FEB 23 2011

UNIVERSITY of HAWAI'I SYSTEM

Office of Capital Improvements

January 18, 2011

Mr. Herman Tuiolosega, Acting Administrator
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Mr. Tuiolosega:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE UNIVERSITY OF HAWAII AT HILO COLLEGE OF PHARMACY – PERMANENT FACILITIES, TAX MAP KEY: (3) 2-4-001: 041 (PORTION) and 007 (PORTION), HILO, Hawai'i

The University of Hawai'i at Hilo has reviewed the Draft Environmental Assessment (EA) for the subject project, and anticipates a Finding of No Significant Impact determination. Please publish notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and one (1) copy of the document in pdf format on a CD; and one (1) hardcopy of the Draft EA. Please do not hesitate to contact Vincent Shigekuni at (808) 521-5631 or email (vshigekuni@pbrhawaii.com) if you have any questions.

Sincerely yours,

Brian K. Minaai
Associate Vice President for Capital Improvements

c: Debra Fitzsimons, Vice Chancellor for Administrative Affairs

Enclosure(s).

1960 East West Road, Biomedical Sciences B-102
Honolulu, Hawai'i 96822
Telephone: (808) 956-7935
Fax: (808) 956-3175

UNIVERSITY of HAWAI'I®

HILO

COLLEGE OF PHARMACY

PERMANENT FACILITIES

Draft Environmental Assessment

PBR HAWAII & ASSOCIATES, INC.

February 2011

DRAFT ENVIRONMENTAL ASSESSMENT

FOR THE

UNIVERSITY OF HAWAI‘I AT HILO
COLLEGE OF PHARMACY – PERMANENT FACILITIES

Contact:

University of Hawai‘i
Office of Capital Improvements
1951 East West Road
Room 102
Honolulu, Hawaii 96822

Maynard Young
(808) 956-4071

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1.0

INTRODUCTION

1.0 INTRODUCTION

In 2008, the University of Hawai‘i at Hilo (hereafter referred to as "UHH") approved a Final Environmental Assessment (EA) for proposed interim UHH College of Pharmacy Facilities, with a Finding of No Significant Impact (FONSI) (PBR HAWAII, *Final Environmental Assessment for University of Hawai‘i at Hilo, College of Pharmacy*, Honolulu, Hawai‘i. January 2008). Prior to the Final EA/FONSI, a Draft EA was published in October 2007 for public review and comment. Comment letters received during the public review period and pre-consultation letters for the 2007 Draft EA are included in Chapter 9.

Three of the four proposed modular buildings have been completed. The fourth building will arrive in February for installation. Subsequently, UHH was able to secure funding for permanent facilities on the adjoining land to the north and is proposing to construct its permanent College of Pharmacy facilities. Plans for the University Park (an area long planned and proposed for UHH campus expansion, student housing, research and technology, multipurpose arena) have been addressed in two previous environmental documents: Final Environmental Assessment Research & Technology Park at the University of Hawai‘i at Hilo (April 1989) and the University of Hawai‘i at Hilo University Park Final Environmental Impact Statement (September 1997). The proposed action will require the use of State land and funds and possibly some County lands for infrastructure service.

1.1 PROJECT SUMMARY

Project Title: UHH College of Pharmacy – Permanent Facilities

Applicant: University of Hawai‘i
Office of Capital Improvements
1951 East West Road, Room 102
Honolulu, Hawaii 96822

Contact: Mr. Maynard Young
Phone: (808) 956-4071

Location: Waiākea, South Hilo District, Hawai‘i (Figure 1)

Tax Map Key: (3) 2-4-01: 41 (portion) and 2-4-01: 07 (portion) (Figure 2)

Property Owner: State of Hawai‘i

Existing Use: Underdeveloped land and portions of partially developed land in UHH University Park

Proposed Use: Two new buildings and one new parking lot for the permanent facilities of the UHH College of Pharmacy

Land Use Designations:	State Land Use:	Urban (Figure 3)
	General Plan:	University Use (Figure 4)
	County Zoning:	A-1a, Agricultural (Figure 5)
Project Area:	Approximately 4.5 acres	
Special Management Area (SMA):	The subject property is not within the SMA.	
Action Requested:	Compliance with Chapter 343, *Hawai'i Revised Statues*	
Accepting Authority:	University of Hawai'i at Hilo	
Anticipated Determination:	Finding of No Significant Impact (FONSI)	

1.2 ENVIRONMENTAL COMPLIANCE

This draft environmental assessment (DEA) has been prepared in compliance with the State of Hawai'i, *Hawai'i Revised Statutes* (HRS), Chapter 343, for the use of State lands and funds and possible County lands and facilities in accordance with the State Department of Health, Hawai'i Administrative Rules (HAR), Title 11, Chapter 200.

1.3 LOCATION

The project site area is comprised of approximately 4.5 acres within the South Hilo District in Waiākea on the Island of Hawai'i (Figure 1) and is identified as Tax Map Keys (TMKs): (3) 2-4-01: 41 (portion) and 7 (portion) (Figure 2).

1.4 LAND OWNERSHIP

The UHH has site control over the project site, under a general lease from the State of Hawai'i, which is situated within the UHH campus.

1.5 BACKGROUND

UHH is proposing to construct permanent facilities for the College of Pharmacy within the UHH University Park (Figure 6) to support the growing demand for a comprehensive pharmacy education center based in the Pacific Island region. Once established, the school will offer a four-year program of study leading to a doctor of pharmacy degree.

UHH has recognized for decades that Hawai'i has been viewed as the crossroads of the Pacific, merging cultures and people from all walks of life. UHH is poised to become the center of pharmaceutical research, education, and patient care services in the Asian Pacific Region due to its central location in the Pacific Basin and its extraordinary potential for growth. Students and researchers alike will benefit from the combined contributions of Western science, Eastern traditions and Pacific Island heritage in

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LEGEND

Project Area

Area Covered in Original FEA/FONSI (2008)

FIGURE 1
Regional Location Map

UHH College of Pharmacy

University of Hawai'i at Hilo

ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)
0 1,000 2,000 4,000

PBR HAWAII & ASSOCIATES, INC.

Source: U.S. Geological Survey (1983)
Disclaimer: This map has been prepared for general planning purposes only.

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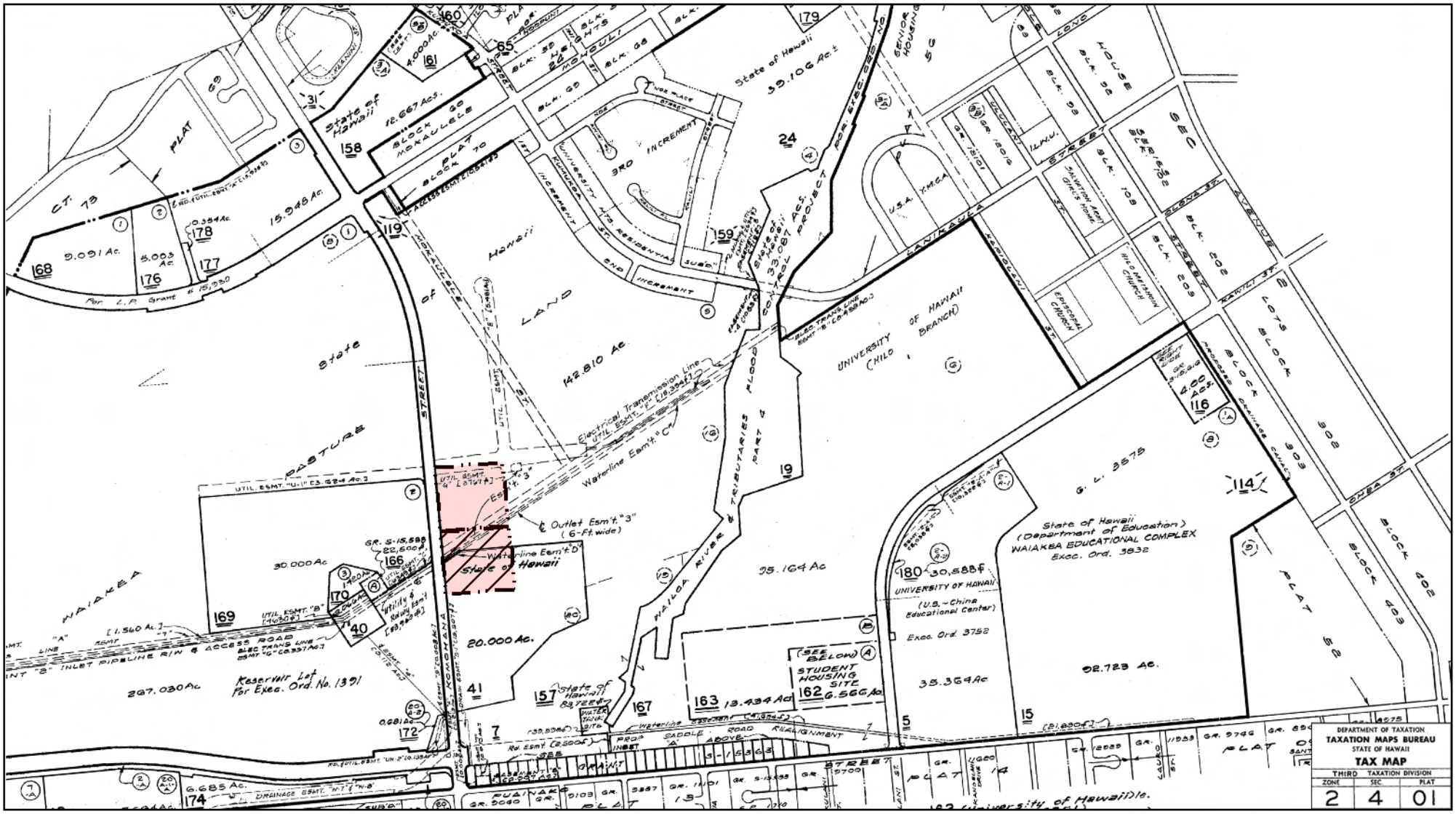


LEGEND

- Project Area
- Area Covered in Original FEA/FONSI (2008)
- Roads

FIGURE 2

Tax Map Key

UHH College of Pharmacy

University of Hawai'i at Hilo

ISLAND OF HAWAI'I

NORTH

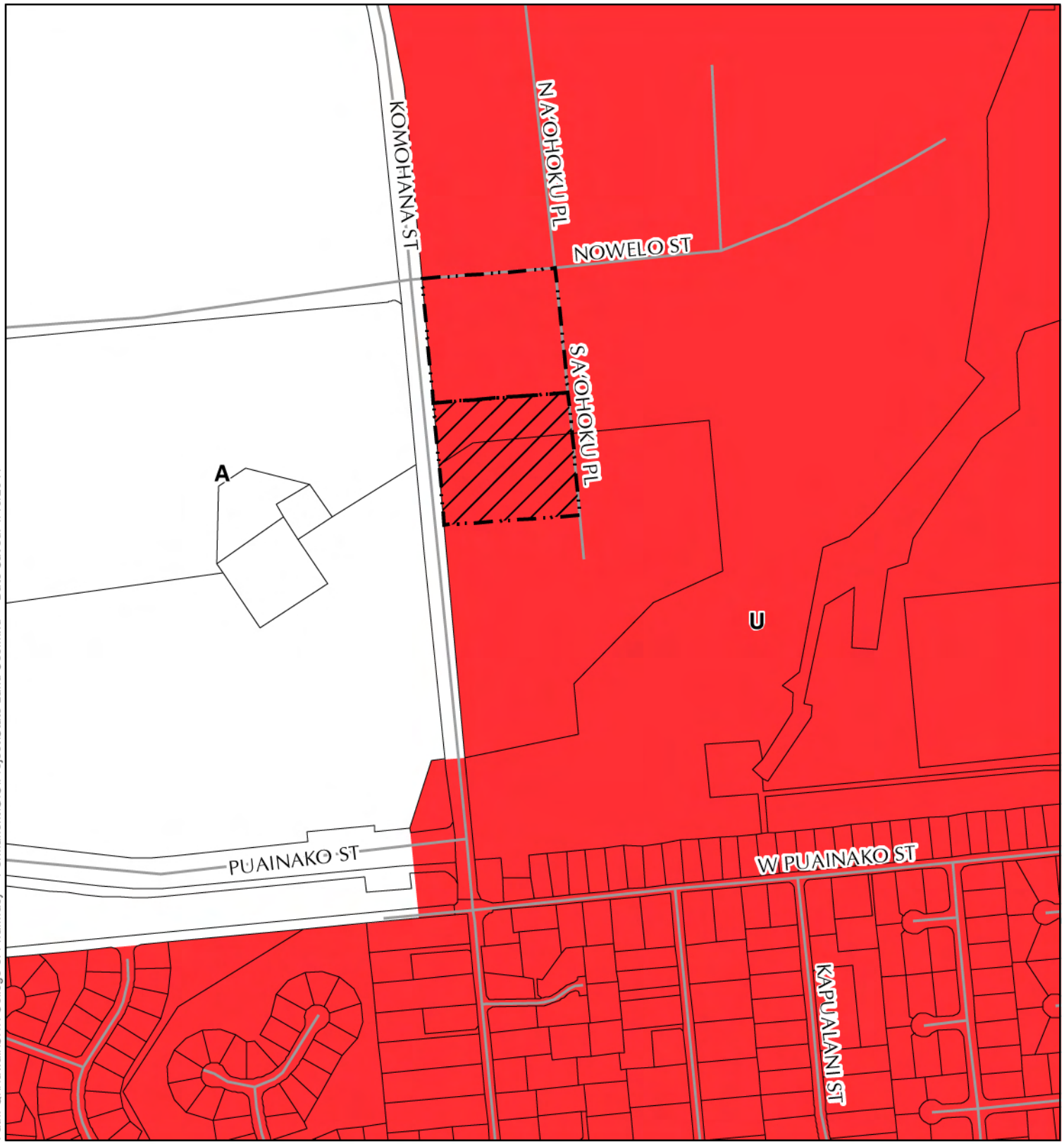
LINEAR SCALE (FEET)

0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.

Source: County of Hawaiʻi, Department of Planning, Department of Taxation (2010)

Disclaimer: This map has been prepared for general planning purposes only.



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LEGEND

Project Area

Area Covered in Original FEA/FONSI (2008)

Roads

Code

A - Agriculture

U - Urban

Source: State Land Use Commission (2010)
Disclaimer: This map has been prepared for general planning purposes only.

FIGURE 3
State Land Use District Boundary Map

UHH College of Pharmacy

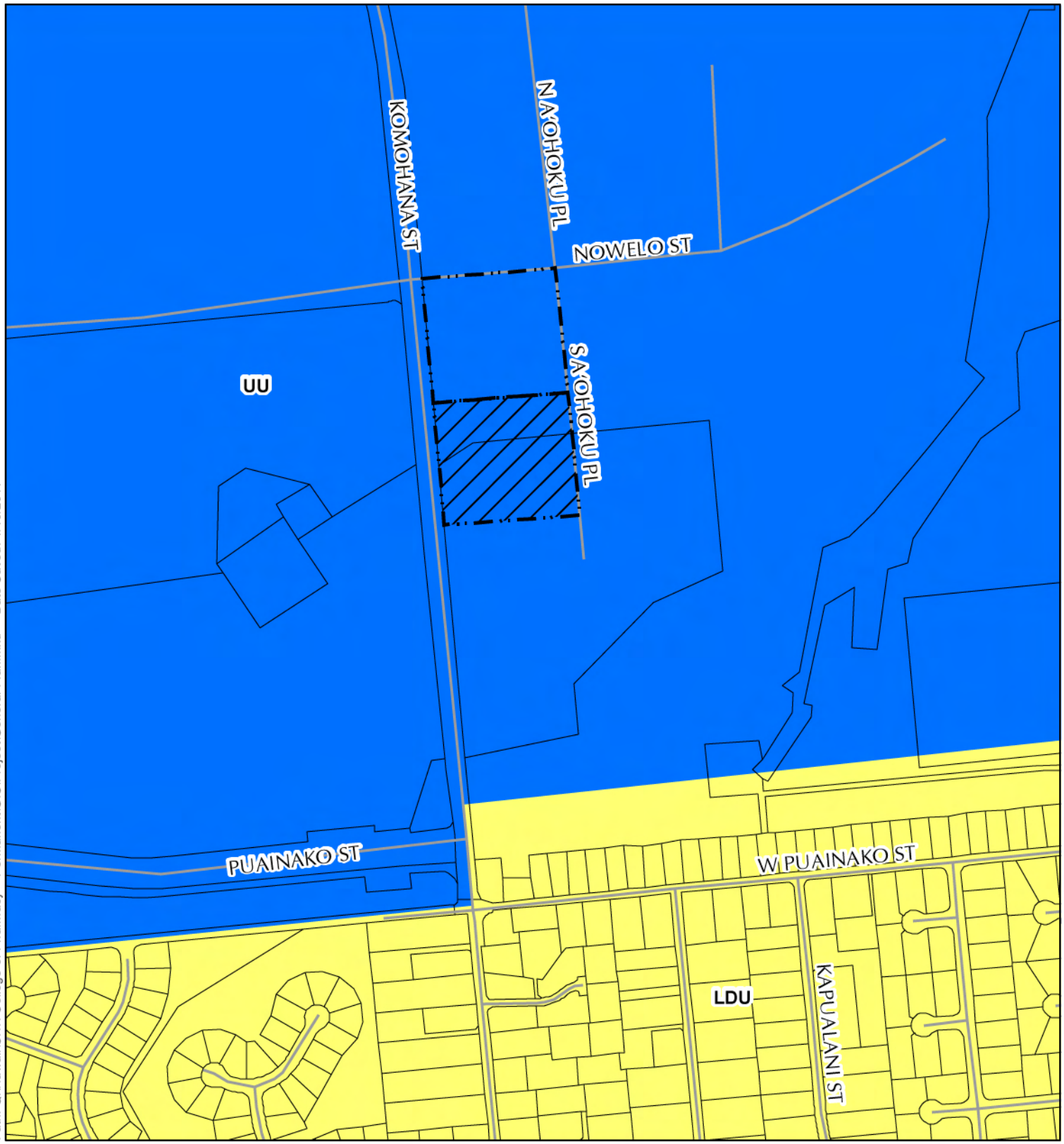
University of Hawai'i at Hilo

ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

PBR HAWAII & ASSOCIATES, INC.



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LEGEND

- Project Area
- Area Covered in Original FEA/FONSI (2008)
- Roads

Class

- UU: University Use
- LDU: Low Density Urban

Source: County of Hawai'i Planning Department (2005)
Disclaimer: This map has been prepared for general planning purposes only.

FIGURE 4
General Plan Map

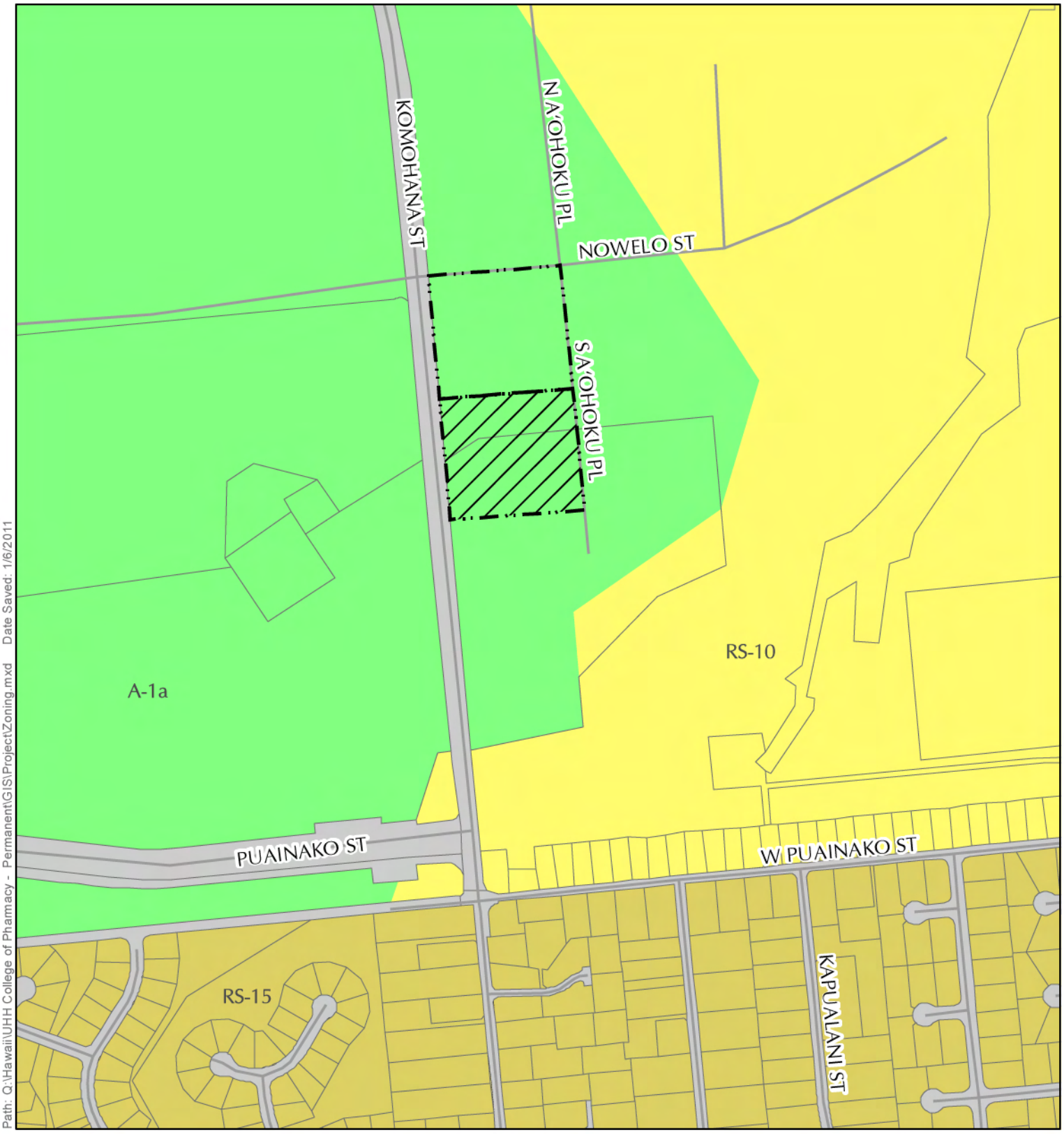
UHH College of Pharmacy

University of Hawai'i at Hilo — ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

PBR HAWAII & ASSOCIATES, INC.



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LEGEND

- Project Area
- Area Covered in Original FEA/FONSI (2008)
- Roads

Zone

- Road
- A-1a
- RS-10
- RS-15

Source: County of Hawai'i Planning Department (2010)
Disclaimer: This map has been prepared for general planning purposes only.

FIGURE 5
County of Hawai'i Zoning

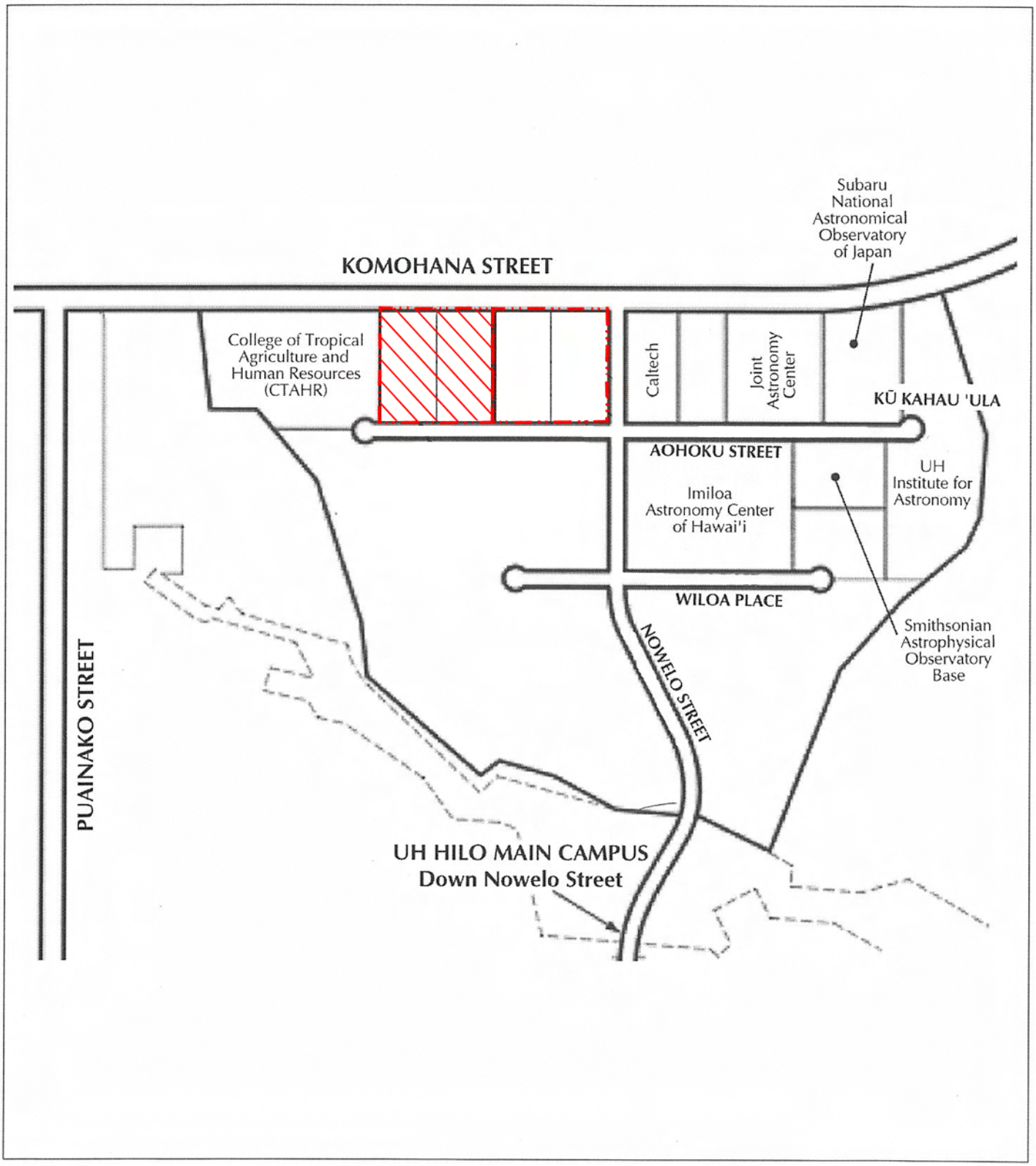
UHH College of Pharmacy

University of Hawai'i at Hilo — ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

PBR HAWAII & ASSOCIATES, INC.



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LEGEND

Project Area

Area Covered in Original FEA/FONSI (2008)

FIGURE 6

University Park Development Plan

UHH College of Pharmacy

University of Hawai'i at Hilo ISLAND OF HAWAI'I

NORTH

NOT TO SCALE

PBR HAWAII & ASSOCIATES, INC.

Source: University of Hawaii at Hilo

Disclaimer: This map has been prepared for general planning purposes only.

cultivating a unique and effective approach to the healing arts and subsequent pharmaceutical advancements. Revolutionary investigations are expected to be conducted at the UHH - College of Pharmacy, producing groundbreaking discoveries and advanced medications by examining the natural and man-made assets of the Pacific Basin region.

The permanent College of Pharmacy facilities will be approximately 119,453 square feet, built in two phases (first phase would include two buildings totaling approximately 94,044 square feet) on land totaling 4.5 acres. One parking lot with a minimum of 69 stalls to comply with County standards, but a potential capacity of 192 stalls is planned to accommodate the need for parking at the permanent facilities. The first phase would include two buildings, the "Phase I Building" and the "Vivarium Building." The "Phase I Building" will be three-story and include classrooms, student services and offices, restrooms, study rooms, lecture halls, pharmacy lab, SIM labs, NMR lab, lab support, clerical support and offices, faculty lounge, conference rooms, student lounge, drug information learning resource center, and lobby/reception.

The Vivarium Building will be an enclosed area for keeping and raising plants for research. The proposed "Vivarium Building" will also include labs and offices.

1.6 PROJECT DEVELOPMENT GOALS AND OBJECTIVES

The goal and objective of the project is to provide facilities for the proposed permanent College of Pharmacy by the 2014 Spring Semester. The proposed permanent College of Pharmacy is intended to support the labor demand for qualified pharmacists in the State of Hawai'i. It is the only college of pharmacy to service the Pacific region as a whole.

The mission of the University of Hawai'i at Hilo College of Pharmacy is to prepare competent pharmacy practitioners who are committed to patient care, who reflect humanistic values, who embrace change, and who contribute to the renewal of the profession. The College of Pharmacy embodies a spirit of community; in which cooperation, trust and mutual respect are valued.

Inherent in this education is the acquisition by students of a relevant knowledge base as well as professionally related experiences, capabilities, understandings, skills attitudes, and values. It is the mission of the College of Pharmacy to build and deliver a quality, multidisciplinary health professions program, in which role models teach the student to learn and adopt the application of that knowledge throughout our environment.

1.7 IDENTIFICATION OF THE APPLICANT AND APPROVING AGENCY

The proposing agency and approving agency is the State of Hawai‘i with the University of Hawai‘i as the authorized representative on behalf of the Governor to be the approving agency. The contact information for the UHH is provided below:

Maynard Young
Director of Physical Facilities, Planning and Construction
University of Hawai‘i
Office of Capital Improvements
1951 East West Road, Room 102
Honolulu, Hawaii 96822

2.0

PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 UNIVERSITY OF HAWAI'I AT HILO

UHH is a comprehensive regional four-year State university located on the eastern side of the island of Hawai'i. It is one of ten campuses that comprise the University of Hawai'i system and began as the Hawai'i Vocational School in 1941. In 1970, the school was organized under its present name. UHH is located just minutes away from downtown Hilo, Hilo International Airport, and Hilo Bay. The main campus is bounded by Lanikaula, Kapi'olani, Kāwili and Puāinako Streets, and the Wailoa Flood Control Channel along Waiākea Stream.

UHH is comprised of the 115-acre main campus, an adjoining 116-acre University Park of Science and Technology (University Park), a 118-acre University Park expansion area (mauka of Komohana Street) and a 110-acre University Agricultural Farm Laboratory located in Panāewa Agricultural Park. The University also utilizes a number of buildings on the Hawai'i Community College Manono campus.

UHH offers undergraduate and graduate education in a personalized atmosphere, encouraging student-faculty interaction and collaboration on research projects. It offers "hands-on" learning and leadership opportunities in an environment that is responsive to the needs of a diverse student population. UHH consists of approximately one (1) million square feet of space, including classroom space, laboratory facilities, a library and media services center, faculty offices, administrative and student services facilities, residence halls, a theatre, a campus center, student activities, an athletic complex, tennis courts, and play fields.

As recognized by the UHH, the island of Hawai'i possesses natural advantages for scientific study within the field of pharmaceutical research since the agenda of the program emphasizes natural products. Great enthusiasm for investigating the abundant natural resources of Hawai'i and the Pacific Region, as well as studying the various traditional healing practices of the Pacific, imbues the philosophy of the College. At the permanent UHH College of Pharmacy, students will be able to take advantage of and benefit from the close ties the University has forged with public and private institutions throughout the State and the Pacific region; for example, fourth year students will have the opportunity to gain clinical education on any of the four most populated islands, resulting in strengthened community relationships that would bring immeasurable benefits to the entire State and Pacific Rim.

2.1.1 Surrounding Land Uses

The site is located within University Park. University Park encompasses an approximate area of 116 acres located west of the existing UHH campus.

The site is bounded by Komohana Street to the west, Aohoku Street to the east, University of Hilo College of Tropical Agriculture and Human Resources building to the south and Nowelo Street to the north.

Two existing roads provide access to the University of Hilo College of Pharmacy site. Aohoku Street (aligned in a north-south direction), provides the main entry to the University Park site from Nowelo

Street. Nowelo Street connects Komohana Street to the main UHH campus and ultimately Lanikaula and Kawili Streets. Both roads feature asphalt concrete pavements and concrete curbs and gutters. The proposed project site is located south of Nowelo Street and would be accessed by South Aohoku Place.

Current tenant users within the University Park include the Joint Astronomy Center, the CALTECH Submillimeter Observatory, the Imiloa Astronomy Center of Hawai'i, Smithsonian Astrophysical Observatory Base, the Subaru National Astronomical Observatory of Japan and the UH Institute for Astronomy (Figure 6).

2.2 DESCRIPTION OF THE PROJECT SITE AND SURROUNDING LAND USES

The permanent College of Pharmacy facilities will be approximately 119,453 square feet and consist of one two-story building (the "Vivarium") and one three-story building (the "Phase I Building"), which will include classrooms, a student center, restrooms, research labs, office space, small meeting rooms, pharmaceutical labs, and patient consulting rooms.

Each of the two new buildings will be over twenty (20) feet high (the approximate height of the existing College of Pharmacy modular buildings). The maximum height within the agricultural zone (A-1a) is 45 feet. The Phase I Building is designed to reach a height of 90 feet and will therefore require a zoning variance. The proposed Vivarium is designed to reach a height of 45 feet, thus making this height consistent with this zoning. The total floor area of the two buildings will encompass approximately 94,044 square feet and will lie adjacent to pertinent infrastructure on the property. Figure 7 shows the conceptual site plan and Figure 8 includes the photographs of the existing site. The primary structural system considered for each building will be a combination of steel and concrete construction and the architectural character of the building (design, roof shape, colors) will be compatible with the predominant architectural design of the rest of the UHH. The proposed new buildings and proposed parking lot, and the rest of the site, will be designed to be fully accessible according to the guidelines provided by the Americans with Disability Act.

Setbacks from South Aohoku Place will be in excess of 30 feet as per the Hawai'i County Zoning Code.

One parking lot with a minimum of 69 stalls to comply with County standards, but a potential capacity of 192 stalls is planned to accommodate the need for parking at the permanent facilities of the UHH College of Pharmacy. The parking lot will include accessible and van accessible parking stalls depending on the number of stalls that will be required for each phase of development. When appropriate, indigenous plants will be considered in the design and landscaping of the parking lot.

2.3 SUSTAINABLE BUILDING DESIGN

The Office of Environmental Quality Control has issued "Guidelines for Sustainable Building Design in Hawai'i: A planner's checklist" (OEQC May 1999) and has requested that consideration be made in applying sustainable building techniques to projects. The OEQC Guidelines state that "[a] sustainable building is built to minimize energy use, expense, waste and impact on the environment. It seeks to improve the region's sustainability by meeting the needs of Hawai'i's residents and visitors today without compromising the needs of future generations." An evaluation of the plans for the permanent UHH College of Pharmacy indicates that the building will apply many of the techniques described in the

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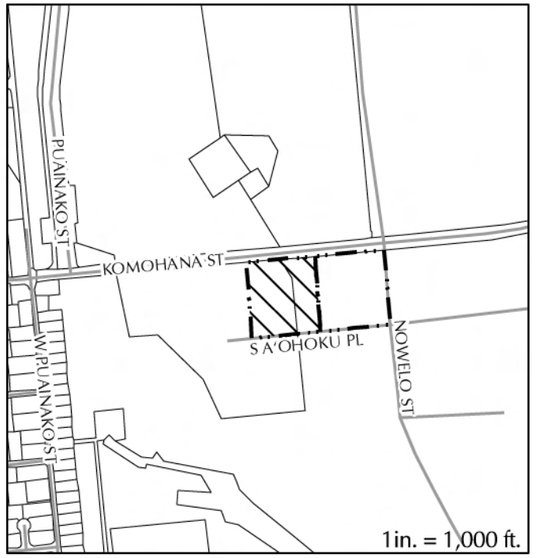


LEGEND

Project Area

Area Covered in Original FEA/FONSI (2008)

FIGURE 7
Conceptual Site Plan

UHH College of Pharmacy

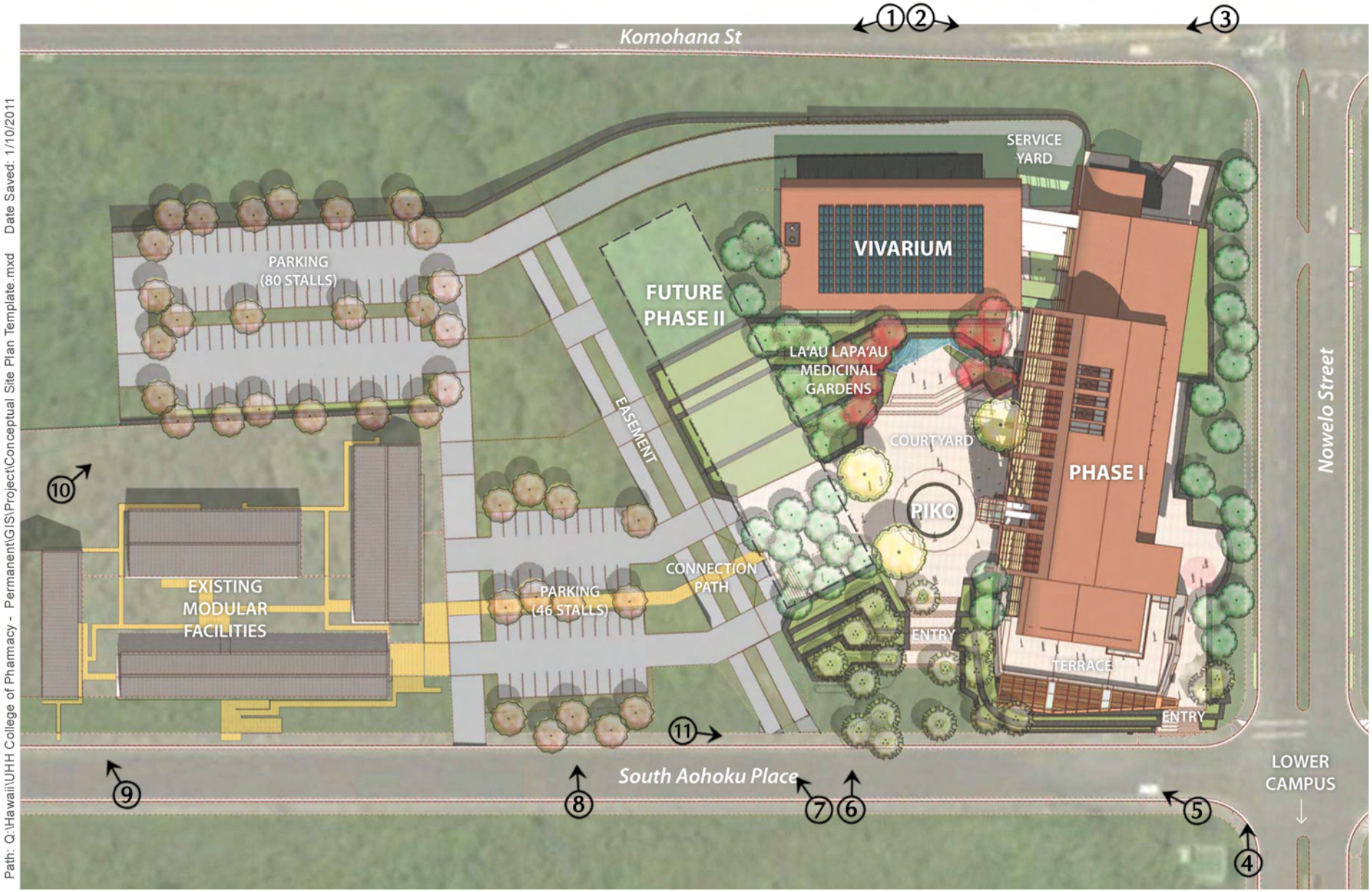
University of Hawai'i at Hilo — ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET) 0 20 40 80 160

PBR HAWAII & ASSOCIATES, INC.

Source: WCIT Architecture, Smith Group (2010)
Disclaimer: This map has been prepared for general planning purposes only.



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LEGEND

(#) Photo Direction

FIGURE 8A
Site Photograph Key

UHH College of Pharmacy

University of Hawai'i at Hilo
ISLAND OF HAWAI'I

NORTH

NOT TO SCALE

PBR HAWAII & ASSOCIATES, INC.

Source: WCIT Architecture, Smith Group (2010)
Disclaimer: This map has been prepared for general planning purposes only.

1. View south down Komohana Street

2. View north up Komohana Street

3. From the intersection with Nowelo Street, facing south down Komohana Street

4. From the intersection of South A'ohoku Place, facing west up Nowelo Street

5. Facing south down South A'ohoku Place

6. Facing west across South A'ohoku Place, typical site frontage along South A'ohoku Place

7. Facing west across South A'ohoku Place. Note overhead electrical lines in the easement that bisects the campus

8. Existing parking lot with electrical easement visible in the background

9. View towards the southern boundary and the adjacent CTAHR building

10. View towards future parking lot mauka of the existing modular buildings

11. Site frontage along South A'ohoku Place

FIGURE 8B
Site Photographs

UHH College of Pharmacy
University of Hawai'i at Hilo
ISLAND OF HAWAI'I

PBR HAWAII & ASSOCIATES, INC.

Guidelines to: 1) use less energy for operation and maintenance, 2) preserve and conserve water and other natural resources, 3) minimize health risks to those who construct, maintain and occupy the building, 4) minimize construction waste, 5) recycle and reuse generated construction wastes, 6) provide the highest quality product practical at competitive (affordable) costs. Some of the measures the project will implement include:

- Siting building(s) to take advantage of natural features and maximize their beneficial effect.
- Minimize the disruption of site drainage pattern.
- Exceed the State of Hawai‘i Model Energy Code requirements.
- Use durable products.
- Install water conserving, low flow fixtures.
- Use of glassphalt for paved surfaces will be considered.

Leadership in Energy and Environmental Design

The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a nationally accepted benchmark for the design, construction, and operation of sustainable buildings. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

The proposed permanent facilities of the UHH College of Pharmacy are designed to meet the equivalent of a LEED Silver certification. The LEED certification system is credit-based, allowing projects to earn points for environmentally friendly actions taken during construction and use of a building. Credits are broken down into individual points. A building requires at least 50 points for LEED Silver certification.

2.4 PHASING AND TIMING OF ACTION AND COSTS

Construction of Phase I is expected to begin summer 2011 and last 24 to 30 months. The Phase I Building, Vivarium Building and proposed parking lot will be built in the first of two anticipated phases. The total approximate cost is $60 million.

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3.0

LAND USE CONFORMANCE

3.0 LAND USE CONFORMANCE

Relevant State of Hawai‘i and County of Hawai‘i land use plans, policies, and ordinances are described below.

3.1 STATE OF HAWAI‘I

3.1.1 Chapter 205, Hawai‘i Revised Statutes - State Land Use Law

The State Land Use Law (Chapter 205, Hawai‘i Revised Statues) establishes the State Land Use Commission (LUC), which has the authority to designate all lands in the State into one of four districts: Urban, Rural, Agricultural, and Conservation. The project site is located on land classified as Urban (U) (Figure 3). The Urban classification generally includes land characterized by a city-like concentration of people, structures and services, including vacant areas for future development. The counties primarily have jurisdiction over urban lands through their land use ordinances and regulations. The proposed permanent facility is thus consistent with existing State Urban designation.

3.1.2 Chapter 226, Hawai‘i Revised Statutes - Hawai‘i State Plan

The *Hawai‘i State Plan* (Chapter 226, HRS) serves as a guide for the future long-range development within the State; it identifies goals, objectives, policies, and priorities for the State and provides a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources. The *Hawai‘i State Plan* also improves the coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities, and establishes a system for the planning, coordination, and integration of major state and county activities. Part I of the Plan lists the State’s long-range goals, objectives, policies and priorities. Part II establishes a statewide planning system to coordinate and implement the plan. Part III establishes priority guidelines to address areas of statewide concern. Applicable sections are discussed below.

Section 226-10 Objective and policies for the economy—potential growth activities.

> *(a) Planning for the State’s economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawai‘i’s economic base.*
>
> > *(8) Develop, promote and support research and educational training programs that will enhance Hawai‘i’s ability to attract and develop economic activities of benefit to Hawai‘i.*

Discussion: The proposed project represents implementation of the master planned UHH University Park, promoting research and educational opportunities and allowing for growth in enrollment.

Section 226-21 Objective and policies for socio-cultural advancement—education.

(a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspiration.

(b) To achieve the educational objective, it shall be the policy of the State to:

(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.

(9) Support research programs and activities that enhance the education programs of the State.

Discussion: The continuation of development of the University Park will expand the educational facilities of the UHH campus, attracting increased enrollment and providing higher education opportunities. Establishment of a pharmacology program will help meet the demand for qualified pharmacists in the State, while providing a lower cost alternative to pursuing these studies out-of-State.

Section 226-103 Economic priority guidelines.

(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:

(2) Encourage expansion of technological research to assist industry development and commercialization of technological advancements.

Discussion: The proposed project is part of the master planned UHH Research and Technology Park and provides accessible, educational opportunities for the people of Hawai'i in pharmacology which will support the growth of quality jobs in Hawai'i.

Section 226-107 Quality Education.

Priority guidelines to promote quality education:

(6) Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific.

Discussion: The proposed project supports this objective by being the first comprehensive pharmacology program in the State of Hawai'i and providing training for students from elsewhere in the Pacific.

3.1.3 Section 205A-2, Hawai'i Revised Statutes - Coastal Zone Management Program

The objectives of the Coastal Zone Management (CZM) Program, (Section 205A-2, HRS), are to provide the public with recreational opportunities, protect historic and prehistoric resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce hazards, and manage development.

A discussion of the CZM Program objectives applicable to the College of Pharmacy is presented below.

1. <u>Recreational Resources</u>

Objective:
Provide coastal recreational opportunities accessible to the public.

Policies:
1.b. Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:

iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
iv. Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

Discussion: In as much as the subject property is located well inland from the coastline, access to coastal resources will not be impacted by the proposed permanent College of Pharmacy facility. In addition, the Applicant will institute Best Management Practices (BMPs) to ensure there will be no impact to downstream areas greater than current conditions from the project area. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

2. <u>Historic Resources</u>

Objective:
Protect, preserve, and where desirable, restore those natural and man made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:
2.a. Identify and analyze significant archaeological resources;
2.b. Maximize information retention through preservation of remains and artifacts or salvage operations; and
2.c. Support state goals for protection, restoration, interpretation and display of historic resources.

Discussion: Based on the archaeological inventory survey for the site, no significant archaeological resources were found on the site. Subsequent to the publication of the 2007 Draft

EA, the Department of Land and Natural Resources, State Historic Preservation Division (SHPD) reviewed and commented on the AIS noting that "the summaries of physical setting, historical and cultural contexts, and previous archaeological work in the area are found to be more than sufficient. We concur with your presentation of expected findings as well… We agree with the recommendation that no further work is necessary." However, should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phases of development, their treatment will be conducted in strict compliance with the requirements of SHPD.

3. Scenic and Open Space Resources

Objective:
Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:
3.a. Identify valued scenic resources in the coastal zone management area;
3.b. Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; and
3.d. Encourage those developments which are not coastal dependent to locate in inland areas.

Discussion: Coastal scenic resources will not be significantly affected since all of the project area is located approximately 8,000 feet (or over a mile and a half) from the shoreline and outside of the Special Management Area. No significant natural landforms will be altered. There are very limited opportunities for views towards the shoreline from Komohana Street because of the abundant vegetation on the makai side of Komohana Street. The project will not affect views towards the shoreline from Nowelo Street.

4. Coastal Ecosystems

Objective:
Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:
4.a. Improve the technical basis for natural resource management;
4.b. Preserve valuable coastal ecosystems of significant biological or economic importance.
4.d. Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Discussion: The site for the proposed permanent College of Pharmacy facilities is located far from the shoreline. However, the development will incorporate measures necessary to mitigate any water quality impacts from surface run-off in accordance with applicable governmental regulations. Drainage improvements will be designed to control the quantity and quality of surface water to keep runoff to off-site areas to current levels. This will mitigate potential

impacts to coastal resources by improving water quality before runoff leaves the site and by restricting the quantity of runoff to current levels. Similarly, construction related impacts will be mitigated by the implementation of best management practices to control waterborne erosion. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

5. Economic Uses

Objective:
Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:
5.a. Concentrate coastal dependent development in appropriate areas;
5.b. Ensure that coastal dependent development such as harbors and ports, visitor industry facilities and energy generating facilities are located, designed and constructed to minimize adverse social, visual and environmental impacts in the coastal zone management area; and
5.c. Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside presently designated areas when:
ii. Adverse environmental effects are minimized.
iii. The development is important to the State's economy.

Discussion: The permanent College of Pharmacy facilities will not include coastal dependent development. Consequently, all the land uses planned by the project are located well in-land from coastal areas and are appropriate for the property. Therefore, existing coastal areas, and the economic activities associated with the Hilo Bay front, will be unaffected by the project.

6. Coastal Hazards

Objective:
Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies:
6.b Control development in areas subject to storm wave, tsunami, flood, erosion and subsidence.
6.c. Ensure that developments comply with the requirements of the Federal Flood Insurance Program.

Discussion: The project area is not located in an area subject to tsunami run up, storm waves, stream flooding, erosion, subsidence or pollution.

7. Managing Development

Objective:
Improve the development review process, communication and public participation in the management of coastal resources and hazards.

Policies:

7.a. Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development.

7.b. Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements.

7.c. Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Discussion: This environmental assessment will describe the environmental impacts of the proposed project and will be reviewed by both County and State land use Planning agencies, and the general public.

8. Public Participation

Objective:
Stimulate public awareness, education, and participation in coastal management.

Policies:

8.a. Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

8.b. Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

8.c. Organize workshops, policy dialogues, and site-specific mediation to respond to coastal issues and conflicts.

Discussion: The consultation and public review processes of this environmental assessment is one way of providing public awareness and education of the proposed project.

9. Beach Protection

Objective:
Protect beaches for public use and recreation.

Policies:

9.a. Locate new structure inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

9.b. Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering

solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

9.c. Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: The project area is located well inland of the shoreline and is not subject to beach erosion

10. Marine Resources

Objective:
Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

10.a. Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

10.b. Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

10.c. Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

10.d. Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

10.e. Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The project area is located 8,000 feet inland of the shoreline and is not anticipated to have any effect on coastal or marine resources.

3.2 COUNTY OF HAWAI'I

County of Hawai'i land use policies and plans related to the proposed project include the Land Use Pattern Allocation Guide (LUPAG) map in the *County of Hawai'i General Plan* (General Plan) and the Hawai'i County Code (Comprehensive Zoning Ordinance). The proposed permanent facilities for the UHH College of Pharmacy site are located well outside of the Special Management Area (SMA).

3.2.1 General Plan

The General Plan, which was adopted in February 2005 and amended in December 2006 under Ordinance 06-153, is a policy document for the long-range comprehensive development of the Island of Hawai'i. The plan provides direction for the future growth of the County and offers policy statements that embody the expressed goals for present and future generations. The General Plan provides the legal basis for all subdivision, zoning, and related ordinances and for the initiation and authorization of all public improvements and projects.

The General Plan states courses of action for each of the island's districts. For South Hilo, the general course of action is encouragement of commercial endeavors. The General Plan LUPAG designates the site and the rest of the UHH as "University Use". Therefore, the proposed permanent facilities of the College of Pharmacy are consistent with the General Plan. The General Plan also encourages development of UHH, but warns that development relies on State funds which will be subject to competition from other counties.

Several courses of action apply to the proposed project:

Economic Development. The General Plan directs the County to encourage the State to provide necessary funding for the development of the university complex, and to provide necessary support services and facilities to aid the development of these complexes.

Public Facilities. The General Plan directs the County to support the expansion of the university system, specifically as related to the campus master plan.

3.2.2 County Zoning

The project site is zoned Agricultural District (A-1a) (Figure 5) by the County of Hawai'i Planning Department. Section 25-5-71 of the Hawai'i County code designates zone A-1a as an Agricultural zoning district with a minimum building site area of one acre. The Hawaii County Code (section 25-5-72(d)) requires a Use Permit for "schools" proposed in the Agricultural zoning district but in the State Land Use Urban District. As part of the Use Permit, a Plan Approval is required per Hawaii County Code (section 25-2-70 et. seq). Rezoning of this property and the rest of the University Park to the "University" zoning district designation would obviate the need for a Use Permit and Height Variance.

3.2.3 Special Management Area

The Special Management Area was established to protect coastal resources in areas extending inland of the shoreline. The proposed project site is not in the Special Management Area (SMA).

3.3 APPROVALS AND PERMITS REQUIRED

During the implementation stages of the project, the applicant will be working with the State and County review agencies for examination and approval of project plans and specifications.

The following permits/approvals will be required as part of the project:

Permit/Approval	Authority
Grading/Building Permits	County of Hawai'i, Department of Public Works
Water	County of Hawai'i, Department of Water Supply
ADA Accessibility	Disability and Communication Access Board
Approval for Sewer Connection	County of Hawai'i, Department of Environmental Management
Use Permit and Plan Approval	County of Hawai'i, Planning Department
Height Variance	County of Hawai'i, Planning Department
NPDES Permit	Department of Health

4.0

DESCRIPTION OF THE AFFECTED ENVIRONMENT, POTENTIAL IMPACTS OF THE PROPOSED ACTION, AND MITIGATION MEASURES

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT, POTENTIAL IMPACTS OF THE PROPOSED ACTION, AND MITIGATION MEASURES

This chapter discusses the existing environment of the proposed area, including physical, biological, social, economic, and infrastructure conditions. It also identifies potential impacts that may result from the project and provides mitigation measures that may be implemented.

4.1 CLIMATE

4.1.1 Existing Conditions

The climate in Hilo is very moderate, with average daytime temperatures ranging from 66 (low) to 82 (high) degrees Fahrenheit. Temperatures at night range from the low 60's to the upper 70's. Mean annual rainfall averages about 130 inches. Although the wet season usually occurs from October through April, rain falls approximately 280 days of the year. Northeast trade winds typically occur during the day, while winds from the southwest typically occur during the night due to cold air drainage from the mountains. The mean annual wind speed recorded at the Hilo International Airport (about two miles northeast of the UHH main campus) is about 8 miles per hour (mph) and usually varies between about 4 and 12 mph during the day.

4.1.2 Potential Impacts and Mitigation Measures

The proposed project is not expected to have a significant effect on climatic conditions and no mitigation measures are planned. Project landscaping may help to decrease any localized temperature increases resulting from the increase in paved areas.

4.2 TOPOGRAPHY

4.2.1 Existing Conditions

The elevation of the site ranges from approximately 280 feet to 320 feet above mean sea level (MSL). The topography of the site is sloping, with slope range of approximately 7 percent in a north east direction. The historical use of the site has been associated with agricultural uses (sugar cane, pasture). The project site currently contains no permanent structures.

4.2.2 Potential Impacts and Mitigation Measures

The project will require vegetation removal, earthwork, and grading. However, there are no major topographical features on the site. While the entire site is approximately 4.5 acres, only approximately 27 percent of the site will be developed. All grading operations will be conducted in full compliance with dust, erosion control and other governmental requirements. All construction activities will comply with the provisions of Chapter 11-60.1, Hawai'i Administrative Rules, on fugitive dust. A grading permit is required.

4.3 SOILS

4.3.1 Existing Conditions

4.3.1.1 Soil Conservation Survey

The majority of the subject parcel is identified in the U.S. Natural Resources Soil Conservation Survey as *Pāhoehoe* lava flows (rLW). In drier climates, this classification is characterized by a relatively smooth, billowy, glassy surface which has thin to no soil covering. In areas of higher rainfall, such as the project site, scattered *ōhi'a* trees, *ohelo* berry and *aali'i* have become established. A very small portion of the subject parcel located at the northeast corner consists of Keaukaha extremely rocky muck (rKFD) (Figure 9). Such soils have very severe limitations that make them generally unsuited for cultivation and restrict their use to mainly pasture and woodland or wildlife.

4.3.2 Potential Impacts and Mitigation Measures

The potential for soil erosion may increase during construction and decrease after development of the proposed project. Generally, because of light wind conditions, the potential of wind-borne soil erosion is relatively low. An increase in soil erosion potential will result from removal of existing vegetation during the construction period. However, all contractors will be required to institute best management practices to minimize soil erosion and degradation of water quality. Soil erosion potential after development will be reduced due to the establishment of permanent landscaping and drainage improvements.

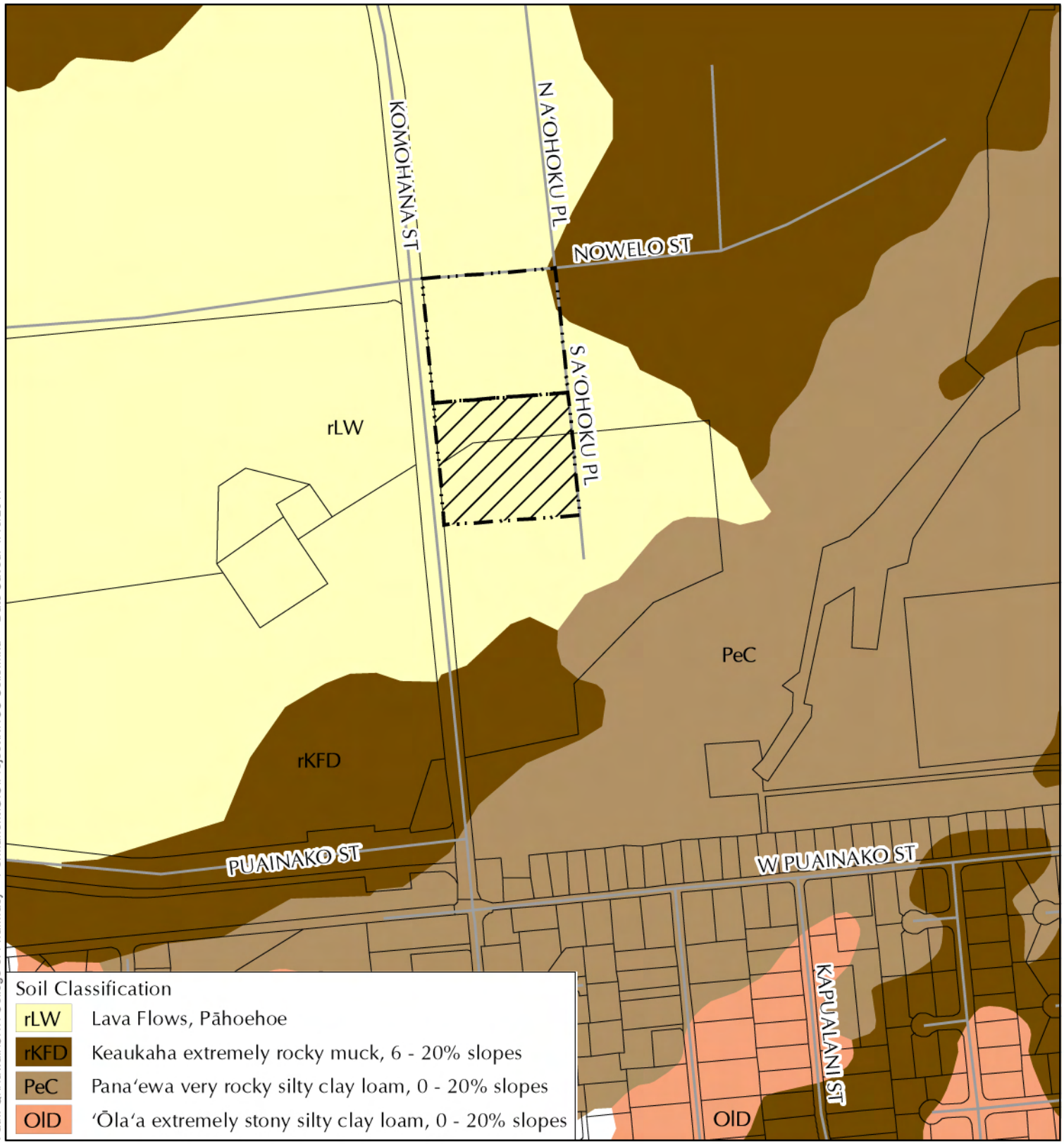
Geotechnical investigations will be conducted to verify soil types and the suitability for construction. Erosion control plans will be prepared for all construction work. The erosion control plan will identify specific best management practices (BMPs) which will be employed to minimize erosion and runoff from the site. In addition, construction activities will be subject to conditions of the National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm water associated with construction activities. Minimizing site erosion and associated sediment transport to State waters is a primary objective of this permit.

Proposed mitigation measures may include hydro-mulching with seeds or placement of erosion control matting to stabilize slopes and exposed surfaces, and construction of a graveled ingress/egress for use by construction vehicles at the entrance of the site to minimize the tracking of debris onto paved streets. Silt fences, berms, temporary siltation basins and other means of protecting water quality may be employed to prevent direct discharge of sediment-laden storm runoff to municipal storm drains.

4.4 DRAINAGE

4.4.1 Existing Conditions

The proposed project is outside of a designated floodplain (Figure 10), is not a shoreline property, and lies entirely outside of the coastal flood zone attributable to either high wave action or tsunami.



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LEGEND

- Project Area
- Area Covered in Original FEA/FONSI (2008)
- Roads

FIGURE 9
Soil Survey Map

UHH College of Pharmacy

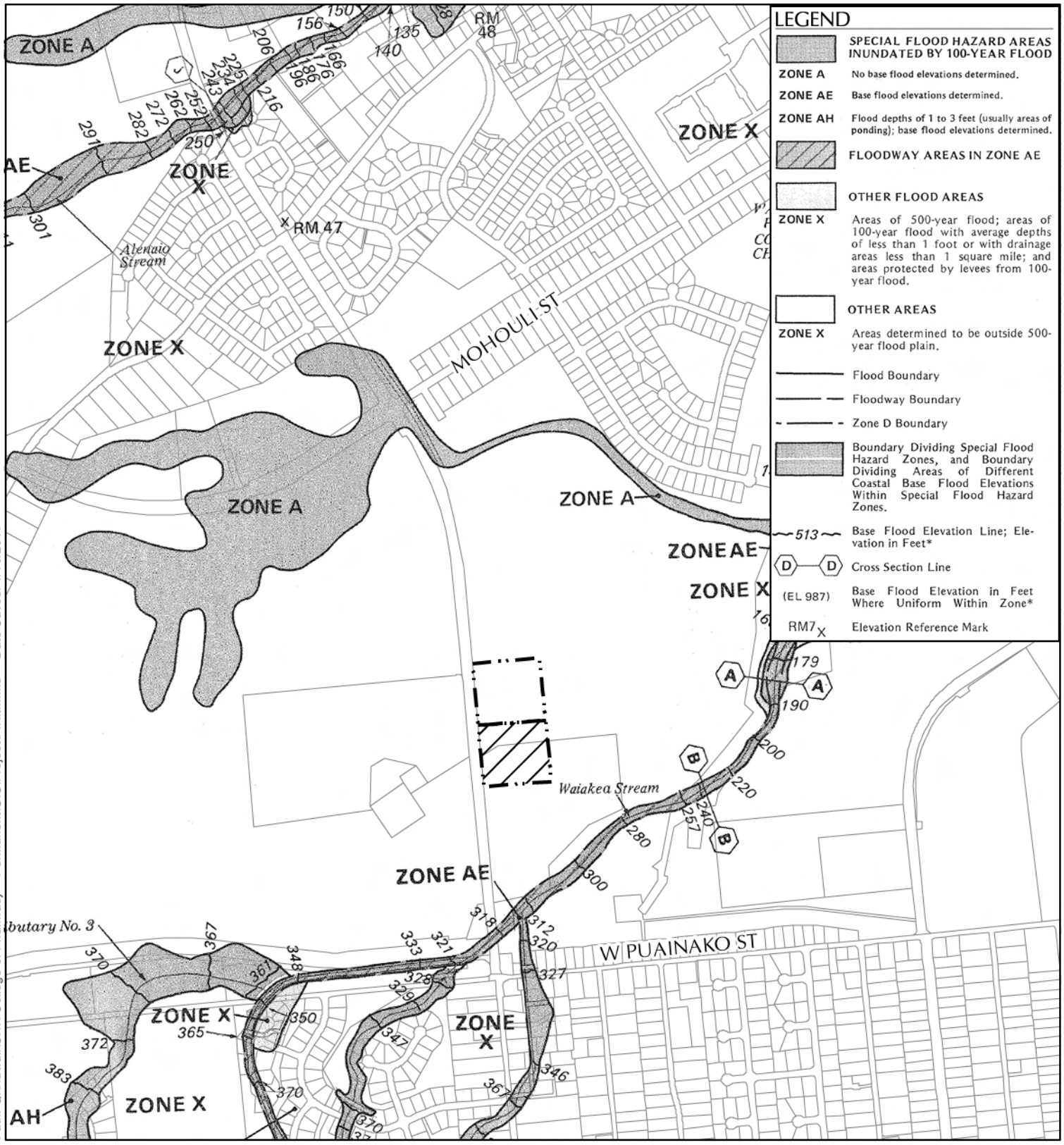
University of Hawai'i at Hilo — ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

PBR HAWAII & ASSOCIATES, INC.

Source: Natural Resources Conservation Service (2007)
Disclaimer: This map has been prepared for general planning purposes only.



LEGEND

Project Area

Area Covered in Original FEA/FONSI (2008)

Roads

FIGURE 10

Flood Insurance Rate Map

UHH College of Pharmacy

University of Hawai'i at Hilo

ISLAND OF HAWAI'I

NORTH

LINEAR SCALE (FEET)

0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.

Source: Federal Emergency Management Agency panel 1551660880C (1988)

Disclaimer: This map has been prepared for general planning purposes only.

4.4.2 Potential Impacts and Mitigation Measures

Development will increase the percentage of impervious surfaces within the project site and thus increase the volume of storm runoff from the site.

During construction, mitigation measures may include temporary siltation basins to detain runoff and minimize sediment transport to off-site areas.

After development, the drainage system will be designed to ensure no increase in runoff toward adjacent properties. On-site measures will be employed to detain any increase in runoff due to development. Mitigation measures that will be employed on a long-term basis include storm drain drywells and landscaping/grading to provide filtering and detention of runoff, if required. In addition, the site will be landscaped to help minimize runoff and provide pervious surfaces. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

4.5 NATURAL HAZARDS

4.5.1 Existing Conditions

Hurricanes, tsunamis, earthquakes, and lava flows represent the major natural hazards on the island of Hawai'i. The subject site is elevated above and located more than 1.5 miles from the shoreline. As such, it would not be vulnerable to tsunamis.

According to the Flood Insurance Rate Map (FIRM), the subject site is designated "Outside Floodplain/Area of Minimal Flooding" (Figure 10). Thus, the subject site does not appear vulnerable to flooding or wave action hazards.

According to the Pacific Disaster Center, the site is located outside of the tsunami evacuation zone. Tsunami evacuation zones are derived from tsunami inundation maps, but are more conservative than the inundation maps in that they encompass a greater area that are potentially at risk that should be evacuated and refer to readily identifiable physical landmarks such as roads where possible. The evacuation zones apply to distant tsunamis, assuming worst case wave action from any probable source. The project site is not affected since it is situated outside the tsunami evacuation zone.

The U.S. Geologic Survey report identifies the degree of volcanic hazard of this area to be a"3" out of a scale of "9", with the lower the number, the greater the degree of hazard. It should be noted that the entire city of Hilo has been designated Zone 3. In 1881, a historic lava flow from Mauna Loa flowed into Hilo within one mile of Hilo Bay.

4.5.2 Potential Impacts and Mitigation Measures

The proposed project will not exacerbate any natural hazard conditions. The potential impact of hurricanes and earthquakes will be mitigated by compliance with the County Building Code, in the design and construction of the proposed buildings.

4.6 FLORA

4.6.1 Existing Conditions

A walk-through field study of the subject parcel and the surrounding area's botanical resources was conducted by Char and Associates in November 1992. The study encompasses the UHH College of Pharmacy site (existing and proposed permanent) and the entire 116 acre University Park. The survey found the site to be characterized by *ōhi'a* trees and matted *uluhe* ferns. Visual observation also indicates the presence of guava thicket. Based on the study, none of the plants inventoried were listed as threatened or endangered species; nor were any proposed as candidates for such status.

4.6.2 Potential Impacts and Mitigation Measures

The vision for the landscape architectural design of the campus and facilities of the University of Hawaii at Hilo College of Pharmacy is to combine its Pacific Island heritage with that of Western science, and Eastern customs. The proposed landscape architectural design will reflect this multi-cultural/multi-faceted influence while showcasing some of Hawaii's native medicinal plants and practices. The landscape will set the tone to the campus, serving as an educational "gateway" (both physically and metaphorically), while inviting its users, and facilitating social interaction.

Terraced moss rock walls reminiscent of traditional *lo'i* patches will be a unifying element throughout the site. Contrasting with the terraced walls will be a grove of Variegated *Hala* trees which will direct users up a series of staggered staircases and landings, and through a sequence of open and enclosed spaces. Ascending to the top of the staircase will be a plaza defined by a grove of *'Ōhi'a* trees. The plaza will be centrally located between the Pharmacy buildings and medicinal garden, and will serve as a multi-use gathering space within the College. The plaza will culminate with a *Pa'a* (elevated outdoor stage), where a water feature wall with a colorful array of hanging orchids and ferns will set the backdrop to the stage.

The campus landscape architectural design for the permanent UHH College of Pharmacy facilities will reflect its educational philosophy of combining Eastern and Western culture with that of Pacific Island heritage, to produce a premier educational environment found nowhere else in the World.

Because the site contains no threatened or endangered plant species or their habitats, development of the project site is not expected to have a significant impact on botanical resources.

4.7 FAUNA

4.7.1 Existing Conditions

Avifaunal species:

The avifaunal species currently inhabiting the University Park area and the project site are considered almost completely alien. The avifauna currently found below 500 feet in elevation in the Hilo area is dominated by introduced species. Endangered bird species may over fly University Park occasionally between the months of April and October. These include the Hawaiian Hawk or *'Io* (*Buteo solitarius*),

the Short-eared Owl or *Pueo* (*Asiofiammeus sandwichensis*), the Dark-rumped Petrel or *'Ua'u* (*Pterodrom aphaeopygia sandwichensis*) and the Newell's Shearwaters or *Ao* (*Puffinus newelli*).

Mammals:

There have been only four comprehensive bat surveys conducted on the Island of Hawai'i. Two of these surveys addressed lands close to the University Park. Originally considered to be a distinct species, the Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'Ōpe'ape'a*, is now taxonomically classified as an endemic Hawaiian sub-species of the North American hoary bat. This bat is usually solitary and roosts in tree tops, therefore, it is difficult to study. This species may use the University Park area at least occasionally. However, taking into consideration the current knowledge and understanding of the abundance, distribution, and biology of the Hawaiian hoary bat, it is unlikely that the proposed project will have a deleterious impact on the Hawaiian hoary bat.

With the lone exception of the Hawaiian hoary bat , all the terrestrial mammalian species currently on the island are alien species introduced by man. The mammalian species which may occasionally use the site include rats, mice, dogs, cats, mongooses.

4.7.2 Potential Impacts and Mitigation Measures

During the pre-consultation process for the 2007 Draft EA, the Hawai'i office of the USFWS recommended that a biological survey be done if appropriate habitat is found for the Hawaiian hoary bat, and also recommends downward-facing, fully shielded exterior lights as a mitigation measure to eliminate the negative impacts of disorientation and bird strikes to overflying Hawaiian petrels and Newell's shearwaters.

According to the USFWS website, the entire Hilo area is outside of any area designated as critical habitat. Therefore a biological survey for the presence or absence of the Hawaiian hoary bat does not appear warranted. The shielding of exterior lights on site will be considered as a precautionary mitigation measure, to mitigate the impact or endangered avian species.

Given the fact that the avifauna of University Park is dominated by alien species, and that any usage of the site by endemic avian species is best described as incidental, no negative impacts are expected to native avian populations due to development of the project.

The proposed project should not have any other significant negative impacts to birds or introduced wildlife in the area. Therefore, no other mitigation measures are proposed.

4.8 CULTURAL, ARCHAEOLOGICAL AND HISTORIC RESOURCES

4.8.1 Existing Conditions

4.8.1.1 Cultural Assessment

A Cultural Impact Assessment was performed by PBR HAWAII in September 2003 for the University of Hawai'i at Hilo Mauka Lands Master Plan. The study assessed the potential

impacts of developing approximately 267 acres immediately *mauka* of the project site on traditional cultural practices, including native Hawaiian gathering rights. A review of existing archaeological information, as well as oral interviews with cultural practitioners familiar with the area, were part of this study. The assessment is included below in its entirety.

History. Waiākea and Hilo have been known as rich, sustainable areas associated with a number of Hawai'i's most prominent ali'i (chiefs) and often mentioned in Hawaiian folklore and history because of their resources. Both Hilo and Waiākea are mentioned as a residence or favorite visiting place in famous stories such as Hi'iaka and Pele, 'Umi-a-Liloa, 'Ulu, Kawelo, Keaomelemele, and Kūapāka'a. In narratives recorded as Kepā Maly, the lands of Waiākea were actually named after a high chief:

> *…the lands of Waiākea were named for the high chief Waiākea-nui-kumuhonua. The brother of Pi'ihonua-a-ka-lani and Pana'ewa-nui-moku-lehua. After departing from Pana'ewa, Ka-Miki mā met Haili-kula-manu, who was a guardian of Waiākea. Haili led Ka-Miki and his companions to his chief's compound at Kalepolepo [February 17,1916]. Arrangements were made for Ka-Miki to compete with the 'ōlohe – experts of Waiākea, with the events to be held at the kahua [contest site] at Kalepolepo...*

Waiākea was the home of 'Ulu, a legendary man living in a time of famine. 'Ulu eventually died of starvation and was buried next to a fresh water spring. The next day, an 'ulu (breadfruit) tree filled with fruit stood where he was buried, ending the famine in Waiākea. In Native Planters in Old Hawai'i, Handy and Handy recorded the agricultural development of Waiākea and Hilo:

> *In lava-strewn South Hilo there were no streams whose valleys or banks were capable of being developed in terraces, but [taro] cuttings were stuck into the ground on the shores and islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Waiākea Bay, east of Hilo, taro was planted in a unique way known as kanu kipi…On the lava-strewn plain of Waiākea and the slopes between Waiākea and the Wailuku River, dry taro was formerly planted wherever there was enough soil. There were forest plantation in Pana'ewa and in the lower fern-forest zone above Hilo Town and along the course of the Wailuku River (Handy & Handy, 1972).*

While Waiākea was, in ancient times, very rich in agriculture, it became a home for sugar plantations from the mid-1800s through the mid-1900s. Waiākea and Hilo's lands were filled with crops of sugar, as commercial sugar became the top industry and Waiākea Mill the largest in the district. After statehood and with the closing of Waiākea Mill, Hilo relied on tourism as its economic mainstay. Waiākea eventually included in an airport, hotels along Hilo Bay, residential subdivisions, and an accredited University.

According to Van James in his book Ancient Sites of Hawai'i, Hilo was known to support ancient settlements. Although it is certain that there were many heiau, Hawaiian temples of worship, the only evidence of ancient temples in the area include Naha and Pinao

Pōhaku. Recorded accounts of destroyed heiau include Kaipalaoa, Kānoa, Kīnailoa, and ʻŌhele heiau.

The sources of Hilo's rich water supply include two major rivers, a number of streams, Waiākea Fishpond, and an annual rainfall of about 140 inches. Famous natural landmarks in the district include the ʻAkaka Falls and Waiānuenue (Rainbow Falls). Other natural features include Ka Waʻa o Māui, Mo'o Kuna, and the Boiling Pots, all on the Wailuku River.

The following individuals were asked if they were aware of any cultural practices or archaeologically significant sites within the property: Mr. Jeno Enoncencio (Cultural Specialist), Mrs. Pua Kanehele (Professor/Kumu Hula), Mr. Larry Kimura (Professor of Hawaiian Studies - UHH), Mr. Kepā Maly, Ms. Kealoha Piscotta (Cultural Specialist), Ms. ʻUlulani Sherlock (Cultural Specialist), and Mr. Kalani Flores (Instructor at Hawaiʻi Community College).

Mr. Flores deferred comment and suggested that Hawaiian organizations such as the Edith Kanakaʻole Foundation and Hawaiian Civic Clubs might have more information. Hawaiian Studies professor and co-founder of the Edith Kanakaʻole Foundation, Ms. Pua Kanahele said she was not familiar with Waiākea but offered some oral history of the Waiākea area.

Mr. Larry Kimura, a professor of Hawaiian Studies and Language at the University of Hawaiʻi at Hilo, was not aware of any obvious cultural practices or archaeological evidence in the area. Mr. Kimura noted that the Lava Flow of 1881 flowed through the area and may have covered any culturally significant sites. He also mentioned that the proposed development is near the campsite where Princess Ruth Keʻelikōlani was summoned to help the people of Hilo and try to stop the lava flow from destroying more of Hilo town.

Keʻelikōlani was often referred to as "the Last of the Kamehamehas". The high Chiefess was an ali'i who held true to Hawaiian beliefs, refusing instruction and influences from the protestant missionaries. Although fully capable, Ruth refused to speak any English. Many Hawaiians loved her, while many hated or were terrified of her. In 1881, lava flowed to the edge of Hilo town. After months of prayer, many Hawaiians approached the Kamehameha descendent and requested her help. Kristin Zambuka, author of The High Chiefess Keʻelikōlani writes:

> *She sent for her bookkeeper to fetch her required offerings for Pele: red silk handkerchiefs and brandy…Ruth tied one of the red handkerchiefs around her throat, bandanna style, then announced that she was ready to go the edge of lava…They were awed as the mighty Chiefess moved boldly and fearlessly towards the fiery edge as if she were going to greet an old friend…Chanting loudly to Pele at time, then softening her voice to a conversational tone, Ruth spoke to the goddess, defying the intense heat and moving so near that some of retainers swore later that the Chiefess actually stepped on to the hot molten lava as she began her eerie*

> *ritual…By the first light of morning, their unbelieving eyes saw the lava had stopped, some said within a yard of Princess Ruth's sleeping body.*
> *Mr. Kimura stated that any development in the Waiākea area should be culturally sensitive and respectful to its history:*
>
> *I would like to propose that due respect be given especially to the 1881 lava flow because of the significance of its being stopped by Princess Ruth (Zambuka). I am of course backing my concern that every effort be made to be mindful of the destruction of the natural landscape and native plants and their importance to Hawaiian cultural lore and values. A committee to initiate acts of respect for the natural native landscape and plants and their importance to Hawaiian cultural lore and values should be initiated so that the relevance of the Hawaiian cultural connections can survive in spite of future development being planned for the project.*

Kepā Maly performed studies in the immediate vicinity of the proposed site:

> *I have done some extensive documentary research and limited oral history interviews in the area you described, and know that there are a number of storied places from traditional accounts and historical testimonies in the vicinity.*

Mr. Maly agreed with Mr. Kimura and stated:

> *Larry Kimura's comments on the 1881 lava are most likely accurate for a portion of the property; and I concur with his thoughts about care for the 'ōhi'a, as well as the neneleau and other patches of native plants left in the area. Anything natural and native, or of cultural-historical archaeological interest (regardless of its period in history – i.e., traditional or historic plantation) is becoming almost impossible to locate in the Hilo Town/UH vicinity. Thus, careful planning and development could help retain some of the unique environment and qualities of Hilo's past.*

The State Office of Environmental Quality Control (OEQC) reviewed the DEIS and requested that consultation with native Hawaiian groups (i.e., Hawaiian Civic Clubs and Community Associations) be conducted (Chapter 15.0). During the pre-consultation process for the 2007 Draft EA, the Office of Hawaiian Affairs (OHA) suggested contacting Ululani Sherlock (OHA Community Resource Coordinator), Kealoha Piscotta (Mauna Kea Anaina Hou), Geno Enocencio (Native Hawaiian Historic Preservation Council), and local members of the Royal Orders and the Hawaiian Civic Clubs. Each of these individuals and groups were contacted, and seven individuals (cultural specialists and instructors, in addition to the three recommended by OHA) assisted in the preparation of the cultural impact assessment included above. After reviewing the DEIS, OHA had no substantive comments to offer other than to note that the UHH provides a much needed resource to the general population and to native Hawaiians seeking to expand their educational opportunities (Chapter 15.0).

4.8.1.2 Archaeological and Historical Assessment

An archaeological inventory survey (AIS) study of the project area was performed by Scientific Consultant Services Inc. (SCS) in January 2011. Two new sites, consisting of a rock wall (SIHP# 22817) and a sugar cultivation-era rock clearing mound (SIHP# 22818) were recorded in the course of the archaeological inventory survey study. Both of the sites within the study area were interpreted to be related to historic sugar cane cultivation activities. Neither site were interpreted as from the pre-Contact era.

4.8.2 Potential Impacts and Mitigation Measures

4.8.2.1 Cultural Impact Assessment

Hilo/Waiākea is rich in water and was a very desirable area for chiefs and commoners alike. Hilo is famous for its rain and the abundance of *ʻōhiʻa lehua*. Although no negative cultural impacts were identified through consultation, special care should be taken to preserve as much of the natural landscape consisting of *ʻōhiʻa lehua* and *neneleau* (also known as *neleau*), which takes many years to mature. *Kanilehua* is the name for Hilo's misty rain that *lehua* blossoms drink. It is often referenced in chants and songs. An alternate interpretation is "rain that make the *lehua* blossoms rustle" (Pūkuʻi, Elbert 1986). It is likely that since the College of Pharmacy may offer *lāʻau lapaʻau* (traditional native Hawaiian medicine) classes, other native Hawaiian plants of traditional medicinal value will be planted on site, which will have a positive impact on the cultural value of the site.

4.8.2.2 Archaeological and Historical Impact Assessment

Site 28817 and Site 28818 have been fully documented by SCS during the recently completed AIS study and no further work was recommended. According to SCS, the rock wall at Site 28817 and the clearing mound at Site 28818 are not recommended for preservation. Should *iwi kūpuna* or Native Hawaiian cultural or traditional deposits be found during the construction of the building, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

4.9 ROADS AND TRAFFIC

4.9.1 Existing Conditions

The project site is bordered by three roadways; Komohana Street, Nowelo Street and South Aohoku Place (Figure 6). Komohana Street is a two-lane, county-owned roadway with an 80-foot right-of-way and it serves as one of several major cross-town roads. Nowelo Street, which has an east-west extent, serves as an access road that connects Komohana Street and Aohoku Street. Nowelo Street has been constructed to county dedicable standards and has a right-of-way of 60 feet with at least 20+ feet of pavement.

Access to the site is available from South Aohoku Place, a county-standard cul-de-sac road with a 50-foot right-of-way. South Aohoku Place intersects with Nowelo Street. Both South Aohoku Place and

Nowelo Street roads are improved with curbs, gutters, and sidewalks. The utilities are also underground within the road right-of-way.

The overall road condition of Komohana Street, Nowelo Street, and South Aohoku Place conforms to county standards.

4.9.2 Potential Impacts and Mitigation Measures

Anticipated traffic for the facility should not be significant to warrant additional road improvements in this area. The project is expected to generate 120 faculty and staff jobs and 350 students at the facility. It is estimated that at least 85 employees will work during the day. The peak number of students at any given time will be approximately 260 full-time equivalent (FTE).

As access to the site is already via a county-standard road (Nowelo Street) with a channelized intersection (at Komohana Street), coupled with a traffic signal light at the Komohana Street/Mohouli Street intersection, traffic movements to and from the site should not be significantly adverse. Some traffic movement will occur to/from the UHH main campus via the eastern portion of the Nowelo Street. Thus, the traffic impacts resulting from the proposed project – on Komohana Street should not be significant.

The current conditions of the site will allow pedestrians, bicyclists and other commuters to safely access the site until the permanent College of Pharmacy building is completed. Once completed, the University of Hawai‘i expects to revisit their plan to enhance and encourage the pedestrian, bicycle and commuter access features of the permanent facility, which may include:

- Bicycle racks that are visible and accessible; and
- Facilities for bicycle commuters (e.g., showers and lockers).

Measures proposed to mitigate traffic impacts resulting from development of the project include:

<u>Mitigation of Short-Term Construction Impacts</u>. The contractor shall conform to the safety precautions and requirements of the Rules and Regulations Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways, adopted by the Highway Safety Coordinator, and the U.S. Federal Highway Administration’s Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI, Traffic Controls for Highway Construction and Maintenance Operations. Other conditions to be imposed on the contractor to minimize traffic disruptions include:

(1) Access to and from driveways and public streets shall be provided during most times, but especially during peak hour traffic.

(2) During non-working hours, any trenches shall be covered with steel plates and all lanes shall be open to traffic.

(3) As required by the County of Hawai‘i, special duty police officers shall be hired to direct the flow of traffic.

(4) All walkways and intersections shall be maintained in passable condition for pedestrian and bicycle traffic.

4.10 AIR QUALITY

4.10.1 Existing Conditions

The State Department of Health (DOH) maintains a limited network of air monitoring stations around the State to gather data on certain regulated pollutants. Currently, no routine ambient air monitoring is conducted by DOH in the Hilo area. Historical monitoring during the 1970's and 1980's indicated very low pollutant levels in Hilo and there is little reason to believe this has changed significantly.

While air quality in the Hilo area is very good for the most part, periodic degradation occurs naturally due to the active volcano, Kilauea, located almost directly south of Hilo. This degradation occurs under southerly or "*kona*" wind conditions when plumes from the volcanic vents are carried toward Hilo, which is intermittent, and not continuous.

4.10.2 Potential Impacts and Mitigation Measures

The project will generate more trips to and from the site on a daily basis. These trips will essentially be split between the morning and afternoon work hours. Given the usual tradewind patterns, the projected volume of vehicles generated by this project, and cars now being equipped with better vehicular emission control systems, the impact to the existing ambient air quality should not be significant.

Construction activity will be the principal source of short-term air quality impact. Construction vehicle activity will increase automotive pollutant concentrations along the existing roadways as well as on the project site. Site preparation, earth moving, and building and road construction will create particulate emissions. Movement of construction vehicles on unpaved surfaces will also generate particulate emissions.

No exceedance of state or federal carbon monoxide standards is anticipated. Concentrations will increase with or without the project due to increased traffic volumes, reduced average speed, and queuing at signalized intersections.

Although the potential for fugitive dust seems low due to the wet climate and low wind speeds, adequate dust control will be employed, particularly at dry periods during construction. Dust control will be accomplished by frequent watering of unpaved roads within the project site and areas of exposed soil surfaces. As soon as it is feasible, landscaping of completed areas will also be employed. Dust control measures will comply with applicable provisions of HAR section 11-60.1-33 and the County grading ordinance.

4.11 NOISE

4.11.1 Existing Conditions

There are no residences adjacent to the site. Surrounding land uses are those typical research facilities. Generally, noise in this area is associated with traffic from Komohana Street.

4.11.2 Potential Impacts and Mitigation Measures

Construction Impacts:

There will be short-term noise impacts associated with the construction of the project during normal working construction hours.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50-foot distance), and due to the exterior nature of the work (e.g. rock breaking, grading and earth moving, trenching, concrete pouring, hammering).

Compliance with State Department of Health construction noise limits and curfew times, which are applicable on the island of Hawai‘i, is the primary noise mitigation measure that will be employed. Construction activities will be in compliance with the provisions of Hawai‘i Administrative Rules, Chapter 11-46," Community Noise Control":

- The contractor will obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the regulations as stated in Section 11-466(a);
- Construction equipment and on-site vehicles requiring an exhaust of gas or air will be equipped with mufflers as stated in Section 11-46-6(b)(1)(A);
- No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays as stated in Section 11-467(3); and
- The contractor must comply with the conditional use of the permit as specified in the regulations and conditions issued with the permit as stated in Section 11-46-7(d)(4).
- The contractor shall also comply with County noise regulations, including those specified in the grading permit.

Operational Impacts:

Once in operation, the project's noise impact should be negligible, except for noise associated by vehicles visiting the site.

4.12 VISUAL RESOURCES

4.12.1 Existing Conditions

While the site abuts Komohana Street, the major roadway in the area, the site is covered with vegetation typical of the area and overhead utility lines. The project site is located on the *makai*, or ocean side of Komohana Street. Abutting the project site to the south is the College of Tropical Agriculture and Human Resources (CTAHR). North of the project site is Nowelo Street.

4.12.2 Potential Impacts and Mitigation Measures

The proposed buildings will be designed to be compatible with the character of the surrounding area and will be landscaped in keeping with the character of the University and of Hilo Town. The tallest of the two structures proposed will be approximately 90 feet high, which is above the height limit within the A-1a zoning district. In addition, the view from the project site is not listed as a critical view plane in the County of Hawai‘i’s General Plan.

4.13 SOCIAL AND EMPLOYMENT CHARACTERISTICS

4.13.1 Existing Conditions

Presently no one is residing and no one is employed on site.

4.13.2 Potential Impacts and Mitigation Measures

Construction of the facility will not require the relocation of residents, as the site is currently vacant. Short-term construction employment benefits will be generated throughout the work; there will be longer-term employment for the estimated 120 faculty and staff.

4.14 ECONOMIC FACTORS/GOVERNMENT REVENUES

4.14.1 Existing Conditions

Presently, as no one is employed on the site, no revenues in the form of income taxes are being generated to the State of Hawai‘i

4.14.2 Potential Impacts and Mitigation Measures

The project will generate short-term, construction-related employment. Construction workers pay State and Federal income taxes. In addition, the State will gain from general excise taxes paid for construction materials and services. The proposed action is not expected to significantly affect surrounding land values and real property tax revenues since it is an educational facility within the existing UHH University Park. Once in operation, the faculty and staff will pay income taxes

4.15 INFRASTRUCTURE

4.15.1 Water System

4.15.1.1 Existing Conditions

There is an existing 12-inch County water line along Komohana Street. This 12-inch line has been extended to Nowelo Street and North Aohoku Place, fronting the subject site. This 12-inch line will supply the site with its water commitment demands, which will be determined by a professional engineer licensed within the State of Hawai‘i and approved by the Department of Water Supply.

4.15.1.2 Potential Impacts and Mitigation Measures

The future students, faculty, and staff are expected to generate an average daily demand of 28,200 gallons per day from the 12-inch water line. Additionally, the 12-inch water line will serve the site if/when fire protection services are required. The 12-inch line will supply the gallon per minute requirement for fire protection services.

During the Draft EA public review period, the Department of Water Supply wrote: “that a portion of the project site encumbers our existing waterline and easement. Should it be necessary, the developer may be required to relocate the Department’s waterline and will be responsible to bear all costs associated with the relocation.” Should a relocation be required, construction plans showing the proposed waterline relocation will be submitted to the DWS for review and approval. All relocation work shall be done in accordance with the Department’s Water System Standards and Rules and Regulations. Appropriate documents to convey the water system improvements, together with all necessary easements, will be submitted for review and approval of the Water Board, in order for water system improvements to be utilized.

4.15.2 Wastewater System

4.15.2.1 Existing Conditions

There is an existing eight-inch sewer line within Nowelo Street and South Aohoku Place up to the subject site. This line connects to the University system; and the University’s system is tied into two lines, one is a 12-inch line along Kawili Street and the other a 10-inch line along Lanikaula Street.

4.15.2.2 Potential Impacts and Mitigation Measures

The future students, faculty, and staff are expected to generate an average daily flow of 11,750 gallons per day of wastewater. The project will tie into a sewer line along the access road to the east, downhill of South Aohoku Place via gravity feed.

4.15.3 Drainage System

4.15.3.1 Existing Conditions

The subject site is located in an area described as "outside floodplain/minimal flooding area" on the Flood Insurance Rate Map (FIRM) (Figure 10).

4.15.3.2 Potential Impacts and Mitigation Measures

The proposed school with its buildings, walkways and parking area will increase the amount of semi-impervious surfaces. However, the project will be constructed based on County approved drywells and related on-site drainage systems. On-and off-site drainage problems associated with this project are not anticipated. As required by Chapter 11-55, HAR, a NPDES Permit will be required for the proposed project. All discharges related to the project construction or operation activities will comply with State's Water Quality Standards.

4.15.4 Solid Waste

4.15.4.1 Existing Conditions

The County of Hawai'i Department of Environmental Management, Solid Waste Division is responsible for administering the island's solid waste management system. This division operates the County's South Hilo Landfill and Pu'uanahulu Landfill (West Hawai'i). The County does not currently provide solid waste collection service for the project area; however, UHH contracts a private company to haul its solid waste to the South Hilo Landfill. The *Update to the Integrated Solid Waste Management Plan for the County of Hawai'i* (December 2002)estimated that the South Hilo Landfill (as of mid-2001) had approximately 500,000 cubic yards of remaining air space and would be full by the summer of 2004. The plan also stated that the landfill must be closed in the next five years.

4.15.4.2 Potential Impacts and Mitigation Measures

The proposed use should not generate a significant amount of waste. Generated waste will be hauled by commercial haulers to the County's landfill. As may be needed, any hazardous waste associated with the project will be disposed of in a manner consistent with the appropriate Federal, State, and County disposal requirements.

4.15.5 Electrical /Communications

4.15.5.1 Existing Conditions

The Hawai'i Electric Light Company, Inc. (HELCO), a privately-owned utility company regulated by the State Public Utilities Commission, provides electrical power to the island of Hawai'i. The HELCO network of power plants serving Hilo includes the Kanoelehua Power Plant, Puna Power Plant, Wailuku Hydro Power Plant, Hilo Coast Power Plant, and Shipman Power Plant. Telephone service is provided by Hawaiian Telcom. Cable TV is provided by

Oceanic Time Warner Cable. Currently, the electrical, telephone and cable TV conduit stubouts to the site, front the property along South Aohoku.

4.15.5.2 Potential Impacts and Mitigation Measures

The proposed project will require both electrical and communications services. The estimated electrical demand is approximately 2,025 kVA for Phase I of the project, and an additional 1,900 kVA for Phase II. Electrical service will need to be coordinated with HELCO to determine if it's current generation capacity to serve the proposed project.

Presently, the project will need to be fully connected into the UH telecommunications system. It has not yet been determined if the direct line connection to the main campus will be provided by facilities of Hawaiian Telcom or Oceanic Time Warner Cable. All of the electrical and communication lines will be provided underground.

4.16 PUBLIC SERVICES

4.16.1 Police Protection Services

4.16.1.1 Existing Conditions

The project site is located in South Hilo, Patrol District 1. The district extends from Hakalau in the north, to the mid-point of Kanoelehua Avenue between Hilo and Kea'au in the south, to the Saddle Road in the west. The district includes the main police station, located at 349 Kapi'olani Street, approximately five minutes travel time from the project site. More than half of the District's patrol officers are assigned to the City of Hilo.

4.16.1.2 Potential Impacts and Mitigation Measures

During the public review period for the 2007 Draft EA, the Hawai'i Police Department wrote that it did not anticipate any significant impact to traffic and/or public safety concerns from the project.

4.16.2 Fire Protection Services

4.16.2.1 Existing Conditions

The project site is served by the Kawailani Fire Station located at 411 Kawailani Street. Backup service would be provided by the Central Fire Station, located at 466 Kinoole Street. Travel time from each station to the project site is three to five minutes. Additional backup would be provided by the Waiakea Rescue Station and the Kaumana Station with its HAZMAT team, which would be used in the unlikely event of a chemical spill.

4.16.2.2 Potential Impacts and Mitigation Measures

There may be an occasional and unavoidable demand for services from the Fire Department. The buildings will be designed with a fire sprinkler system for additional fire protection and UHH will coordinate with the Fire Department regarding emergency vehicle accessibility and fire hydrant installation. Site specifications will be designed to meet code requirements and road accessibility will be in accordance with UFC Section 10.207

4.16.3 Medical Services

4.16.3.1 Existing Conditions

Hilo Medical Center (HMC) is the primary health care facility serving the South Hilo district. HMC is located approximately 2.3 miles from UHH at 1190 Waianuenue Avenue. Ambulance service in Hilo is provided by the Hawai‘i County Fire Department, which can serve the project site area from the Hilo Central Fire Station in five minutes.

4.16.3.2 Potential Impacts and Mitigation Measures

There will be an occasional and unavoidable demand for emergency medical services. These situations are expected to be infrequent and are not likely to adversely affect the Hilo Medical Center or the Fire Department’s ambulance service.

4.16.4 Recreational Facilities

4.16.4.1 Existing Conditions

The entire South Hilo District contains 54 parks totaling 590 acres. The immediate area of the project site is served by two neighborhood parks, including University Heights Park and Mohouli Park. Both parks are located within walking distance of the UHH campus. The existing campus contains approximately 15 acres of recreational facilities used for basketball, baseball, tennis, volleyball and soccer.

4.16.4.2 Potential Impacts and Mitigation Measures

It is anticipated that sufficient recreational facilities exist and/or are planned to serve the projected daytime (working) population increase due to the proposed project. The proposed permanent facilities of the UHH College of Pharmacy will not include student or faculty/staff housing that are expected to create a demand for recreational facilities.

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5.0

ALTERNATIVES TO THE PROPOSED ACTION

5.0 ALTERNATIVES TO THE PROPOSED ACTION

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-17(f), *the "known feasible" alternatives to the proposed project are limited to those that would allow the objectives of the project to be met, while minimizing potential adverse environmental impacts.* As such, the proposed project has been evaluated in terms of the following.

5.1 NO ACTION ALTERNATIVE

The "no action" alternative would result in the loss of educational and economic benefits to the Hilo area, as the faculty, staff and students associated with the permanent facility would not be spending money in the local economy.

The no action alternative could also diminish the University's efforts to attract off-island students to enroll at UHH for a degree in Pharmacology, as the proposed permanent facilities would clearly demonstrate the University's commitment to the program. The proposed permanent facilities enhances the UHH College of Pharmacy offerings to prospective students. Implementation of the no action alternative would result in not providing would-be pharmacists an opportunity to attend a comprehensive program that would be unique and unlike any other program in the South Pacific region.

5.2 OTHER ALTERNATIVES

There are other locations within University Park and possibly within the UHH main campus, where the proposed permanent facilities of the College of Pharmacy could be alternatively located. A location of the permanent College of Pharmacy facilities within the UHH main campus would be less conveniently located to the existing College of Pharmacy facilities and would involve the "permanent" loss of some open space or the displacement of an existing building(s) within the main campus, whereas the University Park is relatively sparsely developed. Other locations within the University Park would not be conveniently located adjacent to the existing interim modular facilities and would present different development considerations, such as steeper slopes and more expensive site preparation costs, but may possibly provide better views.

The relative ease in developing the proposed site as compared to on the existing campus or elsewhere in the University Park are positive factors for the proposed location of the permanent College of Pharmacy facilities.

The presence of the College of Pharmacy may attract other sciences to University Park, which has been more successful at attracting astronomy-related organizations. Fulfillment of the University's research and technology park plans could provide a catalyst for an academic landmark for the study of pharmacy and a resource for economic diversity in South Hilo and the State of Hawai'i.

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6.0

DETERMINATION, FINDINGS, AND REASONS FOR SUPPORTING DETERMINATION

6.0 DETERMINATION, FINDINGS, AND REASONS FOR SUPPORTING DETERMINATION

To determine whether the proposed action may have a significant impact on the environment, expected consequences, both primary and secondary, and the cumulative as well as short-and long-term effects have been evaluated. Based on the analysis performed and the research evaluated, the Accepting Agency (University of Hawai‘i at Hilo) anticipates a finding of no significant impact (FONSI).

6.1 SIGNIFICANCE CRITERIA

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish ”Significance Criteria“ to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

No endangered plant or animal species or their habitats are known to exist on the property. Based on the archaeological inventory survey for the site, no significant archaeological resources were found on the site. Subsequent to the publication of the 2007 Draft EA, the Department of Land and Natural Resources, State Historic Preservation Division (SHPD) reviewed and commented on the AIS noting that “the summaries of physical setting, historical and cultural contexts, and previous archaeological work in the area are found to be more than sufficient. We concur with your presentation of expected findings as well… We agree with the recommendation that no further work is necessary.” If, however, archaeological resources are discovered, work will cease and the State Historic Preservation Division will be contacted to assess the significance of the find and to recommend appropriate mitigation measures.

Therefore, based on the above, it is expected that there will be no irrevocable commitment to loss or destruction of any natural or cultural resources.

(2) Curtails the range of beneficial uses of the environment;

The site is currently underdeveloped, so the proposed project will not displace any existing uses. The immediate area has been planned for use as a technology park. Environmental impacts were addressed in a Final EIS (*Final Environmental Impact Statement for the University of Hawai‘i at Hilo University Park, Hilo, Hawai‘i, TMK: 2-4-01:7, 12, 19, 41 and 2-4-03: 26*, September 1997) which was accepted in 1997. As such the proposed project will not interfere with surrounding uses but will complement and enhance the proposed uses of the University Park.

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

The proposed project is consistent with the Environmental Policies established in Chapter 344, HRS.

(4) Substantially affects the economic or social welfare of the community or state;

The site is currently underdeveloped but is planned for academic related uses. The project will not have any significant effects on the local economy nor cause any increase, reduction or shifts in population. Therefore, no negative economic or social impacts are expected from the proposed project. However, it will provide in-State students a lower cost alternative to attempting to obtain a degree in Pharmacology out of State.

(5) Substantially affects public health;

Impacts to ambient noise conditions and air quality from construction are expected to be insignificant and temporary. No impacts to water quality are expected. All State, Federal, and County building codes will be met in the design and operation of the facility. No significant long-term effects to public health are anticipated.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

The proposed use is part of the University's plans to expand a research and technology park in this area. The action will have a positive secondary impact by further adding and contributing to the University Research Park. While a total of 120 faculty and staff positions will be ultimately created by the proposed project, this does represent a substantial population change or burden on public facilities.

(7) Involves a substantial degradation of environmental quality;

While air quality and ambient noise levels may experience impacts during the short-term construction period, they will be mitigated through employment of best management practices.

(8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;

The proposed action is part of an established University Research Park since 1989. No significant negative cumulative effect on the environment is expected from the addition of the proposed permanent facilities of the College of Pharmacy. [The project site and UHH University Park have already been described along with potential impacts and mitigation measures in the 1996 LRDP and 1997 FEIS. Impacts on half of the UHH College of Pharmacy site were addressed in an EA/FONSI accepted in 2008.]

(9) Substantially affects a rare, threatened or endangered species or its habitat;

There are no known rare, threatened or endangered species or their habitats on the proposed project site. Therefore there will be no impacts to such species or their habitats from the proposed project.

(10) Detrimentally affects air or water quality or ambient noise levels;

During construction, project impacts will be mitigated by the use of best management practices (BMPs). Minimal impacts only on air and water quality and ambient noise levels are therefore anticipated.

The drainage system will be designed to ensure no increase in runoff toward adjacent properties after project completion. The only discernible impact on air quality or noise levels associated with the proposed facility would be from vehicular traffic. These impacts are expected to be insignificant and can be mitigated through various best management practices.

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

The proposed project is not located in an environmentally sensitive area. Flood Insurance Rate Maps place the project location outside the 500-year flood zone and it is not likely that the proposed improvements would suffer damage from tsunami inundation, as the site is located over 1.5 miles inland. At this distance, the site would not be vulnerable to tsunamis.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

The proposed project is not listed as a critical view plane in any of the County's published planning documents, the General Plan, or Hilo Community Development Plan. Therefore, no significant vistas or viewplanes will be affected.

(13) Requires substantial energy consumption.

Construction of the proposed improvements will increase energy consumption due to the addition of new educational facilities. However, the increase is not expected to exceed the requirements of other similar facilities. The project will be subject to the provisions of the energy section of the Hawai‘i County Building Code. During the design phase, appropriate measures will be considered to reduce energy consumption over and above code requirements.

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7.0

CONSULTED PARTIES

7.0 CONSULTED PARTIES

Since an EA was prepared, processed and completed in 2008 with a Finding of No Significant Impact, this Draft EA was prepared based on the comments received on the 2007 Draft EA and included in PBR HAWAII, *Final Environmental Assessment for University of Hawai'i at Hilo, College of Pharmacy*, Honolulu, Hawai'i. January 2008. The following parties were consulted in the preparation of the 2007 Draft EA.

Federal

U.S. Fish and Wildlife Service Pacific Islands Office

State of Hawai'i

DBEDT Office of Planning
Department of Education
Department of Health - Environmental Planning Office
Department of Land and Natural Resources
DLNR State Historic Preservation Division
Department of Transportation
Office of Environmental Quality Control
Office of Hawaiian Affairs
University of Hawai'i at Hilo
University of Hawai'i at Hilo Library
Hilo Public Library

County of Hawai'i

Department of Environmental Management
Department of Parks and Recreation
Department of Public Works
Department of Research and Development
Department of Water Supply
Fire Department
Planning Department
Police Department

Private

Hawaii Tribune Herald
Hawaiian Electric Company, Environmental Department
Honolulu Advertiser
Honolulu Star Bulletin
West Hawaii Today

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8.0

REFERENCES

8.0 REFERENCES

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Morrow, J. W. and A. N. Kodama, "Characterization of VOG and LAZE in Three Communities on the Island of Hawai'i, 1 Oct 90 - 30 Sep 91, Summary Report," 1 July 1994.

Morrow, J.W. "Air Quality Impact Report University of Hawai'i at Hilo University Park, 10 March 1997," in Engineering Concepts, Inc., *Final Environmental Impact Statement for the University of Hawai'i at Hilo University Park, Hilo, Hawai'i, TMK: 2-4-01:7, 12, 19, 41 and 2-4-03: 26*, September 1997.

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PBR HAWAII, *Final Environmental Assessment for University of Hawai‘i at Hilo, College of Pharmacy*, Honolulu, Hawai‘i. January 2008.

R. M. Towill Corporation, *Final Environmental Assessment for Hilo Scattered Lots Residential Development, Hilo, Island of Hawai‘i, State of Hawai‘i*, prepared for State of Hawai‘i Department of Hawaiian Home Lands, September 1992.

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U.S. Department of Transportation Federal Highway Administration, State of Hawai‘i Department of Transportation Highways Division, and County of Hawai‘i Department of Public Works, *Environmental Assessment for Mohouli Street Extension, Komohana Street to Kaumana Drive, South Hilo, Hawai‘i*, September 1997.

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9.0

COMMENT LETTERS RECEIVED DURING THE PUBLIC REVIEW PERIOD FOR THE 2007 DRAFT EA

9.0 COMMENT LETTERS RECEIVED DURING THE PUBLIC REVIEW PERIOD FOR THE 2007 DRAFT EA

On October 19, 2007, the Draft EA was sent to the parties listed below. Agencies, organizations, or individuals that submitted comments on the 2007 Draft EA are listed in bold. Comment and response letters were reproduced and included in the Final EA/FONSI (2008).

Federal

U.S. Fish and Wildlife Service Pacific Islands Office

State of Hawai‘i

DBEDT Office of Planning
Department of Education
Department of Health - Environmental Planning Office
Department of Land and Natural Resources
DLNR State Historic Preservation Division
Department of Transportation
Office of Environmental Quality Control
Office of Hawaiian Affairs
University of Hawai‘i at Hilo
University of Hawai‘i at Hilo Library
Hilo Public Library

County of Hawai‘i

Department of Environmental Management
Department of Parks and Recreation
Department of Public Works
Department of Research and Development
Department of Water Supply
Fire Department
Planning Department
Police Department

Private

Hawaii Tribune Herald
Hawaiian Electric Company, Environmental Department
Honolulu Advertiser
Honolulu Star Bulletin
West Hawaii Today

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LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

November 15, 2007

Mr. Vincent Shigekuni, Vice-President
PBR Hawaii
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813

Dear Mr. Shigekuni:

SUBJECT: Draft Environmental Assessment for the University of Hawaii at Hilo, College of Pharmacy TMK (3) 2-4-01:41 (por.) and 7 (por.)

The Department of Education (DOE) has reviewed the Draft Environmental Assessment for the College of Pharmacy at the University of Hawaii, Hilo. The DOE has no comment or concern to offer on the proposed plans to construct four one-story buildings as interim facilities for the college.

Should you have any questions, please call George Casen of the Facilities Development Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:jmb

cc: Randolph Moore, Assistant Superintendent, OSFSS
Duane Kashiwai, Public Work Administrator, FDB
Valerie Takata, CAS, Hilo/Laupahoehoe/Waiakea Complex Areas
Director, OEQC, Department of Health

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

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Tel: (808) 242-2876

December 11, 2007

Ms. Patricia Hamamoto, Superintendent
State of Hawai'i
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Hamamoto,

Thank you for your letter dated November 15, 2007. We acknowledge that the Department of Education has no additional comments regarding the proposed project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPO-07-204

December 10, 2007

Mr. Vincent Shigekuni
PBR Hawaii
ASB Tower, Suite 650
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Shigekuni:

SUBJECT: Draft Environmental Assessment for University of Hawaii Hilo-College of Pharmacy
Waiakea, Hilo, Island of Hawaii, Hawaii
TMK: (3) 2-4-001: 042 (portion) and 007 (portion)

Thank you for allowing us to review and comment on the subject application. The application was routed to the various branches of the Environmental Health Administration. We have the following Clean Water Branch and General comments.

Clean Water Branch

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

   b. Hydro-testing water.

   c. Construction dewatering effluent.

   d. Non-contact cooling water

   You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. You must also submit a copy of the NOI to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at 586-4309.

General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
CWB
EH-Hawaii

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Fax: (808) 961-3989

WAILUKU OFFICE
1787 Wili Pā Loop, Suite 4
Wailuku, Hawai'i 96793-1271
Tel: (808) 242-2578

December 19, 2007

Mr. Kelvin H. Sunada, Manager
Environmental Planning Office
State of Hawai'i
Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Attn: Mr. Jiacai Liu

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Sunada:

Thank you for your letter dated December 10, 2007 (your reference number: EPO-07-204). We offer the following responses to your comments:

Clean Water Branch (CWB)

1. As recommended, the Standard Comments on the Department of Health website http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf) have been reviewed and will be adhered to as applicable.

2. It is acknowledged that the project and its potential impacts to State Waters must meet the following criteria:
   - antidegradation policy (HAR, Section 11-54-1.1);
   - designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters; and,
   - water quality criteria (HAR, Section 11-54-4 through 11-54-8).

3. It is acknowledged that an NPDES permit is required as per HAR, Chapter 11-55.

4. An Archaeological Inventory Survey of the project site was prepared for the proposed project and submitted to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD). SHPD has reviewed and commented: The summaries of physical setting, historical and cultural contexts, and previous archaeological work in the area are found to be more than sufficient. We concur with your presentation of expected findings as well...We agree with the recommendation that no further work is necessary."

5. It is acknowledged that all discharges related to the project construction or operation activities must comply with the State's Water Quality Standards.

6. As recommended, the Standard Comments on the Department of Health website (http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html) have been reviewed and will be adhered to as applicable.

Thank you again for your participation in the review of this Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Desmond Wery, Hawai'i Fire Department CIP Manager

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LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 30, 2007

PBR Hawaii
1001 Bishop Street
ASB Tower Suite 650
Honolulu, Hawaii 96813

Attention: Mr. Vincent Shigekuni

Gentlemen:

Subject: Draft Environmental Assessment for University of Hawaii at Hilo, College of Pharmacy, Hilo, Hawaii, Tax Map Key: (3) 2-4-1:portion 41 and 7

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

Sincerely,

for Russell Y. Tsuji
Administrator

PBR HAWAII
& ASSOCIATES, INC.

PARTNERS
THOMAS S. WITTEN, ASLA
President

R. STAN DUNCAN, ASLA
Executive Vice-President

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Associate

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Fax: (808) 961-4989

WAILUKU OFFICE
1787 Wili Pa Loop, Suite 4
Wailuku, Hawai'i 96793-1271
Tel: (808) 242-2878

December 11, 2007

Mr Russell Y. Tsuji, Administrator
State of Hawai'i
Department of Land and Natural Resources, Land Division
Post Office Box 621
Honolulu, Hawai'i 96809

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Tsuji,

Thank you for your letter dated October 30, 2007. We acknowledge that the Department of Land and Natural Resources (DLNR) has no additional comments regarding the proposed project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BRENNON T. MORIOKA
ACTING DIRECTOR

Deputy Directors
MICHAEL D. FORMBY
FRANCIS PAUL KEENO
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.2712

December 13, 2007

Mr. Vincent Shigekuni
PBR Hawaii & Associates, Inc.
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: University of Hawaii at Hilo (UHH) College of Pharmacy
Draft Environmental Assessment (DEA)
TMK: 2-4-01: 41 (por.) and 7 (por.)

Thank you for requesting our review of the subject project. This letter is provided as a follow-up to earlier verbal comments provided by DOT staff.

As stated in your letter to DOT dated September 21, 2007 (see Appendix A, of the subject report), "While the Mauka Lands Master Plan TIAR included the cumulative impacts of the traffic generated by the University Park…the proposed College of Pharmacy was not contemplated within the existing University Park at the time the traffic impact assessment report (TIAR) was prepared." It was also stated, "that the UHH is about to embark on updating its Long Range Development Plan, and part of its scope will include an updated TIAR."

Your firm and/or the UHH should consult with our Highways Division, Hawaii District Office and Planning Branch when developing the scope of the TIAR update for the UHH Long Range Development Plan. The traffic study should reflect the cumulative impact of traffic generated with the full build out of the UHH campus including the proposed project, and identify required mitigation measures.

We look forward to participating in the UHH's Long Range Development Plan TIAR update and the opportunity to provide comments.

Very truly yours,

Francis Paul Keeno

for BRENNON T. MORIOKA, PH.D., P.E.
Acting Director of Transportation

c: Lawrence Lau, Office of Environmental Quality Control
Lo-li Chih, University of Hawaii at Hilo

PBR HAWAII
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Executive Vice-President

VINCENT SHIGEKUNI
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January 4, 2008

Mr. Brennon T. Morioka, Acting Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

SUBJECT: THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Morioka,

Thank you for your letter dated December 13, 2007 (your reference number: STP 8.2712). As suggested, the University of Hawai'i at Hilo (UHH) will consult with the Department of Transportation's Highways Division, Hawaii District Office and Planning Branch when developing the scope of an updated traffic impact assessment report (TIAR) to be included in UHH's Long Range Development Plan Update. The TIAR will reflect the cumulative impact of traffic generated with the full build out of the UHH campus including the proposed College of Pharmacy, and identify required mitigation measures.

Thank you again for your review of the Draft Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hawai'i at Hilo

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PHONE (808) 594-1888

FAX (808) 594-1865

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

HRD07/3158B

December 18, 2007

Vincent Shigekuni
Vice President
PBR Hawai'i
1001 Bishop Street, ASB Tower, Ste. 650
Honolulu, HI 96813

RE: Request for comments on the Draft Environmental Assessment for the construction of the University of Hawai'i at Hilo's proposed College of Pharmacy buildings, TMKs: (3) 2-4-01: por. 41 and por. 7.

Dear Vincent Shigekuni,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-referenced Draft Environmental Assessment for the construction of a four one-story buildings and a 47-stall parking lot for the university's College of Pharmacy. OHA offers the following comments.

We support the applicant's plan to landscape the project area with native plants and plants used in lā'au lapau. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

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

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

Sincerely,

Clyde W. Nāmu'o
Administrator

C: Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, HI 96813

Lo-li Chih
University of Hawai'i at Hilo
200 West Kawili Street
Hilo, HI 96720

Lukela Ruddle, OHA Community Resource Coordinator
162 A Baker Avenue,
Hilo, Hawai'i 96720-4869

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1787 Wili Pā Loop, Suite 4
Wailuku, Hawai'i 96793-1271
Tel: (808) 242-2878

January 4, 2008

Mr. Clyde W. Nāmu'o, Administrator
State of Hawai'i
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Attn: Mr. Sterling Wong

SUBJECT: THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Nāmu'o,

Thank you for your letter dated December 18, 2007 (your reference number: HRD07/3158B). We offer the following responses to your comments:

1. We concur that landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

2. Should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the building, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you again for your review of the Draft Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hawai'i at Hilo

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Harry Kim
Mayor

Bobby Jean Leithead-Todd
Director

Nelson Ho
Deputy Director

County of Hawaii
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
25 Aupuni Street • Hilo, Hawai'i 96720-4252
(808) 961-8083 • Fax (808) 961-8086
http://co.hawaii.hi.us/directory/dir_envmng.htm

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DEC 04 2007
PBR HAWAII

November 28, 2007

Mr. Vincent Shigekuni
Vice President
PBR Hawai'i
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, HI 96813-3484

SUBJECT: UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY
DRAFT ENVIRONMENTAL ASSESSMENT
TMK: 2-4-01:41 (por.) and 7 (por.)

Dear Mr. Shigekuni,

We have no comments to offer on the subject draft EA.

Thank you for allowing us the opportunity to review and comment on this project.

Sincerely,

Bobby Jean Leithead-Todd
DIRECTOR

cc: OEQC

Hawai'i County is an equal opportunity provider and employer.

10171A

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December 11, 2007

Ms. Bobby Jean-Leithead-Todd, Director
County of Hawai'i
Department of Environmental Management
25 Pauahi Street
Hilo, Hawai'i 96720-4252

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Leithead-Todd,

Thank you for your letter dated November 28, 2007. We acknowledge that the Department of Environmental Management has no additional comments regarding the proposed project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

December 10, 2007

Mr. Vincent R. Shigekuni
PBR Hawaii
ASB Tower
1001 Bishop Street, Suite 650
Honolulu, HI 96813

DRAFT ENVIRONMENTAL ASSESSMENT
UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY
TAX MAP KEY 2-4-001:007 (PORTION) AND 040 (PORTION)

We have reviewed the subject Draft Environmental Assessment and our comments from our August 27, 2007, letter to you still stand.

The Department will also note that a portion of the project site encumbers our existing waterline and easement. Should it be necessary, the developer may be required to relocate the Department's waterline and will be responsible to bear all costs associated with the relocation. Further, relocation of the waterline will be subject to the following:

1. Submit construction plans, prepared by a professional engineer licensed in the State of Hawai'i, showing the proposed waterline relocation, for review and approval.

2. All relocation work shall be done in accordance with the Department's Water System Standards and Rules and Regulations.

3. Submit the appropriate documents to convey the water system improvements, together will all necessary easements, for review and approval by the Water Board. The water system improvements cannot be utilized until all necessary documents have been accepted and approved by the Water Board.

Should there be any questions, please contact Mr. Finn McCall of our Water Resources and Planning Branch at 961-8070, extension 255.

Sincerely yours,

Milton D. Pavao, P.E.
Manager

FM:dfg

... Water brings progress...

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410. Or call (202) 720-5964 (voice and TDD)

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January 4, 2008

Milton D. Pavao, P.E., Manager
Department of Water Supply
County of Hawai'i
345 Kekūanō'a Street, Suite 20
Hilo, Hawai'i 96720

Attn: Mr. Finn McCall

SUBJECT: THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Pavao,

Thank you for your letter dated December 10, 2007. We acknowledge your comments dated from your August 27, 2007 letter still stand and we offer the following responses to your most recent letter in the respective order of those comments:

It is understood that a portion of the project site encumbers the Department's existing waterline and easement. We acknowledge that should it be necessary, the developer may be required to relocate the Department's waterline and will be responsible to bear all costs associated with the relocation. We further recognize that the waterline will be subject to the following should this relocation occur:

1. Construction plans, prepared by a professional engineer licensed in the State of Hawai'i, showing the proposed waterline relocation, will be submitted for review and approval.

2. All relocation work shall be done in accordance with the Department's Water System Standards and Rules and Regulations.

3. Appropriate documents to convey the water system improvements, together with all necessary easements, will be submitted for review and approval of the Water Board, in order for water system improvements to be utilized.

Thank you again for your review of the Draft Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hawai'i at Hilo

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Harry Kim
Mayor

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

Darryl J. Oliveira
Fire Chief

Glen P.I. Honda
Deputy Fire Chief

RECEIVED DEC 0 4 2007

November 6, 2007

PBR Hawaii & Associates
101 Aupuni Street
Hilo Lagoon Center, Suite 310
Hilo, Hawaii 96720

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
UNIVERSITY OF HAWAII AT HILO COLLEGE OF PHARMACY
TAX MAP KEY: 2-4-01:41 (POR.) AND 2-4-01:7 (POR.)

In regards to the above-mentioned for Draft Environmental Assessment, there are no additional comments.

DARRYL OLIVEIRA
Fire Chief

PBE:lpc

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& ASSOCIATES, INC.

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December 11, 2007

Fire Chief Darryl J. Oliveira
County of Hawai'i
Hawai'i Fire Department
25 Aupuni Street, Room 103
Hilo, Hawai'i 96720

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Fire Chief Oliveira,

Thank you for your letter dated November 6, 2007. We acknowledge that the Hawai'i Fire Department has no additional comments regarding the proposed project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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Harry Kim
Mayor

Christopher J. Yuen
Director

Brad Kurokawa, ASLA LEED® AP
Deputy Director

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

November 6, 2007

Mr. Vincent Shigekuni
PBR Hawaii
1001 Bishop Street, ASB Tower, Suite 650
Honolulu, HI 96813

Dear Mr. Shigekuni:

SUBJECT: Draft Environmental Assessment
University of Hawaii at Hilo College of Pharmacy
TMK: 2-4-1:41 and portion of 7

This is to acknowledge receipt of the October 2007 Draft Environmental Assessment for the above-referenced project.

We are encouraged by UHH's use of the OEQC's "Guidelines for Sustainable Building Design in Hawaii" and the application of several of the techniques described in the guidelines. We suggest that the University also encourage bicycle and pedestrian access and commuting by providing:

- Bicycle and pedestrian paths,
- Bicycle racks that are visible and accessible, and
- Facilities for bicycle commuters (e.g., showers and lockers).

Otherwise, we have no additional comments to offer regarding the Draft Environmental Assessment.

Hawai'i County is an Equal Opportunity Provider and Employer.

If you have questions, please feel free to contact Ron Whitmore of this office at 961-8288, Extension 250.

Sincerely,

CHRISTOPHER J. YUEN
Planning Department

RJW:cd
P:\wpwin60\rwhitmore\EA-EIS\PBR Hawaii UHH Pharmacy Draft EA.ntf

cc: Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Mr. Lo-Li Chih
University of Hawaii at Hilo
200 West Kawili Street
Hilo, HI 96720

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Associate

SCOTT MURAKAMI, ASLA, LEED AP
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December 11, 2007

Mr. Christopher Yuen, Director
County of Hawai'i
Planning Department
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720-4224

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Yuen,

Thank you for your letter dated November 6, 2007. We offer the following responses in the respective order of your comments:

1. The current building is intended to be used as an interim facility for the UHH College of Pharmacy. Access to the site via South Aohoku Place and Nowelo Street includes paved streets with curbs, gutters and sidewalks. The current conditions of the site will allow pedestrians, bicyclists and other commuters to safely access the site until the permanent College of Pharmacy building is constructed. At that time, the University of Hawai'i expects to revisit their plan to enhance and encourage the pedestrian, bicycle and commuter access features of the permanent facility, which may include:

    - Bicycle and pedestrian paths
    - Bicycle racks that are visible and accessible, and
    - Facilities for bicycle commuters (e.g., showers and lockers).

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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November 26, 2007

PBR Hawaii
Attention: Vincent Shigekuni
1001 Bishop Street, ASB Tower, Suite 650
Honolulu, Hawaii 96813

Gentlemen:

Subject: University of Hawaii at Hilo College of Pharmacy
TMK: (3) 2-4-01:41(por) and 7(por)
South Hilo District, Hawaii

Thank you for the opportunity to review the Subject Project located in South Hilo. HELCO will be able to provide electrical service to the subject development as described subject to detailed analysis to be performed after receipt of your consultant's detailed design drawings and estimated demand.

1. Generation Capacity - HELCO's current system peak load is 196,370 kW and our total generation system capability is 269,330 kW. Our reserve margin is 37 percent and has adequate generation to serve the above.
2. Electrical Substation – The area is currently served by our existing 10MVA Komohana electrical substation and a 12,470 volt underground distribution system along Aohoku Street. Based on an assumption of 10W/sq-ft demand (26,000 sq-ft), the capacity of our existing substation is adequate to serve the estimated load of 260kW. However, a detailed distribution engineering analysis needs to be done if this substation could serve as the source pending your detailed design drawings.
3. Electrical Distribution System – The existing 12,470 volt distribution system along Aohoku Street is adequate to serve the proposed development however, distribution line extensions are required to connect the existing distribution system along the Aohoku Street to the project on-site developments. After the development's detailed loading and civil plans are submitted, HELCO will prepare a firm cost for the off-site distribution system to connect to the development.

HELCO recommends energy efficient and conservation measures to reduce the maximum electrical demand and energy consumption. The developer may call HELCO's Energy Services Manager, Curtis Beck, at (808) 969-0134 for questions or details on available programs.

It is encouraged that the developer's electrical consultant opens a service request with HELCO's Engineering Department as soon as practicable to ensure timely electrical facility installation.

Should you have any questions, please contact Hal Kamigaki at (808) 969-0322.

Sincerely,

Jose Dizon, P.E., Manager
HELCO Engineering Department

JSD:HKK/gk

VIA FACSIMILE

cc: STT
SSO

PBR HAWAII
& ASSOCIATES, INC.

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Tel: (808) 242-2878

December 11, 2007

Mr. Jose Dizon, P.E., Manager
HELCO Engineering Department
P.O. Box 2750
Honolulu, Hawai'i, 96840

SUBJECT: PRE-CONSULTATION FOR THE UNIVERSITY OF HAWAI'I AT HILO COLLEGE OF PHARMACY DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Dizon,

Thank you for your letter dated November 26, 2007. We offer the following responses in the respective order of your comments:

1. We acknowledge that HELCO's current generation capacity is sufficient to serve the proposed project.

2. We acknowledge that the electrical substation is adequate to serve the estimated load of 260kW but that a detailed distribution engineering analysis is required to confirm whether the substation could serve as the source.

3. We acknowledge that the existing volt distribution system along Aohoku Street is adequate to serve the proposed project site and that distribution lines will be required to connect the existing distribution system to the project on-site developments.

4. We acknowledge that HELCO will prepare a firm cost for the off-site distribution system to connect to the development after detailed loading and civil plans have been submitted.

5. We acknowledge that HELCO recommends energy efficient and conservation measures to reduce the maximum electrical demand and energy consumption and will try to incorporate energy-saving features where feasible for this modular building project.

6. We will relay to the project architect that its electrical consultant should open a service request with HELCO's Engineering Department as soon as practicable to ensure timely electrical facility installation.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni
Vice President

cc: Lo-Li Chih, University of Hilo at Hawaii

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APPENDIX A

ARCHEOLOGICAL INVENTORY SURVEY (2007)

LINDA LINGLE
GOVERNOR OF HAWAII

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

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

November 30, 2007

Tomas R. Wolforth
Hawai'i Islands Operations Manager,
Scientific Consultant Services, Inc.
1564 Leilehua Street
Hilo, HI 96720

LOG NO: 2007.3595
DOC NO: 0711TS13
Archaeology

Dear Mr. Wolforth:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Archaeological Inventory Survey for the University of Hawai'i at Hilo College of Pharmacy School Building on the Periphery of Historical Sugar Cane Agriculture.
Waiakea Ahupua'a, South Hilo District, Island of Hawai'i
TMK: (3) 2-4-001:007 por. and 041por.

Thank you for the opportunity to comment on the aforementioned project, which we received on September 29, 2007.

The summaries of physical setting, historical and cultural contexts, and previous archaeological work in the area are found to be more than sufficient. We concur with your presentation of expected findings as well. Though the methodology section could be elaborated upon to be more detailed and specific, this minor component of the report is not enough to justify a rejection of the report, though we hope you will take this into consideration in future reports.

Similarly, we find your descriptions and interpretations of the function and significance of the six Waiakea Mill Co. plantation field features that were lumped into a single site, as reported, to be acceptable. We agree with the recommendation that no further work is necessary.

We accept this AIS as final.

Please contact Hawaii Island Archaeologist, Tim Scheffler at (808) 987-5001 if you have any questions or concerns regarding this letter.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

TS:oap

SCS 873-1

Archaeological Inventory Survey for the University of Hawai'i at Hilo College of Pharmacy School Building: on the Periphery of Historical Sugar Cane Agriculture

Waiākea Ahupua'a, South Hilo District, Island of Hawai'i
TMK (3) 2-4-001:7 portion, and 41 portion

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ABSTRACT

An Archaeological Inventory Survey was conducted on 5.22 acres of land in the *ahupua'a* of Waiākea, South Hilo District, Island of Hawai'i, (Figure 1) TMK (3) 2-4-001:7 portion and 41 portion where University of Hawai'i at Hilo (UHH) proposes to build a College of Pharmacy building. Six sugar cane field stone mounds were identified. These were grouped into one site that was evaluated as being significant for Criterion D only. No further work is recommended.

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INTRODUCTION

The University of Hawai'i at Hilo (UHH) proposes to build a College of Pharmacy building on 5.22 acres of land in the *ahupua'a* of Waiākea, South Hilo District, Island of Hawai'i, (Figure 1) TMK (3) 2-4-001:7 portion and 41 portion. Scientific Consultant Services (SCS), Inc. conducted an Archaeological Inventory Survey on this property to identify and evaluate historical properties pursuant to state cultural resource management regulations (HAR § 275 and 276). The project area is a rectangle with the western edge along Komohana Street, northern boundary along Nowelo Street, eastern edge along A'ohōkū Street, and the southern boundary at the edge of the current Agricultural Station (Figures 2 and 3).

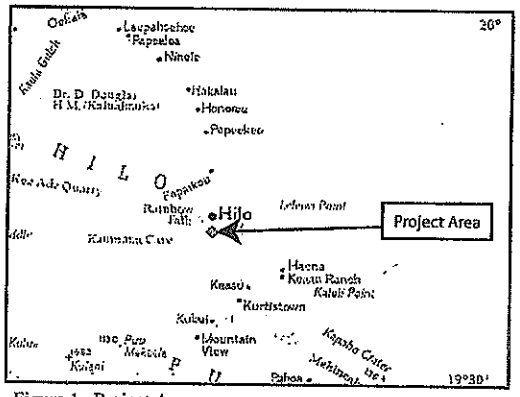

Figure 1. Project Area.

PHYSICAL SETTING

Mauna Loa pāhoehoe flows within the project area dictate soil conditions, drainage, and vegetation in the area. The UHH College of Pharmacy project is situated on flows that were created between 750 and 1,500 years ago (Wolfe and Morris 1996). Soil coverage is thin to nonexistent on this relatively young flow. An older flow just to the south (5,000 to 10,000 years ago) is covered by well-developed deep ash soils.

The north half of the project area is on a soil type classified as "Lava Flows, Pahoehoe" (Sato *et al.* 1973:33). Site inspection confirms the description of this area as having no soil covering, but contrary to the description that it "is typically bare of vegetation", the vegetation within the project area is very dense. The southern half of the project area is on soils called "Panaewa very rocky silty clay loam" (Sato *et al.* 1973:45). These soils can be up to 15 inches thick, but bedrock outcrops cover up to 25 of the ground surface.

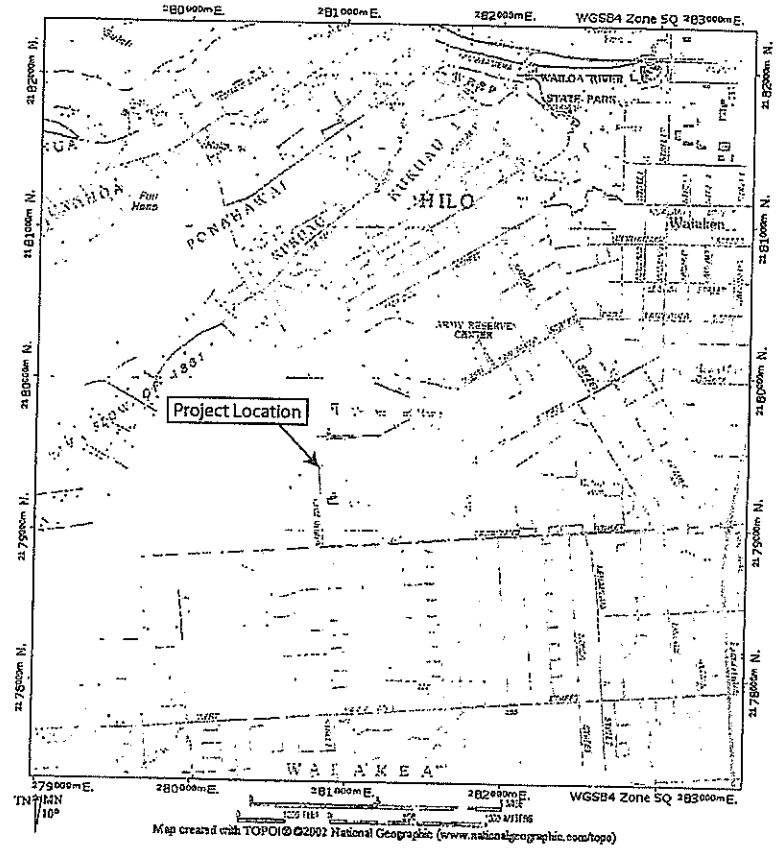

Figure 2. Project Location. USGS 7.5 minute Hilo quadrangle.

Rainfall in the project area is high, ranging between 330 and 440 centimeters (150 and 200 inches) per year (Kelly *et al.* 1981). Natural drainage in the area runs from southwest to northeast and from west to east. The vegetation is dominated by *waivi* (*Psidium cattleianum*) and common guava (*Psidium guajava*), and is very dense. Ornamental palms are at the eastern edge of the project area.

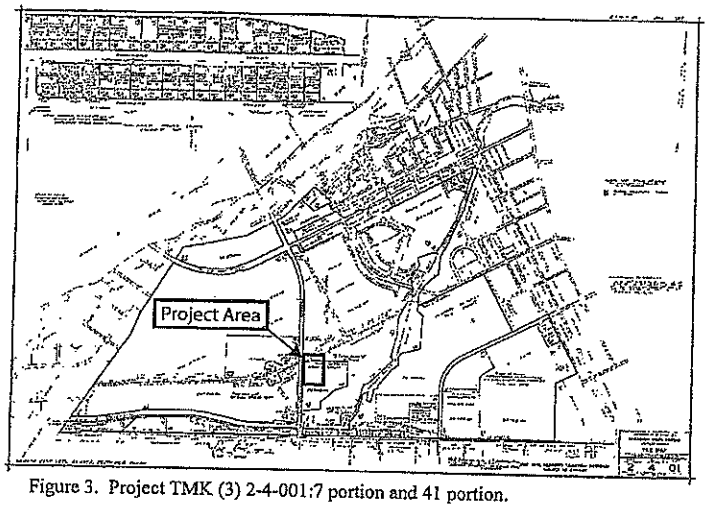

Figure 3. Project TMK (3) 2-4-001:7 portion and 41 portion.

HISTORICAL AND CULTURAL CONTEXTS

Hilo was, by most estimates, one of the first settlements on the Island of Hawai'i and was settled between A.D. 300 and 600. The rich marine resources of Hilo Bay and the gently sloping forests of Mauna Loa and Mauna Kea provided abundant resources. Fresh water was available from the Wailoa and Wailuku rivers and smaller streams such as Waiākea, Waiolama, Pukihae, and 'Alenaio.

The UH Hilo Mauka Lands Project is within the *ahupua'a* of Waiākea, a large land division at the eastern edge of South Hilo district that was regarded as a region of abundant natural resources and numerous fishponds (Figure 4). Waiākea was also an early important political center, notably under chief Kulukulu'a (Kelly *et al.* 1981:3). Kamehameha lived and often returned to his *'ili kūpono* (independent land division where all tributes were paid to the chief of the *'ili* and not the *ahupua'a*) lands of Pi'opi'o in the *ahupua'a* of Waiākea. The *'ili kūpono* lands and its royal fishpond were passed on to his son Liholiho after his death.

Traditional Settlement Patterns, Subsistence, and Land-Use

Historical accounts and archaeological/cultural studies pertaining to the *ahupua'a* of Waiākea (Ellis 1963; Bingham 1969; Handy and Handy 1972; Bird 1974; McEldowney 1979; Kelly *et al.* 1981; and Maly 1996) provide a wealth of information on traditional settlement

Kelly *et al.* 1981; and Maly 1996) provide a wealth of information on traditional settlement patterns, land-use, and subsistence horticulture of the area. These are synthesized below as they allude to the types of sites that may be encountered in the project area.

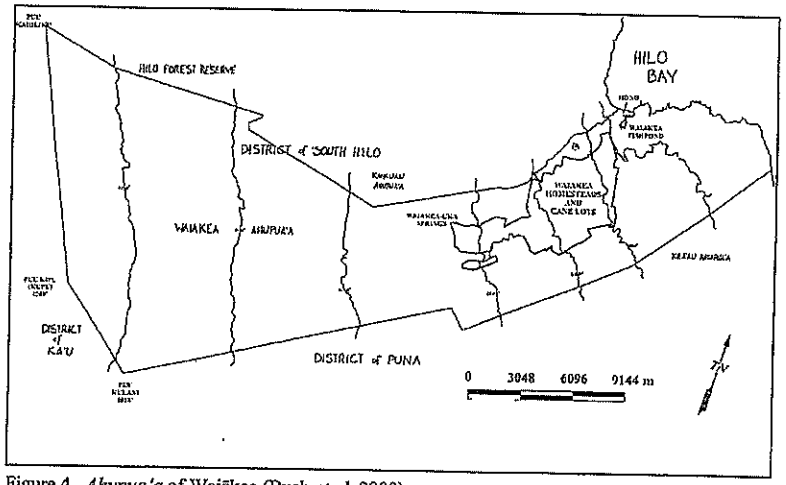

Figure 4. *Ahupua'a* of Waiākea (Bush *et al.* 2000).

Historical accounts of residence patterns, land-use, and subsistence horticulture are believed to be indicative of traditional practices developed long before contact with Europeans (McEldowney 1979). Early accounts describe several distinct environmental regions in Waiākea. From the coast inland five or six miles, scattered subsistence agriculture was evident, followed by a region of tall fern and bracken, flanked at higher elevations by a forest region between 10 and 20 miles wide, beyond which was an expanse of grass and lava (Ellis 1969:403). The American Missionary C.S. Stewart wrote, "the first four miles of the country is open and uneven, and beautifully sprinkled with clumps, groves, and single trees of the bread-fruit, pandanus, and candle tree" (Stewart 1970:361–363). The majority of Waiākea's estimated 2,000 inhabitants (in 1825) lived within this coastal region (Ellis1969:253). Taro, plantains, bananas, coconuts, sweet potatoes, and breadfruit were grown individually or in small garden plots. Fish, pig, dog, and birds were also raised and captured for consumption.

The present study area is located along the upper reaches of the open coastal region and the lower reaches of the tall fern and bracken zone. It is located in McEldowney's coined "upland agricultural zone" consisting of "scattered huts" amidst "garden "plots" created through "shifting agriculture" (McEldowney 1979:18–19). Wood, such as *ohi'a* and *koa* for house construction, canoe building, and fires was obtained from this upland agricultural zone, and from the dense forests above (Ellis 1963:236). *Hala* for thatching was also known to be plentiful

along the lava flows of eastern Waiākea (Ellis 1917, cited in Kelly *et al.* 1981:20). Of particular interest is a description of bird snaring and mention of banana growing in the area of the present study (Maly 1996:6–8).

The *Māhele* of 1848 and Land Commission Awards

The *ahupua'a* of Waiākea became Crown Lands during the *Māhele* of 1848 and in the following years, twenty-five Land Claims were awarded within the *ahupua'a* of Waiākea (Table 1). The awards were small in area, 24 of which went to native claimants. No Land Commission awards were made within the project area, and all but two were located near the coast. A five-acre parcel was awarded to Keaniho (LCA 2402) approximately one kilometer east of the present study area. The parcel contained a house and three cultivation fields. Keaniho's parcel bordered *kalo* fields to the west according to testimony given in support of the claim (Maly 1996:22).

Table 1: Land Commission Awards in Waiākea Ahupua'a.

Grantee	LCA	Acreage
Barenaba	2327	12.25
Halai, L.K.	1279	0.60
Hale	40004	4.25
Kahue	2663	3.75
Kaiana, J.B.	2281	10.25
Kaihenui	11050-B	5.19
Kalolo	1333	2.25
Kalua	8854	3.40
Kaluhikaua	1738	2.98
Kamamalu, V.	7713	*'Ili 'āina*
Kamanuhaka	8803	1.02
Kapu	1-F	1.60
Kealiko	11174	1.00
Keaniho	2402	5.00
Keawe	5018	0.24
	10505	—
Kuaio	4344	1.22
Leoi	9982	0.80
Lolo	4738-B	1.27
Mahoe	1-E	4.46
Moealoha	4737	1.03
Nakai	4785	1.05
Napeahi	2603	1.30
Wahine	4737-B	1.01
Wahinealua	11173	2.50
Wahinenohoihilo	10004	1.69

Changing Residential and Land-Use Patterns (1845–1865)

Between 1845 and 1865, traditional land-use and residential patterns underwent a change. In particular, the regular use of Hilo Bay by foreign vessels, the whaling industry, the

establishment of missions in the Hilo area, the introduction of the sandalwood trade, the legalization of private land ownership, the introduction of cattle ranching, and the introduction of sugar cane cultivation all brought about changes in settlement patterns and long-established land-use patterns (Kelly *et al.* 1981). Hilo became the center of population and settlements in outlying regions declined or disappeared. While food was still grown for consumption, greater areas of land were continually given over to the specialized cultivation and processing of commercial foodstuffs for export. Sugar cane plantations and industrial facilities were established in areas that were once upland agricultural areas and coastal settlements, respectively.

Waiākea Mill Company

On July 15, 1861, S. Kipi leased the Crown Land of Waiākea from Kamehameha IV to be used as pastureland for an annual amount of $600 (Kelly *et al.* 1981:89). In 1874, Rufus A. Lyman was granted a 25-year property lease (General Lease 124-A) within Waiākea, encompassing the government pastureland on which the present study area is located (Maly 1996:26). The lease granted him all privileges of land use including the cutting of firewood and the use of fishponds. The newly established Waiākea Mill Company, founded by Alexander Young and Theo H. Davies, acquired Rufus A. Lyman's General Lease 124-A in 1879 (with an extension of terms until June 1, 1918 [Maly 1996:27]). By the early 1900s, Waiākea plantation was cultivating sugar cane on over 6,000 acres of government land (Kelly *et al.* 1981:89,120).

In 1911, the Waiākea Mill Company applied for a title to several portions of its leased land, but was rejected by the Board of Public Lands. Rather than renew the lease with the Waiākea Mill Company, the government of Hawai'i implemented a plan to sell homestead lots and lease sugar cane lots to the public (Figure 5). By 1919, 2003 acres of land was returned for house lots and 5,300 acres was returned for cane field lease (Maly 1996:27–28). Sugar cane grown on these lots was, by terms of contract, to be processed by the Waiākea Mill Company for a share of the profits. None of the publicly leased government property is located within the present study area.

Fairview Dairy acquired a 21-year lease at public auction to Lots 11 through 20-A (General Lease 3333) to be used for pasturing cattle. Fairview Dairy transferred its lease to William Kama'u Sr. in 1959 for the purposes of pasturing cattle and horses. The majority of Lot 20-A is most recently located along the newly-constructed Pu'ainako Street extension.

The largest portion of the study area composed of a single government parcel known as "Waiākea Pasture Land" was leased (approximately 500 acres covered under General Lease 2751) to Kazuo Miyasaki in 1939 as pastureland for his dairy cattle (Figure 6). The lease then passed to John Matson in 1942. During World War II, the parcel covered under General Lease 2751 and known as "Waiākea Pasture Land" was used for training by the U.S. Army Corps (Maly 1996:34). By 1946, the Army was clearing the property of barbed wire, unexploded ordinance, three Quonset buildings, and two latrines. The project area is within this Pasture Land area.

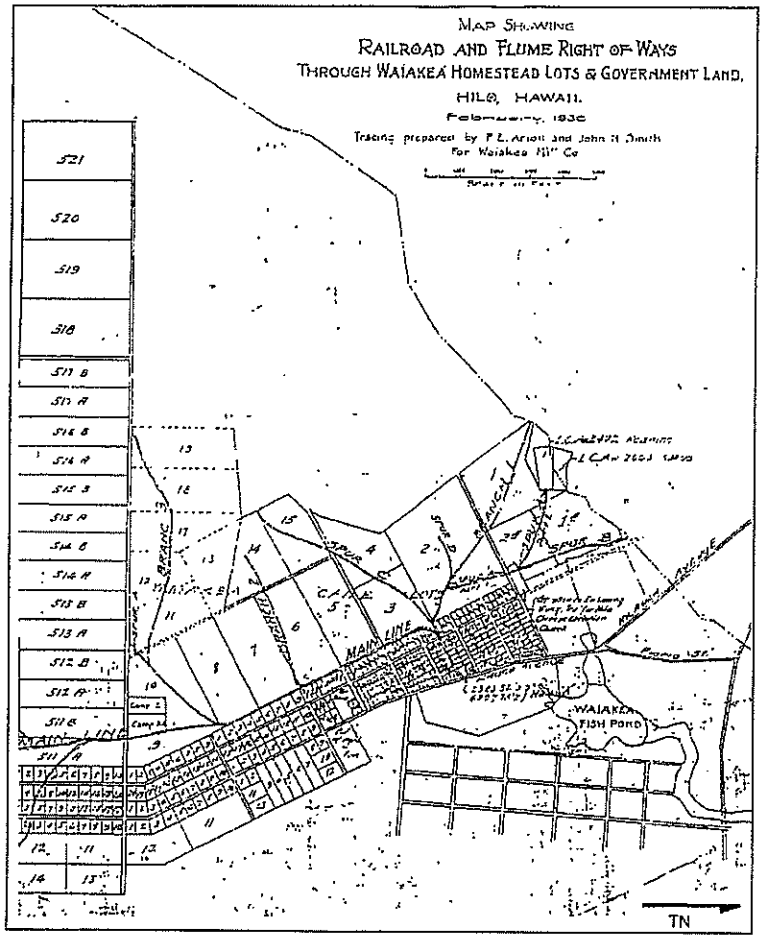

Figure 5. Map Showing Portion of Waiākea Homestead Lots and Plantation Fields South and East of the Project Area.

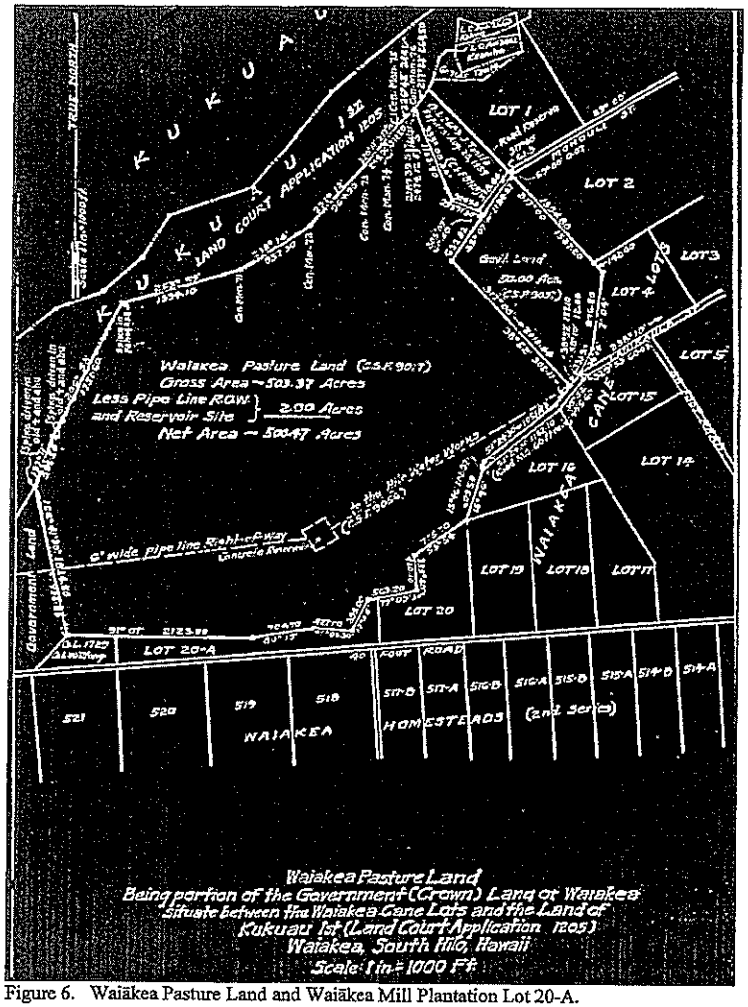

Figure 6. Waiākea Pasture Land and Waiākea Mill Plantation Lot 20-A.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Numerous archaeological investigations have been carried out in the Hilo area and within the *ahupua'a* of Waiākea over the last 95 years. Projects that relate directly to the UHH College of Pharmacy project due to their proximity have been reviewed for the current investigation (Table 2).

These archaeological and historical investigations are instrumental to understanding broad patterns of land-use in the Hilo area (see McEldowney 1977; Kelly *et al.* 1981; Maly 1996), general trends in the distribution of formal archaeological features in the Hilo area (see Thrum 1907 and 1908; Hudson 1930; Smith 1991; Moniz 1992; Spear 1993), and to formulating archaeological expectations at the UH Hilo Mauka Lands project (see Borthwick *et al.* 1993; Hunt and McDermott 1994; Spear 1995; Robins and Spear 1996; McGerty and Spear 1999; Bush *et al.* 2000; Dega 2000; and McDermott and Hammatt 2001).

One previous archaeological investigation was conducted over the current project area (Borthwick and Hammatt 1993). Survey was conducted over 11 acres east of Komohana Street (Figure 7). Sugar cane plantation sites were identified in the southern edge of that project area, and none were seen within the UHH College of Pharmacy area. Based on Borthwick and Hammatt (1993), the several sites along the southern boundary of that project area appeared to represent the northern boundary of sugar cane cultivation.

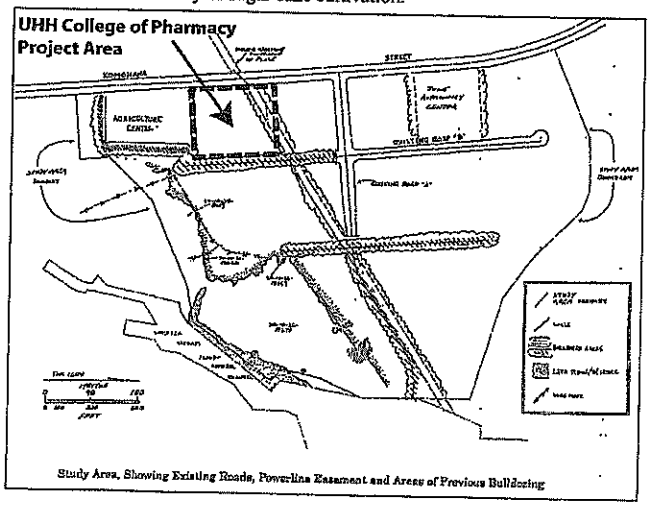

Figure 7. Borthwick and Hammatt 1993 project area.

Table 2: Previous Archaeological Research in Project Vicinity.

Reference	Location	Description & Results
Thrum 1907	Waiākea Ahupua'a	*Heiau* in Waiākea, none near project area.
Thrum 1908	Waiākea Ahupua'a	*Heiau* in Waiākea, none near project area.
Hudson 1932	East Hawai'i Island	Description of various sites in the Hilo area.
McEldowney 1979	Hilo Bay area	Zonal characteristics—Land-use study.
Kelly, Nakamura, and Barrère 1981	Hilo Bay area	History of Hilo Bay.
Smith 1991	UHH lands	Inventory survey recommended.
Stokes and Dye 1991	Hawai'i Island	*Heiau* of Hawai'i Island, none in project.
Smith 1992	Waiākea Cane Lots	Numerous cane field features including walls, clearing mounds, a large rectangular enclosure, and c-shaped enclosures.
Moniz 1992	Waiākea Ahupua'a	A listing of 1979-1992 Inventory Survey results within Waiākea Ahupua'a with walls, mounds, platforms, and terraces.
Hunt 1992	Puainako Street Extension	Interim Inventory Survey report with 31 cane field features.
Spear 1993	Puainako Street Extension	Inventory Survey report of a 5-acre parcel with historic oven and trash dump.
Borthwick, Collins, Folk, and Hammatt 1993	UH Hilo property	163 acres east of Komohana Street with 4 sugar cane agriculture sites.
Hunt and McDermott 1994	Puainako Street Extension	Inventory Survey with 13 historical sites associated with sugar cane agriculture.
Maly, Walker, and Rosendahl 1994	Lands of Waiākea TMK: 2-4-57:01	Inventory Survey of 4.5 acres in Waiākea Cane Lots with 4 sites of sugar cane agriculture. 47 features.
Spear 1995	Lands of Waiākea TMK: 2-4-57:01	Data Recovery report of Maly *et al.* (1994) for historic sugar cane agricultural features and temporary habitations.
Maly 1996	Waiākea Cane Lots (12, 13, 17, 18, 19, 20, 20A	Oral interviews and archival research for Waiākea Cane Lots. Description of sugar cane agricultural features, construction, use.
Robins and Spear 1996	Pu'ainako Street Realign	Inventory Survey with 30 new sugar cane agriculture features at 3 sites (Hunt and McDermott 1994), and one new site containing 16 features.
Eblé, Denham, and Pantaleo 1997	Pu'ainako Street Realign	Supplemental testing of historic sugar cane agriculture features (six sites) from Hunt and McDermott (1994). Recommended preservation of several sites.
Spear 1998	Pu'ainako Street Realign	Survey of proposed realignment of Corridor. 27 new historical sugar cane features. Inventory recommended.
McGerty and Spear 1999	Pu'ainako Street Realign	Inventory Survey of Spear (1998) with 17 historic sugar cane features. Data Recovery recommended.
Dega and Benson 1999	Pu'ainako Street Realign	Survey of Corridor with 8 historic sugar cane sites and one pre-Contact *'auwai*.
Dega 2000	Pu'ainako Street Realign	Inventory Survey of Dega and Benson (1999) with 8 new sugar cane features.
Dega and Spear 2000	Pu'ainako Street Realign	Preservation Plan for sites 18914, 18915, 18917 and a boulder path/alignment recorded by Eblé *et al.* (1997).
Bush, McDermott, and Hammatt 2000	USDA Pacific Basin Agricultural Center	Inventory Survey of 20 acres. One skylight (Site 22080) with a single human femur. Preservation recommended.
McDermott and Hammatt 2001	USDA Pacific Basin Agricultural Center	Inventory Survey of 10 acres west of Bush *et al.* (2000) with modified outcrop and a stone causeway.
Escott 2004	UHH *Mauka* Lands	Inventory Survey of 258 acres *mauka* of Komohana Street. 20 sites. Sugar canes fields, and 3 WWII era sites.

EXPECTED ARCHAEOLOGICAL PATTERNS

Based on previous archaeological studies, geological studies, historical research, interviews, and County Planning Department records, site distribution and type can be predicted to fall into two major zonal types: sugar cane cultivation and processing sites (along the southern boundary of the project area) and historic period ranching activities (within the remaining portion of the project area).

Prehistoric Sites

Historical accounts of Waiākea Ahupua'a describe the region surrounding the present project as unwooded grasslands consisting of extensive dryland cultivation plots. McEldowney suggested this region was likely deforested prior to European contact through shifting agricultural practices such as swidden farming. Site types would consist of scattered houses sites adjacent to garden and arboreal plots on older *pāhoehoe* and *'a'ā* flows with well-developed soils. Modified lava tubes and tubes used for cultural practices were also expected to be found in this upland agricultural zone. A single human femur located in an overhang within a shallow skylight (SIHP Site 22080) was discovered west of the current study area (Bush *et al.* 2000).

Sugar Cane Cultivation Sites

According to Smith (1991), the majority of sites in the region are located on the older lava flow, along the southern boundary of the project area. Archaeological investigations and historical documentation have shown that the predominant site type in this area is associated with Waiākea Mill Company plantation fields. Pre-Contact sites are infrequently documented and were likely dismantled or obscured by cane field clearing (Maly 1996). It is expected that sugar cane field features will be encountered along the southern and southeastern boundary of the project area in an area formerly designated as Waiākea Mill plantation Lot 20-A. The southeast corner of the project area likely contains water diversion and catchment features because it is situated in a low basin near a primary runoff that once flowed into the Waiākea Stream, and because water was necessary for irrigating sugar cane and for preparing field pesticides and herbicides.

Ranching and Military Sites

The majority of the project area is situated on a more recent lava flows (1,500 to 750 B.P. and the historical 1880–1881 flow) along the northern edge of the project area. Soils here are thin and scattered and are poorly suited for traditional or modern agriculture. While traditional pre-Contact horticultural practices (*i.e.*, planting in pockets of soil in bedrock depressions and mulching with rocks) may have been practiced in the area, it is expected that they will be infrequently encountered. Arboreal agriculture is not expected in the thin soils. If traditional agriculture was not practiced in the area, it is unlikely that temporary habitation and associated features will be located in the central and northern portions of the project area. It is primarily expected that sites related to historic-period ranching and military training (pertaining to General Lease 2741) will be encountered.

RESULTS OF FIELDWORK

METHODS

Fieldwork was conducted during four days in August 2007 by SCS archaeologist Ryan Calma, B.A. and Field Director Thomas Wolforth, M.S. The Principal Investigator for this project is Robert Spear, Ph.D.

There were three main field components to this project: pedestrian survey of the entire project area; site clearing; and site recordation. Transect lines were established in a northeast-southwest bearing, and the entire property was systematically walked by SCS staff. Visibility was limited in many areas by dense mats of *uluhe* fern *(Dicranopteris linearis)*. Cultural features were flagged and plotted on overall site map. Features were assigned temporary site numbers.

Laboratory work included digital drafting of plan view maps, curation of photographs and maps, and information analysis. There was no cultural material found within the project area. All field notes, maps, and photographs pertaining to this project are currently being curated at the SCS facilities in Honolulu.

SURVEY RESULTS

Six stone features were observed within the project area. The location, and configuration of the features indicates that they are historical era clearing mounds for agricultural purposes. They have been arbitrarily assigned to one site, Site 1 (a temporary number that will eventually be assigned a SIHP [State Inventory of Historic Places] by SHPD [State Historic Preservation Division]).

Site 1: Waiākea Mill Company plantation field features

Site 1 is six stone features in three locations within the project area (Figure 8). They are at an elevation of 300 to 340 feet above sea level. The six features in this arbitrarily defined site are within an approximately 130 by 70 meter area. The center of the site is at approximately UTM (metric) N 2179380, E 280920.

These features (Table 3) are constructed of angular and subangular *'a'ā* cobbles and boulders stacked on a bedrock outcrop (Figure 9). They are amorphous in plan view, and not level in profile. In other words, they are not configured to be foundations for pre-Contact, or post-Contact habitations. The irregular construction also indicates that it is extremely unlikely that these were built to contain human burials (Figures 10 and 11). These features are just beyond the boundaries of the sugar cane fields (see Figures 5 and 6), however other investigations nearby indicate that sugar cane field features exist just beyond the periphery of the plantation area (Dega 2000; Escott 2004). Based on this set of criteria, the six stone features within the UHH College of Pharmacy project area are interpreted as sugar cane field features associated with the Waiākea Mill Company.

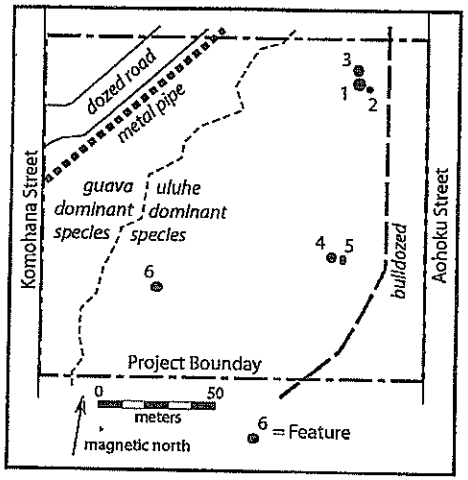

Figure 8. Features in Project Area.

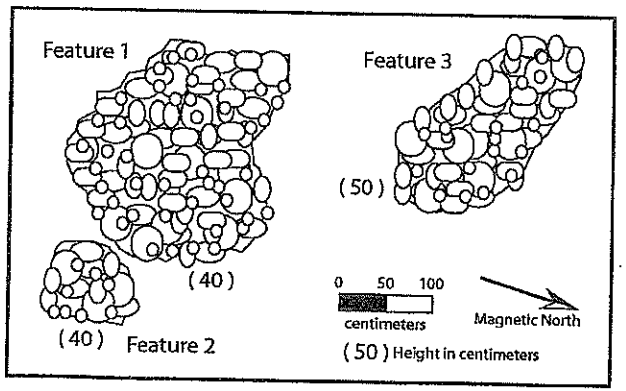

Figure 9. Site1, Features 1, 2, and 3.

Table 3. Site 1 Features.

Feature #	Type	Dimensions (L x W x H) meters	Function	Condition
1	Mound	2.3 by 2.2 by 0.2 to 0.4	Clearing Mound	Fair
2	Mound	1.0 by 1.0 by 0.3 to 0.4	Clearing Mound	Fair
3	Mound	2.5 by 1.5 by 0.2 to 0.5	Clearing Mound	Fair
4	Mound	2.5 by 1.0 by 0.4 to 1.0	Clearing Mound	Fair
5	Mound	1.8 by 0.7 by 0.3 to 0.8	Clearing Mound	Fair
6	Mound	4.0 by 4.0 by 0.6 to 0.8	Clearing Mound	Fair

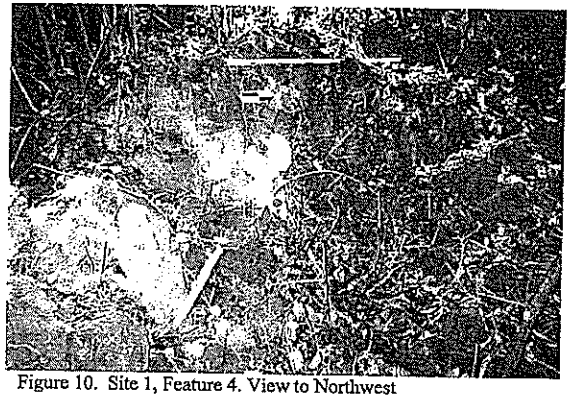

Figure 10. Site 1, Feature 4. View to Northwest

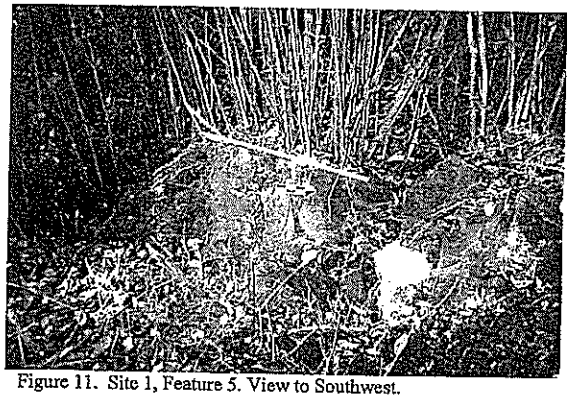

Figure 11. Site 1, Feature 5. View to Southwest.

SIGNIFICANCE ASSESSMENTS AND RECOMMENDED TREATMENTS

Sites identified during this project were assessed in accordance with Rules Governing Procedures for Historic Preservation Review for Governmental Projects Covered Under Sections 6E-7 and 6E-8 contained in draft Hawai'i Administrative Rules 13§13-275 (Table 3). To be assessed as significant a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and must be characterized by one or more of the following five criteria:

(A) It must be associated with events that have made an important contribution to the broad patterns of history.

(B) It must be associated with the lives of persons important in the past.

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

(D) It must yield or may be likely to yield, information important in prehistory or history.

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

The Waiākea Mill Company sites in beyond this project area were previously recommended as being significant for Criterion D only (Borthwick and Hammatt 1993). That evaluation is germane to the UHH College of Pharmacy project. Site 1 is evaluated as significant for Criterion D only. The information contained within this site has been collected in this project in the form of size, configuration, and locational data. No further work is recommended for this project.

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APPENDIX B

ARCHAEOLOGICAL INVENTORY SURVEY (2011)

SCS PROJECT 1195-1

Archaeological Inventory Survey for the University of Hawai‘i at Hilo College of Pharmacy School North Parcel: Historical Sugar Cane Agriculture

Waiākea Ahupua‘a, South Hilo District, Island of Hawai‘i
TMK (3) 2-4-001:007 portion

Prepared by:
Glenn Escott, M.A.
January 2011
Draft

Prepared for:
University of Hawai‘i at Hilo
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INTRODUCTION

PROJECT AREA DESCRIPTION

At the request of PBR Hawaii, Scientific Consultant Services (SCS), Inc. conducted an Archaeological Inventory Survey of a 4.48-acre parcel (TMK: (3) 2-4-001:007, por.) located in the *ahupua`a* of Waiākea, South Hilo District, Island of Hawai`i (Figures 1, 2, and 3). The project area is situated approximately three kilometers southwest of Hilo Bay and is bounded by Nowelo Street to the north, Komohana Street to the west, and by the Aohoku Street to the east. The parcel is being considered for the University of Hawai'i (UH) Hilo College of Pharmacy facilities at the University of Hawai'i Hilo campus.

SCOPE OF WORK

The Archaeological Inventory Survey was undertaken in accordance with draft Hawai`i Administrative Rules 13§13-284 and was performed in compliance with the Rules Governing Minimal Standards for Archaeological Inventory Surveys and Reports contained in draft Hawai`i Administrative Rules 13§13-276. The investigation included the following procedures:

1.) A 100 percent pedestrian survey of the project area. All sites and features were located, mapped (GIS), described, drawn at appropriate scales, and photographed. Sites were assigned temporary numbers pending State Historic Preservation Division (SHPD) assignment of SIHP site numbers.

2.) Limited subsurface testing was conducted at sites, where warranted, to determine depth, quantity, and context of cultural materials and to obtain samples for radiocarbon dating.

3.) Extensive historical and archaeological archival research was conducted including a search of historic maps, aerial photos, written records, Land Commission Award documents, and State and County Planning Division documents.

METHODS

Prior to fieldwork, a search of geological maps, aerial photos, historical maps, historical documents, and archaeological reports was conducted. Extensive archival research and oral interviews were also carried out as part of the Inventory Survey work. The project area was found to exist along the eastern edge of the Waiākea Sugar Mill plantation fields and Waiākea Pastureland.

Fieldwork was carried out on January 28 and 30, 2011 by Suzan Keris B.A. and Glenn Escott, M.A. Fieldwork was completed in two days and totaled 30 man-hours. During the survey, SCS crewmembers were spaced 10 to 15-meters apart and traversed the project area in

north-south intervals. Ground visibility was limited in many areas by dense mats of *uluhe* fern (*Dicranopteris linearis*). Interval spacing was reduced to as much as three meters in areas of thick ground cover. All features were surveyed and plotted on a GIS map using WSGS84 datum. A single test unit was excavated and unit matrix was screened through 1/8th inch mesh screen. No artifacts were recovered.

Fieldwork and the Inventory Survey report production were completed under the overall direction of Robert L. Spear, Ph.D. (Principal Investigator).

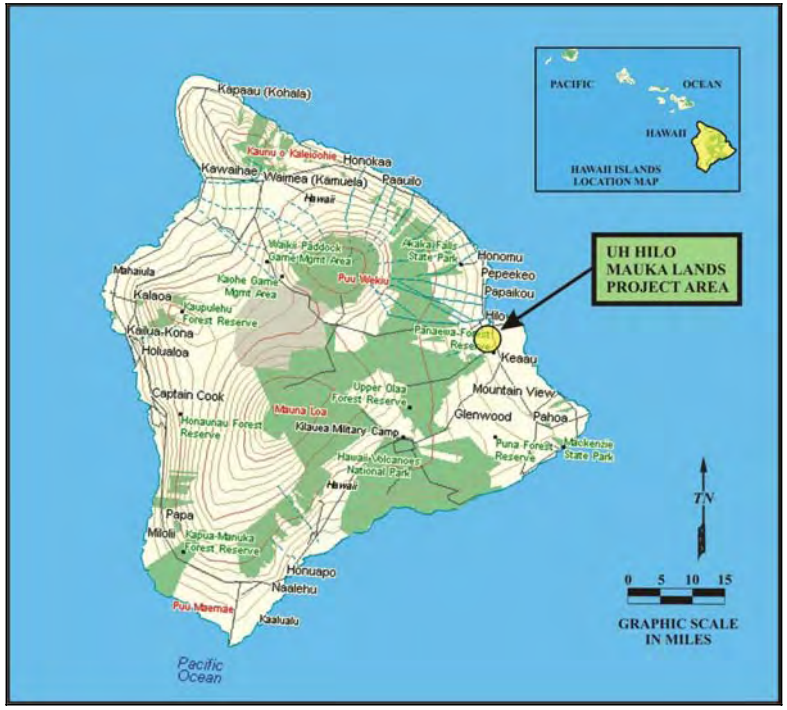

Figure 1: Map of Hawai`i Island Showing Project Location.

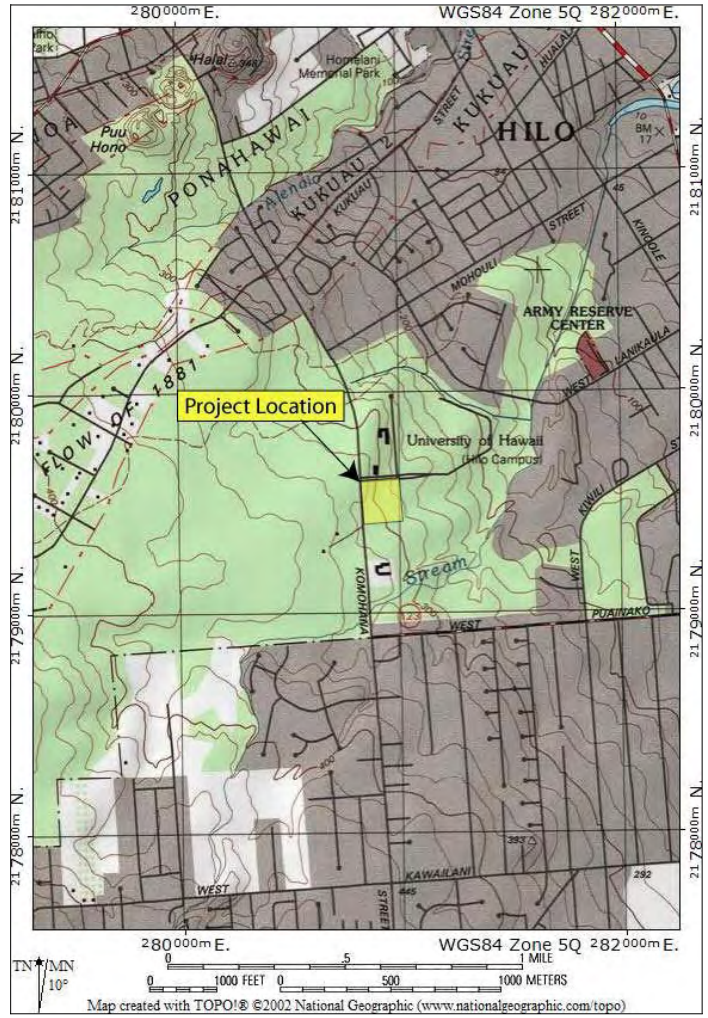

Figure 2: Portion of USGS 1995 Hilo Quadrangle Topographical Map, Showing Project Location.

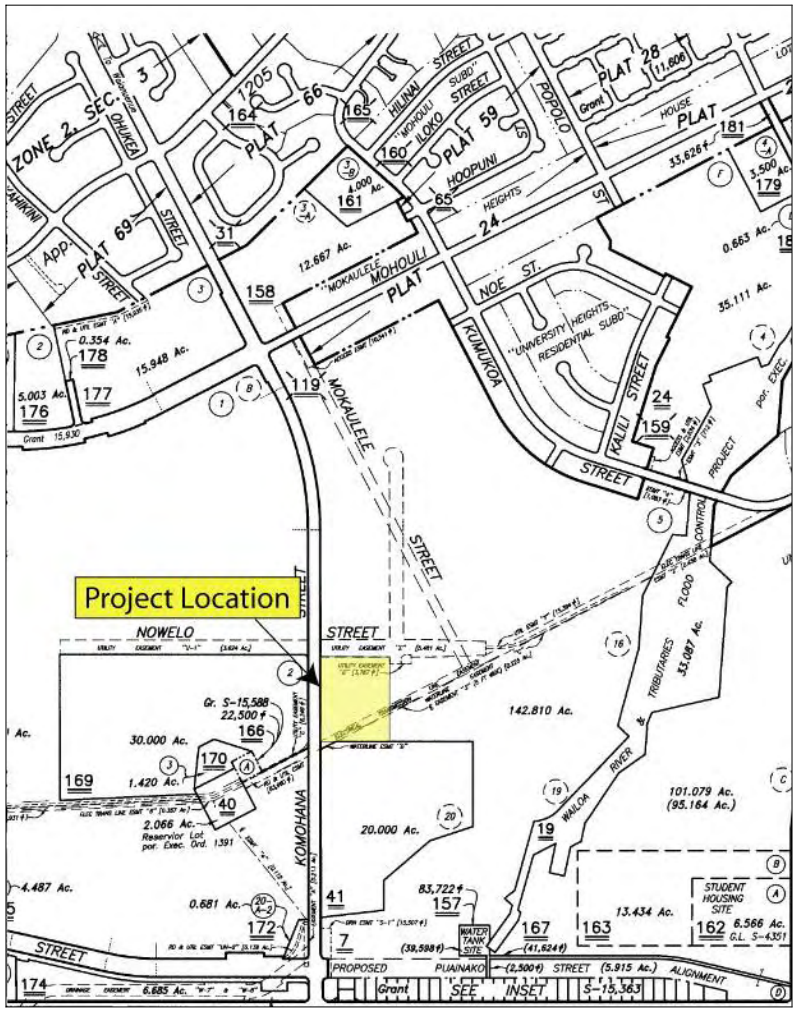

Figure 3: Project Area Located on Portion of TMK (3) 2-4-001 Map.

This report contains background information outlining the environmental and cultural contexts of the project area, a presentation of previous archaeological work within the study area and in the immediate vicinity, and current survey expectations based on that previous work. This report also includes an explanation of the archaeological methods used during the project; detailed descriptions of the archaeological resources encountered; interpretation and evaluation of those resources; and treatment recommendations for all of the documented sites.

ENVIRONMENTAL SETTING

The UH Hilo Pharmacy project area (4.48 acres) is situated on eastward sloping land at 76 m (250 feet) to 107 m (350 feet) above means sea level (amsl). There is a single Mauna Loa pāhoehoe flow within the project area dated between 750 and 1,500 years before present (Wolfe and Morris 1996. The majority of the project area consists of hummocky bedrock outcrops overlain in places by thin organic soils.

Soils in the project area belong to the Keaukaha extremely rocky muck rKFD series (Sato 1973:27). The soil type is characterized as poorly suited or unsuited to mechanized-farming (Soil Survey of the Territory of Hawaii 1955). Sugar cane was cultivated (Waiākea Mill Company Lot 20-A) south of the project area where deeper pockets of well-developed organic soil exist, despite the fact that Lot 20-A soil was classified as “poor” due to its shallow, very wet consistency (cited in Maly 1996:33). Rainfall in the project area is high, ranging between 330 and 440 centimeters (150 and 200 inches) per year (Kelly *et al*. 1981). Natural drainage in the area runs from west to east.

Plant communities in the project are dominated by introduced invasive species including *waivi* (*Psidium cattleianum*), common guava (*Psidium guajava*), ‘*uluhe* (*Metrosideros*/*Dicranopteris*), Asian Melastoma (*Melastoma septemnervium*), Fox-tongued Melastoma (*Melastoma sanguineum*), and Koster's curse (*Clidemia hirta*). Vegetation within the vast majority of the project is extremely dense.

HISTORICAL AND CULTURAL CONTEXTS

Hilo was, by most estimates, one of the first settlements on the Island of Hawai`i and was settled between A.D. 300 and 600. The rich marine resources of Hilo Bay and the gently sloping forests of Mauna Loa and Mauna Kea provided abundant resources. Fresh water was available

from the Wailoa and Wailuku rivers and smaller streams such as Waiākea, Waiolama, Pukihae, and ‘Alenaio.

The UH Hilo Pharmacy Project is located on and near the former *‘ili* (subdivision of an *ahupua‘a*) lands of Pū‘āinakō, Kāwili, and Mohouli, in the *ahupua‘a* of Waiākea, Hilo Hanakāhi ‘Okana, in the *moku-o-loko* (district) of Hilo (Maly 1996:4–5) (Figure 4). Waiākea Stream flows along the southern edge of the present study area. The *ahupua‘a* of Waiākea is large, consists of roughly 95,000 acres, and was regarded as a region of abundant natural resources and numerous fishponds. Waiākea was also an early important political center, notably under chief Kulukulu‘a (Kelly *et al*. 1981:3). Kamehameha lived and often returned to his *‘ili kūpono* (independent land division where all tributes were paid to the chief of the *‘ili* and not the *ahupua‘a*) lands of Pi‘opi‘o in the *ahupua‘a* of Waiākea (Figure 5). The *‘ili kūpono* lands and its royal fishpond were passed on to his son Liholiho after his death.

TRADITIONAL SETTLEMENT PATTERNS, SUBSISTENCE, AND LAND-USE

Historical accounts and archaeological/cultural studies pertaining to the *ahupua‘a* of Waiākea (Ellis 1963; Bingham 1969; Handy and Handy 1972; Bird 1974; McEldowney 1979; Kelly *et al.* 1981; and Maly 1996) provide a wealth of information on traditional settlement patterns, land-use, and subsistence horticulture of the area. These are synthesized below as they allude to the types of sites that may be encountered in the project area.

Historical accounts of residence patterns, land-use, and subsistence horticulture are believed to be indicative of traditional practices developed long before contact with Europeans (McEldowney 1979). Early accounts describe several distinct environmental regions in Waiākea. From the coast inland five or six miles, scattered subsistence agriculture was evident, followed by a region of tall fern and bracken, flanked at higher elevations by a forest region between 10 and 20 miles wide, beyond which was an expanse of grass and lava (Ellis 1969:403). The American Missionary C.S. Stewart wrote, “the first four miles of the country is open and uneven, and beautifully sprinkled with clumps, groves, and single trees of the bread-fruit, pandanus, and candle tree (Stewart 1970:361–363). The majority of Waiākea's estimated 2,000 inhabitants (in 1825) lived within this coastal region (Ellis1969:253). Taro, plantains, bananas, coconuts, sweet potatoes, and breadfruit were grown individually or in small garden plots. Fish, pig, dog, and birds were also raised and captured for consumption.

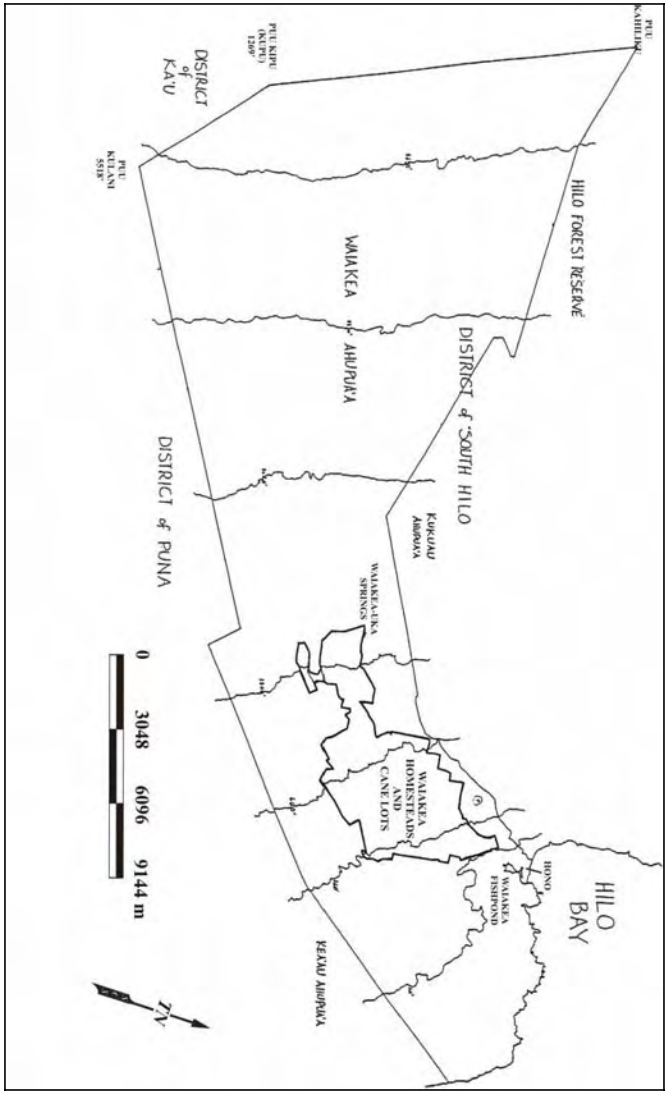

Figure 4: *Ahupua‘a* of Waiākea (Bush *et al*. 2000).

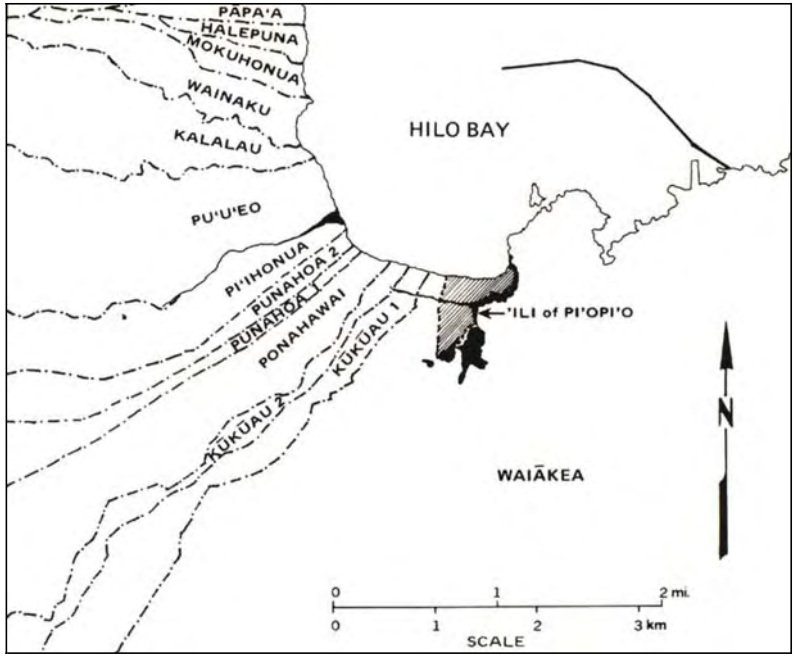

Figure 5: *'Ili Kūpono* Lands of Pi'opi'o (Kelly *et al.* 1981).

The present study area is located along the upper reaches of the open coastal region and the lower reaches of the tall fern and bracken zone. It is located in McEldowney's coined "upland agricultural zone" (see Previous Archaeology section) consisting of "scattered huts" amidst "garden "plots" created through "shifting agriculture" (McEldowney 1979:18–19). Wood, such as *ohi'a* and *koa* for house construction, canoe building, and fires was obtained from this upland agricultural zone, and from the dense forests above (Ellis 1963:236). *Hala* for thatching was also known to be plentiful along the lava flows of eastern Waiākea (Ellis 1917, cited in Kelly *et al*. 1981:20). Of particular interest is a description of bird snaring and mention of banana growing in the area of the present study (Maly 1996:6–8).

THE *MĀHELE* OF 1848 AND LAND COMMISSION AWARDS

The *ahupua'a* of Waiākea became Crown Lands during the *Māhele* of 1848 and in the following years, twenty-five Land Claims were awarded within the *ahupua'a* of Waiākea (Table 1). The awards were small in area, 24 of which went to native claimants. No Land Commission awards were made within the project area, and all but two were located near the coast. A five-acre parcel was awarded to Keaniho (LCA 2402) approximately one kilometer east of the present study area. The parcel contained a house and three cultivation fields. Keaniho's parcel bordered *kalo* fields to the west according to testimony given in support of the claim (Maly 1996:22).

Table 1: Land Commission Awards in Waiākea Ahupua`a.

Grantee	LCA	Acreage
Barenaba	2327	12.25
Halai, L.K.	1279	0.60
Hale	40004	4.25
Kahue	2663	3.75
Kaiana, J.B.	2281	10.25
Kaihenui	11050-B	5.19
Kalolo	1333	2.25
Kalua	8854	3.40
Kaluhikaua	1738	2.98
Kamamalu, V.	7713	*`Ili `aina*
Kamanuhaka	8803	1.02
Kapu	1-F	1.60
Kealiko	11174	1.00
Keaniho	2402	5.00
Keawe	5018	0.24
	10505	—
Kuaio	4344	1.22
Leoi	9982	0.80
Lolo	4738-B	1.27
Mahoe	1-E	4.46
Moealoha	4737	1.03
Nakai	4785	1.05
Napeahi	2603	1.30
Wahine	4737-B	1.01
Wahinealua	11173	2.50
Wahinenohoihilo	10004	1.69

CHANGING RESIDENTIAL AND LAND-USE PATTERNS (1845–1865)

Between 1845 and 1865, traditional land-use and residential patterns underwent a change. In particular, the regular use of Hilo Bay by foreign vessels, the whaling industry, the establishment of missions in the Hilo area, the introduction of the sandalwood trade, the legalization of private land ownership, the introduction of cattle ranching, and the introduction of sugar cane cultivation all brought about changes in settlement patterns and long-established land-

use patterns (Kelly *et al*. 1981). Hilo became the center of population and settlements in outlying regions declined or disappeared. While food was still grown for consumption, greater areas of land were continually given over to the specialized cultivation and processing of commercial foodstuffs for export. Sugar cane plantations and industrial facilities were established in areas that were once upland agricultural areas and coastal settlements, respectively.

WAIĀKEA MILL COMPANY

On July 15, 1861, S. Kipi leased the Crown Land of Waiākea from Kamehameha IV to be used as pastureland for an annual amount of $600 (Kelly *et al.* 1981:89). In 1874, Rufus A. Lyman was granted a 25-year property lease (General Lease 124-A) within Waiākea, encompassing the government pastureland on which the present study area is located (Maly 1996:26). The lease granted him all privileges of land use including the cutting of firewood and the use of fishponds. The newly established Waiākea Mill Company, founded by Alexander Young and Theo H. Davies, acquired Rufus A. Lyman`s General Lease 124-A in 1879 (with an extension of terms until June 1, 1918 [Maly 1996:27]). By the early 1900s, Waiākea plantation was cultivating sugar cane on over 6,000 acres of government land (Kelly *et al*. 1981:89,120).

In 1911, the Waiākea Mill Company applied for a title to several portions of its leased land, but was rejected by the Board of Public Lands. Rather than renew the lease with the Waiākea Mill Company, the government of Hawai`i implemented a plan to sell homestead lots and lease sugar cane lots to the public (Figure 6). By 1919, 2003 acres of land was returned for house lots and 5,300 acres was returned for cane field lease (Maly 1996:27–28). Sugar cane grown on these lots was, by terms of contract, to be processed by the Waiākea Mill Company for a share of the profits. None of the publicly leased government property is located within the present study area.

The Waiākea Mill Company plantation Lots are just south and east of the current project area (Figure 7). Lot 20-A was retained by the Waiākea Mill Company and was classified as "poor" due to shallow, very wet soils (cited in Maly 1996:33). The Waiākea Mill Company retained the property (General Lease 2741) and as late as 1947 was offering to lease it to private cultivators for the sole purpose of growing sugar cane (Maly 1996:34).

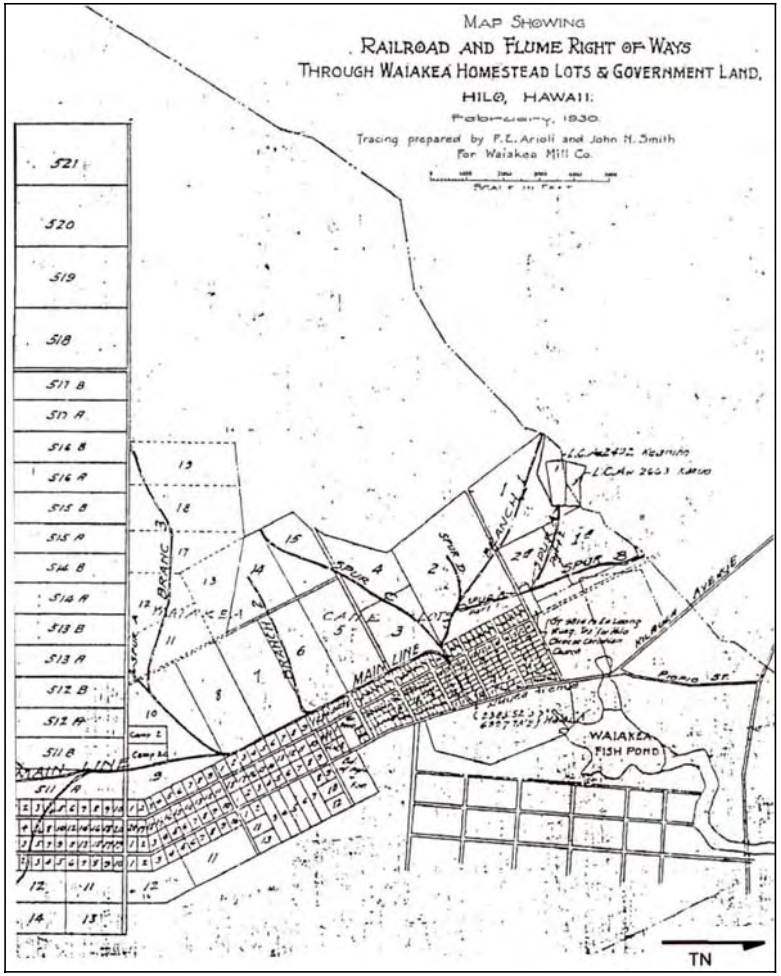

Figure 6: Map Showing Portion of Waiākea Homestead Lots and Plantation Fields South and East of the Project Area.

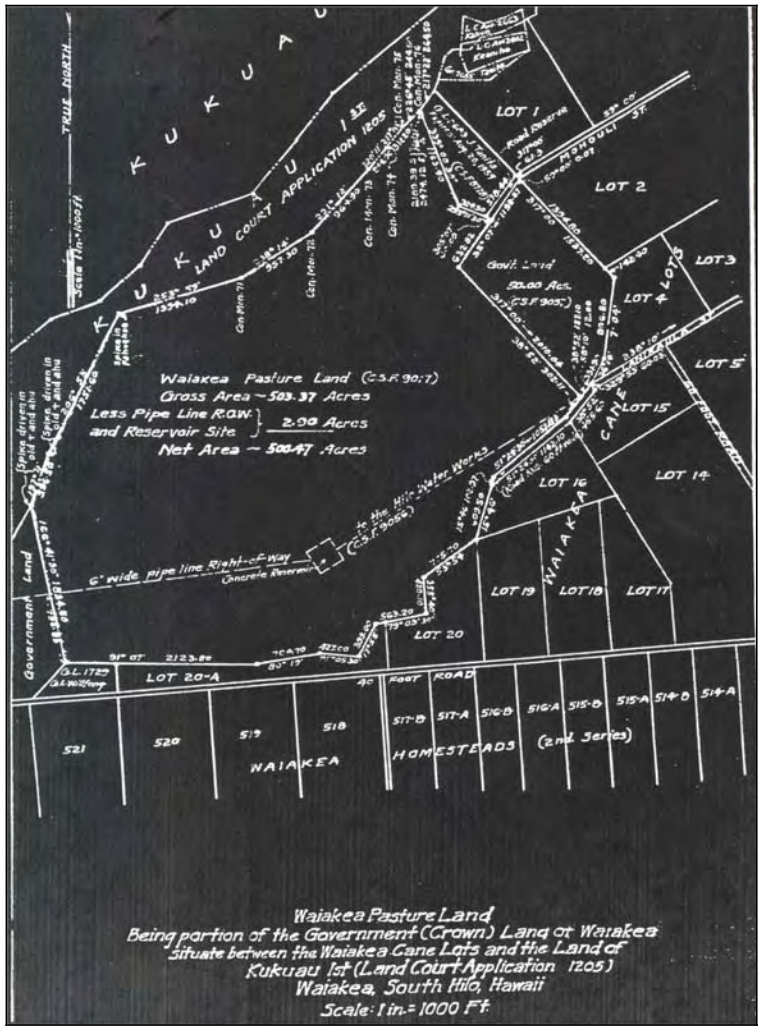

Figure 7: Map Showing Waiakea Pasture Land and Waiakea Mill Plantation Lot 20-A.

Fairview Dairy acquired a 21-year lease at public auction to Lots 11 through 20-A (General Lease 3333) to be used for pasturing cattle. Fairview Dairy transferred its lease to William Kama‘u Sr. in 1959 for the purposes of pasturing cattle and horses. The majority of Lot 20-A is most recently located along the newly-constructed Puainako Street extension.

A single government parcel, just west of the project area and known as “Waiākea Pasture Land,” was leased (approximately 500 acres covered under General Lease 2751) to Kazuo Miyasaki in 1939 as pastureland for his dairy cattle (see Figure 7). The lease then passed to John Matson in 1942. During World War II, the parcel covered under General Lease 2751 and known as “Waiākea Pasture Land” was used for training by the U.S. Army Corps (Maly 1996:34). By 1946, the Army was clearing the property of barbed wire, unexploded ordinance, three Quonset buildings, and two latrines. The project area is located along the eastern edge of the Waiākea Pasture Land parcel.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Numerous archaeological investigations have been carried out in the Hilo area and within the *ahupua‘a* of Waiākea over the last 95 years. Many of the research projects are located adjacent to or in the immediate vicinity of the current study area. Table 2 below summarizes major findings and Figure 8 shows the location of archaeological investigations near the current project area.

Table 2. Previous Archaeological Research in Waiākea *Ahupua‘*.

Reference	Location	Description & Results
Thrum 1907	Waiākea *Ahupua‘a heiau* sites	List of *heiau* in Waiākea — none located near present project area.
Thrum 1908	Waiākea *Ahupua‘a*	List and description of *heiau* in Waiākea —none located near present project area.
Hudson 1932	East Hawaii Island	Detailed description of various sites in the Hilo area.
McEldowney 1979	Hilo Bay area	Zonal Characteristics—Land –use study
Kelly, Nakamura, and Barrère 1981	Hilo Bay area	History of Hilo Bay

Reference	Location	Description & Results
Jensen 1991	AIS in Ponahawai *Ahupua'a* TMK: (3) 2-3-044:09	Site 14946, an early historic house and sugar cane site. Site 14947, the Hilo Boarding School and Old Mission Ditch
Smith 1991	Waiākea *Ahupua'a*, South Hilo, Hawaii Island TMK: 3-2-4-01:7	List and description of sites on the 4000+BP and 1500-750BP lava flows. Inventory survey recommended.
Stokes and Dye 1991	Hawaii Island	List and description of heiau of Hawaii Island
Smith 1992	Waiākea Cane Lots, Waiākea *Ahupua'a*, South Hilo, Hawaii Island TMK: 3-2-4-56:1	Numerous cane field features including walls, clearing mounds, a large rectangular enclosure, and c-shaped enclosures.
Moniz 1992	Waiākea *Ahupua'a*, Hilo Hawaii	A listing of 1979-1992 inventory survey results within Waiākea *Ahupua'a* that document walls, mounds, platforms, and faced terraces.
Hunt 1992	Lands of Waiākea, Kukuau 1 & 2, and Ponahawai *ahupua'a*, South Hilo District, Hawaii (Puainako Street Extension Project)	Interim inventory survey report listing 31 cane field features including walls, clearing mounds, platforms, and faced terraces.
Spear 1993	Pi'ihonua *Ahupua'a*, South Hilo TMK: 2-3-32:4	Inventory survey report of a 5-acre parcel that documents an historic oven and a trash dump. No further work recommended.
Borthwick, Collins, Folk, and Hammatt 1993	Waiākea *Ahupua'a* TMK: 2-4-01:7 and 41	Inventory survey of 163 acres of UH property along and east of Komohana Street. Documents four historic sites associated with sugar cane agriculture. No further work recommended.
Hunt and McDermott 1994	Lands of Waiākea, Kukuau 1 & 2, and Ponahawai	Inventory survey final report (completion of Hunt

Reference	Location	Description & Results
	ahupua'a, South Hilo District, Hawaii (Puainako Street Extension Project)	1992) documenting 13 historical sites associated with sugar cane agriculture.
Maly, Walker, and Rosendahl 1994	Lands of Waiākea, South Hilo TMK: 2-4-57:01	Inventory survey of 4.5 acres in the Waiākea Cane Lots documenting four sites associated with historical sugar cane agriculture. Forty-seven features were recorded including walls, clearing mounds, and terraces. One radiocarbon date and recovered artifacts suggest prehistoric land-use in the project area. Data recovery recommended.
Spear 1995	Lands of Waiākea, South Hilo TMK: 2-4-57:01	Data recovery report of Maly *et al*. (1994) parcel documenting historic sugar cane agricultural features and a few temporary habitations. No further archaeological work recommended.
Maly 1996	Waiākea Cane Lots (12, 13, 17, 18, 19, 20 & 20-A, District of South Hilo, Island of Hawaii	Oral interviews and archival research pertaining to Waiākea Cane Lots. Provides background of pre-Contact land-uses in the area and description of sugar cane agricultural features, their construction, and uses.
Robins and Spear 1996	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Inventory survey of proposed realignment of Puainako Street Extension Corridor documenting 30 new features at 3 sites (Hunt and McDermott 1994), and one new site containing 16 features. Sites and features are associated

Reference	Location	Description & Results
		with historic sugar cane agriculture.
Eblé, Denham, and Pantaleo 1997	Lands of Waiākea, Kukuau 1 & 2, and Ponahawai *ahupua'a*, South Hilo District, Hawaii (Puainako Street Extension Project)	Supplemental testing of features (six sites) documented in Hunt and McDermott (1994). Features associated with historic sugar cane agriculture. Recommended preservation of several sites within the project area.
Spear 1998	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Reconnaissance-level survey of proposed realignment of Puainako Street Extension Corridor documenting 27 new features associated with historical sugar cane agriculture.
McGerty and Spear 1999	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Inventory survey of Spear (1998) parcel documenting 17 features: 15 historic sugar cane agriculture features and two features associated with a modern pig farm. All features were added to site 18921. Data Recovery recommended.
Dega and Benson 1999	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Reconnaissance-level survey of proposed realignment of Puainako Street Extension Corridor documenting eight sites containing 18 features including 12 clearing mounds, two platforms, two walls, a rock alignment, and an *'auwai*. All but the *'auwai* were associated with historic sugar cane cultivation. The *'auwai* was described as a pre-Contact feature likely also utilized in historic cane field agriculture.

Reference	Location	Description & Results
Dega 2000	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Inventory survey of Dega and Benson (1999) parcel documenting eight new features (at Site 18921) associated with sugar cane agriculture.
Dega and Spear 2000	Lands of Waiākea, Kukua 1 & 2, and Ponahawai, South Hilo District, Island of Hawaii (Puainako Street Realignment/Extension Project)	Preservation plan for sites 18914, 18915, 18917 and a boulder path/alignment recorded by Eblé *et al*. (1997).
Bush, McDermott, and Hammatt 2000	Lands of Waiākea, South Hilo TMK: 2-4-01: 122, South Hilo, Hawai'i Island (USDA Pacific Basin Agricultural Center Project)	Inventory survey of 20 acres along western edge of Komohana Street, and adjacent to east-central portion of current project area. Documents one skylight (site 22080) containing a single human femur. Preservation recommended.
McDermott and Hammatt 2001	Lands of Waiākea, South Hilo TMK: 2-4-01: 122, South Hilo, Hawai'i Island (USDA Pacific Basin Agricultural Center Project)	Inventory survey of 10 acres adjacent (west) to Bush *et al*. (2000) documenting two historic sites (one feature each), including a modified outcrop and a stone causeway. No further work recommended.
Haun 2002	Archaeological Field Inspection of eight acres in Ponahawai *Ahupua'a* TMK: (3) 2-3-037:001	Historic sugar cane agricultural features and house site.
Escott 2004	AIS of 258 Acres, Waiākea *Ahupua'a* [TMK: 3-2-4-01:122].	Sixteen sites associated with sugar cane agriculture, ranching, and WWII

Reference	Location	Description & Results
		training
Calma & Wolforth 2007	AIS of 5.22 Acres Waiākea *Ahupua'a* [TMK: 3-2-4-01:1007 por.]	Six sugar cane rock clearing mounds identified. No further work recommended.
Escott 2009	AA of 5.0 acres Waiākea *Ahupua'a* [TMK: (3)-2-4-01:176]	No archaeological sites present.

The above listed archaeological and historical investigations are instrumental to understanding broad patterns of land-use in the Hilo area (see McEldowney 1977, Kelly *et al.* 1981, Maly 1996), general trends in the distribution of formal archaeological features in the Hilo area (see Thrum 1907 and 1908, Hudson 1930, Smith 1991, Moniz 1992, Spear 1993), and to formulating archaeological expectations at the present project area (see Jensen 1991, Borthwick *et al*. 1993, Hunt and McDermott 1994, Spear 1995, Robins and Spear 1996, McGerty and Spear 1999, Dega 2000, Bush *et al*. 2000, McDermott and Hammatt 2001, Haun 2002, and Escott 2004).

REGIONAL ARCHAEOLOGICAL STUDIES

McEldowney (1979)

McEldowney (1979) provides an overview of changing land-use patterns in the Hilo area based on early historic accounts. She proposes that Hawaiians utilized land in accordance to five elevation zones (1979:14). Land-use zones are classified as (I) coastal, (II) upland agricultural, (III) lower forest, (IV) rainforest, and (V) sub alpine, or montane. The inhabitants of Waiākea *Ahupua'a* had access to resources in all five of McEldowney's zones.

The present project is situated in the upland agricultural zone (50 to 1,500 feet) described as unwooded grasslands and extensive dryland cultivation plots. McEldowney suggests this region was likely deforested prior to European contact through shifting agricultural practices such as swiddening. Site types consist of scattered houses adjacent to garden and arboreal plots on older *pāhoehoe* and *'a'ā* flows with well-developed soils. Modified lava tubes and tubes used for cultural practices are also common in the upland agricultural zone.

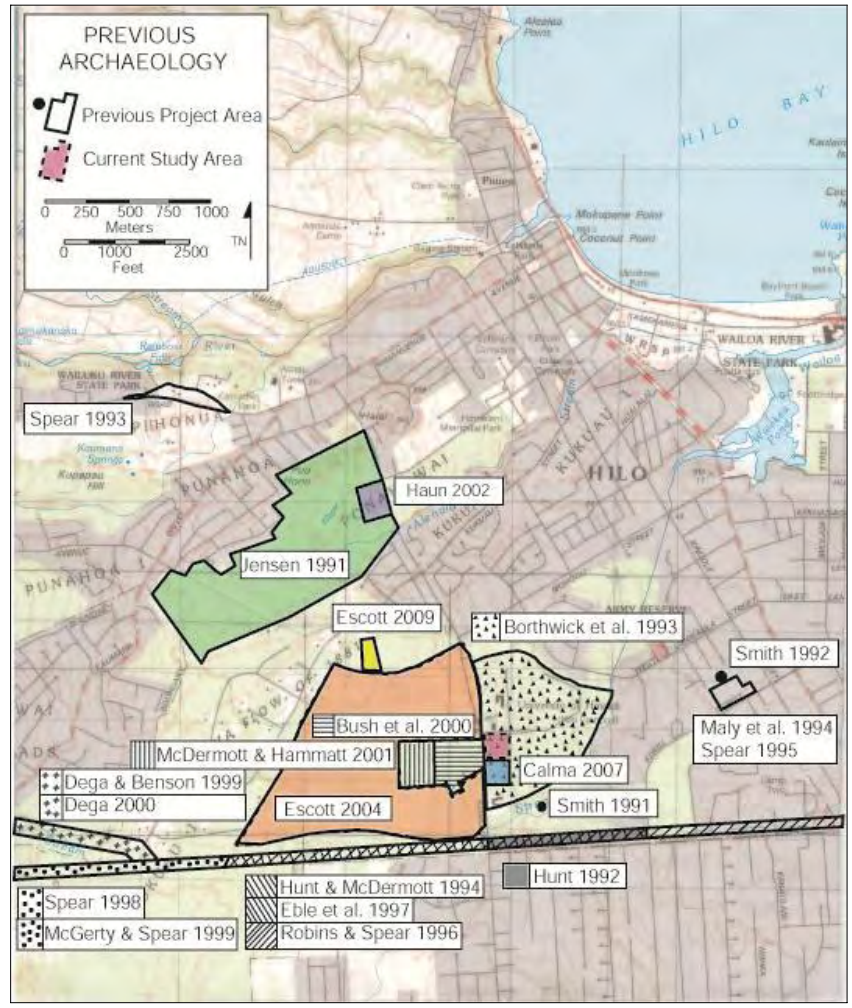

Figure 8: Map of Previous Archaeology (Hilo USGS Quad, 1995).

Smith (1991)

Smith (1991) also comments on site distribution in the *ahupua'a* of Waiākea based on Mauna Loa lava flows, including a portion of the 1880-1881 *pāhoehoe* flow, a *pāhoehoe* flow dating to 750-1,500 ybp, and a *pāhoehoe* flow dating to 5,000-10,000 ybp. He notes that the majority of sites are located on the older lava flow, which has deeper, more developed soils.

Kelly *et al*. (1991)

Kelly *et al*. (1991) also contributes to an historical understanding of changing land-use patterns following European involvement in the economy of Hawaii. In particular, the regular use of Hilo Bay by foreign vessels, the whaling industry, the establishment of missions in the Hilo area, the introduction of the sandalwood trade, the legalization of private land ownership, the introduction of cattle ranching, and the introduction of sugar cane cultivation all brought about changes in settlement patterns and long-established land-use patterns. Hilo became a population center and settlements in outlying regions declined. While food was still grown for consumption, greater areas of land were continually given over to the specialized cultivation and processing of commercial foodstuffs for export. Sugar cane plantations and industrial facilities were established in areas that were once upland agricultural areas and coastal settlements.

Thrum (1907 and 1908), Hudson (1932), and Stokes and Dye (1991)

Thrum (1907 and 1908), Hudson (1932), and Stokes and Dye (1991) represent early archaeological efforts to document site distribution pertinent to the greater Hilo area. Hudson notes there were already no archaeological sites remaining in the city of Hilo by the early 1930s (Hudson 1932:236). All three authors note the dismantling of well-known heiau in the Hilo area (Thrum 1908:240, Hudson 1932:236, Stokes and Dye 1991:152).

INVESTIGATIONS SPECIFIC TO STUDY AREA

Several recent archaeological and historical investigations completed in the immediate vicinity of the present project area have direct bearing on the types and distribution of expected sites and features. The majority of these reports document historic-era sites on well-developed ash and organic soils overlaying a Mauna Loa *pāhoehoe* flow dating to 5,000-10,000 ybp (see Figure 4). Sites are primarily the remains of sugar cane field clearing and in-field collection and processing architecture. Two recent reports (Bush *et al*. 2000, McDermott and Hammatt 2001) provide insight into predicting the types of sites located on the nearby *pāhoehoe* flow dating to 750-1,500 ybp south of the project area. Two studies document historic-era sugar cane agricultural sites on deep soils north of the present project area (Jensen 1991 and Haun 2002).

Jensen 1991

PHRI conducted an archaeological inventory survey north of the present project area and identified only two sites. Only one of the two sites, SIHP 14947, the Hilo Boarding School and Old Mission Ditch, was recommended for further documentation and preservation. The second site, SIHP 14946, is an historic-era house site associated with sugarcane agriculture.

Haun 2002

Haun conducted a field inspection north of the present project and identified 15 sites with 25 component features. There were 19 rock mounds, a road, a low wall, a retaining wall, a terrace, and two platforms. The features all appear to be historic and related to sugar cane agriculture.

Hunt and McDermott (1994)

The initial archaeological investigations south and southeast of the present project area was an Archaeological Inventory Survey of the Pu'ainako Street Extension within Waiākea, Kūkūau 1 and 2, and Ponahawai *ahupua'a* conducted by Hunt and McDermott (1994) in 1992 and 1993. The study entailed historical background research, pedestrian survey, and limited subsurface testing.

The inventory survey report documents 13 sites (SIHP Sites 50-10-35-18911 to -18923) comprised of 88 individual features. All features were interpreted as dating from A.D. 1880 to 1950, and were interpreted as features associated with the cultivation and processing of sugar cane. Five test-units were excavated within several features and it was concluded that the lack of prehistoric artifacts and traditional subsurface features within them supported the interpretation that the features were historic in origin (Hunt and McDermott 1994:104). The inventory survey report recommended that data recovery be carried out at site complexes as additional excavation work "could potentially yield isolated traces of prehistoric use of the area, presumably for dryland agriculture" (Hunt and McDermott 1994:109-113). The report also recommended extensive archival research, a task later undertaken by Maly (1996).

Borthwick, Collins, Folk, and Hammatt (1993)

Cultural Surveys Hawaii conducted an archaeological on a 163-acre UH Hilo parcel adjacent to and southeast of the present study area. The report documents four historic sugar cane cultivation sites (SIHP Sites 18667 through 18670) comprised of seven features (one feature contains 25 clearing mounds), including walls, clearing mounds, enclosures, and a remnant sugar cane field (Figure 9). Test-units contained no cultural material confirming their association with more recent sugar cane cultivation. No further work was recommended.

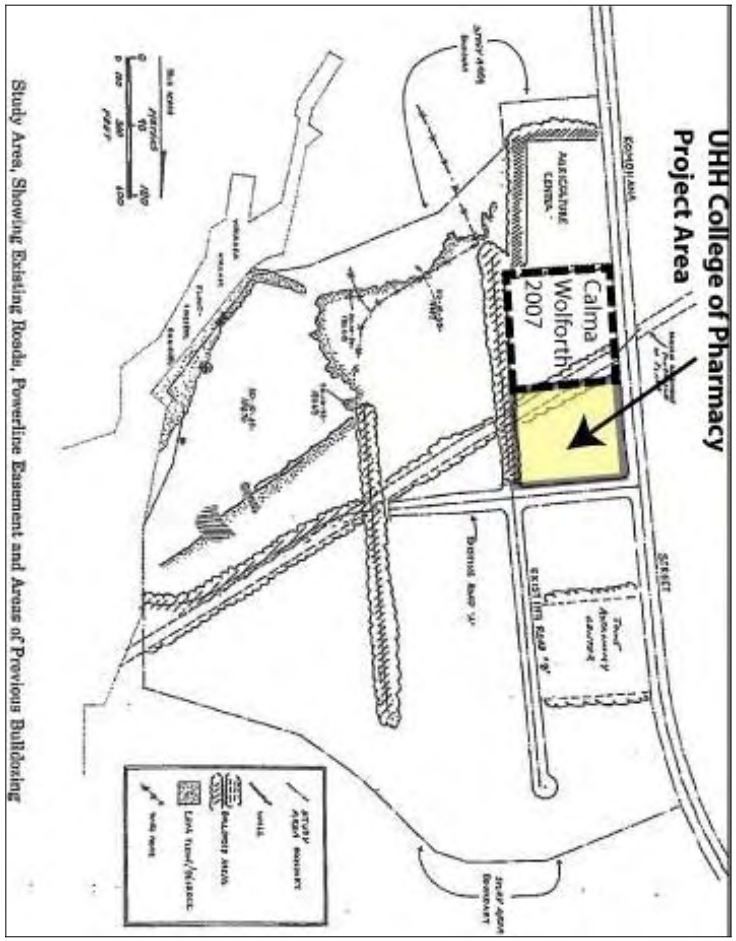

Figure 9: Location of CSH, Inc. Archaeological Sites (Borthwick *et al.* 1993).

Maly (1996)

Kepa Maly's report combines the results of McEldowney (1979) with traditional Hawaiian history, early European accounts, previous archaeological work, and oral histories to document cultural and agricultural practices in Hilo and the *ahupua'a* of Waiākea. The report focuses on Hawaiian settlement and population expansion in the region of the present study area. Of particular interest is the description of bird snaring and mention of banana growing in the area of the present study (Maly 1996:6-8). Maly also documents the effect of sugar cane cultivation (Waiākea Mill Company operations from the 1870s to 1940s) on pre-Contact archaeological remains within the present project area. While some components of early Hawaiian sites might be incorporated in more modern archaeological features, the clearing of fields and the construction of collection and processing facilities have dismantled or obscured older archaeological sites (Kenneth Bell in Maly 1996:57). Informants who remembered the Waiākea sugar cane plantation fields stated that features such as stone mounds, ramped platforms, terraces, walls, enclosures, and berms (railway berms) were built in order to facilitate sugar cane cultivation and ranching.

Robins and Spear (1996)

Following Maly's (1996) work, SCS (Robins and Spear 1996) conducted an inventory survey on a narrow parcel of land south of the present study area. The project area covered four proposed road alignments for the Pu'ainako Street Extension project and reflected both an elongation and a lateral expansion of the original road alignment study (Hunt and McDermott 1994) from a 120 to 300-foot wide corridor.

The Robins and Spear survey documented the 30 architectural features associated with sites previously reported by Hunt and McDermott (SIHP Sites 18912, 18914, and 18919) as well as 16 additional features that were combined, with features taken by SHPD from SIHP Site 18919, to form a new site (SIHP Site 20681). Robins and Spear (1996:49-52) concluded that all 46 features, representing four sites, were associated with historic sugar cane activities based on the fact that all of the sites are located within or adjacent to known sugar cane fields, all features are representative of formal sugar cane field features, site structure is comparable to other known plantation sites and is atypical of traditional Hawaiian structures, and the documented sites contain historic-era artifacts that are specific to sugar plantation or ranching activities. No traditional Hawaiian components of modern features or pre-Contact artifacts were discovered during the inventory survey work. Robins and Spear (1996:53-56) recommended data recovery for eight sites within the corridor and concurred with SHPD in the preservation of several other sites.

Eblé, Denham, and Pantaleo (1997)

At the request of the Ho' oikaika Hawaiian Club (HHC), Garcia and Associates (Ganda) conducted supplemental archaeological excavations (reported in Eblé *et al.* 1997) at sites previously identified by Hunt and McDermott (1994). The purpose of the additional work was "to aid in the interpretation of site function and chronology, and to ensure that all cultural remains in the area have been sufficiently identified" (Eblé *et al*. 1997:1). The Hunt and McDermott survey had excavated only five units within 88 features and the sponsoring Ho' oikaika group deemed additional excavations necessary to support or refute the report's site age and function determinations. The supplemental archaeological work performed by Ganda was not considered an official stage in the State of Hawai'i historic preservation process but was deemed a supplemental aid to the previous study.

Seven test-units (typically 1.0 m by 1.0 m) were excavated within six sites previously mapped and recorded by Hunt and McDermott (1994). The sites included SIHP Site 18916, 18911, 18912, 18914, 18915, and 18917. The excavation units yielded historic artifacts such as metal and midden. Three samples of wood charcoal were submitted for radiocarbon testing and were dated to pre-Contact (traditional) and early historic times. The samples were considered problematic since they did not precisely date the architectural structures themselves but were taken from the soil matrix below features and were not associated with any subsurface features such as *'imu* or discrete hearths, for example. The report further concluded that all "intact evidence of pre-Contact occupation and/or activity in the project area has been disturbed or destroyed as a result of post-Contact period activity" (Eblé *et al*. 1997:53). The archaeological features examined as part of this supplemental project were interpreted as associated with sugar cane cultivation and processing, and reinforced the interpretations offered by Hunt and McDermott (1994), Maly (1996), and Robins and Spear (1996). The supplemental testing report recommended preservation for several sites (discussed below) (Eblé *et al*. 1997:56).

Spear (1998)

The following year an archaeological reconnaissance-level investigation was carried out by SCS along the western (*mauka*) portion of the Pu'ainako Street Extension, located to the south of the present study area. While reconnaissance surveys are not recognized by the SHPD as a stage in the historic preservation process, reconnaissance surveys provide a rapid means of assessing the cultural resources within a given project area. A formal report of a reconnaissance survey is not generally submitted to SHPD because the results are usually incorporated into an inventory survey reports. Twenty-seven features were recorded during the reconnaissance survey and were

associated with SIHP Site 18921 previously recorded by Hunt and McDermott (1994). Spear (1998) recommended that an inventory survey be conducted.

McGerty and Spear (1999)

The inventory survey work (McGerty and Spear 1999) generated as a result of the previous reconnaissance survey (Spear 1998) was listed as an addendum to the inventory survey report completed by Robins and Spear (1996). McGerty and Spear (1999) re-identified the features documented by Spear (1998) and recorded a total of 17 features. The number of features was reduced from 27 to 17 because several of the features documented during the reconnaissance survey were combined into more discrete feature designations or were assessed as not being archaeological features. All 17 features were assigned to SIHP Site 18921 and 15 of them were interpreted as features associated with historic sugar cane activities cultivation and processing. The inventory survey report notes that SIHP Site 18921 is located on former Waiākea Sugar Company cane fields (Conde and Best 1973:120, as cited in McGerty and Spear 1999:23).

Based on information provided in an interview, two features (Feature 1 and Feature 11) were interpreted as remnants of a modern pasture or piggery Robins and Spear 1996:42, McGerty and Spear 1999:5). The inventory survey report (McGerty and Spear 1999:25) concurred with Hunt and McDermott (1994:112) that the site was significant under Criterion D and recommended a data recovery investigation.

Dega and Benson (1999)

In August 1999, SCS conducted a reconnaissance-level survey (Dega and Benson 1999) southwest of the UH Hilo Mauka lands project. The survey was performed within a short, expanded section of the highway (western end) occurring just to the south, and partially overlapping the reconnaissance survey area documented in Spear (1998), and the inventory survey work reported in McGerty and Spear (1999). The project area was approximately 1.0 mile long (east-west) and 300 feet wide (north-south) and was situated from 0.40 km to 2.5 km south of Kaumana Drive at the study corridor's western and eastern termini.

Eight archaeological sites were identified within the western border of the project area. Eighteen features were documented including 12 rock mounds, two platforms, two walls, one alignment, and one stone-lined *'auwai*, or water channel. Seventeen features were interpreted as related to historic sugar cane cultivation and processing, a similar interpretation to that presented previously (Hunt and McDermott 1994, Robins and Spear 1996, McGerty and Spear 1999).

One feature, a rock-lined *'auwai* or water channel, was interpreted as traditional (pre-Contact). The *'auwai* is situated parallel to and between several rock mounds associated with sugar cane cultivation but is suggestive of a traditional water channel because its width (0.80 m) is much smaller than channels typically used for sugar cane field irrigation. Secondly, the gravity-fed system was lined with small cobbles and not metal, as is commonly used in the construction of sugar cane water channels. Thirdly, the channel itself was not deep (average 0.10 m below rock surface) and had not been maintained for some time. Finally, the channel emptied onto a small alluvial plain that would have been well suited to small-scale irrigated taro cultivation. The Dega and Benson (1999) reconnaissance survey report recommended inventory survey work be carried out, including test-excavations within and near the *'auwai* feature.

Dega (2000)

SCS conducted an inventory survey to complete the reconnaissance-level survey reported by Dega and Benson (1999) at SIHP Site 18921. Eight features were documented, two previously recorded by Spear (1998) or during the Dega and Benson (1999) reconnaissance survey. Features included walls, clearing mounds, rock alignments, a platform, and a stone-lined *'auwai*. Four stratigraphic trenches were mechanically excavated in and around the *'auwai* feature. Trenches were typical 1.80 meters wide and totaled 17 meters in length. The *'auwai* was reinterpreted as an historical sugar cane field irrigation ditch due to a lack of stones lining its bottom as is common in traditional Hawaiian *'auwai*. No evidence was found to substantiate the presence of a *lo'i* associated with the irrigation ditch.

Bush, McDermott, and Hammatt (2000)

Cultural Surveys Hawaii carried out an inventory survey of a 20-acre parcel for the proposed USDA Pacific Basin Research Center. The project is located on a parcel along the western-central edge of the UH Hilo Mauka Lands project area on a Mauna Loa *pāhoehoe* lava flow dated to between 750 and 1,500 ybp. A single human femur was located in an overhang within a collapsed lava blister or lava tube. The site (SIHP Site 22080) was designated a burial and recommended for preservation.

McDermott and Hammatt (2001)

Cultural Surveys Hawaii carried out an additional inventory survey of a 10-acre parcel (adjacent to and west of the 2000 study area) for the proposed USDA Pacific Basin Research Center. The project was also located along the western-central edge of the UH Hilo Mauka Lands project area on a Mauna Loa *pāhoehoe* lava flow dated to between 750 and 1,500 ybp. Two post-Contact sites comprised of two features were documented. SIHP Site 22734 consisted

of a modified outcrop and SIHP Site 22735 consisted of a stacked stone causeway. No further work was recommended at both sites.

Escott 2004

Sixteen new sites (80 features) and three previously recorded sites were recorded during inventory survey work conducted on lands just south of the present project area. Eleven of the sites on the project area were associated with Historic-era sugarcane agriculture, three were associated with WWII military training activities, one was associated with Historic-era ranching, and four were associated with Historic-era dirt roads. None of the sites were recommended for preservation, two of the military sites were recommended for data recovery, and the seventeen remaining sites required no further work.

Calma and Wolforth 2007

SCS, Inc. conducted an archaeological inventory survey on 5.22 acres of UH-Hilo for the College of Pharmacy (see Figure 9). The project area is immediately south of the current project area, and is within the Borthwick *et al*. 1993 project area.. A single site consisting of six rock clearing mounds associated with sugarcane agriculture were identified within the project area (Figure 10). No further work was recommended for the rock mounds.

EXPECTED ARCHAEOLOGICAL PATTERNS

Based on previous archaeological studies, geological studies, historical research, interviews, and County Planning Department records, site distribution and type can be predicted to consist of sugar cane cultivation and processing sites. Archaeological investigations and historical documentation have shown that the predominant site type in this area is associated with Waiākea Mill Company plantation fields. Pre-Contact sites are infrequently documented and were likely dismantled or obscured by cane field clearing (Maly 1996).

RESULTS OF FIELDWORK

Two new sites consisting a rock wall (SIHP# 22817) and a sugarcane rock clearing mound (SIHP# 22818) were recorded in the course of the archaeological inventory survey study (Figures 11 and 12). Both of the sites within the study area were interpreted to be related to historic sugar cane cultivation activities. None of the sites were interpreted as pre-Contact.

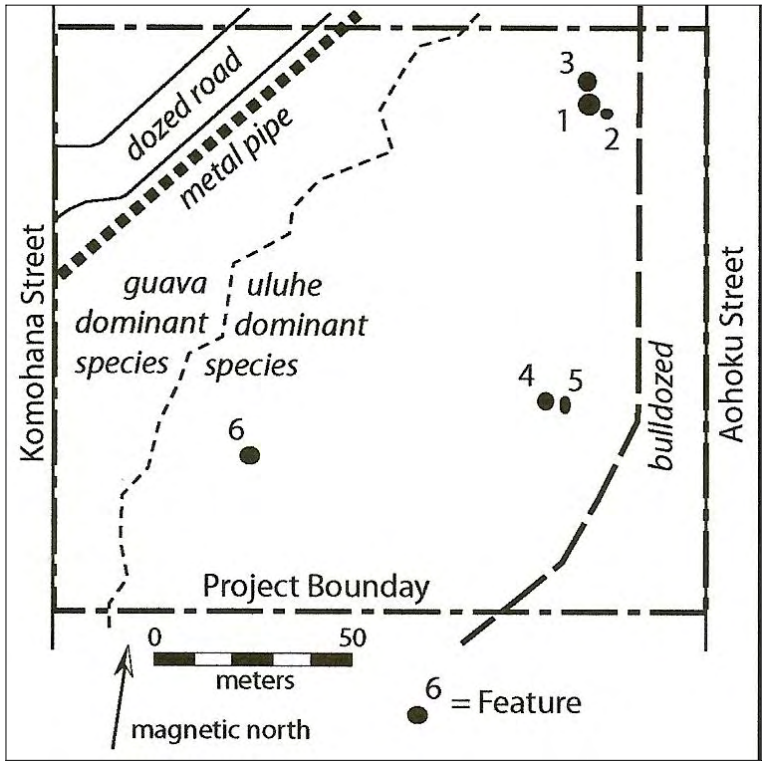

Figure 10: Rock Mound Features Documented in Calma and Wolforth 2007.

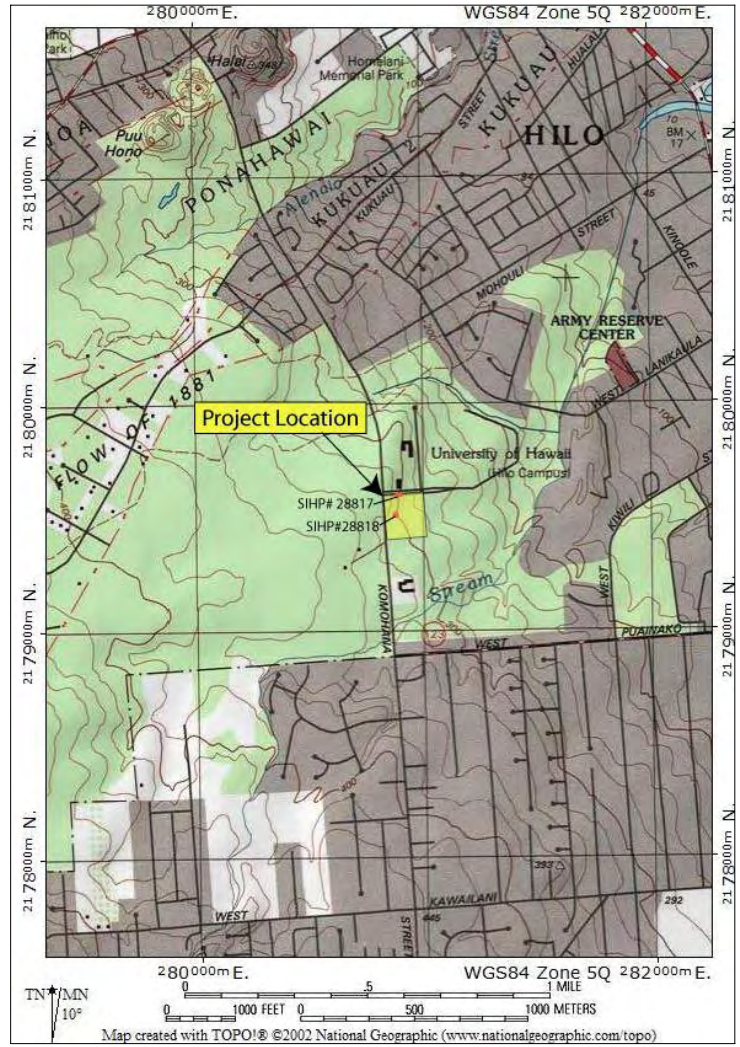

Figure 11: Project Area Sites Located on USGS Topo Map.

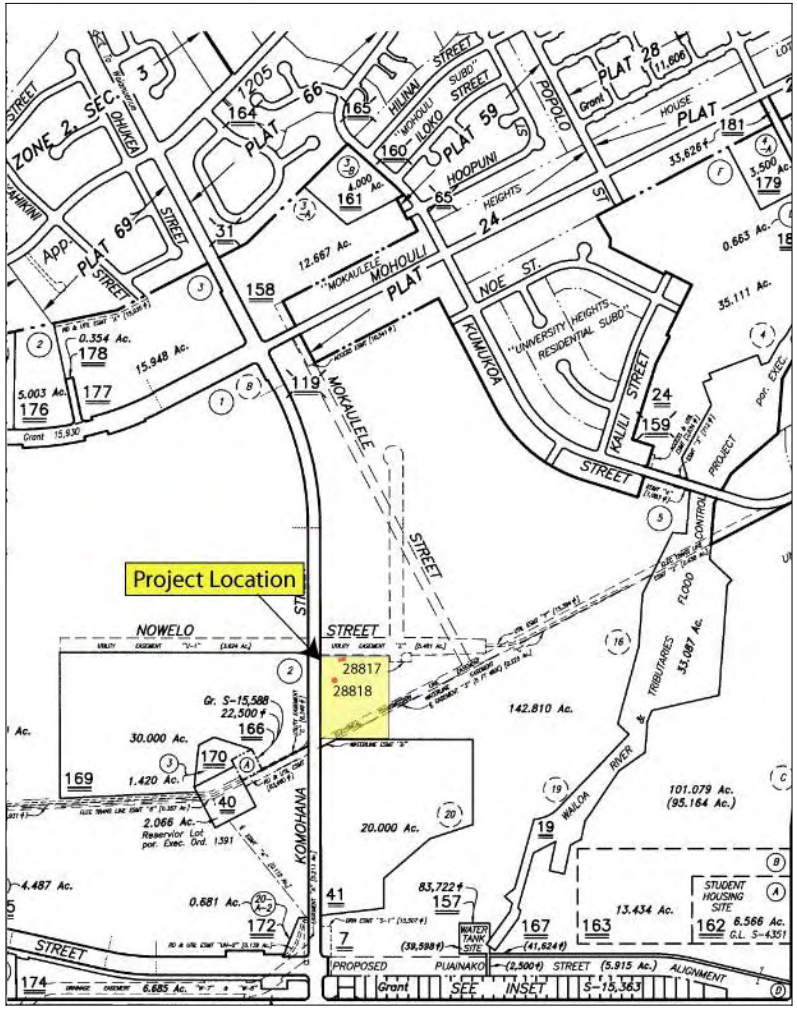

Figure 12: Project Area Sites Located on TMK: (3) 2-4-001 Map.

SITE 28817

Site 1 is a rock wall segment located at 300 ft amsl along the north boundary of the project area parcel (see Figures 11 and 12). The wall is situated on bedrock and thin soil on the gentle east sloping ground surface. The wall is 20.0 m long (E/W) by 1.2 m wide, and is from 0.5 to 0.9 m in height. The wall is constructed of angular and subangular small boulders piled and stacked two to three courses high and two to four courses wide (Figures 13, 14, and 15). The wall is roughly faced and is not core filled. The east and west ends of the wall segment have been bulldozed. The wall segment has been impacted by bulldozing and is in fair condition. The wall is an Historic-era sugarcane field boundary feature.

Figure 13: Photograph of Site 28817 Wall Looking South.

Figure 14: Photograph of Site 28817 Wall Looking West.

Figure 15: Photograph of Site 28817 Wall Looking North.

SITE 28818

Site 28818 is an agricultural rock clearing mound located at 300 ft amsl along the west side of the project area parcel (see Figures 11 and 12). The rock mound is 1.75 m long (E/W) by 1.4 m wide, and is from 0.1 to 0.70 m in height (Figure 16). The rock mound is constructed of angular and subangular small boulders and cobbles piled on the south sloping ground surface (Figure 17). No facing is evident in the feature construction. Site 28818 was in fair condition and is likely associated with sugarcane agricultural field clearing. A 1.0 by 1.0 m test-unit (TU-1) was excavated in the center of the rock mound.

Test-Unit 1

TU-1 was excavated in the center of the rock mound and contained an architectural layer and a natural stratigraphic layer. TU-1 was excavated as six roughly 10cm levels and terminated on bedrock at maximum depth of 60cmbs.

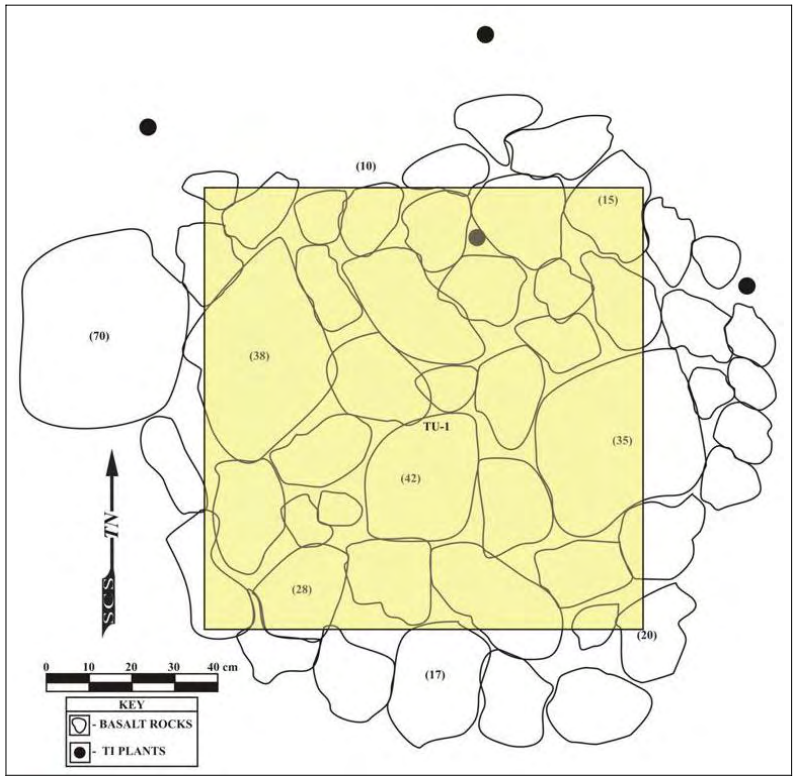

Figure 16: Site 28818 Plan View.

Figure 17: Photograph of Site 28818 Rock Mound Looking East.

Layer I (20 cm above ground surface to 20/35cmbs) was an architectural layer of piled angular and subangular basalt small boulders and cobbles with a small amount of very dark brown (10YR3/3) silt loam and 10% roots (Figure 18). Layer I was excavated as three roughly 10cm levels and did not contain cultural material. The base of the rock mound architecture appeared to be at the base of Layer I at a maximum depth of 3cmbs.

Layer II (20/35cmbs-60cmbs) was an ‘a‘a bedrock flow consisting of angular and subangular basalt cobbles and small boulders with 5% roots. Layer II was excavated as three roughly 10 cm levels and did not contain cultural material. TU-1 terminated on dense ‘a‘a bedrock at a maximum depth of 60cmbs. No pit features or other subsurface features were identified in the TU-1 excavation.

The rock mound at Site 28818 is typical of sugarcane rock clearing mounds recorded in the area. The mound is not stacked or faced and is loosely piled on the ground surface.

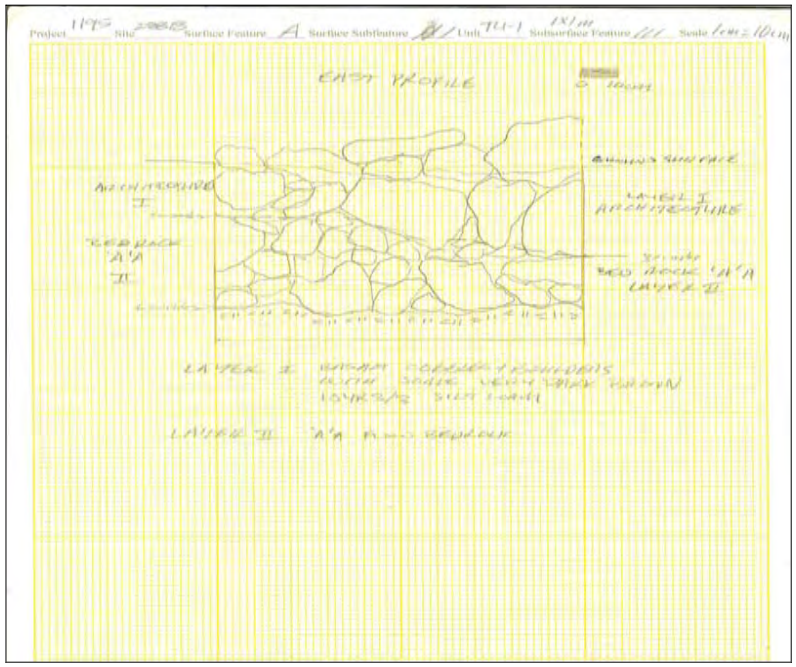

Figure 18: Site 28818 Test Unit 1 East Profile.

CONLUSION

Site 28817 and Site 28818 are the remains of Historic-era sugarcane agriculture in the area. They are similar in formal construction to other sugarcane features recorded in the surrounding area. These two sites are on the eastern edges of the known Waiākea Mill Company plantation fields. The topography immediately east of Site 28817 and Site 28818 slopes steeply *makai* and the soil is too thin for agriculture.

SIGNIFICANCE ASSESSMENTS AND RECOMMENDED TREATMENTS

Sites identified during this project were assessed in accordance with Rules Governing Procedures for Historic Preservation Review for Governmental Projects Covered Under Sections 6E-7 and 6E-8 contained in draft Hawai`i Administrative Rules 13§13-275. To be assessed as significant a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and must be characterized by one or more of the following five criteria:

(A) It must be associated with events that have made an important contribution to the broad patterns of history.

(B) It must be associated with the lives of persons important in the past.

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

(D) It must yield or may be likely to yield, information important in prehistory or history.

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

Site 28817 and Site 28818 are significant under Criterion D for information content. Both sites have been fully documented during the current AIS study and no further work is recommended at Site 28817 and Site 28818. Several intact sugarcane field system sites with good integrity have already been recommended for preservation and are listed in Appendix A. The rock wall at Site 28817 and the clearing mound at Site 28818 are not recommended for preservation.

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APPENDIX A: MITIGATION OF CANE FIELD SITES

Archaeological Significance and Recommended Mitigation of Cane Field Sites

Site (50-10-35-)	Relation to Current Project	Function	Significance Assessment	Recommended Mitigation
18911	900 m East	Historic Agriculture	Criterion D	Data Recovery
18912	600 m East	Historic Agriculture	Criterion D	Data Recovery
18913	450 m East	Historic Agriculture	No Longer Significant	No Further Work
18914	380 m East	Historic Agriculture	Criterion C, D	Preservation
18915	250 m East	Historic Agriculture	Criterion C, D	Preservation
18916	180 m East	Historic Agriculture	Criterion (C), D	Data Recovery (Preservation)
18917	180 m East	Historic Agriculture	Criterion D	Preservation
18918	On Project	Historic Agriculture	Criterion D	Data Recovery
18919	On Project	Historic Agriculture/Pasture	Criterion D	Data Recovery
18920	1200 m SW	Historic Agriculture/Pasture	No Longer Significant	No Further Work
18921	3000 m SW	Historic Agriculture	Criterion D	Data Recovery
18922	1000 m East	Clearing	Criterion D	No Further Work
18923	1200 m East	Clearing	Criterion D	No Further Work
20681	On Project	Historic Agriculture	Criterion D	Data Recovery
Boulder Path	East	Transportation	Suggested	Preservation
22734	Near Center of Project	Burial	Burial	No Further Work
22735	Near Center of Project	Historic Agriculture	Criterion D	No Further Work
22080	Near Center of Project	Historic Transportation	Criterion D	Preservation