Harry Kim
Mayor

Christopher J. Yuen
Director
Brad Kurokawa, ASLA, LEED™ AP
Deputy Director

County of Hawaii

PLANNING DEPARTMENT
Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720
Phone (808) 961-8288 • Fax (808) 961-8742

August 22, 2008

Katherine Kealoha, Director
Office of Environmental Quality Control (OEQC)
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Kealoha,

Draft Environmental Assessment (DEA) for Kohala Place at Waikoloa
TMK: (3) 6-8-003: 14, 15, 16, and 40, Waikoloa, South Kohala, Hawai'i

The Planning Department, County of Hawai'i, has reviewed the Draft Environmental Assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the next OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, and one (1) PDF copy and four (4) hard copies of the project DEA. A copy of the project summary will be e-mailed to OEQC. Please call Daryn Arai of the Planning Department at (808) 961-8828 Ext. 204 or Chester Koga of R.M. Towill Corporation at (808) 842-1133 should there be any questions.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

DSA:
P:\wpwin60\DSA\2008\LKohalaPlaceWaikoloaDEA.doc

Attachments

DRAFT ENVIRONMENTAL ASSESSMENT

Prepared in Accordance with Requirements of Chapter 343, Hawaii Revised Statutes

KOHALA PLACE AT WAIKOLOA
TMK: (3) 6-8-003: 14, 15, 16, and 40
Waikoloa, South Kohala District, Hawai'i

August 22, 2008

Metric Passco Waikoloa, LLC
c/o Cooper and Cooper LLC
1124 Fort Street Mall, Suite 204
Honolulu, Hawai'i 96813

DRAFT ENVIRONMENTAL ASSESSMENT

FOR

KOHALA PLACE AT WAIKOLOA
TMK: (3) 6-8-003: 14, 15, 16, and 40
Waikoloa, South Kohala District, Hawai'i

August 22, 2008

Accepting Agency::
Planning Department
County of Hawai'i

Applicant
Metric Passco Waikoloa, LLC
c/o Cooper and Cooper LLC
1124 Fort Street Mall, Suite 204
Honolulu, Hawai'i 96813

Prepared By:
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819-3494
21182-1P

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SECTION 1
PROJECT SUMMARY

Project:	KOHALA PLACE AT WAIKOLOA
Applicant:	Metric Passco Waikoloa, LLC c/o Cooper and Cooper LLC 1124 Fort Street Mall, Suite 204 Honolulu, Hawai'i 96813
Accepting Agency:	Planning Department County of Hawai'i
EA Preparation	R.M. Towill Corporation
Location:	Waikoloa, South Kohala District, Hawai'i
Tax Map Key:	(3) 6-8-003: 14, 15, 16, and 40
Proposed Action:	Roadway connections and proposed improvements to Waikoloa Road and Puu Melia Street in order to construct 140,500 s.f. of retail-commercial, 44,000 s.f. of professional office, 42,000 s.f. business park, 200 room hotel, and 300 multifamily residential (rental and condominium and 150 senior units. 1,362 parking (standard, ADA and loading) for the development. Internal roadway network and 5 connections to Puu Melia and 1 connection to Waikoloa Road.
Land Area:	45.092 acres
Present Use:	Open and vacant (undeveloped)
State Land Use District:	Urban
General Plan Land Use Designation:	Medium Density Urban
Present Zoning:	CV-10 Village Commercial District
Special Management Area SMA:	Not in SMA
Permits and Approvals Required:	NPDES - Construction Stormwater Permit, Grading Permit, Building Permits, Plan Approval
Anticipated Determination:	Finding of No Significant Impact (FONSI)

SECTION 2
INTRODUCTION

2.1 Project Overview

The Metric Passco Waikoloa, LLC, is proposing the development of 45.1 acres into a low-density retail-office complex along with a 200 room hotel, multifamily workforce and senior housing component in Waikoloa, South Kohala District, Island of Hawai'i. The retail component of the project will include the development of a grocery store, retail outlets, food outlets, drug store, and convenience outlets. A portion of the project will be set-aside for professional office space. Parking to meet the requirements of the zoning ordinance will be provided. A significant portion of the project area will be set-aside for 300 workforce housing units and 150 senior units in a multifamily format. A hotel with 200 rooms is also proposed for this project.

Internal circulation will be provided via roadways that will connect Waikoloa Road and Puu Melia Street. The intersection with Waikoloa Road is proposed to be signalized.

2.2 Purpose and Need for Project

The purpose of the project is to provide additional retail-commercial floor area for this growing community. The workforce housing will provide alternatives for the working in the South Kohala region. The provision of office space will further add to the current inventory in the areas.

2.3 Purpose of the Environmental Assessment

This Draft Environmental Assessment (DEA) has been prepared by the applicant and is used to evaluate the possible environmental effects of the proposed action. Specifically, the preparation of this document is provided in accordance with Chapter 343, Hawai'i Revised Statutes. The State of Hawai'i environmental review procedures and requirements are delineated in Chapter 343, Hawai'i Revised Statutes ("HRS"), Act 241, Session Laws of Hawai'i ("SLH") 1992, and Chapter 200 of Title 11, Department of Health ("DOH") Hawai'i Administrative Rules ("HAR"), "Environmental Impact Statement Rules." This DEA has been prepared pursuant to Chapter 343-5(a)(1), HRS, as the project may involve the "use of State or County lands, which include, but is not limited to connection of planned roadways to existing (County/State) roads." These locations include: (1) the new intersection with Waikoloa Road where traffic signals will be installed and a new intersection designed; and (2) five (5) new intersections proposed

along Puu Melia Street. State or county funds will not be required to complete the roadway improvements.

The DEA describes the proposed project and evaluates the direct, indirect and cumulative impacts. The document considers the alternatives to the proposed project and describes measures proposed to minimize potential impacts. The public has thirty (30) days from the publication of a notice of availability in the *Environmental Notice* to review and comment on the DEA. After the DEA has been finalized and public comments have been all responded to, the proposing agency, in this case, the Planning Department, County of Hawai'i reviews the final assessment and determines if any "significant" environmental impacts are anticipated. If the agency determines that the project will not have a significant environmental impact, it issues a Finding of No Significant Impact (FONSI), and allows the project to proceed without further study. The public has thirty (30) days to challenge the findings in circuit court. If the agency determines that the project may have a significant impact, a more detailed environmental impact statement (EIS) be prepared. An EIS preparation notice initiates a sixty (60) day period during which an aggrieved party may challenge the determination in court.

2.4 Project Location

The proposed project is located along Waikoloa Road and Puu Melia Street in Waikoloa, South Kohala District, Island of Hawai'i. See Figure 1, Location Map. The project is further identified as Tax Map Keys: (3) 6-8-003: 14, 15, 16, and 40, see Figure 2.

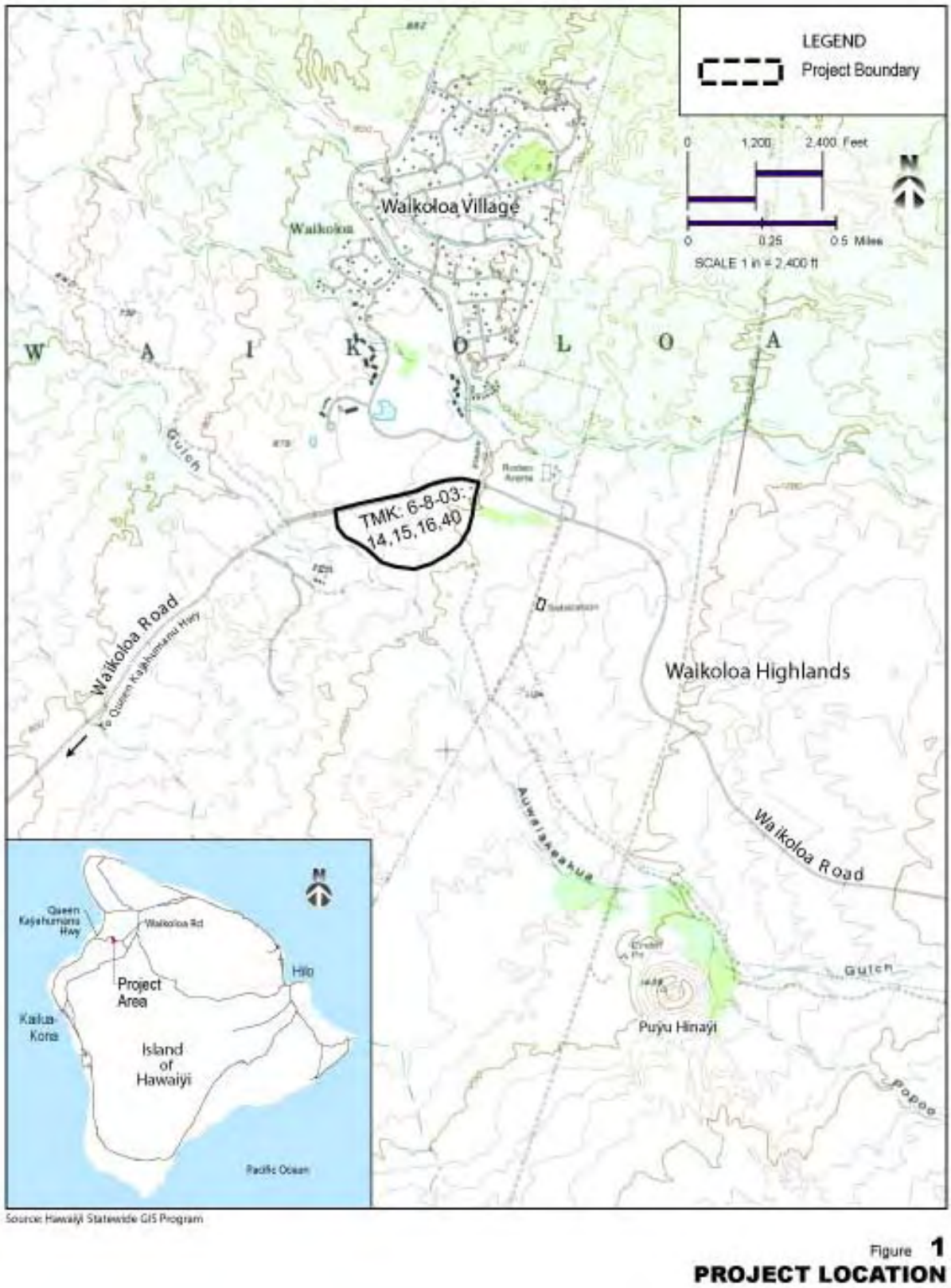
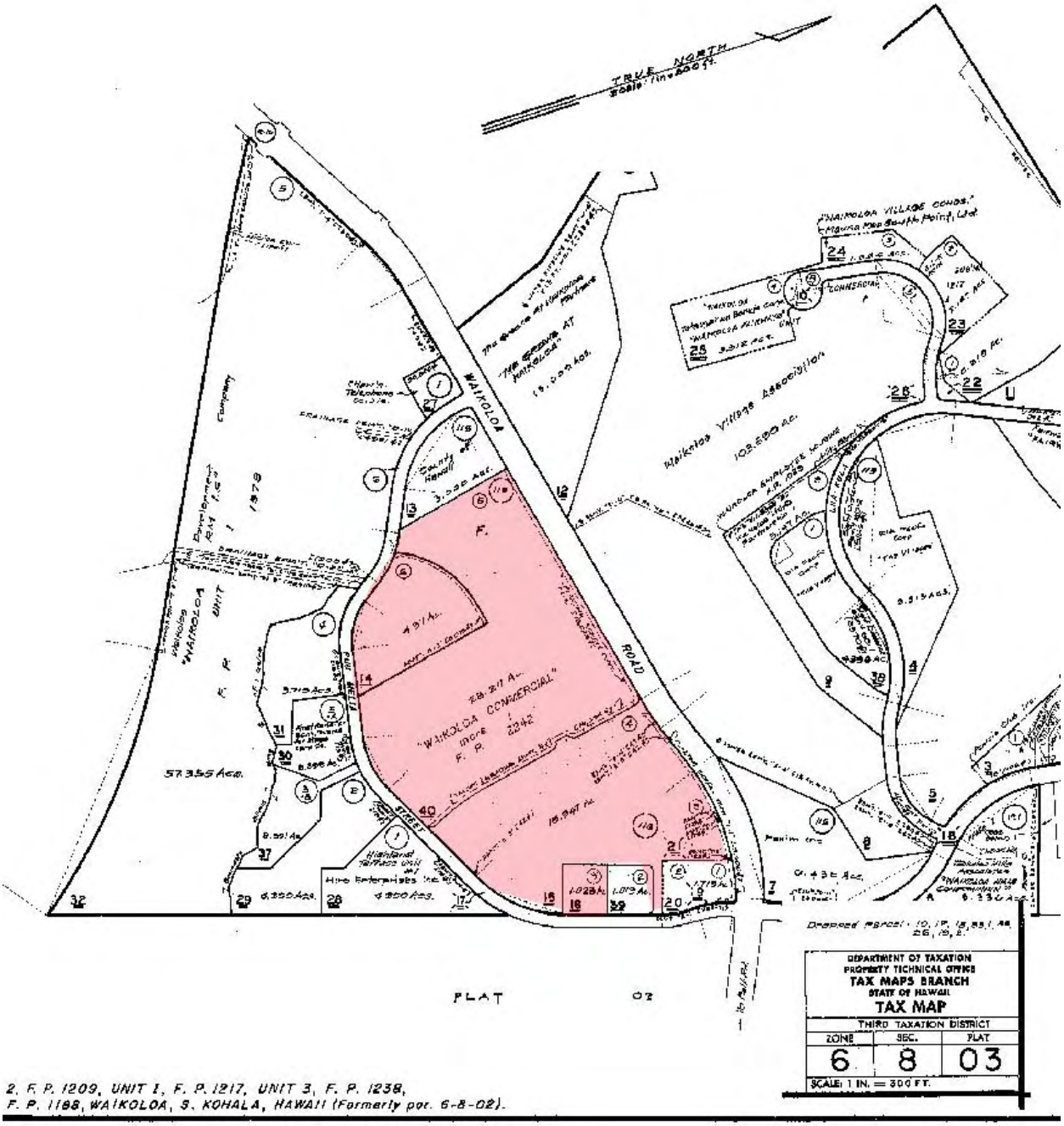


Figure 1. Location Map

Figure 2. Tax Map Key



SECTION 3
PROJECT ALTERNATIVES

3.1 Existing Condition

The Kohala Place project site is located south of Waikoloa Village, in the ahupua'a of Waikoloa, District of South Kohala, on the west coast of the Island of Hawai'i. The project site is located between Mamalahoa Highway and Queen Ka'ahumanu Highway, approximately 36 miles north of Kailua-Kona, 22 miles from the Kona International Airport, and 18 miles south of Kawaihae. (See Figure 1, Project Location).

The site is bordered by Waikoloa Road on the north, by Puu Melia Street to the south and west. The Waikoloa Fire Station is located to the west of the project site at the intersection of Waikoloa Road and Puu Melia Street. An existing post office, retail-office complex is located on the east-side of the project at the other intersection of Waikoloa Road and Puu Melia Street.

3.2 Development Program

Metric Passco Waikoloa, LLC is proposing the development of 45.1 acres into a low-density retail-office complex along with a multifamily component in Waikoloa, South Kohala District, Island of Hawai'i. The retail component of the project will include the development of 140,500 s.f. of space for a grocery store, retail outlets, food outlets, drug store, gas station and convenience outlets. A portion of the project (44,000 s.f.) will be set-aside for professional office space, and another 42,000 s.f. for a business park. Parking to meet the requirements of the zoning ordinance will be provided. A significant portion of the project area will be set-aside for 300 workforce and 150 senior housing units in a multifamily format. A hotel with 200 rooms is also proposed for this project. See Figure 3, Proposed Site Plan. Parking to be provided is summarized below.

Parking Summary				
Land Use	Unit	No. Spaces + ADA	Loading	Total
Retail	140,500 s.f.	508	11	519
Office	44,000 s.f.	132	2	134
Business Park	42,000 s.f.	141	6	147
Hotel	200 rooms	91	3	94
Multifamily	300 units	382	3	385
Senior Housing	150 units	82	1	83
TOTAL		1,336	26	1,362

Internal circulation will be provided via a roadways that will connect Waikoloa Road and Puu Melia Street. The intersection with Waikoloa Road is proposed to be signalized.

3.3 Project Alternatives

The focus of this alternative review is the proposed roadway connections to Waikoloa Road and Puu Melia Street.

3.3.1 No Action

The no action alternative is undesirable because "no action" will mean that the objectives of the project: to develop a residential, hotel, retail, office, and commercial complex and connect to existing roadways, cannot be met. Because of these reasons, this alternative was rejected.

3.3.2 Alternative Connect Points

The proposed connection points along Waikoloa Road and Puu Melia Street were selected considering 1) topography, 2) curves in the road, 3) vertical profile of the road, 4) sight distances, and 5) roadway obstructions. The connection points selected were evaluated to meet the minimum design standards for an intersection along a major collector. Because the road is divided at the connection point to Waikoloa Road, approval from the County of Hawai'i will be required. The provision of a traffic signal is also being proposed and will be determined after a "traffic warrant" study is completed. A left-turn pocket is also being proposed for the west-bound traffic. See Figure 4.

This intersection will allow direct access into the retail area without going to the Waikoloa-Pu'u Melia Street intersection. The western intersection will currently signalized and is the primary access point into Waikoloa Villages. By have this new intersection along Waikoloa Road, traffic congestion at this intersection can be minimized. The traffic study conducted for this project suggests that with this intersection the overall level of service at the Waikoloa-Paniolo-Pu'u Melia intersection will improve.

Figure 3. Site Map

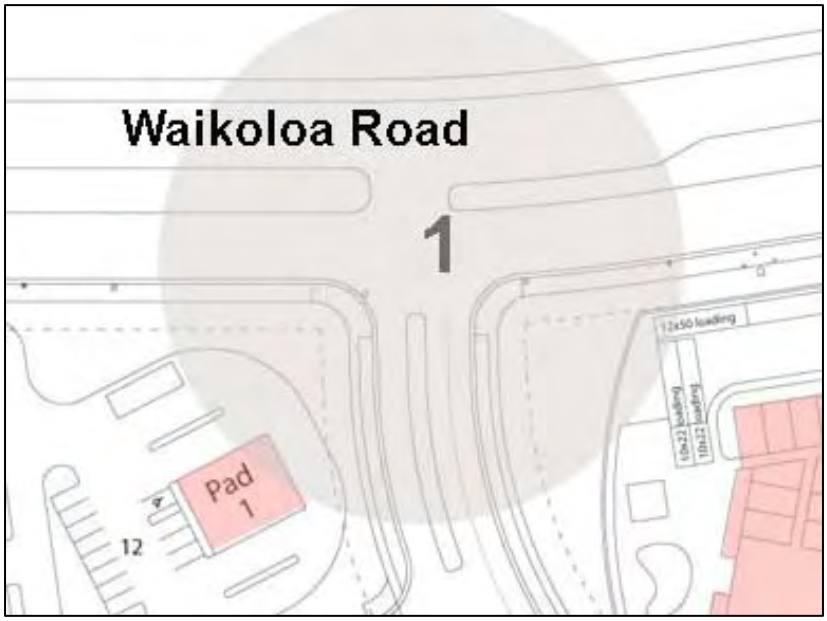


Figure 4
Waikoloa Road Intersection

Five (5) new connection points are proposed on Puu Melia Street as shown in Figure 3 and in highlighted Figures 5 through 9 below.

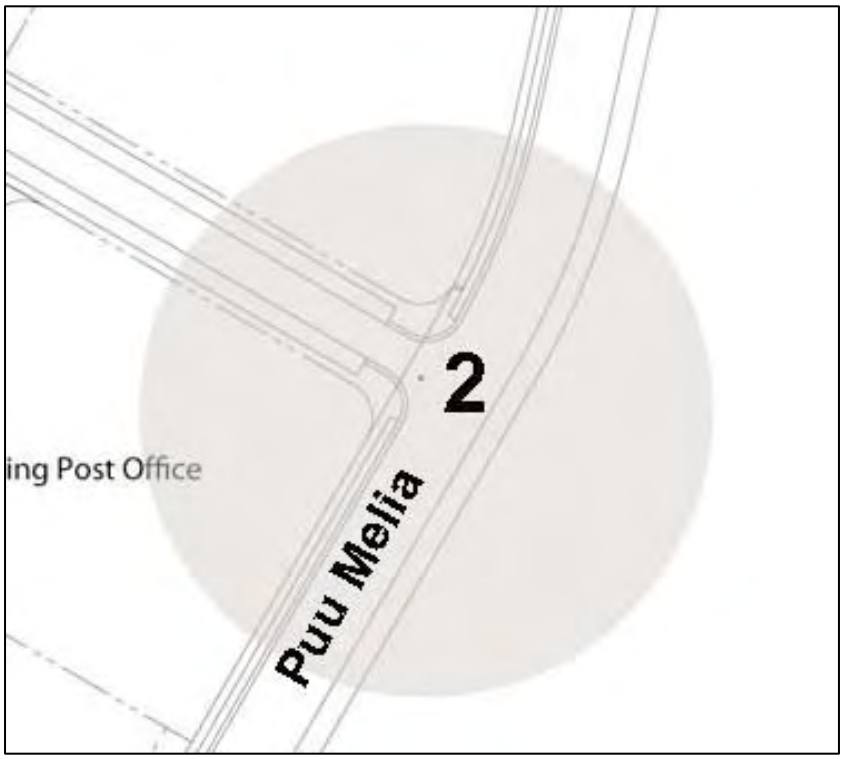


Figure 5
Puu Melia Street Intersection 2

Development of this intersection will allow direct access to the retail area.

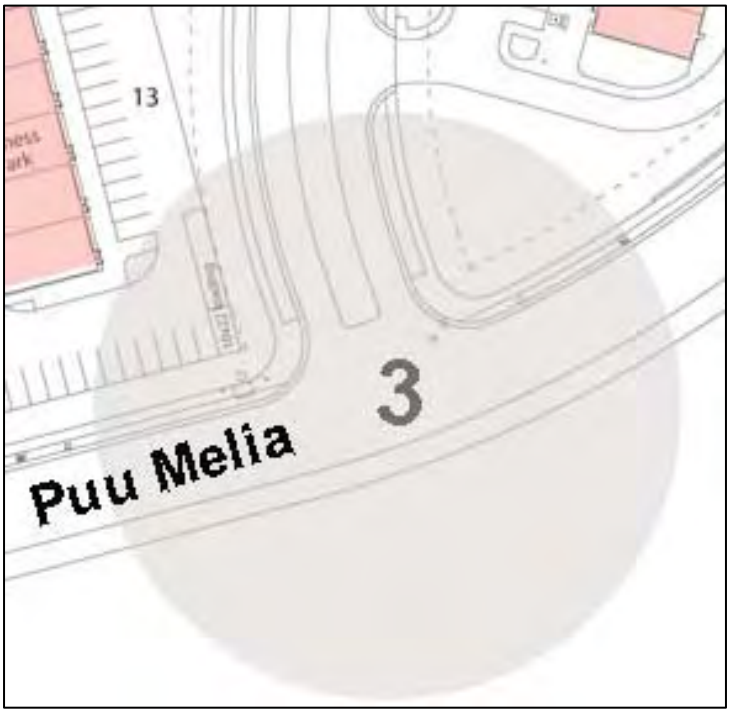


Figure 6
Puu Melia Street Intersection 3

This intersection is at the other end of intersection which connects to Waikoloa Road. This roadway and intersection will provide direct access to Waikoloa Road without having to travel to the Paniolo Avenue intersection.

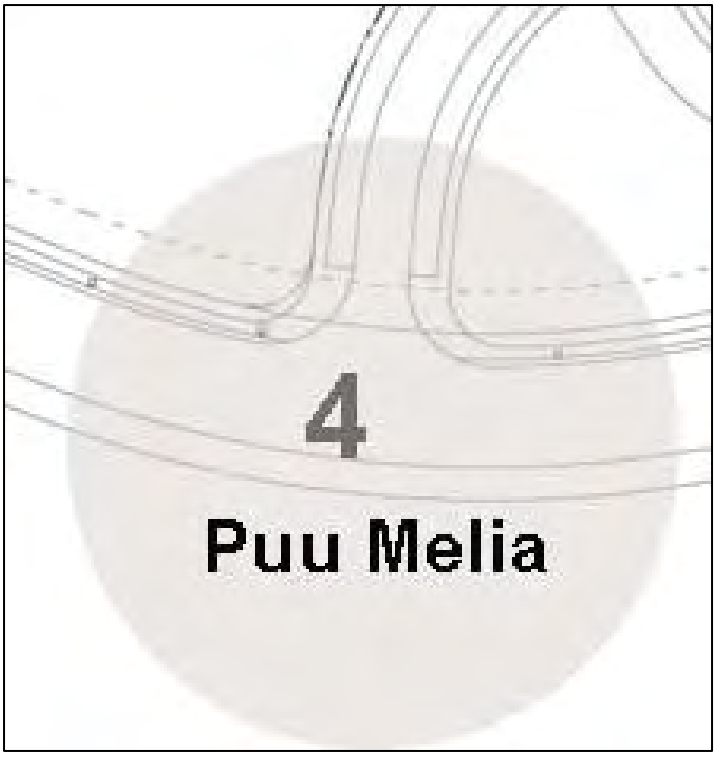


Figure 7
Puu Melia Street Intersection 4

This intersection provides an alternative access point for the office and business park without having to travel through the retail area to access Pu‘u Melia Street or Waikoloa Road.

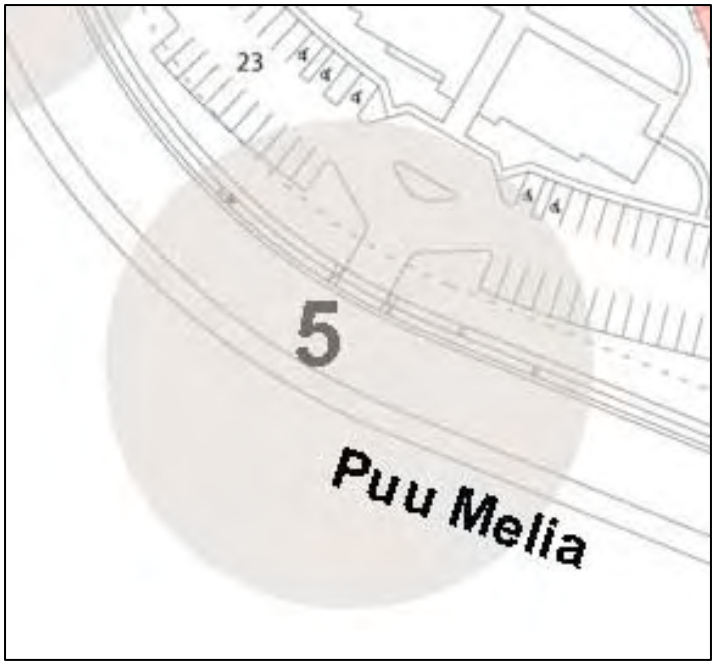


Figure 8
Puu Melia Street Intersection 5

This intersection connects the senior housing area with Pu'u Melia Street. This is the only connection to the housing area.

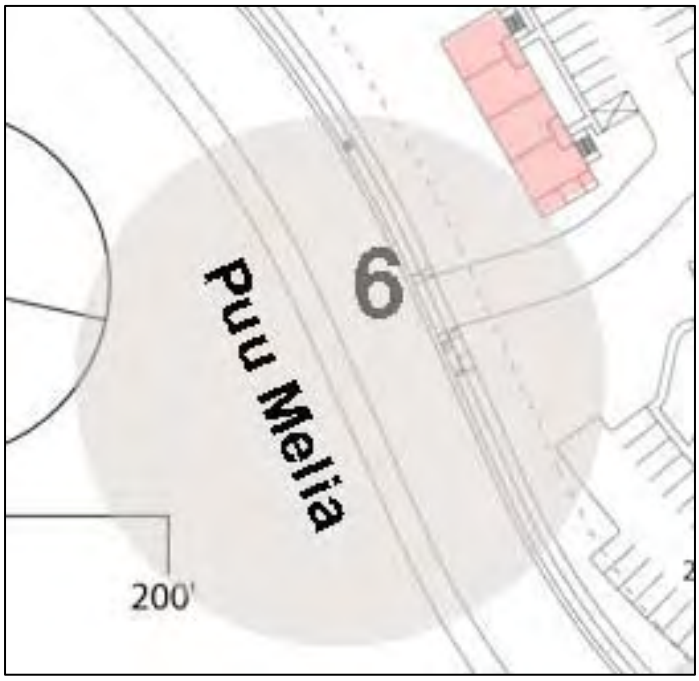


Figure 9
Puu Melia Street Intersection 6

This intersection connects the multifamily housing area with Pu'u Melia Street. This is the only connection to the housing area.

3.4 No Connection to Waikoloa Road

If access along Waikoloa Road is not allowed the traffic entering the project area will be confined to the western connection to Pu'u Melia at the fire station or the eastern connection at Paniolo Avenue-Waikoloa Road-Pu'u Melia intersection. This alternative was rejected because of the additional traffic burden that would be placed on the existing intersections. The Paniolo-Waikoloa Road intersection would need to handle additional traffic from the project. The traffic study prepared for this project indicates that the level of service at this intersection would actually improve with this new roadway connection. Not building this intersection, however, would mean that construction impacts, such a additional congestion during construction, would be avoided, along with noise and dust. Financial and personnel resources would also be avoided.

3.5 Fewer Connections to Pu'u Melia

Providing fewer or more connections to Pu'u Melia was considered but rejected because eliminating the access points to the housing area would mean that traffic going to the housing area would need to travel thought the retail-office areas and vice versa, where the retail-office traffic would need to travel through the housing area to access businesses in the area. Increased traffic through the housing area would also put the residents at conflict with through traffic.

3.6 Preferred Alternative

The preferred land use and roadway connection points are shown in Figure 3.

3.7 Project Costs

The infrastructure improvements are estimated to cost between $17 to $20 million dollars.

3.8 Schedule

Project implementation is scheduled for Spring 2009. The implementation will commence upon receipt of required approvals.

SECTION 4
EXISTING CONDITIONS

4.1 EXISTING TRANSPORTATION NETWORK

The existing transportation network serving the Waikoloa area is shown in Figure 10. The major arterials serving the area are the Queen Ka'ahumanu Highway located to the west of the project area and Mamalahoa Highway to the east of the project area.

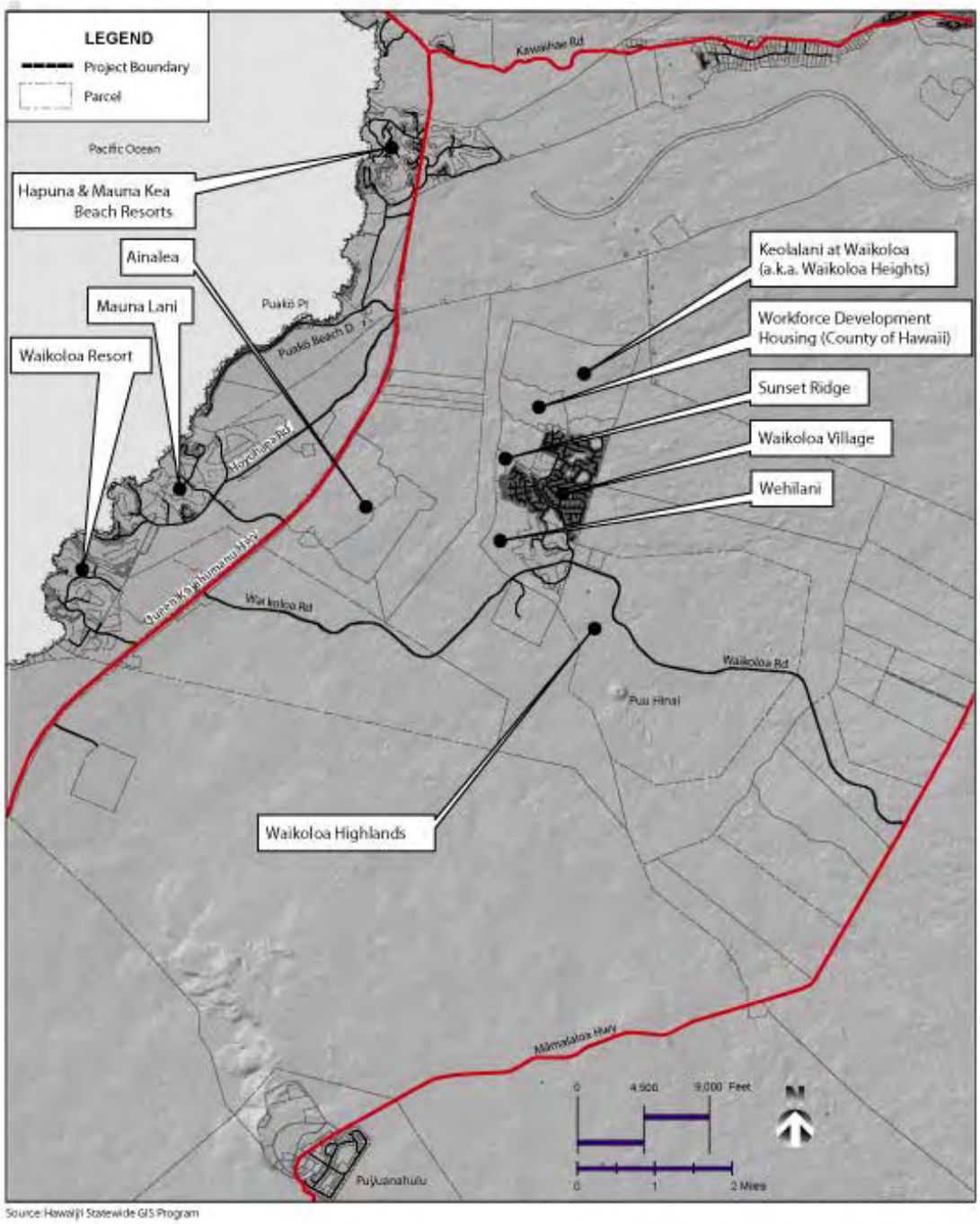
Waikoloa Road is a major collector serving the project area. Puu Melia Street is a minor collector that surrounds the project site. In December 2007, a Traffic Impact Analysis Report was prepared to assess the impacts of the proposed action on Waikoloa Road and Puu Melia Street considering existing conditions and with the proposed improvements. A copy of the study is appended to this document.

Existing AM traffic is shown in Figure 11. Existing PM traffic is shown in Figure 12.

Future traffic volumes on Waikoloa Road is shown in Figure 9, AM Traffic and Figure 13, PM Traffic.

Figure 14 shows the resultant levels of service (LOS) during the peak traffic periods. The analysis shows that the LOS with the project improvements will improve at Waikoloa Road-Paniolo-Puu Melia intersection. The analysis does show that with the increased development in Waikoloa the LOS at Queen Ka'ahumanu and Waikoloa Road will be decreasing.

FIGURE 10. Surrounding Land Use



Source: Hawai'i Statewide GIS Program

SURROUNDING LAND USES
(Existing & Proposed)

Figure 11. Existing AM Peak Traffic

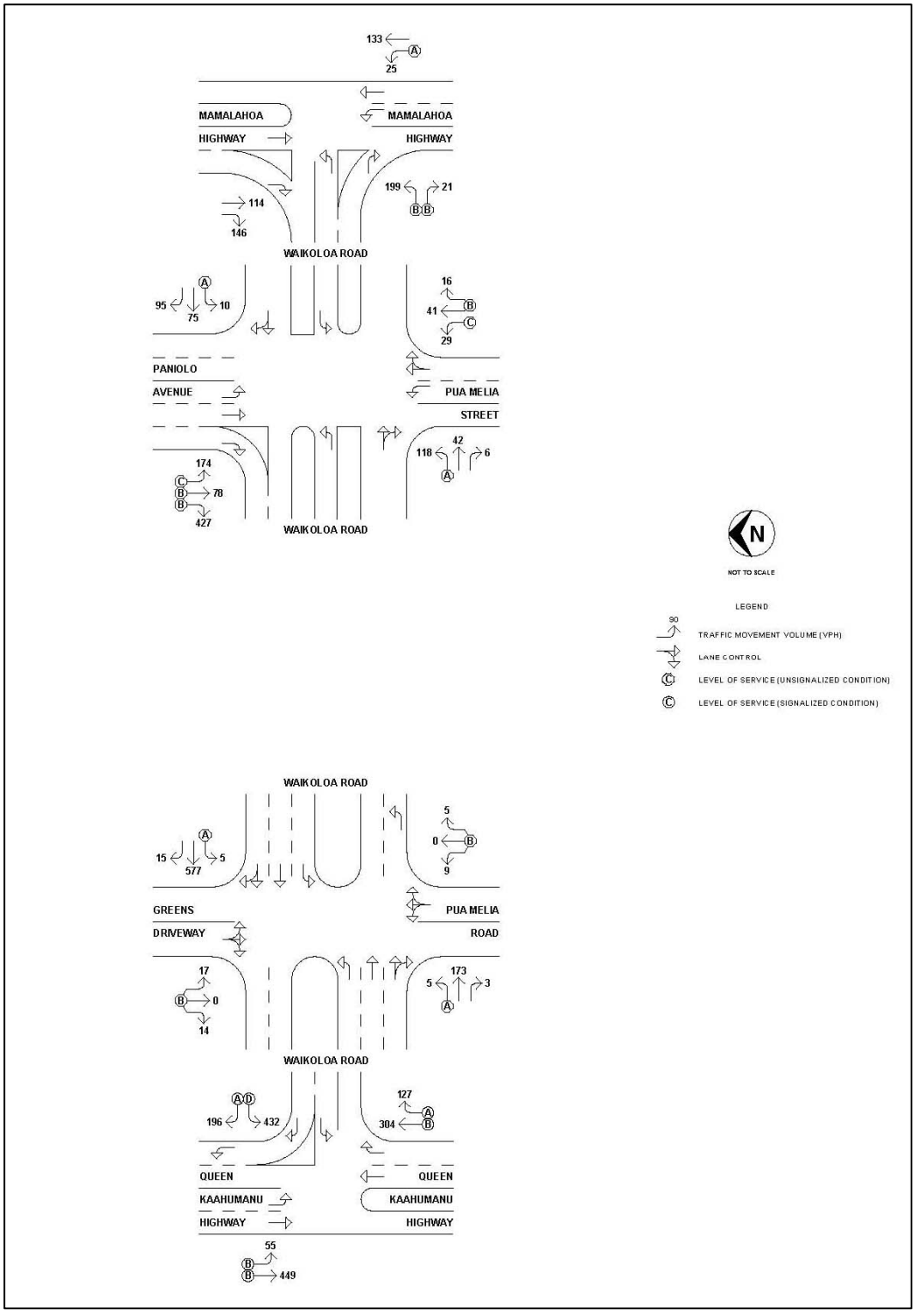


Figure 12. Existing PM Peak Traffic Volumes

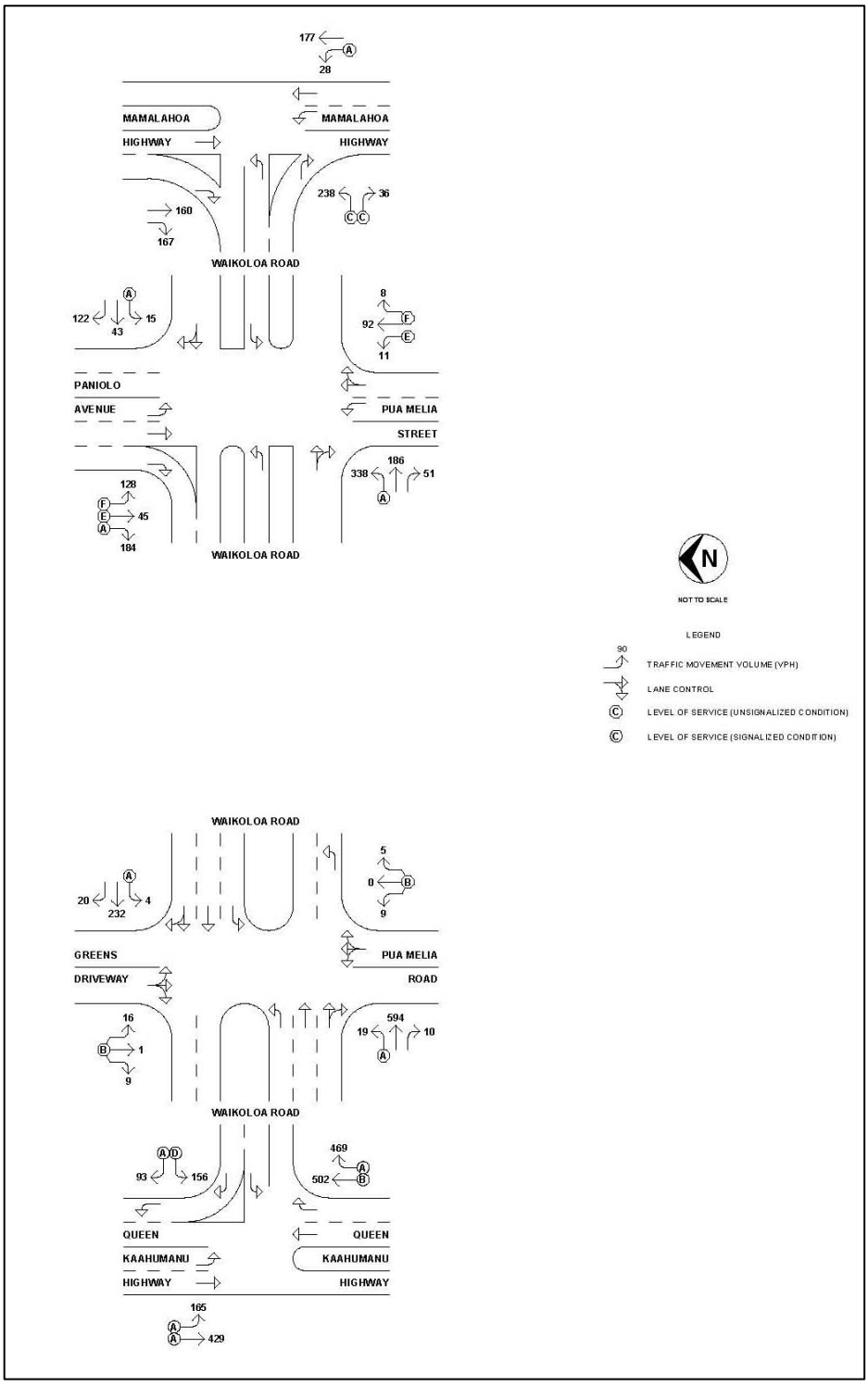


Figure 13. Future AM Peak Traffic Volumes

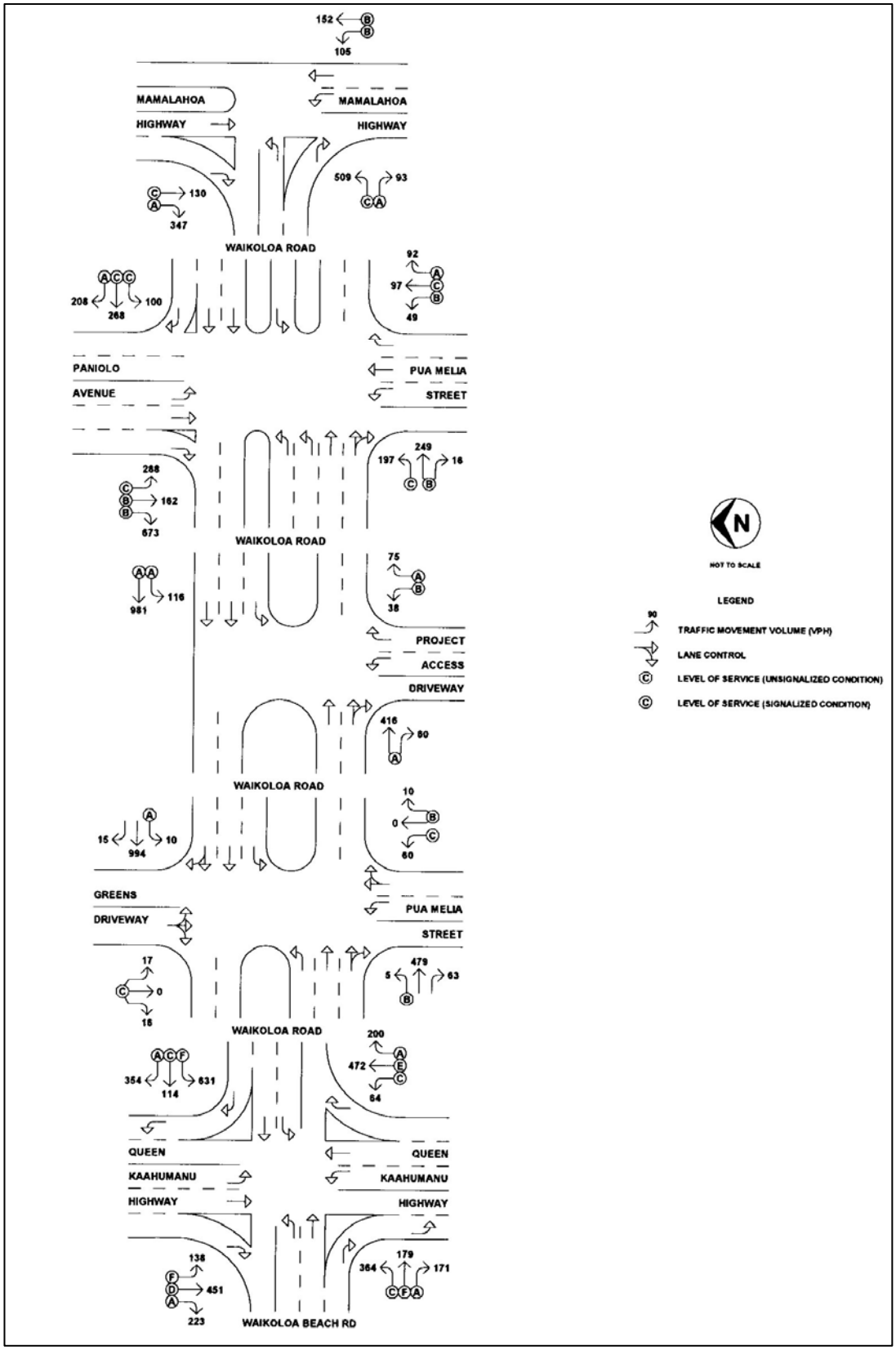


Figure 14. Future PM Peak Traffic Volumes

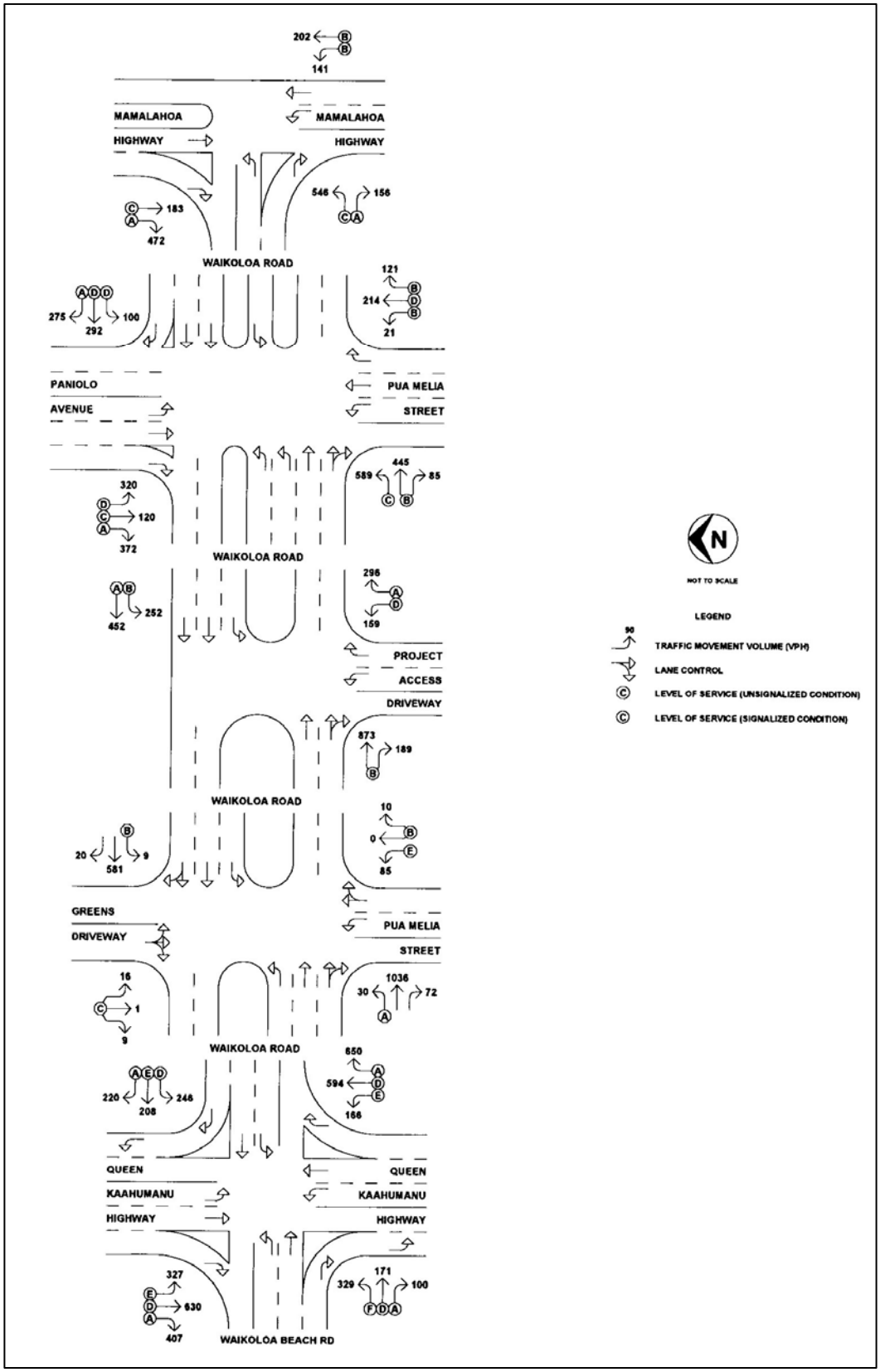


Figure 15. Traffic Impact Analysis Summary

Waikoloa Road Intersection	MOE	Existing Condition		Without Project		With Project With Mitigation	
		AM	PM	AM	PM	AM	PM
Paniolo Avenue/ Pua Melia Street	LOS	B	F	A	E	B	C
	v/c	0.49	3.03	0.55	1.20	0.76	0.86
Project Access Driveway	LOS	N/A	N/A	N/A	N/A	A	B
	v/c	N/A	N/A	N/A	N/A	0.60	0.64
Pua Melia Street/ Greens Driveway	LOS	A	A	A	A	A	A
	v/c	0.27	0.23	0.44	0.37	0.46	0.45
Queen Kaahumanu Highway	LOS	B	B	C	C	D	D
	v/c	0.85	0.69	0.97	0.98	1.07	1.03
Mamalahoa Highway	LOS	A	A	C	D	B	B
	v/c	0.38	0.57	0.88	1.02	0.76	0.84

4.2 LAND USE

Land uses in the vicinity of the project site are shown in Figure 10. The proposed land use is consistent with current zoning which is Village Commercial, minimum 10,000 square feet lots. Figure 22 illustrates to zoning surrounding the project area which includes multifamily residential, agriculture, single family residential and open space. The proposed uses are compatible and will compliment uses in Waikoloa Village which includes a mixture of single family residential with retail spaces. The project site is bounded by two important uses – to the west is located a fire station and to the east the post office. The remainder of the land in this area is currently vacant. Because the land uses are in conformance with existing zoning, no impacts to existing land uses are anticipated.

4.3 CLIMATE

Nearly the entire ahupua'a of Waikoloa is located within the rain shadow of Mauna Kea making this region one of the drier areas in West Hawai'i. The area has generally low annual rainfall, ranging between 10 and 15 inches with the majority of rain falling

during the winter months. Daily highs generally range from 77 to 85 degrees and daily lows from 65 to 70 degrees Fahrenheit.

Project Impacts and Mitigation

No impacts are anticipated and no mitigation is proposed.

4.4 Air Quality

National Ambient Air Quality Standards (NAAQS) have been established for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), particulate matter smaller than 10 microns (PM_{10}), particulate matter smaller than 2.5 microns ($PM_{2.5}$), sulfur oxides (SO_x), and lead (Pb). Air pollutant levels are monitored by the State Department of Health (DOH) at a network of sampling stations statewide. The State monitors PM_{10}, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO) and ozone (O_3).

Based on ambient air monitoring data, the U.S. Environmental Protection Agency has classified the Island of Hawai'i and the entire state as being in attainment of the federal standards. The DOH Clean Air Branch indicates that both national and State standards have been met in the region.

The closest DOH air quality monitoring station is in Captain Cook, south of Kailua-Kona. This station measures sulfur dioxide (SO_2) only. Volcanic eruptions are the most significant factor affecting air quality on the island. In addition to particulates, volcanic emissions contain substantial amounts of mercury and sulfur dioxide. In addition, volcanic haze and gas can accumulate on the leeward side of Mauna Kea when winds are light and variable.

Project Impacts and Mitigation

During construction of the roads and infrastructure, air pollutant emissions will be generated both on-site and off-site by vehicular movement, grading, concrete and asphalt batching, and general dust-generating construction activities.

The principal source of short-term air quality impact will be construction-related activity. Construction vehicle activity can at times increase automotive pollutant concentrations along adjoining streets as well as on the project site itself. Site preparation and earth moving will create particulate matter ("PM") emissions. Construction vehicle movement on unpaved areas will also generate PM emissions.

Given the area's arid climate, there will be an increased potential for fugitive dust. During construction, dust control measures such as frequent watering of

unpaved roadways and areas of exposed soil will be employed. The soonest possible paving of roadways and landscaping of bare areas will also reduce dust emission. Transported or stored soils will be covered.

4.5 GEOLOGY AND TOPOGRAPHY

The site is currently vacant and undeveloped. The site terrain is characterized by rolling, grass-covered hills cut by several dry stream beds with rock outcrops. The project site slopes upland from north to south, with slopes ranging from 5 to 10 percent. Elevations range from 850 feet above mean sea level near the northwestern boundary to 1,000 feet near the southeast boundary.

The most prominent geographic feature located to the northeast of project area and one of the most visible landmarks within the ahupua'a is Pu'u Hina'i, a cinder cone located near the center of Waikoloa. The pu'u is located outside and northeast of the project area.

Project Impacts and Mitigation

The project will not adversely impact site topography. Grading will be required to construct the project roadways and infrastructure. All earthwork and grading will conform to Chapter 10, Erosion and Sediment Control of the Hawai'i County Code and Best Management Practices (BMP) will be implemented to mitigate potential runoff from the project site.

4.6 WATER RESOURCES AND HYDROLOGY

A Waikoloa Water Master Plan was completed by Tom Nance Water Resource Engineering in 1991. The document includes a source development plan and distribution plans for the projected build out of the Waikoloa Village and resort areas. The following information on groundwater resources is from the source development plan in the Waikoloa Water Master Plan.

The Kohala Place property is located at the boundary of the Waimea and Anaehoomalu aquifers in South Kohala. The State of Hawai'i, in its 1990 Water Resources Protection Plan, delineated the aquifer boundaries and proposed maximum groundwater use rates, or sustainable yields, throughout the State. The State-identified sustainable yield for the Waimea aquifer is 24 million gallons per day (mgd). At the time the Waikoloa Water Master Plan was completed, there were ten potable water wells and five brackish

irrigation wells in the aquifer, which were drawing a total of 7.0 mgd. This represented 29 percent of the regulatory sustainable yield.

Water service in the Waikoloa area is under the jurisdiction of West Hawai'i Utility (WHU), a private utility company serving the existing Waikoloa Village, areas surrounding the Village, and the Waikoloa Resort area. Therefore, water service will be provided by the WHU.

Project Impacts and Mitigation

Additional demands will be placed on the area's water resources. The Waikoloa Water Master Plan has included the proposed development, and WHU will provide drinking water to the project. WHU has provided the developer with his "will serve" commitment.

4.7 SOILS

The land in the Waikoloa area is composed of a mix of a'a and pahoehoe lava flows, the bulk of which were disgorged from Mauna Kea between 65,000 and 250,000 years ago during the Pleistocene Age. This, in turn, is overlain on the southern portion below Auwaiakeakua Gulch with newer flows deposited between 14,000 and 65,000 years ago.

At least ten major lava flows emanating from Mauna Kea have subdivided Waikoloa into areas of rough and broken pahoehoe, areas of a 'a flow, and areas within which recent flows have been covered with eroded sediments.

According to the Department of Agriculture, Soil Conservation Service (now Natural Resource Conservation Service), the primary soils type within the project area is Kawaihae extremely stony, very fine sandy loam, 6 to 12 percent slopes (KNC). There is an area of Kamakoa very fine sandy loam, 0 to 10 percent slopes (KGC), at the southern portion of the property adjacent to Pu'u Hina'i, which is outside the project area. The pu'u is considered Cinder land (rCL) and gulch areas are classified as Very stony land (rVS).

The major soil types are described below and are shown in Figure 16, Soils Map.

Kawaihae extremely stony very fine sandy loam, 6 to 12 percent slopes (KNC). The Kawaihae soil series consists of somewhat excessively drained extremely stony soils that formed in volcanic ash. These soils have a very thin surface layer of fine sandy loam over silt loam and loam. KNC is found on the leeward coastal plains of Mauna Kea, at elevations ranging from near sea level to 1,500 feet.

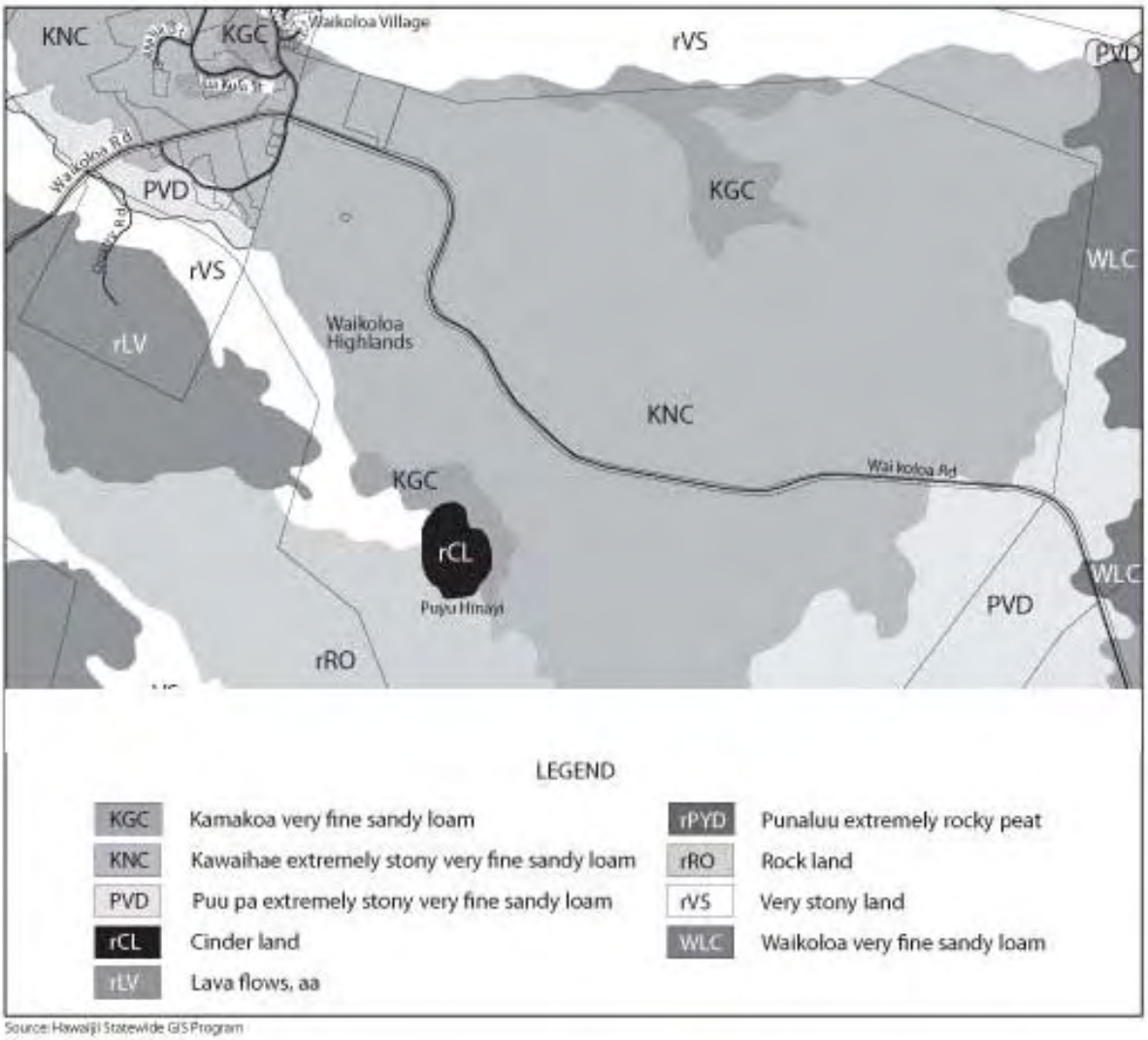


Figure 16. Soils Map

Permeability is moderate, runoff is medium, and the erosion hazard is moderate. This soil is used mostly for pasture, wildlife habitat, and recreation areas.

Kamakoa very fine sandy loam, 0 to 10 percent slopes (KGC). The Kamakoa series consists of somewhat excessively drained very fine sandy loams that formed in recent alluvium. These soils are nearly level to gently sloping. They are on the flood plains of Mauna Kea at an elevation ranging from 1,000 to 4,000 feet. KGC soils occur as long, narrow areas along shallow, intermittent streams. The slope is dominantly 3 percent. Permeability is rapid, runoff is slow, and the erosion hazard is slight. This soil is high in fertility and is well supplied with bases. It is used for pasture.

Very stony land (rVS) is a miscellaneous land type consisting of very shallow soil material and a high proportion of A'a lava outcrops. The dominant slope is between 10 and 15 percent. Between the lava outcrops and in the cracks of the lava, the soil material extends to a depth of 5 to 20 inches. The vegetation ranges from a sparse cover in dry areas to dense stands of ōhi'a and tree fern in areas of high rainfall. The erosion hazard is slight. This land is used for pasture and watershed and for wildlife habitat.

Cinder land (rCl). This is a miscellaneous land type consisting of bedded cinders, pumice, and ash. The particles have jagged edges and a glassy appearance and show little or no evidence of soil development. Cinder land commonly supports some grass, but it is not good pastureland because of its loose consistency and poor trafficability. This land is a source of material for surfacing roads. Pu'u Hina'i, located outside the project area, is classified as Cinder land.

U.H. Land Study Bureau Detailed Land Classification

The University of Hawai'i Land Study Bureau (LSB) Detailed Land Classification classifies soils by land type in which classifications are provided for an overall crop productivity rating, with and without irrigation, and for selected crop productivity ratings for seven crops. The LSB overall ratings range from A to E, with A being the best. LSB has classified the area as "E" lands, meaning it is only marginally suitable for agricultural use. The surrounding land uses are primarily low-scale residential and commercial areas, and not in active agricultural production.

Agricultural Lands of Importance to the State of Hawai'i (ALISH)

The Agricultural Lands of Importance to the State of Hawai'i (ALISH) land classification system was developed by the State Department of Agriculture (1977). The ALISH system identifies three broad classes of lands, including "Prime Agricultural Land," "Unique Agricultural Land," and "Other Important Agricultural Land." The majority of the project area is unclassified, or not rated according to the ALISH land categories.

Project Impacts and Mitigation

No impacts are anticipated and no mitigation is proposed.

4.8 NATURAL HAZARDS

Existing Conditions

Natural hazards that could occur in the project area include volcanic eruptions, earthquakes, hurricanes and floods.

The U.S. Geological Survey ("USGS") has prepared volcanic hazard maps that divide the island into zones that are ranked from 1 through 9 based on the probability of coverage by lava flows. Zone 1 is the area of greatest hazard, and Zone 9 the area of least hazard. The project site is located in Lava Hazard Zone 3. The volcanic hazard map does not account for other direct hazards from eruptions, such as tephra fallout and ground cracking and settling, but these hazards also tend to be greatest in the areas of highest hazard from lava flows.

According to the USGS, defining hazard zones for the effects of earthquakes is more difficult than for eruptions and has not been attempted for the Island of Hawai'i. The island experiences thousands of earthquakes each year; most so small that they are only detectable by instruments. Most of Hawai'i's earthquakes are directly related to volcanic activity and are caused by magma moving beneath the earth's surface. These earthquakes tend to be concentrated beneath Kilauea and Mauna Loa, the island's active volcanoes, particularly their south flanks and in the region between them. In order to facilitate evacuation from the Waikoloa Village area, the County of Hawai'i developed in 2006 a secondary evacuation route to the northwest of Waikoloa Village.

The Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") currently designates the site Zone X, which are areas outside of the 500-year flood plain (Panel 1551661NDOA, April 2004).

Project Impacts and Mitigation

The project will have no effect on the occurrence of natural hazards or the level of public risk. No mitigation is required.

4.9 FLORA AND FAUNA

The flora of the project area is comprised mostly of lichens on exposed rock surfaces and flowering plants. Alien plant species predominate over most of the area. The project site is nearly completely covered with grassland, primarily kuwelu grass (*Eragrostis variabilis*), buffelgrass (*Cenchrus ciliaris*), and fountain grass (*Pennisetum setaceum*). The latter two are non-native species that are extremely abundant on

undeveloped lowlands of West Hawai'i. The terrain becomes increasingly stony to the south of Auwaiakeakua Gulch. In the riparian zone along Auwaiakeakua Stream beside Pu'u Hina'i, kiawe trees form an open forest with grassland understory. In the deeper soils along the gulch bottom, several different grasses predominate in large patches, with buffelgrass and yellow foxtail (*Setaria gracilis*) most conspicuous.

Shrub species common to abundant on the property include fuzzy rattlepod (*Crotalaria incana*), indigo (*Indigofera suffruticosa*), and koa haole (*Leucaena leucocephala*). A small cluster of approximately three dozen native 'akia (*Wikstroemia pulcherrima*) occurs east of the quarry entrance road not far from Waikoloa Road. 'Uhaloa (*Waltheria indica*) is ubiquitous over the area, and tree tobacco (*Nicotiana glauca*) is more common over the pahoehoe flow on the south. 'Aheahea (*Chenopodium oahuense*), another native shrub, is limited in its distribution to the northwest corner near Waikoloa Village.

The kiawe is the most abundant tree species on the property, but is sparse outside of the riparian zone in the vicinity of Pu'u Hina'i. A very few and widely scattered native wiliwili (*Erythrina sandwicensis*) trees are present within the site.

These findings were consistent with a previous botanical survey of the project area conducted by Char and Associates in 1988. The botanical study found that none of the plant species noted in the general area is listed as endangered or threatened, on or proposed for endangered status. Vegetation varies from rolling grasslands with widely scattered trees to savannah scrubland. Nearly 90 percent of 46 species of vascular plants found growing in the area were exotic or non-native weeds.

Project Impacts and Mitigation

There are no plant species on the site currently listed as endangered, threatened, or proposed for listing. Once construction commences, the landscape will be changed with the clearing of existing vegetation which is predominately fountain grass. As development proceeds, landscaping will be introduced and open area planted with grass, shrubs and trees. To the extent feasible, native plants will be planted.

4.10 ARCHAEOLOGY

Three archaeological studies were conducted in the Waikoloa area and include:

- "Archaeological Survey of Portions of Waikoloa, South Kohala District, Island of Hawai'i," Bishop Museum, Robert Bevacqua, editor, 1972.

- "Archaeological Inventory Survey Waikoloa Mauka Lands," PHRI, Paul Rosendahl, principal, 1990.
- "Archaeological Inventory Survey, Kohala Place at Waikoloa Project," PHRI, Paul Rosendahl, principal, 2008. (see Appendix for report).

During the 2008 survey conducted by PHRI an archaeological site (State Site No. 26404) was identified. The site is located near the center of the project site as shown in Figure 17. "The site consists of a complex of eight small cairns, some of which may have functioned as directional markers according to PHRI. Based on federal/state significance evaluation criteria, the site was assessed as significant solely for information content (Criterion D). During the current project the site was recorded to inventory-level standards, and all of the research information at the site was collected." PHRI concluded "no further archaeological work is necessary." The State Historic Preserved Division concurred (letter March 2008).

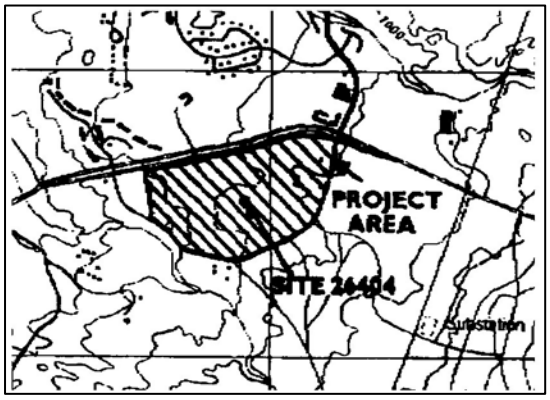


Figure 17. Location Map - Site 26404

Source: PHRI, 2008

Project Impacts and Mitigation

The archaeological site found within the project area will be destroyed during clearing and grading activities. The information relating to the site has been included in the study conducted by PHRI and is included in the document. No further action has been proposed.

4.11 NOISE CONDITIONS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and noise limits as a function of land use. The State of Hawai'i Community Noise Control Rule, enforced by the State DOH, identifies three classes of zoning districts and corresponding maximum permissible noise levels

due to *stationary* noise sources. The Community Noise Control Rule does not specifically address *moving* sources, such as vehicular traffic noise or air traffic noise.

The State of Hawai'i Department of Transportation ("HDOT") has adopted the FHWA's design goals for traffic noise exposure. A traffic noise impact occurs when predicted traffic noise levels "approach" or exceed FHWA's design goals, or when the predicted traffic noise levels "substantially exceed the existing noise levels." "Approach" means at least 1 dB less than FHWA's design goals, and "substantially exceed the existing noise levels" means an increase of at least 15 dB.

The U.S. Environmental Protection Agency has established a goal to reduce exterior environmental noise to a day-night equivalent sound level (Ldn) not exceeding 65 dBA, and a future goal of reducing noise levels to no more than 55 dBA. These goals are not intended as regulations, but rather as levels below which the general population will not be at risk from any of the identified effects of noise.

The project site is currently exposed to low levels of ambient noise. Noise sources in the area include traffic on Waikoloa Road, occasional aircraft traveling to and from the Kona International Airport, and noise from nearby cinder quarry operations at Pu'u Hina'i, birds and wind.

Project Impacts and Mitigation

During construction, the dominant noise sources will probably be earth moving equipment such as bulldozers, pavers, and diesel powered trucks. Although these activities will generate noise, there are no noise sensitive developments adjacent to the construction area that would be impacted. The Waikoloa Village residential and commercial areas are located upwind of the project site, and would not be adversely affected by construction noise.

All project activities will comply with the DOH Administrative Rules Chapter 11-46, "Community Noise Control." Where construction noise exceeds or is expected to exceed the State's "maximum permissible" property line noise levels, a permit must be obtained from the DOH to allow the operation of vehicles, construction equipment, power tools, etc. which emit noise levels in excess of the "maximum permissible" levels.

In order to obtain a construction noise permit, the contractor must submit a noise permit application to the DOH describing construction activities for the project. The State may, in turn, require the contractor to incorporate noise mitigation into the construction plan, conduct noise monitoring, or hold community meetings. The construction contractor will use reasonable and standard practices to

mitigate noise, such as muffled equipment. In addition, the DOH, at its discretion, may require additional mitigation such as temporary noise barriers or time of day usage limits for certain kinds of construction activities.

The project will not have a significant noise impact on the surrounding community. Although noise levels along Waikoloa Road and at the intersection with Puu Melia Street and Paniolo Avenue will increase due to project-generated traffic, traffic noise levels are expected to be less than the federal 67 dBA limit. The incremental increase in traffic noise over existing conditions is not expected to be significant. Overall, no significant noise impact on the surrounding community due to project generated traffic noise is anticipated. No mitigation for vehicular traffic noise is proposed.

4.12 SOCIO-ECONOMIC ENVIRONMENT AND DEMOGRAPHICS

4.12.1 Adjacent and Surrounding Land Uses

The project site is located south from the existing Waikoloa Village, a primary residential community in South Kohala situated upland approximately seven miles inland from Queen Ka'ahumanu Highway and eight miles from the coastline. Figure 10, Surrounding Land Uses, shows existing and proposed land uses in the vicinity of the project site. All of the project area is in the State's Urban zone. Figure 21 illustrates the General Plan Land Use Pattern Allocation Guide (LUPAG) map for the project area. The project area is designated for medium density urban developed. Figure 22 shows the zoning for the project area – Village Commercial – 10.

The residential and resort community of Waikoloa Village was first conceived and developed by Boise Cascade, at that time the major landowner in the area. Residential development commenced with the 1972 opening of the Waikoloa Village Golf Course. The community has developed incrementally over the past 30 plus years, and encompasses approximately 2,795 acres.

In addition to the Robert Trent Jones 18-hole golf course with clubhouse and swimming pool, Waikoloa Village includes tennis courts, riding stables, community park, and shopping center. Of the 2,400 total existing residential units in Waikoloa, approximately 1,360 (57%) are single-family or detached homes, and 1,040 (43%) are condominiums (some of which are detached).

Existing zoning is in place for thousands of home site and multi-family units, commercial center, schools, parks and recreational amenities. About one-third of the

residential development identified in the Waikoloa Master Plan has been constructed to date.

4.12.2 Area Demographics

The Island of Hawai'i is the largest of the Hawaiian Islands in terms of land area, encompassing approximately 4,028 square miles. Despite its size it is only the second most populous county with a population of over 164,400 residents, 13.3% of the state population. During the last five years, Hawai'i County population has increased markedly by 12.7 percent, the largest growth rate of all the counties during this period. In addition, Hawai'i County is the only county projected to have consistent appreciable growth beyond 2003 (SMS Research, 2006).

South Kohala is one of the nine districts that make up Hawai'i County. The major areas in South Kohala include Waimea, Puako, and Waikoloa. Census figures show South Kohala with a total resident population in 2000 of 13,079 in 4,648 households.

South Kohala is the fourth most populous district accounting for approximately 9 percent of the County population. South Kohala has experienced the greatest wide-scale growth since 1980, as the population has increased by more than 140 percent over that period of time. The median age for South Kohala residents is 36.2, and Waikoloa Village residents have a median age of 34.6 years. Both are lower than the County median of 38.6 years.

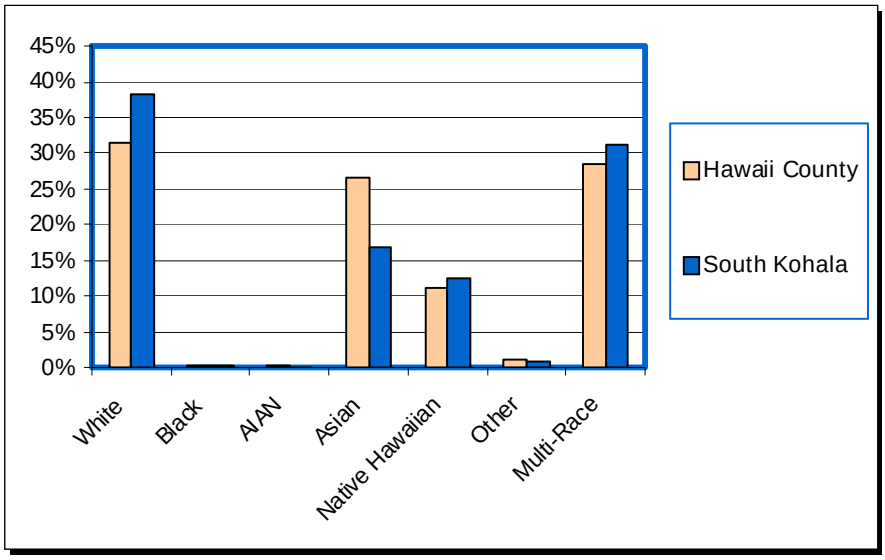
In terms of racial make-up, nearly one third of County residents and 28 percent of South Kohala residents classify themselves as mixed or multi-raced. South Kohala has a slightly higher concentration of Caucasians than the County with 38 percent compared to 32 percent respectively and fewer Asians (17 percent compared to 27 percent) (Figure 18, Racial Distribution).

Income and Employment

From an economic perspective South Kohala is one of the strongest districts in the County. Census 2000 showed that South Kohala has the highest proportion of employed adults in the County at 70.7 percent and the lowest unemployment rate of 2.3 percent.

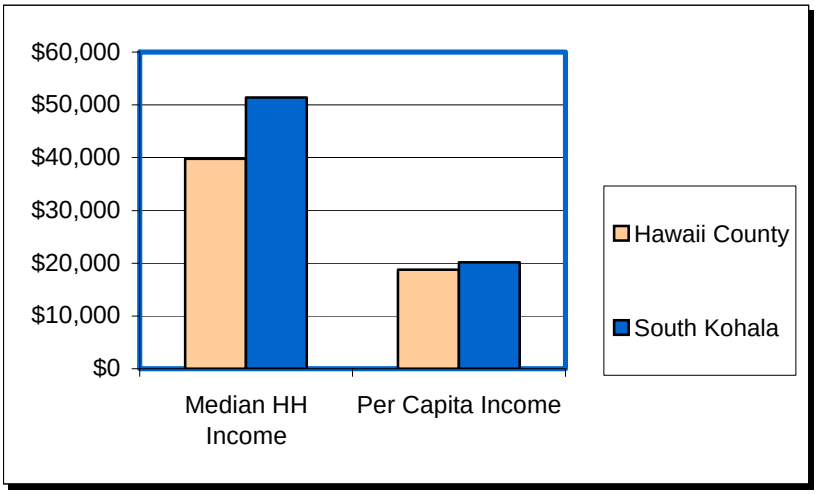
Among all the districts in Hawai'i County, South Kohala residents have the highest median income at $51,379 and the per capita income of $23,194 second only to the North Kona District (Figure 19, Household and Per Capita Income). at $50,040 more than 25 percent higher than the County median. Very few Waikoloa families, 8.6 percent, were living below the poverty level in 2000.

Figure 18
Racial Distribution, Hawai'i County and South Kohala



Source: U.S. Census Bureau, County of Hawai'i Data Book, 2004 and SMS Research, 2006

Figure 19
Household and Per Capita Income, Hawai'i County and South Kohala



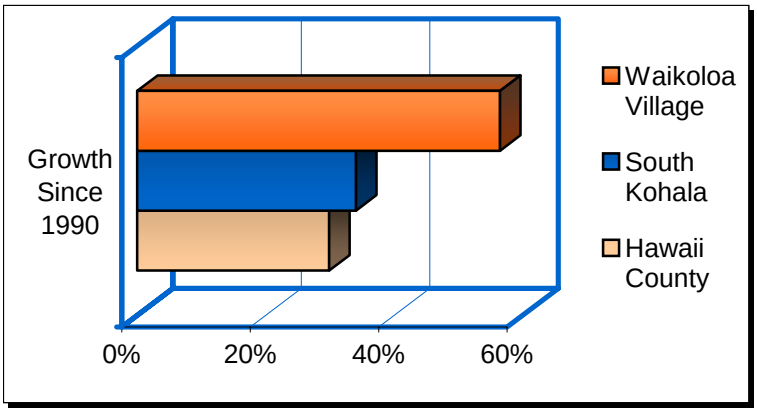
Source: U.S. Census Bureau, County of Hawai'i Data Book, 2004 and SMS Research 2006

More than 75 percent of the eligible Waikoloa workforce is currently employed. This employment rate is the highest of all Big Island neighborhoods. Similarly, Waikoloa Village boasts an extremely low unemployment rate, charted at 2.5 percent in 2000.

Housing

As of 2000 there were 5,348 residential units in South Kohala (US Census, 2000), a 34 percent increase in housing units since 1990. This growth is larger than that of the County as a whole (30 percent), and given the economic health of the region, it is expected to continue (SMS Research, 2006). (Figure 20, Number of Housing Units by Area).

Figure 20
Number of Housing Units by Area, 1990 to 2000



Source: US Census 2000, County of Hawai'i Data Book 2004

Several new developments are planned in the district that will add to the growing community. Communications with officials at the County of Hawai'i Department of Housing and Community Development and developers indicate that approximately 2,000 to 4,000 units are planned in South Kohala between present and 2010. It is impossible to estimate how many of these units will actually be built, and it is quite possible that a great deal less of these planned units will actually come online by 2010. However, it is clear that the South Kohala district will continue to experience future residential growth.

Project Impacts and Mitigation

Waikoloa was originally intended to be a town of much larger size, designed as a complete community. After a relatively slow growth period in its first 30 years, current proposals may push the Village to its original intentions.

If only half of the proposed plans were to become reality, Waikoloa would more than double in size. As a community significantly off the coastline, it is unlikely that Waikoloa would develop into a community dominated by tourism

investment. Rather it will, in all likelihood, develop into a diverse community whose members work throughout the region, from Kamuela to the Kailua-Kona, both in and out of the visitor industry. As a mid-point between the established community of Kamuela and the bustling coastline, Waikoloa will probably continue in its suburban character, perhaps with a more defined town center offering a wider array of commercial and public services.

4.13 PUBLIC FACILITIES AND SERVICES

4.13.1 Drinking Water

The Waikoloa Village and Waikoloa Beach Resort areas are currently served by a private water system originally developed by the Waikoloa Development Company. The drinking water system is owned and operated by the West Hawai'i Utility Company (WHU), which is regulated by the Public Utilities Commission. The County Department of Water Supply does not have any existing or proposed programs for water development in the area.

Project Impacts and Mitigation

WHU will provide drinking water to the Kohala Place project. The proposed project will receive water from the existing transmission main in Puu Melia Street. WHU is responsible for the development of off-site improvements and the specific locations of well(s) and reservoirs. Although the specific locations are not known by the project developer, information that is known includes the approximate elevation of the reservoirs so that sufficient pressure can be provided to meet water system requirements. The Waikoloa Water Master Plan, 1991, identifies these water storage elevations at 1,300 feet and 1,800 feet relative to mean sea level (msl).

4.13.2 Wastewater

In Hawai'i County, municipal wastewater service is limited to Hilo, Papaikou, Kapehu, Pepeekeo and Kealakehe. The remaining communities, including the Waikoloa area, are served by private wastewater treatment facilities or individual facilities such as cesspools or septic tanks. Most of the residential areas surrounding the project site are on Individual Wastewater Systems (IWS), primarily septic tanks, or are connected to the wastewater treatment system operated by WHU. The project site is located in the County's Critical Wastewater Disposal Area (CWDA) and the use of new cesspools is

not allowed. The Kohala Place project will connect to the existing wastewater treatment system in Waikoloa.

Project Impacts and Mitigation

The proposed project will connect to the existing wastewater system operated by WHU. No impacts are anticipated as the project will connect to the existing wastewater collection and treatment system.

4.13.3 Police

Police service to the Waikoloa Village area is provided by the South Kohala Police Station in Waimea. The station has a staff of 32 officers who cover an area of 688 square miles, an area larger than the Island of O'ahu. A minimum of four officers are on duty at all times, with one of the four responsible for covering the Waikoloa Village area. Two of the officers cover Waimea, and one officer covers Kawaihae and the coastal areas. The Police Department has a small substation in Waikoloa located near the golf course. The substation is a small unmanned office generally used to complete paperwork. The Waikoloa substation is not currently tied into the Department's computer system, so the Waikoloa officer goes to the Mauna Lani Resort substation to enter reports into the Police Department computer system.

Project Impacts and Mitigation

The proposed development and associated population will increase the demand for police services in the Waikoloa area. The Police Department has indicated that the project will impact the need for additional police personnel and police facilities to service the Waikoloa area. A request for additional personnel was made to the County Council by the Police Department in 2007.

4.13.4 Fire and Emergency Medical Services

The Hawai'i County Fire Department has 20 full-time fire/medic stations, and twenty volunteer stations. The island is divided into two battalion areas, East and West. Waikoloa Village, in the West Battalion area, is served by a fire station located on Waikoloa Road, near the entrance to Waikoloa Village. The Waikoloa Fire Station currently has a total of five personnel per shift, including a hazardous materials unit, engine company unit, and medic. Secondary response and back up is provided by the South Kohala Fire Station at Mauna Lani. The South Kohala station also has a medevac helicopter.

The major medical facility serving the South Kohala area is the North Hawai'i Community Hospital (NHCH), located in Waimea. This full service, acute care hospital opened in 1996, and serves the northern region of the Big Island.

Project Impacts and Mitigation

The proposed Kohala Place development and resulting increase in population and new uses will increase the need for fire protection services in the Waikoloa area. At present, there appears to be adequate fire protection service for the existing community.

4.14 RECREATIONAL FACILITIES

Kohala and North Kona region recreational facilities include golf courses, tennis courts, beaches, riding stables, historic sites, small boat harbors, and other facilities.

The Pu'ukohola Heiau National Historic Site is located just north of the Queen Ka'ahumanu Highway intersection with Highway 19, Kawaihae Road. This site, built in the late 1700's by Kamehameha I, includes several heiau and the remains of the John Young homestead.

The Hapuna Beach State Park is a popular white sand beach about three miles south of Kawaihae that includes swimming, picnicking, and camping facilities. 'Anaeho'omalu Beach fronts the Royal Waikoloan Hotel, and is popular for swimming and snorkeling. There is also an ancient Hawaiian fishpond nearby. Kauna'oa (Mauna Kea) Beach fronts the Mauna Kea Beach Hotel and has limited available public access. This beach provides areas for swimming, snorkeling and surfing. The County's Samuel M. Spencer Beach Park just south of Kawaihae is popular with locals, and provides calm waters that are excellent swimming and snorkeling.

Other State-owned recreation facilities in the region include the Kawaihae boat harbor, and Puako boat ramp. A number of public recreational facilities are located in Waimea, including the State's Thelma Parker Gym, Waimea Elementary/Intermediate School playground, and the County's Waimea District Park and Waimea Playground.

The region has a number of golf courses that are open to the public. The Waikoloa Village Golf Course, located near the project site, is a public 18-hole course designed by Robert Trent Jones. Along the cost, the Waikoloa Beach Resort has two 18-hole courses, the 18-hole Beach Course and the King's Course, a championship course with Scottish-links layout. Other golf courses along the South Kohala coast include the Mauna Kea Beach Hotel, Mauna Kea Resort-Hapuna, and the Mauna Lani Resort's North and South Courses. Waikoloa Village also has riding stables.

County recreational facilities in the region include the Samuel Spencer Beach Park just south of Kawaihae, the Waimea District Park and Waimea playground.

In Waikoloa Village, there is one County-maintained park, with a second park location undeveloped. The current park is two to three acres in size, and used primarily for baseball and soccer, with a small jungle gym for younger children. Given the County of Hawai'i standards of five acres of park per 1,000 residents, Waikoloa is currently under served in park space (SMS Research, 2006).

Project Impacts and Mitigation

The proposed Kohala Place development and resulting increase in population will increase the need for recreation services in the Waikoloa area. At present, the area is underserved but the County of Hawai'i is planning a regional recreational facility east of the project area. The project will include recreational facilities to serve the residential units, such as open play fields, playground, community meeting space, etc.

4.15 SOLID WASTE

The Hawai'i County government does not provide waste collection services in the project area. Private companies haul approximately 50 percent of the waste generated in Big Island's residential areas to County landfills. The remaining 50 percent is self-hauled, and taken to County transfer stations. The county has two landfills, one serving east Hawai'i and the other serving west Hawai'i. The Pu'uanahulu Landfill serves west Hawai'i, including Waikoloa. This landfill has more than 12,000,000 cubic yards of permitted air space, which is adequate to support the proposed Kohala Place and other proposed residential projects.

Project Impacts and Mitigation

In the West Hawai'i area, a private hauler, PFI Rubbish Service, offers curbside residential trash removal. Pick up in Waikoloa is on Mondays & Thursdays, starting at 7:00 AM. Commercial trash and construction waste disposal is provided by other contractors.

Given the current and projected capacity of the County landfill, the project is not expected to have an adverse impact on landfill. However, the project developers will encourage practices such as recycling and composting to reduce and divert materials from the waste stream.

Construction debris – aggregate and rock – will not be disposed in the County's landfill and will be used for on-site fill or removed by the construction contractor for use on another project.

4.16 FORMERLY USED DEFENSE SITE

The Waikoloa area was formerly used as a target range by the military during World War II. Because of this use, the military conducted surveys of the area, which included the subject project site. Surveys of the project site have identified and cleared all surface debris and ordnance found. In the event that debris or ordnance is found during construction, the military at Pohakuloa Training Area will be notified for appropriate treatment and disposal.

SECTION 5
CULTURAL IMPACT

5.1 Area Overview

Historic accounts of Anaehoomalu is provided by PHRI, 2008. Kirch (1979) noted that agricultural pursuits were generally not feasible along the cost of West Hawai'i and argued that either the prehistoric population also utilized upland arable lands for agricultural activities, or the population was in the unique position of being totally dependent on marine resources. PHRI (1972) characterized prehistoric patterns of land use, settlement and resource exploitation as follows:

a. use of temporary shelters by people, traveling between the coastal and upland habitation and agricultural exploitation zones

b. temporary and extended residential occupation by people engaged in marine and other exploitation activities, particularly in the area situated close to the ocean;

c. storage facilities for marine exploitation gear and other recurrently used possessions;

d. seasonal marginal agriculture in conjunction with coastal occupations and marine exploitation,; and

e. raw material procurement and initial fabrication of lava abrading tools within area containing suitable raw material.

PHRI (2008) noted that "very little work has been conducted in the uplands of Waikoloa. Previous archaeological and historical studies in the area haven focused primarily on the ili of Anaehoomalu and Kalahuipuaa, where resorts are located. Waikoloa mauka has been traditionally sparsely inhabited own to its harsh terrain, and it thus was little visited by foreigners."

Cattle were introduced on the west coast of Hawai'i by Vancouver in 1794 and were allowed to roam free by Kamehameha I's decree so that they might multiply. By 1846 the majoring of the Waimea area had been converted to pasture for herds of cattle, sheep and horses (PHRI, 2008).

5.2 Potential Impacts and Mitigation

As noted above, PHRI (2008) located a single site in the project area. The cairns on the site were determined to be prehistoric and may have been used as a locational or

directional markers. Historical evidence suggests that the land in Waikoloa was not intensively used, and if used, was a corridor between the mauka lands of Waimea and the coastal areas during historic times and for cattle in latter periods. The vegetation in the project area has changed over the years to a point were there are no native plants due in part to cattle grazing and wildland fires.

Through contact with cultural informants (CSH, 2006) the following was concluded:

- No on-going fishing activities are associated with the Waikoloa ahupua'a.
- Resource gather along the coastal area of Anaeho'omalu is limited.
- No ongoing stream activities were identified in the project area.
- No ongoing gathering of plant resources were identified in the project area.
- One of the persons interviewed noted that "attention should be made to the cultural landscape in its entirety. . . . it is about a sense of place and a sense of space."

To ensure that opportunities to protect cultural resources and to ensure continued access to native practitioners, the following will be implemented prior to the start of infrastructure development:

- Advise site contractors of the potential for finding cultural features; and
- If historic or cultural features are found during construction, the SHPD will be consulted.

SECTION 6
POLICIES AND PLAN

6.1 STATE LAND USE COMMISSION (CHAPTER 205-2, HRS)

Chapter 205, Hawai'i Revised Statutes (HRS), relating to the Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed: Urban, Rural, Agricultural, and Conservation. Criteria for these land use designations are cited below. The project area is currently in the State's Urban District.

Chapter 205, HRS, 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. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district, provided that:

(1) In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included;

(2) In the establishment of boundaries for rural districts, areas of land composed primarily of small farms mixed with very low density residential lots, which may be shown by a minimum density of not more than one house per one-half acre and a minimum lot size of not less than one-half acre shall be included, except as herein provided;

(3) In the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation; and

(4) In the establishment of the boundaries of conservation districts, the "forest and water reserve zones" provided in Act 234, section 2, Session Laws of Hawai'i 1957, are renamed "conservation districts" and, effective as of July 11, 1961, the boundaries of the forest and water reserve zones theretofore established pursuant to Act 234, section 2, Session Laws of Hawai'i 1957, shall constitute the boundaries of the conservation districts; provided that thereafter the power to determine the boundaries of the conservation districts shall be in the commission.

In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county.

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

(c) Rural districts shall include activities or uses as characterized by low density residential lots of not more than one dwelling house per one-half acre, except as provided by county ordinance pursuant to section 46-4(c), in areas where "city-like" concentration of people, structures, streets, and urban level of services are absent, and where small farms are intermixed with low density residential lots except that within a subdivision, as defined in section 484-1, the commission for good cause may allow one lot of less than one-half acre, but not less than 18,500 square feet, or an equivalent residential density, within a rural subdivision and permit the construction of one dwelling on such lot, provided that all other dwellings in the subdivision shall have a minimum lot size of one-half acre or 21,780 square feet. Such petition for variance may be processed under the special permit procedure. These districts may include contiguous areas which are not suited to low density residential lots or small farms by reason of topography, soils, and other related characteristics.

(d) Agricultural districts shall include activities or uses as characterized by the cultivation of crops, orchards, forage, and forestry; farming activities or uses related to animal husbandry, aquaculture, and game and fish propagation; aquaculture, which means the production of aquatic plant and animal life for food and fiber within ponds and other bodies of water; wind generated energy production for public, private, and commercial use; bona fide agricultural services and uses which support the agricultural activities of the fee or leasehold owner of the property and accessory to any of the above activities, whether or not conducted on the same premises as the agricultural activities to which they are accessory, including but not limited to farm dwellings as defined in section 205-4.5(a)(4), employee housing, farm buildings, mills, storage facilities, processing facilities, vehicle and equipment storage areas, and roadside stands for the sale of products grown on the premises; wind machines and wind farms; small-scale meteorological, air quality, noise, and other scientific and environmental data collection and monitoring facilities occupying less than one-half acre of land, provided that such facilities shall not be used as or equipped for use

as living quarters or dwellings; agricultural parks; and open area recreational facilities, including golf courses and golf driving ranges; provided that they are not located within agricultural district lands with soil classified by the land study bureau's detailed land classification as overall (master) productivity rating class A or B.

These districts may include areas which are not used for, or which are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics.

Discussion:

The proposed development does not require changing the existing State Urban Land Use designations as the proposed uses are compatible and allowed.

6.2 Federal

6.2.1 Clean Water Act Section (401) (404)

In accordance with Section 401, States can use their water quality standards in Section 401 certifications to protect wetlands. (Note that there are no wetlands on the subject property.) Under Section 401, States can review and approve, condition, or deny all Federal permits or licenses that might result in a discharge to State waters, including wetlands. States and Tribes make their decisions to deny, certify, or condition permits or licenses primarily by ensuring the activity will comply with State water quality standards. In addition, States and Tribes look at whether the activity will violate effluent limitations, new source performance standards, toxic pollutants, and other water resource requirements of State/Tribal law or regulation.

Section 404 of the Clean Water Act requires a permit before dredged or fill material may be discharged into waters of the United States including wetlands. Dredging or fill activities are not anticipated.

6.2.3 Endangered Species Act

The purpose of the Endangered Species Act (ESA) of 1973, is to protect and conserve ecosystems upon which endangered and threatened species are dependant, and to provide for the conservation of endangered and threatened species. The ESA is administered by the U.S. Department of Interior through the Fish and Wildlife Service and the U.S. Department of commerce through the National Marine Fisheries Service,

National Oceanic and Atmospheric Administration. The project site is not a recognized habitat for endangered plant or animal species.

6.2.4 National Historic Preservation Act Section 106

The National Historic Preservation Act (NHPA) became law in 1966, and was last amended in 2000. The NHPA requires government agencies to evaluate the impact of government funded construction projects through the process known as Section 106 Review. The goal of the process is to identify historic properties potentially affected by the proposed project, assess its impacts and seek ways to minimize or mitigate adverse effects. The NHPA is administered by the U.S. Department of Interior, National Park Service and the Advisory Council on Historic Preservation (ACHP). At the State level, the NHPA is implemented by the State Historic Preservation Officers. During the archaeological survey conducted for the project, a single site was identified by the project archaeologist. His findings and recommendations are reported above.

6.2.5 Coastal Zone Management

The Coastal Zone Management Act (CZMA), enacted in 1972, provides states with financial incentives for the development and implementation of coastal zone management practices, and limited review power over federal actions affecting the state's coastal zone. The CZMA requires federally assisted actions, including federally-funded state and local government projects, be consistent with Hawai'i's CZM Program objectives and policies. The national CZM program is administered by the Office of Ocean and Coastal Resources management (OCRM), an office within the National Oceanic and Atmospheric Administration, under the U.S. Department of Commerce.

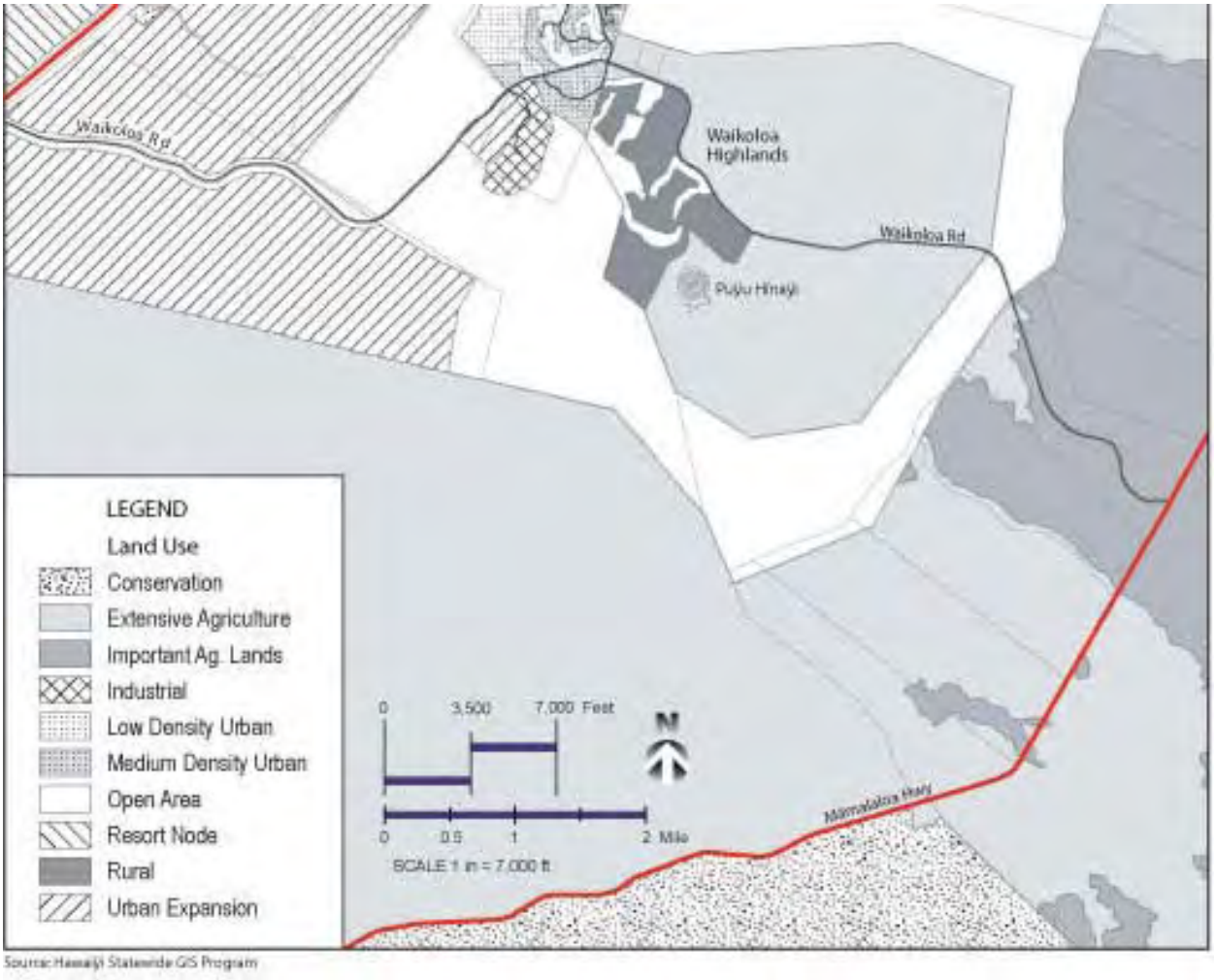
The proposed action is not subject to compliance with the provision of the CZMA.

6.3 COUNTY OF HAWAI'I

6.3.1 General Plan

Figure 21 show General Plan Land Use Pattern Allocation Guide (LUPAG) map for the project area. The current land use designation is "Medium Density Urban." The proposed use confirms with the proposed use and no amendments to the General Plan is required.

Figure 21. County General Plan – LUPAG Map



6.3.2 Waikoloa Zoning

Zoning for the subject parcel is shown in Figure 22, Zoning Map. The zoning for the subject parcels is "Village Commercial District" (CV-10). The purpose of the CV district is to provide for "a broad range or variety of commercial and light industrial uses that are necessary to serve the population in rural areas where the supplementary support of the general business uses and activities of the central commercial district is not readily available." (HCC Section 25-5-120) The minimum land area required for this district is 10,000 square feet.

No changes in zoning is required to implement this project.

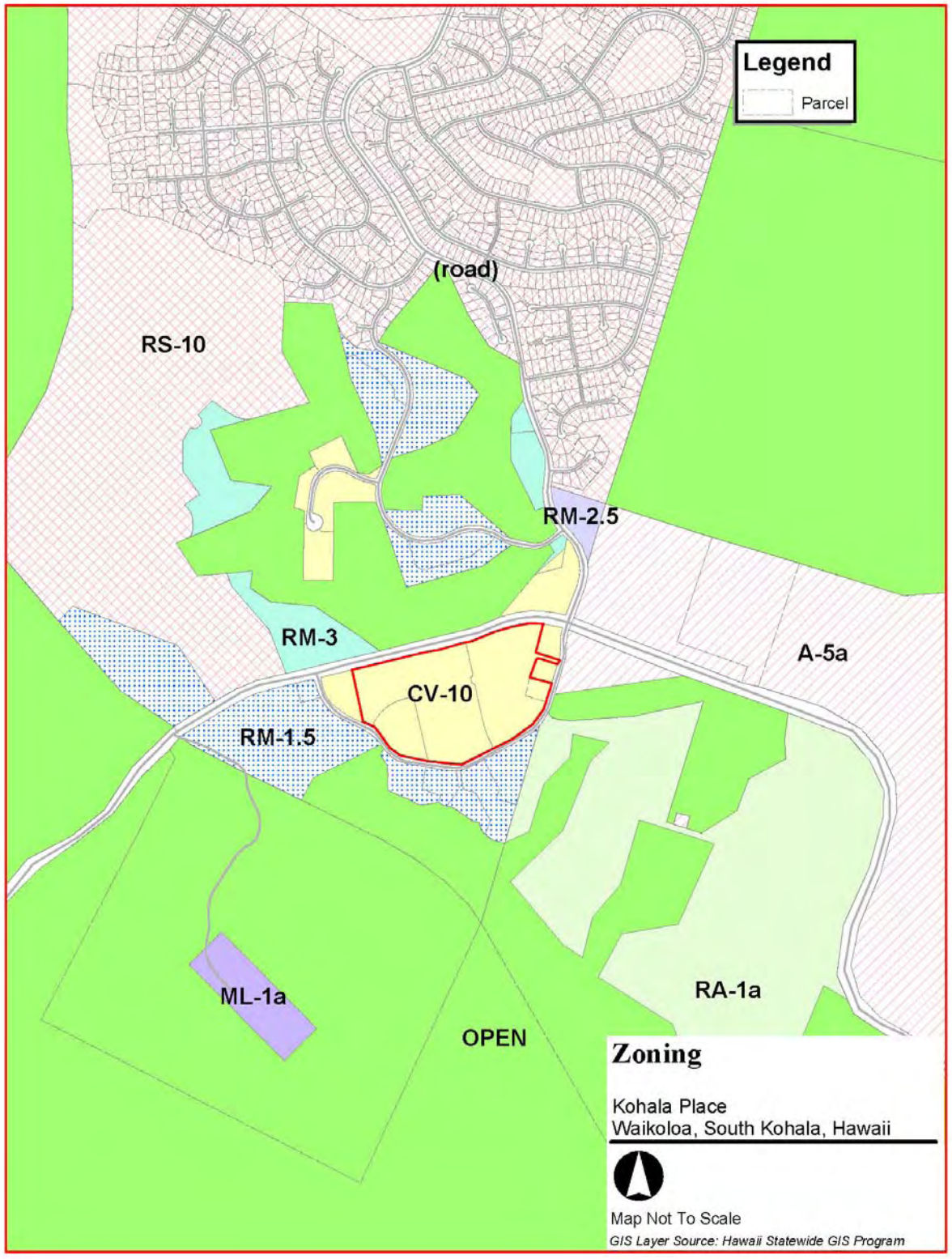


Figure 22. Zoning Map

SECTION 7
NECESSARY PERMITS AND APPROVALS

7.1 State of Hawai'i

7.1.1 Community Noise Control –Department of Health

This project will require a noise permit for the period of time of construction from the State Department of Health.

7.1.2 Commission on Persons with Disabilities

Plan review required as part of the Building Permit reviews.

7.1.3 National Pollutant Discharge Elimination System Permit

Construction stormwater discharge permit is required by the State Department of Health as this project will disturb more than one acre of land.

7.2 County of Hawai'i

7.2.1 Grading Permit

Earthwork activities in the project area will require a grading permit.

7.2.2 Building Permit

Construction of the building in the proposed project will required a building permit.

7.2.3 Plan Approval

Plan approval is required by the Planning Department.

7.3 Utility Companies

Utility agreements are required for water, sewer, electrical, and communication services.

SECTION 8
AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED

8.1 FEDERAL AGENCIES

- U.S. Army Corps of Engineers

8.2 STATE AGENCIES

- Department of Land and Natural Resources
- Department of Transportation
- Department of Health
- Office of Planning
- Department of Agriculture
- Office of Hawaiian Affairs

8.3 COUNTY OF HAWAII

- Planning Department
- Department of Public Works
- Fire Department
- Department of Water Supply
- Police Department
- Department of Environmental Services

8.4 ORGANIZATIONS AND INDIVIDUALS

- Hawaiian Telcom
- Hawai'i Electric and Light Company
- West Hawai'i Utilities

SECTION 9
SIGNIFICANCE ANALYSIS

Chapter 200 (Environmental Impact Statement Rules) of Title 11 (HAR) of the State Department of Health establishes criteria for determining whether an action may have a significant impact on the environment. The Rules establish "significance criteria" for making the determination. The relationship of the proposed land use designations to the thirteen criteria is provided below.

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

   The existing study area site was previously modified when the lands were used for agriculture. Subsequently, some area were modified and cleared for development. The proposed land uses will impact a known historic or cultural sites. The site has been determined to be significant for its information content only.

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

   The proposed land use changes will curtail other uses of the area. The proposed changes, however, are consistent with the General Plan of Hawai'i and the zoning of the area.

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

   The proposed land use changes are consistent with the General Plan of Hawai'i and the provision of Chapter 343, HRS.

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

   The proposed land uses will generally benefit the community through the provision of additional retail, commercial and residential units.

5. **Substantially affects public health.**

   There is no public health concerns related to the proposed development.

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

   The proposed land uses will involve a substantial secondary impacts in the form of additional retail and commercial floor area. Population changes in the area will change as a result of the new housing opportunities that will be provided. The population impact may have an affect on public facilities and services.

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

   The proposed land uses do not constitute substantial degradation of environmental quality.

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

   The proposed land use will not involve a commitment for a larger action. The proposed project does not create significant adverse effects upon the environment. As part of the larger Waikoloa area, this project will contribute to increased demand on public services and available resources, e.g. drinking water.

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

   The proposed land uses will not impact the habitat of rare, threatened, or endangered species.

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

    The proposed land uses will not detrimentally affect air or water quality or ambient noise levels. No mitigation is required or proposed.

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

    The study area is not located near or adjacent to an environmentally sensitive area such as a tsunami zone, flood plain or erosion-prone area. The proposed land uses will not impact or be impacted by these hazards.

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

    The project area is located in a zone that has panoramic views of the Mauna Kea to the east, and the ocean and coastline to the west. The proposed development

will change the view of the existing landscape from open undeveloped land to one of an urbanized setting with retail, commercial and residential uses.

13. Requires substantial energy consumption.

The proposed development will contribute to additional consumption of energy in the form of petroleum products used for construction, electrical power generation, and fuel for vehicles.

SECTION 10
FINDINGS AND DETERMINATION

In accordance with the provisions set forth in Chapter 343, HRS, and the significance criteria in Section 11-200-12 of HAR, Title 11, Chapter 200, it is anticipated that the proposed roadway intersections will have no significant adverse impacts to air quality, water quality, noise levels, social welfare, population, historic sites, or wildlife habitat.

Long-term and secondary impacts anticipated are both beneficial and adverse. Beneficial impacts are related to increased retail, commercial space and new housing opportunities in the Waikoloa area. Long-term impacts are also related to the conversation of agricultural lands for the roadway, increased traffic, and increased consumption of resources, e.g. water.

The proposed action will not result in any displacement of businesses or residents from this action. Changes to the landscape will impact the current views of the area. The change will be from a view of open undeveloped land to one that has urban development.

Short-term impacts will be limited to construction impacts that include: release of fugitive dust, potential for increased run-off during severe storm events, increased noise, energy consumption, and traffic congestion.

Overall, the long-term benefits of the proposed project are believed to outweigh the adverse impacts as these adverse impacts can be mitigated. Therefore, it is anticipated that an Environmental Impact Statement (EIS) will not be required, and that a Finding of No Significant Impact (FONSI) will be issued for this project.

SECTION 11
REFERENCES

1. University of Hawai'i, Department of Geography, Atlas of Hawai'i University Press, 2nd Edition, 1983.
2. State of Hawai'i, Department of Planning and Economic Development, State Data Book. 2000.
3. R.M. Towill Corporation, Final Environmental Impact Statement, Waikoloa Highlands, 2007.
4. County of Hawai'i, General Plan Land Use Pattern Allocation Guide, 2006.
5. PHRI, Archaeological Inventory Survey Kohala Place at Waikoloa Project, 2008.
6. PHRI, Archaeological Inventory Survey Waikoloa Mauka Lands, 1990.
7. Bishop Museum, Archaeological Survey of Portions of Waikoloa, June 1972.
8. Traffic Management Consultant, Traffic Impact Analysis Report for the Proposed Kohala Place at Waikoloa (Draft), 2008.
9. Cultural Surveys Hawai'i, Cultural Impact Assessment, 2006.
10. USDA, Soil Survey of Hawai'i, 1972.
11. State of Hawai'i, Chapter 343, Hawai'i Revised Statutes.
12. State of Hawai'i, Chapter200, Hawai'i Administrative Rules.
13. County of Hawai'i, Chapter 25, Hawai'i County Code.
14. Tom Nance, Waikoloa Water Master Plan, 1991.

APPENDIX

Harry Kim
Mayor

Christopher J. Yuen
Director

Brad Kurokawa, ASLA
LEED® AP
Deputy Director

County of Hawaii
PLANNING DEPARTMENT
101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-4224
(808) 961-8288 • FAX (808) 961-8742

March 11, 2008

Mr. Richard M. Rosenberg
Managing Member
METRIC HOLDINGS, INC.
16633 Ventura Blvd., 711
Encino, CA 91356

Dear Mr. Rosenberg:

SUBJECT: TMK NOS. 6-8-004:014, 105, AND 040

This is in response to your letter dated December 10, 2007, requesting approval of up to 200 hotel units on CV zoned property in Waikoloa Village, TMK Nos. 6-8-004:014, 105, and 040. You have also presented a conceptual site plan where the hotel would be part of a shopping center which would also include community gathering areas. Your letter states that the hotel would primarily be directed toward business travelers and guests of residents in the Waikoloa Village area, and that it would not be operated as a resort.

I apologize for the time it has taken to respond to this letter.

Haw. Cty. Code sec. 25-5-122(a)(26) provides that a permitted use in a CV zone includes "Hotels, when the design and use conform to the character of the area, as approved by the director." This letter concurs that the proposed use of the CV zoned area for a hotel or hotels, with a cumulative amount of not more than 200 rooms, is approved as conforming to the character of the area, with the following conditions, that are an integral part of this approval, and are based on the representations we have received:

1. that the hotel (or hotels) be developed as part of a larger commercial development that includes shopping and community space. In other words, the hotel cannot stand alone as the only development in the CV area; it must be complementary to other development.

2. that the units within the hotel or hotels not be operated as timeshares or under a similar fractional ownership. This condition is to implement the representation that this will function as a business hotel and not a resort.

We would comment that this is at the upper limit of what could be considered compatible with the area, and not requiring a General Plan amendment.

We have not had a specific design proposal, and this would also need to be approved during the plan approval process.

If you have any questions, please make an appointment to discuss this with Chris Yuen, Planning Director.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

CJY:pak
Wpwin60/Rosenberg – Waikoloa Village - Metric Holdings, Inc.

cc: Honorable Pete Hoffmann
TMK: 6-8-004:014, 105, And 040

FILE

Report 2720-012808

Archaeological Inventory Survey Kohala Place at Waikoloa Project

Land of Waikoloa, South Kohala District Island of Hawai'i

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 23

To Tyler Ivie	From PHRI/Cornwall
Co.	Co.
Dept. 1-808-	Phone #
Fax # 587-8022	Fax #

PHRI
Paul H. Rosendahl, Ph.D., Inc.
Archaeological • Historical • Cultural Resource Management Studies & Services

SUMMARY

At the request of Pete Cooper, on behalf of Metric Passco Waikoloa LLC, Paul H. Rosendahl, Ph.D., Inc. (PHRI) carried out an archaeological inventory survey of the Kohala Place at Waikoloa Project project area, located in the uplands of the Land of Waikoloa, South Kohala District, on the leeward side of Hawai'i Island. The project area consists of c. 45 acres situated on the south edge of the present Waikoloa Village. The survey was conducted in support of the client's land use development planning and related permit applications.

During the survey one archaeological site was identified. The site consists of a complex of eight small cairns, some of which may have functioned as directional markers. Based on federal/state significance evaluation criteria, the site was assessed as significant solely for information content (Criterion D). During the current project the site was recorded to inventory-level standards, and all of the research information at the site was collected. No further archaeological work is necessary.

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INTRODUCTION

BACKGROUND

At the request of Pete Cooper, on behalf of Metric Passco Waikoloa LLC, Paul H. Rosendahl, Ph.D., Inc. (PHRI) carried out an archaeological inventory survey of the Kohala Place at Waikoloa Project project area, located in the uplands of the Land of Waikoloa, South Kohala District, on the leeward side of Hawai'i Island. More specifically, the project area consists of c. 45 acres situated on the south edge of the present Waikoloa Village; it is generally bound to the north by Waikoloa Road, and to the east, south, and west by Puu Melia Street (*Figure 1*). The survey was conducted in support of the client's land use development planning and related permit applications.

OBJECTIVES AND SCOPE OF WORK

The basic objectives of the inventory survey were to determine the following: (a) the general nature, extent, and potential significance of any archaeological-historical remains that might be present, (b) the historic preservation implications of any such remains for the feasibility of any proposed future development; and (c) the general scope of work and level of effort for any subsequent archaeological-historic preservation work that might be appropriate and/or required. The ultimate objective of any such subsequent work would be to comply with all current historic preservation requirements of the Hawai'i State Historic Preservation Division (SHPD) and the Hawai'i County Planning Department (HCPD).

Based on PHRI discussions with Tim Lui-Kwan, Esq., a preliminary review of prior archaeological work done within the general vicinity of the subject project area (including an inventory survey of the nearby Waikoloa Mauka Lands conducted by PHRI in January 1990 - Jensen 1990), and our familiarity with both the general project area and the current regulatory review requirements of the SHPD and the HCPD, the following scope of work was determined to be appropriate for the proposed services:

1. Conduct appropriate archaeological and historical documentary background review and research;

2. Mobilization – including all field work preparations, field crew travel time, and demobilization;

3. Conduct fieldwork – detailed recording (written descriptions, scaled maps, and photographs) of all identified sites and features;

4. Conduct fieldwork – limited subsurface testing at selected sites and features;

5. Conduct post-field analysis of fieldwork and other research data;

6. Prepare appropriate draft and final reports – including general significance assessments and recommended general mitigation treatments, as appropriate, for all potentially significant sites and features; and

7. Coordinate and consult with client, client representatives, local informants, regulatory agency staff, etc. (as appropriate and/or required).

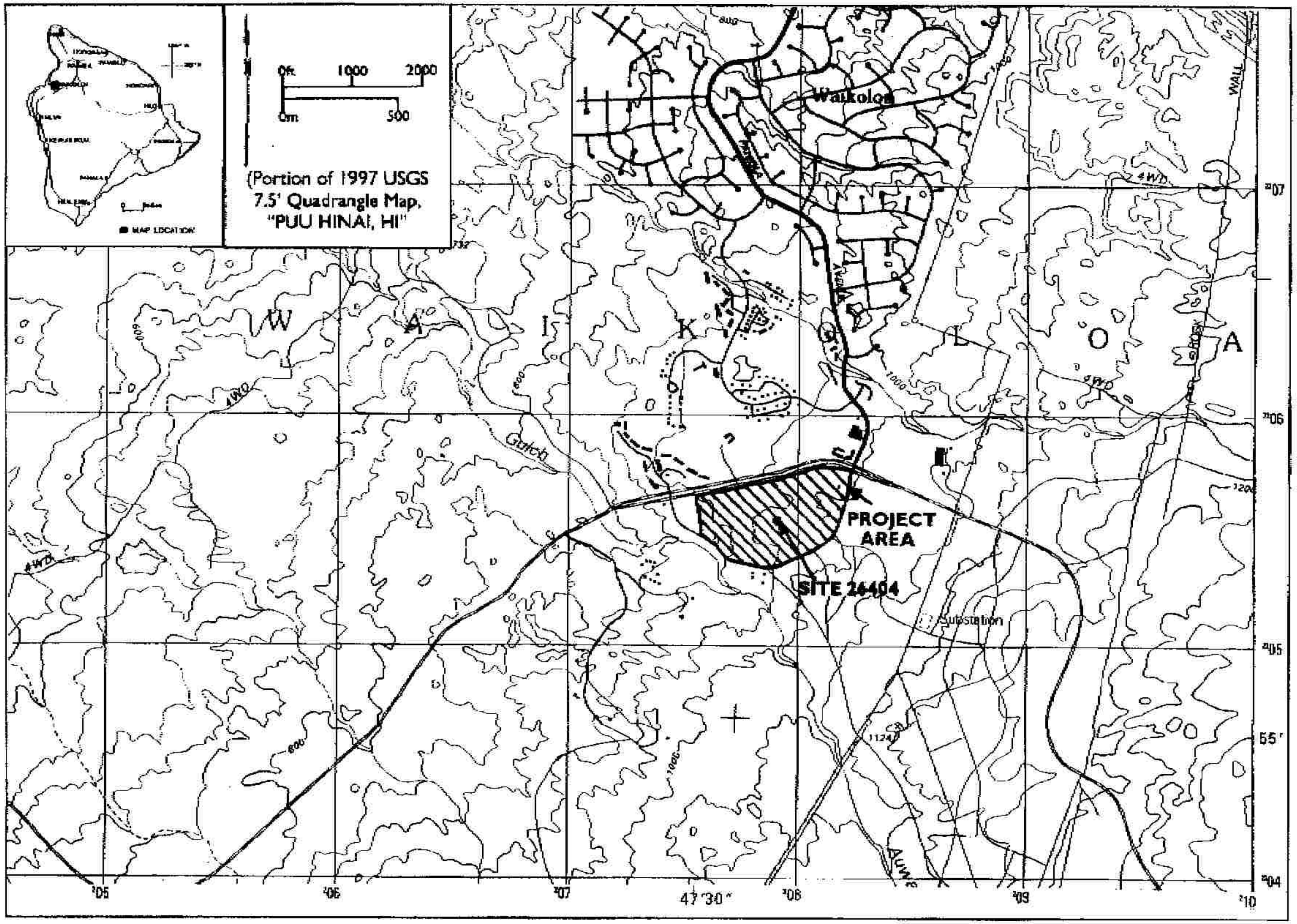

Figure 1. Project Area and Site Location

PROJECT AREA DESCRIPTION

The project area is located in the Land of Waikoloa, District of South Kohala, which is located between the *ahupua'a* of Lalamilo on the north and Puuanahulu on the south (*Figure 1*). From the coastal *'ili* of Anaeho'omalu and Kalahuipua'a, Waikoloa extends approximately 20 miles to the east to the vicinity of Waimea town.

Specifically, the current project area consists of c. 45 acres bounded on the north by Waikoloa Road, and on the east, south, and west by Puu Melia Street, which curves around on each end to meet Waikoloa Road. The project area consists of gently rolling hillocks, rising slightly from west to east, with an elevation of c. 920 feet at its western end and c. 1,000 feet at its eastern end. The soil in the project area is Kawaihae extremely stony very fine sand loam, 6 to 12 per cent slopes. Permeability is moderate, runoff is medium, and the erosion hazard is moderate (Sato et al. 1973:26). The soil layer is thin, with small areas of protruding bedrock.

Nearly the entire *ahupua'a* of Waikoloa is located within the rain shadow of Mauna Kea, making this region one of the driest in West Hawai'i. Rising to 14,000 feet above sea level, Mauna Kea intercepts prevailing easterly moisture-laden air and, through adiabatic lifting, cools the air which then quickly precipitates its moisture. This air then descends toward the coast of West Hawai'i where it heats up through compression, thereby increasing its potential to retain, rather than precipitate, whatever moisture it retains. This orographic rainfall pattern is reflected in the generally low annual rainfall figures for this area, which range between 10 and 20 inches (Jensen 1990).

The aridity of the *ahupua'a* is clearly reflected in the paucity of permanent water sources and particularly by local vegetation patterns. The most prevalent plant species within the project area are three introduced xerophytes, *kiawe* (*Prosopis pallida*), *koa-haole* (*Leucaena glauca*), and fountain grass (*Pennisetum* sp.). Also present in small amounts is *'ilima* (*Sida fallax*).

PREVIOUS ARCHAEOLOGICAL WORK

Over the past four decades a large number of archaeological survey and excavation projects have been undertaken along the coastal region in the vicinity of Waikoloa. Near the present project area, however, only two archaeological research projects have been completed. The first is a project undertaken by the Bishop Museum and supervised by Robert F. Bevacqua (Bevacqua 1972). This work consisted of an archaeological survey of portions of Waikoloa, including upland areas just south of the present project area. During the course of the survey, Bevacqua recorded his Site 22, which was described as "...a complex of walls, portions of which protrude above the flood plain...At the streambank, the E end of the [primary] wall corners and extends N another 7.1 meters; the W end of the main wall corners and extends N 5.5 meters. East of the main wall an 11-meter long, bifaced wall runs N-S and stands clearly above ground surface" (Bevacqua 1972:12). In addition to this, Bevacqua also noted that the wall was directly associated with a stream. Unfortunately, Bevacqua did not provide a map sufficient to relocate his site. The second project was undertaken by PHRI in 1990 and involved an archaeological inventory survey of Waikoloa *mauka* land, again just south of the current project area (Jensen 1990). Comprising c. 600 acres, this project area had been minimally impacted by historic activities and consisted primarily of undeveloped and ungraded lands. Evidence of prehistoric or historic activity was observed and recorded at a single location c. 300 m north of Pu'u Hinai, on the grassy slopes above and overlooking a series of drainages which converge within this area. The site, recorded as T-1, consisted of a single low wall of poorly stacked, rough *pāhoehoe* cobbles and boulders. No evidence of Bevacqua's Site 22, believed to have been recorded within the general area of this project was observed, and it has been hypothesized that this previously recorded site was destroyed by heavy runoff water sometime within the past 22 to 27 years (Jensen 1990).

Complete summaries are available for all past archaeological work undertaken at Anaeho'omalu, Kalahuipua'a, and within the coastal portions of Waikoloa (see Jensen 1989a and 1989b). While important new findings as well as advances in recovery and analytical techniques continue to expand our knowledge of West Hawai'i prehistory, the specific findings from these coastal areas are only partially relevant to the present project area. For the present purposes, it is sufficient to relate the basic findings in summary fashion. First synthesized by Barrera (1971) and Cordy (1975), and subsequently by Kirch (1979) and others, the following briefly summarizes our current knowledge and understanding of regional prehistory as it has emerged on the basis of findings generated largely, but not entirely, from coastal sites.

CHRONOLOGY AND POPULATION

Present evidence suggests initial human occupation at Anaeho'omalu and Kalahuipua'a by from two to five extended families, perhaps as early as about AD 700-800 at Anaeho'omalu and between about AD 1000-1200 at Kalahuipua'a. Population gradually increased through time, with at least one probable break in the sequence at both areas. For Kalahuipua'a, the most widely utilized chronological model suggests that the period between about AD 1200 and 1600 was characterized by a continuous expansion in the number, and in the typological range, of occupied sites. According to Kirch (1979), this trend becomes particularly evident at around AD 1500, and confirms an increase through time in the local population, either through internal population growth, or through immigration. Moreover, while the earliest period of occupation at Kalahuipua'a (i.e., between AD 1000-1300) appears to have been marked by exclusive use of shelter cave sites, the period of "expansion" saw a wider range of feature types called into use for habitation, including specifically surface structural features. Kirch has interpreted these latter findings not only as signaling an increase in the resident population, but perhaps as also indicating a greater degree of permanence (Kirch 1975:180-182). After about AD 1650, however, the number of occupied features at both Kalahuipua'a and Anaeho'omalu (both cave as well as surface features) is believed to have decreased. This event suggests a number of operative mechanisms which, according to Kirch's view (1979), include (a) population growth in west Hawai'i reaching an equilibrium peak by c. AD 1600; (b) competition for arable land or other resources leading to significant internal stress with a concomitant reduction in population; and/or (c) an increase in open conflict and competition during the two to three centuries preceding European contact.

SETTLEMENT PATTERNS AND RESOURCE EXPLOITATION

Kirch's Kalahuipua'a-based model is generally consistent with information from Anaeho'omalu. Noting that agricultural pursuits were generally not feasible along the coast of West Hawai'i, Kirch argued (1975:186) that either the prehistoric population also utilized upland arable lands for agricultural activities, or "...the population was in the unique position of being totally dependent on marine resources." Kirch felt that it was unlikely that the native population subsisted without a significant vegetable (carbohydrate) component. Moreover, the presence of upland plant remains at occupied coastal shelters seemed to document extensive prehistoric contacts between these two ecological zones (Kirch 1975). Since arable uplands are only a few hours walk from the coast, Kirch argued that "...a pattern of upland residence and agricultural activity, with repeated intermittent occupation of coastal sites in order to exploit marine (principally protein) resources, would be a maximizing strategy in the West Hawai'i ecosystem." Hommon (1982) subsequently obtained additional botanical evidence for a significant upland agricultural contribution to the diet of the coastal Kalahuipua'a occupants.

In Kirch's model, the coastal shelter cave sites at Anaeho'omalu and Kalahuipua'a served as "...temporary residences for small groups exploiting the marine environment, for periods of a few days to perhaps several weeks or even months." In support of this hypothesis, Kirch observed that in excess of 75% of the artifact assemblage from coastal sites related directly or indirectly to marine exploitation, with shellfish representing approximately 90% of the total meat and energy value of the midden. This figure

correlated closely with other temporary marine exploitation sites for which similar midden data was available, and was found to contrast with available midden data from sites associated with permanent agricultural fields (such as exist at Halawa Valley, Island of Molokai).

Collectively, these findings led Kirch to conclude that Kalahuipua'a represented the marine component of a much larger system, analogous to the ethnohistoric *ahupua'a*, in which coastal and inland environments were linked in a pattern of economically and socially induced transhumance.

Additional evidence of this pattern of transhumance was acquired in conjunction with the archaeological survey and excavation work for the 23-mile-long Queen Kaahumanu Highway construction corridor between Kailua and Kawaihae. The corridor entered the *ahupua'a* of Waikoloa from the south at a point approximately 0.5 km east of the Kiholo-Puako Trail, and proceeded northward through Waikoloa following a broad eastward arc. That portion of the corridor passing by Kalahuipua'a was located in excess of 1,500 meters east of the shore, and thus provided some insight into the types of sites and features located within non-marine settings. Ching recorded a large number of sites along the inland highway corridor (Ching 1971), and salvage excavations were subsequently undertaken by Rosendahl at several of those located within Waikoloa (Rosendahl 1972). Rosendahl's work focused primarily on defining the nature of aboriginal Hawaiian residential occupation and exploitation within "...the barren and seemingly inhospitable environment between the narrow, coastal habitation- and marine-resources exploitation zone and the more extensive, upland, habitation-and agricultural-exploitation zone" (1972). Within this intermediate zone, Rosendahl characterized prehistoric patterns of land use, settlement and resource exploitation as follows (Rosendahl 1972: iii-vi):

1. Use of temporary shelters by people travelling between the coastal and upland habitation- and agricultural-exploitation zones;

2. Temporary and extended residential occupation by people engaged in marine and other exploitation activities, particularly in those areas situated closest to the ocean;

3. Storage facilities for marine exploitation gear and other recurrently used possessions;

4. Seasonal marginal agriculture in conjunction with coastal occupation and marine exploitation; and

5. Raw material procurement and initial fabrication of lava abrading tools within areas containing suitable raw material.

The results of limited dating suggested that these activities were undertaken between about AD 1500 through the post-1778 contact period. One of the most significant of Rosendahl's findings was the possibility that a form of floodwater farming of dryland-irrigation horticultural crops dependent on intermittent seasonal flows of surface water took place in this barren area. The evidence for this activity consisted of short terrace sections associated with temporary habitation areas and features.

LIMITED HISTORICAL DOCUMENTARY RESEARCH

by Helen Wong Smith, M.A., Cultural Resources Specialist

Very little work has been conducted in the uplands of Waikoloa. Previous archaeological and historical studies in the area have focused primarily on the *'ili* of Anaeho'omalu and Kalahuipua'a, where resorts are located. In addition, Waikoloa *mauka* has been traditionally sparsely inhabited owing to its harsh terrain, and it thus was little visited by foreigners. The coastal zone, by contrast, was inhabited by fishermen. For

example, Anaeho'omalu was most likely a permanent village in prehistoric times (Barrera 197 1:109). The verdant forest zone of which Waimea is a part was cultivated extensively and goods were exchanged with the coastal inhabitants. Barrere has this to say about the zone in which the project area is located:

> There appears to have been very little activity in the zone stretching from Kawaihae to the area of extensive agricultural and residential occupation in the uplands...So, while little has been reported of this less-desirable zone between the coast and the uplands, the true nature of land utilization of the area remains unclear (Barrere 1983:46).

A member of Captain Vancouver's crew was one of the few early foreigners to travel inland from a coastal village. In this case, the area visited was *mauka* of Kawaihae, north of Waikoloa. The description of Waikoloa would no doubt be quite similar:

> I traveled a few miles back...through the most barren, scorching country I have ever walked over, composed of scorious dregs and black porous rocks, interspersed with dreary caverns and deep ravines....The herbs and grasses which the soil produced in the rainy seasons were now mostly in the shriveled state, thinly scattered and by no means sufficient to cover the surface from the sun's powerful heat, so that I met with very few plants in flower in this excursion (Menzies 1920 *In* Barrere 1983).

Use of this zone was probably for the most part limited to transportation routes, with most habitation temporary. Barrere, however, names three permanent settlements of the early 1800s:

> On the rising ground above the seacoast settlements, several main trails led past occasionally cultivated ground to the uplands of Waimea where there were, in the early 1820s, three major settlements about two miles apart. One was at Keaalii, one at Waikoloa, and one at Pu'ukapu. All three were concentrated where a major stream emptied itself upon the plateau (1983:30).

Kamehameha I figures in the early history of Waikoloa. Barrere reports that it is uncertain whether he gave Waikoloa Nui to John Young or Isaac Davis, his two *haole* chiefs. Nevertheless, it was listed as one of John Young's lands at the time of the Mahele (Privy Council Records 1848: 3:98-99). This same Privy Council also found George Hueu, son of Davis, the heir of Waikoloa and awarded it to him with Land Commission Award 8521-B:1, Royal Patent 5671 (Board of Commissioners 1929:59). George's mother was Kahaanapilo, whose father was one of the Waimea chiefs that had previously held Waimea land (Barrere 1983:25). It was determined by Supreme Court Justice Robertson that the land was rightfully Hueu's through direct inheritance from his father, Isaac. This portion of Judge Robertson's decision gives insight into the value of Waikoloa in 1867:

> The land....was granted by King Kamehameha I to his faithful friend and follower, Isaac Davis, the father of the appellant [George Hueu Davis], about the beginning of the present century. We consider it clear that in making the grant the King intended to give, and did give to Isaac Davis, a tract of land of very great extent, although not of proportionate value. There were no cattle or sheep in this country when the grant was made, and the land given to Isaac Davis only yielded what revenue could be derived from wild birds and pili grass.
>
> By terms of the grant...the land given to Isaac Davis was expressly deprived of any rights in the sea, i.e. of fishery, and was so bounded as to include scarcely any land fit for cultivation; and, as some of the witnesses expressed it, all the pili land extending out to the aa on the boundary of Kona, was given to Isaac Davis.

> There is one fact which we regard as clearly established...and that is the fact that for upwards of sixty years, the appellant and his father before him, exercised undisturbed lordship over the large tract of land which we feel bound to include in the boundaries of Waikoloa nui, as granted to Isaac Davis. No evidence has been given to contravene the fact of long and undisturbed control and occupancy (*Hawaiian Gazette*, Feb. 27, 1867).

Although we refer to Waikoloa as an *ahupua'a* today, older references classify it as an *'ili* of Waimea *ahupua'a*. The following is part of testimony given by natives of the area:

> Waimea is an ahupuaa of Waimea, which is a kalana with eight divisions (Ehu).
>
> Waikoloa is an ili of Waimea ahupuaa; Waimea is an Okana (Kanehailua). (Boundary Commission Book No. 1 pp.6-12)

George Hu'eu Davis himself referred to Waikoloa as an *ili* (Hu'eu 1847). Several maps at the State Survey Office indicate this latter division to be the most common. An exception is Marion Kelly's citation of Waikoloa as an *'ili kupono* (land division paying tribute to the ruling chief). She writes, "The other of these 'ilikupono, namely Waikoloa, was given by Kamehameha as a separated property to Isaac Davis (Kelly 1956:119). It should be noted here that the *'ili* of Anacho'omalu and Kalahuipua'a were detached from Davis' award of Waikoloa and were awarded to Queen Kalama (Boundary Commission Book 1:8).

Barrere gives a complete review of Davis' battle to settle the boundaries of his land (Barrere 1983:29). This was due to the Crown having lands also known as "Waikoloa." The end result was calling those lands belonging to the crown, "Lalamilo" and "Waikoloa-iki."

The land file includes a listing of available correspondence relating to lands of Waikoloa. The correspondence provides names of those who possibly had an interest in land or land uses in this area and includes a method of monitoring land transactions. You will note that these entries concern both Davis' and the Crown lands and the battle that Barrere covers:

> *Interior Dept., Land Matters Doc. 381*
> The following ahupuaas for konohikis in Waimea and Hamakua. Waikoloa Leleihoku heir. "Other lands for C. Carr 1/2 acres in Waikoloa."
>
> *Interior Dept., Bk 15, p.[117]*
> In list of konohiki lands, showing that the above land belong to Awane Leleiohoku & own a fishing right.
>
> *Interior Dept., Doc. 314*
> In list of lands, showing that R.P. 5671, was issued to Hueu, by name only on Land Claim No. 852 1B, on above land Waimea, Hawaii.
>
> *Interior Dept., Doc. 364*
> In list showing that Leleiohoku is the owner of the above ahupuaa. Also in list showing that the school is the owner of the above land . . .
>
> *Public Instruction, Dec. 23, 1851*
> L. Lyons to Minister of Public Instruction. Has sold 180 acres to J.P. Parker, Jr. &c.

Interior Dept., Jan. 11852

In original lease from Kamehameha III to C. Carr on a piece of land situated at the above place containing 68 periods and 7 rods for the term of 50 years at a rental of $70 a year. Receipt of the payment of one year's rent, attached.

Public Instruction, Apr. 23, 1852

L. Lyons to Minister of Public Instruction. Re. deed for Mr. Parker to above land, if ready to deliver same to his son Curtis. To consult with John Ii, re matter of surveying the following lands, belonging to Leleihoku.

Interior Dept., May 29, 1859

In letter from the Minister of Interior to the Chief Clerk of the Interior Dept. re. dispute between Mr.Davis & Mr. Parker over the boundaries of the above land.

Interior Dept., June 26, 1866

In letter from John P. Parker to J. 0. Dominis informing him that Wiltse is now engaged in surveying the above land.

Interior Dept., July 26, 1866

In letter from S.C. Wiltse to J. 0. Dominis informing him that he has completed the survey of the above land & Waimea.

Interior Dept., Sept 19, 1866

In letter from George Davis to the Commissioners of Crown Lands informing them that he will commence the survey of the above ahupuaa on Sept 30, 1866 &c.

Interior Dept. Oct. 4, 1866

In petition by the Commissioner of Crown Lands to the Commissioner of Boundaries for the settlement of the boundaries of the ahupua'a of Waimea in S. Kohala. Also protest by G. D. Hueu against the settlement of boundaries along the above ahupuaa-Docs. attached, testimony notes of survey, protest &c.

Interior Dept., Dec. 6, 1893

Surveyor General to Commissioner of Crown Lands. That the above land was awarded to G. D. Hueu, under Land Claim 8521B, &c.

As noted in several of the entries above, rancher John Parker had interest in the lands of Waikoloa. Cattle were introduced on the west coast of Hawai'i island by Vancouver in 1794 and were allowed to roam free by Kamehameha I's decree so that they might multiply. A wall was built between the King's and Davis' land in Waikoloa c. 1815 in order to keep the roaming cattle out of the king's cultivated lands. The wall was named after the King's *konohiki*, Kauliokamoa (Barrere 1983:30). By the time Reverend William Ellis conducted his tour around the island in 1822 there were "immense herds of them, they do not attempt to tame any; and the only advantage they derive is by employing persons, principally foreigners, to shoot them, salt the meat in the mountains, and bring it down to the shore for the purpose of provisioning the native vessels" (Ellis 1963:291).

Barrere cites these "marauding cattle," as the cause of abandonment of agricultural plots, construction of stone walls, and the deforestation of certain areas (1983:48). By 1846 the majority of the Waimea area had been converted to pasture for herds of cattle, sheep, and horses (ibid:49). Reverend Lyons reported that because of this, many people had moved away and that he was then living in a cattle pen (Lyons n.d. *In* Barrere 1983).

The rise of John Parker and his ranch in Waimea will not be covered here. More relevant to this report is the ranch's acquisition of Waikoloa lands. This transaction was hindered by a dispute between Sam Parker and his manager Alfred Carter:

> An example of the situation is Carter's effort in 1903 to add to the pasturage of the ranch. He found that the Waikoloa property owned by Lucy Peabody was essential to the Parker Ranch as important grazing land, and it could be acquired. When Carter finally convinced Sam of its importance, the latter concurred and agreed to the negotiations. Carter was in the midst of working out the transaction when Sam suddenly withdrew his consent.
>
> Carter then did the only thing that seemed feasible; he negotiated with Miss Peabody in order to get the land for his ward, Thelma. He was shortly shocked to learn that Sam was already bidding for the land in his own right and for his own purpose—excluding Thelma entirely. Carter immediately brought all his legal skills to bear on the problem and, in his astute way, soon had Sam agreeing to purchase the land for the joint interest of himself and Thelma. The purchase was made (Brennan 1974:124).

Thelma was the mother of Richard Smart, present owner of Parker Ranch. According to history sheets at the Real Property Tax Office, Smart sold the project area to Boise Cascade in 1968 as part of parcel TMK 6-8-14. The area just south of the present project area is parcel TMK (3) 6-8-002:16. Boise Cascade sold this parcel to Waikoloa Land & Cattle Co., who in turn sold it to Atpac Land Co.

IMPLICATIONS OF PREVIOUS RESEARCH FOR THE PRESENT PROJECT

The present project area is located near the interface between the "barren intermediate zone" and the upland habitation and agricultural exploitation zone. So far as the present project was concerned, therefore, the primary implications of prior research in the immediate and general project area can be summarized in the form of three general assumptions.

First, portions of the present project area include the type of 3,000 year-old *pāhoehoe* which characterizes much of Waikoloa's coastal areas and which was the focus of abrader manufacturing quarries and workshops (see Jensen 1988). It was thus considered possible that some evidence of this type of exploitation and activity might be present within the project area. On the other hand, it was not expected that significant evidence of associated habitation would be encountered in view of the absence of natural sources of food equivalent to those found in marine environments of the coastal zone.

Secondly, the chronological summaries presented above suggest that any project area caves and surface shelters, if found to have been occupied, would most likely have been utilized between about AD 1500 and 1800. This prediction was based primarily on Rosendahl's findings at certain highway corridor sites located inland from the coast, and on the assumption that the more "marginal" habitat of the project area would not have been routinely exploited until expanding population pressures of the coastal zone forced increased reliance on such areas and until patterns of coastal-upland interdependence had become well established. Both of these situations are believed to have emerged during late prehistoric and early historic time periods.

Thirdly, Rosendahl's previous work at lower elevations, and Bevacqua's previous findings near the present project area, suggested that small, seasonally utilized agricultural features would likely be encountered within the project area. Representing a form of floodwater farming of dryland irrigation horticulture crops, low stone-walled terraces constructed so as to intercept seasonal runoff represent small-scale but significant components of the settlement and exploitation strategy of the late prehistoric occupants of West Hawaii. Bevacqua's previously identified Site 22, believed located close to Puu Hinai south of the present project area, consisted of such a feature which had been constructed adjacent to a small, seasonal stream at the foot of Puu Hinai. Although not associated with evidence of habitation, Bevacqua's Site 22 agricultural feature seemed to confirm the hypothesis previously advanced by Rosendahl concerning exploitation of the "intermediate" zone.

Unfortunately, several details concerning Bevacqua' s Site 22 were lacking. The 300-acre survey area was itself not clearly identified on any maps, while the text which the author provides relays the following information:

> Survey Area G is situated slightly N of Puu Hinai, a prominent cinder cone in the center of Waikoloa. The exact location and configuration of this 300-acre parcel of land has not yet been determined by the developers; thus the survey encompasses only the approximate area of the parcel. The terrain consists of gently rolling, grass-covered hills cut by several dry stream beds. The banks of the streambeds are crowded with kiawe trees...Only one site (22), located on the S bank of a dry stream bed NE of Puu Hinai, was found during the survey [of the 300-acre parcel]...The vast majority of the site has been completely inundated by stream-deposited soil, approximately 1.3 meters deep, thus making identification and description exceptionally difficult (Bevacqua 1972:12).

It can be concluded that due to its sparse use during prehistoric and early historic periods, and due to its subsequent use for ranching, that the project area will have few archaeologically significant remains.

FIELD METHODS

The inventory survey was conducted on January 9, 2008 by PHRI Supervisory Archaeologist Alan B. Corbin, M.A, assisted by Field Technician Leonard Kubo B.A.. The entire project area was surveyed north-south by a series of transects, with surveyors spaced c. 20 m apart. Visibility in all portions of the project area was excellent, due to the low-lying vegetation. The single identified site was flagged with red and white stripped flagging. This site was given a temporary site number (T-1); a permanent SHPD site number has been requested. Features of the site were designated Feature A, B, C, etc., and were drawn in plan view and photographed. All photographs are on file at the PHRI office in Hilo, Hawai'i.

FINDINGS

During the current field survey, a single site (State Site 26404) was identified. The site consists of eight cairns in an area 26.0 m east-west by 12 m north-south (*Figure 2 and Table 1*). Feature A is a cairn composed of approximately ten field rocks ranging from c. 0.20 to 0.40 m in diameter. The cairn is 0.95 m east-west, 0.62 m north-south, and 0.30 m high (*Figure 3*). Feature B is a cairn composed of five field rocks ranging from c. 0.20 to 0.50 m in diameter. The cairn is fallen and consists of only a single course of stones lying in an area 1.2 m north-south and 0.65 m east-west. The cairn is 0.40 m high (*Figure 4*). Feature C is a cairn composed of eight field rocks ranging in size from c. 0.25 to 0.50 m. The cairn is 1.15 m in east-west and 1.1 m north-south, with a height of 0.50 m (*Figure 5*). Feature D is a cairn composed of three field rocks ranging in size from c. 0.25 to 0.50 m in diameter. It is 0.70 m east-west and 0.50 m north-south, with a height of 0.40 m. Feature E is a cairn composed of three field rocks 0.35 to 0.55 m in diameter. It is 0.65 m east-west, and 0.55 m north-south, with a height of 0.40 m. Feature F is a cairn composed of six field rocks, ranging in size from c. 0.25 to 0.40 m in diameter. It is 0.95 m east-west, and 0.65 m north-south, with a height of 0.33 m. Feature G is a cairn composed of four field rocks c. 0.15 to 0.25 m in diameter. It is 0.60 m north-south, and 0.50 m east-west, with a height of 0.30 m. Feature H is a cairn composed of one stone placed on a bedrock base. The stone is 0.5 m east-west by 0.30 m north-south, and is 0.55 m high.

Table 1. Summary of Cairns

Feature	L	W	H	No. of Rocks
A	0.95	0.62	0.30	10
B	1.20	0.65	0.40	5
C	1.15	1.10	0.50	8
D	0.70	0.50	0.40	3
E	0.65	0.55	0.40	3
F	0.95	0.65	0.33	6
G	0.60	0.50	0.30	4
H	0.50	0.30	0.55	1

All dimensions in meters

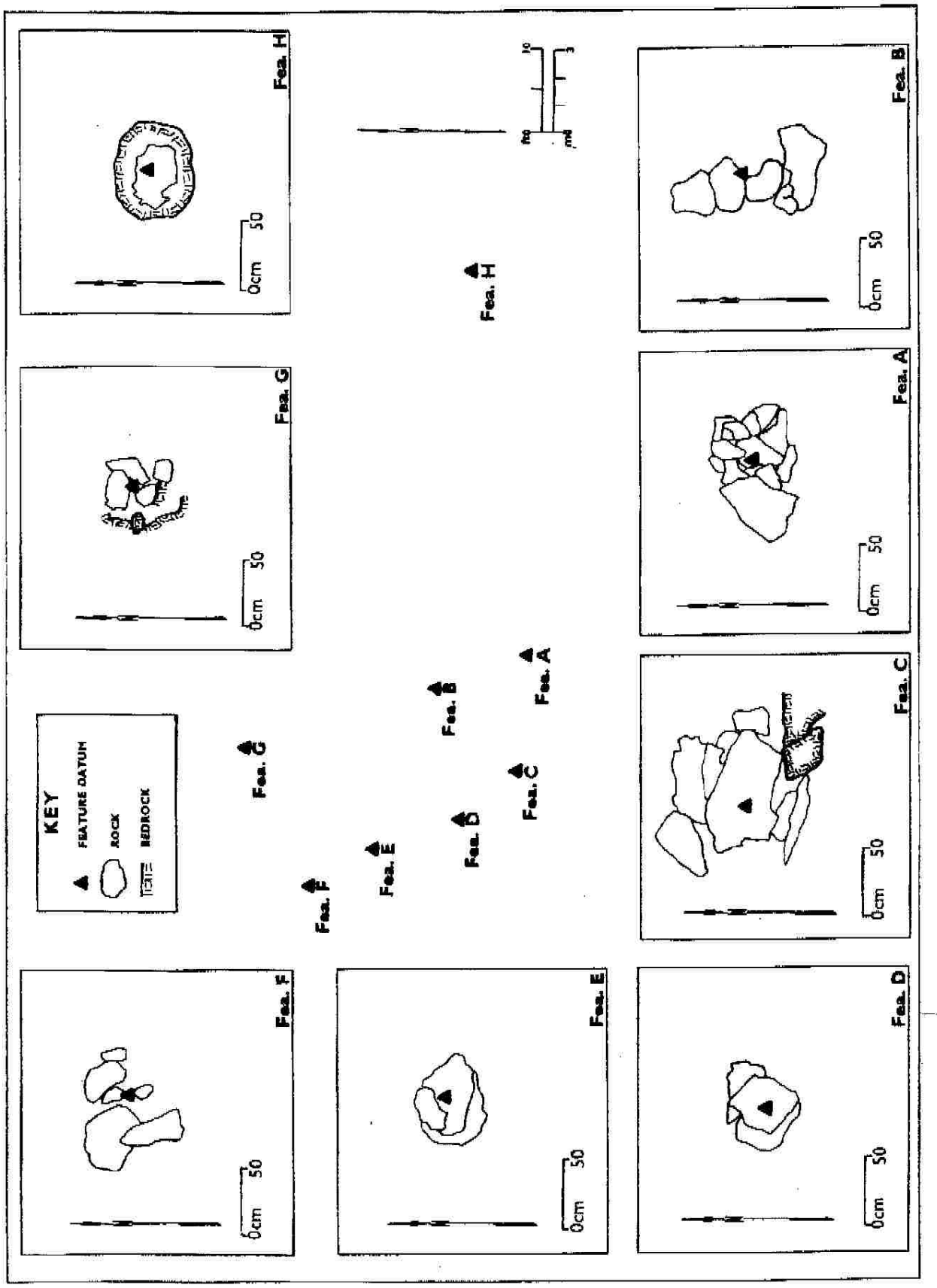

Figure 2. Cairn Complex

Figure 3. Feature A – Cairn

Figure 4. Feature B – Cairn

Figure 5. Feature C – Cairn

CONCLUSION

DISCUSSION

It is possible that the cairns identified during the current project are historic and are associated with military use of the area, as Waikoloa was used as a military training area during WWII (Corbin 2004). However, based on available information, a military origin is unlikely. In the Corbin (2004) study, the characteristics of 16 prehistoric cairns and 41 military cairns were compared. It was found that military cairns are: (a) usually associated with other military features, (b) are well constructed, (c) average 1.15 m in height, and (d) are constructed using many rocks (cf. Jensen 1994; Corbin 2004). The cairns of the current project area do not have any of these characteristics. They are generally loosely and informally constructed, they average only 0.39 m in height, and they are composed of fewer rocks.

The cairns appear to be more likely prehistoric and to have functioned as locational/directional markers. Four of the cairns are spaced approximately equidistant from each other (c. 2.75-3.00 m apart) and oriented northwest/southeast (*Figure 2*). Perhaps these cairns point to a prehistoric coastal settlement, possibly Puakō Bay, which lies in a northwesterly direction.

In general, the findings of the current project survey are in keeping with the set of expectations generated on the basis of prior research within the immediate and general project vicinity. It was not expected that a significant number of sites would be encountered, or that any of these would reflect any more than very short-term habitation within the area. This expectation was based on general research findings elsewhere within West Hawaii, as well as Bevacqua's (1972) results on land located to the south of the present project area. During the current project, the absence of accumulated cultural material of any type tends to corroborate existing models of settlement and resource exploitation for West Hawai'i generally.

GENERAL SIGNIFICANCE ASSESSMENTS AND RECOMMENDED GENERAL TREATMENTS

Site T-1 was assessed for significance based on Rules Governing Procedures for Historic Preservation Review to Comment on Chapter 6E-42, Hawaii Revised Statutes, Hawaii Administrative Rules; Title 13, Department of Land and Natural Resources; Subtitle 13, State Historic Preservation Division Rules (2001). The DLNR-SHPD uses these criteria for evaluating cultural resources. The site was assessed for integrity of location, design, setting, materials, workmanship, feeling, and association and in terms of the following criteria:

A. It must be associated with events that have made a significant contribution to the broad patterns of our history;

B. It must be associated with the lives of persons important in our past;

C. It must embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value;

D. It must have yielded or may be likely to yield, information important in prehistory or history; or

E. It must have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts-these associations being important to the group's history and cultural identity.

Based on the above criteria, Site 26404 is assessed as significant solely for information content (Criterion D). During the current project the site has been recorded to inventory-level standards, and its research potential has been exhausted. No further archaeological work is necessary.

There is always the possibility, though somewhat remote, that potentially significant, as yet unidentified, cultural remains could be encountered in the project area during the course of future development. In this situation, archaeological consultation should be sought immediately.

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TRAFFIC IMPACT ANALYSIS REPORT

FOR THE PROPOSED

KOHALA PLACE AT WAIKOLOA

WAIKOLOA, HAWAII

TAX MAP KEYS: (3) 6-8-003: 14, 15, 16, 40

PREPARED FOR

R. M. Towill Corporation

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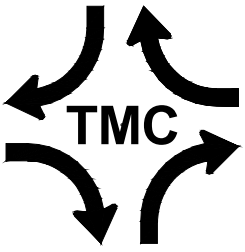

PREPARED BY

THE TRAFFIC MANAGEMENT CONSULTANT

RANDALL S. OKANEKU, P.E., P.T.O.E., PRINCIPAL * 1188 BISHOP ST., # 1907 * HONOLULU, HI 96813

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TRAFFIC IMPACT ANALYSIS REPORT

FOR THE PROPOSED

KOHALA PLACE AT WAIKOLOA

WAIKOLOA, HAWAII

TAX MAP KEYS: (3) 6-8-003: 14, 15, 16, 40

I. Introduction

A. Project Description

Metric-Passco Waikoloa, LLC proposes to develop a mixed-use project in Waikoloa, Hawaii. The proposed Kohala Place at Waikoloa is planned as a mixed-use development, which would contain a retail-shopping center, a hotel, office space, multi-family housing, and senior housing. The project site is bounded by Waikoloa Road and Pua Melia Street. The 45.1± acre project site is identified as Tax Map Keys: (3) 6-8-003: 14, 15, 16, & 40. Figure 1 depicts the vicinity map.

The proposed project would consist of a retail-commercial space with a total of 226,500 square feet of gross floor area (SFGFA), which includes 140,500 SFGFA of retail space, 44,000 SFGFA of office space, and a 42,000 SFGFA business park; a total of 450 dwelling units (DU), which includes, 300 DU of residential condominiums, and 150 DU of senior housing; and a 200-room hotel. The project site would contain a total of about 1,236 parking stalls. Table 1 summarizes the development plan. The proposed redevelopment project is expected to reach full build out and occupancy by the Year 2012.

Table 1. Development Plan

Land Use	**Units/SFGFA**
Commercial-Retail	140,500 SFGFA
Commercial-Office	44,000 SFGFA
Business Park	42,000 SFGFA
Residential Condominium	300 DU
Senior Housing	150 DU
Hotel	200 Rooms

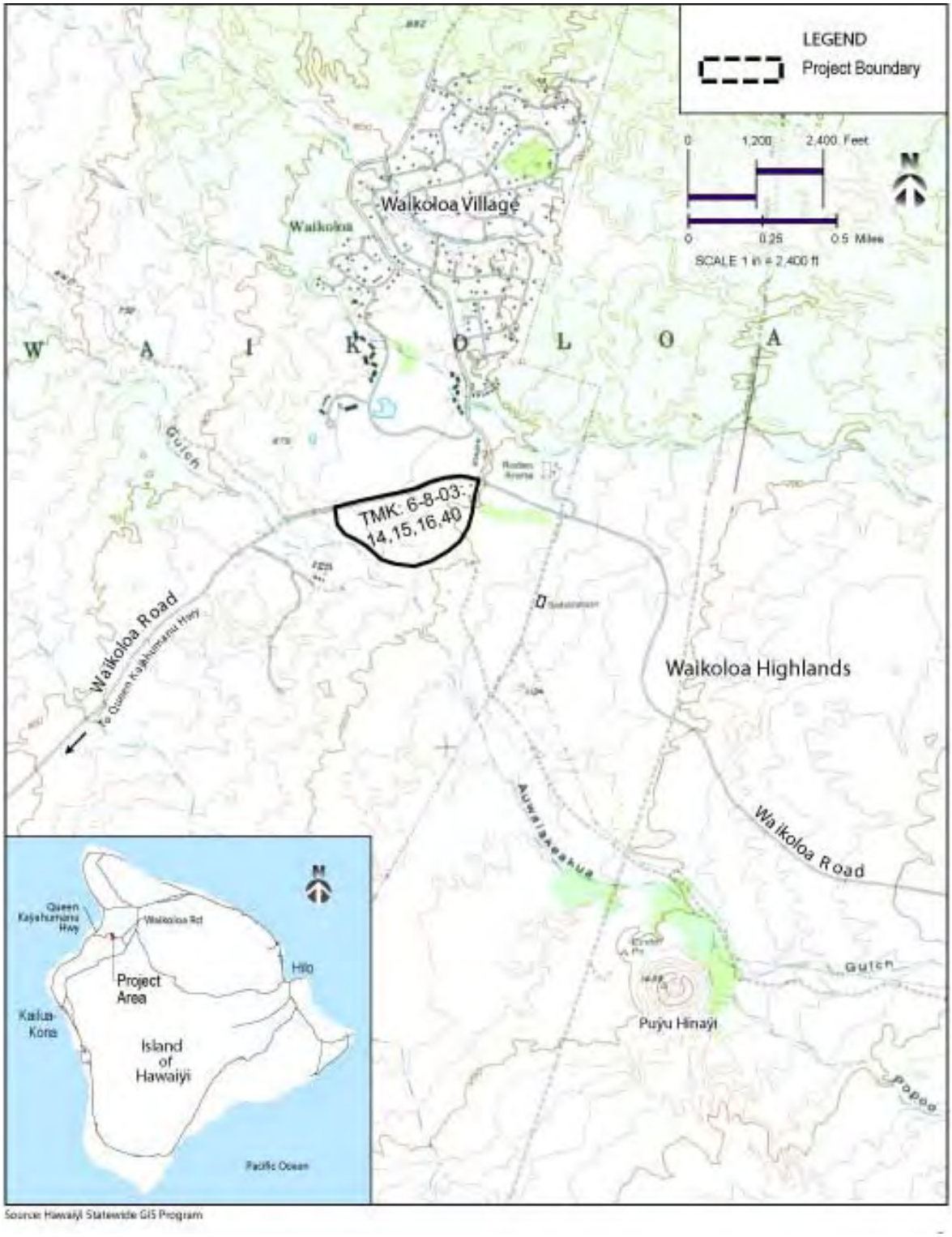


Figure 1. Location and Vicinity Map

Site access is proposed via a new signalized intersection on Waikoloa Road, and five new driveways on Pua Melia Street. The project site is depicted on Figure 2.

B. Purpose and Scope of the Study

The purpose of this study is to analyze the traffic impacts resulting from the full build out and occupancy of the proposed Kohala Place at Waikoloa. This report presents the findings and recommendations of the study. The scope of this study includes:

1. Description of the proposed project.
2. Evaluation of existing roadways and traffic conditions.
3. Development of trip generation characteristics of the proposed project.
4. Analysis of the future roadway and traffic conditions without the proposed project.
5. Identification and analysis of traffic impacts resulting from the development of the full build out of the proposed project.
6. Recommendations of improvements, as necessary, that would mitigate the traffic impacts identified in this study.

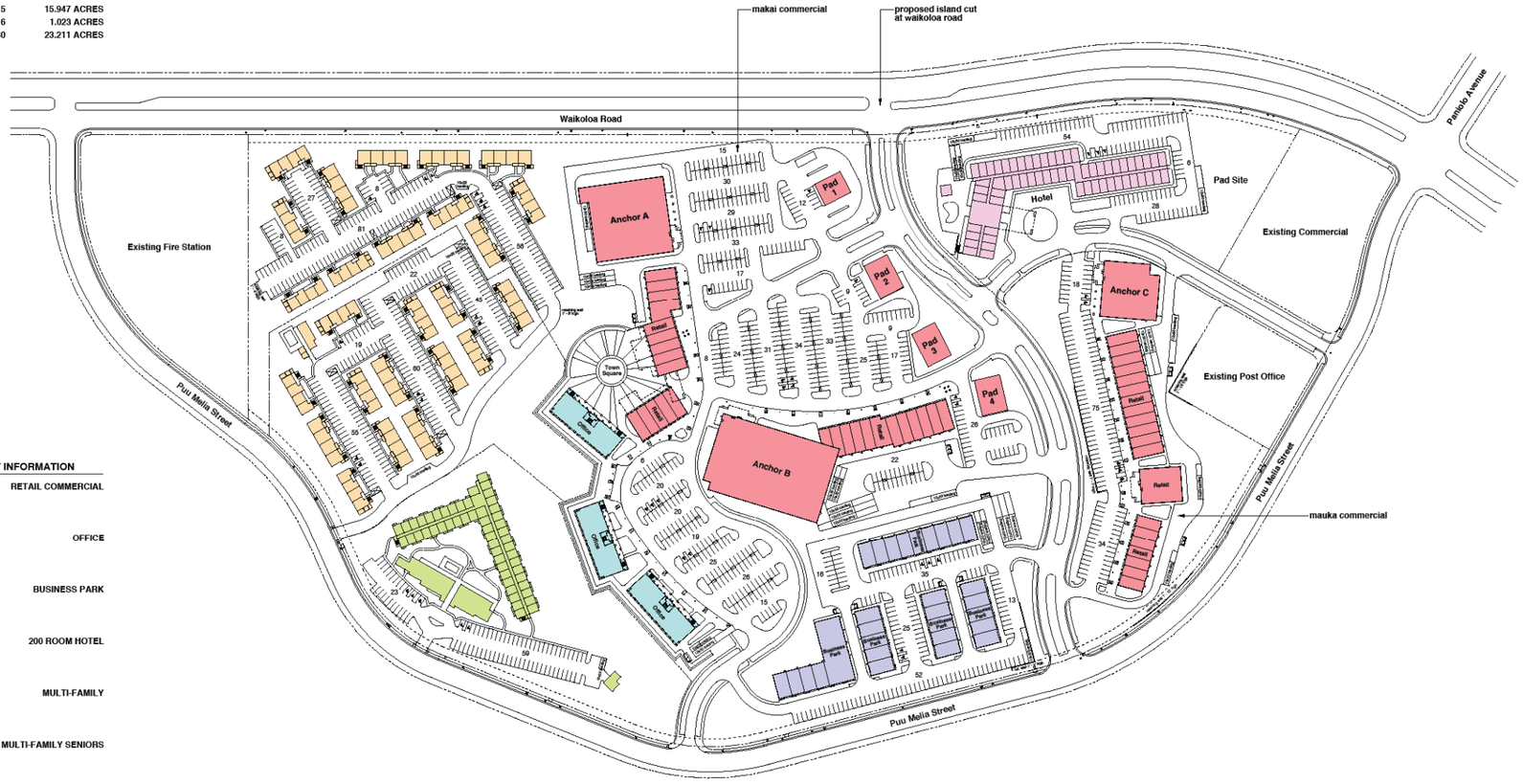
C. Methodologies

1. Capacity Analysis Methodology

The highway capacity analysis, performed for this study, is based upon procedures presented in the Highway Capacity Manual (HCM), published by the Transportation Research Board. HCM defines Level of Service (LOS) as "a quality measure describing operational conditions within a traffic stream". Several factors may be included in determining LOS, such as: speed, travel time, freedom to maneuver, traffic interruptions, driver comfort, and convenience. LOS's "A", "B", and "C" are considered satisfactory Levels of Service. LOS "D" is generally considered a "desirable minimum" operating level of service. LOS "E" is an undesirable condition, and LOS "F" is an unacceptable condition. Intersection LOS is primarily based upon delay. Table 2 summarizes the LOS criteria.

PROJECT INFORMATION

TAX MAP KEY	**TMK (3) 6-8-003: 014**
	TMK (3) 6-8-003: 015
	TMK (3) 6-8-003: 016
	TMK (3) 6-8-003: 040
COUNTY ZONING	
TMK (3) 6-8-003: 014	**CV-10**
TMK (3) 6-8-003: 015	**CV-10**
TMK (3) 6-8-003: 016	**CV-10**
TMK (3) 6-8-003: 040	**CV-10**
AREA	
TMK (3) 6-8-003: 014	**4.911 ACRES**
TMK (3) 6-8-003: 015	**15.947 ACRES**
TMK (3) 6-8-003: 016	**1.023 ACRES**
TMK (3) 6-8-003: 040	**23.211 ACRES**



PROJECT INFORMATION

- RETAIL COMMERCIAL
- OFFICE
- BUSINESS PARK
- 200 ROOM HOTEL
- MULTI-FAMILY
- MULTI-FAMILY SENIORS

Master Plan

N

0' 50' 100' 200'

Scale 1" = 100' - 0" 8.1.08

Kohala Place at Waikoloa

Waikoloa, Island & County of Kauai'i

Figure 2. Site Plan

Table 2. Level of Service Criteria (HCM)		
	Signalized Intersections	**Unsignalized Intersections**
LOS	Control Delay (sec/veh)	Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

"Volume-to-capacity" (v/c) ratio is a measure indicating the relative traffic demand to the roadway's capacity. HCM defines capacity as "the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic flow, and traffic control conditions." A v/c ratio of 0.50 indicates that the traffic demand is utilizing 50 percent of the roadway's capacity. A v/c ratio in excess of 1.00 indicates that the traffic demand exceeds the capacity of the highway facility. Worksheets for the capacity analysis performed throughout this report are presented in the Appendix, which is compiles under a separate cover.

2. Traffic Simulation

SimTraffic is a microscopic traffic simulation software, developed by Trafficware Corporation. Microscopic traffic simulation is a stochastic process, which can analyze the interactions of individual vehicles as they pass through the roadway network. HCM procedures do not include a Level of Service analysis for roundabouts. SimTraffic was used to evaluate the Levels of Service of the proposed roundabout intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street. SimTraffic also was used to analyze the vehicle queuing, vehicular delays, and the overall operations of the street network.

3. Trip Generation Methodology

The trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation, 7th Edition. ITE hotel trip rates were developed by correlating the total vehicle trip generation data with various activity/land use characteristics, such as the vehicle trips per hour (vph) per 1,000 SFGFA.

The total trips generated by a shopping center can be defined as driveway trips, i.e., traffic entering and exiting the project site. A percentage of the peak hour trips are considered to be "pass-by" trips, i.e., traffic already on the road stopping at a "secondary" destination. Pass-by traffic is included in the driveway traffic, but it does

not add to overall traffic in the vicinity. The “new" or primary trips are those trips, whose primary destination is the proposed shopping.

The percentages of pass-by trips were correlated with the gross leasable floor areas of the shopping centers that were taken from studies that were compiled by ITE. The results of the analysis were published in the Trip Generation Handbook, October 1998. Based upon the regression equation in Figure 5.5 of the Trip Generation Handbook, the pass-by trips are expected to comprise about 31.8 percent of the total PM peak hour of weekday traffic generated by the 200,000 SFGFA shopping center.

II. Existing Conditions

A. Roadways

Waikoloa Road is the primary arterial highway in the Waikoloa area, between Queen Kaahumanu Highway and Mamalahoa Highway. Waikoloa Road is a two-way, two- to four-lane roadway. In the vicinity of the project site, Waikoloa Road has a wide, raised median. The posted speeds on Waikoloa Road vary from 30 mph to 55 mph. Waikoloa Road is stop-controlled at its Tee-intersection with Mamalahoa Highway. Waikoloa Road is signalized at its Tee-intersection with Queen Kaahumanu Highway.

Paniolo Avenue is the major collector roadway in Waikoloa Village. Paniolo Avenue is a two-way, two- to four-lane roadway, which intersects Waikoloa Road at a stop-controlled four-legged intersection, opposite Pua Melia Street.

Pua Melia Street is a two-lane, two-way loop roadway, which extends from its intersection at Waikoloa Road, opposite Paniolo Avenue, to a stop-controlled four-legged intersection, opposite the Greens at Waikoloa driveway. Pua Melia Street provides access to the Post Office and Fire Station.

Queen Kaahumanu Highway is the primary arterial highway is West Hawaii between Kailua-Kona and Kawaihae. Queen Kaahumanu Highway is at two-way, two-lane highway. The posted speed on Queen Kaahumanu Highway is 55 miles per hour (mph) in the vicinity of the Waikoloa Road.

Mamalahoa Highway is a two-way, two-lane secondary arterial highway between Kailua-Kona and Waimea. The posted speed on Mamalahoa Highway is 55 mph in the vicinity of Waikoloa Road.

B. Existing Peak Hour Traffic Volumes and Operating Conditions

1. Field Investigation and Data Collection

Manual traffic count surveys were conducted in the study area in November 2007, during the peak periods of traffic from 6:30 AM to 8:30 AM and from 2:30 PM to 5:30 PM. The Appendix contains the traffic count survey data.

The following intersections were included in the study area.

- Queen Kaahumanu Highway and Waikoloa Road
- Waikoloa Road and Pua Melia Street/Greens Driveway
- Waikoloa Road and Paniolo Avenue/Pua Melia Street
- Mamalahoa Highway and Waikoloa Road.

2. Existing AM Peak Hour Traffic

The AM peak hour of traffic in the study area generally occurred from 7:00 AM to 8:00 AM. Between Paniolo Road and Mamalahoa Highway, Waikoloa Road carried about 400 vehicles per hour (vph), total for both directions. Waikoloa Road carried 800 vph, total for both directions, between Paniolo Road and Queen Kaahumanu Highway, during the existing AM peak hour of traffic.

The intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street operated at satisfactory Levels of Service, i.e., LOS "C" or better, during the existing AM peak hour of traffic. The intersection of Queen Kaahumanu Highway and Waikoloa Road operated at LOS "B" with a v/c ratio of 0.85. The left-turn movement from Waikoloa Road onto southbound Queen Kaahumanu Highway operated at LOS "D".

The other intersections in the study area operated at satisfactory Levels of Service. The existing AM peak hour traffic volumes and the results of the capacity analysis are depicted on Figure 3.

3. Existing PM Peak Hour Traffic

The PM peak hour of traffic in the study area occurred between 3:30 PM and 4:30 PM. Waikoloa Road carried about 500 vph, between Paniolo Road and Mamalahoa Highway. Makai of Paniolo Road, Waikoloa Road carried about 900 vph, during the existing PM peak hour of traffic.

During the PM peak hour, the through and left-turn movement from Paniolo Avenue and the shared through/right-turn movement from Pua Melia Street at Waikoloa Drive operated LOS "F". The left-turn movement from Pua Melia Street and the through movement from Paniolo Avenue operated at LOS "E" at Waikoloa Road.

The intersection of Queen Kaahumanu Highway and Waikoloa Beach Road operated at LOS "B" and a v/c ratio of 0.69. The left-turn movement from Waikoloa Road onto southbound Queen Kaahumanu Highway operated at LOS "D".

The other intersections in the study area operated at satisfactory Levels of Service. Figure 4 depicts the existing PM peak hour traffic volumes and the results of the capacity analysis.

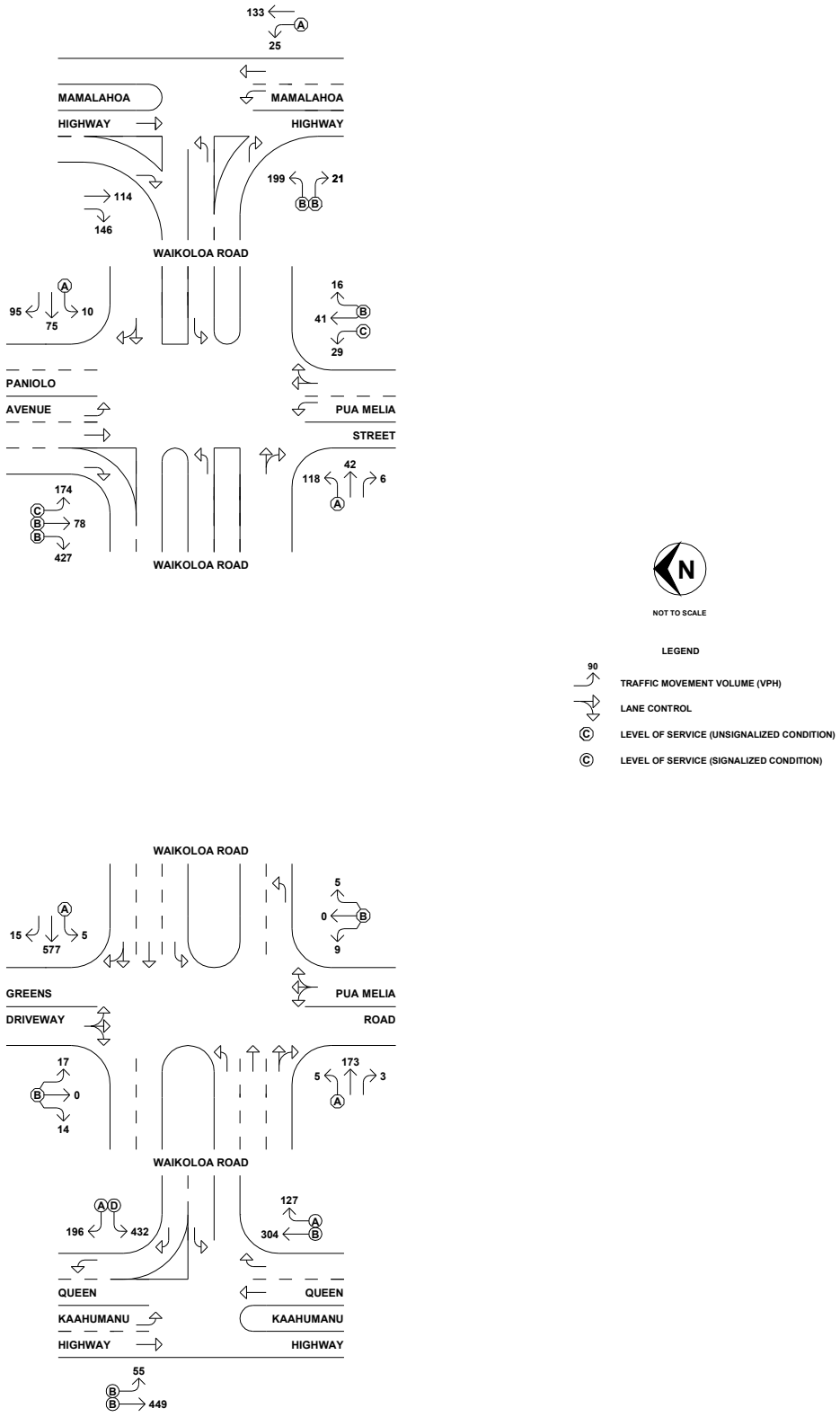


Figure 3. Existing AM Peak Hour Traffic

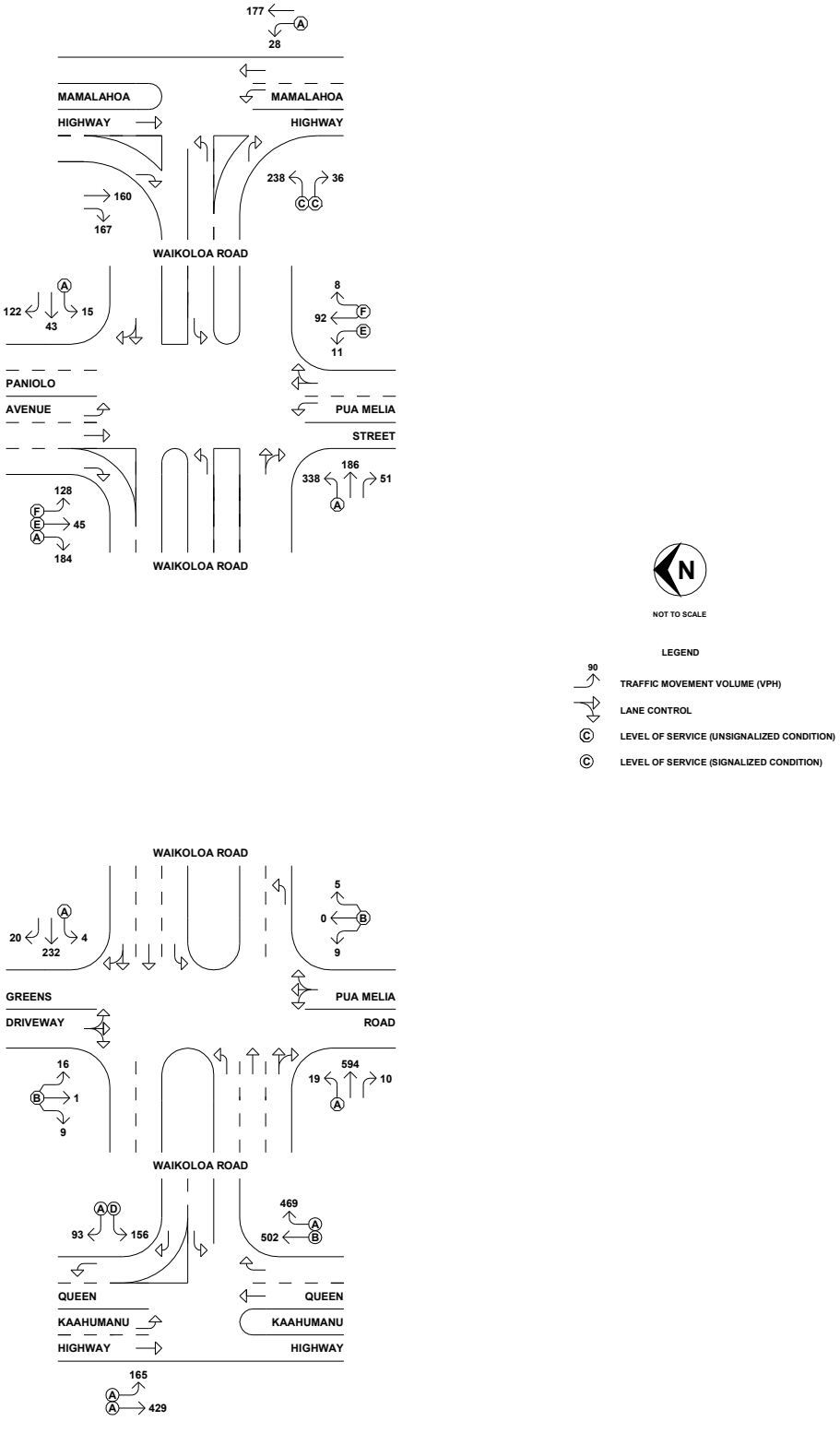


Figure 4. Existing PM Peak Hour Traffic

III. Future Traffic Conditions

A. External Traffic

The South Kohala Regional Traffic Forecasts (SKRTF) was prepared for DOT by Julian Ng, Inc., dated April 2002. The purpose of the SKRTF was to establish a consistent basis for traffic forecasts for three ongoing independent planning efforts by DOT for future highways in the South Kohala and Waimea regions. According to the SKRTF, traffic in the study region is expected to increase at an annual rate of 2.88 percent. The SKRTF traffic forecast was use in this traffic impact analysis. A growth factor of 1.14 was applied to through traffic on Queen Kaahumanu Highway and on Mamalahoa Highway.

B. Planned Roadway Projects

1. Saddle Road Extension

The State of Hawaii Department of Transportation (DOT) is proposing to construct the Saddle Road Extension in South Kohala, Hawaii as recommended in the Hawaii Long Range Land Transportation Plan. The Saddle Road Extension would be a new two- to three-lane two-way, 10±-mile highway, which would extend the Saddle Road Realignment from Mamalahoa Highway to Queen Kaahumanu Highway, opposite its intersection with Waikoloa Beach Road. The implementation of the Saddle Road improvements are beyond the time frame of this study and are not taken into account in this traffic impact analysis.

2. Kawaihae Bypass Highway

The Kawaihae Bypass Highway is another DOT highway project, which is in the planning stage at this writing. The Kawaihae Bypass Highway would be located to the south of Kawaihae Road. The Kawaihae Bypass Highway would extend the west terminus of the proposed Waimea Bypass Highway at Mamalahoa Highway to Akoni Pule Highway in Kawaihae. The completion of the Kawaihae Bypass Highway is beyond the time frame of this study and is not taken into account in this traffic impact analysis.

3. Queen Kaahumanu Highway Widening

Queen Kaahumanu Highway is proposed to be widened from two lanes to four lanes between Kailua-Kona and Kawaihae. At this writing, the first phase of the widening project is under construction in Kailua-Kona. The widening of Queen Kaahumanu Highway is beyond the time frame of this study and is not taken into account in this traffic impact analysis.

4. Waikoloa Beach Road

The extension of Waikoloa Beach Road to Queen Kaahumanu Highway, opposite Waikoloa Road is under construction at this writing. The Waikoloa Beach Road

extension is part of the Waikoloa Beach Resort expansion plans. A memorandum, dated October 27, 2005, prepared by Kaku Associates, documented the traffic analysis of the expansion of the Waikoloa Beach Resort and the extension of Waikoloa Beach Road. The extension of Waikoloa Beach Road to Queen Kaahumanu Highway, opposite Waikoloa Road, is assumed to be completed within the time frame of this traffic impact analysis. The traffic assignments developed in the Waikoloa Resort traffic study are included in this traffic impact analysis.

5. Waikoloa Road and Paniolo Avenue/Pua Melia Street Intersection

The intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street is being redesigned to a roundabout configuration at this writing. The proposed improvement is an unsignalized intersection, which will require approaching traffic to turn right at the intersection, enter a circular roadway, and turn right to exit at the appropriate leg of the intersection. The modern roundabout requires approaching traffic to yield to traffic in the roundabout. Exclusive right-turn lanes will be included on the southbound approach (Paniolo Avenue) and on the makai bound (eastbound) approach (Waikoloa Road). The roundabout improvement was required by County of Hawaii Ordinance 05-157 as a condition of approval for the proposed Waikoloa Highlands Subdivision and is assumed to be completed within the time frame of this traffic impact analysis.

C. Planned Developments

1. Waikoloa Highlands Subdivision

The Traffic Impact Analysis Report for the Waikoloa Highlands Subdivision, prepared for Waikoloa Mauka, LLC, by Julian Ng, Incorporated, dated January 2007, documented the traffic impact analysis of the proposed Waikoloa Highlands. Waikoloa Highlands will create 400 one-acre residential lots on the south side of Waikoloa Road, mauka of Pua Melia Street. Access is proposed on Waikoloa Road and on Pua Melia Street.

The Waikoloa Highlands traffic study recommended the signalization of the intersections of Mamalahoa Highway at Waikoloa Road and Waikoloa Road at Paniolo Avenue/Pua Melia Street. The traffic signals at Waikoloa Road and Paniolo Avenue/Pua Melia Street, recommended in the Waikoloa Highlands traffic study, has since been revised to a roundabout. The traffic assignments developed in the Waikoloa Highlands traffic study are included in this traffic impact analysis.

2. Waikoloa Heights Subdivision

The Draft Traffic Impact Analysis Report for the Waikoloa Heights Subdivision, prepared for Waikoloa Mai Lai, LLC, by Julian Ng, Incorporated, dated April 2005, documented the traffic impact analysis of Phase I of the proposed Waikoloa Heights. The Waikoloa Heights Subdivision would ultimately contain about 2,000 dwelling units. Phase I would include about 270 single-family dwelling units. Waikoloa

Heights would be located at the north end of Paniolo Avenue. The Waikoloa Heights traffic study also recommended the signalization of the intersection Waikoloa Road at Paniolo Avenue/Pua Melia Street. The traffic assignments developed in the Waikoloa Heights traffic study are included in this traffic impact analysis.

3. Waikoloa Village

Other developments in Waikoloa Village include the 200-dwelling unit Kilohana Kai and the 2,000-dwelling unit County workforce housing. For the purpose of this study, the Kilohana Kai development and 1,000 dwelling units of the County workforce housing are assumed to be completed within the time frame of the proposed project and is included in this traffic impact analysis.

It has long been recognized that the growth in Waikoloa Village was placing heavy traffic demands on Paniolo Avenue. Secondary access roads to Waikoloa Village have been discussed in previous studies to relieve Paniolo Avenue. At this writing, the alternative accesses to Waikoloa Village are in the planning stages and are not included in this traffic impact analysis.

D. Year 2012 Peak Hour Traffic Analysis Without Project

1. AM Peak Hour Traffic Analysis Without Project

During the Year 2012 AM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Waikoloa Road/Waikoloa Beach Road is expected to operate at an overall LOS "C" with a v/c ratio of 0.97. The through movement on eastbound Waikoloa Beach Road is expected to operate at LOS "E". The left-turn movement on westbound Waikoloa Road and the left-turn and through movements on southbound Queen Kaahumanu Highway are expected to operate at LOS "D".

Waikoloa Road is expected to operate at LOS "E" at Mamalahoa Highway. The other intersections in the study area generally operated at satisfactory Levels of Service. Figure 5 depicts the AM peak hour traffic volumes without the proposed project and the results of the capacity analysis.

2. PM Peak Hour Traffic Analysis Without Project

The planned roundabout at the intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street is expected to operate at an overall LOS "E", during the PM peak hour of traffic without the proposed project. Eastbound Waikoloa Road is expected to operate at LOS "F" with a v/c ratio of 1.20.

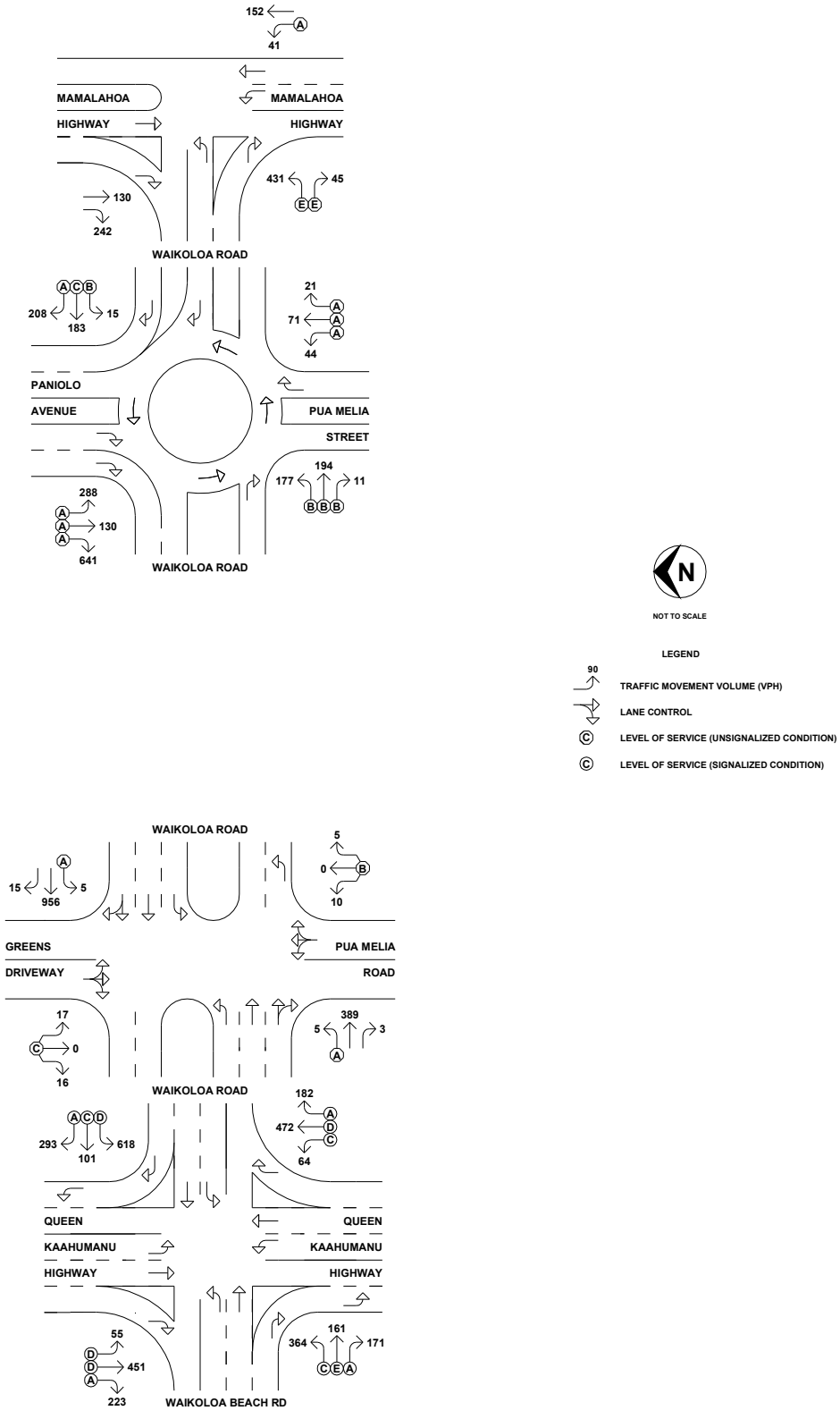


Figure 5. AM Peak Hour Traffic Without Project

During the PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Waikoloa Road/Waikoloa Beach Road is expected to operate at an overall LOS "C" with a v/c ratio of 0.98. The left-turn movements on eastbound Waikoloa Beach Road and northbound Queen Kaahumanu Highway are expected to operate at LOS "E". The left-turn and through movements on westbound Waikoloa Road and the through movement on southbound Queen Kaahumanu Highway are expected to operate at LOS "D".

Waikoloa Road is expected to operate at LOS "F" at Mamalahoa Highway. The PM peak hour traffic volumes without the proposed project and the results of the capacity analysis are depicted on Figure 6.

E. Proposed Improvements Without Project

1. Signalize the intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street.
   a. Provide two left-turn lanes and two through lanes on eastbound Waikoloa Road.
   b. Provide two through lanes and an exclusive right-turn lane on westbound Waikoloa Road.
2. Signalize the intersection of Mamalahoa Highway and Waikoloa Road.
3. Widen Queen Kaahumanu Highway from two lanes to four lanes (beyond time frame of this study).

IV. Traffic Impact Analysis

A. Project Generated Traffic

1. Trip Generation Characteristics

During the AM peak hour of traffic, the proposed Kohala Place at Waikoloa is expected to generate an increase in traffic of 563 vehicles per hour (vph) – 283 vph entering the site and 280 vph exiting the site. The proposed project is expected to generate 1,819 vph, during the PM peak hour of traffic – 936 vph entering the site and 883 vph exiting the site. Of the total 1,819 vph, 432 vph are expected to be pass-by traffic, resulting in a net increase of 1387 vph. The trip generation characteristics for the proposed project are summarized in Table 3.

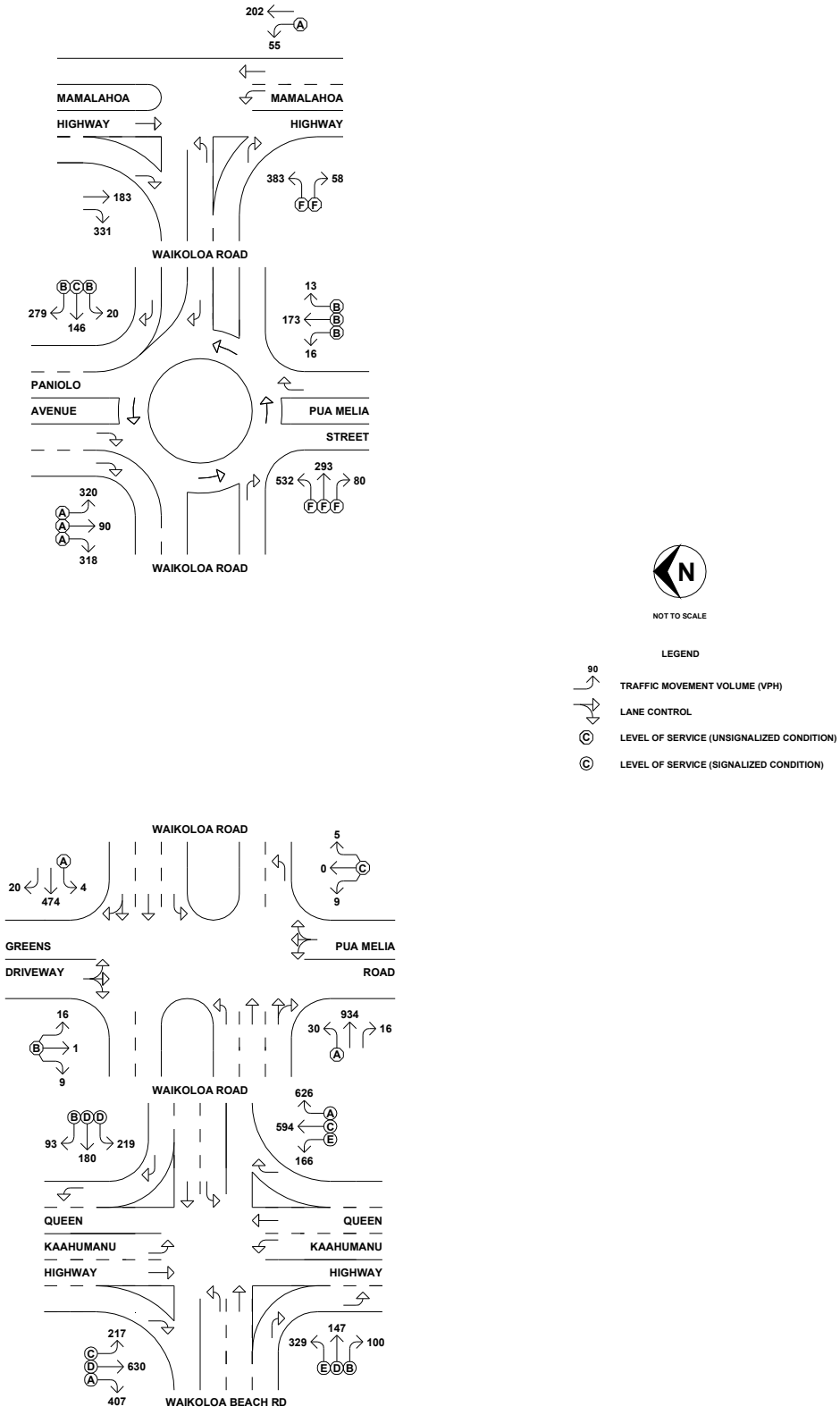


Figure 6. PM Peak Hour Traffic Without Project

Table 3. Trip Generation Characteristics							
Land Use (ITE Code)	**Units**	**AM Peak Hour (vph)**			**PM Peak Hour (vph)**		
		Enter	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Retail (820)	140,500 SFGFA	117	75	192	376	407	783
Office (710)	44,000 SFGFA	86	12	98	22	106	128
Business Park (770)	42,000 SFGFA	51	10	61	16	52	68
Condominium (230)	300 DU	21	103	124	99	49	148
Senior Housing (254)	150 DU	18	22	40	28	18	46
Hotel (310)	200 Rooms	59	38	97	65	47	112
Subtotals		353	260	612	606	679	1,289
Pass-By Trips		0	0	0	138	138	276
Net Increase in Trips		**352**	**260**	**612**	**468**	**541**	**1,009**

2. Trip Distribution

The trip distribution is based upon existing site traffic patterns and population distribution in the region. Figures 7 and 8 depict the AM and PM peak hour site-generated traffic assignments for the proposed project, respectively.

B. Proposed Traffic Improvements With Project

1. Signalize the intersection of Waikoloa Road and the proposed project access driveway.
   a. Provide an exclusive left-turn lane on westbound Waikoloa Road.
   b. Provide an exclusive right-turn lane on eastbound Waikoloa Road.
   c. Provide separate left-turn and right-turn lanes on the project access driveway.
2. Provide an exclusive left-turn lane on Pua Melia Street (west terminus) at Waikoloa Road.
3. Provide an exclusive right-turn lane on Pua Melia Street (east terminus) at Waikoloa Road.

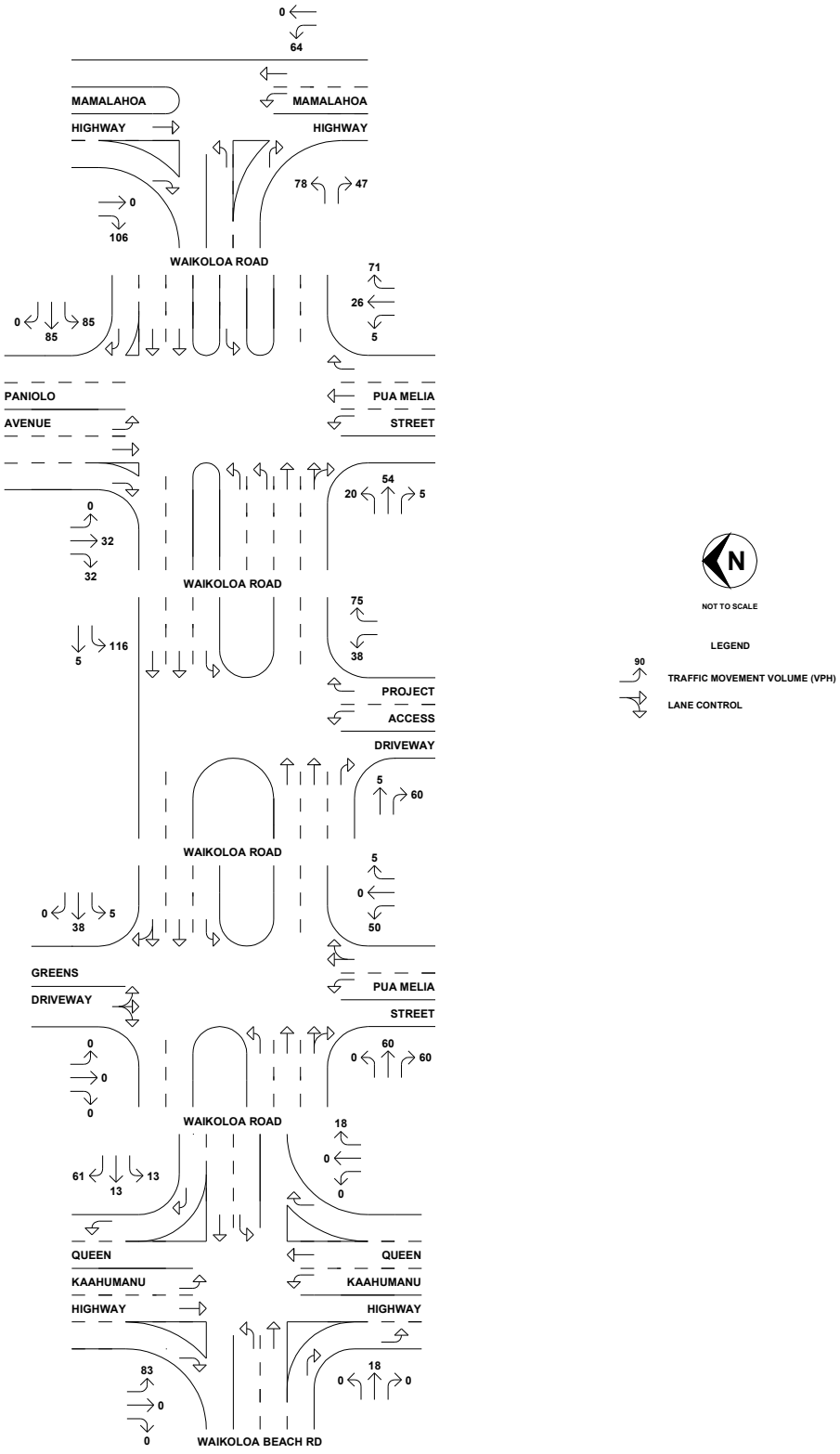


Figure 7. AM Peak Hour Traffic Assignment

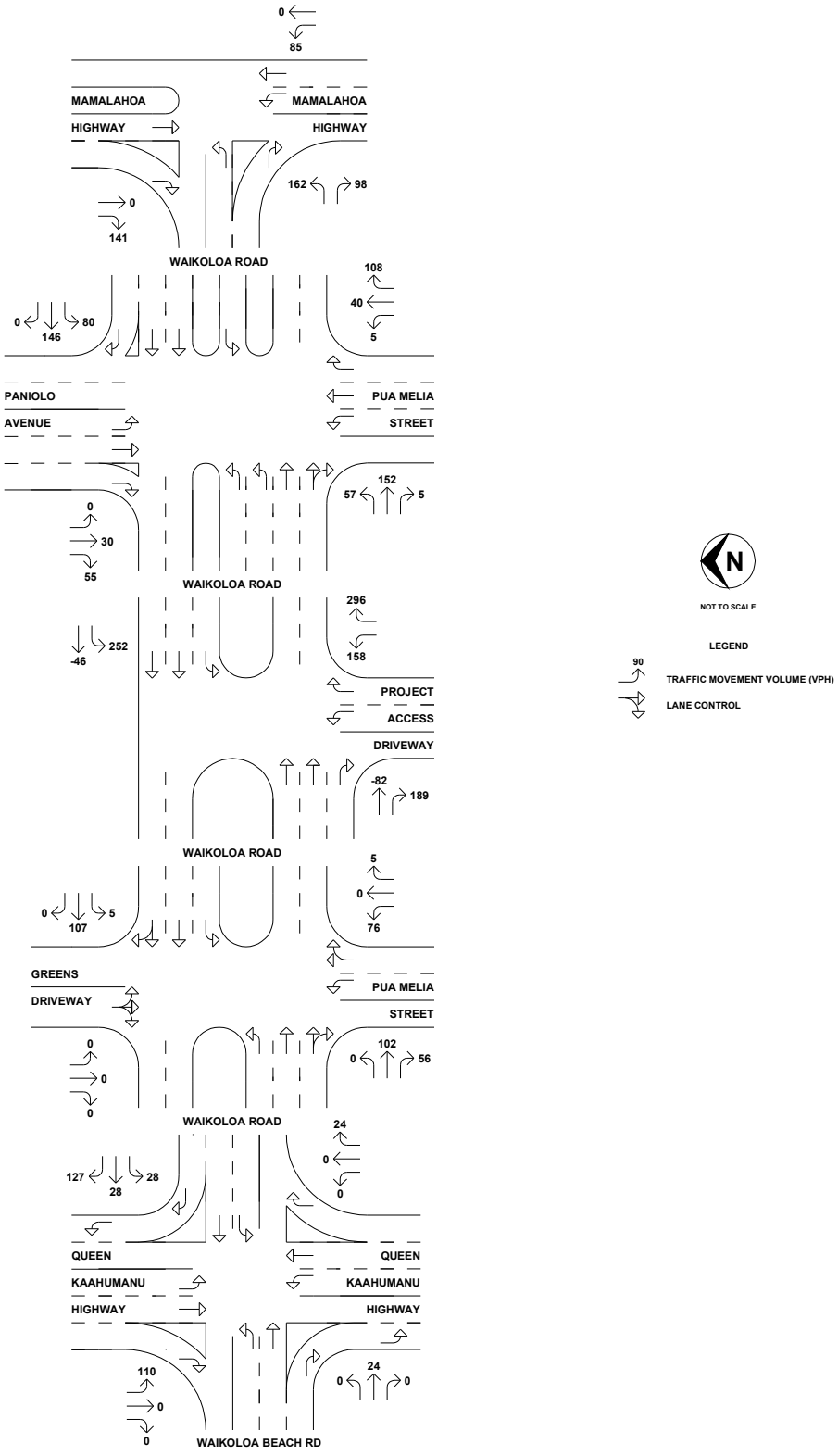


Figure 8. PM Peak Hour Traffic Assignment

C. Peak Hour Traffic Impact Analysis With Project

1. AM Peak Hour Traffic Impact Analysis With Project

The intersection of Queen Kaahumanu Highway and Waikoloa Road/Waikoloa Beach Road is expected to operate at an overall LOS “D” with a v/c ratio of 1.07. The through movement on eastbound Waikoloa Beach Road and the left-turn movements on westbound Waikoloa Road and on southbound Queen Kaahumanu Highway are expected to operate at LOS “F”. The left-turn movement on westbound Waikoloa Road is expected to operate at LOS “E.

The other intersections in the study area are expected to operate at satisfactory Levels of Service”, during the AM peak hour of traffic with the proposed project. Figure 9 depicts the AM peak hour traffic with the proposed project, and the results of the capacity analysis.

2. PM Peak Hour Traffic Impact Analysis With Project

During the PM peak hour of traffic with the proposed project, the intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street is expected to operate at LOS “C” with a v/c ratio of 0.86. The left-turn and through movements on westbound Waikoloa Road are expected to operate at LOS “D”. The through movement on northbound Pua Melia Street and the left-turn movement on southbound Paniolo Avenue also are expected to operate at LOS “D”.

The intersection of Waikoloa Road and the Project Access Road is expected to operate at LOS "B" with a v/c ratio of 0.64. The left-turn movement from the Project Access Road onto Waikoloa Road is expected to operate at LOS "D". The left-turn movement from Pua Melia Street (west terminus) onto Waikoloa Road is expected to operate at LOS “E”, during the PM peak hour of traffic with the proposed project.

The intersection of Queen Kaahumanu Highway and Waikoloa Road/Waikoloa Beach Road is expected to operate at an overall LOS “D” with a v/c ratio of 1.03. The left-turn movement ON eastbound Waikoloa Road is expected to operate at LOS “F”. The left-turn movements on northbound and southbound Queen Kaahumanu Highway and the through movement on westbound Waikoloa Road are expected to operate at LOS “E”.

The intersection of Mamalahoa Highway and Waikoloa Road is expected to operate at LOS "B" with a v/c ratio of 0.84. The individual traffic movements at the intersection are expected to operate at satisfactory Levels of Service. The PM peak hour traffic with the proposed project and the results of the capacity analysis are depicted on Figure 10.

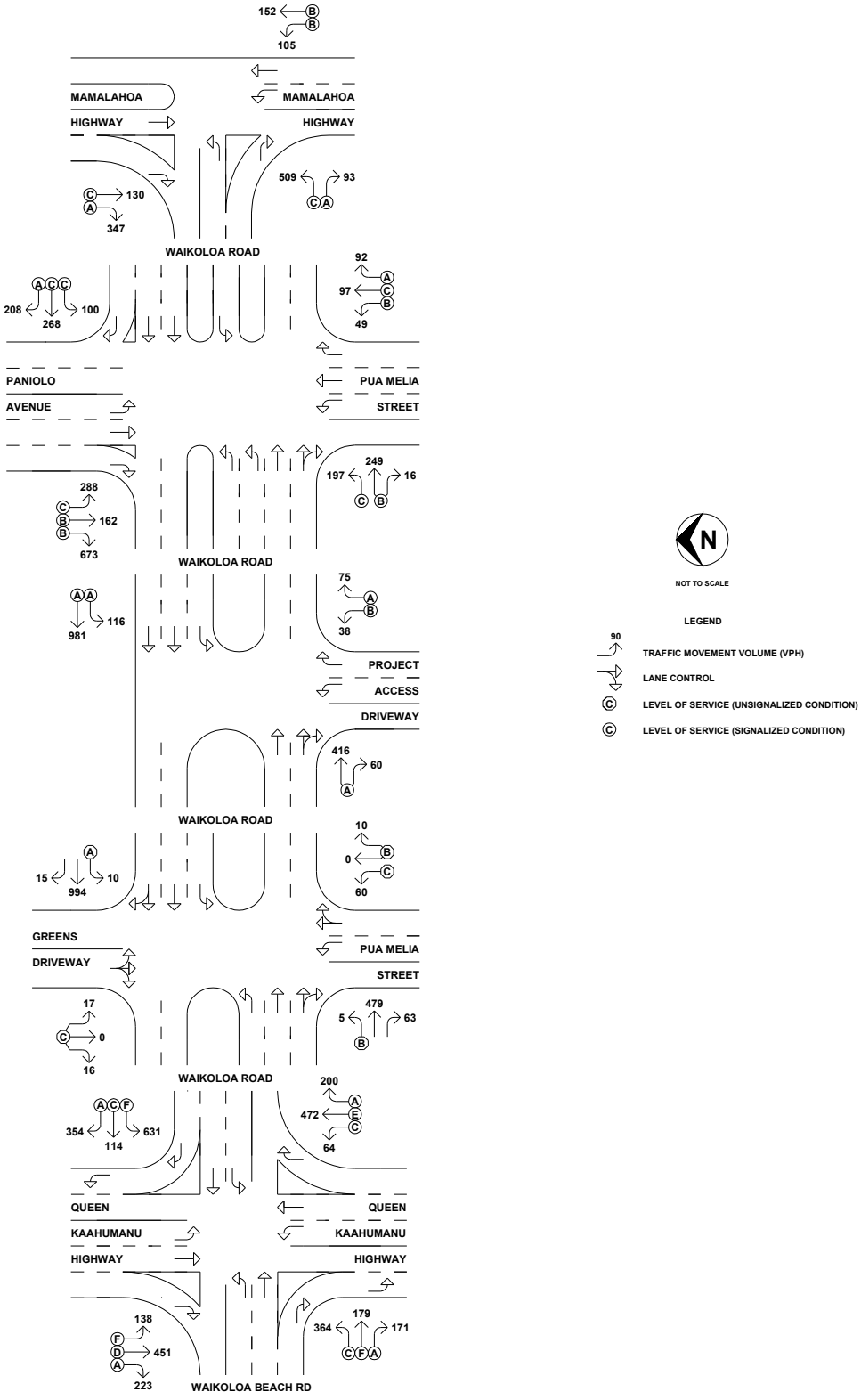


Figure 9. AM Peak Hour Traffic With Project

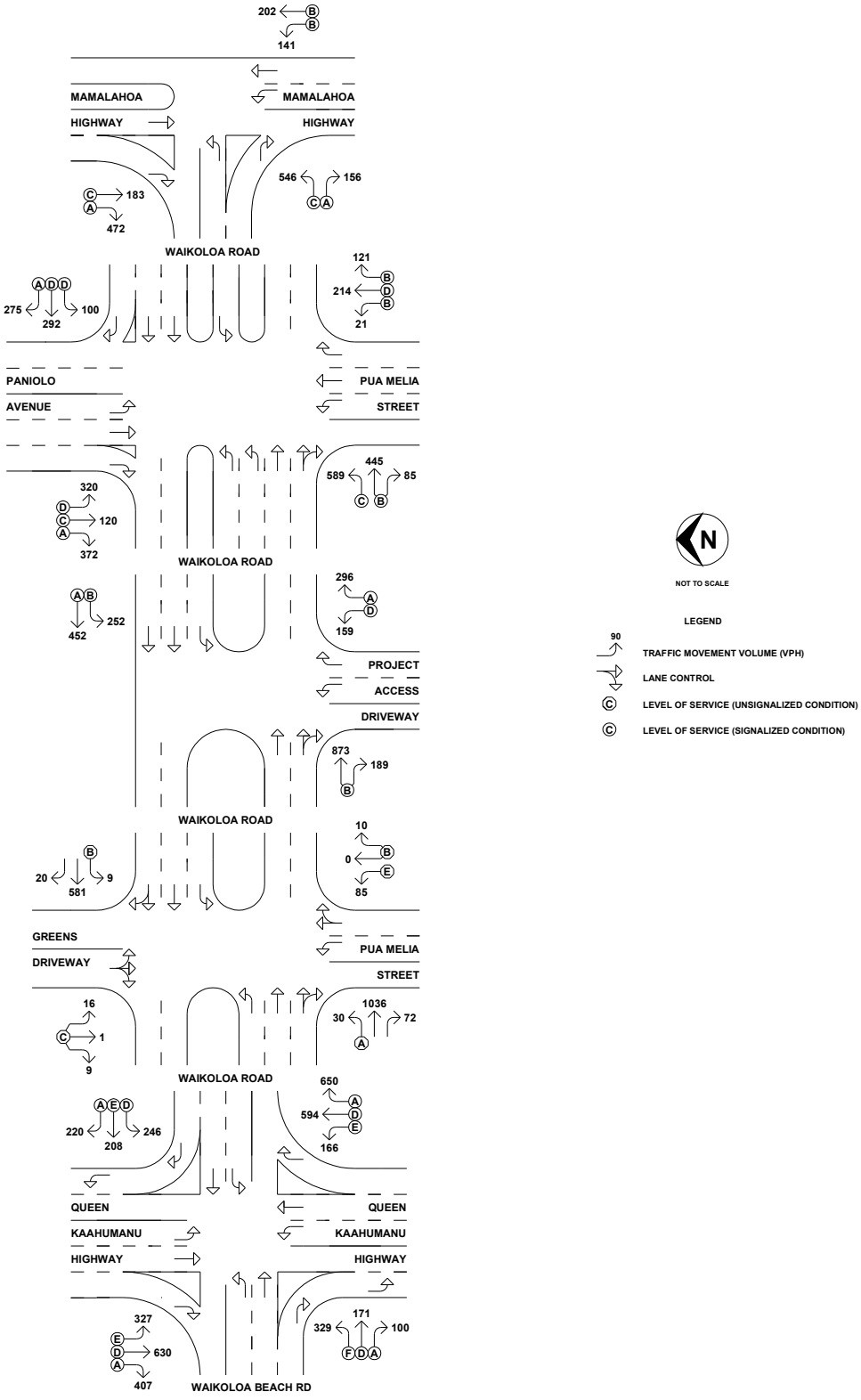


Figure 10. PM Peak Hour Traffic With Project

V. Recommendations and Conclusions

A. Recommended Traffic Improvements Without Project

The following traffic improvement are recommended to mitigate future traffic impacts without the proposed project:

1. The intersection of Waikoloa Road and Paniolo Avenue/Pua Melia Street should be signalized when it becomes warranted.
    a. Two left-turn lanes and two through lanes should be provided on eastbound Waikoloa Road.
    b. Two through lanes and an exclusive right-turn lane should be provided on westbound Waikoloa Road.
2. The intersection of Mamalahoa Highway and Waikoloa Road should be signalized when it becomes warranted.
3. Queen Kaahumanu Highway should be widened from two lanes to four lanes as part of the Department of Transportation's regional highway improvement program.

B. Recommended Traffic Improvements With Project

1. Waikoloa Road and the proposed project access driveway
    a. The intersection of Waikoloa Road and the proposed project access driveway should be signalized.
    b. Westbound Waikoloa Road should be widened to provide an exclusive left-turn lane.
    c. Separate left-turn and right-turn lanes should be provided on the project access driveway.
2. Pua Melia Street (west terminus) should be widened/restriped to provide an exclusive left-turn lane at Waikoloa Road.
3. Pua Melia Street (east terminus) should be widened/restriped to provide an exclusive right-turn lane on at Waikoloa Road.

C. Conclusions

Waikoloa Road is the major east-west roadway between Queen Kaahumanu Highway and Mamalahoa Highway in the region. The only other alternative route is located further north along Kawaihae Road. The proposed Saddle Road Extension is expected provide a regional alternative route to Waikoloa Road.

Several other projects are in various stages of development in Waikoloa Village that will impact Paniolo Avenue and Waikoloa Road. As future development occurs in

Waikoloa Village, the eastbound leg of the planned roundabout at the intersection will reach its capacity without the proposed project. The Waikoloa Road intersection at Queen Kaahumanu Highway also can be expected to reach capacity conditions during the peak hours of traffic. The widening of Queen Kaahumanu Highway from two lanes to four lanes planned by DOT is expected to mitigate the projected capacity conditions at its intersection with Waikoloa Road.

The Waikoloa Beach Resort expansion plans and the extension of Waikoloa Beach Road to Queen Kaahumanu Highway, opposite Waikoloa Road, are expected to impact the intersection. The future Saddle Road Extension can be expected to divert some of the Waikoloa Beach Resort traffic from Waikoloa Road.

Waikoloa Road traffic make up the dominant movements at the intersection of Mamalahoa Highway and Waikoloa Road. Until the Saddle Road Extension is constructed, Waikoloa Road traffic is expected to continue to provide regional access as well as access to Waikoloa Village. In the interim, a median shelter lane on northbound Mamalahoa Highway would facilitate the left-turn movement from Waikoloa Road. Eventually the intersection will warrant traffic signalization.

The proposed traffic improvements, recommended herein are expected to mitigate the traffic access impacts resulting from the proposed Kohala Place at Waikoloa. Table 4 summarizes the traffic impact analysis of the intersections in the vicinity of the proposed project.

Table 4. Traffic Impact Analysis Summary

Waikoloa Road Intersection	MOE	Existing Condition		Without Project		With Project With Mitigation	
		AM	PM	AM	PM	AM	PM
Paniolo Avenue/ Pua Melia Street	LOS	B	F	A	E	B	C
	v/c	0.49	3.03	0.55	1.20	0.76	0.86
Project Access Driveway	LOS	N/A	N/A	N/A	N/A	A	B
	v/c	N/A	N/A	N/A	N/A	0.60	0.64
Pua Melia Street/ Greens Driveway	LOS	A	A	A	A	A	A
	v/c	0.27	0.23	0.44	0.37	0.46	0.45
Queen Kaahumanu Highway	LOS	B	B	C	C	D	D
	v/c	0.85	0.69	0.97	0.98	1.07	1.03
Mamalahoa Highway	LOS	A	A	C	D	B	B
	v/c	0.38	0.57	0.88	1.02	0.76	0.84