

DRAFT ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

October 2008

Prepared for:
County of Hawai'i
Planning Department
Aupuni Center, Suite 3
101 Pauahi Street
Hilo, HI 96720

DRAFT ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPLICANT:

Sunstone Kona LLC
1003 Bishop St., Suite 1240
Honolulu, HI 96813

APPROVING AGENCY:

County of Hawai'i
Planning Department
101 Pauahi Street, Suite 3
Hilo HI 96720

CONSULTANT:

Geometrician Associates LLC
PO Box 396
Hilo HI 96721

CLASS OF ACTION:

Use of County Land

This document is prepared pursuant to:

The Hawai'i Environmental Policy Act,
Chapter 343, Hawai'i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai'i Department of Health Administrative Rules (HAR).

TABLE OF CONTENTS

| | |
|--------------------------------------------------------------------------|-----|
| SUMMARY | iii |
| PART 1: PROJECT DESCRIPTION, LOCATION, AND E.A. PROCESS | 1 |
| 1.1 Project Description, Location and Property Ownership | 1 |
| 1.2 Environmental Assessment Process | 1 |
| 1.3 Public Involvement and Agency Coordination | 9 |
| PART 2: ALTERNATIVES | 10 |
| 2.1 Proposed Action | 10 |
| 2.2 No Action | 10 |
| PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION | 11 |
| 3.1 Physical Environment | 11 |
| 3.1.1 Climate, Geology, Soils and Geologic Hazards | 11 |
| 3.1.2 Water Features and Water Quality | 12 |
| 3.1.3 Drainage | 16 |
| 3.1.4 Flora, Fauna, and Ecosystems | 20 |
| 3.1.5 Air Quality, Noise and Scenic Resources | 22 |
| 3.1.6 Hazardous Materials, Toxic Substances and Hazardous Conditions ... | 23 |
| 3.2 Socioeconomic and Cultural | 24 |
| 3.2.1 Socioeconomic Characteristics | 24 |
| 3.2.2 Cultural and Archaeological Resources | 24 |
| 3.3 Infrastructure | 35 |
| 3.3.1 Utilities, Energy, Public Facilities and Public Services | 35 |
| 3.3.2 Roadways | 37 |
| 3.4 Secondary and Cumulative Impacts | 43 |
| 3.5 Required Permits and Approvals..... | 46 |
| 3.6 Consistency With Government Plans and Policies | 47 |
| 3.6.1 Hawai‘i State Plan | 47 |
| 3.6.2 Hawai‘i County SMA, Zoning and General Plan | 47 |
| 3.6.3 Hawai‘i State Land Use Law | 52 |
| 3.6.3 Kona Community Development Plan | 53 |
| PART 4: DETERMINATION | 54 |
| PART 5: FINDINGS AND REASONS | 54 |
| REFERENCES | 57 |

LIST OF TABLES

| | | |
|----------|-------------------------------------------------------------------------|----|
| TABLE 1 | Plant Species on Project Site | 21 |
| TABLE 2 | Selected Socioeconomic Characteristics | 25 |
| TABLE 3 | Archaeological Sites..... | 32 |
| TABLE 4a | Existing (2006) & Future (2020) AM and PM Peak Hour Traffic Volumes ... | 38 |
| TABLE 4b | Level-of-Service Definitions for Unsignalized Intersections Sites..... | 41 |
| TABLE 4c | Level-of-Service Analysis for 2020 Conditions Sites..... | 42 |

LIST OF FIGURES

FIGURE 1 General Location Maps 2
FIGURE 2 TMK Map 3
FIGURE 3 Project Site Airphoto 4
FIGURE 4a Overall Site Plan 5
FIGURE 4b Site Plan: Typical Elevations, Eight-Plex Residential Unit Front Elevation ... 6
FIGURE 4c Site Plan: Commercial Area (Block C) 7
FIGURE 4d Site Plan: typical Commercial Building Elevation 8
FIGURE 5a Existing Drainage Conditions 17
FIGURE 5b Proposed Drainage Conditions 18
FIGURE 6 Archaeological Sites 33
FIGURE 7a 2020 AM With and Without Project Traffic 39
FIGURE 7a 2020 PM With and Without Project Traffic 40

LIST OF APPENDICES

APPENDIX 1a Comments in Response to Pre-Consultation
APPENDIX 1b Special Management Area Permit
APPENDIX 2a Historic Sites Compliance Summary
APPENDIX 2b Archaeological Inventory Survey, Haun & Associate, 2004
APPENDIX 2c State Historic Preservation Division Letters Correspondence
APPENDIX 3 Cultural Impact Assessment
APPENDIX 4 Visual Impact Assessment
APPENDIX 5 Traffic Impact Analysis Report

SUMMARY OF THE PROPOSED ACTION, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Sunstone Kona LLC (Sunstone) proposes to build a condominium project on a portion of a 46.3-acre parcel located between Ali'i Drive and Kuakini Highway in Kona, 1.2 miles south of Kailua Village. A total of 289 multi-family dwelling units, complete with landscaping and off-street parking, are proposed for the L-shaped property. Plans for the development include commercial space on a 2.2-acre portion of the property carrying a neighborhood commercial zoning designation. The project includes a mauka-makai connector roadway to be developed between Ali'i Drive and Kuakini Highway partially outside of the property that will also provide access to the project.

A botanical survey conducted on the project site found no threatened or endangered plant species, with vegetation consisting of introduced or alien species except for several common roadside plants indigenous to Hawai'i. Two burial sites on the project parcel are being protected by a burial treatment plan approved by the Hawai'i Island Burial Council. In addition, the State Historic Preservation Division has approved an archaeological preservation and data recovery plan for the Great Wall of Kuakini, a habitation site, two burials, and other documented significant historic sites. In the unlikely event that additional archaeological resources or human remains are encountered during future development activities, work in the immediate area of the discovery will be halted.

As it is consistent with surrounding development, and views of the shoreline from the nearest State Highways or other viewplanes are blocked by topography and vegetation, the project is anticipated to have minor visual impacts including both toward and from the shoreline. The developer also proposes to employ a color scheme featuring earth-tone colors to minimize visual impacts. The project is not expected to have a negative impact on coastal water resources as it is separated from the shoreline by a distance ranging between 200 and 3,400 feet and by a County-owned roadway. The developer proposes to build a drainage channel parallel to the mauka-makai roadway to accommodate stormwater flow, and on-site drainage systems will be developed to adequately dispose of surface runoff generated by the project. All construction will be done in accordance with County, State and federal regulations, including County flood control and Federal Emergency Management Agency requirements. The County Planning Commission has concluded, as a result of a contested case hearing for a Special Management Area Use Permit, that under the County Planning Department's recommended conditions, the proposed development should not present a substantial or significant adverse environmental or ecological impact on the SMA.

PART 1: PROJECT LOCATION, DESCRIPTION, AND ENVIRONMENTAL ASSESSMENT PROCESS

1.1 Project Description, Location and Property Ownership

Sunstone Kona LLC (Sunstone) proposes to build a condominium project on a 46.3-acre parcel located between Ali‘i Drive and Kuakini Highway in Kona, 1.2 miles south of Kailua Village (Figures 1-3). As shown in conceptual plans in Figures 4a-d, a total of 289 multi-family dwelling units, complete with landscaping and off-street parking, are proposed for the L-shaped property.

Plans for the development include a combination of three-, four-, six- and eight-plexes. The project also includes 45,765 square feet of commercial space on a 2.2-acre portion of the property carrying a neighborhood commercial zoning designation.

The project includes Kona Sea Crest Road, a mauka-makai connector roadway to be developed between Ali‘i Drive and Kuakini Highway, which will provide access to the development from both thoroughfares, enhanced public shoreline access and an alternate egress for evacuation in times of natural disasters (see Figure 4a). Drainage improvements will be constructed in association with Kona Sea Crest Road. The project area also includes approximately 3.1 acres that will be set aside as part of the proposed Kahului to Keauhou Parkway improvements, as called for under the 1987 ordinance granting rezoning for the project parcel.

The project is expected to be built in six phases over a 48-month period at a cost of approximately \$70 million. The property is located within the County’s Special Management Area (SMA), and the Hawai‘i County Planning Commission has issued SMA Permit 05-005 on March 16, 2007 for the project following a contested case hearing (see Appendix 1b for SMA approval letter), with conditions (see Appendix 1b, pp: 26-35). The Planning Commission concluded that the proposed development should not present a substantial or significant adverse environmental or ecological impact on the SMA.

The property is owned by Sunstone Kona LLC (hereinafter called Sunstone). Currently, the property contains the Sea Villas condominium project as well as the vacant land on which the Kona Sea Crest project would be built (see Figure 4a). Sunstone is currently in the process of subdividing this property into three bulk lots, one of which will be owned by Sea Villas, the other two by Sunstone.

1.2 Environmental Assessment Process

The project would be provided with water, wastewater, electrical and telephone service from existing lines located within the right-of-way on Ali‘i Drive. The project would take access from both Ali‘i Drive and Kuakini Highway, both of which are County roads. Because of the location within County rights-of-way of the proposed utility and access connections, these connections and any associated non-exempt development would be subject to Chapter 343, HRS, Hawai‘i’s Environmental Impact Statement law. As the development of a condominium and commercial

Figure 1 General Location Maps

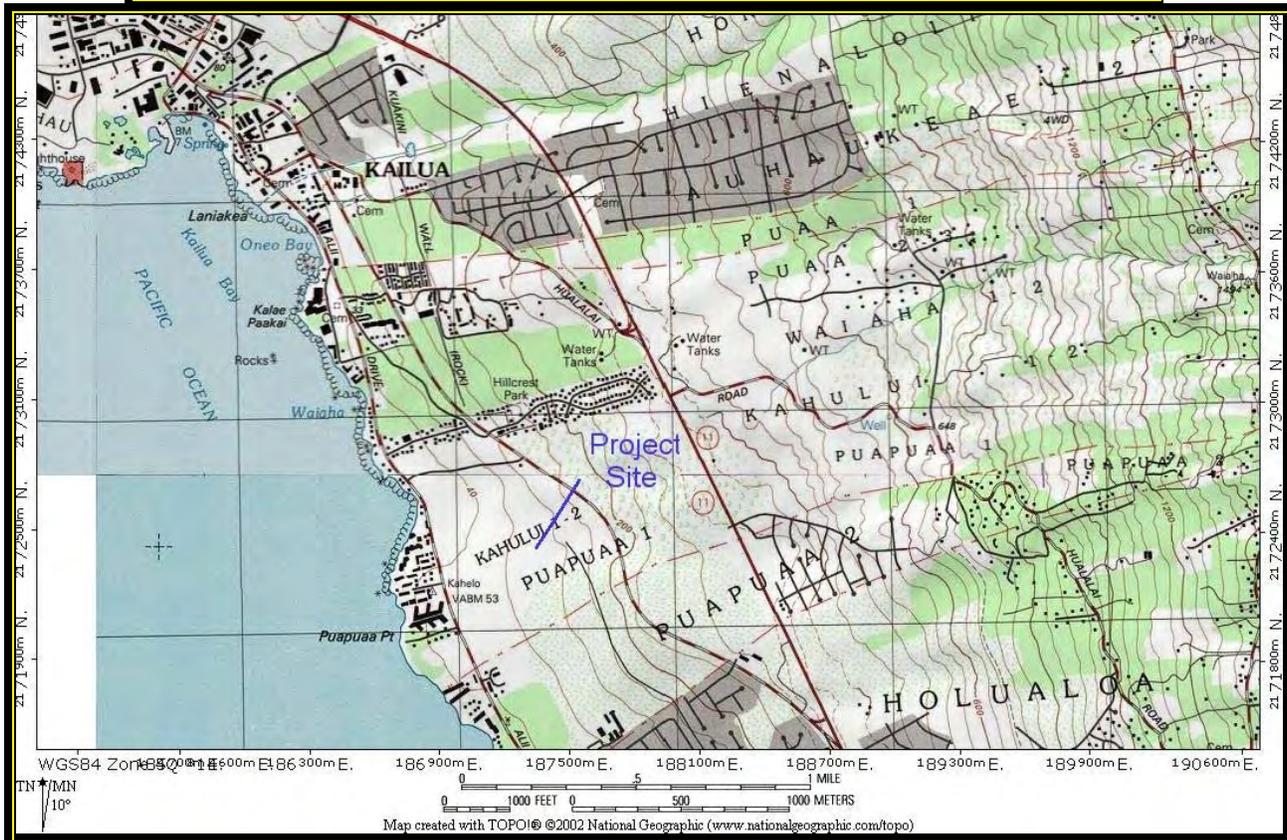
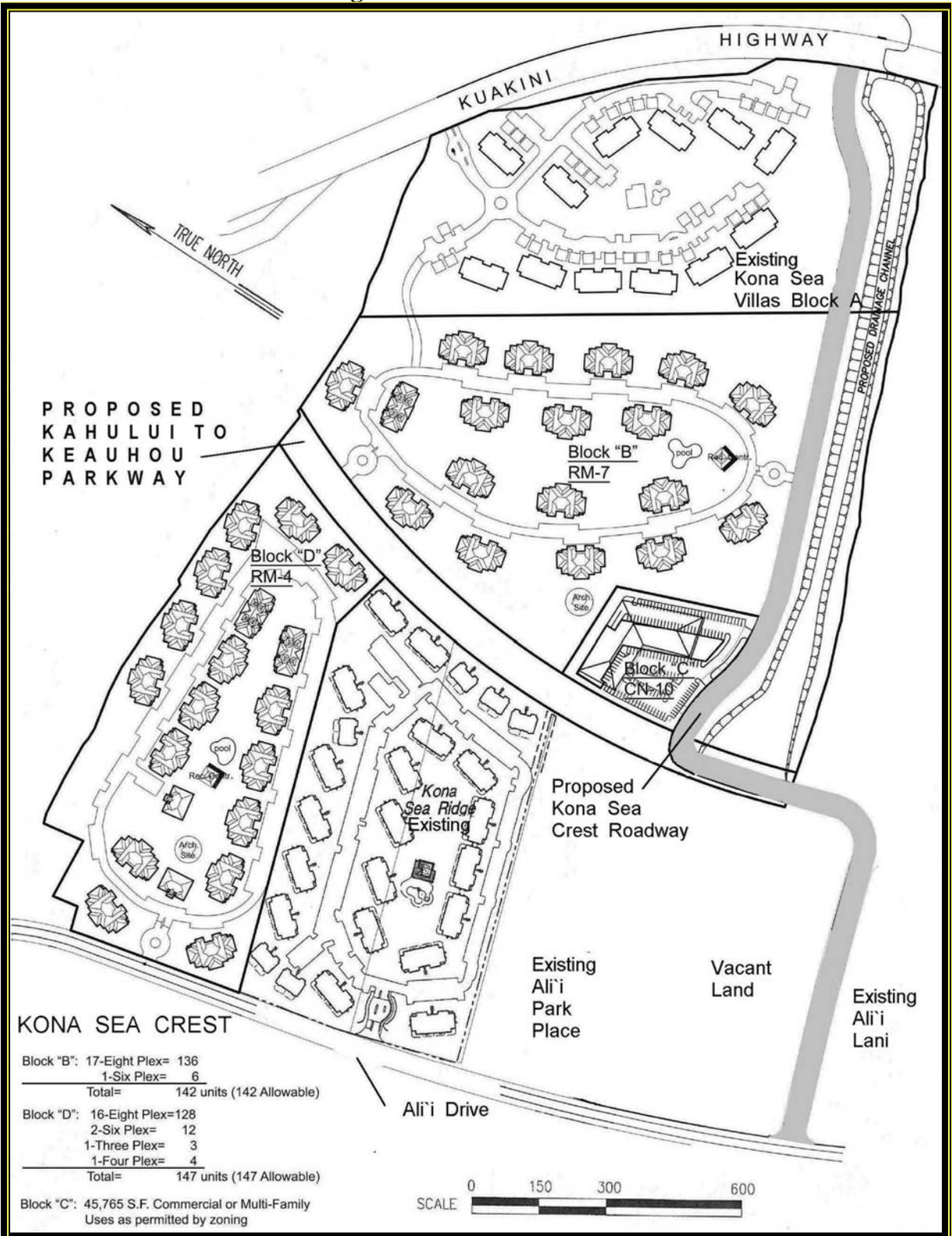


Figure 3 Project Site Airphoto

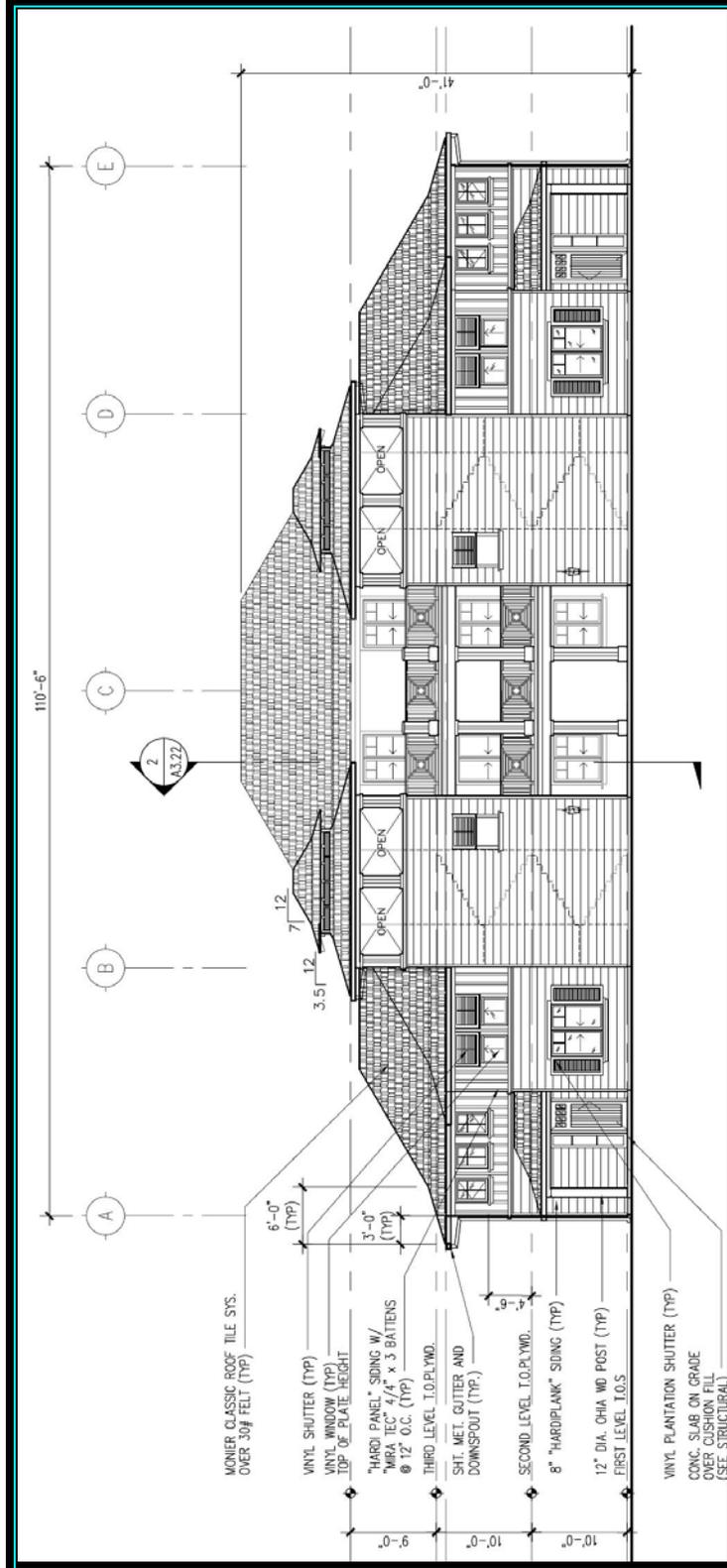


Figure 4a Overall Site Plan



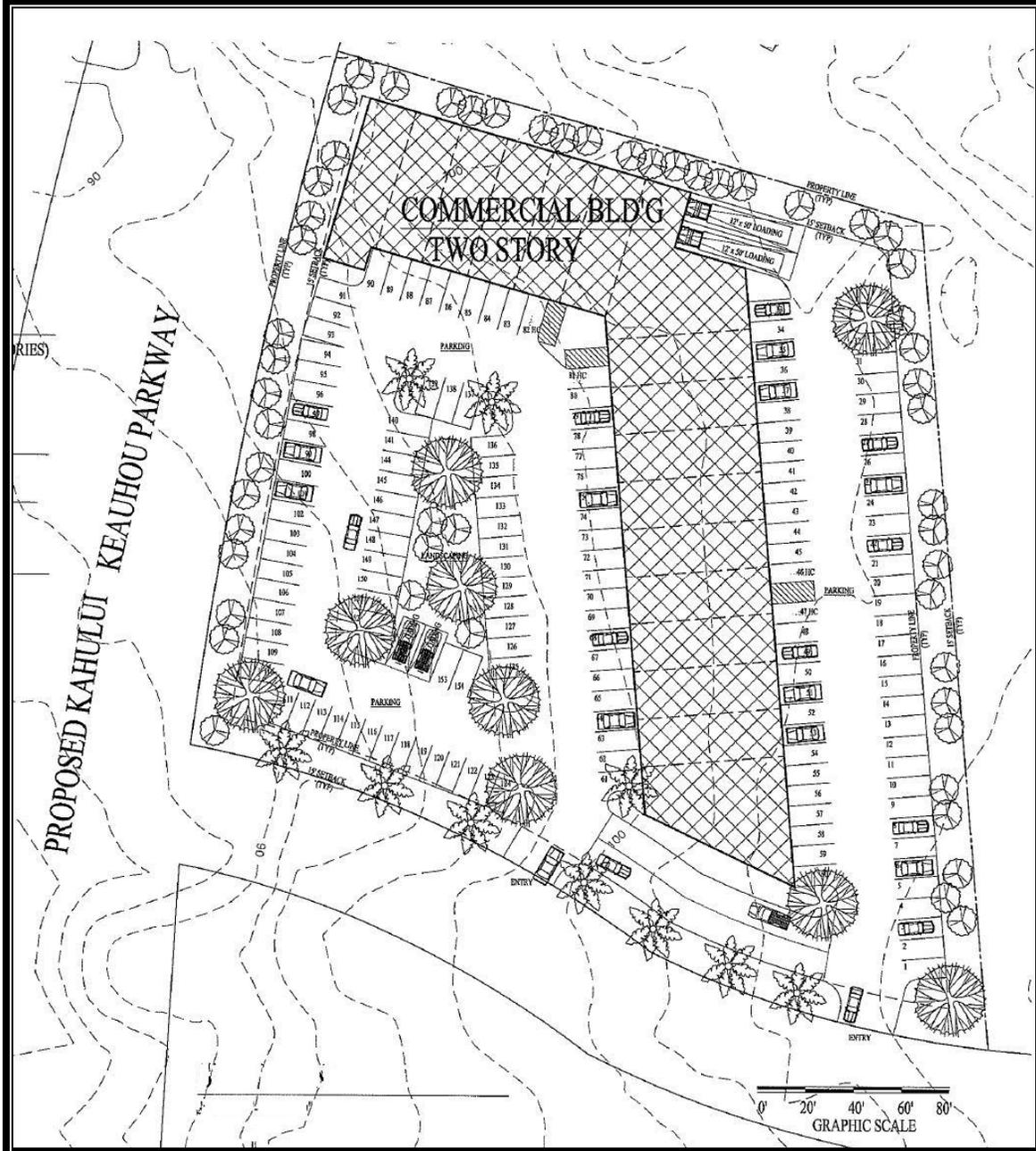
Note: Site plan is conceptual.

Figure 4b Site Plan: Typical Eight-Plex Residential Unit Front Elevation



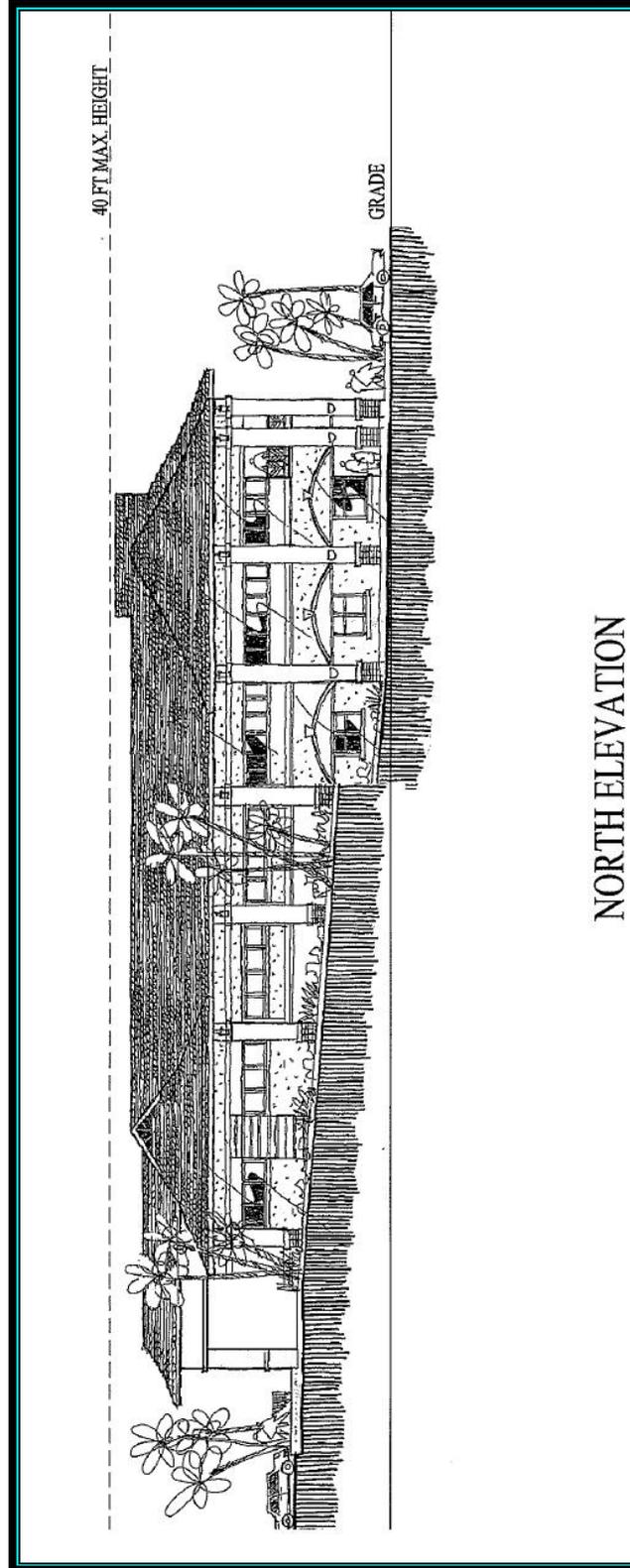
Note: Typical elevation is conceptual.

Figure 4c Site Plan: Commercial Area (Block C)



Note: Site Plan is conceptual.

Figure 4d Site Plan: Typical Commercial Building Elevation



Note: Typical elevation is conceptual only.

project is not an exempt action, an Environmental Assessment (EA) is required. It should be noted that prior to DOT's institution of this policy in June 2007 in response to a revised interpretation of Chapter 343 (and the County of Hawai'i's subsequent adoption of a similar policy), a condominium project in the State of Hawai'i generally needed only appropriate zoning and various building permits to be developed.

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawai'i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai'i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai'i. According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria. Part 4 of this document states the anticipated finding that no significant impacts are expected to occur; Part 5 lists each criterion and presents the preliminary findings for each made by the County of Hawai'i Planning Department, the approving agency. If, after considering comments to the Draft EA, the approving agency concludes that, as anticipated, no significant impacts would be expected to occur, then the agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to occur. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) will be prepared.

1.3 Public Involvement and Agency Coordination

The following agencies and organizations were consulted in development of the environmental assessment:

State:

Department of Land and Natural Resources
State Historic Preservation Division
Department of Health
Office of Hawaiian Affairs

County:

Department of Public Works
Department of Environmental Management
Police Department
Fire Department
County Council

Private:

Sierra Club
Kona Hawaiian Civic Club

Copies of communications received during early consultation are contained in Appendix 1a.

PART 2: ALTERNATIVES

2.1 Proposed Action

The *proposed action* is development of a 289-unit condominium project with related improvements (see Figure 4), including commercial space and a mauka-makai connector road (Kona Sea Crest Road), with vehicular access and utility connections to the County road Ali‘i Drive right-of-way.

2.2 No Action

Under the No Action Alternative, the approval for work in the County roadway right-of-way of Ali‘i Drive and Kuakini Highway would not occur and Sunstone would be denied the use of the road right-of-way for utility and vehicular access to the development, essentially preventing implementation of the Kona Sea Crest development. This would avoid all direct adverse environmental impacts related to the development. It would also preclude benefits including jobs, income, tax revenues, and additional road connectivity associated with the development. The No Action Alternative forms the baseline against which environmental impacts associated with the proposed action are measured.

2.3 Alternative Actions

Sunstone, the owner of the property, does not envision any alternate development scenarios that could reasonably satisfy its objectives, and none are therefore analyzed. It is important to note that the Hawai‘i County Planning Commission systematically evaluated the impacts to the Special Management Area of the current planned configuration of Kona Sea Crest has issued an SMA Use Permit for its development, with conditions (see Appendix 1b, pp: 26-35).

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Basic Geographic Setting

The Kona Sea Crest development is referred to throughout this EA as the *project site*. The term *project area* is used to describe the general environs in this area of Kailua-Kona.

The project site is a portion of a 46.3-acre parcel located 1.2 miles south of Kailua-Kona at elevations between 10 and 160 feet above sea level, mauka of the County-owned Ali'i Drive (see Figures 1-4). Adjacent land is primarily residential, with scattered commercial uses and undeveloped properties. The surface of the project area has been partially disturbed previously by ranching, residential and construction activities, and the vegetation is almost entirely alien.

3.1 Physical Environment

3.1.1 Climate, Geology, Soils and Geologic Hazards

Environmental Setting

The climate in the area is mild and semi-arid, with a median annual rainfall of approximately 40 inches (U.H. Hilo-Geography 1998:57). The mean annual temperature is 75 degrees F (Armstrong 1983). There are two types of soil on the project site. The most prevalent is classified by the U.S. Natural Resources Conservation Service (formerly Soil Conservation Service) as Punaluu extremely rocky peat (rPYD), which is characterized by rapid permeability, slow runoff and slight erosion hazard on six- to 20-degree slopes. In a representative profile, the surface layer is black peat about four inches thick underlain by pahoehoe lava bedrock. The soil found on the project parcel's northeast and southwest portions is classified as Waiaha extremely stony silt loam, which is characterized by shallow, well-drained silt loam that formed in volcanic ash and is found on 6 to 12-degree slopes (Sato et al. 1973:52). The capability subclass for both types is VIIs, which means that these soils have very severe limitations that make them unsuitable for cultivation and restrict their use mainly to pasture, woodland or wildlife (U.S. Soil Conservation Service 1973). Numerous pahoehoe outcrops are also found throughout the parcel.

Geologically, the project site is located on the flanks of Hualālai Volcano, and the surface consists of basalt lava dated more than 10,000 years before the present (Wolfe and Morris 1996). The property varies from about 10 to 160 feet above sea level, with a moderate slope.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of North Kona is

Zone 4, on a scale of ascending risk from 9 to 1 (Heliker 1990:23). The hazard risk is based on the fact that Hualālai has steep slopes and is the third most historically active volcano on the island. In terms of seismic risk, the entire Island of Hawai‘i is rated Zone 4 Seismic Hazard (*Uniform Building Code, 1997 Edition*, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built. The project site does not appear to be subject to subsidence, landslides or other forms of mass wasting.

Impacts and Mitigation Measures

In general, geologic conditions impose no constraints on the area, and the proposed action is not imprudent to construct. This level of volcanic hazard is shared by most of the Big Island. Appropriate seismic standards would be followed during any building construction, per building codes.

3.1.2 Water Features and Water Quality

Existing Environment

No permanent streams, ponds or anchialine pools are present in the area, and the only water features in the area are the coastal waters of Kahului Bay, across Ali‘i Drive.

The offshore waters and marine habitat in this area are typical of the lava shoreline of Kona. In 1999, marine ecologists performed a series of qualitative and quantitative field assessments on the beach, intertidal zones and subtidal zone in Kahului Bay, makai of the project site, as part of an environmental assessment (not filed as of September 2008) for the replacement of the Ali‘i Drive culvert over Waiaha drainage (Tissot and Cotton 1999). This work provided a unique look at the area almost exactly offshore of the proposed Kona Sea Crest development.

The assessments determined that the intertidal shoreline area is typical of the rocky coast environments of Kona, with lag deposits of basalt boulders and quantities of sand that vary widely with surf conditions. Algae and crab of various species are common. The intertidal zone along the seawall to the northwest consists of basalt shelf and boulders. Algae, invertebrates, and juvenile fish are common. In the waters offshore, the fish survey observed a total of 37 fish species. The predominant fish species was the brown surgeonfish, *Acanthurus nigrofuscus*, an herbivore. This fish accounted for about 30 percent of the fish observed. The second most common fish was the saddle wrasse, *Thalassoma duperrey*, a carnivore, which accounted for 13 percent of the fish observed. Other common species included the bright-eye damselfish (*Plectroglyphidodon imparipennis*), the spotted boxfish (*Ostracion meleagris*), the ornate wrasse (*Halichoeres ornatissimus*), and the blackspot sergeant (*Abudefduf sordidus*). The substratum consisted of bare rock (mean percent cover 54 percent), sand (30 percent) or the octocoral *Anthelia edmondsonii* (15 percent). In general, the substratum of the surveyed area consists mainly of basalt shelf and

boulders, a few small sandy patches and a large sandy area approximately 160 feet offshore. As in the intertidal area, sand cover varies widely with surf conditions. The octocoral *Anthelia edmondsonii* and turf algae were the most common organisms found on the rocks but several species of urchins and corals and a few cone shells were found among the rocks. Most of the stony corals and the rubber coral were uncommon. The exception was the cauliflower coral, *Pocillopora meandrina*, which was very common in one area. Only one species of macroalgae, a *Pterocladia*, was observed within the survey area. A green sea turtle (*Chelonia mydas*) was spotted during the survey.

Several species of marine animals that occur in Hawaiian waters have been declared threatened or endangered under federal law. The threatened green sea turtle is commonly found along the Kona Coast, while the endangered hawksbill turtle (*Eretmochelys imbricata*) is known infrequently from Kona. Populations of the endangered humpback whale (*Megaptera novaeangliae*) winter in Hawaiian waters from December to April. Individuals of the endangered Hawaiian monk seal (*Monachus schlauslandi*), which are much more common in the Northwestern Hawaiian Islands, are occasionally seen in the area.

A natural factor promoting good water quality in Kona is the volcanic geology that favors fast circulation of recharging groundwater, which also prevents substantial mineral accumulation, but can also lead to fast delivery of nutrients. Also, the high energy of the shoreline zone leads to rapid mixing of the small amount of pollutants that do arrive.

Factors that potentially impair coastal water quality in urban Kona are wastewater, chemical contaminants from industrial and commercial uses, and polluted runoff from streets and parking lots. The typical pathway of pollutants is via groundwater, as there are no surface streams and runoff directly into the ocean is generally not substantial except during rare episodes of intense rainfall when drainage channels have large flows.

Preservation of water quality is an important goal, even in this urban area, as clean coastal waters support valuable ecological communities, native Hawaiian fishing and gathering practices, subsistence and commercial fishing, and tourism and economic activity. Coastal water quality in urban Kona, which lacks the heavy industry, history of intensive agriculture, or other factors that lead to contamination, is generally good (U.S. EPA 2000). However, the Natural Resources Defense Council has reported exceedances (<http://www.nrdc.org/water/oceans/ttw/ttw2008.pdf>) of bacteria in water quality at certain beaches, which local water quality scientists attribute mainly to wastewater (*Hawai'i Tribune Herald*: August 6, 2008, page 1).

Much of Kona's wastewater, especially that associated with new urban development in the Kailua-to-Keauhou corridor, is treated in municipal facilities at the County's Kealakehe Wastewater Treatment Plant (WWTP) and the He'eia WWTP in Keauhou, owned and operated by Kamehameha Investment Corporation. Although central wastewater treatment plants are important

to maintaining water quality, there are questions about whether the County's practice of pouring partially treated effluent into an unlined hole about three-quarters of a mile from the shoreline in Honokohau may be inducing water quality impacts. Furthermore, despite the significant amount of treated wastewater, many older and scattered parts of Kona continue to rely on cesspools and septic systems.

Another source of water pollution is runoff from developed properties, which can carry chemicals, sediments and nutrients. Although not a chronic problem, periodic acute episodes have occurred in some construction sites. Proper implementation and enforcement of construction BMPs are important to safeguard water quality. After construction, reducing contamination relies on confining runoff, particularly "first-flush" runoff, which contains most of the contaminants, to drainage structures which capture and retain many of the pollutants, especially sediments.

In terms of effects on groundwater, U.S. EPA and Department of Water Supply Annual Water Quality Reports for wells and water systems indicate no health-based or monitoring violations in at least the past 10 years (<http://oaspub.epa.gov/enviro/>). Although some chemical contamination has been found in a few (Hawai'i State DOH 2003), levels have been below EPA acceptable limits.

Impacts and Mitigation Measures

In general, given the structure of laws, regulations and practices that govern development of multifamily housing and commercial operations on the island of Hawai'i, water quality impacts from the development are within the capacity of the natural ecosystem to absorb.

Wastewater will be treated at the Kealakehe WWTP, which may be required at some point to upgrade or modify its treatment to respond to general water quality concerns.

The project includes drywells that will ensure there is less runoff from the property after development, reducing polluted stormwater runoff. Operationally, multi-family residential housing tends to produce moderate quantities of substances that can affect water quality. Landscaping for condominium projects involves smaller areas per unit residence and professional maintenance, both of which tend to reduce the impact of fertilizers and herbicides relative to single-family homes. The vegetative cover in landscaping, including lawns and decorative patches of shrubbery, also acts as a filter to catch sediments and other pollutants. Beyond this, maintenance of water quality depends to some degree on whether residents properly dispose of wastes such as used motor oils, paints and solvents, and insecticides. One of the goals in the revision being undertaken by the County of Hawai'i to its Integrated Solid Waste Management Plan is to better collect household hazardous waste and reduce water quality impacts.

Construction has the potential to produce uncontrolled excess sediment from soil erosion during and after clearing and excavation that may impact natural watercourses, water quality and flooding. Contaminants associated with heavy equipment and other sources during construction have the potential to impact surface water and groundwater if not mitigated effectively. In order to minimize the potential for sedimentation and erosion of shoreline areas, the contractor shall perform all earthwork and grading in conformance with Chapter 10, Erosion and Sediment Control, Hawai'i County Code. It is important to note that Chapter 10 is currently undergoing an update, and projects built after changes are adopted by the County Council will be required to conform with the revised Chapter, which is expected to be stricter.

Because the project will disturb more than one acre of soil, a National Pollutant Discharge Elimination System (NPDES) permit must be obtained by the contractor before the project commences. This permit requires the completion of a Storm Water Pollution Prevention Plan (SWPPP). In order to properly manage storm water runoff, the SWPPP will describe the emplacement of a number of best management practices (BMPs) for the project. These BMPs may include, but will not be limited to, the following:

- Minimization of soil loss and erosion by revegetation and stabilization of slopes and disturbed areas of soil, possibly using hydromulch, geotextiles, or binding substances, as soon as possible after working;
- Minimization of sediment loss by emplacement of structural controls possibly including silt fences, gravel bags, sediment ponds, check dams, and other barriers in order to retard and prevent the loss of sediment from the site;
- Minimizing disturbance of soil during periods of heavy rain;
- Phasing of the project in order to disturb a minimum necessary area of soil at a particular time;
- Application of protective covers to soil and material stockpiles;
- Construction and use of a stabilized construction vehicle entrance, with designated vehicle wash area that discharges to a sediment pond;
- Washing of vehicles in the designated wash area before they egress the project site;
- Use of drip pans beneath vehicles not in use in order to trap vehicle fluids;
- Routine maintenance of BMPs by adequately trained personnel; and
- Clean up of significant leaks or spills and disposal at an approved site, if they occur.

3.1.3 Drainage

Existing Environment

The existing site is undeveloped land covered with grass, shrubs, and low trees. The Flood Insurance Rate Maps (FIRM) generally show that parts of the site are currently contained within Zone AE of the 100-year floodplain, which is defined as the area subject to inundation from a flood having a 1 percent chance of occurring in any given year. This flood is referred to as the “100-year” flood or “base flood”, and it may occur more or less often than once every 100 years. Two FIRM 100-year floodplains are contained within or are adjacent to the project site. These floodplains are related to flood flows in the Wai‘aha Drainageway and Wai‘aha Split Flow No. 2 Drainageway. Figure 5a shows the estimated limits of both floodplains based on existing topographic conditions, with no drainage improvements related to the Kona Sea Crest project (the proposed multi-family housing units and roadways are mapped in their correct positions in order to provide context). The peak flow that can be generated in the Wai‘aha Drainageway is 7,670 cubic feet per second (cfs), and the peak flow that can be generated in the Wai‘aha Split Flow No. 2 Drainageway is 2,680 cfs.

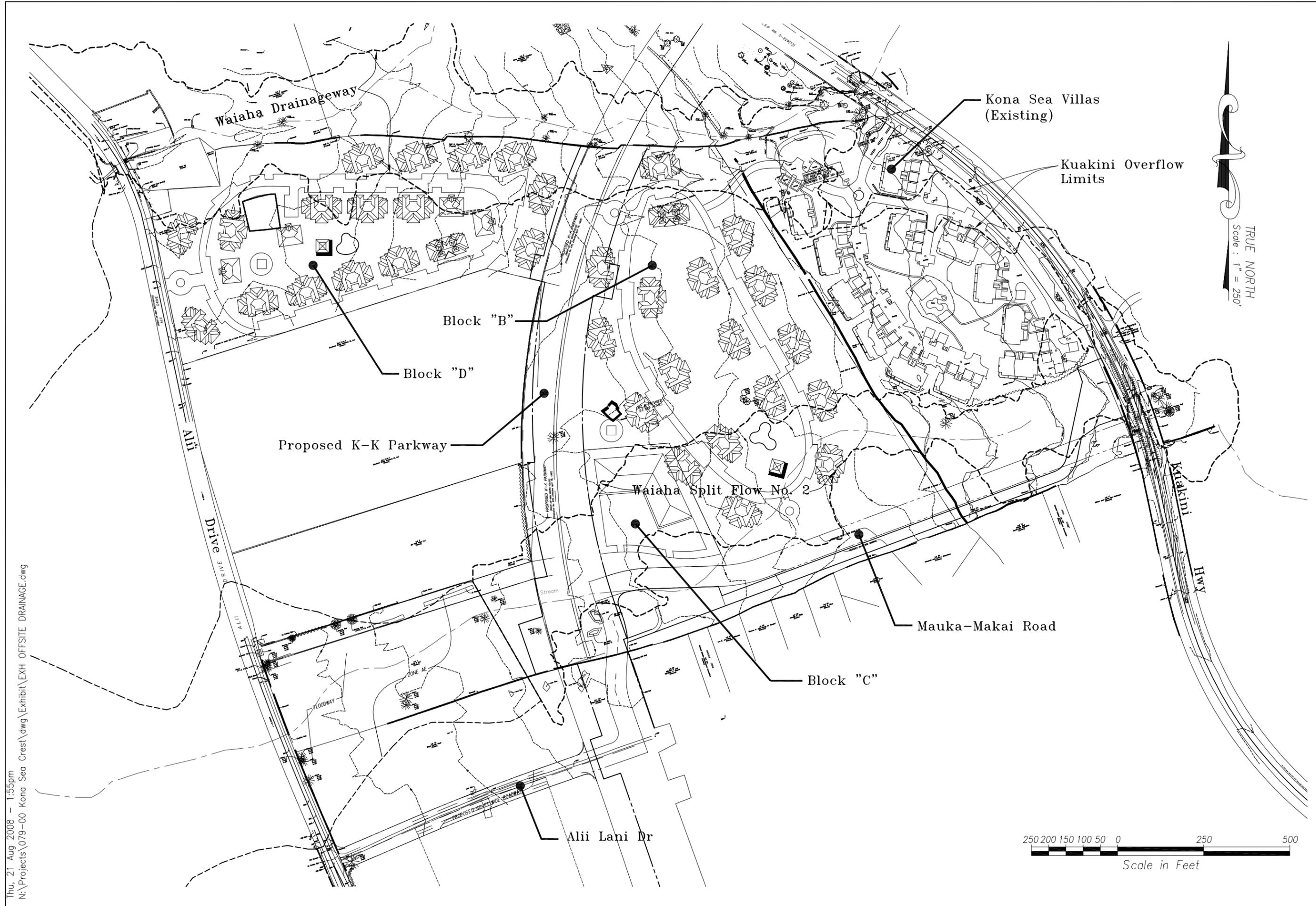
There is a 36-inch pipe under Kuakini Highway at the Wai‘aha Splitflow No. 2 Drainageway. The pipe is inadequate to pass the peak flow, and current floodplain modeling suggests that up to 540 cfs can spill down Kuakini Highway and enter the Wai‘aha Drainageway, crossing over the existing Kona Sea Villas development. These spillage limits have also been shown on Figure 5a. For purposes of calculating drainage impacts and determining improvements, this 540 cfs has been included in the peak flow for Wai‘aha Drainageway.

Proposed Improvements, Impacts and Mitigation Measures: Offsite Drainage

Modifications to the floodplains are proposed to reduce the extent of the floodplain on the project site and to pass the storm water through the project site without aggravating downstream flooding conditions.

The project would re-grade a portion of the Wai‘aha Drainageway to more efficiently carry the water through the property. The estimated boundaries of the floodplain after the grading operations are shown on Figure 5b. The grading will create a more defined channel section rather than having shallow flow spilling over a broad expanse, assuring no downstream aggravation of flood conditions.

With respect to Wai‘aha Split Flow No. 2, all storm flow that passes under or over Kuakini Highway will be caught in a basin just below Kuakini Highway (see Figure 5b). The basin subsequently will transition the flow into a lined channel. The channel will terminate at a stilling basin/culvert transition structure just above the Kahalui to Keauhou Parkway. Release of the storm



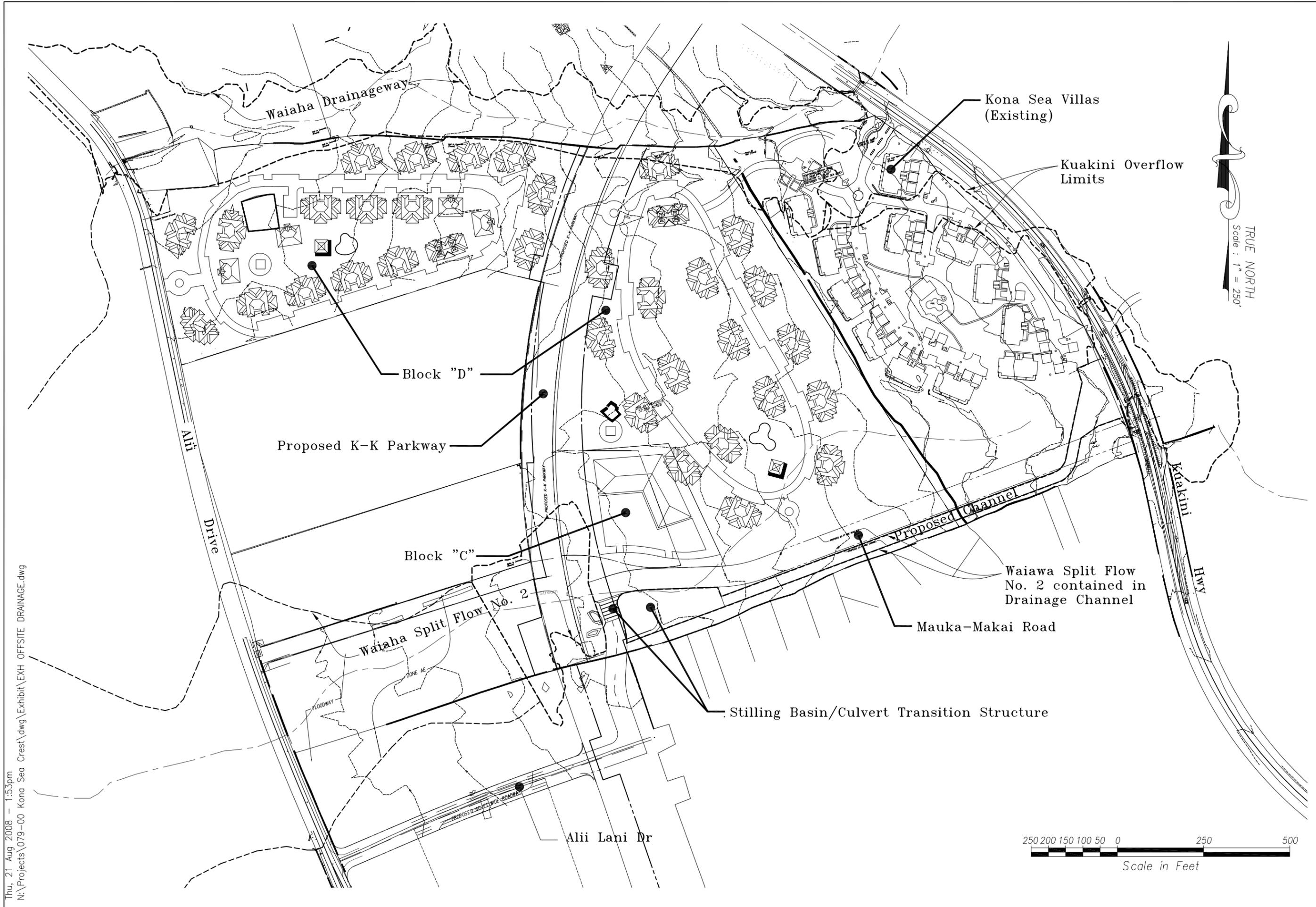
Thu, 21 Aug 2008 - 1:55pm
 N:\Projects\079-00 Kona Sea Crest\dwg\Exhibit\EXH OFFSITE DRAINAGE.dwg

Kona Sea Crest
 North Kona, Hawaii
 Offsite Drainage - Existing Conditions
 FIRM Floodplain

Bills Engineering Inc.
 Civil/Environmental Engineering
 1124 Fort Street Mall, Suite 200
 Honolulu, HI 96813

SCALE:
 1"=250'
 DATE:
 August 2008

FIGURE
5A



Thu, 21 Aug 2008 - 1:53pm
 N:\Projects\079-00 Kona Sea Crest\dwg\Exhibit\EXH OFFSITE DRAINAGE.dwg

Kona Sea Crest
 North Kona, Hawaii
Offsite Drainage - Proposed Conditions
 FIRM Floodplain

Bills Engineering Inc.
 Civil/Environmental Engineering
 1124 Fort Street Mall, Suite 200
 Honolulu, HI 96813

SCALE:
 1"=250'
 DATE:
 August 2008

FIGURE
5B

TRUE NORTH
 Scale : 1" = 250'

250 200 150 100 50 0 250 500
 Scale in Feet

water below the Parkway will be at flow rate and velocity that matches the pre-development condition, assuring no downstream aggravation of flood conditions. As shown in Figure 5b, the floodplain boundaries will change within the project site and the floodplain will shrink after the project drainage improvements are completed.

Implementation of the proposed off-site drainage improvements on the Wai‘aha Drainageway and on Wai‘aha Split Flow No. 2 Drainageway requires a Drainage Report approved by the County, as well as a Conditional Letter of Map Revision (CLOMR) application endorsed by the County and approved by the Federal Emergency Management Agency (FEMA), before work can commence. The Drainage Report was prepared and submitted to the County in January 2008. No work in or affecting the floodplains will occur until the County of Hawai‘i and FEMA approve of the drainage improvements.

Proposed Improvements, Impacts and Mitigation Measures: Onsite Drainage

On-site drainage analysis typically consists of projecting storm water runoff under existing conditions versus developed conditions and then assessing how to accommodate increased runoff. The following is a summary of the information contained in the *Drainage Report for Kona Sea Crest*, which was provided to the County of Hawai‘i in January 2008 and is on file with the Department of Public Works.

Existing Runoff Rates:

The project site is essentially undisturbed and is covered with grass and shrubs. Runoff calculations (developed using the County Drainage Standards) predict the following existing runoff rates for the ten-year storm (Q_{10}) and the 50-year storm (Q_{50}) in cubic feet per second (cfs) per acre:

- Blocks “B” and “D”

| | |
|------------|---------------|
| Q_{10}/A | 0.87 cfs/acre |
| Q_{50}/A | 1.09 cfs/acre |

- Block “C”

| | |
|------------|---------------|
| Q_{10}/A | 1.09 cfs/acre |
| Q_{50}/A | 1.37 cfs/acre |

Developed Runoff Rates:

Runoff calculations (developed using the County Drainage Standards) predict the following developed runoff rates:

- Blocks “B” and “D”

| | |
|------------|---------------|
| Q_{10}/A | 3.03 cfs/acre |
| Q_{50}/A | 3.85 cfs/acre |

- Block “C”

| | |
|--------------------|---------------|
| Q ₁₀ /A | 4.94 cfs/acre |
| Q ₅₀ /A | 6.08 cfs/acre |

In order to handle the project increase in runoff from development, the project’s drainage system will have drywells within the project site and along its perimeter to collect design storm water prior to leaving the project site. The design discharge leaving the site will be less than the pre-construction conditions. Drywells and catch basins will be located within the proposed Kona Sea Crest Road and within Ali‘i Lani Drive, in accordance with County Drainage Standards.

The roadway corridor drainage system will be designed so that all storm water runoff will be dissipated in dry wells without runoff entering coastal waters.

3.1.4 Flora, Fauna and Ecosystems

Existing Environment

A botanical survey was conducted by Patrick Hart, Ph.D., and Ron Terry, Ph.D. on March 5, 2005, the results of which are presented below. As is typical of the region, the property was thickly covered with alien vegetation. Most areas of the site were dominated by a low forest of scattered kiawe (*Prosopis pallida*), with an understory of koa haole (*Leucaena leucocephala*) and guinea grass (*Panicum maximum*). In one portion of the site, kiawe was absent or uncommon, and koa haole dominated, with guinea grass and pigweed (*Portulaca oleracea*) making up most of the ground cover.

A total of 32 plant species were identified. Only four of them, pohinahina or beach vitex (*Vitex rotundifolia* - part of a landscaped border), and the common roadside plants ilima (*Sida fallax*), ‘uhaloa (*Waltheria indica*), and black nightshade (*Solanum americanum*), are indigenous to the Hawaiian Islands. No threatened or endangered plant species (USFWS 2008) are present or would be expected to be present on the project site. All plant species observed during the survey are listed in Table 1 below.

Table 1
Plant Species on Project Site

| Scientific Name | Family | Common Name | Life Form | Status* |
|--------------------------|----------------|----------------------|------------------|----------------|
| Abutilon grandifolium | Malvaceae | Hairy abutilon | Herb | A |
| Asystasia gangetica | Acanthaceae | Chinese violet | Herb | A |
| Bidens pilosa | Asteraceae | Beggar's tick | Shrub | A |
| Chamaesyce hirta | Euphorbiaceae | Garden spurge | Herb | A |
| Chloris barbata | Poaceae | Swollen-finger grass | Herb | A |
| Cleome gynandra | Capparaceae | Spider flower | Shrub | A |
| Clusia rosea | Clusiaceae | Autograph tree | Tree | A |
| Coccinea grandis | Cucurbitaceae | Ivy gourd | Vine | A |
| Coccoloba uvifera | Polygonaceae | Sea grape | Tree | A |
| Cyperus rotundus | Cyperaceae | Nut sedge | Sedge | A |
| Delonix regia | Fabaceae | Royal poinciana | Tree | A |
| Desmanthus virgatus | Fabaceae | Slender mimosa | Herb | A |
| Ficus microcarpa | Moraceae | Banyan | Tree | A |
| Ipomoea triloba | Convolvulaceae | Little bell | Vine | A |
| Jatropha curcas | Euphorbiaceae | Physic nut | Tree | A |
| Kalanchoe pinnata | Crassulaceae | Air plant | Shrub | A |
| Lantana camara | Verbenaceae | Lantana | Shrub | A |
| Leucaena leucocephala | Fabaceae | Haole koa | Tree | A |
| Momordica charantia | Cucurbitaceae | Bitter gourd | Vine | A |
| Panicum maximum | Poaceae | Guinea grass | Herb | A |
| Pithecellobium dulce | Fabaceae | Opiuma | Tree | A |
| Portulaca oleracea | Portulacaceae | Pig weed | Herb | A |
| Portulaca pilosa | Portulacaceae | Portulaca | Herb | A |
| Prosopis pallida | Fabaceae | Kiawe | Tree | A |
| Rhynchelytrum repens | Poaceae | Natal red-top | Grass | A |
| Samanea saman | Fabaceae | Monkeypod | Tree | A |
| Schinus terebinthifolius | Anacardiaceae | Christmas-berry | Shrub | A |
| Sida fallax | Malvaceae | Ilima | Shrub | I |
| Solanum americanum | Solanaceae | Black nightshade | Shrub | I |
| Triumfetta rhomboidea | Tiliaceae | Bur bush | Shrub | A |
| Vitex rotundifolia | Verbenaceae | Beach vitex | Shrub | I |
| Waltheria indica | Sterculiaceae | 'Uhaloa | Herb | I |

* A = alien; I = indigenous; botanical names follow Wagner, Herbst and Sohmer 1990.

Fauna

The mammalian fauna of the project area is composed of mainly introduced species, including small Indian mongooses (*Herpestes a. auropunctatus*), feral cats (*Felis cattus*) roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*). None are of conservation concern and all are deleterious to native flora and fauna.

All birds seen on the site were wide-ranging aliens such as Common Myna (*Acridotheres tristis*), Yellow-billed Cardinal (*Paroaria capitata*), and Japanese White-eye (*Zosterops japonicus*). No birds indigenous to Hawai'i were identified during the survey.

The endangered native Hawaiian Hawk or 'Io (*Buteo solitarius*) possibly makes some use of this urban area for hunting. It is also possible that certain native seabirds fly over the site, but it is unlikely that any with threatened or endangered status would find the site suitable habitat. The only native Hawaiian land mammal, the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), may also be present in the area, as it is present in many areas on the island of Hawai'i. Observation took place in daylight, and therefore the lack of bat observations does not signify an actual absence of bats. Although the weedy vegetation of the site would not be expected to represent essential habitat for this endangered species, they have been observed in kiawe scrub vegetation in other parts of Ali'i Drive. According to a recent habitat assessment of a similar area in Kailua-Kona (David 2005), site clearing is unlikely to impact this species.

Impacts and Mitigation Measures

In order to frame impacts to flora and fauna, it is important to remember that the project site is land historically used for ranching now zoned for multi-family and commercial use which is dominated by introduced plant species. From this perspective, the development will produce almost no impacts to any species of flora and fauna other than the alien species already present.

3.1.4 Air Quality, Noise, and Scenic Resources

Environmental Setting

Air pollution in West Hawai'i is mainly derived from volcanic emissions of sulfur dioxide, which convert into particulate sulfate and produce a volcanic haze (vog) that persistently blankets North and South Kona.

Noise on the project site is moderate and is derived principally from adjacent single and multiple family residences as well as roadway noise, as the project site lies between Ali'i Drive and Kuakini Highway. Construction in the area is a periodic and temporary source of noise. Noise increases with proximity to Ali'i Drive or Kuakini Highway. Construction of the anticipated Kahului to Keauhou Parkway will be a temporary source of noise; traffic on the completed Parkway will raise noise levels around the project site.

The viewplane from Kuakini Highway in both the mauka and makai directions is listed as scenic in the Hawai'i County General Plan, but a Visual Impact Assessment conducted for the project site, attached as Appendix 4, determined that the total visual impacts of the project would be minor. The development's moderate-density, moderate-height buildings would be built on a moderate slope in a neighborhood of similar structures and uses. As such it would have no effect on views from Ali'i Drive except for the portion of the project with frontage on the roadway where motorists, pedestrians and bicyclists will exchange views of the kiawe scrub land for the landscaped border of a condominium complex. While the condominium project will reduce at least to some degree the sensation of open space, it matches neighboring uses and will have little if any impact to views of

the shoreline or ocean from Kuakini Highway, in the context of the many existing and planned buildings in the area.

Impacts and Mitigation Measures

The proposed action would not measurably affect air quality, noise levels, or scenic sites recognized in the Hawai‘i County General Plan beyond those expected from busy roadways.

Development of the condominium project will involve excavation, grading, compressors, vehicle and equipment engine operation, and construction of new infrastructure and buildings. These activities have the potential to generate noise exceeding 95 decibels at times, impacting nearby sensitive noise receptors on the margins of the development. Whenever construction noise is expected to exceed the Department of Health’s (DOH) “maximum permissible” property-line noise levels, contractors will be required to consult with DOH per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. DOH would then review the proposed activity, location, equipment, project purpose and timetable in order to decide whether a permit is necessary and what conditions and mitigation measures, such as restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers, will be necessary. The contractor would consult with DOH to determine whether permit restrictions would consist of construction being limited to daylight hours.

Future legal uses of the properties for multi-family, commercial, and associated landscaped areas will also generate noise consistent with expectations and allowable limits in areas zoned for these uses, which is thus not considered an impact. As for noise generated by the Kahului to Keauhou Parkway, before the Parkway is completed, the County SMA permit required that prospective buyers of condominiums be notified of those potential impacts and of the fact they would be required to pay for any noise abatement measures related to the condominium project that are mandated, in order to qualify the road project for federal funding, should such funding be available for the project.

3.1.5 Hazardous Materials, Toxic Substances and Hazardous Conditions

Environmental Setting, Impacts and Mitigation Measures

No Phase I Environmental Site Assessment was performed for the site, and there is no definitive knowledge of the presence or absence of hazardous materials or toxic substances. However, no conditions or activities that would lead to such are known to be present or are expected to be present on the project site, which is vacant and does not appear to have undergone any active land use in modern times. The history of use of the site and its surroundings as understood by the project developer does not suggest the presence of hazardous materials or toxic substances. The project site does not contain quarries, former explosives sites, or other hazardous conditions.

3.2 Socioeconomic and Cultural

3.2.1 Socioeconomic Characteristics

The proposed action would most directly affect the portions of urban Kailua along Ali'i Drive and Kuakini Highway, and, in a wider sense, the entire North Kona District. Table 2 provides information on the socioeconomic characteristics of North Kona and Kailua-Kona along with those of Hawai'i County as a whole for comparison, from the United States 2000 Census of Population.

Impacts

The construction of 289 dwelling units may lead to a moderate increase in population. Based on the Kailua-Kona average household size and vacancy rates, an increase of about 658 residents would occur, although many units are expected to be occupied part-time by off-island residents. This would lead to moderate shifts in demographic characteristics, unemployment rates, and demands on public services (see Section 3.3, below). Importantly, the population increase is consistent with the expectations of multiple-family zoning and medium-density urban LUPAG designation.

3.2.2 Cultural and Archaeological Resources

Cultural and Historical Background

The project site is located in the ahupua'a of Kahului 2nd in the district of North Kona. According to radiocarbon dating studies, agricultural and habitation use of the area began in the 13th century (Schilt 1984, Haun et al. 1998, O'Hare and Wolforth 1998, Haun and Henry 2001). The four studies indicate that Native Hawaiian use slowly became intensive during the 15th and 16th centuries and then rapidly intensified from the 1600s to the early historic period.

When studying the cultural setting in Hawai'i, it is important to focus on the ahupua'a. These land units generally extend from the mountain to the sea and traditionally contained most of the resources that a settlement would require for its subsistence, distributed at various elevations. As historian Marion Kelley has said, the ahupua'a "was the basic land unit, most common and most closely related to the religious and economic life of the people." (Kelley 1996:iv).

Table 2
Selected Socioeconomic Characteristics

| Characteristic | Hawai'i County | North Kona | Kailua-Kona | Characteristic | Hawai'i County | North Kona | Kailua-Kona |
|-------------------------------------------------------------------|----------------|------------|-------------|---------------------------------------------------------------------------------------|----------------|------------|-------------|
| Total Population | 148,677 | 28,543 | 9,870 | 21 to 64 Years, Disabled (%) | 19.2 | 17.4 | 18.7 |
| Median Age | 38.6 | 39.4 | 35.5 | Employed and Disabled, 21 to 64 Years, (%) | 51.8 | 64.1 | 67.0 |
| Older Than 65 Years (%) | 13.5 | 11.8 | 10.0 | 65 Years or Older, Disabled (%) | 40.3 | 38.1 | 38.3 |
| Race (%) | | | | Employment in: | | | |
| White | 31.5 | 47.1 | 38.7 | Management and professional | 30.2 | 26.6 | 20.3 |
| Asian | 26.7 | 16.3 | 18.3 | Service | 22.2 | 24.3 | 27.7 |
| Hawaiian | 9.7 | 8.9 | 10.8 | Sales and offices | 25.1 | 27.8 | 31.2 |
| Other Pacific Islander | 1.5 | 1.8 | 2.4 | Construction | 9.9 | 10.4 | 9.4 |
| Two or More Races | 28.4 | 23.5 | 27.1 | Farming, Fishing and Forestry | 3.8 | 2.2 | 2.3 |
| Hispanic (Any Race) | 9.5 | 7.9 | 10.2 | Production and Transportation | 8.9 | 8.8 | 9.1 |
| Family Households (%) | 69.6 | 68.6 | 68.7 | Families Below Poverty Line (%) | 11.0 | 5.6 | 6.5 |
| Households with Female Householder, no Husband, With Children (%) | 7.7 | 6.7 | 8.8 | Households with Female Householder, no Husband, With Children, Below Poverty Line (%) | 28.1 | 22.0 | 26.3 |
| Householder Lives Alone (%) | 23.1 | 22.2 | 22.6 | Individuals Below Poverty Line (%) | 15.7 | 9.7 | 10.8 |
| Average Household Size | 2.75 | 2.70 | 2.78 | 65 and Over Below Poverty Line | 7.2 | 5.3 | 3.9 |
| Average Family Size | 3.24 | 3.13 | 3.26 | Median Household Income (\$) | 39,805 | 47,610 | 40,874 |
| Over 25 Years Old With High School Diploma (%) | 84.6 | 87.7 | 84.5 | Housing Owner-Occupied (%) | 64.5 | 58.5 | 51.3 |
| Married Now (%) | 52.0 | 53.9 | 48.7 | Housing Rented (%) | 35.5 | 41.5 | 48.7 |
| Widowed (%) | 6.3 | 4.9 | 5.2 | Housing Vacant (%) | 15.5 | 19.7 | 18.2 |
| Divorced Now (%) | 10.7 | 11.4 | 11.9 | Median Home Value, 1999 (\$) | 153,700 | 233,900 | 190,900 |
| Veterans (%) | 14.5 | 14.8 | 13.2 | Median Rent, 1999 (\$) | 645 | 745 | 686 |
| Over 16 in Labor Market (%) | 61.7 | 69.2 | 69.5 | Rent is Greater Than 25% of Income (%) | 46.0 | 47.2 | 51.8 |
| Residence 5 Years Ago (%) | | | | | | | |
| Same Home | 57.7 | 49.9 | 46.2 | | | | |
| Different Home, Same County | 26.5 | 28.8 | 34.9 | | | | |
| Different County in Hawai'i | 4.8 | 3.5 | 4.1 | | | | |
| Different State/Country | 11.0 | 17.8 | 14.8 | | | | |

Source: U.S. Bureau of the Census May 2001. *Profiles of General Demographic Characteristics, 2000 Census of Population and Housing, Hawai'i*. (U.S. Census Bureau Web Page).

Traditional Hawaiian legendary and historical accounts contain references to Kahului, including *Ka'ao Ho'oniua Pu'uwai No Ka-Miki*, the "Heart Stirring Story" of travels around the island of Hawai'i by supernatural brothers Ka-Miki and Maka'iole.

Published in serial form between 1914 and 1917 in the Hawaiian newspaper *Ka Hoku o Hawai'i*, portions of the account have been translated by Kepa Maly (Maly 1996). The meaning of Kahului is “the winning” (Pukui et al. 1976), and according to Maly, the account recorded by Hawaiian historians John Wise and J.W.I. Kihe included:

The story is set in about the 13th century, in the time of Pili-a-Ka'aiea (Pili), sovereign chief of all Kona, the narrative identifies the lands between Lanihau [Kailua] and Puapua'a as an integral component of Pili's royal domain. Pili was a great advocate of contests in debating, fighting and physical strength, and Hinakahua at Puapua'a was the site of the chief's longhouses and contest field which supported those activities. While Pili was at Hinakahua, he was supported by the agricultural and natural resources of the surrounding ahupua'a including Kahului, Waiaha, Pua'a, Auhaueka'e, Hinaloli (Hienaloli), Honua'la, Keopu, Moeauoa and Lanihau. Pili's royal compound was at Niumalu, his canoe fleets were harbored at Oneo (just north of the project site) and his wealth-houses, where tribute was kept until it was needed, were situated at Ahu'ena (Lanihau) (Maly, 1996: A-2).

Some of the earliest events documented in the Kona regional traditional history are associated with 'Umi-a-Liloa, whose father was the first to unify rule there. Kona was a popular dwelling place of chiefs (Kamakau 1961) and traditional Hawaiian political authority was centered in the area from Kailua to Keauhou from at least the 15th century to the reign of Kamehameha I. That included the area between Kamakahonu, on the north side of the present-day Kona pier, to Puapua'a, which is located just south of the project area, which served as a hub of royal activity. Kamakau wrote:

... at Kamakahonu could be seen at night the sparkle of lights reflected in the sea like diamonds, from the homes of the chiefs from Kahelo (in Puapua'aiki) to Lanihau. The number of chiefs and lesser chiefs reached into the thousands (1961:221-222).

English missionary William Ellis recorded the earliest detailed historical accounts of the area south of Kailua, including Kahului:

Leaving Kairua [Kailua], we passed through villages thickly scattered along the shore to the southward. The country looked unusually green and cheerful, owing to the frequent rains, which for some months have fallen on this side of the island. Even the barren lava, over which we have traveled, seemed to veil its sterility beneath frequent tufts of tan waving grass, or spreading shrubs and flowers.

The sides of the hills, laid out for a considerable extent in gardens and fields, and generally cultivated with potatoes, and other vegetables, were beautiful. The number of heiaus, and depositories of the dead, which we passed, convinced us that this part of the island must formerly have been populous. The latter were

built with fragments of lava, laid up evenly on the outside, generally about eight feet long, from four to six broad, and about four feet high. Some appeared very ancient, others had evidently been standing but a few years.

At Ruapua [Puapua‘a] we examined an interesting heiau, called Kauaikaharoa, built of immense blocks of lava and found its dimensions to be 150 feet by 70. At the north end was a smaller enclosure, sixty feet long and ten feet wide, partitioned off by a high wall, with but one narrow entrance. The places where the idols formerly stood were apparent, though the idols had been removed. (Ellis 1963:72-3)

The project area is located in the kula zone (Newman 1970, Kelly 1983, Schilt 1984, Cordy 1995) of the Kona Field System, that extended north to Kau Ahupua‘a, south to Honaunau and up to the forested slopes of Hualālai. The kula zone extended from sea level to the 500-foot elevation, although Cordy (1995) argues that the zone may have extended as high as the 700-foot elevation. Typically used for the cultivation of sweet potatoes, paper mulberry (wauke) and gourds, this zone is often marked by mounds from clearing and planting, modified outcrops and planting terraces and depressions (Hammatt and Clark 1980, Hammatt and Folk 1980, Schilt 1984). Habitation areas are scattered through the kula zone but are more typically found along the shoreline (Cordy 1995) along with burial, canoe storage, rituals and marine exploitation activities. The shoreline area was also the typical location for homes for royalty and their supporting activities including heiau, holua slides and pu‘uhonua, or places of refuge.

The area immediately above the kula zone is the kalu‘ulu zone, which extends up to about 1,000 feet in elevation and was used for growing primarily breadfruit as well as sweet potatoes and paper mulberry. From an archaeological standpoint, the kalu‘ulu zone is similar to the ‘apa‘a zone rising above it (Cordy 1995) to the 2,500-foot elevation. Examples of permanent habitation are found in the ‘apa‘a zone but were not common there (Cordy 1995, Newman 1970) as the zone was usually used to grow dryland taro, sugar cane, sweet potato and ti. Habitation there was more likely temporary to aid in the pursuit of agriculture, bird hunting and the collection of plant resources. According to Kawachi (1989), burials and ritual sites are rare in the higher elevation zones. Temporary habitation is also associated with the ‘ama‘u zone, which extends further to the 4,000-foot elevation along with banana and plantain cultivation. Prominent agricultural features of the kalu‘ulu and ‘apa‘a zones include kua‘iwi (Cordy 1995, Newman 1970), broad linear piles of rocks built cleared from nearby slopes that also served as field boundaries. Kua‘iwi are oriented in a mauka-makai direction, often connected with perpendicular, soil-retaining walls and terraces to form rectangular field grids, which also helped control rainfall runoff (Kirch 1985). This field layout differed from informal garden areas scattered among very rocky areas, including recent lava flows, in much of the kula zone.

Settlement and agriculture development in the kula zone has been categorized in five phases as a result of research stemming from the Kuakini Highway Realignment Corridor survey (Schilt 1984). They include:

Phase I – Pioneer Settlement c. A.D. 1050-1400

Very limited, sporadic use of lowland slopes and cave shelters just above the Kailua Bay area. Probably contemporaneous with pioneer settlements along the coast. Development of one or more of the mauka sub-zones of the Kona Field System may have commenced in the later portion of this phase.

Phase II – Garden Developments c. A.D. 1400-1600/1650

Initial use of the kula sub-zone for small gardens and of the caves for temporary shelter. Erosional deposition, resulting from development of the upland sub-zones, began to bury an old ground surface and gradually created deepening soil deposits on kula land.

Phase III – Refuge, Habitation and Intensive/Extensive Gardening

c. A.D. 1600/1650-1779

Extensive development of at least the mauka portion of the kula sub-zone, for sweet potatoes, wauke and probably also gourds. This development was accompanied rarely by permanent habitation and more often by temporary and seasonal habitation along the kula gardens. Animal enclosures, probably for pigs, may date to this phase. The upland zones were under complete development by this time. Suitable caves were modified for refuge during times of warfare or social conflict. Caves located in the midst of garden features were intensively used for temporary shelter and work spaces.

Phase IV – Historic Habitation and Gardening c. A.D. 1779-1850

The cultivation of kula lands gradually decreased in extent and intensity, nevertheless remaining important to a decreasing population. Permanent habitations on the kula during this phase occurred primarily on the makai side of the Great Wall of Kuakini. In 1848, Hawaiians were claiming an undetermined portion of kula lands, but none of these kula claims were honored by the Board of Land Commissioners (Kelly 1983). Some kula lands were being converted to grazing beginning in the 1840s.

Phase V – Historic Ranching c. A.D. 1850-Modern Times

Land use shifted completely to grazing, following the awards of kula lands to chiefs, missionaries and others (Kelly 1983). Isolated permanent habitations on upland slopes of the kula were oriented to ranching. Today ranching is not as extensive as it once was. Kailua in recent years has been rapidly developing as a tourist and urban hub for leeward Hawai'i Island (Schilt 1984:284).

During the Mahele, the entire ahupua'a of Kahului 2nd was awarded to Grace Kama'iku'i Rooke, daughter of John Young and Mary Kuamo'o, while Kahului 1st became government land. According to the Waihona 'Aina Mahele Database (Waihona 'Aina Corp. 2000), which is a collection of data from the Indices of Awards (Indices 1929), Native Register (NR n.d.), Native Testimony (NT n.d.), Foreign Register (FR n.d.) and Foreign Testimony (FT n.d.), there were 19

Land Commission Award (LCA) claims within Kahului, which resulted in the awarding of 15 claims. Kahului 1 and Kahului 2 were the location for eight claims each, while the remainder were listed simply as being in Kahului. Eventually 25 parcels were awarded to 17 claimants with the kuleana parcels ranging from 0.25 to 13.31 acres in size and averaging 2.24 acres. Most of the claims included several parcels at different elevations.

Testimonies describe at least 11 ili land divisions, with Kahului 1st containing Halewaawaa, Kukuipulua and Papalua and Kahului 2nd ili named Inaimoa, Kamuku, Kahuki, Kikiaiole, Lapalua, Ohia and Papiha. The ili of Puki is described as being in both ahupua'a. The parcels were concentrated near the coast and in the area below the upper road between the 1,100-foot and 1,500-foot elevation, with house lots in both areas. Cultivation sites were primarily on the inland portion. Nine claims included house lots containing at least 15 homes, with five house lots described as having enclosing walls. Parcel boundary descriptions include a canoe-dragging path, three cattle corrals and a cattle fence. No information of specific crops is mentioned in the testimonies about the claims, most of which included cultivated plots in multiple subzones of the Kona Field System. None of the awarded parcels were located within the project area.

Portions of Kahului 1st were sold by the government to Kapae (97 acres) and Kipola (78 acres) between 1852 and 1853 (Kelly 1983). Another 100 acres were sold between 1855 and 1911. Emerson's maps of Kailua of the late 1880s show Kahului 1st as divided into four grants: 1868 to Kaupena, 983 to Kipola and 976 and 2961 to Kapae (who also received two LCAs in Kahului 2nd). At that time the lower edge of the forest is depicted to be at approximately 600 feet in elevation.

The Kona Sugar Company was established in 1898 (Conde and Best 1973). The West Hawai'i Railway Company began construction of a railroad to transport sugar to the Kona Sugar Co. mill in Waiaha began in 1901. The railroad had ceased operating by the end of 1926. According to testimony from Joseph Gomes (Maly in O'Hare and Wolforth 1998), the Gomes family purchased the Kona Sugar Co. lands in both Kahului 1st and Kahului 2nd in 1927 for grazing purposes.

Archaeological Resources

As illustrated in Figure 4a, the main portion of the project area is irregularly-shaped and is 35.1-acres in area. It is bisected by the proposed Ali'i Parkway and is bordered along the north, south and east by stone walls. The west side of the parcel is bordered by Ali'i Drive, by undeveloped land and by the Kona Sea Ridge Development. The project also includes a road corridor that provides access to the parcel from Ali'i Drive at the far south of the project site. The access corridor is L-shaped and originates in the Land of Puapua'a 1 along the inland side of Ali'i Drive. It extends 725 ft to the east-northeast, centered along an existing gravel road, where it intersects the proposed Kahului to Keauhou Parkway corridor (TMK: 7-5-20:01). This portion of the corridor is located within County of Hawai'i Easement Lot 114. It then angles to the north-northeast extending about 1,800 feet where it terminates. Large portions of the project site have been disturbed by modern ranching and construction activities over the last 50 years.

Because of these irregular boundaries and the differing times and various types of planned development, a number of archaeological surveys have been conducted covering various parts. Kahului has been the subject of at least 15 archaeological surveys, some of which covered areas that overlapped the project site. Appendix 2a provides a full and recent overview of the historic compliance status for various parts of the project site and includes maps and tables. The information in this section is drawn from that overview and also from the archaeological inventory survey (AIS) conducted by Haun & Associates (2004) of the largest part of the project area, which is reproduced in Appendix 2b. Most scholarly references have been removed from the following summary for readability but are found in Appendices 2a and 2b.

No sites already listed on the National and State Register of Historic Places are present on any portion of the project site.

Archaeological inventory surveys had located 21 sites with 121 features including modified outcrops, mounds, terraces, platforms, walls, enclosures, midden scatters, cairns, kua'iwi and a modified knoll (Table 3 and Figure 6). The functions of the features include burial, agriculture, temporary habitation, permanent habitation and burial, undifferentiated habitation, marker and livestock control. Agricultural features are scattered throughout the undisturbed portions of the project area. The sites and features identified are typical of those expected in the lower kula zone of the Kona Field system. The presence of two remnants of kua'iwi, which are not common in the lower kula zone, suggest that formal fields may have been previously present and imply a relatively intensive agricultural use of the vicinity.

The permanent habitation sites likely date to late prehistoric to early historic periods, as these sites all lack historic artifacts. The only Historic-era sites on the property identified were ranch walls. Two of the permanent habitation sites include walled yards indicating the sites probably date to the late 1700s or early 1800s after free-ranging cattle became a problem and before historic artifacts were widely distributed. The other four permanent habitation sites lack enclosed yards and likely date to the late prehistoric period. Readers interested in the further specifics of the sites are referred to Appendix 2b.

Of the total of 22 sites documented within the project area over the decades, seven sites with 11 features had already been destroyed by construction activities and emergency fire suppression activities prior to the acquisition of the property by Sunstone in 2003 and the Haun & Associates inventory survey a year later. Currently, there are 15 sites, comprised of 110 features, present within the project area (Table 3).

Impacts and Mitigation Measures

In overview, as shown in Table 3, most of the 15 sites and their component features that are currently present were evaluated by the consulting archaeologist and determined by the State Historic Preservation Division (SHPD) to be significant for the data they contained only, which was collected during the inventory survey or during subsequent data recovery efforts (one site

recommended for data recovery is awaiting approval of an inventory survey). Two sites and two features of two other sites are being preserved. Specifically:

Six sites (6306, 6331, 6334, 21768, 22475, and 23916) require no further work or preservation (Table 3). Two features of Site 14447/24981 (Features B and C) also require no further work; however, Feature A of the site will be preserved.

Three sites were mitigated through data recovery (Sites 23917, 23918 and 23919). Feature B of Site 23914 was also mitigated through data recovery. The remaining feature of Site 23914 (Feature A) will be preserved.

Five sites or portions of them have either been preserved or have been recommended for preservation. Sites 6302, 6332-A and 23914-A are preserved in accordance with an approved Site Preservation Plan (Haun and Henry 2005). The preservation plan includes provisions for breaching the Kuakini Wall along the southern boundary to provide access and drainage improvements. Sites 6332-B and 23915 will be preserved in accordance with an approved Burial Treatment Plan (Haun and Associates 2005). Feature A of Site 14447/24981 is recommended for preservation and will be preserved under the terms of a preservation plan to be prepared.

It deserves emphasis that the inventory survey documented three burial sites, although during the latest study one of those was found to have been destroyed sometime in the last few decades. A burial treatment plan for the remaining two burial sites, Nos. 6332 and 23915, was prepared by Haun & Associates and approved by the Hawai'i Island Burial Council on May 19, 2005. The plan calls for preserving these burials in place. If necessary to accommodate the burial treatment plan for burials within the Kahului to Keauhou Parkway right-of-way, Sunstone shall dedicate additional right-of-way as required by the County Department of Public Works. Sunstone has also received approval from the State Historic Preservation Division for a preservation and data-recovery plan for other remaining sites.

As detailed in Appendix 2a, SHPD has reviewed and approved a number of inventory surveys, data recovery plans, data recovery reports, site preservation plans, and burial treatment plans, although several reports are still pending approval of preparation. Much of the relevant SHPD correspondence is included in Appendix 2c. SHPD has also been provided a copy of this Draft EA for their review, in order to ensure proper implementation and description of the historic site review process.

In the unlikely event that additional burials, cultural deposits or archaeological resources are encountered during future development activities, work in the immediate area of the discovery will be halted and SHPD will be contacted as outlined in Hawai'i Administrative Rules 13§13-275-12.

Table 3 Archaeological Sites

| Site No. | TMK | Type | Function | F* | Status Details and Remaining Tasks |
|------------------------|------------------------|----------------|--------------------------------------|------------|----------------------------------------------------------------------------|
| 6302 | Numerous | Wall | Livestock Control | 1 | Preserved |
| 6306 | 7-5-19:01 | Wall | Livestock Control | 1 | No further work |
| 6331*# | 7-5-19:01 | Complex | Permanent Habitation, Burial, Marker | 11 | No further work |
| 6332*# | 7-5-19:01 | Complex | Permanent Habitation/ Burial | 4 | Preserved |
| 6334 | 7-5-19:01/ 7-5-20:1 | Wall | Livestock Control | 1 | No further work |
| 9837 | 7-5-19:01 | Lava Tube | Temporary Habitation | 1 | Recc: data recovery; Awaiting AIS review, approval, data recovery |
| 14447/ 24981# | 7-5-20:74, 76 | Complex | Permanent Habitation | 3 | Feat. A recc. for preserve; No further work for Feat B; Need preserve plan |
| 21768 | 7-5-19:01 | Wall | Permanent Habitation | 1 | No further work |
| 22475 | 7-5-19:01 | Wall | Livestock Control | 1 | No further work |
| 23914 | 7-5-19:01 | Complex | Permanent Habitation | 2 | Feat. A preserved; Feature B mitigated |
| 23915 | 7-5-19:01 | Platform | Permanent Habitation/ Burial | 1 | Preserved |
| 23916 | 7-5-19:01 | Platform | Permanent Habitation | 1 | No further work |
| 23917 | 7-5-19:01 | Terrace | Temporary Habitation | 1 | Mitigated |
| 23918 | 7-5-19:01 | Midden Scatter | Temporary Habitation | 1 | Mitigated |
| 23919 | 7-5-19:01 | Complex | Agriculture | 80 | Mitigated |
| Total | | | | 110 | |
| Destroyed Sites | | | | | |
| 6372# | 7-5-20:1, 76 | Complex | Agriculture | 2 | |
| 9838 | 7-5-20:1 | Complex | Agriculture | 4 | |
| Site 1 Soehren | 7-5-19:01 | Midden | Habitation | 1 | |
| Site 2 Soehren | 7-5-19:01 | Platform | Burial | 1 | |
| Site 3 Soehren | 7-5-19:01 | Midden Scatter | Habitation | 1 | |
| Site 21 Soehren | 7-5-19:01 | Midden Scatter | Habitation | 1 | |
| Site T-106 Walk/Rosend | 7-5-20-76 | Platform | Possible Burial | 1 | |

* F= Number of features; P= Preserved; D= Data Recovery; N= No further work

Cultural Resources

The lands of Kahului, as with other ahupua‘a in Kona, were carefully managed for resources. There were both open ocean and nearshore fisheries (ko‘a), and a wide range of environmental zones (wao), extending from the nearshore to upland forests provided the natural resources and materials necessary for the development of a sophisticated agricultural system. These resources allowed the native residents of the lands to meet their immediate community needs as well as contribute to the overall support of the larger Hawaiian social, economic, religious and political system of Kona.

A limited cultural impact assessment (CIA) was conducted in July 2005 as part of the SMA Assessment by J. Curtis Tyler III, who is kama‘aina to Kona and recognized as both a lineal and cultural descendant of ahupua‘a tenants who once resided in Puapua‘a, Kahului and Waiaha (Appendix 3). The CIA identified valued resources, practices and beliefs in the area on the development site and the impacts upon those resources. The CIA found that the major changes in land ownership and use that have taken place along the Kona coast have obscured the relationships between the spiritual aspects of the cultural landscape and what is actually on the ground.

Valued natural, cultural and historical resources are still present in various parts of Kahului and the adjacent, larger ahupua‘a of Puapua‘a and Waiaha. Despite the cumulative impacts of development on these lands, consultation with cultural descendants clearly demonstrated that they continue to value cultural resources that once existed or exist today. Coastal water features have not only biological and recreational but also cultural significance. Burial sites for ‘iwi kupuna, including caves, in various parts of these ahupua‘a, are important resources to protect. Other important resources include agricultural plots, heiau, ku‘ula (fishing shrines), and ala hele (trails). Surfing, fishing, gathering and diving still take place in Kahului Bay. On a wider level, the entire range of wao, from the kahakai (shoreline) to the wao akua (cloud forests), that make up the ahupua‘a have a level of cultural importance.

With the exception of a possible mauka-makai trail, interviews and consultation did not reveal the precise locations or specific identifications of any valued resources located directly on the project site. However, informants did make general comments about resources that might have existed or may still exist within this ahupua‘a and possibly, the project site itself. In particular, burials that had been reported to be destroyed but still might exist under bulldozer pushpiles were cited. On a more general level, concern with water quality, scenic resources, and trails were expressed.

Subsequent to the SMA Assessment, as part of the preparation of the EA, the Office of Hawaiian Affairs (Honolulu and West Hawai‘i) and the Kona Hawaiian Civic Club were contacted to determine if they had any knowledge of cultural resources that may be present or practices that may be ongoing on the property. No specific resources or practices were identified.

Impacts to Cultural Resources and Mitigation

Based in part upon recommendations of descendants interviewed, the CIA proposed mitigation measures to protect any valued resources, practices and beliefs that are or may be located on the development site.

1. Due to prior damage or destruction to features believed to be burials, archaeological monitoring within the project area will be undertaken in accordance with the approved Inventory Survey Report and the recommendations of SHPD. If any human skeletal remains and burial goods are found, protective measures will be implemented under the direction of SHPD, in accordance with Hawai‘i Administrative Rules (HAR) 13-300-40.
2. If any caves with burials are found on the property, work will cease in the immediate area, and a site inspection will be requested from SHPD.
3. If any artifacts, including burial goods are discovered on the property, they will be treated in accordance with HAR 13-279.
4. To ensure that the approved plans for reasonable protection of any valued resources, practices and beliefs are carried out in accordance with the approved Site Preservation Plan and the Burial Treatment Plan, these plans shall be made part of the property deed covenants, recorded with the Bureau of Conveyances and run with the land. The covenants shall include a provision that written notice of these covenants shall be provided to any buyer of any portion of the property prior to closing.
5. To accommodate recognized descendants, appropriate access, including adequate on-site parking, will be provided in accordance with the approved Burial Treatment Plan.
6. Participation by recognized descendants in the care and maintenance of any on-site burial preservation area shall be in accordance the approved Burial Treatment Plan.
7. Establishment of any protective buffer along the makai side of the Pa Kuakini section located on the property shall be in accordance with the approved Preservation Plan.
8. If any trails are found on the property, they shall be treated in accordance with HAR 13-280 and the recommendations, if any, of the State Na Ala Hele program.
9. Any burials and burial goods identified in the proposed alignment corridor of the Kahului to Keauhou Parkway shall be handled in accordance with the recommendations of SHPD.
10. The treatment and disposition of any iwi and burial goods found on the property will be in accordance with the Hawaii Revised Statutes and HAR 13-300.
11. In order to avoid any impacts to the shoreline and nearshore waters, accommodation of any runoff and nonpoint source pollution generated on the property, either during construction or after the project has been completed, shall be made in accordance with the law and regulations of the State Department of Health and the County Department of Public Works.

3.3 Infrastructure

3.3.1 Utilities, Energy, Public Facilities and Public Services

Existing Utilities, Impacts and Mitigation Measures

Electrical power would be supplied to the project area by Hawai‘i Electric Light Company (HELCO), a privately owned utility company regulated by the State Public Utilities Commission, via its island-wide distribution network through overhead lines along Ali‘i Drive. Telephone service is available from Hawaiian Telcom, also through overhead lines. According to Sunstone, the project will use energy efficient materials and systems and will strive to achieve the National Association of Home Builders Green building construction recommendations. This design will include energy efficient lighting fixtures and a focus on using natural light and ventilation.

Water would be provided by the County Department of Water Supply, which has made an initial commitment of 77 units of water for the project. According to the terms of the SMA permit granted for the project by the County Planning Commission, if additional water units are required, those dwelling units shall not be constructed until additional commitments become available through either on-site or off-site improvements. The project will receive the balance of its water commitments through its participation in the Waiaha System LLC water agreement as approved by the Water Board of the County of Hawai'i on November 8, 2007. The design for the project will feature low water use landscaping, which is also in keeping with the natural vegetation of this part of Kona. In response to early consultation (see letter in Appendix 1a), Debbie Hecht of the Sierra Club noted the issue of increasing salinity in Kona potable wells due to overpumping of the Kahalu'u shaft. The County is developing additional mauka sources, including wells at Waiaha and Palani, and also restructuring transmission systems to direct water from mauka sources to makai uses, in order to address this problem.

Wastewater will be managed by an 8-inch sewer line along Ali'i Drive connected to the County's wastewater treatment plant in Kealakehe. Solid waste from the commercial-zoned portion of the development will be collected by commercial haulers for disposal at the County's West Hawai'i Sanitary Landfill in Pu'uana'hulu, which has several decades of capacity. A Solid Waste Management Plan will be submitted to the County Department of Environmental Management prior to the issuance of a Certificate of Occupancy.

In sum, the proposed action would not have any adverse impact on existing utilities and is being developed with energy efficiency, low water use, and pollution minimization in mind.

Existing Public Services and Facilities, Impacts and Mitigation Measures

The Kailua Police Station is located in Kealakehe and the Kailua Fire Station is located on Palani Road, both within reasonable distances of the property. Emergency medical services are provided by the Hawai'i County Fire Department. Acute care services are available at Kona Hospital, approximately eight miles away.

Schools include Kahakai Elementary, Kealakehe Intermediate and Kealakehe High. Recreational facilities in the Kailua area include an Olympic swimming pool, ballfields and a community center. Numerous State and County beach parks are located within 10 miles of Kailua, including White Sands, Kahalu'u, and Pahoe County Beach Parks within three miles of the project site. Keolonahihi State Historical Park, which is largely undeveloped, is located about a mile south of the project site.

A 2003 economic study of resort-residential housing (Decision Analysts Hawai'i, Inc. 2003) in West Hawai'i determined that on balance it provides substantial economic benefits to the Big Island. Construction and occupant expenditures are important for employment and economic growth, and the support services required by those occupying the homes and condominiums cost far less to the County and State than the large amount of property taxes they pay. Revenues are high

and steady because of the large numbers of very high value units, the low percentage of homeowners who qualify for homeowner exemptions, and the high property tax rate for properties that are not occupied by homeowners. Government costs are low because developers fund most or all of the infrastructure and amenity construction costs, and often much of the operating costs. Also, low occupancy rates mean lower demand for County services, and as most residents are well-off, they require little if any government assistance. According to the report:

“Thus, property-tax revenues from resort-residential projects exceed support expenditures by \$20.8 million per year for existing projects (\$22.2 million – \$1.4 million) and \$25 million per year for planned projects (\$26.7 million – \$1.7 million). In effect, resort-residential projects provide substantial tax revenues to subsidize support services to other Big Island residents and visitors” (Ibid: 6).

In summary, real property and other tax contributions would more than compensate for extra costs of public services and would also enable agencies to improve and expand their services.

3.3.2 Roadways and Traffic

Introduction

A Traffic Impact Analysis Report (TIAR) for the project was prepared by Phillip Rowell and Associates in 2006; it is attached as Appendix 5 and summarized below.

Existing and Proposed Facilities and Conditions

Street access to the proposed Kona Sea Crest condominium project will be from Ali‘i Drive via Kona Sea Crest Road, a proposed road between Ali‘i Drive and Kuakini Highway, and also via the driveway to Block “D” of the condominium project off Ali‘i Drive. Kona Sea Crest Road is to be located approximately 300 feet south of the existing Ali‘i Park Place condominium. The new road would extend from Ali‘i Drive mauka (east, in this case) to the proposed Kahului to Keauhou Parkway, where it would shift approximately 350 feet to the north before continuing mauka to Kuakini Highway. For the purposes of the TIAR it was assumed that all intersections would be unsignalized.

Ali‘i Drive is a two-lane road owned and maintained by the County, serving the area south of Kailua and extending from Kailua to Keauhou, where it connects with the Mamalahoa Bypass that will eventually connect to Captain Cook. Kuakini Highway is a secondary County arterial highway with two lanes in this area. Ali‘i Drive has a posted speed limit of 25 mph, a paved shoulder and no sidewalks. Ali‘i Drive at the project site is basically flat and straight. Kuakini Highway has a posted speed limit of 35 mph, a paved shoulder and no sidewalks. In the vicinity of the project site, Kuakini Highway is basically straight with a slight grade. In order to assess current conditions, traffic counts were made at the nearest intersections to the proposed intersections along Ali‘i Drive and Kuakini Highway during March and April, 2006. Table 4a depicts existing (2006) traffic volumes for Ali‘i Drive and Kuakini Highway for the AM and PM peak hours.

Table 4a. Existing (2006) & Future (2020) AM and PM Peak Hour Traffic Volumes*

| Road | Direction | A.M. | | P.M. | |
|-----------------|------------|------|------|------|------|
| | | 2006 | 2020 | 2006 | 2020 |
| Ali'i Drive | Northbound | 215 | 590 | 700 | 645 |
| | Southbound | 105 | 335 | 305 | 670 |
| Kuakini Highway | Northbound | 230 | 495 | 550 | 565 |
| | Southbound | 255 | 425 | 545 | 770 |

* Without project, at site of proposed Kona Sea Crest Road

Impacts and Mitigation Measures

The approach in the TIAR consisted of assessing existing conditions, predicting background traffic growth, and assessing traffic conditions using the year 2020 as the design or horizon year, which was consistent with the traffic study for the Kahului to Keauhou Parkway, a facility which was assumed to be in existence for the purposes of the TIAR. Therefore, the TIAR made assessments of traffic volumes in the year 2006, traffic volumes in the year 2020 both with and without the Kona Sea Crest development, and Level of Service under the Build Alternative. Using the 2003 *Trip Generation Handbook* from the Institute of Transportation Engineers, it considered traffic generated by the proposed Kona Sea Crest Road at Ali'i Drive and Kuakini Highway as well as the north and south intersections with the proposed Kahului to Keauhou Parkway. It also considered traffic generated by the proposed Block B driveway and retail center on Kona Sea Crest Road, and the proposed Block D driveway at Ali'i Drive (Figure 4a).

Predicted traffic volumes resulting from the generation of traffic created by site development were added to existing-plus-background growth to derive future traffic volumes with the site fully developed. These data are shown in Figures 7a and 7b, which also show the Without Project volumes on Ali'i Drive and Kuakini Highway. As expected, traffic volumes in these areas would increase roughly 10-25 percent because of additional trips into and out of the development.

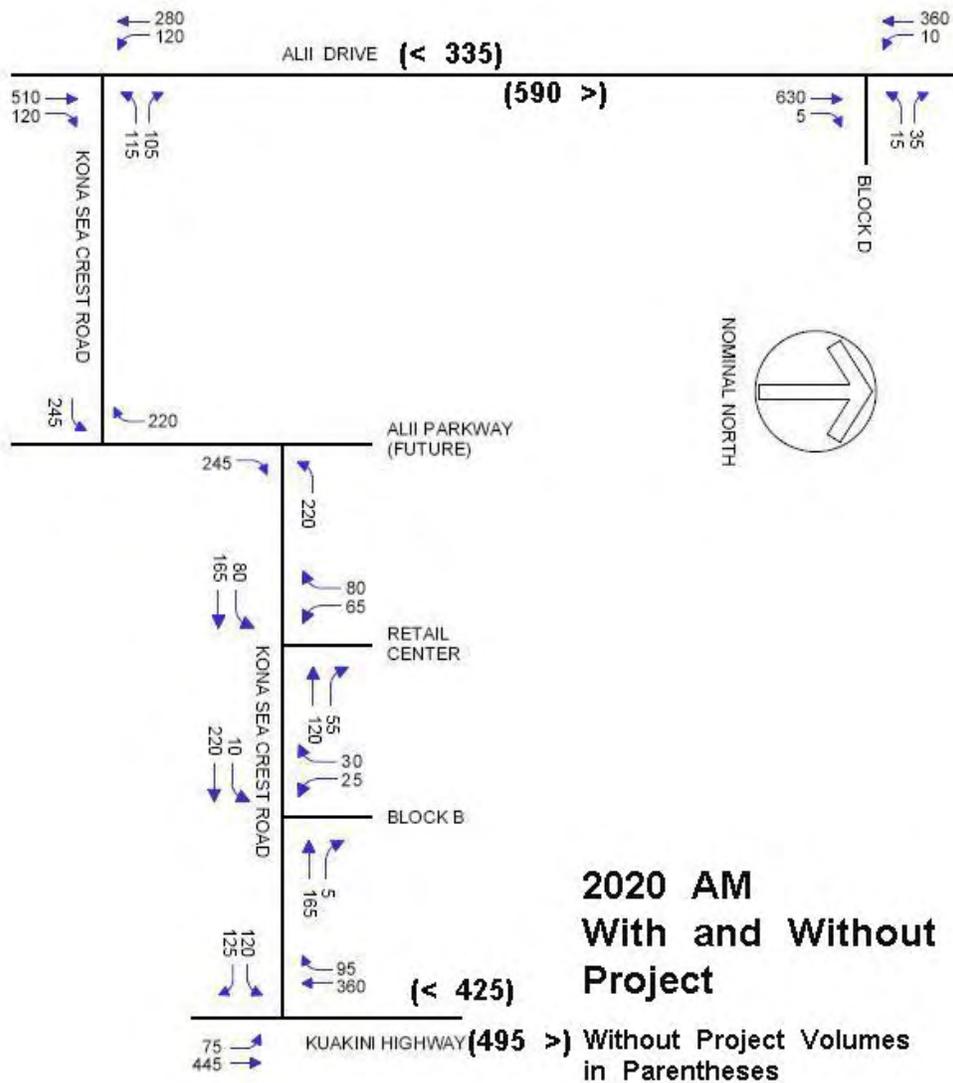


Figure 7a

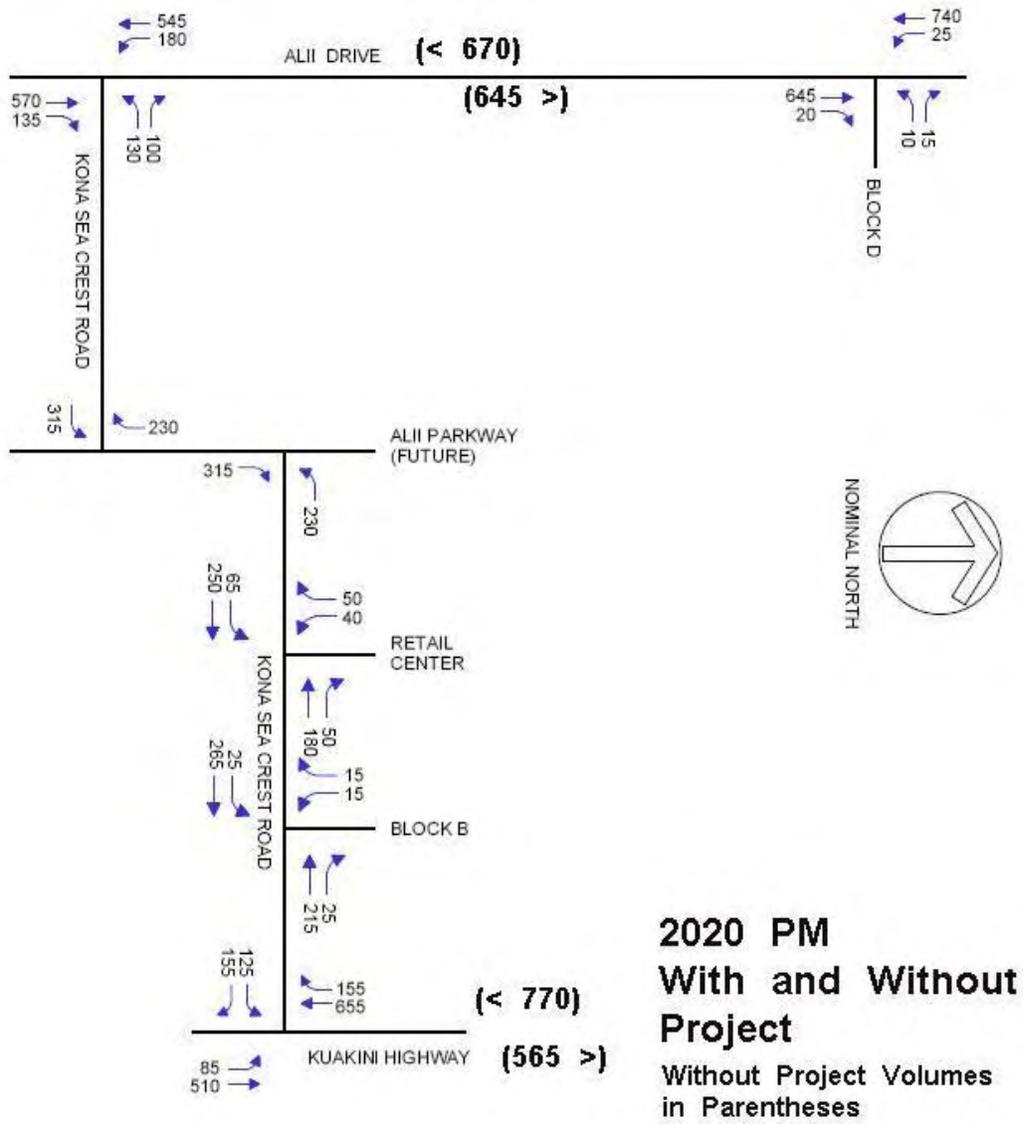


Figure 7b

The TIAR measured traffic flow quality using the concept of Level of Service (LOS) as defined by the *Highway Capacity Manual* (Transportation Research Board 2000) (HCM). was used to assess traffic conditions and Level of Service for the proposed intersections in the study area. Generally, the concept of LOS for intersections relates the quality of traffic flow to the delay time experienced by drivers. LOS varies from “A” to “F,” with the quality of traffic service declining as the levels move from “A” towards “F.” With declining LOS, the ability to travel at the desired speed is inhibited by other vehicles either adjacent, opposite, or in front of a driver. Generally, in urban

areas and growing rural areas transitioning to urban areas, it is expected that LOS D will be prevalent and acceptable in the morning and afternoon peak hours. Therefore, any traffic movements with LOS E or worse should be reviewed closely to determine if any changes or improvements could be made to move the LOS to an acceptable level. Table 4b indicates general LOS and the thresholds of delay for non-signalized intersections.

Table 4b. Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

| Level-of-Service | Expected Delay to Minor Street Traffic | Vehicular Delay (Seconds) |
|-------------------------|-----------------------------------------------|----------------------------------|
| A | Little or no delay | <10 |
| B | Short traffic delays | 10 - 15 |
| C | Average traffic delays | 15 - 25 |
| D | Long traffic delays | 25 - 35 |
| E | Very long traffic delays | 35 - 50 |
| F | See Note (2) below | > 50 |

Notes:

- (1) From Highway Capacity Manual, 2000 Edition, Transportation Research Board.
- (2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing that may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

The TIAR study also assessed the need for left-turn lanes at study intersections using guidelines from *Evaluating Intersection Improvements: An Engineering Study Guide* (2001) by the Transportation Resource Board, and calculated left-turn storage lengths to accommodate estimated traffic volumes using guidelines in *A Policy of Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials (1990 edition).

Table 4c below shows the results of the Level of Service analysis for both the AM and PM peak hour periods for the project intersections in the year 2020. The analysis considered the intersection of Ali'i Drive and the future Kona Sea Crest Road both with and without a left-turn refuge lane. As without the project there would be no intersections near the project site to measure, Level of Service was calculated only for the With Project condition (the Build Alternative), although it should be understood that whether or not the project is built, the background growth in traffic will have the effect of increasing congestion and delay and reducing levels of service on Ali'i Drive and Kuakini Highway.

**Table 4c
Level-of-Service Analysis for 2020 Conditions**

| Intersection, Approach and Movement | A.M. Peak Hour | | P.M. Peak Hour | |
|---------------------------------------------------------------------------|----------------|-----|----------------|-----|
| | Delay | LOS | Delay | LOS |
| Ali'i Drive at Kona Sea Crest Road (Without Left Turn Refuge Lane) | | | | |
| Southbound Left | 9.6 | A | 10.3 | A |
| Westbound Left | 49.5 | E | 297.4 | F |
| Westbound Right | 13.5 | B | 14.0 | B |
| Ali'i Drive at Kona Sea Crest Road (With Left Turn Refuge Lane) | | | | |
| Southbound Left | 9.6 | A | 10.3 | A |
| Westbound Left | 18.1 | C | 33.1 | D |
| Westbound Right | 13.5 | B | 14.0 | B |
| Keauhou to Kahului Parkway at Kona Sea Crest Road (South) | | | | |
| Eastbound Left | 9.7 | A | 10.2 | B |
| Keauhou to Kahului Parkway at Kona Sea Crest Road (North) | | | | |
| Westbound Left | 9.6 | A | 9.6 | A |
| Kuakini Highway at Kona Sea Crest Road | | | | |
| Northbound Left | 8.6 | A | 10.3 | B |
| Eastbound Left | 14.9 | B | 20.8 | C |
| Eastbound Right | 10.3 | B | 12.5 | B |
| Ali'i Drive at Block B Driveway | | | | |
| Southbound Left & Thru | 9.0 | A | 9.2 | B |
| Westbound Left & Thru | 17.0 | C | 24.0 | C |
| Kona Sea Crest Road at Block B Driveway | | | | |
| Eastbound Left & Thru | 7.6 | A | 7.8 | A |
| Southbound Left & Right | 10.6 | B | 11.5 | B |
| Kona Sea Crest Road at Retail Center Driveway | | | | |
| Eastbound Left & Thru | 7.8 | A | 7.9 | A |
| Southbound Left & Right | 12.5 | B | 12.4 | B |

The analysis in the TIAR showed that in general, Level of Service would be A to C, well within the acceptable range, for nearly all movements at all intersections at both the AM and PM peak hours. A separate left-turn lane is warranted at the intersection of Ali'i Drive and the proposed Kona Sea Crest Road, as without this improvement the Level of Service for vehicles exiting the project roadway onto Ali'i Drive would have LOS E or F conditions at peak hours.

In conclusion, traffic resulting from the project will operate with acceptable Level-of-Service if the following mitigation measures are provided:

- For traffic turning from Ali'i Drive onto Kona Sea Crest Road, a left-turn lane of at least 300 feet; and for traffic from Kona Sea Crest Road turning south on Ali'i Drive, a refuge lane.

- For traffic turning from Kuakini Highway onto Kona Sea Crest Road, a left-turn lane at least 60 feet long; and for traffic from Kona Sea Crest Road turning north on Kuakini Highway, a refuge lane.

It also important to note that Kona Sea Crest Road will improve the public's access to the shoreline, and it will also provide the area with another evacuation route in case of tsunami or other emergency.

It should be noted that notwithstanding the County approval, with conditions, that resulted from the SMA process, the Police Department recommended in response to early consultation on the EA against any further development on Ali'i Drive until the Kahului to Keauhou Parkway has been completed and is open for traffic (see Appendix 1a for letter).

3.4 Secondary and Cumulative Impacts

Somewhat distinct from the direct effects that construction and occupation of a housing project can have on the environment are secondary impacts. These can include impacts from residents traveling to different parts of the island for work or recreation and inducing impacts in environmentally sensitive areas. Another potential secondary impact is economic; although generally positive, increased economic activity resulting from the expenditures of new residents can draw in workers who add to the existing demand for affordable housing. In the case of the subject project, its modest scale in relation to the existing population of the island indicates that any such secondary impacts would be negligible.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures.

The fast-growing North Kona District is the center of the visitor industry and real-estate development that power the economy of the island. Despite the recent economic slowdown, there are many public and private projects being planned at any given time in North Kona, the details of which often change daily in response to market conditions and the regulatory process. The descriptions below provide context for development occurring in the area south of Kailua-Kona along Ali'i Drive and nearby areas.

A variety of market housing projects, some with an affordable housing component, are underway south of the project area. They include the Royal Ali'i Planned Unit Development near Kamoia Point, 1.6 miles south of the project site. The project will be built on the mauka side of Ali'i Drive and will contain 19 lots and underground utilities, and has already been granted a Special Management Area permit from the County Planning Commission and has prepared an EA.

Just south of the Royal Ali'i project is a condominium project that was granted a Special Management Area permit in 2007. The project by developer D-Bar Ranch includes 108 units to be located mauka of the Kona Magic Sands subdivision.

Further to the south, Kona Heights LLC has proposed to build two subdivisions with a total of 267 lots. The development, announced to the public in January 2008, would include Laipala Makai, which would be located above Ali'i Drive along the proposed route of the Kahului to Keauhou Parkway, and Laipala Heights, which would be mauka of Laipala Makai and abutting Kuakini Highway.

Kamehameha Investment Corporation, the development arm of Kamehameha Schools, has announced long-term plans for 1,700 more housing units in its Keauhou Resort properties located approximately 4 miles south of the project area.

To the north, in the vicinity of Kailua Village, a 67-unit condominium project is planned on Ali'i Drive next to the Coconut Grove Market Place. Located about a mile north of the project site, the KPC Villages project, which received rezoning approval in 2006, will include a 13,000 sq. ft. commercial area.

In the heart of Kailua, the landmark King Kamehameha's Kona Beach Hotel and its grounds are planned for extensive renovation. The most noticeable change will be demolition of a portion of the central arcade structure located between the two Hotel towers, which will be converted to a more modern style guest check-in. The existing pool and bar area, which is now makai of the hotel, will be removed and replaced by a resort-style pool deck pulled closer to the hotel central core, walkways, and enhanced landscaping, resulting in more open area near the shoreline. Conference and banquet facilities will be completely refurbished while adding a small pre-function lobby, board-room and storage area. More efficient site planning will add parking.

Planned new development includes a variety of roadway infrastructure projects which are expected to provide some long-term relief to Kona's traffic congestion. They include the proposed Kahului to Keauhou Parkway, a project that has been decades in the planning but which is moving closer to fruition. The Parkway, which would create a limited-access roadway located mauka of Ali'i Drive and below Kuakini Highway, includes a proposed section that crosses the project site and is the subject of fees assessed to the applicant in lieu of actual construction of that segment of the Parkway, as discussed earlier in this document. Planning and design for the Parkway are well underway with construction expected to begin in the 2011 fiscal year.

The County is carrying out several road improvements south of the project area which would improve mauka-makai travel. Two of these involve connectors between Ali'i Drive and Kuakini Highway.

The first is an extension of the existing La'aloa Avenue, which intersects with Ali'i Drive about two miles south of the project site. The project would extend La'aloa Avenue 1,500 feet mauka to connect with Kuakini Highway, making it the first mauka-makai connector in the approximately 3.5-mile stretch between Royal Poinciana Drive to the north and King Kamehameha III Road to the south. Planning and design for the project are continuing.

Closer to the project site, the County is preparing to extend Lako Street, which already intersects with Kuakini Highway, down to Ali'i Drive in order to create another mauka-makai connector south of Royal Poinciana Drive. The project, initiated in 2000, has been delayed by litigation which resulted in a ruling in favor of the County. While that ruling is being appealed, an advisory group continues to meet and is currently considering several possible routes for the extension, which is expected to intersect with Ali'i Drive approximately 1.5 miles south of the project site.

The County is also preparing to make improvements to Ali'i Drive along Oneo Bay, located about three-quarters of a mile north of the project in the southern end of Kailua Village. The design phase is scheduled for 2009 with construction, estimated at \$5 million, set for 2011. Another long-term project would extend the four lanes of Kuakini Highway another 1.5 miles south from Hualalai Road to an intersection with the proposed Kahului to Keauhou Parkway, increasing the capacity of an important alternate to Ali'i Drive.

Several large-scale road improvements underway are designed to improve traffic flow in North Kona as a whole. A section of Queen Ka'ahumanu Highway is being divided and widened from two lanes to four lanes north of the town's center. Further mauka, the Ane Keohokalole Extension will connect Henry Street to Hina Lani Road, providing an alternate route for motorists from Kailua Village to the Kaloko Industrial Park. In the process the "midlevel" extension will link the future West Hawai'i Civic Center, Kealakehe Schools and the Villages of La'i'opua.

The status of another major road improvement in the general area was still in question as of October 2008. The Mamalahoa Bypass, which will extend south from near the end of Ali'i Drive to Captain Cook in South Kona, was built as a condition of the development of the upscale Hokulia subdivision, but its completion was delayed by legal issues. While completion of the southern section of the bypass was contingent on court action, the County was planning to open up the completed northern section as far as Kealakekua for limited use to ease traffic congestion on Mamalahoa Highway.

There are also two projects in the works expected to provide additional recreational opportunities for the Ali'i Drive area, both involving playgrounds. The first is a community center to be developed and operated by the Kona YMCA on a parcel leased from the County near La'aloa Avenue. The proposed center is to include a swimming pool and fitness center as well as facilities aimed specifically at senior citizens. The other project is a 1.63-acre park off Royal Poinciana Drive in the Ali'i Kai subdivision.

There is also a large County project underway which is designed to reduce traffic congestion by consolidating County services. The West Hawai'i Civic Center to be built in Kealakehe will replace 22 County offices currently spread throughout the Kailua area. Groundbreaking for the \$50 million complex was set for late 2008 with completion scheduled for 2011. In another public project, the State is preparing to expand the parking facilities at Kona International Airport by more than 500 stalls.

Although it is difficult if not impossible to systematically determine the complex interaction of environmental impacts in this fast-growing region, aside from traffic during construction and occupancy, the Kona Sea Crest project generally has limited impacts that will not tend to accumulate with those of other projects. Impacts to natural resources such as vegetation are limited because of the basically disturbed, alien nature of the vegetation that is found on the property. Archaeological resources were properly inventoried and preservation plans have been approved for two burials and other significant sites, adding to a very large number of preserved sites in Kona. The design guidelines of the project will prevent a loss of scenic character or interference with viewplanes, even considering the development going on around the area. Water quality impacts are being minimized through connection to the municipal wastewater plant, drainage improvements that retain stormwater on site, and construction Best Management Practices that limit erosion and sedimentation. Despite mitigation, residual water quality effects occur that can accumulate with those of existing development in the region, and strict adherence to Best Management Practices will be necessary.

Traffic impacts have been assessed with a cumulative perspective, and with mitigation the project will have only limited impacts on local traffic flow. It will also provide a critical mauka-makai connector. As with every housing project, however, new residents will produce new motorists not only at the margins of the project but throughout the region, increasing demand on already stressed transportation systems. Mitigating this is the fact that increases in the tax base generated by new occupants can provide the funding for new infrastructure, services and facilities. There is often a lag time, however, between population growth and full infrastructure development, which has led many in Kona to call for restrictions or moratoriums on development to allow infrastructure to “catch up.” The imminent opening of the Mamalahoa Bypass, the widening of Queen Ka‘ahamānu Highway, and the coming construction of the La‘aloa Avenue and Lako Street Extensions are examples of projects that will begin to alleviate some traffic concerns. Ongoing improvement of the County of Hawai‘i’s mass transit program (buses are now fare-free) and a new initiative to create Park and Ride lots will also mitigate this problem.

3.5 Required Permits and Approvals

The following permits and approvals would be required:

- County of Hawai‘i, Department of Public Works, Engineering Division: Grading Permit; Approval for Work Within County Roadway Right-of-Way
- County of Hawai‘i, Department of Public Works, Building Division, Building Permits
- State of Hawai‘i, Department of Health: Underground Injection Control (UIC) permits; National Pollutant Discharge Elimination System (NPDES) permits.

3.6 Consistency With Government Plans and Policies

3.6.1 Hawai‘i State Plan

Adopted in 1978 and last revised in 1991 (Hawai‘i Revised Statutes, Chapter 226, as amended), the Plan establishes a set of themes, goals, objectives and policies that are meant to guide the State’s long-run growth and development activities. The three themes that express the basic purpose of the *Hawai‘i State Plan* are individual and family self-sufficiency, social and economic mobility and community or social well-being. The proposed project would promote these goals by adding housing opportunities for the North Kona district, thereby enhancing quality-of-life and community and social well-being.

3.6.2 Hawai‘i County SMA, Zoning and General Plan

Special Management Area. The property is situated within the County’s Special Management Area (SMA) and the Hawai‘i County Planning Commission has issued an SMA permit for the project.

Hawai‘i County Zoning. The project site carries several zoning designations, including RM-4 (multiple-family, minimum 4,000 square feet per unit), RM-7 (multiple-family, minimum 7,000 square feet) and CN-10 (neighborhood commercial, minimum 10,000 square feet). The proposed action is entirely consistent with this designation.

The *Hawai‘i County General Plan Land Use Pattern Allocation Guide (LUPAG)*. The LUPAG map component of the *General Plan* is a graphic representation of the Plan’s goals, policies, and standards as well as of the physical relationship between land uses. It also establishes the basic urban and non-urban form for areas within the planned public and cultural facilities, public utilities and safety features, and transportation corridors. The project site is classified as Medium Density Urban in the LUPAG. The proposed action is consistent with this designation.

The *General Plan* for the County of Hawai‘i is a policy document expressing the broad goals and policies for the long-range development of the Island of Hawai‘i. The plan was adopted by ordinance in 1989 and revised in 2005 (Hawai‘i County Department of Planning). The *General Plan* itself is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawai‘i. The Planning Commission determined that the project was consistent with the General Plan (see Appendix 1b, Page 22). Analysis for the EA confirms that it generally satisfies the following Goal and Policies, and Courses of Action of particular chapters of the General Plan:

ECONOMIC GOALS

Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.

Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawaii.

Strive for diversity and stability in the economic system.

Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.

Discussion: The proposed action is in balance with the natural, cultural and social environment of the County, and it will create temporary construction jobs for local residents and indirectly affect the economy through construction industry purchases from local suppliers. A multiplier effect takes place when these employees spend their income for food, housing, and other living expenses in the retail sector of the economy. Such activities are in keeping with the overall economic development of the island.

ENVIRONMENTAL QUALITY GOALS

Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.

Maintain and, if feasible, improve the existing environmental quality of the island.

ENVIRONMENTAL QUALITY POLICIES

Take positive action to further maintain the quality of the environment.

ENVIRONMENTAL QUALITY STANDARDS

Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.

Incorporate environmental quality controls either as standards in appropriate ordinances or as conditions of approval.

Discussion: The proposed action, which occurs in an area designated for urban development that has been largely, disturbed by modern ranching and construction activities, would not have a substantial adverse effect on the environment and would not diminish the valuable natural resources of the region. The project will obtain permits and follow the conditions designed to reduce or eliminate pollution and environmental degradation.

HISTORIC SITES GOALS

Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawaii.

Appropriate access to significant historic sites, buildings, and objects of public interest should be made available.

HISTORIC SITES POLICIES

Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.

Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.

Public access to significant historic sites and objects shall be acquired, where appropriate.

Discussion: Archaeological resources are being protected through inventory survey, as well as the formulation and implementation of a data recovery and burial treatment plan, all of which have been reviewed and approved by the State Historic Preservation Division.

FLOOD CONTROL AND DRAINAGE GOALS

Conserve scenic and natural resources.

Protect human life.

Prevent damage to man-made improvements.

Control pollution.

Prevent damage from inundation.

Reduce surface water and sediment runoff

FLOOD CONTROL AND DRAINAGE POLICIES

Enact restrictive land use and building structure regulations in areas vulnerable to severe damage due to the impact of wave action. Only uses that cannot be located elsewhere due to public necessity and character, such as maritime activities and the necessary public facilities and utilities, shall be allowed in these areas.

Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works in compliance with all State and Federal laws.

FLOOD CONTROL AND DRAINAGE STANDARDS

Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawaii County Code.

Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).

Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control" of the Hawaii County Code.

Applicable standards and regulations of the Natural Resources Conservation Service and the Soil and Water Conservation Districts.

Discussion: Some of the property is within Zone AE of the 100-year floodplain, according to the Flood Insurance Rate Maps (FIRM). Drainage improvements to handle onsite runoff as well as reduce the size of the floodplain within the project site are planned in conformance Chapter 27 and Chapter 10 of the Hawai'i County Code. Implementation of the proposed off-site drainage improvements on the Wai'aha Drainageway and on Wai'aha Split Flow No. 2 Drainageway requires a Drainage Report approved by the County and a Conditional Letter of Map Revision (CLOMR) application endorsed by the County and approved by the Federal Emergency Management Agency (FEMA) before work can commence. The Drainage Report was prepared and submitted to the County in January 2008. No work in or affecting the floodplains will occur until the County of Hawai'i and FEMA approve of the drainage improvements.

NATURAL BEAUTY GOALS

Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.

Protect scenic vistas and view planes from becoming obstructed.

Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

NATURAL BEAUTY POLICIES

Increase public pedestrian access opportunities to scenic places and vistas.

Protect the views of areas endowed with natural beauty by carefully considering the effects of proposed construction during all land use reviews.

Do not allow incompatible construction in areas of natural beauty.

Discussion: The construction of the project will occur in an area with similar residential/agricultural uses. No adverse visual impacts, including shoreline, are expected.

NATURAL RESOURCES AND SHORELINES GOALS

Protect and conserve the natural resources of the County of Hawaii from undue exploitation, encroachment and damage.

Provide opportunities for the public to fulfill recreational, economic, and educational needs without despoiling or endangering natural resources.

Protect and promote the prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.

Ensure that alterations to existing landforms and vegetation, except crops, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

NATURAL RESOURCES AND SHORELINES POLICIES

The County of Hawaii should require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.

Encourage the use of native plants for screening and landscaping.

Discussion: The proposed action is located from 200 to 3,400 feet from the shoreline. Impacts to existing natural landforms and vegetation will be mitigated through permit-regulated Best Management Practices to avoid any impacts related to flooding, landslides, sedimentation or other similar impacts.

LAND USE GOALS

Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.

LAND USE POLICIES

Allocate appropriate requested zoning in accordance with the existing or projected needs of neighborhood, community, region and County.

LAND USE, OPEN SPACE GOALS

Provide and protect open space for the social, environmental, and economic well-being of the County of Hawaii and its residents.

Protect designated natural areas.

LAND USE, OPEN SPACE POLICIES

Open space shall reflect and be in keeping with the goals, policies, and standards set forth in the other elements of the General Plan.

Discussion: The condominium/commercial project on an urban-designated parcel is in keeping with County and State land use plans and does not detract from important open space.

3.6.3 Hawai‘i State Land Use Law

All land in the State of Hawai‘i is classified into one of four land use categories – Urban, Rural, Agricultural, or Conservation – by the State Land Use Commission, pursuant to Chapter 205, HRS. The property is in the State Land Use Urban District. The proposed use is consistent with intended uses for this land use district.

3.6.4 Kona Community Development Plan

The Kona Community Development Plan (CDP) encompasses the judicial districts of North and South Kona, and is being developed under the framework of the February 2005 County of Hawai‘i General Plan. Community Development Plans are intended to translate broad General Plan Goals, Policies, and Standards into implementation actions as they apply to specific geographical regions around the County. CDPs are also intended to serve as a forum for community input into land-use, delivery of government services and any other matters relating to the planning area. The General Plan now requires that a Community Development Plan shall be adopted by the County Council as an “ordinance”, giving the CDP the force of law. This is in contrast to plans created over past years, adopted by “resolution” that served only as guidelines or reference documents to decision-makers. In September 2008, the Kona CDP was adopted by the County Council. The version referenced in this Environmental Assessment is at:

http://www.hcrc.info/community-planning/community-development-plans/kona/cdp-final-drafts/KCDP_Final_Draft_Vol1_May2008_rev1.pdf.

The purposes of the Kona CDP are to:

- Articulate Kona’s residents’ vision for the planning area;
- Guide regional development in accordance with that vision, accommodating future growth while preserving valued assets;
- Provide a feasible infrastructure financing plan to improve existing deficiencies and proactively support the needs of future growth;
- Direct growth to appropriate areas;
- Create a plan of action where government and the people work in partnership to improve the quality of life in Kona for those who live, work, and visit;
- Provide a framework for monitoring the progress and effectiveness of the plan and to make changes and update if necessary.

The CDP emphasizes smart growth and sustainability, listing eight principles of sound development: preserving a sense of community, promoting interaction with nature, developing green building standards, minimizing energy use, avoiding environmental degradation, reducing toxic materials, achieving zero waste, and addressing climate change. The Kona Sea Crest design includes energy efficient lighting fixtures, natural light and ventilation, and low water use landscaping.

The draft CDP states that:

“Urban Area. Most of the future growth in Kona will be directed to an Urban Area (UA) defined in the Official Kona Land Use Map [Figure 4-7 of CDP]. Within this Kona Urban Area, growth would be directed to compact villages located along proposed transit routes or to infill areas within, or adjacent to, existing development. The general locations of these villages are within the Growth Opportunity Areas (GOAs) identified during the public meetings that evolved into the Transit-Oriented Developments (TODs).”

The Kona Sea Crest development is located on the Official Kona Land Use Map as part of the Kahului-Puapuaa Village, which is designated for neighborhood-style transit oriented development. The project, which had received its entitlements prior to the Kona CDP, does not appear to be inconsistent with this designation.

PART 4: DETERMINATION

Sunstone expects that the Hawai‘i County Planning Department will determine that the proposed action will not significantly alter the environment, as impacts will be minimal, and that this agency will accordingly issue a Finding of No Significant Impact (FONSI). This determination will be reviewed based on comments to the Draft EA, and the Final EA will present the final determination.

PART 5: FINDINGS AND REASONS

Chapter 11-200-12, Hawai‘i Administrative Rules, outlines those factors agencies must consider when determining whether an Action has significant effects:

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* No valuable natural or cultural resources would be committed or lost. The project site and surrounding areas support residential and commercial uses and will not be affected by the proposed action. In any case, these resources were properly inventoried and significant resources will be responsibly protected.
2. *The proposed project will not curtail the range of beneficial uses of the environment.* The proposed project in no way curtails beneficial uses of the environment in this area.
3. *The proposed project will not conflict with the State's long-term environmental policies.* The State’s long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. The proposed action provides housing and commercial opportunities for residents of Hawai‘i County in an area identified in the General Plan for such uses, fulfilling needed County and State goals while avoiding significant impacts to the environment. It is thus consistent with all elements of the State’s long-term environmental policies.

4. *The proposed project will not substantially affect the economic or social welfare of the community or State.* The major effects are beneficial, providing housing and jobs. Although considering the cumulative deficiency of infrastructure, and that any population increase in Kona involves potentially adverse effects to traffic, the location of the project in the vicinity of similar developments and the addition of a mauka-makai connector road will minimize the effects of traffic on that roadway system.
5. *The proposed project does not substantially affect public health in any detrimental way.* No effects to public health are anticipated. Water quality will be protected through adherence to Best Management Practices that will be specified as part of NPDES, Grading and UIC permits, as well as connection to a municipal wastewater treatment plant.
6. *The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities.* Only modest secondary effects are expected to result from the condominium project. Because of the nature of the project, real property and other tax contributions would more than compensate for extra costs of public services and would also enable agencies to improve and expand their services.
7. *The proposed project will not involve a substantial degradation of environmental quality.* The proposed action is taking place in an area already impacted by ranching and construction activities, and is being regulated by permits to avoid environmental degradation and thus would not contribute to environmental degradation. Water quality, which is an increasing issue in urban areas of West Hawai'i, will be protected by connecting to the County sewer system, handling runoff in drywells and other structures to prevent direct runoff to the sea, and incorporating sound practices in landscape management.
8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* The project site supports overwhelmingly alien vegetation. Impacts to rare, threatened or endangered species of flora or fauna will not occur.
9. *The proposed project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* Aside from traffic during construction and occupancy, the Kona Sea Crest project generally has limited impacts that will not tend to accumulate with those of other projects. Impacts to natural resources such as vegetation are limited because of the basically disturbed, alien nature of the vegetation that is found on the property. Archaeological resources were properly inventoried and preservation plans have been approved for two burials and other significant sites, adding to a very large number of preserved sites in Kona. The design guidelines of the project will prevent a loss of scenic character or interference with viewplanes, even considering the development going on around the area. Water quality impacts are being minimized through connection to wastewater plants, drainage improvements that retain stormwater on site, and construction Best Management Practices that limit erosion and sedimentation. Despite mitigation, residual water quality effects occur that can accumulate with those of existing development in the region, and strict adherence to Best Management Practices will be necessary. Traffic impacts have been assessed with a cumulative perspective, and with mitigation the project will have only limited impacts on local traffic flow. It will also provide a critical mauka-makai connector.
10. *The proposed project will not detrimentally affect air or water quality or ambient noise levels.* Due to the character of the proposed action, no adverse effects on these resources would occur.

11. *The project does not affect nor would it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area.* Although the proposed action is located in an area with volcanic and seismic risk, the entire Island of Hawai‘i shares this risk, and the proposed action is not imprudent to construct.
12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* The project site is not noted for its natural beauty in the Hawai‘i County General Plan. Analysis of protected scenic viewplanes has determined that the development will not intrude into the sight lines from any such viewplane, including views from Queen Ka‘ahumanu Highway of the coast. No aspect of the proposed action would adversely impact scenic resources or viewplanes.
13. *The project will not require substantial energy consumption.* Although the project’s infrastructure construction will require the use of energy, as will construction of the dwelling units, the development’s electrical requirements are within HELCO’s capacity and no major adverse effects to energy consumption would be expected, and there is no feasible way to provide housing without energy consumption. The Kona Sea Crest design includes energy efficient lighting fixtures, natural light and ventilation, and low water use landscaping, which all reduce energy use.

For the reasons above, the proposed action will not have any significant effect in the context of Chapter 343, Hawai‘i Revised Statutes and section 11-200-12 of the State Administrative Rules.

REFERENCES

- Armstrong, R. (editor). 1983. *Atlas of Hawai'i*. Honolulu: University of Hawai'i Press (2nd Edition).
- Conde, J., and G. Best. 1973. *Sugar Trains: Narrow Gauge Rails of Hawai'i*. Felton, California: Glenwood Publishers.
- Corbin, A., and P. Rosendahl. 2002. "Mitigation Plan for Phase 4: Archaeological Data Recovery and Phase 5(a): Interim Site Preservation, Ali'i Highway Phased Mitigation Program, Lands of Kahului 1st to Keauhou, North Kona District, Island of Hawai'i." Prep. by PHRI for the County of Hawai'i.
- Cordy, R. 1985. "Central Kona Archaeological Settlement Patterns." State Historic Preservation Division, DNLR, State of Hawai'i. Prep. for Planning Department, County of Hawai'i.
- David, R. 2005. "A Survey of Avian and Terrestrial Mammalian Species, La'aloa Avenue Extension." Prep. for Geometrician Associates.
- Decision Analysts Hawai'i, Inc. 2003. "Property Tax Revenues From Premium Resort-Residential Homes And Condominiums In West Hawai'i." Prep. for: Hawai'i Leeward Planning Conference, Kailua-Kona, Hawai'i.
- FR. n.d. Foreign Register of Kuleana Claims Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.
- FT. n.d. Foreign Testimony Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.
- Gagne, W., and L. Cuddihy. 1990. "Vegetation," pp. 45-114 in W.L. Wagner, D.R. Herbst, and S.H. Sohmer, eds., *Manual of the Flowering Plants of Hawai'i*. 2 vols. Honolulu: University of Hawai'i Press.
- Ellis, W. 1963. *The Journal of William Ellis, Narrative of a Tour of Hawai'i, of Owhyee*. Honolulu: Advertiser Publishing Co.
- Hammatt, H., and S. Clark. 1980. "Archaeological Testing and Salvage Excavations of a 155 Acre Parcel in Na Ahupua'a Pahoehoe, La'aloa, and Kapala'aea, Kona, Hawai'i." Archaeological Research Center Hawai'i Report 14-152 III. Prepared for Pacific Basin Resorts, Inc.
- Hammatt, H., and W. Folk. 1980. "Archaeological Survey, Phase I: Portions of Keauhou-Kona Resort, Keauhou and Kahaluu, Kona Excavations within the Proposed Keahole Agricultural Park, Kalaoa-Ooma, Kona, Hawai'i." Archaeological Research Center Hawai'i Report 1401777 II. Prepared for Kamehameha Investment Corp.
- Haun, A., and D. Henry. 2001. "Archaeological Inventory Survey, TMK: 7-5-16: 15, 16, 17, 29 Kahului 1-2, North Kona, Island of Hawai'i." Haun & Associates report 023. Prep. for Bolton Inc.
- Hawai'i County Planning Department. 2005. *The General Plan, County of Hawai'i*. Hilo.

- Hawai'i, Territory of. 1929. *Indices of Awards Made by the Board of Land Commissioners to Quiet Land Titles in the Hawaiian Islands*. Archives of Hawaii. Territory of Hawai'i, Honolulu.
- _____. n.d. *Native Register of Kuleana Claims Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Manuscript. Hawai'i State Archives.
- _____. n.d. *Native Testimony Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Manuscript. Hawai'i State Archives.
- Heliker, C. 1990. *Volcanic and Seismic Hazards on the Island of Hawai'i*. Washington: U.S. GPO.
- Kamakau, S. 1961. *Ruling Chiefs of Hawai'i*. Honolulu: The Kamehameha Schools Press.
- Kawachi, C. 1989. "An Upland Habitation and Agricultural Complex in North Kona, Hawai'i Island." Master's Thesis, Department of Anthropology, University of Hawai'i.
- Kelly, M. 1983. "Na Mala O Kona. A History of Land Use in Kona, Hawai'i." *Departmental Report Series 83-2*. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for the Department of Transportation, State of Hawai'i.
- Kelley, M. 1996. *A Brief History of the Ahupua'a of Pu'uwa'awa'a and Its Neighbors in North Kona, Island of Hawai'i*. Privately printed by Earl Bakken.
- Kirch, P. 1985. *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. Honolulu: University of Hawai'i Press.
- Kumu Pono Associates. 1999 (v.1) and 2000 (v.2). "Pu'u Anahulu and Pu'u Wa'awa'a, (Nāpu'u), at Kekaha - Kona, Hawai'i, A Report on Archival-Historical Documentary Research, and Oral History Interviews. Cultural-Historical Documentation for Ahupua'a Based Planning in the Lands of Pu'u Anahulu and Pu'u Wa'awa'a (Nāpu'u; District of Kona, Island of Hawai'i)." Kumu Pono Associates. Hilo.
- _____. 2001. "He Wahi Mo'olelo no na 'Aina o Pu'u Anahulu Me Pu'u Wa'awa'a a me na 'Ohana Papa o ka 'Aina Aloha Napu'u ma Kona" (brochure). Honolulu: Kumu Pono Associates/Nature Conservancy.
- Malo, D. 1951. *Hawaiian Antiquities: Mo'olelo Hawai'i*. Bernice P. Bishop Museum, Special Publication 2, Second Edition. Bishop Museum Press: Honolulu, Hawai'i.
- Maly, Kepa. 1996. "Historical Documentary Research." in "Archaeological Inventory Survey, Hienaloli 3 and 4, North Kona District, Island of Hawai'i (TMK 7-5-11:2)", by Henry, J., T. Wolforth and P. Rosendahl. PHRI Report 1348-032996. Prepared for Maryl Development, Inc.
- Newman, T. 1970. *Hawaiian Fishing and Farming on the Island of Hawai'i in AD 1778*. Department of Land and Natural Resources, Division of State Parks.
- O'Hare, C., and T. Wolforth. 1998. "Archaeological Inventory Survey of the Gomes Property Parcel, Land of Kahului 1st, Island of Hawai'i (TMK: 3-7-5-19:5, 38, 40)." PHRI Report 1807-090998. Prepared for Towne Development of Hawai'i, Inc.

- Pukui, M. S. Elbert and E. Mo'okini. 1976. *Place Names of Hawai'i*. University of Hawai'i Press, Honolulu.
- Pukui, M.K. and E.S.C. Handy. 1999. *The Polynesian Family System in Ka'u, Hawai'i*. Mutual Publishing. Orig. Ed. 1972.
- Sato, Ikeda, Paeth, Smythe & Takehiro, Jr. 1973. *Soil Survey of the Island of Hawai'i*. U.S. Department of Agriculture. Soil Conservation Service and University of Hawai'i Agricultural Experiment Station. Washington, D.C., GPO.
- Schilt, A. 1984. "Subsistence and Conflict in Kona, Hawai'i. An Archaeological Study of the Kuakini Highway Realignment Corridor". *Departmental Report Series 84-1*. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for Department of Transportation, State of Hawai'i.
- Thrum, T.G. 1900. Excerpt from *Hawaiian Annual*. Honolulu, Hawai'i.
- Tissot, B.N., and Cotton, S.P. 1999. "Marine Survey, Alii Drive Bridge Replacement Project, Kahului Bay, Kailua-Kona, Hawaii." Prep. for Hawai'i County Dept. of Public Works for *Ali'i Drive Bridge/Culvert Replacement Draft Environmental Assessment* (not filed).
- U.S. Dept. of Commerce, Bureau of the Census. 2001. <http://factfinder.census.gov/>.
- U.S. Environmental Protection Agency (EPA). 2000. *National Water Quality Inventory Report to Congress*. 2000, EPA. p. 100-101: Chapter 10: "State and Territory Summaries: Hawaii."
- U.S. Soil Conservation Service. 1973. *Soil Survey of Island of Hawai'i, State of Hawai'i*. Washington: U.S.D.A. Soil Conservation Service.
- University of Hawai'i at Hilo, Dept. of Geography. 1998. *Atlas of Hawai'i*. 3rd ed. Honolulu: University of Hawai'i Press.
- U.S. Fish and Wildlife Service (USFWS). 2008. *USFWS Threatened and Endangered Species System (TESS)*. Washington: GPO. http://ecos.fws.gov/tess_public/StartTESS.do
- Waihona 'Aina Corporation. 2000. The Mahele Database, Waihona.com.
- Wolfe, E.W., and J. Morris. 1996. *Geologic Map of the Island of Hawai'i*. USGS Misc. Investigations Series Map i-2524-A. Washington, D.C.: U.S. Geological Survey.

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

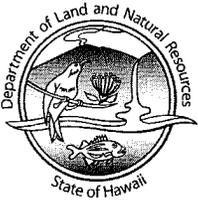
TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 1a **Comments in Response to Pre-Consultation**

LINDA LINGLE
GOVERNOR OF HAWAII



Laura H. Thielen
Chairperson
Board of Land and Natural Resources
Commission on Water Resource Management



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 16, 2008

Geometrician Associates, LLC
Box 396
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Gentlemen:

Subject: Kona Sea Crest Multi-Family and Commercial Development, Kailua,
Hawaii, Tax Map Key: (3) 7-5-19:por 1

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Morris M. Atta".

Handwritten initials in black ink, appearing to be "MA".
Morris M. Atta
Administrator

----- Original Message -----

From: Debbie Hecht

To: ron Terry ; Cory Harden ; Debbie Hecht ; Paul Campbell ; Phil & Diane Barnes ; Roberta Brashear ; Rose Acevedo

Sent: Wednesday, February 20, 2008 2:54 PM

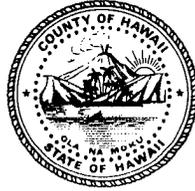
Subject: Sunstone development

Hello Ron- I am with the Board of the Sierra Club. The Kahulu well in the area of this project, will supply water is overtaxed and frequently contains brackish water. As I understand it, the well was extended and went past the lens and into the salty water, then the lines were extended laterally. See attached report. The Kealakehe sewer plant has several ponds which are failing. See attached report.

You probably know this, but if not I hope this information will help.

Debbie

Harry Kim
Mayor



Bobby Jean Leithead-Todd
Director

Nelson Ho
Deputy Director

County of Hawaii

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

25 Aupuni Street • Hilo, Hawai`i 96720-4252

(808) 961-8083 • Fax (808) 961-8086

http://co.hawaii.hi.us/directory/dir_envmng.htm

February 25, 2008

Mr. Ron Terry
Principal
Geometrician Associates, LLC
P O Box 396
Hilo, HI 96721

Subject: Early Consultation on Environmental Assessment for Kona Sea Crest
Multi-Family and Commercial Development, TMK 7-5-019:001 (por.),
North Kona, Island of Hawai`i

Dear Mr. Terry,

We offer the following comments:

Wastewater Division

This property is accessible to County sewer system and must connect.

Thank you for allowing us the opportunity to review and comment on this project. If you need additional information, please contact Bert Saito, P.E., Wastewater Division Chief.

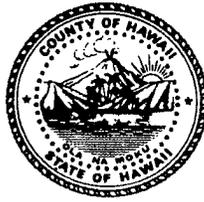
Sincerely,

Bobby Jean Leithead-Todd
DIRECTOR

cc: Bert Saito, WWD Chief

10474A

Harry Kim
Mayor



Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-2389

February 26, 2008

Mr. Ron Terry
Principal
Geometrician Associates
P.O. Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Early Consultation on Environmental Assessment for Kona Sea Crest Multi-Family and Commercial Development, North Kona, Island of Hawaii, TMK 7-5-019"001 (por.), North Kona, Island of Hawaii

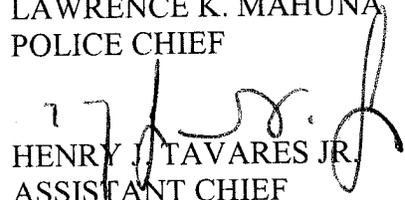
Staff has reviewed the above referenced documents and submits the following comments:

- Any additional development/project utilizing Ali'i Drive and Kuakini Highway will adversely impact traffic conditions on both roadways particularly during peak traffic hours or during an emergency condition.
- Recommend against any further rezoning in this area until such time as the proposed Kahului-Keauhou Parkway has been completed and is open to traffic.
- Any plan to approve this rezoning should, at minimum, include improvements at surrounding intersections consisting of turning and acceleration lanes.

Should you have any questions, please contact Acting Captain Chad Basque, Commander of Kona Patrol, at 326-4646 extension 249.

Mahalo,

LAWRENCE K. MAHUNA
POLICE CHIEF


HENRY J. TAVARES JR.
ASSISTANT CHIEF
AREA II OPERATIONS

CB:dmv

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

February 29, 2008

Ron Terry, Principal
Geometrician Associates, LLC
PO Box 396
Hilo, Hawaii 96721

LOG NO: 2008.0339
DOC NO: 0802MD93
Archaeology

Dear Mr. Terry:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –
Request for Comments on Early Consultation on Environmental Assessment for,
Kona Sea Crest Multi-Family and Commercial Development
Por. of Kahului 1st & 2nd Ahupua`a, North Kona District, Island of Hawai`i
TMK: (3) 7-5-019:001**

Thank you for the opportunity to comment on the aforementioned project. You have been contracted by the landowner SunStone Kona LLC. We have no comment at this time as we are currently reviewing the Preservation Plan for this property prepared by Dr. Alan Haun. At the time maps are prepared we will need to review them and will require all known archaeological and preservation easements be clearly and accurately identified.

Please contact Morgan Davis at (808) 896-0514 if you have any questions or concerns regarding this letter.

Aloha,

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

for Nancy McMahon, Acting Archaeology Branch Chief
State Historic Preservation Division

Cc:

Christopher Yuen, Planning Director
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawaii 96720-4224

Harry Kim
Mayor



Darryl J. Oliveira
Fire Chief

Glen P.I. Honda
Deputy Fire Chief

County of Hawai'i
HAWAII FIRE DEPARTMENT
25 Aupuni Street • Suite 103 • Hilo, Hawai'i 96720
(808) 981-8394 • Fax (808) 981-2037

March 5, 2008

Mr. Ron Terry
Geometrician Associates, LLC.
PO Box 396
Hilo, Hawaii 96721

SUBJECT: EARLY CONSULTATION ON ENVIRONMENTAL ASSESSMENT
KONA SEA CREST MULTI-FAMILY AND COMMERCIAL
DEVELOPMENT
TAX MAP KEY: 7-5-019:001 (POR.)

We have no comments to offer at this time in reference to the above-mentioned Early Consultation on Environmental Assessment.


DARRYL OLIVEIRA
Fire Chief

PBW:lpc





STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD08/3510

March 12, 2008

Ron Terry
Geometrician Associates LLC
P.O. Box 396
Hilo, HI 96721

RE: Pre-consultation for Draft Environmental Assessment for Kona Sea Crest Multi-Family and Commercial Development, Kona, Hawai'i Island, TMK: 7-5-019: por. 001.

Dear Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-referenced pre-consultation letter. SunStone Kona LLC is planning to build 289 multi-family dwelling units and a commercial center on a 46.3-acre parcel located between Ali'i Drive and Kuakini Highway in Kona. OHA offers the following comments.

OHA requests that a comprehensive archaeological inventory survey for the project area be conducted and submitted to the Department of Land and Natural Resources Historic Preservation Division for review and approval. OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey. We also request the applicant complete a Cultural Impact Assessment for the project. Consideration should be afforded to any individuals accessing the project area for constitutionally protected traditional and customary purposes.

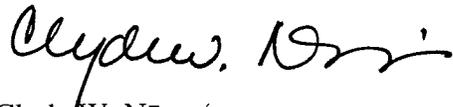
We further request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Ron Terry
Geometrician Associates LLC
March 12, 2008
Page2

In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Thank you for the opportunity to comment. If you have further questions, please contact Sterling Wong (808) 594-0248 or e-mail him at sterlingw@oha.org.

Sincerely,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o". The signature is fluid and cursive, with a prominent initial "C" and a long, sweeping tail.

Clyde W. Nāmu'o
Administrator

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 1b Special Management Area Permit

RECEIVED APR 20 2007



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 96720-3043
(808) 961-8288 • FAX (808) 961-8742

April 20, 2007

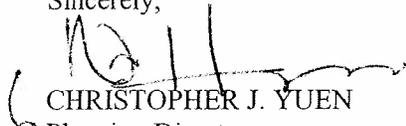
Mr. Gregory Mooers
P.O. Box 1101
Kamuela, HI 96743

Dear Mr. Mooers:

Special Management Area Use Permit Application (SMA 05-005)
Request: 292 RM Units and Related Improvements, Including
Associated Commercial Space
Applicant: SunStone Kona, LLC
Tax Map Key: 7-5-19:por. 1

Enclosed is the Planning Commission's Findings of Fact, Conclusions of Law and Decision and Order regarding the above-referenced application which was approved by the Commission on March 16, 2007.

Sincerely,


CHRISTOPHER J. YUEN
Planning Director

Lsunstonsma05-005syw2
Enclosure

cc: Mr. Curt DeWeese
Steven S. C. Lim, Esq. ✓
Department of Public Works
Department of Water Supply
Ivan Torigoe, Esq.
Amy Self, Esq.
Real Property Tax Office
Department of Transportation-Honolulu
DLNR-HPD/Kona
Ms. Alice Kawaha
Mr. Robert Usagawa, Zoning Inspector
Plan Approval Section
Planning Department-Kona

2007 SEP 13 10:13 AM
HAWAII COUNTY PLANNING COMMISSION

BEFORE THE PLANNING COMMISSION

COUNTY OF HAWAII

In the matter of SMA Application No. 05-005

SMA NO. 05-005

Applicant: SUNSTONE KONA, LLC
Request: Special Management Area (SMA)
Use Permit to allow the development of
approximately 289 multiple family residential
units and related improvements, including
associated commercial space.

FINDINGS OF FACT, CONCLUSIONS OF
LAW, AND DECISION AND ORDER

Tax Map Key No. (3) 7-5-019:001; (3) 7-5-
020: portion of 001

FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND DECISION AND ORDER

Applicant Sunstone Kona, LLC is seeking a Special Management Area (SMA) Use Permit under Chapter 205A, Hawaii Revised Statutes and Rule 9 of the Hawaii County Planning Commission Rules of Practice and Procedure ("HCRP"), to allow the development of approximately 289 multiple family residential units, commercial improvements and related parking and landscaping improvements on approximately 46.3 acres of land in Kahului 2nd, North Kona, Island and State of Hawaii, at TMK No.: (3) 7-5-019: 001, and approximately 1.089 acres of roadway improvements at TMK No.: (3) 7-5-020: portion of 001 (collectively referred to herein as the "Subject Property").

The matter came on for contested case hearing before the County of Hawaii Planning Commission's duly-appointed Hearing Officer Sandra Pechter Song on August 31, 2006 and September 21, 2006. At the hearing, Applicant Sunstone Kona LLC (hereinafter "Sunstone"), was represented by its counsel, Steven S.C. Lim; Christopher J. Yuen, County of Hawaii Planning Director (hereinafter "Yuen") was represented by his counsel, Amy G. Self, Deputy Corporation Counsel; and Intervenors Consolidated Property Owners of Hawaii Planing Mills Subdivision (hereinafter "Consolidated Owners" and/or "Intervenors"), Jill Fusari (hereinafter "Fusari") and Raymond A. Rusalavich (hereinafter "Rusalavich"), consolidated their case and

were represented by Mr. David Hardy-Sullivan (hereinafter "Hardy-Sullivan") with the assistance of Rusalavich.

Prior to the commencement of the hearing on September 21, 2006, Hardy-Sullivan requested that accommodations be made for him in accordance with the Americans with Disabilities Act, 43 USC Section 12132 (hereinafter "ADA"). Based upon Hardy-Sullivan's representation of a disability, reasonable accommodations were made for him at the hearing held on September 21, 2006, which were agreed to by Hardy-Sullivan and the other parties to this proceeding.

At the close of the hearing, the parties were provided with an opportunity to submit proposed findings of fact in the contested case. Sunstone and Yuen each submitted proposed findings on October 18, 2006. No proposed findings were submitted by the Consolidated Owners. The Consolidated Owners, did, however, file a motion, dated October 10, 2006, seeking the recusal of the Planning Commission's Hearing Officer and the continuance and re-hearing of the contested case. That motion was denied by the Hearing Officer by Order dated October 24, 2006.

The Hearing Officer Sandra Pechter Song, having reviewed the respective pleadings and exhibits submitted in this matter; and having heard and considered the evidence and arguments of the parties, recommended to the Hawaii County Planning Commission that Sunstone Kona, LLC's request for a Special Management Area Use Permit be granted subject to the conditions outlined in her Hearing Officer's Report.

On December 6, 2006, the Planning Commission held its hearing on the application of Sunstone Kona LLC regarding action on the Hearing Officer's Report. Prior to the December 6, 2006 Planning Commission hearing, on December 1, 2006, Hardy-Sullivan filed his Petition for Judicial Review And Order for Stay of Contested Case Administrative Decisions ("Petition") at the Circuit Court of the Third Circuit as Civil No. 06-01-188K. On December 26, 2006, Sunstone Kona LLC filed its motion to dismiss the Petition. Hearing Officer Sandra Pechter Song also filed her motion to dismiss the Petition on December 26, 2006. Said Petition was heard on January 25, 2007 at the Circuit Court of the Third Circuit with Judge Elizabeth Strance presiding. On January 25, 2007, the Honorable Judge Elizabeth A. Strance dismissed the Petition with prejudice.

At the December 6, 2006 hearing, the Planning Commission continued the hearing on Sunstone's SMA application to February 15, 2007. The Planning Commission also retained its powers, authority and discretion under Planning Commission Rule 4-33(b) to render its decision upon the record, or after oral argument or after reopening the docket and taking further evidence.

At the February 15, 2007 hearing, the Consolidated Owners withdrew their Petition for Intervention and waived any and all objections to the SMA No. 05-005 application. The Consolidated Owners submitted a letter dated February 14th, 2007 supporting approval of SMA No. 05-005.

Therefore, the County of Hawaii Planning Commission hereby makes the following Findings of Fact, Conclusions of Law and Decision and Order.

I. FINDINGS OF FACT.

A. Background.

1. This matter involves an application filed by Sunstone in July, 2005, for a Special Management Area (hereinafter "SMA") Use Permit to allow the development of 289 multiple family residential units, associated commercial space and related improvements on approximately 46.3 acres of land situated along the mauka side of Alii Drive, at Kahului 2nd, North Kona, Hawaii, designated by Tax Map Key No.: (3) 7-5-019: 001 and (3) 7-5-020: portion of 001 (hereinafter, the "Development").

2. Applicant is the fee owner of the Subject Property located at TMK No.: (3) 7-5-019: 001. Applicant has been authorized to construct roadway improvements to approximately 1.089 acres of land located at TMK No.: (3) 7-5-020: portion of 001.

3. Petitions to intervene in this proceeding were filed by James Allen, Malcolm and Virginia Scott, Brenda Kuessner, Derinda Thatcher, James and Karen Grempe and Jane R. Galante, owners of condominium units within the adjoining development, Alii Park Place, and by the developer of Alii Park Place, Phil Tingley. All of these individuals, except for Malcolm and Virginia Scott (hereinafter "Scott"), withdrew their petitions after Sunstone relocated a proposed mauka to makai connector road to its Development, further away from the Alii Park Place development. Scott was admitted as a party to this proceeding by the Hawaii County Planning Commission (hereinafter "Commission") on May 26, 2006.

4. Rusalavich and Fusari each filed a petition to intervene in this proceeding, on May 17, 2006 and May 19, 2006, respectively. Rusalavich and Fusari, property owners within the Hawaii Planing Mills Subdivision, a development located on the makai side of Alii Drive across from the relocated proposed mauka to makai connector road for the Development, were admitted as parties to this proceeding by the Planning Commission on May 26, 2006.

5. On May 26, 2006, the Planning Commission also authorized any other lot owner within the Hawaii Planing Mills Subdivision who filed a petition to intervene in the proceeding within a two week period, to participate as a party in this proceeding. Pursuant to this order, Intervenor Consolidated Property Owners of the Hawaii Planing Mills Subdivision filed a pro se intervention petition for standing in the contested case hearing on Applicant's application for SMA No. 05-005 on June 8, 2006.

6. The Consolidated Owners consist of property owners that reside in the Hawaii Planing Mills Subdivision located near a proposed mauka - makai connector road to be constructed on an existing 60 foot right-of-way located at TMK No.: (3) 7-5-020: portion of 001 which abuts Alii Drive and is adjacent to the Alii Lani project ("Alii Lani Drive"). The construction of the proposed mauka - makai connector is a condition of the proposed development to comply with Ordinance No. 87-47.

7. The Consolidated Owners are represented pro se by Hardy-Sullivan. Mr. Hardy-Sullivan and Mr. Ray Rusalavitch both attended all hearings before the Hearings Officer.

8. Yuen is a party to this proceeding pursuant to Rule 4-7(a) of the Hawaii Planning Commission Rules of Practice and Procedure (hereinafter "Commission Rules").

9. On August 31, 2006, Scott was stricken as a party to this proceeding on the grounds that Scott did not participate in the contested case hearing.

B. Description of the Proposed Development.

10. The Development is located on approximately 46.3 acres of land which is zoned RM-4 and RM-7, with the associated commercial space proposed on approximately 2.203 acres of land which is zoned CN-10. Additionally, the proposed development will improve an

approximately 1.089 acre existing roadway lot as a mauka-makai connector roadway on Tax Map Key No. (3) 7-5-020: portion of 001. Moreover, approximately 3.1 acres of the Subject Property will be set aside for the proposed Kahului to Keauhou Parkway ("K-K Parkway") improvements. Alii Lani Drive, the K-K Parkway improvement and other proposed Development roadway improvements will be developed as part of the roadway connection network between Alii Drive and Kuakini Highway.

11. The Development is proposed to consist of 289 multiple-family residential dwelling units, in one three-plex, one four-plex, three six-plex and 33 eight-plex buildings, with 45,756 square feet of commercial space in a two-story commercial building. In addition, a portion of the roadway between Alii Drive and Kuakini Highway and related drainage improvements are to be located within approximately 3.5 acres of Development land, with an additional 3.1 acres of Development land to be set aside as part of the proposed K-K Parkway improvements.

12. The Development is bordered by Alii Drive and Kuakini Highway approximately 1,040 feet south of the Lunapule Road - Alii Drive intersection. Access to the Development is proposed from Alii Drive and from Kuakini Highway. In addition, future access to the Development will be provided when the right-of-way for the K-K Parkway alignment that bisects the Development is dedicated to the County of Hawaii, as required by Ordinance No. 87-47, which rezoned the Subject Property for the Development.

13. The Development will occur in six (6) phases, which will take approximately 48 months to complete. The first two phases are proposed to occur in Block D (makai of the K-K Parkway alignment). The next two to three phases will be constructed within Block B (mauka of the K-K Parkway alignment). Along with these phases, the Applicant proposes to construct the road and drainage improvements along the southern boundary from Kuakini Highway through Block B. The final phase of development is proposed to be the commercial improvements in Block C. The Development will occur in compliance with Ordinance No. 87-47, which rezoned the Subject Property for the Development.

14. The Applicant is proposing to complete the roadway from Alii Lani Drive, through the Development up to Kuakini Highway. Although the mauka - makai connector road

to the Development from Alii Drive was originally proposed to be located immediately south of the Alii Park Place condominium project, the alignment of this roadway was relocated further south to an existing sixty (60) foot right-of-way adjoining the Alii Lani project, previously described as Alii Lani Drive. The fee owner of the Alii Lani Drive has consented to the improvement of this right-of-way by Sunstone to comply with Ordinance No. 87-47.

15. The location of the mauka - makai connector road at the existing sixty (60) foot right-of-way defined as Alii Lani Drive was recognized as a connector road to the K-K Parkway in the application for SMA Use Permit No. 386 issued by the Planning Commission on September 3, 1998. That approved SMA Use Permit No. 386 authorized the construction of the K-K Parkway and related improvements.

16. The County Department of Water Supply has allocated a total of 77 units of water for the Development. Off-site improvements to the County water system would be required if more than 77 units of water are needed for the Development.

17. Wastewater generated by the Development will be disposed of using the existing County sewer facilities along Alii Drive, and thus there should be no significant adverse impacts on the environmental or ecological resources of the area from wastewater.

18. Electrical, telephone and cable services are available to the Development site.

19. Police, fire and medical services are within a reasonable proximity to the Development site. The Kealakehe police station is located less than three miles north of the Development site. There are three fire stations within five miles from the Development site in Kailua-Kona, Kealekehe and Puuloa. Kona Hospital is located in Kealakekua.

C. Procedural Matters.

20. The Consolidated Owners allege that they are, and will be, adversely affected by Applicant's proposed activities on the Development. Specifically, the Consolidated Owners allege that the proposed connecting roadway alignment intersection to Alii Drive will cause flooding as a result of increased drainage, will be a traffic hazard, and may not be the most direct route for evacuation in the event of an emergency.

21. Intervenors' Motion for Continuance. On or about August 4, 2006, Intervenor submitted its Motion and Affidavit for Continuance of Special Hearing Date and Submission of New Exhibits. At a telephone conference held on August 1, 2006, all parties to the contested case matter agreed to the first hearing date of August 31, 2006. Intervenors subsequently moved for rescheduling of the hearing as two of Intervenor's would not be available to testify. On August 31, 2006, Hearing Officer Sandra Pechter Song held that the matter would proceed on August 31, 2006.

22. Intervenors' Motion and Affidavit for Reconsideration. On or about August 21, 2006, Intervenor requested reconsideration of its motion for continuance. No ruling was made on that motion and the first hearing proceeded with all parties hereto in attendance as scheduled on August 31, 2006.

23. Applicant's Motion to Dismiss. At the August 31, 2006 Hearing, Applicant Sunstone raised its motion to dismiss asserting that the issues raised by the Intervenor's had already been addressed by two prior Special Management Area Permit proceedings. On or about September 8, 2006, Applicant filed its Motion to Dismiss the Contested Case hearing pursuant to HRS Chapter 205A, HRS Section 91-14(b), County of Hawaii PCRP Rule 4-19 and Rule 9.

24. Applicant Sunstone's filed motion to dismiss asserted that any appeal of the location of the mauka - makai connector road is untimely pursuant to HRS Chapter 91 and Planning Commission Rule 9-11(E)(5) and therefore any issue regarding the designated location of that roadway be dismissed. Additionally, no timely appeals pursuant to HRS Chapter 91-14 were filed and therefore the settled issues could not be raised as part of another contested case and were not subject to further judicial review.

25. Intervenor's Response to Motion to Dismiss and Written Testimony of Michael Reimer. On or about September 18, 2006, Intervenors submitted their Response to Applicant's Motion to Dismiss, asserting that additional testimony is required in order for the Hearings Officer to make a full determination of the stated issues. Additionally, Intervenors submitted the written testimony of Mr. Michael Reimer.

26. At the September 21, 2006 hearing, Sunstone submitted that its Motion to Dismiss was filed as an objection in order to preserve its objections on the record and requested that the Hearing Officer not rule on the filed motion to dismiss. The Hearing Officer Sandra Pechter Song noted the objection and held that the motion to dismiss would be included as part of the record.

27. Applicant's Motion to Strike Written Testimony of Michael Reimer. On or about September 19, 2006, Intervenor's filed their Motion to Strike the written testimony of Mr. Michael Reimer, which was included in Intervenor's Response to Applicant's Motion to Dismiss. At the September 21, 2006 hearing, Applicant stated that the Motion to Strike was raised as an objection primarily to address any alleged expert opinion testimony that may be made by Mr. Reimer. Applicant withdrew its objection to the written testimony of Mr. Michael Reimer to the extent that it was not expert opinion testimony.

28. Intervenor's Request for Subpoena. On or about September 14, 2006, Intervenor's submitted their request for a subpoena for Mr. Galen Kuba of the Department of Public Works, Mr. Philip Tinguely and Mr. Yama Kimi. Intervenor's further stated that the testimony of Mr. Michael Reimer would be submitted in written form. Intervenor's also submitted a request to recall Mr. Curtis Tyler III and Mr. David Bills. On or about September 14, 2006, the Hearing Officer Sandra Pechter Song ruled that the subpoena for Galen Kuba would be granted and that Intervenor's may recall Mr. Curtis Tyler III and Mr. David Bills. The request for issuance of subpoenas for Mr. Kimi and Mr. Tinguely were denied. Additionally, the Intervenor's were allowed to submit the testimony of Mr. Michael Reimer in written form.

29. Exhibits Admitted into Evidence. During the course of the Contested Case hearing, the Hearing Officer admitted into evidence the following exhibits:

- A. Applicant's Exhibits 1 - 22.
- B. Intervenor's Exhibits A - G, L - Z and AA.
- C. County of Hawaii Planning Department's Exhibit PD-A - PD-D.

30. Administrative Notice. At the August 31, 2006 hearing, the Hearings Officer Sandra Pechter Song took administrative notice of all applicable Federal, State, and County laws and ordinances, rules, and regulations that are relevant to the Contested Case.

31. Intervenor's First Request for Clarification. On or about September 28, 2006, after the close of the contested case proceedings, Intervenor's Filed their First Request for Clarification requesting clarification of the testimony of Christopher Yuen, traffic and environmental considerations, and other procedural aspects of the proceedings including accommodations related to the Americans with Disabilities Act.

32. Applicant's Response to Intervenors' First Request for Clarification. On or about October 2, 2006, Applicant filed its response to Intervenor's First Request for Clarification asserting that the Hearings Officer Sandra Pechter Song could not render advisory opinions as requested by the Intervenors and that modification of the hearing procedures provided reasonable accommodations as required by the Americans with Disabilities Act.

33. County of Hawaii Office of Corporation Counsel's Joiner. On or about October 6, 2006, the Office of Corporation Counsel submitted its Joiner to Applicant's Response to Intervenors' First Request for Clarification, wherein the Planning Director Christopher Yuen joined in Applicant's response.

34. Compliance with the Americans with Disabilities Act. Prior to the continued Contested Case Hearing on September 21, 2006, Intervenor Mr. David Hardy-Sullivan stated that he suffered from an alleged disability that required accommodation under the ADA. At the start of proceedings on that day, the Hearings Officer Sandra Pechter Song provided for reasonable accommodations by allowing short recesses or pauses in the proceedings.

35. The reasonable accommodations made for Hardy-Sullivan were disclosed to all the other parties in the proceedings with no objection. Hardy-Sullivan also agreed that those accommodations were acceptable in accommodating his alleged disability.

36. Hardy-Sullivan was provided ample opportunity to have breaks during the proceedings and breaks were provided at his request. Additionally, as requested by Hardy-Sullivan, Rusalavitch was given an opportunity to question witnesses on behalf of the Intervenors.

37. Order Denying Intervenors' First Request for Clarification. On or about October 6, 2006, the Hearings Officer Sandra Pechter Song denied Intervenor's First request for clarification stating that the proceedings were closed and the evidentiary matters raised by Intervenors were ruled on during the hearings. Moreover, the Order stated that reasonable accommodations were made at the proceedings that were agreed to by all the parties.

38. Intervenor's Motion for Timeline Extension, and First and Second Request for Clarification. On or about October 5, 2006, Intervenors requested an extension to file Findings of Fact, Conclusions of Law and Decision and Order to October 18, 2006. Moreover, Intervenors reiterated its request for clarification of evidentiary and procedural matters from the Hearings Officer Sandra Pechter Song.

39. Order granting Timeline Extension. On or about October 9, 2006, the Hearings Officer Sandra Pechter Song granted the Intervenor's request for an extension to file Findings of Fact, Conclusions of Law and Decision and Order to October 18, 2006, provided the other parties stipulated to the time extension.

40. Stipulation to extend. On or about October 10, 2006, Sunstone stipulated that all parties to the contested case hearing agreed to extend the deadline for submission of proposed Findings of Fact, Conclusions of Law and Decision and Order until October 18, 2006.

41. Intervenor's Motion for Continuance and to Recuse (sic) the Hearings Officer. On or about October 10, 2006, Intervenors filed their Motion and Affidavit for Continuance, and Re-Hearing of the Contested Case and the Recluse (sic) of Special Hearings Officer. That motion requested a continuance of the contested case and a re-hearing of the entire contested case proceeding. That motion also requested that the Hearings Officer be recused, without alleging any actual wrongdoing, for having personal conversations during a telephone conference and lunch with Ms. Amy Self which were unrelated to the present Contested Case proceeding.

42. On November 8, 2006, the Hearing Officer Sandra Pechter Song, having reviewed the respective pleadings and exhibits submitted in this matter; and having heard and considered the evidence and arguments of the parties, submitted her Hearing Officer's Report recommending to the Hawaii County Planning Commission that Sunstone Kona, LLC's request for a Special Management Area Use Permit be approved subject to the conditions outlined in her Report.

43. December 6, 2006 Planning Commission hearing. On December 6, 2006, the Planning Commission held its hearing on the application of Sunstone Kona LLC regarding action on the Hearing Officer's Report. At the December 6, 2006 hearing, the Planning Commission continued the hearing on Sunstone's SMA application to February 15, 2007. The Planning Commission also retained its powers, authority and discretion under Planning Commission Rule 4-33(b) to render its decision upon the record, or after oral argument or after reopening the docket and taking further evidence.

44. Prior to the December 6, 2006 Planning Commission hearing, on December 1, 2006, Hardy-Sullivan filed his Petition for Judicial Review And Order for Stay of Contested Case Administrative Decisions ("Petition") at the Circuit Court of the Third Circuit as Civil No. 06-01-188K. On December 26, 2006, Sunstone Kona LLC filed its motion to dismiss the Petition. Hearing Officer Sandra Pechter Song also filed her motion to dismiss on December 26, 2006. On December 26, 2006, the County of Hawaii Planning Department, Norman Hayashi and Amy Self, by and through their attorney Harry P. Freitas, Deputy Corporation Counsel, filed their motion to dismiss and in the alternative opposition to the Petition. Said Petition was heard on January 25, 2007 at the Circuit Court of the Third Circuit with Judge Elizabeth Strance presiding. On January 25, 2007, Judge Strance dismissed the Petition with prejudice.

45. At the February 15, 2007 hearing, property owners within the Kona Sea Villas Condominium project stated that they did not received notice of the hearings on SMA No. 05-005. The Planning Commission continued the hearing until March 16, 2007 in order for notice to be provided to the property owners within the Kona Sea Villas Condominium project. Pursuant to the Planning Commission's request and authorization, notice of the hearing on SMA No. 05-005 was sent to all property owners within the Kona Sea Villas Condominium project on February 23, 2007 by Mooers Enterprises, LLC.

46 At the March 16, 2007 Planning Commission hearing, the Planning Commission deemed that notice to the property owners within the Kona Sea Villas Condominium project was proper and approved SMA No. 05-005, subject to conditions as stated herein.

D. State and County Plans.

47. The State land use designation for the Development site is Urban, the General Plan Land Use Pattern Allocation Guide (hereinafter "LUPAG") map designates the area for medium density urban use, and the Kona Regional Plan designates the area for residential, with a density of six to ten units per acre, and neighborhood commercial uses.

48. The Development was rezoned by Ordinance No. 87-47, and the current County zoning designation for the Development site is Multiple Family Residential (RM-7 and RM-4) and Neighborhood Commercial (CN-10).

49. The entire State of Hawaii lies within the Coastal Zone Management area, under the Coastal Zone Management Program, Hawaii Revised Statutes (hereinafter "HRS") Chapter 205A. The Coastal Zone Management Program is intended to guide and regulate public and private uses in the Coastal Zone Management area with respect to recreational resources, historic resources, public access to the shoreline, scenic and open space resources, coastal ecosystems, marine resources, economic uses, coastal hazards, managing development, public participation and beach access.

50. The Development site is situated within the SMA. The SMA is part of the Coastal Zone Management Program regulated by the County of Hawaii.

E. SMA Use Permit Requirements.

51. Planning Commission Rule 9-11 D provides that the Planning Commission may approve a SMA Use Permit only upon finding that:

1. The development will not have any substantial adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and is clearly outweighed by public health, safety, or compelling public interest;

2. The development is consistent with the objectives and policies as provided by Chapter 205A, HRS, and the Special Management Area guidelines as contained herein; and

3. The development is consistent with the General Plan, Zoning Code and other applicable ordinances.

52. The objectives of HRS Chapter 205A are contained in HRS Section 205A-2. These are:

- (a) To provide coastal recreational opportunities accessible to the public;
- (b) To protect, preserve and, where desirable, restore natural and manmade historic and prehistoric resources that are significant in Hawaiian and American history and culture;
- (c) To protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources;
- (d) To protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems;
- (e) To provide public or private facilities and improvements important to the State's economy in suitable locations;
- (f) To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution;
- (g) To improve the development review process, communications, and public participation in the management of coastal resources and hazards;
- (h) To stimulate public awareness, education and participation in coastal management;
- (i) To protect beaches for public use and recreation; and

(j) To promote the protection, use and development of marine and coastal resources to assure their sustainability.

53. The policies of HRS Chapter 205A are contained in HRS Section 205A-2. These policies detail the methods of implementing each of the ten objectives of Chapter 205A.

54. The SMA guidelines for the review of all development proposed in the special management area, as contained in the Commission Rules and HRS Section 205A-26, require that all development shall be subject to reasonable terms and conditions set by the Planning Commission in order to ensure the following:

(a) Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;

(b) Adequate and properly located public recreation areas and wildlife preserves are reserved;

(c) Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources; and

(d) Alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.

55. The SMA guidelines also require that the Commission, where reasonable, should seek to minimize the following:

(a) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;

(b) Any development which would reduce the size of any beach or other area usable for public recreation;

(c) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach;

(d) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and

(e) Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

56. Finally, Planning Commission Rule 9-11(D) states that any development permitted shall be subject to reasonable terms and conditions set by the Authority (Planning Commission of the County of Hawaii) in accordance with the Special Management Area guidelines as contained in Section 9-7.

F. The Proposed Development Complies with All Relevant Criteria for Approval of a Special Management Area Use Permit.

I. The development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interest.

1. The proposed development will not have any substantial adverse effects on the coastal resources or environment because the Development is separated from the shoreline by between 200 and 4,000 feet and by Alii Drive, a county owned roadway. Moreover, properties makai of the Development have been developed with single and multi-family residential units and landscaping.

2. Scenic Vistas and Viewplanes. There are no identified recreational resources or public access to the shoreline or mountain areas, scenic and open space preserves, coastal ecosystems, marine resources or other natural and environmental resources on the proposed development site. A Visual Impact Assessment was performed by Ron Terry, Ph.D., who reported that the view planes to and along the shoreline will not be impacted as the area is

already developed with single and multi-family residences and landscaping. Therefore, the Development will not substantially affect or interfere with scenic vistas or viewplanes of nearby residents; nor, will it have an adverse impact on coastal recreational or visual resources to the shoreline and coastal ecosystems due to the fact that the shoreline area is already developed with existing buildings, and the Development will not be visible from the shoreline looking mauka.

3. Air Quality and Noise. Air quality and noise in the area of the Development is most affected by emissions from natural and vehicular sources. Although short-term air and noise quality impacts may be expected during construction, particularly during grubbing and grading, Sunstone proposes to mitigate these impacts by utilization of best management practices during construction. Utilization of best management practices will mitigate any substantial adverse short term air and noise quality impacts. There is no evidence to establish that there is any substantial adverse long-term air and noise quality impacts from the Development and any long term impacts of noise can be mitigated by installation of landscaping.

4. Drainage, Flooding and Earthwork. Most of the Development is located in an area that is outside of the 500-year flood plain, or in Zone X, as designated by the U.S. Federal Emergency Management Agency Flood Insurance Rate Map (FIRM). However, the southern portion of the Development within the Development areas of Blocks A and B, is within the AE flood zone and the Waiaha drainageway on the FIRM. Properties makai of the Development have been subject to periodic flooding and there have been two known serious floods in the area since the 1960s. Water and drainage runoff will be generated by the improvements proposed by the Development; however, a drainage system disposing all runoff on-site, constructed in accordance with a drainage study prepared by a licensed civil engineer, will mitigate the impacts of the drainage runoff. Development of additional on-site drainage structures to reduce the downstream flow of flood waters will mitigate the threat of floods and reduce the hazard to life and property of downstream owners. Any impacts of the on-site flooding in the AE flood zone and in the Waiaha drainageway can be mitigated if no dwelling units are constructed within these areas. Erosion may occur because of grading and grubbing earthwork, but the impacts of such construction activity can be mitigated by submitting plans and obtaining an NPDES permit form the Department of Health, to control water pollution caused by

construction activity. Performing all earthwork and grading in conformance with the County of Hawaii erosion and sediment control standards, under Hawaii County Code Chapter 10, will also mitigate the impacts of soil erosion.

5. In response to an April 2006 water quality monitoring study entitled A Review of Coastal Monitoring Data For Developments in West Hawaii prepared by the Marine Science Department at University at Hawai'i at Hilo, Gregory Mooers testified that it would be difficult to determine the impacts of specific projects on water quality in West Hawai'i. Mr. Mooers suggested that the County of Hawai'i could develop protocols for testing and evaluation of coastal waters for impacts by developments.

6. Moreover, the Planning Department, as part of its favorable recommendation, has recommended conditions of approval to ensure that activities or uses that could possibly adversely impact the coastal ecology or environment are properly mitigated.

7. Specifically, as a condition of approval and compliance with Change of Zone Ordinance No. 87-47, Applicant will be required to build roadway improvements, including the dedication of the K - K Parkway right-of-way and drainage improvements to the Waiaha flood plain.

8. The decision to locate the mauka-makai connector roadway to the Parkway on Alii Lani Drive was made in the 1990's and the design and location was posted on the County of Hawaii's website since 2001. The Planning Director for the County of Hawaii has concluded that given the Planning Department's recommendations and conditions of approval, the location of Alii Lani Drive will not have significant adverse environmental or ecological impacts to the Special Management Area. There will be substantial impacts upon the traffic along Alii Drive as a result of the Development; however, general traffic impacts cannot be considered in a SMA use permit application. *Topliss v. Planning Commission*, 9 Haw.App. 377, 842 P.2d 648 (1993).

9. Tsunami Inundation and Evacuation. Although the Development is not within a tsunami inundation zone, it is within the designated County of Hawaii tsunami evacuation zone. The additional mauka-makai access roadway at Alii Lani Drive would increase

the public's access to the shoreline and provide a needed additional evacuation route in case of emergency. Presently there are two evacuation routes by way of Lunapule and Royal Poinciana. The proposed additional mauka-makai connector roadway (Alii Lani Drive) will provide for an additional third evacuation route in case of emergency and would be beneficial to the public interest. Moreover, the Deputy Director for Civil Defense has stated that Alii Lani Drive would be beneficial to the Civil Defense Agency during evacuations and that there is no significant difference for emergency evacuation purposes between the mauka-makai road alignments at Alii Lani Drive and Alii Park Place. The Planning Director also concluded that the slight difference in distance for evacuation will not have the slightest effect for evacuation purposes. Preparation of an emergency evacuation plan for the Development and the installation of a civil defense siren will minimize the risk to residents during a tsunami or other emergency.

10. Although Project traffic impacts alone are not proper issues for consideration in the approval of a Special Management Area Use Permit under *Larry T. Topliss, dba Pacific Land Company vs. The Planning Commission and the Planning Department of the County of Hawaii*, 9 Haw.App.377, 842 P.2d 648 (Jan. 6, 1993), to the extent that the location of the proposed Alii Lani Drive may be considered for its environmental or ecological impact, Applicant will comply with the conditions imposed by Change of Zone Ordinance No. 87-47 and the Planning Department. Even so, Applicants have contracted with Mr. Phillip Rowell, a traffic engineer, to conduct a Traffic Impact Analysis Report. The Hearings Officer specifically ruled that traffic is not an issue of an SMA permit unless it is related to environmental considerations. Additionally, to the extent that traffic can be considered, the Planning Director for the County of Hawaii has stated that development of Alii Lani Drive will assist with traffic congestion in the area. Moreover, the Planning Director has also stated that the proposed Alii Lani Drive roadway alignment complies with all applicable Subdivision Code requirements and does not pose any safety issues. Specifically, the Planning Director has concluded that Hawaii County Code 23-43 (Subdivision Chapter) regarding roadway alignment does not apply to the proposed Alii Lani Drive and therefore the proposed roadway is compliant with all Subdivision Code requirements. The Planning Director's interpretation of permit conditions and code requirements is presumptively authorized as he administratively enforces non-compliance with permit conditions, subdivision codes and zoning ordinances. Additionally, there will be no condition or requirement for Applicants to build a (traffic circle) round-about.

11. Drainage improvements will be completed as a condition of approval and to comply with the requirements of Change of Zone Ordinance No. 87-47. Although there have been incidents of flooding at the Hawaii Planing Mills Subdivision in the early 1960's and 1980's due to a pre-existing flooding condition (the subdivision is within an AE flood zone), the proposed development will not aggravate any pre-existing flooding conditions. A completed drainage analysis will be performed as a condition of approval, and no downstream aggravation will be allowed as required by the County of Hawaii drainage principles and practices. All construction of the proposed development will be in compliance with Chapter 27 of the Hawaii County Code, Flood Control, and with all regulations of the Federal Emergency Management Agency. There will be no impact on the flow of water to any downstream properties. As is customary, the complete drainage assessment and detailed study will be performed during construction or construction plan preparation.

12. Valued Natural, Cultural, Historical and Coastal Recreational Resources.

An archeological inventory survey of the Development site, conducted by Haun & Associates, documented a total of 17 sites with 103 features, and an additional four recorded sites which had previously been destroyed. The Department of Land and Natural Resources, Historic Preservation Division (hereinafter "DLNR-HPD"), has reviewed and approved this inventory. Any archeological impacts can be mitigated by means of preparing and implementing a data recovery and data preservation plan in accordance with the requirements of DLNR-HPD. Two burial sites have been located within the Development site and a burial treatment plan which proposes preserving these burials in place, prepared by Haun & Associates, was submitted to and approved by the Hawaii Island Burial Council on May 19, 2005. The impacts of the proposed Development upon the burial sites can be mitigated by implementing the preservation measures contained in the approved burial plan. A limited cultural impact assessment, conducted by J. Curtis Tyler III in July 2005, identified valued resources, practices and beliefs in the area and on the Development site and the impacts upon those resources. Based, in part, upon recommendations of descendants interviewed, mitigation measures are proposed to protect any valued resources, practices and beliefs that are or may be located on the Development site. Finally, the Development is not located adjacent to the shoreline and there are no known coastal recreational resources impacted by reason of the Development.

13. The Planning Director for the County of Hawaii has concluded that with the Planning Department's recommended conditions, there should not be a substantial or significant adverse environmental or ecological impact on the Special Management Area from the proposed development. Therefore, the proposed development is not anticipated to have any substantial adverse effects on the coastal resources or environment.

II. The proposed development is consistent with the objectives and policies of Chapter 205A, HRS and the Special Management Area Guidelines pursuant to Hawaii Revised Statutes, Chapter 205A-26, as amended.

14. The proposed development is consistent with the objectives and policies of Chapter 205A, the Special Management Area Guidelines and Rule No. 9 of the Planning Commission Rules of Practice and Procedure because all relevant objectives, policies and guidelines have been addressed and complied with by the Applicant through preliminary studies and assessments. Moreover, because the proposed development is separated from the shoreline, there are no identified recreational resources of public access to the shoreline or mountain areas, scenic and open space preserves, coastal ecosystems, marine resources or other natural and environmental resources on the proposed development site.

15. The public's access to the ocean will not be negatively impacted because the proposed development is separated from the shoreline by between 200 and 4,000 feet and a County owned roadway. Since the proposed development is located on the mauka side of Alii Drive it will not be impacted by coastal hazard and beach erosion. As stated above, the proposed mauka-makai connector will provide an enhanced public access to the shoreline and an additional mauka-makai emergency access. Conditions can be imposed to ensure that provisions are made for solid and liquid waste treatment, soil and sediment control, drainage, and preservation of historic and cultural resources. The solid waste from the Commercial zoned area of the Development will be collected by commercial haulers and disposed at the County Landfill. The wastewater will be managed by a sewer line that delivers the wastewater to the County's Wastewater Treatment Facility at Kealakehe.

16. Biological issues were addressed in the botanical report and there will be no anticipated impact on any flora or fauna or coastal ecosystems. The proposed development is not connected to any coastline areas that would require access over or through the Subject Property to any beaches, recreation areas or natural resources not otherwise available. The Development will only minimally physically alter and change the existing land form. The proposed development will include the required off-street parking stalls, and will be in compliance with the applicable requirements of the Zoning Code and ADA requirements.

17. There is no identified recreational resources or public access to the shoreline or mountain areas, scenic and open space preserves, coastal ecosystems, marine resources or other natural and environmental resources on the Subject Property.

18. The proposed Development will not substantially affect scenic vistas or viewplanes of nearby residents nor have an adverse impact on visual resources to the shoreline. A Visual Impact Assessment for the proposed project concluded that "the total visual impacts of the projects of the proposed Kona Sea Crest condominium project are minor."

19. No significant long-term air and noise quality impacts are anticipated. Air quality in the area of the Subject Property is mostly affected by emissions from natural and vehicular sources. Volcanic haze is the dominant form of natural emissions, while windblown dust may also contribute to air pollution.

20. The U.S. Federal Emergency Management Agency Flood Insurance Rate (FIRM) Map designates the proposed development within Zone X, which is an area outside the 500-year flood plain, with a portion of the southern side of the Subject Property located within the AE Zone and the Waiaha Drainageway. The Waiaha Drainageway Splitflow No. 2, which is on the south side of the Subject Property, affects Blocks A and B listed on the Applicant's site plan. Any improvements to the Subject Property must comply with Chapter 27 of the Hawaii County Code relating to Flood Hazard Control, and Chapter 11-55, Water Pollution Control, Hawaii Administrative Rules, Department of Health. A condition of the Planning Department's favorable recommendation will be preparation of a drainage study and a flood study for the proposed Development.

21. The Civil Defense Agency has noted that a major portion of the proposed development lies within the Tsunami Evacuation Zone. Applicant may be required to develop an Emergency Evacuation Plan and to install a Civil Defense Siren.

22. A limited Cultural Impact Assessment was conducted and mitigation measures are listed that constitute feasible actions that will reasonably protect any valued resources, practices and beliefs that are located or may be located on the Subject Property.

23. An archeological inventory survey was conducted and the work was reviewed and approved by the State Historical Preservation Division. The Applicant has also submitted a Burial Treatment Plan which was presented to the Hawaii Island Burial Council, at which time the Council voted to preserve-in-place the burials at two sites located within TMK (3) 7-5-019: 001.

24. Therefore, the proposed development is consistent with the objectives and policies of Chapter 205A, HRS and the Special Management Area Guidelines pursuant to Hawaii Revised Statutes, Chapter 205A-26, as amended.

III. The proposed development is consistent with the General Plan, Zoning Code and other applicable ordinances.

25. The Planning Department has determined that the proposed development is consistent with the County General Plan and the Zoning Code because the Subject Area is situated in the State Land Use Urban District and County of Hawaii Zoning designations of Multiple-Family Residential (RM-7 and RM-4) and Neighborhood Commercial (CN-10). Commercial development is permitted in the CN zoned district.

26. The Kona Regional Plan adopted by the Hawaii County Planning Commission by Resolution No. 1-84 recommends the project site for a residential density of 6 to 10 units per acre (RES - 6 and RES - 10) and a portion of the proposed development for neighborhood commercial uses.

27. The General Plan Land Use Pattern Allocation Guide ("LUPAG") Map designates the Subject Property as "Medium Density Urban" which allows village and

neighborhood commercial and single family and multiple family residential uses and related functions (multiple family residential - up to 35 units per acre.)

28. Additionally, the Planning Department has found that the proposed development will complement the goals, policies and standards of, among others, the Land Use, Housing and Economic Elements of the General Plan, because the proposed development will add to the housing inventory for the district of North Kona and will be in harmony with the character of the surrounding properties and result in an intensity of land utilization no higher than as permitted or as otherwise specified for the zoning district in which this proposed Development occurs.

29. Traffic impacts will be mitigated in accordance with the requirements of the Department of Public Works, and the requirement to comply with conditions of Change of Zone Ordinance No. 87-47. Overall density is consistent with existing County land use policies and plans. Appropriate construction practices and improvements to contain runoff, sedimentation and erosion will be implemented in accordance with applicable governmental requirements.

30. Therefore, the proposed development is consistent with the County General Plan and the Zoning Code.

IV. The development will, to the extent feasible, reasonably protect traditional and customary native Hawaiian rights if they are found to exist.

31. The proposed development will, to the extent feasible, reasonably protect native Hawaiian rights if they are found to exist because as part of its SMA application, Applicant has submitted information regarding valued cultural, archaeological, historical, and natural resources, to include, without limitation, the Archeological Inventory Survey conducted by Haun & Associates in September 2004; a Burial Treatment Plan for Site 6332 (Feature B) and Site 23915 prepared by Haun & Associates in March 2005; a Botanical Reconnaissance by Ron Terry, Ph.D. and Patrick Hart, Ph.D. and a Limited Cultural Impact Assessment by J. Curtis Tyler III dated July 2005.

32. The Department of Land and Natural Resources - State Historic Preservation Division (DLNR-SHPD) has acknowledged the Hawaii Island Burial Council's determination to preserve-in-place the burials within the proposed development site. Applicant has also received approval for a preservation and data recovery plan for the remaining sites.

33. Although native vegetation may be destroyed by ground alteration, there is no evidence that the flora is desired or used for cultural practices. Moreover, as a condition of approval, Applicant will be required to notify DLNR-SHPD should there be any undiscovered historic sites and subsequent work shall only be allowed to proceed upon archeological clearance from DLNR-SHPD. Impacts upon any cultural resources or upon any traditional and customary native Hawaiian rights practiced on the Development site can be mitigated by implementing the mitigation measures outlined in the Cultural Impact Assessment, which include preservation of burial sites and buffer areas, treatment of artifacts in accordance with DLNR-SHPD rules, providing access and off-street parking to the descendents of the burial sites, recognition of the descendents in the preservation and care of the burial sites, and treatment of any located trails in accordance with the recommendations of the State Na Ala Hele program. If any unidentified historical sites or remains are encountered during construction, adverse impacts of such discovery can be mitigated by requiring as a condition of approval that the Applicant will be required to stop construction, notify DLNR-HPD, and proceed with construction only upon receipt of an archeological clearance from DLNR-HPD. *Exhibit PD-B.*

34. Therefore, the proposed development will reasonably protect traditional and customary native Hawaiian rights to the extent feasible, if they are found to exist on the Subject Property.

34. Finally, Pursuant to HRS Section 205A-26 and Commission Rule 9-11(D), the Planning Commission is authorized to issue a SMA use permit for the Development subject to reasonable terms and conditions to insure that the Development meets the SMA guidelines contained in Planning Commission Rule Section 9-7 and HRS Section 205A-26.

II. CONCLUSIONS OF LAW.

Based upon the foregoing proposed Findings of Fact, the Commission makes the following Conclusions of Law, including mixed conclusions of fact and law.

1. The Planning Commission has jurisdiction over this request for a Special Management Area Use Permit pursuant to HRS Chapter 205A, and Rule 9 of the Planning Commission Rules of Practice and Procedure.
2. The proposed development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interest.
3. The proposed development is consistent with the objectives, policies and special management area guidelines as provided by Chapter 205A, HRS, and Special Management Area guidelines contained in Rule No. 9 of the Planning Commission Rules of Practice and Procedure.
4. The proposed development is consistent with the County of Hawaii General Plan, Zoning Code and other applicable ordinances.
5. Reasonable terms and conditions of the proposed development, as applicable, will ensure: a) adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles; b) adequate and properly located public recreation areas and wildlife preserves are reserved; c) provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources; and d) alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of an earthquake.
6. The impacts of the Development upon the traffic system cannot be a basis for denial of an SMA use permit application. *Topliss v. Planning Commission*, 9 Haw. App. 377, 842 P.2d 648 (1993).

7. To the extent herein that any of the Conclusions of Law constitute Findings of Fact, or Findings of Fact constitute Conclusions of Law, they shall be considered and construed as such.

III. DECISION AND ORDER.

Based upon the evidence presented in this matter and in accordance with the foregoing Findings of Fact and Conclusions of Law, and pursuant to Planning Commission Rule 4 (Contested Case Procedure) and Rule 9 (Special Management Area),

IT IS HEREBY ORDERED that the application of Sunstone Kona, LLC, SMA No. 05-005, for a Special Management Area Use Permit to allow the development of approximately 289 multiple family residential units, commercial improvements and related parking and landscaping improvements on an approximately 46.3-acre parcel, located at Kahului 2nd, North Kona, Hawaii, identified as TMK No.: (3) 7-5-019:001, and roadway improvements on approximately 1.089 acres of land located at TMK No. (3) 7-5-020: Portion of 001, is hereby approved subject to the following conditions:

1. The Applicant, its successors or assigns shall comply with all stated conditions of approval of the Special Management Area Use Permit.
2. The Applicant, its successors or assigns shall fulfill their portion of all applicable conditions of Change of Zone Ordinance No. 87-47. Specifically, the applicant shall make the payments required by Condition "M" of Ordinance No. 87-47 no later than six months after the approval of this SMA Use Permit by the Planning Commission. The applicant shall pay \$29,000 per acre for the Waiaha drainageway improvements (\$1,508,000 = \$29,000 x 52 acres). The Applicant shall also dedicate all lands on the Subject Property necessary for the Waiaha flood plain improvements at no cost to the County. Pursuant to Condition M(l) of Ordinance No. 87-47, the value of the dedicated land shall not be credited against the per-acre fee. The SMA Use permit shall not take effect until the required payments have been made. The Applicant shall make the payments required by Condition "J" of Ordinance No. 87-47 no later than one year after the approval of this SMA Use Permit by the Planning Commission. The Applicant

shall pay \$483,800 toward the Kahului to Keauhou Parkway (41.0 acres x \$11,800 = \$483,800). The Applicant shall also dedicate all portions of the Kahului to Keauhou Parkway to the County upon request, at no cost to the County. Pursuant to Condition J(1) of Ordinance No. 87-47, the value of the dedicated land shall not be credited against the per-acre fee. The payment may be secured by a bond or other security acceptable to the Planning Director, which shall be released to fund the Waiaha drainage construction, which may include the Kahului Bridge, and the Kahului to Keauhou Parkway, upon request by the County.

3. The per-acre fees shall be subject to annual adjustment by the Director of Public Works pursuant to Condition J(2) and Condition M(2) of Ordinance No. 87-47, which may result in upward or downward adjustments of the pro rata fee.

4. In lieu of making the payments required by Condition J(1) of Ordinance No. 87-47, the Applicant has the option under Condition J(1) to construct and dedicate the portion of the Kahului to Keauhou Parkway from the Kuakini Highway to the southern end of the Subject Property, which shall be completed prior to the issuance of occupancy permits for any structure on the Subject Property. If the Applicant chooses this option, it shall make the choice before the due date for the required per-acre payments, and the choice shall be irrevocable, because otherwise it delays the per-acre payments beyond the time frames required by Ordinance No. 87-47.

5. In lieu of making the payments required by Condition M(1) of Ordinance No. 87-47, the Applicant has the option to construct drainage improvements to the Waiaha drainageway, which shall include the replacement of the Kahului Bridge, which shall be completed prior to the issuance of occupancy permits for any structures on the Subject Property. If the Applicant chooses this

option, it shall make the choice before the due date for the required per-acre payments, and the choice shall be irrevocable, because otherwise it delays the per-acre payments beyond the time frames required by Ordinance No. 87-47.

6. Pursuant to Condition "K" of Ordinance No. 87-47, the Applicant shall construct and complete a connecting road between Kahului to Keauhou Parkway and Alii Drive, meeting with the approval of the Director of Public Works, prior to the issuance of any occupancy permits for any portion of the Subject Property makai of Kahului to Keauhou Parkway. To fulfill this condition, Kahului to Keauhou Parkway must also be open for travel. If the Applicant wishes to develop the area makai of the Kahului to Keauhou Parkway alignment before the construction of Kahului to Keauhou Parkway, the intent of Condition "K" can be fulfilled by the applicant constructing a road between Alii Drive and Kuakini Highway. The road shall contain the following three segments, and all segments shall be built to county-dedicable standards, per Department of Public Works Standard Detail R-33 for collector streets. A) The segment, between Alii Drive and the Kahului to Keauhou Parkway right-of-way shall be constructed on the Alii Lani Drive alignment shown by the current County plans for the Kahului to Keauhou Parkway, adjacent to the Alii Lani townhouse project. B) Another segment shall be built within the Kahului to Keauhou Parkway right-of-way, provided however that the Applicant is not required to construct the roundabout shown in the current Kahului to Keauhou Parkway plans and is not required to construct this segment to the planned standard for Kahului to Keauhou Parkway. To the extent that the Kahului to Keauhou Parkway segment can be built without greatly increasing the cost to the Applicant, it shall be built so that it can be converted to the Kahului to Keauhou Parkway. The Applicant shall receive a credit against the per-acre fee for the Kahului to Keauhou Parkway for the value of the road improvements within the Kahului to Keauhou Parkway alignment that also benefits the permanent Kahului to Keauhou Parkway. C) The segment between the Kahului to Keauhou Parkway right-of-way and Kuakini Highway, shall be constructed on the Applicant's property.

7. Prior to the issuance of a water commitment by the Department of Water Supply, the applicant shall submit the anticipated maximum daily water usage calculations as recommended by a registered engineer, and a water commitment deposit in accordance with the “Water Commitment Guidelines Policy” to the Department of Water Supply within ninety days from the effective date of the SMA Use permit for the initial commitment of 77 units of water. The applicant shall obtain water commitments to develop the requested number of units prior to submitting plans for Final Plan Approval for any portion of the project.

8. The proposed dwelling units shall not exceed the number of units of water that are available and have been committed to the Subject Property by the Department of Water Supply or other approved water source. Any further development shall occur only when sufficient County water becomes available by construction of on-site and off-site water system improvements. All water system improvements shall meet with the requirements of the Department of Water Supply prior to the issuance of Final Plan Approval.

9. Construction of the first phase of the proposed development shall be completed within five (5) years from the effective date of this permit. Prior to construction, the Applicant, successors or assigns shall secure Final Plan Approval for the first phase of the proposed development from the Planning Director in accordance with Section 25-2-70, Chapter 25 (Zoning Code), Hawaii County Code. The Applicant shall receive Final Plan Approval for each additional phase. Plans shall identify all existing and/or proposed structures, paved driveway access and parking stalls associated with the proposed development. Landscaping shall also be indicated on the plans for the purpose of mitigating any adverse noise or visual impacts to adjacent properties in accordance with the requirements of Planning Department's Rule No. 17 (Landscaping Requirements).

10. All development-generated runoff up to the level required by the Department of Public Works "Storm Drainage Standards", shall be disposed of on site and shall not be directed toward any adjacent properties. A drainage study shall be prepared by a licensed civil engineer and submitted to the Department of Public Works prior to issuance of a construction permit. Any recommended drainage improvements, if required, shall be constructed meeting with the approval of the Department of Public Works prior to receipt of a Certificate of Occupancy.

11. All earthwork and grading shall conform to Chapter 10, Erosion and Sediment Control, of the Hawaii County Code.

12. The applicant shall comply with Chapter 11-55, Water Pollution Control, Hawaii Administrative Rules, Department of Health, which requires an NPDES permit for certain construction activity.

13. During construction, measures shall be taken to minimize the potential of both fugitive dust and runoff sedimentation. Such measures shall be in compliance with construction industry standards and practices utilized during construction projects of the State of Hawaii.

14. There shall be no construction of dwellings and related improvements or other substantial buildings, or subdivision roads within areas designated "AE" or "shaded" Zone "X" by Flood Insurance Rate Maps (FIRM), except that subdivision roads can be built in "shaded" Zone "X." Restrictive covenants in the deeds of all lots shall give notice of the terms of this condition. No residential lots may be created which lack a buildable area. A copy of the proposed covenant(s) to be recorded with the Bureau of Conveyances shall be submitted to the Planning Director for review and approval prior to the issuance of Final Plan Approval. A copy of the recorded document shall be filed with the Planning Department upon its receipt from the Bureau of Conveyances.

15. Prior to the issuance of any building or grading permit for Blocks B and C, or for Block A between the existing Kona Sea Villas project and the southern property line, a flood study shall be prepared by a licensed professional civil engineer from newly acquired field data, including a hydraulic analysis of the culvert and overflow at Kuakini Highway and downstream through the Subject Property to Alii Drive. The study shall recommend how to mitigate downstream impact of the applicant's proposed channelization as compared to a "no-development" of the flood plain alternative. The project shall incorporate all mitigation measures, as required by the Department of Public Works, to ensure that stormwater flow to Alii Drive, or to downstream properties is not increased by the applicant's channelization projects proposed for the Waiaha Splitflow No. 2.

16. Should any flood plain alteration be proposed, it will be subject to Chapter 27 of the Hawaii County Code and the County of Hawaii Storm Drainage Standard. Prior to any alteration of the base flood boundaries or base flood elevations, the applicant shall submit the flood study to the Federal Emergency Management Agency (FEMA) for a Conditional Letter of Map Revision (CLOMR). Approval of a Letter of Map Revision (LOMR) shall be secured before issuance of a construction permit, Certificate of Occupancy or final subdivision approval, as applicable.

17. A Solid Waste Management Plan shall be submitted to the Department of Environmental Management for review and approval prior to the issuance of a Certificate of Occupancy.

18. All units shall be connected to the County sewer system.

19. All driveway connections to a County road shall conform to Chapter 22, Streets and Sidewalks, of the Hawaii County Code. All sight distances shall meet the recommended minimum intersection sight distances in

the AASHTO Policy on Geometric Design of Highways and Streets. The access intersection to Kuakini Highway shall be constructed meeting with the approval of the Department of Public Works.

20. The applicant shall provide a 5-foot wide road-widening setback along the Alii Drive frontage of the Property and dedicate it to the County at no cost upon request by the Department of Public Works.

21. Access to Alii Drive for the portion of the property abutting Alii Drive, including the provision of adequate sight distances, shall meet with the approval of the Department of Public Works and shall include a left turn pocket. The Applicant shall install street lights, signs and markings meeting with the approval of the Department of Public Works, Traffic Division. The Applicant shall construct intersection improvements at the intersection of Alii Drive and the mauka-makai road meeting with the approval of the Department of Public Works. Said improvements may include a left turn lane or the extension of the existing two-way left turn lane from Alii Lani to a point allowing a left turn onto the mauka-makai road. The Applicant shall provide all required improvements at no cost to the County. These requirements shall be fulfilled prior to the issuance of a Certificate of Occupancy for any portion of the project makai of the Kahului to Keauhou Parkway.

22. Access to Kahului to Keauhou Parkway Phase 1 or successor project, and to Kuakini Highway, including the location and provision of adequate sight distances, and access restrictions, such as right-in, right-out, only if required, shall meet with the approval of the Department of Public Works. Additional intersection improvements, such as channelization, if required, shall comply with the requirements of the Department of Public Works. The Applicant shall install street lights, signs and markings meeting with the approval of the Department of Public Works, Traffic Division.

23. If necessary to accommodate a burial treatment plan for burials within the Kahului to Keauhou Parkway right-of-way, the Applicant shall dedicate the additional right-of-way if required by the Department of Public Works. The request from the Department of Public Works shall be made prior to the issuance of the Final Plan Approval for the subject area.

24. If sound abatement measures are required to qualify the Kahului to Keauhou Parkway for federal funding because of the residences built or planned to be built in the area covered by this permit, the applicant, its successors or assigns shall be required to pay for such measures. The Planning Director may waive this requirement, and the corresponding notice to prospective purchasers, if a noise study prepared by a licensed engineer, and approved by the Planning Director, determines that noise abatement measures will not be necessary.

25. Until the completion of the Kahului to Keauhou Parkway through the Subject Property, covenants in all deeds to the Subject Property, including deeds to individual units and to any lots subdivided from the Subject Property, and promotional and sales materials given to prospective purchasers, shall provide notice to prospective owners of the following concepts. The sales materials and covenants for the project do not have to follow the exact wording of this condition, but shall inform the prospective purchasers of the substance of this condition. "Plans for the area involve the construction of the Kahului to Keauhou Parkway within a right-of-way shown on the attached map. The Kahului to Keauhou Parkway will be a major highway that is expected to carry a high volume of traffic. The County of Hawaii has determined that the construction of this highway is important to the proper development of Kona as a whole. The construction of the Kahului to Keauhou Parkway will create noise, dust, and other impacts. The contractor building the Kahului to Keauhou Parkway will be required to follow some regulations to reduce noise and dust, but some impacts will occur. After completion, traffic on the Kahului to Keauhou Parkway will cause noise and other effects that must be expected from a busy roadway. A prospective purchaser who cannot accept the future construction of the Kahului to

Keauhou Parkway in this area is advised to seek another area to reside. This property was issued a Special Management Area Use Permit on condition that if noise abatement measures between the Kahului to Keauhou Parkway and adjacent residences in this project must be taken to qualify the Kahului to Keauhou Parkway Project for federal funding, the private owners would be required to pay for noise abatement.”

26. The applicant shall be required to reserve the affected portions of the Subject Property planned for roadway and drainage improvements of the Kahului to Keauhou Parkway Phase 1 or successor project or provide equivalent improvements meeting with the approval of the Department of Public Works at no cost to the County.

27. Any vehicular security gate shall be installed more than 60 feet from any existing or proposed future County road right-of-way with a turnaround on the County Road side of the gate.

28. An Emergency Response Plan shall be submitted to the Hawaii County Civil Defense Agency for review and approval prior to the issuance of a Certificate of Occupancy. The Applicant shall also construct a Civil Defense siren onsite meeting with the approval of the Hawaii County Civil Defense Agency.

29. The Applicant shall implement the approved Archaeological Preservation and Data Recovery Plan, and Burial Treatment Plan. A copy of the approved Final Archaeological Preservation and Burial Treatment Plan shall be submitted to the Planning Director for its files prior to submitting plans for Final Plan Approval review or prior to the issuance of any land alteration permits.

30. Should any remains of historic sites, such as rock walls, terraces, platforms, marine shell concentrations or human burials be encountered, work in the immediate area shall cease and the Department of Land and Natural

Resources-Historic Preservation Division (DLNR-HPD) shall be immediately notified. Subsequent work shall proceed upon an archaeological clearance from the DLNR-HPD when it finds that sufficient mitigative measures have been taken.

31. The applicant shall comply with all applicable County, State and Federal laws, rules, regulations and requirements.

32. An annual progress report shall be submitted to the Planning Director prior to the anniversary date of this permit. The report shall include, but not be limited to, the status of the development and the extent to which the conditions of approval are being satisfied. This condition shall remain in effect until all of the conditions of approval have been satisfied and the Planning Director acknowledges that further reports are not required.

33. An initial extension of time for the performance of conditions within the permit may be granted by the Planning Director upon the following circumstances:

A. The non-performance is the result of conditions that could not have been foreseen or are beyond the control of the applicant, its successors or assigns, and that are not the result of their fault or negligence;

B. Granting of the time extension would not be contrary to the General Plan or Zoning Code;

C. Granting of the time extension would not be contrary to the original reasons for the granting of the permit;

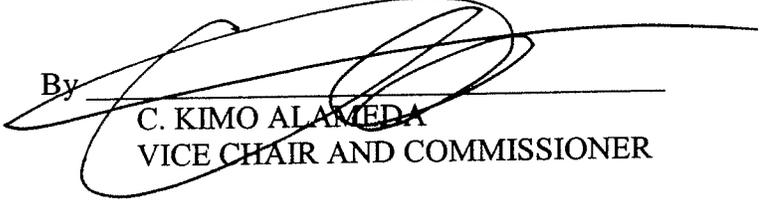
D. The time extension granted shall be for a period not to exceed the period originally granted for performance (i.e., a condition to be performed within one year may be extended for up to one additional year).

Should any of the conditions not be met or substantially complied with in a timely fashion, the Director may initiate to revoke this permit.

SMA No. 05-005, Sunstone Kona, LLC
TMK (3) 78-5-019:001 AND (3) 7-5-020:Portion of 001

Voted and Approved at Hilo, Hawaii, this 20th day of April,
2007, per Motion on March 16, 2007.

PLANNING COMMISSION
County of Hawaii

By 

C. KIMO ALAMEDA
VICE CHAIR AND COMMISSIONER

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 2a Historic Sites Compliance Summary

HISTORIC PRESERVATION COMPLIANCE STATUS
KONA SEA CREST - BLOCKS B, C AND D
LANDS OF KAHULUI 2 AND PUAPUA‘A 1
NORTH KONA DISTRICT, ISLAND OF HAWAI‘I
PORTIONS OF TMK: (3) 7-5-19:01 AND 7-5-20:1
AND COUNTY OF HAWAII EASEMENT LOT 114

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keauu, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

**HISTORIC PRESERVATION COMPLIANCE STATUS
KONA SEA CREST – BLOCKS B, C AND D
LANDS OF KAHULUI 2 AND PUAPUA‘A 1
NORTH KONA DISTRICT, ISLAND OF HAWAI‘I
PORTIONS OF TMK: (3) 7-5-19:01 AND 7-5-20:1
AND COUNTY OF HAWAII EASEMENT LOT 114**

By:

Alan E. Haun, Ph.D.

and

Dave Henry, B.S.

Prepared for:

Sunstone Realty Partners
1001 Bishop Street, Pauahi 1250
Honolulu, HI 96813

September 2008

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

INTRODUCTION

This document summarizes the historic preservation compliance status of the proposed Kona Sea Crest Blocks B, C and D project located in the Land of Kahului, North Kona District, Island of Hawaii (TMK: (3) 7-5-19:01). Block A of the project was completed previously. The project also includes a road corridor that provides access to the parcel from Ali'i Drive. The locations of the project and associated road are depicted in *Figure 1*.

The main portion of the project area is irregularly-shaped and is 35.1-acres in area. It is bisected by the proposed Ali'i Parkway and is bordered along the north, south and east by stone walls. The west side of the parcel is bordered by Ali'i Drive, by undeveloped land and by the Kona Sea Ridge Development.

The access corridor is L-shaped and originates in the Land of Puapua'a 1 along the inland side of Ali'i Drive. It extends 725 ft to the east-northeast, centered along an existing gravel road, where it intersects the proposed Ali'i Parkway corridor (TMK: 7-5-20:01). This portion of the corridor is located within County of Hawaii Easement Lot 114. It then angles to the north-northeast extending 558 m in this direction where it terminates within the Land of Kahului 2.

SUMMARY OF RECENT ARCHAEOLOGICAL STUDIES

Haun and Henry (2004) conducted an archaeological inventory survey (AIS) of the main project area (*Figure 2*). This parcel was surveyed during several prior archaeological studies that are summarized in the Haun and Henry (2004) report. The AIS was approved by DLNR-SHPD in a letter dated 01/19/2005 (Log No. 2005.0100 – Doc. No. 0501MM22).

A Site Preservation Plan was subsequently prepared for three sites located in the Haun and Henry (2004) study area (Sites 6302, 6332-A and 23914-A – Haun and Henry 2005). This plan was approved by DLNR-SHPD in a letter dated 05/12-2008 (Log No. 2008.0882 – Doc. No. 0805TD09).

A Burial Treatment Plan was prepared for two sites in the Haun and Henry (2004) survey area (Sites 6332-B and 23915 – Haun and Associates (2005). This plan was approved by DLNR-SHPD in a letter dated 06/03/2005 (Log No. 2005.1125 – Doc. No. 0505kl07).

An Archaeological Data Recovery Program was conducted at five sites within the Haun and Henry (2004) study area (Sites 6332, 23914, 23917, 23918 and 23191 – Haun et al. 2006). The results of this study were approved by DLNR-SHPD in a letter dated 05/22/2006 (Log No. 2006.1583 – Doc. No. 0605JT15).

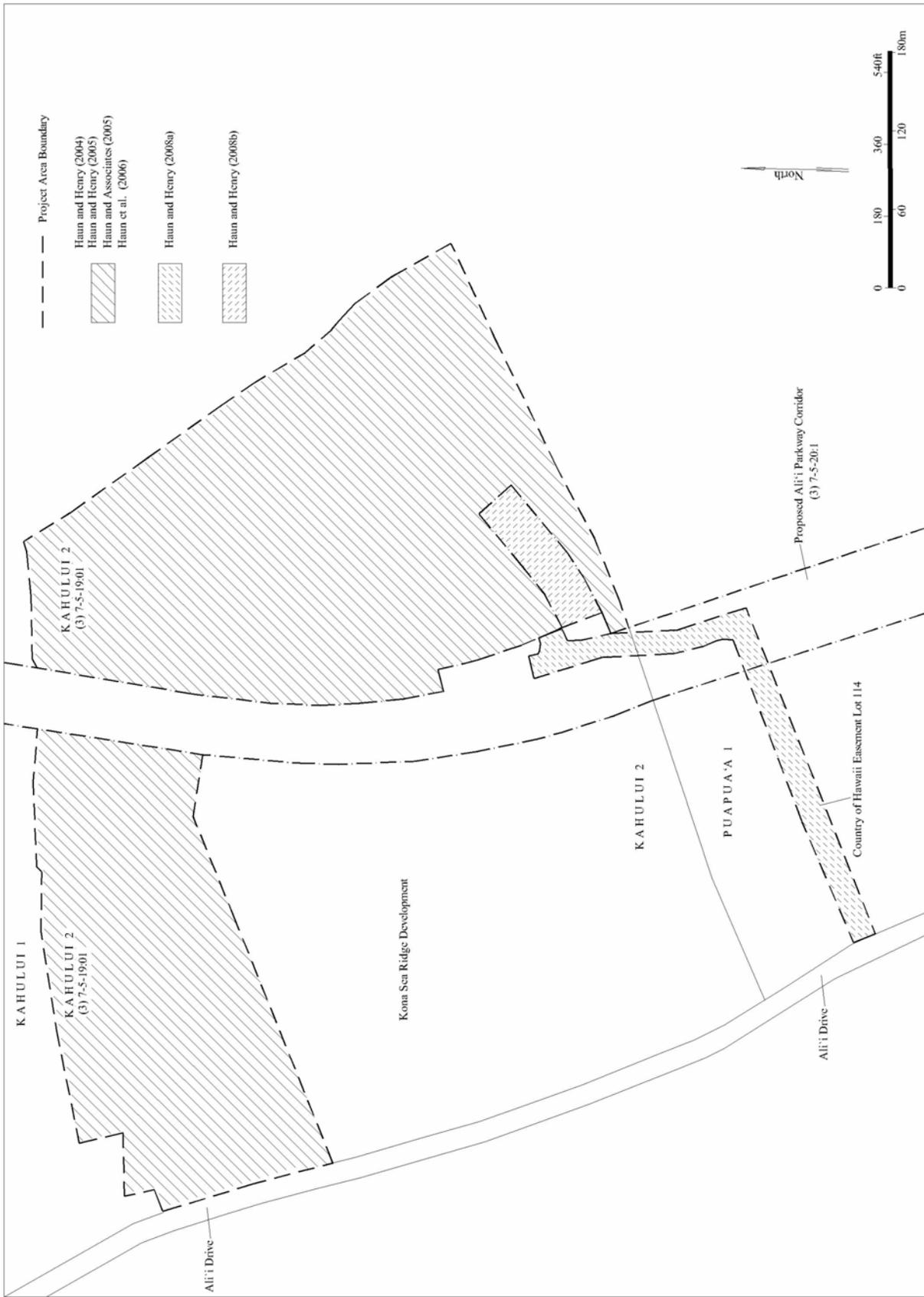


Figure 2. Location of Haun & Associates Studies

The access road corridor that originates in the Land of Puapua‘a was subjected to an archaeological inventory survey by Haun & Associates (Haun and Henry (2008a). The results of this study were approved by DLNR-SHPD in a letter dated 07/13/208 (Log No. 2008.1020 – Doc. No. 0807MD54).

A flood channel that extends located from the proposed Ali‘i Parkway corridor in Kahu-
lui 2 was examined by Haun & Associates (Haun and Henry (2008b). The review of this study
by DLNR-SHPD is pending.

SUMMARY OF IDENTIFIED SITES

A total of 22 sites with 121 features have been documented within the project area; how-
ever, seven sites with 11 features were destroyed prior to the Haun & Associates studies. Cur-
rently, there are 15 sites, comprised of 110 features, present within the project area. These sites
are summarized in *Table 1* and their locations are depicted in *Figure 3*.

Six sites (6306, 6331, 6334, 21768, 22475, and 23916) require no further work or preser-
vation (*Table 2*). Two features of Site 14447/24981 (Features B and C) also require no further
work; however, Feature A of the site will be preserved.

Three sites were mitigated through data recovery (Sites 23917, 23918 and 23919). Fea-
ture B of Site 23914 was also mitigated through data recovery. The remaining feature of Site
23914 (Feature A) will be preserved.

Five sites or portions of them have either been preserved or have been recommended for
preservation. Sites 6302, 6332-A and 23914-A are preserved in accordance with an approved
Site Preservation Plan (Haun and Henry 2005). The preservation plan includes provisions for
breaching the Kuakini Wall along the southern boundary to provide access and drainage im-
provements. Sites 6332-B and 23915 will be preserved in accordance with an approved Burial
Treatment Plan (Haun and Associates 2005). Feature A of Site 14447/24981 is recommended for
preservation and will be preserved under the terms of a preservation plan to be prepared.

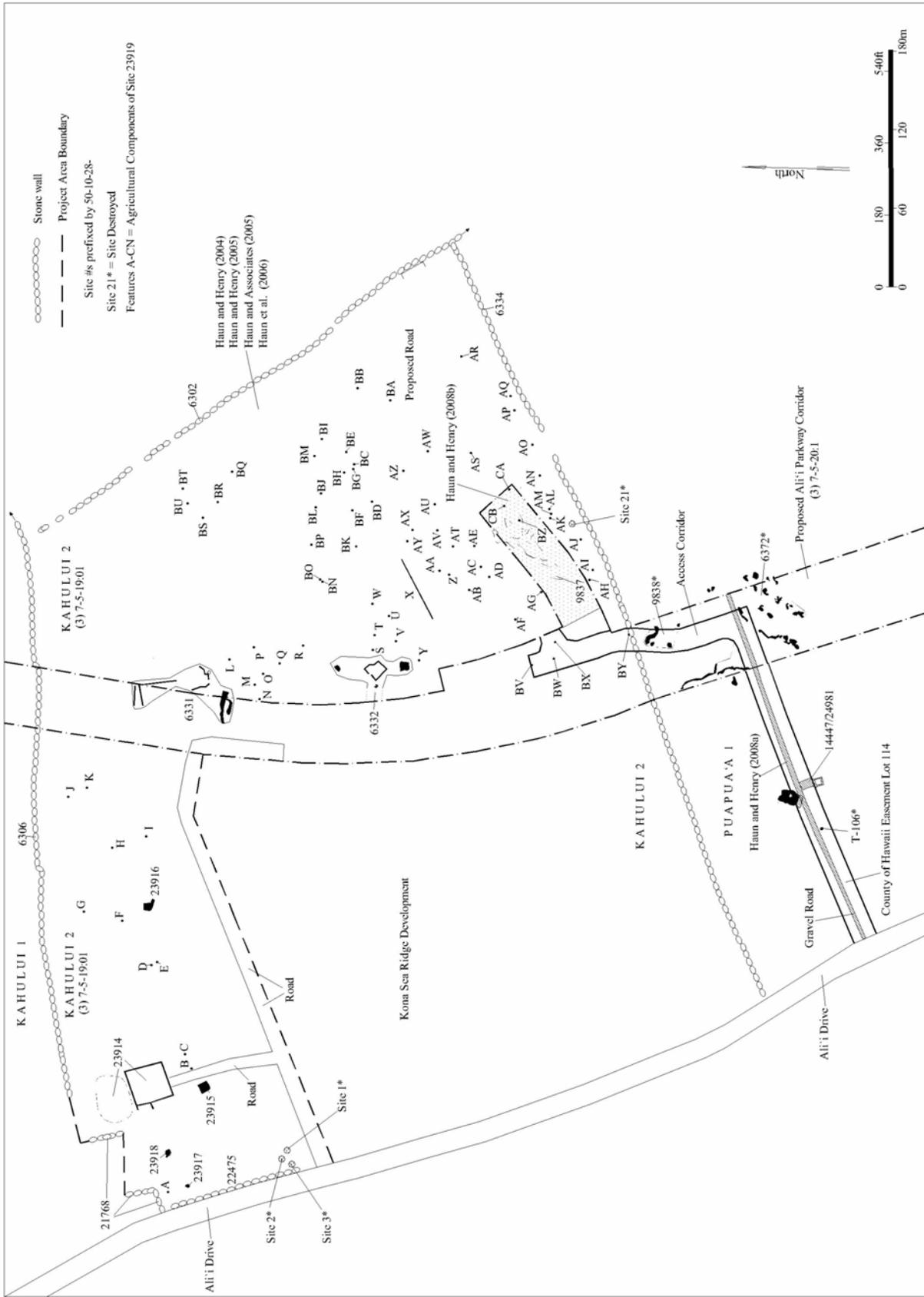


Figure 3. Site Distribution Map

Table 2. Historic Preservation Compliance Status

| Site | Significance Assessment* | Recommended Treatment+ | Status | | | SHPD Approval Letter** | Status Details | Remaining Tasks |
|-----------------|--------------------------|------------------------------|-----------|---------------|-----------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| | | | Preserved | Data Recovery | No Further Work | | | |
| 6302 | A, B, C, D | PR | 1 | | | A, B | Preserved (Haun and Henry 2005) | |
| 6306 | D | NFW | | | 1 | A | No further work (Haun and Henry 2004) | |
| 6331 | D | NFW | | | 1 | A | No further work (Haun and Henry 2004) | |
| 6332 | D, E | Fea A - DR Fea B - PR | 1 | | | A, B, C, D | Site Preserved Haun and Henry 2005) | |
| 6334 | D | NFW | | | 1 | A, E | No further work (Haun and Henry 2004 and 2008a) | |
| 9837 | D | DR | | | | No | Recommended for Data Recovery by Haun and Henry (2008b) | Awaiting Inventory Survey Report review and approval. Need Data Recovery Plan and Implementation of DRP |
| 14447/ 24981 | D | Fea A - PR Fea B, C - NFW | 1 | | 1 | E | Fea A Recommended for Preservation by Haun and Henry (2008a) - No further work for Fea B and C (Haun and Henry 2008a) | Need Preservation Plan for Fea A |
| 21768 | D | NFW | | | 1 | A | No further work (Haun and Henry 2004) | |
| 22475 | D | NFW | | | 1 | A | No further work (Haun and Henry 2004) | |
| 23914 | C, D | Fea A - PR Fea B - DR | 1 | 1 | | A, B, D | Fea A - Preserved (Haun and Henry 2005), Fea B - Mitigated (Haun et al. 2006) | |
| 23915 | D, E | PR | 1 | | | A, C | Preserved (Haun and Associates 2005) | |
| 23916 | D | NFW | | | 1 | A | No further work (Haun and Henry 2004) | |
| 23917 | D | DR | | 1 | | A, D | Mitigated (Haun et al. 2006) | |
| 23918 | D | DR | | 1 | | A, D | Mitigated (Haun et al. 2006) | |
| 23919 | D | DR | | 1 | | A, D, E | Mitigated (Haun et al. 2006) | |
| Total | | | 5 | 4 | 7 | | | |

*Significance Assessment Criteria (A-E)

+Recommended Treatment-PR=Preservation, NFW=No Further Work, DR=Data Recovery

**Approval Letters

- A - Haun and Henry (2004) - Inventory Survey - Log. No. 2005.0100 - Doc. No. 0501MM22 - Dated 01/19/2005
- B - Haun and Henry (2005) - Site Preservation Plan - Log. No. 2008.0882 - Doc. No. 0805TD09 - Dated 05/12/2008
- C - Haun and Associates (2005) - Burial Treatment Plan - Log. No. 2005.1125 - Doc. No. 0505KL07 - Dated 06/03/2005
- D - Haun et al. (2006 - Data Recovery - Log. No. 2006.1583 - Doc. No. 0605JT15 - Dated 05/22/2006
- E - Haun and Henry (2008a) - Inventory Survey - Log. No. 2008.1020 - Doc. No. 0807MD54 - Dated 07/13/2008

REMAINING COMPLIANCE TASKS

The AIS report for the flood channel located in Kahului 2 is under review by DLNR-SHPD (Haun and Henry 2008b). Upon receipt of the AIS approval, a data recovery plan will need to be prepared for Site 9837, a lava tube located within this area. Implementation of the data recovery plan would then occur, followed by completion of a data recovery report and its review and acceptance by DLNR-SHPD.

The preparation of a site preservation plan for DLNR-SHPD approval is required for Feature A of Site 14447/24981. This is a large platform located along the southern access corridor in the Land of Puapua‘a.

Finally, a Monitoring Plan will need to be prepared for the entire project. Following plan approval by DLNR-SHPD and plan implementation, a report detailing the findings of the monitoring work will be required.

References

Haun and Associates

- 2005 Burial Treatment Plan, Sites 6332 (Feature B) and 23915, Land of Kahului 2, North Kona District, Island of Hawaii. Haun & Associates report 369 prepared for Sunstone Realty.

Haun, A., and D. Henry

- 2004 Archaeological Inventory Survey, TMK: 7-5-19:01, Kahului 2, North Kona, Island of Hawaii. Haun & Associates report 175 prepared for Sunstone Realty.
- 2005 Archaeological Site Preservation Plan, Sites 6302, 6332 (Feature A) and 23914 (Feature A), Land of Kahului 2, North Kona District, Island of Hawaii. Haun & Associates report 370 prepared for Sunstone Realty.
- 2008a Archaeological Inventory Survey, Portions of TMK: (3) 7-5-19:01 and 7-5-20:1 and County of Hawaii Easement Lot 114, Lands of Kahului 2 and Puapua‘a 1, North Kona District, Island of Hawaii. Haun & Associates report 537A prepared for Sunstone Realty.
- 2008b Archaeological Inventory Survey, Portions of TMK: (3) 7-5-19:01, Land of Kahului 2, North Kona District, Island of Hawaii. Haun & Associates report 537B prepared for Sunstone Realty.

Haun, A., D. Henry and D. Berrigan

- 2006 Archaeological Data Recovery, Sites 6332, 23914, 23917, 23918, and 23919, Land of Kahului 2, Island of Hawaii. Haun & Associates report 368 prepared for Sunstone Realty.

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 2b
Archaeological Inventory Survey, Haun & Associate, 2004

ARCHAEOLOGICAL INVENTORY SURVEY
TMK: (3) 7-5-19:01
LAND OF KAHULUI 2, NORTH KONA DISTRICT
ISLAND OF HAWAI'I

By:

Alan E. Haun, Ph.D.

and

Dave Henry, B.S.

Prepared for:

Sunstone Realty Partners LLC
1001 Bishop Street, Pauahi 1250
Honolulu, Hawaii 96813

September 2004

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

SUMMARY

At the request of Sunstone Realty Partners LLC, Haun & Associates conducted an archaeological inventory survey of a c. 35.1-acre parcel located in the Land of Kahului 2, North Kona District, Island of Hawai'i (TMK: (3) 7-5-19:01). The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules.

A total of 17 sites with 103 features have been documented within the project area. These consist of 13 sites that were examined during the present project and four previously recorded sites that have subsequently been destroyed. The identified features consist of modified outcrops, mounds, terraces, platforms, walls, enclosures, midden scatters, cairns, *kua'iwi* and a modified knoll. Feature function includes burial, agriculture, permanent habitation, permanent habitation/burial, temporary habitation, undifferentiated habitation, burial, livestock control, and marker.

The identified sites and features conform to the traditional Hawaiian site/feature types expected in the lower Kula Zone of the Kona Field System based on previous archaeological work and historic documentary research. As expected, agricultural features, temporary and permanent habitation sites, and burials, have been identified in the project area. Also, as expected, historic remains consist of ranch walls. The temporary habitation sites consist of a midden scatter and a terrace at two sites. Six permanent habitation sites were also identified. The permanent habitation sites consist of three sites consisting of a single feature, one site with two features, and two complexes of four to eleven features. The features include probable pole and thatch house foundations (terraces and platforms), probable residential yards, activity areas, and a possible men's house. Two platform features at two of the permanent habitation sites are also assigned burial functions based on the presence of human remains.

The permanent habitation sites probably are late prehistoric to early historic in age because these sites all lack historic artifacts. Two of the permanent habitation sites include walled yards indicating the sites probably date to the late 1700s to early 1800s after free-ranging cattle became a problem and before historic artifacts were widely distributed. The other permanent habitation sites lack such enclosed yards and probably date to the late prehistoric period.

The 13 sites that remain in the project area are assessed as significant for their information content. These sites have yielded information important for understanding prehistoric and historic land use in the project area. Site 6302, Kuakini Wall, has been previously determined by DLNR-SHPD to be also significant under significance criteria "a", "b", "c" and "e". Feature B at Site 6332 and Site 23915 are also assessed as significant under Criterion "e" based on the presence of human remains. Feature A of Site 23914 and Feature A of Site 6332 are additionally assessed as significant under Criterion "c" as a good examples of site types.

Sites 6306, 6331, and 6334 were individually recommended for data recovery in conjunction with an intensive survey for the planned Ali'i Highway; however, the sites were not included in the data recovery sample of sites in the approved Mitigation Plan for the planned Ali'i Highway (Corbin and Rosendahl 2002), and therefore, no further archaeological work or preservation is recommended for the sites. Feature A of Site 6332 is recommended for limited data recovery to refine its function and preservation, and Feature B is recommended for preservation. The mapping, written descriptions, photography, and test excavations at Sites 21768, 22745, and 23916 adequately documents the sites and no further work or preservation is recommended. Site 6302, Feature A of Site 23914, and Site 23915 also are recommended for preservation. Three sites (23917, 23918, and 23919) and Feature B of Site 23914 are recommended for data recovery. At the request of DLNR-SHPD, archaeological monitoring of construction excavations is also recommended. Plans for preservation, data recovery, and monitoring will be prepared for DLNR-SHPD review and approval. Preservation of burial features would be detailed in a Burial Treatment Plan prepared for DLNR-SHPD and the Hawaii Island Burial Council (HIBC) review and approval.

CONTENTS

| | | |
|-----------------------------------------------------------------------|---|----|
| Introduction | · | 1 |
| Scope of Work | · | 1 |
| Project Area Description | · | 1 |
| Field Methods | · | 3 |
| Archaeological and Historical Background | · | 6 |
| Historical Documentary Research | · | 6 |
| Previous Archaeological Research | · | 11 |
| Project Expectations | · | 17 |
| Findings | · | 18 |
| Conclusion | · | 60 |
| Discussion | · | 60 |
| Significance Assessments | · | 63 |
| Recommended Treatments | · | 64 |
| References | · | 65 |
| ILLUSTRATIONS | | |
| Figure 1. Portion of USGS Kailua Quadrangle Showing Project Area | · | 2 |
| Figure 2. Bulldozed Area | · | 4 |
| Figure 3. Pushpile | · | 4 |
| Figure 4. Pushpile | · | 5 |
| Figure 5. Project Area Overview | · | 5 |
| Figure 6. Ahupua'a Boundaries and Land Commission Awards | · | 7 |
| Figure 7. Portion of Emerson's Late 1880's Map of Kailua | · | 12 |
| Figure 8. Portion of 1928 USGS Kailua Quadrangle | · | 13 |
| Figure 9. Previous Archaeological Work | · | 14 |
| Figure 10. Site Location Map | · | 19 |
| Figure 11. Site 6302 Wall | · | 22 |
| Figure 12. Site 6306 Wall | · | 22 |
| Figure 13. Plan Map of Sites 6307, 6330 and 6331 | · | 23 |
| Figure 14. Site 6331 Plan Map from Haun et al. (1998:248) | · | 25 |
| Figure 15. Current Condition of Site 6331 and TU-6 North Face Profile | · | 26 |

ILLUSTRATIONS (cont.)

| | |
|-----------------------------------------------------------------------------|----|
| Figure 16. Site 6331, Feature E, TU-1320-20, West Face Profile · | 28 |
| Figure 17. Site 6331, Feature E, TU-1320-20, East Face Profile · | 29 |
| Figure 18. Plan Map of Sites 6308, 6332 and 6371 · | 32 |
| Figure 19. Site 6332 Plan Map modified from Haun et al. (1998:257) · | 33 |
| Figure 20. Site 6332, Feature A, Interior Walls of Enclosure · | 35 |
| Figure 21. Site 6332, Feature A, Faced Entrance · | 35 |
| Figure 22. Site 6332, Feature A, TU-1320-22, West and South Face Profiles · | 36 |
| Figure 23. Site 6332, Feature B, TU-1170-118, North Face Profile · | 37 |
| Figure 24. Site 6332, Feature B, TU-9 South Face Profile · | 39 |
| Figure 25. Site 6332, Feature K, TU-1170-26 Southeast Face Profile · | 40 |
| Figure 26. Site 6334 Wall · | 42 |
| Figure 27. Site 21768, Segment A Wall · | 42 |
| Figure 28. Site 22475 Wall · | 44 |
| Figure 29. Site 23914, Northern Exterior Wall of Enclosure · | 44 |
| Figure 30. Site 23914 Plan Map and Extent of Cultural Deposit · | 45 |
| Figure 31. Site 23914, TU-2 North Face Profile · | 46 |
| Figure 32. Site 23914, Representative Shovel Test Stratigraphy · | 46 |
| Figure 33. Site 23915 Plan Map and TUs 1 and 7 Profiles · | 50 |
| Figure 34. Site 23916 Plan Map and TUs 3 and 8 Profiles · | 51 |
| Figure 35. Site 23917 Plan Map and TU-4 West Face Profile · | 53 |
| Figure 36. Site 23918 Plan Map · | 55 |
| Figure 37. Site 23919, Feature AU Modified Outcrop · | 58 |
| Figure 38. Site 23919, Feature X Kua'iwi · | 58 |
| Figure 39. Distribution of Habitation Sites · | 62 |

TABLES

| | |
|--------------------------------------------------------|----|
| Table 1. Land Commission Award Claims · | 9 |
| Table 2. Summary of Previous Archaeological Work · | 15 |
| Table 3. Summary of Identified Sites · | 20 |
| Table 4. Summary of Site 23914 Shovel Tests · | 48 |
| Table 5. Summary of Site 23919 Agricultural Features · | 56 |
| Table 6. Summary of Permanent Habitation Sites · | 61 |
| Table 7. Site Significance and Recommended Treatment · | 64 |

INTRODUCTION

At the request of Mr. Curt DeWeese of Sunstone Realty Partners LLC, Haun & Associates conducted an archaeological inventory survey of a c. 35.1-acre parcel located in the Land of Kahului 2, North Kona District, Island of Hawai'i (TMK: (3) 7-5-19:01; *Figure 1*). The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules (2003).

The survey fieldwork was conducted between April 30-May 15, 2003, and March 12-19, 2004 under the direction of Dr. Alan Haun. Field personnel consisted of Project Supervisors Dave Henry, B.S, Mark Donham, M.A., and field archaeologists Dick Rudolph, B.A., James Barton, B.A., and Keith Colvin, M.A. Approximately 29 person days were required to complete the fieldwork. Described in this final report are the project scope of work, field methods, background information, survey findings, and significance assessments of the sites with recommended further treatments.

Scope of Work

Based on DLNR-SHPD rules for inventory surveys, the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity--including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;
2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;
3. Conduct detailed recording of all potentially significant sites including scaled plan drawings, written descriptions, and photographs, as appropriate;
4. Conduct limited subsurface testing (manual excavation) at selected sites (a) to determine the presence or absence of potentially significant buried cultural deposits or features, and (b) to obtain suitable samples for radiocarbon age determination analyses;
5. Analyze background research and field data; and
6. Prepare and submit Final Report.

Project Area Description

The project area consists of an irregularly-shaped parcel and a 15.0 m wide access corridor. The project area is bisected by the proposed Ali'i Highway Realignment corridor that extends through the parcel in a roughly north-south direction. This corridor is 1,509 ft (460.0 m) long (north-south) and 150 ft (45.7 m) to 245 ft (74.6 m) wide. The irregularly-shaped parcel is bordered by stone walls on the north and east sides and portions of the west and south sides. The remaining portions of the south side are bordered by the Kona Sea Ridge development and the remaining portions of the west side are bordered by the highway corridor. The access corridor originates on the inland side of Ali'i Drive and extends 260 m to the northeast, terminating at the western boundary of the irregularly-shaped parcel. The parcel ranges in elevation from 10 to 120 ft with the ground surface sloping slightly to the west.

Large portions of the project area have been disturbed by modern ranching and construction activity. Soehren (1976) examined the project area in the mid-1970s and determined that it had been largely

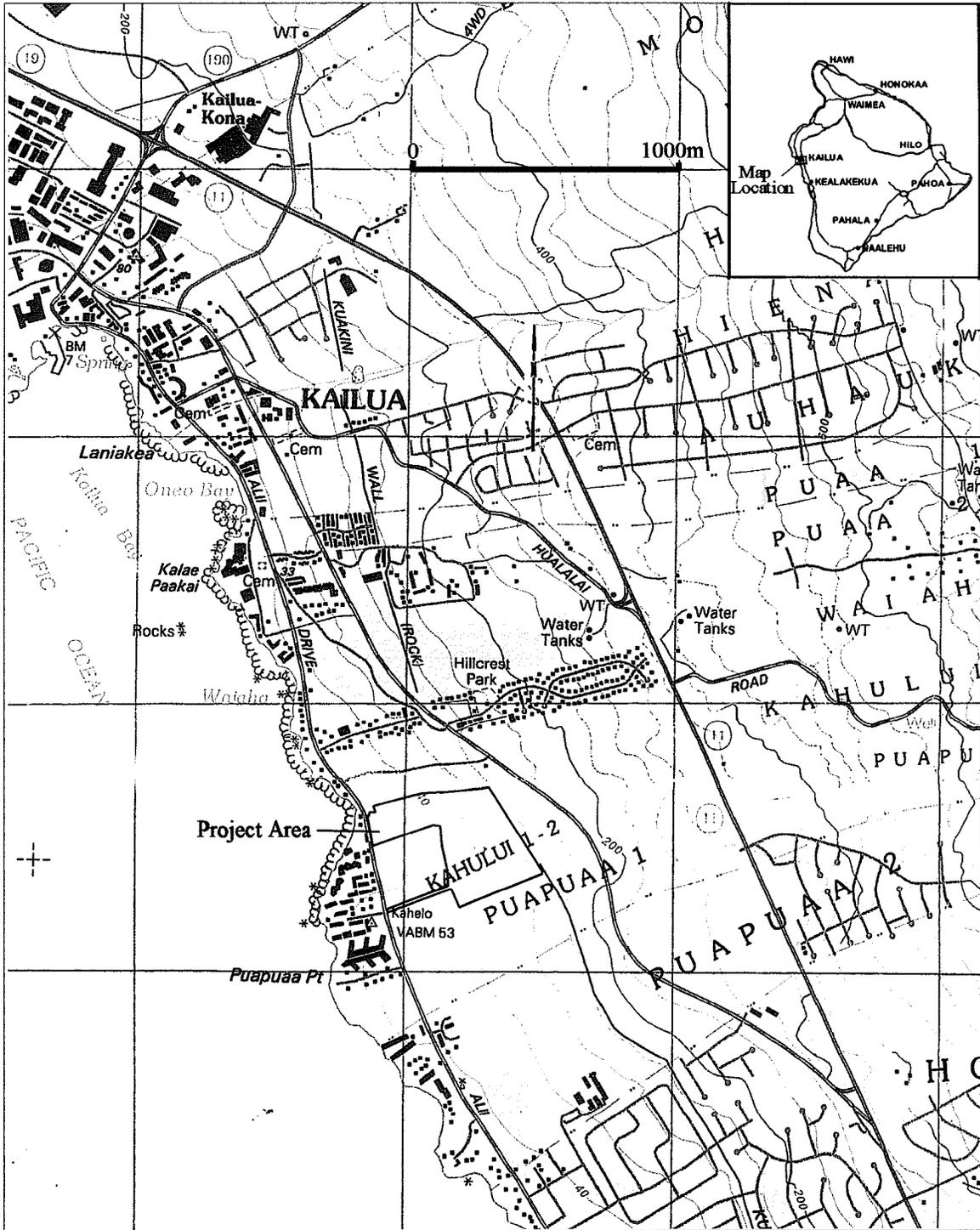


Figure 1. Portion of USGS Kailua and Kealahou Quadrangles showing Project Area

grubbed by a bulldozer. More recent disturbance is evident along the inland and northern sides of the Kona Sea Ridge development (*Figure 2*). A bulldozed road cut extends along the north boundary of the Kona Sea Ridge development and a perpendicular road cut extends to the north. A recently bulldozed road cut also parallels the southern project area boundary, exiting the parcel through the Site 6334 wall. Large pushpiles of boulders and *kiawe* trees are scattered throughout the inland portion of the project area, especially in the northeastern corner, which has been leveled and cleared of surface stones, and probably archaeological remains. Examples of the pushpiles are presented in *Figures 3* and *4* and the extent of the disturbance within the parcel is illustrated in *Figure 10*.

The project area is situated on the southwestern slopes of Hualalai Volcano. The surface mantle in this area is comprised of Holocene and Pleistocene series lava flows that date to greater than 5,000 years in age (Wolfe and Morris 2001). The soil within the parcel consists of Waiaha extremely stony silt loam (6-12% slopes) which is characterized by shallow, well drained silt loam that formed in volcanic ash (Sato et al. 1973: 52). This soil evidences a moderately rapid permeability, a slow runoff and a slight erosional hazard and is classified as suitable for pastureland. Numerous pahoehoe outcrops were observed throughout the parcel.

The mean annual temperature in the area is c. 75 degrees (Armstrong 1983) and rainfall averages 40 to 50 inches per year (Juvik and Juvik 1998). The vegetation within the parcel is dominated by young *koa haole* (*Leucaena glauca* [Lam.] de Wit), with scattered *kiawe* (*Prosopis pallida* [Humb. and Bonpl. Ex Willd] HBK), *lantana* (*Lantana camara* L.), and 'ilima (*Sida fallax* Walp.). Low, dry guinea grass (*Panicum maximum* Jacq.) and fountain grass (*Pennisetum setaceum* [Forsk.] Chiov.) are present throughout the parcel. An example of the project area vegetation is presented in *Figure 5*.

Field Methods

The project area was subjected to a 100% surface examination with surveyors spaced at 10 m intervals. Transects were oriented in a roughly northwest-southeast direction, or parallel to Ali'i Drive. Ground surface visibility was good to excellent due to the relatively dry vegetation within the parcel. The identified sites were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map with the aid of Garmin Global Positioning System (GPS) III+. The accuracy of the GPS device for a single point is +/- 15 m. This accuracy is increased to less than c. 3-5 meters by taking multiple points including property corners and overlying the plotted points on a scaled map using AutoCAD software.

Agricultural features identified within the project area were subjected to limited recording, consisting of documenting length, width, height, and shape. Photographs were taken of representative feature types. The non-agricultural sites identified were subjected to detailed recording consisting of the preparation of scaled plan maps, the completion of standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the site plan map.

Subsurface testing was undertaken at seven features during the study. This testing consisted of the excavation of nine test units and 27 shovel tests. The test units were situated at four platforms, an enclosure, a terrace and a modified knoll. The shovel tests were excavated at a midden scatter. The test units were dug in arbitrary levels within stratigraphic layers and were terminated on bedrock or on the identification of human remains. The shovel tests were excavated in stratigraphic layers and were dug to bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. The soil removed during the excavations was screened through ¼" mesh. Portable remains collected were placed in paper bags labeled with the appropriate provenience information. Recovered charcoal samples were carefully removed from either *in situ* locations or collected during the screening process. These samples were deposited in aluminum foil pouches and placed in properly labeled paper bags.

Following the excavation of the test units, a section drawing depicting the stratigraphy was prepared, post-excavation photographs were taken, and the units were backfilled. Recovered cultural remains were transported to Haun & Associates laboratory for analysis. Subsurface testing within two platforms (Site 6332, Feature B, and Site 23915) resulted in the identification of human remains. These excavations



Figure 2. Bulldozed Area, view to northeast



Figure 3. Pushpile, view to west



Figure 4. Pushpile, view to east



Figure 5 Project Area Overview, view to northeast

were terminated on identification of these remains. Profile drawings depicting the location of the remains were prepared then the structures were carefully reconstructed.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

The project area is located within the *ahupua'a* of Kahului 2 (*Figure 6*), in the district of North Kona. Kahului is literally translated as “the winning” (Pukui et al. 1976). There are few specific references to Kahului in traditional Hawaiian legendary and historical accounts. Kepa Maly translated portions of *Ka 'ao Ho'oniua Pu'uwai No Ka-Miki* (The Heart Stirring Story of *Ka-Miki*) a legendary account of two supernatural brothers, *Ka-Miki* and *Maka-i'ole*, who traveled around the island of Hawai'i (Maly 1996). The account was published in serial form between 1914 and 1917 in a Hawaiian newspaper, *Ka Hoku o Hawai'i*. According to Maly, the account was recorded by Hawaiian historians John Wise and J.W.I. Kihe. Based on Maly's translation and study of the account:

The story is set in about the 13th century, in the time of *Pili-a-Ka'aiea* (Pili), sovereign chief of all Kona, the narrative identifies the lands between Lanihau (Kailua) and Puapua'a as an integral component of Pili's royal domain. Pili was a great advocate of contests in debating, fighting, and contests of physical strength, and Hinakahua at Puapua'a was the site of the chief's longhouses and contest field, which supported these activities. While Pili was at Hinakahua he was supported by the agricultural and natural resources of the surrounding *ahupua'a*, including Kahului, Wai'aha, Pua'a, Auhaueka'e, Hinaloli (Hienaloli), Honua'ula, Keopu, Moeauoa, and Lanihau. Pili's royal compound was at Niu-malu, his canoe fleets were harbored at Oneo, and his wealth-houses (where tribute was kept until it was needed) were situated at Ahu'ena (Lanihau) (1996:A-2).

Early events documented in the Kona regional traditional history are associated with 'Umi-a-Liloa. Hawai'i was first unified under the rule of 'Umi-a-Liloa's father and Kona was selected as a dwelling place of chiefs (Kamakau 1961). The area lies within the realm of the traditional Hawaiian political authority that was centered in the Kailua-Keauhou area from at least the 15th century to the reign of Kamehameha I. With the arrival of Kamehameha I and his court in Kona, the area between Kamakahonu (on the north side of the present-day Kailua pier) and Puapua'a became an extended royal center, a hub of activity that focused on the support of the king and his large court. According to Kamakau:

...at Kamakahonu could be seen at night the sparkle of lights reflected in the sea like diamonds, from the homes of the chiefs from Kahelo [in Puapua'aiki] to Lanihau. The number of chiefs and lesser chiefs reached into the thousands (1961:221-222).

The earliest detailed historic account of the area south of Kailua Town including Kahului comes from English missionary William Ellis.

Leaving Kairua [Kailua], we passed through the villages thickly scattered along the shore to the southward. The country around looked unusually green and cheerful, owing to the frequent rains, which for some months have fallen on this side of the island. Even the barren lava, over which we traveled, seemed to veil its sterility beneath frequent tufts of tan waving grass, or spreading shrubs and flowers.

The sides of the hills, laid out for a considerable extent in gardens and fields,

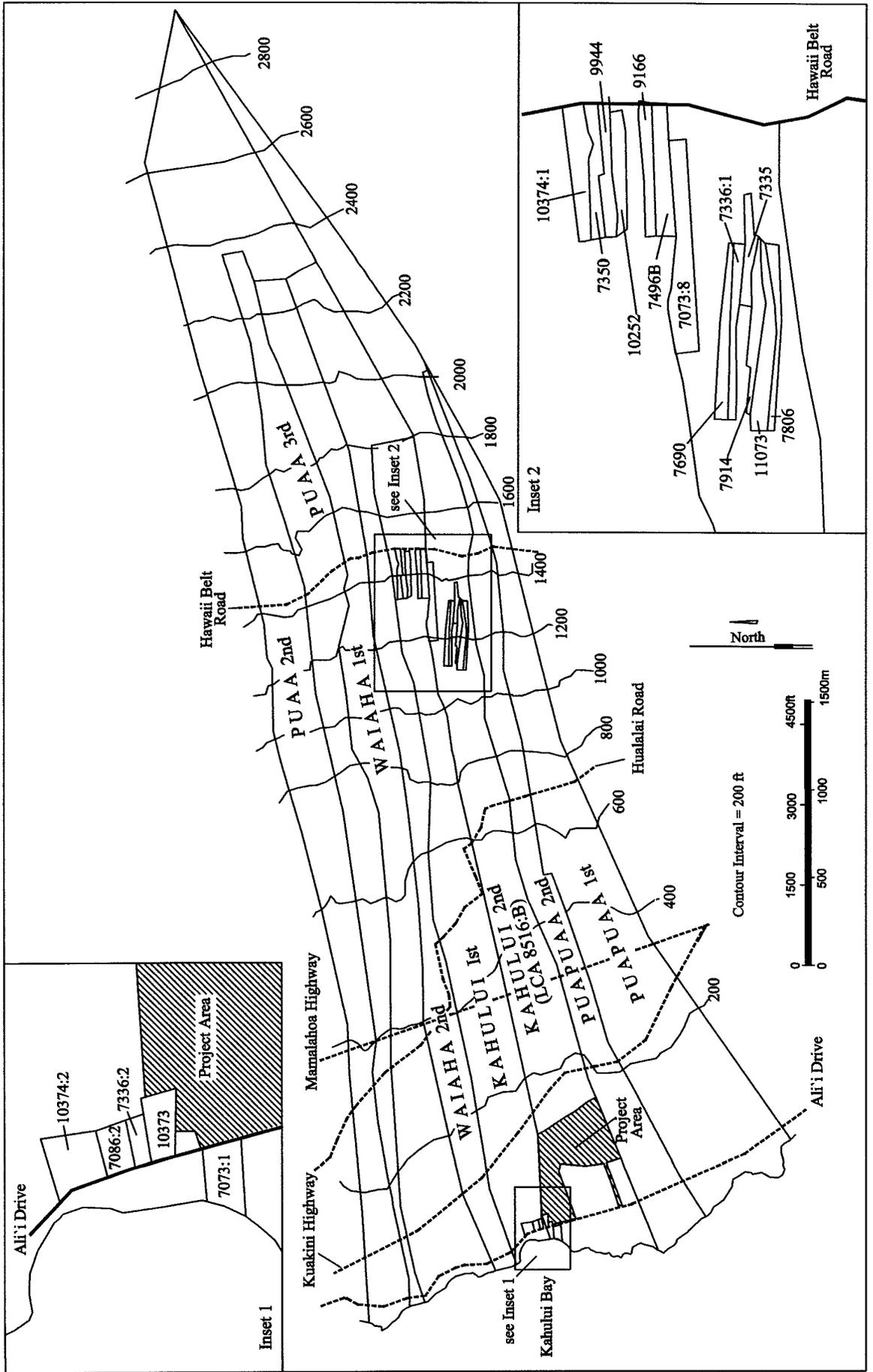


Figure 6. Ahupua'a Boundaries and Land Commission Awards

and generally cultivated with potatoes, and other vegetables, were beautiful. The number of heiaus, and depositories of the dead, which we passed, convinced us that this part of the island must formerly have been populous. The latter were built with fragments of lava, laid up evenly on the outside, generally about eight feet long, from four to six broad, and about four feet high. Some appeared very ancient, others had evidently been standing but a few years.

At Ruapua [Puapua'a] we examined an interesting heiau, called Kauaikaharoa, built of immense blocks of lava and found its dimensions to be 150 feet by 70. At the north end was a smaller enclosure, sixty feet long and ten wide, partitioned off by a high wall, with but one narrow entrance. The places where the idols formerly stood were apparent, though the idols had been removed. (Ellis 1963:72-3)

During the Mahele, Grace Kama'iku'i Rooke was awarded the entire *ahupua'a* of Kahului 2 (Kelly 1983). She was the daughter of John Young and Mary Kuamo'o. Kahului 1 became government land. The Waihona 'Aina Mahele Database (Waihona 'Aina Corp. 2000); which is a compilation of data from the Indices of Awards (Indices 1929), Native Register (NR n.d.), Native Testimony (NT n.d.), Foreign Register (FR n.d.) and Foreign Testimony (FT n.d.); lists nineteen Land Commission Award (LCA) claims within Kahului, of which 15 were awarded. *Table 1* summarizes the testimony given in support of the claims and *Figure 6* shows the locations of awarded parcels.

Eight claims were in Kahului 1, eight claims were in Kahului 2, and the rest were listed simply as Kahului. Twenty-five parcels were awarded to seventeen claimants. The awarded *kuleana* parcels range from 0.25 to 13.31 acres in area with an average of 2.24 acres; however, if the small house lot parcels and the two largest parcels are omitted, then the average awarded parcel was 1.53 acres in area. Most claims included several parcels at different elevations.

The testimonies refer to at least eleven *ili* land divisions. Kahului 1 *ili* consists of Halewaawaa, Kukuipulua, and Papalua. Kahului 2 *ili* includes Inaimoa, Kamuku, Kahuki, Kikiaiole, Lapalua, Ohia, and Papiha. Puki is mentioned in both *ahupua'a*. The awarded parcels are concentrated in two areas, at the coast and inland below the upper road between 1,100 ft and 1,500 ft elevation. House lots are described in the testimonies for coastal parcels. House lots and cultivation are described for the inland parcels. Nine claims included house lots with at least 15 houses. Enclosing walls are described for five house lots. A canoe dragging path, a cattle fence, and three cattle corrals are described in the parcel boundary descriptions. None of the awarded parcels are situated within the project area.

The claim testimonies include no information on specific crops. Most of the claims include cultivated plots in more than one of the elevation zone subdivisions of the Kona Field System. The project area is situated within the *kula* zone of the system, SIHP Site 6601 (Newman 1970, Kelly 1983, Schilt 1984, Cordy 1995). This site extends north to Kau Ahupua'a, south to Honaunau, and from the coastline to the forested slopes of Hualalai. The area was intensively cultivated and served as the resource base for the large number of chiefs and retainers that occupied the Kailua-Keauhou coast. The characteristics and general locations of the elevation zones of the system described by Newman (1970) have been confirmed and elaborated on by subsequent ethnohistorical investigations (Kelly 1983). The system is subdivided into four elevation zones.

The *kula* zone extends from sea level to 500 ft elevation. Cordy (1995) has suggested that the upper limit of this zone may be higher between 600-700 ft elevation. This lower elevation zone traditionally was used for habitation and cultivation of sweet potatoes, paper mulberry (*wauke*), and gourds. Agricultural features, including clearing mounds, planting mounds, planting depressions, modified outcrops, and planting terraces, are common in this zone (Hammatt and Clark 1980; Hammatt and Folk 1980; Schilt 1984). Habitations are scattered throughout the *kula*, but they are concentrated along the shoreline portion of the zone (Cordy 1995). The shoreline portion, extending approximately 200 m inland, was the focus of permanent habitation and activities such as burial, canoe storage, ritual, and marine exploitation. Royal centers and chiefly residences were also situated near the shoreline. These complexes included residences for high

Table 1. Land Commission Award Claims (cont.)

| LCA | Claimant | Apana claimed | Apana awarded | Other claims | Section No. | Ahupua'a | ili | Land Use | Boundary Mauka | Boundary Kau | Boundary Makai | Boundary Kohala | Date Rec'd | Givee | Acreage | Royal Patent | Sources | Comment |
|-------|----------|---------------|---------------|--------------|-------------|-----------|--------------|---------------------------------|-----------------|-----------------|--------------------------------------------|-----------------|---------------|----------------|----------|--------------|------------------------|--------------------------------------------|
| 7350 | Kialoa | 3 | 1 | 0 | | Kahului 1 | N/D | 15 patches | road | Naleona | N/D | Niuhia | 1844 | konohiki | 1.65 | 7059 | NR 262v8, NT 671v8 | near Great Wall |
| 7499B | Keaweehu | 3 | 1 | 0 | | Kahului 1 | Papalua | cultivated land | konohiki | lilioa | cattle coral | Ohiki ili | 1848 | Ipunui | 1.90 | 6277A | NR 444v8, NT 515v4 | |
| | | | | | 1 | | | partially cultivated land | konohiki street | Kahului 2 | | Kukuiipulua ili | | | | | | |
| | | | | | 2 | | | cultivated land | konohiki | Kahului 2 | | Kukuiipulua ili | | | | | | |
| | | | | | 3 | | | cultivated land | konohiki | Kahului 2 | | Kukuiipulua ili | | | | | | |
| 7690 | Kulou | 6 | 1 | 0 | none | Kahului 2 | Kahuki | cultivated land | N/D | N/D | N/D | N/D | 1843 | wife's parents | 1.75 | none | NR 445v8, 516v4 | |
| 7903 | Kapae | 1 | 0 | 0 | none | Kahului 2 | Lapalua | cultivated land | N/D | N/D | N/D | N/D | N/D | Puna | 0.00 | none | NR 452v8 | |
| 7914 | Kekipi | 1 | 1 | 0 | none | Kahului 2 | N/D | partially cultivated | Waipauko ili | Puki ili | Road | Kikiaiolo ili | | Kaanaana | 1.40 | 7064 | NR 453v8, 546v4 | mentions trail or path for dragging canoes |
| 7915 | Kekipi | 1 | 0 | 0 | none | Kahului | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | 0.00 | none | NR 447v8 | |
| 8222 | Ipunui | 1 | 0 | 0 | none | Kahului 1 | N/D | house lot, 3 houses (enclosed) | N/D | N/D | N/D | N/D | 1845 | Naheana | 0.00 | none | NR460v8, 522v4 | |
| 8516B | Kamaikai | 1 | 1 | 3 | none | Kahului | N/A | 2 kihapai | N/D | N/D | N/D | N/D | N/D | N/D | ahupua'a | 1669 | NR 709v3, NT 170v10 | awarded entire ahupua'a |
| 9944 | Nalima | 2 | 1 | 0 | none | Kahului 1 | Kukuiipulua | 2 kihapai | N/D | N/D | N/D | N/D | Kuakini times | Opunui | N/D | 6276 | NR 472v8, NT 517v4 | 1 parcel next to road, one in apana zone |
| 10252 | Maliu | 6 | 1 | 0 | | Kahului 1 | | | | | | | Kam II times | Kahenu | 1.40 | 6742 | NR 475v8, 538v4 | |
| | | | | | 1 | | Kamuku | cultivated land | Kaliuapahu | N/D | Ohuahale trail or path for dragging canoes | Niukini | | | | | | |
| | | | | | 2 | | Kamuku | N/D | Lale | lilioa ili | | Niukini ili | | | | | | |
| | | | | | 3 | | Kamuku | cultivated kihapai | Umwai well | Lapulua ili | | Papalanui | | | | | | |
| | | | | | 4 | | Halewaawaa | cultivated land | highway | Naalapa ili | | Waiaha | | | | | | |
| | | | | | 5 | | Kamuku 2 | cultivated kihapai | Alapai | Kukuiipulua ili | | N/D | | | | | | |
| | | | | | 6 | | Kamuku | house lot, 3 cultivated kihapai | street | lilioa ili | | Ohiki ili | | | | | | |
| 10373 | Nimha | 1 | 1 | 0 | none | Kahului 2 | N/D | house lot | idle land | idle land | sand and road | Kuapuu | Kam I times | wife's parents | 0.77 | 8060 | NR 479v8, 533v4 | |
| 10374 | Natawala | 4 | 2 | 0 | | Kahului 1 | Halewaawaa | | | | | | | | 2.97 | none | NR 479v8, 528v4 | awarded 2 apana |
| | | | | | 1 | | | cultivated kihapai | Hapeipapa | Naalopa ili | land fence | Kauaioa ili | Kam II times | N/D | | | | |
| | | | | | 2 | | | partially cultivated, Kaluulu | road | Naalopa ili | Ahakahewa | Kanaloa | Kam II times | N/D | | | | |
| | | | | | 3 | | | cultivated land | Kaalapahee | Naalapa | highway | Kanaloa ili | Kam II times | N/D | | | | |
| | | | | | 4 | | | house lot, 2 houses (enclosed) | idle land | Kalawa | road | idle land | 1848 | Maliu | | | | |
| 11073 | Aikane | 2 | 1 | 1 | | Kahului 2 | Ohia, Papiha | | | | | | 1839 | lino | 1.80 | 7058 | NR 610v8, NT 651v8 | |
| | | | | | none | | | N/D | konohiki | konohiki | konohiki | konohiki | | | | | | |
| | | | | | none | | | kula land | konohiki | konohiki | konohiki | konohiki | | | | | | |

status individuals and their supporters and attendants, *heiau*, places of refuge, *holua* slides, and other structures.

The *kalu'ulu* zone extends from 500 to 1000 ft elevation. The zone was used for cultivating sweet potatoes, paper mulberry, and especially breadfruit. Archaeologically, this zone is not distinguishable from the adjacent *'apa'a* zone (Cordy 1995). The *'apa'a* zone is situated between 1000 and 2500 ft elevation. This zone traditionally was used for dryland cultivation of taro, sugar cane, sweet potato, and ti. Permanent habitations were present in the *'apa'a* zone, but were infrequent (Cordy 1995, Burtchard 1995). Dwellings were observed by early historic chroniclers, but most were probably for temporary use in conjunction with agriculture, bird hunting, and collecting of plant resources. Burials and ritual sites are rare in the upper elevation zones (Kawachi 1989).

Kua'iwi are prominent agricultural features of the *kalu'ulu* and *'apa'a*, zones (Cordy 1995; Newman 1970). These are broad, linear piles of rocks built from stones cleared from the adjacent slopes that also served as field boundaries. *Kua'iwi* are oriented inland-seaward often interconnected with perpendicular, soil-retaining walls and terraces forming rectangular grid pattern of fields. *Kua'iwi* also served to control rainfall runoff (Kirch 1985). These formal fields contrast with more informal garden areas characterized by scattered agricultural features in very rocky areas, such as young lava flows, and much of the *kula* zone.

The *'ama'u* zone extends from 2500 ft to 4000 ft elevation. The zone was associated with banana and plantain cultivation. The archaeological traits of the zone have not been well defined, but temporary habitations were probably present associated with agriculture and exploitation of forest resources (Allen 1984).

The government sold portions of Kahului 1 to Kapae (97 ac) and Kipola (78 ac) between 1852 and 1853 (Kelly 1983). Another 100 acres were sold between 1855 and 1911. Emerson's late 1880s map of Kailua (Figure 7) shows Kahului 1 as being divided into four grants: 1868 to Kaupena, 983 to Kipola, and 976 and 2961 to Kapae, who also received two LCAs in Kahului 2. The Makuakane's house and Kahului Church are situated on the inland side of the coastal road. The lower forest edge is depicted at approximately 600 ft elevation.

The Kona Sugar Company was established in 1898 and it was incorporated the following year (Conde and Best 1973). Construction of a railroad began in 1901 by the West Hawai'i Railway Company. The railroad was constructed to transport sugar cane to the Kailua Sugar Company Mill situated in Waiaha (Figure 8). The railroad was no longer in operation by the end of 1926. Information related by Joseph Gomes (Maly in O'Hare and Wolforth 1998) indicates that the Gomes family purchased the Kona Sugar Company lands in Kahului 1 and 2 in 1927. The family subsequently used the land for grazing.

Previous Archaeological Research

At least 15 archaeological survey and excavation projects have been conducted in Kahului. Figure 9 shows the locations of the projects and Table 2 summarizes the projects. The project areas for the studies by Barrera (1991), Rosendahl (1974), and Soehren (1979a, 1979b) are not shown on the figure because the reports either lack adequate maps or the tax map information provided is too old to locate the parcels on current tax maps. All four studies were conducted near the coast, seaward of the Kuakini Wall.

Not included in the table or figure are the surveys by Stokes (Stokes and Dye 1991) and Reinecke (n.d.). Stokes reported *heiau* in Waia'ha to the north and Puapua'a to the south, but none in Kahului. Reinecke surveyed the coastal portion of Kahului in 1929-30. He described 10 sites along the coast of Kahului 1 and 2. The sites included two fishing *heiau*, three *papamu*, eight house platforms, five walled house sites or pens, a cave, a graveyard, two house sites of unstated type, and a large area of rough platforms. The fishing *heiau* consist of one called Haleokolia and Kapuu o Ka Maile, a named that also applied to a cave.



Figure 8. Portion of 1928 USGS Quadrangle

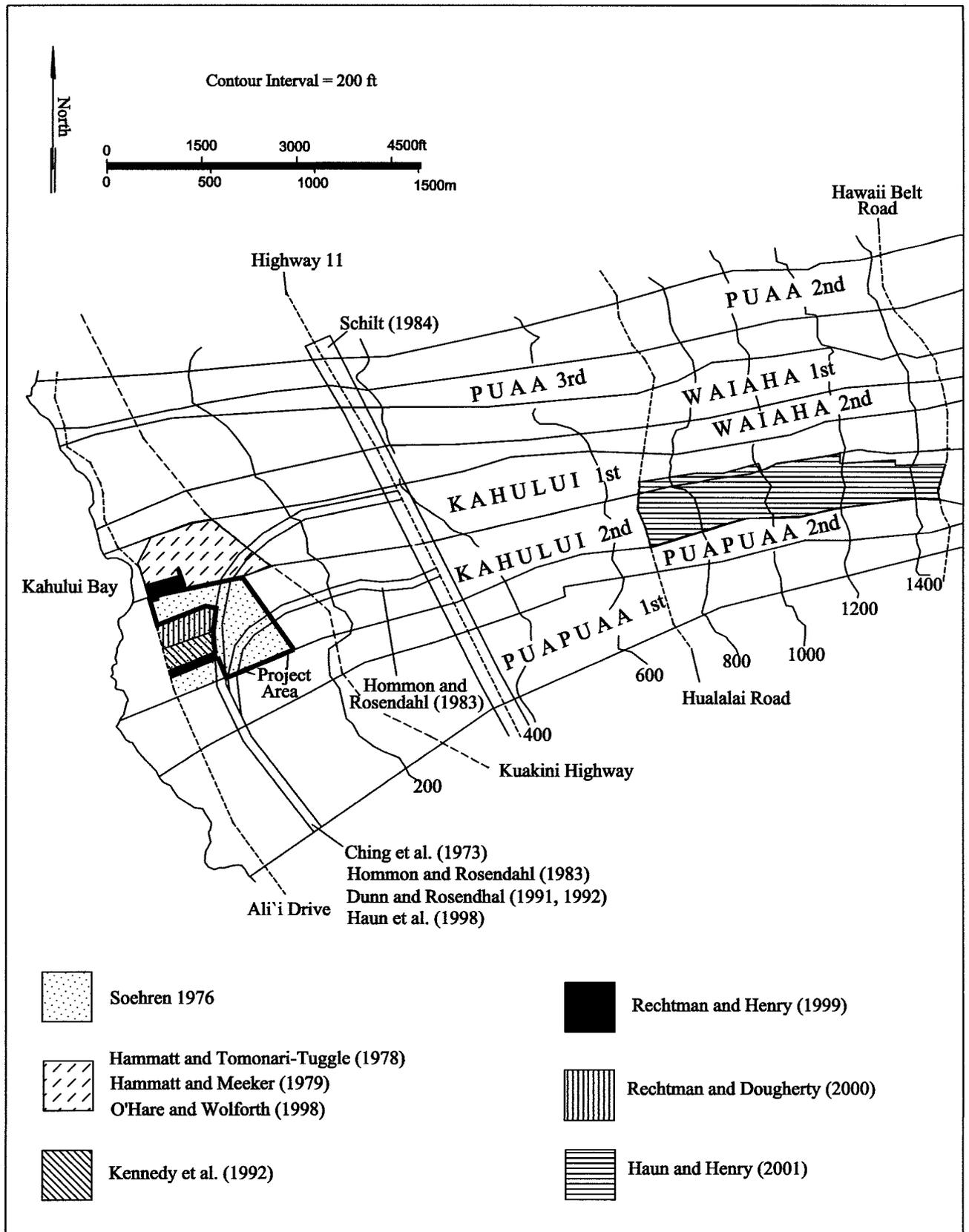


Figure 9. Previous Archaeological Work

Table 2. Summary of Previous Archaeological Work

| Author | Land | Study Type* | Elevation (feet) | Area (ac) | Total sites | Sites/acre | Total feaas | Feas/acre | Hab Feas | Hab Feas/acre | Perm Hab Feas | Temp. Hab Feas | Ag Feas | Ag Feas/acre | Burial Feas | Ritual Feas | Misc/Indet Feas | Historic Feas |
|-------------------------------------------------------------------------------------------------------|---------------|-------------|------------------|--------------|-------------|-------------|-------------|-------------|-----------|---------------|---------------|----------------|------------|--------------|-------------|-------------|-----------------|---------------|
| Rosendahl (1974) | Kahului 2 | RN | 0-5 | 4.4 | 1 | 0.23 | 4 | 0.91 | | | | | | | | | 3 | 1 |
| Hammatt and Tomonari-Tuggle (1978), Hammatt and Meeker (1979), O'Hare and Wolforth (1998) | Kahului 1 | IN/DR | 15-165 | 32.0 | 18 | 0.56 | 30 | 0.94 | 6 | 0.19 | 6 | | | | 5 | 11 | | 8 |
| Barrera (1991) | Kahului 1 | IN | 15-25 | 1.9 | 1 | 0.53 | 5 | 2.63 | 2 | 1.05 | | | | | | | | 3 |
| Rechtman and Dougherty (2000) | Kahului 2 | IN | 20-80 | 12.0 | 5 | 0.42 | 7 | 0.58 | 3 | 0.25 | 2 | 1 | | | | | 3 | 1 |
| Kennedy et al. (1992) | Kahului 2 | IN | 20-80 | 5.5 | 3 | 0.55 | 4 | 0.73 | | | | | | | 2 | | | 2 |
| Soehren (1976) | Kahukui 2 | RN | 20-100 | 30.0 | 22 | 0.73 | 22 | 0.73 | 11 | 0.37 | | | | | | | 9 | 2 |
| Rechtman and Henry (1999) | Kahului 1 & 2 | IN | 20-30 | 2.0 | 4 | 2.00 | 4 | 2.00 | | | | | | | | | | 4 |
| Soehren (1979a) | Kahukui 2 | RN | 20-30 | 1.0 | 0 | | | | | | | | | | | | | |
| Sorehen (1979b) | Kahului 2 | RN | 20-30 | 1.0 | 0 | | | | | | | | | | | | | |
| Ching et al. (1973), Hommon and Rosendahl (1983), Dunn and Rosendahl (1991, 1992), Haun et al. (1998) | Kahului 1 & 2 | IN | 82-376 | 23.8 | 34 | 1.43 | 366 | 15.38 | 45 | 1.89 | 33 | 12 | 292 | 12.27 | 3 | | 19 | 7 |
| Schilt (1984) | Kahului 1 & 2 | IN | 350-400 | 14.4 | 10 | 0.69 | 32 | 2.22 | | | | | 25 | 1.74 | | | | 7 |
| Haun and Henry (2001) | Kahului 1 & 2 | IN | 680-148 | 87.0 | 27 | 0.31 | 349 | 4.01 | 6 | 0.07 | 4 | 2 | 325 | 3.74 | | | 1 | 17 |
| Total/Average | | | | 215.0 | 125 | 0.74 | 823 | 3.01 | 73 | 0.64 | 45 | 15 | 642 | 5.91 | 10 | 11 | 35 | 52 |

* RN=Reconnaissance Survey, IN=Inventory Survey, DR=Data Recovery

Portions of the project area have been previously surveyed by Soehren (1976), Rechtman and Dougherty (2000), and several studies conducted for the proposed Kahalui-Keauhou Parkway (Ching et al. 1973, Hommon and Rosendahl 1983, Dunn and Rosendahl 1991, 1992; Haun et al. 1998). These studies identified twenty-two sites in the project area that are discussed in detail in the "Findings" section of this report.

The projects in *Table 2* cover 215 acres identifying 125 sites with 823 features. To aid in reconstructing settlement patterns, features were quantified by probable age and function. Traditional Hawaiian features were categorized as habitation, agricultural, burial (including possible burials), and ritual. Features not assignable to these categories were categorized as miscellaneous/indeterminate. Traditional sites in this category include trails, *papamu*, bait cups, and *ahu*. Habitation sites are further subdivided into temporary and permanent for studies making this distinction. Density values are given for sites, features, and habitation and agricultural features. Overall, the studies have identified 73 habitation features including 45 permanent habitation features and 15 temporary habitations; 642 agricultural features, 10 burials, and 11 ritual features. Historic features were not segregated by function. The majority of the historic features are ranch walls.

Feature density values for the projects with survey areas larger than 10 acres range from 0.58 to 15.38 features per acre. Habitation feature density for areas larger than 10 acres ranges from 0 to 1.89 features per acre with an average of 0.55. Agricultural feature density ranges from 0 to 12.27 features per acre with an average of 5.91; however, these values are skewed by differences in the extent to which minor agricultural features were identified or recorded in the previous studies.

Nineteen radiocarbon dates are reported in the studies by Schilt (1984), Haun et al. (1998), O'Hare and Wolforth (1998) and Haun and Henry (2001). Many of the age determination results produced multiple age ranges or long single age ranges between the 1600s and 1950. When all potential age ranges are examined only three results span the period between AD 1200 and 1300, eleven include the 1400s, twelve span the 1500s, nineteen span the 1600s, and fifteen each include the 1700s to mid-1900s. The results indicate initial use of the area in the period between the late 1200s to 1300s, followed by a gradual increase during the 15th and 16th centuries. The most intensive use dates from the 1600s to early historic period.

Schilt (1984) used information gathered from the Kuakini Highway Realignment Corridor survey research to propose a five-phase chronology of settlement and field system development in the *kula* zone as follows:

Phase I -Pioneer Settlement c. A.D. 1050-1400

Very limited, sporadic use of lowland slopes and cave shelters just above the Kailua Bay area. Probably contemporaneous with pioneer settlements along the coast. Development of one or more of the *mauka* sub-zones of the Kona Field System may have commenced in the later portion of this phase.

Phase II - Garden Developments c. A.D. 1400-1600/1650

Initial use of the *kula* sub-zone for small gardens and of the caves for temporary shelter. Erosional deposition, resulting from development of the upland sub-zones, began to bury an old ground surface and gradually created deepening soil deposits on *kula* land.

**Phase III- Refuge, Habitation, and Intensive/Extensive Gardening
c. AD1600/1650-1779**

Extensive development of at least the *mauka* portion of the *kula* subzone, for sweet potatoes, *wauke*, and probably also gourds. This development was accompanied rarely by permanent habitation and more often by temporary and seasonal habitations among the *kula* gardens. Animal enclosures, probably for pigs, may date to this phase. The upland zones were under complete development by this time. Suitable caves were modified for refuge during times of warfare or so-

cial conflict. Caves located in the midst of garden features were intensively used for temporary shelter and work spaces.

Phase IV - Historic Habitation and Gardening c. A.D. 1779-1850

The cultivation of *kula* lands gradually decreased in extent and intensity, nevertheless remaining important to a decreasing population. Permanent habitations on the *kula* during this phase occurred primarily on the *makai* side of the Great Wall of Kuakini. In 1848, Hawaiians were claiming an undetermined portion of *kula* lands, but none of these *kula* claims were honored by the Board of Land Commissioners (Kelly 1983). Some *kula* lands were being converted to grazing beginning in the 1840s.

Phase V - Historic Ranching c. A.D. 1850-Modern Times

Land-use shifted completely to grazing, following the awards of *kula* lands to chiefs, missionaries, and others (Kelly 1983). Isolated permanent habitations on upland slopes of the *kula* were oriented to ranching. Today ranching is not as extensive as it once was. Kailua in recent years has been rapidly developing as a tourist and urban hub for leeward Hawaii Island (Schilt 1984:284).

While subsequent work has generally confirmed Schilt's chronology, the data from Haun et al. (1998) and Dye and Komori (1992) indicate a peak in dating results in the 1400-1500s and a decline after the mid-1600s. This may indicate that the increase in habitation and agricultural activity in Schilt's Phase III may have begun as much as two centuries earlier.

PROJECT EXPECTATIONS

The project area is situated in the lower portion of the *kula* zone of the Kona Field System. Prehistoric use of the project area is potentially represented by scattered temporary habitation sites, trails, and agricultural features, such as terraces, modified outcrops, and mounds, dating to as early as the 1200s.

Intensive agricultural use is expected from the 1400s until the early 1800s, with a possible slight decline after the mid-1600s. A variety of agricultural features including those mentioned above and kua'iwi, garden enclosures, and animal pens may be present. Temporary habitations (caves, overhangs, simple walled shelters) and permanent habitation sites, usually evidenced by complexes of enclosures, terraces, or platforms, are expected, scattered among the agricultural features. Burial and religious sites are potentially present, but are relatively infrequent. Other potential site types include trails and refuge caves.

Sites dating to the mid- to late 1800s would include the agricultural and habitation sites mentioned above, although in reduced numbers owing to population decrease. Differences in agricultural sites from the previous periods may be evident as a result of a shift to a market-based economy, which presumably would favor cultivated fields as opposed to small garden plots. Walls designed to control cattle and trails or roads for horse and wagon traffic also may be present.

By the beginning of the 1900s, traditional agricultural and habitation sites should be rare. Potential sites include transportation infrastructure such as vehicle and railroads. Ranching activity, which continued until at least the mid-1900s would be evidenced by walls, corrals, and clearing piles of stone associated with pasture improvement.

FINDINGS

A total of 17 sites with 103 features have been documented within the project area. These consist of 13 sites that were examined during the present project and four previously recorded sites that have subsequently been destroyed. The destroyed sites are Sites 1, 2, 3, and 21 that were identified by Soehren (1976) but not assigned State site numbers. Portions of Site 6331 have also been destroyed.

The 17 sites in the project area consist of 15 that been identified during previous archaeological investigations within and adjacent to the project area and two that were newly identified. The 15 previously identified sites consist of five that were first documented by Ching et al. (1973; Sites 6302, 6306, 6331, 6332 and 6334), eight identified by Soehren (1976; Sites 23914-23917 and Sites 1, 2, 3 and 21), one identified by Rechtman and Henry (1999; Site 21768), and one identified by Rechtman and Dougherty (2000; Site 22475). The four Soehren (1976) sites with SIHP numbers were assigned temporary field designations during the 1976 survey and were assigned State Site numbers during the present project. The two remaining sites (Sites 23918 and 23919) were identified during the present project.

The 103 features consists of 50 modified outcrops, 20 mounds, eight terraces, eight platforms, five walls, five midden scatters, three enclosures, two cairns, one *kua'iwi*, and one modified knoll. Functionally the features consist of agriculture (n=74), permanent habitation (n=12), permanent habitation/burial (n=2), burial (n=4), livestock control (n=4), undifferentiated habitation (n=3), temporary habitation (n=2), and marker (n=2). The four burial features were all platforms that had been previously interpreted as possible burials although no subsurface testing was conducted. All four platforms were destroyed prior to the present project. The two permanent habitation/burial features consisted of platforms that were interpreted as house platforms and in which human remains were encountered during testing conducted during the present project. The distribution of the 17 sites that have been identified in the project area is illustrated in *Figure 10* and the sites are summarized in *Table 3*.

Subsurface testing has been conducted in 12 locations within the project area. This testing consisted of the excavation of 13 test units and 28 shovel tests. The test unit excavations consist of two units excavated by Dunn and Rosendahl (1992), two units excavated by Haun et al. (1998) and nine units excavated during the present project. These test units were excavated at four platforms (Sites 6332, Feature B and Feature E, , Site 23915 and Site 23916), a modified outcrop (Site 6332, Feature K), two terraces (Site 6331, Feature E and Site 23917), two enclosures (Sites 6332, Feature A and Site 23914, Feature A), and a modified knoll (Site 6331, Feature S).

The shovel testing has been undertaken in two locations within the parcel. Haun et al. (1998) excavated a single shovel test adjacent to a platform (Site 6331, Feature A2), and 27 shovel tests were excavated at a midden scatter (Site 23914, Feature B) during the present project. The results of all the excavations that have been conducted within the project area are discussed in the following site descriptions.

In the following site descriptions, permanent habitation features are defined based on a criteria developed by Cordy (1981:66-82). In his model, Cordy presents the following attributes for permanent habitation sites and features: (a) external area greater than 16.0 to 19.0 sq m; (b) substantial construction (i.e. faced walls, paving); (c) presence of special purpose structures (small structures for work and storage); and (d) location (permanent housing clustered primarily along the shoreline or at the mouth of and on the sides of valleys).

Cordy (1981) defined special purpose structures as foundations for probable roofed structures at permanent habitation sites that are less than 16-19 sq m in area. According to Cordy such structures may represent work or storage areas. For the purposes of this study other features at permanent habitation sites, which would not have supported roofed structures because the features are either too small or because they have other obvious functions (i.e., hearths and yard enclosures), are classified as permanent habitation ancillary features. These features consist of surface hearths, small platforms and terraces and pavements that probably functioned as site furniture such as tables, benches or drying racks. Large enclosures surrounding

Table 3. Summary of Identified Sites

| Site No. | Type | Function | No. of Features | Formal Type | | | | | | | | | | | | | Function | | | | | Temp. Field No. | | | | |
|-------------------------|----------------|--------------------------------------|-----------------|------------------|-----------|----------|----------|----------|----------------|-----------|----------|----------|----------------|-------------|----------------------|-------------------|----------|------------|-----------------------------|----------------------|----------|-----------------|----------|----------|-----|----------------|
| | | | | Modified Outcrop | Mound | Terrace | Platform | Wall | Midden Scatter | Enclosure | Cairn | Kuaiwi | Modified Knoll | Agriculture | Permanent Habitation | Livestock Control | Burial | Habitation | Permanent Habitation/Burial | Temporary Habitation | Marker | | | | | |
| 6302 | Wall | Livestock Control | 1 | | | | 1 | | | | | | | | | | | | 1 | | | | | | 159 | |
| 6306 | Wall | Livestock Control | 1 | | | | 1 | | | | | | | | | | | | 1 | | | | | | | 24 |
| 6331** | Complex | Permanent Habitation, Burial, Marker | 11 | | 3 | 4 | | | | 1 | 2 | | | | | | | | 6 | | 3 | | | | | 7, 28, 29 |
| 6332** | Complex | Permanent Habitation/ Burial | 4 | 2 | | 1 | | | | 1 | | | | | | | | | 1 | 2 | | | | | | 42, 45, 46, 47 |
| 6334 | Wall | Livestock Control | 1 | | | | 1 | | | | | | | | | | | | | | 1 | | | | | 151 |
| 21768 | Wall | Permanent Habitation | 1 | | | | 1 | | | | | | | | | | | | 1 | | | | | | | 20, 21, 23 |
| 22745 | Wall | Livestock Control | 1 | | | | 1 | | | | | | | | | | | | | | 1 | | | | | 1 |
| 23914 | Complex | Permanent Habitation | 2 | | | | | | 1 | 1 | | | | | | | | | 2 | | | | | | | 14,25 |
| 23915 | Platform | Permanent Habitation/ Burial | 1 | | | | 1 | | | | | | | | | | | | | | | 1 | | | | 2 |
| 23916 | Platform | Permanent Habitation | 1 | | | | 1 | | | | | | | | | | | | 1 | | | | | | | 7 |
| 23917 | Terrace | Temporary Habitation | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | 18 |
| 23918 | Midden Scatter | Temporary Habitation | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | 17 |
| 23919 | Complex | Agriculture | 73 | 48 | 20 | 4 | | | | | | | | | | | | | 73 | | | | | | | See Table 5 |
| Soehren (1976) Site 1* | Midden Scatter | Habitation | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | Site destroyed |
| Soehren (1976) Site 2* | Platform | Burial | 1 | | | | 1 | | | | | | | | | | | | | | | 1 | | | | Site destroyed |
| Soehren (1976) Site 3* | Midden Scatter | Habitation | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | Site destroyed |
| Soehren (1976) Site 21* | Midden Scatter | Habitation | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | Site destroyed |
| Total | | | 103 | 50 | 20 | 8 | 8 | 5 | 5 | 3 | 2 | 1 | 1 | 74 | 12 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | | |

Site #s. prefixed by 50-10-28-

* = Site Destroyed

** = Portion of Site Destroyed

permanent habitations sites are also termed ancillary features, functioning to define the limits of enclosed yards.

As defined by Cordy (1981), temporary habitations are (a) less than 16 sq m in external area, (b) insubstantial constructions, (c) contain numerous features of internal stratification (multiple firepits), and (d) have few or no associated structures. These habitations are of short-term or recurrent duration.

Site 6302

Site 6302 is the Great Wall of Kuakini that forms the inland boundary of the current project area. This massive wall extends through the coastal portions of Kailua-Kona distance of c. 8 kilometers (5 miles), extending from the southern boundary of Kahalu'u north of Keahuolu. It was initially recorded by Ching et al. (1973) and sections of it have been documented by numerous researchers including Kelly (1983), Hommon and Rosendahl (1983), Schilt (1984) Soehren (1976), Haun et al (1998), O'Hare and Wolforth (1998) and Haun (2003). The portion of the wall within the project area is 395.0 m in length (north-northwest by south-southeast), extending between wall Sites 6306 and 6334, (discussed below). The wall is built of stacked pahoehoe cobbles and boulders, with faced sides and a core-filled interior (*Figure 11*). It ranges in width from 1.7 to 2.1 m at the base and 1.4 to 1.65 m at the top and varies in height from 1.5 to 1.85 m. The wall has been breached in five locations within the project area (see *Figure 10*), although the majority of the wall is intact.

The wall's construction began in the early 1800s. Its completion in the mid-1850s is attributed to Governor Kuakini. There are two interpretations of the wall's function (a) to keep cattle and other livestock inland from the coastal habitation and agricultural areas (Kelly 1983; Schilt 1984), or (b) to keep livestock seaward of the *kula* agricultural fields (Baker 1916; Handy and Handy 1972). It is likely that the function of the wall changed over time as the economic importance of cattle grew, and the kinds and density of land use and settlement changed. The portion of Site 6302 in the project area is altered and in fair condition.

Site 6306

Site 6306 is a stone wall situated on the boundary between Kahului 1 and 2. The site was initially identified by Ching et al. (1973) and has been revisited by researchers including Hommon and Rosendahl (1983), Schilt (1984), Dunn and Rosendahl (1991), Haun et al (1998), and O'Hare and Wolforth (1998). The seaward end of the wall has been disturbed, with the intact portion originating 110.0 m inland of Ali'i Drive (see *Figure 10*). The wall extends inland to the east from this disturbed area a distance of 428.0 m, where it intersects the Great Wall of Kuakini. The examination of this intersection indicates that Site 6306 abuts the Site 6302 wall and likely post-dates it. The wall continues outside the project area to the east.

The wall is built of stacked cobbles and small boulders, with a core-filled interior of small cobbles. It varies in width at the base from 0.75 to 1.0 m and at the top from 0.5 to 0.7 m (*Figure 12*). The wall is also illustrated in *Figure 18*. The height of the wall ranges from 0.8 to 1.2 m. Some wall collapse was observed during the project but generally the wall is intact. As stated, the wall is situated on the land division between Kahului 1-2. While it is probable that this wall marks a land division, its primary function was to restrict the movement of cattle based on its method of construction and height. The site is altered and in fair to good condition.

Site 6331

Site 6331 is a partially disturbed habitation complex located in the north-central portion of the project area, south of Site 6330. Portions of the site extend into the adjacent Ali'i Highway Realignment corridor. The site was initially identified by Ching et al. (1973) as a habitation and possible burial complex comprised of a series of enclosures (no feature designation), eight platforms (Features A-D, and G-J), two terraces (Features E and F), a U-shaped enclosure (Feature L) and a cairn (Feature K). Ching et al. (1973) also identified the entrances to three caves, although they were not described or assigned feature designations. The distribution of the Site 6331 features identified by Ching et al. (1973) is depicted in *Figure 13*.



Figure 11. Site 6302, Kuakini Wall, view to east



Figure 12. Site 6306 Wall, view to northwest

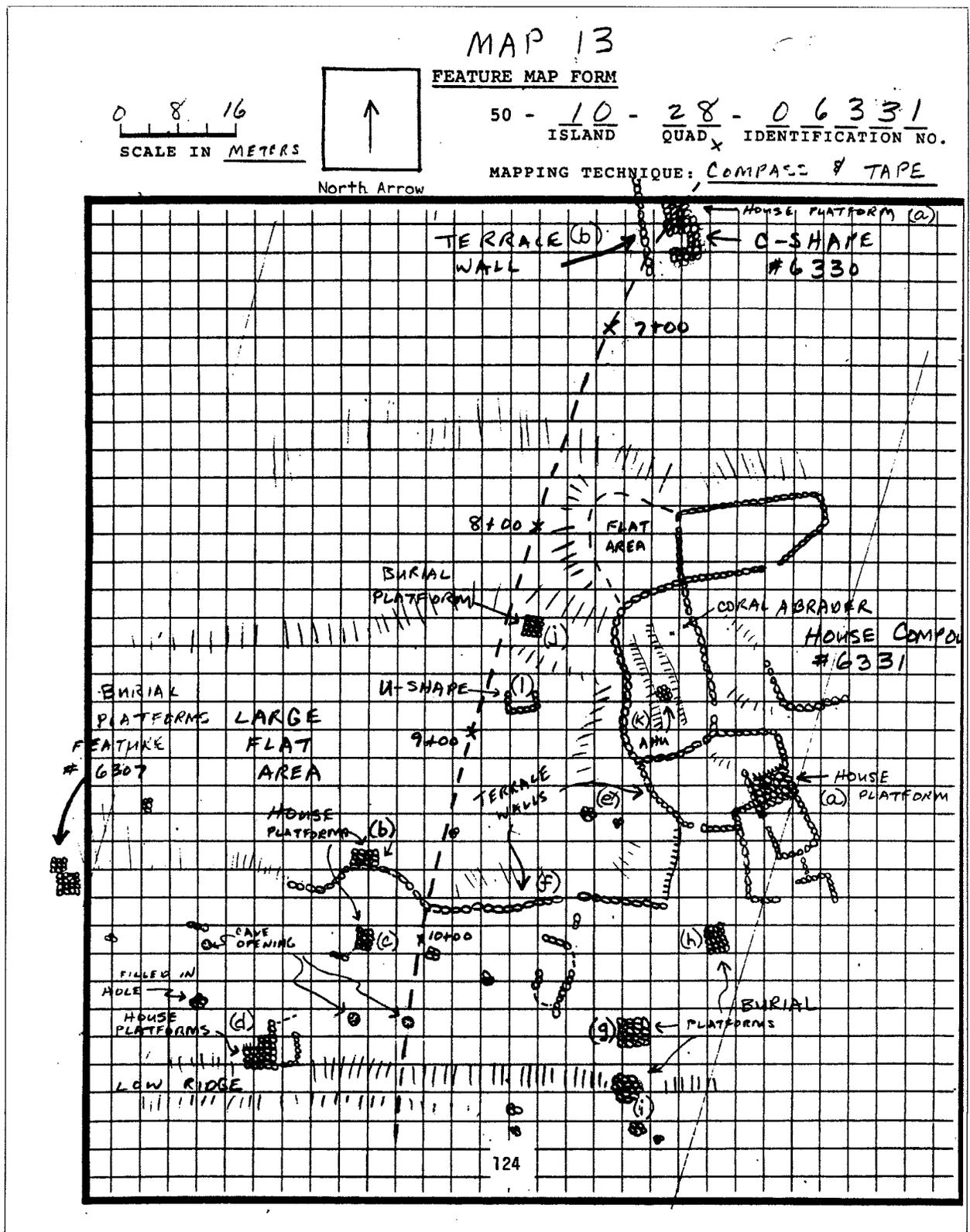


Figure 13. Plan Map of Sites 6307, 6330 and 6331 from Ching et al. (1973:124)

Soehren (1976) examined this area and identified an enclosure (Site 15) in the Site 6331 area that potentially corresponds to the enclosure noted by Ching et al. (1973). Hommon and Rosendahl (1983) returned to the site and noted that it had been significantly impacted since the previous studies. The U-shape (Feature L), three of the platforms (Features A, D and J) and the cairn (Feature K) were reportedly destroyed, and the terraces (Features E and F) and three of the platforms (Features G, H and I) had been significantly impacted. The two remaining platforms (Features B and C) were relocated but re-classified as modified outcrops.

Dunn and Rosendahl (1991) returned to the site and confirmed the destruction to portions the site. They identified three of the original platforms (Features A, B and C), and the two terraces (Features E and F) that had been mistakenly reported as destroyed by Hommon and Rosendahl (1983). Dunn and Rosendahl (1991) also identified four previously undocumented features, consisting of a cairn (Feature A-1), a terrace (Feature M), and two small caves (Features N and O). The Feature A platform was also designated as Feature A-2.

Haun et al. (1998) subsequently examined the site and noted that considerable disturbance had occurred since the 1991 study. This project confirmed the destruction of five platforms (Features D, G, H, I and J), the two cairns (Features A1 and K), and the U-shape (Feature L). This examination also resulted in the identification of a mound (Feature R) and a modified outcrop (Feature Q). The Features B and C modified outcrops were reclassified as terraces by Haun et al. (1998). The distribution of the Site 6331 features identified by Haun et al. (1998) is presented in *Figure 14*. Feature P depicted on this map appears to have been mis-labeled as the report states that the Feature P designation was not used. The structure depicted on this map is described in Haun et al. (1998) as the inland end of Feature F, with the intervening area having been destroyed by bulldozer activity.

In 2000, Rechtman and Dougherty (2000) relocated the two cave features (Features N and O) during a survey of an adjacent parcel, seaward of the Ali'i Highway Realignment corridor. However, the Feature M terrace, noted by Dunn and Rosendahl (1991) appears to have been destroyed as it is not described by Rechtman and Dougherty (2000).

The previous examinations of Site 6331 have identified a total of 19 features, consisting of the series of enclosures (no feature designation), six platforms (Features A1, D, G, H I and J), five terraces (Features B, C, E, F and M), two cairns (Features A2 and K), two caves (Features N and O), a modified outcrop (Feature Q), a U-shape (Feature L), and a mound (Feature R). The examination of the site during the present project indicates that it has been significantly altered since the Haun et al. (1998) and Rechtman and Dougherty (2000) studies. Only three of the original 19 features were relocated (Features A2, E, and F), although two previously unrecorded features were identified. The new features consist of a modified knoll (Feature S) and a terrace (Feature T). It is possible that the newly identified features may correspond to portions of the series of enclosures noted by Ching et al. (1973), although they do not exactly match what is depicted on their site map, the modified knoll and terrace were assigned new feature designations.

The current condition of Site 6331 is presented in *Figure 15*. To date, a total of 21 features have been identified at the site, however, only 11 of the features (Features A1, A2, E, F, G, H, I K, S, T and the series of enclosures [no feature designation]) were located within the project area, with the ten remaining features situated to the west of the parcel, in the Ali'i Highway Realignment corridor (Features B, C, D, J, L, M, N O, Q, and R). Of the 11 features within the boundaries of the parcel, six have been destroyed (Features A1, G, H, I, K and the series of enclosures). Of the five remaining (Features A2, E, F, S and T) Features A2 and E are situated entirely within the project area, while Features F, S and T partially extend into the adjacent Ali'i Highway Realignment corridor. A large recently excavated pit and adjacent backdirt pile were also identified in the southeastern portion of the site. The features of Site 6331 that have been documented within the boundaries of the current project area are described below. The site is altered and in poor to fair condition.

The large enclosure noted by Ching et al. (1973) in the northeastern portion of the site has not been assigned a feature designation during any of the previous research and has not been described. The enclosure contained at least five compartments at the time of Ching et al.'s (1973) study, extending from a

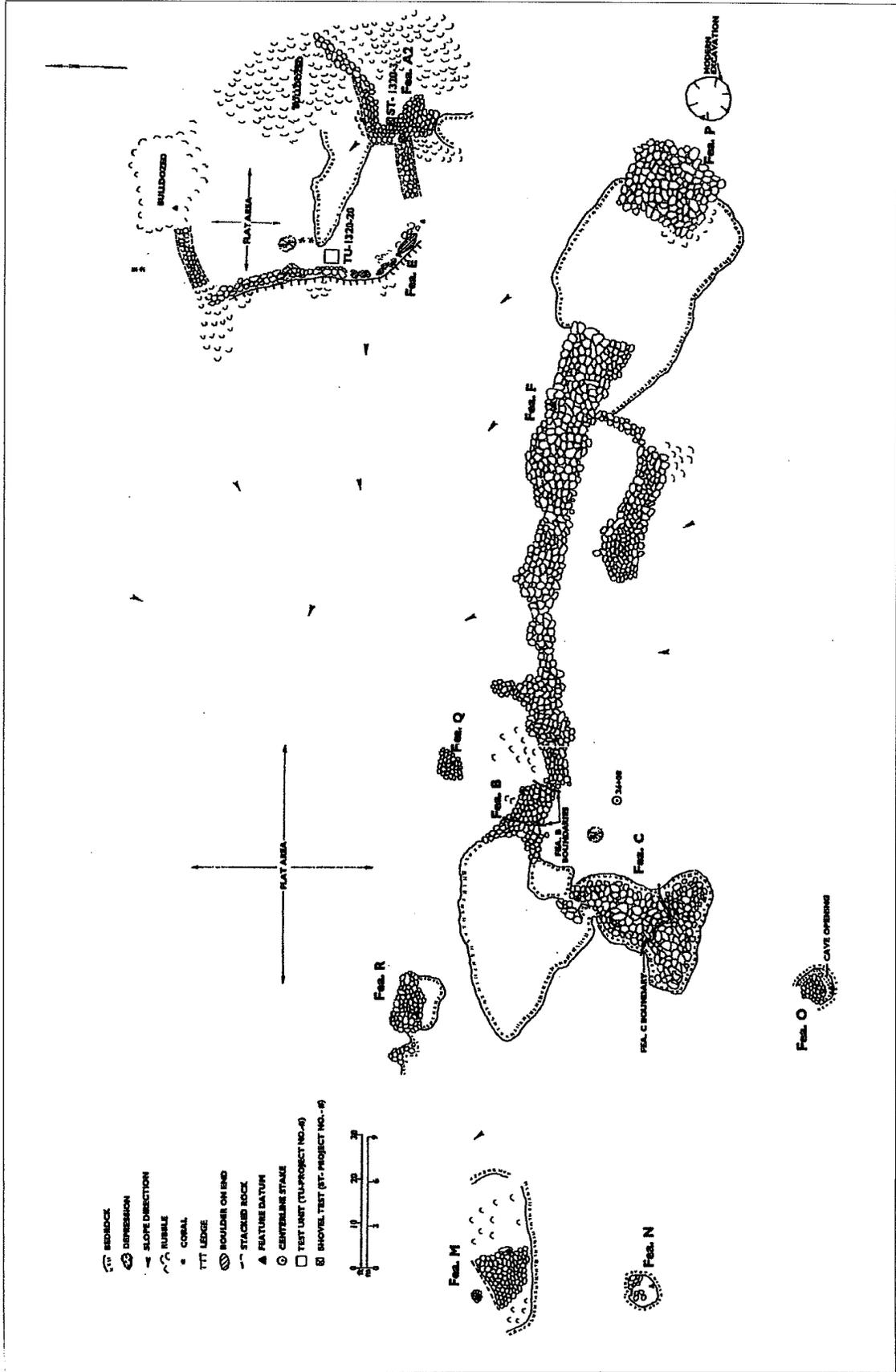


Figure 14. Site 6331 Plan Map from Haun et al. (1998:248)

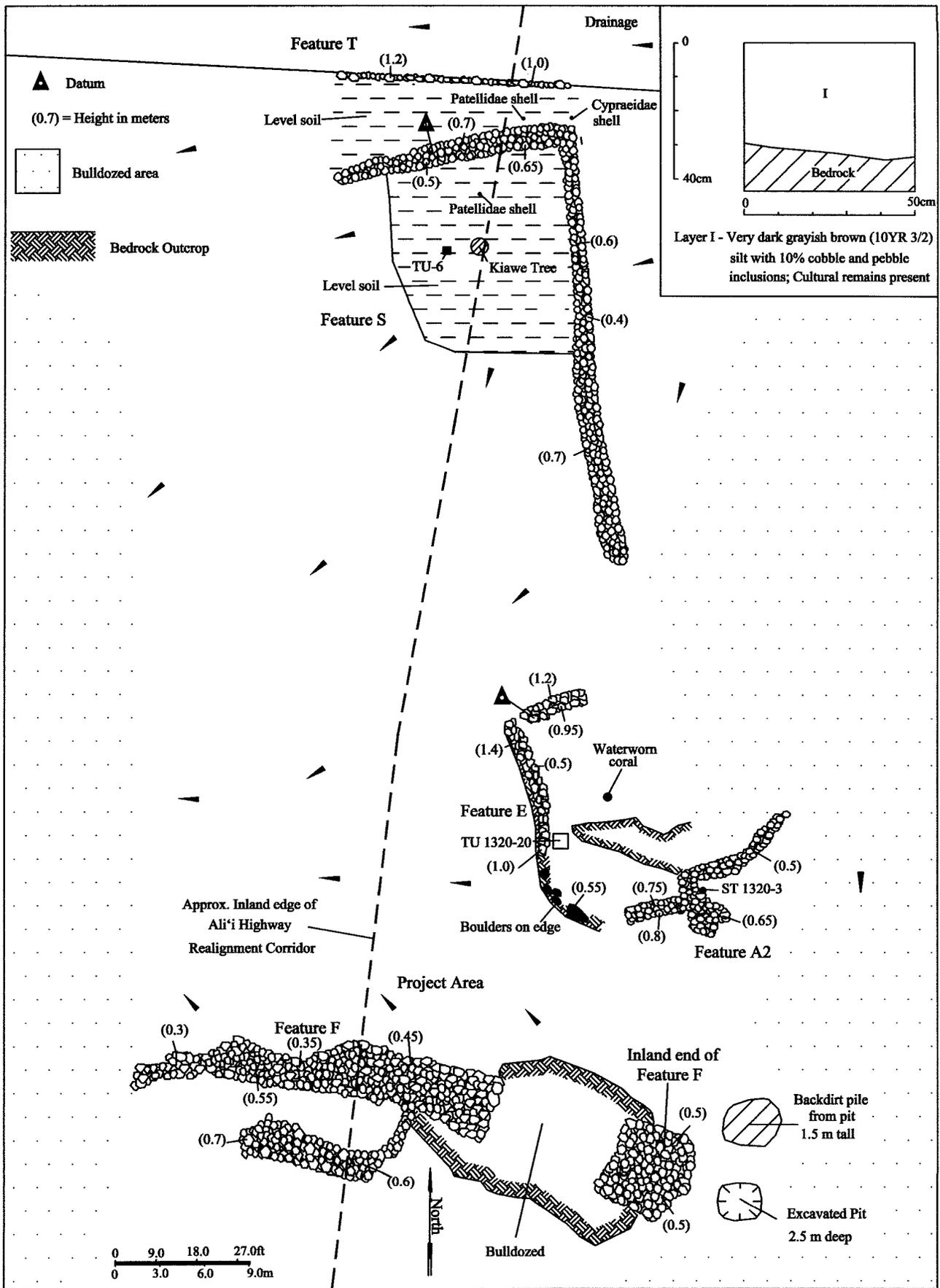


Figure 15. Current Condition of Site 6331 and TU-6 North Face Profile

level area at the north, south to the Feature A2 platform. This level area appears to correspond to the knoll containing Feature S and T (discussed below). According to Ching et al.'s map, the compartmentalized enclosure encompasses an area 65.5 m (north-south) by 33.5 m wide, with the individual enclosures ranging in length from 8.0 to 26.5 m, and in width from 5.5 to 13.5 m. No information concerning wall construction or portable remains is available and the feature was not identified during the present project. This enclosure is interpreted as a series of permanent habitation yards which potentially contained pole and thatched roofed structures. This is based on its formal type and proximity to the other features at the site.

Feature A1 was a cairn apparently located in the vicinity of the Feature A2 platform, previously identified by Dunn and Rosendahl (1991). The feature has been destroyed. It reportedly measured 1.0 m in diameter and 0.25 m in height. The feature was interpreted as a marker based on its formal type by Haun et al. (1998).

Feature A2 is a platform located along the eastern portion of the site. Ching et al.'s (1973) examination of the feature indicated that it originally measured 6.0 m long by 5.0 m wide. The only remaining portion of the feature noted during the present project consists of the northwest corner of the feature and two segments of wall likely associated with the larger enclosure discussed above. This remaining section of platform is irregularly-shaped and is 2.8 m long (east-west), 2.25 m wide and 0.65 m in height. The surface is irregular but appears to have been paved. Two fragments of waterworn coral were noted on the surface. The area to the east and northeast has been bulldozed. The wall segments are 1.0 to 1.1 m wide and 0.5 to 0.8 m in height, built of stacked and piled cobbles and small boulders.

Haun et al. (1998) excavated a 0.5 by 0.5 m shovel test (ST-1320-3) in an area of level soil adjacent to the structure to the north (see *Figure 14*). This shovel test identified two cultural deposits over bedrock. Cultural remains from Layer I consisted of 42.45 grams of marine shell, two pieces of fish bone, four pig bones, five unidentified bone fragments and two volcanic glass flakes. Cultural remains from Layer II consisted of 39.94 grams of marine shell, five fish bones, one rodent bone, two pig bones, three unidentified bone fragments and one volcanic glass flake. Feature A2 was interpreted as the foundation for a permanent habitation structure (Haun et al. 1998) based on its formal type, substantial construction (paved surface) and original area (30.0 sq m).

Feature E is a terrace located to the west of Feature A2. The feature is comprised of a retaining wall built on and against a pahoehoe outcrop that is 1.0 to 1.4 m in height on the western, downslope side and 0.5 m in height on the upslope side. Portions of the retaining wall are faced on the downslope side. Several basalt boulders set on edge are located at the southern end of the outcrop. The retaining wall and vertical boulders are 15.3 m long, and 0.4 to 1.1 m wide. The area inland of the wall is comprised of level soil. A piece of waterworn coral was noted in the soil area during the current project, and a possible basalt core was observed in this area by Haun et al. (1998). The north side of the terrace area is bordered by a free-standing wall that is 4.8 m long (east-northeast by west-southwest), 1.0 to 1.05 m wide and 0.95 to 1.2 m in height. The wall is built of stacked cobbles and small boulders.

Haun et al. (1998) excavated a 1.0 by 1.0 m test unit (TU-1320-20) into the surface of the terrace adjacent to the retaining wall at its southern end. This excavation revealed an architectural layer (Layer A) and two soil layers (Layers I and II) over bedrock (*Figures 16* and *17*). The architectural layer consisted of 0.85 m of stacked cobbles and small boulders that extended from c. 0.5 m above ground surface to 0.35 m below ground surface. The base of the architectural layer intruded into the Layer I soil. No cultural remains were present.

Layer I consisted of 0.12 to 0.32 m of a dark brown (10YR 3/3) very gravely cobbly silt loam containing 48.13 grams of marine shell. Layer II consisted of 0.21 to 0.3 m of a very dark grayish brown (10YR 3/2) very gravely cobbly silt loam with 103.5 grams of marine shell, an echinoid abraded and a volcanic glass flake. According to Haun et al. (1998) the results of this excavation indicate that the area had been utilized prior to the construction of the surface feature. Feature E has been interpreted as a permanent habitation ancillary feature by Haun et al. (1998), that appears to have functioned as an activity area. This was based on its association with the other permanent habitation features of the site.

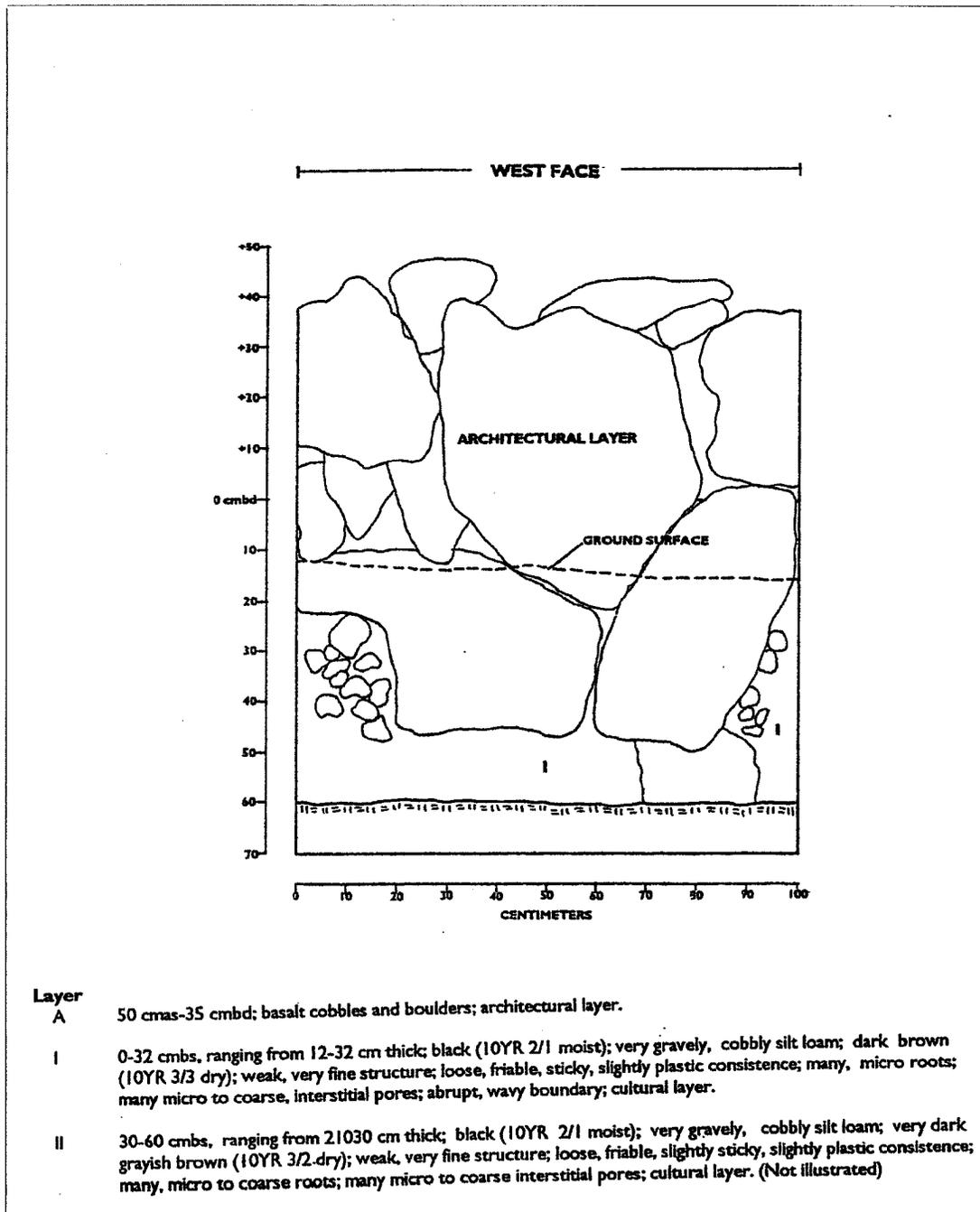


Figure 16. Site 6331, Feature E, TU-1320-20, West Face Profile from Haun et al. (1998:252)

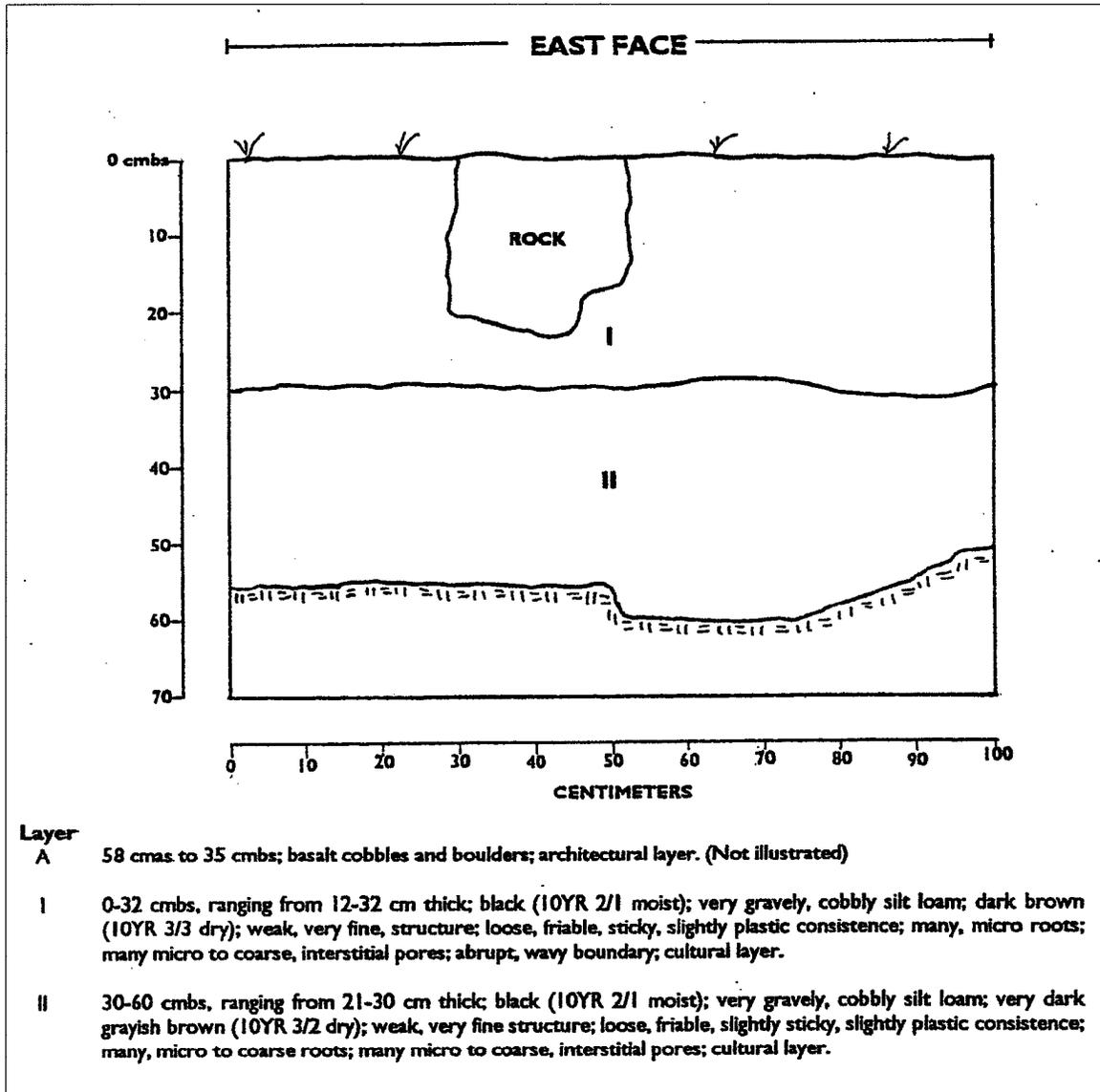


Figure 17. Site 6331, Feature E, TU-1320-20, East Face Profile from Haun et al. (1998:251)

Feature F is a terrace located to the southwest of Feature E. Only the inland portion of the terrace is located within the project area. Originally, the feature was 63.8 m long (east-west), 9.8 m wide and 0.6 m in height, with 8.6 m wide gap at the inland end. The portion of Feature E at the east end of the feature, on the inland side of the gap was mistakenly labeled as Feature P on the Haun et al. (1998) site map (see *Figure 14*). According to Haun et al. (1998), the terrace followed a natural outcrop, with an uneven surface that sloped to the north. The western end terminated on a large pahoehoe outcrop with scattered surface stones.

The examination of Feature F during the present project indicates that western 25.0 m of the structure has been destroyed by recent bulldozer activity (see *Figure 15*). The remaining portion of the feature consists of the inland remnant and 24.3 m of the seaward end. These sections are built of piled cobbles and small boulders, with relatively level but unpaved surfaces. The sides of the remaining portions of the feature range in height from 0.3 to 0.7 m. No cultural remains were noted. Feature F has been interpreted as the disturbed remnant of a permanent habitation, ancillary feature based on its association with the other permanent habitation features of the site. It is possible that the terrace functioned as an activity area. It is altered and in poor condition.

Feature G was a platform that was reportedly impacted prior to 1983. The destruction of the feature was noted in 1991 by Dunn and Rosendahl (1991). According to Ching et al. (1973), the platform measured 4.5 m long (east-west) 4.0 m wide and 1.0 m in height. This feature was interpreted as a burial platform by Ching et al. (1973), although no subsurface testing was conducted.

Feature H was a platform located to the northeast of Feature G and east-southeast of Feature F. The platform was reported as significant impacted by Hommon and Rosendahl (1983) and as destroyed by Dunn and Rosendahl (1991). Ching et al. (1973) stated that the platform was 4.0 m long (north-south), 3.0 m wide and 1.0 m in height and was interpreted to be a burial platform.

Feature I was a platform located adjacent to Feature G to the south. As with Features G and H, Feature I was reportedly disturbed prior to 1983 and destroyed prior to 1991. According to Ching et al. (1973), the platform was 4.0 m square and 0.9 m in height. Feature I was also interpreted as a burial platform.

Feature K was a cairn located within a compartment of the large enclosure noted by Ching et al. (1973). The cairn was reported as destroyed by Hommon and Rosendahl (1983). It measured 2.0 m long, 1.5 m wide and 0.9 m in height, according to Ching et al. (1973). Feature K was assigned a marker function based on its formal type.

Feature S is a modified knoll located in the northern portion of the site, identified during the present project. This knoll appears to correspond to a "flat area" depicted on Ching et al.'s (1973) site map (see *Figure 13*); however, the configuration of the walls noted during the present project do not correspond to the walls depicted on Ching et al.'s (1973) map. The knoll is bisected by the inland edge of the Ali'i Highway Realignment corridor. Stone walls border the north and eastern sides of the knoll. The eastern wall is 29.8 m long (north-south), 1.0 to 1.2 m wide and 0.6 to 0.7 m in height. The southern end of the wall terminates 19.0 m north of the northern end of Feature E. The wall bordering the north side of the knoll originates at the north end of the eastern wall and extends 16.5 m to the west. This wall is 1.0 to 1.3 m wide and 0.5 to 0.7 m in height. Both walls are constructed of stacked and piled cobbles and small boulders.

The surface of the knoll is comprised of a level soil deposit with a large *kiawe* tree growing out of it. The knoll is 15.4 m long (north-south) and 13.1 m wide. The ground surface slopes moderately to the west and south below the knoll. A *Cellana* sp. shell was observed on the soil surface of the knoll, just outside the boundaries of the project area. A 0.5 by 0.5 m test unit (TU-6) was excavated into the surface of the knoll during the present project (see *Figure 15*). This excavation revealed a single layer of a very dark grayish brown (10YR 3/2) silt with 10% cobble and pebble inclusion. This deposit (Layer I) varied in thickness from 0.38 to 0.4 m and was situated directly above bedrock. Cultural remains from Layer I con-

sisted of three *Cypraea* sp. shells (6.4 grams), *Cellana* sp. shell (19.1 grams), two unidentified marine shell fragments (0.6 grams), two fragments of waterworn coral (0.62 grams) and 0.4 grams of charcoal.

Feature S is interpreted as a permanent habitation, ancillary feature which potentially once contained a pole and thatched roof structure. The walls along the north and east of sides of the knoll likely served to delineate the boundaries of a yard. This is based on the feature's formal type, surface and subsurface cultural remains and its association with the other permanent habitation features of the site. Feature S is unaltered and in fair condition.

Feature T is a linear terrace situated adjacent to the Feature S modified knoll to the north. This feature is also bisected by the Ali'i Highway Realignment corridor. The terrace is 15.7 m long (east-west), with a stacked and piled cobble and small boulder retaining wall along the north side, built into the southern side of a drainage that slopes down to the west. The wall is 1.0 to 1.2 m in height above the floor of the drainage and level with the terrace surface on the upslope side. The area south of the retaining wall is 2.6 to 6.3 m wide, comprised of a level soil deposit. A *Cellana* sp. shell and a *Cypraea* sp. shell were noted on the surface of the terrace. Feature T is interpreted as an ancillary feature associated with the permanent habitation of the site, potentially functioning as an activity area. This is based on its formal type, and association with the other permanent habitation features of the site. Feature T is unaltered and in fair condition.

Site 6332

Site 6332 is a disturbed complex of features located in the inland portion of the project area, 90.0 m south of the Site 6331 complex. The site was first recorded by Ching et al. (1973) as a complex consisting of a large enclosure or walled shelter (Feature A), four platforms (Features B, E, F and G), two caves (Features C and D), a terrace (Feature H), and a possible cistern (Feature I). The distribution of the Site 6332 features as recorded by Ching et al. (1973) is depicted in *Figure 18*. An alignment of stones extending between the Feature A enclosure and the Feature E platform is presented on this map, but was not assigned a feature designation.

Portions of this site also appear to have been identified by Soehren (1976). The large Feature A enclosure correspond to Soehren's Site 16, which was described as a house site or animal pen. The Feature B platform corresponds to Soehren's Site 17 and the Feature E platforms correspond to his Site 18, both of which were interpreted as possible burials.

Hommon and Rosendahl (1983) subsequently revisited the site and reported disturbance to the complex. The Feature H terrace and the Feature F and G platforms had been destroyed and some disturbance was observed at the Feature A enclosure.

In 1991, Dunn and Rosendahl (1991) examined the site and confirmed the destruction of Features F, G and H, and noted that the Feature I cistern had also been destroyed. Two previously unrecorded features, consisting of a mound (Feature J) and a platform (Feature K) were identified in 1991. The following year, Dunn and Rosendahl (1992) returned to the site and noted the destruction of four features, consisting of the Features C and D caves, the Feature E platform, and the Feature J mound. Additionally, the Feature K platform was reinterpreted as a modified outcrop.

In 1996, Haun et al. (1998) examined the site and relocated three of the five features that had been reported as destroyed by Dunn and Rosendahl (1992). These consisted of the Feature C and D caves and the Feature E platform. The Feature C cave was also reinterpreted as a modified outcrop comprised of a small cupboard in a pahoehoe outcrop.

The site was examined during the present project and was found to be in similar condition as that observed in 1996 by Haun et al. (1998). The current condition of the Site 6332 complex is present in *Figure 19*. In all, a total of 11 features have been identified at the site, although only six remain intact. The intact features consist of the Feature A enclosure, the Feature B and E platforms, the Feature C modified outcrop, the Feature D cave and the Feature K modified outcrop. Of the 11 total features, only four are situated within the project area (Features A, B, C and K) with the remainder situated within the adjacent Ali'i

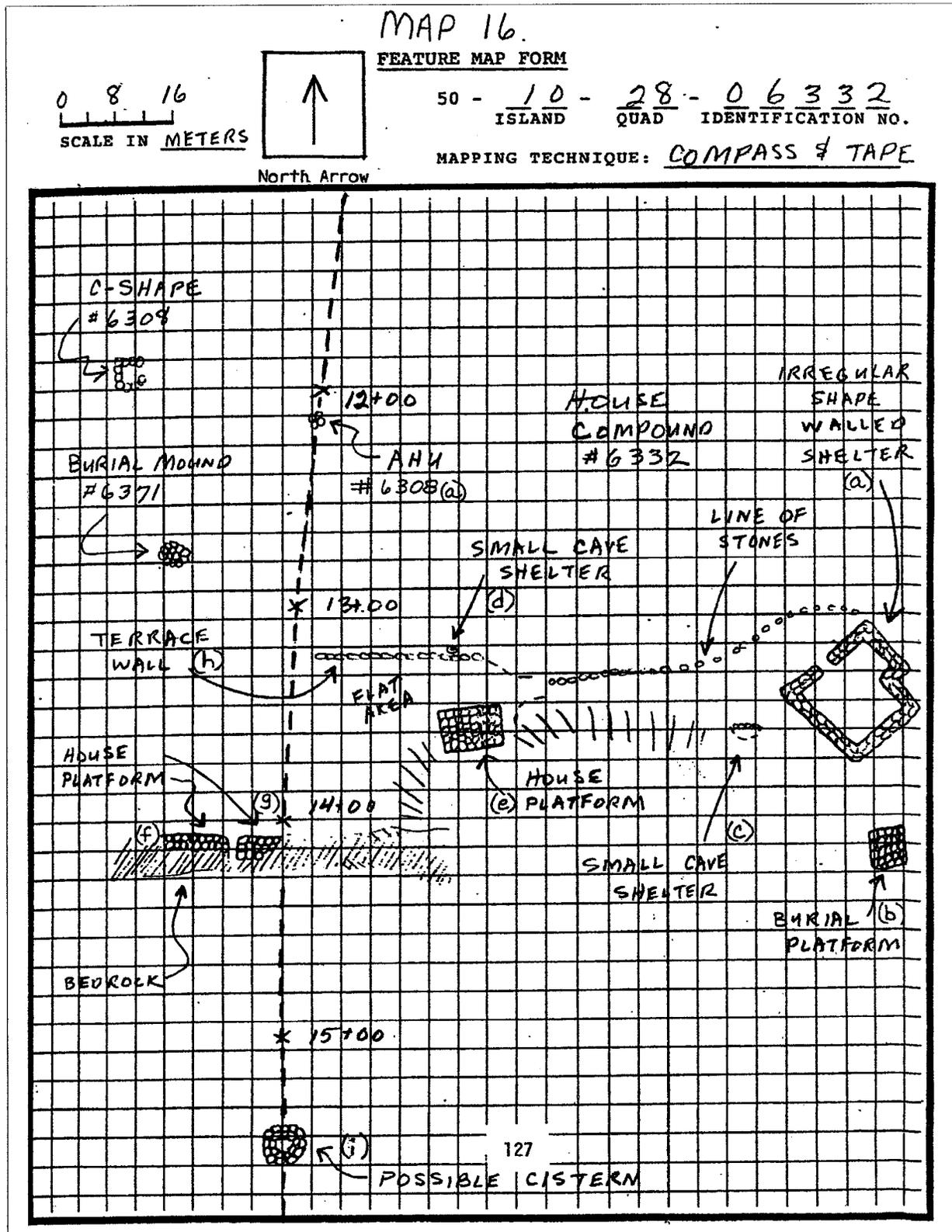


Figure 18. Plan Map of Sites 6308, 6332, and 6371 from Ching et al. (1973:127)

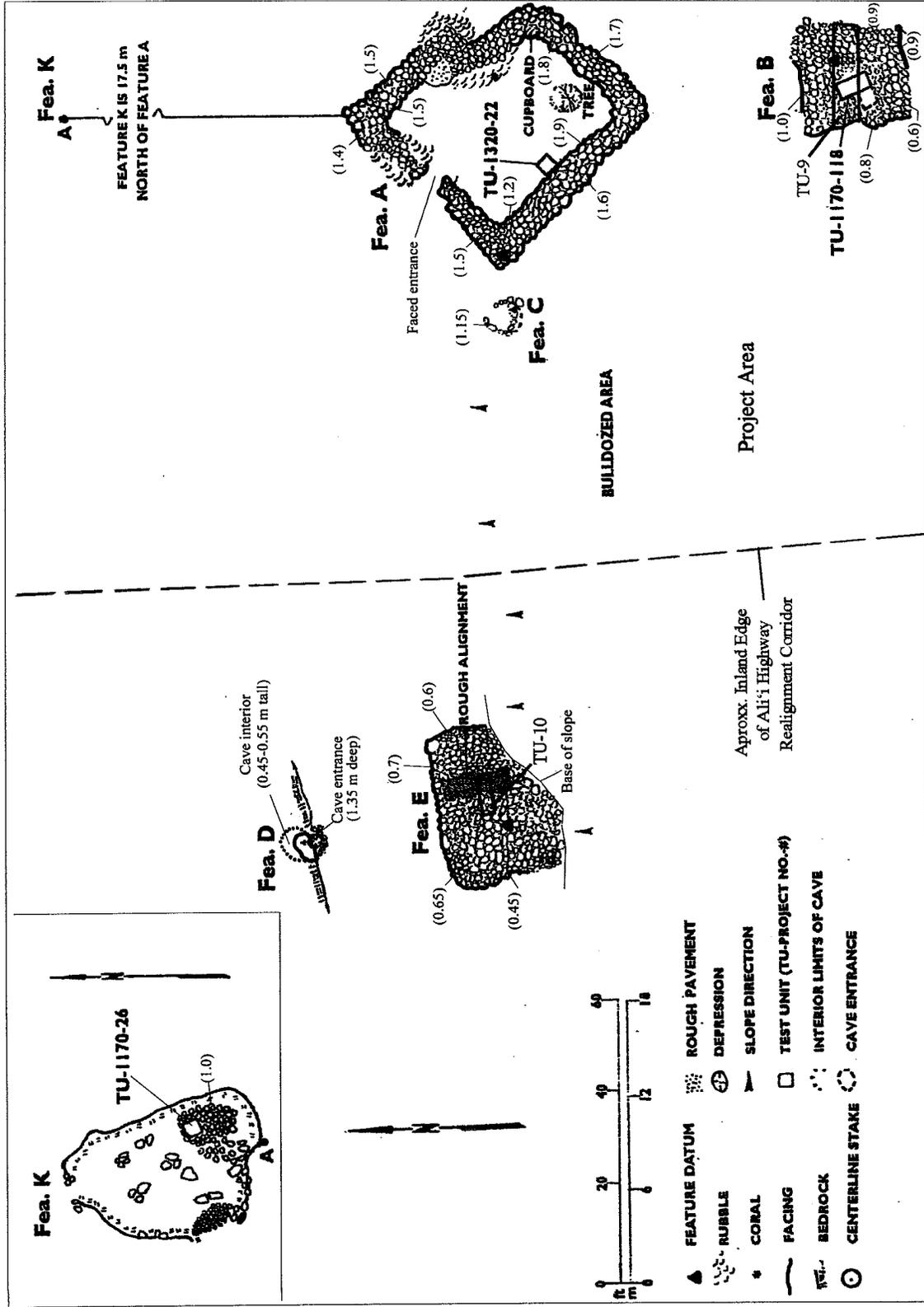


Figure 19. Site 6332 Plan Map Modified from Haun et al. (1998:257)

Highway Realignment corridor. The alignment of stones noted by Ching et al. (1973) was not observed during the present project and it is assumed that it was destroyed between 1973 and 1983, as it is not mentioned by Hommon and Rosendahl (1983). The disturbance noted at Feature A by Hommon and Rosendahl (1983) was not noted during the current project, although some wall collapse along the inland side was observed. Site 6332 is interpreted as the disturbed remnants of a permanent habitation complex. The intact features of the site are unaltered and in fair to good condition. The features of Site 6332 situated within the present project area are described below.

As stated, Feature E is a large platform located west of Feature A within the Ali'i Highway Realignment corridor. Initially this feature was thought to be present within the project area and a 2.0 m long by 1.0 m wide test unit was excavated in the approximate center of the platform, identifying a stone architectural layer above a soil deposit. A roughly oval-shaped burial pit was identified in the southwestern portion of the unit. An *in situ* human humerus and radius were identified near the base of the pit. The excavation of the unit was terminated on identification of the remains and the unit was carefully backfilled and the surface structure reconstructed.

Feature A is a large, well-built enclosure located at the inland end of the site. It is roughly square-shaped although it is slightly narrower at its southeastern end. The enclosure is 14.4 m long (northwest to southeast) and from 10.8 to 14.4 m wide. The walls of the enclosure are built of stacked cobbles, small boulders and slabs, ranging in width from 1.2 to 2.0 m and in height from 1.4 to 1.9 m (*Figure 20*). The walls are faced along the interior and exterior side and some wall collapse was observed on the inland portion of the feature.

There is a 1.0 m wide faced entrance to the enclosure in the center of the northwestern wall (*Figure 21*). The interior of the enclosure is comprised of a level soil deposit with scattered surface stones and midden. A possible cobble pavement is situated along the eastern interior side of the structure, measuring 2.1 m long by 1.5 m wide. A recessed cupboard is incorporated into the interior southeastern corner of the structure, measuring 0.4 m wide, 0.7 m deep and 0.5 m in height.

Haun et al. (1998) excavated a 1.0 by 1.0 m test unit (TU-1320-22) within the enclosure along the southwestern wall. This excavation revealed two soil deposits overlying bedrock (*Figure 22*). Layer I consisted of 0.17 to 0.4 m of a black (7.5YR 2.5/1) cobbly silt loam with two subsurface soil features identified. HF-3 consisted of a discrete ashy soil deposit located along the southern side of the unit. It measured 0.15 m long, 0.1 m wide and 0.19 m deep. Cultural remains from HF-3 consisted of 0.76 grams of echinoid, two pieces of fish bone and one piece of bird bone. HF-4 was located in the northwest portion of the unit and was comprised of 0.2 m long, 0.12 m wide and 0.13 m deep pit with an ashy soil, waterworn and angular basalt cobbles and one fragment of coral. No other cultural remains were recovered from Layer I.

The Layer II deposit consisted of 0.1 to 0.26 m of a very dark brown (7.5YR 2.5/3) cobbly silt with no cultural remains present. The enclosure was interpreted by Haun et al. (1998) as a permanent habitation based on its substantial construction (faced walls, interior pavement) and large area (196 sq m). Haun et al. suggest that the large size of the enclosure may indicate it functioned as a men's house. The feature is unaltered and in fair to good condition.

Feature B is a platform located 10.0 m south of Feature A, on the surface of a bare pahoehoe outcrop. The feature is rectangular in shape and is 7.0 m long (north-south) and 6.8 m wide, with sides built of stacked cobbles and small boulders that range in height from 0.6 to 1.0 m. The eastern side and portions of the north and south side have collapsed, although the remaining sides are faced. The surface of the structure is level and paved with small cobbles and flat pahoehoe slabs. No cultural remains were observed.

Dunn and Rosendahl (1992) noted a shallow depression on the surface of the platform along the western side and excavated a 2.0 by 1.0 m test unit in this location (TU-1170-118). This excavation revealed two architectural layers (*Figure 23*). Layer I consisted of 0.94 to 1.4 m of cobbles and boulders with no cultural remains. Large slabs were observed at the base of Layer I and the unit was expanded 1.0 m to the west in an attempt to remove the slabs. Layer II consisted of 0.1 to 0.96 m of a cobbles and small boulders in a very dark brown (10YR 2/2) loam matrix. Cultural remains from Layer II consisted of 0.49 grams



Figure 20. Site 6332, Feature A Interior Enclosure Walls, view to east



Figure 21. Site 6332, Feature A, Faced Entrance, view to south

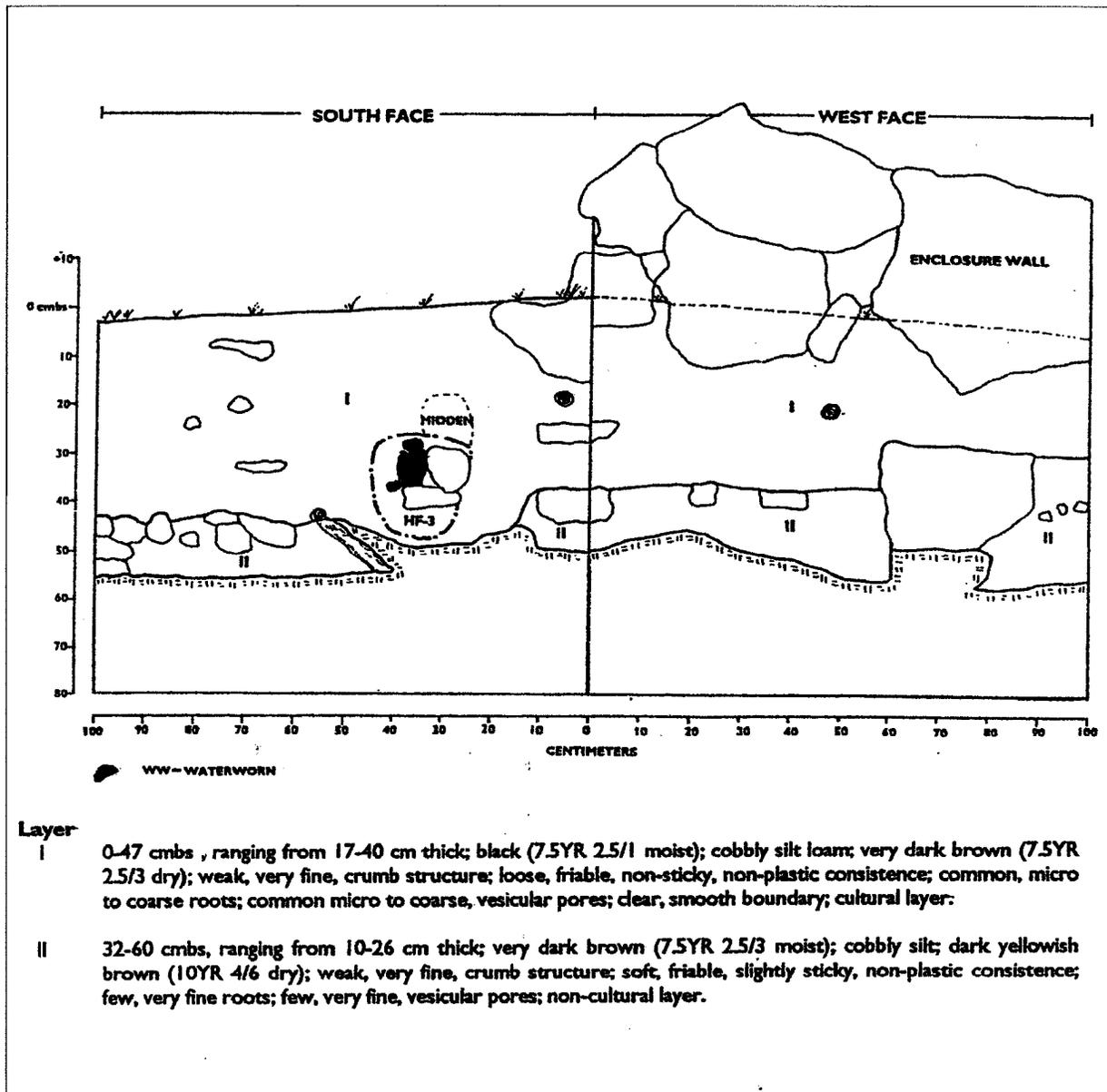


Figure 22. Site 6332, Feature A, TU-1320-22, West and South Face Profiles from Haun et al. (1998:259)

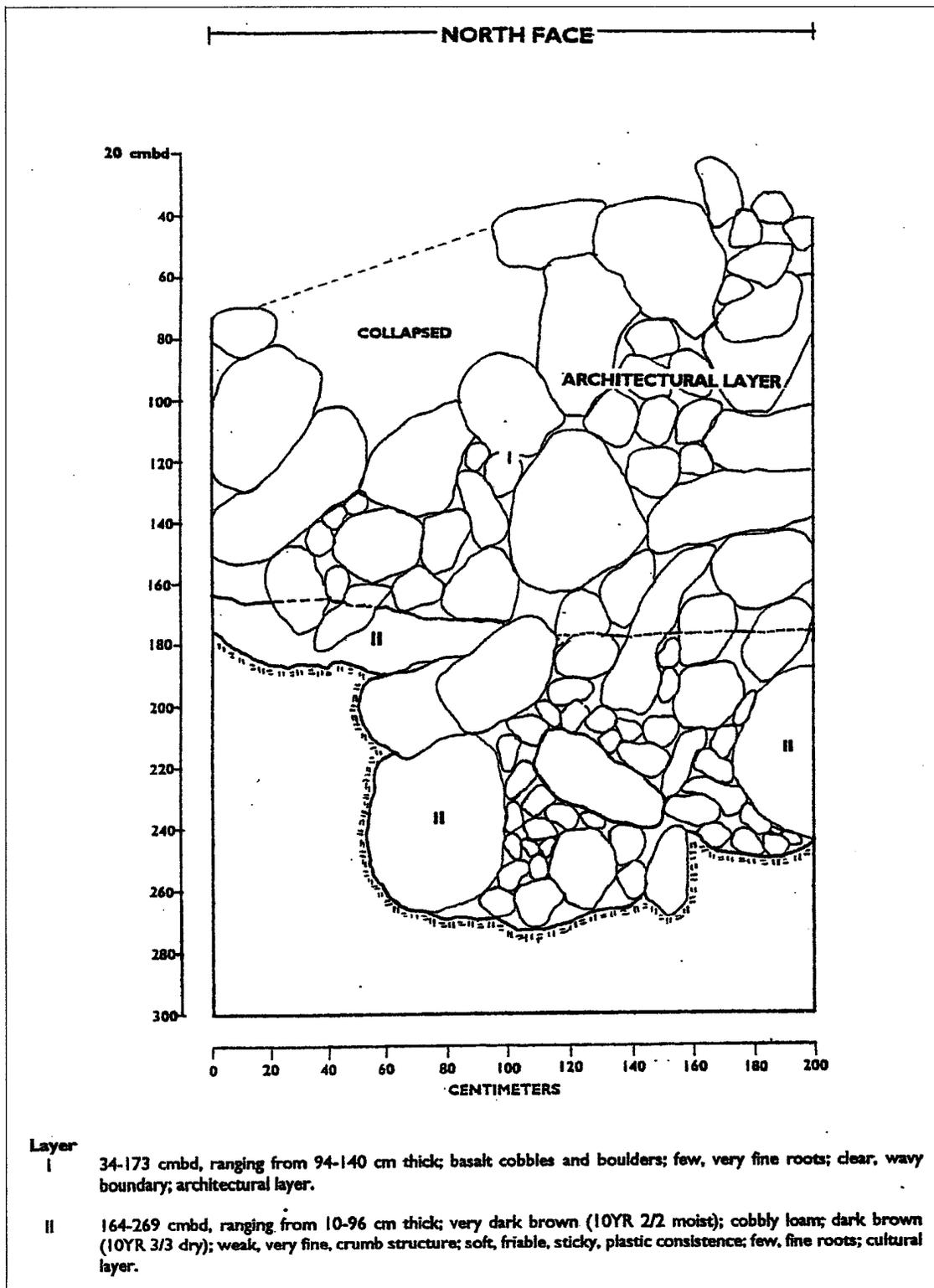


Figure 23. Site 6332, Feature B, TU-1170-118, North Face Profile from Haun et al. (1998:262)

of marine shell, a fragment of mammal bone and charcoal. A sample of this charcoal was submitted for radiocarbon age determination yielding a date of AD 1663-1896. The excavation was reportedly terminated on bedrock.

A 6.0 m long by 1.5 m wide unit (TU-9) was excavated through the center of the Feature B platform during the present project, bisecting the feature in an east-west direction. This excavation revealed a stone architectural layer (Layer I), over two soil deposits that were situated within a small blister cave (Layers II and III; *Figure 24*). Layer I was comprised of 0.7 to 1.65 m of tightly packed cobbles and small boulders with no cultural remains. This layer was comprised of the surface structure and also sealed the entrance to the blister cave. The base of Layer I intruded slightly into the Layer II soil and no evidence was found to indicate that it had been built during more than a single construction episode.

The Layer II deposit consisted of 0.2 to 0.38 m of a very dark brown (10YR 2/2) silt, situated below the stone architectural layer within the blister cave. Cultural remains from Layer II consisted of a fragment of unidentified small mammal bone (0.1 gram), a crab claw (0.4 grams) and 0.7 grams of charcoal. This soil corresponds to the Layer II soil identified by Dunn and Rosendahl (1992) and it is possible that what was thought to be bedrock was actually a large boulder during the previous excavation. The Layer III deposit was comprised of a dark yellowish brown (10YR 3/4) silt. This deposit was removed by burrowing into the soil-filled cave. No portable remains were recovered from Layer III, though a human cranium and humerus were identified in the wall of the excavation at the western end of the cave. These remains were carefully re-buried upon identification, the blister cave was re-sealed and the surface structure was reconstructed.

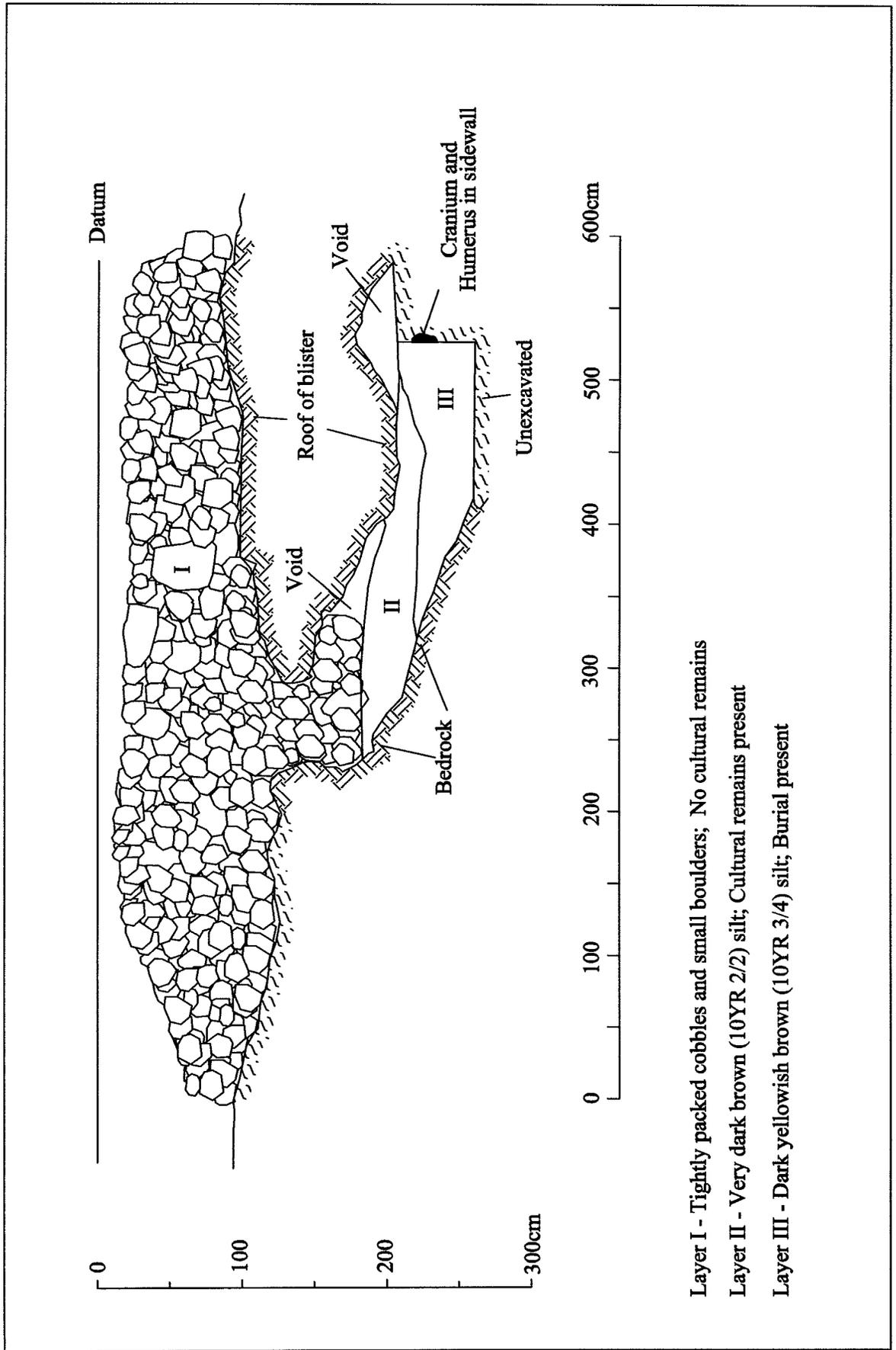
Feature B was interpreted as the foundation for a permanent habitation structure by Haun et al. (1998). This was based on its formal type, substantial construction (faced sides, paved surface) and area (49 sq m). The presence of the human remains within the blister cave further indicates a burial function. Feature B is unaltered and in good condition.

Feature C is a modified outcrop located on a bare pahoehoe flow adjacent to the Feature A enclosure to the west. The feature is irregularly-shaped and is 2.0 m long, 2.0 m wide and 1.15 m in height, built of sparsely piled cobbles. No cultural remains were noted. Feature C was interpreted as an agricultural clearing pile based on its formal type, informal construction and absence of cultural remains by Haun et al. (1998). It is unaltered and in good condition.

Feature K is a modified outcrop located 17.5 m north of the Feature A enclosure. This feature was initially identified and recorded as a platform by Dunn and Rosendahl (1991). The following year, Dunn and Rosendahl returned to the site and reclassified the feature as a partially disturbed modified outcrop that was 12.0 m long, 8.0 m wide, with a maximum height of 0.9 m. The outcrop is roughly triangular in shape and contains two paved cobble areas and scattered surface stones. No cultural remains were noted on the surface.

Dunn and Rosendahl (1992) excavated a 1.0 by 1.0 m test unit (TU-1170-26) into the paved area at the southeastern end of the outcrop. This excavation revealed a stone architectural layer (Layer I), over two soil deposits (Layers II and III; *Figure 25*). Layer I consisted of 0.28 to 0.52 m of cobbles and small boulders, containing a single waterworn basalt cobble. The base of Layer I intruded slightly into the Layer II soil deposit. Layer II consisted of 0.15 to 0.2 m of a black (10YR 2/1) sandy loam. Cultural remains from Layer II consisted of 12.34 grams of marine shell and a coral abrader.

The Layer III deposit was comprised of 0.1 to 0.2 m of a black (10YR 2/1) sandy clay with ash, located over bedrock. This layer contained 18.77 grams of marine shell, four fragments of fish bone, a piece of bird bone, two rodent bones, two coral abraders and a volcanic glass flake. Feature K was interpreted as the foundation for a permanent habitation structure based on its substantial construction (paved surface) and area (96.0 sq m) by Haun et al. (1998). The feature is altered and in fair condition.



- Layer I - Tightly packed cobbles and small boulders; No cultural remains
- Layer II - Very dark brown (10YR 2/2) silt; Cultural remains present
- Layer III - Dark yellowish brown (10YR 3/4) silt; Burial present

Figure 24. Site 6332, Feature B, TU-9, South Face Profile

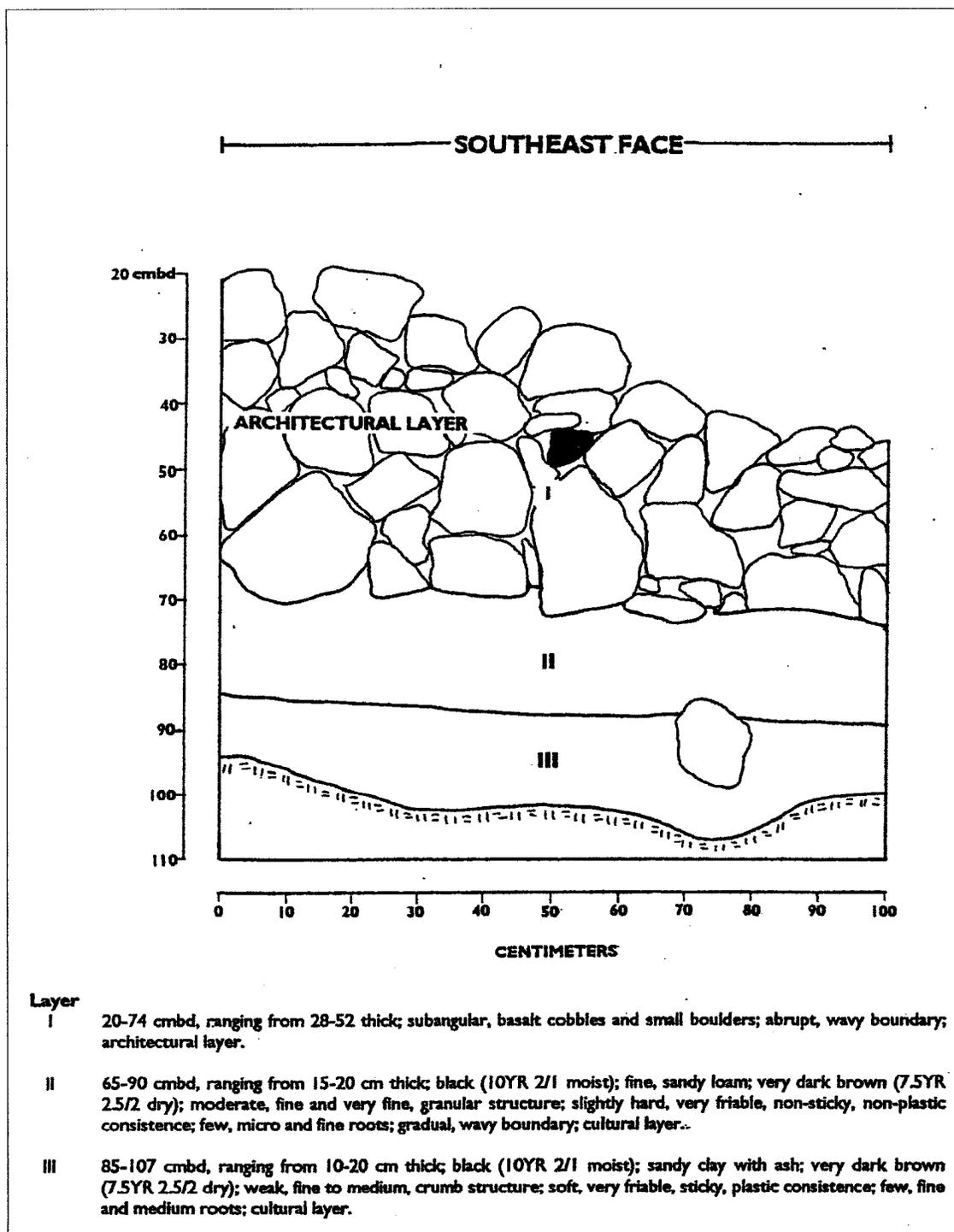


Figure 25. Site 6332, Feature K, TU-1170-26, Southeast Face Profile from Haun et al. (1998:266)

Site 6334

Site 6334 is a stone wall located on the boundary between Kahului 2 and Puapua'a 1. The wall was initially identified by Ching et al. (1973) and has been recorded by researchers including Hommon and Rosendahl (1983), Dunn and Rosendahl (1991), and Haun et al. (1998). The portion of the wall within the project area originates against the seaward side of the Great Wall of Kuakini (Site 6302) and extends downslope a distance of 382.0 m. The seaward portion of the wall extends to the southwest outside the project area boundary. The inland portion on the eastern side of Site 6302 has been destroyed.

The wall is built of stacked cobbles and small boulders, with a core-filled interior of small cobbles. It varies in width at the base from 0.7 to 1.1 m and at the top from 0.4 to 0.7 m (*Figure 26*). The height of the wall ranges from 0.8 to 1.35 m. The majority of the wall is intact although some collapse was noted and a section of the wall has been recently breached by bulldozer activity associated with the development of a parcel located adjacent to the project area to the south. Site 6334 is interpreted as a livestock control feature based on its height and method of construction. It also likely functioned as an historic land division boundary between Kahului 2 and Puapua'a 1. The site is altered and in fair to good condition.

Site 21768

Site 21768 is a stone wall located in the northwestern corner of the project area. The site was previously identified by Rechtman and Henry (1999), who recorded it as a series of four connected wall sections that bordered a bulldozed parking area that had once contained an historic cemetery. The wall originates 7.0 m inland of Ali'i Drive and extends 17.0 m to the east-northeast. This portion of the wall was recorded as Segment A by Rechtman and Henry (1999). It ranges in width from 1.0 to 1.2 m at the base, 0.7 to 0.8 m at the top and 0.7 to 0.9 m in height (*Figure 27*). This segment has been disturbed since it was recorded by Rechtman and Henry (1999) who indicate it originally was built of stacked cobbles and small boulders with a core-filled interior of small cobbles.

The wall angles to the north-northwest at the inland end of Segment A and extends to the north for 21.0 m. This section of wall was recorded as Segment B by Rechtman and Henry (1999). This section been significantly impacted by modern bulldozer activity likely associated with the construction of the parking area; however, an intact section is located at the Segment A intersection. The majority of the wall is collapsed and contains fragments of concrete and asphalt. It is 1.4 to 2.0 m wide and 0.6 to 0.8 m in height. Wall segments A and B formed the southern and eastern sides of an expansion of LCA 10373 that became a historic cemetery for the Komomua and Kahulamu families. The graves were reportedly relocated in the 1970s (Rechtman and Henry 1999).

Rechtman and Henry (1999) observed a section of wall that originated at the northern end of Segment B and which extended 47 m to the east (Segment C), terminating at the southern end of Segment D (discussed below). No remnants of this section were identified during the present study, indicating it has been destroyed since this earlier study. According to Rechtman and Henry (1999), Segment C was built of stacked and faced stones with a core-filled interior, averaging 1.5 m wide and 0.7 m in height. A 6.5 m wide opening framed with wooden posts was observed 7.5 m seaward of its eastern end and hog-wire fencing was incorporated into it.

According to Rechtman and Henry (1999), Segment D originally extended from the eastern end of Segment C a distance of 21.0 m, terminating in a disturbed area at the northern end. The southern end of this section, at the Segment C/D intersection, has been destroyed since the earlier study. The portion that remains is 20.0 m long (north-south) and is mostly collapsed. The base of the wall is relatively intact, ranging in width from 0.7 to 0.8 m and in height from 0.4 to 0.6 m. Hog-wire fencing extends across the top of Segment D. Segments C and D formed the southern and eastern boundaries of LCA 10373 (Rechtman and Henry 1999). Site 21768 is interpreted as a permanent habitation ancillary feature that enclosed a residential yard. The site is altered and in poor to fair condition.



Figure 26. Site 6334 Wall, view to southwest



Figure 27. Site 21768, Segment A Wall, view to south

Site 22475

Site 22475 is a stone wall that borders the inland side of Ali'i Drive, in the northwestern portion of the project area. A portion of this wall was previously identified by Rechtman and Dougherty (2000) during a survey of a parcel located adjacent to the present project area to the south-southwest. The southern end of the wall originates on the northern side of a bulldozed road that parallels the project area boundary in this area. It extends to the north-northwest a distance of 102.0 m, terminating 5.0 m south of the seaward end of the Site 21768 wall. Large portions of the wall have collapsed and the south-southwestern end has been destroyed by recent construction. Intact sections are present ranging in width at the base from 0.95 to 1.05 m and at the top from 0.8 to 0.9 m (*Figure 28*). The height of the intact sections of wall ranges from 0.8 to 1.0 m. It is built of stacked cobbles and small boulders with a core-filled interior of cobbles.

Site 22475 is interpreted as a livestock control feature based on its height and method of construction. According to Rechtman and Dougherty (2000), the wall was constructed after 1927 when Mr. Manuel Gomes established a cattle ranch in Kahului and Wai'aha (2000:16). The site is altered and in poor to fair condition.

Site 23914

Site 23914 is a complex of two features located in the northwestern portion of the project area. The features consist of a large enclosure (Feature A) and a surface and subsurface cultural deposit (Feature B). Both features were previously identified by Soehren (1976) but were not assigned State site numbers. Feature A was previously identified as Site 6 by Soehren (1976) and Feature B appears correspond to Site 5.

Soehren (1976) interpreted the Feature A enclosure as a corral constructed in an area that had been previously utilized for habitation. The enclosure is 30.5 m long (north-northwest by south-southeast) and 29.5 m wide (*Figures 29 and 30*). The walls are generally intact, although some collapse was observed. The intact sections of wall are faced and range in width at the base from 1.0 to 1.6 m, at the top from 0.7 to 1.2 m, and in height from 1.2 to 1.85 m. Waterworn basalt cobbles are incorporated into the walls on the north and east sides. The interior of the enclosure consists of a level soil deposit that slopes slightly to the west. A low pahoehoe outcrop bisects the interior at its western end. Several fragments of sun-bleached marine shell were noted inside the enclosure.

A walled in entrance into the enclosure is present along the central portion of the western wall. This entrance is 2.5 m wide and has been filled in with stacked cobbles and small boulders to the height of the adjacent walls. Faced sides are visible at the north and south ends of this walled in area. Soehren (1976) states that this entrance was only walled in to a height of two feet during his examination, suggesting that it has been further enclosed since 1976.

A 0.5 by 0.5 m test unit (TU-2) was excavated into the interior of the enclosure in the southeastern corner. This excavation revealed two soil deposits overlying bedrock (*Figure 31*). Layer I consisted of 0.36 to 0.4 m of a very dark brown (10YR 2/2) sandy silt with 20-30% cobble and pebble inclusions. Cultural remains from this layer consisted of 105 *Cypraea* sp. shells and shell fragments (169.8 grams), 93 *Neritidae* shells (35.1 grams), two *Drupa morum* shells (6.5 grams), five *Drupa rubusidaeus* shells (5.3 grams), five *Drupa* sp. shell fragments (1.1 grams), seven *Conus* sp. shells and fragments (41.9 grams), two *Mitra* sp. shells (1.1 grams), four fragments of *Isognomon* shells (1.5 grams), four unidentified marine shell fragments (1.5 grams), 196 fragments of sea urchin body (28.4 grams), two sea urchin spines (2.2 grams), five fish bones (0.6 grams), two fish scales (0.1 grams), three pig teeth (4.4 grams), 14 waterworn basalt pebbles (21.4 grams), 10 waterworn coral pebbles (22.8 grams), eight volcanic glass flakes (2.5 grams), one *kukui* nut shell (0.6 grams), and 1.55 grams of charcoal. Layer II consisted of 0.13 to 0.24 m of a pale brown (10YR 6/3) silt with 50% cobble and pebble inclusions. No cultural remains were present in Layer II.



Figure 28. Site 22475 Wall, view to east



Figure 29. Site 23914, Northern Exterior Wall of Enclosure, view to southwest

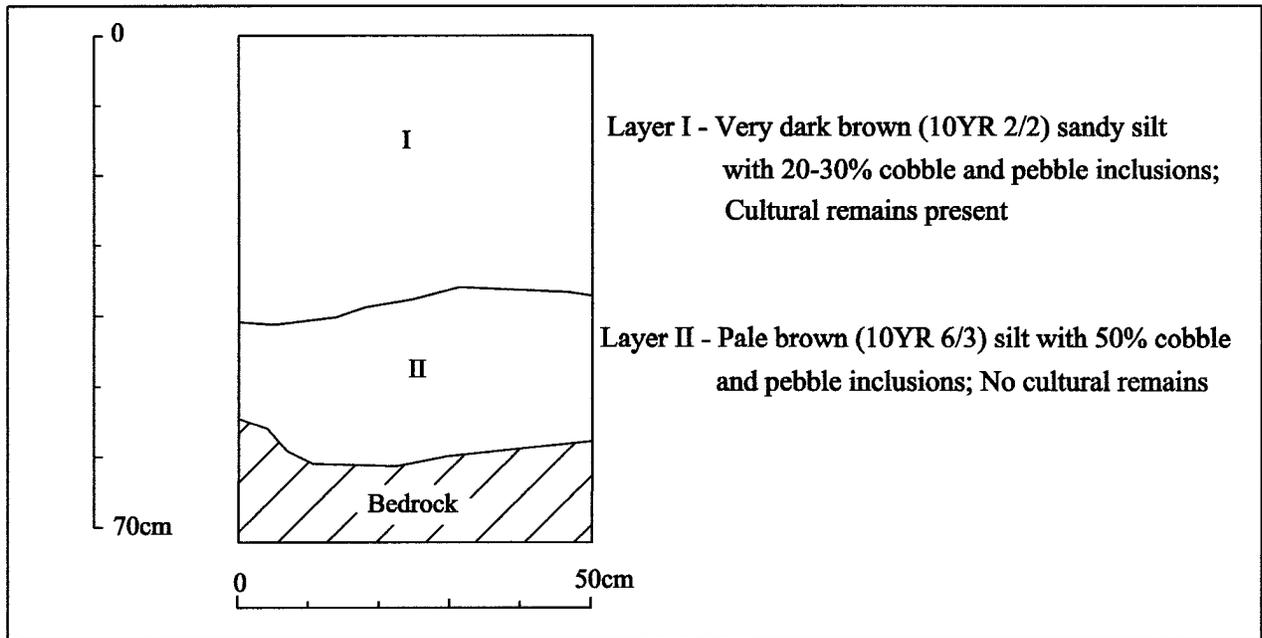


Figure 31. Site 23914, TU-2 North Face Profile

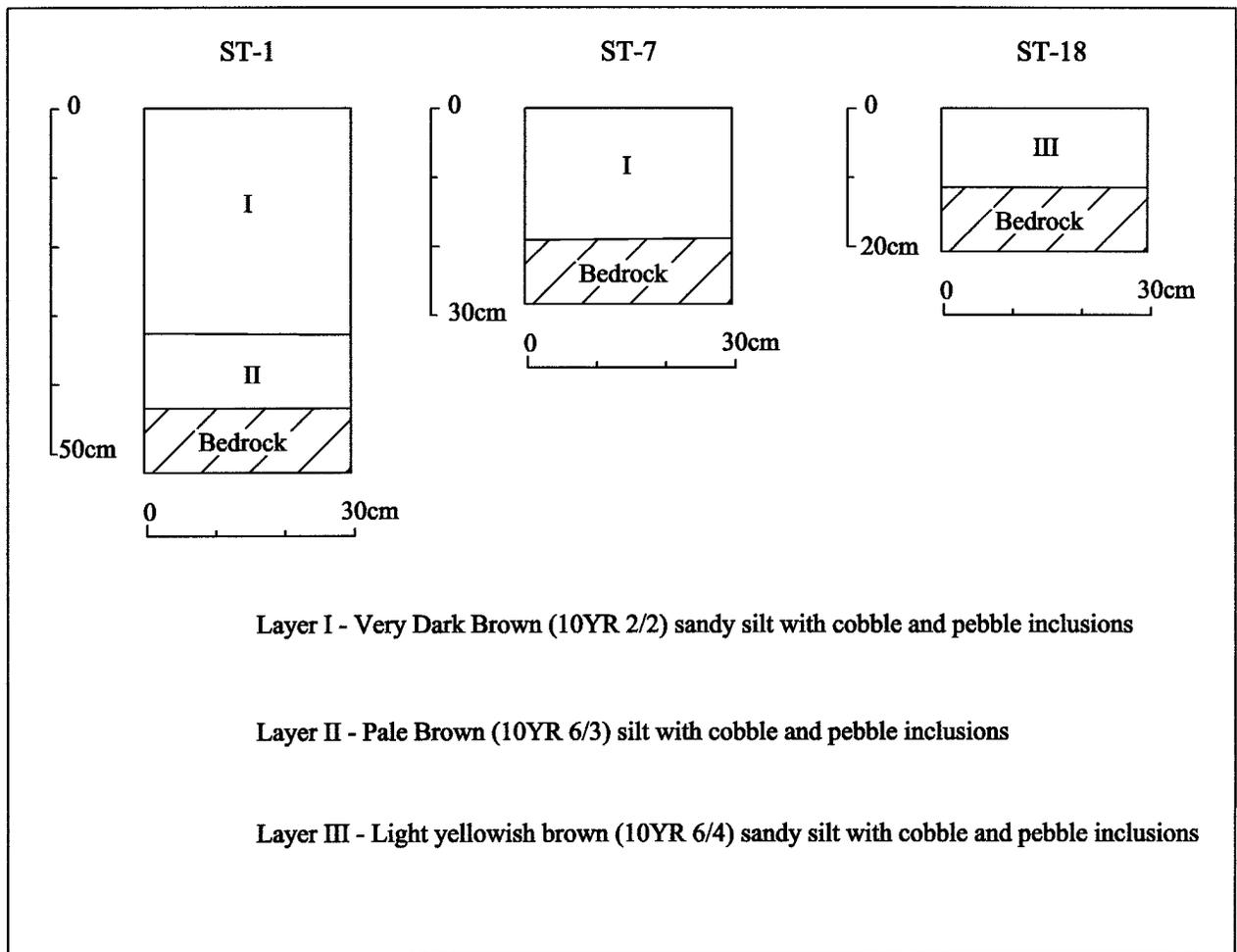


Figure 32. Site 23914, Representative Shovel Test Stratigraphy

Several low sections of wall extend to the west-southwest from the seaward side of the structure, suggesting that the enclosure previously contained multiple compartments. A large bulldozer pushpile of boulders, soil and fallen trees is located to the west of the enclosure, the creation of which may have caused the disturbance to the site. The first wall section extends 1.8 m to the west-southwest from the northwestern corner of the enclosure. This section is 1.4 m wide and 1.3 m in height. The second section is located 10.5 m to the south-southeast from the first, adjacent to the northern end of the walled in entrance. This section is 5.0 m long, 1.35 m wide and 0.9 m in height. The third section consists of a low linear rubble berm of cobbles and small boulders that extends 11.5 m to the west-southwest from the southwestern corner of the enclosure. It is 1.7 to 2.0 m wide and averages 0.35 m in height.

A surface scatter of marine shell (*Cypraea* sp., *Nerita* sp., *Conus* sp.), waterworn pebbles and cobbles, and waterworn coral, designated as Feature B, is located adjacent to the enclosure to the north. This scatter corresponds to an area of midden previously identified by Soehren (1976) as Site 5. These surface remains encompass an area that is 36.5 m long (east-west) and 22.7 m wide (see *Figure 30*). A series of 27 shovel tests were excavated in the area to determine the subsurface extent of this cultural deposit. These 27 shovel tests (STs) averaged 0.3 m in diameter and were excavated to bedrock. The STs were spaced at 10.0 m intervals, forming a grid comprised of two rows of STs oriented in a north-northwest by south-southeast direction, and two rows oriented in a east-northeast by west-southwest direction.

The shovel testing at the site indicates that the subsurface cultural deposit occupies an area of 1,525 sq m, measuring 50.0 m in length (north-northwest by south-southeast) and 30.5 m wide. The deposit extends from the area of the surface scatter south into the interior of the enclosure. *Table 4* summarizes the soil stratigraphy noted in the 27 STs. The cultural deposit, designated as Layer I, consists of a very dark brown (10YR 2/2) sandy silt with cobble and pebble inclusions, present in 11 of the 27 STs (STs 1, 2, 4, 7, 9-14 and 16). This deposit varied in thickness from 0.08 to 0.41 m, with an average thickness of 0.26 m. The Layer I soil was also present in ST 3, although no cultural remains were present. Cultural remains from Layer I are summarized in *Table 4* and consist of 74 marine shells and shell fragments (49 *Cypraea* sp. shells - 97.1 grams, five *Conus* sp. shells - 15.8 grams, 14 *Nerita* sp. shells - 6.8 grams, three *Drupa* sp. shells - 2.7 grams, and three unidentified shell fragments - 4.6 grams), 29 sea urchin body fragments (5.7 grams), one sea urchin spine (0.9 grams), three volcanic glass flakes (1.4 grams), 13 waterworn coral pebbles (23.3 grams), three waterworn basalt pebbles (11.1 grams), and 1.05 grams of charcoal.

The Layer I cultural deposit was underlain by a pale brown (10YR 6/3) silt with cobble and pebble inclusions (Layer II) in seven of the STs (STs 1, 2, 4, 10, 12, 14 and 16), and in the culturally sterile ST-3. Layer II contained no cultural remains and ranged in thickness from 0.05 to 0.13 m and averaged 0.09 m thick. Bedrock was located beneath the Layer II deposit. In the four remaining STs containing Layer I, bedrock was present below the cultural deposit (STs 7, 9, 11 and 13).

Shovel testing to the north, east and west of the surface scatter, and to the east, west and south of the enclosure evidenced no cultural remains (STs 5, 6, 8, 15 and 17-27). The soil within these 15 STs consisted of a light yellowish brown (10YR 6/4) sandy silt with cobble and pebble inclusions, designated as Layer III. Bedrock was encountered beneath the Layer III deposit in these 15 STs. Representative examples of the soil stratigraphy identified during shovel testing is presented in *Figure 32*.

Site 23914 is interpreted as a permanent habitation structure (Feature A) with an associated surface and subsurface cultural deposit (Feature B). Feature A potentially functioned as a yard surrounding one or more pole and thatched roofed structures based on its formal type, substantial construction (faced sides) and area (899.7 sq m). The site is altered and in fair condition.

Site 23915

Site 23915 is a low platform situated in the northwestern portion of the project area, 22.0 m south of the Site 23914 enclosure. This site potentially corresponds to a platform previously recorded by Soehren (1976) as Site 7. The site is located in an area comprised of level soil that has been mechanically disturbed and it appears that it has potentially been run over by a bulldozer. The platform is rectangular in shape and is 8.1 m long (north-northwest by south-southeast) and 7.1 m wide and is collapsed around its entire pe-

Table 4. Summary of Site 23914 Shovel Tests

| ST # | Layer | Munsell color | Soil Texture | Depth (meters bs) | Thickness (in meters) | Cultural remains |
|------|-------|----------------------------------|--------------|-------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.33 | 0.33 | 13 <i>Cypraea</i> sp. shells (28.6 grams), 1 <i>Conus</i> sp. shell (2.1 grams), 1 <i>Drupa</i> sp. shell (0.6 grams), 8 sea urchin body fragments (1.3 grams), 1 sea urchin spine (0.9 grams), 2 volcanic glass flakes (0.6 grams), two waterworn coral pebbles (4.6 grams) |
| | II | Pale brown (10YR 6/3) | Silt | 0.33-0.43 | 0.1 | No |
| 2 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.22 | 0.22 | 7 <i>Cypraea</i> sp. shells (11.5 grams), 2 <i>Conus</i> sp. shells (10.7 grams), 1 <i>Drupa</i> sp. shell (0.7 grams), 2 <i>Nerita</i> sp. shells (1.1 grams), 8 sea urchin body fragments (1.3 grams), 1 unidentified marine shell fragment (2.8 grams), 1 waterworn coral pebble (2.7 grams) |
| | II | Pale brown (10YR 6/3) | Silt | 0.22-0.3 | 0.08 | No |
| 3 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.19 | 0.19 | No |
| | II | Pale brown (10YR 6/3) | Silt | 0.19-0.31 | 0.12 | No |
| 4 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.08 | 0.08 | 1 <i>Cypraea</i> sp. shell (6.4 grams) |
| | II | Pale brown (10YR 6/3) | Silt | 0.08-0.15 | 0.07 | No |
| 5 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.23 | 0.23 | No |
| 6 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.24 | 0.24 | No |
| 7 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.19 | 0.19 | 3 <i>Cypraea</i> sp. shells (1.3 grams), 1 waterworn coral pebble (3.2 grams) |
| 8 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.3 | 0.3 | No |
| 9 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.39 | 0.39 | 2 <i>Cypraea</i> sp. shells (3.6 grams), 1 unidentified marine shell fragment (0.1 grams), 2 sea urchin body fragments (0.4 grams), 6 waterworn coral pebbles (8.5 grams) |
| 10 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.18 | 0.18 | 3 <i>Cypraea</i> sp. shells (1.4 grams), 1 <i>Nerita</i> sp. shell (1.2 grams), 0.2 grams charcoal |
| | II | Pale brown (10YR 6/3) | Silt | 0.18-0.25 | 0.07 | No |
| 11 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.3 | 0.3 | 3 <i>Cypraea</i> sp. shells (5.3 grams), 2 waterworn coral pebbles (3.5 grams) |
| 12 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.23 | 0.23 | 2 <i>Cypraea</i> sp. shells (2.1 grams), 3 <i>Nerita</i> sp. shells (0.7 grams), 3 sea urchin body fragments (0.6 grams), 1 unidentified marine shell fragment (1.7 grams), 1 volcanic glass flake (0.8 grams), 1 waterworn basalt pebble (2.9 grams), 0.15 grams of charcoal |
| | II | Pale brown (10YR 6/3) | Silt | 0.23-0.28 | 0.05 | No |
| 13 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.24 | 0.24 | 2 <i>Cypraea</i> sp. shells (1.3 grams), 1 <i>Drupa</i> sp. shell (1.4 grams), 1 waterworn coral pebble (0.8 grams) |
| 14 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.34 | 0.34 | 5 <i>Cypraea</i> sp. shells (26.1 grams), 1 <i>Conus</i> sp. shell (1.6 grams), 1 <i>Nerita</i> sp. shell (0.3 grams), 3 sea urchin body fragments (1.4 grams), 2 waterworn basalt pebbles (8.2 grams) |
| | II | Pale brown (10YR 6/3) | Silt | 0.34-0.45 | 0.05 | No |
| 15 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.25 | 0.25 | No |
| 16 | I | Very dark brown (10YR 2/2) | Sandy silt | 0 - 0.41 | 0.41 | 8 <i>Cypraea</i> sp. shells (9.5 grams), 7 <i>Nerita</i> sp. shells (3.5 grams), 1 <i>Conus</i> sp. shell (1.4 grams), 5 sea urchin body fragments (0.7 grams), 0.7 grams of charcoal |
| | II | Pale brown (10YR 6/3) | Silt | 0.41-0.53 | 0.12 | No |
| 17 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.2 | 0.2 | No |
| 18 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.11 | 0.11 | No |
| 19 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.15 | 0.15 | No |
| 20 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.17 | 0.17 | No |
| 21 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.15 | 0.15 | No |
| 22 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.2 | 0.2 | No |
| 23 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.21 | 0.21 | No |
| 24 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.25 | 0.25 | No |
| 25 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.4 | 0.4 | No |
| 26 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.3 | 0.3 | No |
| 27 | III | Light yellowish brown (10YR 6/4) | Silt | 0 - 0.23 | 0.23 | No |

rimeter (*Figure 33*). The sides of the structure vary in height from 0.25 to 0.4 m above the surrounding ground surface. The surface is relatively level and is roughly paved with small cobbles. There is an oval-shaped depression located in the southwestern portion of the platform, measuring 0.49 m long, 0.45 m wide and 0.35 m deep. Cultural remains observed on the surface of the site consist of two fragments of waterworn coral and a waterworn basalt cobble.

A 0.5 by 0.5 m test unit (TU-1) was excavated into the platform in the northwestern corner (see *Figure 33*). This excavation revealed a stone architectural layer (Layer I) over a soil deposit (Layer II) above bedrock. Layer I consisted of 0.3 to 0.32 m of a loosely packed cobbles and small boulders with no cultural remains present. The base of Layer I rests on the surface of the Layer II deposit and no evidence was found to indicate that it had built during more than a single construction episode.

Layer II consisted of 0.38 to 0.4 m of a brown (10YR 4/3) silt loam with 10% cobble and pebble inclusions. Cultural remains from Layer II consisted of two fragments of *Cypraea* sp. shell (1.2 grams), a large waterworn coral cobble (376.5 grams) and 0.2 grams of charcoal.

A second test unit (TU-7) was excavated in the center of the platform during the present project. The excavation of this 2.0 m long by 1.0 m wide unit revealed similar stratigraphy to that observed in TU-1 (see *Figure 33*). Layer I consisted of 0.5 to 0.72 m of a loosely packed cobbles and small boulders with no cultural remains. Layer II was comprised of a brown (10YR 4/3) silt loam with 10% cobble and pebble inclusions. A human cranium was identified within this deposit at 0.76 m below the surface of the structure. Additional cultural remains from Layer II consisted of a single *Cypraea* sp. shell (1.7 grams). The excavation of TU-7 was terminated on identification of the human remains and the unit was carefully backfilled and the surface structure reconstructed. Site 23915 is interpreted as the foundation for a permanent habitation structure. This is based on its formal type, substantial construction (paved surface) and area (57.5 sq m). The presence of the human remains identified in TU-7 further indicates a burial function. It is possible that the depression noted on the surface of the structure may represent the remnant of a posthole used to support a post in a wooden structure. The site is altered and in poor to fair condition.

Site 23916

Site 23916 is the platform located on the top of a knoll, 120 m east of Site 23914, in an area of level soil with scattered surface stones. This site potentially corresponds to Soehren's (1976) Site 14, which was described as a habitation site. The platform is roughly L-shaped, consisting of the main platform and a linear projection that extends to the east of the southeastern corner (*Figure 34*). The main platform is rectangular in shape and is 5.7 to 7.6 m long (north-south) and 5.4 to 6.0 m wide. The sides of the platform are built of stacked cobbles and small boulders, ranging in height from 0.35 to 0.7 m, with the northern side collapsed outward. The surface is relatively level and is roughly paved with cobbles and small boulders. Fragments of marine shell were observed on the platform surface at the southern end. A piled cobble wall is located along the eastern side of the structure, measuring 4.2 m long (north-south) and 1.0 to 1.15 m wide. The wall is 0.5 m in height above the surface of the platform and 0.6 m in height above the surrounding ground surface.

The projection off the southeastern corner of the main platform is 3.15 m long (east-west) 3.0 m wide and 0.3 to 0.4 m in height. The surface of this portion of the site is comprised of level but unpaved cobbles with no cultural remains present.

A 0.5 by 0.5 m test unit (TU-3) was excavated into the south-central portion of the platform, revealing an architectural layer (Layer I), over a soil deposit (Layer II) over bedrock (see *Figure 34*). Layer I consisted of 0.2 to 0.23 m of loosely packed cobbles and small boulders with no cultural remains present. The base of Layer I rests on the surface of the Layer II deposit and no evidence was found to indicate that it had built during more than a single construction episode.

Layer II consisted of 0.09 to 0.21 m of a dark yellowish brown (10YR 4/4) silt loam with 10% cobble and pebble inclusions. Cultural remains from Layer II consisted of nine fragments of waterworn

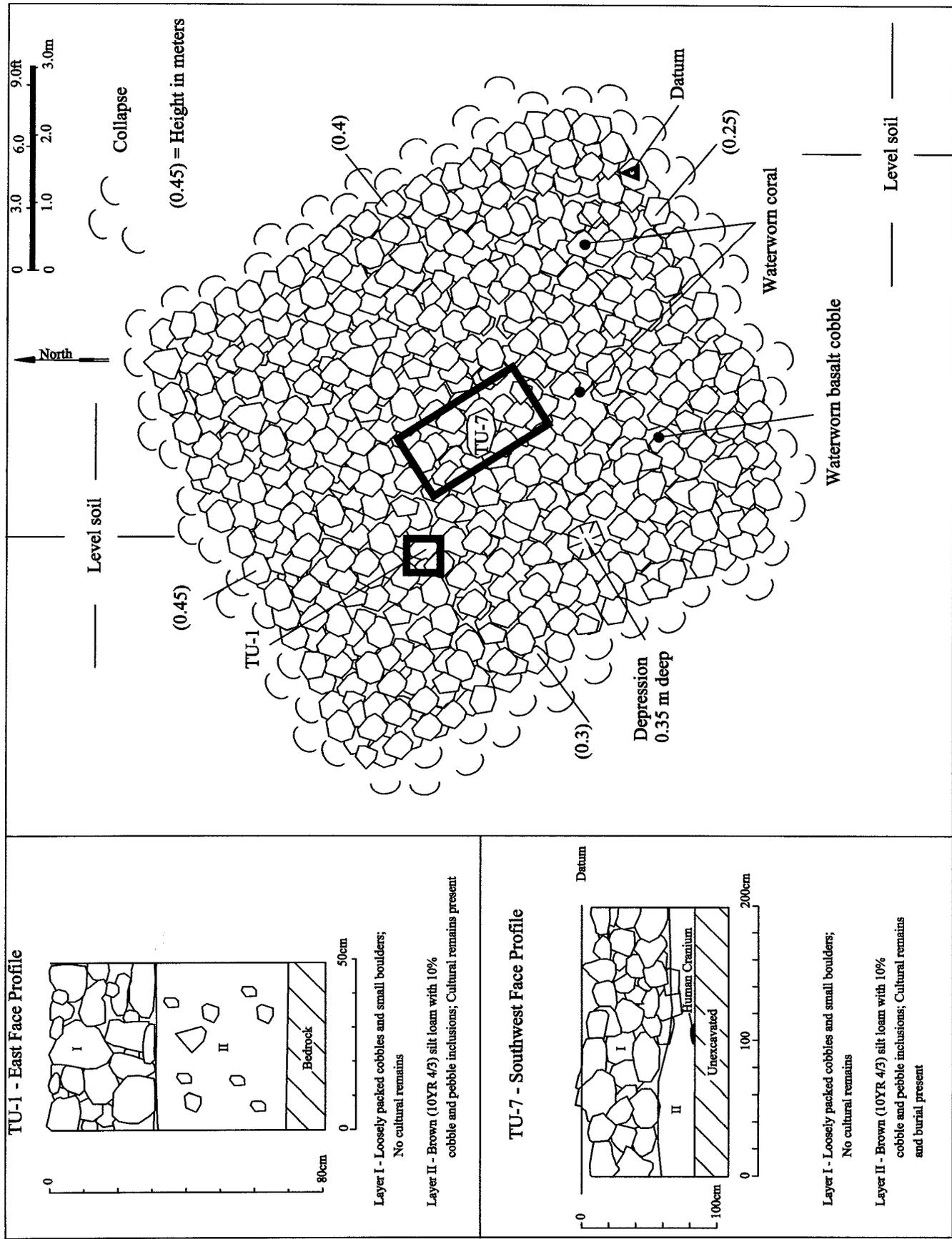


Figure 33. Site 23915 Plan Map and TUs 1 and 7 Profiles

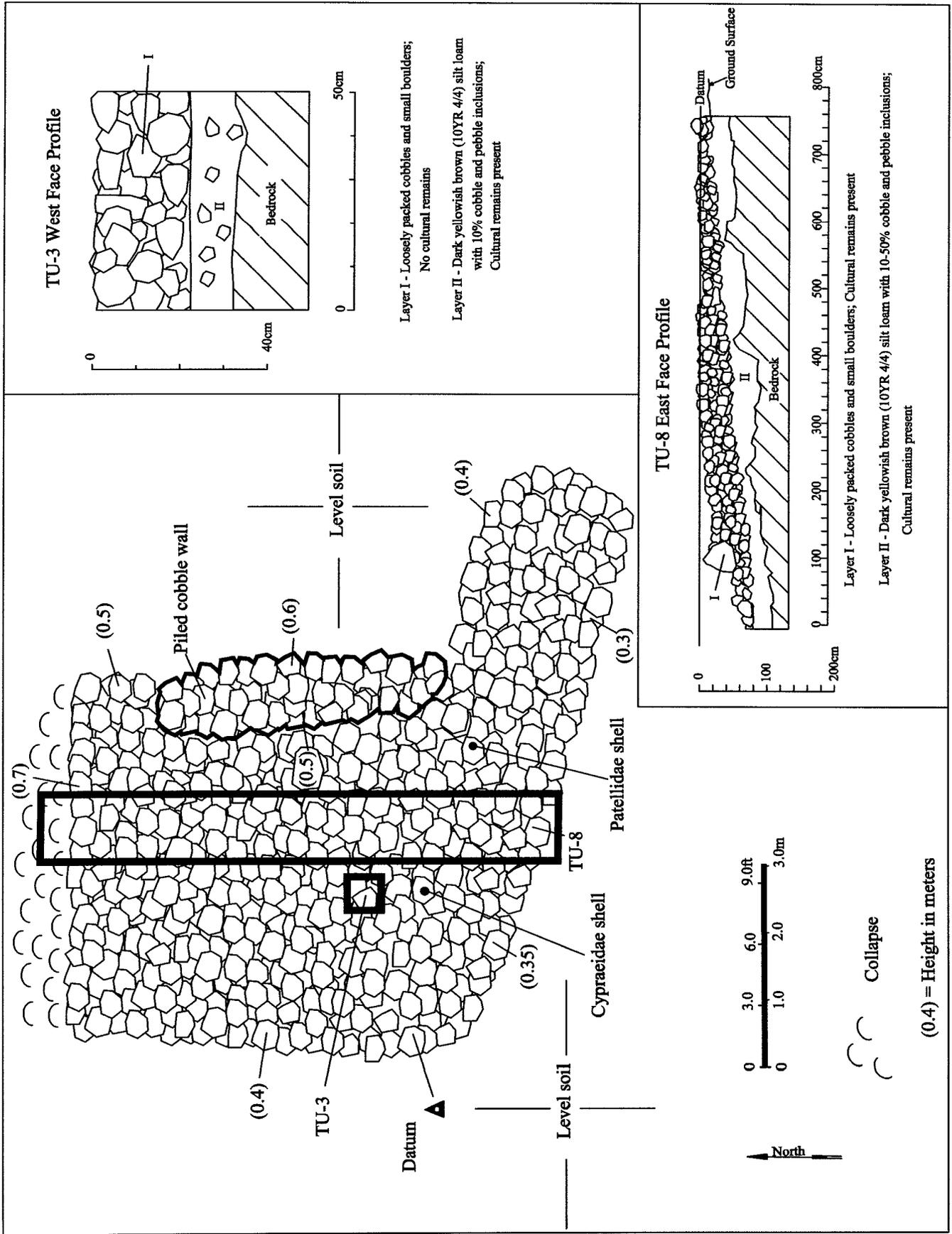


Figure 34. Site 23916 Plan Map and TUs 3 and 8 Profiles

coral (4.3 grams), two fragments of *kukui* nut shell (1.3 grams), three fragments of *Cypraea* sp. shell (4.1 grams) and three fragments of sea urchin body (0.4 grams).

A second test unit (TU-8) was excavated through the center of the platform during the present project, bisecting it through the center in a north-south direction (see *Figure 34*). The excavation of this 7.7 m long by 1.0 m wide unit revealed identical stratigraphy to that observed in TU-3. Layer I consisted of 0.2 to 0.68 m of loosely packed cobbles and small boulders. Cultural remains from Layer I consisted of a water-worn basalt cobble.

The Layer II deposit consisted of 0.08 to 0.43 m of a dark yellowish brown (10YR 4/4) silt loam with 10-50% cobble and pebble inclusions. Cultural remains from this layer consisted of 20 *Cypraea* sp. shells (51.3 grams), ten *Patellidae* sp. shells (18.0 grams), three *Thaididae* sp. shells (7.3 grams), three *Isognomidae* sp. shells (0.9 grams), two *Nerita polita* shells (0.9 grams), one *Nerita picea* shell (0.2 grams), one *Terebridea* sp. shell (3.2 grams), one *Strombidae* sp. shell (0.6 grams), one *Cerithiidae* sp. shell (6.6 grams), 14 unidentified marine shell fragments (60.6 grams), five *Echinoid* spines (1.9 grams), seven fragments of *Echinoid* body (1.1 grams), two fish bones (1.1 grams), one pig bone (0.7 grams), 19 dog bones (15.2 grams), a coral abrader (27.6 mm long, 13.4 mm wide, 10.7 mm thick, 3.2 grams), a basalt abrader (66.4 mm long, 55.7 mm wide, 10.1 mm thick, 36.8 grams), two basalt adze fragments (No. 1 - 28.7 mm long, 26.6 mm wide, 10.7 mm thick, 13.3 grams, No. 2 - 29.2 mm long, 15.1 mm wide, 4.7 mm thick, 1.7 grams) and 70.1 grams of charcoal.

Site 23916 is interpreted as the foundation for a permanent habitation structure. This is based on its formal type, substantial construction (paved surface) and area (44.8 sq m). The site is unaltered and in fair condition.

Site 23917

Site 23917 is the disturbed remnant of a low terrace located in the northwestern portion of the project area, inland of Ali'i Drive and 70.0 m west of Site 23914. The site appears to correspond to Soehren's Site 4, which was described as a habitation site of midden and rubble. The terrace is roughly oval in shape and is 3.3 m long (north-south) and 1.1 to 2.7 m wide (*Figure 35*). A low cobble and small boulder retaining wall extends along the east, northeast and southeast sides of the structure, built of stacked and piled cobbles and small boulders and ranging in height from 0.2 to 0.4 m above the surrounding ground surface. The terrace is built on and against pahoehoe outcrops at the northwest and southwest sides, with an area of level soil between the outcrops. The surface is comprised of level but unpaved cobbles and small boulders. Cultural remains noted on the surface consist of four small waterworn cobbles and a waterworn basalt cobble.

A 0.7 by 1.0 m test unit (TU-4) was excavated into the surface of the terrace, revealing a stone architectural layer (Layer I), above a soil deposit (layer II), over bedrock (see *Figure 35*). Layer I consisted of 0.08 to 0.32 m of loosely packed cobbles. A piece of waterworn coral was recovered from Layer I (17.1 grams). The base of Layer I rests on the surface of the Layer II soil and no evidence was found to indicate that it had been built during more than a single construction episode.

Layer II consisted of a dark brown sandy silt containing four fragments of waterworn coral (8.1 grams), a waterworn basalt pebble (8.4 grams), two *kukui* nut shell fragments (1.5 grams), and a fragment of sun-bleached unidentified marine shell (0.7 grams). This deposit was very thin in the northern portion of the unit, measuring 0.02 to 0.3 m in thickness (labeled Layer IIa on *Figure 35*). In the southern portion of the unit, the deposit was 0.1 to 0.11 m in thickness (Layer IIb).

The area in which Site 23917 is located has been disturbed, potentially during the construction of Ali'i Drive or during historic/modern ranching activities. Although no obvious evidence of disturbance to the terrace was noted, bulldozer scrape marks were visible on the surface of the outcrops in the area, and it is possible that the terrace represents the remnants of a larger structure. Site 23917 is interpreted as a temporary habitation site based on its formal type, insubstantial construction and small area (6.3 sq m). It appears unaltered and in fair condition.

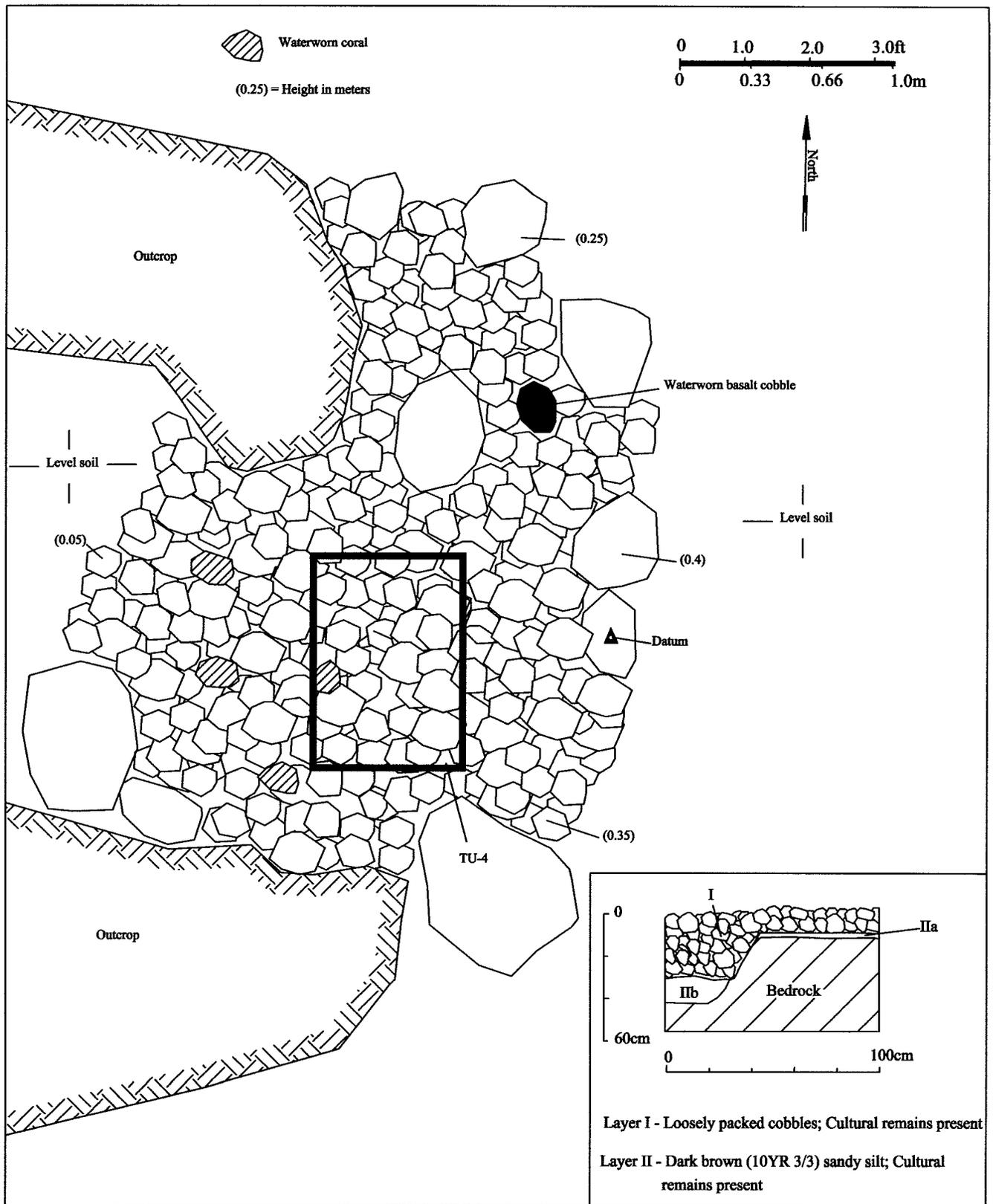


Figure 35. Site 23917 Plan Map and TU-4 West Face Profile

Site 23918

Site 23918 is a midden deposit located in the northwestern portion of the project area, 40.0 m west of the Site 23914 enclosure. The deposit is situated at the seaward end of a low pahoehoe outcrop, and is roughly oval in shape, measuring 6.45 m long (east-west) by 1.1 to 4.0 m wide (*Figure 36*). The deposit is comprised of a light brown sandy loam with scattered marine shell (*Cypraea* sp., *Drupa* sp., and *Conus* sp.), waterworn coral and waterworn pebbles. Trowel probes within the deposit indicate it is 0.05 to 0.1 m in thickness. Site 23918 is interpreted as a temporary habitation site based on its formal type and the absence of an associated surface structure. The site is unaltered and in good condition.

Site 23919

Site 23919 is a complex of 73 features interpreted as elements of the Kona Field System. The distribution of these features is presented in *Figure 10* and their physical characteristics are summarized in *Table 5*. The features consist of 48 modified outcrops, 20 mounds, four terraces and one *kua'iwi*. The features are crudely constructed of piled basalt cobbles and boulders, with no artifacts or food remains present. The mounds and modified outcrops consist of piles of stones that were likely cleared from nearby planting areas. The terraces were constructed to retain soils area on the sides of slopes for planting and the *kua'iwi* are clearing features that also functioned to delineate agricultural fields. The Site 23919 features are unaltered and in fair to good condition.

The clearing piles are constructed of piled cobbles and small boulders, situated either on bedrock outcrops (modified outcrops) or on soil areas (mounds). The modified outcrops range in length from 1.5 to 11.5 m (averaging 5.37 m long), in width from 0.85 to 7.1 m (averaging 3.01 m wide) and in height from 0.25 to 1.2 m (averaging 0.68 m tall). The majority of these features are irregularly-shaped (n=36), with the remainder consisting of linear (n=7) and oval (n=5). The mounds range in length from 2.6 to 6.5 m (averaging 4.29 m long), in width from 1.0 to 4.0 m (averaging 2.41 m) and in height from 0.3 to 1.1 m (averaging 0.60 m). Half of these features are also irregularly-shaped (n=10), with the remainder consisting of oval (n=6) and linear (n=4). An example of a Site 23919 clearing pile is illustrated in *Figure 37*.

The agricultural terraces vary in length from 2.5 to 16.5 m (averaging 7.8 m long), and in width from 1.5 to 3.2 m (averaging 2.45 m wide). These features evidence piled cobble and small boulder retaining walls along their downslope sides, with uneven surfaces. These retaining walls range in height from 0.3 to 1.0 m (averaging 0.68 m in height). The *kua'iwi* feature within the project area (Feature X) is situated in the inland portion of the parcel, 60.0 m southeast of the Site 6332 complex. This feature is 51.5 m long (northeast by southwest), 1.5 to 2.0 m in width, and 0.5 to 0.7 m in height (*Figure 38*).

Soehren (1976) Site 1

This site, identified by Soehren (1976), was situated in the southwestern corner of the seaward portion of the project area, in an area that is extensively disturbed by bulldozer activity. This site and Sites 2, 3, and 21 (discussed below) were never assigned SIHP site designations. Soehren (1976) interpreted Site 1 as a habitation site comprised of coral and shell fragments with scattered rubble. No information concerning the size or nature of the midden is presented. No evidence of the site was identified during the present study.

Soehren (1976) Site 2

Soehren's (1976) Site 2 was situated adjacent to Site 1 to the west. It is described as a small platform on a low pahoehoe ridge that was 9.0 feet long and 6.0 feet wide with facing along the south and east sides. It was interpreted as a possible "grave monument" by Soehren (1976). No evidence of the site was identified during the present study.

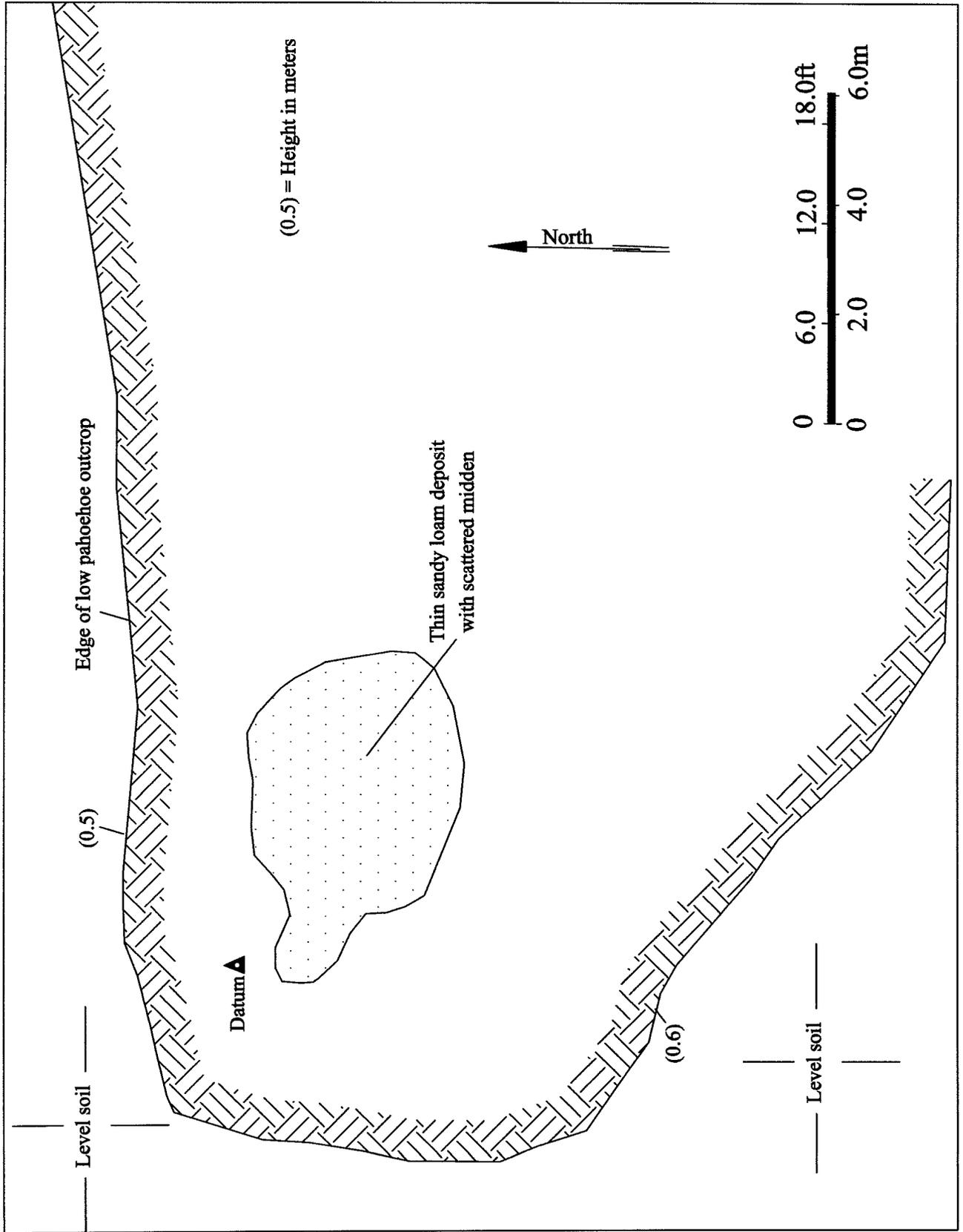


Figure 36. Site 23918 Plan Map

Table 5. Summary of Site 23919 Agricultural Features

| Feature | Type | Length | Width | Height | Shape | Field Number |
|----------------|------------------|---------------|--------------|---------------|--------------|---------------------|
| A | Modified outcrop | 3.25 | 1.80 | 1.00 | Irregular | 19 |
| B | Mound | 3.00 | 1.00 | 0.30 | Irregular | 3 |
| C | Modified outcrop | 2.20 | 1.50 | 0.45 | Oval | 4 |
| D | Terrace | 2.50 | 1.50 | 0.30 | Irregular | 5a |
| E | Mound | 3.00 | 1.20 | 0.55 | Oval | 5b |
| F | Modified outcrop | 5.00 | 4.50 | 0.30 | Irregular | 13 |
| G | Mound | 2.60 | 2.10 | 0.60 | Irregular | 12 |
| H | Terrace | 4.50 | 2.80 | 0.90 | Irregular | 9 |
| I | Modified outcrop | 7.20 | 1.50 | 0.40 | Linear | 8 |
| J | Mound | 4.10 | 3.50 | 0.30 | Oval | 11 |
| K | Mound | 4.70 | 1.60 | 0.35 | Linear | 10 |
| L | Modified outcrop | 4.70 | 3.20 | 0.70 | Irregular | 75 |
| M | Modified outcrop | 2.60 | 0.85 | 0.40 | Irregular | 37 |
| N | Modified outcrop | 3.20 | 2.20 | 0.75 | Oval | 38 |
| O | Modified outcrop | 4.50 | 1.00 | 0.55 | Linear | 39 |
| P | Modified outcrop | 2.60 | 2.00 | 0.70 | Oval | 74 |
| Q | Modified outcrop | 3.50 | 1.50 | 0.40 | Irregular | 40 |
| R | Modified outcrop | 1.60 | 1.40 | 0.25 | Irregular | 72 |
| S | Mound | 4.00 | 1.50 | 0.80 | Linear | 43 |
| T | Modified outcrop | 4.30 | 4.00 | 0.70 | Irregular | 68 |
| U | Modified outcrop | 8.50 | 4.00 | 0.95 | Irregular | 67 |
| V | Modified outcrop | 6.50 | 4.00 | 0.40 | Irregular | 66 |
| W | Mound | 4.50 | 3.20 | 0.80 | Irregular | 69 |
| X | Kuaiwi | 51.50 | 1.5-2 | 0.5-0.7 | Linear | 92 |
| Y | Modified outcrop | 1.50 | 1.50 | 0.50 | Irregular | 65 |
| Z | Modified outcrop | 6.10 | 1.90 | 0.65 | Linear | 99 |
| AA | Modified outcrop | 5.00 | 4.00 | 0.50 | Irregular | 97 |
| AB | Mound | 3.30 | 2.20 | 0.60 | Oval | 100 |
| AC | Modified outcrop | 2.70 | 2.50 | 0.55 | Irregular | 101 |
| AD | Mound | 6.50 | 4.00 | 0.60 | Oval | 102 |
| AE | Modified outcrop | 7.70 | 4.70 | 0.80 | Irregular | 117 |
| AF | Mound | 4.20 | 3.60 | 0.65 | Irregular | 62 |
| AG | Mound | 2.90 | 2.00 | 0.40 | Oval | 105 |
| AH | Mound | 6.00 | 4.00 | 0.40 | Oval | 106 |
| AI | Modified outcrop | 4.50 | 3.50 | 0.70 | Irregular | 108 |
| AJ | Modified outcrop | 11.50 | 4.00 | 1.20 | Irregular | 110 |

Table 5. Summary of Site 23919 Agricultural Features (cont.)

| | | | | | | |
|----|------------------|-------|------|------|-----------|------|
| AK | Modified outcrop | 5.00 | 4.00 | 1.00 | Irregular | 111 |
| AL | Mound | 3.10 | 1.20 | 0.60 | Linear | 112 |
| AM | Modified outcrop | 6.10 | 3.80 | 1.20 | Irregular | 109 |
| AN | Modified outcrop | 7.10 | 2.00 | 0.90 | Irregular | 150 |
| AO | Modified outcrop | 7.00 | 3.10 | 0.50 | Irregular | 151 |
| AP | Modified outcrop | 7.00 | 5.00 | 0.80 | Oval | 148a |
| AQ | Modified outcrop | 8.00 | 4.80 | 0.70 | Irregular | 148b |
| AR | Modified outcrop | 8.10 | 7.10 | 0.60 | Irregular | 147 |
| AS | Modified outcrop | 6.00 | 4.00 | 0.70 | Irregular | 146 |
| AT | Terrace | 4.30 | 2.50 | 0.60 | Irregular | 116b |
| AU | Modified outcrop | 4.50 | 2.70 | 0.52 | Linear | 119 |
| AV | Mound | 5.80 | 1.50 | 0.65 | Irregular | 118 |
| AW | Mound | 6.00 | 4.00 | 1.10 | Irregular | 120 |
| AX | Modified outcrop | 5.20 | 4.50 | 0.60 | Irregular | 95 |
| AY | Terrace | 16.50 | 3.20 | 1.00 | Linear | 94 |
| AZ | Modified outcrop | 2.50 | 1.20 | 0.60 | Linear | 123 |
| BA | Modified outcrop | 8.50 | 6.50 | 0.80 | Irregular | 143 |
| BB | Modified outcrop | 9.40 | 6.50 | 0.70 | Irregular | 142 |
| BC | Modified outcrop | 3.00 | 1.50 | 1.00 | Linear | 125 |
| BD | Modified outcrop | 3.80 | 1.90 | 0.40 | Irregular | 124 |
| BE | Modified outcrop | 5.00 | 3.50 | 1.10 | Irregular | 141 |
| BF | Modified outcrop | 4.70 | 1.70 | 0.80 | Irregular | 128 |
| BG | Modified outcrop | 8.50 | 2.20 | 0.80 | Irregular | 126 |
| BH | Mound | 6.00 | 3.20 | 0.90 | Irregular | 129 |
| BI | Modified outcrop | 3.80 | 2.70 | 0.50 | Irregular | 140 |
| BJ | Modified outcrop | 4.00 | 2.50 | 0.60 | Irregular | 130 |
| BK | Modified outcrop | 6.00 | 3.00 | 1.20 | Irregular | 127 |
| BL | Modified outcrop | 6.20 | 1.10 | 0.50 | Linear | 131 |
| BM | Modified outcrop | 3.90 | 2.30 | 0.80 | Irregular | 132 |
| BN | Mound | 3.90 | 1.05 | 0.45 | Linear | 88 |
| BO | Modified outcrop | 2.60 | 2.10 | 0.35 | Oval | 89 |
| BP | Modified outcrop | 6.80 | 1.70 | 0.80 | Irregular | 87 |
| BQ | Modified outcrop | 6.20 | 3.20 | 0.50 | Irregular | 134 |
| BR | Modified outcrop | 7.90 | 2.20 | 0.60 | Irregular | 85 |
| BS | Mound | 4.50 | 1.80 | 0.90 | Irregular | 137 |
| BT | Mound | 4.50 | 3.90 | 0.60 | Irregular | 138 |
| BU | Mound | 2.60 | 1.50 | 0.30 | Irregular | 136 |



Figure 37. Site 23919, Feature AU Modified Outcrop, view to east



Figure 38. Site 23919, Feature X Kuaiwi, view to southwest

Soehren (1976) Site 3

Site 3 was located adjacent to Soehren's (1976) Site 2 to the west. Soehren (1976) states that the site is similar to Site 1, consisting of coral and shell remains. No information concerning the size or nature of the midden is presented and no evidence of the site was identified during the present study.

Soehren (1976) Site 21

Site 21 was situated along the southern boundary of the inland portion of the project area, north of the Site 6334 wall. It is described as a scatter of marine shell and coral, although no information concerning its size or the nature of the midden is presented by Soehren (1976). A coral file was also reportedly present. A recently bulldozed road cut extends along the southern project area boundary in this area, which is potentially responsible for the site's destruction. No evidence of the site was identified during the present study.

CONCLUSION

Discussion

The identified sites and features conform to the traditional Hawaiian site/feature types expected in the lower Kula Zone of the Kona Field System based on previous archaeological work and historic documentary research. As expected, agricultural features, temporary and permanent habitation sites, and possible burials, which were destroyed, have been identified in the project area. Also, as expected, historic remains consist of ranch walls.

The temporary habitation sites consist of a midden scatter and a terrace at two sites. Six permanent habitation sites were also identified. The 14 permanent habitation features are summarized in *Table 6* and the distribution of all habitation sites is depicted in *Figure 39*. Three sites reported by Soehren (1976), all midden scatters that have since been destroyed, are simply categorized as habitations because there is no basis for determining the permanence of occupation. The data for interpreting the occupational permanence of nearly half of the features are limited because the sites have been destroyed since the initial, usually reconnaissance-level recording.

The permanent habitation sites consist of three sites consisting of a single feature, one site with two features, and two complexes of three to six features. The features include five probable pole and thatch house foundations (terraces and platforms) ranging from 30 to 96 square meters in area. Four features are probable residential yards. Other features at permanent habitation sites are interpreted as activity areas and a possible men's house.

The permanent habitation sites probably are late prehistoric to early historic in age because these sites all lack historic artifacts. Three of the permanent habitation sites (Sites 6331, 21768, and 23914) include walled yards indicating the sites probably date to the late 1700s to early 1800s after free-ranging cattle became a problem and before historic artifacts were widely distributed. The other permanent habitation sites lack such enclosed yards and probably date to the late prehistoric period.

Two permanent habitation enclosures have attributes that set the features apart architecturally from other sites and features in the project area. Feature A at Site 6332 is a well built enclosure with bi-faced walls up to 2.0 m in thickness and 1.9 m in height. It has a 1.0 m wide faced entrance in the northwest wall, an internal cupboard and small pavement, and a notch in one corner. The Site 6332 enclosure is approximately 196 sq m in area. The large area of the feature was the primary basis for Haun et al. (1998) to suggest that it may be a men's house, although its large area is suggestive of a residential yard. The small pavement or cupboard possibly functioned as an altar that would support a ritual function characteristic of a men's house, or *heiau* (Stokes and Dye 1991:29-31). The notched corner is a characteristic of *heiau*, particularly on Maui (Kolb et al. 1997), but it is also found on Hawaii Island. Stokes reported at least three *heiau* in Kona with notched corners: Hahapo at Kealia, Pa'ikapahu at Kealakekua, and Kauakaikaola in Puapua'a 1. The thick and high walls of the enclosure indicate a substantial labor effort that would be expected for a *heiau* or a high status residential feature. The test excavation in the feature by Haun et al. (1998) identified two fire-related pits and recovered sea urchin remains, fish and bird bone, waterworn basalt, and a piece of coral. Such remains are not inconsistent with any of the possible functions of the feature.

Feature A at Site 23914 is also well built with bi-faced walls up to 1.6 m thick and 1.85 m high. It has a 2.5 m wide faced entrance in the west wall that was subsequently walled-in, potentially to convert the feature to an animal pen. The Site 23914 enclosure is nearly 900 sq m in area. The very large area of the feature supports a residential yard function and the thick and high walls indicate a substantial labor effort that would be expected for a high status residential feature. Mr. Curtis Tyler III (personal communication) indicated that the Makuakane family had a cemetery in the vicinity, although he was unsure of its exact location and he was probably referring to the historic cemetery seaward of the enclosure that was relocated in the 1970s (Rechtman and Henry 1999). Test excavations in the enclosure interior and in an extensive

Table 6. Summary of Permanent Habitation Sites

| Site | Feature | Formal Type | Shape | Substantial Construction | Area (sq m) | Comments |
|-------|---------|------------------|-------------|--------------------------------|-------------|-------------------------------------------------------------|
| 6331 | * | Enclosure | Rectangular | N/A | 2194.20 | Ancillary Feature - Yard |
| 6331 | A2 | Platform | Rectangular | Paved surface | 30.00 | Foundation for roofed structure |
| 6331 | E | Terrace | Rectangular | None | 45.90 | Ancillary Feature - Activity Area |
| 6331 | F | Terrace | Irregular | None | 625.20 | Ancillary Feature - Activity Area |
| 6331 | S | Modified Knoll | Irregular | None | 566.20 | Ancillary Feature - Yard |
| 6331 | T | Terrace | Linear | None | 69.80 | Ancillary Feature - Activity Area |
| 6332 | A | Enclosure | Rectangular | Faced sides, interior pavement | 196.00 | Possible Men's House |
| 6332 | B | Platform | Rectangular | Faced sides, paved surface | 49.00 | Foundation for roofed structure, Also contains human burial |
| 6332 | K | Modified Outcrop | Irregular | Paved surface | 96.00 | Foundation for roofed structure |
| 21768 | - | Wall | Irregular | None | 2405.00 | Ancillary Feature - Yard |
| 23914 | A | Enclosure | Rectangular | Faced sides | 899.70 | Ancillary Feature - Yard |
| 23914 | B | Midden | Irregular | None | 1525.00 | Ancillary Feature - Activity Area |
| 23915 | - | Platform | Rectangular | Paved surface | 57.50 | Foundation for roofed structure, Also contains human burial |
| 23916 | - | Platform | L-shaped | Paved surface | 44.80 | Foundation for roofed structure |

* = Feature Destroyed

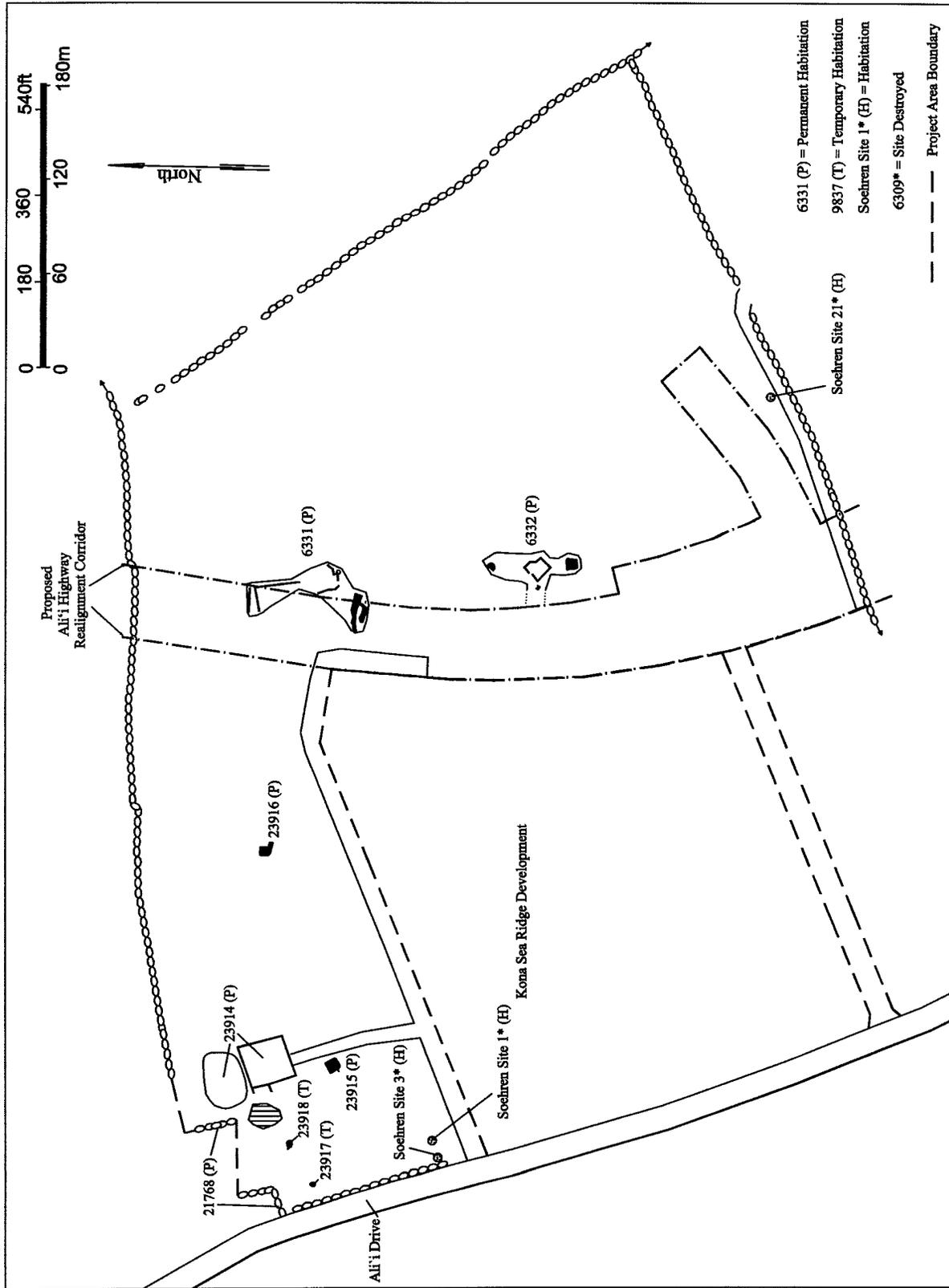


Figure 39. Distribution of Habitation Sites

midden scatter on the north side of the feature produced marine invertebrate food remains and volcanic glass flakes that would support a residential use for the feature.

Haun et al. (1998:9.7) suggest that coastal Kahalui and Puapua'a may have been former the location of a royal center similar to those known from Holualoa, Kahalu'u, and Kailua based on the presence of large, possible high status residential complexes and oral tradition. Surveys of the adjacent property to the north have documented a large *heiau* (Site 6322) situated on the seaward side of the Kuakini Wall in Kahalui 1 (O'Hare and Wolforth 1998). Other *heiau* reported for the vicinity consist of Kauakaiakaola in Puapua'a 1 (Stokes and Dye 1991), and Haleokolia and Kapuu o Ka Maile reported by Reinecke (n.d.). The large enclosures at Sites 6332 and 23914 and concentration of *heiau* provide further support for a potential royal center in the area.

Burials were identified beneath two of the permanent habitation platforms (Site 6332, Feature B and Site 23915). While the presence of the human remains indicates a burial function, the size of the platforms, substantial construction, and presence of habitation debris indicates the structures also functioned as house foundations. The excavations that encountered the burials did not reveal any evidence that the burials were intrusive features suggesting that the burials predate the construction of the features. Alternatively, the platforms may have functioned both to cover the graves and as house foundations.

Agricultural features are scattered throughout undisturbed portions of the project area. The features primarily consist of mounds and modified outcrops resulting from clearing stones from adjacent agricultural plots. The presence of two remnants of *kua'iwi*, which are not common in the lower Kula Zone of the Kona Field System, indicate the probable former presence of formal fields and imply a relatively intensive agricultural use of the vicinity

Significance Assessments

Pursuant to DLNR (2003) Chapter 275-6 (d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 2003; Chapter 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b". Be associated with the lives of persons important in our past;
3. Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
4. Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history; and
5. Criterion "e". Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional 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, all 13 sites that remain in the project area are assessed as significant under Criterion "d" (Table 7). These sites have yielded information important for understanding prehistoric and historic land use in the project area. Site 6302, Kuakini Wall, has been previously determined by DLNR-SHPD to be also significant under Criteria "a", "b", "c" and "e". Feature B at Site 6332 and Site

23915 are also assessed as significant under Criterion “e” based on the presence of human remains. Feature A of Site 23914 and Feature A of Site 6332 are additionally assessed as significant under Criterion “c” as a good examples of site types.

Table 7. Site Significance and Recommended Treatment

| SIHP Site No. | Type | Function | Significance Criteria | Recommended Treatment |
|---------------|----------------|------------------------------|-----------------------|------------------------------|
| 6302 | Wall | Livestock Control | a, b, c, d | PR |
| 6306 | Wall | Livestock Control | d | NFW |
| 6331* | Complex | Permanent Habitation, Burial | d | NFW |
| 6332 | Complex | Permanent Habitation, Burial | c, d, e | DR/PR (Fea. A), PR (Fea. B), |
| 6334 | Wall | Livestock Control | d | NFW |
| 21768 | Wall | Livestock Control | d | NFW |
| 22745 | Wall | Livestock Control | d | NFW |
| 23914 | Complex | Permanent Habitation | c, d | PR (Fea. A), DR (Fea. B) |
| 23915 | Platform | Permanent Habitation, Burial | d, e | PR |
| 23916 | Platform | Permanent Habitation | d | NFW |
| 23917 | Terrace | Temporary Habitation | d | DR |
| 23918 | Midden Scatter | Temporary Habitation | d | DR |
| 23919 | Complex | Agriculture | d | DR |

Recommended Treatment - NFW = No Further Work, DR = Data Recovery, PR = Preservation

*Burial Features destroyed

Recommended Treatments

Sites 6306, 6331 and 6334 were individually recommended for data recovery in conjunction with an intensive survey for the planned Ali'i Highway; however, the sites were not included in the data recovery sample of sites in the approved Mitigation Plan for the planned Ali'i Highway (Corbin and Rosendahl 2002), and therefore, no further archaeological work or preservation is recommended for the sites. Feature A of Site 6332 is recommended for limited data recovery to refine function and preservation, and Feature B is recommended for preservation. The mapping, written descriptions, photography, and test excavations at Sites 21768, 22745, and 23916 adequately documents the sites and no further work or preservation is recommended. Site 6302, Feature A of Site 23914, and Site 23915 also are recommended for preservation. The three sites (23917, 23918, and 23919) and Feature B of Site 23914, are recommended for data recovery (see *Table 7*). At the request of DLNR-SHPD, archaeological monitoring of construction excavations is also recommended. Plans for preservation, data recovery, and monitoring will be prepared for DLNR-SHPD review and approval. Preservation of burial features would be detailed in a Burial Treatment Plan prepared for DLNR-SHPD and the Hawaii Island Burial Council (HIBC) review and approval.

References

- Allen, M.
1984 Archaeological Reconnaissance Survey, Waiono Meadows Development Project Area, Puapua'a 1st and 2nd, Holualoa 1st and 2nd, North Kona, Island of Hawai'i (TMK: 7-5-15:2, 12 and 7-6-2:1, 14), PHRI Report 119-070584. Prepared for Waiono Meadows Ranch, Ltd.
- Armstrong, R. (editor)
1983 *Atlas of Hawai'i*. Honolulu: University of Hawai'i Press (2nd Edition).
- Baker, A.S.
1916 *Between the Bays in Kona. Thurmon's Hawaiian Annual: 80-86.*
- Barrera, W.
1991 Kahului, North Kona, Hawai'i Island: Archaeological Inventory Survey of TMK: 7-5-19:46. Chiniago, Inc. Prepared for KASAL Corp.
- Burtchard, G.
1995 Population and Land Use on the Keauhou Coast, the Mauka Land Inventory Survey, Keauhou, North Kona, Hawai'i Island, Part 1: Narrative Volume. International Archaeological Research Institute, Inc. Prepared for Belt Collins and Associates, and Kamehameha Investment Corporation.
- Ching, F., E. Neller, S. Palama, and P. Griffen
1973 The Archaeology of North Kona, from the Ahupua'a of Kahului to the Ahupua'a of Kahaluu. Surface Survey: Realignment of Ali'i Drive. *Hawaiian Archaeological Journal* 73-2. Archaeological Research Center Hawaii, Inc.
- Conde, J., and G. Best
1973 *Sugar Trains: Narrow Gauge Rails of Hawai'i*. Felton, California: Glenwood Publishers
- Corbin, A., and P. Rosendahl
2002 Mitigation Plan for Phase 4: Archaeological Data Recovery and Phase 5(a): Interim Site Preservation, Ali'i Highway Phased Mitigation Program, Lands of Kahalui 1st to Keauhou, North Kona District, Island of Hawaii. Prepared by PHRI for the County of Hawaii.
- Cordy, R.
1981 *A Study of Prehistoric Social Change: The Development of Complex Societies in the Hawaiian Islands*. Academic Press. New York.

1985 Central Kona Archaeological Settlement Patterns. State Historic Preservation Division, DLNR, State of Hawai'i. Prepared for the Planning Department, County of Hawai'i
- DNLR (Department of Land and Natural Resources
2003 Hawai'i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 13, State Historic Preservation Division Rules.
- Dunn, A., and P. Rosendahl
1991 Preliminary Report: Phase 1(a) – Site Identification, Phased Intensive Archaeological Survey, Ali'i Highway Phased Mitigation Program, North Kona District, Island of Hawaii. PHRI Report 900-052191. Prepared for R.M. Towill Corp.

1992 Preliminary Report: Phase 1(b) – Testing of Potential Burial Features, Phased Intensive Archaeological Survey, Ali'i Highway Phased Mitigation Program, North Kona District, Island of Hawaii. PHRI Report 1170-081792. Prepared for R.M. Towill Corp.

- Dye, T., and E. Komori
 1992 A Precensal Population History of Hawai'i. *New Zealand Journal of Archaeology*, Volume 14, pages 113-128.
- Ellis, W.
 1963 *The Journal of William Ellis, Narrative of a Tour of Hawai'i, or Owhyee*. Honolulu: Advertiser Publishing Co.
- FR
 n.d. Foreign Register of Kuleana Claims Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.
- FT
 n.d. Foreign Testimony Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.
- Graves, D., and S. Goodfellow
 1993 The Gardens of Kona Revisited: Pualani Residential Community Phase II – Archaeological Data Recovery, Lands of Puapuaa 1st and 2nd, North Kona District, Island of Hawai'i. PHRI Report 962-031592. Prepared for Mr. Robert West, Ronald M. Knoll Consulting Group.
- Hammatt, H., and S. Clark
 1980 Archaeological Testing and Salvage Excavations of a 155 Acre Parcel in Na Ahupua'a Pahoe-hoe, La`aloa, and Kapala`aea, Kona, Hawai'i. Archaeological Research Center Hawai'i Report 14-152 III. Prepared for Pacific Basin Resorts, Inc.
- Hammatt, H., and W. Folk
 1980 Archaeological Survey, Phase I: Portions of Keauhou-Kona Resort, Keauhou and Kahaluu, Kona Excavations within the Proposed Keahole Agricultural Park, Kalaoa-Ooma, Kona, Hawai'i. Archaeological Research Center Hawai'i Report 14-177 II. Prepared for Kamehameha Investment Corp.
- Hammatt, H., and V. Meeker
 1979 Archaeological Excavations and Heiau Stabilization at Kahului, Kona, Hawai'i Island. ARCH Report 14-142 II. Prepared for Gerald Park, Urban Planner.
- Hammatt, H., and M. Tomonari-Tuggle
 1978 Archaeological Surface Survey of the Old Gomes Property Belonging to the Pacific Basins Inc., Kahului Kona, Hawai'i Island. ARCH Report 14-142 I. Prepared for Gerald Park, Urban Planner.
- Handy, E.S.C., and E.G. Handy
 1972 Native Planters in Old Hawaii: Their Life, Lore and Environment. *B.P. Bishop Museum Bulletin* 223. Bishop Museum Press, Honolulu. (with M.K. Pukui)
- Haun, A.
 2000 Archaeological Inventory Survey, TMK: 7-5-16:por 5., Puapua'a Iki, North Kona District, Island of Hawai'i. Haun & Associates Report 008. Prepared for Mr. Bob Russell, Holualoa, Hawai'i.
- 2003 Archaeological Assessment and Inventory Survey, Lako Street Extension, Lands of Holualoa 3-4, North Kona District, Island of Hawai'i. Haun & Associates report 020 prepared for Hilo Engineering, Inc.

- Haun, A., and D. Henry
 2000 Archaeological Inventory Survey, TMK: 7-5-11:3, 4 and 24, Hienaloli 1-2, North Kona, Island of Hawaii. Haun & Associates report 010 prepared for Douter Coffee Co., Hawai'i, Inc.
- 2001 Archaeological Inventory Survey, TMK: 7-5-16: 15, 16, 17, 29, Kahului 1-2, North Kona, Island of Hawaii. Haun & Associates report 023 prepared for Bolton Inc.
- Haun, A., J. Henry, J. Jimenez, M. Kirkendall, K. Maly and T. Wolforth
 1998 Ali'i Highway Phased Mitigation Program, Phase I – Archaeological Intensive Survey, North Kona District, Island of Hawai'i. PHRI Report 1320. Prepared for the County of Hawai'i.
- Hommon, R., and P. Rosendahl
 1983 Archaeological Investigation of the Ali'i Drive Realignment Corridors, North Kona, Island of Hawai'i. Science Management, Inc. Prepared for Belt Collins & Associates.
- Indices
 1929 *Indices of Awards Made by the Board of Land Commissioners to Quiet Land Titles in the Hawaiian Islands*. Territory of Hawai'i, Honolulu.
- Juvik, S.P. and J.O. Juvik (editors)
 1998 *Atlas of Hawaii*, Third Edition. University of Hawaii Press. Honolulu.
- Kamakau, S.
 1961 *Ruling Chiefs of Hawai'i*. Honolulu: The Kamehameha Schools Press.
- Kawachi, C.
 1989 *An Upland Habitation and Agricultural Complex in North Kona, Hawai'i Island*. Master's Thesis, Department of Anthropology, University of Hawai'i.
- Kelly, M.
 1983 *Na Mala O Kona. A History of Land Use in Kona, Hawai'i*. *Departmental Report Series 83-2*. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for the Department of Transportation, State of Hawai'i.
- Kennedy, J., M. Maigret, and T. Denham
 1992 Inventory Survey and Subsurface Testing Results for a Property in the Ahupua'a of Kahului 2nd, North Kona District, Island of Hawai'i (TMK: 3-7-5-19:43). Archaeological Research Center of Hawai'i. Prepared for Dr. James Watson.
- Kirch, P.
 1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. Honolulu: University of Hawai'i Press.
- Kolb, M.J., P.J. Conte and R. Cordy
 1997 *Kula: The Archaeology of Upcountry Maui in Waiohuli and Keokea*
- Maly, K.
 1996 Appendix A – Historical Documentary Research. Archaeological Inventory Survey, Hienaloli 3 and 4, North Kona District, Island of Hawai'i (TMK: 7-5-11:2) by Henry, J., T. Wolforth and P. Rosendahl. PHRI Report 1348-032996. Prepared for Maryl Development, Inc.
- NR
 n.d. Native Register of Kuleana Claims Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.

NT

- n.d. Native Testimony Recorded by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Manuscript. Hawai'i State Archives.
- Newman, T.
1970 Hawaiian Fishing and Farming on the Island of Hawai'i in AD 1778. Department of Land and Natural Resources, Division of State Parks.
- O'Hare, C., and T. Wolforth
1998 Archaeological Inventory Survey of the Gomes Property Parcel, Land of Kahului 1st, Island of Hawai'i (TMK: 3-7-5-19:5, 38, 40). PHRI Report 1807-090998. Prepared for Towne Development of Hawai'i, Inc.
- Pukui, M., S. Elbert and E. Mo'okini
1976 *Place Names of Hawai'i*. University of Hawai'i Press, Honolulu
- Rechtman, B., and J.D. Henry
1999 Archaeological Inventory Survey for the Kahului Bridge Replacement Project, Kahului 1st and 2nd, North Kona District, Island of Hawai'i (TMK: 7-5-19:5, 7, 8 and 9). PHRI Report 1945-080499. Prepared for Ron Terry, Ph.D.
- Rechtman, B., and D. Dougherty
2000 An Archaeological Inventory Survey of TMK: 3-7-5-19:44-45, Kahului 2nd Ahupua'a, North Kona District, Island of Hawai'i. RC-0027. Prepared for Sunstone Realty Partners, LLC.
- Reinecke, J.
n.d *Archaeology of Kona*. Ms on file Dept. of Anthropology, Bishop Museum, Honolulu.
- Rosendahl, P.
1974 Letter Report on the Archaeological Walk-Through Survey, Carter Condominiums Site, TMK: 7-5-2:4, Kailua, Kona. PHRI Report 99. Prepared for Oceanic Properties, Inc.
- Sato, H, W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro
1973 Soil Survey of the Island of Hawai'i, United States Department of Agriculture, Soil Conservation Service, In Cooperation with the University of Hawai'i Agricultural Experiment Station.
- Schilt, A.
1984 Subsistence and Conflict in Kona, Hawai'i. An Archaeological Study of the Kuakini Highway Realignment Corridor. *Departmental Report Series 84-1*. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for Department of Transportation, State of Hawai'i.
- Soehren, L.
1976 An Archaeological Reconnaissance of Portion of Kahului 2nd, North Kona, Hawai'i Island. Prepared for P. Yoshimura, Inc.

1979a Letter Report: Archaeological and Historical Features on that Portion of TMK: 3-7-5-19:1 Which lies between the Great Wall of Kuakini and the Kuakini Highway in the Land of Kahului 2, North Kona, Hawai'i. Prepared for Hiroshi Kasamoto, Inc.

1979b Letter Report: Archaeological and Historical Features on those Parcels Identified by Tax Map Key(s) 3-7-5-20:14, 27, Situated in Puapuaa 1, and 3-7-5-21:2,3, Situated in Kahului 2, North Kona, Hawai'i. Prepared for Mr. Clifford H.F. Lum.
- Stokes and Dye
1991 Heiau of the Island of Hawai'i. *Bishop Museum Bulletin in Anthropology 2*. Bishop Museum Press, Honolulu.

Waihona' Aina Corporation
2000 The Mahele Database, Waihona.com

Wolfe, E., and J. Morris
2001 Geological Map of the Island of Hawaii. U.S. Department of the Interior. U.S Geological Survey

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 2c

State Historic Preservation Division Letters Correspondence

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

370 Dec 5/23/08
LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 12, 2008

Dr. Alan E. Haun, Principal Investigator
Haun & Associates
HRC 1, Box 4730
Kea'au, Hawai'i 96749

LOG NO: 2008.0882
DOC NO: 0805TD09
Archaeology

Dear Dr. Haun:

**SUBJECT: Chapter 6E-42 Historic Preservation Review -
Revised Preservation Plan for Sites 6302, 6332 and 23914 within a 35.1-acre Parcel
Kahului 2nd Ahupua`a, North Kona District, Hawai`i Island
TMK: (3) 7-5-19:001**

Thank you for submitting for review the revised preservation plan entitled *Archaeological Site Preservation Plan Sites 6302, 6332 (Feature A) and 23914 (Feature A), Land of Kahului 2nd, North Kona District, Island of Hawai`i TMK: (3) 7-5-19:001* (Report 370-021805), A.E. Haun and D. Henry, May 2005, Revised July 2007.

A draft of this plan was reviewed by our office in 2005 (Melanie Chinen letter to Alan Haun, August 12, 2005, Log No. 2005.1676, Doc No. 0508MM02), and revisions regarding the size of preservation buffer zones were requested. A revised plan was submitted to our office in May 2006; however we did not respond to the 2006 submittal. Further revisions were made to the plan and it was resubmitted to SHPD in July 2007. We apologize for the delay in responding to this third submittal, which was received in the Hilo office in January 2008.

The revised preservation plan (dated July 2007) includes the revisions requested in our August 12, 2005 letter. It is now accepted. We look forward to receiving a letter verifying that the interim preservation buffer fencing is correctly in place prior to any ground alteration within the project area. We would also like to be notified (via phone call) when the restoration work on the Kuakini Wall commences.

Please contact Theresa Donham at 987-5001 or Theresa.K.Donham@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

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

Nancy McMahon, Archaeology and Historic Preservation Manager
State Historic Preservation Division

368 Rec'd 6/1/06

LINDA LINGLE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KABOOLAWA ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 22, 2006

Dr. Alan E. Haun
Haun & Associates
HCR 1 Box 4730
Kea'au, HI 96749

LOG NO: 2006.1583
DOC NO: 0605JT15
Archaeology

Dear Dr. Haun:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –
Archaeological Data Recovery of Sites 6332, 23914, 23917, 23918, and 23919
Kahului 2 Ahupua'a, North Kona District, Island of Hawai'i
TMK: (3) 7-5-019:001**

Thank you for the opportunity to review the aforementioned report by Haun, Henry & Berrigan (2006), which we received on March 9, 2006. The report summarizes the findings of a data recovery project at five archaeological sites to mitigate future effects of development. The data recovery was designed to address the age of the sites and identify the type and variety of activities that took place at features at these sites. The report accomplishes these goals within the constraints of the data recovered.

The plan meets the requirements of HAR 13-278 and the data recovery plan, and is therefore accepted. Please contact Dr. Julie Taomia at 808-327-3691 if you have questions or concerns.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

JT

LINDA LINGLE
GOVERNOR OF HAWAII



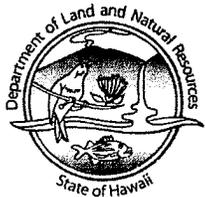
Rec'd 8-16-05

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
KAPOLEI, HAWAII 96707

August 12, 2005

Alan Haun, Ph.D.
Haun and Associates
HCR 1 Box 4730
Keaau, Hawaii 96749

LOG NO: 2005.1677
DOC NO: 0508MM03

Dear Dr. Haun:

**SUBJECT: 6E-42 Historic Preservation Review [County/Planning] Archaeological Data Recovery Plan, 6332 (Feature A), and 23914 (Feature B), 23917, 23918, and 23919 Kahului 2, North Kona, Hawaii
TMK: (3) 7-5-019:001**

Thank you for your letter dated February 14, 2005 and a copy of this plan for our review. We apologize for the delay in reviewing this plan, which was prepared for Sunstone Realty Partners.

The plan poses data recovery research question and proposed methods for archaeological features identified in an approved inventory survey (Haun and Henry, 2004). These include Feature A of Site 6332, a large enclosure interpreted as a possible *hale* mua, also being preserved; Feature B of Site 23914, a buried cultural deposit that extends partially under the surface architecture of Feature A, another preserved feature; Site 23917, interpreted as a temporary habitation terrace; Site 23918, a midden deposit; and Site 23919, a complex of 73 features interpreted as agricultural clearing mounds, terraces, and a *kuaiwi*.

The research questions, description of data requirements and proposed methodologies are satisfactory. With respect to your data recovery work within the preservation Site 6332, Feature A, your work should conclude with some effort to backfill your excavation units to restore the interior of the enclosure to as close as possible to the original appearance.

With respect to your work within Feature B of Site 23914, please observe the same guidelines should your excavation units extend into the preservation buffer of Feature A. We encourage you to excavate, if deemed feasible, in close proximity to Feature A such that the surface architecture of Feature A can be captured in profile with your excavation units and the relationship between this buried deposit and the surface feature, if any, can be addressed.

The plan meets the minimum requirements of HAR 13-278 and is therefore considered adequate. We look forward to reviewing your Data Recovery Report.

If you have any questions regarding our comments, please contact MaryAnne Maigret in our Hawaii Island office at 327-3690.

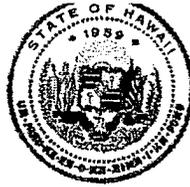
Aloha,

Melanie A. Chinen, Administrator
State Historic Preservation Division

MM:jen

c: Christopher Yuen, Hawaii County Planning Director

LINDA LINGLE
GOVERNOR OF HAWAII



175- 7/27/05
PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAIKOOLAWA ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

July 22, 2005

Dr. Alan Haun
Haun and Associates, Inc.
Haun & Associates
HCR Box 4730
Keaau, Hawaii 96707

LOG NO: 2005.1575
DOC NO: 0507MM11

Dear Dr. Haun

SUBJECT: 6E-42 Historic Preservation Review for the Final Revised Archaeological Inventory Survey, Replacement Pages (Haun and Henry, September 2004) (Report 175-092204 Land of Kahului 2, North Kona, Hawaii Island TMK: (3) 7-5-019:001

Thank you for submitting two replacement pages that reflect our conditional approval review comments for this revised Inventory Survey report (Log No. 2005.0100, Doc No. 0501MM22), which we received on February 11, 2005. Your study was prepared for Mr. Curt DeWeese of Sunstone Realty Partners, LLC.

Approval of this report was granted on the condition you assess Site 6332 Feature A, under Criterion C as well as D, and recommend the feature for preservation. We also asked for a recommendation for archaeological monitoring. Both changes have been made, and the report is now accepted as final.

If you have any questions about this review, please contact MaryAnne Maigret in our Hawaii Island office at 808-327-3690.

Aloha,


Melanie A. Chinen, Administrator
State Historic Preservation Division

MM:jen

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING

FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

June 3, 2005

Alan Haun, Ph.D.
Haun and Associates
HCR 1 Box 4730
Kea'au, Hawaii 96749

LOG NO: 2005.1125
DOC NO: 0505KL07

Dear Dr. Haun:

**SUBJECT: Notice of Hawai'i Island Burial Council Determination
Site 6332 Feature B and Site 23915
Kahului Ahupua'a, North Kona District, Hawai'i Island
TMK (3) 7-5-19:01**

On May 19, 2005, at a duly noticed meeting of the Hawai'i Island Burial Council (HIBC) with a quorum of council members present, the HIBC concurred with your client's request, and voted to preserve in place the burials within Site 6332 Feature B and Site 23915 located on the above mentioned parcel.

The burial treatment plan that was presented to the HIBC can now be used as the final preservation plan for the subject burial sites and the Department of Land and Natural Resources (DLNR) approves the plan. We look forward to seeing the details of the plan implemented, which will provide perpetual preservation and protection for the sites.

We note that your client's project area excludes the portion of the planned right-of-way (ROW) for the proposed Kahului to Keauhou Parkway, which runs through the middle of the subject TMK parcel. There are at least two sites (Site 6333- a possible burial, and Site 6332 Feature E- a confirmed burial) within the portion of the ROW that runs through your client's project area.

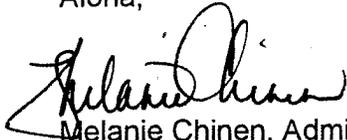
Due to the proximity of these sites in the ROW to your client's project area and the possibility that construction equipment will be crossing over the ROW, prior to concurring with any ground alteration permits issued by the County of Hawai'i, the DLNR will request that at a minimum Site 6333 and Site 6332 Feature E and an appropriate buffer be clearly delineated by orange construction fencing, and all construction personal alerted to their existence.

Alan Haun, Ph.D.
Page 2

By copy of this letter, we are informing the County of Hawai'i, Department of Public Works of this most important matter.

Should you have any questions please call Keola Lindsey of our Burial Sites Program at 327-3692.

Aloha,



Melanie Chinen, Administrator
State Historic Preservation Division

KL:jen

- c: Members, Hawai'i Island Burial Council
Hawai'i County- Dept. of Public Works, 101 Pauahi St., Ste 7, Hilo, HI 96720
Mr. Curtis Tyler (73-1305 Hiolani St. Kailua-Kona, HI 96740)
Ms. Hannah Reeves (P.O. Box 844 Kailua- Kona, HI 96745)
Ms. Marion Keli'ikipi (P.O. Box 3047 Kailua-Kona, HI 96745)
Ms. Leihulu Mamac (74-5080 Ho'oloa St. Kailua-Kona, HI 96740)
Mr. Jim Medeiros (P.O. Box 166 Honaunau, HI 96726)

Rec'd 1/31/05

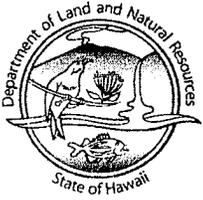
LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

January 19, 2005

Dr. Alan Haun
Haun and Associates, Inc.
Haun & Associates
HCR Box 4730
Keaau, Hawaii 96707

Log No: 2005.0100
Doc No: 0501MM22

Dear Dr. Haun

**SUBJECT: Chapter 6E-42 Historic Preservation Review of a Revised Archaeological Inventory Survey Report (Haun and Henry, September 2004)
Land of Kahului 2, North Kona, Hawaii Island
TMK: (3) 7-5-019:001**

Thank you for submitting this revised Inventory Survey report (Report 175-092204) for our review, which we received on September 27, 2004. Your study was prepared for Mr. Curt DeWeese of Sunstone Realty Partners, LLC.

This is our third review of the subject report, and this revised final version addresses our review comments dated August 19, 2004 (Log No: 2004.2560, Doc No: 0408MM15). As a note, your cover letter with this revised draft misstated the document number of our review as 0408PM15.

In the first draft of the subject report (July 2003, 175-061303), fifteen extant sites were described as surviving within the 35.1-acre project area, and nine sites that had been described in previous archaeological studies were determined to have been destroyed by bulldozing prior to your current investigation. The extant sites included the following: two single feature permanent habitations (Site Nos. 23915 and 23916); four permanent habitation complexes (Site Nos. 6331, 6332, 6333, and 23914); three temporary habitations (Site Nos. 9837, 32917, and 23918); the Kuakini wall (Site No. 6302), four other walls (Site Nos. 6306, 6334, 21768, and 22745) and one agricultural complex (Site No. 23919).

In our review of the first draft dated January 2, 2004, (Log. No. 2003.2576, Doc. No. 0312PM03), we agreed with your significance assessments and recommended treatments for eleven of the fifteen extant sites but requested additional subsurface testing at five platforms within four of the extant sites: Site No. 6332 Features B and E; Site No. 6333 Feature A, Site No. 23915, and Site No. 23916. As a result, your firm conducted further testing and investigations, resulting in the identification of burials at Site No. 6332, Features B and E, and Site No. 23915. Site 6333, Feature A is being considered a "possible burial." No burial was found at Site No. 23916.

In our latest review dated August 19, 2004, we could not approve your significance assessments and recommended treatments because we needed clarification on the limits of your project area. Several features considered in your investigation were actually included within the limits of the right-of-way (ROW) for the planned Kahului-Keauhou Parkway, whereas in the initial draft of your report they had been depicted as inside the project area undergoing inventory survey. In this revised draft, your maps indicate that the project area for this survey excludes the ROW, and therefore excludes Site 6332 Features E and A, two of the burial sites.

We now agree with all but one of your significance assessments and site-specific recommended treatments. Site 6332 Feature A, an enclosure which you believe may be a specialized habitation feature, a men's house, is currently recommended for data recovery only. We believe, based on your information, that this site is eligible as an excellent example of a site type and a good candidate for preservation. We will accept your recommendation that in addition to limited additional investigations during the data recovery phase of work, that the site be preserved. We also believe you should include a recommendation for archaeological monitoring within the project area, due to features having been destroyed which were believed, by previous researchers, to have been burials.

On the condition that you include Site No. 6332 Feature A as a Preservation site, include archaeological monitoring as a recommendation, and submit replacement pages for the changes in site significance and recommendations, we can deem the report adequate and approve it as final. Data recovery is proposed for Sites No. 9837, 23914 Feature B, 23917, 23918, and 23919, as they are considered significant under Criterion D. A combination of data recovery (for interpretive purposes) and preservation shall be proposed for Site No. 6332 Feature A; we believe this feature should be considered significant under Criterion C as well as D. Preservation is proposed for the following sites:

- Site No. 6302 , significant under multiple Criteria A, B, C, and D;
- Site No. 6332 Feature B (a burial), significant under Criteria D and E;
- Site No. 23914 Feature A, significant under Criteria C and D; and
- Site No. 23915 (a burial), significant under Criteria D and E.

Dr. Alan Haun
Page 3

Regarding the two burial sites (Site No. 6332 Features A and E) situated within the ROW for the Parkway, we make the following comments. Since the burial discoveries were made during the course of inventory work, there is a very strong argument that the burials should be considered "previously identified" and their disposition considered as a part of a Burial Treatment Plan for the Parkway. It is our position that if an archaeological feature has been granted a mitigation treatment status in an earlier historic preservation review, we may, as a component of any subsequent 6E-42 reviews, reconsider whether burials may be present and request additional testing. In this case, the mitigation treatment for these two features was for data recovery under the Memorandum of Agreement (MOA) for the Parkway project. However, when they appeared within the described project area for your survey, which is reviewed under the provisions of 6E-42, our division believed further testing was warranted based on new information and recent burial finds in and along the path of the Parkway. You complied with our request on behalf of your client. Therefore, by copy of this letter, we are informing Hawaii County of the presence of these burials and our recommendation that they include them in their Burial Treatment Plan.

If you have any questions about this review, please contact MaryAnne Maigret in our Hawaii Island office at 808-327-3690.

Aloha,



Melanie A. Chinen, Administrator
State Historic Preservation Division

MM: slc

C: Chair, Hawai'i Island Burial Council
Keola Lindsey, Burial Sites Program
Christopher J. Yuen, Director, Hawaii County Planning, 101 Pauahi Street, Suite 3, Hilo, HI 96720-3043
Bruce MacClure, Director, Hawaii County Dept of Public Works

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 3 Cultural Impact Assessment

LIMITED CULTURAL IMPACT ASSESSMENT

Tax Map Key: (3) 7-5-019:001

**Kahului Nui (2) Ahupua'a
North Kona District • Island of Hawai'i**

Prepared For:

**Mooers Enterprises, LLC
Land Use Alternatives
P. O. Box 1101
Kamuela, HI 96743**

July 2005

Prepared By:

**J. Curtis Tyler III
73-1305 Hi'olani Street • Kailua-Kona • Hawai'i • 96740-9344
Tel: (808) 325-6600 • Fax: (808) 325-6452**

INTRODUCTION

At the request of Gregory R. Mooers, on behalf of Sunstone Realty Partners, LLC, J. Curtis Tyler III, has prepared this limited cultural impact assessment (CIA) as part of a Special Management Area Assessment (SMAA) for a proposed multi-family residential development on privately-owned land in Kahului Nui (2) *ahupua'a*, North Kona District, Island of Hawai'i, also known as Tax Map Key: (3) 7-5-019:001 (see Figure 1, Project Area map by Haun).

The purpose of this study is to provide a written description of the anticipated impacts of the proposed development on valued cultural, historical or natural resources on or in the vicinity of the of the property, to include: (a) The identity and scope of such valued resources in the area, including the extent to which traditional and customary native Hawaiian rights are exercised in the area; (b) The extent to which those resources, including traditional and customary native Hawaiian rights, will be affected or impaired by the proposed action; and (c) The feasible action, if any, to be taken to reasonably protect any valued cultural, historical or natural resources, including any existing traditional and customary native Hawaiian rights. This information is required by County of Hawai'i Planning Commission Rule 9, relating to development of property located in the Special Management Area (SMA), in consideration for native Hawaiian rights mandated by the court cases of: *Public Access Shoreline Hawai'i (PASH) v. Hawai'i County Planning Commission*, 79 Hawai'i 425, 903 P.2nd 1246 (1995), cert. Denied, 116 S. Ct. 1559 (April 22, 1996) (Mem.) and *Kapa 'akai O Ka 'Aina v. Land Use Commission*, 94 Hawai'i 31 (September 2000) and is being provided to assist public agency members in their constitutional duty to protect, to the extent feasible, the reasonable exercise of traditional and customary native Hawaiian rights. This study has been prepared in accordance with the Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impacts* (Guidelines) adopted by the Environmental Council, State of Hawai'i on November 19, 1997.

SCOPE OF WORK

In accordance with this OEQC Guidelines, the following specific tasks were undertaken to constitute an appropriate scope of work for this assessment: (1) Identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs, found within a broad geographical area, e.g., district or *ahupua'a*; (2) Identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action; (3) Receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area; (4) Conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research; (5) Identify and describe the cultural resources, practices and beliefs located with the potentially affected area; and (6) Assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures on the cultural resources, practices and beliefs identified.

The scope of this study has been necessarily limited by the inability to conduct interviews and consultation with two individuals who lived in the petition area and who have particular expertise concerning specific valued resources, practices and beliefs located within the Kahului *ahupua'a*, perhaps even on the subject property itself.

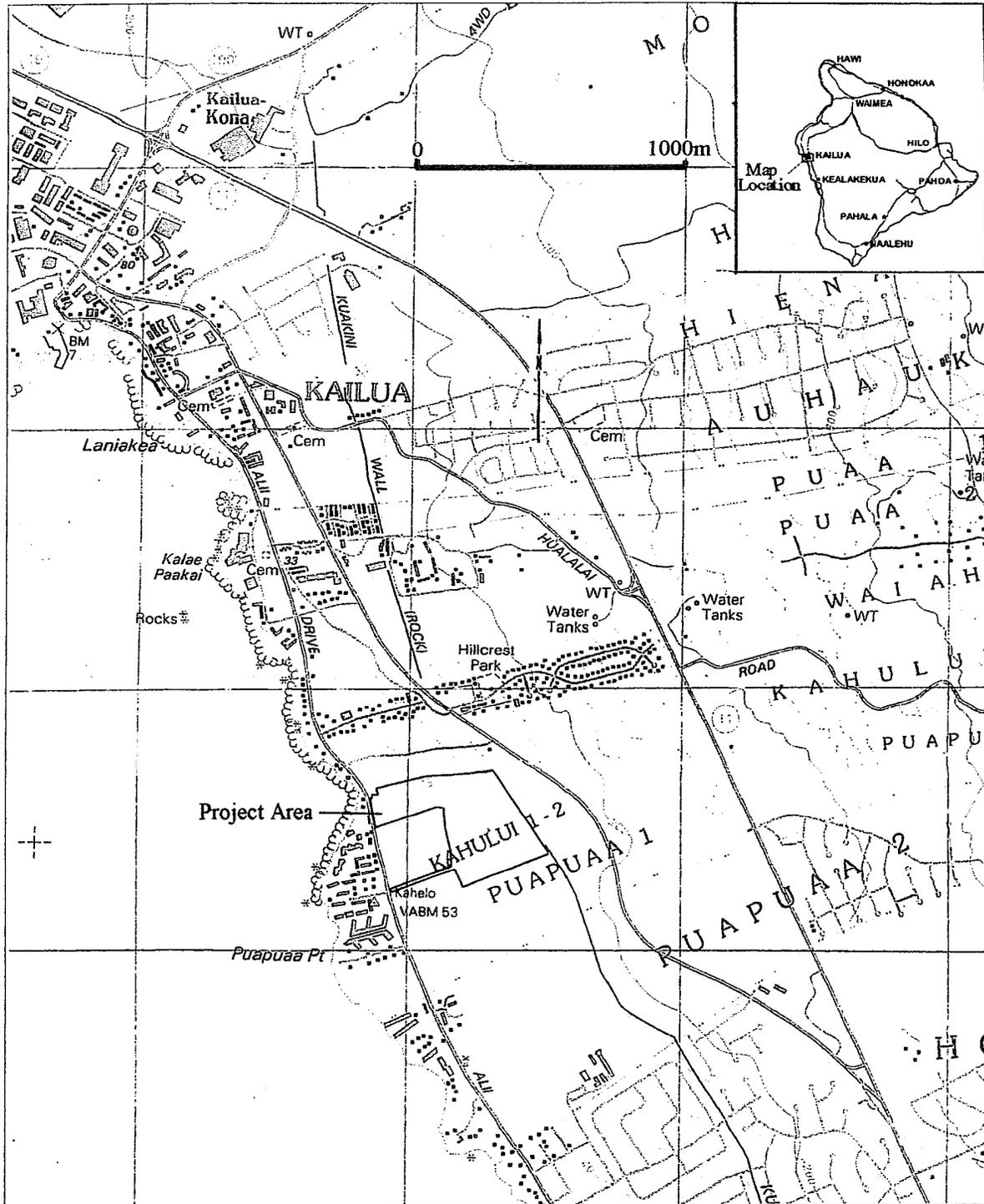


Figure 1. Portion of USGS Kailua and Kealakekua Quadrangles showing Project Area

PROPERTY DESCRIPTION

The subject property is roughly L-shaped and consists of approximately 35.1 acres of vacant land. It is located within the *makai* portion of Kahului Nui (2) *ahupua 'a*, between Ali 'i Drive and the Pā Kuakini (Great Wall of Kuakini), within the district of North Kona on the island of Hawai 'i, being further identified as Tax Map Key: (3) 7-5-019:001. At its closest point, the property is about 200 feet from the *kahakai* (shoreline). Along its *makai* boundary is Ali 'i Drive and the Kona Sea Ridge project. Its *mauka* boundary is the Pā Kuakini, while the northern boundary consists of the *iwi 'āina* (traditional boundary wall) between Kahului Iki (1) and Kahului Nui (2) *ahupua 'a*. The southern boundary consists of a 50-foot wide future access corridor, which runs *mauka-makai* and adjacent to the southern boundary of Ali 'i Park Place and the *iwi 'āina* between Kahului Nui and Puapua 'a Iki *ahupua 'a*. A proposed corridor alignment for the Kahului to Keauhou parkway runs north-south through the approximate middle of the property.

The property elevation above sea level is about 10 feet at the *makai* end, extending to 120 feet on the *mauka* side. According to Haun (2004), and Soehren (1976) large portions of the parcel have been disturbed, both by modern-day construction, fire suppression and ranching activities. As a direct result of these, Haun (Ibid) reports that large push piles of dirt, rocks, and *kiawe* trees “are scattered throughout the inland portion of the project area, especially in the northwestern corner, which has been leveled and cleared of surface stones, and probably archaeological remains.” The property portion below the proposed corridor alignment is currently zoned for multi-family residential 4000 square feet (RM-4). The portion above the proposed alignment is zoned multi-family residential 7000 square feet (RM-7).

SIGNIFICANCE CRITERIA

Under current Federal and State laws, cultural resources found in the field research are assessed for their significance, based on whether or not they possess integrity of location, design, setting, materials, workmanship, feeling and association, and they meet one or more of the following criteria: (a) are associated with events that have made an important contribution to the broad patterns of our history, (b) are associated with the lives of persons important in our past, (c) embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value, (d) have yielded, or are likely to yield, information important for research on prehistory or history, and (d) have an important traditional cultural value to the Native Hawaiian people or to another ethnic group of the state due to associations with traditional 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.

PROPOSED DEVELOPMENT ACTIVITIES

The applicant, Sunstone Realty Partners LLC, proposes to develop the subject parcel for multi-family residential use in accordance with its permitted zoning (See County of Hawai‘i Ordinance 869, as amended by Ordinance 87-47) and conditions of the proposed SMA permit. As part of the development, land alteration, in the form of grubbing and grading with heavy equipment, will be undertaken prior to actual construction of the residential units themselves. Additionally, necessary and permitted access, including roadways to and within the property will be constructed, along with trenching for the installation of foundations and utilities. The applicant will also be required to construct drainage improvements to accommodate any runoff generated on the property; in accordance with State and County laws; these improvements will have to include interim measures to ensure sedimentation and erosion control, during construction and may include the permanent installation of drywells, all in accordance with requirements of Federal, State and County laws.

METHODS

This assessment was prepared within the context of the OEQC Guidelines noted above, including the review of relevant and available cultural, historical and other documentary research about the area, informal personal interviews and consultation with individuals who have expertise concerning cultural resources, practices and beliefs located within the potentially affected area.

The personal interviews and consultation were conducted in Kona on July 5 and 6, 2005 with four individuals, all of whom can document direct ancestral connections to *ahupua‘a* tenants of the area. One of these persons lived directly *makai* of the subject property in the 1940s and early 50s. These persons were also sought because they are *kama‘āina* and have personal knowledge of valued cultural, historical and natural resources and traditional and customary practices and beliefs. The purpose of the interview and the CIA were explained to each participant. Each person was informed that burials and other valued resources had been found on the property and shown copies of maps from the Archaeological Inventory Survey (AIS) and Burial Treatment Plan (BTP) containing some of this information. During the interviews, inquiries were made about recollections of burials, trails, *heiau*, caves, residents, buildings, water sources, boundaries, practices and beliefs, as well as any concerns and recommendations. The interviews, some portions of which were recorded, were transcribed and copies made available to each of the participants.

In addition to the interviews and consultation, a review of available ethnographic, historical, anthropological, sociological and other culturally related documentary research was conducted in the preparation of this assessment.

Portions of the assessment are also based on and include the personal knowledge and experience of the author, who is *kama‘āina* of Kona and recognized by the State Historic Preservation Division (SHPD) as both a lineal and cultural descendant of *ahupua‘a* tenants who once resided in Puapua‘a, Kahului, and Wai‘aha.

CULTURAL & HISTORICAL BACKGROUND

This proposed project is located in the *kula kai* (shoreward plain) zone of the Kona Field System, which itself extends from the Kau-Hu‘ehu‘e area in the north to Hōnaunau and beyond in South Kona. This lower zone was traditionally associated with habitation and cultivation of plants important to the traditional lifestyle. The northern portion of the Kahelo plain is in these lowlands of Kahului and Puapua‘a (Maly 1999) and has a commanding view of the ocean. *Makai* sections of the Wai‘aha natural drainage system, including both stream and sheet flows, also are found here. The area coastline is mostly *pāhoehoe*; although portions *makai* of the subject property are *a‘a*. A sandy beach, formerly used as a canoe and boat landing, is located at the head of Kahului Bay; modern hardening of the shoreline has reduced the beach size in recent decades.

From the time of the great chief, ‘Umi a Liloa, the *kula kai* lands between Lanihau and Keauhou were favored by the *ali ‘i nui* (high chiefs) of Hawai‘i Island as a place of residence, resulting in the area becoming a political seat and population center for the ruling chiefs (Rechtman & Henry 1999). According to Kamakau (1961), when Kamehameha the Great was in his final years at Kamakahonu, these coastal lands again were part of a large royal center supporting the *mō ‘i* and his royal court, such that “at night the sparkle of lights reflected in the sea like diamonds, from the homes of the chiefs from Kahelo to Lanihau. The number of chiefs and lesser chiefs reached into the thousands.” The numerous remains of *heiau*, *kū ‘ula*, *ilina* and habitation sites in the Kahului and Puapua‘a *ahupua‘a* are modern evidence of the cultural significance of the area.

Following the death of Kamehameha I in 1819, his son Liholiho, succeeded him to the throne and broke the traditional *‘ai kapu* (eating prohibition). Later that year, after the defeat of Kekuaokalani on the battlefield at Kuamo‘o, the *kapu* system became largely abolished, although some practices continued long after that. The following year, the first missionaries arrived at Kamakahonu and began establishing churches along the Kona coast, including one at Kahului. In 1823, when the English missionary, William Ellis, visited the area between Kailua and Keauhou, he reported passing through many villages where the houses “are generally built on the sea-shore” and mentioned seeing numerous *heiau* and burial grounds. He also recorded the presence of considerable cultivation in small gardens, “wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around their roots” (Ellis 1963). Similar uses were still employed by native families in the 1950s as they cultivated their gardens in this traditional manner.

Liholiho died in the summer of 1824, and his younger brother, Kamehameha III, succeeded to the throne, becoming Kamehameha III. In 1848, through the *Māhele ‘Āina* (Land Division), lands previously controlled by the sovereign were divided up between the crown, the government, and the *konohiki*, subject to the traditional rights of the native tenants. These *hoa ‘āina*, as these tenants were known, lived on and cultivated lands for the *ali ‘i*, as well as their own *‘ohana*, and through the *Māhele* and the Land Commission awards, they were able to acquire some of these lands. Most of Kahului Iki was retained by the government, while in Kahului Nui, a large portion was awarded to Grace Kama‘iku‘i, daughter of John Young. Smaller *kuleana* lots, closer to the coastal road (nka Ali‘i Drive), were awarded to Kalawa, Kapae, Kuapu‘u, and Niniha, among others.

Following the establishment of the Boundary Commission in 1862 to set the boundaries of all the *ahupua'a* that had been awarded, both Niniha and Makuakāne, who were residents of Kahului, testified before the commission, describing the *ahupua'a* boundaries and some of the nearby resources, including ancient fishing rights extending into the sea. During the Territorial days (1900-1959), the population declined and settlements became smaller, with coastal occupations concentrated in the villages of Keauhou and Kailua (Rechtman & Henry, 1999). Nevertheless, the descendants of the original awardees, including Kaiawe, Kahulāmū, Ka'ilikini, Kīaloa, Komomua, Kunewa, and Makuakāne, continued living in this area for many years. In 1929-30, when Reinecke surveyed the coastal lands of Kahului, he recorded cultural resources that included two fishing *heiau*, called Haleokolia and Kapu'u o Ka Maile, three *papamū*, eight house platforms, five walled house sites or pens, a cave, a graveyard, two house sites, and a large area of platforms. Since the time of that report, major changes in land ownership and use have taken place along the Kona coast, and the cumulative impacts on valued resources, beliefs and practices like these mentioned have been tremendous. As a direct result, the more spiritual and visual aspects of the cultural landscape and their relationship to what is actually on the ground have become more obscured, and, likely, in some cases, lost forever. The cumulative impacts on these culturally rich *ahupua'a* often have not been taken into consideration, and this, in itself, is contrary to the traditional and customary belief system of the Hawaiian culture and the traditional land use system.

PREVIOUS ARCHAEOLOGICAL & BACKGROUND STUDIES

The Archaeological Inventory Survey (AIS) for this property (Haun & Henry, 2004) contains background information on approximately 18 survey and excavation projects which were previously conducted in the Kahului area, and considered in the current AIS. These were considered for, but are not repeated, in this assessment.

The references listed at the back also were reviewed in the preparation of this assessment. Oral history interviews and consultation were also undertaken with persons who can document lineal descent from *ahupua'a* tenants who possessed and exercised traditional and customary rights in the subject area and are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778. The author is also such a descendant and has drawn on his personal knowledge and experience, including involvement in previous burial treatments in Wai'aha, Kahului, and Puapua'a *ahupua'a*, among others of the district.

VALUED RESOURCES, PRACTICES & BELIEFS OF THE AREA

As noted above, the *kula kai* of Kahului, including the adjacent *ahupua'a* of Wai'aha and Puapua'a, was an important cultural area for Hawaiians, having contained the residences of chiefs, their families and descendants for hundreds of years. As a result, the remains of *iwi 'āina*, habitation sites, agricultural plots, *heiau*, *kū'ula* (fishing shrines), *ala hele* (trails), *ilina* (burials) and outstanding view corridors still exist on portions these lands. All of these are valued resources, with *ilina*, *heiau*, *kū'ula*, *iwi 'āina* and *ala hele*, including the traditional and customary functions associated with these features, attracting particular attention today.

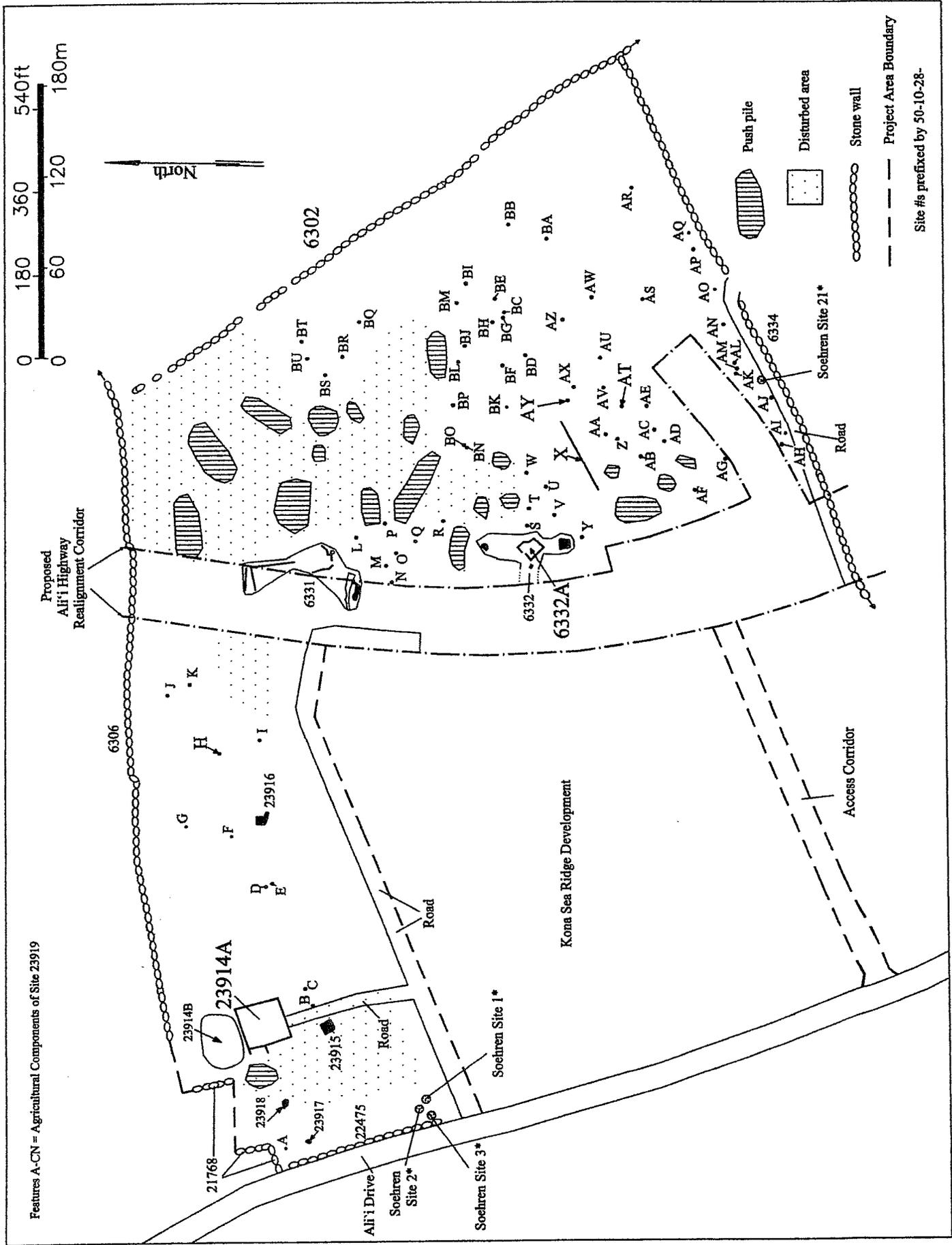


Figure 2. Site Location Map

Despite the subdivision and cumulative impacts on ancestral lands, the oral interviews and consultations with the descendants of the *ahupua'a* of Kahului and Puapua'a clearly demonstrate they continue to have great affinity for and love of the 'āina, including valued resources that once existed and those that remain to this day. As is true in most cultures, *ilina*, *iwi* and *moe pū* (burial goods), in particular, are special valued resources; in Hawai'i, since it is believed that *iwi* contain the *mana* of the individual and continue as an integral part of the 'ohana, it was customary practice to bury family in their own 'āina. Such resources are to remain *kapu* and not to be disturbed. However, with the passage of time, as families have sold and moved off the ancestral lands, the specific location and identification of some *iwi* have been forgotten or lost. However, in a few cases, descendants have elected to move known burials to more modern cemetery parks to avoid further disturbance. Immediately north of subject property and adjacent to Ali'i Drive, there is an identified *pā ilina* (walled cemetery) that contained *iwi* of the Kahulāmū and Komomua 'ohana. Descendants report that all of these *iwi* were disinterred a few decades ago and "moved *mauka* to Hualālai" (nka Kona Memorial Park). However, it is unknown if any other *iwi* remain there, although a few years ago, the site was used as a temporary baseyard and permanently backfilled in conjunction with a County sewer line project. Also north, in Kahului Iki, just makai of Pā Kuakini, is Site 6322, a large *heiau* in excellent condition. Strategically placed on a hill, it overlooks the ocean and *makai* coastal area; within one of its walls is a relocated burial. As one large burial feature, it is protected by a 100-foot buffer as part of an approved burial treatment plan. Other large burial sites exist in Kahului Iki and have been set aside for protection in perpetuity.

VALUED RESOURCES, PRACTICES & BELIEFS ON THE PROPERTY

Archaeological Report: According to Haun (2004), the property contains a total of 17 sites with 103 features documented in previous studies (See Figure 2, Site Location Map by Haun). These include 13 sites that were examined during the 2004 survey and four previously recorded sites reported to have been destroyed. They do not include an unknown number of other features, including burials, described by Soehren (1976) as being "totally obliterated" by previous bulldozer grubbing. The 103 features include 74 for agriculture, 12 for permanent habitation, 2 for permanent habitation/burial, 4 for burial, 4 for livestock control, 3 for undifferentiated habitation, 2 for temporary habitation, and 2 as markers (Haun 2004). The 4 burial features were recorded prior to 2004 and, according to Haun & Associates, were destroyed prior to their inventory survey in that year. The 2004 inventory survey indicates a number of burial features and *iwi* still exist within the property. In addition to these, there are also 2 *iwi* 'āina, the Pā Kuakini and 3 complexes which may have an important traditional cultural value to Hawaiians due to associations with traditional 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 their history and cultural identity.

Interviews & Consultation: With the exception of a possible *mauka-makai* trail, interviews and consultations conducted in conjunction with this assessment did not reveal the precise location or specific identification of any valued resources located directly on the subject property. However, informants did make general comments about resources that might have existed or may still exist within this *ahupua'a* and possibly, this particular property. Some are significant under Criterion E and all are categorized on the next page.

Buildings: None of the informants remembered anyone living on the property, but the author and one of the informants did recall, an old building, “a little shack” in the *makai* portion, next to the old cemetery; however, no one interviewed was able to recall what it was used for.

Burials: When asked about the location of any burials, there was initial concern that the walled cemetery was part of the property and would be further impacted by the project; when informed it was not, all seemed greatly relieved to know that. The informants were shown Figure 2, and the 2 burial sites that are to be preserved in place. None of the informants had specific knowledge of who was buried in those or any other burials located on the property; however, they are likely related to families of the area. One informant showed the author a large survey map prepared for the “Alii Drive Alignment” project with a “poss [sic] burial monument” located at Site 6307 on *makai* edge of that alignment. There was concern about the possibility that some or all of previously recorded burials and related sites, impacted by previous ground alteration and reported as being “destroyed” in the inventory, still exist in some form within the “push piles” or at the original site itself.

Caves: The informants were asked about any caves located on the property; none knew of any, although one had heard of the cave *mauka* of the Makuakāne house, but was uncertain if it was located on the subject property. Based on firsthand information the author previously had received from members of the Makuakāne ‘*ohana*, indicating it was a large cave and might contain burials, everyone felt further efforts needed to be made to locate it. One informant reported he did see a cave on the *makai* side of Kuakini highway above the property, but archaeologists found nothing in it.

Plants: None of the informants had knowledge of any valued native plants or gathering practices located on the property. Most agreed the area had been used for cattle grazing for a long period of time. One of the informants did mention the “*ono*” tamarind tree located in the area; its location was near Ali ‘i Drive and the old cemetery.

Trails: When asked about knowledge of any trails on the property, one informant, said, that, because “it was a good sizeable community” trails traditionally existed to the church, houses, and burials in the area. The same informant also pointed (See Figure 2) to an opening in the *makai* boundary wall on the *mauka* side of Ali ‘i Drive, saying, “Yeah, it [the trail] was there, right on the[south] side [of the old cemetery], go up.” Upon further inquiry, the informant indicated she was not allowed to go on it, so she was unfamiliar with where or how far it went. There was speculation by some that a breach in the Pā Kuakini directly *mauka* of this *makai* breach may be a part of this trail.

Water: When asked about any springs or groundwater in the area, most agreed they were there. Some had specific knowledge of wells on nearby properties, including one directly *makai* of the subject property; in that case, it was pointed out that “If there’s a spring down there, the vein has to come from *mauka*, right?” Another responded, saying, “That’s right, the whole area like one stream.” The inference seemed to be that ground alteration activity might impact this underground water source, if one were located under the surface of the property. One informant said the cave reported by the Makuakāne ‘*ohana* might have had water. When asked about the impact drywells might have on the coastal and near shore waters, the feeling was that, in this area, the wells would not have much of an affect on the water quality. On the issue of non-point source pollution and runoff from the site, it was generally agreed that such runoff should not be allowed to reach the coastline or near-shore waters where it could have an impact.

Practices & Beliefs: When asked about any traditional and customary practices or beliefs being conducted on the property, except for those that might be associated with the burials and possible trail, no one knew of any specific ones being carried on today. Interestingly, there was mention of one *kūpuna* in years past who always wore his red *malo* and was buried in it with his spear. One informant did indicate she was going to contact other family members who might know more about any practices or beliefs associated with this property. While the subject of scenic resources was not specifically discussed, as more properties have been developed, as this one is planned to be, with multi-story structures, the visual resources which have been an integral part of the cultural landscape of the area, obviously become more and more impacted.

IMPACTS TO IDENTIFIED RESOURCES ON THE PROPERTY

Grubbing, grading, and other land-alteration and development activities all have the potential for significant impacts to or irretrievable loss of identified and valued resources, such as, among others, burials and related sites, a possible trail, any caves, any underground water source, the coastline and near shore waters, including any related practices and beliefs. As the density and heights of structures have increased in recent years, the cumulative impact to the view corridors in the area has been substantial; the proposed project may result in further impacts of this nature, although it is anticipated that all of the lands makai of the property have been or will be developed when this project gets underway. The impact on the mauka view corridor is expected to be similar to that created when the adjacent Kona Sea Ridge project was developed.

ALTERNATIVES TO PROPOSED DEVELOPMENT

Given the underlying State Land Use Designation, County General Plan and Zoning for the property, other development alternatives would not be viable; therefore none are being contemplated at this time. It is believed that, by exercising caution, following established laws, rules and regulations, implementing descendant recommendations and mitigation measures, any negative impacts, including damage, loss or destruction of valued resources, practices and beliefs that are or may be located on the property will be minimized or eliminated. A no-action alternative may actually result in reduced long term protection of the valued resources, practices and beliefs because the result could be that nothing further would be undertaken to protect them.

DESCENDANT RECOMMENDATIONS

During the oral interviews and consultations, informants provided a number of recommendations to minimize the potential impacts to identified and valued resources, practices and beliefs. These are presented in no special order or preference.

- (1) The locations of “push piles” and previously located burials or related sites identified in the AIS as “destroyed” should be identified and marked prior to any ground alteration. In order to assist in the location, protection and recovery of any *iwi*, *moe pū* and other valued resources that may be present, an archaeologist and a cultural resource monitor should be on site, preferably during any

ground disturbance, but, at a minimum, when heavy equipment will be working in these marked areas.

(2) If the location of the cave noted by the Makuakāne *‘ohana* can be determined, and if it is located on the subject property, it should be investigated and, if found to be a significant and valued resource, it should be protected. One informant indicated a willingness to look for a particular family member who, it is believed, knows the location of this cave and may be able to find it.

(3) Any artifacts that are found in proximity to or link with the burials need to be kept with them; these would include items like fishing hooks, tools, *poi* pounders and the like.

(4) Written assurances should be provided that approved plans for the protection and conservation of significant cultural resources, especially burials, will be implemented in accordance with what was represented in the original plans, even if the project is sold before it is finished or before full implementation has been completed.

(5) Provide designated on-site parking spaces for descendants who wish to visit the family burials.

(6) Provide an opportunity for descendants to offer input about the landscaping of the burial areas.

(7) Provide a minimum 30-foot open space buffer for the Pā Kuakini to protect the integrity of this wall. Consider repairing the breached sections of the wall, using the original rocks, if available.

(8) Ascertain if a *mauka-makai* trail exists on the property; if it does, it should be preserved.

(9) Ensure that any burials and other significant cultural resources located within the proposed parkway alignment are protected both during and after construction.

(10) Provide that any *iwi* found on the property “remain on the *‘āina*” and consider using the approved preservation sites as receiving areas for other *iwi*, if any, are found on the property.

(11) In order to protect the coastal and ocean resources, measures should be implemented, both during and after construction, to keep any on site runoff from reaching the shoreline and ocean.

Some of these actions, or portions of them, are contemplated by existing Federal, State and County laws, rules and regulations that will be applied to this project. Nevertheless, others may not be, and since there is the potential of significant damage to or irretrievable loss of valued resources, including traditional and customary rights, it is important that proactive steps or measures are undertaken by the approving agency to ensure that feasible actions have or will be taken to reasonably protect these resources and eliminate or minimize the potential for such damage or loss.

MITIGATION MEASURES

In consideration of valued resources, practices and beliefs that have been or may be identified on the subject property, the following mitigation measures constitute feasible action that can be taken by the approving authority to reasonably protect such resources, including any traditional and customary native Hawaiian rights, found to exist on the property:

1. Due to prior damage or destruction to features believed to be burials, archaeological monitoring within the project area will be undertaken in accordance with the approved Inventory Survey Report and the recommendations of SHPD. If any human skeletal remains and burial goods are found, protective measures will be implemented under the direction of SHPD, in accordance with Hawai'i Administrative Rules (HAR) 13-300-40..
2. If any caves with burials are found on the property, work will cease in the immediate area, and a site inspection will be requested from SHPD.
3. If any artifacts, including burial goods are discovered on the property, they will be treated in accordance with HAR 13-279.
4. To ensure that the approved plans for reasonable protection of any valued resources, practices and beliefs are carried out in accordance with the approved Site Preservation Plan and the Burial Treatment Plan, these plans shall be made part of the property deed covenants, recorded with the Bureau of Conveyances and run with the land. The covenants shall include a provision that written notice of these covenants shall be provided to any buyer of any portion of the property prior to closing.
5. To accommodate recognized descendants, appropriate access, including adequate on-site parking, will be provided in accordance with the approved Burial Treatment Plan.
6. Participation by recognized descendants in the care and maintenance of any on-site burial preservation area shall be in accordance the approved Burial Treatment Plan.
7. Establishment of any protective buffer along the *makai* side of the Pā Kuakini section located on the property shall be in accordance with the approved Preservation Plan.
8. If any trails are found on the property, they shall be treated in accordance with HAR 13-280 and the recommendations, if any, of the State Nā Ala Hele program.
9. Any burials and burial goods identified in the proposed alignment corridor of the Kahului-Keauhou Parkway shall be handled in accordance with the recommendations of SHPD.
10. The treatment and disposition of any *iwi* and burial goods found on the property will be in accordance with the Hawaii Revised Statutes and HAR 13-300.
11. In order to avoid any impacts to the shoreline and nearshore waters, accommodation of any runoff and nonpoint source pollution generated on the property, either during construction or after the project has been completed, shall be made in accordance with the law and regulations of the State Department of Health and the County Department of Public Works.

CONCLUSION

This assessment has been prepared in accordance with Rule 9 of the Hawai‘i County Planning Commission and the recommended OEQC Guidelines for assessing cultural impacts. Valued resources, practices and beliefs have been identified in the area and on the subject property, and the possible presence of others has been discussed. The extent of impacts has been described, and, in consideration of the recommendations of the descendants interviewed, mitigation measures are listed and constitute feasible actions, that, if taken, will reasonably protect any valued resources, practices and beliefs that are located or may be located on this property.

REFERENCES

- Ching, F., E. Neller, S. Palama, and P. Griffen, 1973, The Archaeology of North Kona, from the Ahupua‘a of Kahului to the Ahupua‘a of Kahalu‘u. Surface Survey: Realignment of Ali‘i Drive. *Hawaiian Archaeological Journal* 73-2. Archaeological Research Center Hawaii, Inc.
- Ellis, W., 1963, Journal of William Ellis. Advertiser Publishing Co., Ltd, Honolulu, Hawai‘i.
- Geometrician Associates, 2001, Cultural Impact Assessment, Kaloko-Honokōhau Business Park, North Kona, Hawai‘i. Prepared for Lanihau Properties, LLC, as part of the Draft Environmental Impact Statement.
- Haun, A. and D. Henry, 2004, Archaeological Inventory Survey, TMK: 7-5-19:01, Kahului 2, North Kona District, Island of Hawai‘i, Haun & Associates Report 175. Prepared for Sunstone Realty Partners LLC.
- Haun & Associates, 2005a, Burial Treatment Plan, Site 6332 (Feature B) and Site 23915, Land of Kahului 2, North Kona District, Island of Hawai‘i, TMK: 3-7-5-19:01, Report 369. Prepared for Sunstone Realty Partners LLC.
- _____, 2005b, Archaeological Site Preservation Plan, Site 6302, 6332 (Feature A) and 23914 (Feature A), Land of Kahului 2, North Kona District, Island of Hawai‘i, TMK: 3-7-5-19:01, Report 370. Prepared for Sunstone Realty Partners LLC.
- Kamakau, S. M., 1961, Ruling Chiefs of Hawaii (Revised Edition), The Kamehameha Schools Press, Honolulu, Hawai‘i.
- Kapa ‘akai O Ka ‘Āina v. Land Use Commission* 94 Hawai‘i, 31 (September 2000).
- Maly, K, 1996, Archival-Historical Documentary Research and Limited Oral History Study. In: Archaeological Inventory Survey of the Gomes Property Parcel, Land of Kahului 1st, Island of Hawai‘i (TMK: 3-7-5-19:5, 38, 40). PHRI Report 1807. Submitted to Towne Development of Hawaii, Inc.

_____, 1999, He Mo‘olelo ‘Āina: A Cultural-Historical Study of Puapua‘a iki, Kauakaiakaola (Kauakahiakahaola) Heiau and Vicinity. Land of Puapua‘a, District of Kona, Island of Hawai‘i (TMK: 7-5-20:22,24,28 & 34). Prepared for Wesley K. Saito, Group Management Inc. Eco-International, Inc. in cooperation with *Kumu Pono Associates*, Hilo, Hawai‘i.

Public Access Shoreline Hawai‘i (PASH) v. Hawai‘i County Planning Commission, 79 Hawai‘i 425, 903 P.2nd 1246 (1995), cert. Denied, 116 S. Ct. 1559 (April 22, 1996) (Mem.).

Pukui, M. K. and S. H. Elbert, 1986, *Hawaiian Dictionary* (Revised and Enlarged Edition), University of Hawai‘i Press, Honolulu, Hawai‘i.

_____, S. H. Elbert and E. T. Mookini, 1974, *Place Names of Hawaii*, Revised and Expanded Edition, The University Press of Hawaii, Honolulu, Hawai‘i.

Rechtman, R. and T. Wolforth, 1977, Burial Treatment Plan for Kona Hawaiian Village, Land of Kahului 1st, North Kona District, Island of Hawai‘i (TMK: 3-7-5-19:5,38,40 and TMK: 3-7-5-18:6) PHRI Report 1977.1. Prepared for Adventure Resorts, Inc.

_____, and D. Henry, 1999, Archaeological Inventory Survey for the Kahului Bridge Replacement Project, Kahului 1st and 2nd Ahupua‘a, North Kona District, Island of Hawai‘i (TMK: 7-5-19:5, 7, 8 and 9). PHRI Report 1945. Prepared for Ron Terry, Ph.D.

_____, and D. Dougherty, 2000, An Archaeological Inventory Survey of TMK: 3-7-5-19:44-45, Kahului 2nd Ahupua‘a, North Kona District, Island of Hawai‘i. RC-0027. Prepared for Sunstone Realty Partners, LLC.

Reinecke, J. E., 1930, Survey of Sites on West Hawaii. File Manuscript, Dept. of Anthropology, Bishop Museum, Honolulu, Hawai‘i.

Soehren, L., 1976, An Archaeological Reconnaissance Survey of a Portion of Kahului 2nd, North Kona, Hawai‘i. Prepared for P. Yoshimura, Inc.

_____, 2004, A Catalog of Hawaiian Place Names, Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaii. Honokaa, Hawai‘i.

Stokes, J. F. G. and T. Dye, 1991, Heiau of the Island of Hawai‘i: A Historic Survey of Native Hawaiian Temple Sites. *Bishop Museum Bulletin in Anthropology* 2. Bishop Museum Press, Honolulu, Hawai‘i.

Tyler, J. C. III, 2005, Oral History Interviews & Consultation, Tax Map Key: (3) 7-5-019:001, Kahului Nui Ahupua‘a, District of North Kona, Island of Hawai‘i. OHX 75019:1 (0705).

ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 4 Visual Impact Assessment

Visual Impact Assessment
Kona Sea Crest Condominium Development
TMK 7-5-19:01
Kahului 2nd, North Kona, Island of Hawai`i
May 2005

Introduction

This report was developed to accompany an application for a Special Management Area (SMA) permit for the proposed Kona Sea Crest condominium development on Ali`i Drive in Kailua-Kona, Island of Hawai`i. The property, TMK: 7-5-19:01, is owned by Sunstone Realty Partners LLC, which is also the applicant for a SMA permit.

The purpose of this report is to describe the impacts that the project will have on the visual resources in the area and propose mitigation to minimize any adverse impacts. To accomplish these objectives, the following steps have been undertaken:

- Photographic depiction of the project sites and environs, including views of the existing area from key vantage points;
- Review of the Special Management Area's policies for scenic resources, including scenic views and resources listed as important in the Hawai`i County General Plan, as well as other scenic views, and their relationship to the site and proposed project, with map depiction of key view planes;
- Discussion of elements of proposed project that could impact scenery and viewplanes;
- Mauka-makai profiles that include the existing topography and buildings along with proposed structures along key view corridors; and
- Analysis that integrates the above and makes conclusions about the total visual impact, including proposed mitigation measures, where appropriate.

Map figures referenced in this report are contained in **Appendix 1**; photographic figures are contained in **Appendix 2**; and profiles are contained in **Appendix 3**.

Property Location and Existing Appearance

The L-shaped, 46.3-acre property is located between Ali`i Drive and Kuakini Highway in the ahupua`a of Kahului 2nd (**Map Figures 1-2; Photo Figures 1-2**). As airphotos (**Photo Figures 1-2**) and ground photos (**Photo Figures 3-4**) reveal, the land has not been developed and is thickly covered with alien vegetation. In a few locations throughout the property there are signs of grading and other disturbance from earlier eras.

Most surrounding properties have been developed for single- or multi-family housing (see **Photo Figures 1-2**). Makai of the mauka part of the "L" is the Kona Sea Ridge development; to the south is Kahakai Subdivision; mauka is Kona Sea Villas; only on the northern side is there a

large extent of undeveloped property. The other leg of the “L” extends as a 300-400 foot wide strip down to Ali`i Drive, with Kona Sea Ridge to the south and undeveloped land north. Between this part of the property and the shoreline is Ali`i Drive and one to three rows of homes and condominium structures.

It is important to note that the proposed Kahului-Keauhou Parkway will bisect the property and separate the sides of the “L.” Another mauka-makai connector road is planned for the southern border of the property.

Views toward the shoreline from the ground level of property are essentially blocked by development mauka or makai of Ali`i Drive except through a few gaps (**Photo Figure 5**). The view mauka currently consists of heavily vegetated land sloping steeply upwards towards Kuakini Highway, with a row of resort homes in the middle ground and the slopes of Hualalai in the background (**Photo Figure 6**).

Scenic Resources and Viewplanes in Project Area

Chapter 205A, Hawai`i Revised Statutes, expresses the intent of the State’s Coastal Zone Management program to protect, preserve, and where desirable, restore or improve the quality of scenic and open space resources. The guidelines contained in Rule 9 of the Hawai`i County Planning Commission Rules (which governs County-regulated development in the Special Management Area or SMA) seek to minimize development that would substantially interfere with or detract from the line of sight toward the sea from the State Highway nearest the coast or from other scenic areas identified in the *General Plan*. The discussion below identifies and evaluates scenic resources in the context of these regulations and guidelines.

At present, the scenic values of the general area are derived from onshore and offshore views of the ocean and shoreline. The Hawai`i County General Plan identifies views of the shoreline from Queen Ka`ahumanu Highway in “various” locations in the Kailua-Kona to Keauhou area, including the project area (Kahului). Views within the Holualoa-Keauhou area (somewhat south of the project area) going mauka and makai on Kuakini Highway are also identified. No other scenic resources are noted in the General Plan. Although not noted, views from Ali`i Drive – especially views makai – are also scenic. This analysis primarily considers views from Queen Ka`ahumanu Highway, as these are identified as important in Chapter 205 and the General Plan, but also considers views from Kuakini Highway and Ali`i Drive.

Queen Ka`ahumanu Highway is about 4,000-4,500 feet mauka of the shoreline (see **Map Figure 1**). Existing development and vegetation along with topography result in almost no views of the shoreline from Queen Ka`ahumanu Highway, as shown in a typical view (**Photo Figure 7**). Views of the property for drivers heading north on Kuakini Highway are blocked by topography, vegetation and existing development, as illustrated in **Photo Figure 8**. The subject property is mauka of Ali`i Drive and thus does not impact views of the shoreline from Ali`i Drive.

Proposed Project

The site plan for the development is shown in **Map Figure 3**. The applicant proposes to construct 67 two-story townhome-type structures, consisting of 5 four-plexes, 34 eight-plexes, and a small area of either multifamily or commercial uses. Also proposed in the development plans are parking areas, walkways, swimming pools, landscaping and other accessory uses. Landscaping will be designed to soften the structures and match the character of surrounding properties. All plans will be reviewed and approved by the Planning Department through the Plan Approval process.

A sample elevation view of typical proposed buildings is shown in **Map Figure 4**. Each structure's roof would be approximately 41 feet above grade. In order to be conservative, however, this analysis models roofs of 45 feet, the legal limit in this zone.

The general area contains many one- to three-story resort, commercial and residential developments with similar mass, density and roof lines. Basically, the Kona Sea Crest development would insert a moderate-density, moderate-height development in a neighborhood of uses that are of roughly the same density and height.

Mauka-Makai Profiles Through Project Site

Profiles A-E illustrate the position and height of the ground surface as well as existing and proposed structures along two lines extending between the major highways and the shoreline. The location of the project structures are shown in their correct positions¹; surrounding structures are conservative approximations based on airphoto reconnaissance. The locations of the profiles are illustrated on a USGS topographic map (**Map Figure 1**).

Profiles A and B extend from the intersection of Hualalai Road and Queen Ka`ahumanu Highway to south of Puapua`a Point, and illustrate coastal views from both Queen Ka`ahumanu and Kuakini Highways in a southerly direction across the property. **Profiles C and D** extend from these highways down the contours of the long axis of the property. **Profile E** extends from the intersection Queen Ka`ahumanu and Kuakini Highways to the coast at Waiaha and illustrates coastal views in a northerly direction across the property.

For each profile, elevations were derived from 5-foot/10-foot survey topography performed in the 1970s as part of a wastewater infrastructure study, contours were digitized, and profiles were generated using an ARC-VIEW © Geographic Information System (GIS) routine.

The purpose of the profiles is to illustrate the elevations of the land surface, Kuakini and Queen Ka`ahumanu Highways, and certain structures in order to determine direct lines of sight. It is important to note that for ease of interpretation, these profiles incorporate *significant vertical*

¹ The profiles are based on an earlier Site Plan that does not vary in any substantial way from the current Site Plan depicted in Map Figure 3.

exaggeration. Slopes are not as steep and structures are not as tall and narrow in reality as they appear on the profile. Sightlines, however, are not distorted by vertical exaggeration.

Impact of Project on Scenic Resources and Proposed Mitigation

View from shoreline and Ali`i Drive makai and mauka. Other lots with structures and dense landscaping are present between Ali`i Drive and the shoreline (see **Photos Figure 1-2**). As the subject property is mauka of Ali`i Drive, no impact on makai views would occur in any case. As for views mauka from either the shoreline or Ali`i Drive, there is no current development along the road frontage for the 300-400-foot wide strip that extends to Ali`i Drive. Motorists, pedestrians and bicyclists on Ali`i Drive will exchange a mauka view of the kiawe scrub-land (see **Photo Figure 5-6**) for a condominium complex similar to those next door in Kona Sea Ridge. Because this matches the character of the area, and the kiawe scrub-land is not generally considered scenic, there will be little if any scenic impact, although there will be a lessening of the “open-space” feeling that this and neighboring undeveloped properties offer.

Views of the shoreline from Kuakini and Queen Ka`ahumanu Highways. As illustrated in the **Profiles A-E**, topography (not to mention buildings and vegetation) prevent views of the shoreline or nearshore area from Queen Ka`ahumanu Highway. As illustrated in the typical view from this highway shown in **Photo Figure 7**, this occurs not only at these profiles, but also along most of the highway, even where there open views towards the ocean. Topography, buildings and vegetation are similar obstacles to all but a few sightlines of the shoreline from Kuakini Highway as well, as illustrated in all profiles. In total, however, little visual impact for the viewplanes from the listed highways to the shoreline is expected.

Summary

The total visual impacts of the projects of the proposed Kona Sea Crest condominium project are minor. It would insert a moderate-density, moderate-height development in a neighborhood of uses that are of roughly the same density and height. The development will have no effect on views from Ali`i Drive to the shoreline, and it will not be visible from shoreline looking mauka. For the portion of the property with frontage on Ali`i Drive, motorists, pedestrians and bicyclists will exchange views of the kiawe scrub-land for a condominium complex, matching neighboring uses but reducing at least to some degree the sensation of open-space. Because of the context of many existing and planned buildings both mauka and makai, there will be little if any impact to views of the shoreline or ocean from the Kuakini and Queen Ka`ahumanu Highways. Landscaping, particularly if done with native plants (*Vitex rotundifolia* is thriving next door) could improve the scenic character of the property, which now supports weeds.

Visual Impact Assessment Appendix 1
Map Figures

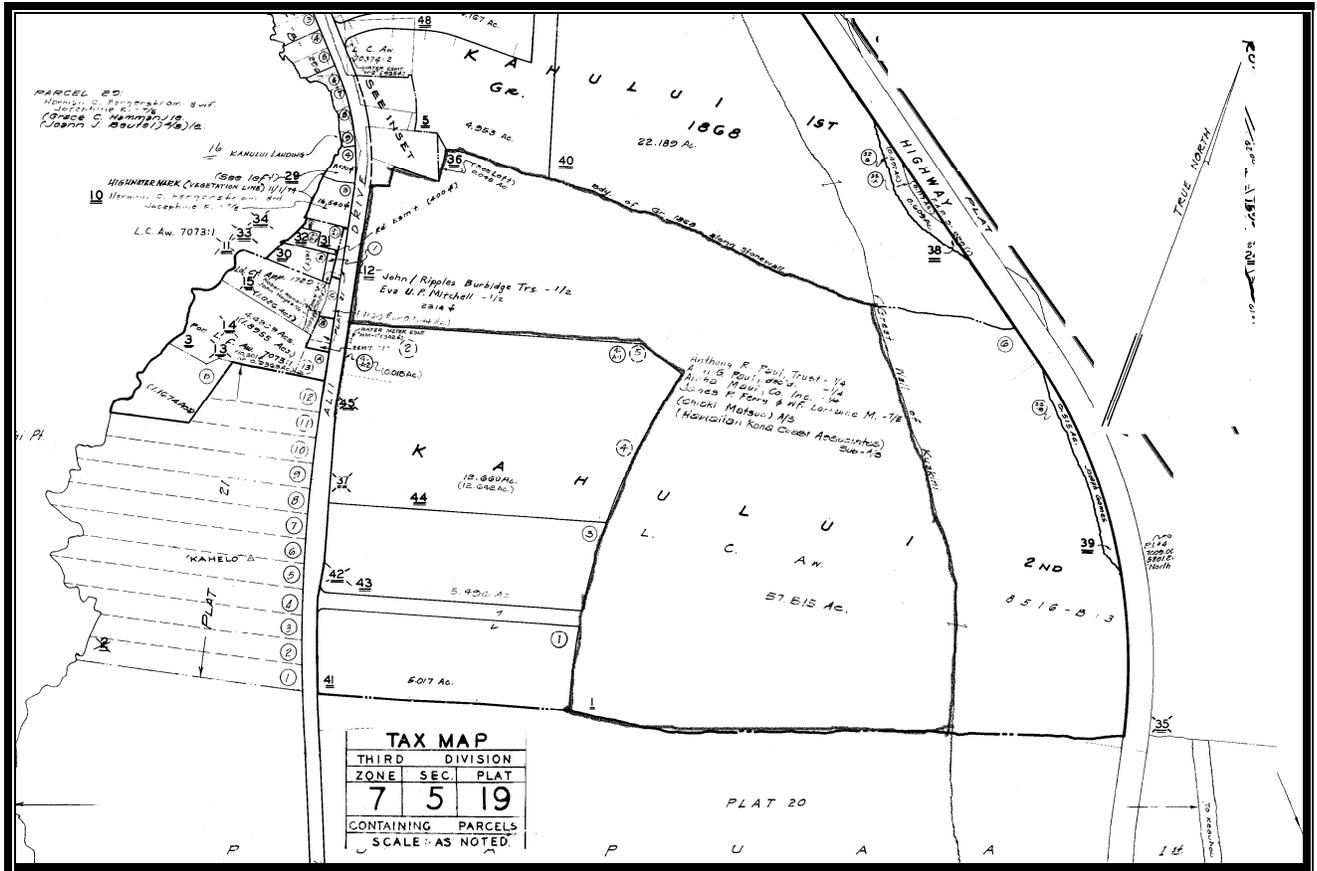
Map Figure 1



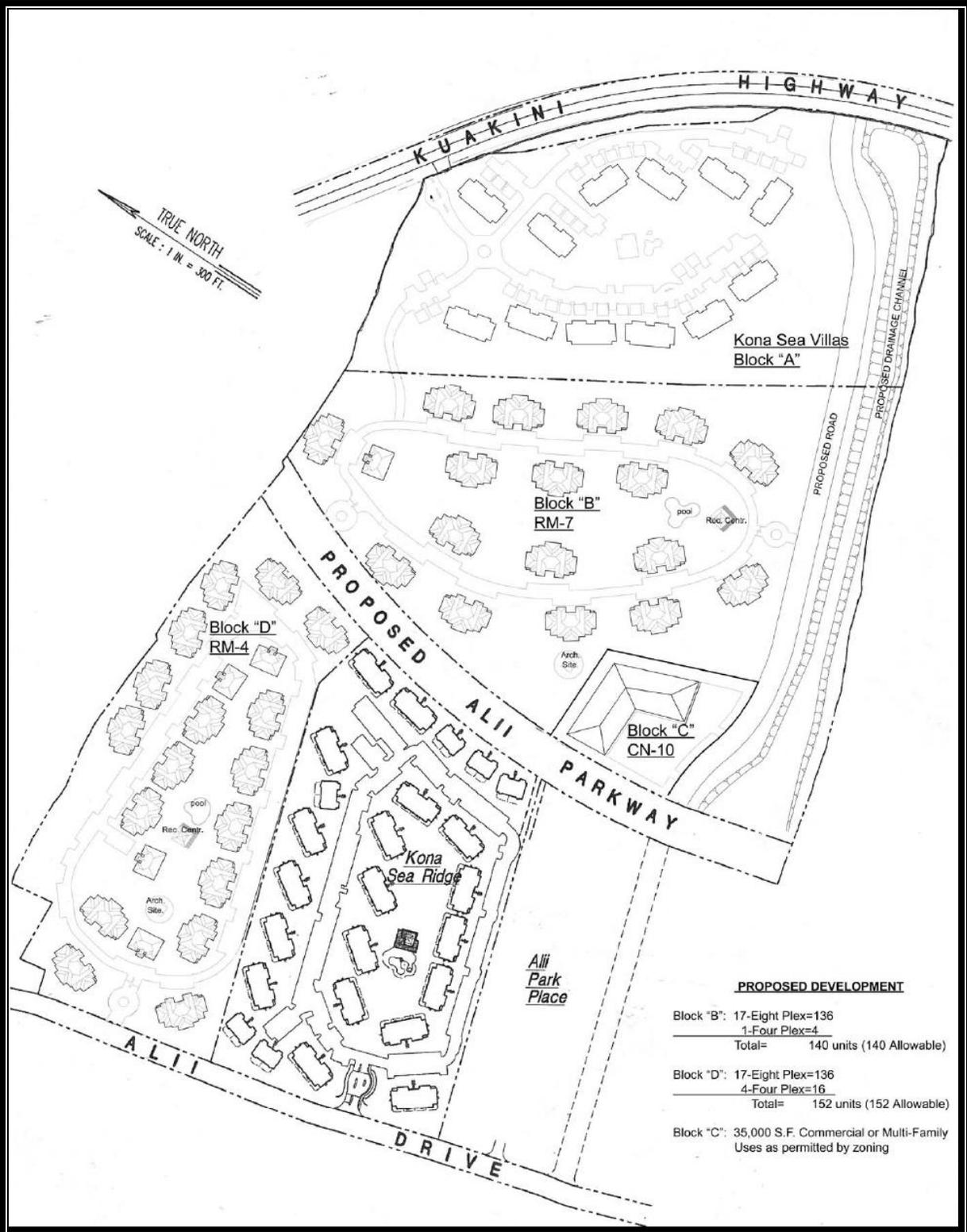
Base Map: U.S.G.S. Topographic
Projection: UTM Zone 5

0 1,000 2,000 3,000 4,000 5,000 Feet

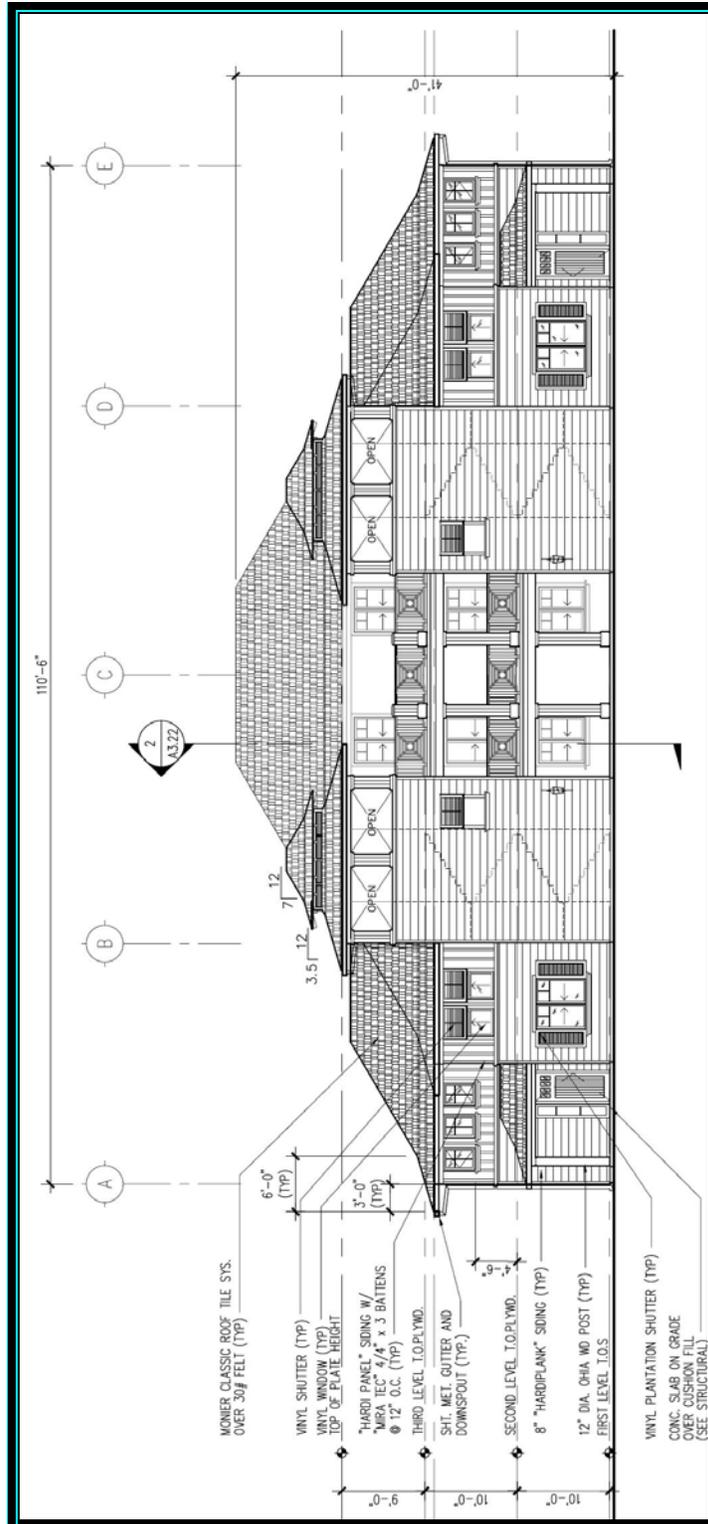




Map Figure 2
TMK Map



Map Figure 3
Site Plan



Map Figure 4
Typical Building Elevation

Visual Impact Assessment Appendix 2
Photographic Figures

PHOTO FIGURES



1. Aerial View of Property from Mauka



2. Aerial View of Property from Makai



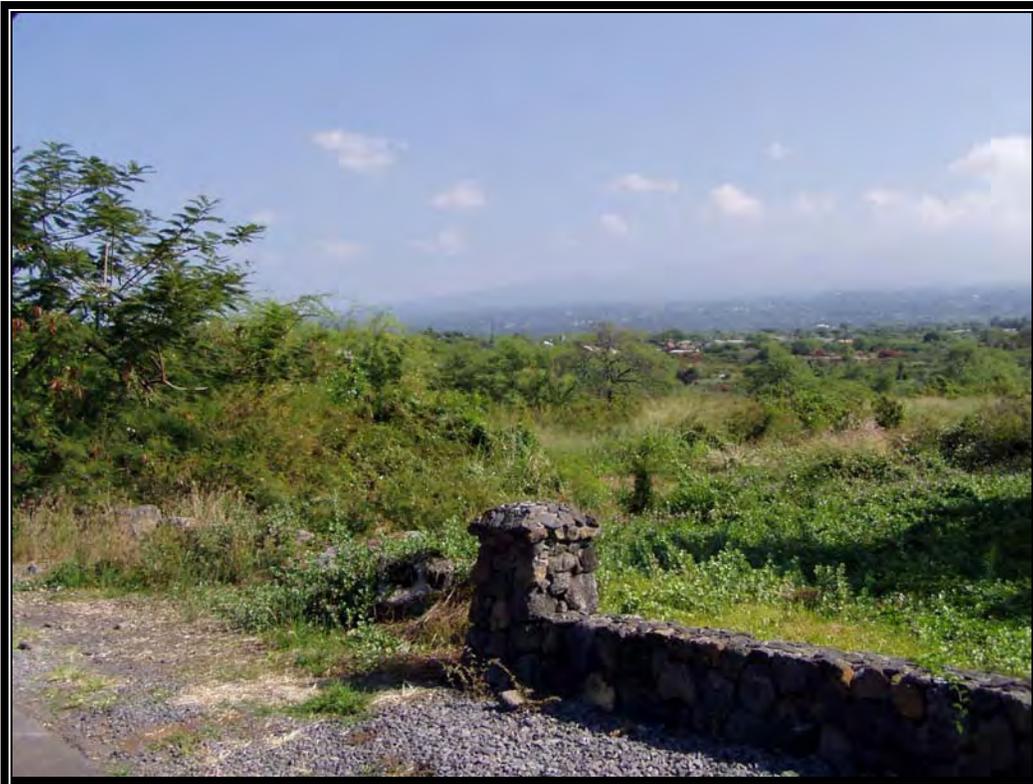
3. Vegetation on Property



4. View South Along Ali'i Drive, Property to Right



5. View Makai from Property, Through Gap in Development



6. View from Ali'i Drive Mauka



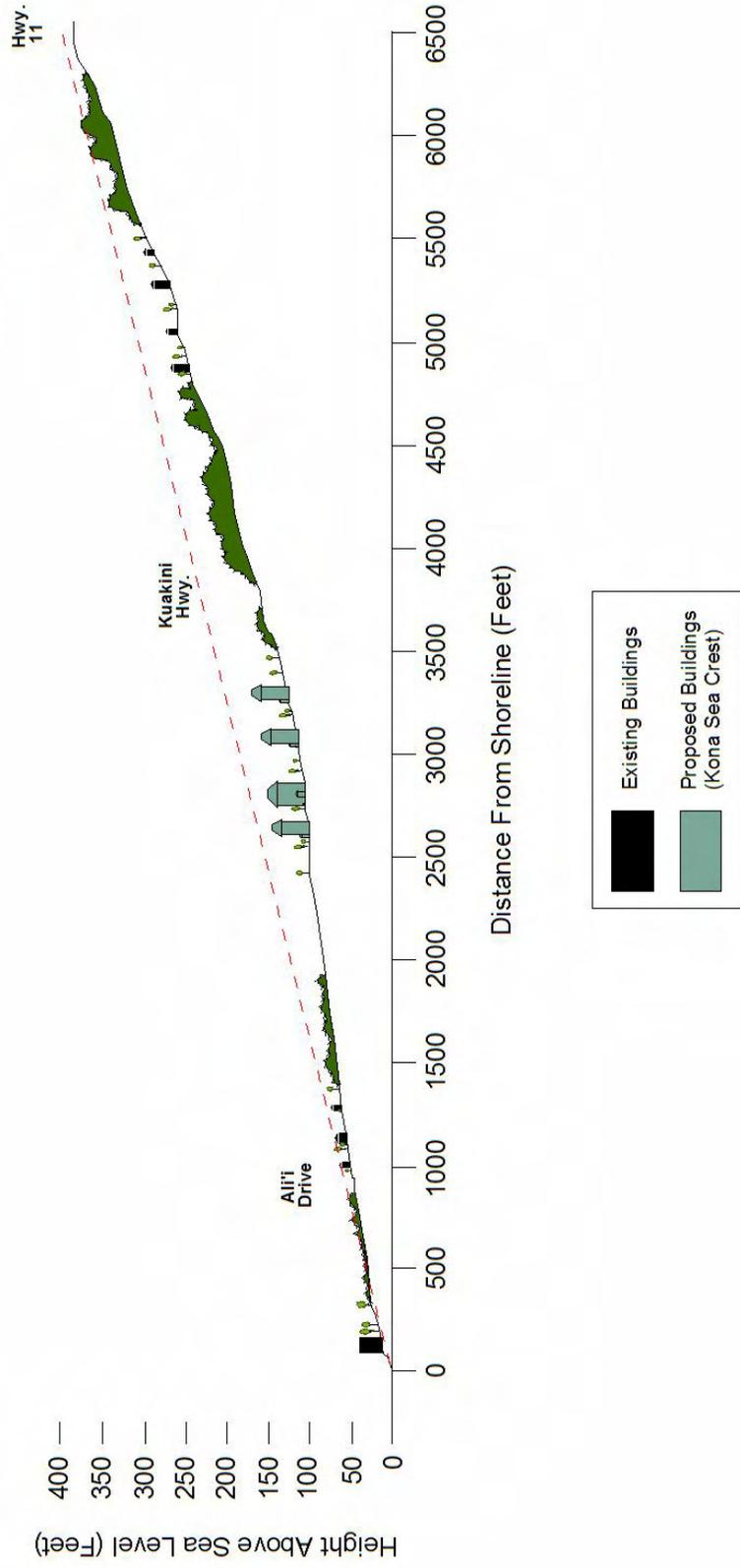
7. View from Queen Ka'ahumanu Highway Makai



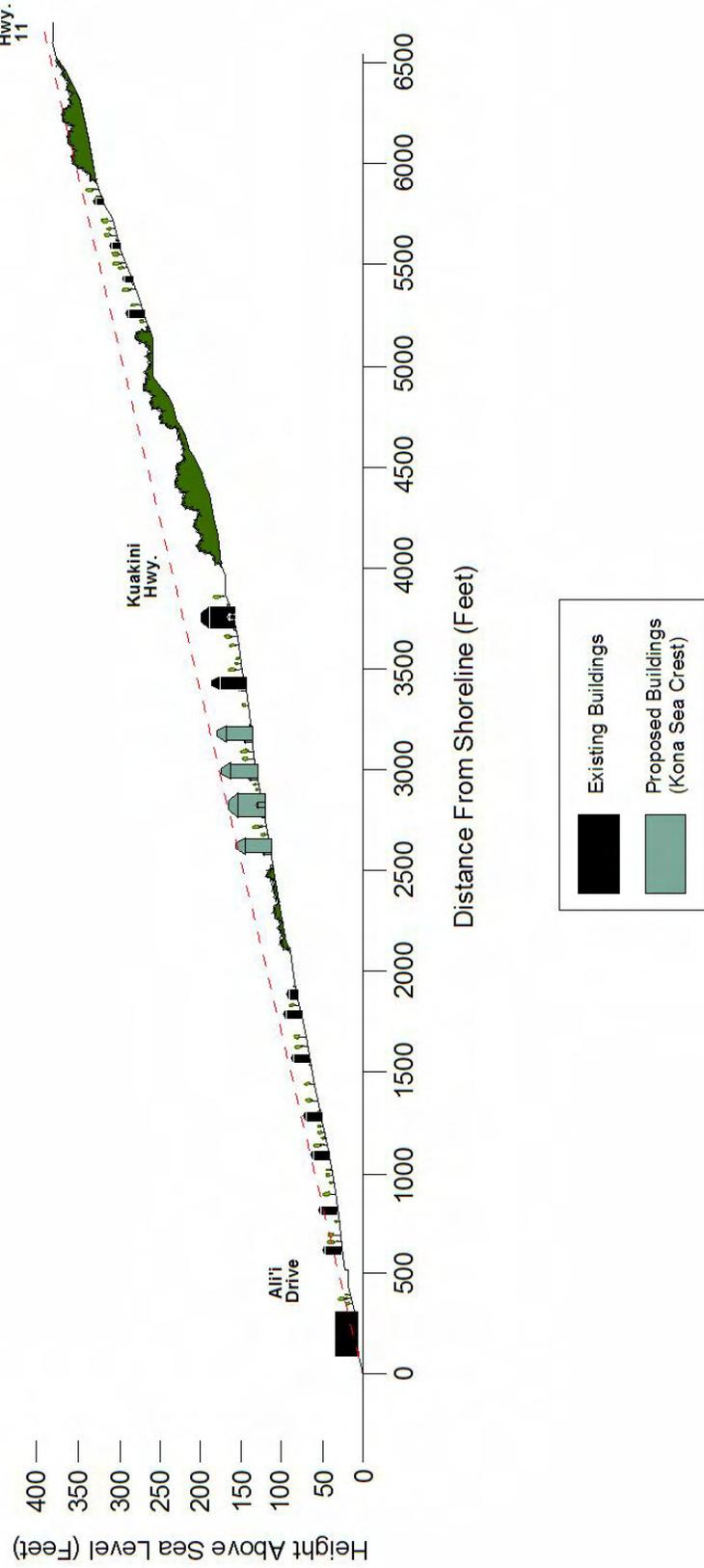
8. View from Kuakini Makai; Kona Sea Villas Visible on Left

Visual Impact Assessment Appendix 3
Profiles

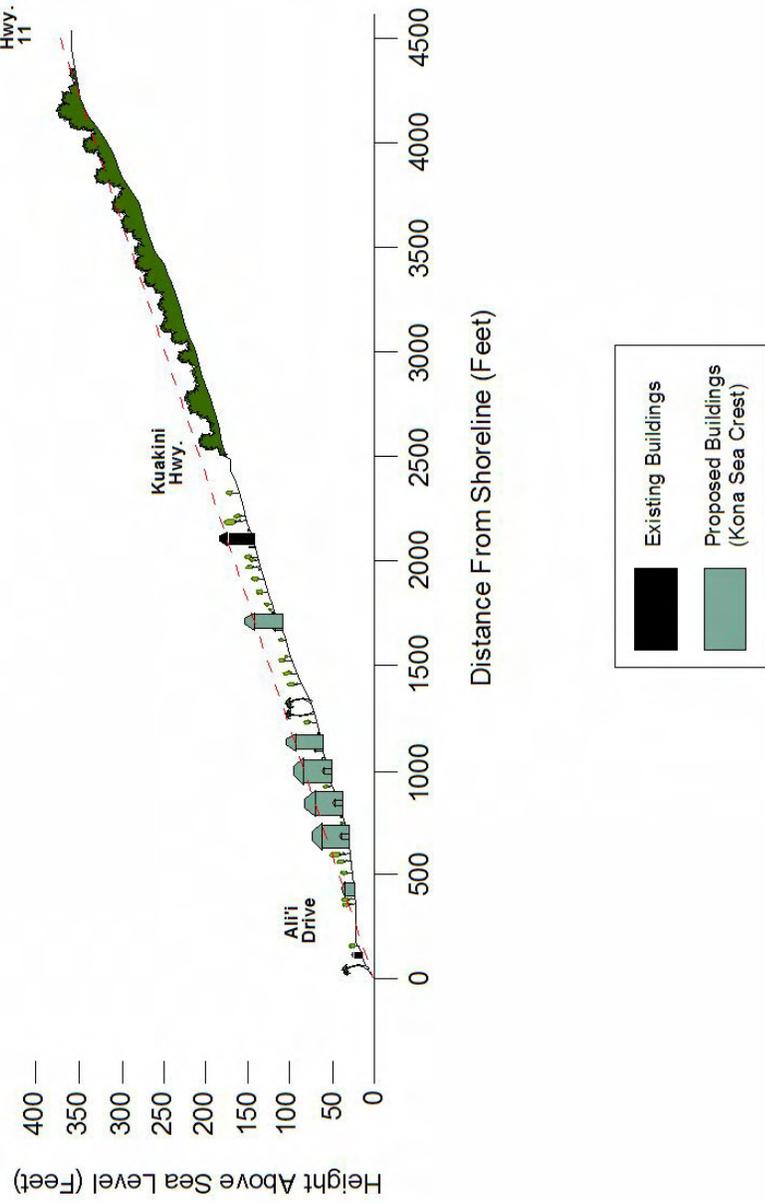
Profile A



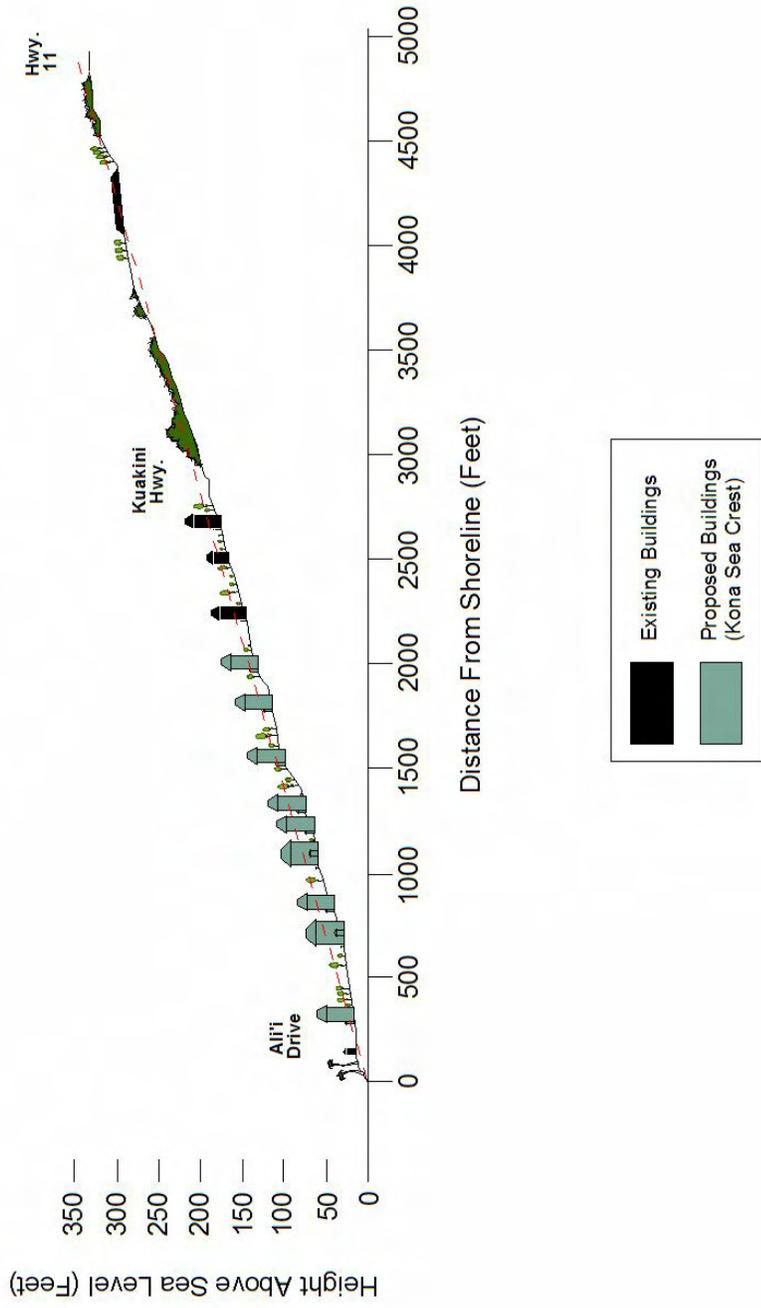
Profile B



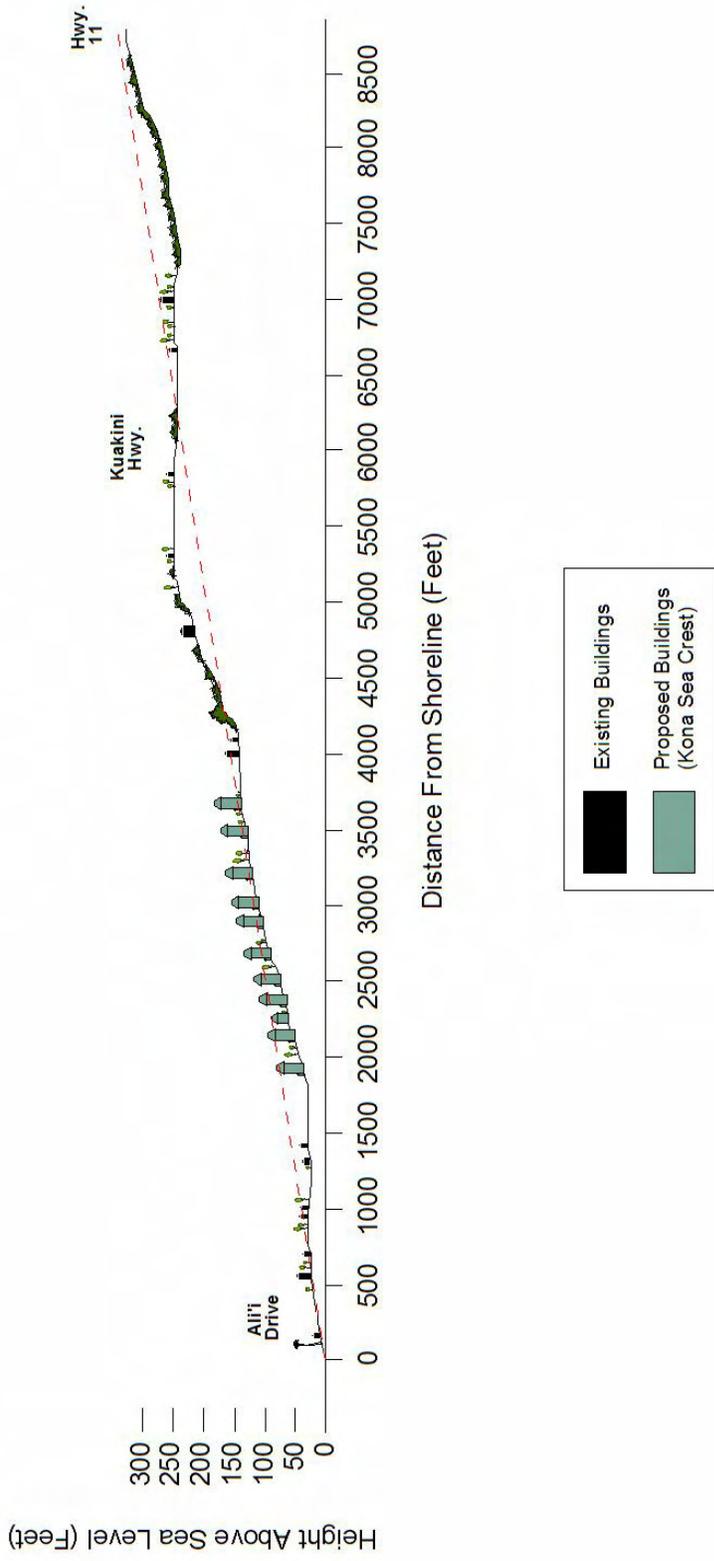
Profile C



Profile D



Profile E



ENVIRONMENTAL ASSESSMENT

Kona Sea Crest Development

TMK: (3rd) 7-5-19:01 (por.)
Kahului 2nd, North Kona District, Hawai'i Island, State of Hawai'i

APPENDIX 5 **Traffic Impact Analysis Report**

TRAFFIC IMPACT ANALYSIS REPORT FOR

KONA SEA CREST ROAD

IN KAILUA-KONA, HAWAII

Prepared For

SUNSTONE KONA, LLC

1003 Bishop Street, Suite 1240
Honolulu, Hawaii 96813

Prepared By

Phillip Rowell and Associates

47-273 'D' Hui Iwa Street
Kaneohe, Hawai'i 96744
Tel: 808-239-8206 Fax: 808-239-4175
Email: prowell@hawaiiintel.net

October 29, 2007

TABLE OF CONTENTS

1. INTRODUCTION Page 1
 Project Location and Description Page 1
 Purpose and Objectives of Study Page 1
 Study Methodology Page 3
 Study Area Page 3
 Order of Presentation Page 4

2. ANALYSIS OF EXISTING CONDITIONS Page 5
 Existing Peak Hour Traffic Volumes Page 5
 Level-of-Service Concept Page 8
 Level-of-Service Analysis of Existing Conditions Page 9

3. PROJECTED BACKGROUND TRAFFIC CONDITIONS Page 10
 2020 Background Traffic Projections Page 10

4. TRAFFIC IMPACT ANALYSIS Page 13
 2020 Background Plus Project Traffic Projections Page 13
 Standards for Significance and Mitigation Page 16
 Left Turn Storage Lane Warrants Page 16
 Left Turn Storage Lane Length Requirements Page 16
 2020 Lane Configurations and Right-of-Way Controls Page 17
 Results of Level-of-Service Analysis Page 20
 Findings and Conclusions Page 21

Appendix A Trip Generation Calculations and Trip Assignments

LIST OF FIGURES

Figure 1 Project Location Page 2
 Figure 2 Existing (2006) AM Peak Hour Traffic Volumes Page 6
 Figure 3 Existing (2006) PM Peak Hour Traffic Volumes Page 7
 Figure 4 2020 Background AM Peak Hour Traffic Projections Page 11
 Figure 5 2020 Background PM Peak Hour Traffic Projections Page 12
 Figure 6 2020 Background Plus Project AM Peak Hour Traffic Projections Page 14
 Figure 7 2020 Background Plus Project PM Peak Hour Traffic Projections Page 15
 Figure 8 Guidelines for the Need for a Separate Left Turn Lane Page 18
 Figure 9 2020 Lane Configurations and Right-of-Way Controls Page 19

LIST OF TABLES

Table 1 Level-of-Service Definitions for Signalized Intersections Page 8
 Table 2 Level-of-Service Definitions for Unsignalized Intersections Page 9
 Table 3 Left Turn Storage Lane Requirements Page 17
 Table 4 Results of Level-of-Service Analysis for 2020 Conditions Page 20

1. INTRODUCTION

Project Location and Description

The project under study is the proposed construction of Kona Sea Crest Road between Alii Drive and Kuakini Highway in the Kailua-Kona area of the Island of Hawaii. The approximate location of the proposed roadway is shown on [Figure 1](#).

The new roadway is located approximately 300 feet south of the existing Alii Park Place. The roadway will connect Alii Drive and the proposed Alii Parkway. At the Alii Parkway, the alignment will shift approximately 350 feet north and then continue to Kuakini Highway. For purposes of this study, it was assumed that all intersections will be unsignalized.

Purpose and Objectives of Study

1. Quantify and document anticipated traffic conditions without and with the proposed Kona Sea Crest Road, proposed Block B, proposed Block D and a proposed retail center.
2. Determine the geometric requirements of the proposed intersections.

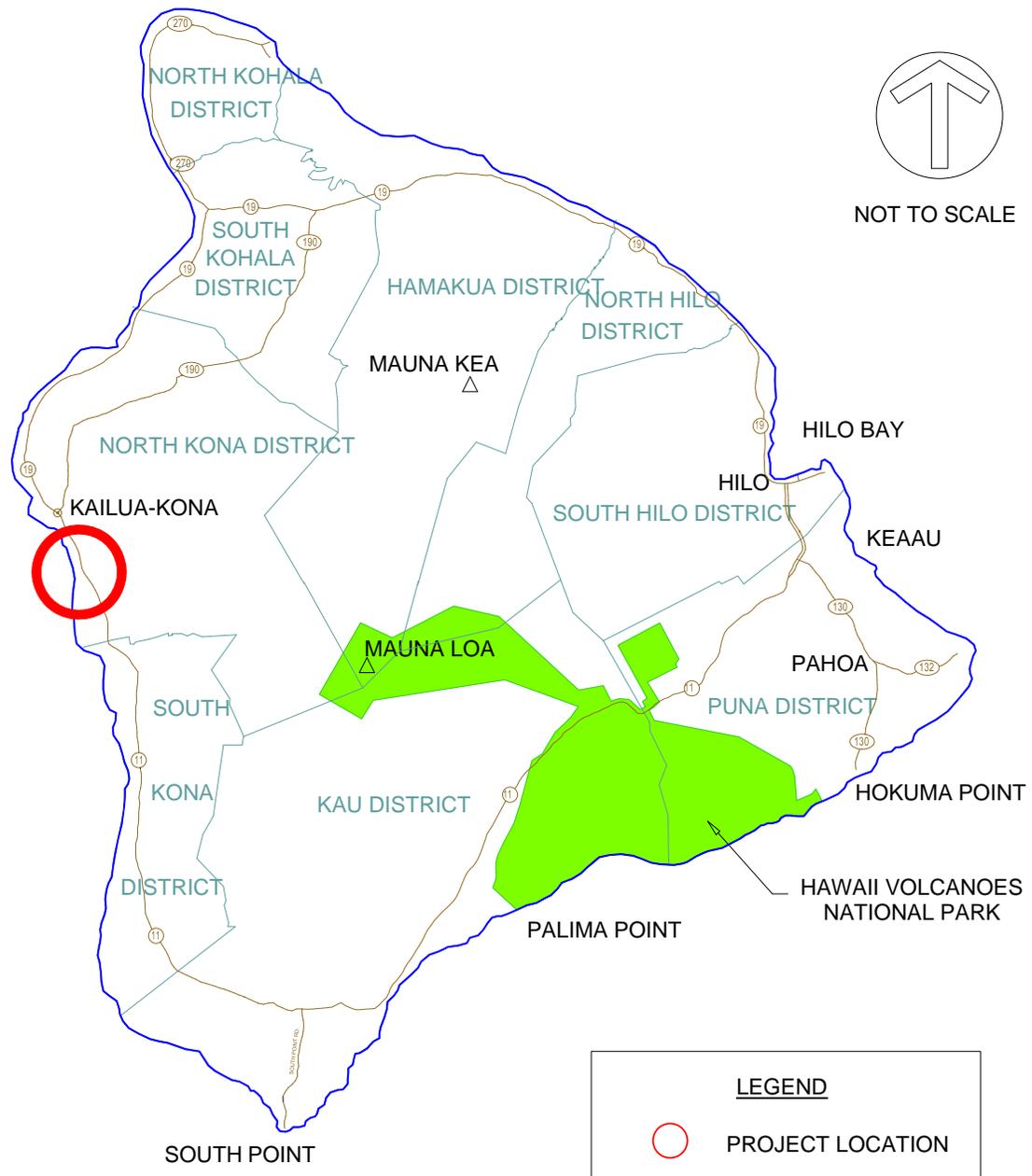


Figure 1
PROJECT LOCATION MAP

Study Methodology

The following is a summary list of the tasks performed:

1. A field reconnaissance was performed to identify existing roadway cross-sections, intersection lane configurations, traffic control devices, and surrounding land uses.
2. Existing levels-of-service of the study intersections were determined using the methodology described in the *2000 Highway Capacity Manual*.
3. The year 2020 was used as the design, or horizon, year. This year was selected to be consistent with the traffic study for the Keauhou Parkway¹.
4. 2020 background traffic volumes along Alii Drive and along Kuakini Highway in the vicinity of the proposed roadway were estimated.
5. The traffic that will be generated by Block B, Block D and the proposed retail center was estimated and assigned to the roadnet.
6. A level-of-service analysis was performed for 2020 conditions without and with the proposed Kona Sea Crest Road.
7. Locations with inadequate level-of-service were identified and, if required, alternative mitigation measures were formulated and assessed.
8. A draft report documenting the conclusions of the analyses performed and recommendations was prepared and submitted for review and comment.
9. A report was prepared documenting the analyses and conclusions.

Study Area

The study includes the following existing and proposed intersections:

1. Alii Drive at Kona Sea Crest Road
2. Kona Sea Crest Road (South) at Alii Parkway
3. Kona Sea Crest Road (North) at Alii Parkway
4. Kona Sea Crest Road at Kuakini Highway
5. Alii Drive at Proposed Block 'D' Driveway
6. Kona Sea Crest Road at Proposed Block 'B' Driveway
7. Kona Sea Crest Road at Proposed Retail Center Driveway

¹ Julian Ng, Inc., *Traffic Analysis Report Kahului to Keauhou Parkway*, August 2000

Order of Presentation

Chapter 2 describes existing traffic conditions, the Level-of-Service (LOS) concept and the results of the Level-of-Service analysis of existing conditions.

Chapter 3 describes the process used to estimate future background traffic volumes and the resulting background traffic projections.

Chapter 4 describes the traffic impacts of the proposed project, identifies potential mitigation measures and summarizes the traffic impact study.

2. ANALYSIS OF EXISTING CONDITIONS

This chapter presents the existing traffic conditions on the roadways adjacent to the proposed project. The level-of-service (LOS) concept and the results of the Level-of-Service analysis for existing conditions are also presented. The purpose of this analysis is to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

Existing Peak Hour Traffic Volumes

The existing morning and afternoon peak hour traffic volumes are shown in [Figures 2 and 3](#). The peak hour volumes were determined from traffic counts at the nearest intersections to the proposed intersections along Kuakini Highway at Alii Drive, respectively. The counts were performed during March and April, 2006.

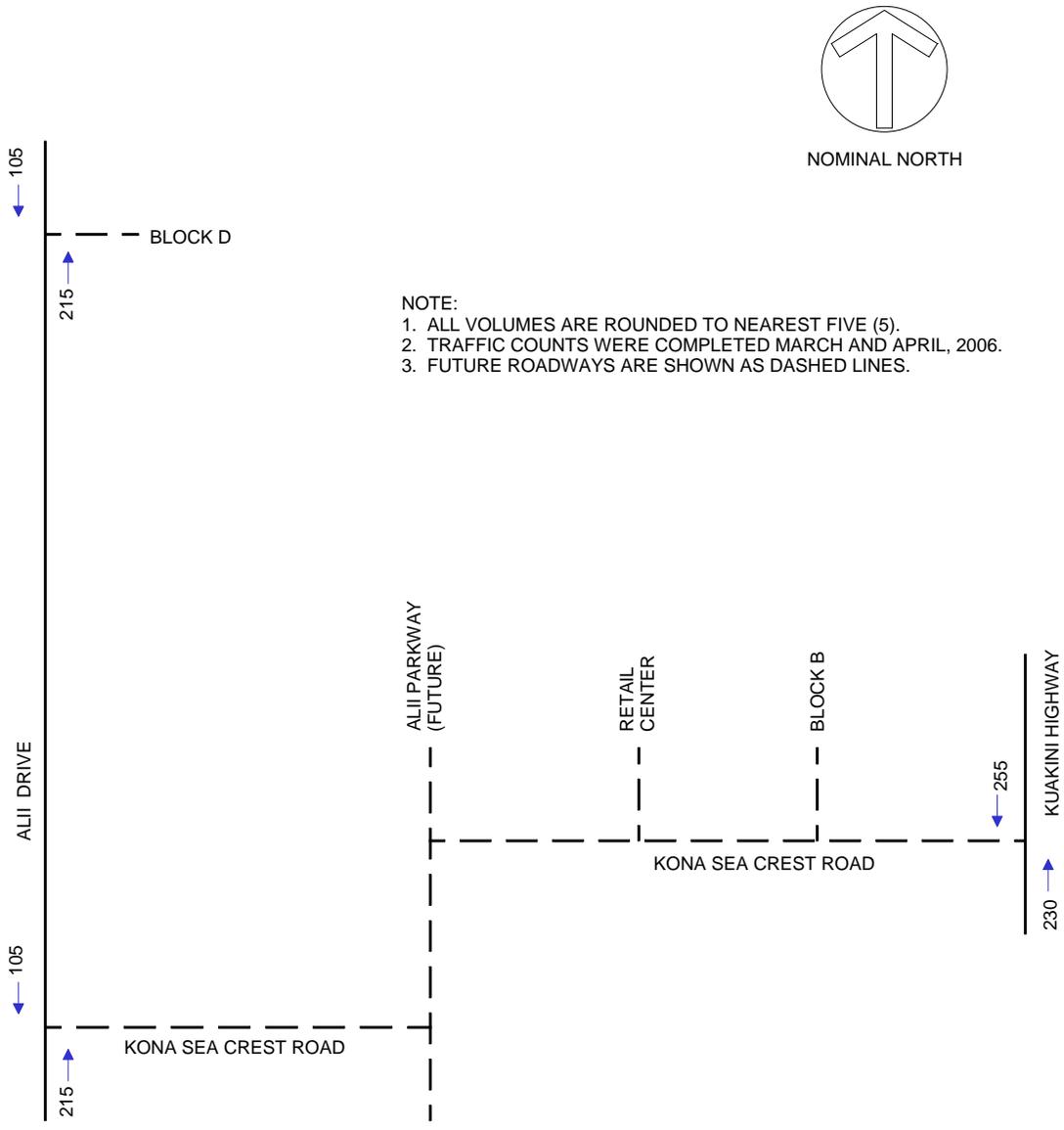


Figure 2
EXISTING (2006) AM PEAK HOUR TRAFFIC VOLUMES

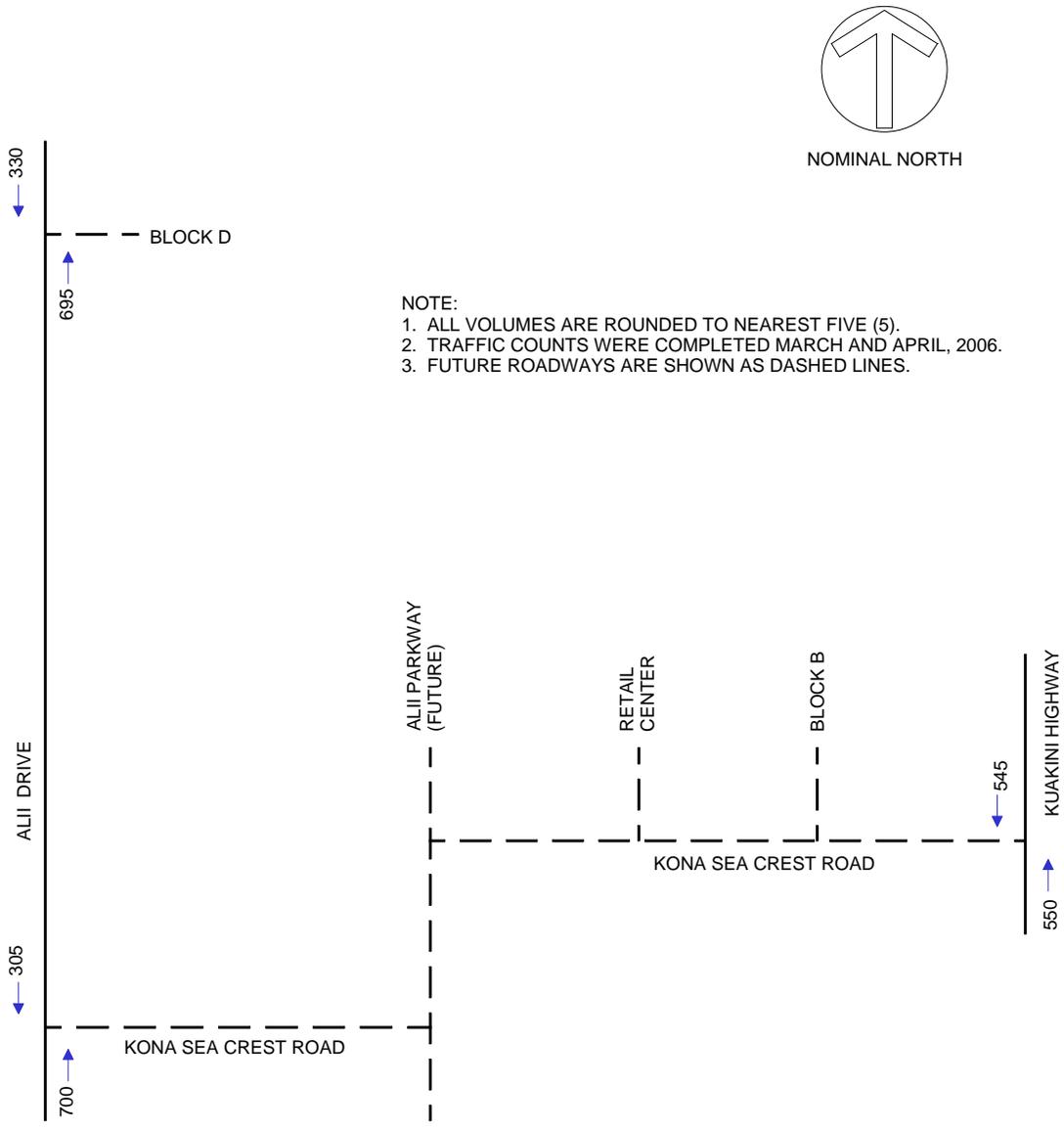


Figure 3
EXISTING (2006) PM PEAK HOUR TRAFFIC VOLUMES

Level-of-Service Concept

Signalized Intersections

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (Level-of-Service) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in [Table 1](#). In general, Level-of-Service A represents free-flow conditions with no congestion. Level-of-Service F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 1 Level-of-Service Definitions for Signalized Intersections⁽¹⁾

| Level of Service | Interpretation | Volume-to-Capacity Ratio ⁽²⁾ | Stopped Delay (Seconds) |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------|
| A, B | Uncongested operations; all vehicles clear in a single cycle. | 0.000-0.700 | <20.0 |
| C | Light congestion; occasional backups on critical approaches | 0.701-0.800 | 20.1-35.0 |
| D | Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed. | 0.801-0.900 | 35.1-55.0 |
| E | Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements. | 0.901-1.000 | 55.1-80.0 |
| F | Total breakdown with stop-and-go operation | >1.001 | >80.0 |

Notes:

(1) Source: *Highway Capacity Manual*, 2000.

(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 2 summarizes the definitions for level-of-service and the corresponding delay.

Table 2 Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

| Level-of-Service | Expected Delay to Minor Street Traffic | Delay (Seconds) |
|------------------|----------------------------------------|-----------------|
| A | Little or no delay | <10.0 |
| B | Short traffic delays | 10.1 to 15.0 |
| C | Average traffic delays | 15.1 to 25.0 |
| D | Long traffic delays | 25.1 to 35.0 |
| E | Very long traffic delays | 35.1 to 50.0 |
| F | See note (2) below | >50.1 |

Notes:

(1) Source: *Highway Capacity Manual*, 2000.

(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

Level-of-Service Analysis of Existing Conditions

As none of the study intersections exist, no existing levels-of-service were calculated.

3. PROJECTED BACKGROUND TRAFFIC CONDITIONS

The purpose of this chapter is to discuss the assumptions and data used to estimate 2020 background traffic conditions. Background traffic conditions are defined as future traffic volumes without the proposed project.

2020 Background Traffic Projections

2020 traffic volumes along Alii Drive and Kuakini Highway were derived from data provided in the traffic impact study for Keauhou Parkway. This document provided 2020 background traffic projections without and with the The Parkway. These projections did not appear to include traffic associated with the Kona Sea Ridge, Alii Park Place, Block 'B,' Block 'D' or the retail Center

Accordingly, traffic associated with existing development within the study area (Kona Sea Ridge and Alii Park Place) was estimated, assigned to the roadway network and added to the 2020 background traffic projections provided in the Parkway traffic report. The resulting 2020 background peak hour traffic projections without Kona Sea Crest Road, Block B, Block D and the retail center are shown in [Figures 4 and 5](#).

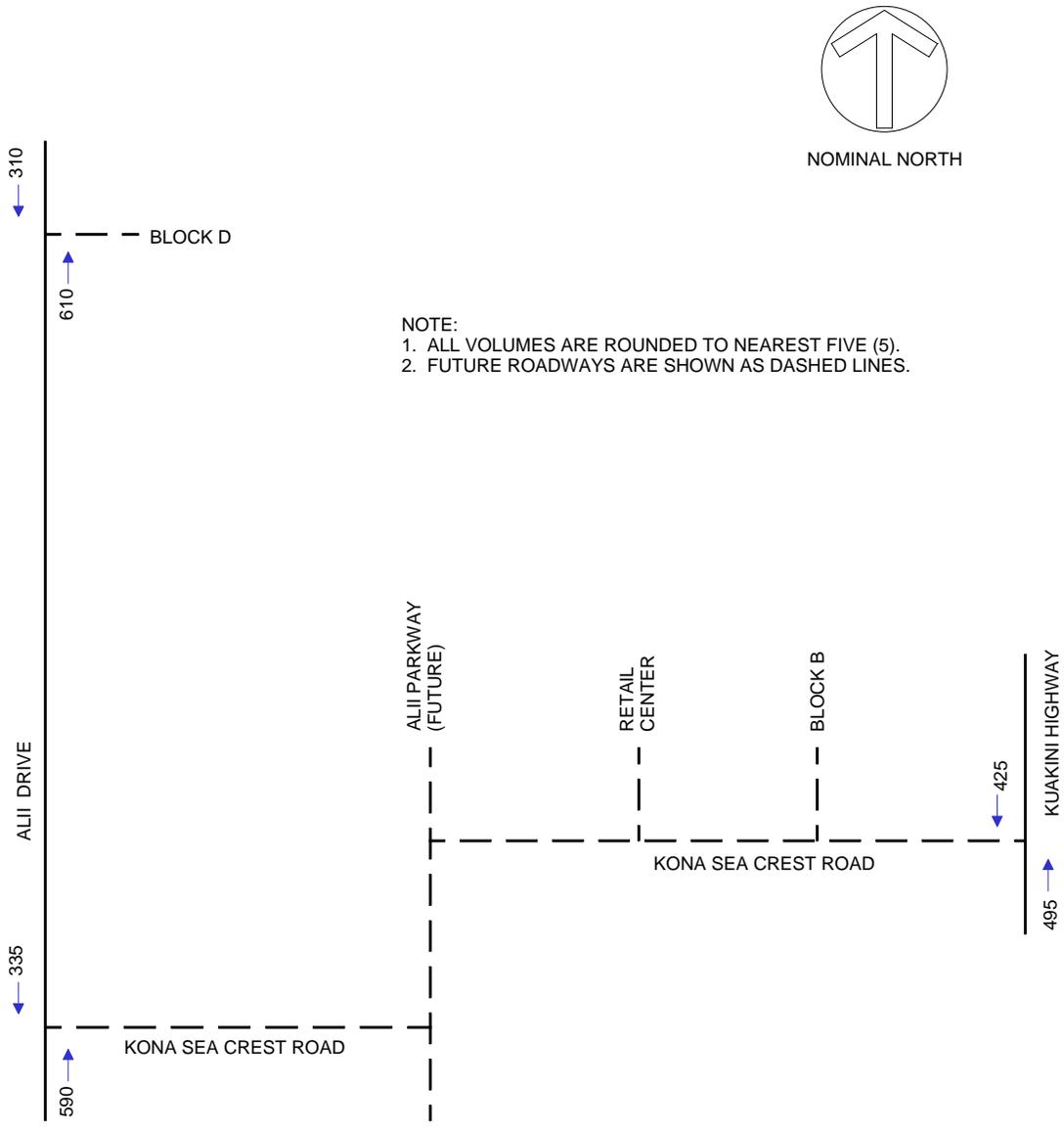


Figure 4
2020 BACKGROUND AM PEAK HOUR TRAFFIC PROJECTIONS

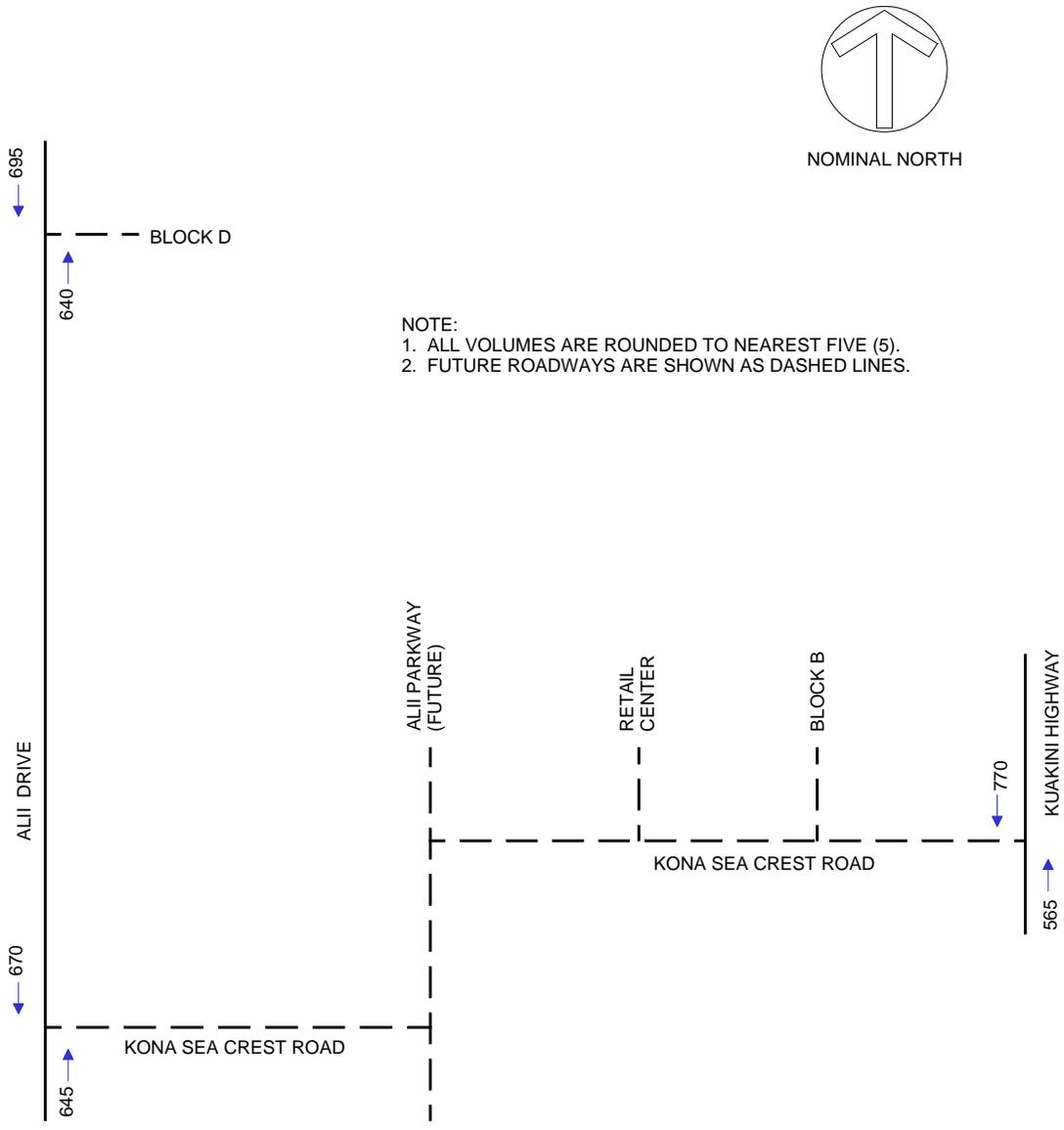


Figure 5
2020 BACKGROUND PM PEAK HOUR TRAFFIC PROJECTIONS

4. TRAFFIC IMPACT ANALYSIS

The purpose of this chapter is to summarize the results of the level-of-service and impact analysis. In addition, any mitigation measures necessary and feasible are identified and discussed.

The traffic impact of the project was quantified by analyzing the changes in the levels-of-service of the study intersections. The analysis and the results are discussed in the following sections.

2020 Background Plus Project Traffic Projections

2020 background plus project traffic projections represent conditions upon completion of Kona Sea Crest Road between Alii Drive and Kuakini Highway plus traffic generated by Block 'B', Block 'D' and the retail center. The following methodology was used to estimate 2020 background plus project traffic projections:

1. The 2020 traffic project provided in the traffic study for Alii Parkway were adjusted to reflect diversion of northbound and southbound traffic along Alii Drive and Kuakini Highway to Kona Sea Crest Road.
2. Traffic generated by Block B, Block D and the retail center was estimated, assigned to the roadway network and added to the background traffic projections developed in the preceding task. These generation calculations and trip assignments are presented as Appendix A.

The resulting 2020 background plus project traffic projections are summarized in [Figures 6 and 7](#).

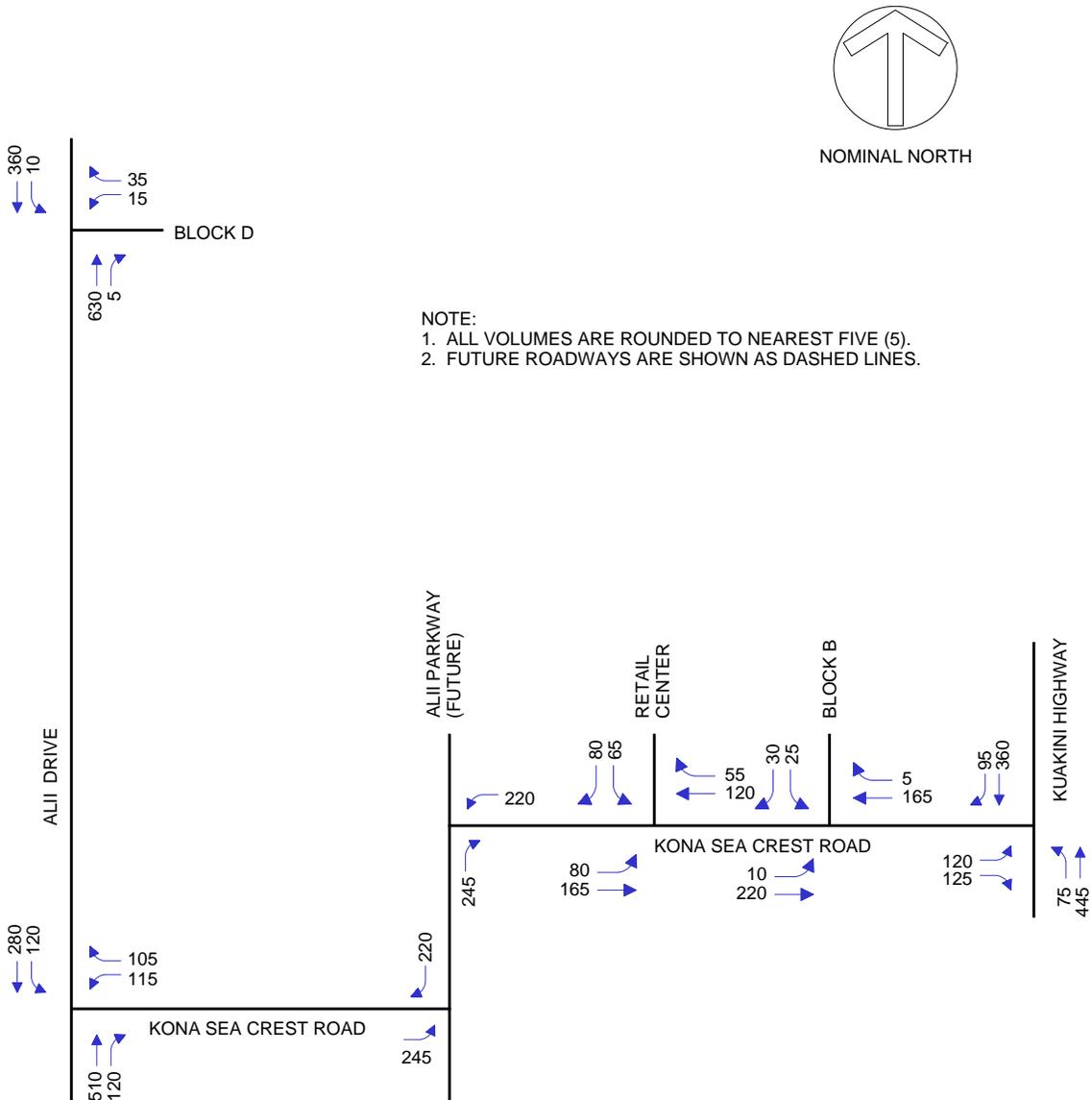


Figure 6
2020 BACKGROUND PLUS PROJECT
AM PEAK HOUR TRAFFIC PROJECTIONS

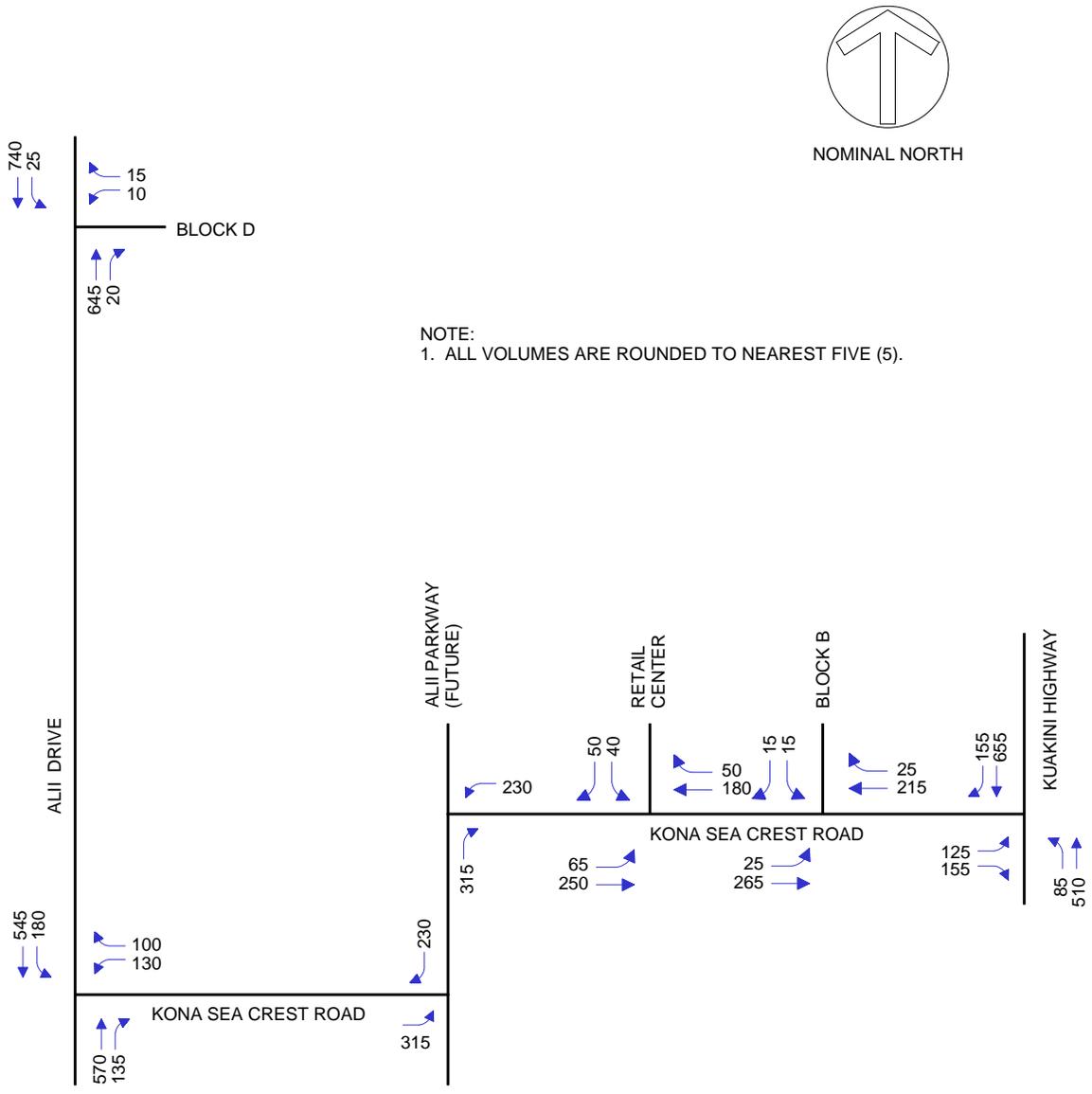


Figure 7
2020 BACKGROUND PLUS PROJECT
PM PEAK HOUR TRAFFIC PROJECTIONS

Standards for Significance and Mitigation

Level-of-Service D is considered acceptable. If the Level-of-Service is E or F, mitigation measures should be identified and assessed.

Left Turn Storage Lane Warrants

An assessment of the need for a separate left turn lanes at the study intersections was performed using guidelines published by the Transportation Resource Board². This guideline is a graph and is reproduced as [Figure 8](#). The assessment determined the following;

1. A separate left turn lane is warranted at the intersection of Alii Drive at the proposed Kona Sea Crest Road.
2. A separate left turn lane is not warranted at the intersection of Alii Drive at the driveway to Block D. However, it should be noted that the County has indicated that a separate left turn lane will be required at the intersection of Alii Drive at Kona Sea Crest Road. Separate left turn lanes will most likely be required at the remaining driveways along Alii Drive to be consistent with other new project entrances along the roadway.
3. A separate left turn lane is warranted along Kuikani Highway at Kona Sea Crest Road for northbound to westbound left turns.
4. Separate left turn lanes are not warranted at the driveway to Block B or the retail center.

Left Turn Storage Lane Length Requirements

The left turn storage lengths required to accommodate estimated traffic volumes were calculated using guidelines in *A Policy on Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials, 1990 edition. There are separate policies for signalized and unsignalized intersections. Based on this policy, the assumptions used to determine the required lengths of the left turn storage lanes are:

1. For signalized intersections, the length of the left turn storage lane should be 1.5 (minimum) to 2.0 (desirable) times the average number of vehicles arriving during a signal cycle during the peak hour.
2. For unsignalized intersections, the length of the left turn storage lane should be 1.5 to 2.0 times the average number of vehicles arriving during a 2-minute.
3. The average length required per vehicle is 25 feet.
4. The minimum length of a left turn storage lane should be 60 feet, which is sufficient to accommodate one automobile and one truck.

² Transportation Resource Board, NCHRP Report 457, *Evaluating Intersection Improvements: An Engineering Study Guide*, 2001, Washington, D.C. p21-22

Using the above criteria, the turn storage lane requirements were calculated and the results are summarized in [Table 3](#). Required lengths are shown for the driveways to Block D, Block B and the Retail Center even though the warrant analysis concluded separate left turn lanes were not warranted at these locations. The required lengths are shown in case it is decided to provide left turn lanes at the locations in the future.

Table 3 Left Turn Storage Lane Requirements

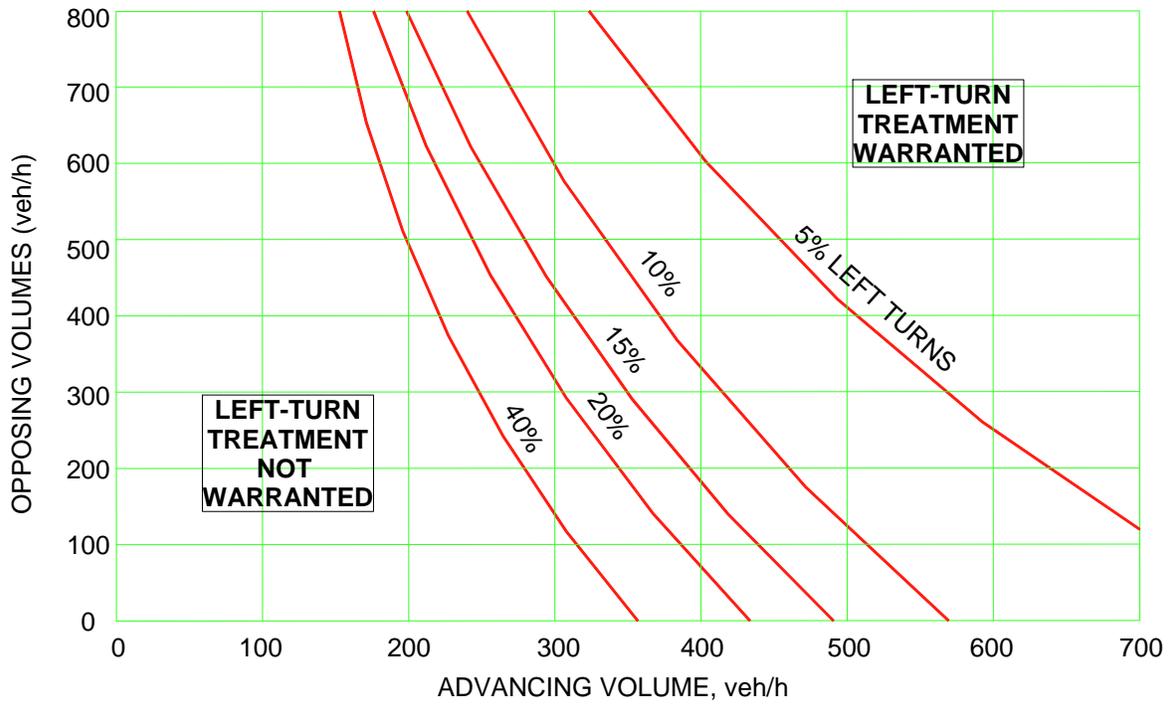
| Intersection | Approach | Design Volume | Cycle Length (Seconds) | Cycles per Hour | Average Vehicles per Cycle | Recommended Length ⁽¹⁾ | | | | Length Recommended (Ft) |
|-----------------------------------|----------|---------------|------------------------|-----------------|----------------------------|-----------------------------------|-----|-----------|-----|-----------------------------|
| | | | | | | Minimum | | Desirable | | |
| | | | | | | Veh | Ft | Veh | Ft | |
| Alii Drive at Kona Sea Crest Road | SB | 180 | 120 | 30 | 6 | 9 | 225 | 12 | 300 | 300 |
| Kuakini Highway at Kona Sea Crest | NB | 85 | 120 | 30 | 3 | 5 | 125 | 6 | 150 | 150 |
| Alii Drive at Block D Driveway | SB | 25 | 120 | 30 | 1 | 2 | 50 | 2 | 50 | Not Warranted See Report |
| Kona Sea Crest Road at Block B | EB | 25 | 120 | 30 | 1 | 2 | 50 | 2 | 50 | Not Warranted See Report |
| Kona Sea Crest at Retail Center | EB | 80 | 120 | 30 | 3 | 5 | 125 | 6 | 150 | Not Warranted See Report |

NOTE:

(1) Minimum queue length is 1.5 time average number of vehicles. Desirable queue length is 2.0 time average number of vehicles.

2020 Lane Configurations and Right-of-Way Controls

The results of the warrant analysis for separate left turn lanes is summarized in [Figure 9](#). This figure indicates the lane configurations and right-of-way controls used in the level-of-service analysis.



Source: NCHRP Report 457
Evaluating Intersection Improvements: An Engineering Study Guide
2001, page 22

Figure 8
GUIDELINES FOR DETERMINING THE NEED FOR
A MAJOR ROAD LEFT-TURN BAY AT A TWO-WAY
STOP CONTROLLED INTERSECTION

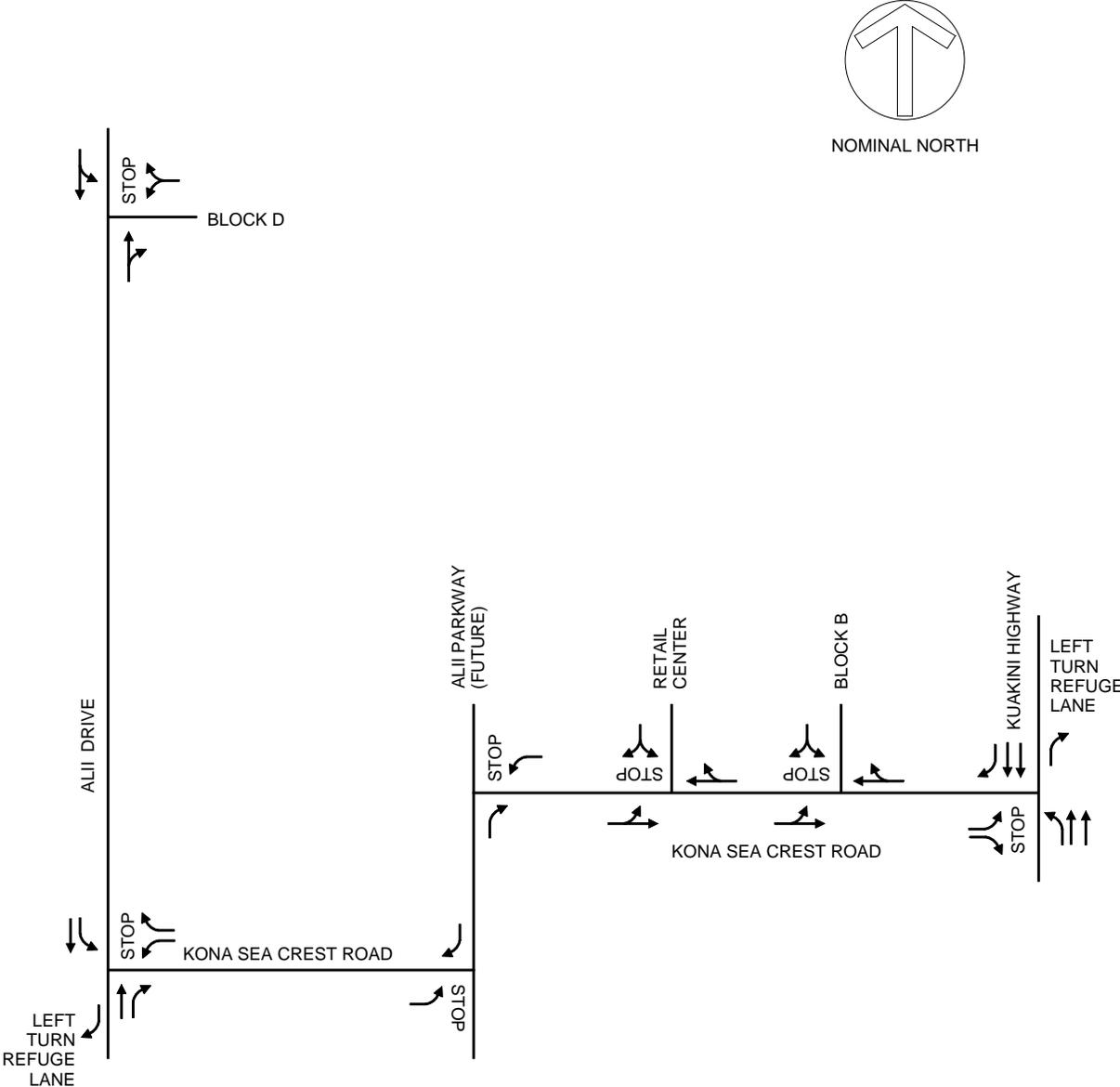


Figure 9
2020 LANE CONFIGURATIONS AND
RIGHT-OF-WAY CONTROLS

Results of Level-of-Service Analysis

The results of the level-of-service analysis are summarized in Table 4. Shown are the delays and levels-of-service of the controlled movements at the study intersections. As the study project is the Kona Sea Crest Road connection between Alii Drive and Kuakini Highway, level-of-service results are not shown for the intersections along Kona Sea Crest Road for “without project” conditions.

Table 4 Results of Level-of-Service Analysis for 2020 Conditions

| Intersection, Approach and Movement | AM Peak Hour | | PM Peak Hour | |
|--------------------------------------------------------------------------|--------------|-----|--------------|-----|
| | With Project | | With Project | |
| | Delay | LOS | Delay | LOS |
| Alii Drive at Kona Sea Crest Road (Without Left Turn Refuge Lane) | | | | |
| Southbound Left | 9.6 | A | 10.3 | A |
| Westbound Left | 49.5 | E | 297.4 | F |
| Westbound Right | 13.5 | B | 14.0 | B |
| Alii Drive at Kona Sea Crest Road (With Left Turn Refuge Lane) | | | | |
| Southbound Left | 9.6 | A | 10.3 | A |
| Westbound Left | 18.1 | C | 33.1 | D |
| Westbound Right | 13.5 | B | 14.0 | B |
| Alii Parkway at Kona Sea Crest Road (South) | | | | |
| Eastbound Left | 9.7 | A | 10.2 | B |
| Alii Parkway at Kona Sea Crest Road (North) | | | | |
| Westbound Left | 9.6 | A | 9.6 | A |
| Kuakini Highway at Kona Sea Crest Road | | | | |
| Northbound Left | 8.6 | A | 10.3 | B |
| Eastbound Left | 14.9 | B | 20.8 | C |
| Eastbound Right | 10.3 | B | 12.5 | B |
| Alii Drive at Block D Driveway | | | | |
| Southbound Left & Thru | 9.0 | A | 9.2 | B |
| Westbound left & Right | 17.0 | C | 24.0 | C |
| Kona Sea Crest Road at Block B Driveway | | | | |
| Eastbound Left & Thru | 7.6 | Q | 7.8 | A |
| Southbound Left & Right | 10.6 | B | 11.5 | B |
| Kona Sea Crest Road at Retail Center Driveway | | | | |
| Eastbound Left & Thru | 7.8 | A | 7.9 | A |
| Southbound Left & Right | 12.5 | B | 12.4 | B |

NOTES:

1. Peak hour conditions analyzed are “worst-case” conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

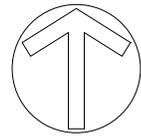
Findings and Conclusions

The findings and conclusions of the level-of-service analysis for each of the study intersections are:

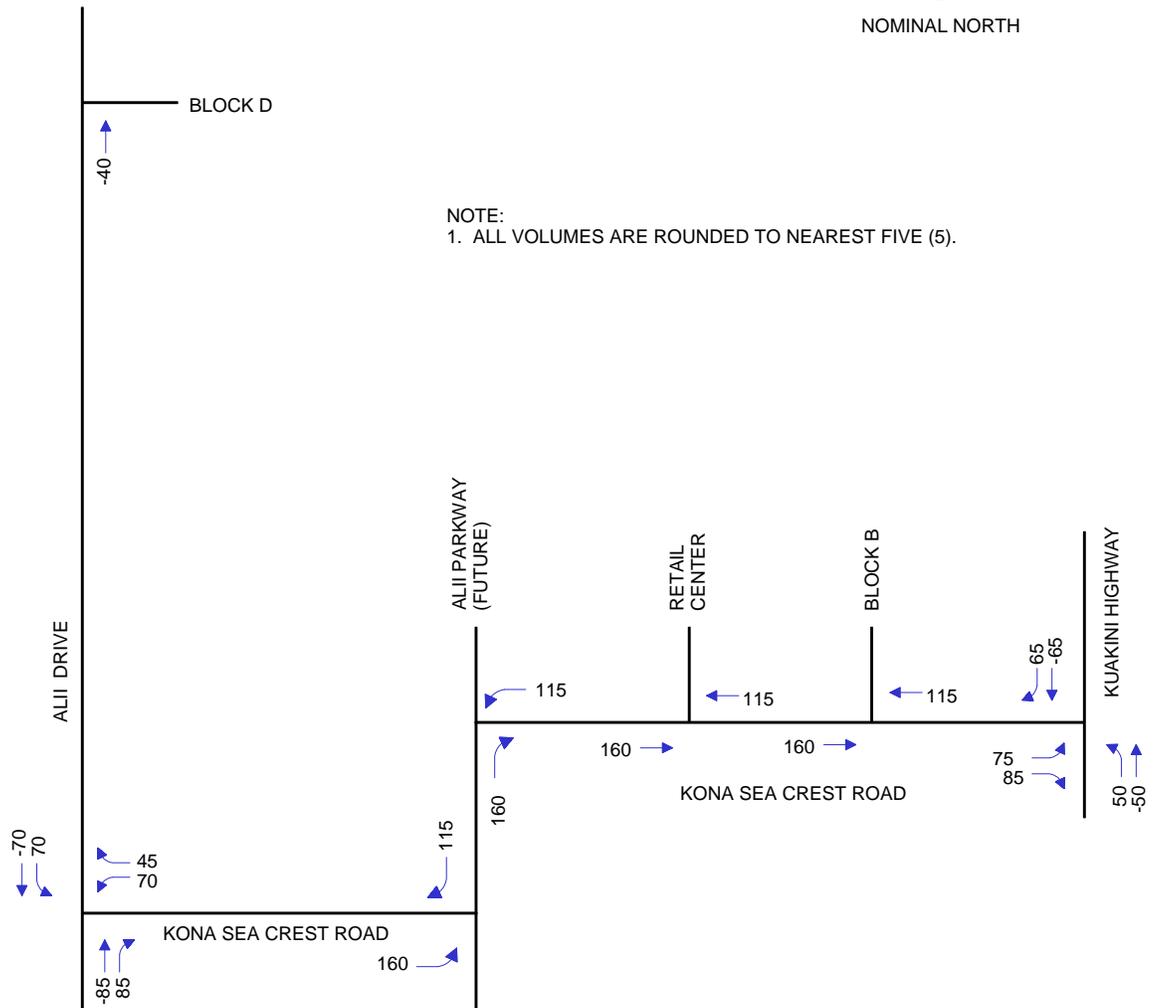
1. The intersection of Alii Drive at Kona Sea Crest Road will operate at Level-of-Service D, or better, during both peak periods with the appropriate mitigation. A separate southbound left turn lane and a left turn refuge lane should be provided along Alii Drive at Kona Sea Crest Road. The left turn should be a minimum of 300 feet long.
2. The intersection of Alii Parkway at Kona Sea Crest Road will operate at Level-of-Service A and B. These intersections will have to be reassessed when the Alii Parkway is constructed.
3. The intersection of Kuakini Highway at Kona Sea Crest Road will operate at Level-of-Service C, or better during both peak periods. A left turn refuge lane and a northbound to westbound left turn lane should be provided. This left turn lane should be at least 60 feet long. No additional mitigation is required.
4. The intersection of Alii Drive at the driveway to Block D will operate at Level-of-Service B, or better, without and with a separate left turn lane for southbound to eastbound left turns.
5. The intersections of Kona Sea Crest Road at Block B and the Retail Center will operate at Level-of-Service B, or better, without separate left turn lanes.

APPENDIX A

TRIP GENERATION CALCULATIONS AND TRIP ASSIGNMENTS

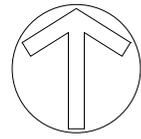


NOMINAL NORTH



NOTE:
1. ALL VOLUMES ARE ROUNDED TO NEAREST FIVE (5).

Figure A1
TRIP ASSIGNMENTS FOR NEW ROAD
AM PEAK HOUR



NOMINAL NORTH

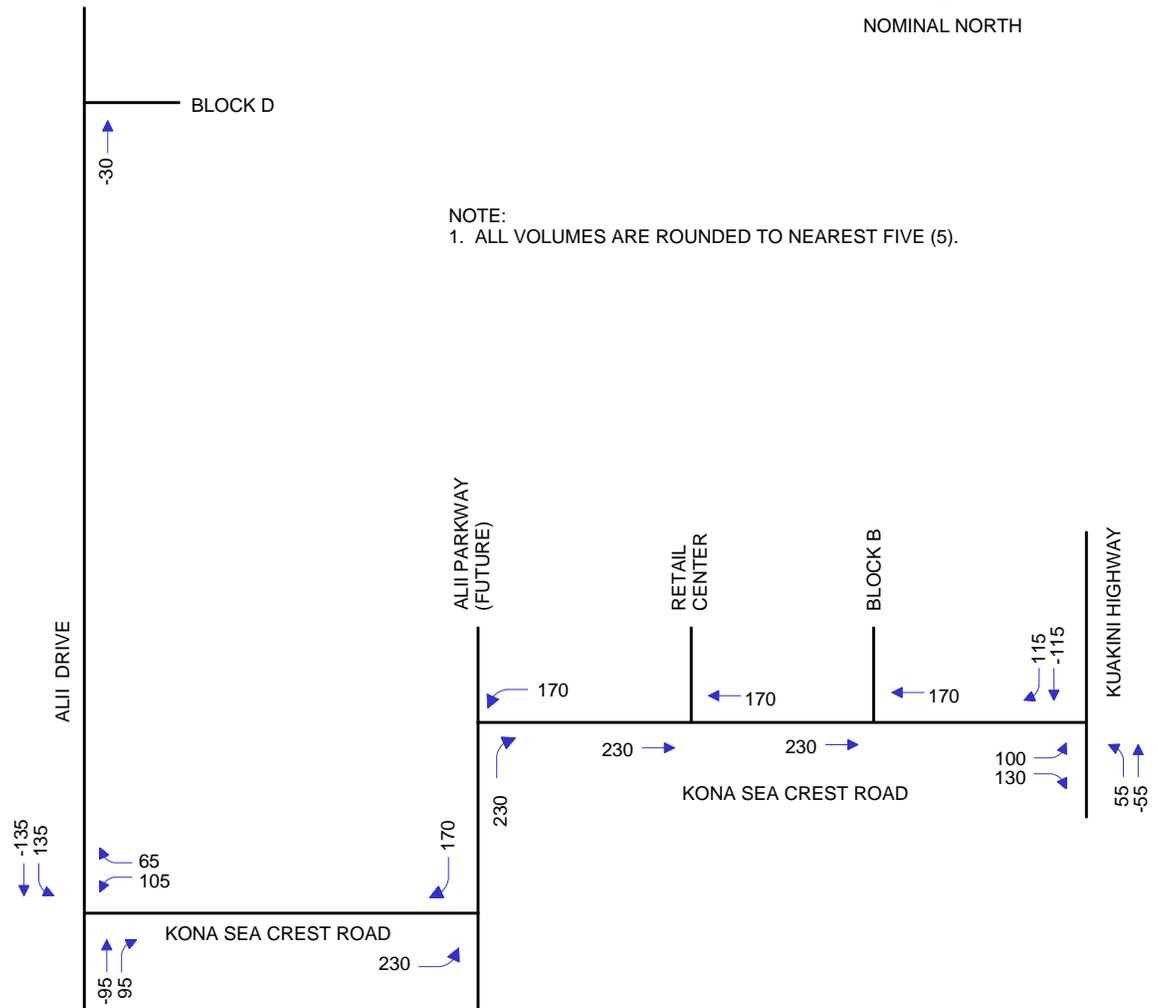
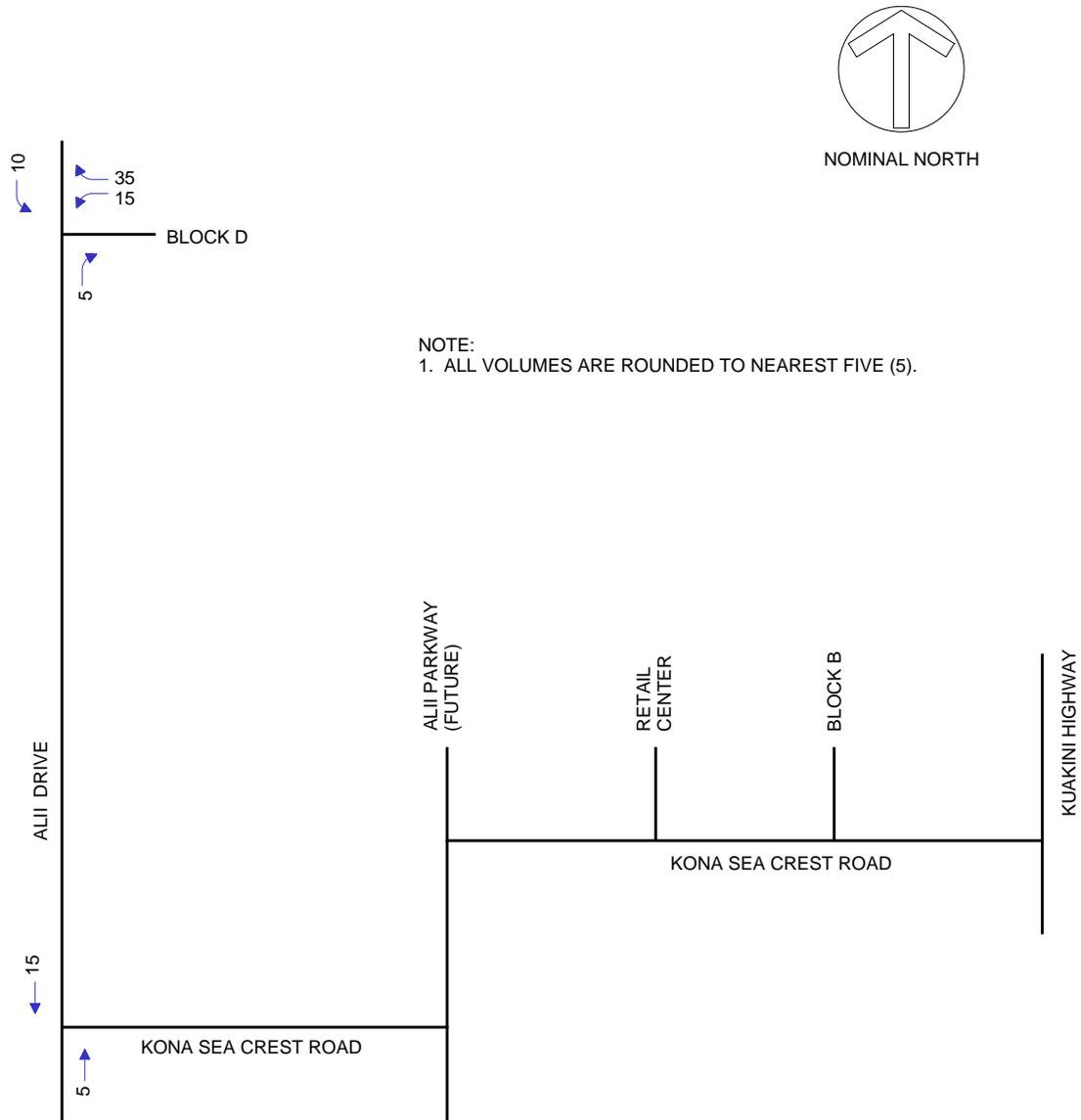
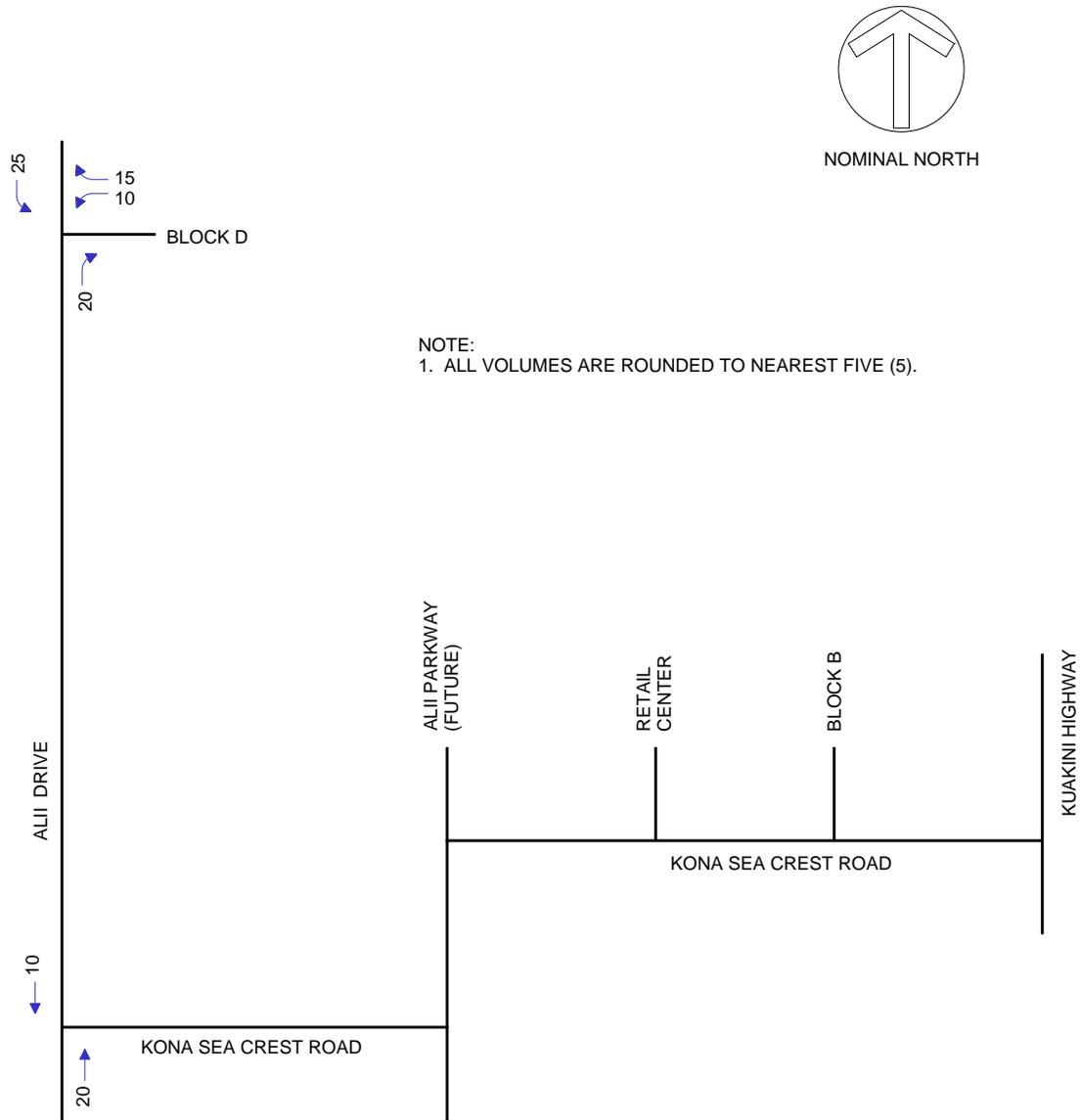


Figure A2
TRIP ASSIGNMENTS FOR NEW ROAD
PM PEAK HOUR

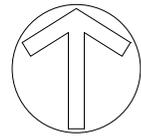


**Figure A3
TRIP ASSIGNMENTS FOR BLOCK D
AM PEAK HOUR**



NOTE:
 1. ALL VOLUMES ARE ROUNDED TO NEAREST FIVE (5).

Figure A4
TRIP ASSIGNMENTS FOR BLOCK D
PM PEAK HOUR



NOMINAL NORTH

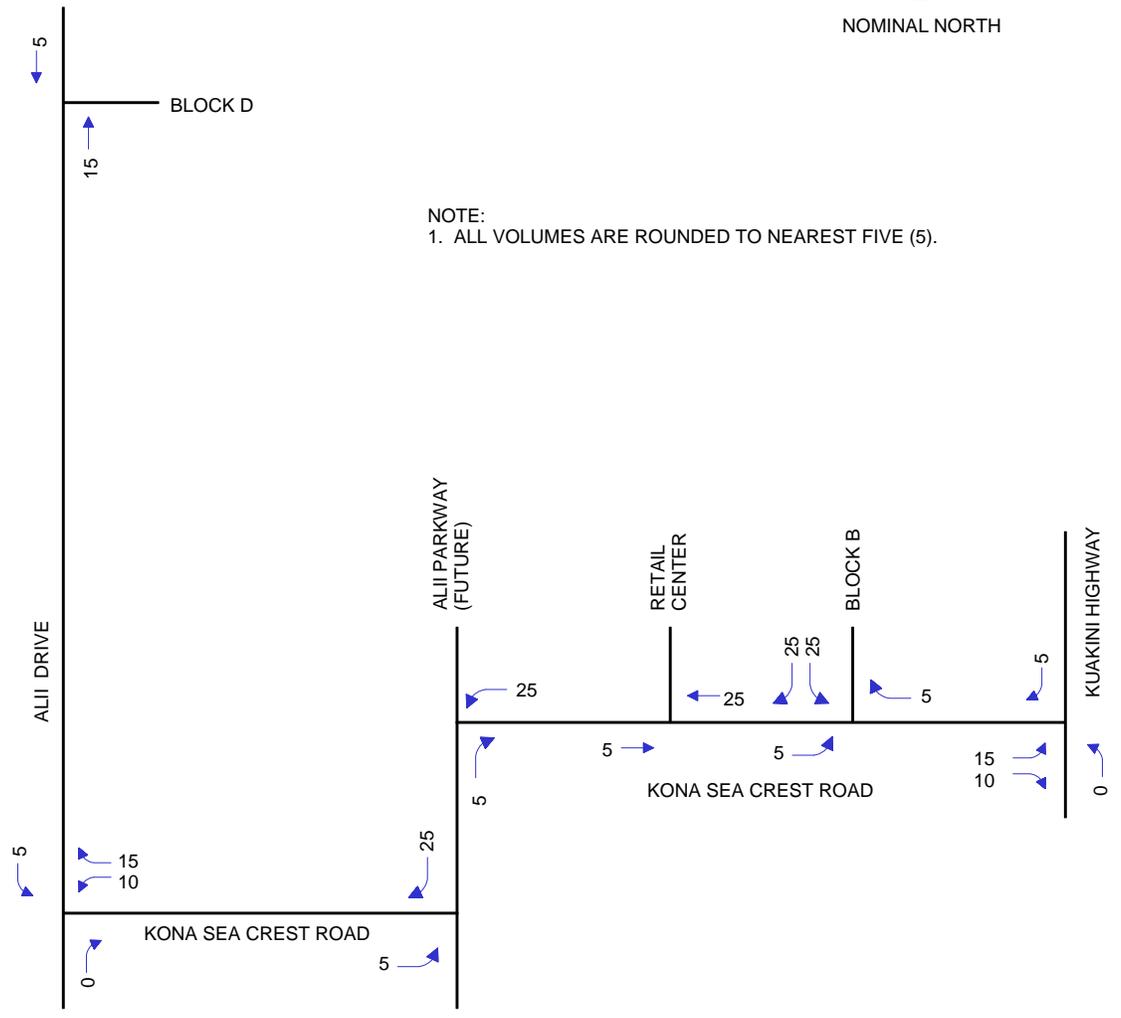
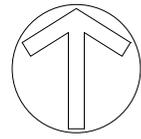


Figure A5
TRIP ASSIGNMENTS FOR BLOCK B
AM PEAK HOUR



NOMINAL NORTH

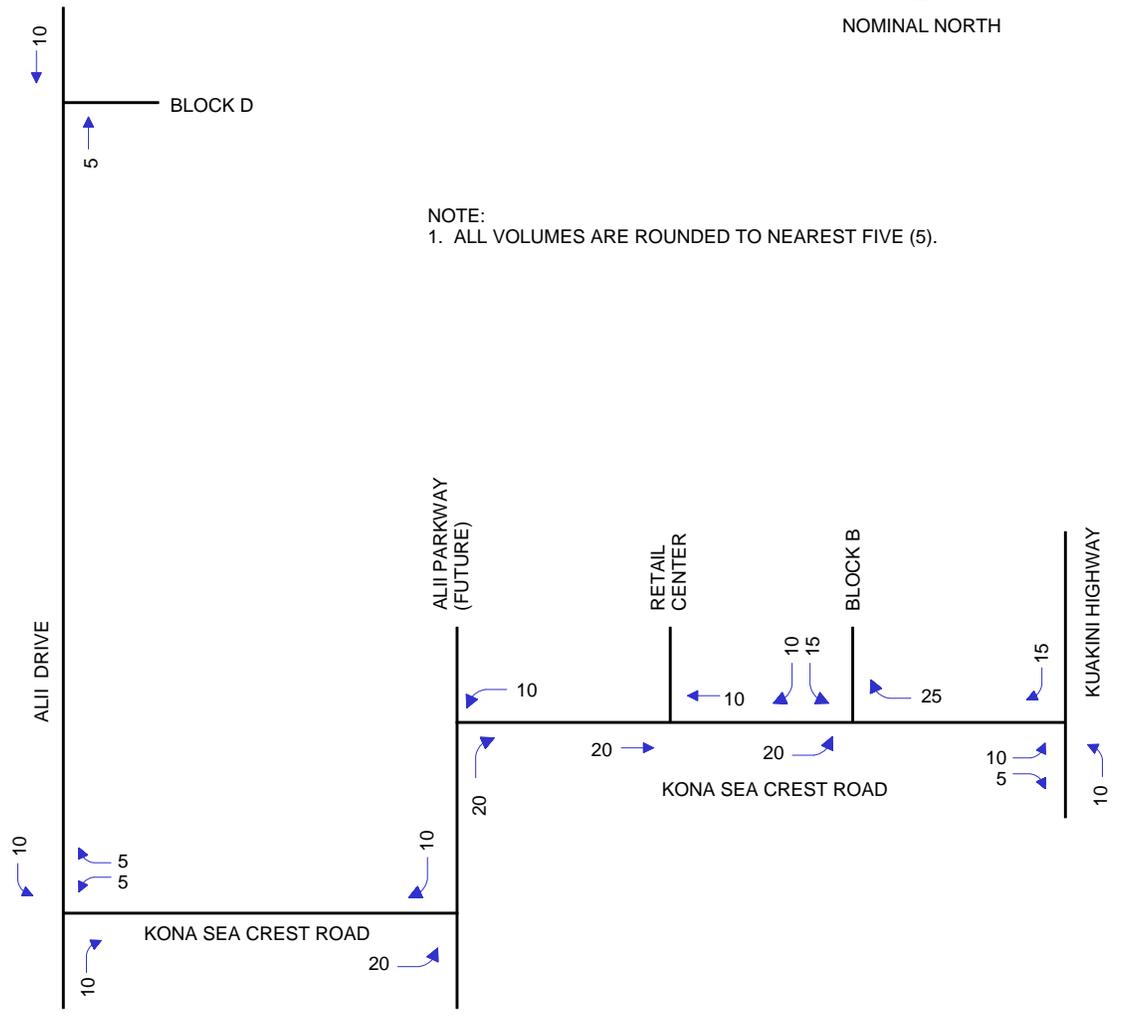
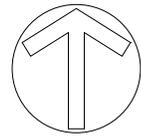


Figure A6
TRIP ASSIGNMENTS FOR BLOCK B
PM PEAK HOUR



NOMINAL NORTH

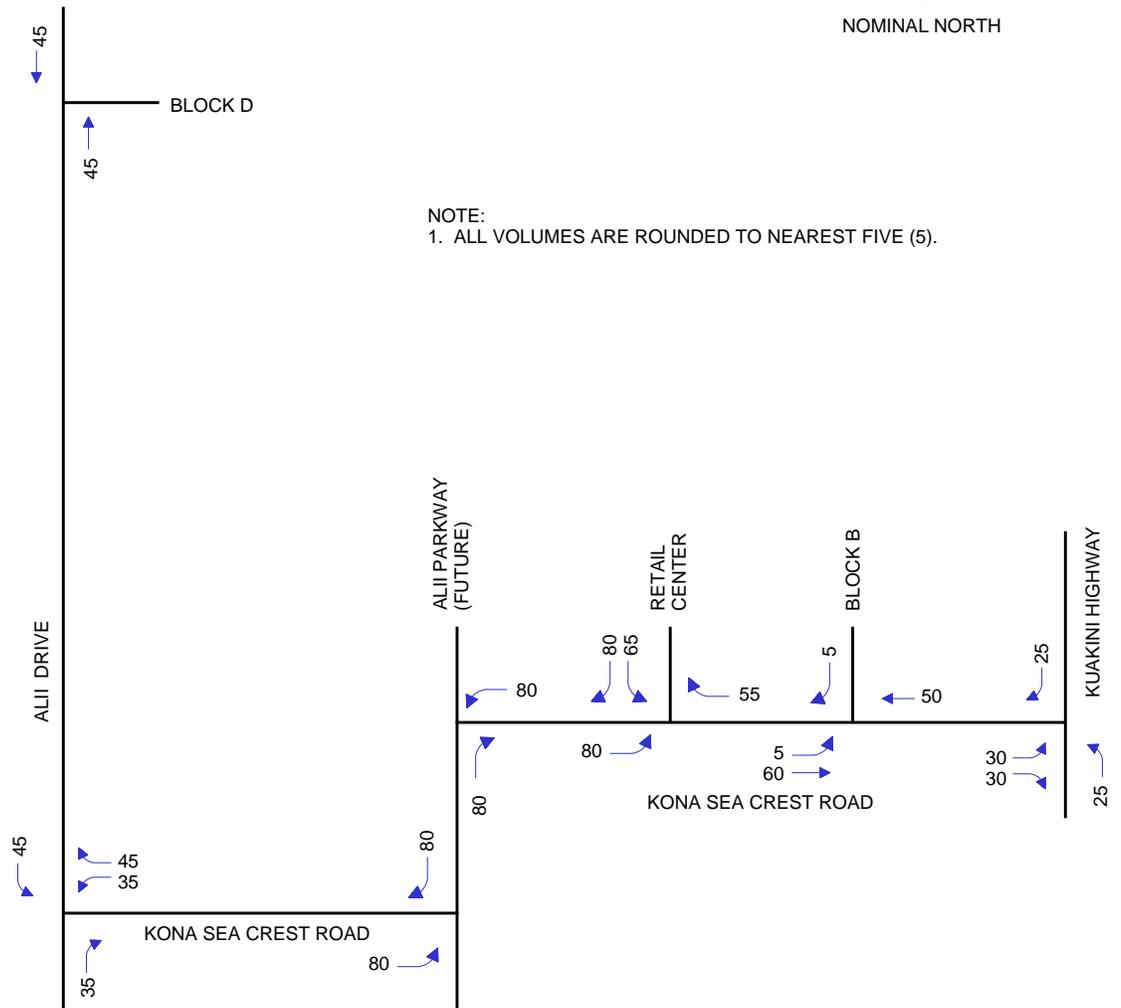
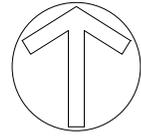
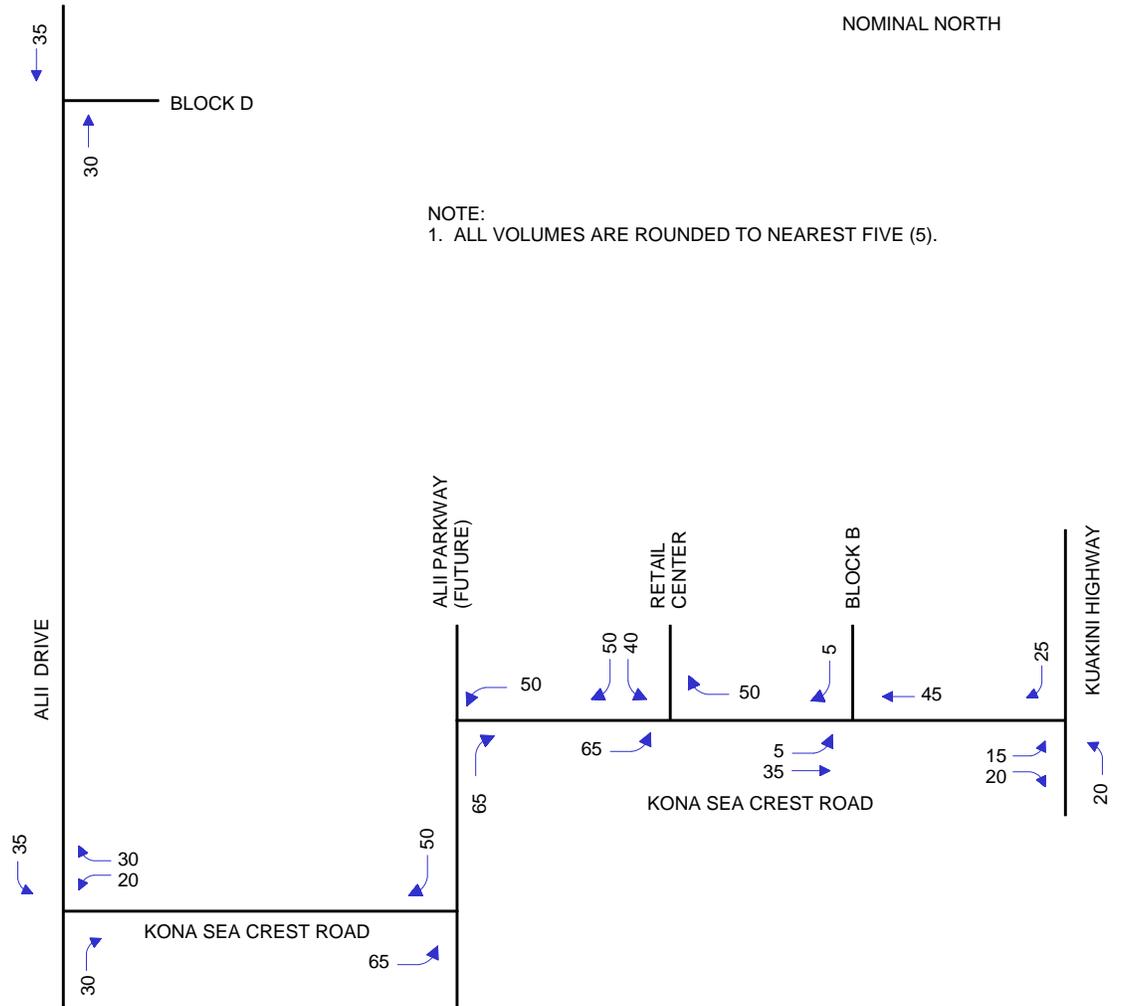


Figure A7
TRIP ASSIGNMENTS FOR RETAIL CENTER
AM PEAK HOUR



NOMINAL NORTH



NOTE:

1. ALL VOLUMES ARE ROUNDED TO NEAREST FIVE (5).

Figure A8
TRIP ASSIGNMENTS FOR RETAIL CENTER
PM PEAK HOUR

TRIP GENERATION ANALYSIS WORKSHEET

Project: Block D
 Occupied Dwelling Units: 147
 Land Use Type: Residential Condominium/Townhouse
 Land Use Code: 230
 Definition: Residential condominiums/townhouses are defined
 a single-family ownership units that have at least or
 single-family onwed unit within the same building st
 Trips Based On: Dwelling Units

| <u>Period</u> | <u>Rate</u> | <u>Trips</u> |
|---------------------------------|-------------|--------------|
| Weekday Total | 5.86 | 861 |
| AM Peak Hour of Adjacent Street | 0.44 | 65 |
| AM In | 17% | 11 |
| AM Out | 83% | 54 |
| PM Peak Hour of Adjacent Street | 0.52 | 76 |
| PM In | 67% | 51 |
| PM Out | 33% | 25 |
| AM Peak Hour of Generator | 0.44 | 65 |
| AM In | 18% | 12 |
| AM Out | 82% | 53 |
| PM Peak Hour of Generator | 0.52 | 76 |
| PM In | 64% | 49 |
| PM Out | 36% | 27 |
| Saturday Total | 5.67 | 833 |
| Saturday Peak Hour | 0.47 | 69 |
| Sat In | 54% | 37 |
| Sat Out | 46% | 32 |
| Sunday Total | 4.84 | 711 |
| Sunday Peak Hour | 0.45 | 66 |
| Sun In | 49% | 32 |

TRIP GENERATION ANALYSIS WORKSHEET

Project: Block B
 Occupied Dwelling Units: 142
 Land Use Type: Residential Condominium/Townhouse
 Land Use Code: 230
 Definition: Residential condominiums/townhouses are defined
 a single-family ownership units that have at least or
 single-family onwed unit within the same building st
 Trips Based On: Dwelling Units

| <u>Period</u> | <u>Rate</u> | <u>Trips</u> |
|---------------------------------|-------------|--------------|
| Weekday Total | 5.86 | 832 |
| AM Peak Hour of Adjacent Street | 0.44 | 62 |
| AM In | 17% | 11 |
| AM Out | 83% | 51 |
| PM Peak Hour of Adjacent Street | 0.52 | 74 |
| PM In | 67% | 50 |
| PM Out | 33% | 24 |
| AM Peak Hour of Generator | 0.44 | 62 |
| AM In | 18% | 11 |
| AM Out | 82% | 51 |
| PM Peak Hour of Generator | 0.52 | 74 |
| PM In | 64% | 47 |
| PM Out | 36% | 27 |
| Saturday Total | 5.67 | 805 |
| Saturday Peak Hour | 0.47 | 67 |
| Sat In | 54% | 36 |
| Sat Out | 46% | 31 |
| Sunday Total | 4.84 | 687 |
| Sunday Peak Hour | 0.45 | 64 |
| Sun In | 49% | 31 |

TRIP GENERATION ANALYSIS

Land Use Type: Specialty Retail

Land Use Code: 814

| | TSFGLA 41,189 | | Acres 0.00 | |
|---------------------------------|---------------|--------------|-------------|--------------|
| <u>Period</u> | <u>Rate</u> | <u>Trips</u> | <u>Rate</u> | <u>Trips</u> |
| Weekday Total | 44.32 | 1,825 | 195.11 | 0 |
| AM Peak Hour of Adjacent Street | 2.71 | 112 | 25.65 | 0 |
| AM In | 44% | 49 | 92% | 0 |
| AM Out | 56% | 63 | 8% | 0 |
| PM Peak Hour of Adjacent Street | na | 0 | 28.28 | 0 |
| PM In | na | 0 | 12% | 0 |
| PM Out | na | 0 | 88% | 0 |
| AM Peak Hour of Generator | 6.84 | 282 | 25.65 | 0 |
| AM In | 48% | 135 | 92% | 0 |
| AM Out | 52% | 147 | 8% | 0 |
| PM Peak Hour of Generator | 5.02 | 207 | 28.28 | 0 |
| PM In | 56% | 116 | 12% | 0 |
| PM Out | 44% | 91 | 88% | 0 |
| Saturday Total | 42.04 | 1,732 | 29.33 | 0 |
| Saturday Peak Hour | NA | 0 | 2.37 | 0 |
| Sat In | NA | 0 | 78% | 0 |
| Sat Out | NA | 0 | 22% | 0 |
| Sunday Total | 20.43 | 841 | 13.69 | 0 |
| Sunday Peak Hour | NA | 0 | 2.15 | 0 |
| Sun In | NA | 0 | 41% | 0 |
| Sun Out | NA | 0 | 59% | 0 |

Source:

Source: Institute of Transportation Engineers, Trip Generation, 2003