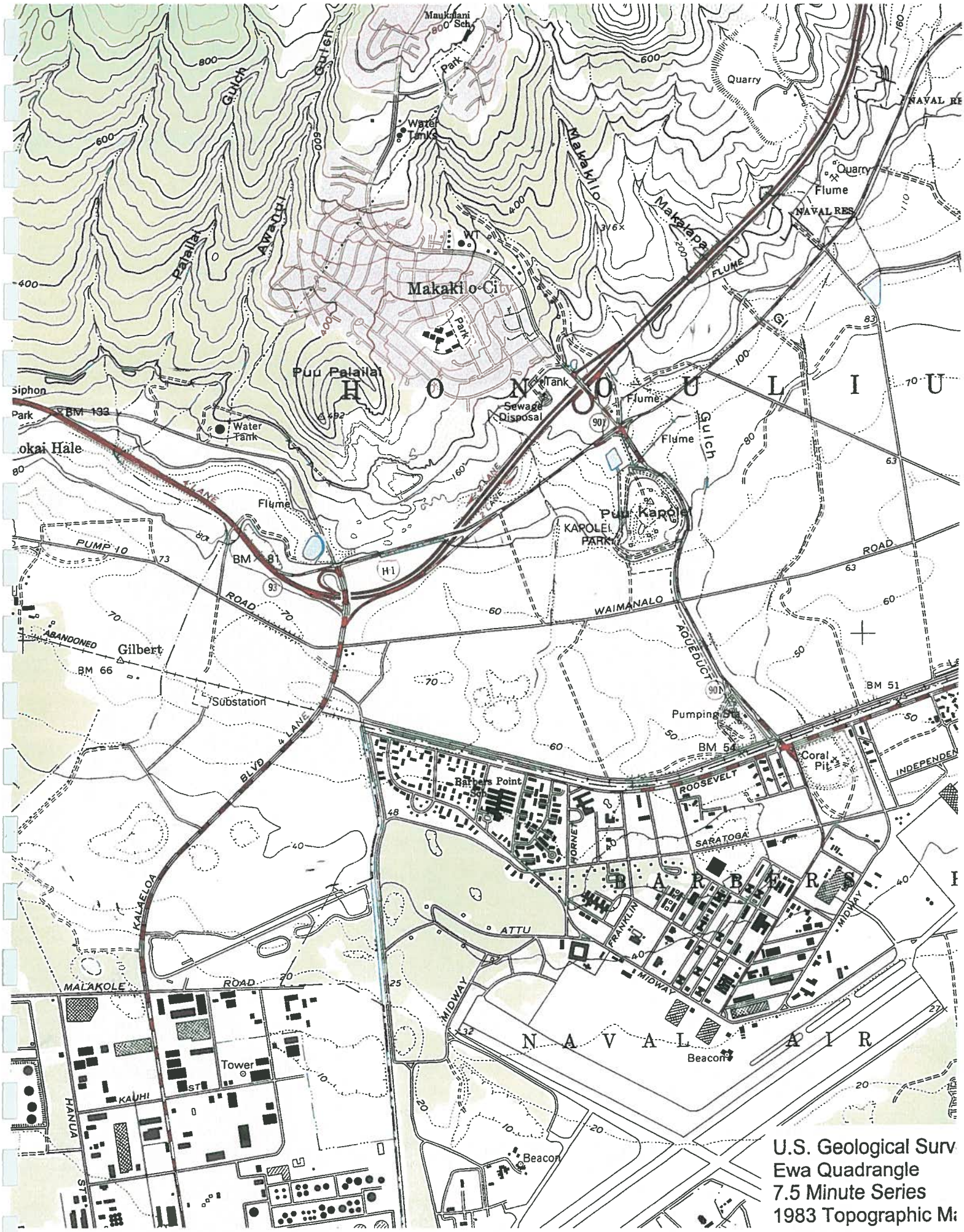
Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration



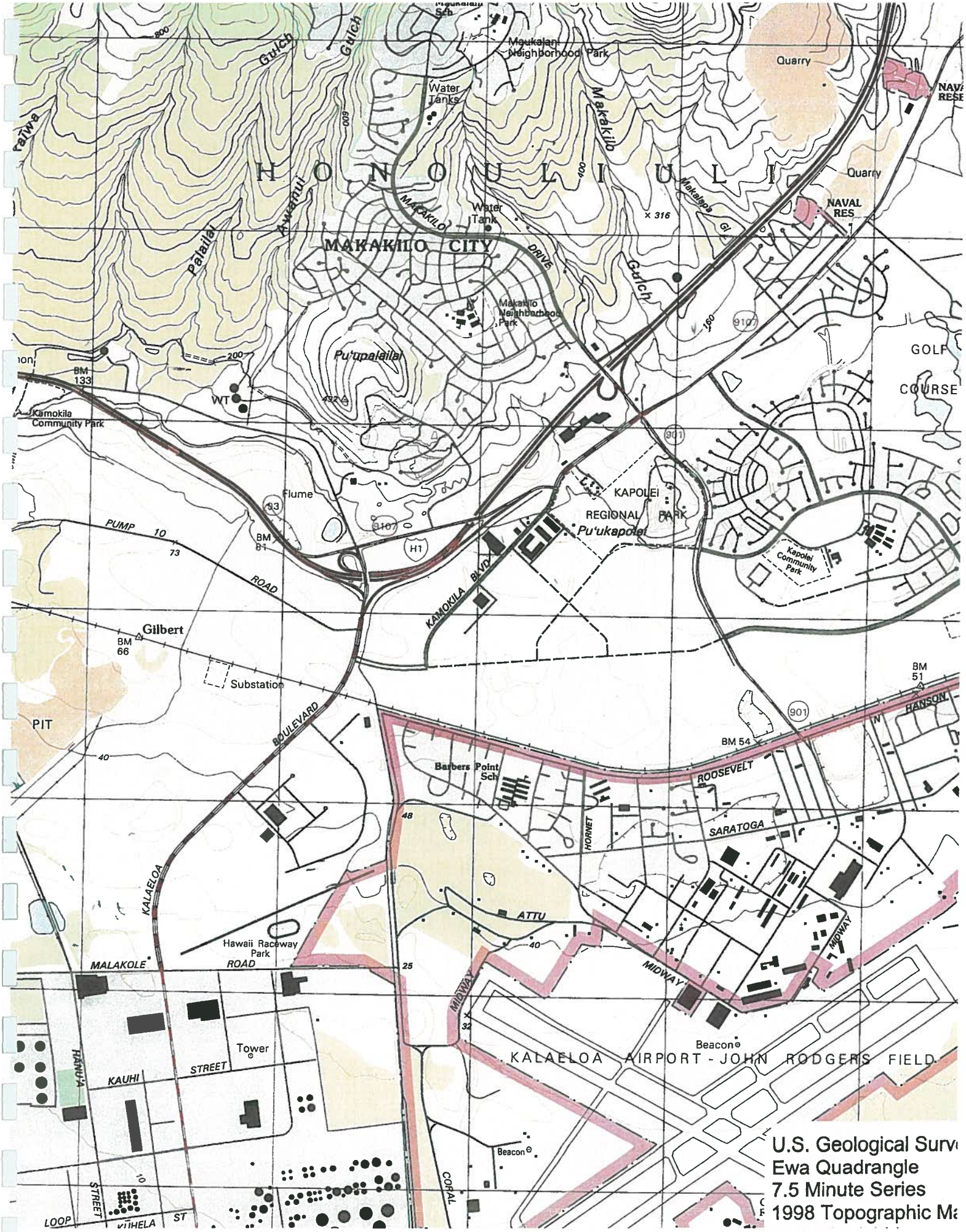
U.S. Geological Surv
Ewa Quadrangle
7.5 Minute Series
1962 Topographic M



U.S. Geological Surv
Ewa Quadrangle
7.5 Minute Series
1968 Topographic Ma

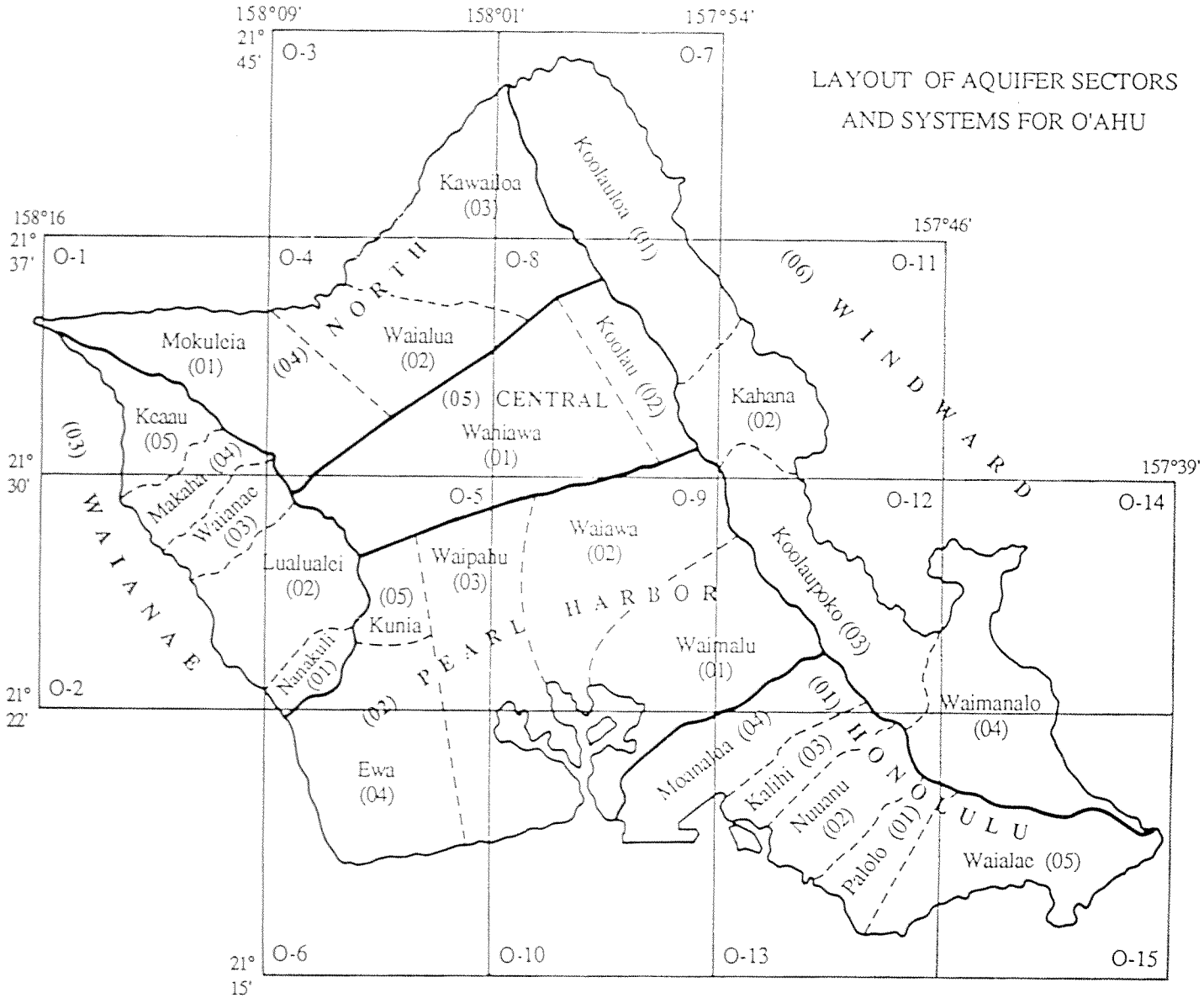


U.S. Geological Surv
Ewa Quadrangle
7.5 Minute Series
1983 Topographic Ma



U.S. Geological Surv
Ewa Quadrangle
7.5 Minute Series
1998 Topographic Ma

Appendix D - Aquifer Classification System


LAYOUT OF AQUIFER SECTORS
AND SYSTEMS FOR O'AHU
158°09'
158°01'
157°54'
21° 45'
158°16
21° 37'
157°46'
21° 30'
157°39'
21° 22'
21° 15'
O-1
O-2
O-3
O-4
O-5
O-6
O-7
O-8
O-9
O-10
O-11
O-12
O-13
O-14
O-15
NORTH
(04)
Waialua (02)
Kawailoa (03)
Koolauloa (01)
(06) WINDWARD
Mokuleia (01)
(03)
Keaau (05)
Makaha (04)
Waianae (03)
WAIANAE
(05) CENTRAL
Wahiawa (01)
Koolau (02)
Kahana (02)
Lualualei (02)
Waipahu (03)
(05) Kunia
Nanakuli (01)
PEARL HARBOR
Waiawa (02)
Koolaupoko (03)
Waimalu (01)
(02)
Ewa (04)
(01)
Moanalua (04)
Kalihi (03)
Nuuanu (02)
Palolo (01)
HONOLULU
Waimanalo (04)
Waialae (05)

AQUIFER CLASSIFICATION EXPLANATION

AQUIFER AND STATUS CODES*

Aquifer Code		=	Island
		+	Aquifer Sector
		+	Aquifer System
		+	Aquifer Type
Thus, 30104111		=	Aquifer Code
where	3	=	Oahu
	01	=	Honolulu
	04	=	Moanalua
	1	=	basal
	1	=	unconfined
	1	=	flank
and			
	(11111)	=	Status Code
where	1	=	currently used
	1	=	drinking
	1	=	fresh, <250 mg/l Cl^-
	1	=	irreplaceable
	1	=	high vulnerability to contamination

IS.	AQUIFER SECTOR	AQUIFER SYSTEM
3	01 Honolulu	01 Palolo
		02 Nuuanu
		03 Kalihi
		04 Moanalua
		05 Waialae
	02 Pearl Harbor	01 Waimalu
		02 Waiawa
		03 Waipahu
		04 Ewa
		05 Kunia
	03 Waianae	01 Nanakuli
		02 Luaʻlualei
		03 Waianae
		04 Makaha
		05 Keaau
	04 North	01 Mokuleia
		02 Waialua
		03 Kawailoa
	05 Central	01 Wahiawa
		02 Koolau
	06 Windward	01 Koolauloa
		02 Kahana
		03 Koolaupoko
		04 Waimanalo

*Where sedimentary caprock aquifers rest on primary basalt aquifers, two Aquifer and Status Codes separated by a slash indicate numerator code is upper aquifer and denominator is lower aquifer.

AQUIFER TYPE:	Hydrology†	
1	Basal	Fresh water in contact with seawater
2	High Level	Fresh water not in contact with seawater
1	Unconfined	Where water table is upper surface of saturated aquifer
2	Confined	Aquifer bounded by impermeable or poorly permeable formations, and top of saturated aquifer is below groundwater surface
3	Confined or Unconfined	Where actual condition is uncertain

AQUIFER TYPE:	Geology‡	
1	Flank	Horizontally extensive lavas
2	Dike	Aquifers in dike compartments
3	Flank/Dike	Indistinguishable
4	Perched	Aquifer on an impermeable layer
5	Dike/Perched	Indistinguishable
6	Sedimentary	Nonvolcanic lithology

†1st two digits from hydrologic descriptors (pts. 1, 2).
‡Last digit from geologic descriptor.

STATUS CODE (GROUNDWATER)

Development Stage
1 Currently used
2 Potential use
3 No potential use

Utility
1 Drinking
2 Ecologically important
3 Neither

Salinity (mg/l Cl^-)
1 Fresh (<250)
2 Low (250-1000)
3 Moderate (1000-5000)
4 High (5000-15,000)
5 Seawater (>15,000)

Uniqueness
1 Irreplaceable
2 Replaceable

Vulnerability to Contamination
1 High
2 Moderate
3 Low
4 None

Rev. Feb. 1990

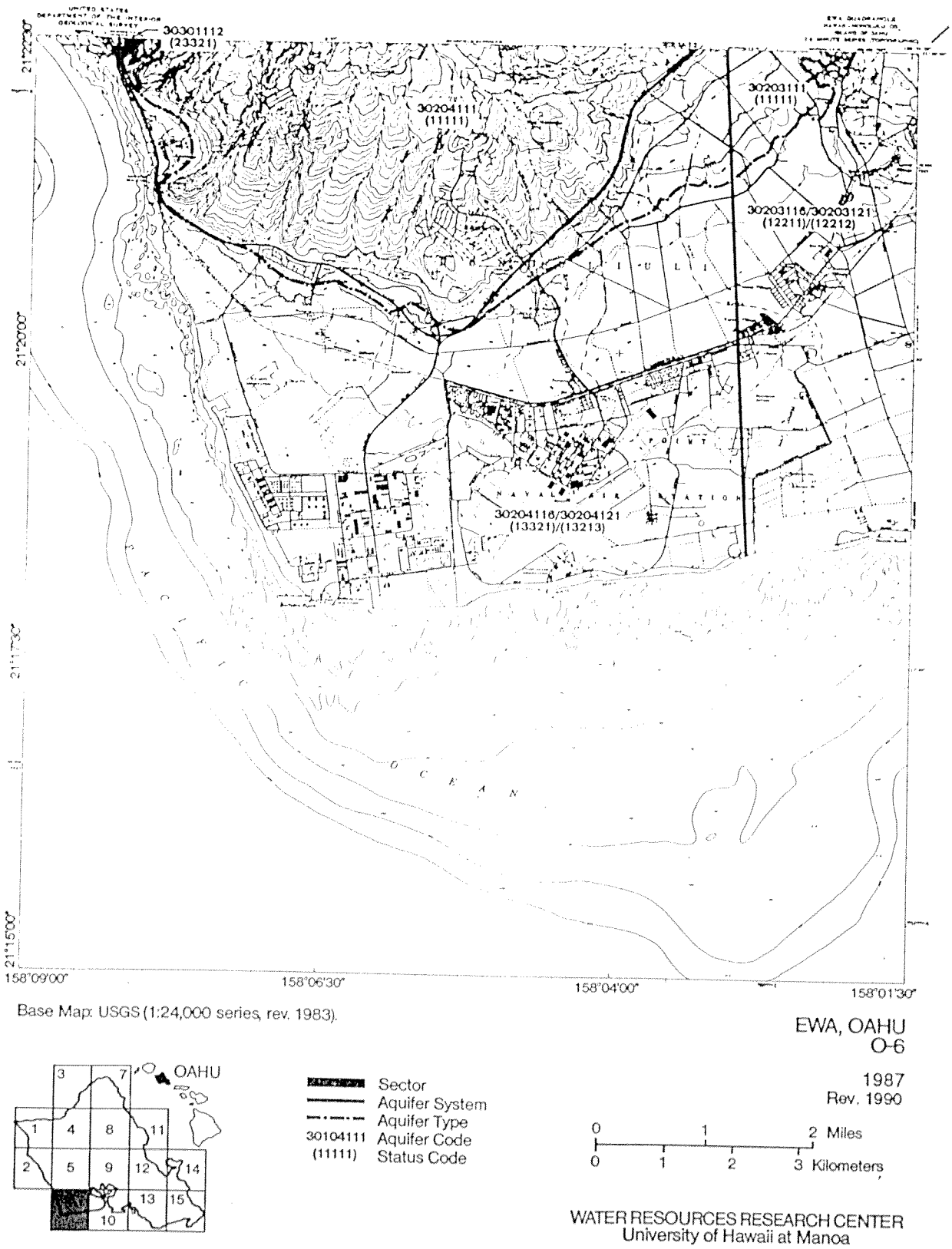


Figure 1.6. Aquifer classification map, 'Ewa, O'ahu, Hawai'i

Appendix E - Assessor Qualifications

CHARLES G. SCHUSTER, P.E. SENIOR CIVIL/ENVIRONMENTAL ENGINEER

Mr. Schuster has twenty years of experience in civil and environmental engineering design in a wide variety of civil engineering projects throughout Hawaii. Work responsibilities have included design and supervision of civil engineering works from layout and design of utility systems, pump stations, and site grading, in projects ranging through resort hotels, private subdivisions, shopping centers, and highways, as well as upgrades, repairs and retrofits to existing works. His involvement in these projects has ranged from feasibility studies, environmental assessments, site selection and investigation, through design, bidding, construction management and project closeout.

EDUCATION

B.S. Civil Engineering, University of Hawaii

REGISTRATION

Professional Engineer Registration, State of Hawaii, Civil Branch, 1984
OSHA Hazwoper Certification
AHERA Asbestos Project Designer Certification
EPA Lead Inspector Certification
EPA Lead Risk Assessor Certification

EXPERIENCE

- Senior Civil/Environmental Engineer
  Edward K. Noda and Associates, Inc.
  1996 to Present

  Provided Senior Civil/Environmental Engineering services and is responsible for all hazardous materials (haz mat) design projects including underground storage tank (UST) removal, asbestos abatement and removal design, lead-based paint abatement and removal design, and other haz mat design services. In addition, Mr. Schuster's responsibilities also include Environmental Site Assessments (Phase 1 & 2), development of UST operation, maintenance and spill prevention plans, UST removal oversite and closure reports, monitoring well installations, and lead-based paint (LBP) inspection, surveys and risk assessments.

- GKO & Associates, Inc.
  1995 to 1996

  Performed civil engineering design services including underwater inspections of bridge substructures, various engineering studies in support of the U.S. Navy's unexploded ordnance clearance project at Kahoolawe Island such as development of water sources, fire protection for the base camp, and development of a nursery for native plant materials.

- Hawaii Community Development Authority (HCDA)
  1993 to 1995

  Provided engineering project management services including reviewing and coordinating consultant design efforts (plans and specifications), preparing bid documents, bidding and award, construction management services including construction inspection, review and approval of contractor submissions and pay requests, preparation of change orders, through contract closeout.

- Wilson Okamoto and Associates, Inc.
  1988 to 1993

  Provided general civil engineering services including planning and design, coordination with subconsultants, cost estimation, specification preparation, bidding, award, and construction management services. Project areas included roadway alignments, cross-section design, traffic and

striping, water transmission and distribution mains, booster pumping stations, water storage tanks, hydrology and hydraulic calculations. Provided supervisory responsibility over junior engineers and draftspersons.

- Sam O. Hirota, Inc.
  1980 to 1988

  Provided civil engineering services related to civil engineering planning and design, coordination with subconsultants, cost estimation, and construction management services.

SAMPLE PROJECT EXPERIENCE

Architect/Engineer Support Services, Kaho'olawe Island Cleanup, N62742-D-95-0025, Kaho'olawe, U.S. Naval Facilities Engineering Command, Pearl Harbor, Hawaii. Conducted literature review of available water resources studies and data for island of Kaho'olawe; synthesized alternatives; developed schematic design of water systems, feasibility analyses, cost estimates, recommendation of best alternative. Developed schematic design of a fire protection system to serve the Kaho'olawe base camp. Responsible for schematic design of an on-island native plant nursery in support of a revegetation effort for areas cleared of unexploded ordnance.

Kewalo Incinerator Hazardous Materials Removal and Kewalo Incinerator Building General Demolition and Structural Stabilization. Provided project management services for the abatement and removal of hazardous materials from the former municipal incinerator in Kakaako and to partially demolish, restore and structurally upgrade the remaining structure for the future use as a Childrens' Museum.

Kewalo Basin Park and Facilities, Phase 1. Project manager for the refurbishment of the shoreside facilities at the State's commercial boat harbor at Kewalo Basin.

Kaloko Roadway, TSA Hawaii. Project Manager responsible for design of 2-1/2 miles of County highway on the island of Hawaii. Establishment of alignment in conformance with County and State traffic criteria, roadway grade, calculation of earthwork, hydraulics and hydrology, design and location of drainage structures, roadway utilities including water transmission and distribution, cost estimation and preparation of construction specifications and bid package. Supervised junior engineers and draftspersons, coordinated electrical and mechanical subconsultants, County agency reviews. Responsible for project management during construction, reviewed and approved contractor pay requests, and processed project closeout.

Kaloko Water Tanks, TSA Hawaii. Project Manager responsible for design and construction of four, one million gallon potable water storage tanks and three 1,100-gpm booster pumping stations on the island of Hawaii to support future development in holdings of approximately 4,000 acres. Directed site selection, grading, utility design and connections, access roadways. Coordinated design with electrical and mechanical subconsultants, supervised junior engineers and draftspersons. Responsible for plan review, coordination, County agency review, permit application and processing; project management during construction; reviewed and approved contractor pay requests, processed project closeout documents.

Kalihiwai Agricultural Subdivision, Phase II, C. Brewer Properties, Inc. Responsible for design of 35-lot agricultural subdivision on the island of Kauai, including roadway alignment and grading, complete design of water system including booster pump station and storage tank, drainage hydrology and hydraulics, preparation of construction specifications and bid package, award and construction.

Appendix G

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT

Kapolei Mixed Use Development

1□2□ □ a□ea □treet□□apolei□□ a□u□Hawaii □□□□□
□M□ □-1-□□□:□21

Prepared for:
M□F □evelopment □orporation
1□□2 □□□eretania □t□□1□1
Honolulu□HI □□□2□

Prepared b□:

Sato & Associates, Inc.
Consulting Engineers
2046 South King Street
Honolulu, Hawaii 96826
www.satoandassociates.com

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□.□ □□□□□ □□□□E□□I□□ ..... E

□.□ □A□I□A□□ □E□ E□ ..... F

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□ite P□oto□

1 GENERAL

1.1 PURPOSE AND SCOPE

□□e purpo□e of t□i□ report i□ to identif□ and evaluate e□i□ting condition□ and t□e impact□ of t□e propo□ed pro□ect on e□i□ting utilit□ □water□ □anitar□ □ewer□ drainage□ □□□tem□ infra□tructure□

□□e propo□ed pro□ect con□i□t□ of development of a □ingle bloc□ in □apolei□ bounded b□ Haumea □treet □mau□a□□□ a□ea □treet □ea□t□□Ala □a□awai □treet □ma□ai□ and Alo□i□ea □treet □we□t□□ A □ocation Map i□ pre□ented in Figure 1□ □ocation Map and E□i□ting □ondition□□ and □ite p□oto□ in t□e Appendice□□

□□e pro□ect i□ propo□ed to be con□tructed in t□ree p□a□e□ a□ □□own in Figure□ 2a□2b and 2c□ P□a□e 1 will con□i□t of retail□building □ervice□□ and re□idential tower lobb□ area on t□e fir□t level□par□ing on t□e fir□t and □econd level□□ and □tudio□□tudio one- and two-bedroom □enior re□idential apartment□ totaling 1□□ unit□□ P□a□e 1 will occup□ t□e mau□a ea□t portion and central of t□e □ite□

P□a□e 2 will con□i□t of □ingle-level retail u□e□ totaling 21□□□ □□uare feet along Ala □a□awai and part of □ a□ea □treet□ and limited interior ground level par□ing□

P□a□e □ will con□i□t of retail□building □ervice□□par□ing and par□ing acce□□□re□idential tower and recreation center u□e□ on t□e fir□t level□par□ing □tall□ on t□e □econd level and □tudio□one- and two bedroom □enior re□idential on level□ t□ree t□roug□ t□irteen□ totaling 1□□ unit□□P□a□e □ will occup□ t□e mau□a we□t portion of t□e □ite□

Following information i□ ba□ed on variou□ □ource□ including but not limited to di□cu□□ion□ wit□ □it□ agencie□ and official□□

1.2 PROJECT LOCATION

□□e propo□ed pro□ect will be □ituated on a □ingle-parcel bloc□ containing 1□2□22□ □□uare feet □□□□□□ acre□□□ located in t□e □apolei area of t□e i□land of □a□u□

□□e □ite i□ identified a□ □a□ Map □e□ □-1-□□□:□21□ □ee Figure □□ □a□ Map in t□e Appendice□ for t□e parcel ta□ map and immediate □urrounding□□

2 SITE CONDITIONS

2.1 EXISTING CONDITIONS AND USE

Pre□entl□□t□e entire □ite □a□ been vacant and unu□ed □ince t□e end of □ugar cane production u□e□ in t□e 1□□□□□ □□e propert□ i□ vacant□graded wit□ a gentle □lope from Haumea □treet frontage toward□ Ala □a□awai □treet□and i□ becoming overgrown wit□ gra□□e□ and weed□□ P□oto□ ta□en of t□e pro□ect □ite from mau□a and ma□ai □treet inter□ection□are pre□ented in t□e Appendi□□

□□e propert□i□bounded b□Haumea □treet □2-lane□□□it□□on t□e mau□a □ide and □ a□ea □treet □□-lane divided roadwa□□□it□□on it□ □iamond Head □ide□ □ot□ □treet□ are full□ developed wit□ curb□and gutter□□idewal□□□utilitie□and □treet lig□ting□

Ala □a□awai □treet bound□ t□e propert□ on t□e ma□ai □ide and Alo□i□ea □treet on t□e Ewa □ide□ □ot□ □treet□are incomplete wit□ a□p□alt-treated ba□e at □ to □inc□e□below gutter grade□concrete curb and gutter□ and □treet lig□ting□ □o □idewal□□ □ave been con□tructed□ All utilitie□ are in place but t□e□e □treet□ are bloc□ed from public acce□□□ □eit□er □treet □a□ been completed w□ere t□e□ ad□oin t□e pro□ect □ite nor □a□ been dedicated to t□e □it□at t□i□writing□

□□e □idewal□□at inter□ection□of Haumea and □ a□ea □treet□□and at Ala □a□awai □treet□ □ave curb ramp□ alt□oug□ □everal were con□tructed □lig□tl□ □teeper t□e regulator□ ma□imum 1:12 □lope□

□□ere i□a □it□bu□□top on Haumea □treet at t□e Ewa end of t□e □ite□

□□ere are no drivewa□apron□around t□e perimeter of t□e □ite□

Propertie□ acro□□ Ala □a□awai and Alo□i□ea □treet□ are vacant□ □□ere i□a □□opping mall acro□□ Haumea □treet□and I□land Paradi□e Academ□occupie□t□e propert□acro□□ □ a□ea □treet□

2.2 SOILS

□oil□ in t□e area are identified b□ t□e □□□□□online □oil mapping tool□ a□ t□pe H□A □ Honouliuli cla□□□ to 2 percent □lope□□ □□e □oil i□ derived from ba□ic igneou□ roc□ and occur□ on alluvial flat□□ □□e mean annual precipitation i□ 1□ to □□ inc□e□□ It i□ well drained□wit□ moderate water capacit□ and t□e fre□uenc□ of flooding or ponding i□ rare□

2.3 ORDINANCE 2412

□□e □it□'□ □rdinance □o 2□12 □□□apter 1□□Article 21 of t□e □evi□ed □rdinance□ of Honolulu □□□H□□re□uire□ t□at an□ propert□ owner ma□ing improvement□ to propert□ abutting a public □treet mu□t con□truct nece□□ar□ improvement□ and dedicate a □treet

□etbac□area□ □□pe of improvement□include but are not limited to □idewal□□□curb□□curb ramp□□gutter□□pavement and ad□u□tment to t□e propert□line□

□ecau□e t□ere are no drivewa□apron□leading onto t□e □ite□drivewa□□ and curb ramp□ will □ave to be de□igned and con□tructed to meet current A□A □tandard□□

3 DEVELOPMENT REQUIREMENTS

3.1 DOMESTIC WATER

□on□truction plan□for □treet□bordering t□e pro□ect □ite □□ow 12-inc□water line□ bordering t□e pro□ect □ite in Haumea and □ a□ea □treet□□a□well a□on Alo□i□ea and Ala □a□awai □treet□□ A □-inc□water lateral i□provided from t□e 12-inc□Haumea □treet main□□owever no water meter □a□been provided at t□e □ite□ □ ater line□in t□e pro□ect area□from di□tribution map□on file wit□ t□e Honolulu □oard of □ ater □uppl□ □H□□ □□ are □□own on Figure □□Potable and □onpotable □ ater□

A □ample calculation of water fi□ture unit□for re□idential u□e□in P□a□e□1 and P□a□e □ follow□ □t□e actual t□pe and number of fi□ture□to be in□talled at eac□ unit t□pe □a□ not been determined□□

Phase 1: □tudio□□ne- and □wo-□edroom □nit□		
□avator□	1□2	
□ub□□□ower	1□□	
□ ater □lo□et □□an□□	1□□	
□itc□en □in□	1□□	
□ a□□ing mac□ine	2□□	
	□□1 F□	
2 □tudio□ □11 floor□ □ □□1 F□ □		1□□2
2 1-□edroom unit□ □11 floor□ □ □□1 F□ □		1□□2
1□2-□edroom unit□ □11 floor□ □ □□1 F□ □		□□1□□
		1□2□□□□
P□a□e 1 □etail and □ffice □a□□umed□		
2 □avator□ □1□2 □		2□□
□ □ ater □lo□et □□an□□□1□□ □		□□□
2 □rinal □1□□ □		□□□
		12□□
Total Phase 1 =		**1,260.0**

Phase 2: □etail 21□□□□ □f □a□□umed□1□lea□ee□□		
2 □avator□ □1□2 □1□lea□ee□		2□
□ □ ater □lo□et □□an□□□1□□ □1□lea□ee□		□□
2 □rinal □1□□ □1□lea□ee□		□□
Total Phase 2 =		**126**
Phase 3: □ne-□□wo- and □□ree-□edroom □nit□		
□avator□ □1□2	1□2	
□ub□□□ower □1□□	1□□	
□ ater □lo□et □□an□□□1□□	1□□	
□itc□en □in□ □1□□	1□□	
□ a□□ing mac□ine	2□□	
	□□1 F□	
1 □tudio □11 floor□ □ □□1 F□ □		□□□1
□1-□edroom unit□ □11 floor□ □ □□1 F□ □		□□□□□
□2-□edroom unit□ □11 floor□ □ □□1 F□ □		□2□□□
1 □-□edroom unit□ □11 floor□ □ □□1 F□ □		□□□1
		1□1□□□□
□etail□office and □ecreation □enter □a□□umed□		
2 □avator□ □1□2 □ □		□□□
□ □ ater □lo□et □□an□□□1□□ □ □		2□□2
2 □rinal □1□□ □ □		1□□□
		□□□□
Total Phase 3 =		**1,208.7**
Total, Phases 1 and 3 =		
1260 + 126 + 1,208.7 =		**2,594.7 FU**
		= 400 gpm

A □-inc□ compound meter□rated b□ □□ □ for □21 to □□□ gmp□will be □ufficient for water □ervice to t□e planned pro□ect□

H□□ □ □tated □Figure □□a □□□□□ gallon□per da□ □gpd□water commitment to t□e pro□ect □ite□and t□at t□e e□i□ting water □□□tem i□inade□uate to □ervice a propo□ed □□□-unit commercial□re□idential development□ □□e pre□ent pro□ect contemplate□a total of 2□□ unit□wit□ commercial and ot□er u□e□□ Additional water commitment□be□ond t□e pre□ent □□□□□ gpd will □ave to be obtained from □apolei Propert□ □evelopment □□□□

□ ater □□□tem ade□uac□ and availabilit□ of water mu□t be confirmed at t□e time of □uilding Permit application□

3.2 FIRE PROTECTION

□ ater □□□tem di□tribution map□ from H□□ □ □□ow eig□t fire □□drant□ around t□e □ite□ eit□er on t□e bloc□ to be developed or immediatel□ acro□□ t□e perimeter □treet□ □Figure □□Potable and □onpotable □ ater□□

□□e □niform Fire □ode re□uire□ fire apparatu□ acce□□ for ever□ portion of a building w□en an□ portion of t□e building i□ located more t□an 1□□ feet from and approved acce□□ wa□□ □a□ed on fire protection coverage afforded b□e i□ting fire □□drant□ in Figure □□at lea□t one additional on□ite □□drant will be needed to afford protection to t□e pro□ect interior□

□□e □niform Fire □ode al□o re□uire□ on□ite fire □□drant□ w□en an□ portion of t□e building i□ located more t□an 1□□ feet from a fire water □uppl□□ alt□oug□ t□e di□tance ma□ be e□tended to □□□ feet if t□e building i□ provided wit□ fire □prin□ler□□ □a□ed on fire □□drant location□ □□own in Figure □□fire □prin□ler□ will be re□uired in eac□ building□ connected to a new detector c□ec□ meter□ □i□ing of t□e meter □□ould be evaluated a□ t□e mec□anical plan□ are developed□

A fire meter will be re□uired for t□e par□ing □tructure planned a□ P□a□e 2□

3.3 IRRIGATION

A□-built plan□ □□ow a 12□ reclaimed irrigation water main along Haumea □treet□ and □-inc□ reclaimed water main□ along □ a□ea □treet□ Ala □a□awai □treet and Alo□i□ea □treet□ A □tubout and meter bo□ for a □ □meter i□ provided from t□e main in Haumea □treet □Figure □□Potable and □onpotable □ ater□□

□□e rec□cled water □□□tem i□ not □et energi□ed□ □urrentl□ it i□ a pumped□ on-demand □□□tem□ fed wit□ potable water from a fire □□drant□ Flow and pre□□ure are variable□ Availabilit□ of water will be evaluated w□en a □uilding Permit application i□ made □Figure □□□□ □ letter dated □ept□11□2□1□□□

3.4 CROSS CONNECTION

□onnection to t□e H□□ □ water □□□tem will re□uire a bac□flow preventer in□talled immediatel□ down□tream of t□e water meter and wit□in private propert□□ prior to an□ branc□e□ or tee□□ □i□e of t□e bac□flow preventer will be determined w□en t□e dome□tic meter □i□e□ building piping □□□tem □i□e and allowable pre□□ure drop i□ a□certained□

3.5 SANITARY SEWER

A□-built plan□ □□ow □□and 1□□gravit□ □ewer main□along Haumea □treet□a 1□□main along Ala □a□awai □treet and an □-inc□ □ewer line □tubout to t□e undedicated portion of Alo□i□ea □treet□ □wo □□lateral□run on□ite□one from a man□ole on Haumea □treet and anot□er from t□e main along Ala □a□awai □treet □Figure □□E□i□ting □anitar□ □ewer □□□tem□□

□□e average dail□ wa□tewater generation for eac□ p□a□e of t□e propo□ed pro□ect i□ calculated[1] a□:

<u>P□a□e 1</u>

□e□idential:	□tudio□1 □edroom	
	1□□ unit□ □2□□ per□on□unit □ □□ gpcd	□ 22□□□ gpd
	2 □edroom	
	11 unit□ □2□□ per□on□unit □ □□ gpcd	□ 2□□□□ gpd
□etail:	□□□□□ □f□□ □1 emplo□ee□□□□ □f□□1□ gpcd	□ □1□
□ffice:	□2□□□□ □f□□ □1 emplo□ee□2□□ □f□□1□ gpcd	□ 1□□
□ommunit□ □enter:	□□□□ □f□□	
	□otal P□a□e 1 average dail□ wa□tewater flow	□ 2□□□2□ gpd

<u>P□a□e 2</u>

□etail:	□22□1□□ □f□□ □1 emplo□ee□□□□ □f□□1□ gpcd□	□□□ gpd

<u>P□a□e □</u>

□e□idential:	□tudio□1 □edroom	
	□□ unit□ □2□□ per□on□unit □ □□ gpcd	□ □□□□□ gpd
	2 □edroom	
	□□ unit□ □2□□ per□on□unit □ □□ gpcd	□ 1□□2□□ gpd
	□ □edroom	
	11 unit□ □ □□□ per□on□unit □ □□ gpcd	□ □□□2□ gpd
□etail:	□1□□□□□□ □1 emplo□ee□□□□ □f□□1□ gpcd	□ □□
□ffice:	□□□□□ □f□□ □1 emplo□ee□2□□ □f□□1□ gpcd	□ 2□□
□ecreation □tr□:	□□□□2 □f□□ □□ gal□1□□ □f	□ 2□2□□
	□otal P□a□e □ average dail□ wa□tewater flow	□ □2□1□□ gpd

<u>□otal □Full □evelopment□□ a□tewater Flow</u>

□e□idential:	2□□□□□ □2□□□□□	□ □□□□12 gpd
□etail:	□1□ □ □□□ □ □□	□ 1□□□□
□ffice:	1□□ □2□□	□ □22
□ecreation □enter:		□ 2□2□□
	□otal	□ □□□□□□ gpd

[1] □ewage generation flow rate□ba□ed on *"Design Standards of the Department of Wastewater Management□□□it□and □ount□of Honolulu□□1□□□□□and Metcalf and Edd□ □1□□1□Wastewater Engineering, Treatment and Reuse,* □ □□c□obanoglou□□□urton and □ten□el □Ed□□□

A □ewer □onnection Application □2□1□□□A-□□1□□Figure □□wa□approved b□t□e □it□□ ba□ed on 2□□ re□idential unit□ □□□ □tudio□□□ one-bedroom□1□2 two-bedroom□11 t□ree-bedroom□plu□retail□da□care and office u□e□□

□□e □□evi□ed □ewer Ma□ter Plan For □apolei □it□□ba□ed on □2□per□on□at t□e □ite at full build-out wa□u□ed in t□e preparation of Ma□ter Plan□for interceptor □ewer□□ □o e□ce□□flow capacit□i□calculated to be available□ P□a□e 1 contemplate□ □□□ re□ident□ and emplo□ee□on□ite□P□a□e 2 add□ □□ retail wor□er□□and P□a□e □add□ □□□ re□ident□ and emplo□ee□for a total of □□□ per□on□on□ite□ □□ere i□ □ewer capacit□for p□a□e□1 and 2□

3.6 STORM DRAINAGE

□□e e□i□ting condition at t□e □ite i□vacant land□ □wo catc□ ba□in□fronting t□e □ite are connected to a □□□culvert along Haumea □treet wit□an 1□□drain □tubout from one catc□ ba□in terminating wit□in t□e pro□ect □ite□ □□ree catc□ ba□in□are connected to 1□□and □□□culvert□along □ a□ea □treet□ □□ree catc□ ba□in□are connected to □□□culvert□along Ala □a□awai □treet wit□an 1□□drain □tubout from one catc□ ba□in terminating wit□in t□e pro□ect □ite□□wo catc□ ba□in□are connected to 1□□culvert□along Alo□i□ea □treet wit□A drain □tubout from one catc□ ba□in terminating wit□in t□e pro□ect □ite □Figure □□E□i□ting □torm □rainage □□□tem□□

□□e pro□ect will □ave to compl□ wit□ t□e □it□ □ □ount□ of Honolulu □torm drainage and runoff water □ualit□ re□uirement□□ □□e anticipated rainfall volume to be retained on □ite i□calculated a□follow□□

□ □V □P □□ □A □□□□□□w□ere
P □water □ualit□de□ign □torm dept□ □1□□ □□□□□□ foot□
□ □runoff coefficient □ □□□ □a□□umed□for full□imperviou□developed □urface□□
A □area in acre□
□ □V □2□2□2□ □A

<u>P□a□e 1:</u> □ □V □2□2□2□ □1□□□ □ □□2 ft□

<u>P□a□e□1 and 2:</u> □ □V □ □□2 □2□2□2□ □ □□□2 □ □□2 ft□

<u>P□a□e□1□2 and □:</u> □ □V □ □□2 □2□2□2□ □ □□□□ □ □2□ ft□

P□a□e□1 and 2 ma□di□po□e of □torm runoff to undeveloped portion□ of t□e □ite□ □io-filtration wit□ appropriate low impact development mea□ure□ will be re□uired to be implemented for runoff leaving t□e □ite□ Approved □torm runoff treatment met□od□ include:

- Vegetated bio-filter□
- □reen □oof□
- En□anced □wale□

- Vegetated □wale□
- Vegetated bumper □trip□
- □ree bo□filter□□
- Infiltration c□amber□□

3.7 FLOOD ZONE

Flood In□urance □ate Map□ □FI□M□publi□□ed b□t□e Federal Emergenc□Management Agenc□ □FEMA□indicate□t□at t□e □ite i□located in a flood □a□ard □one □□a□ □□own in Figure 1□□Flood Ha□ard Map□

□one □ i□defined a□t□e flood in□urance rate □one t□at corre□pond□to un□tudied area□ w□ere flood □a□ard□are undetermined□but po□□ible□

APPENDIX

Figure 1 - □ocation Map and E□i□ting □ondition□

Figure 2a - Pro□ect P□a□e 1

Figure 2b - Pro□ect P□a□e 2

Figure 2c - Pro□ect P□a□e □

Figure □ - □a□Map

Figure □ - Potable and □onpotable □ ater

Figure □ - □□ □ □ ater Allocation □etter

Figure □ - □□ □ □eclaimed □ ater □etter

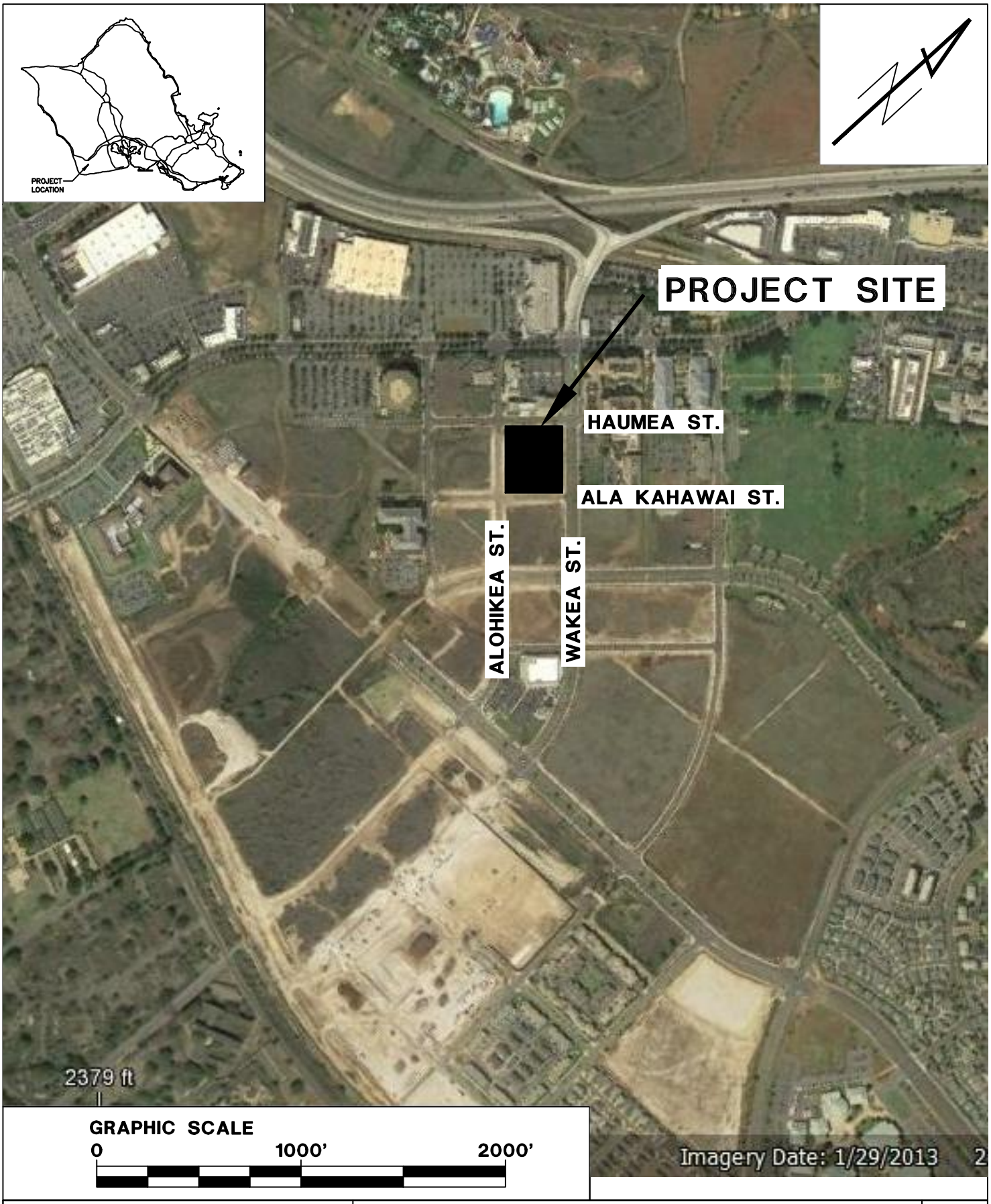
Figure □ - E□i□ting □anitar□ □ewer □□□tem

Figure □ - □ewer □onnection Application

Figure □ - E□i□ting □torm □rainage □□□tem

Figure 1□ - Flood Ha□ard Map

□ite P□oto□



GRAPHIC SCALE

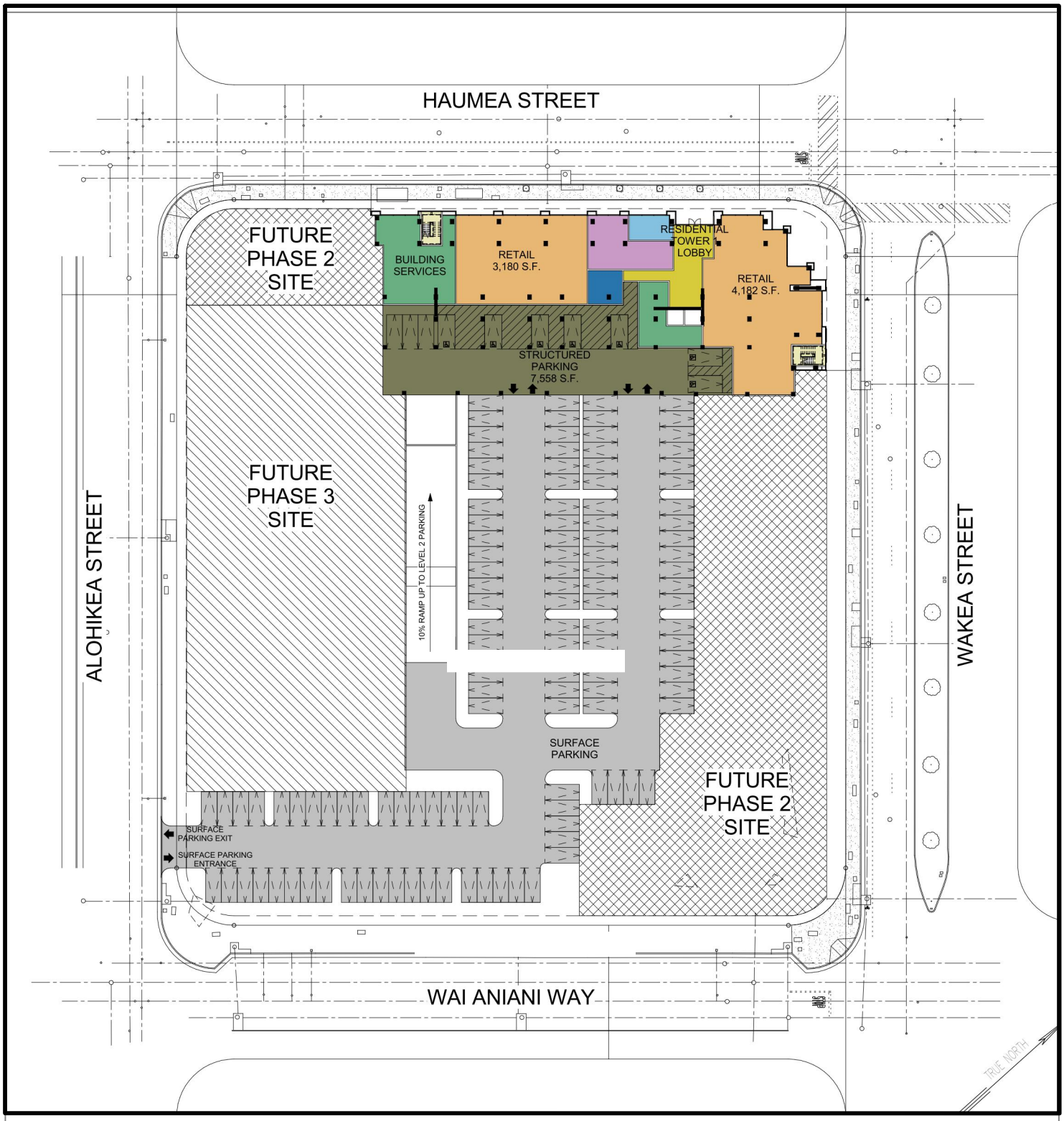
0 1000' 2000'

SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS • CIVIL & STRUCTURAL
2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
T (808) 955-4441 F (808) 942-2027

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII

LOCATION MAP AND EXISTING CONDITIONS

1
FIGURE



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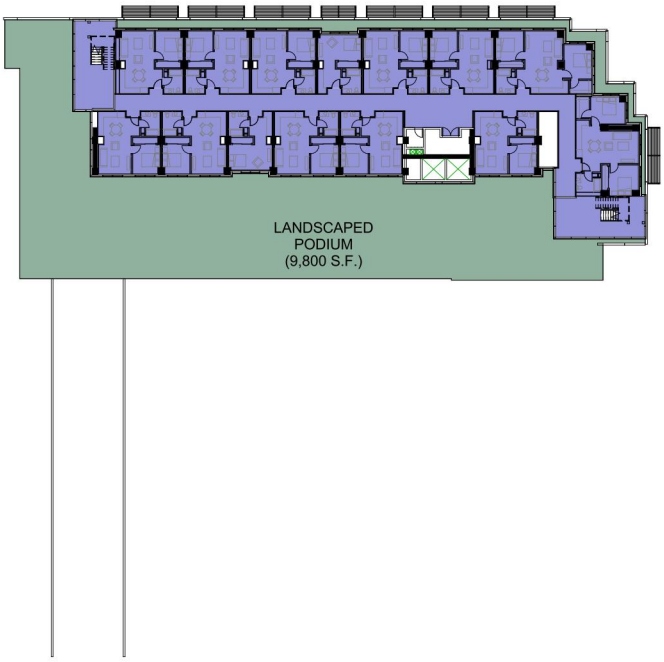
KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
PROJECT PHASE 1

2a
FIGURE

AFFORDABLE SENIOR TOWER

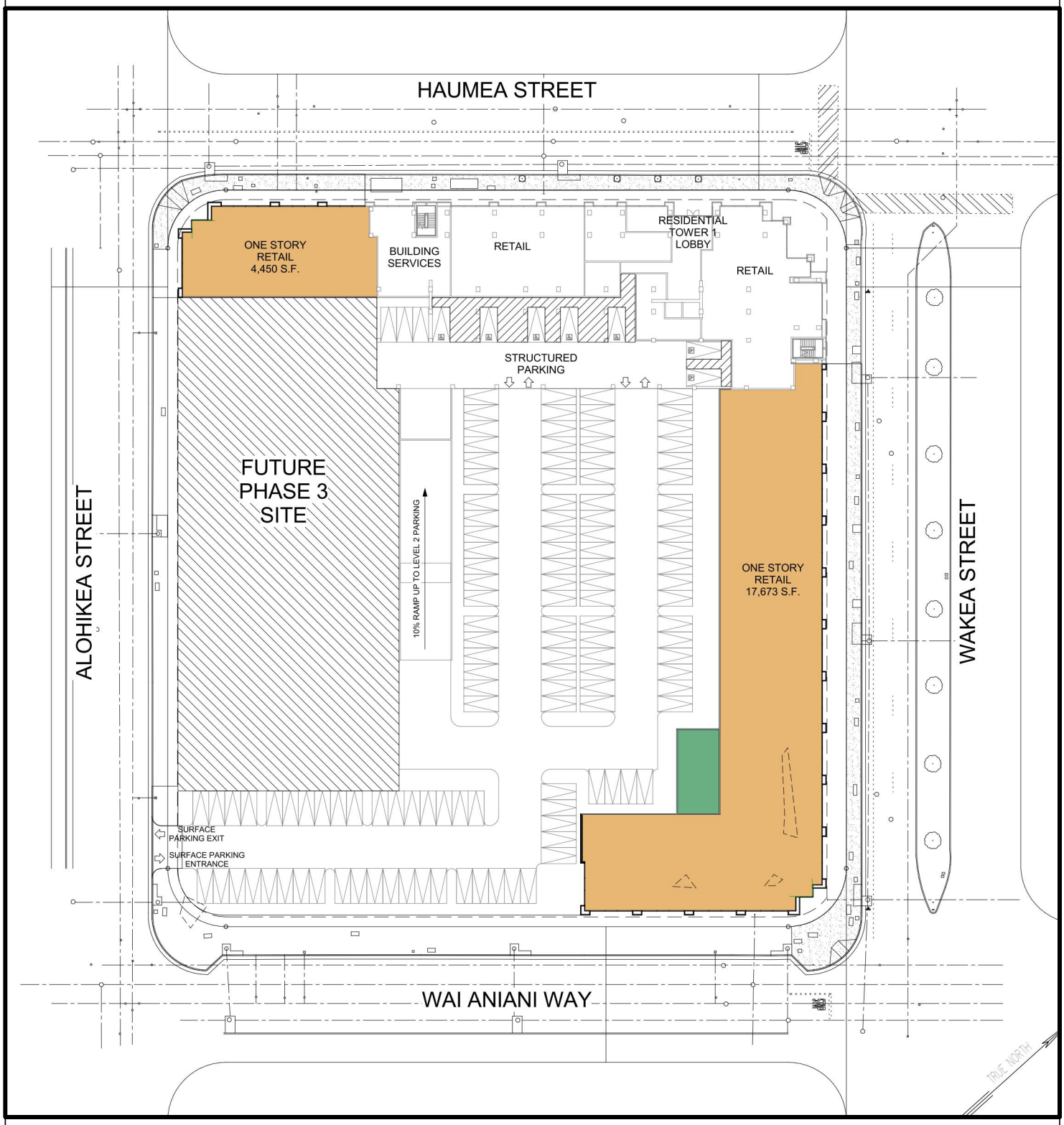


LEVEL THREE

SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS CIVIL & STRUCTURAL

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
PROJECT PHASE 1

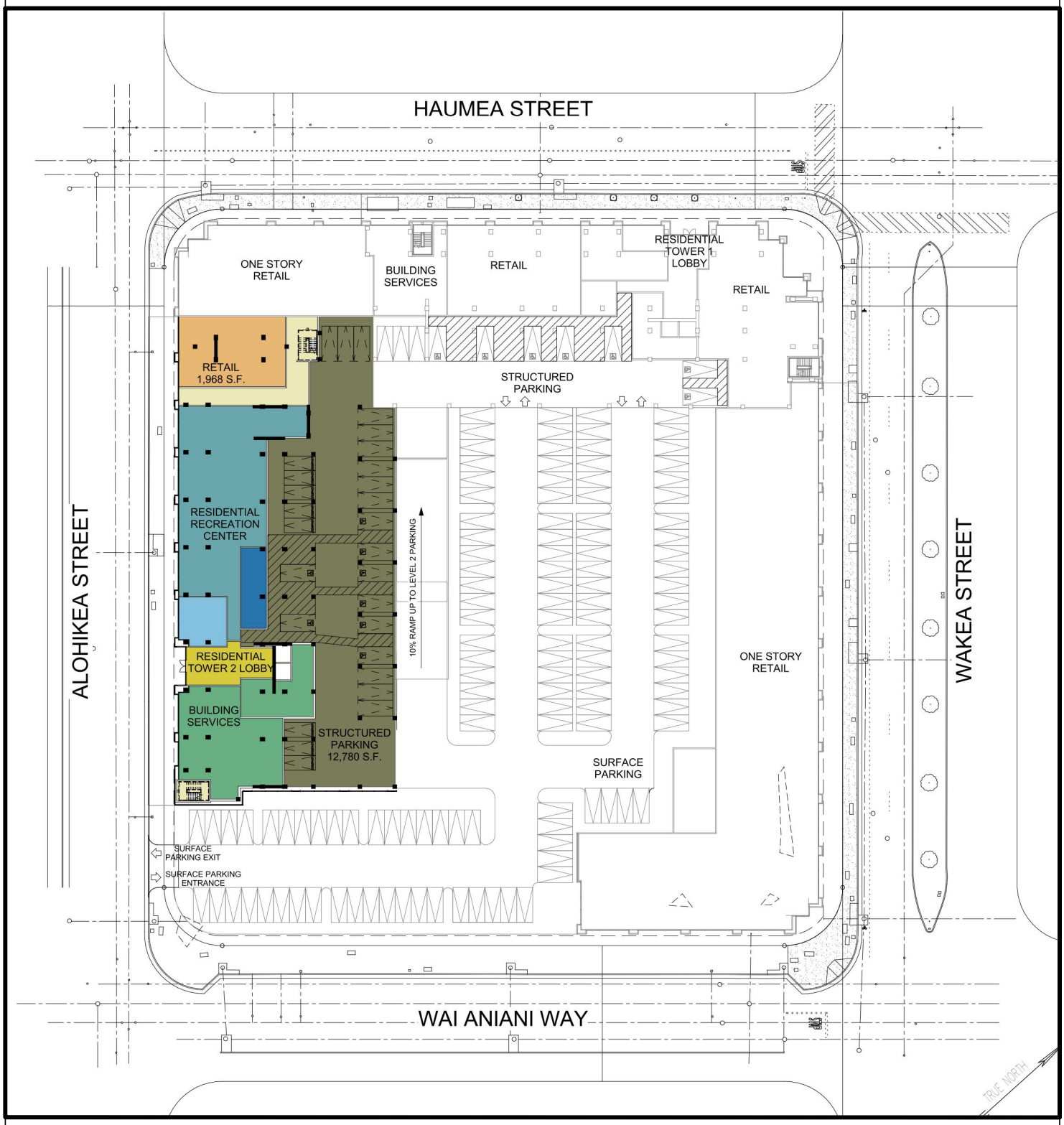
2b
FIGURE



SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS CIVIL & STRUCTURAL

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
PROJECT PHASE 2

2c
FIGURE



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CONSULTING ENGINEERS CIVIL & STRUCTURAL

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
PROJECT PHASE 3

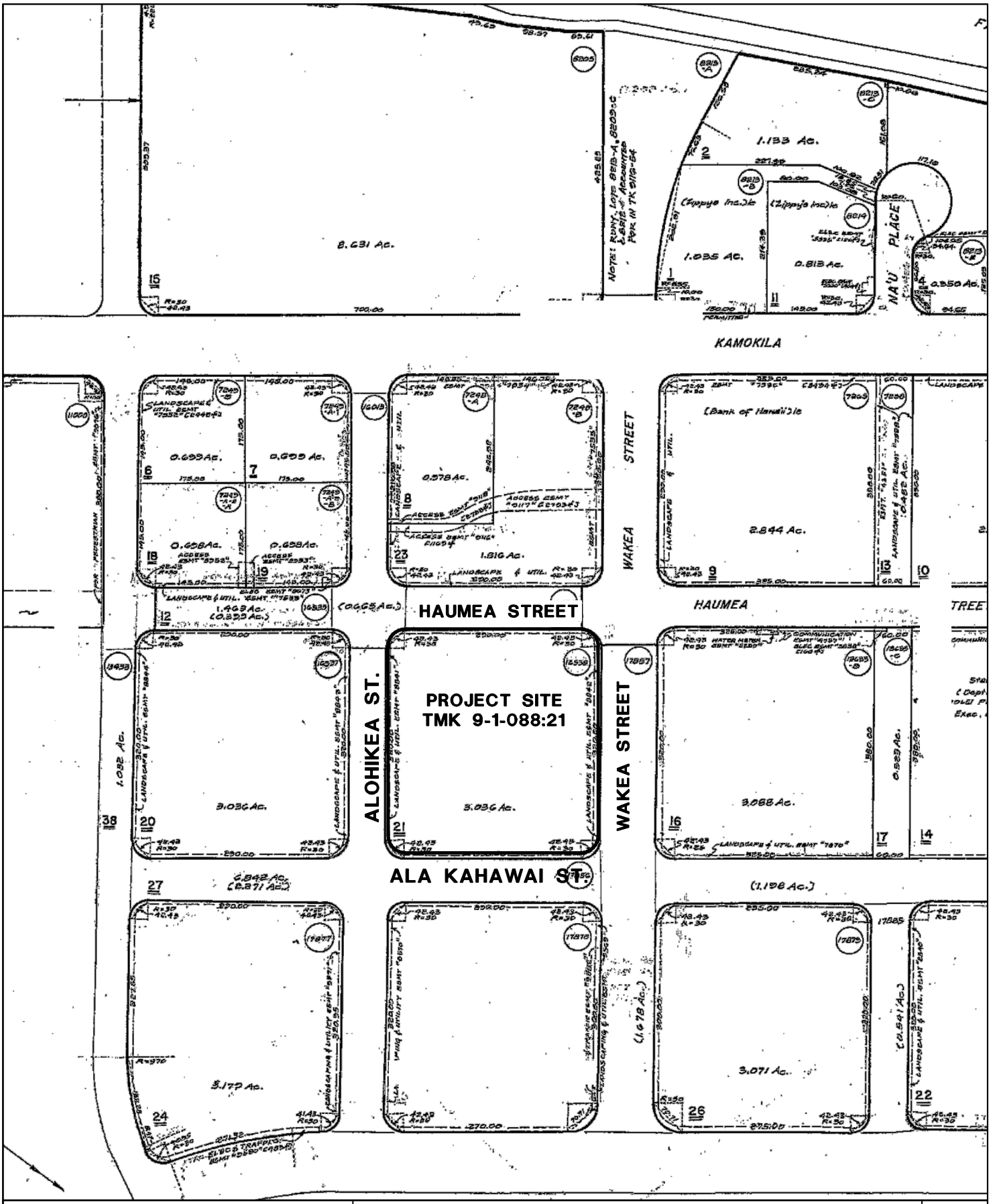
2d
FIGURE

LEVEL THREE

SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS CIVIL & STRUCTURAL

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
PROJECT PHASE 3

2e
FIGURE



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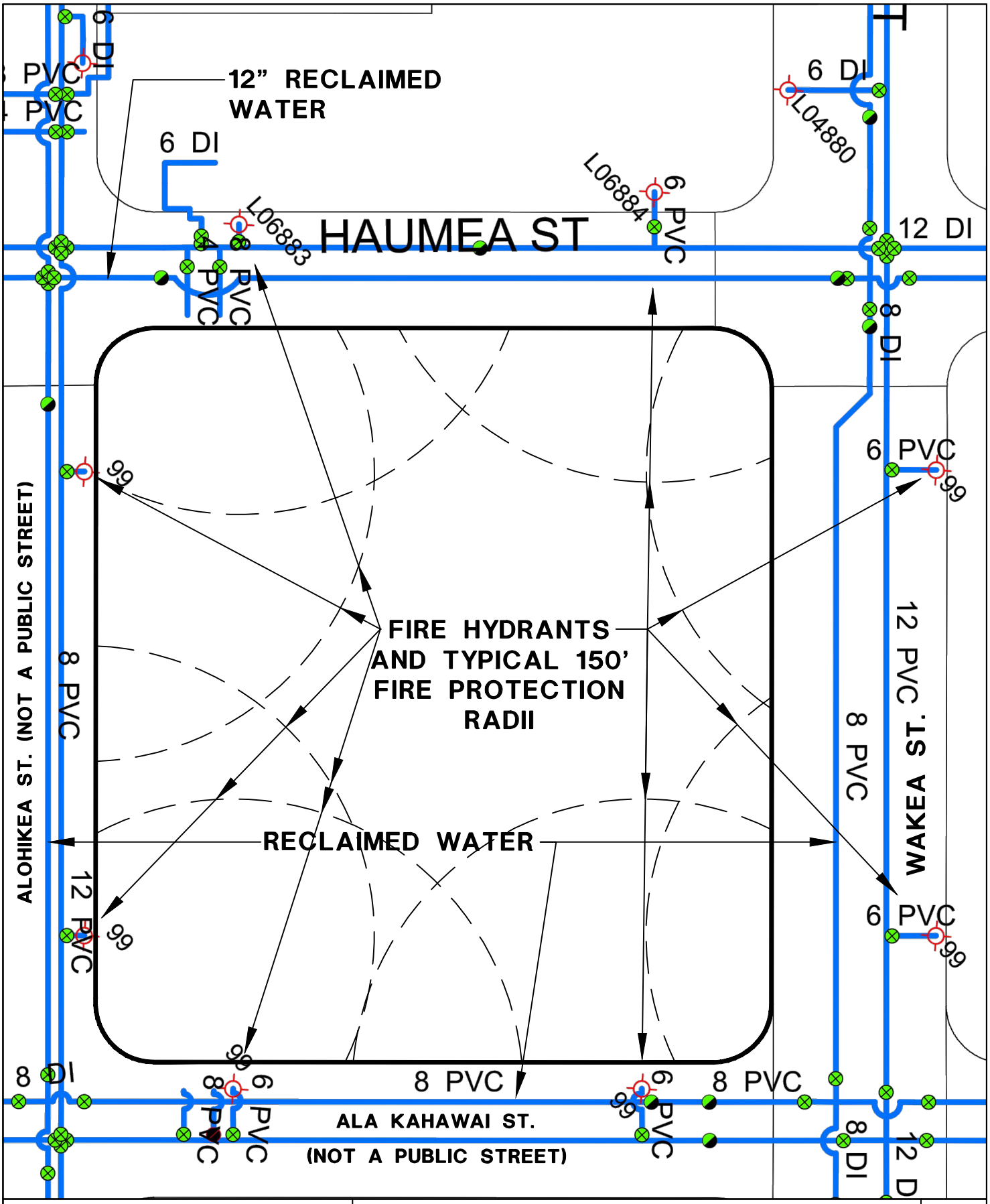
2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
T (808) 955-4441 F (808) 942-2027

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
TAX MAP

3
FIGURE



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HONOLULU, HAWAII 96826
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KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
POTABLE AND NONPOTABLE WATER

4
FIGURE

Attachment 1

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

June 17, 2013

KIRK CALDWELL, MAYOR

DUANE R. MIYASHIRO, Chairman
MAHEALANI CYPHER, Vice Chair
THERESIA C. McMURDO
ADAM C. WONG
KAULANA H. R. PARK

ROSS S. SASAMURA, Ex-Officio
GLENN M. OKIMOTO, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

Mr. Keane K. Kaneakua, P.E.
Community Planning and Engineering, Inc.
1286 Queen Emma Street
Honolulu, Hawaii 96813

Dear Mr. Kaneakua:

Subject: Your Email Dated June 4, 2013 Requesting Availability of Water to the Proposed 585-Unit Commercial/Residential High-Rise Development on Wakea Street – Tax Map Key: 9-1-088: 021

Thank you for your letter on the proposed commercial/residential development in Kapolei City.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

This parcel currently has a potable water allocation of 9000 gallons per day. The estimated water requirements exceed this amount. Therefore, the developer will be required to obtain additional potable water allocation from Kapolei Property Development LLC.

When water is made available, the applicant will be required to pay the applicable Water System Facilities Charges.

Water conservation measures are required for all proposed developments. These measures include low flow plumbing fixtures, utilization of nonpotable water for irrigation using rain catchment and chiller/air handler condensate, cooling tower conductivity meters and water softening recycling systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems and the use of Water Sense labeled ultra-low-flow water fixtures and toilets.

High-rise buildings with booster pumps will be required to install water hammer arrestors or expansion tanks to reduce pressure spikes and potential main breaks in our water system.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

Ellen E. Kitamura
for ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

RECEIVED
JUN 19 2013
COMMUNITY PLANNING AND ENGINEERING INC.

Water for Life . . . Ka Wai Ola

Attachment 2

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

September 11, 2013

KIRK CALDWELL, MAYOR

DUANE R. MIYASHIRO, Chairman
MAHEALANI CYPHER, Vice Chair
THERESIA C. McMURDO
ADAM C. WONG
KAULANA H. R. PARK

ROSS S. SASAMURA, Ex-Officio
GLENN M. OKIMOTO, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

Mr. Anson Murayama
Chief Executive Officer
Community Planning and Engineering, Inc.
1286 Queen Emma Street
Honolulu, Hawaii 96813

Dear Mr. Murayama:

Subject: Your Letter Dated June 25, 2013 Regarding Recycled Water Availability for the Kapolei Mixed-Use Development, Haumea Street – Tax Map Key: 9-1-088: 02

Thank you for your letter requesting a recycled water availability for the Kapolei Mixed Use Development. We have the following comments:

1. Provide a site plan showing the recycled water meter location, meter size and the landscaped area proposed for irrigation. Provide supporting calculations for the requested 1,167 gallons per day (GPD) of R-1 recycled water.

2. The availability of recycled water will be confirmed when the Recycled Water Service Agreement (RWSA) between the Board of Water Supply (BWS) and the user is executed. BWS reserves the right to change any position or information stated herein up until the execution of the RWSA. When recycled water is made available, the user will be required to pay any applicable costs for its use.

3. The user shall be required to comply with Chapter 11-62, Hawaii Administrative Rules, Wastewater Systems and Department of Health (DOH) Guidelines for the Treatment and Use of Recycled Water, dated May 15, 2002, and as amended, published by the State DOH Wastewater Branch, including the Recycled Water Project Application, permitting, training, signage and on-site improvements.

4. The BWS Recycled Water System is an on-demand, pumped system, so flows and pressures will vary throughout the day. At this time, the recycled water system at the City of Kapolei is not yet energized and is being temporarily fed by a potable water fire hydrant.

5. We recommend using drought tolerant and low water use plants, and xeriscaping principles in all landscaping. We also recommend installing efficient irrigation systems, such as drip irrigation, and incorporating moisture sensors to avoid operating the irrigation system in the rain and/or if the ground has adequate moisture.

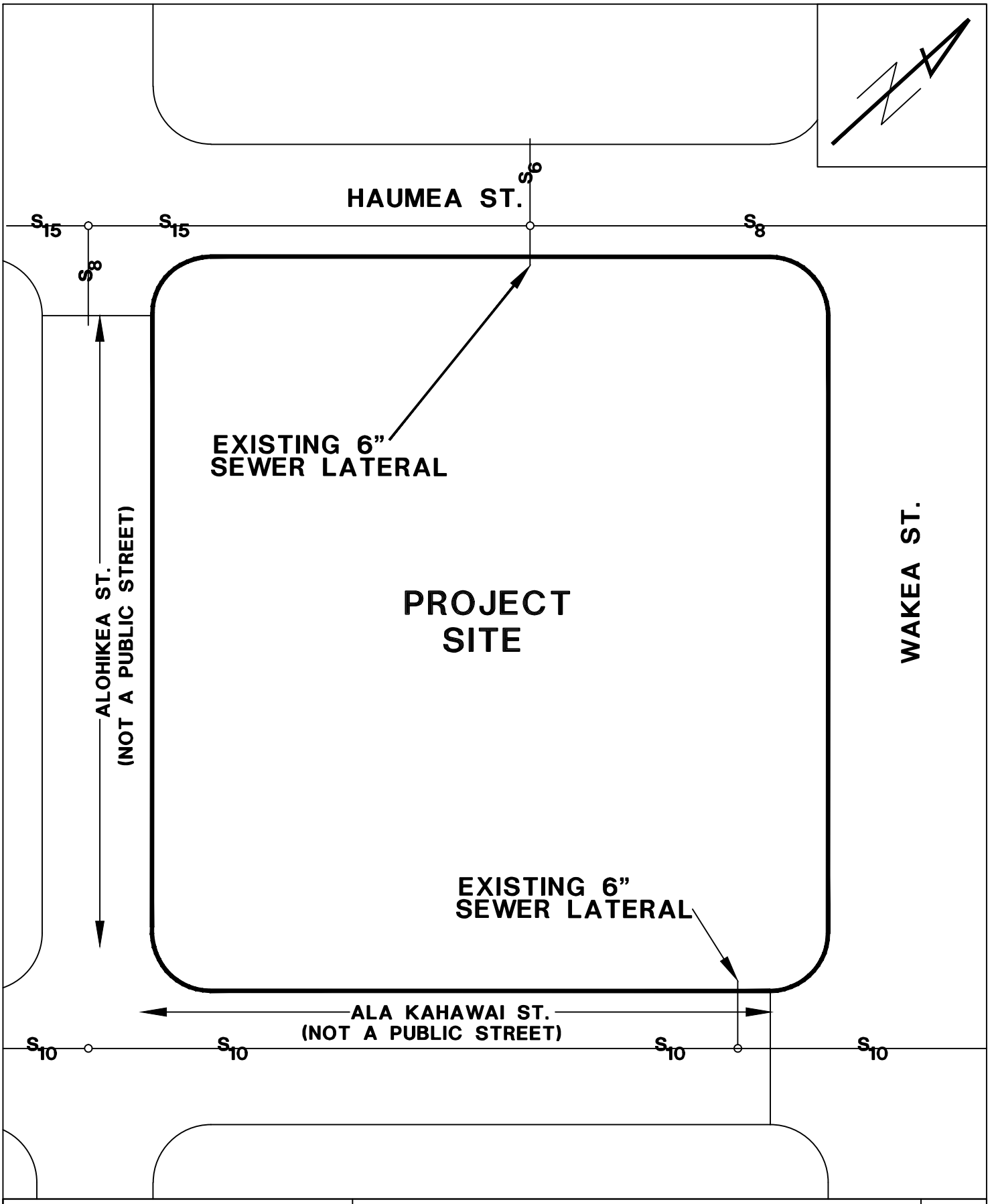
If you have any questions, please contact Barry Usagawa at 748-5900.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

RECEIVED
SEP 16 2013
COMMUNITY PLANNING AND ENGINEERING INC.

Water for Life . . . Ka Wai Ola



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2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
T (808) 955-4441 F (808) 942-2027

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
EXISTING SANITARY SEWER SYSTEM

7
FIGURE

DEPARTMENT OF PLANNING AND PERMITTING

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2014/SCA-0915** STATUS: **Approved with conditions**

DATE RECEIVED: **12/19/2014** IWDP APP. NO.:

PROJECT NAME: **2014/SCA-0915 Kapolei Mixed Use Development: Phase 1, 2, and 3**

$1,852,092.00
Estimated Wastewater System Facility Charge*

LOCATION:

Zone	Section	Plat	Parcel
9	1	088	021

1020 WAKEA ST Kapolei 96707 **132,248** Sq. Ft.

SPECIFIC LOCATION: **1020 Wakea St.**

APPLICANT: **Choy, Liana S.F.**
Sato & Associates, Inc.
2046 S. King Street
Honolulu, Hawaii 96826

DEVELOPMENT TYPE: **Dwelling, Multi-family** SEWER CONNECTION WORK DESIRED:

OTHER USES: **Retail**
Daycare
Office

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION:

PROPOSED UNITS		EXISTING UNITS		UNITS TO BE DEMOLISHED	
No. of New Units:	**297**	No. of Existing Units:	**0**	No. of Units to be Demolished:	**0**
Studios:	33	Studios:		Studios:	
1-Bedroom:	66	1-Bedroom:		1-Bedroom:	
2-Bedroom:	182	2-Bedroom:		2-Bedroom:	
3-Bedroom:	11	3-Bedroom:		3-Bedroom:	
4-Bedroom:		4-Bedroom:		4-Bedroom:	
5-Bedroom:		5-Bedroom:		5-Bedroom:	
6-Bedroom:		6-Bedroom:		6-Bedroom:	

REMARKS **Application supersedes 2013/SCA-0467 and 2014/SCA-0649. A letter from Campbell is required for the allocation of Wastewater System Facility Charge credits and capacity.**

APPROVAL DATE: **12/23/2014**

EXPIRATION DATE: **12/22/2016**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

REVIEWED BY: ***Tessa Ching***

Site Development Division, Wastewater Branch

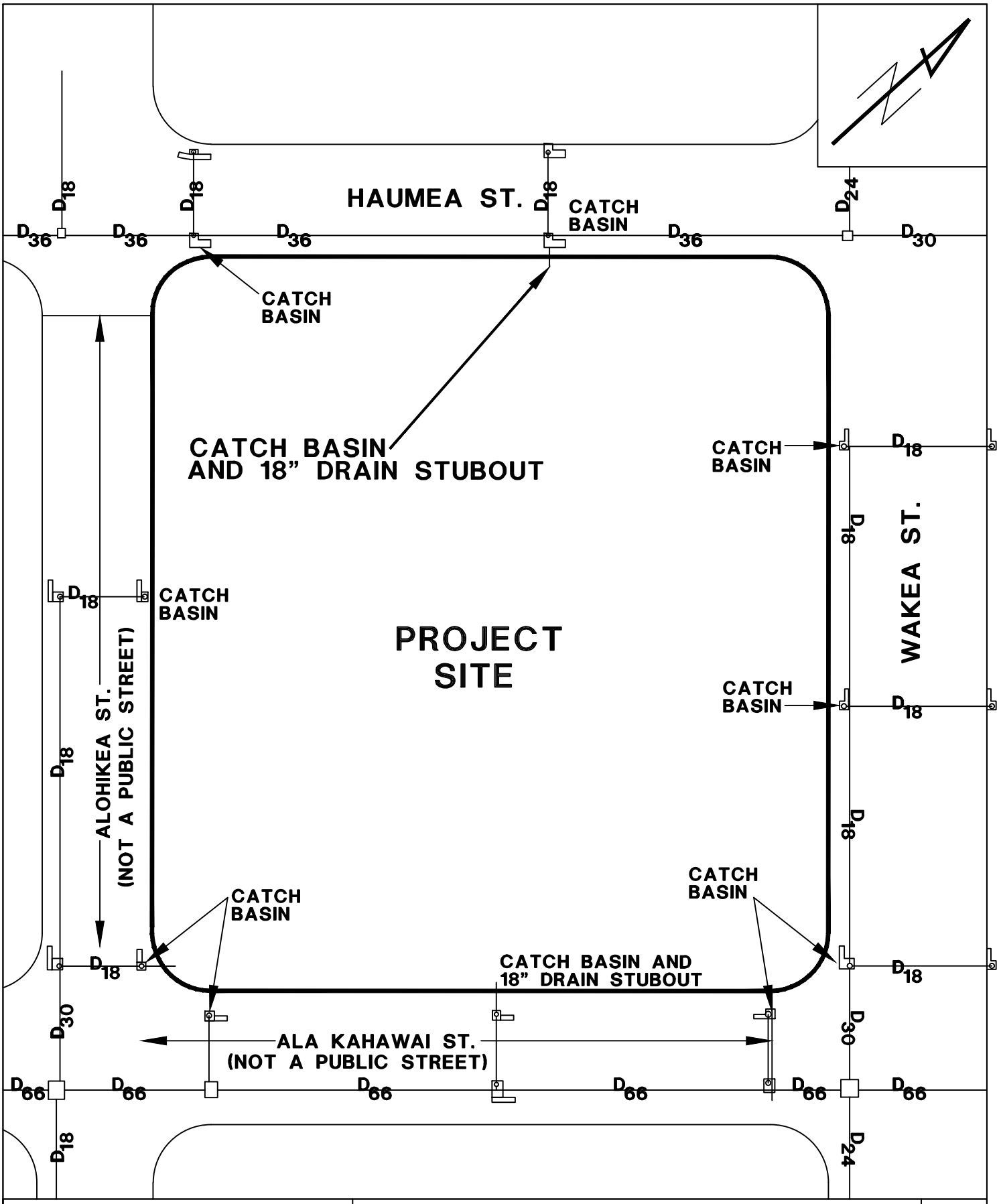
ExternalID: **054123530-001** JobId: **54123530**

Initial Print Date: Tuesday December 23, 2014 4:13 p

SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS • CIVIL & STRUCTURAL
2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
T (808) 955-4441 F (808) 942-2027

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
SEWER CONNECTION APPLICATION

8
FIGURE



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HONOLULU, HAWAII 96826
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KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
EXISTING STORM DRAINAGE SYSTEM

9
FIGURE

View from intersection of Wakea and Ala Kahawai Streets, looking west across the site.

View from intersection of Alokikea and Ala Kahawai Streets, looking north across the site.

SATO AND ASSOCIATES, INC.
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2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
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KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII

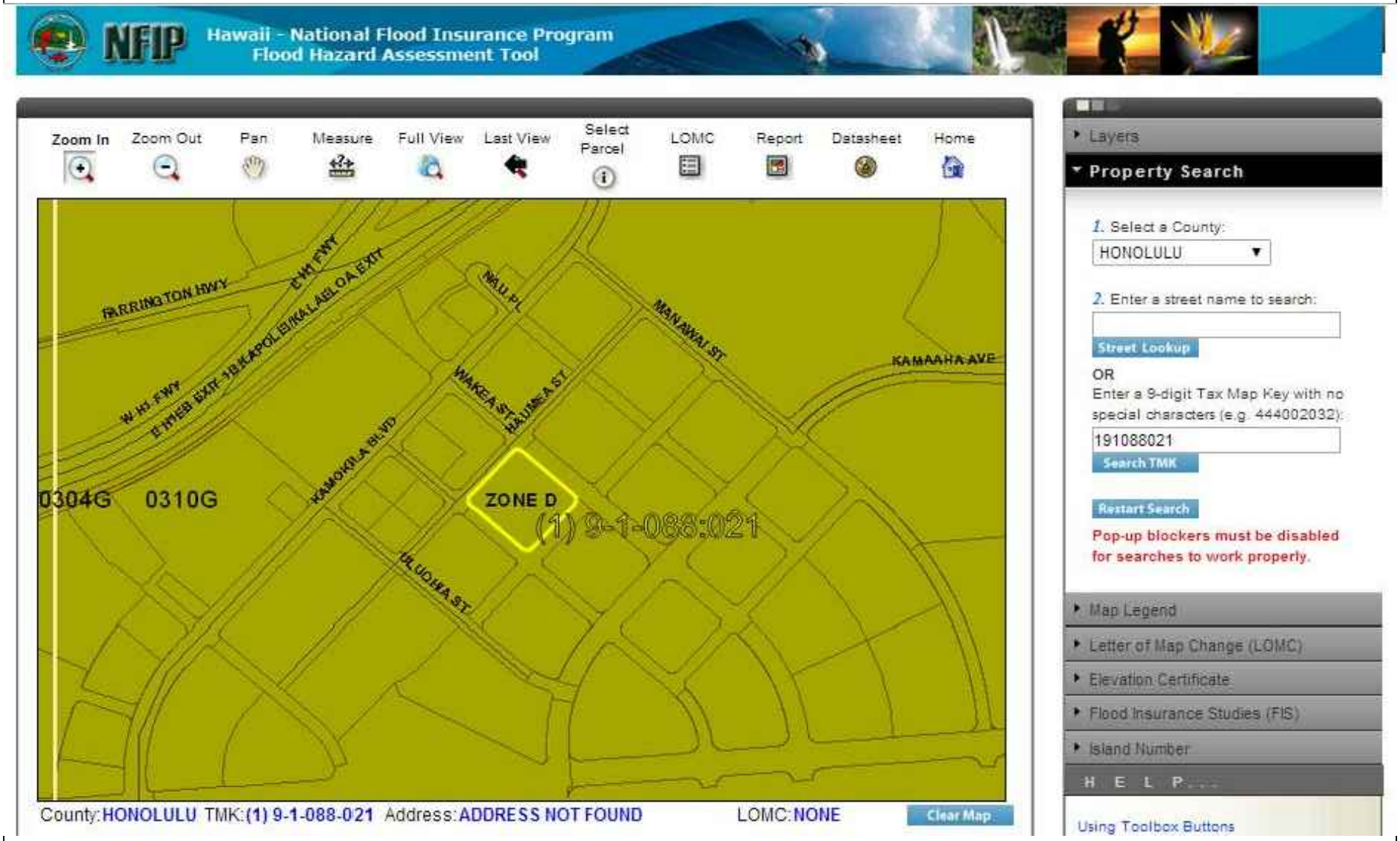
SITE PHOTOS

View from intersection of Haumea and Alohikea Streets, looking east across the site.

View from intersection of Haumea and Wakea Streets, looking south across the site.

SATO AND ASSOCIATES, INC.
CONSULTING ENGINEERS CIVIL & STRUCTURAL
2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
T (808) 955-4441 F (808) 942-2027

KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
SITE PHOTOS



Source: NRCS online Web Soil Survey mapping tool.

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2046 SOUTH KING STREET
HONOLULU, HAWAII 96826
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KAPOLEI MIXED-USE DEVELOPMENT
1020 WAKEA ST., KAPOLEI, OAHU, HAWAII
FLOOD HAZARD MAP

10
FIGURE

Appendix H

Chapter 201H, Department of Planning and Permitting Correspondence

RECEIVED
SEP 30 2013
PLANPACIFIC, INC.

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2013/ELOG-1891 (JP)

September 27, 2013

Ms. Lisa Leonillo Imata, President
Plan Pacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Eligibility for Affordable Housing Exemptions
Chapter 201H-38, Hawaii Revised Statutes (HRS)
Coastal Rim Properties, LLC
Kapolei, Oahu
Tax Map Key 9-1-88: 21

This responds to your inquiry, received September 26, 2013, concerning whether a planned affordable housing project on the subject 3.036-acre property, which is in the B-2 Community Business Distinct, will be eligible for processing by the Department of Planning and Permitting (DPP). We understand that the project will involve 583 dwelling units, neighborhood retail space, day-care, community centers, and park and play space; some of the affordable units being affordable to households earning up to 140 percent of the median income for Honolulu. Under those particular circumstances, the project will not be eligible for processing by the DPP.

To be eligible for processing by the DPP, projects must include a minimum of 10 percent of the total units being affordable to households earning annual incomes which do not exceed 80 percent of the median income. And, a minimum of 20 percent of the total units must be affordable to households earning between 81 to 120 percent of the median income. The remaining affordable units to be provided may be affordable to gap group (i.e., 121 to 140 percent) households. A maximum of 50 percent of the total units can be sold at market rates. It is our understanding that the eligibility requirements for processing requests for exemptions pursuant to Chapter 201H-38, HRS by the Hawaii Housing Finance and Development Corporation are less restrictive than our own.

I hope this clarifies the matter. Please contact Jamie Peirson of our Land Use Permits Division at 768-8011 if you have any questions.

Very truly yours,

for George I. Atta, FAICP
Director

GIA:nw

Appendix I

Pre-Consultation Comment and Response Letters

RECEIVED
NOV 26 2013
PLANPACIFIC, INC.

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CITY AND COUNTY OF HONOLULU
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PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2013/ELOG-2238 (JP)

November 25, 2013

Ms. Lisa Leonillo Imata
PlanPacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Kapolei Ohana Affordable Housing Project
1020 Wakea Street - Kapolei
Tax Map Key 9-1-88: 21

This responds to your request, received November 20, 2013, for comments regarding a proposed affordable housing project on the subject site, which is in the B-2 Community Business District with a 150-foot zoning height limit. We understand that this will be a mixed-use project involving senior housing, both affordable and market priced housing, retail and office space, a day-care facility, and recreational space. There will be four residential towers, with a total of 583 multi-family dwelling units, on a podium containing commercial uses and parking spaces. Multi-family dwelling units are not permitted uses in the B-2 Community Business District.

Since we do not have much other knowledge concerning this project, we have no further comments to offer at this time. We will be happy to review the Draft Environmental Assessment when it is available and will provide any comments we may have then.

Please contact Jamie Peirson of our Land Use Permits Division at 768-8011 if you have any questions.

Very truly yours,

George I. Atta, FAICP
Director

GIA:nw

PLANPACIFIC

April 15, 2014

George Atta, FAICP, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dear Mr. Atta,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated November 25, 2013 (reference 2013/ELOG-2238 JP). Multifamily dwellings are not permitted in the underlying B-2 Community Business District and therefore, the applicant will request an exemption from Sec. 21-3.110-1(a) of the *Land Use Ordinance* via an application for a permit processed under Chapter 201H, *Hawai'i Revised Statutes.*

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to your review of the Draft Environmental Assessment and any additional comments you may have during the public review period.

Sincerely,

Lisa Leonillo Imata
President

1001 Bishop Street
Suite 2755
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9468
www.planpacific.com

RECEIVED
NEIL ABERCROMBIE
GOVERNOR OF HAWAII
DEC - 2 2013
PLANPACIFIC, INC.

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

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

In reply, please refer to:
File:
EPO 13-222
Ohana Project

November 26, 2013

Ms. Lisa Leonillo Imata, President
Plan Pacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088: 021, Kapolei, Oahu, Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated November 18, 2013. Thank you for allowing us to review and comment on the subject document. The document was routed to the Wastewater Branch. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/.
You are required to adhere to all standard comments specifically applicable to this application.

EPO suggests the applicant examine the many sources available on strategies to support the sustainable design of communities, including the:
State of Hawaii, Office of Planning: www.planning.hawaii.gov and the new 2013 ORMP;
U.H., School of Ocean and Earth Science and Technology: www.soest.hawaii.edu;
U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability; and
U.S. Green Building Council's LEED program: www.usgbc.org/leed.

DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at: www.cdc.gov/healthyplaces/hia.htm. We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

We require a written response confirming receipt of this letter and any other letters you receive from DOH in regards to this submission. You may mail your response to 919 Ala Moana Blvd., Ste. 312, Honolulu, Hawaii 96814. However, we would prefer an email submission to: epo@doh.hawaii.gov. We anticipate that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me at (808) 586-4337.

Mahalo,

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office

PLANPACIFIC

April 8, 2014

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

Dear Ms. McIntyre,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 2, 2013 (reference EPO 13-222 Ohana Project).

Please be aware that the applicant is renaming the project "Kūlana at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

We have reviewed the Standard Comments on the Department of Health's website per your recommendation. The applicant plans to incorporate sustainable design and strive for LEED Platinum Certification for the entire project via the following:

- Street trees to mitigate the heat island effect
- Stormwater management
- Water conservation and recycling
- Rainwater harvesting
- Solar harvesting via photovoltaic systems

These proposed components will provide for a more sustainable project. Moreover, native plants and habitat enhancement will be implemented in the design concept. This combined with street trees will provide a more pleasant walking experience to the various services and recreational opportunities in proximity to the proposed project site. This in turn, promotes a healthier environment and supports healthy living concepts and themes that are also called for in the Urban Design Plan for the City of Kapolei.

The sustainability goal for this project relative to water consumption is to use water harvesting and recycling for landscape irrigation. A letter requesting

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Hawaii 96813

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recycled water use already has been sent to the Honolulu Board of Water Supply.

Per your request, a written response confirming receipt of your letter was sent earlier via email on December 20, 2013.

Thank you for participating in the environmental review process for this project. We look forward to additional comments you may have during the review period for the Draft Environmental Assessments.

Sincerely,

Lisa Leonillo Imata
President

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PLAN PACIFIC, INC.

NEIL ABERCROMBIE
GOVERNOR
STATE OF HAWAII

JOBIE M. K. MASAGATANI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

DARRELL T. YOUNG
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

November 27, 2013

Plan Pacific
Attn: Ms. Lisa Leonillo Imata, President
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK 9-1-088:021, Kapolei, O'ahu, Hawai'i

Thank you for the opportunity to review the subject Pre-Consultation for an Environmental Assessment. The Department of Hawaiian Home Lands has no comment to offer at this time.

If you have any questions, please contact our Planning Office at (808) 620-9480.

Aloha,

Darrell C. Yagodich,
Planning Program Manager

DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 ● HONOLULU, HAWAII 96813 ● AREA CODE 808 ● PHONE: 768-7762 ● FAX: 768-7792

KIRK CALDWELL
MAYOR

PAMELA A. WITTY-OAKLAND
DIRECTOR

GARY K. NAKATA
DEPUTY DIRECTOR

November 29, 2013

RECEIVED
DEC - 4 2013
PLANPACIFIC, INC.

Ms. Lisa Leonillo Imata
President
Plan Pacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Pre-Consultation for an Environmental Assessment
Kapolei Ohana Project TMK: 9-1-088:021
Kapolei, Oahu, Hawaii

We have reviewed your letter dated November 18, 2013, and the information provided for the pre-consultation for an Environmental Assessment for the Kapolei Ohana project located at TMK: 9-1-088:021 in Kapolei, Oahu, Hawaii.

Our review of the information provided indicates that the proposed project will have no adverse impacts on any Department of Community Services' activities or projects at this time.

Thank you for providing us with the opportunity to comment on this matter.

Sincerely,

Pamela A. Witty-Oakland
Director

PAW:sk

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PLANPACIFIC, INC.

DEPARTMENT OF PARKS & RECREATION
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
Phone: (808) 768-3003 • Fax: (808) 768-3053
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

TONI P. ROBINSON
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

November 29, 2013

Ms. Lisa Leonillo Imata, President
Plan Pacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK 9-1-088:021 Kapolei, Oahu, Hawaii

Thank you for the opportunity to review and comment at the pre-consultation stage of the environmental assessment for the subject Coastal Rim Properties, Inc. mixed residential/ commercial use Kapolei Ohana Project.

The Department of Parks and Recreation requests that the environmental assessment include a description of how this project will address the requirements of the Park Dedication Ordinance applicable to the market priced housing units.

Should you have any questions, please contact Mr. John Reid, Planner at 768-3017.

Sincerely,

Toni P. Robinson

Toni P. Robinson
Director

TPR:jr
(539319)

PLANPACIFIC

April 9, 2014

Toni P. Robinson, Director
Department of Parks and Recreation
City and County of Honolulu
1001 Uluohia Street, Suite 309
Kapolei, HI 96707

Dear Ms. Robinson,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated November 29, 2013.

We would like to inform you that the applicant is renaming the project "Kūlana at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail space. A separate Environmental Assessment will be submitted for the second phase, which will be for the remainder of the project, at a later date.

The project will meet park dedication requirements per Chapter 22, Article 7 of the *Revised Ordinances of Honolulu*, by providing the required land area and improvements for a park and open spaces on site. However, because of the phasing of the project, where senior affordable units will be built in phase 1, a deferral for meeting park dedication requirements until phase 2 will be requested. This information will be included in the discussion in the Draft Environmental Assessment.

Thank you for participating in the environmental review process for this project.

Respectfully,

Lisa Leonillo Imata
President

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Hawaii 96813

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Fax (808) 521-9468
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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD-1 9 1 088 021-ID1529
PreCons EA Kapolei Ohana

December 3, 2013

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DEC - 6 2013
PLANPACIFIC, INC.

Ms. Lisa Leonillo Imata, President
Plan Pacific
American Savings Bank Tower
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

Subject: Pre-Consultation for an Environmental Assessment
Kapolei Ohana Project, 1020 Wakea Street, Kapolei, HI 96707
Corner or Wakea & Haumea Streets TMK (1) 9-1-088: 021

Thank you for allowing us the opportunity to review the above subject project which requests comments on the Pre-Consultation for an Environmental Assessment for the Kapolei Ohana Project.

The subject project is located in the critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. We have no comments to offer at this time as domestic wastewater from the project will be handled by the City and County of Honolulu's sewer system.

Should you have any questions, please contact Mr. Mark Tomomitsu of my staff at telephone 586-4294 or fax 586-4300.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Ms. Laura McIntyre, DOH-Environmental Planning Office (13-222)
Mr. George I. Atta, C&C of Honolulu, Dept. of Planning & Permitting 7th Floor

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PLANPACIFIC, INC.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

KIRK CALDWELL
MAYOR

CHRIS T. TAKASHIGE, P.E., CCM
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

December 4, 2013

PlanPacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Attn: Lisa Leonillo Imata

Dear Ms. Imata:

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK 9-1-088:021, Kapolei, Oahu, Hawaii

In response to your November 18, 2013 letter requesting review and comments on the pre-consultation, the Department of Design and Construction has the following comment:

We respectfully request that your DEA address how the proposed project fulfills the park dedication requirements contained within the City's subdivision ordinance.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Clifford Lau, Chief, Facilities Division at 768-8483.

Sincerely,

For M. Yonamine

Chris T. Takashige, P.E., CCM
Director

CTT: cf (539267)

PLANPACIFIC

April 10, 2014

Chris T. Takashige, P.E., CCM, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

Dear Mr. Takashige,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 4, 2013.

We would like to inform you that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail space. A separate Environmental Assessment will be submitted for the second phase, which will be for the remainder of the project, at a later date.

The project will meet park dedication requirements per Chapter 22, Article 7 of the *Revised Ordinances of Honolulu*, by providing the required land area and improvements for a park and open spaces on site. However, because of the phasing of the project, where senior affordable units will be built in phase 1, a deferral for meeting park dedication requirements until phase 2 will be requested. This information will be included in the discussion in the Draft Environmental Assessment.

Thank you for participating in the environmental review process for this project.

Respectfully,

Lisa Leonillo Imata
President

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NEIL ABERCROMBIE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

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PLANPACIFIC, INC.

December 5, 2013

Ms. Lisa Leonillo Imata, President
PlanPacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

The Department of Education (DOE) is responding to your request for pre-consultation comments on the Kapolei Ohana Project (Project), in Kapolei, Oahu.

The Project will house DOE students in three of the four proposed residential towers, so we would expect roughly 440 units could house students. The Project is located in the Leeward Oahu school impact fee district, so there will be a requirement to pay school impact fees on all units which permit the occupancy of school age children.

The DOE requires any developer of 50 or more residential units to have a written agreement with the DOE before the issuance of building permits, subdivision approval, and condominium property regime approval.

If we apply the student generation rates for the Leeward Oahu school impact fee district, we estimate that at the project's maturity, there would be on average 92 elementary students, 26 middle school students, and 44 high school students residing the project.

We project that there will be no excess capacity at Kapolei Elementary School or Kapolei High School from now through the 2018-2019 school year. However, there should also be a new elementary school in the City of Kapolei Mehana project by school year 2015-2016. There should be sufficient space in Kapolei Middle School to accommodate students from the Project.

We look forward to reviewing the environmental assessment for the project and discussing an educational contribution agreement with the Project's developer.

If you have any further questions, please contact Heidi Meeker of the DOE's Facilities Development Branch at 377-8301.

Respectfully,

Kenneth G. Masden
Public Works Manager
Planning Section

KGM:jmb

c: Heidi Armstrong, CAS, Campbell/Kapolei Complex Areas

PLANPACIFIC

April 9, 2014

Kenneth Masden, Public Works Manager
Office of School Facilities and Support Services
Hawai'i Department of Education
P.O. Box 2360
Honolulu, HI 96804

Dear Mr. Masden,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 5, 2013. The information regarding area school capacities and projected number of students is very helpful.

Please be aware that the applicant is renaming the project "Kūlana at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail space. A separate Environmental Assessment will be submitted for the second phase, which will be for the remainder of the project, at a later date.

We understand that a Leeward O'ahu school impact fee would not apply to the first phase of the project since all units will be for seniors, but the impact fee will apply to the second phase of the project. We also understand that a written agreement between the project developer and the DOE is required prior to the issuance of building permits, subdivision approval, and condominium property regime approval.

Thank you for participating in the environmental review process for this project.

Sincerely,

Lisa Leonillo Imata
President

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Hawaii 96813

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Fax (808) 521-9468
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HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK CALDWELL
MAYOR

MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

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PLANPACIFIC, INC.

December 6, 2013

Ms. Lisa Leonillo Imata
President
PlanPacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

Subject: Preconsultation for an Environmental Assessment
Kapolei Ohana Project
Tax Map Key: 9-1-088: 021

In response to your letter of November 18, 2013, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; Uniform Fire Code [UFC]™, 2006 Edition, Section 18.2.3.2.2.)

   A fire department access road shall extend to within 50 ft (15 m) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; UFC™, 2006 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter

constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; UFC™, 2006 Edition, Section 18.3.1, as amended.)

3. Submit civil drawings to the HFD for review and approval.

Should you have questions, please contact Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151 or sbratakos@honolulu.gov.

Sincerely,

ROLLAND J. HARVEST
Assistant Chief

RJH/SY:jl

PLANPACIFIC

April 14, 2014

Rolland Harvest, Assistant Chief
Fire Department
City and County of Honolulu
636 South Street
Honolulu, HI 96813-5007

Dear Assistant Chief Harvest,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 6, 2013. We have forwarded your department's comments to the project architect and engineer and mentioned compliance with Honolulu Fire Department requirements in the Draft Environmental Assessment. The requirements will be better addressed with the permit plan sets that will be submitted to your department for review.

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to your review of the Draft Environmental Assessment and any additional comments you may have during the public review period.

Sincerely,

Lisa Leonillo Imata
President

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Hawaii 96813

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DEC 12 2013
PLANPACIFIC, INC.

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 13-1060

December 9, 2013

Ms. Lisa Leonilla Imata, President
Plan Pacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Pre-Consultation for an Environmental Assessment Kapolei Ohana Project, TMK: 9-1-088:021, Kapolei, Oahu, Hawaii

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

Our comments are as follows:

- Once construction phase commence, approved Best Management Practices (BMP) shall be placed fronting all drainage facilities along Haumea Street (City-owned) and future City roadways (Alohikea Street, Ala Kahawai Street and Wakea Street).
- Upon completion of project; any deficiencies/damages within Haumea Street, Alohikea Street, Ala Kahawai Street and Wakea Street's right-of-ways caused during construction of the subject project, shall be corrected and accepted by the City.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Ross S. Sasamura, P.E.
Director and Chief Engineer

PLANPACIFIC

April 14, 2014

Ross Sasamura, P.E., Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, HI 96707

Dear Mr. Sasamura,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 9, 2013. We will forward your comments to the project engineer.

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to your review of the Draft Environmental Assessment and any additional comments you may have during the public review period.

Sincerely,

Lisa Leonillo Imata
President

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Hawaii 96813

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GOVERNOR

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PLANPACIFIC, INC.

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
AUDREY HIDANO
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PS 2.6131

December 10, 2013

Ms. Lisa Leonillo Imata
PlanPacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

Subject: Pre-Consultation for Preparation of an Environmental Assessment, Kapolei Ohana Project, Coastal Rim Properties, Inc., Kapolei, Oahu, TMK: (1) 9-1-088: 021

The Kapolei Ohana project is a mixed-use development with a significant affordable housing component. The project will be located on a vacant lot located within the City of Kapolei.

The project proposes four residential towers (senior affordable, affordable, and two market) totaling 583 dwelling units, plus 18,898 SF of retail and 2,161 SF of office space. The project will also include a daycare facility and a recreation center.

The use of State lands triggers the environmental assessment (anticipated FONSI) as per HRS 343.

The Department of Transportation requires that a traffic assessment be prepared and submitted for review and acceptance. Although the project will access roads under the jurisdiction of the City and County of Honolulu, the assessment should project likely project traffic volumes at connection points to the State highways, such as at Kalaeloa Boulevard and at Fort Barrett Road, and evaluate/discuss whether they represent any significant impact and mitigation that might be appropriate.

If there are any questions, please contact Gary Ashikawa, Systems Planning Engineer, Highways Division, Planning Branch, at 587-6336. File number: 2013-246.

Very truly yours,

Alvin A. Takeshita
Highway Administrator

PLANPACIFIC

April 8, 2014

Alvin Takeshita, Highway Administrator
Hawai'i Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813-5097

Dear Mr. Takeshita,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 10, 2013 (reference HWY-PS 2.6131 and/or file number 2013-246).

An Environmental Assessment is required because the developer will be applying for a Section 201H, HRS permit and tax credits through the Hawai'i Housing Finance and Development Corporation.

Per your recommendation, a Traffic Impact Analysis Report (TIAR) has been prepared for the proposed project. The TIAR included projections of likely traffic volumes at connection points to State highways, such as at Kalaeloa Boulevard and at Fort Barrett Road. The Draft Environmental Assessment will summarize the findings of the analysis and the full TIAR will be included as an appendix.

Please be aware that the applicant is renaming the project "Kūlana at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date. However, the completed TIAR assumes full development of the project.

Thank you for participating in the environmental review process for this project. We look forward to your review and acceptance of the TIAR, as well as any additional comments, during the review period for the Draft Environmental Assessment.

Sincerely,

Lisa Leonillo Imata
President

1001 Bishop Street
Suite 2755
Honolulu
Hawaii 96813

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www.planpacific.com

RECEIVED
DEC 18 2013
PLANPACIFIC, INC.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

KIRK CALDWELL
MAYOR

MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

TP11/13-539354R

December 12, 2013

Ms. Lisa Leonillo Imata
President
PLANPACIFIC
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

SUBJECT: Pre-Consultation for Draft Environmental Assessment (DEA)
Kapolei Ohana Project; Tax Map Key (TMK): 9-1-088: 021;
Kapolei, Oahu, Hawaii

In response to your letter dated November 18, 2013, we have the following comments:

- The DEA should include a traffic impact assessment report (TIAR). The TIAR should discuss the traffic and pedestrian impacts on the surrounding City roadways as a result of the project, including short-term impacts during construction and any proposed traffic mitigating measures.

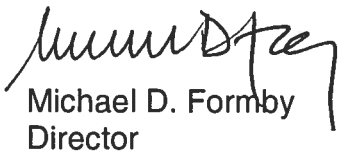
- The area Neighborhood Board, as well as the area residents, businesses, etc., should be kept apprised of the details of the proposed project and the impacts, particularly during construction, the project may have on the adjoining local street area network.

- The DEA should include a description of Public Transit and the impact of your project on TheBus and paratransit operations during construction. Our Kapolei Transit Center is adjacent to the property at Haumea and Wakea Streets, which serves many bus routes and is a major transfer center. Basic information is available on our websites: www.thebus.org and www.honolulu.gov/dts. For more details, you may contact our staff at 768-8370.

We reserve further comment pending submission of the DEA.

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,



Michael D. Formby
Director

PLANPACIFIC

April 14, 2014

Michael Formby, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, HI 96813

Dear Mr. Formby,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 12, 2013 (reference TP11/13-539354R).

Per your recommendation, a Traffic Impact Analysis Report (TIAR) has been prepared for the proposed project. The TIAR includes a discussion of traffic and pedestrian impacts as a result of normal rates of growth as well as due to the proposed project. The TIAR also includes a description of public transit. The Draft Environmental Assessment will summarize the findings of the analysis and the full TIAR will be included as an appendix to the Draft Environmental Assessment.

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date. However, the completed TIAR assumes full development of the project.

Thank you for participating in the environmental review process for this project. We look forward to your review of the TIAR, as well as any additional comments, during the public review period for the Draft Environmental Assessment.

Sincerely,

Lisa Leonillo Imata
President

1001 Bishop Street
Suite 2755
Honolulu
Hawaii 96813

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www.planpacific.com

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DEC 17 2013
PLANPACIFIC, INC.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

KIRK CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. McCAULEY
DEPUTY CHIEFS

OUR REFERENCE EO-WS

December 12, 2013

Ms. Lisa Leonillo Imata, President
PlanPacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

This is in response to your letter dated November 18, 2013, requesting comments on the Pre-Consultation, Draft Environmental Assessment, for the Kapolei Ohana project.

The Honolulu Police Department anticipates an increase in calls for service in and around the project area. Due to its size and scope, the development will also create an increase in the number of people, businesses, and vehicular traffic in the area.

The HPD has no major concerns at this time. However, we would like to be involved in future planning and/or the implementation of the project in order to reassess the project's impact on future police operations.

If there are any questions, please contact Major Kerry Inouye of District 8 (Kapolei) at 723-8403 or via e-mail at kinouye@honolulu.gov.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
RANDAL K. MACADANGDANG
Assistant Chief
Support Services Bureau

PLANPACIFIC

April 14, 2014

Louis Kealoha, Chief of Police
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, HI 96813

Dear Chief Kealoha,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 12, 2013 (reference EO-WS). We have incorporated your department's comments into the Draft Environmental Assessment.

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to your review of the Draft Environmental Assessment and any additional comments you may have during the public review period.

Sincerely,

Lisa Leonillo Imata
President

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HART
HONOLULU AUTHORITY for RAPID TRANSPORTATION

IN REPLY REFER TO:
CMS-AP00ENV-00329

Daniel A. Grabauskas
EXECUTIVE DIRECTOR AND CEO

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Carrie K.S. Okinaga, Esq.

December 18, 2013

Ms. Lisa Leonillo Imata, President
PlanPacific
1001 Bishop Street, Suite 2755
Honolulu, Hawaii 96813

Dear Ms. Imata:

Subject: Pre-Consultation for an Environmental Assessment
Kapolei Ohana Project, TMK 9-1-88: 21, Kapolei

This responds to your November 18, 2013 request for our comments on the Draft Environmental Assessment and the Hawaii Revised Statutes Chapter 201H application to be prepared for a proposed mixed-use development in Kapolei City.

The project site is situated near the planned Kapolei Transit Center (TheBus) and the Honolulu Rail Transit Project Kapolei Transit Center Station (station name unofficial). The former is a block makai of the project site (block bounded by Kamaaha Avenue, Alohikea Street and Kapolei Parkway). The rail station lies just beyond at Kapolei Parkway, makai of and on the same super-block as Kapolei Hale. The project should address, thus, any program(s) that would promote the use of public transportation for the many occupants/users of the proposed mix of housing and businesses; for example, retail, offices, daycare and recreation center.

In addition to pedestrian circulation between the development and the transit facilities, the project should also consider bicycle trips and facilities (e.g., provisions for bike racks and storage) for this alternate mode of travel since both the rail system and TheBus accommodates bicycles for longer trips.

To encourage use of public transportation versus private vehicles, consideration should be given to providing a reduced number of parking spaces than conventionally required in the 201H application.

Should you have any questions regarding these comments, please contact Mr. Bruce Nagao of the Planning Division at 768-8351.

Sincerely,

Daniel A. Grabauskas
Executive Director and CEO

CITY AND COUNTY OF HONOLULU, Alii Place, Suite 1700, 1099 Alakea Street, Honolulu, Hawaii 96813
Phone: (808)768-6159 Fax: (808)768-5110 www.honolulutransit.org

PLANPACIFIC

April 15, 2014

Daniel Grabauskas, Executive Director and CEO
Honolulu Authority for Rapid Transportation
City and County of Honolulu
1099 Alakea Street, Suite 1700
Honolulu, HI 96813

Dear Mr. Grabauskas,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 18, 2013 (reference CMS-APOOENV-00329), that confirms that the project site is situated near the planned Honolulu Rail Transit Project Kapolei Transit Center Station. The Kapolei Transit Center is currently adjacent to the site. We have incorporated your department's comments into the Draft Environmental Assessment, as applicable.

Please be aware that the applicant is renaming the project "Kūlana Hale at Kapolei" and that the forthcoming Draft Environmental Assessment will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate Environmental Assessment will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to your review of the Draft Environmental Assessment and any additional comments you may have during the public review period.

Sincerely,

Lisa Leonillo Imata
President

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Lisa Imata

From: Liu, Rouen [rouen.liu@heco.com]
Sent: Friday, December 20, 2013 10:49 AM
To: 'info@planpacific.com'
Subject: Kapolei Ohana Project - pre consultation for an EA

Dear Ms. Imata,

Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objections to the project. Should HECO have existing easements and facilities on the subject property, we will need continued access for maintenance of our facilities.

We appreciate your efforts to keep us apprised of the subject project in the planning process. As the Kapolei Ohana project comes to fruition, please continue to keep us informed. Further along in the design, we will be better able to evaluate the effects on our system facilities.

If you have any questions, please call me at 543-7245.

Sincerely,

Rouen Liu

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OFFICE OF PLANNING
STATE OF HAWAII

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NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

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Ref. No. P-14199

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PLANPACIFIC, INC.

December 12, 2013

Ms. Lisa L. Imata
Plan Pacific, Inc.
1001 Bishop Street, Suite 2755
Honolulu, HI 96813

Dear Ms. Imata:

Subject: Pre-Assessment Consultation for an Environmental Assessment – Kapolei Ohana Project, Kapolei, Oahu; TMK: 9-1-088:021

Thank you for the opportunity to provide comments on the Kapolei Ohana Housing project in Kapolei, Oahu.

We have reviewed the documents submitted to our office by letter dated November 18, 2013, and have the following comments to offer:

1. The entire state is defined to be within the Coastal Zone Management Area, see Hawaii Revised Statutes (HRS) §205A-1 (definition of "coastal zone management area"). The Draft Environmental Assessment (Draft EA) should include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS §205A-2.

2. During the construction phase of this project, there is a possibility that nonpoint pollution may be generated and may have an impact on coastal waters. Please review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact. Specifically, please examine the section on Urban Areas/New Development (page 120) and Urban Areas/Site Development (page 122). The Hawaii Watershed Guidance can be viewed or downloaded from the Office of Planning website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HIWatershedGuidance Final.pdf.

3. For potential impacts to water resources from stormwater and inundation concerns, please consider utilizing the Office of Planning's Stormwater Impact Assessment, to incorporate into the environmental review process. Specifically, examine

Stormwater Design & Mitigation (page 11) and Low-Impact Development Concepts (page 14) of the Stormwater Impact Assessment. The Appendices include a list of Data Resources, Best Management Practice Techniques, and a Reviewers Checklist. The Stormwater Impact Assessment guidance document can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf.

4. The Draft EA should include the Coastal Zone Management Act, HRS Chapter 205A, in the list of "Relationship to Land Use Plans, Policies, and Controls."

If you have any questions regarding this comment letter, please contact Josh Hekekia of our Hawaii CZM Program at 587-2845.

Sincerely,

Jesse K. Souki
Director

PLANPACIFIC

April 16, 2014

Mr. Leo Asuncion, AICP, Acting Director
Hawai'i Department of Business, Economic Development & Tourism
Office of Planning
P.O. Box 2359
Honolulu, HI 96804

Dear Mr. Asuncion,

Subject: Pre-Consultation for an Environmental Assessment, Kapolei Ohana Project, TMK: 9-1-088:021, City of Kapolei, O'ahu, Hawai'i

Thank you for your comment letter on the subject project, dated December 12, 2013 (reference P-14199). During the public review process for the Draft Environmental Assessment, we will incorporate applicable information from the various sources that you cited, as well as discussion about how the proposed project addresses the objectives and policies of the Coastal Zone Management Program, promulgated by Chapter 205A, HRS.

For your future reference, the applicant is renaming the project "Kūlana Hale at Kapolei" and the forthcoming Draft Environmental Assessment (EA) will focus on the first phase of the project only. The first phase proposes 154 senior affordable rental units, a daycare, a community center, and some retail spaces. A separate EA will be submitted for the remainder of the project at a later date.

Thank you for participating in the environmental review process for this project. We look forward to any additional comments you may have during the public review period for the Draft EA.

Sincerely,

Lisa Leonillo Imata
President

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Appendix J

Coastal Rim Properties Memorandum to Makakilo-Kapolei-Honokai Hale Neighborhood Board Planning & Zoning Committee

September 19, 2013

Dr. Kioni Dudley
Via Email: DrKioniDudley@hawaii.rr.com
Chair of the Planning and Zoning Committee
Makakilo-Kapolei-Honokai Hale Neighborhood Board

Re: Responses to Questions from the Meeting with Planning and Zoning Committee and the General Public of August 21, 2013 – 7:00-8:00 p.m. in reference to:
Kapolei Mixed Use Project: 1020 Wakea Street (Haumea and Wakea Streets)

Dear Dr. Dudley:

We appreciate the opportunity to offer additional information to you and your committee in reference to the proposed project.

1. *Why did CRP choose to propose a mixed use development on a site currently designed for commercial use and therefore requiring approval of other uses in the project?* How will the proposed project improve the quality of the life for Kapolei from the developer's perspective?

   Response: The project site was chosen for its favorable development potential and its close proximity to the commercial and retail centers in Kapolei and existing transit linkages. A project of mixed uses is considered appropriate on this site and is consistent with the stated goals of the Ewa Development Plan (Oahu General Plan), as well as the City of Kapolei Urban Design Plan, including these stated development objectives:

   - A city of people on bicycles, buses or foot where it is convenient and safe to travel to work, run errands or
     engage in recreation.
   - A city with street connectivity that makes travel more direct, shortens trips and provides a wide variety of travel choices.
   - A city where energy efficient practices such as recycling and water conservation techniques are firmly established.

   Interestingly, with approximately two million square feet of existing commercial and retail uses in the Kapolei Business District today, there are few opportunities for any of these folks to walk to work.

   Envisioned in the Kapolei Urban Design Plan (Page 31) is the City Center District, of which the project site is a part, and is described as follows:

   > "The *predominant uses in this district are to be offices, financial, retail, business support services, personal services, and restaurants.* *Multi-family dwelling units may be permitted on the upper floors of buildings, subject to obtaining the proper zoning from the City & County"*

While the vast majority of the current City Center zoning does not accommodate multifamily dwelling units, it is clearly the intent of the Kapolei Urban Design Plan to allow for zone changes or other zoning exemptions to introduce these uses on the upper floors, as proposed. Also, the Ewa Development Plan notes,

> *"Mixed use should be permitted and encouraged throughout most of the city area, in order to achieve the diversity and intensity of uses that characterize a city….The City Center should be the high density core of the city. Larger office towers should be the predominant form of development in this district, with shopping and restaurants at ground level. <u>The inclusion of apartments within some of the towers should also be encouraged</u> to establish a more dynamic mix of uses and help maintain an active urban environment in the area…A transit node should be located near the Civic Center and City Center, and high density residential uses should be encouraged within a five minute walking distance (about 1300 feet) from the node."*

With the proposed site's adjacency to the existing Kapolei Transit Center (as defined by The City Bus system), we believe that it provides an exemplary opportunity to develop a transit oriented, mixed-income, and mixed use community in the heart of the City Center consistent with the stated community planning goals. The site is served within 1 block by bus lines: C, 40, 41, 411, 412,413, 414, and 415. Sites with existing BMX-3 zoning are currently not as well served by public transit. We also believe that many of the other principles of the KUDP are furthered by integration of residential uses in the City Center, including maintaining an active presence not only during the day but into the evening and avoiding the "ghost town" feel of day-use-only office districts. Adding residential uses to the City Center also promotes a critical vibrancy to the urban landscape. This increased activity, especially at night, leads to a safer pedestrian environment and a higher quality of life for those who live, work, and visit the area.

2. *How does the 201H process and approval change, if at all, the base B2 zoning of the property? Does the 201H process actually change the zoning from B2 to BMX or is there simply a variance that will allow for the residential and daycare uses on the B2 property?*

Response: The 201H expedited processing tool provides for greater design flexibility and cost savings for development projects meeting a certain affordability threshold. Coastal Rim Properties has chosen to pursue the planning and zoning approval required for the proposed project by way of the State of Hawaii's 201H regulations and process. With this approval, which is expected to be processed through the state's Hawaii Housing Finance and Development Corporation (HHFDC), submission of a wide variety of development studies will be required that support residential use on a B2 (Commercial) zoned property. With a 201H approval for this project, the underlying existing B2 zone is not changed, but rather a project specific allowance is granted for residential use. Note that a 201H approval for the project provides for additional development requirements of the project, <u>beyond those required otherwise</u>, including, Owner-Occupant Provisions, Owner 10 Year Buy Back and Shared Appreciation Equity with HHFDC, compliance with Davis-Bacon Wage provisions, Performance Bonds and special Insurance Requirements of HHFDC. 201H approval, although reviewed and processed by HHFDC, requires approval of the City Council, as well.

3. *The Project is proposing a quantity of parking stalls that is 20% reduced from current city requirements. It was noted by MVEI that developments with affordable and senior residents often recognize that residents of these types of urban living places, located with access to good transit, own and use less vehicles when compared with other multi-family developments. MVEI noted that there is data to illustrate the success of projects with this type of parking configuration and would be willing to share that with the board members for their information.*

   Response: Concern for traffic congestion and overcrowded street parking has led many cities to establish minimum parking requirements calling for developments to provide often excessive amounts of off-street parking. For well over a decade, city and urban planners have studied the actual parking needed for a wide variety of community uses and have realized that a "one-size-fits-all" formula for city parking requirements has considerable negative impacts. Nationwide, in cities big and small, Los Angeles to Gainesville, as well as recently on Oahu, City Planners have or are considering changes to their seemingly outdated parking requirements. Reductions to parking required for affordable and senior housing developments have historically ranged from 25%-70%. In the recent Transit Oriented Planning initiative, Oahu is proposing reduced parking in areas with access to transit for any type of multi-family residence. The proposed reduction is from an average of 1.5 stalls per unit to 1.0 stalls per unit, 33%, with additional considerations to provide relief from parking for affordable housing developments. Specifically as it pertains to residents that will live in this Kapolei location, including very low income renting seniors and many who will purchase subsidized affordable homes, current nationwide statistics indicate that this population is less likely to require the use of more than one parking space, if that. It has also been shown that the need for parking is substantially lower for residents in areas near transit. This project is located directly on the Kapolei City Center Bus Routes on Haumea Street, with access immediately available, and is two blocks from the Rail Transit Station site identified in the City of Kapolei's Long Term Master Plan.

   Several Important References on this topic include:
   - "The Dimensions of Parking" (Fifth Edition 1979-2010) – Published jointly by the Urban Land Institute and the National Parking Association
   - "Parking Requirements for Affordable Housing Developers" - (www.scanph.org)
   - "Developing Successful Infill Housing" - Urban Land Institute (Catalog No. D105) – (www.uli.org)
   - "Affordable Housing Parking Study – City of San Diego 2011 – (http://www.sandiego.gov/planning/programs/transportation/pdf/ahpsfactsheet2.pdf)

4. *Did CRP have any discussion with the adjacent school facility and if so, what was their opinion of the proposed development adjacent to the school.*

   Response: Coastal Rim Properties has met and discussed the development of the proposed development with Mr. Dan White, Founder & Headmaster of Island Pacific Academy. Mr. White and the Academy are excited about the project and have expressed their support.

5. *What is the rational for the increase density (FAR 4.20 proposed, 3.5 allowed). A 16% percent increase.*

   Response: As referenced in question #1, the 201H entitlement process is specifically in place to allow zoning exemptions for affordable housing. This is common practice not only in Hawaii, but

elsewhere. Many communities support desirable developments with increases in allowable density (FAR), as well as other exemptions, such as decreased parking in order to effectuate affordability. Zoning exemptions and expedited entitlement processes are all means to help subsidize affordability.

Specifically in the case of the FAR increase, increasing the number of residences helps to spread fixed costs, such as land cost, over a larger number of units, which helps to make a project financially feasible. This is all in consideration of the fact that residents are paying below market rate for their units – with less money coming from the homeowners, the cost to develop must be subsidized in other ways. Public funding, such as the low income housing tax credit, is one way to help subsidize affordability, and zoning exemptions are another.

6. *Are the sidewalks wide enough for the proposed urban use considering this project and future uses? What are the proposed sidewalk widths?*

   Response: The existing sidewalks will be widened to provide sufficient width for their intended use and in compliance with the Kapolei Urban Design Plan, including areas for landscape, site furnishings where appropriate and broad walking ways. The proposed site plan indicates the following public sidewalks (measured from face of curb to face of building):
   Wai Aniani Way = 21 feet
   Haumea Street = 14 feet, 8 inches
   Wakea Street = 18 feet, 6 inches
   Alohikea Street = 13 feet, 6 inches

7. *Why does the project not provide air-conditioned residences? Some in the public think it is inappropriate to provide homes without air-conditioning in this area of Oahu.*

   Response: With the goal of becoming the first LEED Platinum project of this type/scale in the State, we are required to meet rigorous criteria, including energy efficiency and offsetting usage of energy that comes from utility companies. Providing effective alternatives to the use of central air conditioning is estimated to offset total energy costs by 20-30%. Purposeful, integrated design provides for other measures to take the place of air conditioning, such as reducing the passive solar effect, using thermal massing for temperature control, and specifying proper natural and mechanical ventilation. The end result is that the elimination of air conditioning saves energy and does not jeopardize occupant comfort. This development Team has a successful track record of designing and implementing projects of this type, with these important considerations, in Hawaii and across the country. Reaching the goal of LEED Platinum certification furthers the goals of the KUDP and other planning documents, including the goals of the Hawaii 2050 Sustainability Plan, as well as the goals of the HHFDC.

   Further, eliminating air conditioning in favor of natural and mechanical ventilation and other strategies referenced above allows residents to save money on utility costs, which is an important consideration in overall residential affordability. With the highest costs of electricity in the country, Hawaii has significant challenges and few options in overcoming the price of electricity other than to reduce usage or provide alternative methods of generation. This project considers a family's cost to own and maintain their home a critical component to overall affordability and therefore proposes to address both energy usage and alternative energy generation within its design and construction.

8. *Explain for the general public the concepts of co-generation and why they are needed or desired for this project.*

Response: The cogeneration (cogen) system envisioned for the Kapolei Mixed Use Project also plays a key role in reaching LEED Platinum certification. As referenced in the prior question, offsetting usage of energy from utility companies provides points in the LEED system. Our engineers performed a thorough analysis (available upon request) of how best to accomplish these goals and found that a photovoltaic (PV) system combined with the cogen system is the most efficient and cost effective way to reduce usage from the grid. The proposed PV system will meet approximately 42% of energy demand. The cogen system will meet approximately 20% of energy demand and 71% of domestic hot water heating. These are drastic reductions compared to conventional developments and will not only help in obtaining LEED Platinum but will benefit homeowners through dramatic utility cost savings.

An on-site cogen system uses fuel such as propane or diesel to produce electricity for domestic use while capturing the heat byproduct, which is used to heat domestic hot water. There are numerous advantages to taking this approach over the conventional approach of buying electricity and gas from the utilities. First, the system captures the heat generated in the process of making electricity. This heat is typically sent up the exhaust stack in a conventional power plant. By capturing this free "waste" product and producing domestic hot water we are increasing efficiency. Second, since propane is regulated differently by Hawaii's Public Utility Commission there will be more certainty in its cost than buying regulated electricity and gas, which have frequent price adjustments. Locking in a long term contract for propane to produce electricity and domestic hot water will help avoid escalating utility costs. Third, while obtaining LEED Platinum certification is important, it is also important to note that for the most part these benefits of drastically reduced utility costs accrue to the homeowners, thereby increasing the affordability of the overall cost of housing.

Please contact us should there be additional questions we can address.

Sincerely,

Mr. Franco Mola
President