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Mayor



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**PLANNING DEPARTMENT**

**County of Kaua'i, State of Hawai'i**

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March 21, 2011

Mr. Gary Hooser, Director  
Office of Environmental Quality Control  
State of Hawaii  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

**RECEIVED**

**MAR 22 2011**

**BELLES GRAHAM PROUDFOOT  
WILSON & CHUN, LLP**

RE: Draft Environmental Assessment (DEA) for Construction of  
Sewer Facilities to Serve Brennecke's Restaurant and the County of  
Kaua'i's Po'ipū Beach Restroom Facilities at Po'ipū, Kōloa,  
Kaua'i, Hawai'i; Tax Map Key(s) (TMKs) (4) 2-8-017:001, 015

Dear Mr. Hooser:

The Planning Department of the County of Kaua'i in conjunction with the Department of Parks and Recreation of the County of Kaua'i has reviewed the Draft Environmental Assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the next issue of the Environmental Notice. We have enclosed four (4) hard copies of the Draft EA document along with the Applicant's project summary and the OEQC Bulletin Publication Form, together with a CD containing said documents.

If you wish to provide comments regarding this project, please respond by April 4, 2011. If no response is received by the April 4, 2011, we will assume that no comments are forthcoming. Please contact Ka'aina Hull of our Planning Department staff at 241-4059 if you have any questions.

Sincerely,

**MICHAEL A. DAHILIG**  
Director of Planning

Enclosures

cc: Lorna A. Nishimitsu, Attorney for Applicant

## DRAFT ENVIRONMENTAL ASSESSMENT

LEALANI CORPORATION, a Hawai'i corporation (hereinafter "Lealani"), through its attorneys, Belles Graham Proudfoot Wilson & Chun, hereby submits the following Draft Environmental Assessment pursuant to the requirements contained in Chapters 343 and 344 of the Hawai'i Revised Statutes ("HRS"), Title 11, Chapter 20 and Title 13, Chapter 5, of the Hawai'i Administrative Rules ("HAR").

### I. APPLICANT/OWNER

1.1 Applicant. The Applicant is LEALANI CORPORATION, a Hawai'i corporation.

1.2 Owner.

**Lealani Corporation** - Lealani is the lessee of the following: property located at 2100 Ho'ōne Road, Kōloa, Kaua'i, Hawai'i, more particularly identified as Tax Key No. (4) 2-8-17:015 (hereinafter the "Brennecke Property"), which is leased from Poipu Inn, Inc., the owner. Attached as Exhibit "A" is the authorization from Poipu Inn, Inc., for the work proposed for the wastewater improvements.

**County of Kaua'i (Park and Parking Lots)** - Lealani also proposes to donate to the County of Kaua'i wastewater improvements for the Po'ipū Beach Park restroom facilities, which are located on Ho'ōne Road, Kōloa, Kaua'i, Hawai'i, more particularly identified as Tax Key No. (4) 2-8-17:01 (hereinafter the "Park"), and to install and use force mains and lines at Tax Key Nos. (4) 2-8-17:11 and 2-8-17:23 (two parking lot parcels, separated by Ho'owili Road, located mauka of Ho'ōne Road) (collectively the "Parking Lots").

## **II. APPLICANT'S ADDRESS AND TELEPHONE**

- 2.1 Lealani's Address. Lealani's address and telephone number are:

P. O. Box 1325  
Kōloa, Kaua'i, Hawai'i 96756  
Attention: Mr. Robert French  
Telephone: (808) 742-7588

- 2.2 Lealani's Attorney's Address. All communications having to do with this

Draft Environmental Assessment should be made to Lealani's attorney at the following address:

Lorna A. Nishimitsu, Esq.  
Belles Graham Proudfoot Wilson & Chun, LLP  
4334 Rice Street, Suite 202  
Lihu'e, Kaua'i, Hawai'i 96766  
Telephone: (808) 246-6965

## **III. APPROVING AGENCY**

- 3.1 Agency. The Approving Agency is as follows:

Planning Department  
County of Kaua'i  
4444 Rice Street, Suite 273  
Līhu'e, Kaua'i, Hawai'i 96766

## **IV. CONSULTED AGENCIES**

4.1 Agencies Consulted. The governmental agencies consulted with regard to the Applicant's proposal include the following: the Department of Parks and Recreation of the County of Kaua'i; the Planning Department of the County of Kaua'i; the Department of Health of the State of Hawai'i; the Historic Preservation Division of the Department of Land and Natural Resources of the State of Hawaii; the Office of Hawaiian Affairs of the State of Hawai'i; the

Kaua'i-Ni'ihau Islands Burial Council; the Kaua'i Historic Preservation Review Commission; and community and cultural organizations in the Kōloa District of Kaua'i.

## **V. DESCRIPTION OF PROPERTIES**

5.1 Lealani Property. The Lealani Property is located mauka of Ho'ōne Road in Kōloa, Island and County of Kaua'i, State of Hawai'i, is designated as Tax Key No. (4) 2-8-17:015, and contains 2,714 square feet, more or less.

5.2 County of Kaua'i (Park). The Park is located makai of Ho'ōne Road and is oceanfront property across the street from the Lealani Property, is designated as Tax Key No. (4) 2-8-17:001, and contains 5.69 acres, more or less.

5.3 County of Kaua'i (Parking Lots). The two parcels which are used for public parking are located mauka of Ho'ōne Road, and east of the Lealani Property, are designated as Tax Key Nos. (4) 2-8-17:011 and 023, and contain 8.270 acres and 43,212 square feet, respectively, more or less. The smaller of the parcels borders the Lealani Property on two sides.

5.4 Marriott Ownership Resorts, Inc. An existing wastewater treatment system manhole located on Tax Key No. (4) 2-8-17:007, in which HOH Utilities, LLC (a company which provides water and wastewater services) has an easement, will provide the tie-in to an existing wastewater treatment system.

5.5 Location. The general location of all of the properties described herein is shown on the Location Map attached hereto as Exhibit "B". The Lealani Property (colored in green), the Park (colored in yellow) and the Parking Lots (colored in pink) are shown in greater detail on a copy of the Tax Map No. 5-9-03 attached hereto as Exhibit "C".

## **VI. LAND USE CLASSIFICATIONS**

6.1 State Land Use Classification. All of the properties described herein are located in the State Land Use Commission ("SLUC") Urban District.

6.2 Special Management Area. All of the properties are located within the Special Management Area of the County of Kaua'i ("SMA").

6.3 County Zoning. The Lealani Property and the County Parking Lots are zoned Open Special Treatment Cultural/Historical (Open ST-C) and Open Special Treatment Public (Open ST-P). The Park is zoned Open ("O"); and the Marriott Ownership Resorts, Inc. property is zoned Resort ("RR-20").

## **VII. REQUESTED LAND USE PERMITS**

7.1 Use Permits. The Applicant will file an application for a Use Permit pursuant to Articles 9 and 20 of Chapter 8 of the Kaua'i County Code ("KCC"), as the proposed utility installation is not a generally permitted use within the Open zone, and further, because practically all uses, structures and development within the Special Treatment District require a use permit. The following development is proposed:

a. construction/installation of a grease interceptor, pump station and emergency back-up generator on property owned by the County of Kaua'i, which is adjacent to the Lealani Property and directly behind the Brennecke's Beach Broiler building (located on the Lealani Property), and related facilities for transmission of wastewater from the Brennecke's Beach Broiler building through a new, small diameter wastewater force main to a tie-in point at the Marriott Waiohai Beach Resort (at Tax Key No. (4) 2-8-17:07) for ultimate disposal at the HOH Utilities Poipu Water Reclamation Facility.

b. construction/installation of two (2) pump stations on the Park property and related facilities for transmission of wastewater from two restroom facilities at the Park through a new, small diameter wastewater force main to a tie-in point at the Marriott Waiohai Beach Resort (at Tax Key No. (4) 2-8-17:07) for ultimate disposal at the HOH Utilities Poipu Water Reclamation Facility.

c. construction/installation of a new, small diameter wastewater force main through and beneath the Parking Lots and Ho'owili Road to a tie-in point at the Marriot Waiohai Beach Resort (at Tax Key No. (4) 2-8-17:07) for ultimate disposal at the HOH Utilities Po'ipū Water Reclamation Facility.

Lealani will have to abandon its large-capacity cesspools that are currently used to process wastewater generated at the Lealani Property, for the purposes of becoming compliant with a directive from the Environmental Protection Agency. This is work that Lealani is required to do in order to continue its commercial operations.

The work proposed for the Park, however, is not mandatory, but is being offered as a donation by Lealani to the County of Kaua'i to improve wastewater disposal from the Park's restroom facilities.

7.2 Class IV Zoning Permits. Class IV Zoning permits, pursuant to Section 8-19.6, KCC, which are procedurally required to accompany any Use Permit application.

7.3 Special Management Area Permits. The proposed work is exempt pursuant to Section 1.4(H)(2)(m) of the Special Management Area Rules and Regulations of the County of Kaua'i as the pump stations, wastewater force mains and related facilities are underground and, to the extent any aboveground fixtures are involved, are less than four (4) feet

in height and located along existing corridors.<sup>1</sup> The exemption is confirmed by a written determination of the Planning Department of the County of Kaua'i dated August 30, 2010 and attached hereto as Exhibit "D".

### **VIII. PROPOSED DEVELOPMENT**

Lealani owns and operates the Brennecke's Beach Broiler (a restaurant), and a retail store and snack bar from a building located on property leased from Poipu Inn, Inc. Brennecke's wastewater is currently disposed through two large-capacity (2) cesspools located on one of the Parking Lot properties (an easement for such use has been granted by the County of Kaua'i). Lealani is subject to an Environmental Protective Agency directive to close its two large-capacity cesspools by the end of 2010. In order to dispose of wastewater for Brennecke's, Lealani will be disposing of wastewater through the HOH Utilities Po'ipū Water Reclamation Facility.

As part of its need to upgrade its wastewater disposal facilities, Lealani has also volunteered, at its expense, to provide the labor, equipment and materials to connect the County of Kaua'i's restroom facilities at the Park to the HOH Utilities Po'ipū Water Reclamation Facility. The existing County facilities are septic tanks and leach fields which require regular pumping because the volume of use creates excessive sludge. Risks of leachate to the ocean will be significantly reduced with the change.

All three (3) of the new pump stations and wastewater force main connections will deliver wastewater from Brennecke's and the two public restroom facilities along the mauka

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<sup>1</sup> Section 1.4(H)(2) of the Special Management Area Rules and Regulations of the County of Kauai, as amended, excludes, from the definition of "development", "[i]nstallation of underground utility lines and appurtenant aboveground fixtures less than four feet in height along existing corridors".

edge of Ho'ōne Road (through the two public parking lots) then through (under) Ho'owili Road to a tie-in point/manhole located at the Marriott Resort property.

The plans and location of these improvements are as depicted on the drawings entitled "Brennecke's Restaurant New Wastewater System Service Connection" consisting of 22 pages, prepared by Aqua Engineers, Inc., attached hereto as Exhibit "E".

The directional drilling that will be done for the force main lines involves a crew of two to five workers, using an excavator, loader, tool trucks, foreman's truck and a boring machine. About twenty-five feet (25') in width (maximum) along the force main line alignment is typically involved while the work is being conducted, and the surface area is restored as nearly as possible to pre-construction condition when the work has been completed. The bore pits that the construction crews will use to begin the directional drilling were selected by the archaeology consultant as trenches for inventory assessments because these areas constitute the most likely locations of possible impact for potential archaeological resources. A total of nine (9) bore locations took place within the project areas in the fall of 2010.

## **IX. SUBJECT PROPERTIES ANALYSIS**

9.1 Improvements: Lealani Property. The Lealani Property is the site of a commercial building which houses a restaurant, fast food service and retail space. The original building was constructed in approximately 1963 for storage, with renovations done in approximately 1976 for dining and storage, in 1997 for a restaurant addition and alteration (addition of a second story and entry), in 1978 for a deck, in 1978 for interior renovations, in 1983 for a temporary roof/canvas, in 1985 for alterations, and in 1995 for renovation. Two (2) large-capacity cesspools serve the structure, and are required to be closed by the end of 2010.

9.2 Improvements:Park. The Park contains a total of ten (10) structures (including three with toilet facilities, five pavilions, one lifeguard tower and one play structure). All of the restroom facilities process all wastewater generated through septic systems with leach fields. These septic systems are subjected to high volume usage by members of the public, and require annual pumping. Risks of leachate into the ocean exist under these conditions.

9.3 Improvements:Parking Lots. The two Parking Lots are vacant, unimproved parcels.

9.4 Present Uses. The Lealani Property is in commercial use, while the Park and the Parking Lots are used for public recreational purposes.

9.5 Botanical. No endangered or threatened species of plants exist on any of the properties.

9.6 Fauna. Although the Hawaiian monk seal (*monachus schauinslandi*)<sup>2</sup>, an endangered species, periodically appear on the sandy beach fronting the Park, and the Hawaiian green sea turtle (*chelonina mydas*), a threatened species, is observed in the offshore Poipu waters, none of the properties themselves otherwise serve as habitat for endangered or threatened animals. Newell's shearwater (*puffinus auricularis newelli*), an endangered species, may have flight paths from the mountains to the ocean over and across the subject properties, but none of the proposed work entails installation of light fixtures or towers which would result in incidental "takes" of the bird.

9.7 Site Characteristics. The properties consist of mostly level terrain, not well-drained, with a high water table given their proximity to the ocean. Diverting wastewater generated from the Lealani Property and the Park will be better for the area.

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<sup>2</sup> The classifications of these animals as either threatened or endangered was derived from the U. S. Endangered Species Act of 1973.  
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9.8 Economic Characteristics. The proposed replacement of cesspools and a heavily-used septic system should have no adverse economic impacts, but should have the have the following economic impacts:

a. Jobs. The Restoration will result in jobs on a temporary basis during the period of work. One (1) additional permanent job and/or services will be required for maintenance and servicing of the new pump stations.

b. Housing. The Restoration will not result in the need for additional worker housing. All contractors and their employees will be Kaua'i residents who are already living on Kaua'i.

c. Property Values. Since the fair market value of real property is based on the value of the land and physical improvements, there is a small possibility that the completion of the conversion to a sewerred system might create some increase in the value of the Subject Property. However, since the improvements are largely below the surface of the properties in question, it is not likely that an increase will result which would impact the values of neighboring properties.

9.9 Social Characteristics. The properties are used for restaurant, retail and recreational purposes. The proposed work will not change the uses, character or ambience of the area, either positively or negatively, nor will it result in any increase in population.

9.10 Flooding and Drainage. The Subject Property is situated within Flood Zone AE, as shown on the County of Kaua'i's flood insurance rate map (Flood Insurance Rate Map 150002-0352E). All of the proposed work will be performed Flood Zone AE, and will meet all of the requirements of the Flood Plain Management Ordinance of the County of Kaua'i, as contained in Chapter 15, Article 1, of the Kaua'i County Code, 1987. The work will have no

impact on flooding on or around the subject properties. No additional run-off or drainage issues will result from the installation of the force mains and pumps, and there should be no significant or negative impacts to the shoreline or ocean.

9.11 Traffic Impacts. The roads which service the properties involved are Ho'owili Road and Ho'ōne Road (County roadways). The work will not cause any increase in traffic along Ho'owili or Ho'ōne, or on Po'ipū Road (to which Ho'owili connects). During the course of construction, there are expected to be short-term impacts as the work is to be performed immediately adjacent to the traveled portions of Ho'owili and Ho'ōne.

9.12 Availability of Public Services and Facilities. The conversion from the Lealani Property cesspools and the Park septic systems will not unreasonably burden public agencies to provide additional and necessary amenities, services and/or facilities.

a. Schools. None of the work being proposed to do the wastewater change-over will generate an increase in the number of students attending any of the public or private schools on the island.

b. Wastewater Disposal. The proposed work will be an improvement of current conditions. Lealani Corporation is under a directive to close its large-capacity cesspools. The Park's restroom facilities, connected to septic systems and leach fields, require more than normal pumping because of the high volume of use. Risks of leaching of wastewater into the ocean are higher than desirable. The ideal alternative, given the high water table and proximity to the ocean, is to connect both the Brennecke's building and the Park's restrooms to an existing sewage disposal system. No additional wastewater will be generated than is currently being generated at these properties, but the method of disposing of that wastewater is far more ecologically proper and acceptable.

9.13 Solid Waste Disposal. No additional solid waste, except for that which might be generated during the period of construction, will be generated by the proposed work. All construction debris (to the extent that the same exists) will be disposed of by the contractor(s) at the County's Kekaha Landfill.

9.14 Water. No additional water usage or demand will result from the changeover of the less desirable wastewater systems.

9.15 Electricity, Telephone and Cable Service. Telephone and cable television service are not necessary for the changeover of the wastewater disposal systems. Electrical connections are required to operate the pump stations.

9.16 Diesel. Lealani will provide two (2) back-up, portable diesel generators to the County for use in running the pump stations during an extended power outage. The County will provide its own diesel for operation of the generator.

9.17 Police and Fire Protection. The proposed work will not, in and of itself, result in the need for an expansion of police or fire protection for the area.

## **X. IMPACTS UPON RESOURCES OF THE AREA**

10.1 Flora. The proposed installation of the facilities for a connection to the HOH Utilities Po'ipū Water Reclamation Facility will have no impacts on the flora in the area.

10.2 Fauna. The proposed work will have no negative impact on any animals or birds using this area.

10.3 Historical and Archaeological. An Archaeological Inventory Survey ("AIS") for Tax Key Nos: (4) 2-8-17:001, 007, 011, 015 and 023 was conducted by Cultural Surveys Hawai'i, Inc. ("CSH"), pursuant to Section 6E-42, Hawai'i Revised Statutes ("HRS"), a

copy of which is attached hereto as Exhibit "F". The AIS was submitted to the State Historic Preservation Division of DLNR ("SHPD") for comments and approval.

The AIS contains the following findings and recommendations:

a. Fieldwork Effort. The fieldwork component of this AIS was conducted on October 11 and 13, 2010 by three (3) CSH archaeologists (Gerald Ida, B.A., Michelle Pammer, B.A. and Kendy Altizer, B.A.) under the general supervision of Hallett H. Hammatt, Ph.D (principal investigator). The fieldwork required approximately seven person-days to complete.

Nine (9) locations, selected based upon the future construction activities planned, were excavated (four on the mauka side of Ho'ōne Road, and three in the Park).

b. Historic Property Identified and Recommended Eligibility to the National/Hawai'i Register. SIHP #50-30-10-745 is a multi-component cultural layer previously documented and evidencing continual use of the Park from very early pre-Contact to modern times, which occupies the extent of the Park, and exhibiting variable differences in stratigraphy because of previous construction and post-hurricane beach park restoration activities. A possible hammerstone fragment was collected from Excavation E. A charcoal sample collected from SIHP # 50-30-10-745 yielded a date range of 1430 AD to 1630 AD. SIHP # 50-30-10-745 is assessed as significant under Criterion C (embodies the distinctive characteristics of a type, period or method of construction, represents the work of a master, or possesses high artistic value) Criterion D (have yielded, or may be likely to yield information important in prehistory or history) and Criterion E (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history

accounts – these associations being important to the group's history and cultural identity) of the National and Hawai'i Registers of Historic Places evaluation criteria.

c. Effect Recommendation. The proposed project will affect a historic property recommended eligible to the Hawai'i Register. CSH's project specific effect recommendation is "effect, with agreed upon mitigation measures." The mitigation measures described below will help alleviate the project's impact on significant historic properties.

d. Mitigation Recommendations. SIHP #50-30-10-745, a large cultural layer, was documented with a detailed written description, photographed in profile, analyzed and radiocarbon dated, and because additional information can still be gained from this site, an archaeological monitoring program is recommended.

A monitoring plan should be submitted to SHPD for review and approval before the commencement of any ground disturbing activities, and a report detailing monitoring activities should be generated after the archaeological monitoring has been concluded. This monitoring program should include a combination of on-site and on-call monitoring as determined by SHPD, which should alleviate any adverse impact resulting from the proposed activities.

The possible hammerstone fragment was collected from the Park, which is public land and it is recommended that it should be stored at the CSH storage facility until CSH has made arrangements with the County of Kaua'i about its disposition.

The Applicant agrees to follow all of the recommendations contained in the AIS. In particular, the Applicant will implement the on-site and on-call monitoring as agreed upon in advance by CSH and SHPD.

10.4 Recreational Resources. There are no recreational activities that take place on the Lealani Corporation. The Park and Parking Lots, however, provide beach recreational opportunities for members of the public. During the course of the connecting the restroom facilities to the sewage system, one of the restrooms will be open while work occurs on the other. Access to the Parking Lots may have to be diverted; however, there will be sufficient areas in which work is not occurring to accommodate public parking.

10.5 Scenic Resources. The proposed work will neither diminish nor enhance the visual appearance of the areas around the subject properties, as the wastewater "structures" are to be located primarily below ground.

10.6 Cultural Impacts. A Cultural Impact Assessment for the project was not conducted, as the Park and Parking Lots are accessible will continue to be accessible to all members of the public, including native Hawaiians. However, CSH conferred with Rupert Rowe, Sr., president of Hui Malama O Kaneioulouma in preparing the AIS. Mr. Rowe shared his knowledge of the area and informed CSH that Hawaiian remains which had previously been located in the Park had been pushed mauka as a result of flooding from past hurricanes, and were reinterred within a cemetery located in the Park.

A retaining wall along the beach portion of the Park that had been constructed by Hawaiians was destroyed by past hurricanes, and fish ponds in the Parking Lots had previously been filled and paved over.

After consideration of the history of post-contact activities in the Koloa and Po'ipū area, CSH noted that mechanized land modifications associated with the sugarcane industry, and the use of the project area primarily for "in-use roadways and old cane haul roads", have resulted in disturbance and destruction of historic properties. The demographic changes in

the area, the growth of the resort industry over the past 40 years, and the use of the Park and Parking Lots for public recreational use have also significantly altered the immediate environment in which any cultural practices may have occurred previously. Immediately northeast of the present project limits is the well-known archaeological and cultural preserve area known as Kane i ola uma. This area includes a fishpond and a complex of traditional sites that is actively managed by Hawaiian cultural practitioners. The main caretaker of this complex, Rupert Rowe, Sr., has indicated that the present project will have no impact on the complex and the cultural practices associated with it. Mr. Rowe has indicated that he is in favor of the present project, and thinks that it will benefit the preservation and ongoing activities of the complex.

10.7 Future Development/Cumulative Impacts. The proposed changeover of the existing wastewater disposal systems is not linked to or dependent upon any future development on any of the involved properties. Any future development (if any) on these properties will be controlled and regulated by applicable State and County land use laws.

10.8 Air Quality/Noise. The proposed work will have little or no impact on the air quality and ambient noise levels in the area over the long-term. Air quality and ambient noise levels may be affected at a very minimal level during the work to install the required pumps and connect the Lealani Property and the Park to a new force main. All vehicles or equipment used by the Applicant during construction will be properly muffled, housed and maintained to reduce any noise impacts or emission impacts. The Environmental Protection Agency (EPA) and State of Hawai'i air quality standards will not be exceeded.

During power outages, the use of emergency generators for the Park and restaurant facilities would be required to ensure that wastewater continues to be directed into the sewer lines. The generator that will be provided for emergency usage at the Lealani Property is

equipped with a noise hood, while the generator for County use is equipped with a muffler system to reduce noise and vibrations; however, emergency generators that are used as required and necessary for maintenance or repair of public utilities systems, including sewer systems, or for the protection of public health and safety, are exempted from maximum permissible sound levels pursuant to the State Department of Health's rules and regulations (Title 11, Chapter 46, Section 11-46-5).

## **XI. ALTERNATIVES CONSIDERED**

The Applicant considered alternatives to connecting its operations through HOH Utilities for wastewater treatment and disposal.

One alternative was to install a septic tank and leachfield on the eastern side of the Lealani Property. However, Applicant is neither the owner of the property nor a lessee, and the owner, after discussion, was unwilling to consent to the installation of the septic tank and leachfield to process wastewater. Additionally, leachate from the leachfield, even if permitted by the owner, could affect offshore water quality.

Another alternative would have been to route the existing sewer force main, located mauka of Ho'ōne Road, to a location makai of Ho'ōne Road within the roadway right-of-way. However, the following should be noted:

- Rupert Rowe, Sr., raised concerns that Hawaiian burials which may have been pushed into this area by storm surges generated by Hurricane 'Iniki which would be disturbed by such routing;

- the Engineering Division of the Department of Public Works, County of Kaua'i, was not inclined to locate the sewer line within the Ho'ōne Road right-of-way as such a line would affect future waterlines and drainage improvements;

- Applicant's engineering consultants were concerned with interference with existing fire hydrants within the roadway right-of-way;

- having a small sewer force main within the roadway right-of-way would put the main at high risk of breakage during future road work activities; such positioning would pose an unacceptable health risk, which would mean that the County's and Brennecke's restroom facilities would be out of service during repair periods; and

- engaging in construction work within the roadway right-of-way would require closure of one lane of traffic on the two-lane roadway during the construction period, estimated to involve a period of at least three (3) months, resulting in traffic impacts.

The third alternative considered, and rejected, was to relocate an existing sewer force main such that the new grease interceptor, generator and pump station for the Lealani Property would be connected to a sewer line that links to the Marriott manhole. However, the sewer force main would by design have to be installed within the roadway right-of-way, and the Engineering Division of the Department of Public Works was averse to this design alternative because of the traffic impacts that would occur during the installation phase (pavement repair and additional time required for such installation) and the potential impacts to future waterlines and drainage improvements. Further, locating the small sewer force main within the roadway right-of-way would put the main at high risk of breakage during future road work activities, and such positioning would pose an unacceptable health risk when the County's and Brennecke's restroom facilities would be out of service because of repair work.

As such, it was determined that the most desirable routing would be alongside the County right-of-way within the Parking Lots.

If the routing is permitted within the Parking Lots, the cost of the project would allow the Applicant to proceed with the connection of the restroom facilities located in the Park to the HOH system. If, however, the Applicant will not be permitted to route its connection through the Parking Lots and must, instead, locate the facilities within the roadway right-of-way, the cost of such routing will make the connection of the public restroom facilities cost-prohibitive.

## **XII. COMPATIBILITY WITH APPLICABLE LAWS**

12.1 Compliance with Land Use Laws. The proposed work is compatible with: Chapter 205, Hawai'i Revised Statutes ("HRS") (Land Use Commission); Chapter 205A, HRS (Coastal Zone Management); Chapter 225, HRS (Hawai'i State Plan); the Special Management Area Rules and Regulations of the County of Kaua'i ("SMA Rules"); Chapter 8, Kaua'i County Code; and all other applicable laws, ordinances or regulations.

12.2 Compliance with EIS Significance Criteria. The proposed work on the subject properties will comply with the following criteria as set forth in Title 11, Chapter 200, Section 11-200-12 of the EIS Administrative Rules of the Office of Environmental Quality Control:

a. Whether the proposed action involves an irrevocable commitment to, or loss or destruction of any natural or cultural resources. The changeover from the existing, antiquated or inadequate wastewater disposal systems to a system which will transport

wastewater to a water reclamation facility will not result in the loss or destruction of any natural or cultural resources.

The trenchless excavation is intended to limit the extent of ground disturbance normally associated with installation of utility lines that would tend to disrupt subsurface archaeological and/or cultural deposits, and will be done after completion of the archaeological inventory survey that is intended to locate and identify such archaeological and/or cultural deposits. Archaeological inventory surveys focus on depths of 5 to 6 feet below ground, which is the depth at which archaeological and/or cultural deposits are typically located (i.e., where "anticipated finds" are made). The trenchless drilling occurs below that level to minimize disturbance through strata which generally predate Hawaiian settlement on the islands.

b. Whether the proposed action curtails the range of beneficial uses of the environment. The proposed work will have no negative impact on the involved properties and their environs; rather, the work is intended to benefit the environment by removing systems which could result in leachate entering the water table and the ocean.

c. Whether the proposed action conflicts with the State's long-term environmental policies or goals and guidelines as expressed in HRS Chapter 344, and any revisions thereof and amendments thereto, court decisions or executive orders. The proposed work should enhance and protect the environmental qualities of the area to the extent that sewage spills or overflows might result from the inadequacy of wastewater treatment for the properties; and will not result in any adverse effects on the public health, safety and welfare. As such, the work should not conflict with the State's long-term policies or goals as articulated in HRS Chapter 344, court decisions or executive orders.

d. Whether the proposed action substantially affects the economic or social welfare of the community or the State. The proposed work will not negatively affect the economic or social welfare of the community or the State.

e. Whether the proposed action substantially affects public health. The proposed work will have no negative impact on public health; it is being proposed because of health and environmental considerations.

f. Whether the proposed action involves substantial secondary impacts, such as population changes, or affects public facilities. The proposed work will not cause substantial secondary impacts such as: population increases; or a significant increase in usage of the public facilities (i.e., roadways, electric, domestic water usage, park usage, etc.).

g. Whether the proposed action involves a substantial degradation of environmental quality. The proposed work will enhance the environmental quality by removing current risks posed by large-capacity cesspools and a septic system located in an area with a high water table and in close proximity to the ocean.

h. Whether the proposed action is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions. The proposal described herein is limited to the changeover of systems for wastewater disposal, and does not require a commitment to allow additional or greater actions on any of the involved properties.

i. Whether the proposed action affects a rare, threatened or endangered species, or its habitat. There are no known rare, threatened or endangered species, or such species habitat, on or near the involved properties, except for the beach area fronting the Park and the Po'ipū off-shore waters, that will be affected by the proposed work. Any Hawaiian

monk seals which may be on the sandy beach or Hawaiian green sea turtles in the off-shore waters should not be affected by work on the restrooms, which are set closer to Ho'ōne Road than to the beach. If the project area is a flight path of fledgling and/or adult Newell's shearwater should not be impacted by the wastewater proposal, as no lines, towers, poles or lights which are reported to be the source of many downings of these birds are involved.

j. Whether the proposed action affects air or water quality or ambient noise levels. There will be a temporary change in the ambient noise levels during the period of the work to install the pumps, during trenching, and during the installation of the lines for the force main (none of which should have a direct effect on air or water quality). Work will be limited to day time hours. Once the contractor(s) has completed its work, there will be no change in ambient noise levels. Changing from cesspools and septic systems to sewer connection should positively impact water quality in the area.

As part of the wastewater upgrade for the Lealani Property and the Park, Lealani will be providing a generator (to be stored in an on-site County structure) and one generator (to be permanently located behind the restaurant building) for use during power outages, to ensure that wastewater can continue to be directed into the sewage system. The generators that will be provided for emergency usage are equipped with a muffler system or a noise hood to reduce noise and vibrations; however, emergency generators that are used as required and necessary for maintenance or repair of public utilities systems, including sewer systems, or for the protection of public health and safety, are exempted from maximum permissible sound levels pursuant to the State Department of Health's rules and regulations (Title 11, Chapter 46, Section 11-46-5).

k. Whether the proposed action substantially affects scenic vistas and view planes identified in County or State plans or studies. None of the involved properties have been identified in any County or State plans or studies as being part of a scenic vista, or within the view plane of any scenic vista. Changing the existing wastewater facilities to a sewer system will have no impact upon the visual appearance of the area.

l. Whether the proposed action requires substantial energy consumption. The proposed work will not substantially increase the potential energy consumption on the involved properties.

### **XIII. COMMENTS**

13.1 Requests for Comments. The Applicant and Public Works sent requests for comments on the Draft Environmental Assessment to the agencies and organizations listed in the Request For Comments Index, attached as Exhibit "G". All comments received from such agencies or organizations, and the responses thereto by the joint applicants, will be attached to the Final Environmental Assessment.

### **XIII. CONCLUSION**

The Applicant respectfully requests that the Planning Department of the County of Kaua'i: find that the proposal set forth herein will not have any significant environmental impacts; find that the an Environmental Impact Statement need not be prepared in this case; and issue a "Negative Declaration" (or a "finding of no significant impact") in this matter, as that

term is defined by Title 11, Department of Health, Chapter 200, Environmental Impact Statement (EIS) Rules, Subchapter 2(11-200-2).

DATED: Līhu'e, Kaua'i, Hawai'i, March 1, 2011.

**BELLES GRAHAM PROUDFOOT  
WILSON & CHUN, LLP**

By   
LORNA A. NISHIMITSU  
Attorney for Applicant  
LEALANI CORPORATION

**INDEX OF EXHIBITS**

<b><u>EXHIBIT</u></b>	<b><u>ITEM</u></b>
A	AUTHORIZATION
B	LOCATION MAP
C	TAX MAP
D	SPECIAL MANAGEMENT AREA EXEMPTION LETTER
E	BRENNECKE'S RESTAURANT NEW WASTEWATER SYSTEM SERVICE CONNECTION PLANS (AQUA ENGINEERS, INC.)
F	ARCHAEOLOGICAL INVENTORY SURVEY
G	REQUEST FOR COMMENTS INDEX

**EXHIBIT "A"**

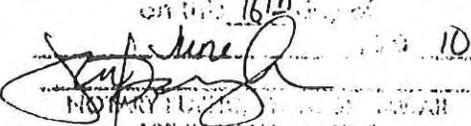
**AUTHORIZATION**

POIPU INN, INC., a Hawaii corporation, as Lessor, hereby authorizes LEALANI CORPORATION, a Hawaii corporation, as Lessee of property located at Koloa, Island and County of Kauai, State of Hawaii, more particularly identified as Tax Key No.: (4) 2-8-17:015 ("Subject Property"), by and through Lessee's attorneys, Belles Graham Proudfoot Wilson & Chun, LLP, to file and process any and all drafts, documents, and correspondence relating to the Draft and Final Environmental Assessments and/or Draft and Final Environmental Impact Statements for processing through the Office of Environmental Quality Control of the Department of Health, State of Hawaii.

DATED: June 16, \_\_\_\_\_, 2010.

POIPU INN, INC.,  
a Hawaii corporation

By   
Name: Jed Sueoka  
Its: Vice President

STATE OF HAWAII  
CITY & COUNTY OF KOLOA  
Subscribed and sworn to before me  
on this 16th day of June, 2010  
  
NOTARY PUBLIC  
1ST DISTRICT  
MY COMMISSION EXPIRES APR 05 2013

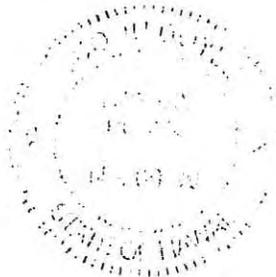


June 16, 2010

Authorization Form

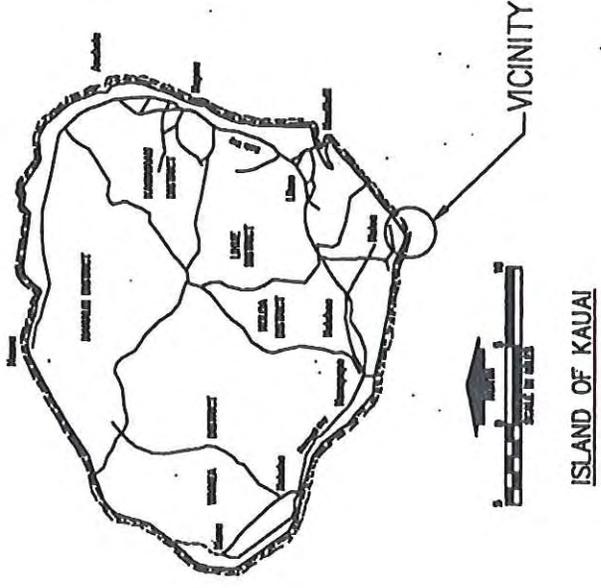
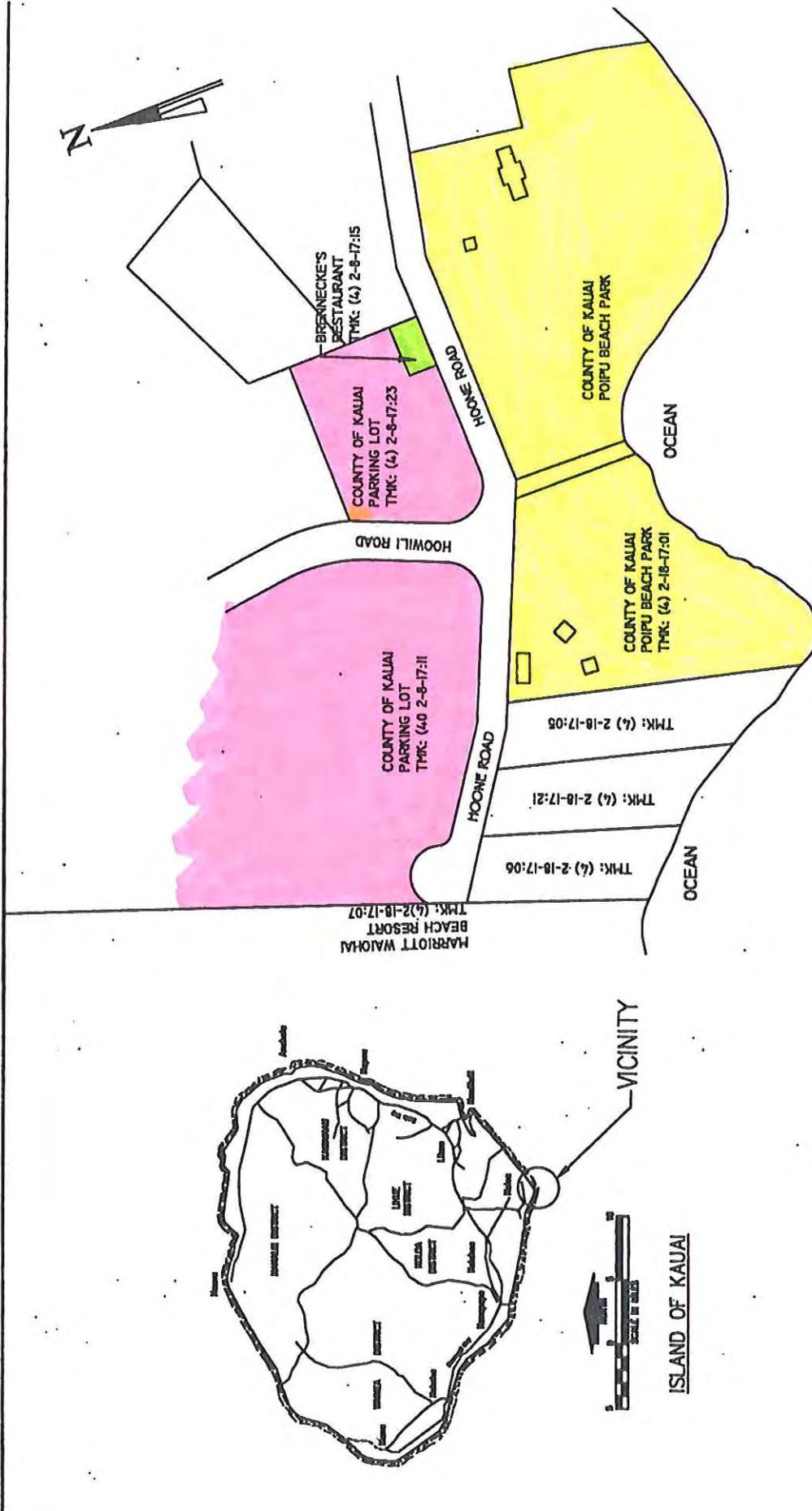
Poipu Inns Inc

June 16, 2010



**EXHIBIT "B"**

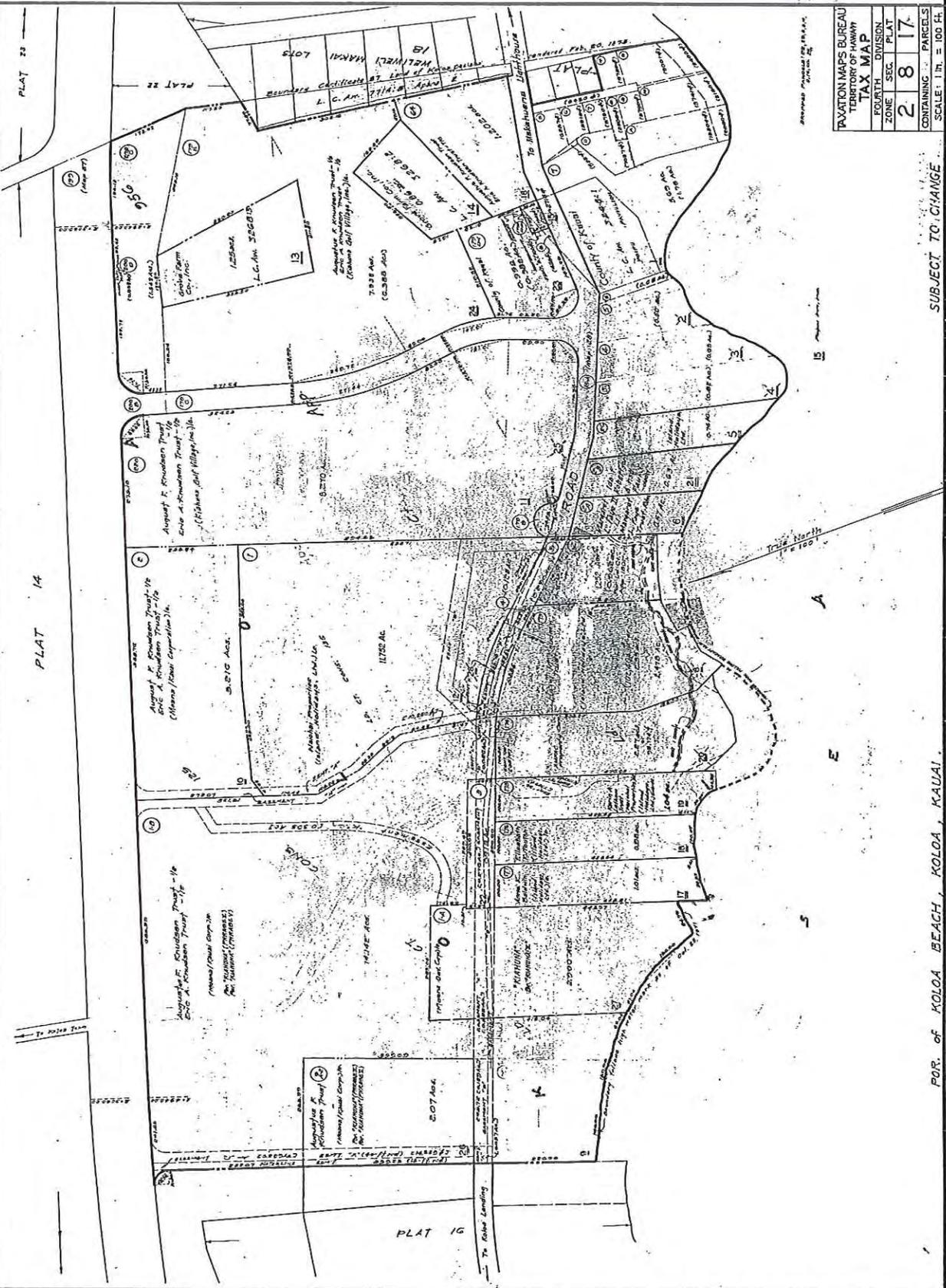
PROJECT LOCATION



LOCATION MAP  
NO SCALE

**EXHIBIT "C"**

DNG No: 5061  
 Source: L.A. & App. 958 (A-1)  
 By: D.C. & S.L.C. Oct., 1936.  
 JAN 2 1937  
 JAN 15 1937  
 JAN 22 1937  
 FEB 5 1937  
 FEB 12 1937  
 FEB 19 1937  
 FEB 26 1937  
 MAR 5 1937  
 MAR 12 1937  
 MAR 19 1937  
 MAR 26 1937  
 APR 2 1937  
 APR 9 1937  
 APR 16 1937  
 APR 23 1937  
 APR 30 1937  
 MAY 7 1937  
 MAY 14 1937  
 MAY 21 1937  
 MAY 28 1937  
 JUN 4 1937  
 JUN 11 1937  
 JUN 18 1937  
 JUN 25 1937  
 JUL 2 1937  
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 JUL 23 1937  
 JUL 30 1937  
 AUG 6 1937  
 AUG 13 1937  
 AUG 20 1937  
 AUG 27 1937  
 SEP 3 1937  
 SEP 10 1937  
 SEP 17 1937  
 SEP 24 1937  
 OCT 1 1937  
 OCT 8 1937  
 OCT 15 1937  
 OCT 22 1937  
 OCT 29 1937  
 NOV 5 1937  
 NOV 12 1937  
 NOV 19 1937  
 NOV 26 1937  
 DEC 3 1937  
 DEC 10 1937  
 DEC 17 1937  
 DEC 24 1937  
 DEC 31 1937



TAXATION MAPS BUREAU			
TERRITORY OF HAWAII			
TAX MAP			
FOURTH	DIVISION	PLAT	PARCELS
2	8	17	CONTAINING
SCALE: 1 in. = 100 ft.			PLAT

SUBJECT TO CHANGE

POR. of KOLOA BEACH, KOLOA, KAUAI.

**EXHIBIT "D"**

**BERNARD P. CARVALHO, JR.**  
MAYOR



**IAN K. COSTA**  
DIRECTOR OF PLANNING

**GARY K. HEU**  
ADMINISTRATIVE ASSISTANT

**IMAIKALANI P. AIU**  
DEPUTY DIRECTOR OF PLANNING

**COUNTY OF KAUA'I  
PLANNING DEPARTMENT**

4444 RICE STREET  
KAPULE BUILDING, SUITE A473  
LIHU'E, KAUA'I, HAWAII 96766-1326

TEL (808) 241-4050 FAX (808) 241-6699

August 30 2010

Camp Consulting, Inc.  
P. O. Box 750  
Anahola, Hawaii'i, 96703

Re: TMK Brennecke's Restaurant New Wastewater Systems Service connection  
(4) 2-8-017:015, (4) 2-8-017:023, (4) 2-8-017:001, (4) 2-8-017:011

Dear Ms. Camp:

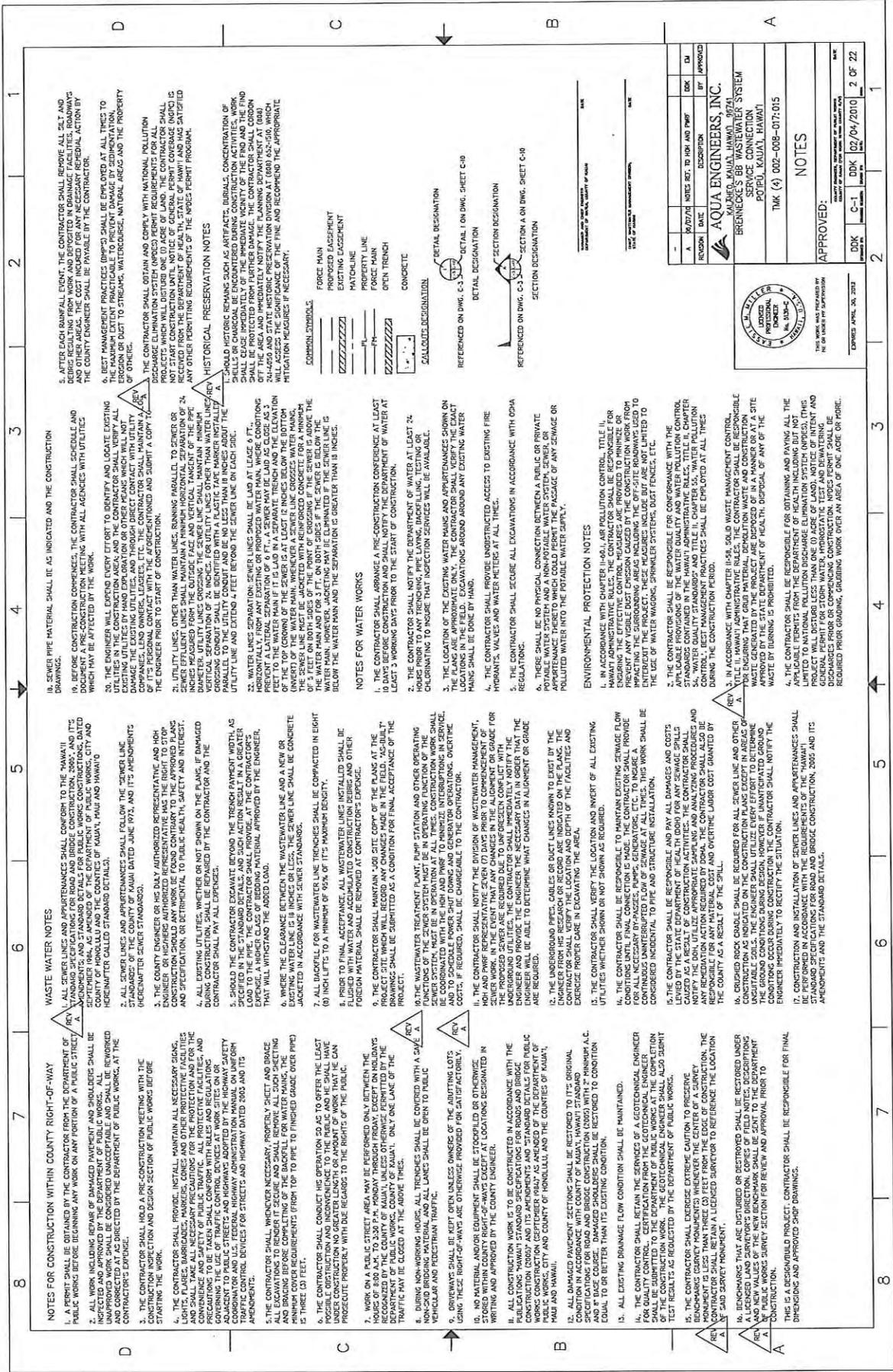
In response to your email dated August 25, 2010, it is noted that the above referenced tax map keys are located within the Special Management Area of the County of Kaua'i. Additionally they are located within Open Special Treatment Cultural and Open zoning. This would not be considered development within the Special Management Area Rules and Regulations of the County of Kaua'i, the proposed work will require a Class IV Zoning and Use Permit.

Should there be any questions regarding the above, please contact CZM planner Lisa Ellen Smith at 808-241-4050.

**IAN K. COSTA**  
Planning Director

**EXHIBIT "E"**





**WASTE WATER NOTES**

1. ALL SEWER LINES AND APPURTENANCES SHALL CONFORM TO THE "HAWAII PIPE STANDARDS SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTIONS, DATED SEPTEMBER 1984, AS AMENDED" OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF MAUI, MOLOKAI AND HAWAII (HEREINAFTER CALLED STANDARD DETAILS).
2. ALL SEWER LINES AND APPURTENANCES SHALL FOLLOW THE "SEWER LINE CONSTRUCTION MANUAL" DATED JUNE 1972, AND ITS AMENDMENTS (HEREINAFTER CALLED SEWER STANDARDS).
3. THE COUNTY ENGINEER OR HIS duly APPOINTED REPRESENTATIVE AND HIS ENGINEER OR HIS duly AUTHORIZED REPRESENTATIVE HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED PLANS, SPECIFICATIONS, OR DETAILMENTS TO PUBLIC HEALTH, SAFETY AND INTEREST.
4. ALL EXISTING UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, IF DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED BY THE CONTRACTOR AND THE CONTRACTOR SHALL PAY ALL EXPENSES.
5. SHOULD THE CONTRACTOR EXCAVATE BEYOND THE TRENCH FAYMENT WIDTH, AS SHOWN ON THE PLANS, THE CONTRACTOR SHALL PROVIDE AT THE CONTRACTOR'S EXPENSE, A HIGHER CLASS OF BEDDING MATERIAL APPROVED BY THE ENGINEER, THAT WILL WITHSTAND THE ADDED LOAD.
6. WHERE THE CLEARANCE BETWEEN THE WASTEWATER LINE AND A NEW OR EXISTING WATER LINE IS 8 INCHES OR THEREABOUTS, THE CONTRACTOR SHALL SUBMIT IN ACCORDANCE WITH SEWER STANDARDS:
7. ALL BACKFILL FOR WASTEWATER LINE TRENCHES SHALL BE COMPACTED IN EIGHT (8) INCH LIFTS TO A MINIMUM OF 95% OF ITS PROPOSED DENSITY.
8. PRIOR TO FINAL ACCEPTANCE, ALL WASTEWATER LINES INSTALLED SHALL BE TESTED TO PROVE THEY ARE FREE FROM LEAKS AND SHALL BE REMOVED AT CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL MAINTAIN A JOB SITE COPY OF THE PLANS AT THE PROJECT SITE WHICH WILL RECORD ANY CHANGES MADE IN THE FIELD. "AS-BUILT" DRAWINGS SHALL BE SUBMITTED AS A CONDITION FOR FINAL ACCEPTANCE OF THE PROJECT.
10. IN THE WASTEWATER TREATMENT PLANT, PUMP STATION AND OTHER OPERATING FUNCTIONS OF THE SEWER SYSTEMS THEREIN, ALL CONSTRUCTION WORK SHALL BE COORDINATED WITH THE HIGH AND FIVE TO MINIMIZE INTERRUPTIONS IN SERVICE, AND TO SCHEDULE POWER SHUT DOWNS AND GENERATOR OPERATIONS. OVERTIME COSTS, IF REQUIRED, SHALL BE BORNE BY THE CONTRACTOR.
11. THE CONTRACTOR SHALL NOTIFY THE DIVISION OF WASTEWATER MANAGEMENT, DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, OF ANY LOCATION OR GRADE FOR SEWER WORK IN THE EVENT THAT ANY CHANGE IN THE ALIGNMENT OR GRADE FOR THE PROPOSED SEWER ARE REQUIRED DUE TO UNFORESEEN CONFLICT WITH EXISTING UTILITIES, STRUCTURES, OR OTHER OBSTRUCTIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND PROVIDE THE ENGINEER THE NECESSARY DATA IN ORDER THAT THE ENGINEER WILL BE ABLE TO DETERMINE WHAT CHANGES IN ALIGNMENT OR GRADE ARE REQUIRED.
12. THE UNDERGROUND PIPES, CABLES OR DUCT LINES KNOWN TO EXIST BY THE ENGINEER FROM HIS RESEARCH OR RECORD ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING THE AREA.
13. THE CONTRACTOR SHALL VERIFY THE LOCATION AND INVERT OF ALL EXISTING UTILITIES WHETHER SHOWN OR NOT SHOWN AS REQUIRED.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN EXISTING FLOW LINE CONDITIONS UNTIL FINAL CONNECTION IS MADE. THE CONTRACTOR SHALL PROVIDE FOR ALL NECESSARY BY-PASSES, PUMPS, GENERATORS, ETC. TO INSURE A CONTINUOUS UNINTERRUPTED FLOW OF WASTEWATER THROUGHOUT THE INSTALLATION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE AND PAY ALL DAMAGES AND COSTS CAUSED AS A RESULT OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL NOTIFY THE DDH, UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES AND BE RESPONSIBLE FOR ANY MATERIAL COST AND OVERTIME LABOR COST GRANTED BY THE COUNTY AS A RESULT OF THE SPILL.
16. CRUSHED ROCK GRADE SHALL BE REQUIRED FOR ALL SEWER LINE AND OTHER DISTRIBUTION AREAS AS INDICATED ON THE CONSTRUCTION PLANS EXCEPT IN AREAS OF UNDESIRABLE SOILS. THE ENGINEER DESIGN, HOWEVER, IF UNDESIRABLE SOILS CONDITIONS OCCUR DURING CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY TO RECTIFY THE SITUATION.
17. CONSTRUCTION AND INSTALLATION OF SEWER LINES AND APPURTENANCES SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "HAWAII PIPE STANDARDS SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTIONS, 2005 AND ITS AMENDMENTS AND THE STANDARD DETAILS.

**NOTES FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY**

1. A PERMIT SHALL BE OBTAINED BY THE CONTRACTOR FROM THE DEPARTMENT OF PUBLIC WORKS BEFORE BEGINNING ANY WORK ON ANY PORTION OF A PUBLIC STREET.
2. ALL WORK INCLUDING BOARD OF DAMAGED PAVEMENT AND SHOULDER SHALL BE INSPECTED AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS. ALL REPAIRS AND CORRECTIONS SHALL BE COMPLETED BY THE DEPARTMENT OF PUBLIC WORKS AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH THE CONSTRUCTION INSPECTION AND DESIGN SECTION OF PUBLIC WORKS BEFORE STARTING THE WORK.
4. THE CONTRACTOR SHALL PROVIDE, INSTALL, MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES TO MAINTAIN THE SAFETY OF THE PUBLIC AND TO PROTECT THE FACILITIES, AND CONVENIENCE AND SAFETY OF PUBLIC TRAFFIC. ALL PROTECTIVE FACILITIES, AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH RULES AND REGULATIONS GOVERNING THE CONSTRUCTION OF PUBLIC WORKS AND HIGHWAYS AND REGULATIONS SUBJECT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COMMISSION AND U.S. FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS DATED 2003 AND ITS AMENDMENTS.
5. THE CONTRACTOR SHALL, WHENEVER NECESSARY, PROPERLY SILENT AS DRUMS AND BRAGING BEFORE COMPLETING OF THE BACKFILL FOR WATER MAINS, THE MANHOLE COVER REQUIREMENTS (FROM TOP TO PIPE TO FINISHED GRADE OVER PIPES) IS THREE (3) FEET.
6. THE CONTRACTOR SHALL CONDUCT HIS OPERATION SO AS TO OBTAIN THE LEAST UNDER CONSTRUCTION NOISE LENGTH OR AMOUNT OF WORK THAT CAN BE COMPLETED PROPERLY WITH DUE REGARD TO THE RIGHTS OF THE PUBLIC.
7. WORK ON A PUBLIC STREET AREA MAY BE PERFORMED ONLY BETWEEN THE BENCHMARKS (MARKERS) SHOWN ON THE PLANS UNLESS OTHERWISE PERMITTED BY THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII. ONLY ONE LANE OF THE TRAFFIC MAY BE CLOSED AT THE ABOVE TIME.
8. DURING NON-WORKING HOURS, ALL TRENCHES SHALL BE COVERED WITH A SAFE, NON-SKID BEDDING MATERIAL, AND ALL LANCES SHALL BE OPEN TO PUBLIC HIGHWAY AND THROUGH TRAFFIC.
9. DRIVEWAYS SHALL BE KEPT OPEN UNLESS OWNERS OF THE ADJACENT LOTS USING THESE DRIVEWAYS ARE OTHERWISE PROVIDED FOR SAFETY ACTIVELY.
10. NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED AT ANY LOCATION DESIGNATED IN WRITING AND APPROVED BY THE COUNTY ENGINEER.
11. ALL CONSTRUCTION WORKS TO BE CONDUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION (2005) AND ITS AMENDMENTS AND "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION (SEPTMBER 1984) AS AMENDED" OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, AND THE COUNTIES OF MAUI, MOLOKAI AND HAWAII.
12. ALL BARRIERS AND/OR FENCINGS SHALL BE RESTORED TO THE ORIGINAL CONDITION IN ACCORDANCE WITH COUNTY OF HAWAII, HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2005) WITH 2" MINIMUM A.P.C. AND IF BUCE COURSE, DAMAGED SURF SHALL BE RESTORED TO CONDITION EQUAL TO OR BETTER THAN ITS EXISTING CONDITION.
13. ALL EXISTING DRAINAGE FLOW CONDITION SHALL BE MAINTAINED.
14. THE CONTRACTOR SHALL CERTAIN THE SERVICES OF A GEOTECHNICAL ENGINEER FOR QUALITY CONTROL, CERTIFICATION FROM THE GEOTECHNICAL ENGINEER SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF THE CONSTRUCTION WORK. THE GEOTECHNICAL ENGINEER SHALL ALSO SUBMIT TEST RESULTS AS REQUESTED BY THE DEPARTMENT OF PUBLIC WORKS.
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO PRESERVE BENCHMARKS (MARKERS) WHATEVER THE CENTER OF A SURVEY MONUMENT IS LARGER THAN THREE (3) FEET FROM THE BENCHMARKS. THE CONTRACTOR SHALL BE RESPONSIBLE TO RE-ESTABLISH THE LOCATION OF ANY SURVEY MONUMENT, A BENCHMARK OR BENCHMARK THAT IS DESTROYED OR DESTROYED OR DESTROYED ONLY BY THE CENTER OF A SURVEY MONUMENT. COPIES OF FIELD NOTES, DESCRIPTIONS AND NEW VALUES OF THE BENCHMARK SHALL BE SENT TO THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, PRIOR TO THE START OF CONSTRUCTION.
16. THE DESIGNER/PROJECT CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL DIMENSIONING AND APPROVED SHOP DRAWINGS.

**IN SEWER PIPE MATERIAL SHALL BE AS INDICATED AND THE CONSTRUCTION DRAWINGS.**

19. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL SCHEDULE AND OBTAIN ALL NECESSARY PERMITS FROM ALL AGENCIES WITH JURISDICTION OVER ANY AREAS WHICH MAY BE AFFECTED BY THE WORK.
20. THE ENGINEER WILL SUPPLY EVERY DETAIL TO CONTRACTOR TO LOCATE EXISTING UTILITIES IN THE CONSTRUCTION AREA AND THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY HAND EXPLORATION OR OTHER MEANS WHICH WILL NOT CAUSE DAMAGE TO EXISTING UTILITIES. THE CONTRACTOR SHALL MAINTAIN A COPY OF ITS PERSONAL CONTACT WITH THE AGENCIES AND SUBMIT A COPY TO THE ENGINEER PRIOR TO START OF CONSTRUCTION.
21. UTILITIES OTHER THAN WATER LINES, RUNNING PARALLEL TO SEWER OR SEWER EFFLUENT LINES SHALL MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF 24" VERTICAL SEPARATION OF 72" INCHES. FOR UTILITY LINES OTHER THAN WATER LINES, THE MINIMUM HORIZONTAL SEPARATION SHALL BE 18" INCHES. SEPARATE TRENCH AND ELEVATION OF THE TOP (GROUND) OF THE SEWER IS AT LEAST 12" INCHES BELOW THE BOTTOM (INVERT) OF THE WATER MAIN. WHENEVER A SEWER LINE CROSSES WATER MAINS, THE SEWER LINE SHALL CROSS UNDER THE WATER MAIN. THE SEWER LINE SHALL BE 3 FEET ON BOTH SIDES OF THE POINT OF CROSSING IF THE SEWER IS ABOVE THE WATER MAIN AND FOR 3 FT. ON BOTH SIDES IF THE SEWER IS BELOW THE WATER MAIN AND THE SEPARATION IS GREATER THAN 18 INCHES.

**NOTES FOR WATER WORKS**

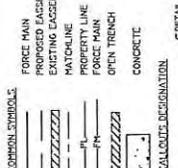
1. THE CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE AT LEAST 10 WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER AT LEAST 72 HOURS PRIOR TO ANY TRENCHING, PIPE LAYING, BACKFILLING, TESTING OR CALIBRATING TO INSURE THAT INSPECTION SERVICES WILL BE AVAILABLE.
3. THE LOCATION OF THE EXISTING WATER MAINS AND APPURTENANCES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD. EXCAVATIONS AROUND AROUND ANY EXISTING WATER MAINS SHALL BE DONE BY HAND.
4. THE CONTRACTOR SHALL PROVIDE UNRESTRICTED ACCESS TO EXISTING FIRE HYDRANTS, VALVES AND WATER METER IN ALL TRENCHES.
5. THE CONTRACTOR SHALL SECURE ALL EXCAVATIONS IN ACCORDANCE WITH OSHA REGULATIONS.
6. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE APPURTENANCE EXPOSED WHICH COULD PERMIT THE BACKFLOW OF ANY SEWAGE OR POLLUTED WATER INTO THE POTABLE WATER SUPPLY.

**ENVIRONMENTAL PROTECTION NOTES**

1. IN ACCORDANCE WITH CHAPTER 11-461, AIR POLLUTION CONTROL, TITLE 11, HAWAII ADMINISTRATIVE RULES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT CONSTRUCTION ACTIVITIES DO NOT CAUSE EXCESSIVE AIR POLLUTION. ANY MOBILE DUST EMISSION CAUSED BY THE CONSTRUCTION WORK FROM IMPACTING THE SURROUNDING AREAS INCLUDING THE OFF-SITE ROADWAYS USED TO ENTER THE PROJECT, THESE MEASURES INCLUDE BUT ARE NOT LIMITED TO THE USE OF WATER MISTING, SPRINKLER SYSTEMS, BARRIERS, ETC.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 34, WATER QUALITY STANDARDS AND TITLE 11, CHAPTER 35, WATER POLLUTION CONTROL STANDARDS. THESE STANDARDS SHALL BE ENFORCED THROUGHOUT DURING THE CONSTRUCTION PERIOD.
3. IN ACCORDANCE WITH CHAPTER 11-461, WASTE MANAGEMENT CONTROL, TITLE 11, HAWAII ADMINISTRATIVE RULES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT CRUISE MATERIAL, DEPOSITION WASTE AND CONSTRUCTION WASTE GENERATED BY THE PROJECT ARE DEPOSITED IN A MANNER THAT AT A SITE WHERE BURNING IS PROHIBITED, THE WASTE IS NOT BURNED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING ALL APPLICABLE PERMITS FROM THE DEPARTMENT OF HEALTH INCLUDING BUT NOT LIMITED TO NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), THIS PERMIT IS REQUIRED FOR THE DEPOSITION OF WASTE AT A SITE WHERE BURNING IS PROHIBITED. THE GENERAL PERMIT FOR STORM WATER, HYDROLOGIC TEST AND DEMONSTRATING DISCHARGES PRIOR OR CONDUCTING CONSTRUCTION, NPDES PERMIT SHALL BE REQUIRED PRIOR GRADING, GRUBBING WORK OVER AN AREA OF ONE ACRE OR MORE.

**HISTORICAL PRESERVATION NOTES**

1. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH ALL NECESSARY PERMITS FOR ALL PROJECTS WHICH WILL DISTURB ONE (1) ACRE OF LAND. THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS OBTAINED FROM THE DEPARTMENT OF LAND AND NATURAL RESOURCES. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE NGPC PERMIT PROGRAM.
2. HISTORICAL REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELLS OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY OF THE APPROPRIATE AGENCY. THE CONTRACTOR SHALL CONSULT WITH THE DEPARTMENT OF LAND AND NATURAL RESOURCES AT (808) 241-4500 AND STATE HISTORIC PRESERVATION DIVISION AT (808) 622-5156, WHICH WILL ASSIST IN THE IDENTIFICATION OF THE FINDS AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES IF NECESSARY.



REFERENCED ON DWG. C-3 DETAIL 1 ON DWG. SHEET C-8

REFERENCED ON DWG. C-3 SECTION DESIGNATION

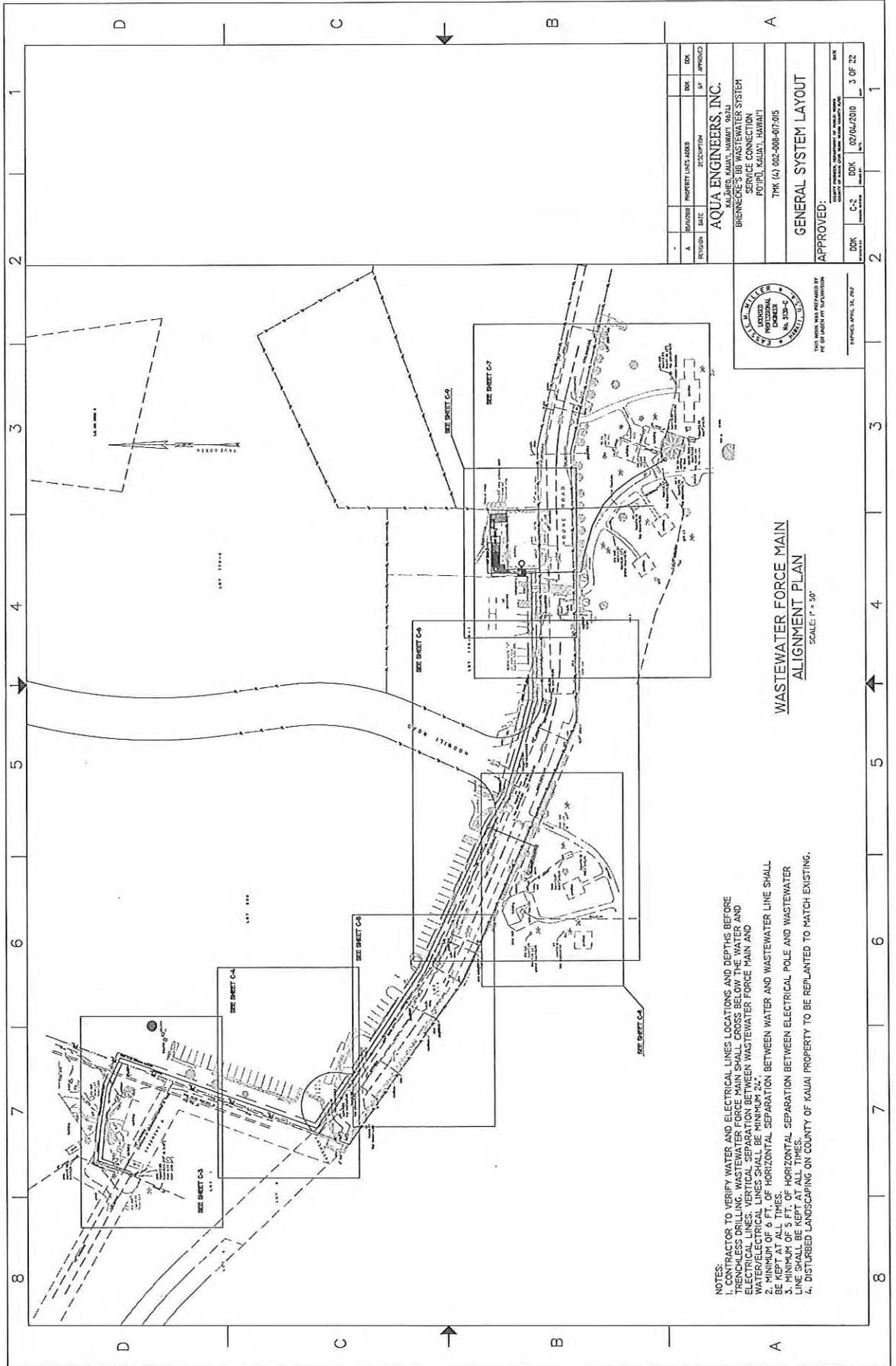
REVISION	DATE	DESCRIPTION	BY	APPROVED
A	10/27/20	NOTES REV. TO 20K AND 20W	DK	DU



**AQUA ENGINEERS, INC.**  
 1036-C  
 BREWSTER AVENUE, SUITE 100  
 POPOI, KAUAI, HAWAII  
 TIK (4) 002-008-071-015

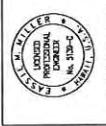
**NOTES**

APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 DDK 102/04/2010 2 OF 22  
 EXPIRES APRIL 30, 2012



- NOTES:
1. CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE EXCAVATION. VERIFY DEPTHS OF ALL EXISTING UTILITIES. VERIFY SEPARATION BETWEEN WASTEWATER FORCE MAIN AND WATER/ELECTRICAL LINES SHALL BE MINIMUM 24".
  2. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
  3. MINIMUM OF 5 FT. OF HORIZONTAL SEPARATION BETWEEN ELECTRICAL POLE AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
  4. DISTURBED LANDSCAPING ON COUNTY OF KAUAI PROPERTY TO BE REPLANTED TO MATCH EXISTING.

**WASTEWATER FORCE MAIN  
ALIGNMENT PLAN**  
SCALE: 1" = 30'



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
 EXPIRES APRIL 30, 2012

PROJECT NO.	10054	DATE	02/04/2010
PROJECT NAME	WASTEWATER FORCE MAIN	DRAWN BY	C-2
PROJECT LOCATION	KAUAI, HAWAII	CHECKED BY	
PROJECT OWNER	STATE OF HAWAII	DATE	3 OF 22
PROJECT DESCRIPTION	WASTEWATER FORCE MAIN		
PROJECT ADDRESS	10054		
PROJECT CONTACT			
PROJECT PHONE			
PROJECT FAX			
PROJECT EMAIL			
PROJECT WEBSITE			
PROJECT URL			
PROJECT STATUS			
PROJECT PHASE			
PROJECT START DATE			
PROJECT END DATE			
PROJECT COMPLETION DATE			
PROJECT BUDGET			
PROJECT COST			
PROJECT REVENUE			
PROJECT PROFIT			
PROJECT RISK			
PROJECT APPROVAL			

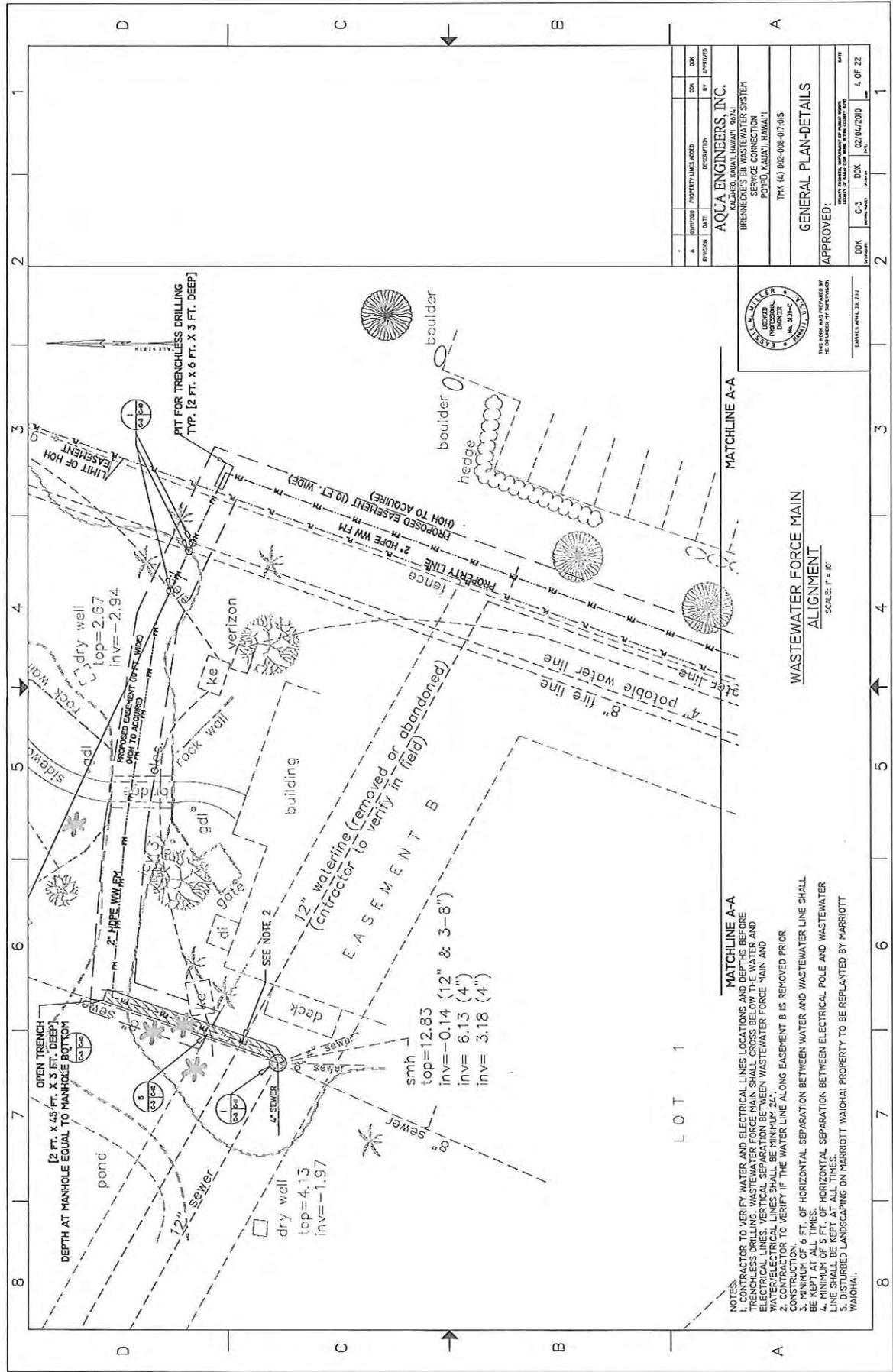
**AQUA ENGINEERS, INC.**  
 10054 KAUAI, HAWAII 96741

WASTEWATER FORCE MAIN  
 GENERAL SYSTEM LAYOUT

PROJECT NO. 10054  
 PROJECT NAME: WASTEWATER FORCE MAIN  
 PROJECT LOCATION: KAUAI, HAWAII  
 PROJECT ADDRESS: 10054

DATE: 02/04/2010  
 DRAWN BY: C-2  
 CHECKED BY: [blank]

APPROVED: [signature]



**NOTES:**

1. CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE TRENCHLESS DRILLING. WASTEWATER FORCE MAIN SHALL CROSS BELOW THE WATER AND ELECTRICAL LINES. VERTICAL SEPARATION BETWEEN WASTEWATER FORCE MAIN AND WATER LINES SHALL BE 6 FT. MINIMUM.
2. CONTRACTOR TO VERIFY IF THE WATER LINE ALONG EASEMENT B IS REMOVED PRIOR CONSTRUCTION.
3. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
4. HORIZONTAL SEPARATION BETWEEN ELECTRICAL POLE AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
5. DISTURBED LANDSCAPING ON MARRIOTT WAIOHAI PROPERTY TO BE REPLANTED BY MARRIOTT WAIOHAI.

**MATCHLINE A-A**

SEE NOTE 2

**MATCHLINE A-A**

**WASTEWATER FORCE MAIN ALIGNMENT**

SCALE: 1" = 10'

**LOT 1**

NO.	DATE	DESCRIPTION	BY	APPROVED
A		PRIORITY LINE ADD	DK	DKA

**AQUA ENGINEERS, INC.**  
KALANEO, KAUAI, HAWAII, 90241

**BIRNICK'S BIR WASTEWATER SYSTEM**  
SERVICE CONNECTION  
POPOI, KAUAI, HAWAII

TRK (4) 002-008-07-505

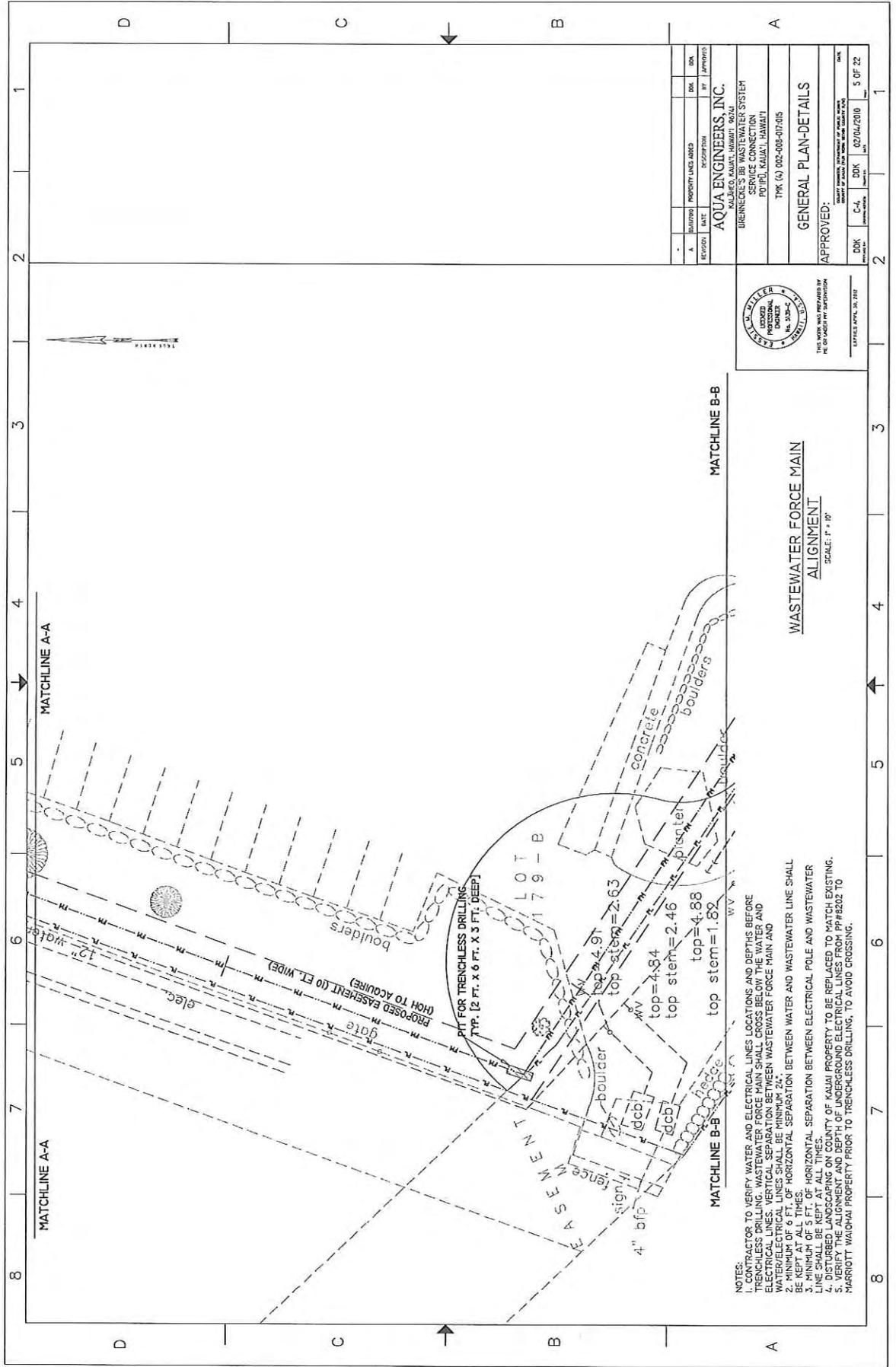
**GENERAL PLAN-DETAILS**

APPROVED: \_\_\_\_\_

DATE: 02/04/2010

SCALE: 1" = 10'

4 OF 22



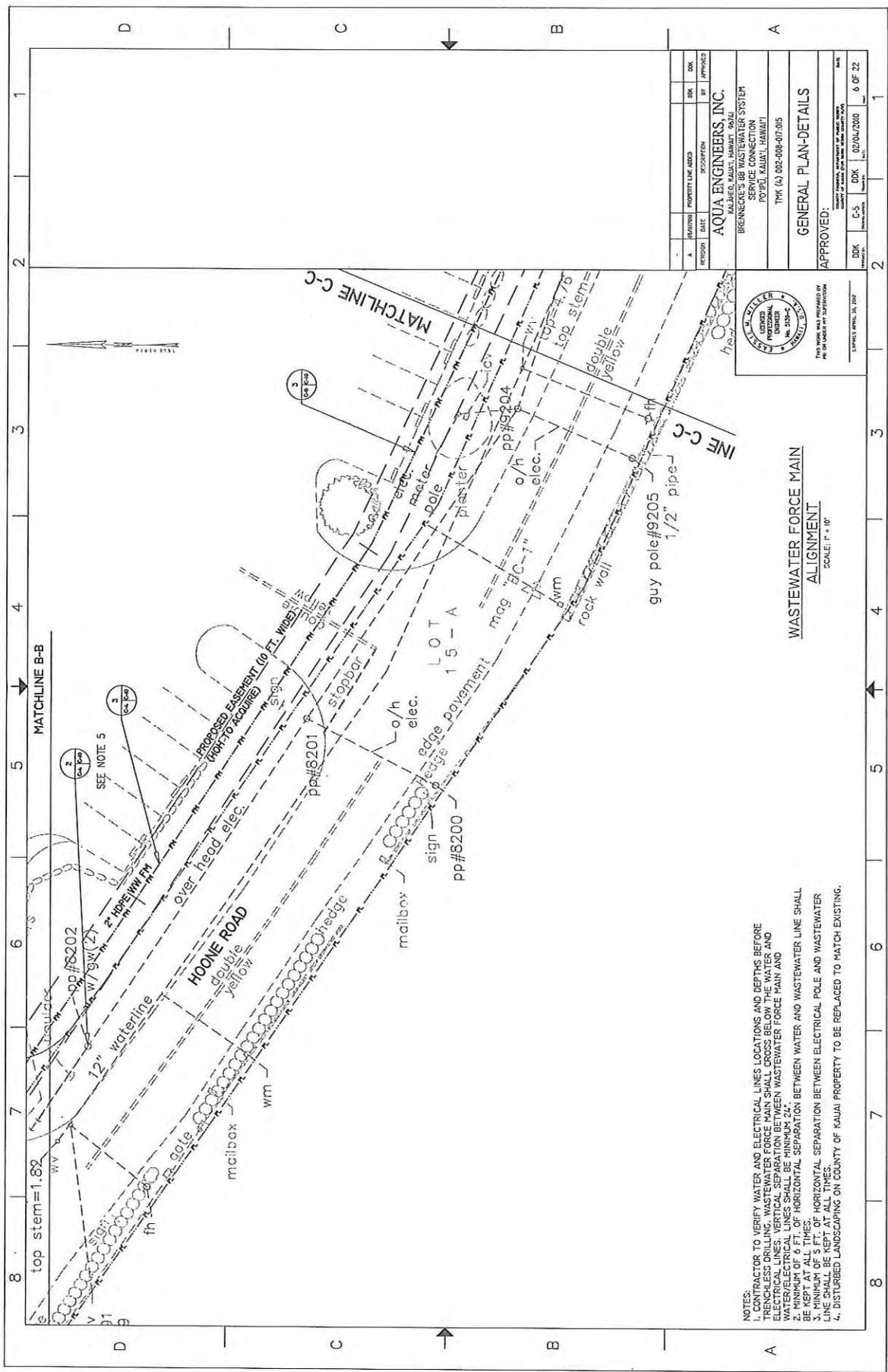
- NOTES:
1. CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE CONSTRUCTION. VERIFY ALL EXISTING WATER AND ELECTRICAL LINES. VERTICAL SEPARATION BETWEEN WATER/ELECTRICAL LINES SHALL BE MINIMUM 24\"/>
  - 2. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN WASTEWATER FORCE MAIN AND WATER/ELECTRICAL LINES SHALL BE MINIMUM 24\"/>
  - 3. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
  - 4. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN ELECTRICAL POLE AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.
  - 5. VERIFY THE ALIGNMENT AND DEPTH OF UNDERGROUND ELECTRICAL LINES FROM PP#8202 TO HARRIOTT WAIOHAI PROPERTY PRIOR TO TRENCHLESS DRILLING, TO AVOID CROSSING.

**WASTEWATER FORCE MAIN  
ALIGNMENT**  
SCALE: 1" = 10'



DATE PLOTTED	DATE	BY	APP'D
DKK	DKK	DKK	DKK
PROJECT NO.	DESCRIPTION	DATE	BY
THK (4) 002-009-07-015	SERVICE CONNECTION	PP0101, KAUAI, HAWAII	DKK
<b>GENERAL PLAN-DETAILS</b> APPROVED:			
DATE PLOTTED	DATE	BY	APP'D
DKK	DKK	DKK	DKK

**AQUA ENGINEERS, INC.**  
 KAUAI, HAWAII, 96742  
 BUREAU OF WATER SUPPLY  
 SERVICE CONNECTION  
 PP0101, KAUAI, HAWAII



NOTES:  
 1. CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE TRENCHLESS DRILLING. WASTEWATER FORCE MAIN SHALL CROSS BELOW THE WATER AND ELECTRICAL LINES. VERTICAL SEPARATION BETWEEN WASTEWATER FORCE MAIN AND WATER/ELECTRICAL LINES SHALL BE MINIMUM 24".  
 2. MINIMUM OF 6 FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINE SHALL BE MAINTAINED AT ALL TIMES.  
 3. HORIZONTAL SEPARATION BETWEEN ELECTRICAL POLE AND WASTEWATER LINE SHALL BE KEPT AT ALL TIMES.  
 4. DISTURBED LANDSCAPING ON COUNTY OF KAUAI PROPERTY TO BE REPLACED TO MATCH EXISTING.

**WASTEWATER FORCE MAIN  
ALIGNMENT**  
SCALE: 1" = 10'



NO.	REVISION	DATE	DESCRIPTION	BY	APPROVED
1	ISSUED FOR PERMITS				

**AQUA ENGINEERS, INC.**  
 BREINNECKE'S 88 WASTEWATER SYSTEM  
 SERVICE CONNECTION  
 PO'OHU, KAUAI, HAWAII  
 TRK (A) 002-008-017-015

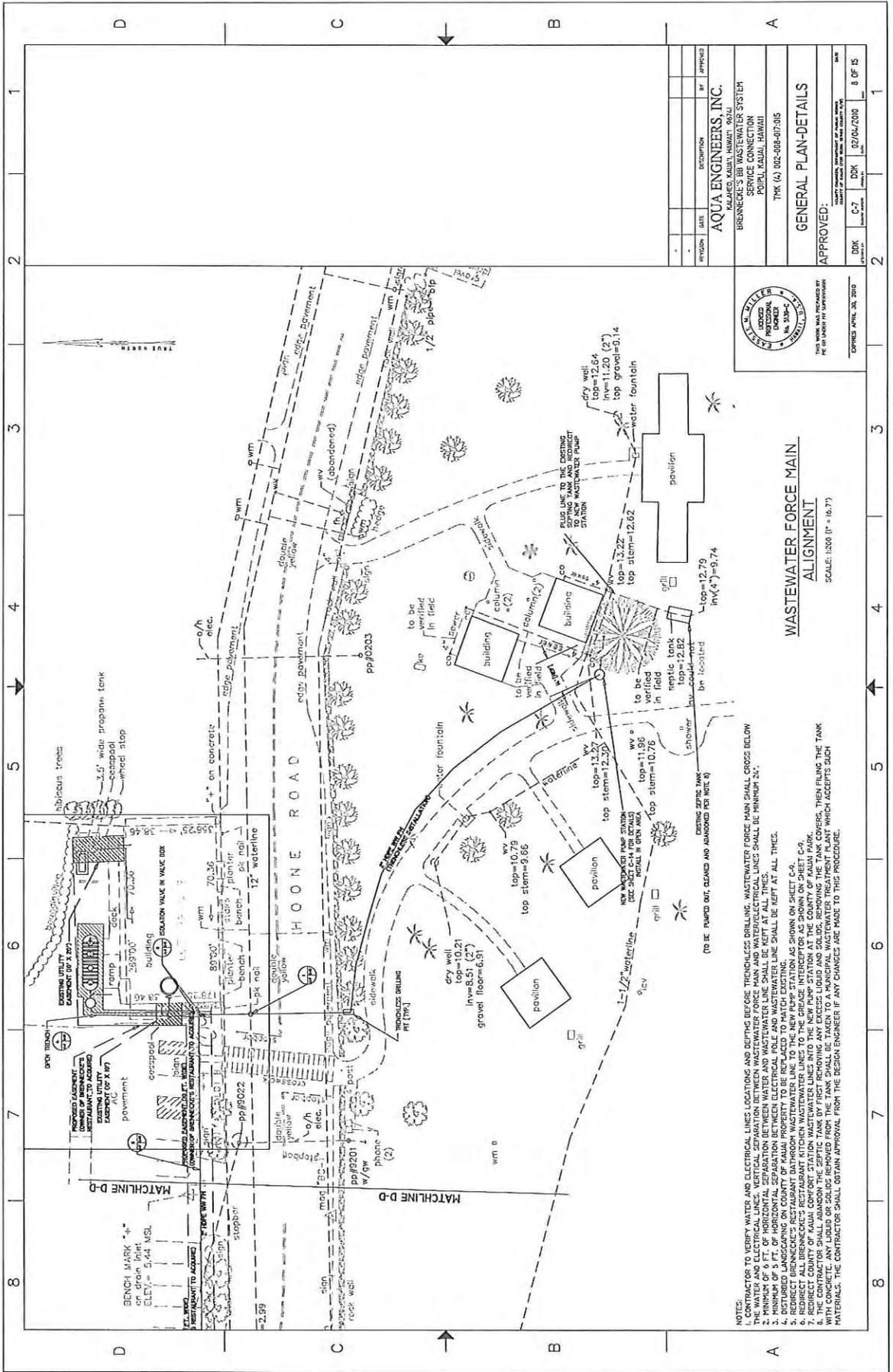
**GENERAL PLAN-DETAILS**

APPROVED:

DATE: 02/04/2010  
 DRAWN BY: C-S  
 CHECKED BY: DDK  
 PROJECT NO: 06 OF 22







NO.	DATE	DESCRIPTION	BY	APPROVED
1				
2				
3				
4				
5				
6				
7				
8				

**AQUA ENGINEERS, INC.**  
 1000 KALANANUIKI  
 POLOA, KAUAI, HAWAII  
 TEL: (808) 833-2200  
 FAX: (808) 833-2201  
 WWW: WWW.AQUAENGINEERS.COM

URENNECAL'S 88 WASTEWATER SYSTEM  
 SERVICE CONNECTION  
 POLOA, KAUAI, HAWAII  
 TKM (A) 002-008-017-015

**GENERAL PLAN-DETAILS**

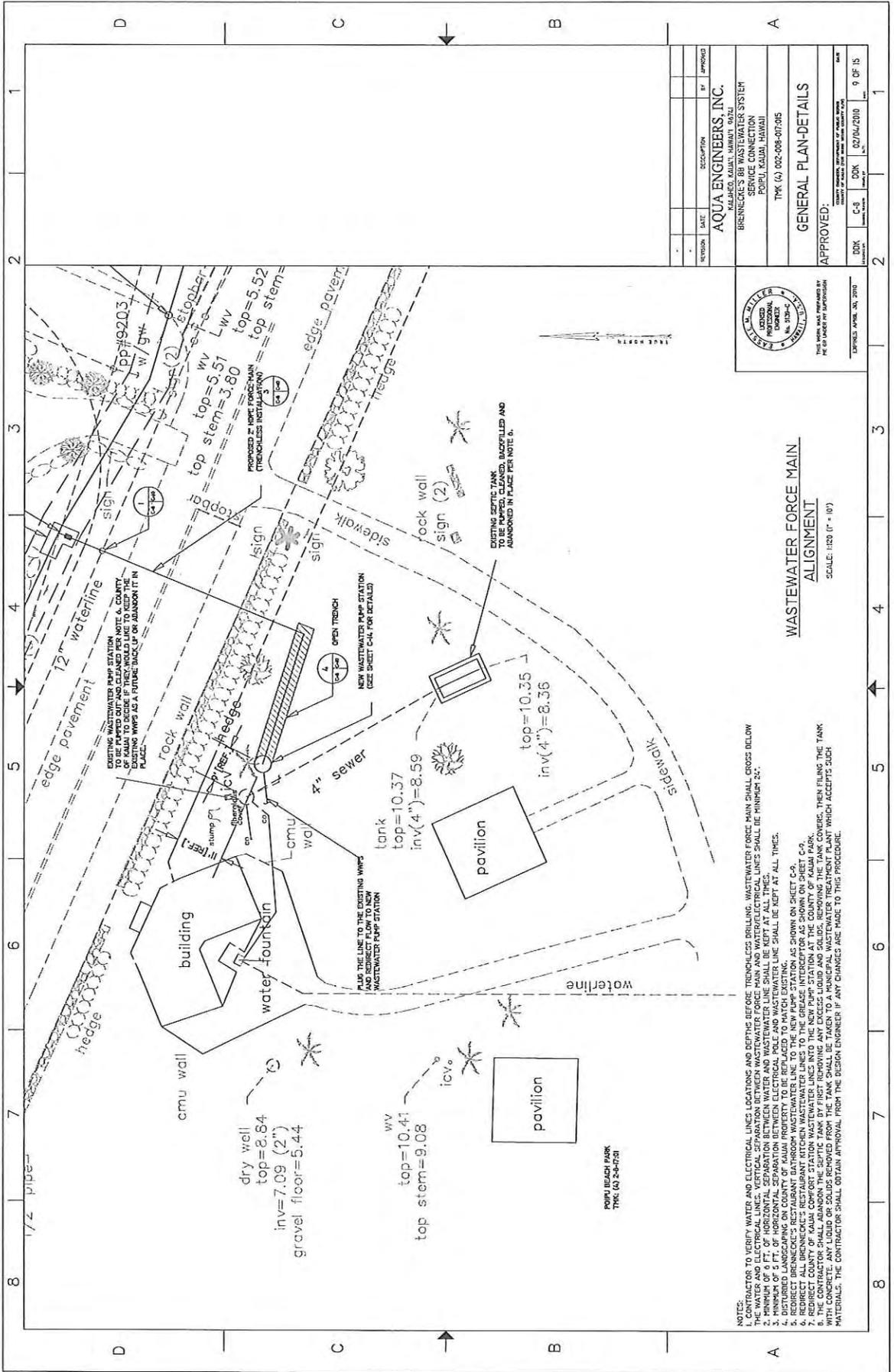
APPROVED:  
 DATE: 02/04/2010  
 DRAWN BY: C-7  
 CHECKED BY: DDK  
 SCALE: 1/8" = 1'-0"

**WASTEWATER FORCE MAIN ALIGNMENT**

SCALE: 1/8" = 1'-0"

DATE: APRIL 21, 2010

NOTES:  
 1. CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE TRENCHLESS DRILLING. WASTEWATER FORCE MAIN SHALL CROSS BELOW ALL EXISTING UTILITIES.  
 2. MINIMUM OF 3' FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINES SHALL BE MAINTAINED AT ALL TIMES.  
 3. MINIMUM OF 5' FT. OF HORIZONTAL SEPARATION BETWEEN ELECTRICAL POLE AND WASTEWATER LINE SHALL BE MAINTAINED AT ALL TIMES.  
 4. DISTURBED LANDSCAPING ON COUNTY OF KAUAI PROPERTY TO BE REPLACED TO MATCH EXISTING.  
 5. EXISTING UTILITIES SHALL BE IDENTIFIED AND MARKED AS SHOWN ON SHEET C-6.  
 6. REDIRECT ALL BRENNECAL'S RESTAURANT WASTEWATER LINES TO THE GREASE INTERCEPTOR AS SHOWN ON SHEET C-6.  
 7. REDIRECT COUNTY OF KAUAI CONFORT STATION WASTEWATER LINES INTO THE NEW PUMP STATION AT THE COUNTY OF KAUAI PARK.  
 8. THE CONTRACTOR SHALL ABANDON THE SEPTIC TANK BY FIRST REMOVING ANY EXCESS LIQUID AND SOLIDS, REMOVING THE TANK COVER, THEN FILLING THE TANK WITH GRAVEL AND COVERING THE TANK WITH A CONCRETE SLAB. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE DESIGN ENGINEER IF ANY CHANGES ARE MADE TO THIS PROCEDURE.



**NOTES:**

- CONTRACTOR TO VERIFY WATER AND ELECTRICAL LINES LOCATIONS AND DEPTHS BEFORE TRENCHLESS DRILLING. WASTEWATER FORCE MAIN SHALL CROSS BELOW THE WATER AND ELECTRICAL LINES. VERTICAL SEPARATION BETWEEN WASTEWATER FORCE MAIN AND WATER/ELECTRICAL LINES SHALL BE MINIMUM 2'-0".
- MINIMUM OF 9' FT. OF HORIZONTAL SEPARATION BETWEEN WATER AND WASTEWATER LINES SHALL BE MAINTAINED AT ALL TIMES.
- EXISTING 12" WATERLINE SHALL BE REPLACED WITH 12" WATERLINE. ALL EXISTING WATER LINES SHALL BE KEPT AT ALL TIMES.
- DISTURBED LANDSCAPING ON COUNTY OF KAUAI PROPERTY TO BE REPLACED TO MATCH EXISTING.
- REDIRECT BRENNER'S RESTAURANT BATHROOM WASTEWATER LINE TO THE NEW PUMP STATION AS SHOWN ON SHEET C-8.
- REDIRECT BRENNER'S RESTAURANT WASTEWATER LINE TO THE NEW PUMP STATION AS SHOWN ON SHEET C-8.
- REDIRECT COUNTY OF KAUAI COMPOSITE STATION WASTEWATER LINES INTO THE NEW PUMP STATION AT THE COUNTY OF KAUAI PARK.
- THE CONTRACTOR SHALL ABANDON THE SEPTIC TANK BY FIRST REMOVING ANY EXCESS LIQUID AND SOLIDS, REMOVING THE TANK COVER, THEN FILING THE TANK WITH CONCRETE. ANY LIQUID OR SOLIDS REMOVED FROM THE TANK SHALL BE TAKEN TO A MUNICIPAL WASTEWATER TREATMENT PLANT WHICH ACCEPTS SUCH MATERIALS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE DESIGN ENGINEER IF ANY CHANGES ARE MADE TO THIS PROCEDURE.

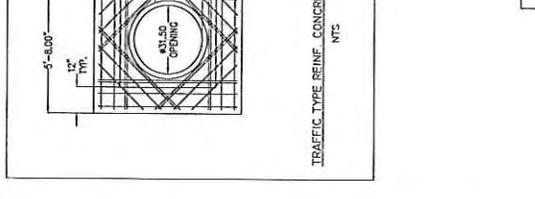
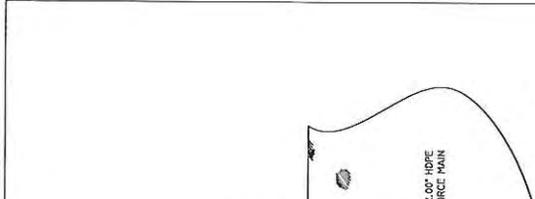
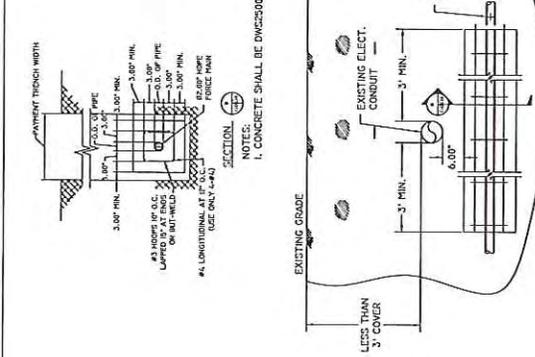
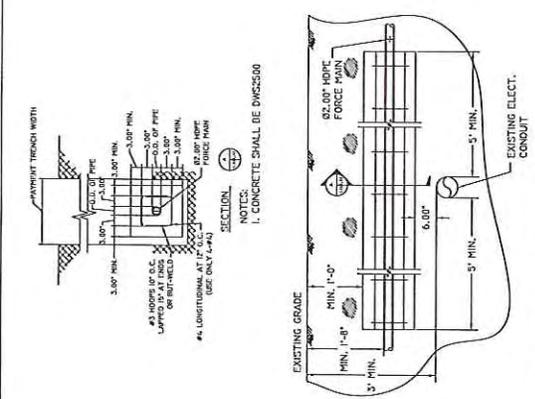
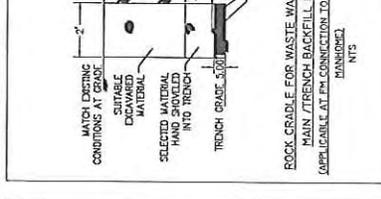
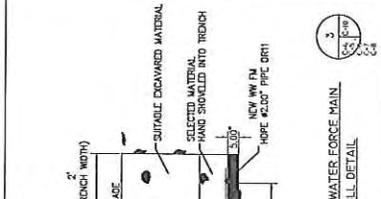
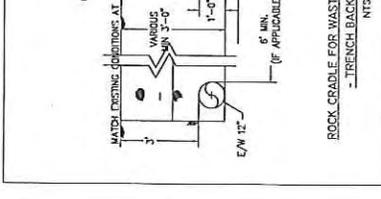
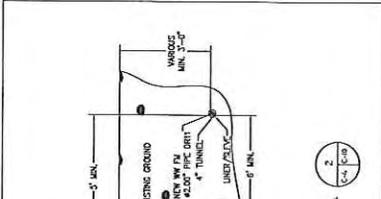
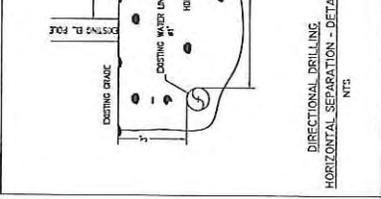
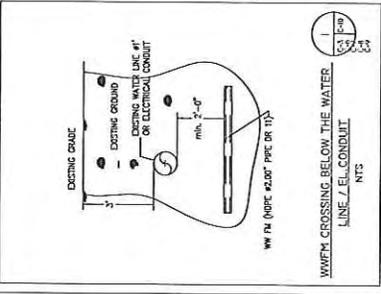
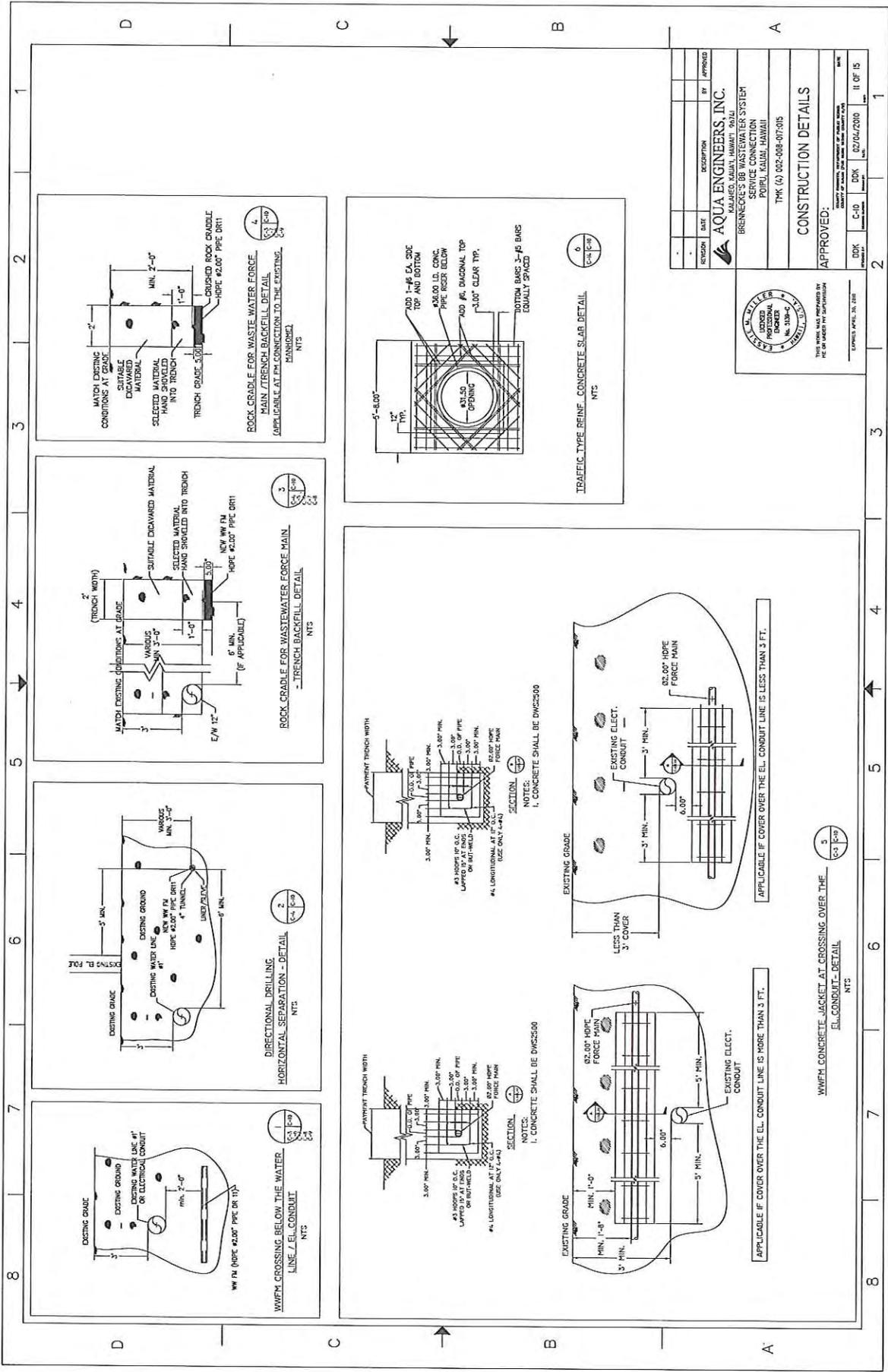
**WASTEWATER FORCE MAIN ALIGNMENT**

SCALE: 1/8" = 1' - 0"



NO.	DATE	OCCUPATION	BY	APPROVED
<b>AQUA ENGINEERS, INC.</b>				
BRENNER'S RESTAURANT WATER SYSTEM				
RESERVE CONSTRUCTION				
POPEI, KAUAI, HAWAII				
TKM (4) 002-008-07305				
<b>GENERAL PLAN-DETAILS</b>				
APPROVED:				
DDK	C-8	DDK	02/04/2010	9 OF 15
DATE				





REVISION	DATE	DESCRIPTION	BY	APPROVED

**AQUA ENGINEERS, INC.**  
 BRENNEKE'S BE WASTEWATER SYSTEM  
 SERVICE CONNECTION  
 POPULU, LAJOLU, HAWAII  
 TPK (A) 002-008-007-015

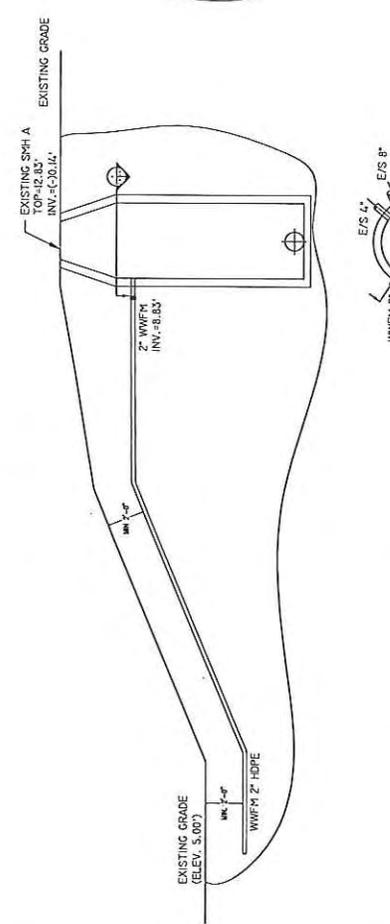
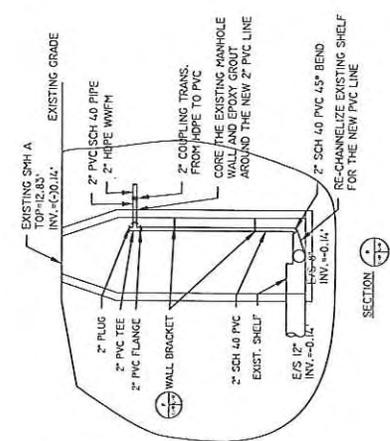
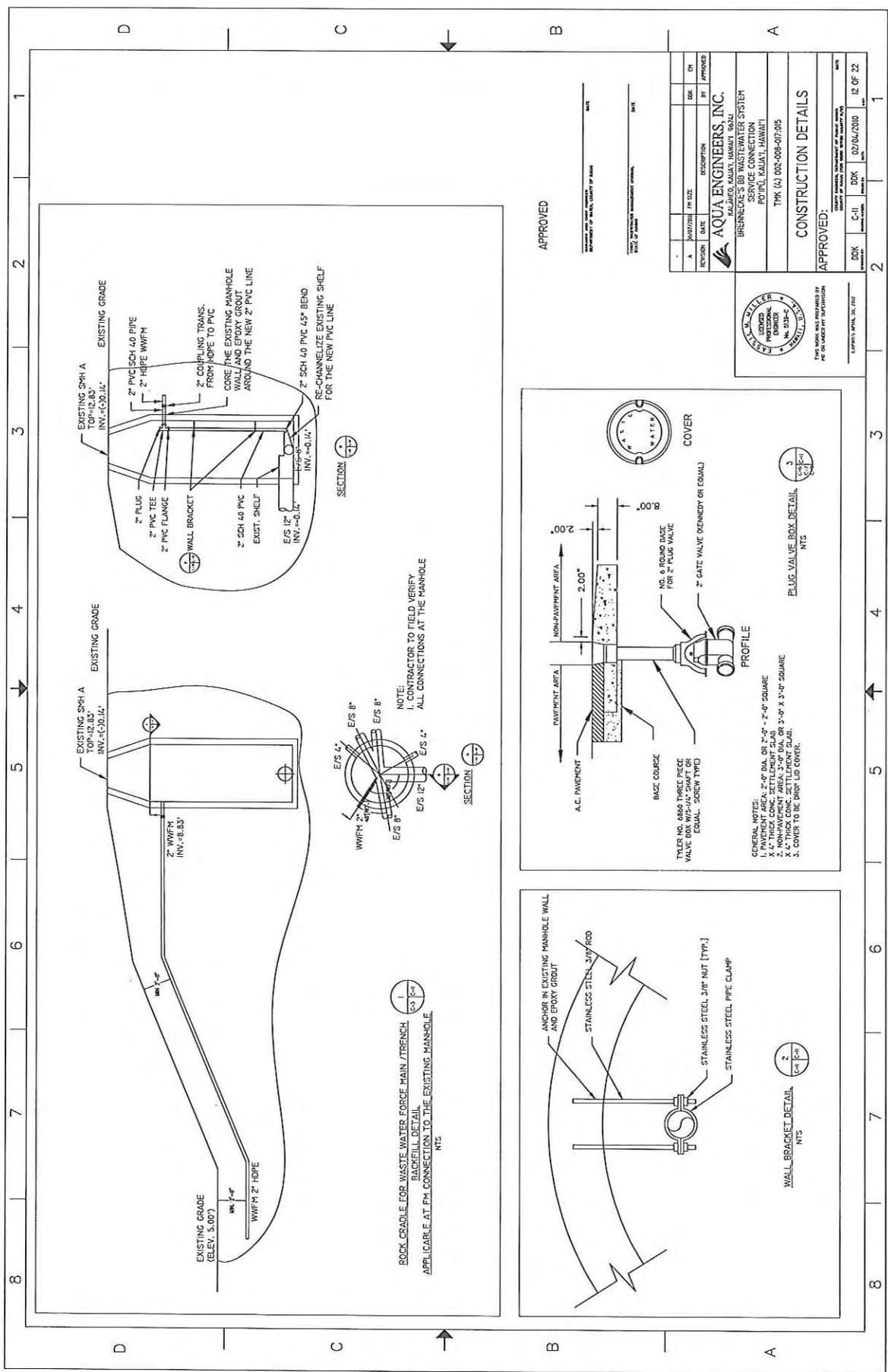
**CONSTRUCTION DETAILS**

APPROVED: \_\_\_\_\_

DATE: APRIL 30, 2010

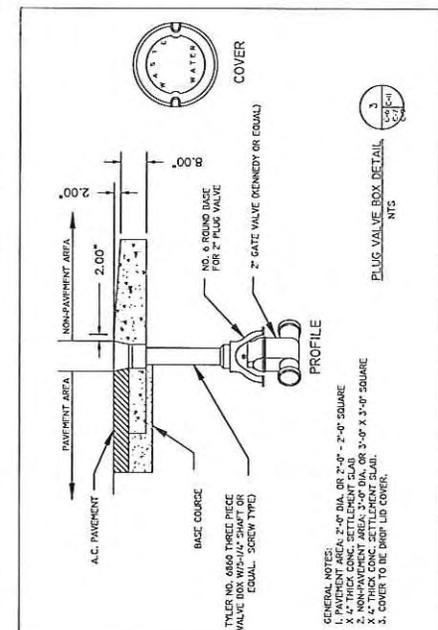
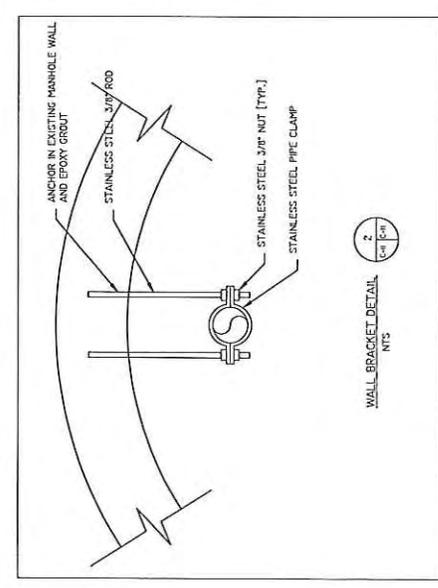
THIS WORK WAS PREPARED BY THE OFFICE OF THE ENGINEER

DDK C-10 02/04/2010 11 OF 15



**ROCK CRADLE FOR WASTE WATER FORCE MAIN / TRENCH BACKFILL DETAIL**  
 APPLICABLE AT FM CONNECTION TO THE EXISTING MANHOLE  
 NTS

**NOTE:**  
 1. CONTRACTOR TO FIELD VERIFY ALL CONNECTIONS AT THE MANHOLE  
 NTS



**GENERAL NOTES:**  
 1. PAVEMENT AREA: 2'-0\"/>

APPROVED

DESIGNED AND DRAWN BY: [Signature]  
 CHECKED BY: [Signature]  
 DATE: [Date]

REVISION	DATE	DESCRIPTION	BY	APPROVED
A	04/07/2010	PRELIMINARY	DKK	DKK

**AQUA ENGINEERS, INC.**  
 BRENNELCKE'S 883 WASTE WATER SYSTEM  
 SERVICE CONNECTION  
 POPOLE, KAUAI, HAWAII  
 THK (4) 002-008-007-015

**CONSTRUCTION DETAILS**

APPROVED: [Signature]

DATE: 02/04/2010

12 OF 22

### BRENNECKE'S BB RESTAURANT WASTEWATER FLOW

TOTALS  
 TOTAL 30 EMPLOYEES @ 20GPD PER EMPLOYEE=1600GPD  
 TOTAL 300 GUESTS @6GPD PER PERSON = 1800GPD  
 USING 2500 GPD FOR DESIGN PURPOSES

KITCHEN  
 MAXIMUM OF 500 MEALS PER DAY @ 3GPD PER MEAL=1500GPD  
 TOTAL FLOW=2500GPD+1500GPD=4000GPD

AVERAGE WATER USE PER WATER BILL <5000GPD.  
 5000GPD WILL BE USED FOR DESIGN.

NEW WASTEWATER PUMP STATION (WWPS) WILL BE DESIGN TO HANDLE UP TO 5000 GPD  
 POIUP BEACH PARK FACILITIES FLOWS

PREVIOUS DESIGN FOR THE AERobic INDIVIDUAL WASTEWATER SYSTEM (IWS) WAS BASED ON  
 MAXIMUM OF 3,500 GPD FLOW.  
 NEW WASTEWATER PUMP STATION (WWPS) WILL BE DESIGN TO HANDLE UP TO 5000 GPD.

AVERAGE NUMBER OF PEOPLE USING POIUP BEACH PARK IS LESS THAN 300 PER DAY.  
 (1600 USERS @ AVERAGE 3GPD PER USER PER DAY=4800GPD)

### WWPS STATIC HEAD

GRADE	WWPS BOTTOM	ELEV. @ 1 FT. CORR. STATIC HEAD
ELEV. [FT.]	ELEV. [FT.]	TO MANHOLE [FT.]
BRENNECKE'S	6.95	-0.45
POIUP UP	8.50	0.83
WEST WWPS	12.30	6.83
ELECT WWPS	4.90	6.83

### DYNAMIC HEAD

TOTAL FLOW OF 5,000 GPD WILL BE DISTRIBUTED OVER 12 HOURS WORK DAY AND  
 AVERAGE FLOW WOULD BE 76PM. PEAK FLOW WILL BE 15GPM.  
 MIN. PIPE DIAMETER SHALL BE FOUND BASED ON THE MINIMUM FLOW VELOCITY OF  
 3FPS AND TOTAL FLOW OF 15GPM (WHEN ONE PUMP IS OPERATING)  
 $D = (15 \text{ GPM})^{.5} / (1.48 \text{ SQ. IN.} / 20 \text{ FT.} / (3 \text{ FPS})^{.5}) = 1.4 \text{ IN.} \times 1.25 \text{ IN.} = 1.75 \text{ IN.}$

BRUNNENCKE'S	POIUP UP	WEST WWPS	ELECT WWPS
1250	2	10	7
1000	2	10	8.5
1500	2	10	8.05

### TDH [FT.]

ONLY ONE WWPS IN SERVICE [FT.]	ALL THREE WWPS IN SERVICE [FT.]
BRENNECKE'S 7.4+0.33+6.33	6.4+0.33+6.33
POIUP UP 5.2+7.53+10.33	4.2+7.53+10.33
WEST WWPS 8.05+4.03+12.10	6.1+4.03+12.05

### WASTEWATER PUMP STATION SELECTION

USE E-ONE DH152-93 WITH 150 GAL. HDPE WETWELL.  
 (ANY CHANGES MUST BE APPROVED BY THE DESIGN ENGINEER)

PUMPS WILL BE THREE @ 16GPM AT 16' OF HEAD AND 12GPM AT 65' OF HEAD  
 (IN CASE ALL THREE PUMP STATIONS - TWO FROM THE COUNTY PARKS AND ONE  
 FROM THE RESTAURANT) ARE OPERATING AT THE SAME TIME. THE FLOWS FROM  
 EACH WWPS WILL VARY BETWEEN 12 AND 14 GPM DEPENDING ON NUMBER OF PUMPS  
 RUNNING AND TDH.

### BRENNECKE'S BB RESTAURANT WASTEWATER FLOW

THE SIZE OF THE INTERCEPTOR SHALL BE DETERMINED BY THE FOLLOWING FORMULA (SEE  
 TABLE 1):

NUMBER OF MEALS PER PEAK HOUR X	WASTE FLOW RATE X 6	RETENTION TIME <sup>2</sup> X 2.5	STORAGE FACTOR <sup>4</sup> X 2	INTERCEPTOR SIZE (LIQUID CAPACITY) X 2
115	X 6	X 2.5	X 2	=3,450 GALLONS

### GREASE INTERCEPTOR CAPACITY

USE 4,000 GALLON XERXES GREASE INTERCEPTOR (RATED FOR 3540 GALLONS).  
 (ANY CHANGES MUST BE APPROVED BY THE DESIGN ENGINEER)

TABLE 1.

GREASE INTERCEPTOR SIZING CALCULATION (UNIFORM PLUMBING CODE, APPENDIX H)	
1. NUMBER OF MEALS SERVED PER PEAK HOUR	115
2. WASTE FLOW RATE A) WITH DISHWASHING MACHINE CONNECTED TO INTERCEPTOR B) WITHOUT DISHWASHING MACHINE CONNECTED TO INTERCEPTOR C) SINGLE SERVICE KITCHEN D) FOOD WASTE DISPOSER	6 GALLON FLOW 5 GALLON FLOW 2 GALLON FLOW 1 GALLON FLOW
3. RETENTION TIME A) COMMERCIAL KITCHEN B) SINGLE SERVICE KITCHEN	2.5 HOURS 1.5 HOURS
4. STORAGE FACTORS FULLY EQUIPPED COMMERCIAL KITCHEN A) 8 HOUR OPERATION B) 2 HOUR OPERATION C) 1 HOUR OPERATION D) SINGLE SERVICE KITCHEN (NORMAL HOURS)	1 2 3 1.5

\* = CRITERIA, THIS PROJECT



THIS WORK WAS PREPARED BY  
 THE ENGINEER AT THE BOTTOM  
 OF THIS PAGE  
 EXPIRES APRIL 30, 2010

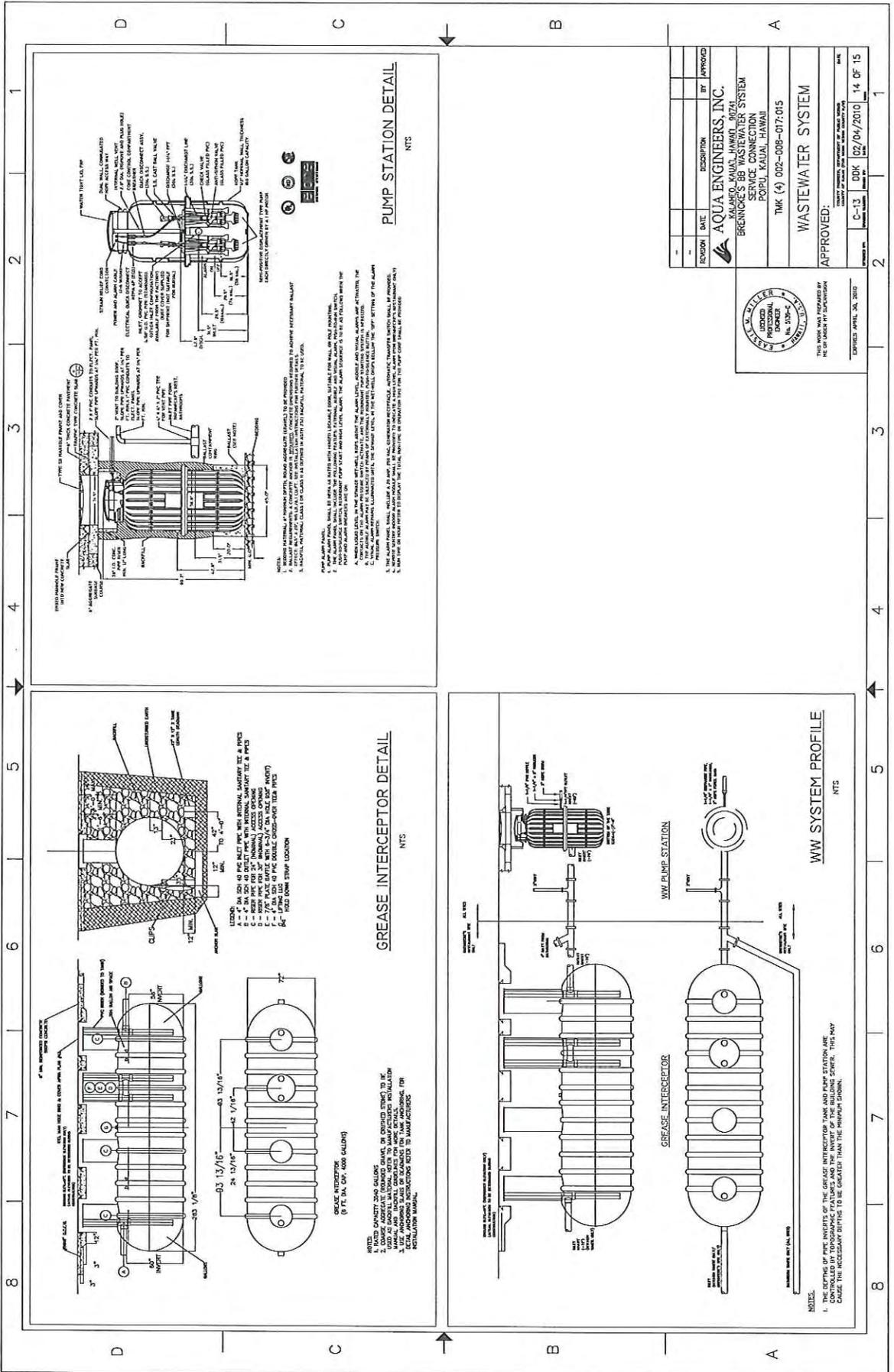
REVISION	DATE	DESCRIPTION	BY	APPROVED

**AQUA ENGINEERS, INC.**  
 1600 KALANANI'UHALI, SUITE 1602  
 HONOLULU, HAWAII 96813  
 BRENNENCKE'S BB RESTAURANT WASTEWATER SYSTEM  
 SERVICE CONNECTION  
 POIUP BEACH PARK  
 POIUP BEACH PARK, HAWAII  
 TMM (4) 002-065-07305

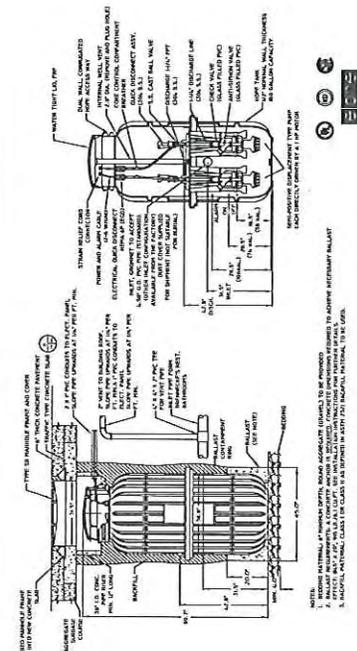
**SIZING CALCULATIONS**

APPROVED:

DATE	BY
02/04/2010	DKK
13 OF 15	

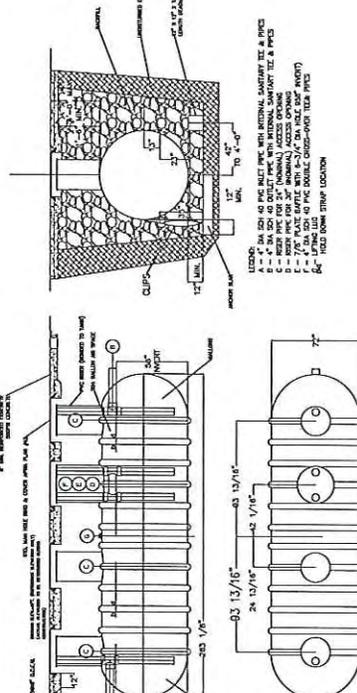


**PUMP STATION DETAIL**  
NTS



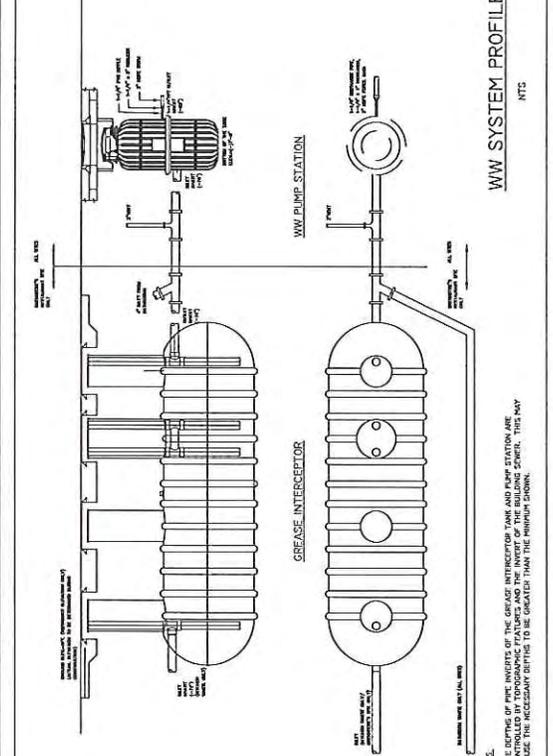
- NOTES:**
1. PROVIDE INTERNAL 4" MINIMUM SPACING (MINIMUM) TO BE PROVIDED TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  2. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  3. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  4. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  5. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  6. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  7. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  8. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  9. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.
  10. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE PUMP ROOM.

**GREASE INTERCEPTOR DETAIL**  
NTS



- NOTES:**
1. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.
  2. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.
  3. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.
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  8. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.
  9. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.
  10. PROVIDE 4" MINIMUM CLEARANCE TO ALL PIPES AND ELECTRICAL CONDUITS TO BE INSTALLED IN THE GREASE INTERCEPTOR ROOM.

**WW SYSTEM PROFILE**  
NTS



- NOTES:**
1. THE SETTING OF THE INVERTS OF THE GREASE INTERCEPTOR, PUMP AND WW STATION ARE CONTROLLED BY TOPOGRAPHIC FEATURES AND THE INVERT OF THE BUILDING FINISH. THIS MAY CAUSE THE NECESSARY DEPTHS TO BE GREATER THAN THE MINIMUM SHOWN.

REVISION	DATE	DESCRIPTION	BY	APPROVED

**AQUA ENGINEERS, INC.**  
KUALA KUALA, HAWAII, 96741  
BRENNIGES BLDG. WASTEWATER SYSTEM  
1515 KONGI DRIVE  
POPOI, KAUAI, HAWAII  
TKM (4) 002-008-017-015

**WASTEWATER SYSTEM**

APPROVED:

THIS WORK WAS PREPARED BY THE OFFICE OF AQUA ENGINEERS, INC. PROFESSIONAL ENGINEER LICENSE NO. 1515-K

EXPIRES: APRIL 30, 2010

DATE: 02/04/2010 14 OF 15

















**EXHIBIT "F"**

---

**DRAFT**

**Archaeological Inventory Survey for Brenneke's Beach  
Broiler Waste Water System Service Connection Project,  
Kōloa Ahupua'a, Kona District, Kaua'i Island**

**TMK: [4] 2-8-017:001, 007, 011, 015, 023**

**Prepared for  
Brenneke's Beach Broiler**

**Prepared by  
Kendy Altizer, B.A.  
and  
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai'i, Inc.  
Kailua, Hawai'i  
(Job Code: KOLOA 42)**

**November 2010**

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## Management Summary

<b>Reference</b>	Draft Archaeological Inventory Survey for Brenneke's Beach Broiler Waste Water System Service Connection Project, Kōloa Ahupua'a, Kona District, Kaua'i Island TMK: [4] 2-8-017:001, 007, 011, 015, 023 (Altizer and Hammatt 2010).
<b>Date</b>	November 2010
<b>Project Number (s)</b>	Cultural Surveys Hawai'i Inc. (CSH) Job Code: KOLOA 42
<b>Investigation Permit Number</b>	Fieldwork associated with archaeological inventory survey was conducted under the Cultural Surveys Hawai'i, Inc. annual permit # 10-10 issued by the State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR).
<b>Project Location</b>	The project area is predominantly on lands belonging to the County of Kaua'i with smaller portions of parcels privately held by Poipu Inn, Inc. (leased to Lealani Corp dba Brennecke's Restaurant) and the Marriott Waiohai Beach Resort. The project area is present on the 1996 Kōloa U.S. Geological Survey 7.5-minute topographic quadrangle.
<b>Land Jurisdiction</b>	State of Kaua'i, Brennecke's Beach Broiler, Marriott Hotels and Resorts
<b>Agencies</b>	SHPD/DLNR
<b>Project Description</b>	This is a private project by Lealani Corp dba Brennecke's Restaurant. The project entails the installation of three new pump stations and a new small force-main on County property for the purpose of pumping wastewater from the two sets of restroom facilities at The County of Kaua'i's Po'ipū Beach Park, as well as Brennecke's Beach Broiler, to a tie-in point/manhole on Marriott's Waiohai Beach Resort property. The wastewater would be directed from the manhole to HOH Utilities' Po'ipū Water Reclamation Facility for treatment and disposal.
<b>Project Acreage</b>	26.47 Acres
<b>Area of Potential Effect (APE) and Survey Acreage</b>	For purposes of this document the survey acreage is the same as the APE.
<b>Historic Preservation Regulatory Context</b>	As a privately funded venture utilizing public lands, the proposed Brennecke's Waste Water Connection Project is subject to state of Hawai'i historic preservation review legislation (Hawaii Revised Statutes [HRS] Chapter 6E-42 and Hawai'i Administrative Rules [HAR] Chapter 13-284). This archaeological inventory survey was completed as part of, and in compliance with, the proposed project's historic preservation review.

<b>Fieldwork Effort</b>	Fieldwork was conducted between November 11 and November 13, 2010 by Gerald Ida, B.A., Michelle Pammer, B.A., and Kendy Altizer, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). Fieldwork required approximately 7 person days to complete.
<b>Number of Historic Properties Identified</b>	One historic property, SIHP # 50-30-10-745, an intact subsurface cultural layer previously documented by Hammatt et al. (1994), was further documented as a result of the inventory survey.
<b>Historic Properties Recommended Eligible to the Hawai'i Register of Historic Places (Hawai'i Register)</b>	SIHP # 50-30-10-745, an intact subsurface cultural layer, is interpreted as associated with pre-Contact Native Hawaiian occupation. SIHP # 50-30-10-745 has been previously assessed as significant under Criteria C (Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value), D (have yielded, or may be likely to yield information important in prehistory or history), and E (Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history and cultural identity) of the Hawai'i Register of Historic Places evaluation criteria.
<b>Effect Recommendation</b>	<p>The archaeological inventory survey investigation identified one historic property within the project area, which is recommended eligible for the Hawai'i State Register, and will be affected by the proposed project.</p> <p>CSH's project specific effect recommendation is "effect, with agreed upon mitigation measures." The recommended mitigation measures will reduce the project's potentially adverse effect on this significant historic property.</p>
<b>Mitigation Recommendation</b>	<p>The recommended mitigation measures listed below are intended to alleviate any adverse effect on the historic property. The scope and methods for these mitigation measures should be developed in consultation with the SHPD/DLNR.</p> <p>SIHP # 50-30-10-745 was further documented with a detailed written description, photographed in profile, analyzed, and radiocarbon dated. Because additional information can still be gained from this site, including but not limited to, additional soil profiles, and additional radio carbon dates, an archaeological monitoring program is recommended for this site. This monitoring program will facilitate the identification of any additional historic properties that might be discovered during project construction, and will gather additional information regarding SIHP # 50-30-10-745 within the project area.</p>

## Table of Contents

<b>Management Summary .....</b>	<b>i</b>
<b>Section 1 Introduction .....</b>	<b>1</b>
1.1 Project Background .....	1
1.2 Scope of Work .....	1
1.3 Environmental Setting .....	6
1.3.1 Natural Environment.....	6
1.3.2 Built Environment .....	6
<b>Section 2 Methods .....</b>	<b>8</b>
2.1 Field Methods .....	8
2.2 Laboratory Methods.....	8
2.3 Document Review .....	8
2.4 Consultation .....	8
<b>Section 3 Background Research .....</b>	<b>10</b>
3.1 Traditional and Historical Background.....	10
3.1.1 Mythological and Traditional Accounts .....	10
3.1.2 Early Historic Period .....	12
3.1.3 Mid-1800s (Land Commission Awards) .....	13
3.1.4 1900s.....	20
3.1.5 Modern Land Use .....	20
3.2 Previous Archaeological Research .....	22
3.2.1 Initial Archaeological Studies at Kōloa .....	22
3.2.2 Archaeological Investigations in the Vicinity of the Project Area .....	22
3.3 Background Summary and Predictive Model .....	32
<b>Section 4 Results of Fieldwork.....</b>	<b>34</b>
4.1 Survey Findings .....	34
4.2 Stratigraphic Summary .....	34
4.2.1 Excavation A .....	36
4.2.2 Excavation B.....	38
4.2.3 Excavation C.....	40
4.2.4 Excavation D .....	42
4.2.5 Excavation E.....	43
4.2.6 Excavation F .....	45
4.2.7 Excavation G .....	47
4.2.8 Excavation H .....	49
4.2.9 Excavation I .....	50
4.3 Site Descriptions .....	52
4.3.1 SIHP # 50-30-10-745.....	52
<b>Section 5 Results of Laboratory Analysis .....</b>	<b>55</b>
5.1 Radiocarbon Analysis.....	55
<b>Section 6 Summary and Interpretation.....</b>	<b>56</b>
<b>Section 7 Significance Assessments .....</b>	<b>57</b>

## List of Figures

Figure 1. 1996 U.S. Geological Survey Topographic Map, Kōloa Quadrangle showing the project area.....	2
Figure 2. Aerial photo of the project area (U.S. Geological Survey Orthoimagery 2005).....	3
Figure 3 TMK 2-8-17 showing project area .....	4
Figure 4. 1996 U.S. Geological Survey Topographic Map with soil overlay showing soils present in the project area (Foote et al. 1972; U.S. Department of Agriculture 2001) .....	7
Figure 5. Portion of 1891 Map of Kōloa by M.D. Monsarrat (R.M.1694), showing the location of the project area (indicated in red) and Land Commission Awards (LCAs) in the vicinity.....	18
Figure 6. Portion of 1935 Koloa Sugar Company map showing the extent of cane lands within Kōloa. Cane cultivation is represented by green shading (Alexander 1937).....	19
Figure 7. 1910 U.S. Geological Survey topographic map, Lihue Quadrangle, showing the network of railroad tracks within the Kōloa District. Note that a majority of the project area (indicated in red) is situated within cane haul roads .....	21
Figure 8. Previous archaeological investigations in the vicinity of the project area .....	23
Figure 9. A portion of Bennett's island wide map of sites (1931). Sites 77-81 are in close proximity to the current project area.....	27
Figure 10. Aerial photo showing the location of Excavations A-I in the project area. ....	35
Figure 11. Excavation A west wall profile. ....	37
Figure 12. Excavation A, west wall profile; view west .....	37
Figure 13. Excavation B west wall profile.....	39
Figure 14. Excavation B, west wall profile; view northwest.....	39
Figure 15. Excavation C south wall profile. ....	41
Figure 16. Excavation C south wall profile; view south.....	41
Figure 17. Excavation D north wall profile. ....	42
Figure 18. Excavation D, north wall profile; view northwest.....	43
Figure 19. Excavation E north wall profile.....	44
Figure 20. Excavation E, north wall profile; view north. ....	45
Figure 21. Excavation F east wall profile. ....	46
Figure 22. Excavation F, east wall profile; view northeast.....	46
Figure 23. Excavation G east wall profile. ....	48
Figure 24. Excavation G east wall profile; view east. ....	48
Figure 25. Excavation H north wall profile. ....	49
Figure 26. Excavation H north wall profile; view north.....	50
Figure 27. Excavation I west wall profile.....	51
Figure 28. Excavation I, west wall profile; view northwest. ....	51
Figure 29. Map of Poi'pū Beach Park showing the extent of SIHP # 50-30-10-745, with the current project area in red. Note Auger Test +4 within excavation G. (Hammatt et al. 1994: 4).....	53

## List of Tables

Table 1. Land Commission Awards in the Vicinity of the Project Area .....	16
Table 2. Previous Archaeological Investigations in the Vicinity of the Project Area .....	24
Table 3. Stratigraphy of Excavation A .....	36
Table 4. Stratigraphy of Excavation B.....	38
Table 5. Stratigraphy of Excavation C.....	40
Table 6. Stratigraphy of Excavation D .....	42
Table 7. Stratigraphy of Excavation E.....	43
Table 8. Stratigraphy of Excavation F .....	45
Table 9. Stratigraphy of Excavation G .....	47
Table 10. Stratigraphy of Excavation H .....	49
Table 11. Stratigraphy of Excavation I.....	50
Table 12. Results of radiocarbon analysis of organic material collected from Stratum II of Excavation G.....	55

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## Section 1 Introduction

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### 1.1 Project Background

At the request of Lealani Corp dba Brennecke's Beach Broiler (BBB), Cultural Surveys Hawai'i (CSH) has completed this archaeological inventory survey for Brennecke's Waste Water System Service Connection Project, Kōloa Ahupua'a, Kona District, Kaua'i Island TMK: [4] 2-8-017:001, 007, 011, 015, 023. The project area is located in Kōloa Ahupua'a, Kona District. The project area lies in multiple parcels ([4] 2-8-017:001, 007, 011, 015, 023) and is primarily located on County of Kaua'i (The County) land alongside existing utility corridors. The project area is depicted on the 1996 Kōloa U.S. Geological Survey 7.5-minute topographic quadrangle (Figure 1), an aerial photo (Figure 2), and Tax Map Key [4] 2-8-017 (Figure 3).

This is a private project for Lealani Corp dba Brennecke's Beach Broiler. The project entails the installation of three new pump stations and a new small force-main on County property for the purpose of pumping wastewater from the two sets of restroom facilities at The County of Kaua'i's Po'ipū Beach Park, as well as BBB, to a tie-in point/manhole on Marriott's Waiohai Resort property. The wastewater would be directed from the manhole to HOH Utilities' Po'ipū Water Reclamation Facility for treatment and disposal.

The Department of Parks and Recreation currently has two sets of restroom facilities at Po'ipū Beach Park; both of which are serviced by septic tanks and leach fields. These facilities require routine maintenance as the heavy load on the septic tanks continues to require excessive sludge pumping. BBB is required by the Environmental Protection Agency to close its two existing large capacity cesspools by the end of 2010. Both of the cesspools are located on County land and there is an existing easement from the County for these cesspools.

BBB would like to assist the County in being environmentally responsible and has offered to pay for the capital improvements. The County will assist by granting necessary easements to Brennecke's and HOH Utilities for this project. BBB will pay for its own on-going operation and maintenance of its pump station and grease interceptor, while the County will be responsible for paying for the operation and maintenance of its two pump stations.

As a privately funded venture utilizing public lands, the proposed Brennecke's Waste Water System Service Connection Project is subject to state of Hawai'i historic preservation review legislation (Hawaii Revised Statutes [HRS] Chapter 6E-42 and Hawai'i Administrative Rules [HAR] Chapter 13-284). This archaeological inventory survey was completed as part of, and in compliance with, the proposed project's historic preservation review.

### 1.2 Scope of Work

The following archaeological inventory survey scope of work is designed to satisfy the Hawai'i state requirements for archaeological inventory surveys (Hawai'i Administrative Rules [HAR] Chapter 13-276 and Chapter 13-275/284):

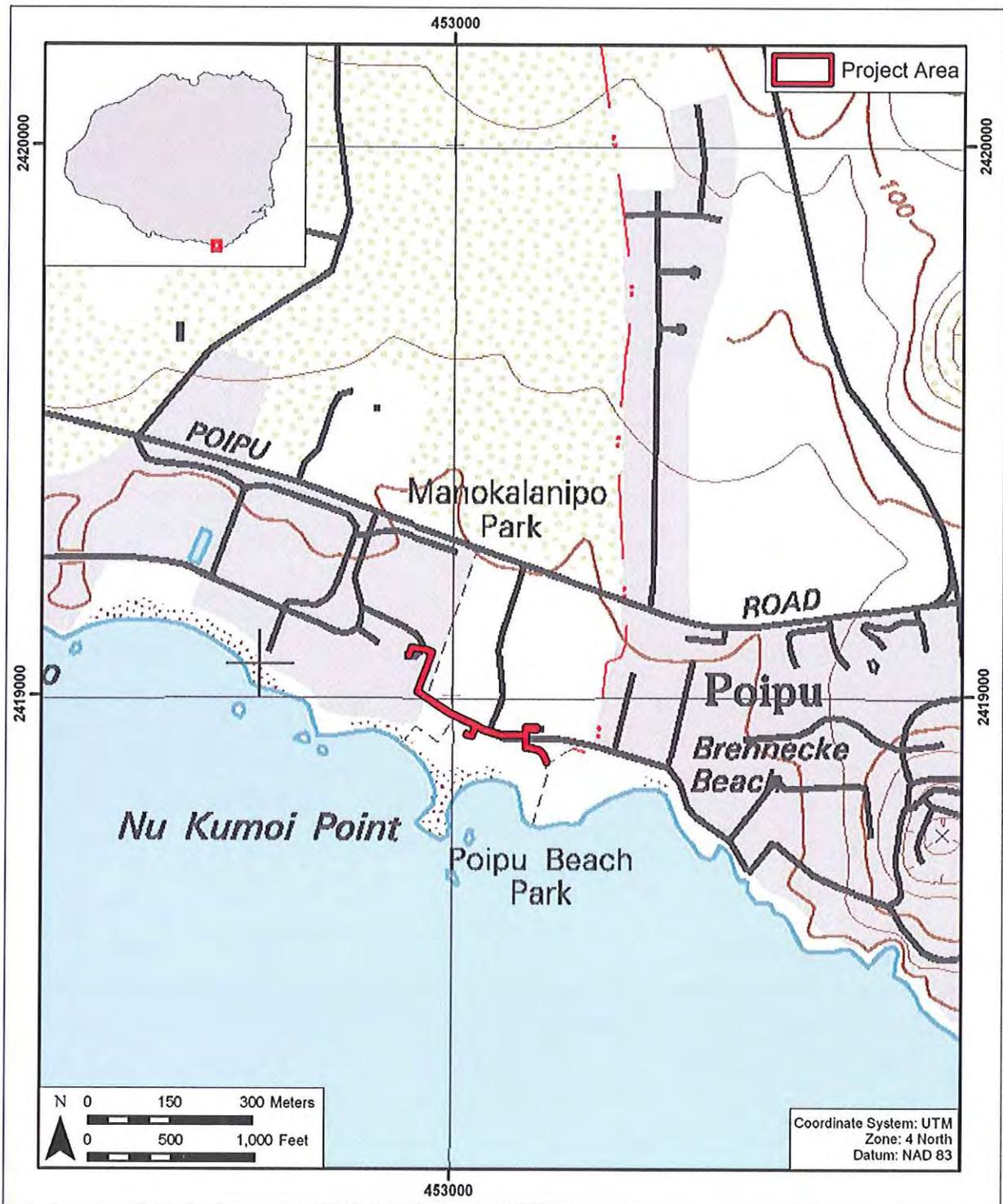


Figure 1. 1996 U.S. Geological Survey Topographic Map, Kōloa Quadrangle showing the project area



Figure 2. Aerial photo of the project area (U.S. Geological Survey Orthoimagery 2005)

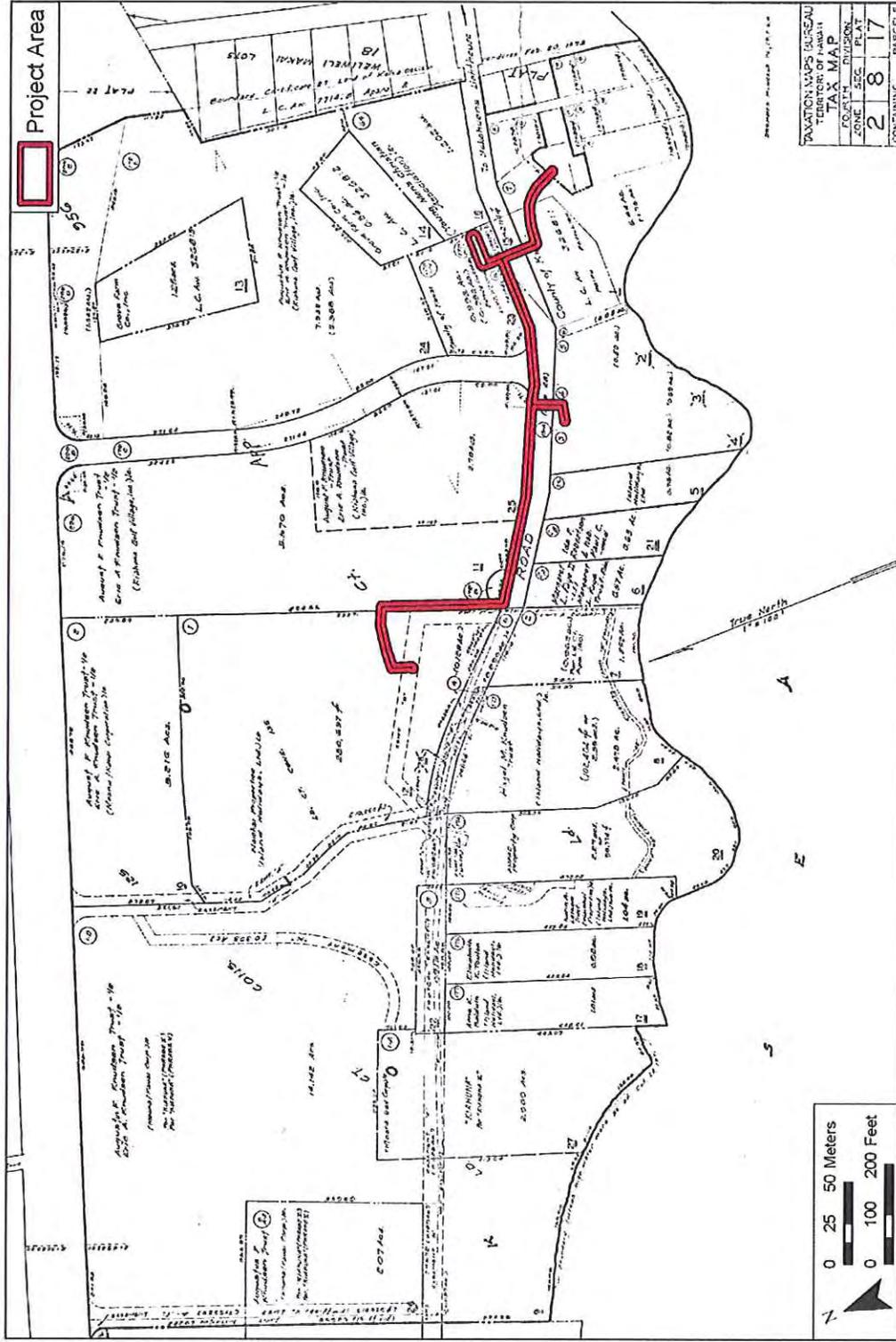


Figure 3 TMK 2-8-17 showing project area

1) Historic and archaeological background research, including a search of historic maps, written records, Land Commission Award documents, and the reports from prior archaeological investigations. This research will focus on the specific project area's past land use, with general background on the pre-Contact and historic settlement patterns of the *ahupua'a* and district. This background information will be used to compile a predictive model for the types and locations of historic properties that could be expected within the project area.

2) A complete (100%) systematic pedestrian inspection of the project area to identify any potential surface historic properties. Surface historic properties will be recorded with an evaluation of age, function, interrelationships, and significance. Documentation will include photographs, scale drawings, and, if warranted, limited controlled excavation of select sites and/or features.

3) Based on the project area's environment and the results of the background research, subsurface testing with a combination of hand and backhoe excavation to identify and document subsurface historic properties that would not be located by surface pedestrian inspection may be appropriate. Appropriate samples from these excavations will be analyzed for cultural and chronological information. All subsurface historic properties identified will be documented to the extent possible, including geographic extent, content, function/derivation, age, interrelationships, and significance.

4) As appropriate, consultation with knowledgeable individuals regarding the project area's history, past land use, and the function and age of the historic properties documented within the project area.

5) As appropriate, laboratory work to process and gather relevant environmental and/or archaeological information from collected samples.

6) Preparation of an inventory survey report, which will include the following:

a) A project description;

b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties;

c) Historical and archaeological background sections summarizing pre-Contact and post-Contact land use of the project area and its vicinity;

d) Descriptions of all historic properties, including selected photographs, scale drawings, and discussions of age, function, laboratory results, and significance, per the requirements of HAR 13-276. Each historic property will be assigned a Hawai'i State Inventory of Historic Properties number;

e) If appropriate, a section concerning cultural consultations [per the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2)].

f) A summary of historic property categories, integrity, and significance based upon the Hawai'i Register of Historic Places criteria;

g) A project effect recommendation;

h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible to the Hawai'i Register of Historic Places.

## 1.3 Environmental Setting

### 1.3.1 Natural Environment

The *ahupua'a* consists of the lavas of the Kōloa Volcanic Series that are post-erosional lavas less than 1.5 million years old (Macdonald 1974). These Kōloa Series flows form a broad apron of predominantly pāhoehoe lava beneath the project area.

The soil mantle in the eastern portion of the project area is identified as stony, very rocky or extremely rocky Waikomo silty clay (Figure 4). It is described as present on slopes ranging from 2 to 6 percent and having a representative profile comprised of a 14-inch thick surface layer of dark grayish-brown stony silty clay, a 6-inch thick subsoil layer of reddish stony silty clay, and a substratum of hard rock (Foote et al. 1972). Jaucas sands are also present in the western portion of the project area. The Jaucas series consists of excessively drained, calcareous soils on narrow strips of the coastal plains, adjacent to the ocean, which developed in wind and water deposited sand from coral and seashells. Jaucas Sand, 0 to 15% slope (JaC) is used for pasture, sugarcane cultivation, truck crops, and urban development (Foote et al. 1972).

Rainfall averages between 30 and 40 inches a year (Armstrong 1973); prevailing winds are from the northeast, and temperatures range from approximately 60 to 90° F throughout the year. Today this dry environment with shallow soil mainly supports *koa haole* (*Leucaena glauca*), exotic grasses, noxious weeds, and cactus.

### 1.3.2 Built Environment

The project area is in the *makai* section of the *ahupua'a* of Kōloa in the district of Kona. This *ahupua'a* extends as a fairly large land segment from Mt. Kāhili to the sea. Lāwa'i Ahupua'a is present to the west and Weliweli Ahupua'a is adjacent to the east. The current project area is present within 400 ft of the shoreline at an elevation of less than 20 ft above mean sea level (amsl) (Juvik and Juvik 1998). The project area is located within built easements along Ho'owili and Ho'one Streets, the Po'ipū Beach parking lot, Po'ipū Beach Park, landscaped areas within the eastern boundary of the Marriott Waiohai, and the service entrance parking lot of Brennecke's Beach Broiler Restaurant.

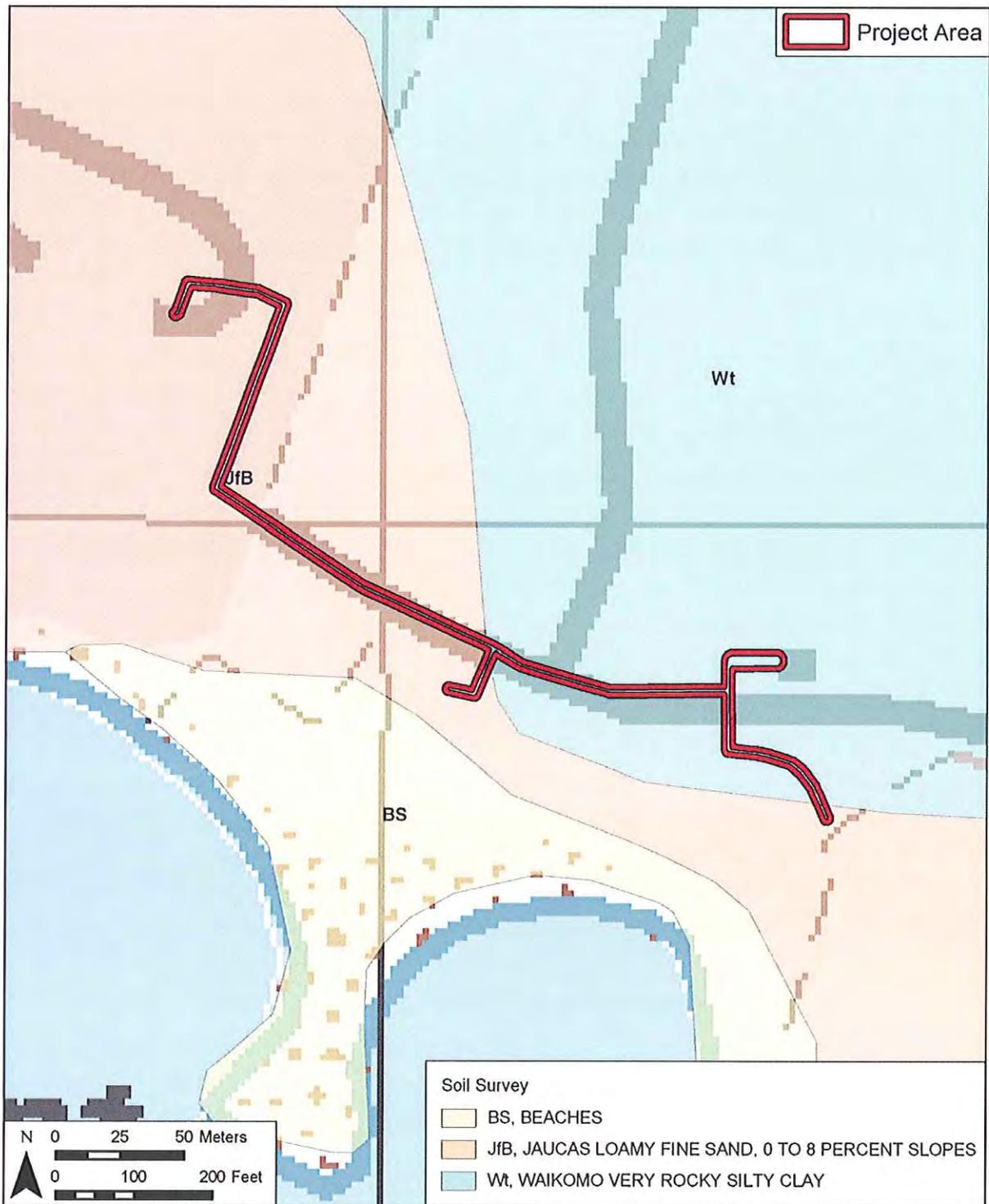


Figure 4. 1996 U.S. Geological Survey Topographic Map with soil overlay showing soils present in the project area (Foote et al. 1972; U.S. Department of Agriculture 2001)

## Section 2 Methods

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### 2.1 Field Methods

Fieldwork was conducted between October 11 and October 13, 2010 by Gerald Ida, B.A., Michelle Pammer, B.A., and Kendy Altizer, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). Fieldwork required approximately 7 person days to complete.

The fieldwork component of the archaeological inventory survey was carried out under archaeological permit number 10-10 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.

Fieldwork consisted of a 100% coverage pedestrian inspection of the project area. Because the project area is in a predominantly urban environment, the inventory survey focused on subsurface probing to document soils and determine the presence of intact subsurface historic properties and/or cultural material. All historic properties and cultural material encountered were recorded and documented with a written field description, scale drawings, photographs, and located using Trimble Pro XH GPS survey technology (accuracy +/- 1 m).

### 2.2 Laboratory Methods

Following the completion of fieldwork, all collected materials were analyzed using current standard archaeological laboratory techniques. A possible hammerstone fragment was collected from Excavation E. Charcoal was collected from SIHP # 50-30-10-745 and sent to Beta Analytic, Inc. for radio carbon analysis. The results of this analysis are discussed in Section 5.1.

### 2.3 Document Review

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources (DLNR); a review of geology and cultural history documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and a study of historic maps at the Survey Office of the DLNR. Information on LCAs was accessed through Waihona 'Āina Corporation's Māhele Data Base ([www.waihona.com](http://www.waihona.com)).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected type and location of sub-surface pre and post-Contact historic properties in the project area.

### 2.4 Consultation

On June 22, 2010 CSH Principal Investigator Hallett H. Hammatt, PhD., along with archaeologist Gerald Ida, B.A., accompanied Mr. Rupert Rowe Sr., president of *Hui Malama O Kaneioulouma*, and on a field trip to view the current project area.

Mr. Rowe shared his knowledge of the area and of past events which modified the cultural make-up of the area. Specifically, many Hawaiian remains were pushed *mauka* from the current County Park as a result of flooding from past hurricanes. The remains that were disturbed and discovered after the last hurricane were re-buried at the cemetery which is located in the County Park. Rupert stated that there was also an original, Hawaiian-constructed retaining wall on the beach that was destroyed during past hurricanes.

With regards to the location of the proposed new pump stations and sewer laterals in the County's Park, Rupert did not have significant concerns, but does expect Cultural Surveys Hawai'i to do its job by vetting the areas prior to construction and by monitoring the work during construction.

## Section 3 Background Research

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### 3.1 Traditional and Historical Background

#### 3.1.1 Mythological and Traditional Accounts

The project area is present in the Kona District on the island of Kaua'i. Few records exist that document traditional Hawaiian life in the *ahupua'a* of Kōloa. While settlement by westerners with religious and commercial interests made the area a focus of documentation after the first quarter of the 19<sup>th</sup> century, the accounts generally emphasized the lives and concerns of the westerners themselves, with only anecdotal references to the Hawaiian population. Two 19<sup>th</sup> century documents, the Boundary Commission Testimony of 1874 and a Lahainaluna manuscript of 1885, however, provide some insight into the history of Kōloa before the arrival of westerners.

A dispute over the northern boundary of Kōloa Ahupua'a in 1874 led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua'i. One native witness, Nao (who described himself as born in Kōloa but presently living in Ha'ikā), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testified: "At Hoaea, tea [*sic*] leaves were hung up to show that there were battles going on" (Boundary Commission, Kaua'i, vol. 1, 1874:124). That there were traditional "warning systems"; well-known to all natives: indicates that Kōloa may well have been the scene of some serious conflicts. Throughout the early settlement history of Kōloa, conflicts must have occurred at intervals serious enough and often enough to warrant having to devise such a system.

Additional evidence of a rich history within Kōloa was offered in a Lahainaluna document produced eleven years later. This document appeared to have been based on an oral history project. On September 7, 1885 a student from Lahainaluna Schools (HMS 43 #17) interviewed Makea – "a native who is well acquainted with Kōloa" -- and recorded "what she said about the well-known places in the olden times." More than sixty-four years after the abolition of the *kapu* (taboo) system and almost as many years after contact with westerners, Makea was able to describe fourteen *heiau* (religious structures) within the Kōloa area.

There were several place names within Kōloa that have legendary associations. The name Kōloa itself has several derivations. Kōloa is the name for the large, soft Hawaiian sugar cane (*Saccharum officinarum*) once grown by the Hawaiians; Kōloa is also the name of a steep rock on the banks of Waikomo Stream, from whence the *ahupua'a* got its name. This bank of the river was called Kōloa, after the native Hawaiian duck (*Anas wyvilliana*) (Kikuchi 1963:46; Pukui et al. 1974:116).

Maulili ([meaning] constant jealousy) is a deep pool in Waikomo Stream in the uplands of Kōloa. When the gods Kāne and Kanaloa first came to Kaua'i, legends say they explored the island and came to the pool at Maulili at evening. They stretched out beside the pool for their night's sleep on its eastern bank and left the impression of their forms within the rock: as can be seen in the 'āpapa (a flat area). The Maulili heiau was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. It was a place of human sacrifice (Wichman 1998:12).

This *heiau* may be the Maulili Heiau described by Makea in the Lahainaluna document mentioned above. "The 'āpapa in this vicinity is called an 'Unu.' and a 'Heiau,' but was never

walled in, it is said. On the nights of Kāne, the drums are heard to beat there, also at the sacred rocks, or unu's, of Opuokahaku and Kanemilohae, near the beach of Poipu" (Farley 1907).

Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa:

In the old days two large *'auwai* or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the *kuāmas* [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the *kula* (dry land), where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted *pia* (arrowroot) as well as *wauke* (paper mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the *hala* (screwpine) for mats and the nuts of the *kukui* (candlenut) for light (Judd 1935:53).

Beginning possibly as early as 1450, the 'Kōloa Field System' was planned and built on the shallow lava soils to the east and west of Waikomo Stream. The Kōloa Field System is characterized as a network of fields of both irrigated and dryland crops, built mainly upon one stream system. Waikomo Stream was adapted into an inverted tree model with smaller branches leading off larger branches. The associated dispersed housing and field shelters were located among the fields, particularly at junctions of the irrigation ditches (*'auwai*). In this way, the whole of the field system was contained within the entire *makai* (seaward) portion of the *ahupua'a* of Kōloa, stretching east and west to the *ahupua'a* boundaries.

The field system, with associated clusters of permanent extended family habitations, was in place by the middle of the 16<sup>th</sup> century and was certainly expanded and intensified continuously from that time. Long *'auwai* were constructed along the tops of topographic high points formed by northeast to southwest oriented Kōloa lava flows, and extended all the way to the sea. Habitation sites, including small house platforms, enclosures and L-shaped shelters were built in rocky bluff areas which occupied high points in the landscape and were therefore close to *'auwai*, which typically ran along the side of these bluffs (Hammatt et al. 2004). From A.D. 1650-1795, the Hawaiian Islands were typified by the development of large communal residences, religious structures and an intensification of agriculture. Large *heiau* in Kōloa may date to this period.

The manufacture of salt was important for the Native Hawaiians. Many of the larger salt pans on Kaua'i are located near Nōmilu, "where people came in the summer to gather salt when the winds blow the salt across the surface of the pond at the edge of the pond where it was carefully scooped out with the hands or with pieces of gourd shell and dried" (Wichman 1998:35). The importance of salt manufacture in the area was illustrated in the 1874 Boundary Commission determination for Kōloa, where the oral testimony of Pene Kalauau claimed he had come all the way "from Koolau to go to Koloa for salt" (Boundary Commission, 1874, Kauai, Vol. No. 1:124).

### 3.1.2 Early Historic Period

By the early 1800s, Kōloa Landing had become the principal port of Kaua'i. Shipments of North American furs and pelts to the Orient depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood (*Santalum sp.*) grown in the Hawaiian Islands. The shipment of most of Kaua'i's sandalwood to the Orient took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830.

Accounts by visitors and settlers at Kōloa focused on the early westerners' own concerns--religious and commercial--as these concerns appeared within the historical record of Kōloa in the 1800s. However, scattered throughout the accounts are occasional references to the Hawaiians of Kōloa that may give some insights into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney described, in an article in the *Missionary Herald* (June 1827:12), a visit to Kōloa with Kaikio'ewa, the governor of Kaua'i, in 1826:

The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired...

Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of *aipupu*, [ 'ā'īpu 'upu 'u] cooks, attendants came on in the rear.

Whitney's account indicates something of the deference paid to the *ali'i* (chiefs) by the local populations and the scale at which the *ali'i* carried out their functions. An even grander view of that deference was provided in an account of a later visit by an *ali'i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III (In Palama and Stauder 1973:18):

In the afternoon, the natives from all parts of the island began to flock to the king's temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [sic] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes of *Poe* [sic], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and 'tinkling cymbal' to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall.

In 1835, Thomas Nuttall and John K. Townsend, two American naturalists, visited the Kōloa area. They noted “fields of taro, yam, and maize (possibly sugar cane), irrigation networks and sweet potato patches in the dryer areas” (Townsend 1839:206).

On December 31, 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua'a*, they initiated the process of rapid change that would reshape the life of Kōloa in the nineteenth century. In 1835, a 30 by 60 foot grass house was erected as a meeting-house and school near the Maulili Pond. Mr. Gulick cultivated sugar cane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90-foot adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840 recorded:

The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes andc. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio (Wilkes 1845:64).

Kōloa Village and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers as trade with Americans and Europeans grew. An estimate in 1857 stated that “10,000 barrels of sweet potatoes were grown each year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai'i” (Judd 1935:326). Sugar and molasses were also chief articles of export. Whalers used the Kōloa “Roadstead” from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make the salt (Palama and Stauder 1973:20).

### 3.1.3 Mid-1800s (Land Commission Awards)

Toward the mid-19th century, the Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848 the crown, the Hawaiian government, and the *ali'i* received their land titles. Subsequently in the Māhele, Land Commission Awards (LCAs) were given to commoners and others who could prove residency on and use of the parcels they claimed.

The Māhele records of Kōloa give a picture of what had evolved by the middle of the nineteenth century when Kōloa Ahupua'a, totaling 8,620 acres, was awarded to Moses Kekūāiwa (LCA 7714-B), the brother of Alexander Liholiho (Kamehameha IV), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu. The award of the *ahupua'a* to Kekūāiwa was the outcome of an event 25 years before: the crushing, by forces loyal to Kamehameha II, of the 1824 revolt on Kaua'i, when Kaua'i lands were divided among the chiefs of the other islands. The next largest award in the *ahupua'a* went to the Protestant Mission (ABCFM) (LCA 387) and consisted of approximately 825 acres. The majority of mission lands were located in the vicinity

of Kōloa Town, where the parsonage was located. Large parcels just *mauka* of Kōloa Town were utilized for sugarcane cultivation and cattle pasture.

Eighty-eight other *kuleana* awards were given to individuals within Kōloa Ahupua'a. The majority of these Land Commission Awards (LCAs) were located in or around Kōloa Town itself. This concentration of awards around the town area may reflect both the traditional land settlement pattern, a focus on the resources of Maulili Pool and Waikomo Stream (a permanent stream), and a more recent movement of the populace to the plantation and missionary centers. Information on the awards from Māhele documents is presented in Table 1.

A Hawaiian subject by the name of Lae stated a claim in January 1848 for three Land Commission Awards (LCAs) within, and in close proximity to, the current project area (LCA 3268:1, 3268:2 and 3268:3). The claimant received his lands from Kauhi in the days of Kaahumanu. Lae appears to have been awarded three apana associated with LCA 3268. LCA 3268:1, present in the current project area, consisted of nine *lo'i* and a house lot located in the *ili* of Waiohai. LCA 3268:2 consisted of three *lo'i*, a *kula*, and a cane field. The composition of LCA 3268:3 is unclear from historical documents. Another individual named Walewale (Waliwali) was awarded LCA 3286:1 and LCA 3268 of Lae. The text for these LCAs is presented below for clarity (Waihona 'Aina 2002). Note the absence of any mention of Section 3.

No. 3268 Lae, Clt F.T. 14v13

Waliwali sworn says i know the land of Clt. It consists of two pieces in Koloa,  
Hikina

No. 1 is nine lois and a house lot in the ili of Waiahai

No. 2 is three three lois, a kula, a Cane field in the ili of Hikinihi.

No. 1 is bounded

Mauka by the ili of Kioea

Puna " Ahupuaa of Weliweli

Makai " Sea beach

Hanapepe-Wahapuu's lois

No. 2 is bounded

Mauka by the ilo of "Kailulu" Wahapuu's land

Puna " " " "Manehaahaa"

Makai " " Kapo-

Hanapepe " " Makapala

This last piece is a whole ili. The Clt recd his lands from Kauhi in the days of Kaahumanu, and his title has never been disputed. Kaanaana sworn says I know Lae's land, The testimony of Waliwali respecting it is correct. No. 3268 Lae N.T. 15-16v13 Walewale sworn I know the land of Lae consisting of 9 lois and a house

lot in the ili of Waiohai East Koloa. Apana 9 lois and a house lot in the ili of Waiohai Koloa. Section 2-3 Lois and one kula area in the ili of Hihinui in East Koloa.

Section 1

Mauka Kioea ili  
 Puna Ahupuaa of Weliweli  
 Makai Sea shore  
 Hanapepe Loi of Wahapuu

Section 2

Mauka Land of Wahapuu, Ili of Kauliuli  
 Puna ili of Manieniehaahaa  
 Makai Kapoo ili  
 Hanapepe Makalapa ili

This land came from Kauhi during the time of Kaahumanu. No one is opposed. Kaanaana sworn I have seen the testimony of Walewale concerning the land of Lae and it is true.

No. 3286 Walewale, Clt

F.T. 18v13

Kaanaana sworn says, I know the Clt's lands. It consists of four pieces in "Koloa Hikina".

No. 1 is three lois in the ili of "Kahoana"

"2" one " " " "  
 "3" " " " Kapalau  
 "4" " " " "Puokahaku"

No. 1 is bounded

Mauka by the ili of "Maulili"  
 Puna " " "  
 Makai Mika's lois  
 Hanapepe Kaili's cane field

No. 2 is bounded

Mauka by Mika's lois  
 Puna "Keno's "  
 Makai "Punalua "  
 Hanapepe "Kaile's cane field

No. 3 is bounded

Mauka by the loi of Kopua  
 Puna " " Palaawhia  
 Makai " " Nahoa's "  
 Hanapepe " " Namanu's

No. 4 is bounded

Mauka by waste Kula  
 Puna " the ili of Waiohai

Makai " House lot of Kaunu  
 Hanapepe " waste Kula of Sand  
 The Clt recd his land from Govr Kanoa in 1845 and, has possessed them in peace ever since.  
 Lae sworn verified the testimony of Kaanaana

No. 3286 Walewale N.T. 20v13

Kaanaana sworn witness concerning the land of Walewale, thre lois in the ili of Kahowana

Section 1 – 3 lois in the ili of Kahoana

Section 2 – 1 lois in the ili of Kapalau

Section 3 – 1 lois in the ili of Kapalaalaea

Section 4 – 1 loi in the ili of Puuokahoku

Section 1

Mauka Ili of Maui  
 Puna Ili of Maui  
 Makai Ili of Kahoana  
 Hanapepe Sugar cane garden of Kaili

Section 2

Mauka Puna loi of Palaawahia  
 Puna Loi of Nahoa  
 Makai Loi of Namanu  
 Hanapepe Loi of Keno

Section 3

Mauka Loi of Namanu?  
 Puna Laned of Lae Waiohai  
 Makai House lot of Ka  
 Hanapepe Kula and (sic)

This land came from Kanoa in 1845, no one has objected to the present.

Lae sworn witness I have heard Kaanaana's testimony and it is true

Table 1. Land Commission Awards in the Vicinity of the Project Area

LCA	Claimant	'Ili	Land Use	Awards
3268	Lae	Waiohai, Hikinihi, Kae	12 <i>lo 'i</i> , a sugar cane <i>kula</i> and a house lot	Waiohai; 3 ' <i>āp.</i> ; 2 Acs 3 roods 1 rod
3286	Walewale	Kahoana, Kapalau, Puokahaku	Several <i>lo 'i</i>	Kahoana; 2 ' <i>āp.</i> ; 1 Ac 33 rods
3326	Wahapuu	Kaluaalamiki, Kailiili, Kikiaola, Pohakuomakali	9 <i>lo 'i</i> , a sugar cane <i>kula</i> and a house lot	Kaluaalamiki; 1 ' <i>āp.</i> ; 2 roods 8 rods; Kikiaola; 1 ' <i>āp.</i> ; 2 roods 16 rods

3415	Pehu, Isaraela	Kapalaalea, Waiohai	3 taro <i>lo'i</i> , 3 dry <i>lo'i</i> , a <i>kula</i> and a house lot	Kapalaalea; 1 ' <i>āp.</i> ; 1 rood 8 rods; Waiohai; 1 ' <i>āp.</i> ; 1 rood 14 rods
3601	Kenoi	Kamaemae, Kahoawa	5 <i>lo'i</i>	Kahoana; 1 ' <i>āp.</i> ; .75 Acs 12 rods; Kamaemae; 1 ' <i>āp.</i> ; 1 rood 17 rods
3607B	Kauna	Kapo, Waiohai	8 <i>lo'i</i> , a <i>kula</i> , and a house lot	Kapoo; 1 ' <i>āp.</i> ; 5.25 Ac 28 rods; Waiohai; 1 ' <i>āp.</i> ; .25 Ac

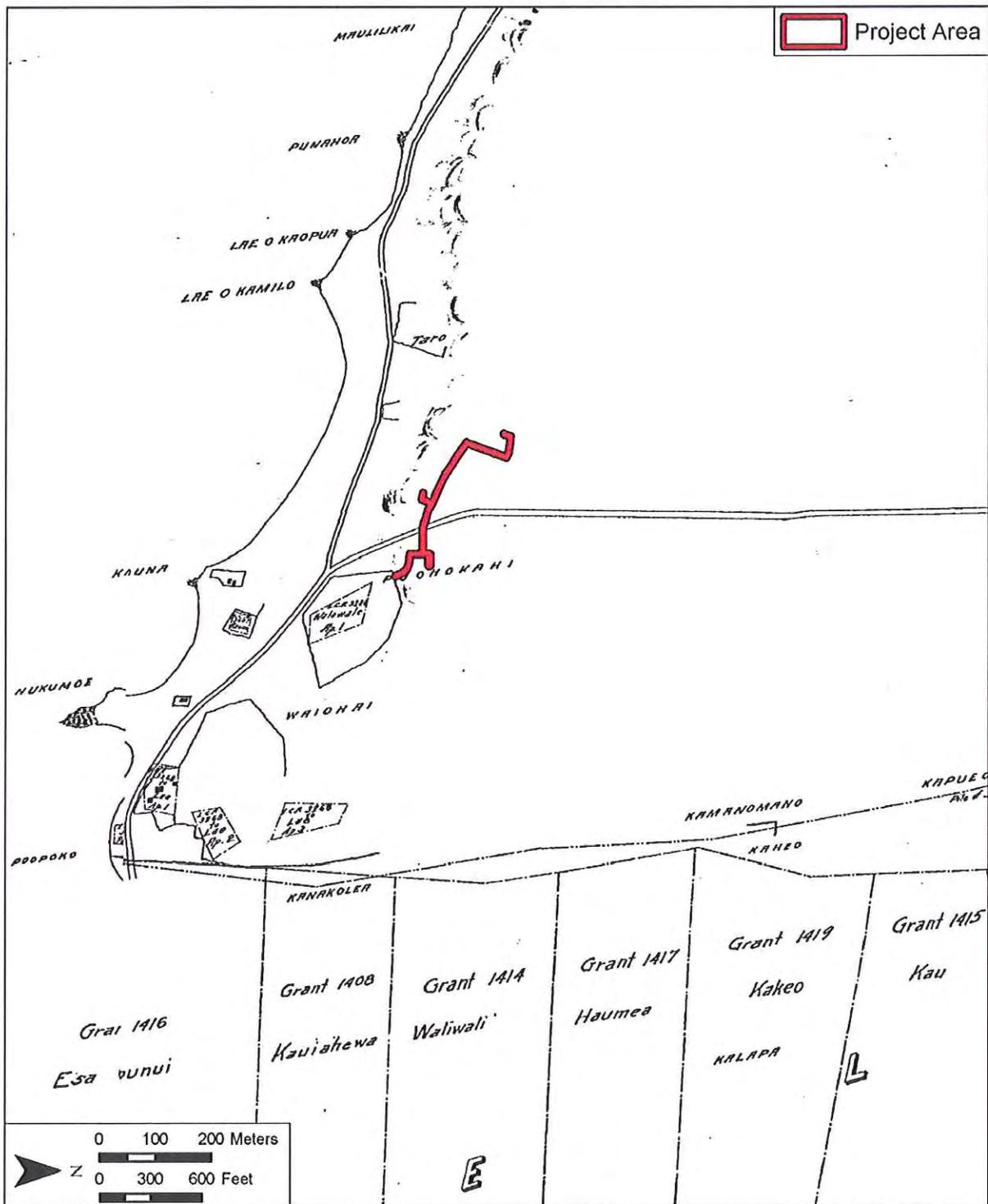


Figure 5. Portion of 1891 Map of Kōloa by M.D. Monsarrat (R.M.1694), showing the location of the project area (indicated in red) and Land Commission Awards (LCAs) in the vicinity

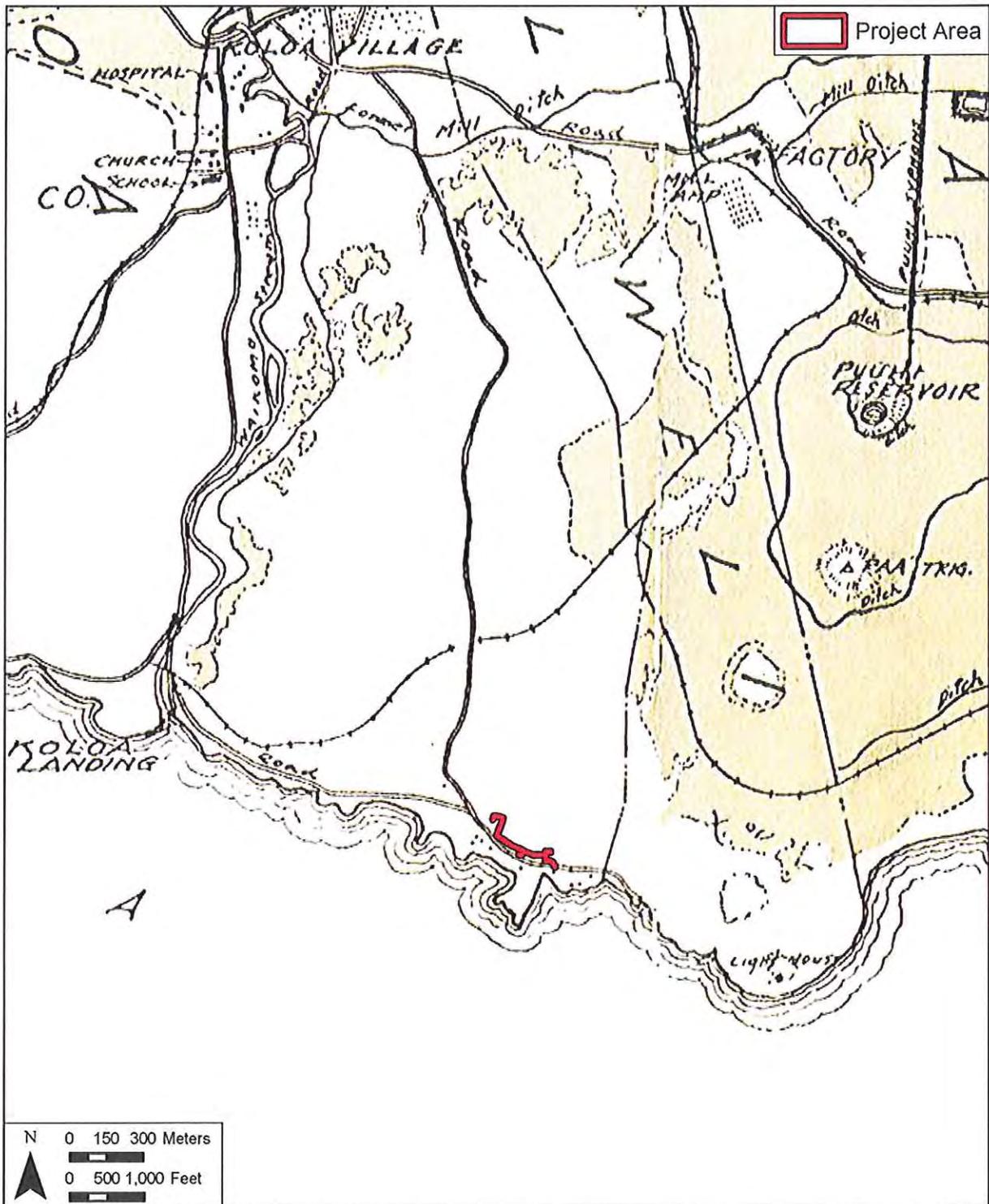


Figure 6. Portion of 1935 Koloa Sugar Company map showing the extent of cane lands within Kōloa. Cane cultivation is represented by green shading (Alexander 1937).

was hauled to the mill by oxcart until 1882. In that year, 3½ miles of 30-inch gauge, 18 pound railroad track and 50 cars were purchased”(Conde 1993: 28).

By 1885, the railway extended to Kōloa Landing where steamers transported the bags of sugar to the mainland (Figure 7). A motorized derrick winched the bagged sugar from the railroad cars to the warehouse on the west side of the landing. From there, bagged sugar was loaded onto small lighters, which would row the sugar out to waiting ships in the harbor. By 1895, the railroad had extended a spur line through the coastal lands of Kōloa into Weliweli to aid in the harvest around Pā‘ā. Remnants of this spur line are seen today throughout lower Po‘ipū, and include the stacked basalt railroad berm located in the vicinity of the southwestern portion of the present project area.

### 3.1.4 1900s

The Koloa Sugar Company had previously purchased the *ahupua‘a* of Pā‘ā southeast of Kōloa town, and a large parcel of it was unproductive. A new and much larger mill was built there in 1912 about a mile from Kōloa. New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year, and adding additional acreage.

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē. The McBryde Plantation had been improving the facilities at Ele‘ele Landing since the turn of the century, and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* (seaward) Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* (upland) areas of Kōloa remained under sugar cane cultivation as late as the 1970s, when these cane lands were converted into pasture.

Following the merger of the plantation lands of the Koloa Sugar Company and Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring the waters from Ku‘ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996). The mill in Pā‘ā was finally closed in 1996, and remains a landmark of the countryside.

### 3.1.5 Modern Land Use

By the late 1960s, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourism-driven development at the shoreline had been drawing construction and service jobs away from the town center. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 70s and 80s. Finally, the Hyatt Regency Resort, with its expansive golf course, opened in 1991.

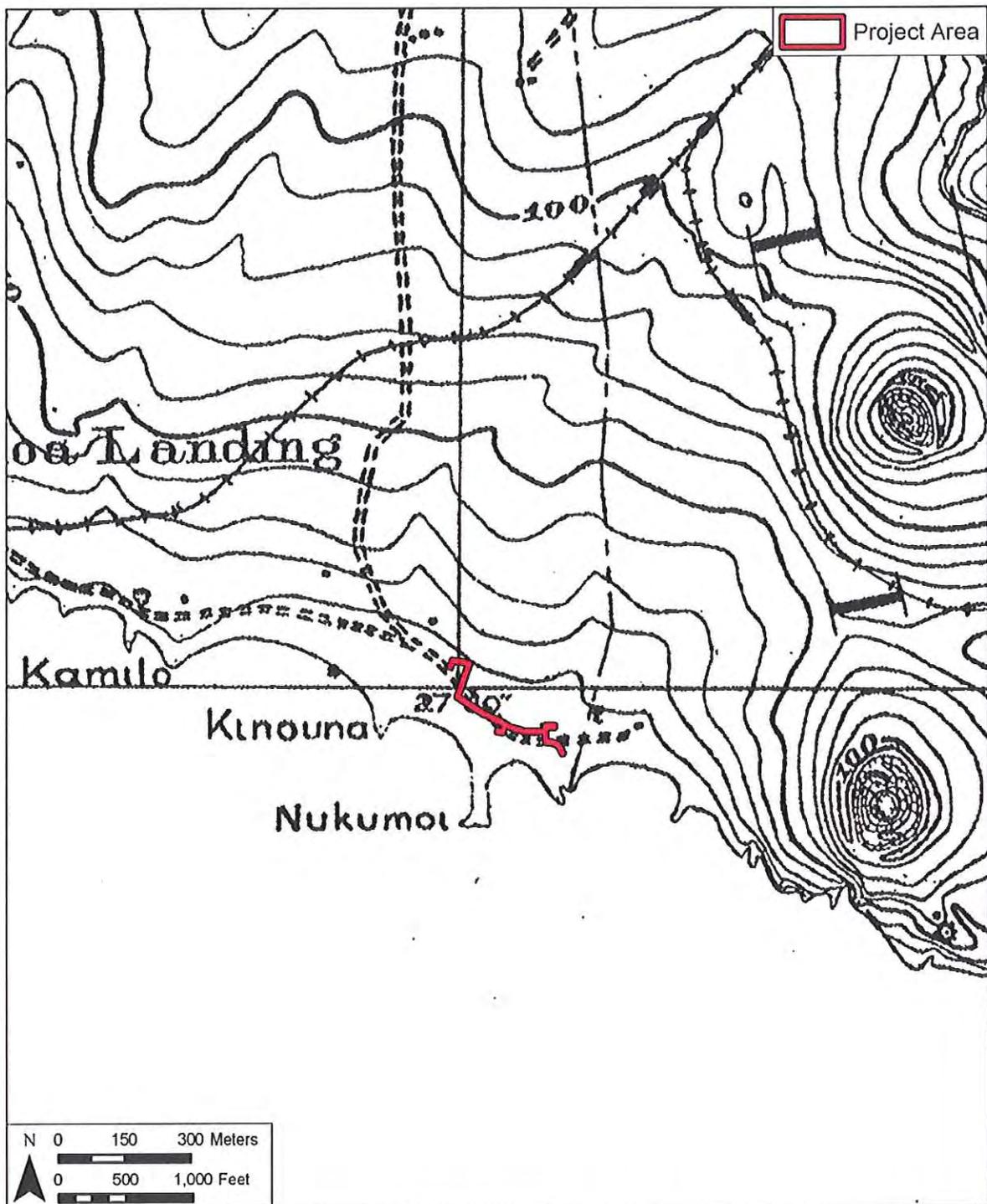


Figure 7. 1910 U.S. Geological Survey topographic map, Lihue Quadrangle, showing the network of railroad tracks within the Kōloa District. Note that a majority of the project area (indicated in red) is situated within cane haul roads

By the early 1990s, the tourist industry had successfully attached the name "Po'ipū Beach" to the entire coastline beginning at Kōloa Landing, and continuing east to Makahū'ena Ledge. With the development of the Po'ipū Bay Resort Golf Course and the Hyatt Regency Kaua'i Resort Hotel, the Po'ipū Beach name became synonymous with all two miles of coastline fronting the Wai'ohai, Kiahuna, and Sheraton developments; ending at Po'ipū Beach Park (Donohugh 2001).

Future plans within the Kōloa District will place more demands on beachfront properties along the coastline. Over 1,000 acres of former sugar plantation lands are slated for hotel and condominium development surrounding both Lāwa'i and Po'ipū coastal resort areas (Donohugh 2001). Future development plans for the upland areas involve both large tracts of lands, as well as regional redevelopment within Kōloa Town itself.

## 3.2 Previous Archaeological Research

### 3.2.1 Initial Archaeological Studies at Kōloa

Evidence of the importance of Kōloa to pre-Contact traditional Hawaiians was indicated in a Lahainaluna Schools document produced in 1885. This document appeared to have been based on an oral history project utilizing information obtained from Makea – "a native who is well acquainted with Kōloa". Makea was able to describe fourteen *heiau* (religious structures) within the Kōloa area. Of the 14 *heiau* five (5) were associated with human and animal blood sacrifices (*luakini* and *po'okanaka*), five (5) with fishing, two (2) medicinal, and one (1) agricultural, with one (1) of unknown function (Lahainaluna 1885 HMS 43 #17).

Thomas Thrum was the next to document sites in the Kōloa area in his list of the *heiau* of Kaua'i (Thrum 1907). He discussed six *heiau* in the district of Kōloa, which once extended from Hanapēpē to Māhā'ulepū. The *heiau* were Hanakalauae (Kōloa Ahupua'a), Kanehale (inland Kōloa Ahupua'a), Kihouna (Kōloa Ahupua'a), Kaneiolouma (Kōloa Ahupua'a), Weliweli (Weliweli Ahupua'a), and Waiopili (Māhā'ulepū Ahupua'a)

### 3.2.2 Archaeological Investigations in the Vicinity of the Project Area

The following is a discussion of previous archaeological investigations conducted in the vicinity of the project area (Figure 8 and Table 2). A majority of the investigations have been conducted within the *ahupua'a* of Kōloa in conjunction with the burgeoning development of the area. In contrast, the archaeological record in the neighboring *ahupua'a* of Weliweli and Pa'a is relatively sparse, due to the fact that these *ahupua'a* are relatively undeveloped and have been continuously under cultivation (historic sugar followed by modern diversified agriculture) for over a century.

The earliest systematic archaeological survey on the Island of Kaua'i was conducted by Wendell Bennett in the late 1920s. Bennett examined and recorded 202 sites on the island. According to his site location map (Figure 9; Bennett 1931:98), Sites 77-81 appear to be in close proximity to the project area.

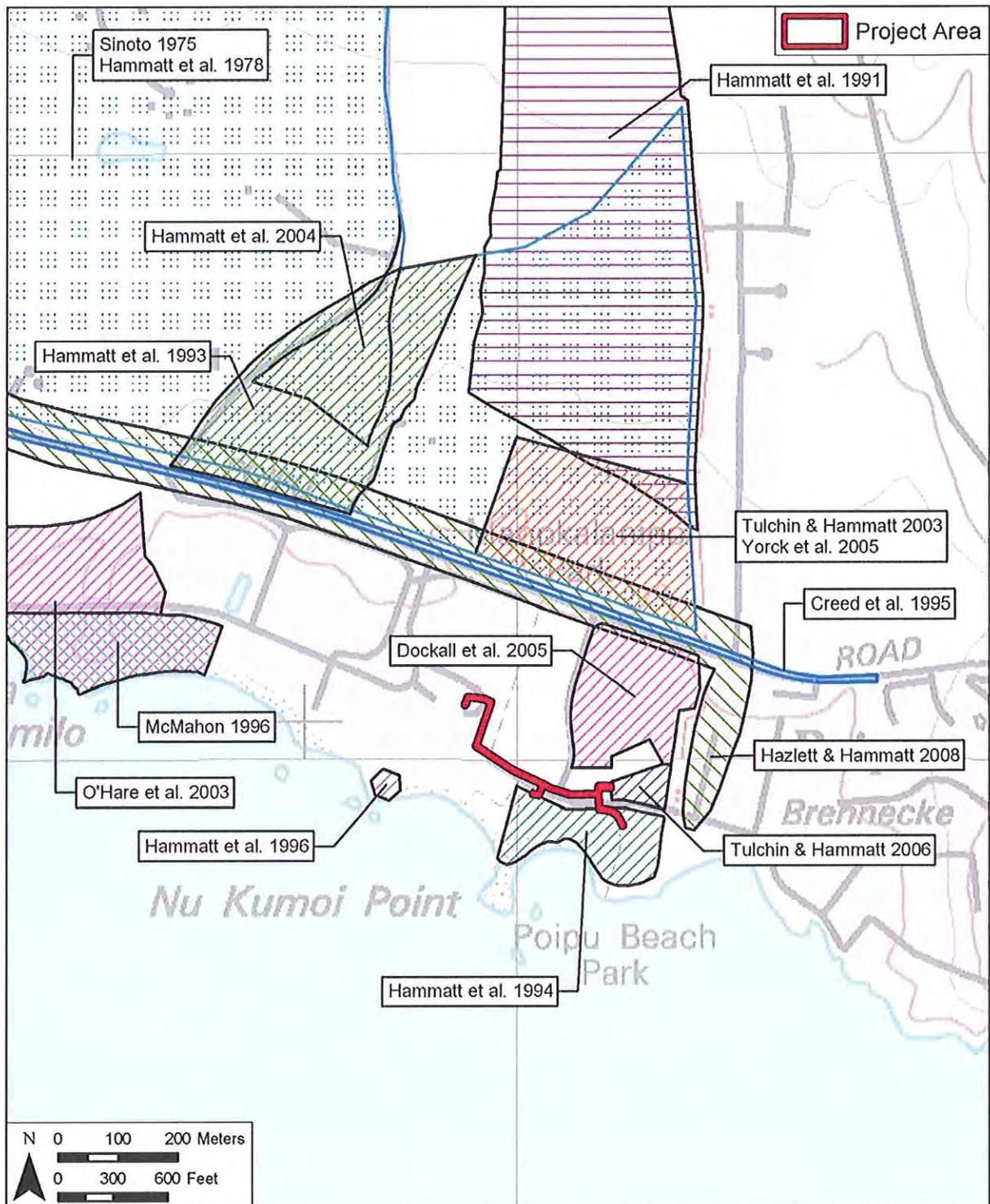


Figure 8. Previous archaeological investigations in the vicinity of the project area

Table 2. Previous Archaeological Investigations in the Vicinity of the Project Area

Reference	Type of Investigation	Findings
Bennett 1931	Archaeological Survey	Identified Sites 77 (ponds), 78 (enclosures and terraces), 79 (enclosures), 80 ( <i>heiau</i> ), and 81 ( <i>heiau</i> ) in the vicinity of the project area.
Sinoto 1975	Archaeological Reconnaissance Survey	Relocation of Bennett's Sites 78, 79, 85, and 86
Hammatt et al. 1978	Archaeological Inventory Survey	15 historic properties identified, consisting of pre-Contact and early post-Contact Hawaiian habitation and agricultural features: stacked stone enclosures (SIHP #s -3455, -3457, and -3820), platforms (SIHP #s -3463, -3757, and -3758), c-shapes (SIHP #s -3694, -3695, -3705, and -3756); an ' <i>auwai</i> network (SIHP # -3823).
Hammatt et al. 1991	Archaeological Inventory Survey	75 historic properties identified including both pre- and post-Contact sites. Pre-Contact historic properties consisted of habitations (platforms and enclosures), agricultural features (' <i>auwai</i> , field walls, terraces, and earthen mounds) and human burials; Post-Contact historic properties consisted of a single house platform associated with an LCA and a brick and mortar corral.
Hammatt et al. 1993	Archaeological Inventory Survey	Historic properties including ' <i>auwai</i> , walls, fields, enclosures and habitation platforms, were documented. These were thought to be related to the Kōloa Field System
Hammatt et al. 1994	Subsurface Testing and Monitoring	Post-hurricane emergency mitigation to stabilize and rehabilitate Poi'pū Beach Park. A cultural layer (SIHP # 50-30-10-0745) was documented as a result of auger testing.
Creed et al. 1995	Archaeological Inventory Survey	3 historic properties identified, including two enclosures, a terrace, and a portion of the Kōloa-Weliweli boundary wall.
Tulchin and Hammatt 2003	Archaeological Assessment	Relocated and assessed the condition of 47 sites. An archaeological inventory survey and data recovery program was recommended.
O'Hare et al. 2003	Archaeological Inventory Survey	Bennett's Site 76, Waikomo Salt Pans, likely relocated; 5 other features related to habitation were also documented.

Reference	Type of Investigation	Findings
Hammatt et al. 2004	Archaeological Survey	Eight historic properties identified. Pre- and early post contact habitation structures consisted of platforms (SIHP #s -3757 and -3758), enclosures (SIHP #s-3756 and -3758), and a mound (SIHP #-541); agriculture structures consisted of clearing mounds (SIHP #s -539 and -540). Two historic properties associated with historic transportation were also identified: SIHP # -947, a segment of the Kōloa Sugar Company railroad berm; and SIHP # -992, a segment of Hapa Road.
Dockall et al. 2005	Archaeological Inventory Survey	Eight sites consisting of 68 component features were identified and documented. The sites were recommended for preservation.
Hammatt 2005	Archaeological Inventory Survey	One historic property was identified: SIHP # 50-30-10-3922, an earthen berm associated with a former plantation road and railroad.
Yorck et al. 2005	Archaeological Inventory Survey	Twenty-one archaeological sites consisting of approximately 70 associated features were documented in an area that contained two LCAs.
Tulchin and Hammatt 2006	Archaeological Inventory Assessment	A rock habitation platform (SIHP # 50-30-10-3888M), comprising three component features was identified and recommended for preservation.
Tulchin and Hammatt 2007	Data Recovery	Radiocarbon analysis of charcoal samples collected from SIHP # -362 yielded a date range (1410AD to 1530AD) that is within the pre-Contact period, indicating the temporary habitation enclosure was constructed and utilized by pre-Contact indigenous Hawaiians.
Hazlett and Hammatt 2008	Archaeological Monitoring Report	No significant historic properties were observed.
Simonson et al. 2009	Data Recovery	Relocated 39 previously identified historic properties within the study area. Test excavations indicated that a majority of the archaeological features were utilized sporadically as temporary habitations.

Bennett's Sites 77 and 78 (later designated SIHP # 50-30-10-077 and -078) are shown on his site map (Bennett 1931: 98) as very close to the project area (Figure 9). These sites were further described as:

Site 77. Ponds, just inland from the shore road at the east side of Weliweli, Koloa.

One of these ponds is of an oval shape 185 yards in circumference. It is encircled with a raised wall of dirt the edges faced with large stones. This raised portion is about 12 feet wide and built up 2 feet high most of the way around. Within this pond is a small circular wall of stones 2 feet wide, 2 feet high, and about 15 feet in diameter. A built-up path leads out to this circle. This pond is one of a series of four all similar in size and construction. There are not internal divisions, nor any great depth to these ponds (Bennett 1931: 98).

The upland sites were further described by Bennett as:

Site 78. These structures consist of a walled enclosure with three terraces and an unmistakable ditch line at the back, which would indicate that the whole was used for taro. The south wall was 5 feet wide and 2 feet high while the north wall is 5 feet wide and 4 feet high. The area is covered by the three terraces is roughly 75 by 90 feet. The south wall continues back of these terraces broadening out along the edge of one of the large ponds to give a paved area 15 by 30 feet, and then continues eastward. The north wall also continues. A few feet back of the ditch line on a solid lava outcropping is a circular wall of stone, 3 feet high and 2 feet thick, covering an area 8 by 5 feet. A short distance north of this is a 15 by 15 foot stone-paved platform house site on the edge of Site 79 (Bennett 1931:118).

Site 79. This inclosure [sic] is an irregular circle 300 to 400 feet in diameter containing good soil and surrounded by a wall 6 to 8 feet high. The land inside is now used for grazing but there is an irrigation ditch leading to it from the west side, which would indicate that it was once used for agricultural purposes. It is slightly marshy to-day. The wall is highest on the north side and presents two cross-sections, one taken near the west end shows a rise of three feet, then a 10 foot width on a slight incline, then a 5-foot perpendicular wall 3 feet wide and only 2 feet high at the back because of the higher level of the outer ground; another section taken near the east end, still on the north wall, shows a wall 5 feet high and 2 feet wide, then a drop of 2 feet and a 6-foot horizontal width from which a 3-foot wall, 2 feet wide, rises and again is but 2 feet high on the back side. The first type is the most extensive. At the east end there are two places where the wall extends inward and the terrace at the base of the wall broadens. On one of these extensions there is a 12 by 15 foot house site. In front of the other extension there is a spring walled around. An altar, apparently of recent construction, is a bit on the seaward side of the spring. North and east of this enclosure are many house sites on the lava rock. The house sites are all of stone, some terraced up, some walled on one, two, three, or four sides. The walls are

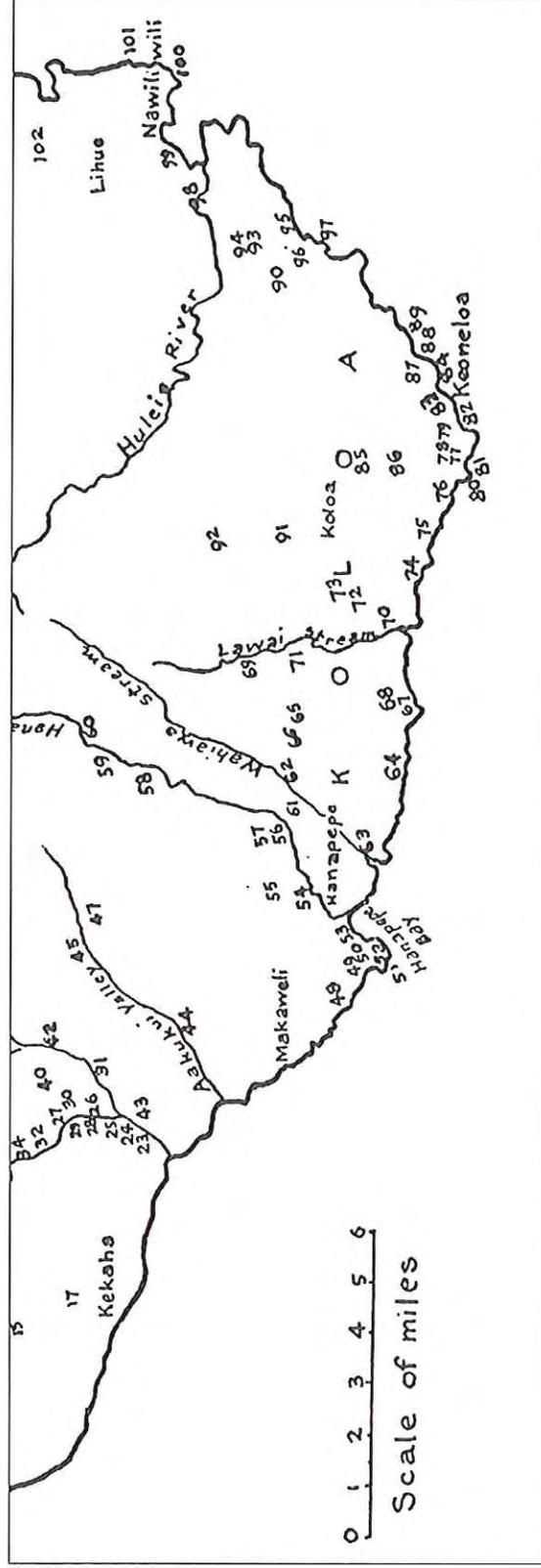


Figure 9. A portion of Bennett's island wide map of sites (1931). Sites 77-81 are in close proximity to the current project area.

mostly 2 feet high and single stones on edge. There are also pits and small enclosures (Bennett 1931: 118).

Two *heiau* (Sites 80 and 81), both in close proximity to the current project area, were further investigated by Bennett:

Site 80. Kihouna heiau, at Kihouna point, Poipu, Koloa

This walled heiau measures 130 feet in length and 89 feet in width on the inside. The whole structure has been greatly disturbed and some of the walls restored. The wall toward the sea is in good condition and measures 7 feet in width, 3 feet in height on the outside, and 5 feet on the inside, and is well made. Along the inside of this wall is a terrace 3 feet wide and 2 feet high that runs the complete length of the wall. The west wall is only marked by stones embedded in the ground. The north wall is missing at the west end but the east half has been restored, which makes it 5 feet wide and 4 feet high. The east wall has been restored on the old wall as a base. Large lava blocks set on edge and filled in with small stones is the method of construction shown in this wall. The whole heiau is strewn with large and small pieces of coral. Thrum's description adds some features not now discernable: "A single walled heiau...100 by 125 feet, enclosed on all sides by walls 4 to 6 feet high, with entry way near middle of mauka wall; seaward or makai wall 8 feet thick. A section of stones as of pavement shows nearly the whole length near makai wall, and in N.E. corner is a section said to have been its altar stones." In front of this heiau towards the point are some rooms roughly built. One is 17 by 10 feet, with walls 4 feet high. Another is 14 by 10 feet. On the seaward side of these divisions is a wall 11 feet wide in front, 30 feet wide to the west, and built up 3 feet on the sea side.

Site 81. Kaneiolouma heiau, on the shore a short distance east of Site 80.

This structure consists of three large sections and four rooms in the back wall. The front wall is now missing but stones embedded in the ground indicate its original position. The outer or front section is unpaved and it is divided from the midsection by a line of stones on edge as well as by a dirt terrace. The middle section still shows a few slabs of the limestone with which it was once paved. It is distinguished from the inner section by a slight dirt terrace. The inner section has no paving stones left. The wall towards the sea is 9 feet wide and 5 feet high. It is built with a facing on each side and a fill between, though the facing is not of large slabs but rather of unshaped blocks. The wall facing inland is 5 feet wide, 3 to 5 feet high, and has been somewhat restored. Room divisions within the back wall are badly fallen in. They are apparently without connection either between themselves or to the heiau proper. Thrum's measurements have been followed in drawing the room divisions

Sinoto (1975) conducted a reconnaissance survey of 400+ acres of Knudsen Trust Lands at Kōloa. He recorded several features and indicated they were the remnants of Bennett's Sites 78, 79, 85 and 86.

In 1978, ARCH conducted an archaeological survey of 460 acres for the then-proposed Kīāhuna Golf Village, located on the east side of Waikomo Stream and Po'ipū Road (Hammatt et al. 1978). A total of 583 archaeological features were identified, including 175 stone enclosures, 108 stone house platforms, 10 habitation caves, a *heiau*, extensive *'auwai* networks, ponded fields, terraced plots, and mounded fields. These features indicate intensive pre-Contact and early post-Contact Hawaiian settlement with a focus on wet and dry land agriculture. Many of the archaeological remains identified were considered unique as they reflected "a complex Hawaiian adaptation of intensive agriculture and settlement to a dry, rocky leeward environment" (Hammatt et al. 1978).

In 2004 CSH (Hammatt et al. 2004) conducted an inventory survey of five project areas on approximately 400 acres of the Kīāhuna Golf Village. A total of 509 historic properties were documented and, of these, 80 historic properties were selected for additional testing. Historic properties documented included 238 permanent habitation sites, 150 temporary habitation sites, 2 habitation/agricultural sites, 104 agricultural sites, 2 artifact sites, 1 rock art site, 1 historic grave, 1 ceremonial site, and 10 miscellaneous sites used for either storage or livestock.

The Kīāhuna Golf Village inventory survey included data recovery within 80 historic properties. 12,153.7 grams of midden were excavated, which included 1017 indigenous artifacts (607 lithic items, 174 bone items, 148 coral items, 45 shell items, 41 sea urchin items and 2 "other") and 109 historic artifacts (glass, metal, ceramic and slate items). The "Kōloa Field System" observed within the project area was described as "unique". The description continued "The field systems of Kōloa are unique, in that they are laid out on almost bare lava rock. Attesting to the degree of planning and labor that went into them, as far as is known, there are no other examples of this type in Hawai'i. The Kōloa Field System, as surveyed in this report, has remained intact despite encroachment by cattle grazing and development of sugar cane lands"(Kīāhuna Archaeological Inventory Survey and Testing of 460 Acres, Volume 1, Archaeological Analysis, January 2004).

The earliest Kīāhuna Golf Village sites dated between the thirteenth and fifteenth centuries A.D. (SIHP # 50-30-10-3841). According to this inventory survey, The Kōloa Field System continued to expand throughout the eighteenth century A.D., and ceased to function as a field system when sugar cane cultivation took over the existing *'auwai* system for its own use.

In 2005, CSH returned to the Kīāhuna Golf Village to complete archaeological investigations originally conducted by ARCH in 1978 (Hammatt et al. 1978 and Hammatt et al. 2005). The CSH study area consisted of approximately 400 acres, 60 acres less than the original 1978 ARCH study. CSH reorganized and reanalyzed the data originally collected during the 1978 ARCH study and identified 462 historic properties within the truncated Kīāhuna Golf Village study area. The 462 historic properties were primarily of pre-Contact and/or early post-Contact origin and are attributed to the Kōloa Field system. Documented historic properties included 316 habitation sites (131 temporary and 214 permanent), 102 agricultural sites, 6 storage areas, 1 petroglyph site, 1 historic crypt with no burial, a *heiau*, and a historic railroad berm.

The 2005 CSH investigations of the Kīāhuna Golf Village also included data recovery of 31 historic properties. The data recovery effort involved subsurface testing in the form of controlled hand excavations at selected historic properties. Observed and collected indigenous Hawaiian artifacts consisted primarily of lithic debitage, volcanic glass flakes, and fishing implements (bone and marine shell fish hooks as well as sinkers or various material), with a smaller occurrence of ornaments (shell, bone, and dog teeth) and a single *ulu maika* (traditional Hawaiian game stone). Radiocarbon analysis indicated that primary occupation of the study area occurred between 1400 and 1600 A.D.

In 1991, CSH conducted an archaeological inventory survey for the proposed Po'ipulani Golf Course and residential development consisting of 160 acres located in the *makai* eastern portion of Kōloa along the Kōloa-Weliweli *ahupua'a* boundary (Hammatt et al. 1991). Although the study area was observed to have been heavily disturbed by 19<sup>th</sup> century sugar cultivation and cattle ranching, significant remnants of pre-Contact indigenous Hawaiian habitation and agriculture were documented. 75 historic properties were identified including both pre- and post-Contact sites. Pre-Contact historic properties consisted of habitations (platforms and enclosures), agricultural features ('*auwai*, field walls, terraces, and earthen mounds) and human burials; Post-Contact historic properties consisted of a single house platform associated with an LCA and a brick and mortar corral.

In 2009, CSH completed data recovery of the *makai* portion of the 1991 Hammatt et al. study area, located *makai* of the railroad berm (SIHP -947) and extending to the *mauka* edge of Po'ipū Road (Simonson et al. 2009). CSH relocated 39 previously identified historic properties within the study area. Where warranted, site descriptions and plan view maps were updated. Test excavations were conducted at 21 of the 39 relocated historic properties. Test excavations revealed that a majority of the archaeological features were utilized sporadically as temporary habitations, providing shelter to pre-Contact and early post-Contact indigenous Hawaiians while they tended to agricultural fields and associated infrastructure observed throughout this portion of the Kōloa area, also known as the Kōloa Field System.

In 1993, CSH (Hammatt et al. 1994) conducted an assessment survey, subsurface testing, and monitoring at Po'ipū Beach Park in the *ahupua'a* of Kōloa. Wave action during Hurricane 'Iniki in 1992 had exposed a cultural layer (SIHP # 50-30-10-745) which needed to be preserved and monitored during the reconstruction and restoration of the park. Auger testing (Hammatt et al 1994: 11) recovered charcoal as well as traditional and historic midden and artifacts including basalt flakes and fragments, nails, glass, *kukui* shells, and mollusk shells. An historic cemetery (SIHP # 50-30-10-1871), located in the middle of Po'ipū Beach Park, and other sections of the buried cultural layer beneath the park, were also monitored during the removal of several cement slabs, remnants of a pavilion, picnic tables, and barbecues. Three radiocarbon dates were determined for this layer: the earliest was A.D. 1282-1414 and latest ranged from A.D. 1678-1940 (Hammatt et al. 1994: 52). The rich cultural layer, supported by radiocarbon dating, indicates this shoreline occupation is contemporaneous with the development of the Kōloa Field System. This cultural layer is the "single largest coastal beach deposit in the *ahupua'a*...of Kōloa" (Hammatt et al. 1994:65-66).

CSH (Hammatt et al. 1993) conducted an archaeological inventory survey, with limited subsurface testing, of 7.6 acres. (TMK: 2-8-14:30) in east Kōloa. This parcel is north of Po'ipū

Road and south of the former railroad grade. SIHP # -3758, a house platform or possible *heiau*, was re-mapped, and three new sites habitation/agricultural complexes were recorded. According to Hammatt et al. (1993:21), these sites are remnants of traditional *'auwai*, walls, fields, enclosures and habitation platforms, and appear to be a part of the larger Kōloa Field System, which encompassed over 1000 acres.

In 1995, CSH conducted an archaeological inventory survey for proposed Poipū Road safety improvements within a 1.4-mile corridor along the *mauka* (inland) side of Po'ipū Road (Creed et al. 1995). 3 historic properties were identified, including two enclosures, a terrace, and a portion of the Kōloa-Weliweli boundary wall. One historic property, a pre-Contact habitation enclosure, was recommended for data recovery.

In 1996, CSH (Hammatt et al. 1996) conducted an assessment survey of an exposed cultural layer in undisturbed sand deposits at the Waiohai Hotel, west of the current project area. This layer was disturbed by high wave action during Hurricane 'Iniki, which completely destroyed the associated reconstructed Kihouna Heiau (SIHP # 50-30-10-80). Three charcoal samples from this layer were dated to A.D. 1430-1950. The exposed cultural layer supports the potential existence of widespread intact cultural areas along the general shoreline (Hammatt et al. 1996:36, 39).

Nancy McMahon, (April 1996) completed a reconnaissance survey west of the current project area. The purpose of the survey of TMK 2-08-16:3 (8.444 acres), part of the Sheraton Kaua'i Resort, was to assess damage caused by Hurricane 'Iniki. No surface sites or cultural deposits were reported. She noted a sandy deposit up to the foundations of the buildings on the eastern side of the project area near Lae o Kamilo and indicated that the remnants of beach dunes could still exist. Recommendations included monitoring of any construction in this area in case historic sites, including human burials, were uncovered.

Beginning in December 1996, reconstruction of areas damaged by the hurricane began at the Sheraton Kaua'i Hotel (McMahon 1996). Excavations were conducted to construct new buildings on new concrete pads. An intact dark sandy cultural layer, designated Layer III was uncovered. After grading of one pad area was complete, human skeletal remains were found in the excavated material. During monitoring of the rest of the project, a total of ten subsurface features (Features B-K) were discovered. Features included six fire pits, one stain, a concentration of fire-cracked rocks, one C-shaped structure, and one pig skeleton. Eight burials were also recovered within Layer III. Six charcoal samples were submitted for radiocarbon age determination of Layer III. These ranged from 20+/- 70 BP (before present) to 540+/- 60 BP, indicating that the earliest possible date for the features was A.D. 1400. The site is west of the current project area.

In 2003, an archaeological survey was conducted along the coast within the Sheraton Kauai Hotel property, west of the current project area (O'Hare et al. 2003). Saltpans, abraded areas, and possible bait cups were recorded along the rocky coast; these may correspond to Bennett's Site 76 "Salt pans, east of Waikomo Stream along the shore" (Bennett 1931:98). Five features were noted in the interior section of the project area, two platforms, one mound, one terraced area, and one enclosure. The two platforms were later partially dismantled to test for burials. No human remains or other cultural materials were recovered from the features.

In 2003, CSH conducted an archaeological assessment of a portion of Eric Knudsen Trust lands (Tulchin and Hammatt 2003). A total of 47 sites related to pre-Contact Hawaiian activity as well as historic ranching activities were relocated as a result of the assessment. An archaeological inventory survey and data recovery program was recommended (Tulchin and Hammatt 2003: 8).

In 2005, CSH (Yorck et al. 2005) conducted an inventory survey of an approximately 25-acre parcel located northwest of the Sheraton Kaua'i Resort at the intersection of Po'ipū and Kapili Roads. Twenty-one archaeological sites consisting of approximately 70 associated features were documented in an area that contained two LCAs. LCA 3606 (to Kamae) and LCA 10272 (to Makalulu) were both located along the eastern bank of Waikomo Stream, close to the coastline of Kōloa. Approximately 12 enclosures, 14 walls or wall segments, 7 mounds, 8 terraces, 11 C-shapes, 8 modified outcrops, a railroad berm and 12 specialized features were located and documented. The report recommended preservation and limited data recovery of SIHP # 50-30-10-0374 (habitation caves and associated rock-filled areas), and data recovery of SIHP #s -0368, -0369, -0370, -0373, -0376, and -0947 (the railroad berm). The parcel was characterized as containing mostly pre-Contact habitation sites. Some walls were identified as historic ranching-era structures.

In 2005, CSH (Dockall et al. 2005) conducted an inventory survey of 6.388 acres located at the Po'ipū Beach Park, *Mauka* Preserve. Eight sites consisting of 68 component features were identified and documented. The report recommended preservation of all eight sites. Previous site preservation work had been conducted by members of the *Ka hui malama o Kane i olo uma* group. All features associated with SIHP # 50-30-10-3886 through -3893 were thoroughly documented. If the current preservation project by *Ka hui malama o Kane i olo uma* could not continue, additional testing was recommended for SIHP # 50-30-10-3886, Features A, C, D, E, H, J, and K. In addition, the sites were interpreted as belonging to an agricultural complex that included a fishpond (SIHP # 50-30-10-3887). The report recommended that each site be interpreted with reference to the entire complex.

Tulchin and Hammatt (2006) conducted an archaeological survey of a 1.2-acre parcel on Ho'one Road. A rock habitation platform (SIHP # 50-30-10-3888M), comprising three component features was identified and recommended for preservation.

In 2008, CSH conducted archaeological monitoring in support of the Western Bypass Road project (Hazlett and Hammatt 2008). A plantation-era trash deposit was identified in the *makai* portion of the project area; however no significant historic properties were observed.

### 3.3 Background Summary and Predictive Model

From previous archaeological studies and historic accounts it appears that pre-Contact habitation and intensive irrigated agriculture were widespread in central and coastal Kōloa. As an extensive irrigated complex, the Kōloa Field System was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish.

In the early post-Contact era (1795-1880), the Kōloa Field System was in continued use for foreign trade and was likely further intensified. Sweet potatoes were a main crop for the whaling and merchant ships, and the purchase of pigs, salt, oranges and other items are noted in many ship journals.

Documents of the Great Māhele show that by the mid-1800s there were still several traditional farmers within Kōloa who both lived and worked within the area. The individual claims – for both *lo'i* (wetland) and *kula* (dryland) indicate that while traditional farming of taro for subsistence was still taking place, in *kula* lands – sugar cane production for sale to the nearby sugar mill, had begun to dominate the landscape. Of the LCAs within Kōloa, several claim a *kula* planted with cane or a cane field or sugar cane garden. Several also identify cane lands as boundaries for the LCAs.

Within three years of sugar cultivation by Ladd and Company in 1835, residents in and surrounding Kōloa were quickly moving to adapt to the new economy based on the production of sugar cane. Eventually, most of inland Kōloa was planted with sugar cane and only the rockiest areas, unsuitable for cultivation, survived the dramatic changes in the landscape brought about during the early 20th century. A 1935 map of Koloa Sugar Company shows extensive cane lands within the project area (see Figure 6).

The Koloa Sugar Company had previously purchased the *ahupua'a* of Pā'ā southeast of Kōloa town. A new mill was built in Pā'ā in 1912 about a mile from Kōloa Town, and in the immediate vicinity of the proposed Regional WRF. The mill in Pā'ā was finally closed in 1996.

By the late 1960s, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourism-driven development at the shoreline drew construction and service jobs away from the town center.

Based on background research, historic properties in the form of pre- and post-Contact subsurface deposits or remnants of architecture may be encountered during the archaeological inventory survey of the project area. Historic research indicated four LCAs in the vicinity of the project area, indicating indigenous Hawaiian land use in the form of habitation and agriculture. Previous archaeological research has documented evidence of both pre- and post-Contact land use in the area.

Evidence of indigenous Hawaiian land use could include both habitation (platforms, enclosures, and C-shapes) and agricultural (terraces, mounds, field walls, etc.) features. Evidence of post-Contact land use is likely to be associated with historic sugarcane cultivation and could include irrigation infrastructure (ditches and flumes), sugar transport infrastructure (road causeways, railroad berms, etc.), clearing mounds, and boundary walls.

It should be noted that due to extensive sugarcane cultivation documented within the project area, mechanized land modifications associated with sugarcane cultivation has likely disturbed and/or destroyed any pre-Contact historic properties that may have been present. Additionally the project area is situated primarily within in-use roadways and old cane haul roads, which have caused additional land modifications within the project area, disturbing and/or destroying historic properties. Thus the probability of encountering surface historic properties during the pedestrian inspection is low.

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## Section 4 Results of Fieldwork

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Fieldwork was conducted between October 11 and October 13, 2010 by Gerald Ida, B.A., Michelle Pammer, B.A., and Kendy Altizer, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). Fieldwork required approximately 7 person days to complete.

### 4.1 Survey Findings

A 100% pedestrian survey was conducted within the project area to assess the possibility of surface features or archaeological sites. This inspection encountered no surface historic properties, therefore the majority of fieldwork focused on subsurface testing.

A total of nine units were excavated within the project area. Excavation locations were determined based on the future location of construction activities planned for the area, and the possibility of encountering cultural material layers. The stratigraphy in each trench was documented and samples of features and artifacts were collected. Subsurface investigation revealed several layers of fill material overlying the natural sediments.

### 4.2 Stratigraphic Summary

A total of nine units were excavated during the archaeological inventory survey. Of these, Excavations A-D, F, and I were excavated on the *mauka* side of Ho'one Road, while Excavations E, G, and H were conducted in Po'ipū Beach Park. Each unit contained layers of fill deposits, designated as Stratum I, with different types of fill which were designated Ia through Ic. Material found within these layers included pieces of concrete, asphalt, and broken glass. The majority of observed cultural material within the fill layers appeared to be related to modern development. Imported soils observed in these fill layers ranged from light yellowish-brown sandy loam to dark grayish-brown clay loam. Strata II, III, and IV, when encountered, represented natural sediments and/or cultural layers.

Excavations E and G contained cultural layers. Excavation E contained remnants of a former land surface/cultural layer and a hammerstone fragment was recovered from back dirt which was likely excavated from this layer. Excavation G contained a cultural layer as well as a thermal feature, and a sample was collected for further analysis. The cultural layer encountered in Excavations E and G is part of SIHP # 50-30-10-745 originally documented in Po'ipū Beach Park in 1993 (Hammatt et al. 1994).

The soil overlay map (see Figure 4) indicates types of natural soils likely present in the project area and subsequent subsurface testing indicates the soils in the project area vary from the general pattern of soils mapped by Foote et al. (1972). According to the soil overlay, Excavations A, B, C, and H should all be in Jaucas sand, while Excavations E and G are on the cusp of Jaucas sand and Waikomo Silty Clay. Excavations D and F should be in Waikomo Silty Clay. All excavations contained at least one layer of imported fill; however natural soils encountered were not contiguous with the soil overlay map with the exception of Excavation F. Excavations E and G both contained Jaucas sand; however they were located on the cusp between two soil types, which likely accounts for the inaccuracy.

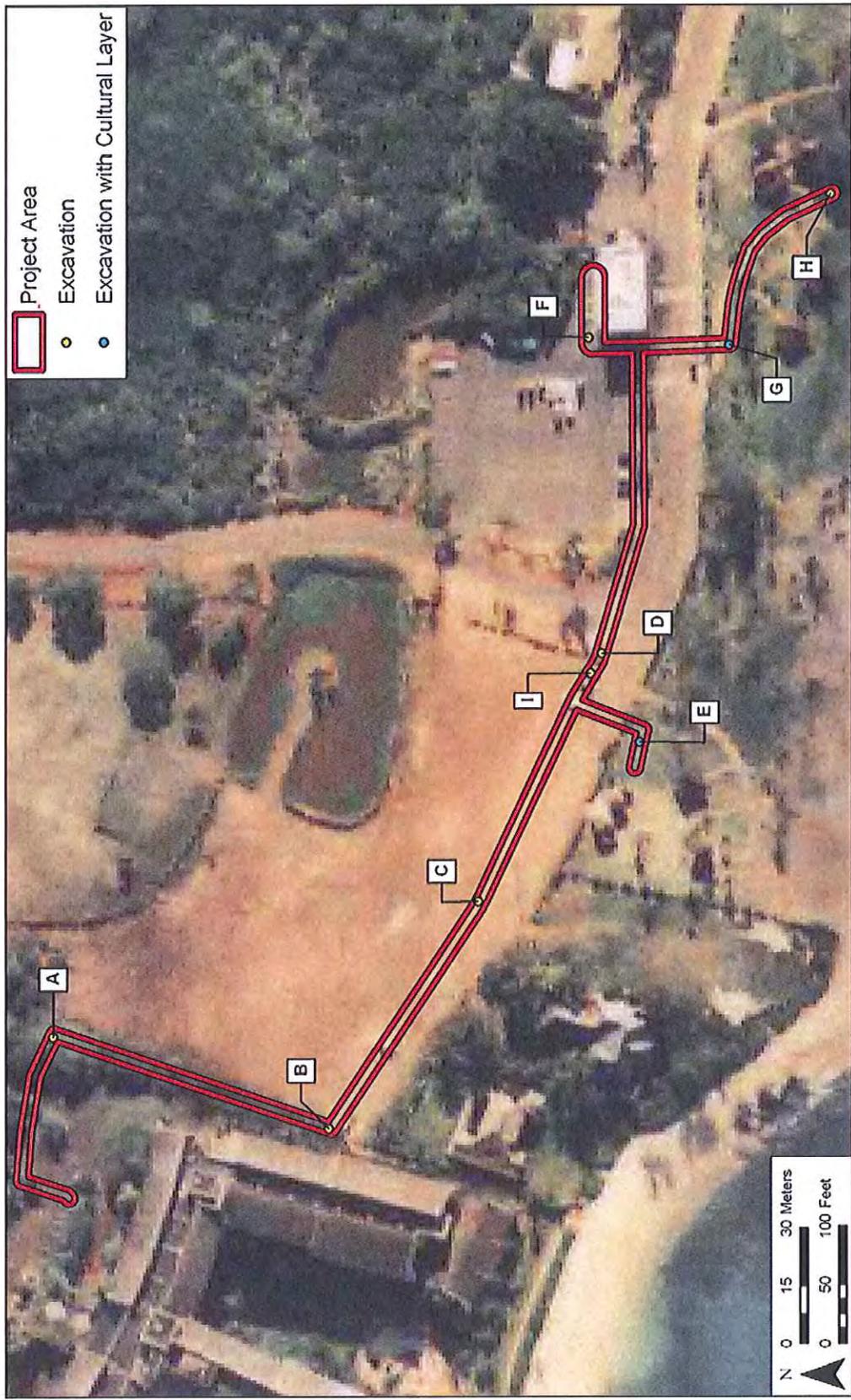


Figure 10. Aerial photo showing the location of Excavations A-I in the project area.

The natural soil in Excavation A was eroding bedrock, while Excavations B, D, and H contained several layers of imported fill. The water table was reached in Excavation B before natural sediments were encountered and testing was terminated at Excavation D because of a large bedrock outcrop. Excavation H was located in close proximity to the eastern bathrooms in Po'ipū Beach Park, and the lack of natural soil layers in this unit is likely due to construction of these facilities. The natural layer in Excavations C and I was sandy marine clay.

#### 4.2.1 Excavation A

Excavation A was located in the western-most portion of the project area adjacent to the Marriott Waiohai and was oriented north-south (see Figure 10). The excavation unit measured 3 m long by 2 m wide and was terminated at 92 cm below surface. The stratigraphic sequence includes Strata I and II. Stratum I consisted of landscaping fill associated with adjacent development. Stratum IIa was eroding bedrock soil and Stratum IIb was eroding bedrock soil with large bedrock boulders (Table 3, Figure 11 and Figure 12). No cultural material was observed in Excavation A.

Table 3. Stratigraphy of Excavation A

Stratum	Depth (cmbs)	Description
I	0-32	10 YR 3/4, dark yellowish-brown; gravelly, sandy clay; structureless; dry hard consistency; non-plastic; weak cementation; mixed in origin; clear boundary; smooth topography. Landscaping fill associated with modern development.
IIa	30-60	10 YR 3/4, dark yellowish-brown; sandy clay; weak, fine, blocky structure; slightly hard to moist friable in consistency; plastic; no cementation; terrigenous in origin; diffuse boundary; smooth topography. Eroding bedrock soil.
IIb	55-92	10 YR 3/4, dark yellowish-brown; sandy clay; moderate, medium, blocky structure; dry hard consistency; plastic; no cementation; terrigenous in origin. Eroding bedrock soil with large bedrock boulder outcrops; BOE*.

\* Base of Excavation

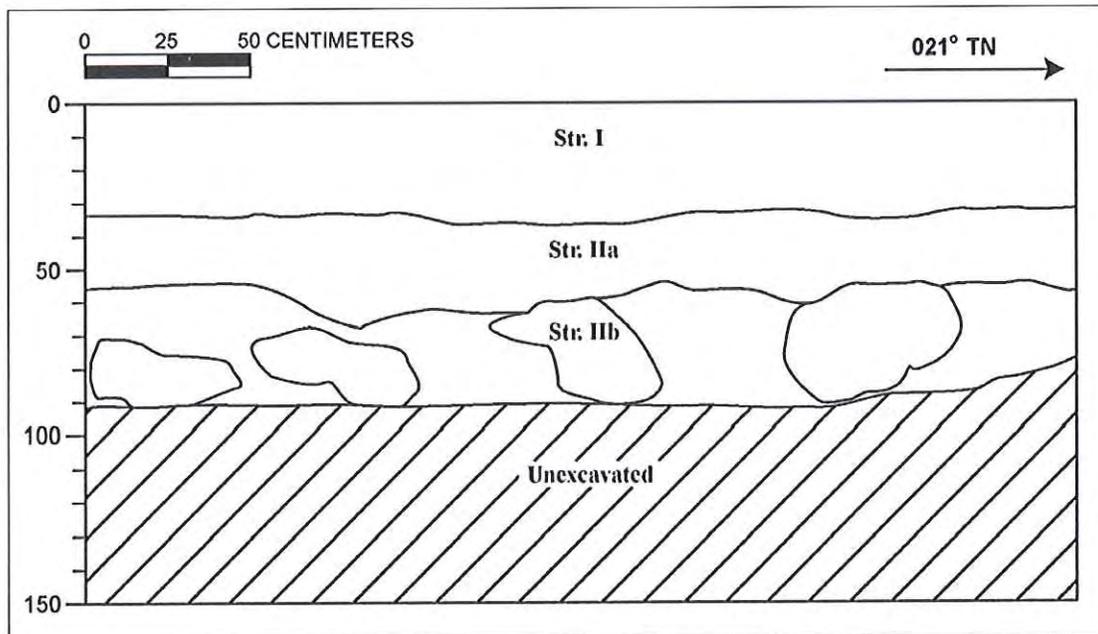


Figure 11. Excavation A west wall profile.



Figure 12. Excavation A, west wall profile; view west

#### 4.2.2 Excavation B

Excavation B was located just *mauka* of Ho'one Road, adjacent to the Marriott Waiohai and was oriented north-south (see Figure 10). The excavation unit measured 5.8 m long by 2 m wide and was terminated at 150 cm below surface. The stratigraphic sequence includes 2 layers of imported landscape fill (Table 11, Figure 13 and Figure 14). A pocket of mortar mottling was present at approximately 70 cm below surface and a concrete jacket was observed at approximately 145 cm below surface. The water table was encountered at approximately 150 cm below surface. No cultural material was observed in Excavation B.

Table 4. Stratigraphy of Excavation B

Stratum	Depth (cmbs)	Description
Ia	0-70	10 YR 5/4, yellowish-brown with mottles of 10 YR 8/1, white; gravelly, sandy loam; weak, fine, blocky structure; slightly hard consistency; non-plastic; no cementation; mixed in origin; very abrupt boundary; wavy topography. Landscaping fill with modern trash and small-to-medium sized cobbles.
Ib	70-150	10 YR 5/4, yellowish-brown with mottles of 10 YR 8/1, white; gravelly, sandy loam; weak, fine, blocky structure; slightly hard consistency; non-plastic; no cementation; mixed in origin; very abrupt boundary; wavy topography. Landscaping fill with modern trash and small-to-medium sized cobbles. BOE*.

\* Base of Excavation

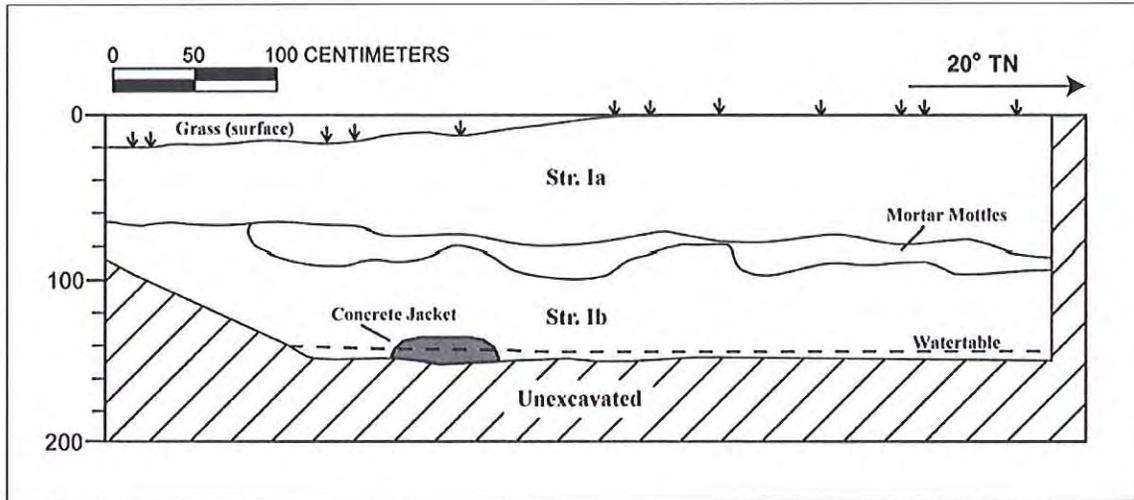


Figure 13. Excavation B west wall profile.



Figure 14. Excavation B, west wall profile; view northwest.

### 4.2.3 Excavation C

Excavation C was located on the northwest side of the Po'ipū Beach parking lot and was oriented east-west (see Figure 10). The excavation unit measured 6 m long by 2 m wide and was terminated at 150 cm below surface. The stratigraphic sequence includes Strata I and II (Table 11, Figure 15 and Figure 16). Stratum Ia was a layer of landscape fill, and Ib was layer of disturbed sand mixed with landscape fill. Strata IIa and IIb were sandy clay, while Stratum IIc was sand. The water table was encountered at approximately 150 cm below surface. No cultural material was observed in Excavation C.

Table 5. Stratigraphy of Excavation C

Stratum	Depth (cmbs)	Description
Ia	0-25	10 YR 4/3, brown with mottles of asphalt and base course, sandy loam; weak, fine, blocky structure; dry, weakly coherent consistency; non-plastic; weak cementation; mixed in origin; very abrupt boundary; smooth topography. Landscaping fill.
Ib	25-58	10 YR 6/3, pale brown; sandy loam; single-grain structure; dry loose consistency; non-plastic; weak cementation; mixed in origin; very abrupt boundary; wavy topography. Disturbed sand mixed with landscape fill.
IIa	58-70	10 YR 8/1 white; sandy clay; single-grain structure; wet, slightly sticky consistency; non-plastic; weak cementation; marine in origin; abrupt boundary; wavy topography. Natural sandy clay
IIb	70-90	10 YR 8/2 very pale brown; sandy clay; single-grain structure; wet, sticky consistency; plastic; weak cementation; marine in origin; very abrupt boundary; smooth topography. Natural sandy clay
IIc	90-150	Gley 6/5 GY greenish-gray; sand; single-grain structure; wet, non-sticky consistency; non-plastic; no cementation; marine in origin;. Natural sand BOE*

\* Base of Excavation

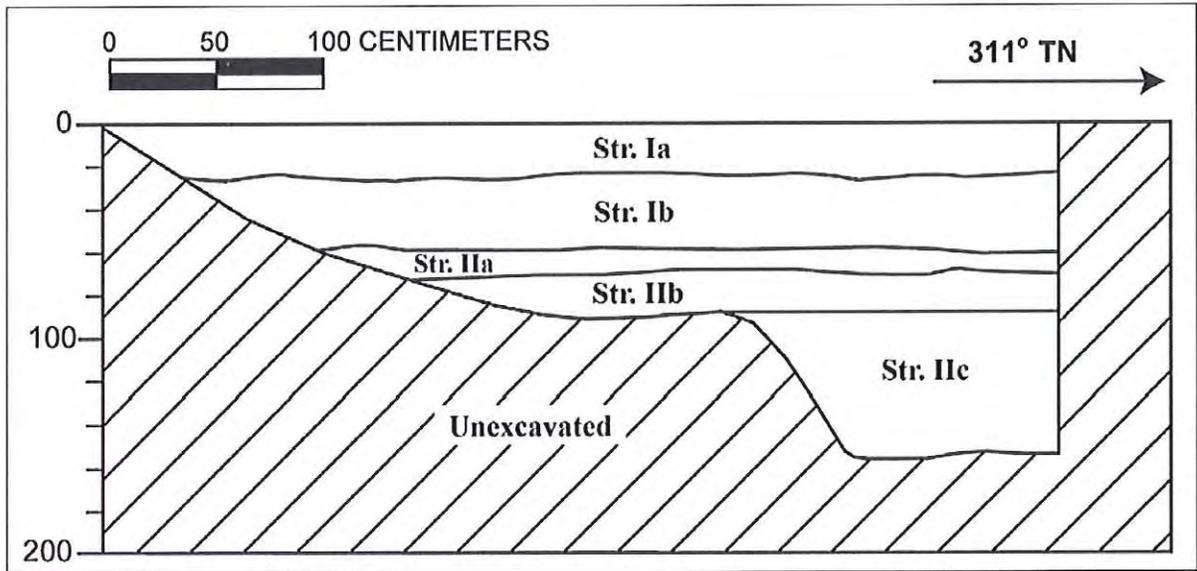


Figure 15. Excavation C south wall profile.



Figure 16. Excavation C south wall profile; view south.

### 4.2.4 Excavation D

Excavation D was located at the northwest corner of Ho'owili Road and Ho'one Road, approximately 5 m east of Excavation I, and was oriented east-west (see Figure 10). The excavation unit measured 4.2 m long by 2 m wide and was terminated at 98 cm below surface. The stratigraphic sequence includes Stratum I, three layers of fill (Table 11, Figure 17 and Figure 18). Bedrock was encountered at 95 cm below surface. No cultural material was observed in Excavation D.

Table 6. Stratigraphy of Excavation D

Stratum	Depth (cmbs)	Description
Ia	0-40	10 R 3/2, dusky red, sandy loam; single-grain structure; dry, loose consistency; non-plastic; no cementation; mixed in origin; very abrupt boundary; smooth topography. Landscaping fill with roots.
Ib	40-95	10 YR 7/2, light gray mottled with 10 YR 8/1 white; sand; single-grain structure; moist loose consistency; non-plastic; no cementation; mixed in origin; BOE*. Disturbed sand.
Ic	40-95	10 YR 6/3, pale brown; sand; single-grain structure; moist loose consistency; non-plastic; no cementation; mixed in origin; BOE*. Disturbed sand.

\* Base of Excavation

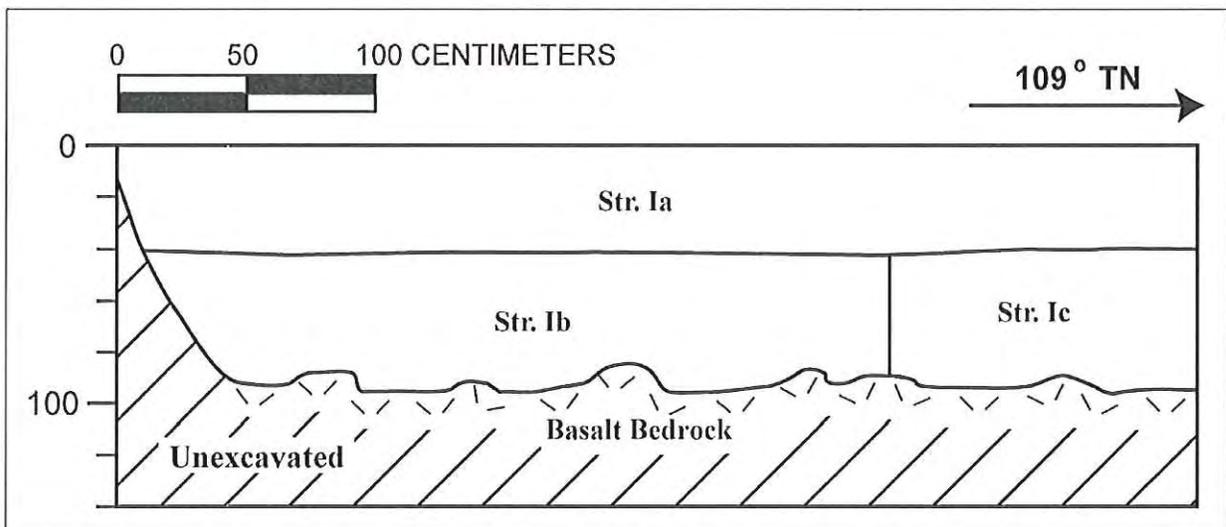


Figure 17. Excavation D north wall profile.



Figure 18. Excavation D, north wall profile; view northwest.

#### 4.2.5 Excavation E

Excavation E was located on the east side of the west restrooms in Po'ipū Beach Park and was oriented east-west (see Figure 10). The excavation unit measured 4.2 m long by 2 m wide and was terminated at 155 cm below surface. The stratigraphic sequence includes Strata I-IV, (Table 7, Figure 19 and Figure 20). Stratum Ia consisted of landscape fill, Stratum Ib was a disturbed fill layer, Stratum II was a cultural layer/ A Horizon; Stratum III consisted of clean Jaucas sand; and Stratum IV consisted of eroding bedrock. A possible hammerstone fragment was recovered from the back dirt, which came from between 40 and 85 cm below surface.

Table 7. Stratigraphy of Excavation E

Stratum	Depth (cmbs)	Description
Ia	0-15	7.5 YR 4/4 brown mottled with 10 YR 8/1 white, sandy loam; single-grain structure; dry, loose consistency; non-plastic; no cementation; mixed in origin; abrupt boundary; smooth topography. Landscaping fill with roots.
Ib	15-40	10 YR 4/4 dark yellowish-brown mottled with 10 YR 8/1 white, sandy loam; moderate, medium, blocky structure; dry, slightly hard consistency; non-plastic; weak cementation; mixed in origin; abrupt boundary; smooth topography. Disturbed fill layer with roots.
II	40-55	10 YR 5/3, brown; sand; single-grain structure; dry, weakly coherent consistency; non-plastic; no cementation; marine in origin; diffuse boundary; smooth topography. A Horizon, cultural layer.

Stratum	Depth (cmbs)	Description
III	55-85	10 YR 6/4, light yellowish-brown; sand; single-grain structure; dry, weakly coherent consistency; non-plastic; no cementation; marine in origin; clear boundary; smooth topography. Jaucas sand with roots.
IV	85-155	10 YR 3/4, dark yellowish-brown; eroding bedrock; moderate, medium, blocky structure; dry, weakly coherent consistency; non-plastic; strong cementation. BOE*. Eroding bedrock.

\* Base of Excavation

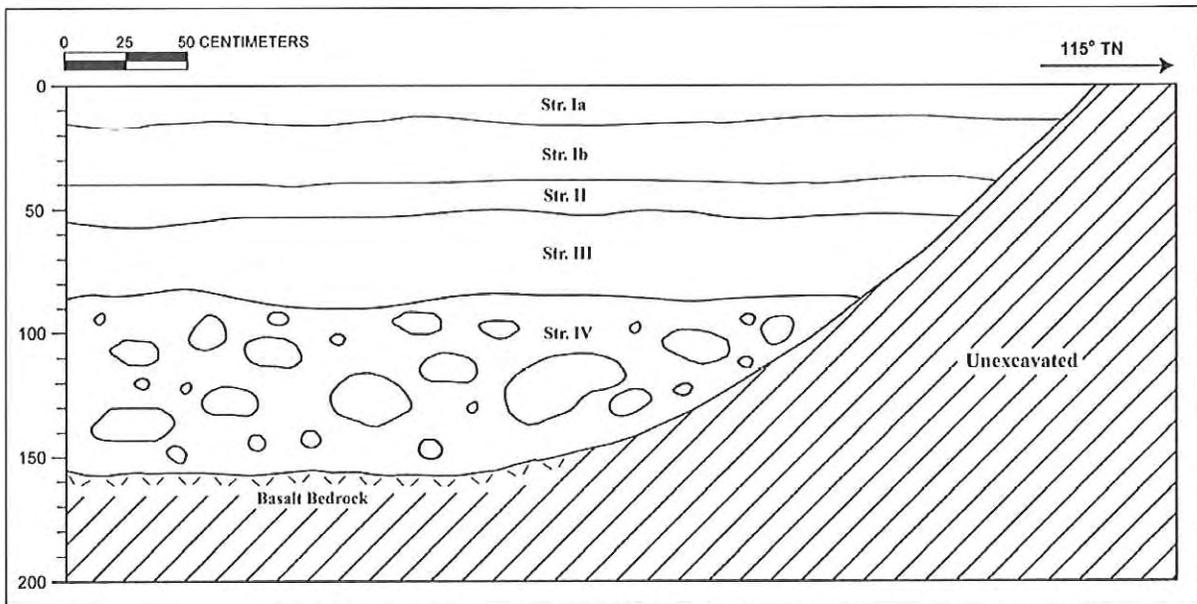


Figure 19. Excavation E north wall profile.



Figure 20. Excavation E, north wall profile; view north.

#### 4.2.6 Excavation F

Excavation F was located in the driveway behind Brennecke's Restaurant and was oriented north-south (see Figure 10). The excavation unit measured 4.2 m long by 2 m wide and was terminated at 100 cm below surface. The stratigraphic sequence includes Strata I-II (Table 8, Figure 21 and Figure 22). Stratum Ia consisted of asphalt and base course; Stratum Ib consisted of imported fill; Stratum IIa was reddish-brown clay; and Stratum IIb consisted of eroding bedrock. No cultural material was observed in Excavation F.

Table 8. Stratigraphy of Excavation F

Stratum	Depth (cmbs)	Description
Ia	0-20	Asphalt and base course
Ib	20-30	10 YR 8/3 very pale brown; sand; moderate, single-grain structure; dry, loose consistency; non-plastic; no cementation; mixed in origin; very abrupt boundary; smooth topography. Imported fill.
IIa	30-70	2.5 YR 4/4, reddish-brown; clay; weak, fine, blocky structure; moist friable consistency; plastic; strong cementation; terrigenous origin; very abrupt boundary; wavy topography. Natural clay with roots.
IIb	70-100	10 YR 4/3, brown; clay loam; moderate, fine, blocky structure; wet, slightly sticky consistency; non-plastic; no cementation; terrigenous in origin; BOE*. Bedrock encountered at BOE..

\* Base of Excavation

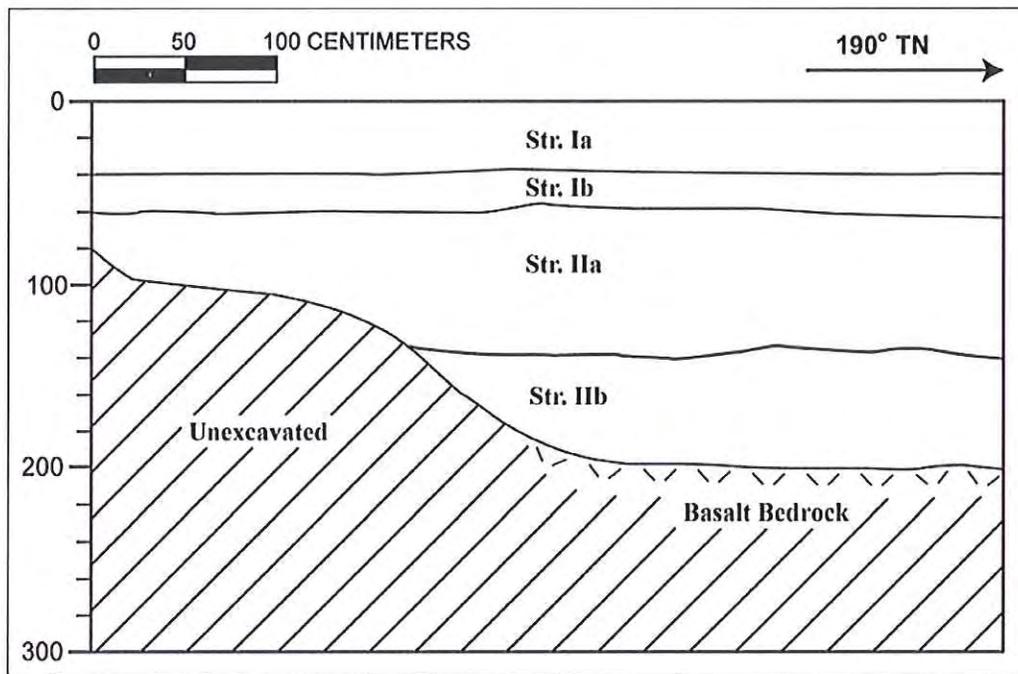


Figure 21. Excavation F east wall profile.



Figure 22. Excavation F, east wall profile; view northeast.

#### 4.2.7 Excavation G

Excavation G was located across the street from Brennecke's Restaurant in Po'ipū Beach Park (see Figure 10). It was oriented north-south, measured 2.7 m long by 1.2 m wide, and was terminated at 128 cm below surface. The stratigraphic sequence includes Strata I-III. Stratum Ia consisted of landscape grass and fill; Stratum Ib consisted of mixed fill material with concrete and modern trash; Stratum Ic consisted of a disturbed cultural layer mixed with large roots and fill material. Stratum IIa consisted of a cultural layer with charcoal present; Stratum IIb consisted of a possible thermal feature of which a sample was collected; and Stratum III consisted of Jaucas sand with bedrock present at the base of excavation (Table 9, Table 11, Figure 23 and Figure 24). A possible cultural layer containing charcoal was observed in Excavation G within Strata IIa and IIb.

Table 9. Stratigraphy of Excavation G

Stratum	Depth (cmbs)	Description
Ia	0-10	7.5 YR 3/3, dark brown with mottles of 10 YR 8/1 white; sandy loam; single-grain structure; dry, loose consistency; non-plastic; no cementation; mixed in origin; abrupt boundary; smooth topography. Landscaping fill.
Ib	10-75	7.5 YR 3/4, dark brown with mottles of 10 YR 8/1 white; sandy loam; single-grain structure; dry loose consistency; non-plastic; no cementation; mixed in origin; diffuse boundary; wavy topography. Mixed fill material with concrete and modern trash.
Ic	35-128	10 YR 3/2 very dark grayish-brown with mottles of 10 YR 8/1 white; sandy loam; single-grain structure; dry, weakly coherent consistency; non-plastic; no cementation; mixed in origin; very abrupt boundary; irregular topography. Disturbed cultural layer mixed with fill material; large root present.
IIa	88-95	10 YR 2/2 very dark brown; sand; single-grain structure; dry, weakly coherent consistency; non-plastic; no cementation; marine in origin; clear boundary; irregular topography. Cultural layer with charcoal.
IIb	95-105	10 YR 2/1 black; sand; single-grain structure; dry, weakly coherent consistency; non-plastic; no cementation; marine in origin; very abrupt boundary; wavy topography. Possible thermal feature; sample collected.
III	110-128	10 YR 6/6 brownish-yellow; sand; single-grain structure; moist loose consistency; non-plastic; no cementation; marine in origin; BOE* Jaucas sand; bedrock present at the bottom of excavation.

\* Base of Excavation

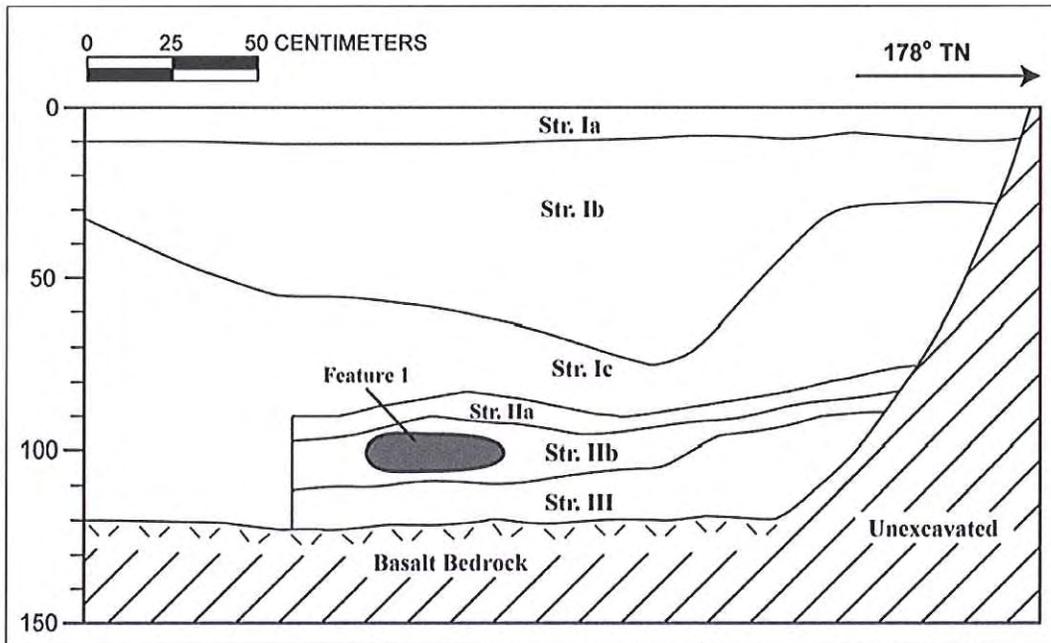


Figure 23. Excavation G east wall profile.



Figure 24. Excavation G east wall profile; view east.

#### 4.2.8 Excavation H

Excavation H was located on the west side of the eastern restrooms in Po'ipū Beach Park (see Figure 10). It was oriented east-west, measured 1.8 m long by 1 m wide, and was terminated at 44 cm below surface. The stratigraphic sequence includes Strata I, which was three layers of fill material with charcoal and modern trash (Table 10, Figure 25 and Figure 26). No significant cultural material was observed in Excavation H.

Table 10. Stratigraphy of Excavation H

Stratum	Depth (cmbs)	Description
Ia	0-10	10 YR 4/3 brown with mottles of 10 YR 8/1 white; sandy loam; moderate, medium, blocky structure; dry, weakly coherent consistency; non-plastic; no cementation; mixed in origin; clear boundary; smooth topography. Landscape fill.
Ib	10-35	10 YR 5/4, yellowish-brown; sandy loam; moderate, medium, blocky structure; dry, slightly hard consistency; non-plastic; weak cementation; mixed in origin; abrupt boundary; smooth topography. Disturbed fill.
Ic	35-44	10 YR 2/1 black; sand; single-grain structure; dry, weakly coherent consistency; non-plastic; weak cementation; marine in origin; BOE*. Probable modern thermal feature, modern trash observed; bedrock observed at the bottom of excavation.

\* Base of Excavation

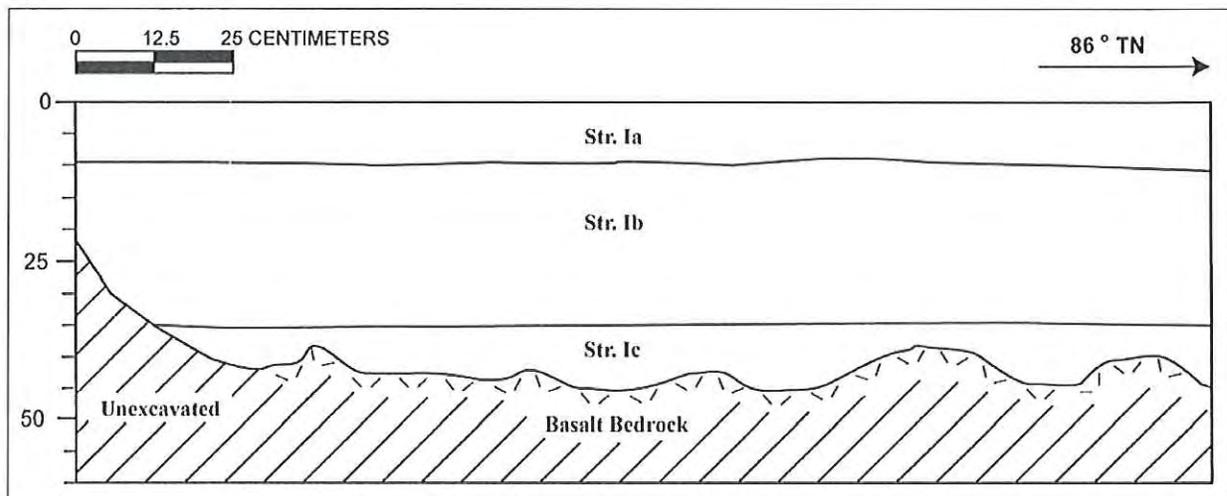


Figure 25. Excavation H north wall profile.



Figure 26. Excavation H north wall profile; view north.

#### 4.2.9 Excavation I

Excavation I was located at the northwest corner of Ho'owili Road and Ho'one Road, approximately 5 m north of a stop sign in the shoulder of the road, and was oriented north-south (see Figure 10). The excavation unit measured 2 m long by 1 m wide and was terminated at 132 cm below surface. The stratigraphic sequence includes Strata I and II. Stratum Ia consisted of asphalt, while Strata Ib and Ic consisted of imported landscape fill. Stratum IIa was natural sandy clay (Table 11, Figure 27 and Figure 28). The water table was encountered at approximately 130 cm below surface. No cultural material was observed in Excavation I.

Table 11. Stratigraphy of Excavation I

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt and base course.
Ib	10-40	7.5 YR 5/4, brown; clay loam; moderate, medium, blocky structure; dry, very hard consistency; non-plastic; strong cementation; mixed in origin; clear boundary; smooth topography. Landscape fill.
Ic	40-128	5 YR 3/4, dark reddish-brown with mottles of Gley 2 4.5 BB; sandy clay; moderate, medium, blocky structure; dry very hard consistency; non-plastic; strong cementation; mixed in origin; clear boundary; wavy topography. Fill layer with large cobbles and boulders.
II	128-132	10 YR 8/3, very pale brown; sandy clay; single-grain structure; wet, sticky consistency; slightly plastic; strong cementation; marine in origin; BOE* Sandy marine clay.

\* Base of Excavation

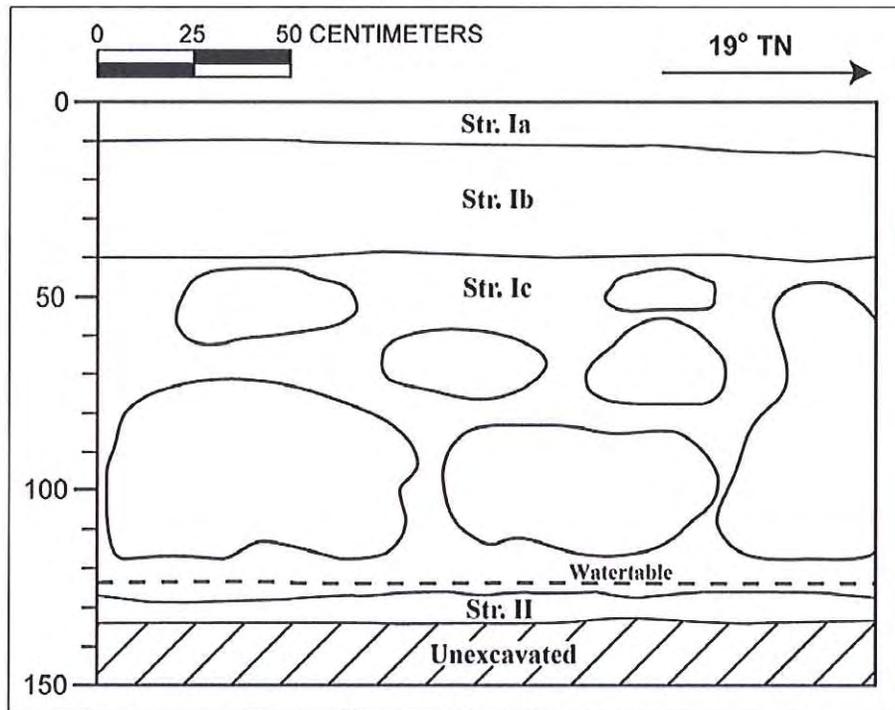


Figure 27. Excavation I west wall profile.



Figure 28. Excavation I, west wall profile; view northwest.

## 4.3 Site Descriptions

### 4.3.1 SIHP # 50-30-10-745

**SITE TYPE:** Cultural layer  
**FUNCTION:** Former land surface  
**CONDITION:** Good  
**AGE:** Pre-Contact  
**TAX MAP KEY:** 2-8-17: 1 and 2

SIHP # 50-30-10-745 is a cultural layer previously documented (Hammatt et al. 1994) during clean-up and restoration activities after Hurricane 'Iniki (Figure 29). The cultural layer was exposed by the hurricane and subsequent testing indicates it occupies the extent of Poi'pū Beach Park. Hammatt et al. notes:

1. Cultural layer occurs within a few centimeters of the ground surface of the Beach Park. Until it was exposed by wave action it remained sealed underneath thin layers of modern beach sand and imported clay loam fill.
2. The cultural layer is underlain by generally fine-textured beach sand indicating a low-energy backshore environment. However, toward the eastern end of the Park, at Localities H and I the underlying layers are composed of gravel, indicating higher-energy water action related more to a rocky coastline than a gentle beach environment.
3. The cultural layer itself varies between 20 cm thickness to a maximum thickness of 75 cm.
4. Except for one isolated instance of discontinuous sterile sand lenses within the cultural layer (at Locality B), the cultural layer is uninterrupted from bottom to top and appears to represent a continuous cultural occupation with no periods of abandonment which would be represented by layers of beach or dune sand interbedded in the cultural layer.
5. In spite of its distribution throughout the central and western portion of the Beach Park, there appears to be variation in intensity of occupation which is indicated in the profiles by variable quantities of midden and artifactual material as well as charcoal. Based on these criteria, as well as the thickness itself, Locality B toward the western end of the Beach Park represents the most intensive area of use.
6. ...the cultural layer appears to be prehistoric and is undisturbed from bottom to top. Where disturbance is present, as in Localities D, E, F, and H, the area of disturbance is clearly marked by compaction of the layer and introduction of historic artifacts, such as metal and glass. This disturbance occurred during construction of earlier Beach Park facilities, i.e., concrete slabs and pipe lines. In+ other localities the cultural layer is

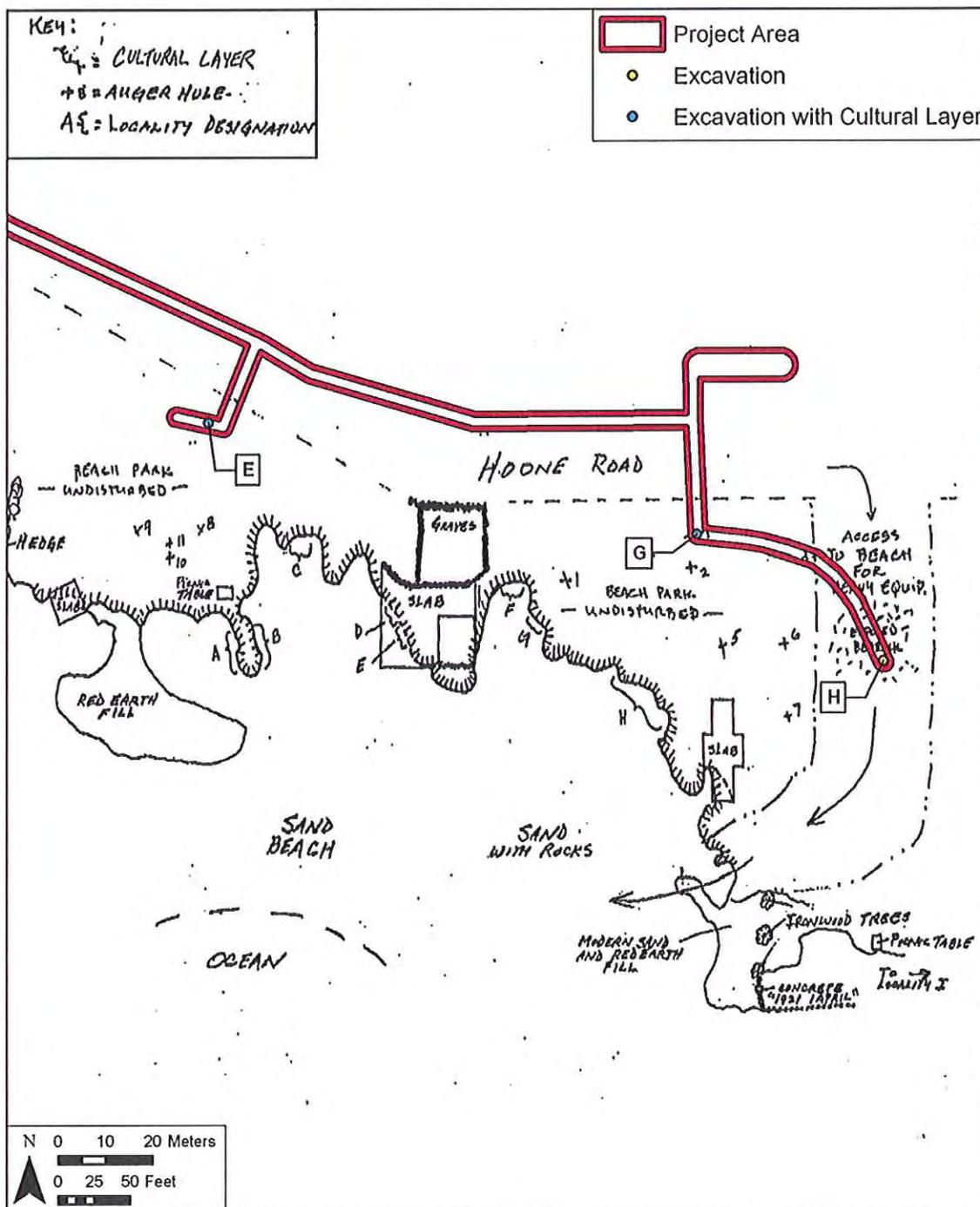


Figure 29. Map of Poi'pū Beach Park showing the extent of SIHP # 50-30-10-745, with the current project area in red. Note Auger Test +4 within excavation G. (Hammatt et al. 1994: 4).

undisturbed by historic and modern activity and appears to be completely prehistoric in age (Hammatt et al. 1994: 30-40).

Remnants of SIHP # 50-30-10-745 were encountered during the current study in Excavations E and G (see Figure 29). While Hammatt et al. indicate the cultural layer was present just beneath the surface, the current study did not encounter remnants of cultural habitation until 40 cm below surface in excavation E and 88 cm below surface in Excavation G. This is likely the result of additional imported fill for landscaping and utilities purposes.

The portion of SIHP # 50-30-10-745 observed in Excavation E consisted of approximately 15 cm of compacted gray sand. A possible hammerstone fragment was recovered from the back dirt of the excavation, which likely came from this stratum. No other features or artifacts were observed from this stratum.

The portion of SIHP # 50-30-10-745 observed in Excavation G consisted of approximately 17 cm of dark brown sand and a possible thermal feature. No artifacts were observed in Excavation G. A sample was collected from this feature for radio carbon dating and the results are discussed in Section 5. Hammatt et al. (1994) conducted an auger test in the general vicinity of Excavation G and documented:

...a loamy sand layer to 25 cmbs. Str. IIA, 25 to 33 cmbs, consists of brown clay loam. Str. IIb, extending to 40 cmbs., consists of pale brown sand which overlies a reddish brown clay loam designated Str. IIb. This layer continues to the base of excavation at 70 cmbs, where Str. III bedrock is encountered. Several historic artifacts were uncovered during the excavation of this trench Hammatt et al. 1994: 42).

It is likely that construction activities related to installation of restroom facilities, as well as subsequent restoration of the beach park, have altered the stratigraphy in this area; thus explaining the differences in stratigraphy between Excavation G of the current project and the Hammatt et al. (1994) auger test.

## Section 5 Results of Laboratory Analysis

### 5.1 Radiocarbon Analysis

One sample from SIHP # 50-30-10-745, Excavation G, Stratum IIb, 95-105 cmbs was submitted to Beta Analytic, Inc for radiocarbon dating analysis. The standard radiometric method was used to establish dates of use for charcoal encountered during the test excavation. The sample (Beta-288474) yielded a date range, with a calibrated 2-sigma date of 1430 AD to 1630 AD (95%). These dates place site use firmly in the pre-Contact period of Hawaiian prehistory.

Table 12. Results of radiocarbon analysis of organic material collected from Stratum II of Excavation G

Trench/ Stratum	Beta Analytic ID #	Sample Material / Analytic Technique	Provenience	Conventional Radiocarbon Age	C13/C12 Ratio	Oxcal Calibrated Calendar Age (2 sigma)
Test Unit 1, Stratum II	Beta- 288474	Sediment and charcoal / Radiometric	Stratum IIb, 95-105 cmbs	400 +/- 40 BP	-24.5 o/oo	1430 AD-1630 AD (95%)

Hammatt et al. (1994) collected samples for radio carbon dating along the cut banks where cultural layer SIHP # 50-30-10-745 was observed after Hurricane 'Iniki. Samples were collected and tested from Hammatt et al. localities A, B, F, and H and returned dates between AD 1282 and AD 1955 (Hamatt et al. 1994: 52). This date range represents continual human use of Poi'pū Beach Park from very early pre-Contact to modern times. The sample collected as part of the current inventory survey supports previous radio carbon dating conducted by Hammatt et al (1994).

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## Section 6 Summary and Interpretation

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The current archaeological inventory survey investigation further documented 1 historic property (SIHP # 50-30-10-745) within the current project area. SIHP # 50-30-10-745 is a multi-component cultural layer previously documented as part of clean-up and restoration activities conducted after Hurricane 'Iniki (Hammatt et al. 1994). This cultural layer represents continual use of Poi'pū Beach Park from very early pre-Contact to modern times. The radio carbon date collected as a result of this inventory survey supports previous research of Poi'pū Beach Park.

The historic property further documented as part of the current inventory survey relates to pre-Contact use of Poi'pū Beach Park. The findings of this archaeological inventory survey support the predictive model based on background research. Extensive land alteration by historic agricultural activities has likely destroyed any previously existing pre-contact structures in the *mauka* portions of the project area. In the areas that were not heavily utilized or disturbed during previous ground disturbing activities in the area, pre-Contact cultural resources were encountered.

## Section 7 Significance Assessments

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### 7.1 Significance Assessments

The historic property identified by the current study was evaluated for significance according to the broad criteria established for the Hawai'i Register of Historic Places. The five criteria are:

- A Associated with events that have made an important contribution to the broad patterns of our history;
- B Associated with the lives of persons important in our past;
- C Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;
- D Have yielded, or is likely to yield information important for research on prehistory or history;
- E Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history and cultural identity.

#### Significance Assessment for SIHP # 50-30-10-745

SIHP # 50-30-10-745, an intact subsurface cultural layer, is interpreted as associated with pre-Contact Native Hawaiian occupation. SIHP # 50-30-10-745 has been previously assessed as significant under Criteria C (Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value), D (have yielded, or may be likely to yield information important in prehistory or history), and E (Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history and cultural identity) of the Hawai'i Register of Historic Places evaluation criteria.

## **Section 8 Project Effect and Mitigation Recommendations**

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The following project effect discussion and cultural resource management recommendations are intended to facilitate project planning and support the proposed project's required historic preservation consultation.

### **8.1 Project Effect**

The historic property, SIHP # 50-30-10-745, identified within the project area will be affected by construction activities associated with the current project. CSH's project specific effect recommendation is "effect, with proposed mitigation commitments." The recommended mitigation measures will reduce the project's potentially adverse effect on these significant historic properties.

### **8.2 Mitigation Recommendations**

The results of this archaeological inventory survey indicate that subsurface deposits within the Poi'pū Beach Park portion of the project area consist of several strata of modern imported fill overlying a large cultural layer, SIHP # 50-30-10-745, at a depth between 40 and 105 cm below the current ground surface. SIHP # 50-30-10-745 was documented with a detailed written description, photographed in profile, analyzed, and radiocarbon dated. Because additional information can still be gained from this site, including but not limited to, additional soil profiles, and additional radio carbon dates, an archaeological monitoring program is recommended for this project. This monitoring program will facilitate the identification of any additional historic properties that might be discovered during project construction, and will gather additional information regarding SIHP # 50-30-10-745 within the project area.

A monitoring plan should be submitted to the SHPD for review and approval before any ground disturbing activities begin, and a report detailing monitoring activities should be generated after archaeological monitoring is complete. The monitoring program should include a combination of on-site and on-call monitoring to be determined in consultation with SHPD. The recommended monitoring program should alleviate any adverse impact resulting from the proposed project.

### **8.3 Disposition of Materials**

The possible hammerstone fragment collected as part of this archaeological inventory survey was collected from public land; accordingly, this material belongs to the landowner, the County of Kaua'i. This artifact will be temporarily housed at the CSH storage facility, and CSH will make arrangements with the County of Kaua'i regarding its disposition.

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# Appendix A Radio Carbon Analysis Results



Consistent Accuracy...  
... Delivered On-time

Beta Analytic Inc.  
4985 SW 74 Court  
Miami, Florida 33155 USA  
Tel: 305 667 5167  
Fax: 305 663 0964  
Beta@radiocarbon.com  
www.radiocarbon.com

Darden Hood  
President

Ronald Hatfield  
Christopher Patrick  
Deputy Directors

December 7, 2010

Dr. Hallett H. Hamnatt/Kendy Altizer  
Cultural Surveys Hawaii  
P.O. Box 1114  
Kailua, HI 96734  
USA

RE: Radiocarbon Dating Result For Sample KOLOA<sup>42</sup><sub>43</sub>

Dear Hallett and Kendy:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis proceeded normally. As usual, the method of analysis is listed on the report sheet and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. It was analyzed with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of the analysis was charged to the MASTERCARD card provided. A receipt is enclosed with the mailed report copy. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

  
Digital signature on file

Page 1 of 3

**BETA****BETA ANALYTIC INC.**

DR. M.A. TAMERS and MR. D.G. HOOD

4985 S.W. 74 COURT  
MIAMI, FLORIDA, USA 33155  
PH: 305-667-5167 FAX: 305-663-0964  
beta@radiocarbon.com**REPORT OF RADIOCARBON DATING ANALYSES**

Dr. Hallett H. Hammatt/Kendy Altizer

Report Date: 12/7/2010

Cultural Surveys Hawaii

Material Received: 11/19/2010

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age(*)
Beta - 288474 SAMPLE : KOLOA 43 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1430 to 1530 (Cal BP 520 to 420) AND Cal AD 1560 to 1630 (Cal BP 390 to 320)	390 +/- 40 BP	-24.5 o/oo	400 +/- 40 BP

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the  $^{14}\text{C}$  activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby  $^{14}\text{C}$  half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured  $^{13}\text{C}/^{12}\text{C}$  ratios (delta  $^{13}\text{C}$ ) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta  $^{13}\text{C}$ . On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta  $^{13}\text{C}$ , the ratio and the Conventional Radiocarbon Age will be followed by \*\*\*. The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

Page 2 of 3

## CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.5;lab. mult=1)

Laboratory number: **Beta-288474**

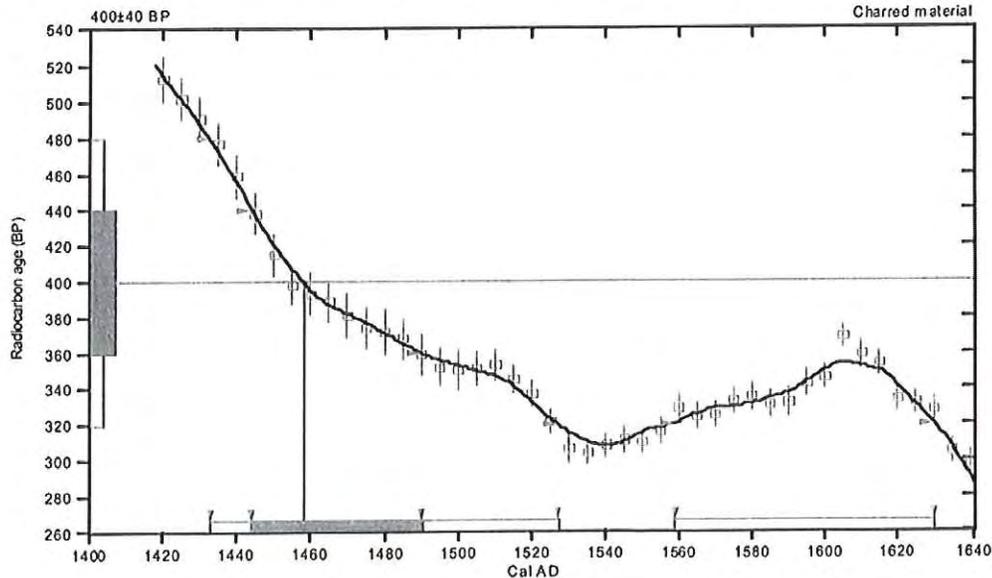
Conventional radiocarbon age: **400±40 BP**

**2 Sigma calibrated results: Cal AD 1430 to 1530 (Cal BP 520 to 420) and  
(95% probability) Cal AD 1560 to 1630 (Cal BP 390 to 320)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: **Cal AD 1460 (Cal BP 490)**

**1 Sigma calibrated result: Cal AD 1440 to 1490 (Cal BP 510 to 460)  
(68% probability)**



### References:

- Database used*  
*INTCAL04*  
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### Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

**EXHIBIT "G"**

**EXHIBIT "G"**

REQUEST FOR COMMENTS INDEX

AGENCY/ORGANIZATION	COMMENTS	
	YES	NO
Department of Parks and Recreation, County of Kaua'i		
Planning Department, County of Kaua'i		
Department of Public Works, County of Kaua'i		
Water Department, County of Kaua'i		
Department of Agriculture, State of Hawai'i		
Department of Accounting and General Services, State of Hawai'i		
Department of Business, Economic Development and Tourism, State of Hawai'i		
Department of Business, Economic Development and Tourism – Energy Division, State of Hawai'i		
Department of Business, Economic Development and Tourism – Office of Planning, State of Hawai'i		
Department of Defense, State of Hawai'i		
Department of Education, State of Hawai'i		
Department of Hawaiian Home Lands, State of Hawai'i		
Department of Health, State of Hawai'i		
Department of Human Services, State of Hawai'i		
Department of Labor and Industrial Relations, State of Hawai'i		
Department of Land and Natural Resources, State of Hawai'i		

AGENCY/ORGANIZATION	COMMENTS	
	YES	NO
Department of Land and Natural Resources – Historic Preservation Division, State of Hawai'i		
Department of Transportation, State of Hawai'i		
Hawai'i Housing Finance and Development Corporation		
Office of Hawaiian Affairs, State of Hawai'i		
University of Hawai'i Environmental Center		
U. S. Fish & Wildlife Service		
Kōloa Neighborhood Association		
Po'ipū Beach Resort Association		