DRAFT ENVIRONMENTAL ASSESSMENT

Information Technology Center







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Prepared by Belt Collins Hawaii Honolulu, Hawaii

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ACRONYMS AND ABBREVIATIONS

ADAAG	Americans with Disabilities Act Access Guidelines
BLNR	Board of Land and Natural Resources, State of Hawai'i
BMP	Best Management Practices
BWS	Board of Water Supply, City and County of Honolulu
CIA	Cultural Impact Assessment
CIP	Capital Improvement Program
CSH	Cultural Surveys Hawai'i, Inc.
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DBEDT	Department of Business Economic Development and Tourism, State of Hawai'i
DLNR	Department of Land and Natural Resources, State of Hawai'i
DOH	Department of Health, State of Hawai'i
DPP	Department of Planning and Permitting, City and County of Honolulu
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GFA	Gross Floor Area
HAR	Hawai'i Administrative Rules
HDPE	High-Density Polyethylene
HECO	Hawaiian Electric Company
HRS	Hawai'i Revised Statutes
IBC	International Building Code
ICS	Information and Computer Sciences

IT	Information Technology
ITC	Information Technology Center
LEED	Leadership in Energy and Environmental Design
LRDP	Long Range Development Plan
LUC	Land Use Commission
LUO	Land Use Ordinance
LUPD	Land Use Permit Division
MIA	Makiki stony clay loam, 0 to 3 percent slopes
MG	million gallons
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
OHA	Office of Hawaiian Affairs
NMR	nuclear magnetic resonance
PRU	Plan Review Use
PUC	Primary Urban Center
SHPD	State Historic Preservation Division, DLNR
SMA	Special Management Area
UHM	University of Hawai'i at Mānoa
UHSM	University Health Services Mānoa
University	University of Hawai'i
UPS	uninterruptible power supply

1 SUMMARY

PROPOSING AGENCY:	University of Hawai'i at Mānoa (UHM)		
APPROVING AGENCY:	University of Hawai'i		
GENERAL PROJECT DESCRIPTION:	The UHM is proposing to consolidate its existing information technology services located in eight separate buildings on the Manoa campus into a single new Information Technology Center (ITC). The new center will house the University's system-wide data/telecommunications infrastructure and operations, information technology public service, and associated administrative/staff offices.		
PROJECT LOCATION:	The ITC will be located adjacent to the Bilger Addition on the UHM campus in Honolulu, Hawai'i. The Tax Map Key (TMK) for the site is (1) 2-8-23: 03 (see Figures 1, 2, and 3).		
PRELIMINARY DETERMINATION:	Anticipated Finding of No Significant Impact (FONSI)		
CONSULTED AGENCIES:	State Agencies		
	 Environmental Center, University of Hawai'i Environmental Management Division, Department of Health Land Division, Department of Land and Natural Resources Office of Hawaiian Affairs Office of Planning, Department of Business Economic Development and Tourism State Historic Preservation Division 		
	City & County Agencies		
	Board of Water Supply (BWS) Department of Design and Construction Department of Environmental Services Department of Facility Maintenance Department of Information Technology		

Fire Department Police Department



BELTCOLLINS NORTH SCALE IN FEET

Figure 1 LOCATION MAP

UHM Information Technology Center University of Hawai'i



Figure 2 PORTION OF TAX MAP KEY (1) 2-8-23

UHM Information Technology Center University of Hawai'i



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Figure 3 PROJECT LOCATION

UHM Information Technology Center University of Hawai'i

2 DESCRIPTION OF THE PROPOSED ACTION

2.1 **PROJECT OBJECTIVE**

The objective of the proposed project is to consolidate the University of Hawai'i's (University) Information Technology (IT) Services presently scattered in eight on-campus buildings into a single location on the UHM campus. The consolidation of operations will help make it possible to maintain a much more efficient and improved systems infrastructure. The new facility will replace existing obsolete and unsuitably housed equipment and meet rapidly advancing information technology infrastructure to support instruction, research, and administrative work in the University system. It will make systems maintenance, development, expansion, and enhancement more easily achievable and provide support spaces including dedicated videoconferencing facilities and IT training facilities, which are currently non-existent on the campus.

The central location of the new Information Technology Center (ITC) will be advantageous for distribution and provision of services. Less telecom infrastructure will be required due to the facility's proximity to existing service points.

The new ITC is included as one of the several planned facilities in the UHM's Long Range Development Plan (LRDP), and its layout and design are consistent with the plan's long-range development program.¹ The LRDP, which was adopted by the University Board of Regents in 2007, serves as a guide for improvement on the Mānoa campus for the next 5 - 10 years (Figure 4).

2.2 BACKGROUND

The UHM identified the need for a central consolidated facility to accommodate IT infrastructure more than 15 years ago. In February 1992, the University's Board of Regents adopted its first *Strategic Plan for Information Technology*, which identified strategic objectives and recommended specific actions to attain those objectives. Thereafter, a system-wide committee was appointed to update the plan and assess the University's progress since 1992, the changes in technology, and the new environment in which the University operates. After a University-wide review, the Board of Regents accepted on June 20, 2000 the *University of Hawai'i Strategic Plan for Information Technology 2000*.

In the strategic plan, the objective for Space and Facilities was: "All University campuses and facilities will be information technology friendly, with a modern and reliable technical infrastructure that is adequate for current and planned uses."

¹ Section "I.T.S. – Bilger Addition, Phase II" of the LRDP describes the planned concept for the new ITC and its design criteria. One criteria calls for the building to be seven stories in height with a footprint of approximately 10,300 square feet.





Figure 4 LONG RANGE DEVELOPMENT PLAN 2007 UPDATE UNIVERSITY OF HAWAI'I, MĀNOA

UHM Information Technology Center University of Hawai'i To meet that objective, Action 21 of the plan states: "Construct ITS in Mānoa." The plan further states: "Construction of the Information Technology Services building, as included on the Mānoa LRDP, must be given a high priority for CIP Budget planning."

Presently, the major institutional computers and servers for the University are housed in various buildings on the Mānoa campus. Many of these buildings are nearly, or over, 50 years old and were not designed with the proper infrastructure to accommodate high technology equipment. Although modifications were made to the individual buildings to accommodate its equipment, the buildings' infrastructure presented a restraint and even a liability on the equipment's operations. For instance, none of these critical facilities have dual building entrances as current standard practice calls for telecommunications facilities. Most of the buildings have inadequate primary electrical power and air-conditioning, and none have back-up power in the event of outages that are occurring more frequently as the buildings increasingly age. The lack of appropriate facilities to support a modern IT infrastructure is directly responsible for inefficiencies in network design and management. The result is increased cost, heightened exposure to outages, lower physical security, and reduced levels of services to the entire University system.

In addition to infrastructure concerns, there is a lack of acceptable campus-wide space to support the work of students, faculty, and staff who utilize information technologies in research, instruction, and administrative work. Staff offices are dispersed within the buildings currently housing IT equipment. The current physical placement of IT Services personnel, in eight separate on-campus locations, significantly inhibits the development of organizational synergies that could improve efficiencies and services in an increasingly converging technological environment.

IT Services, that are currently provided in various converted classroom and library spaces, are not ideally configured for effective teaching and learning, and in some cases, lack adequate power, air-conditioning, or noise insulation. The lack of air-conditioning in the largest computer laboratory on the campus dictates that the windows of the lab be left open, subjecting the computer equipment to dust, dirt, humidity, and temperature variations. These outside elements reduce the life of the equipment. Televised classes in the "distance learning" program still operate in non-insulated environments resulting in poor audio broadcasts.

The UHM must improve and upgrade IT Services facilities to accommodate numerous technological advances and meet the challenges of the future. No new building or spaces have been built to accommodate campus-wide IT utilization. There is no large, high-quality computer lab open to the entire campus on a 24-hour, 7 days a week basis. There is no dedicated video-conferencing center or campus-wide access to advance collaboration environments such as the Access Grid. There is no dedicated IT training facility for faculty and staff. There is no support for visualization technologies used in modern research, and there is no "project" space available for ad-hoc projects involving multi-unit collaboration.

An ITC dedicated to the needs of the University's system-wide data/telecommunications infrastructure and support services would empower UHM to reach the goals set forth in the IT Strategic Plan. It would also allow most of the existing areas presently occupied by IT Services to be utilized by other, much needed programs that are more conducive to those spaces. The need

for an ITC is apparent. It has been recognized by the UHM for many years and is supported in the UHM's LRDP.

2.3 DESCRIPTION OF THE PROPOSED ACTION

The new ITC is being designed in collaboration among the University planners and facility managers, potential users of the building, and design consultants in information technology infrastructure. It will bring the University's data and computing center and telecommunications system into one building equipped with modern systems safeguards, state-of-the-art security, backup power generators, and reliable air conditioning. Its Disaster Recovery/Backup System combines the best technology in the framework of infrastructure efficiency and survivability for the Center.

2.3.1 Information Technology Center

The proposed ITC will be constructed adjacent, but not attached, to the eastern exterior wall of the Bilger Addition in an approximately 34,000- to 35,000-square foot area currently occupied by two temporary, single-story wooden structures (Bilger Annexes) and a faculty parking lot.

The new ITC will contain approximately 74,400 square feet of gross floor area (GFA) in a seven-story high building (Figures 5 and 6). A single floor would have approximately 9,700 to 11,700 square feet of GFA depending on the floor (building's unique configuration creates different size floor areas). The building will be constructed of concrete, steel, and glass and have a classical modern architectural theme. The four upper floors on the eastern side of the building will have terraced roof tops. The colors of the building will be similar to the adjacent campus buildings consisting primarily of neutral tones.

The ITC is being designed to incorporate sustainable concepts and attain Leadership in Energy and Environmental Design (LEED) NC Silver Certification or higher.² Energy saving, water conservation, superior indoor air quality ventilation, thermal comfort, and recycled content in construction materials are high priorities in the building design and in reducing the facility's carbon footprint.³

The ITC is also being designed to comply with the International Building Code (IBC) "Chapter 11 Accessibility" guidelines as well as provisions set forth in Hawai'i Revised Statutes (HRS) 103-50, which call for conformance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).⁴

The staff of the ITC will include personnel from the existing IT Services located around the Mānoa campus, including Building 37, Keller Hall, Physical Science Building, Bilger Addition, Kuykendall Hall, Webster Hall, Sinclair Library, and Queen Lili'uokalani Center for Student

² LEED is a nationally recognized rating system developed by the U.S. Green Building Council to verify claims of environmental performance, and provide recognition of facilities that achieve a variety of measurable sustainable criteria. NC signifies new construction and major renovation projects.

³ Carbon footprint is the total set of greenhouse gas emissions caused directly and indirectly by an individual, organization, event, product, or facility.

⁴ Administered by the Facility Access Unit of the Disability and Communication Access Board.



Figure 5 PROPOSED INFORMATION TECHNOLOGY CENTER

UHM Information Technology Center University of Hawai'i

Source: Ferraro Choi and Associates







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Source: Ferraro Choi and Associates

UHM Information Technology Center University of Hawai'i

SITE PLAN

-(F) D DIGITA MEDIA •7 111111111111 2 0 0 28'-6" CENTE 788 st 0 28, E 66 TTTH-ITOCI –(E) (E) HNNI PAR 99 <u>DELOCATION</u> 880 sf 30'-0" 00 OUTPUT 0000 -(D) 0000 D <u>SEC</u>. PRNT. 30'-0" R -(c) (c) OPEN TO LOBBY BELOW N/IIII+ -TTTC ECYCLING STORAG <u>LOBBY</u> 1554 sf °____ WAREHOUS 1834 sf ENTRY DADING 🕁 7 ART WORKSHOP 00 **B** в A **⊕**λ\$.5 A <u>*</u>* 1 PROPERTY LINE A751C 447 LEGEND PUBLIC BUILDING CORE w GRAPHC S VERTICAL SHAFTS SEMI-PRIVATE FIRST FLOOR PLAN SECOND FLOOR PLAN TERRACE PRIVATE SCALE: 1 " = 4 0 ' SCALE: 1 " = 4 0'



Source: Ferraro Choi and Associates

Figure 7 TYPICAL FLOOR PLANS

UHM Information Technology Center University of Hawai'i



Figure 8 SECTION PLANS

UHM Information Technology Center University of Hawai'i

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BeltCollins

Source: Ferraro Choi and Associates

Services. The new ITC will have offices and work stations for approximately 25 administrators and managers; 138 faculty, researchers, technicians and support personnel; and 52 students. There will be training, workshop, and multi-media rooms, and approximately 25 small conference rooms. (See Figures 7 and 8.)

The core of the ITC operations will be the Data Center which will occupy one full floor of the new building. The Data Center will be equipped to support information technology services on all University of Hawai'i campuses statewide, and includes space for future growth.

A summary of the building's general operational functions is provided in Table 1.

Operations	Functions
Public Spaces	Reception/Lobby/Gallery/Showcase Help Desk Training/Workshop Rooms Digital Media Production Center Multi-Purpose Conferencing/Seminar Rooms
Data & Telecommunications	Data Center Information Technology Operations Center Collocation Server Area Uninterruptible Power Supply
Staff Spaces	Management and Staff Offices Student Assistant Work Clusters Conference/Project Rooms Equipment/Test Labs Input/Output Room Copy and Production Rooms Staff Lounge and Lunch Room
Support and Infrastructure	Restrooms Receiving, Loading, Staging Areas Storage Rooms Utility Corridors and Cable Vault Electrical/Telecommunication Rooms Mechanical Rooms Janitor Closets

Table 1: ITC Operations and Functions

The building's mechanical and electrical equipment including chillers, cooling towers, outdoor air preconditioning units, possible antenna facilities (radio masts and dishes), emergency generators, primary electrical room, and elevator penthouse will be located on the rooftop. As part of the building's sustainable theme, space has been delegated for possible wind-generated turbines and photovoltaic arrays to produce renewable energy and supplemental power for the ITC.

2.3.2 Landscaping

The ITC will include an entrance plaza, rooftop gardens, native plant landscape treatment, and pedestrian walkways. The landscape goal of the project is to create a "showcase of sustainability" that will help teach and serve as an example of low-impact development for future campus projects as well as private projects in Hawai'i.

The entrance to the building will include step-up circular forms that relate to shapes of disks, hard drives, and even the universal on-off symbol for electronic equipment. The circular forms are a basic building block shape and, on the project site, will help to unify the walkways with the building entrance that includes an exterior lanai or plaza space.

Planting around the building will include native plants and low-water use plants as well as relocated plants affected by the ITC construction. The proposed formal pedestrian walkway fronting the ITC's eastern façade is designed to retain the informal pedestrian access, known as "Scientific Pathway," which presently connects McCarthy Mall and Correa Road. This pathway connection is also occupied by the existing faculty parking that is part of the University's long-range plan for conversion to a mauka-makai pedestrian mall.

The pedestrian pathway between the ITC and Physical Science Building will be designed to accommodate service vehicles for continued maintenance and service of Bilger Hall and Physical Science Building. Also, the accessway will have a width of 20 feet to accommodate a mandatory fire lane for emergency vehicles.

The ITC will also include outdoor roof terraces that extend from the conference rooms and meeting areas of the building's top four floors. These terraces, which will be in keeping with the sustainability theme, will have gardens that consist primarily of succulent plants or plants that require little watering. At least 10 percent of the building's total roof top will be landscaped as part of the project's green roof and LEED objectives.

The basic features of the remaining landscaping will include rooftop rainwater catchment for plant irrigation, drip irrigation, permeable pavement areas, bio-swale drainageways, green walls, recycled hardscape materials, solar in-pavement lighting, and low-water use and native plants.

2.3.3 Parking

Staff and users of the ITC will include managers, administrative assistants, operators, support personnel, students, and visitors of existing facilities already on the University campus. As a result, parking needs would not change and would not be a primary requirement for the new ITC. Existing parking within the campus grounds will continue to provide parking for the ITC staff.

Long-range plans, as provided in UHM's LRDP, call for the construction of additional parking areas throughout the campus to meet future needs of the University, including a new 480 stall parking structure between Kennedy Theater and Physical Science Building.

2.4 ESTIMATED COST

Construction of the new building and landscaping is estimated to cost in the range of \$35 to \$45 million. This estimate does not include planning, permitting, and design fees. Funding for the project will come from the State Legislature and existing University funds.

2.5 CONSTRUCTION SCHEDULE

Construction of the ITC is projected to begin in 2010 after all government permits and approvals are secured. Completion of the facility would occur approximately 16 to 18 months thereafter.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 REGIONAL SETTING

The UHM is located in lower Mānoa Valley on approximately 320 acres of land in urban Honolulu. The campus is divided into a Central Campus that encompasses the main institutional facilities including the University's administration offices, main libraries, student center, and majority of classrooms, from Dole Street to Maile Way. The Makai Campus includes the law school and student dormitories below Dole Street as well as the athletic facilities in the quarry. The Upper Central Campus includes the Agricultural Engineering Institute, Biomedical Science, and other buildings and support facilities above Maile Way, and the Mauka Campus includes the University facilities along Woodlawn Drive.

Mānoa Valley extends approximately three miles from its valley opening at the UHM to its deep reaches at the Lyon Arboretum. With a wide valley floor, Mānoa Valley has been a readily developable area for the expanding city of Honolulu. Its attractiveness as a residential community is due to its close proximity to many of the city's major employment and shopping centers. Downtown Honolulu is located approximately three miles from the valley and Waikīkī is less than one mile from the University campus.

Approximately 21,775 people reside in this quiet community. With a sizable population, there are many convenience establishments and public facilities to serve the local residents, including a neighborhood shopping center, schools, neighborhood parks, playgrounds, and churches.

3.2 EXISTING LAND USE

The new ITC will be centrally located on the Central Campus of the UHM. It will be situated between Bilger Addition and Physical Science Building on approximately 34,000 to 35,000 sq. ft. of land presently occupied by two portable office buildings (Figure 9). These 20-foot by 70-foot single-story, wooden structures built on a post and beam foundation will be demolished and removed from the site to make way for the ITC. The portable buildings currently accommodate personnel from the University's Center on Disability Studies Program and College of Languages, Linguistics, and Literature. There are also temporary rooms for staff from other departments and a storage space for IT Services.

The ITC site is surrounded by the Physical Science Building to the east, Hawai'i Institute of Geophysics and Watanabe Hall to the south, and Bilger Hall and Bilger Addition to the north and west, respectively (Figure 10). Correa Road, a secondary access for vehicular and pedestrian traffic, extends from the East-West Road to the Campus Center passing the proposed ITC on the south side.

A faculty parking lot is located between Bilger Hall and Physical Science Building and along Correa Road fronting the project site. One of the two portable buildings is built over the western edge of that parking lot. The parking lot is a frequently travelled route for pedestrians seeking access between several classroom buildings on the south side of Correa Road and McCarthy Mall, the main campus mall to the north.



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View toward north of Project Site

Figure 9 **EXISTING PORTABLE BUILDINGS**

UHM Information Technology Center University of Hawai'i



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Bilger Hall



Bilger Addition



Physical Science Building



Parking and pedestrian access between Bilger Hall and Physical Science Building

Figure 10 SURROUNDING LAND USES

UHM Information Technology Center University of Hawai'i

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3.3 LAND TENURE

The proposed ITC is located on UHM land owned by the University of Hawai'i. No land acquisition or lease is required for the proposed project.

3.4 GEOLOGY/PHYSIOGRAPHY

Over the course of several hundred thousands of years, erosion in the Ko'olau Mountains formed the Mānoa Valley. Sedimentation from the valley and other valleys of the Ko'olau Mountains formed the lowlands and coastal zones of Honolulu and Waikīkī. Hard basalt rock presently underlies the valley floor of Mānoa, including the UHM campus. Evidence of the hard rock is displayed in the mauka quarry face of the Makai Campus. This shear rock face is more than 40 feet high and was created by a rock quarry operation in the first half of the 1900s.

The ITC site, which is at the 74-foot elevation (mean sea level) of the University's Central Campus, is completely altered from its original terrain. Grading has occurred to configure the project area for UHM facilities, including buildings, parking lots, driveways, pedestrian walkways, utilities, and drainage systems.

Except for the portable buildings, no permanent structures occupy the site. The land is relatively level, and has a general grade of 2 percent sloping from north to south toward Correa Road. There are no prominent natural features, such as rock outcrops or promontories.

3.5 HYDROLOGY

No rivers, streams, or gullies traverse the project site. The nearest water course is Mānoa Stream located more than 800 feet to the east of the ITC site. Groundwater in the area occurs at significant depth according to a geotechnical study conducted on the project site.⁵ As a result, construction of the ITC foundation and underground utilities is not expected to encounter groundwater during site excavation and trenching.

A 6-foot by 5-foot box culvert is located beneath the parking lot between Bilger Hall and Physical Science Building. This drainage system collects stormwater runoff from McCarthy Mall, Maile Way, and areas up to the MidPacific Institute boundary. Downslope of the project site, the underground culvert enlarges to 6-foot by 6-foot and discharges its flow into Mānoa Stream on the north side of Burns Hall.

The median annual rainfall in the project area is 39.4 inches. Drainage in the vicinity presently occurs through roof drains and lawn and pavement swales that extend to landscaped areas. There are also drainage inlets which connect to the University's underground drainage system. The drainage system for the ITC will include rainwater rooftop catchments with connection to the building's landscape irrigation system. Runoff from the ITC grounds will percolate into the site through pervious concrete paving and permeable HDPE grass paving. The ITC building and its landscaped grounds will have less hard impervious surfaces than what presently occur.

⁵ Geolabs, Inc., *Geotechnical Engineering Exploration, Information Technology Services Building, University of Hawaii at Manoa*, April 21, 2008.

Consequently, there would be no increase in storm runoff from the proposed project to adjacent properties.

The underground drainage system in the remaining portion of the parking lot along Correa Road and the large 6-foot by 5-foot box culvert between Bilger Hall and Physical Science Building may require modification when construction of the ITC occurs.

3.6 NATURAL HAZARDS

3.6.1 Flood

The Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program do not identify any major floodways or flood plains in the project area. According to the FIRM, the site is located in Flood Zone X which are areas determined to be outside the 0.2% annual chance flood plain.⁶

Although the site's potential for flooding is minimal, a flash flood did occur in 2004 in Mānoa Valley which caused significant damage to the Biomedical Science building and Hamilton Library. Minor flooding of about 6 inches occurred in nearby Keller Hall and about 2 inches in the Physical Science Building. The basement floor of Bilger Hall was flooded to a depth of 36 inches. The cause of the flood resulted from a clogged drainage channel in upper Mānoa Valley. The obstruction pushed floodwaters to overtop channel banks and flow over developed lands following new courses and paths.

Following the flood, drainage channels in Mānoa were improved and repaired. As such, flooding is not expected to be an imminent concern. The new ITC will have built-in flood protection safeguards, including an elevated first floor and flood proofed walls, to assure that future flooding of the facility is an extremely low possibility.

3.6.2 Wind Damage

Hurricanes could cause severe damage to life and property. However, early warning systems by Civil Defense sirens, radio and television broadcasts, and news reports should provide residents with ample preparation time to evacuate susceptible areas and minimize or avoid life-threatening situations.

In Hawai'i, hurricane winds, especially when augmented by local terrain, have been very damaging to trees, vegetation, crops, and lightly built dwellings and structures. During the last 50 years, many hurricanes and tropical storms have come close to the Hawaiian Islands, but only three have had direct impact. In all three cases, Kaua'i was the hardest hit, although O'ahu suffered significant damages as well. Hurricane Iniki was by far the most destructive storm to strike Hawai'i in recorded history, with widespread wind and water damage exceeding \$2.2 billion dollars. One of the greatest threats from hurricane winds is caused by flying debris, such as lawn furniture, signs, roofing materials, and metal siding.⁷

⁶ Flood Insurance Rate Map, Panel 370 of 395, City and County of Honolulu, Hawaii, Map No. 15003C0370F.

⁷ City and County of Honolulu, Civil Defense Website http://www.honolulu.gov/ocda/hurrican.htm.

The proposed ITC will be built in accordance with enhanced wind design criteria which are more stringent than the International Building Code (IBC), 2003 Edition, as adopted and amended by the City and County of Honolulu.

3.6.3 Earthquakes

Earthquakes occur frequently in Hawai'i; however, many are so small that they cannot be felt. The islands are in a volcanic and tectonically active region with rifts, faults, and fissures cutting through every one of the major islands. The tectonic process of the earth's moving crust builds stresses along the faults. The sudden release of stress causes earthquakes on land and undersea. The actual movement of the ground, however, is seldom the direct cause of death or injury. Most casualties result from partial or total building collapse, falling objects, debris, and shattering glass.⁸

According to Dr. Gerard Fryer, of the University of Hawai'i Institute of Geophysics and Planetology, the last damaging earthquake to occur on O'ahu was in 1948 with a magnitude of about 5.0. Dr. Fryer indicated, while older buildings on O'ahu might suffer some damage, modern buildings in Honolulu are probably quite safe due to the upgrading of the City's building code by placing Oahu in Seismic Zone 2A from Seismic Zone 1.⁹ The proposed ITC will be built in accordance with the IBC, as adopted and amended by the City and County of Honolulu.

3.6.4 Tsunami

The largest and most destructive tsunami wave in reported history struck the island of Hawai'i in 1946. A total of 159 tsunami related fatalities resulted from that destructive event. During the past century, 13 significant tsunamis that impacted Hawai'i were generated by earthquakes occurring along the geologically active margins of the Pacific Basin.

The University of Hawai'i developed a methodology for determining the maximum expectable inundation of our shores for worst-case tsunamis.¹⁰ Historical data were mathematically analyzed to predict maximum wave heights along the coast. These heights were then used in numerical models involving the topography (land contours) to map the inundation in each location. In coordination with Civil Defense officers, a final map was prepared showing actual evacuation zones.

According to the tsunami evacuation map for O'ahu, the UHM campus is far enough inland that it would not be impacted by any tsunami inundation.

3.7 SOILS

According to the U.S. Soil Conservation Service's *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, soils on the property consist of Makiki stony clay loam, 0 to 3 percent slopes (MIA). This soil is well drained and usually developed in alluvium and

⁸ City and County of Honolulu, Civil Defense Website at http://www.honolulu.gov/ocda/earth.htm

⁹ UH School of Ocean and Earth Sciences and Technology Website at www.soest.hawaii.edu/GG/ASK/ earthquakes.html

¹⁰ Drawn on the records compiled by the Joint Institute for Marine and Atmospheric Research.

terraces, washed from upland soils. The soil is usually level in topography and is geographically associated with Kaena and Tantalus soils. The soil includes some occurrences of stones enough to hinder cultivation. The stones are angular and make up about 15 percent of the soil volume.

The depth of the soil to basalt or cinders varies from 20 to 60 inches. Basalt outcrops are common. The soil is neutral to slightly acid. Its Capability Classification is IIIs, non-irrigated, which indicates severe limitations for cultivation because the soil is stoney, has unfavorable texture, is shallow, or has low water-holding capacity.

A geotechnical study was conducted on the project site in 2008.¹¹ The study used seven test borings to investigate the subsurface condition of the site and found that the property has a surface fill layer, 3 to 9 feet deep, of very stiff to hard silty clays overlaying a massive hard basalt rock formation below. The foundation of the ITC building will be designed in accordance with the geotechnical study recommendations.

3.8 FLORA

Approximately 15 percent of the project site is opened to an existing grass lawn. The remainder of the site is occupied by the two portable buildings, a faculty parking lot, and paved walkways. In the grass area are four shaving brush trees (*Bombax ellipticum*) and two alahe'e (*Psydrax odorata*). The shaving brush trees are an introduced species native to Mexico. The alahe'e is a native shrub indigenous to Hawai'i, Micronesia, and parts of the South Pacific. Neither of these species are listed as rare, threatened, or endangered.

On the perimeter of the site abutting the adjacent buildings and Correa Road are introduced trees, including foxtail palm (*Wodyetia bifurcate*), Mexican blue fan palm (*Brahea armata*), pink tecoma (*Tabebuia rosea*), and four unidentified trees (possibly bottle tree (*Brachychiton spp.*)), and one native tree, the loulu palm (*Pritchardia spp.*).

When construction begins on the ITC, the four shaving brush trees and two alahe'e will be relocated to the northern perimeter of the project site. The loulu palm will be retained in its existing location or relocated elsewhere within the property.

It is noted that the overall theme for the project landscaping is to create a "showcase of sustainability" using low-impact plants including as much as possible native species. Hence, the selection of plants to be incorporated into the landscaped areas around the building and on the terraced roof tops would include floral that naturally occur in the area or are suitable to the environmental conditions of the site. The final list of plant species will be made during the construction design stage of the project.

3.9 FAUNA

Set in the midst of the University campus, the project site is well exposed to daily pedestrian movement and vehicular traffic. The area's lack of vegetation makes it less inviting for fauna to forage and roost. The predominant wildlife that may be observed on the property is lowland

¹¹ Geolabs, Inc., April 21, 2008.

urban avifauna. They typically include the common myna, house sparrow, rice finch, Japanese white-eye, zebra dove, Java finch, bulbul, and red-crested cardinal; none of which are rare, threatened or endangered.

Wildlife mammals are infrequently encountered as a result of constant human activity in the area. Feral cats, stray dogs, rats, and mice might be observed, but no rare, threatened or endangered species can be expected.

3.10 AIR QUALITY

The quality of air in the project area is good as no major air pollutant generators operate in the vicinity. No industrial incinerators, rock quarries, manufacturing plants, or mass drying beds occur. Moreover, there are no heavily-used thoroughfares or busy intersections that generate extensive exhaust emissions from high vehicle volumes.

Bilger Hall and Bilger Addition, which are presently occupied by the Department of Chemistry, include research and teaching laboratories that use scientific instruments such as NMR spectrometers. The buildings also have machine and electronics shops, and provide glassblowing services. Emission stacks on Bilger Addition's rooftop are connected to fume hood exhausts in the building. Emissions tests will be conducted during the project's design construction stage to determine if mitigation measures will be required to reduce or remove any adverse impacts on the ITC.

Emissions from the ITC will come typically from the building's plumbing vents and cooling and ventilation system. There will be no chemical labs and exhaust hoods in the building. The ITC's emergency generator will operate on diesel fuel which will produce exhaust fumes. Operating time for the generator, however, will be limited and infrequent.

3.11 ACOUSTICAL ENVIRONMENT

The source of major sounds in the project area is predominantly the pedestrian activity and vehicular movement around the portable buildings, adjacent parking lot, and Correa Road. These activities occur throughout the weekday and to a lesser extent in the evenings, during night hours, and on the weekends. This campus location is not along the University's main pedestrian circulation route nor in the main hub of student activities, so noise levels at the project site are not at maximum levels for the University.

The ITC will have mechanical and electrical equipment on the building's roof top. These facilities, however, will have noise dampering features or will be housed in enclosed rooms to mitigate and buffer noise to the surrounding campus facilities.

3.12 SCENIC RESOURCES

The visual characteristics of the project area could be described as a built up urban environment with long views restricted by surrounding three-, four-, and five-story buildings. The visual expectation for this area is not of scenic natural amenities, but of logistics and movement of people and vehicles between origin and destination. There are no places to sit and rest or to linger on leisure walks. The visual experience in the area is extensively urbanized.

The ITC will be setback from the Physical Science Building to maintain the existing pedestrian pathway between the Physical Science Building and Bilger Hall. This setback will also preserve the mauka-makai visual corridor that occurs in this area of the campus. The ITC will also be setback from Correa Road to preserve the east-west visual corridor along Correa Road. The LRDP is proposing to convert the western portion of Correa Road into a full pedestrian mall. Preserving the mauka-makai and Correa Road view corridors will help re-establish the pedestrian-oriented campus "feel" which may provide a stronger "sense of place" for the students as recommended by the LRDP and Office of Hawaiian Affairs (OHA).

The LRDP defines the meaning of "sense of place" in terms of E.V. Walter's book *Placeways: A Theory of the Human Environment*. Walter explains "place" is a location of experience. People feel it. It evokes and organizes memories, images, feelings, sentiments, meaning, and the work of imagination. As such, UHM must continue to evoke the essence of the campus and its meaning as a community of scholars and students.

The design of the ITC will incorporate a balance between a "sense of place" and a "sustainable" concept for the new facility in order to attain the benefits of both worlds. The features of either design objectives do not necessary conflict and the proposed scheme for the new building and landscaping presently reflect a good marriage, particularly in the building's entrance plaza, rooftop gardens, and landscaped grounds.

3.13 ARCHAEOLOGICAL RESOURCES

The project site has been completely altered and is presently occupied by two portable buildings and a parking lot. There are no surface archaeological features on the property.

The two portable buildings were constructed in 1991, less than 50 years ago. The State Historic Preservation Division of the DLNR uses 50 years as a criteria to define properties which are historic.¹² The adjacent Bilger Hall was constructed in 1951¹³ and renovated in 1990; Bilger Addition was completed in 1975. The Physical Science Building, located to the east of the ITC site, was constructed in 1960. None of these adjacent buildings will be physically impacted by the proposed ITC.

3.14 CULTURAL RESOURCES

Cultural Surveys Hawai'i, Inc. conducted a cultural impact assessment (CIA) for the project area in 2008. Background research revealed that Mānoa has been exceedingly rich is place names and associated oral histories reflecting the valley's elevated cultural and historical significance to Hawaiians. The valley has been abundant in natural resources including tributary streams, freshwater springs, and good soil. The lower Mānoa section was a prime wet-taro-growing area and

¹² Hawaii Revised Statutes, Chapter 6E-2, Historic Preservation.

¹³ "Building a Rainbow, A History of the Buildings and Grounds of the University of Hawaii's Manoa Campus," edited by Victor Kobayashi, 1983.

the agricultural heartland of the entire valley. Over time, urbanization occurred as residential homes continued to be built deep into the valley.

The UHM started as a small land grant college, known as College of Hawai'i, in 1907 and has grown to 320 acres. Many or most surface sites and features once present in the general project area have been destroyed and/or damaged. There are still subsurface cultural deposits in the valley and in the vicinity of the UH campus. Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area, and along Dole Street approximately 600 meters southwest of the project area adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies. This latter burial site has been interpreted as a traditional Hawaiian cemetery.

CSH's research on ceded lands for this project reveals that TMK 2-8-23: 3 is on DLNR's inventory of Ceded Lands. OHA has pointed out the significance of "Ceded Lands" to many Hawaiians because of its status as Hawaiian Crown and Government Lands. It acknowledges that there is currently no comprehensive Ceded Lands inventory in the state. It noted that as parcels are subdivided or consolidated, their Ceded Land status can, and often do, get lost. Continued confirmation and documentation of known Ceded Lands will be a valuable source for a comprehensive Ceded Lands inventory when one is finally conducted.

CSH also conducted interviews with knowledgeable parties regarding traditional cultural practices at or near the project area. Results of the consultation revealed that:

- 1) there are concerns about the possibility of encountering as-yet undiscovered cultural and historic sites including burials in the project area,
- 2) there are concerns about the need for future buildings and projects being more harmoniously designed and integrated into the natural surroundings and themes inherent to Mānoa Valley,
- 3) it is important to use native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of mālama 'āina,
- 4) it is important to understand and incorporate Hawaiian-language words, phrases, and concepts that extend beyond the superficial,
- 5) detailed accounts were provided of well-documented moʻolelo, wahi pana and other cultural sites in Mānoa,
- 6) there are concerns regarding the State's poor record of protecting and preserving important cultural sites in Mānoa, including heiau that have been damaged or compromised by recent construction projects,
- 7) significant and commemorative trees on campus should be systematically catalogued in order to ensure their protection during future development of the campus,

- 8) it should be noted that OHA seeks clarification on whether a comprehensive archaeological inventory survey will be conducted on the ITC project site and a report submitted to SHPD for review, and finally
- 9) OHA noted the significance of Ceded Lands to many Hawaiians and suggested that the project site's status be identified in the environmental assessment (EA).

Based on its archival research and community consultation, CSH determined that the proposed ITC will have minimal impact on Hawaiian cultural resources, practices, and beliefs. CSH further recommends that by addressing the following measures, in a good faith manner, will help mitigate any potentially adverse effects of the proposed project identified in the CIA.

- 1) The University should proactively develop a plan to avoid disturbing as-yet undiscovered burials and other historic and cultural properties and features located in subsurface contexts.
- 2) The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian sense of place as will as furthering concepts such as mālama 'āina.
- 3) The project proponents should consult UHM's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area.
- 4) The project proponents might consider including as background information in the EA that the property identified as TMK: (1) 2-8-23: 3 is on DLNR's inventory of Ceded Lands.
- 5) It is generally recommended that the project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UHM.

4 SOCIOECONOMIC SETTING

4.1 SOCIOECONOMIC BACKGROUND OF THE REGION

Mānoa, which in Hawaiian means "vast" and "wide," was originally an agricultural area, but beginning in the early 1900s evolved mostly into a residential community. Some of Honolulu's most beautiful historic homes are located in the valley, as well as some of Hawai'i's most notable schools, including UHM, Punahou School, and Mid-Pacific Institute.

UHM was founded in 1907 and has expanded to 320 acres. It now maintains 11 colleges and 9 schools, and offers bachelor/master's degrees in 87 fields, doctoral degrees in 51 fields, and 3 professional degrees. UHM educates and hosts a total student population of 20,357 (14,037 undergraduate and 6,320 graduate and professional). In-state students comprise 69 percent, out-of-state students 21 percent, and international students 10 percent of the enrollment. Faculty, researchers, executives, administrative, and support staff hold almost 4,000 positions at UHM (see Table 2).¹⁴ The University has several faculty and student housing facilities in Mānoa. However, because of the fixed amount of student and faculty housing units, many students commute daily to the campus to attend classes.

Position	No. of Employees	Position	No. of Employees
Admin, Prof & Tech (APT)	1,338	Info, Events & Publication	56
Academic Support	174	Institutional Support	407
Allied Health & Safety	29	Instructional & Student Support	192
Athletics 75	75	IT Specialist	108
Enterprise Operations	23	Media Design & Production	14
Facilities Planning & Design	45	Physical Plant Management	31
Faculty (1,180 Full-time and 92 Part-time)	1,272	Research Support	184

Table 2: UHM Staffing

In the valley, Mānoa is comprised of private homes (built predominantly before the 1960s), and low-rise, multi-family dwellings and apartments. It is considered somewhat of an affluent area with single-family home prices above Honolulu's average.¹⁵

According to the 2007 State of Hawai'i Data Book, approximately 21,775 people currently reside in the Mānoa area, a 0.7 percent increase since 2000. Approximately 7,051 households with an average family size of 3.13 reside in the area. The median age of a resident is 39.3 years old.

¹⁴ UHM, Human Resources Department, September 2008.

¹⁵ Oahu Real Estate Statistics, 12-Month Statistics, September 2008

4.2 ECONOMIC IMPACTS

The preliminary project cost estimate is \$35 to 45 million based on today's prices and a construction schedule of approximately 16 to 18 months. During the planning and construction phase of the ITC, work would be generated in planning, engineering, architecture, landscape architecture, construction trades, material and supply industries, and related fields and support services. The secondary and induced effects of the project are expected to multiply the benefits of consulting firms, construction employment, spending, and employee income into the community. These benefits would, thus, provide a much larger economic effect.

During the operational phase of the project, the ITC would result in beneficial effects to the economy with the creation of a few additional jobs particularly in the building and ground maintenance field, increase in vendor purchases of goods and services, and the collection of additional state income tax and sales tax revenues. Over the long-term, the initial investment in the project is expected to yield a favorable return in terms of streamlining operations, increasing growth capacity, improving levels of service, and creating a first-rate technology infrastructure for the advancement of the University, IT students, faculty, administrators, researchers, and businesses at the state, national, and global level.

4.3 SOCIAL CONSIDERATIONS

An efficient integrated system that can accommodate rapid advances in technology and enhance connectivity for a multi-cultural university would serve Hawai'i well and be of great benefit in building relationships in the business community locally, nationally, and worldwide.

In 2007, UHM submitted 1,560 research proposals valued at \$328 million and received 1,092 grants valued at \$210 million. Nearly all students, faculty, researchers, and administrative staff use technology in one form or another for reports, research, collaboration, communication, administration, data collection, and other tasks.

The proposed ITC would serve as an important and essential IT support facility for the UHM system and the population it serves. Enhancement programs in computing would supplement existing on-campus programs and degree programs for computer science and technology.

The new ITC is expected to serve existing students on campus. No new degree program is anticipated. As such, no sizeable increase in student population would occur, and as a result, the new ITC would not generate a demand for increased student housing, on-campus parking, and student services.

5 PUBLIC FACILITIES AND SERVICES

5.1 **CIRCULATION AND TRAFFIC**

University Avenue and Dole Street are the primary public roads that provide access to the UHM campus. Within the campus grounds is a network of internal roads, driveways, and parking lots owned, maintained, and controlled by the University. Direct access to the ITC building would be via UHM's East-West Road and Correa Road from Dole Street.

The new ITC will be constructed in an area presently occupied by Bilger Annexes and a faculty parking lot.¹⁶ This parking also provides access for service vehicles to Bilger Hall and Physical Science Building. Construction of the new ITC would require removal of up to 53 parking stalls. Another 26 stalls will be lost when its access to Correa Road is blocked off.

The UHM LRDP maintains an inventory of existing parking within the campus and provides plans that address the University's long-term parking needs. The LRDP currently identifies the construction of a new 480-stall parking structure between the Physical Science Building and Kennedy Theater. Funding for this facility is yet to be requested from the State, but its provision will provide additional parking for campus uses in the area including events at Kennedy Theater. Meanwhile, the lost parking at the project site will be made up by assignments to or having available parking at the other parking facilities in the University parking system.

No additional staff parking will be required once the new ITC is in operation. Occupants of the ITC will be relocated staff of on-campus facilities. As such, they would continue to retain their parking privileges on the campus. The only staff that might require additional parking would be employees in the building's maintenance and landscape upkeep department. The number of these employees would be small and their parking needs would be accommodated by the University's Buildings & Grounds Management Office.

Pedestrians travel primarily through the parking lots and driveways and on pedestrian walkways, malls, and sidewalks of existing roads. The pedestrian pathway that will be affected by the new ITC includes a pedestrian access (also known as "Scientific Pathway") from McCarthy Mall to Correa Road through the existing parking lot between Bilger Hall and Physical Science Building. Approximate 60 percent of the length of this parking area will be converted into an entranceway for the ITC and a formal pedestrian mall for the Scientific Pathway. The remainder of the paved parking area will be retained for service vehicle access as well as a fire lane for emergency vehicles.

5.2 WATER, SEWER, ELECTRICITY, TELEPHONE, AND GAS

5.2.1 Water

The new ITC will hook up with the University's existing water distribution system which connects to the BWS's system along East-West Road near Kennedy Theater. It is estimated that the new building will generate a demand for approximately 8,640 gallons of water per day. The

¹⁶ A premium fee is paid for contract parking in this parking zone.
Utility Systems Report of the University's LRDP determined that the building's projected demand would not have a significant impact on the City's water system.¹⁷ In a preliminary review of the project, BWS indicated its existing water system is adequate to accommodate the new ITC.¹⁸

A set of 6-inch chilled water laterals that service the Bilger Addition occurs at the north end of the new ITC. Another set of 6-inch chilled water laterals occurs at the south end of the new building. Records indicate that the laterals may extend to the end of the parking lot, but it is not known what building or buildings they serve. These chilled water laterals will be relocated when the new ITC is constructed.

5.2.2 Sewer

The University's sewer system is available for connection on the makai side of Bilger Annexes or in the parking area between Bilger Hall and Physical Science Building. UHM sewer lines connect with the City sewer system at the adjacent City streets. The wastewater is conveyed via the City's sewer network to the City's Sand Island Wastewater Treatment Plant for treatment and final disposal.

The new ITC is projected to generate a wastewater peak flow of approximately 78 gallons per minute (gpm). This estimate is expected to be smaller as further design refinements are calling for less water fixture units. The Utility Systems Report of the University's LRDP determined that the proposed project would not have a significant impact on the City's wastewater system.¹⁹

5.2.3 Electricity

The ITC is expected to generate an electrical demand of approximately 1.2 megawatts. This demand would come predominantly from the building's data center, communications system, work stations, air conditioning units, and mechanical equipment. The power feed for the new building will be derived from the University's campus-wide primary distribution system, which connects to Hawaiian Electric Company's (HECO) power lines.

UHM will work with HECO to assess the power requirements for the new ITC, and determine whether relocating existing lines or providing new lines or facilities will be necessary.²⁰

As sustainability is an objective for the proposed project, the ITC is being designed with the option to use renewable energy to supplement its primary source of power from HECO. Photovoltaic arrays and wind turbine units may be located on the building's roof and interconnected with the building's electrical distribution system. The photovoltaic and wind turbines would likely be supplied, installed, and maintained by an independent operator under a Power Purchase Agreement with the University.

¹⁷ Utility Systems Report, University of Hawai'i at Mānoa, Long Range Development Plan, 2007 Update (Category I), Mānoa, Honolulu, Hawai'i, prepared by Austin, Tsutsumi & Associates, Inc., October 24, 2007

¹⁸ BWS letter of July 29, 2008 to Belt Collins Hawaii.

¹⁹ Utility Systems Report, University of Hawai'i at Mānoa, Long Range Development Plan, 2007 Update (Category I), Mānoa, Honolulu, Hawai'i, October 24, 2007

²⁰ HECO letter to Belt Collins Hawaii, dated August 20, 2008.

The ITC will have an emergency generator to provide back-up power to computer equipment, associated air-conditioning systems, operational lighting, and convenience power. The generator will include an above-ground storage tank capable of holding three days of fuel supply for extended power outages.

5.2.4 Telephone

Land line telephone service to the UHM is currently provided by Hawaiian Telcom with main lines to the University's PBX Switch Room in Bilger Addition. Private telecommunication companies provide wireless service to individual parties on the campus.

The proposed project calls for replacing the existing PBX Switch Room with an upgraded telecommunications switching station in the new ITC. The University will coordinate its work on the new system with Hawaiian Telcom.

5.2.5 Gas

A 2-inch gas line is located in the parking lot between Bilger Hall and Physical Science Building. The Gas Company, which owns the line, can provide service to the project site.

5.3 SOLID WASTE

Solid waste generated by the UHM is presently collected in garbage bin located in and around buildings of the University campus. Maintenance personnel of the University's Buildings & Grounds Management Office removes the waste from the bins and transports it to the municipal landfill in Leeward O'ahu.

Any hazardous waste that might be discarded will be disposed of by the Buildings & Grounds Management Office or by the University in accordance with procedures established by the Hazardous Waste Material Management Program of the University's Environmental Health & Safety Office, depending on the type of waste to be disposed.

Solid waste is also expected to be generated during construction. The construction contractor will be responsible for hauling away any construction debris or rubbish generated on the construction site.

5.4 PUBLIC FACILITIES AND SERVICES

5.4.1 Honolulu Fire Department

The City and County of Honolulu Fire Department has several fire stations in close proximity to the UHM: Mānoa Fire Station - 1.4 miles; Makiki Fire Station - 1.9 miles; and McCully Fire Station - 1.4 miles. Because of the close proximity to the UHM, faster response times in the event of a fire or emergency can be anticipated. All public roadways in the project vicinity are wide enough to permit access by fire trucks. Fire hydrants are located along Correa Road and on the north side of Bilger Hall.

The ITC will be built in accordance with the Uniform Fire Code, as amended by the City and County of Honolulu. A fire protection system will be installed in the building, which will include

an automatic fire sprinkler system, smoke detection system, heat detection system, carbon dioxide-based automatic fire suppression system, manual fire extinguishers, and fire alarm system. Various inhabitable rooms will contain audio/visual and visual signaling devices as required by the fire code and the accessibility guidelines. The dry standpipe system will be provided at exit stairs and other areas as required by the Building Code.

5.4.2 Campus Security and Honolulu Police Department

The University Board of Regents established an onsite Campus Security department to enforce federal, state, and local laws as well as university rules, regulations, policies, and procedures. The department consists of 36 departmental personnel that respond to 68 emergency call boxes located throughout the campus, provide crime prevention services, escort arrangements, facilities and grounds surveillances, and special services for visitors and special events.

The Honolulu Police Department is also available to provide assistance. The main station is located in downtown Honolulu approximately 3.0 miles from the UHM.

The ITC will have its own security and access control system for its facilities. The security system will utilize motion sensors, camera surveillance, magnetic door sensors, and secured key card door locks to protect areas from unauthorized entry.

5.4.3 Medical Services and Facilities

The UHM offers a wide range of medical services and programs through its University Health Services Mānoa (UHSM) of the Office of Student Affairs. The UHSM is staffed by physicians, nurse clinicians, nurses, and other support staff. Services and programs include the General Medical Clinic, Women's Health Clinic, Sports Medicine, dermatology, pharmacy, clinical laboratory, student training, employment and volunteer opportunities. Students pay \$18 per visit, excluding pharmacy and laboratory fees. Many services are also available to faculty, staff members, and students from other campuses.

For after hours care, private medical facilities within close proximity to UHM include Kaiser Permanente, Kapi'olani Medical Center for Women & Children, Kuakini Medical Center, Queen's Medical Center, Saint Francis Medical (Honolulu), and Straub Clinic & Hospital.

The proposed ITC is not expected to generate a large increase in student population. As such, the net impact on campus medical services should be minimal.

6 RELATIONSHIP TO PUBLIC LAND USE POLICIES

6.1 STATE LAWS AND PLANS

6.1.1 Hawai'i State Plan

The Hawai'i State Plan, as established under the Hawaii State Planning Act, Chapter 226, Hawaii Revised Statutes (HRS), has served as a guide for the long-range development of the State since adoption of the law in 1978. The Plan identifies goals, objectives, and policies for the State to (1) provide a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; (2) improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and (3) establish a system for plan formulation and program coordination to provide for an integration of all major state and county activities.

Of the 107 sections that comprise HRS Chapter 226, six are directly applicable to this EA: (1) HRS §226-10.5 - Objectives and policies for the economy – information industry; (2) HRS §226-14 - Objective and policies for facility systems – in general; (3) HRS §226-18.5 - Objectives and policies for facility systems — telecommunications; and (4) HRS §226-21 - Objective and policies for socio-cultural advancement – education; (5) HRS §226-102- Overall Direction; and (6) HRS §226-107 Quality Education. The following table presents the applicable six sections, assesses the project's conformance with the State Plan's goals and objectives, and summarizes the project's benefits and probable impacts.

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND	CONFORMS	NOT	
SECTION	POLICIES	YES	YES NO A	APPLICABLE
226-10.5	OBJECTIVES AND POLICIES FOR THE ECONOMY - INFORMATION INDUSTR	RY		
(a)	Planning for the State's economy with regard to the information industry shall be directed toward the achievement of the objective of positioning Hawai'i as the leading dealer in information businesses and services in the Pacific Rim;	~		
(b)	To achieve the information industry objective, it shall be the policy of this State to:			
(1)	Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth in the information industry;	~		
(2)	Facilitate the development of new business and service ventures in the information industry which will provide employment opportunities for the people of Hawai ⁺ i;	~		
(3)	Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;	~		
(4)	Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai ^s i's people;	~		

Table 3: Applicable Sections of the Hawai'i State Planning Act

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND	CONFORMS		NOT
SECTION	POLICIES	YES	NO	APPLICABLE
(5)	Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;	~		
(6)	Foster a recognition of the contribution of the information industry to Hawai'i's economy; and	~		
(7)	Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.	~		
COMMENTARY: The proposed project fully supports the objectives and policies for the information industry as set forth by HRS §226-10.5. Consolidation and upgrade of IT Services facilities would improve systems structure, maximize efficiency, and strengthen technological support capabilities. It would support state goals for the: (1) achievement of positioning Hawai'i as the leading dealer in information businesses and services in the Pacific Rim; (2) aid in the development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth in the information industry; and (3) provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry.				
226-14	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS – IN GENERAL			
(a)	Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.	~		
(b)	To achieve the general facility systems objective, it shall be the policy of this State to:			
(1)	Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	~		
(2)	Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.	~		
(3)	Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	~		
(4)	Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.	~		
COMMENTARY: The proposed project fully supports the objectives and policies for facility systems as set forth by HRS §226-14. Major UH system computers and critical servers are currently housed in various campus buildings not originally designed to accommodate high technology equipment. The lack of appropriate facilities to support a modern IT infrastructure is directly responsible for inefficiencies in network design and management, which results in cost increases, heightened exposure to				

outages, decreased physical plant security, and reduced levels of service for the entire system.

The consolidation of IT services would: (1) be a prudent use of facility resources to accommodate changing public demands and priorities; (2) result in cost-savings techniques; and (3) improve organizational synergies that could heighten efficiencies and services.

UHM is one of only 13 institutions to hold the distinction of being a land, sea, and space-grant research institution. The Carnegie Foundation classifies UHM as having "very high research activity." UHM is known for its pioneering research in oceanography, astronomy, Pacific Islands and Asian area studies, linguistics, cancer research, and genetics. The National

SECTION CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND	CONFORMS	NOT		
	YES	NO	APPLICABLE		
Science Foundation ranks UH Mānoa in the top 30 public universities in federal research funding for engineering and science and 49th overall. ²¹ An ITC would fully support the University's achievements and meet State's objectives and policies for facility systems.				and science d policies for	
226-18.5	OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS – TELECOMMUNICATIONS				
(a)	Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.	~			
(b)	To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.	~			
(C)	To further achieve the telecommunications objective, it shall be the policy of this State to:				
(1)	Facilitate research and development of telecommunications systems and resources;	~			
(2)	Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;	~			
(3)	Promote efficient management and use of existing telecommunications systems and services; and	~			
(4)	Facilitate the development of education and training of telecommunications personnel.	~			
COMMENTARY: The proposed project fully supports the objectives and policies for telecommunication facilities as set forth in HRS §226-18.5. The approximately 74,000-square-foot ITC would house system-wide data/telecommunications infrastructure and consolidate operations presently scattered in eight separate locations within the campus. The proposed project would: (1) promote efficient management and use of existing telecommunications systems and services; (2) facilitate research and development of telecommunications systems and resources, and (3) facilitate the development of education and training of telecommunications personnel				2S §226-18.5. d consolidate (1) promote development d training of	
226-21	OBJECTIVE AND POLICIES FOR SOCIO - CULTURAL ADVANCEMENT - EDU	CATION			
(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 aspirations.	~			
(b)	To achieve the education objective, it shall be the policy of this State to:				
(1)	Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.	~			
(2)	Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.	~			
(3)	Provide appropriate educational opportunities for groups with special needs.	✓			
(4)	Promote educational programs which enhance understanding of Hawai'i's cultural heritage.	~			
(5)	Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.	~			

²¹ University of Hawai'i Website: www.uhm.hawaii.edu

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND	CONFORMS	NOT		
SECTION	POLICIES	YES	NO	NO APPLICABLE	
(6)	Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.	~			
(7)	Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.	~			
(8)	Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.	~			
(9)	Support research programs and activities that enhance the education programs of the State.	~			
COMMENTARY: The proposed project fully supports the objectives and policies for socio-cultural advancement in education as set forth i HRS §226-21. An ITC, dedicated to the needs of the University's system-wide data/telecommunications infrastructure an support facilities, would empower the University to further: (1) support educational programs and activities that enhance one understanding of Hawaii's cultural heritage as well as one's personal development; (2) provide higher educations opportunities that enable Hawaii's people to adapt to changing employment demands; and (3) support research program and activities that enhance the education programs of the State. In reference to HRS 226-21(b)(3), students with disabilities have access to programs such as: Partial Services/Facilities for Students With Learning Disabilities; Services/Facilities for Hearing Impaired; Services/Facilities for Speech of Communications Disorders; Services/Facilities for Visually Impaired; Wheelchair Accessibility; 1400 Work Stations in: Dorms Libraries, and Computer Centers; Dorms Wired for Access to Campus-Wide Network; Email Accounts to Students; Onlin Course Registration; Commuter/Off-Campus Student Connections to Campus Network; On-Campus Computer Repa Service: Computer Helpline: Online Library; and Student Web Hosting. ²²				as set forth in structure and nhance one's r educational rch programs s/Facilities for Speech or ns in: Dorms, dents; Online iputer Repair	
226-102	 OVERALL DIRECTION The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education. 	V			
COMMENTARY: The proposed project can be measured as a desirable course of action with the improvement of the quality of life for present and future generations from the growth of economic opportunities and improvements in land resource management through quality education.					
226-107	226-107 QUALITY EDUCATION Priority Guidelines to Promote Quality Education				
(1)	Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;	~			
(2)	Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;	~			
(3)	Initiate efforts to improve the quality of education by improving the capabilities of the education work force;	~			
(4)	Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;	~			

²² University of Hawai'i Website: www.uhm.hawaii.edu

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND	CONFORMS	NOT	
SECTION	POLICIES	YES	NO	APPLICABLE
(5)	Increase and improve the use of information technology in education by the availability of telecommunications equipment for:	\checkmark		
(A)	The electronic exchange of information;	~		
(B)	Statewide electronic mail; and	✓		
(C)	Access to the Internet.	✓		
(6)	Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;	~		
(7)	Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific;	~		
(8)	Develop resources and programs for early childhood education;	~		
(9)	Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and	~		
(10)	Strengthen and expand educational programs and services for students with special needs.	\checkmark		

COMMENTARY:

The proposed project fully supports the objectives and policies for quality education as set forth in HRS §226-107. A dedicated ITC would serve as a key component in achieving the University's LRDP's vision toward developing a globally connected Hawaiian place of learning, leadership, and service.

UHM currently offers bachelor's and master's degrees in 87 fields, doctoral degrees in 51 fields, and three professional degrees. One of the fields is information and computer sciences (ICS) where students study the description and representation of information; the theory, design, analysis, implementation, and application of algorithmic processes that transform information. Students majoring in ICS also learn to use computer systems, scientific principles and technology required to develop new computer systems and applications, software engineering, computer networks, artificial intelligence, human-computer interaction and bioinformatics, and areas uniquely suited to Hawai'i's role as a multi-cultural and geographical center of the Pacific. The role of information technology plays a vital role in meeting the current and future challenges of a global economy.

Moreover, the use of computer systems for research and information would be a valuable skill which can be applied in all fields of study for all students and faculty.

6.1.2 Hawai'i 2050 Sustainability Plan

The Hawai'i State Legislature in 2005 sought answers to pressing economic, social, and environmental issues facing the state, and sought to guide and set goals to achieve a preferred future. Under the 2005 Special Session Laws of Hawai'i, the Legislature enacted Act 8, which provided for the (1) development of a sustainability plan to address the vital needs of Hawai'i through the year 2050, and (2) establishment of the Hawai'i Sustainability Task Force under the guidance of the Office of the State Auditor.

Legislators felt that with the passage of time and new challenges facing the State a thorough review of existing plans would be in the public interest. Legislators recognized that while many key initiatives were accomplished under the Planning Act and State Functional Plans, these plans simply needed updating. However, the intent of the Hawai'i 2050 Sustainability Plan is not to replace existing State and County plans but rather to augment and complement them. One of the goals of the 2050 Sustainability Plan is to increase commercialization and technology transfer between post-secondary institutions and the business sector. The 2050 Sustainability Plan recognized that education would be especially important in an increasingly technology-based and globally competitive world, and that technology and knowledge-based jobs would be "potential pillars" in diversifying Hawai'i's economy.

According to DBEDT, high technology jobs in 2005 comprised 2.8 percent of the workforce. The technology sector employed 13,813 workers at an average salary of \$57,458, 66 percent, higher than the average wage earner. Innovation-based sectors, including high technology, diversified agriculture, digital media, healthcare, biosciences and dual use, comprised about 5 percent of the workforce.

The 2050 Sustainability Plan stressed that functioning infrastructure would be critical to economic health and that without it, the economy will be inefficient. Moreover, the plan cited the need to (1) adopt smart growth policies to guide decision-making that would maximize the efficient use of infrastructure dollars; and (2) identify, prioritize and fund infrastructure "crisis points" that need fixing.

Similarly, the 2002 University of Hawai'i System Strategic Plan recognized the profound implications of the digital age for knowledge-based institutions and reinforced the University's commitment to becoming a leader in information technology in ways that could transform the global enterprise of higher education.

The proposed project correlates with the goals of the 2050 Sustainability Plan, in that, it seeks to (1) maximize efficiency of infrastructure dollars by consolidating IT resources and services; (2) increase commercialization and technology transfer between the University and business sector locally, nationally and globally; and (3) serve as a technology education center in an increasingly technology-based and globally competitive world.

6.1.3 State Land Use Law

Legislators adopted the State Land Use Law in 1961 to protect Hawai'i's valuable land from development that resulted in short-term gains for a few and long-term losses to the income and growth potential of the state's economy. Accordingly, the Legislature established an overall framework of land-use management. HRS, Chapter 205, placed all lands in the State in one of four land-use districts: *Urban, Agricultural, Conservation, or Rural* (the Rural District was added in 1963), and established the State Land Use Commission (LUC).

The State Land Use District Maps, administered by the LUC, designates the project site as part of the Urban District. As such, the proposed action would take place in an existing urban environment where development and foreseeable growth are anticipated and planned. No costly changes in land use, build-up of infrastructure, or extremely adverse impacts are anticipated.

6.1.4 State Environmental Policy

The State Environmental Policy under HRS Chapter 344 established an environmental policy that (1) encourages productive and enjoyable harmony between people and their environment; (2) promotes efforts that will prevent or eliminate damage to the environment and biosphere;

(3) stimulates the health and welfare of humanity; and (4) enriches the understanding of the ecological systems and natural resources important to the people of Hawai'i.

The proposed project is consistent with the following sections of the State Environmental Policy as follows:

HRS 344-3(2)(B) Enhance the quality of life by: Creating opportunities for the residents of Hawai'i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments.

HRS 344-4 (2)(F) Maintain an integrated system of state land use planning which coordinates the state and county general plans.

HRS 344-4 (5)(A) Encourage industries in Hawai'i which would be in harmony with our environment.

One of the vision statements of the UHM LRDP calls for the campus to be a leader in local and global environmental sustainability. The LRDP encourages the employment of sustainable practices on campus using both ecological and economic aspects of sustainability. The LRDP also requires new buildings to be models of sustainable design and satisfy the Silver criteria of Leadership in Energy and Environmental Design (LEED) Green Building Rating System, which is a nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

6.1.5 University of Hawai'i at Mānoa - Long Range Development Plan

The UH Board of Regents adopted the LRDP in 1987, and the plan has since served as the organizing vision and guiding document for campus development. The LRDP was updated in 1994 and again in 2007 to reflect current and upcoming educational priorities, including building and projects that are on the University's Capital Improvement Program (CIP) and/or are anticipated for development within the next 5-10 years. Projects that are anticipated for development beyond the 5-10 year period are briefly noted in the plan for long-term consideration, but are not described in detail. The ITC at Bilger Hall is a project of top priority.

The LRDP recognized that the pattern of future development would need to focus on enhanced environments for learning, working, and living, and that, campuses of the future needed to envision uses and activities similar to a vital urban center. With funding for research grants increasing by over 50 percent over the last 10 years, UHM's recognized the need to use the opportunity afforded by growth in graduate programs, successful professional schools, and research activities to achieve higher levels of quality in its physical and academic environment. The major themes and vision of the LRDP are to create:

- A globally connected Hawaiian place of learning, leadership and service having a global reach while being rooted in Hawai'i,
- A livable urban campus, developing more adjacent housing for student and faculty with supporting commercial, entertainment, and cultural amenities,

- Outdoor spaces for living and learning; envisioning spaces between buildings as either "outdoor rooms" functioning in concert with indoor spaces as venues for education, social gathering, and
- A campus that serves as a laboratory, model, and institutional leader for sustainable practices.

For new buildings, the LDRP recognized that an opportunity exists for the Mānoa campus to become a more cohesive campus and that challenge in the design of new buildings, as well as expansion of existing facilities, would be to maximize the contribution of each project toward providing a greater aesthetic and function wholeness to the campus. The LDRP set the following criteria:

- Buildings will be shaped by external and internal needs.
- Adjacent buildings should "speak" to each other in a dialogue of form, style and space.
- No building can be seen as an independent facility expressing unique functions and users.
- A primary determinant of a building's form and character should be its contribution to the whole.
- Buildings adjacent to new buildings need not warrant stylistic emulation, since many existing campus buildings are not stylistically noteworthy; however, responses to mass and scale, definition of outdoor spaces and functional elements such as entries, fenestration and material system should be considered.
- New buildings will respond to issues of environmental sustainability, and be models of sustainable design.
- State structures must satisfy the LEED standards, which is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings (i.e., daylighting, energy generation, the use of sustainable materials, and water savings).

The proposed ITC will be constructed in accordance with the vision and goals of the LRDP. Further, it will be in conformance with the LRDP's basic design criteria for the ITC. As specified in the University plan, the new ITC should be no more than seven stories in height with a footprint of approximately 10,300 sq. ft.. Although the plan describes a need for an arcade system on the ground floor that would connect with the Physical Science Building and adjacent network of future arcades, the ITC would have an open-air pedestrian mall for connection with adjacent pedestrian systems. The plan also noted that the ITC should maintain the setback currently kept between the Physical Science Building and Bilger Hall, and lastly, because the ITC site is located off the proposed Correa Mall, landscaping along Correa Road frontage should be consistent with the Mall's landscaping.

6.2 CITY & COUNTY PLANS AND REGULATIONS

The City and County of Honolulu guides and directs land use and growth through a three-tier system of objectives, policies, planning principles, guidelines and regulations. The General Plan adopted by resolution in 1977 forms the first tier of this system and sets long-term objectives and policies. The General Plan, which has been amended over the years, guides actions of city government and the private sector and represents the beginning of the planning process for O'ahu.

The second tier of the system adopted and revised by ordinance sets planning principles formed by development and sustainable community plans based on eight geographic regions of the island. The plan applicable to the proposed project is the Primary Urban Center (PUC) Development Plan.

The third tier of the system is composed of implementing ordinances and regulations, including the Land Use Ordinance (LUO) (Honolulu's zoning code) and the City's CIP. Ordinances are mandated by the City Charter, constitute the principal means for implementing City plans, and are required to be consistent with the General Plan, the applicable development plan, and each other.

6.2.1 City & County of Honolulu General Plan

The City & County of Honolulu's General Plan, which was last updated on October 26, 2006, is comprised of 11 sections relating to: *Population; Economic Activity; Natural Environment; Housing; Transportation and Utilities; Energy; Physical Development and Urban Design; Public Safety; Health and Education; Culture and Recreation; and Government Operations and Fiscal Management.*

The sections on *Economic Activity, Physical Development and Urban Design, and Health and Education* are relevant to this EA and are will be presented and discussed in the following table.

Table 4: Applicable Sections of the City & County of HonoluluGeneral Plan

CECTION		CONFORMS YES NO	NOT	
SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN		NO	APPLICABLE
ECONOMIC ACTIVITY				
OBJECTIVE To promote decent standa	A employment opportunities that will enable all the people of O'ahu to attain a ard of living.	~		
Policy 1: Encourage the growth and diversification of O'ahu's economic base.		\checkmark		
Policy 2: Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of O'ahu residents.		\checkmark		
Policy 3: E communication	ncourage the development in appropriate locations on O'ahu of trade, ons, and other industries of a nonpolluting nature.	~		

OFOTION			ORMS	NOT	
SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN	YES	NO	APPLICABLE	
Policy 4: Enc O'ahu-based	ourage the development of local, national, and world markets for the products of industries.	~			
Policy 5: Enco methods as s	ourage the wider distribution of available employment opportunities through such hortening the work week and reducing the use of overtime.			\checkmark	
Policy 6: Enc	ourage the continuation of a significant level of Federal employment on O'ahu.	✓			
OBJECTIVE	E	1			
To prevent th	e occurrence of large scale unemployment.	v			
Policy 1: Enc and future job	ourage the training and employment of present residents for currently available os.	~			
Policy 2: Mak	e full use of State and Federal employment and training programs.	~			
Policy 3: En planned redu	courage the provision of retraining programs for workers in industries with ctions in their labor force.	~			
The proposed project fully supports the General Plan's objectives and policies for economic activity. In addition consolidating, improving, and supporting UH IT Services, the proposed ITC will also serve as a training facility for professionals and thus promote employment opportunities that would enable people to gain valuable skills. It we encourage: (1) growth and diversification of O'ahu's economic base; (2) development of small business enterprises larger industries; (3) development, in an appropriate location, for trade, communications, and other industries of a nonpollut nature; (4) create opportunities for local, national, and world markets of O'ahu-based products and industries; and (5) fur support federal employment on O'ahu. ²³					
PHYSICAL DEVELOPMENT AND URBAN DESIGN					
OBJECTIVE To coordinat developments located.	A e changes in the physical environment of O'ahu to ensure that all new s are timely, well-designed, and appropriate for the areas in which they will be	~			
Policy 1: Plar the Island ac second, in th areas.	n for the construction of new public facilities and utilities in the various parts of coording to the following order of priority: first, in the primary urban center; e secondary urban center at Kapolei; and third, in the urban- fringe and rural	~			
Policy 2: Co adequate wa facilities.	ordinate the location and timing of new development with the availability of ater supply, sewage treatment, drainage, transportation, and public safety	~			
Policy 3: Pha regional supp	ase the construction of new developments so that they do not require more orting services than are available.	~			
Policy 4: Red services, inclute to directly services	quire new developments to provide or pay the cost of all essential community uding roads, utilities, schools, parks, and emergency facilities that are intended ve the development.	~			

²³ In 2006, UH accepted 142 contracts from the Department of Defense worth \$65 million. In June 2008, UH and Navy officials entered into an agreement to create a Navy research center, University Affiliated Research Center. The agreement could bring in up to \$10 million a year to UH researchers over five years. Source: Honolulu Star Bulletin, June 2008.

CECTION		CONF	CONFORMS	NOT APPLICABLE
SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN	YES	NO	
Policy 5: Pro compatible w	vide for more compact development and intensive use of urban lands where ith the physical and social character of existing communities.	~		
Policy 6: End and other pul	courage the clustering of developments to reduce the cost of providing utilities plic services.	~		
Policy 7: Loc their markets	ate new industries and new commercial areas so that they will be well related to and suppliers, and to residential areas and transportation facilities.	~		
Policy 8: Loc intended to se	ate community facilities on sites that will be convenient to the people they are erve.	~		
Policy 9: Exercise pollution.	clude from residential areas, uses which are major sources of noise and air	~		
Policy 10: E surrounding explosives.	stablish danger zones to exclude incompatible uses from hazardous areas airfields, electromagnetic- radiation sources, and storage places for fuel and			V
Policy 11: Pr fuel and exp communities.	ohibit new airfields, electromagnetic- radiation sources, and storage places for plosives from locating on sites where they will endanger or disrupt nearby			√
The proposed project fully supports the General Plan's objectives and policies for physical development and urban desi The much needed ITC will be: (1) well-designed and appropriate for the area; (2) occur in the primary urban center; (3) u available support services; (4) tie in with existing water supply and sewage treatment, drainage, transportation, and pu safety facilities; (5) reduce the cost of utilities and other public services by consolidating facilities and equipment; and (6) compatible with the physical and social character of the existing community, and be close to the people being serv Moreover, the ITC would be built for sustainability and to attain LEED standards, which is a nationally accepted benchmark the design, construction, and operation of high performance green buildings.				
HEALTH ANI	DEDUCATION			
OBJECTIVE To provide a	B wide range of educational opportunities for the people of O'ahu.			
Policy 1: Sup	port education programs that encourage the development of employable skills.	~		
Policy 2: Engroups.	courage the provision of informal educational programs for people of all age	~		
Policy 3: Enc	ourage the after-hours use of school buildings, grounds, and facilities.	~		
Policy 4: End high levels of	courage the construction of school facilities that are designed for flexibility and use.	~		
Policy 5: Fac the university	ilitate the appropriate location of learning institutions from the preschool through levels.			~
OBJECTIVE	С	~		
To make Hor	olulu the center of higher education in the Pacific.			
Policy 1: Enc	ourage continuing improvement in the quality of higher education in Hawai'i.	✓		
Policy 2: Enc	ourage the development of diverse opportunities in higher education.	✓		
Policy 3: Enc	ourage research institutions to establish branches on O'ahu.	✓		

SECTION		CONFORMS	NOT	
	CITY AND COUNTY OF HONOLULU GENERAL PLAN	YES	NO	APPLICABLE
COMMENTA The proposed flexibility and development education; ar assist in maki	RY: d project fully supports the General Plan's objectives and policies for education. Th high levels of use, and will be open 24/7 for after-hours use. An efficient ITC fa of employable skills; (2) improve the quality of higher education; (3) develop d (4) encourage research institutions to establish branches on O'ahu. Moreover, ng Honolulu the center of higher education in the Pacific.	ne new IT Icility wou diverse c a dedica	C will be Id encou opportuni ated ITC	e designed for urage the: (1) ties in higher facility would

6.2.2 Primary Urban Center Development Plan

The intent of the PUC Development Plan is to guide public policy, investment, and decisionmaking through the 2025-planning horizon. The PUC area extends from the core of historic downtown Honolulu to Pearl City in the west and Waialae-Kahala in the east, and serves as the economic center of the state. The area hosts the largest concentration of public and private postsecondary institutions, including the UHM. Other major campuses include the University of Hawai'i's community colleges (Kapi'olani and Honolulu), Chaminade University, Hawai'i Pacific University's downtown campus and a number of smaller private colleges. The University of Hawai'i also operates research and teaching facilities at Kaka'ako, Honolulu Harbor, Sand Island, and the Waikīkī Aquarium.

The PUC plan recognizes that both state and city policies call for diversifying Hawai'i's economic base by attracting businesses in scientific and technological fields – knowledge-based industries that provide higher paying jobs. As such, goals of the plan include: (1) stimulating the development of high technology and knowledge-based industries; (2) attracting high-technology businesses to Hawai'i and providing in-town locations for them; and (3) encouraging investment in infrastructure within commercial buildings to accommodate and attract high-technology and biotechnology businesses.

The PUC plan suggests that leading-edge research enterprises and business operations of technology-based businesses, may wish to locate in central Honolulu near the UHM campus, other universities, and the leading hospitals for logical and quantifiable reasons.

The proposed project fully conforms with the current PUC plan for location and high technology.

6.2.3 Land Use Ordinance

The LUO of the City and County of Honolulu regulates land uses on the island of O'ahu. The LUO regulations consist of development standards, application procedures, and criteria for granting permits and other approvals.

The entire Central and Makai Campus of the UHM is designated as R-5 Residential by the LUO. This zoning designation allows the UHM to develop its main campus with a Plan Review Use (PRU). ²⁴ An application for a PRU is reviewed by the Department of Planning and Permitting (DPP) and sent with a report and recommendation to the City Council for action. Approval of the PRU along with a building and grading permit would allow the proposed ITC to proceed with construction.

²⁴ Land Use Ordinance, City and County of Honolulu, Section 21-2.120.

6.2.4 Special Management Area

Federal Coastal Zone Management (CZM) enforcement authority (Public Law 92-583), as amended, has been delegated to the state and enacted as HRS Chapter 205A. The Hawai'i CZM Program was promulgated in 1977 in response to the federal CZM Act of 1972. Other than the review of federal permit applications and federal activities, the state CZM review authority has been delegated to the county level through the Special Management Area (SMA) controls for development along the shoreline.

The project site for the ITC is located outside of the SMA and, therefore, is not subject to the SMA Rules and Regulations of the City and County of Honolulu.

6.3 **REQUIRED PERMITS AND APPROVALS**

The City through the DPP reviews and administers many different land use permits and approvals. The proposed project will require a Plan Review Use (PRU) approval from the City Council. The purpose of the PRU approval is to review uses of, among others, institutional nature, which provide essential community service but because, of its special characteristics, could also generate major adverse impacts on surrounding uses. The siting and design of such facilities and the screening and buffering of those uses must be master planned so as to minimize any adverse impact on other uses permitted in the zoning district.

The UHM's LRDP has served as the master plan for all new campus facilities including the proposed ITC. A PRU will be sought for the 2007 LRDP Update, or if time doesn't permit, a modification to the existing PRU approved for the previous LRDP will be requested for the ITC.

A National Pollutant Discharge Elimination System (NPDES) general permit from the State DOH will not be required since the construction area of the proposed ITC is less than one-acre in size.

The proposed building is located outside of the SMA, and therefore will not require a SMA Use Permit.

In applying for construction approval, a building permit and grading permit will be required from the DPP.

7 SUMMARY OF MAJOR IMPACTS

7.1 SHORT-TERM IMPACTS - CONSTRUCTION

7.1.1 Project Impacts

Heavy equipment and vehicles will be used during the site preparation stage of the project construction. The two existing portable office buildings and a portion of the existing parking lot will be removed to make way for the new ITC. The site will be excavated to a depth of approximately 12 feet for the building's foundation and basement cable vault, and to a lesser depth for the service utility lines. Groundwater is not expected to be encountered. Any existing utility lines beneath the project site will be realigned or relocated. Project engineers are in contact with the utility owners and will be coordinating construction so no interruption of utility services occurs. Soil from the excavation work will be taken off-campus to a City-approved land fill.

Construction of the building will require cranes, dozers, backhoe, dump trucks, flatbed trucks, loaders, concrete trucks, and diesel power generators. The building will be constructed of concrete, steel, and glass. The majority of the construction crew is expected to be on duty during the building construction phase.

Dust and noise are expected to be generated during construction. Construction equipment will be stored on-site to minimize off-site mobilization, which normally involves transporting of supply equipment on the local roadways between the project site and construction yard or building suppliers.

Landscaping will occur during the last stage of construction. When construction is completed, all construction debris and waste materials will be removed from the site.

Potential runoff and sedimentation from the construction area to adjacent sites in the University campus are likely to occur, but only during heavy rainfall. Existing storm water collection systems are located within the project area.

7.1.2 Cumulative Impacts

The UHM is moving forward with its plans for the renovation and expansion of the existing campus center. Renovations on Hemmenway Hall are scheduled to start before the end of 2009, and renovation and expansion of the campus center are scheduled for 2010.

The projected timeframe for the construction of the ITC could coincide with the campus center construction work. The projects are located near to each other between Campus Road/McCarthy Mall and Dole Street. They are separated by Miller Hall, the Art Building, and Bilger Addition, a distance of just over 500 feet. Construction vehicles would likely use Correa Road to access either project sites. Should construction of the campus center and ITC occur at the same time, Correa Road could experience the combined effect of slow traffic from the two projects.

Construction noise will be generated at each site and the combined effect would be most experienced by the buildings between the two properties.

Construction dust will occur but will be most obvious during the site preparation stage. Notably, the predominant wind direction is northeast to southwest. This wind pattern would take fugitive dust away from the two buildings.

Planning has proceeded with the expansion of the Performing Arts Center at Kennedy Theater, but construction may not commence for several years. Design and construction monies are still needed and must be obtained before any construction schedule can be established. At this time, the expansion of the Performing Arts Center is not expected to be a cumulative effect for the ITC.

7.2 LONG-TERM IMPACTS – ITC OPERATIONS

7.2.1 Project Impacts

When construction of the new ITC is completed, occupation and long-term use of the facility will occur. ITS operations from eight on-campus locations will be relocated to their new quarters in the ITC building. The vacated spaces will be filled by pent-up demand from other University departments and offices. Such demands have included the need for additional classrooms and research labs. The occupants of the portable buildings would move to one of the vacated spaces.

The new ITC will include only operations from on-campus relocated IT Services. No off-campus IT Services will move to the new ITC. Hence, no increase in IT personnel is expected, no increase in commuter traffic to the UHM campus is projected, and no increase in demand for students services is anticipated.

A total of up to approximately 79 parking stalls would be lost with the construction of the new ITC. These stalls are presently available to University faculty members for a fee. Renters of the stalls would need to find parking in other parking lots within the UHM campus, some of which may not be in convenient proximity to the renter's work place or place of destination. The loss of these lots would also mean a lost of income from parking fees paid on these spaces.

Although parking will be lost in the project area, a formal landscaped pedestrian pathway will be constructed in its place. This addition will be consistent with the LRDP's objective to establish the central campus of UHM as more pedestrian oriented. A major component of the plan is to convert Scientific Pathway into a dedicated pedestrian way, and Correa Road from the Kennedy Theater parking area to the Campus Center into a major pedestrian mall.

The ITC and its landscaped grounds will require maintenance and upkeep. According to preliminary estimates, approximately 7 or 8 new positions in building and landscape maintenance would be required for the work. These positions would be with the University and not under an independent private contractor.

Operations of the new building will result in a net increase in water use, wastewater collection and disposal, telephone service, and electricity for the University, even if they are relocated operations. The new building represents an additional campus facility subject to increased use of the University's utility system.

7.2.2 Cumulative Impacts

The ITC constitutes a single-phase project which is not expected to be followed by an expansion or phase two improvement. It is, however, one of several projects planned in the LRDP. The LRDP, which was adopted by the University Board of Regents, represents an overall campus planning guideline for development of UHM over the next 5 to 10 years. The cumulative impact from the development of these projects is to be assessed in an EIS or EA for the implementation of the LRDP.

8 PROPOSED MITIGATION MEASURES

Mitigation Measures for Short-Term Impacts

Mitigation measures will be employed by the construction contractor to minimize short-term, project-generated impacts on the surrounding environment. These temporary impacts are generally associated with project construction activities.

To address potential runoff and sedimentation that might occur on adjacent campus facilities, the contractor will develop a best management practices (BMP) plan for City and County review. The plan will describe how on-site generated runoff and sediment movement will be controlled and prevented from entering other campus facilities, and how the applicant will implement the plan. The plan will not be approved unless the applicant first meets all of the excavation and grading standards that are designed to safeguard life and limb, protect property, promote public welfare, and preserve and enhance the natural environment.

Groundwater is not expected to be encountered during the project's excavation and grading operations. Hence, it would not be necessary to address concerns regarding discharges to subsurface State waters.

In order to control dust generated by earthwork on the construction site, mitigation measures such as the installation of dust screens, covering of dirt stockpiles, and sprinkling of water on exposed dirt areas, would be employed. Since a variety of campus facilities occur in the project vicinity, construction-generated dust will be closely monitored and proper mitigation measures will be employed and adjusted as necessary.

Construction noise will also occur during construction. To mitigate its impact on adjacent buildings and their occupants, various measures could be employed. Muffler devices would be used, as much as possible, on all heavy noise-generating equipment. If possible, the portion of construction work generating high-level noise would be scheduled during the slowest day or week times of student classes and activities. Construction activities will comply with the Hawaii Administrative Rules (HAR), Chapter 11-46, Community Noise Control. Compliance with this DOH regulations will be part of the project's construction contract and the responsibility of the contractor.

No archaeological sites occur on the project site. Should any unexpected archaeological features be uncovered during construction, all work within the immediate area will be halted and the State Historic Preservation Division (SHPD) will be contacted for proper treatment. Work will not resume in the area until authorized by the SHPD.

All solid waste or debris generated within the property during construction will be collected and hauled away by the contractor to the City and County's landfill or authorized commercial disposal site.

Construction vehicle use of Correa Road which transports material and supplies to the ITC site could be scheduled for non-peak hour times to reduce as much as possible conflicts with UHM staff and students' use of the road. Further, traffic monitors could be used to direct and manage traffic in and around the project area.

Mitigation Measures for Long-Term Operational Impacts

As described in Chapter 7.2, long-term impacts are expected to occur during the operations stage of the ITC. Mitigative measures will be employed to reduce or minimizes these impacts. As a goal to be a leader in using sustainable and green building concepts, the University is designing the new ITC to attain LEED NC Silver Certification or higher. The building will incorporate a variety of environmentally-sensitive features including water conservation and energy-saving devices in its design.

The designers of the ITC are proposing to minimize the use of potable water by capturing rainwater that falls on the building's roof and using it for irrigation. Further, low water-use plants, including native and drought-tolerant species, would be used in the landscaping. This type of planting treatment would make drip irrigation possible.

Within the building, low-flow water fixtures would be installed, wherever practical.

Energy saving measures such as daylighting, passive ventilation, envelope insulation, prevent of direct solar heat gain, and use of energy star equipment would be employed. These measures would eliminate unnecessary energy consumption and reduce energy costs.

Hardscape on the ground will be comprised of permeable paving allowing more percolation or infiltration of surface runoff into the ground. This design feature will help reduce the volume of surface runoff that might be generated by impervious surfaces in the project area.

Standard mitigative measures for normal building operations will also be employed. Mechanical and electrical equipment will be enclosed in penthouses or mechanical rooms to screen views from below.

The building's rooftop chillers and backup generators will also be enclosed. Noise impact from these equipment will be mitigated by their enclosures' acoustical louvers and interior sound absorption materials.

In planning for the University's increased parking needs, the LRDP projects a demand for approximately 1,700 new parking stalls and has identified 7 alternative parking areas or structures around the UHM campus. The nearest parking facility to the ITC, and the one with the highest priority among the other planned parking areas, is a 480-stall parking structure that would be built between Kennedy Theater and Physical Science Building. Formal planning and design of the structure have yet to begin, and construction funding must be obtained from the State Legislature for it to move into implementation.

9 ALTERNATIVES CONSIDERED

9.1 No Action

The University identified the need for a central IT Services facility more than 15 years ago. If the new ITC were not constructed, the University would continue to operate an inefficient and inadequate IT Services infrastructure for its state-wide system. It would continue to lack a large, high-quality computer lab that was open to the entire campus on a 24-hour, 7 days a week basis. There would be no dedicated video-conferencing center or campus-wide access to advance collaboration environments such as the Access Grid. Without the ITC, there would be no dedicated IT training facility for faculty and staff, no support for visualization technologies used in modern research, and no "project" space for ad-hoc projects involving multi-unit collaboration.

No action on the new ITC would result in the continuation of existing conditions at the project site. The proposed ITC site would remain as is. There would be no change in land use; the portable buildings would continue to occupy the site and accommodate their existing occupants. The parking area would be retained and the informal pedestrian access would continue through the parking lot mixing with vehicular traffic.

9.2 UPGRADE OF EXISTING INFORMATION TECHNOLOGY SERVICES FACILITIES

Updating and expanding the information technology services facilities at their eight existing locations would require an upgrade not only to the IT equipment, but to its equipment housing and infrastructure. Some of these housings are antiquated and not worth updating. Some of the housings do not have dual building entrances which are standard provisions for telecommunication facilities. Most have inadequate primary electrical power and air conditioning, and none have back-up power in the event of power outages. These outages, notably, are occurring more frequently because of the buildings' age. Additionally, to upgrade the individual ITS facilities would still result in an inherent inferior network that produces duplication of certain operations and support infrastructure.

9.3 ALTERNATIVE LOCATION

The location of the currently proposed ITC is ideal for its proximity to the predominant facilities of UHM, as well as its access to critical existing infrastructure. Consideration of alternative sites within the UHM campus was severely constrained by the number of available sites. This limitation made site selection very quick, and resulted in no in-depth site evaluation and selection process. Even when an alternative site was available, it would be of insufficient size, have inadequate access, be incompatible with surrounding uses, or be environmentally incompatible.

9.4 ALTERNATIVE BUILDING DESIGN

Alternative building concepts were explored before the current design was selected. Earlier designs included a larger building, a building with curvilinear forms and ground level pedestrian passageway, and a building that attached to Bilger Addition.

The current ITC design demonstrates sensitivity to visual impacts. It considers spatial relationship to adjacent buildings, functionality of interior spaces and its relationship to the exterior building design, and design features of a green building. A high priority for the new ITC is to attain LEED NC Silver Certification or higher. A number of water conservation, energy saving, and other sustainable features will be incorporated into the building design.

10 PRELIMINARY DETERMINATION

This EA demonstrates that the proposed action will have no significant adverse impacts on the environment and that an Environmental Impact Statement (EIS) would not be warranted. Therefore, a FONSI is anticipated for this project.

11 FINDINGS AND REASONS SUPPORTING DETERMINATION

The following findings and reasons indicate that the proposed action will have no significant adverse impacts on the environment based on the 13 significance criteria as provided in HAR 11-200-12.

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

Alternative designs were considered in determining the best design for the proposed ITC in order to avoid or minimize impacts that would result in significant losses or destruction on the area's natural and cultural resources.

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

The proposed ITC is identified in the UHM LRDP and has been a major part of the University's vision for the campus. No other uses are intended for the area. The proposed facility would not curtail future beneficial uses of the site.

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.

As demonstrated in Chapter 6.1.4 of this document, the proposed action is consistent with the state's long-term environmental policies and guidelines as expressed in HRS Chapter 344.

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

The proposed project is expected to sustain, improve, and have positive economic effects on a higher education facility which provides many benefits to its community. The construction activity associated with the proposed project will mobilize existing labor forces and generate an infusion of business and personal income into the local economy. No negative effects on the social welfare of the local community are anticipated.

5) Substantially affects public health.

The proposed project will not result in the use of hazardous materials or construction methodology that would be detrimental to the public health and safety of the University community and its area residents. Existing State DOH regulations protect air and water quality in the area. Construction noise will be minimized through compliance with HAR Chapter 11-46, Community Noise Control.

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

There will be no significant adverse social impacts generated by the proposed action. Occupants of the new ITC will come primarily from existing on-campus facilities so the impact on outside public facilities and utilities would not significantly change.

7) Involves a substantial degradation of environmental quality.

The proposed building will occur within the existing UHM campus and will be in character with the other buildings in the project vicinity. It will serve the University's mission and operate as a vital function for the University's system. The site's urban setting is conducive to the proposed facility.

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

The current design for the ITC represents the complete facility. No expansion plans or additions to the building are being contemplated. The University is not making any further commitments to enlarge the project beyond the present plans.

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

A review of existing natural resources in the project area indicate that no federally- or state-listed rare, threatened, or endangered wildlife or flora species will be negatively affected by the proposed project.

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

The anticipated impacts associated with project construction, such as dust, noise, and possible erosion and sedimentation, are short-term and temporary. These impacts would be minimized by the implementation of best management practices and mitigation measures in accordance with applicable laws, statutes, ordinances, and rules and regulations of the federal, state, and county governments.

Long-term operations of the ITC are not expected to have detrimental affects on air or water quality or ambient noise levels.

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

The ITC site is located more than 1-1/2 miles from the shoreline and more than 800 feet from Mānoa Stream. It is not in an environmentally sensitive area subject to major floods, severe erosion, and unique geological hazards.

12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed ITC will be located within the UHM campus. It will not be noticeably visible from any adjacent city streets. The proposed building will not interfere with the mauka-makai view corridors identified in the City's PUC Development Plan.

13) Requires substantial energy consumption.

Although operations in the new ITC will require the use of energy 24-hours a day, the building is being designed to achieve LEED NC Silver Certification or higher which incorporates the use of sustainable resources and optimization of energy performance. Design strategies for the ITC presently include daylighting (minimizing use of electric

lighting), passive ventilation, envelope insulation, direct solar heat gain prevention, and energy star equipment use. The intent of these strategies is to eliminate unnecessary energy consumption and reduce energy costs.

12 **REFERENCES**

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APPENDICES

APPENDIX A

Letters Received During Early Consultation Period





August 11, 2008 PN: 0096

Glen T. Koyama Belt Collins Hawaii Ltd. 2153 North King Street, Suite 200 Honolulu, HI 96819

Dear Mr. Koyama:

Environmental Assessment Preparation Notice Proposed Information Technology (IT) Services Building for the University of Hawaii Honolulu, Hawaii

The University of Hawaii proposes to consolidate its information technology (IT) services currently located at eight locations on and off its Manoa campus. This consolidation of facilities will enable the University to maintain efficient systems structure and to replace obsolete facilities it is presently using. The proposed IT Services building will be seven stories high and will be consistent with the existing Long Range Development Plan for the Manoa campus. The building will be located in a 12,500 square foot area on the east side of Bilger Hall in an area currently occupied by two wooden portables and a parking lot.

This review was conducted with the assistance of Karl Kim, Urban and Regional Planning; Olwen Huxley, Center for Smart Building and Community Design; Wallace Gretz, Facilities Management Office; Eric Yamashita, Space Information Systems Manager; and Ryan Riddle, Environmental Center. Our statement on this notice of intent does not represent an institutional position of the University of Hawaii.

We have several issues that we believe should be addressed in the forthcoming draft environmental assessment.

Aesthetics

The proposed building is very large and dramatic looking. It is essentially replacing one very small building on campus. Is all that space necessary? Will the building fit in with other buildings around it so that it doesn't detract from the surrounding area?

How will the new building impact the viewplane? Will existing view corridors be preserved?

August 11, 2008 Page 2

Office Space

The letter from Belt Collins states that the building will be used to consolidate eight different locations into one single location. What are these eight other spaces, and are they on or off the Manoa Campus? Will IT Services be giving up these spaces?

Since IT Services is a University Systems Office, will the move of off-campus IT Services offices include offices from other campuses? If yes, how will parking and traffic issues at Manoa be impacted. Can the pros and cons of leaving some of the ITS services where they are now located be discussed in the document.

Are the spaces in the new building being designed to best fit the needs of the occupants during the design phase, or are rooms being designed with a general IT purpose in mind?

Hazards Planning

The University is currently working on a system hazard mitigation plan, which includes a building structural risk and vulnerability component to withstand multiple hazards (earthquakes, hurricanes, tsunamis, floods, etc.). Being a new building and of great importance to the information infrastructure of the University, we would hope that the construction of such a building would take into account the issue of multihazard impact to the structure and infrastructure of the building.

The current thinking in security is to decentralize important resources rather than to centralize them to make them safe from potential disasters. In the case of the planned University ITS building it seems that it will consolidate all information technology functions in one building. We hope the DEA will discuss the relative merits of centralization versus decentralization in light of the potential for vulnerability to manmade or natural hazards. Does it make sense, "security-wise" to put everything in one building?

Carbon Footprinting

Given the University's commitment to being a leader in the field of carbon footprinting, a complete carbon footprinting should be prepared for the construction and operations of the building. The Manoa Climate Change Commission may be able to work on this with the consultant as the methodology is still in development.

Teaching/Research Mission

The University's primary mission is teaching and research. Classroom and lab space is in short supply. Will the new building have space for classrooms that can be used by departments around campus for instruction? If not, can the DEA discuss the use of resources to develop space for services, even important ones like IT Services, when there is a need for more classroom and lab space? August 11, 2008 Page 3

Technical Issues

Are setbacks sufficient and within the building code if the replacement of Physical Science building is considered at a later date?

Can the document provide an assessment of existing underground utilities including city-owned box storm drain? Will the construction of a new building impact the maintenance/easement access to these underground utilities.

Can the document evaluate and discuss how the fume hood exhaust stacks on the top of the adjacent Bilger Addition will impact the new building. Is there a danger of hazardous gases being expelled during an emergency finding their way into the proposed ITS building?

What is the impact of the new landscape design on the proposed Correa Mall, North-South Mall and vehicular turnaround?

There was a new generator installed to support IT Services' computing center in Keller Hall. Will this computing center and the new generator be moving into the new IT Services building?

Thank you for the opportunity to review this preparation notice for the draft environmental assessment.

Sincerely,

Peter Rappa Environmental Review Coordinator

cc: OEQC James Moncur, WRRC Wallace Gretz Eric Yamashita Karl Kim Olwen Huxley Ryan Riddle

LINDA LINGLE GOVERNOR OF HAWAII





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2008 SEP 15 PM 2: 44

CHARPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT RUSSELL Y. TSUJI FIRST DEPUTY KEN C. KAWAHARA

LAURA H. THIELEN

AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES BIFORCEMENT ENGINEERING FORESTLY AND WILDLEF HISTORIC PRESERVATION 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

September 11, 2008

Mr. Glen T. Koyama Belt Collins Hawaii Ltd. 2153 North King Street Honolulu, HI 96819-4554

LOG NO: 2008.3319 DOC NO: 0808ST19 Architecture Archaeology

Dear Mr. Koyama:

SUBJECT: Chapter 6E-8 (HRS) Review **Proposed Information Technology (IT) Services Building - Environmental** Assessment University of Hawaii at Manoa – Long Range Development Plan Honolulu, Island of Oahu, Hawaii TMK: (1) 2-8-023:003

This is in regards to the submittal received July 21, 2008 for the proposed construction of an Information Technology (IT) Services Building at the University of Hawaii at Manoa that is listed on the State Register of Historic Places (3/19/1984 and 8/24/1984).

Architecture Concerns

We are not able to make a determination at this time. The proposed work for this project constitutes a possible "effect to historic properties," as such, proper measures will need to be taken to document and evaluate the historic significance of structures in the immediate area. We require the following additional information:

- . Photographic documentation (digital is acceptable) of the immediate area/adjacent buildings; and
- A completed historic resources inventory survey that assesses the integrity of existing and potential historic properties.

Archaeology Concerns

We believe it is possible that archaeological sites and/or previously-disturbed archaeological sites may be present in the subsurface deposits of the subject parcel. Ground-altering work associated with the proposed undertaking may have an effect on any historic properties which are present in the subsurface deposit. We believe any effect may be mitigated through a program of precautionary archaeological monitoring. Therefore, we recommend the following condition be attached to the subject environmental assessment:

Mr. Glen T. Koyama Page 2

- A qualified archaeological monitor or monitors shall be present during all ground-altering activities conducted in the project area in order to document any historic properties which may be encountered during the proposed undertaking and to provide mitigation measures as necessary. An archaeological monitoring plan will need to be submitted to the SHPD for review and acceptance, prior to the commencement of any ground-altering specifications: (1) The kinds of remains that are anticipated and where in the construction area the remains are likely to be found; (2) How the remains and deposits will be documented; (3) How the expected types of remains will be treated; (4) The archaeologist(s) conducting the monitoring has (have) the authority to halt the construction in the immediate area of the find in order to carry out the plan; (5) A coordination meeting between the archaeologist and construction crew is scheduled, so that the construction team is aware of the plan; (6) What laboratory work will be done on remains that are collected; (7) A schedule of report preparation; (8) Details concerning the archiving of any collections that are made; and (9) An acceptable report documenting the finding s of the monitoring activities shall be submitted to the SHPD for review upon 180 days following the completion of the proposed undertaking.
- 2) Please notify our Oahu offices, via facsimile, at onset and completion of the project and monitoring program.

Thank you for the opportunity to comment. Should you have any questions regarding architectural concerns, please call Susan Tasaki and regarding archaeology concerns, please call Teresa Davan in our Oahu office at (808) 692-8015.

Sincerely,

Astrid ME liveraland

Astrid M.B. Liverman, Ph.D. Architecture Branch Chief
PHONE (808) 594-1888

1 .



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

HRD08/941

FAX (808) 594-1865

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2008 AUG 12 PM 2: 24

BELT COLLINS HAWAII

August 6, 2008

Glen T. Koyama Belt Collins Hawai'i Ltd. 2153 North King Street, Suite 200 Honolulu, HI 96819-4554

RE: Pre-consultation for the Environmental Assessment for the proposed Information Technology Services Building for the University of Hawai'i, Mānoa, O'ahu, TMK: (1) 2-8-23:03.

Aloha e Glen T. Koyama,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated July 18, 2008. The University of Hawai'i proposes to build a seven-story high building on a 12,500-square-foot property on its main Mānoa campus. The building will house all of its information technology services located at eight locations. OHA has reviewed the project and offers the following comments.

OHA requests that a comprehensive archaeological inventory survey for the project area be conducted and submitted to the Department of Land and Natural Resources – Historic Preservation Division for review and approval. OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey. Consideration must also be afforded to any individual accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, section 7.

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

In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place. Glen T. Koyama August 6, 2008 Page 2

Further, OHA notes that the subject land is designated as Section 5(b) Ceded Lands, which hold a considerable amount of sentimental, historical and legal significance for Native Hawaiians and OHA. These lands were illegally taken from the Hawaiian Kingdom after the 1893 overthrow and later transferred ("ceded") by the United States government to the State of Hawai'i upon statehood. Today, the state holds the Ceded Lands corpus in trust for Native Hawaiians and the general public. OHA requests that the Ceded Lands status of this property be indicated in the Environmental Assessment to better inform the public review process of this document.

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

'O wau iho nō me ka 'oia'i'o,

alyan Nos

Clyde ₩. Nāmu'o Administrator

DEPARTMENT OF PLANNING AND PERMITTING

CITY AND COUNTY OF HONOLULU RECEIVED

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813 TELEPHONE: (808) 768-8000 • FAX: (808) 527-6743 INTERNET: www.honolulu.gov • DEPT. WEB SITE: www.honoluludpp.org

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BELT COLLINS HAWAI

DAVID K. TANOUE DEPUTY DIRECTOR

2008/ELOG-1794(LK)

MUFI HANNEMANN



August 5, 2008

Mr. Glen T. Koyama Belt Collins Hawaii Ltd. 2153 North King Street, Suite 200 Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Pre-Assessment Consultation University of Hawaii at Manoa 2444 Dole Street - Manoa Tax Map Key 2-8-23: 3

This is in response to your July 18, 2008 letter requesting comments on the proposed 7-story Information Technology (IT) Services Building located on the east side of Bilger Hall and offer the following preliminary comments:

- 1. The applicant should explain how the proposal is consistent with the Long Range Development Plan (LRPD) for the Manoa campus approved under the Plan Review Use (PRU) Permit No. 88/PRU-3 (Resolution No. 89-411, CD-2). If the proposal is not consistent with the project approved under the PRU permit, a modification of the permit will be required. Whether the proposal represents a major or minor modification to the PRU permit will be determined when the additional information is submitted for review.
- 2. You indicated that the proposed building will be located in an area presently occupied by two (2) temporary office buildings and a parking lot. The applicant should indicate the number of parking stalls to be removed, and the number and location of the replacement stalls.

If you have any questions, please contact Lynne Kauer of our staff at 768-8016.

Very truly yours,

Henry Eng, FAICP, Director
 Department of Planning and Permitting

HE:cs g:\landuse\posseworkingdirectory\lkauer\08lg1794.doc DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Uluchia Street, Suite 215, Kapolei, Hawaii 96707 Phone: (808) 768-3343 • Fax: (808) 768-3381 Website: www.honolulu.gov RECEIVED

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BELT COLLINS HAWAII CRAIG I. NISHIMURA, P.E. DIRECTOR AND CHIEF ENGINEER

> GEORGE "KEOKI" MIYAMOTO DEPUTY DIRECTOR

IN REPLY REFER TO: DRM 08-653

MUFI HANNEMANN MAYOR



August 12, 2008

Mr. Glen T. Koyama Belt Collins Hawaii Ltd. 2153 North King Street, Suite 200 Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Environmental Assessment (EA) Proposed Information Technology (IT) Services Building for the University of Hawaii Honolulu, TMK: (1) 2-8-23:03

Thank you for the opportunity to provide input on the proposed Information Technology Services Building for the University of Hawaii. We have no comments to offer at this time.

Should you have any questions, please contact Larry Leopardi, Chief of the Division of Road Maintenance, at 768-3600.

Sincerely,

Craig I. Nishimura, P.E. Director and Chief Engineer

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

Phone: 808-723-7139

636 South Street Honolulu, Hawaii 96813-5007 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

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KENNETH G. SILVA FIRE CHIEF

ALVIN K. TOMITA DEPUTY FIRE CHIEF

MUFI HANNEMANN MAYOR

100



August 5, 2008

Mr. Glen Koyama Belt Collins Hawaii Ltd. 2153 North King Street, Suite 200 Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Environmental Assessment Proposed Information Technology Services Building University of Hawaii Honolulu, Oahu, Hawaii Tax Map Key: 2-8-023: 003

In response to your letter of July 18, 2008, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material provided and requires that the following be complied with:

- Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed and moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from fire apparatus access as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)
- 2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire Mr. Glen Koyama Page 2 August 5, 2008

apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

3. Submit civil and construction drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,

thund s. Set

KENNETH G. SILVA Fire Chief

KGS/SK:bh

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU 630 SOUTH BERETANIA STREET HONOLULU, HI 96843



MUFI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman SAMUEL T. HATA ALLY J. PARK ROBERT K. CUNDIFF MARC C. TILKER

CRAIG I. NISHIMURA, Ex-Officio BRENNON T. MORIOKA, Ex-Officio

CLIFFORD P. LUM Manager and Chief Engineer

DEAN A. NAKANO Deputy Manager and Chief Engineer

Mr. Glen T. Koyama Belt Collins Hawaii, Limited 2153 North King Street, Suite 200 Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Your Letter Dated July 18, 2008 on the Environmental Assessment for the Proposed Information Technology (IT) Services Building for the University of <u>Hawaii, TMK: 2-8-23:3</u>

Thank you for the opportunity to comment on the proposed development.

The existing water system is presently adequate to accommodate the proposed IT Services Building. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

The proposed project is subject to Board of Water Supply cross-connection control and backflow prevention requirements prior to issuance of the Building Permit.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

KEITH S. SHIDA Program Administrator Customer Care Division

August 20, 2008

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Mr. Glenn T. Koyama Belt Collins Hawaii Ltd. 2153 North King Street - Suite 200 Honolulu, HI 96819-4554

Dear Mr. Koyama:

Re: Proposed IT Services Building for the University of Hawaii Honolulu, Oahu TMK: (1) 2-8-23: 03

Thank you for the opportunity to comment on the above-referenced project. Hawaiian Electric Company, Inc. (HECO) has no objections at this time. The following comments were received from our Engineering Department.

(1) <u>Transmission & Distribution (Lisa Ikeda, 543-7977)</u>. HECO currently has no existing facilities within the subject project. We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review.

Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.



Mr. Glenn T. Koyama August 20, 2008 Page Two

(2) <u>Project Management (Kerstan Wong, 543-7059)</u>. In the event that new facilities are required to serve this project, a brief description and environmental analysis of such requirements should be included in the draft/final EA.

To coordinate HECO's continuing input in this project, I suggest dealing directly with the points of contact previously noted above. Thank you again for the opportunity to comment.

Sincerely,

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Kirk S. Tomita Senior Environmental Scientist

cc: M. Lum/W. Hayakawa K. Wong



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BELT COLLINS HAWAII

August 6, 2008

Belt Collins Hawaii, Ltd. 2153 North King Street, Suite 200 Honolulu, Hawaii 96819-4554 Attention: Mr. Glen T. Koyama

Dear Mr. Koyama:

Subject: Environmental Assessment Proposed Information Technology (IT) Services Building for the University of Hawaii, Honolulu, Hawaii TMK: (1) 2-8-23:07

Thank you for the opportunity to review and comment on the subject project in preparation of the Environmental Assessment.

Hawaiian Telcom does not have any comments to offer at this time. Please continue to include us during the design stages of the project.

If you have any questions or require assistance in the future on this project, please call Les Loo at 546-7761.

Sincerely,

lynite your

Lynétte Yoshida Section Manager - OSP Engineering Network Engineering & Planning

cc: File [Punahou]

APPENDIX B

Cultural Impact Assessment

Cultural Impact Assessment for the Proposed Information Technology (IT) Services Building for the University of Hawai'i at Mānoa Waikīkī (Mānoa) Ahupua'a, Kona (Honolulu) District O'ahu Island TMK [1] 2-8-023:003

> Prepared for Belt Collins Hawai'i Ltd.

Prepared by Lehua Ka'uhane, B.A., Randy Groza, M.A., Lisa Gollin Ph.D., and Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi (Job Code: MANOA 21)

January 2009

O'ahu Office P.O. Box 1114 Kailua, Hawai'i 96734 Ph.: (808) 262-9972 Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office 1993 Main St. Wailuku, Hawai'i 96793 Ph: (808) 242-9882 Fax: (808) 244-1994

Management Summary

Reference	Cultural Impact Assessment for the Proposed Information Technology (IT) Services Building for the University of Hawai'i at Mānoa, Waikīkī (Mānoa) Ahupua'a, Kona (Honolulu) District O'ahu Island, TMK [1] 2-8-023:003
Date	January 2009
Project Number	Cultural Surveys Hawai'i (CSH) Job Code MANOA 21
Project Location	The proposed project area is within the central portion of the University of Hawai'i at Mānoa campus. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and by Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle.
Land Jurisdiction	State of Hawai'i
Agencies	State of Hawai'i Department of Health, Office of Environmental Quality Control (OEQC); State of Hawai'i Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD)
Project Description	The University of Hawai'i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of an existing parking lot.
Project Acreage	Approximately 0.3 acres
Area of Potential Effect (APE)	The Area of Potential Effect (APE) is the same as the project area, i.e., the approximately 0.3-acre footprint of the proposed project. While this investigation focused on the project APE, the study area included the entire approximately 304-acre UH Mānoa campus, in the wider cultural and natural context of Mānoa Valley.
Document Purpose	The project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices and resources. CSH undertook this Cultural Impact Assessment (CIA) at the request of Belt Collins Hawai'i Ltd. Through document research and cultural consultation efforts, this report provides information pertinent to the assessment of the proposed project's impacts to cultural practices and resources (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules Chapter 13-275.
Community	Hawaiian organizations, agencies and community members were
Consultation	contacted in order to identify potentially knowledgeable individuals

Cultural Impact Assessment for the Proposed IT Services Building for UH Mānoa

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Results	with cultural expertise and/or knowledge of the project area and the vicinity. Organizations and members/representatives of these organizations consulted included the SHPD, the Office of Hawaiian Affairs (OHA), Hui Mālama I Nā Kūpuna o Hawai'i Nei, and faculty members of the Hawai'inuiākea School of Hawaiian Knowledge. Background research conducted for this project yields the following results:
	 (1) Given its abundant natural resources—including several tributary streams that feed into the main stream and several pūnāwai (fresh-water springs)—Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O'ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley. (2) Mānoa is exceedingly rich in places names, wahi pana (legendary or storied places) and associated mo'olelo (oral histories), reflecting the valley's elevated cultural and historical significance to Hawaiians, in particular. Important mo'olelo focus on Mānoa's many pūnāwai, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'6'ō Heiau, Punahou (a.k.a. Kapunahou), Ka'aipū, Wa'aloa and Waiakeakua. The valley is also home to many pu'u (hills, mountains), peaks, ridges and caves—all with associated with a variety of other mo'olelo, including "Pīkoi the Rat Killer," "Maluae and the Underworld," and "The Woman Who Died and Came Back to Life;" as well as famous events and people of the early historic era, including Kamehameha I, Ka'ahumanu and Boki. (3) The archaeology of lower Mānoa is somewhat problematic in that most of the campus was developed before historic preservation awareness and laws were in place; thus many or most surface sites and features once present in the project area

Cultural Impact Assessment for the Proposed IT Services Building for UH Mānoa

have	been destroyed and/or damaged by being
covered	ed with sediments and structures. Before
these	historic impacts, however, the campus
undou	btedly contained a patchwork of gardens,
includ	ing many <i>lo'i</i> (pond fields) and <i>'auwai</i>
(irriga	tion ditches), and house sites, including many
small	stone enclosures, terraces and platforms.
Undou	abtedly, there are still subsurface cultural
depose	ts within the campus containing significant
histori	c and cultural resources.
(4) The pr	oposed IT Building is located within the <i>'ili</i>
of Pua	hia. Like much of the area located to the east
of Ha	twai'i Hall, the project area was under
intens	we agricultural cultivation prior to the
develo	opment of the UH Mānoa campus in the early
half of	the 1900s. In 1911 there were still 7 groups
of Ha	waiian "squatters" living in Puahia. At least
one of	those groups was actively cultivating land at
the tim	the. These groups were evicted that same year.
(5) Burials	thave been documented near Keller Hall,
approv	timately 100 meters northwest of the project
area at	and along Dole Street, immediately adjacent to
the Ki	inewai Cultural Garden and Kamakūokalani
Center	for Hawaiian Studies, 600 meters southwest
of the	project area. The latter burials, representing
the re	mains of at least 18 individuals, have been
interpr	eted as a traditional Hawaiian cemetery. It is
likely	that more burials are located in subsurface
deposi	ts within the campus.
Community cons following main co impacts:	ultation conducted for this project yields the oncerns and suggestions regarding potential cultural
(1) Four	participants voiced concern about the
possib	ility of encountering as-yet undiscovered
cultura	al and historic sites including, most
import	antly, human skeletal remains and burials in
subsur	face deposits. One participant (Dr. Davianna
McGre	egor) also pointed out that the burial site
preser	we near Keller Hall, which used to be marked
by a	ginger plant, is no longer being maintained
(i.e.,	the ginger plant is not there anymore).
Anoth	er participant (William Ailā) expressed a
prefer	ence for preservation in place if human

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 skeletal remains are found. (2) Four participants voiced concerns about future buildings and projects being more harmoniously designed and integrated into the natural surrounding and themes inherent to the valley. It is important to note that this type of concern is fundamentally a cultural one for Hawaiians, in particular, whose worldview and deeper philosophical spiritual beliefs are based on such concepts as <i>pono</i> (in this case, "right ways" of doing things) and <i>lōkahi</i> ("harmony"), among other related concepts (e.g., <i>mālama 'āina</i>, or "taking care of the land"). For example, Dr. Claire Hughes was concerned about the visual impact of the proposed building/s on open areas and the <i>mauka</i>-
 makai views of Mānoa Valley. (3) Four participants talked about the importance of using native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of mālama 'āina.
 (4) Four participants talked about the importance of understanding and incorporating Hawaiian- language words, phrases and concepts that extends beyond the superficial (e.g., naming buildings).
(5) Four participants provided detailed accounts of well-documented mo'olelo, wahi pana and other cultural sites in Mānoa.
(6) Three participants called into question the State's (i.e., Department of Land and Natural Resources, Historic Preservation Division) poor record of protecting and preserving important cultural sites in Mānoa, including <i>heiau</i> that have been damaged or compromised by recent construction projects
 (7) Dr. McGregor also pointed out that there are many significant and commemorative trees on campus that should be systematically catalogued in order to ensure their protection during future development of the campus
 (8) OHA seeks clarification on whether a comprehensive Archaeological Inventory Survey (AIS) will be conducted and submitted to SHPD for review for the proposed action. Should an AIS be conducted for the project, OHA requests the opportunity to review the AIS and, "to comment on

Cultural Impact Assessment for the Proposed IT Services Building for UH Mānoa

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	 the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey." (9) OHA pointed out the significance of "Ceded Lands" to many Hawaiians because of its status as Hawaiian Crown and Government Lands and suggested that the status of the property be identified in the Environmental Assessment (EA). There is currently no comprehensive Ceded Lands inventory. According to OHA, as parcels are subdivided or consolidated, their Ceded Lands status can—and often does—get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands inventory is finally conducted. TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory.
Recommendations	 Based on the archival and community consultation findings of this CIA, it appears that the proposed development will have minimal impact on Hawaiian cultural resources, practices and beliefs. CSH recommends the following measures, which, if addressed in a good faith manner, will help mitigate any potentially adverse effects of the proposed project identified in this study: (1) The University should proactively develop a plan to avoid disturbing as-yet undiscovered burials and other historic and cultural properties and features located in subsurface contexts. Such a plan might include an AIS before the project begins in addition to cultural monitoring to be conducted during ground disturbance and construction activities. Decisions should be made in consultation with appropriate government agencies (e.g., SHPD, OHA) and Kānaka Maoli (Native Hawaiian) organizations and individuals. In particular, every effort should be made to proactively avoid inadvertent finds of human skeletal remains and burials. (2) The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian

Cultural Impact Assessment for the Proposed IT Services Building for UH Mānoa

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sense of place as will as furthering concepts such as mālama 'āina. Minimally, this should include (a) use of native and Polynesian-introduced plants for landscaping, and (b) integration of mo'olelo, Hawaiian language and other Hawaiian concepts and ideas that goes far beyond superficial application (e.g., building names) into design plans. (3) Project proponents should consult UH Mānoa's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area (http://www.hawaii.edu/bgm/landscaping/pdf/memo rialtrees.pdf). (4) Project proponents might consider including as background information in the EA that TMK: (1) 2-8-023:003 is on the DLNR's inventory of Ceded Lands. For verification of the project TMK as Ceded Lands, contact DLNR's Land Management Division. (5) Generally, it is recommended that project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UH Mānoa.

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Section 1 Introduction

1.1 Project Background

At the request of Belt Collins Hawai'i Ltd., Cultural Surveys Hawai'i, Inc. (CSH) prepared this Cultural Impact Assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai'i at Mānoa. The project area consists of a 12,500 square foot area (approximately 0.3 acres) on Correa Road within the central portion of the campus located in Mānoa [Waikīkī] Ahupua'a, Kona District, Hawai'i [TMK: (1) 2-8-023:003] (see Figures 1-3). The project area consists entirely of State of Hawai'i-owned land.

The project area is located in lower Mānoa Valley, bounded by the Mānoa, St. Louis Heights, Mō'ili'ili and McCully communities. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and by Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle (Figure 1).

The University of Hawai'i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of the existing parking lot (Figure 4).

1.2 Document Purpose

The project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. CSH undertook this CIA at the request of Belt Collins Hawai'i Ltd. Through document research and cultural consultation efforts, this report provides preliminary information pertinent to the assessment of the proposed project's impacts to cultural practices and resources (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules Chapter 13-275.

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Figure 1. USGS topographic map, Honolulu 1998 quadrangle, showing proposed project area

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Figure 2. Tax Map Key [1] 2-8-023:003 showing proposed project area

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Figure 3. Aerial photograph showing proposed project area (source: USGS Orthoimagery 2005)

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Figure 4. Project plans showing proposed project location

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1.3 Scope of Work

The scope of work for this CIA includes:

- 1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
- 2. A review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities, and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
- 3. Consultation and interviews with knowledgeable parties regarding traditional cultural practices at or near the parcel; present uses of the parcel, and/or other (non-Hawaiian) practices, uses, or traditions associated with the parcel.
- 4. Preparation of a report summarizing the results of these research activities.

1.4 Environmental Setting

1.4.1 Natural Environment

Mānoa Valley was formed during the volcanic eruptions that formed the Ko'olau Mountains starting about 10 million years ago. This volcanic activity and the following erosion caused amphitheater-headed, deep V-shaped valleys on the southeast coast of O'ahu, which are separated by sharp, high ridges. The Ko'olau volcano reactivated approximately 250,000 years ago, pouring lava into the valley. This eruption built up new cones, including Pu'u 'Ōhi'a (Tantalus) in the upper valley, and lower down the smaller cones of Pu'u Kākea (Sugar Loaf), Pu'u 'Ualaka'a (Round Top) and Pu'u o Mānoa (Rocky Hill). The erupted lava cascaded down the western ridge of Mānoa Valley. This filled in the V-shaped valley, giving it a more rounded U-shaped appearance (Bouslog et al. 1994:4-5).

According to Foote et al. (1972), soils within the project area consist of Makiki Stony Clay Loam (MIA) (Figure 5). A notable feature of this clay loam is "that there are enough stones to hinder cultivation" making up 15% of the soil by volume (Foote et al. 1972:92). Basalt outcrops are common, and basalt or cinders are present 20 to 60 inches (50 cm to 150 cm) below surface.

The Mānoa sub-basin watershed covers 6,150 acres and 12 miles of stream. 'Aihualama, Waihī, Lua'alaea, Nāniu'apo, Wa'aloa, and Waiakeakua are the tributary streams in the upper valley that merge at an elevation of 400 feet into the main Mānoa Stream. Half-way down the center of the valley, the Sugar Loaf eruption has pushed the streambed to the extreme east of the valley. Before the construction of the Ala Wai Canal, the lower portion of the stream, called Kālia Stream, flowed in a westerly direction, then made a wide bend to the east where it joined the Pālolo Channel in the general vicinity of the present-day Date Street near the *mauka* side of the Ala Wai Golf Course.

Annual rainfall at the head of Mānoa Valley can reach up to 160 inches per year. At the lower boundary, rainfall is only 35 inches per year. The valley is often swept with strong winds that bring rain, including *ala'eli*, the "cool wind of the land," and *kākea*, a "stormy wind" (Bouslog et

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al. 1994:6). However, it is the Tuahine or Kuahine rain, a misty rain, for which the valley is most well known.

Before Hawaiian settlement, the slopes of Mānoa's ridges were probably covered with a dense forest, dominated by '*ōhi*'a lehua (Metrosideros macropus), koa (Acacia koa), and loulu (the native fan palm, Pritchardia spp.). The undergrowth would have included shrubs such as naupaka kuahiwi (Scaevola spp.), ferns such as hāpu'u (Cibotium splendens), 'ama'u (Sadleria spp.), and pala'ā (also known as palapala'ā, Sphenomeris chinesus syn. chusana), and vines such as 'ie'ie (Freycinetia arborea) (Bouslog et al. 1994:8). Mānoa, due to its broad, well-watered valley, was probably settled early by the Hawaiians, who probably cleared much of the lower areas near streams for wetland taro cultivation.

1.4.2 Built Environment

The entire UH campus has been developed with numerous buildings, facilities, and infrastructure. When Bilger Hall, adjacent to the project area, was completed in 1951, the land was within UH farmland (Kamins and Potter 1998:63). Currently, the project area contains two single-story wooden portable structures that appear on campus maps as the Bilger Annex.



Figure 5. Soils map showing proposed project area (data from Foote et al. 1972)

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Section 2 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the CSH library. Information on Land Commission Awards was accessed through Waihona 'Aina Corporation's Māhele Data Base (www.waihona.com). The State Historic Preservation Division, Office of Hawaiian Affairs, O'ahu Island Burial Council, and community and cultural organizations in Mānoa were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the authors' familiarity with people who live in or around the project area. The cultural specialist conducting research on this assessment employed snowball and judgment sampling methods, an informed consent process and semi-structured interviews according to standard ethnographic methods (as suggested by Bernard 2005). Some of the prospective community contacts were not available to be interviewed as part of this project. A discussion of the consultation process can be found in Section 6 on Community Consultations. Please refer to Table 3, Section 6 for a complete list of individuals and organizations contacted.

Section 3 Traditional Background

3.1 Overview

Mānoa is sometimes treated as a portion of the *ahupua'a* of Waikīkī and sometimes treated as a distinct *ahupua'a*. It seems rather unlikely, given its geographic location and its overall size and general physiography, that Mānoa was its own land-locked (i.e., separate from Waikīkī) *ahupua'a* in pre-Contact times. The well-known "Pre-Māhele Moku and Ahupua'a" map and study of 1987 by the Hawaiian Studies Institute, which shows "major land divisions of O'ahu prior to the *Māhele* of 1848," does not show Mānoa as its own separate *ahupua'a* (Figure 6). It seems unlikely that Mānoa's residents would not have enjoyed unencumbered access to the seashore in pre-Contact times, although this may have changed with the late 18^{th} century invasions of O'ahu from the windward islands (Maui and Hawai'i). Regardless, given its abundant natural resources—including several tributary streams that feed into the main Mānoa Stream and several *pūnāwai* (fresh water springs)—the valley has clearly been an attractive place to settle and garden for as long as people have lived on O'ahu (Figure 7).

At various times throughout this long history, Mānoa was home to kings and other highranking *ali'i* (chiefs), as described in legends, land records, early maps of Honolulu and other documents. Two chroniclers of historic Hawai'i talked about Kamehameha I's affinity for Mānoa:

The places Kamehameha farmed and the houses he lived in at those farms were show places. His farmhouses in Nuuanu stood several hundred fathoms away from the right side of Kapahala, a knoll on the western side of Nuuanu Street and Hanaiakamalama House. Perhaps the location was chosen to enable him to look both inland and seaward to his food patches. Some elevated houses seem to have been for that purpose. So it was with Puupueo [today known as Roundtop, on the west side of the valley], directly below Ualakaa. ('Ī'ī 1959:69)

Thrum also stated that Kamehameha often stayed in Mānoa Valley:

It is evident that Manoa has for several generations past, been held in high esteem by Hawaiians of rank. Kamehameha I was no stranger to the valley, and it early became the favorite resort of his immediate household and followers. (Thrum 1892:113)

This section begins by describing some of the many place names in the valley. Compared with other locations on O'ahu and the rest of the Hawaiian Islands, Mānoa is relatively rich in places names; this abundance of names—and their associated *mo'olelo* (oral histories) and legends—is a reflection of the valley's elevated cultural and historical significance to Kānaka Maoli (Native Hawaiians), in particular. For example, there are many *mo'olelo* and legendary accounts of Mānoa's *pūnāwai*, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai (location of the current Kānewai Cultural Garden), Hualani, Wailele (located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'ō'ō Heiau), Punahou (a.k.a. Kapunahou), Ka'aipū,

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Traditional Background



Figure 6. "Pre-Māhele Moku and Ahupua'a" map and study of 1987 by the Hawaiian Studies Institute showing Mānoa as part of Waikīkī Ahupua'a

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Figure 7. 1929 Photograph of the Inter-Island Airway's amphibian plane, Hawaii, passing over Mānoa Valley (Hawai'i State Archives)

Wa'aloa and Waiakeakua. The valley is also home to many *pu'u* (hills, mountains), peaks, ridges and caves—all with associated *mo'olelo* and legendary accounts; these include Wa'ahila Ridge (which defines the eastern border of the valley) and its six peaks [Keanapoi, Pu'u Pia, Pūkele, Paliluahine (also known as Kapaliluahine or Pali Luahine) Akāka and Kūmauna], 'Ulumalu, Pu'u Pueo ("Roundtop") and Pu'u Mānoa. Mānoa is also associated with a variety of other *mo'olelo* and legends, including "Pīkoi the Rat Killer," "Maluae and the Underworld," and "The Woman Who Died and Came Back to Life;" as well as famous events and people of the early historic era, including Kamehameha I (and his famous dog Poki), Ka'ahumanu and Boki (Governor of O'ahu under Kamehameha I and brother of Kalanimōkū).

3.2 Place Names

Translations presented without attribution in this subsection are from Pūku'i et al. (1974), unless indicated otherwise. Figure 8 shows some place names of Mānoa Valley from an 1882 map by E. D. Baldwin.

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The literal meaning of the word **Mānoa** is "vast," or "wide and vast" (Pūku'i cited in Sterling and Summers 1978:281). Along with Pauoa, Nu'uanu and Pālolo, Mānoa is one of the famous "valleys of the rainbow," as described in the legend of "The Lady of the Moon" (see below).

Place names for the many *pūnāwai* of Mānoa typically refer to the sacred nature of *wai* (fresh water), and stress the relationship between the water-giving gods (primarily Kane, but also his companion Kanaloa) and kānaka (people) whose lives depend on it. According to numerous accounts (e.g., Williams 1935), the kaona (hidden or more subtle meaning) for Kānewai (location of the current Kanewai Cultural Garden) is "the healing waters of Kane," reflecting a widespread traditional belief in its curative properties. According to Bouslog et al. (1994:134). Hualani means "dug up by heaven," but this interpretation may be problematic because the word for "to dig" (as in "dug up") is actually hua'i. According to Pūku'i and Elbert (1986), one of the primary meanings of hua is "fruit, tuber, egg, produce, yield, ovum, seed...[etc.]," which suggests a more accurate interpretation for Hualani Pūnāwai is something like "heavenly fruit" or "seed" or "fruit" or "seed of heaven." In any case, this is an evocative name for a pūnāwai. Wailele has been interpreted as "flying water" (Bouslog et al. 1994) or "waterfall" (Pūku'i et al. 1974), and can also mean something closer to "leaping water," based on one of the primary meanings of the word *lele*, as in a spring that bursts forth with water. **Punahou** means "new spring," and in some older references it is called Kapunahou (or "the new spring"). Ka'aipū, literally "the eating together," is associated with a famous "supernatural woman" who lived under a stone there (see several other oral-historical associations for this spring, below). Wa'aloa, "the long canoe," and Waiakeakua, "water [used] by god," are two more pūnāwai in Mānoa associated with many famous supernatural phenomena and events.

The five tributaries that fed into the main Mānoa Stream in the lower valley are: 'Aihualama (literally, "eat the fruit of the lama tree"), Waihī (literally, "trickling water"), Nāniu'apo (literally, "the grasped coconuts"), Lua'alaea (literally, "pit [of] red earth"), and Waiakeakua (literally, "water provided by a god").

The seven principal waterfalls in the back of Mānoa Valley are: Wai'ihī'iki (literally, "small trickling water"), Wai'ihī nui (literally, "big trickling water"), Lua'aulaea, Nāniu'apo, Wa'aloa, Kahuwai'iki (literally, "little water tender," as in one who takes care of the water) and Waiakeakua.

Some of the primary *pu'u*, ridges, peaks and caves include: **Wa'ahila** (which Pūku'i et al. 1974 do not define, but note is the name of a famous rain in the valley), **Keanapoi**, **Pu'u Pia** (literally, "arrowroot hill"), **Pūkele** (literally, "muddy"), **Paliluahine** (also known as Kapaliluahine or Pali Luahine), **Akāka**, **Kūmauna** (these latter two are associated with "The Princess of Mānoa" (Kahala-o-Puna), 'Ulumalu, Pu'u Pueo (literally "owl hill") and **Pu'u Mānoa**.



Figure 8. Outline of 1882 map by E. D. Baldwin, showing topographic points and traditional land units in Mānoa Valley

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3.3 Mo'olelo Associated with Specific Place Names

3.3.1 Mānoa, Pauoa, Nu'uanu and Pālolo

One version of the legend of "The Lady of the Moon" describes the natural phenomena of Mānoa:

Almost all day long the valley is open to the sun, which, looking on the luxuriant verdure and clinging mist, sends its abundant blessing of penetrating light. Rainbows upon rainbows are painted on the steep precipices at the head of the valley. There are arches of exquisite beauty, smashed fragments of scattered color, broad pillars of glorious fire blazing around green branches of ghost-like trees, great bands of opal hues lying in magnificent masses on the hillside, and lunar rainbows almost circular outlined in soft prismatic shades in the time of a full moon. (Irwin 1936:18)

When showers creep down the valley one by one, rainbows also chase each other in matchless symmetry of quiet, graceful motion. Sometimes the mist in the doorway of the valley has become so ethereal that splendid arches hang in the apparently clear sky without cloud support. (Westervelt 1963a:128)

3.3.2 Kane and the Fish of Manoa

After Kāne had created all of the springs of Mānoa, Kāne and Kanaloa were at Waikāne (on the northeastern shore of O'ahu), when Kanaloa asked Kāne to provide fish to the people of Mānoa. Kanaloa called upon his fish god Pōhaku-kū'ula to go out and drive the fish up Mānoa Stream. He also commanded Kukalia, the daughter of the *kahuna* of the *heiau* Kulumalu to wave her *lepa* (flag) as a signal to the fishermen when to lower the '*upena* (fishnet). Pōhaku-kū'ula first drove the fish up through the lands of Waikīkī, dropping the fishnet for the first time at Akuakekau to feed the people of Akuakekau and Kanaloa, and then to Makawiliwili where the net was dropped for the second time. This fish god continued to drive the fish inland into the lands of Mānoa to Kapilpili.

Then the fish came up to Kūkana, where Kukalia again signaled to drop the fishnet. When Kanaloa drew the net up, the fish were given to the chiefs of Kumu'ulu and their people. The fourth net was put down at Hipawai-that catch of fish being for the people of Pāmoa. Still the fish came, following the water course. When they arrived at Halelena, Kukalia, the ever-watchful sentinel, signaled to drop the fishnet; and that catch went to the people of Ka'aipū. The sixth catch was at Kalehua just as the evening star Hōkūloa was rising and the fish were given to Wa'aloa and the Kaululā'au chiefs. The number of fish had decreased, for the waterway was getting narrow, but Kukalia, the beautiful sentinel, kept signaling to Kanaloa to put down the seventh net. This was at Kukuio, a part of the Mānoa Stream where the fish came one by one. The fish came to Kahakiamano, then to Hopenui, where they began to be bewildered and excited. They swished back and forth and started up again in the excitement. They stayed there overnight and at dawn, just as the first red cloud broke over the mountain, the fish followed the water course up to Niuapō, then they spread, some

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going to Wa'aloa and Waiakekua, others turning to the swamp, called Lua'alae, or the Gulch of the Mud Hen, and on to Waihī, where most of the fish disappeared. (Bouslog et al. 1994:138)

After having provided the people of Mānoa with fish, the two gods traveled back to Konahuanui to rest. They started for home at Waihī, climbing the pathway of the 'Opihi at 'Aihualama and ascending the heights to Konahuanui, where they sailed for the east and above the clouds (Bouslog et al. 1994:137-138).

3.3.3 Pīkoi the Rat Killer

Another legendary beauty of Mānoa is described in the "Legend of Pīkoi the Rat Killer." In this tale, a chief on Kaua'i had eight children, six god daughters or demi-gods called $k\bar{i}ko$ 'o, who were rats ($k\bar{i}ko$ 'o is the name for the Hawaiian bow used to hunt rats), one kanaka daughter and one kanaka son. The kanaka son, Pīkoi, became a noted rat hunter on Kaua'i, using a bow and arrow to kill the rats. The kanaka daughter, named Ka-ui-o-Manoa ("The Beauty of Mānoa") moved to O'ahu and married the chief of Mānoa, Pāwa'a. They made their home in Mānoa Valley at Kahaloa and also had the land called Kaho'iwai. One day Pīkoi and his father decided to travel to O'ahu to visit their sister at Mānoa. While in O'ahu, Pīkoi wandered from Mānoa toward the harbor at Honolulu, and joined several ali'i in the sport of rat shooting. Pīkoi impressed a chiefess and her followers by shooting at a hidden rat, and striking and entangling the whiskers of three rats in one shot. He then proceeded to kill an additional number of rats in one shot, all strung along the length of the arrow.

The king of O'ahu, Kākuhihewa, heard about this boy and wanted to find him. Only the caretaker of the high chiefess had seen the boy and she suggested to the king that he command all of the men of O'ahu, each district for one year, to come to his residence at Ulukou in Waikīkī. In the sixth year it was the turn of Mānoa, and Pīkoi, his father, and Ka-ui-o-Mānoa made ready to travel to Waikīkī with other men of the lands of Mānoa, mentioned in the following passage.

She [Kauiomanoa] went from their home at Kahaloa, (a place in the upland of Manoa) to a spot called Kaho'iwai. There she made four lehua leis, two for the neck and two for the head and went home. They made ready to go to the lowland with their food which the stewards carried. All the members of Pawa'a's household went, none remained, and so it was with all the families in the upland of Manoa. The men and women of every locality in Manoa went, from Ka'apakahua, Kawailele, Puahia, Kanewai, Kamo'ili'ili and Kamoku. (Kaui 1865; translation in Hawaiian Ethnological Notes, Vol. II, p. 713)

In another rat-shooting contest, Pīkoi again impressed the king, who made him his personal rat hunter and gave him a grass hut in Mānoa, which Pīkoi returned to with his relatives to live (Westervelt 1963a:171-172).

3.3.4 Poki, the Dog of Kamehameha I

Pu'u Pueo was also a favorite haunt of Poki, the wonder-dog of O'ahu, whose home was on a little knoll behind Punahou College (now enclosed in the small Mānoa Park) (Taylor 1953). This dog was owned by Kamehameha I. By tradition, the dog was brought to the islands on the American trading ship *Eleanor*, which visited the islands in 1790 (Dorothy Barrere, cited in Sterling and Summers 1978:285). Poki, or Boki, is a transliteration of the English name "boss,"

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and is not a Hawaiian name (Pūku'i and Elbert 1986:338). According to legend, this dog was prayed to death (Titcomb 1969:22). After Kamehameha's death, the dog was deified and worshipped; tales of the dog were possibly confused with other tales of other spirit dogs. The legends of this dog may date to Kamehameha's time, or may have been borrowed from older legends of a dog apparition whose name is lost (Dorothy Barrere, cited in Sterling and Summers 1978:285).

Beckwith (1940:346) says that Poki has been confused with the legend of the ghost dog Kaupē and other spirit forms. In these legends, Poki is a dog-like creature "spotted or brindled in color and very long in body, who guards a certain section of Honolulu, but may appear in other places."

Travelers report having seen the creature and having made a long detour to avoid it. It sometimes appears as a form in the clouds, either resting or in motion. A foreigner reports seeing, as he was entering Moanalua valley from Honolulu just as the moon was rising, "a shapeless white form," a mist "convulsed with movement," which passed over the treetops from the Koolau range, preceded as it came by "the wailing of dogs" and followed as it passed by "a deathlike stillness." (Beckwith 1940:346)

The spirit form of Poki may be connected with signs in the sky that the Hawaiians call ' $\bar{o}uli$, which are animal shapes seen in the clouds that were used to foretell the movements of the chiefs. The *ali*'*i* believed that these denoted the presence of their '*aumakua* (guardian spirits) in the heavens (Beckwith 1940:346-347). Poki had magic powers – he could stretch himself along the mountains, his hind feet on the mountain ridge and his head in the valley below, just as:

... the night clouds, sometimes darkened by falling rain, sometimes enriched by the halo of lunar rainbows, and sometime glorified by the silver moonlight, continue to stretch from peak to peak along the mountains and watch over all the various forms of life in the valleys below. (Westervelt 1963a: 88-89)

Poki is also seen at night in Mānoa, especially if one is standing on Pōhaku kīkēkē, the bell stone located in Kamō'ili'ili. By tradition, the bell stone gives clear vision to one who stands on it. If while standing on the stone, one wishes to see Poki, then he appears "stretched along the mountain and silvered by moonlight" (Westervelt 1963a: 87-88).

The association of Poki with Mānoa may be due to the dog's shared name with Boki Kama'ule'ule, the high chief who owned much of the land in lower Mānoa. High chief Boki's original name was 'Īlio-punahele, meaning "favorite dog"; when Kamehameha got the dog "Boss" (Boki or Poki) he changed the name of the young chief from 'Īlio-punahele to "Boss," which was pronounced as Poki or Boki (Day 1984:13). Pūku'i et al. (1974:188) say that many dogs were named Poki around the time of Boki's birth, including dog guardians (*kia'i*). Some Hawaiians say that the dog Poki is the spirit of Boki, who watches over and protects Mānoa Valley (Westervelt 1963a:88).

In recent times, several people still report seeing a strange dog that they identify as Poki. In 1971, a visitor at the Bishop Museum saw a white puppy, which began to grow larger and more terrifying as it ran towards him. He did not stop running from this apparition until he got to the Kamehameha Shopping Center (Grant 1996:215).

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3.3.5 Malua'e and the Underworld

In the tale of "Maluae and the Underworld" (Kamakau 1991b: 51-52; Westervelt 1963b: 14-20), Malua'e was a farmer who lived at the back of Mānoa Valley.

He kanaka mahiai o Maluae no uka o Manoa, o Kanaloaohookau kona ' \bar{a} ina, a o ka maia kana ai kanu nui, he maia na ko akua, a ua mahiai i na ai e ae na laua me kana keiki a me kana wahine. (Kamakau, Ke Au 'Oko'a, Oct. 13, 1870)

Translation:

Malua'e was a planter in the uplands of Manoa, Oahu. Kanaloaho'okau was his land. He raised a lot of bananas as food for the gods, and he planted other food, 'ai [food plants], for himself, his wife, and his son. (Kamakau 1991b:51)

Malua'e always honored the gods by placing some of his crop on an altar to the gods Kāne and Kanaloa before taking the rest home.

His bananas grew rapidly by the sides of the brooks, and yielded large bundles of fruit from their tree-like stems; his taro filled small walled-in pools, growing in the water like water-lilies, until the roots were matured, when the plants were pulled up and the roots boiled and prepared for food; his sweet potatoes . . . were planted on the drier uplands. (Westervelt 1963b: 14)

He had a son called Ka'ali'i, meaning "rolling chief," who was a careless, rollicking child. One day the boy grew hungry and ate some of the bananas that Malua'e had placed on the altar to the gods. In anger, the gods struck the boy dead. Malua'e found the dead boy with a piece of banana still stuck in his mouth. He was so distraught that he lay down on his bed and refused to eat or drink. The gods regretted their action, remembering the long devotion of Malua'e.

The gods gave Malua'e a spirit body ('ano kino lani) and a marvelous hollow cane (ko'oko'o mana) called Maku'uko'o, which contained food to give him strength, a war club and spear to fight off ghosts, and a piece of lava for fire. They took him to Moanalua where there was an entrance to $P\bar{o}$ (po pau 'ole), the underworld. After many confrontations with ghosts who tried to impede his journey, he found his son "down in the papa-ku" (the foundation of $P\bar{o}$), still choking on the banana. The father caught the spirit of the boy and began his way up, again, fighting ghosts with his club and spear and gaining strength from the god's food. Finally they were completely surrounded by the ghosts, and Malua'e poured out the lava from the hollow cane, causing the spirits to flee. The father stuffed his son into the hollow cane and escaped from the underworld. He made his way home and returned the boy's spirit to his body. Forever after, both the father and son took food to the altar of Kāne and Kanaloa to honor and thank them.

3.3.6 The Woman Who Died and Came Back to Life

An historic account of a woman who died in Mānoa was told in the newspaper *Aloha Aina* in 1903 and recounted in the book "The Legend of Kewalo." The account was given by Mrs. Lydia Kaloio and by Mrs. Malie Kamana, the half sister of Mrs. Keakealani Maikini, the woman who died.

Keakealani was very ill and asked to see all her immediate relatives. When they had assembled she told them that she was about to die, and soon after she expired in the arms of her sister Malie. They laid her on a couch. *Rigor mortis* set in, but

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after three hours Malie noticed one of her sister's big toes jerk once violently. Another hour passed, then the woman crowed like a rooster just learning to crow. Two hours later a slight breathing was noticed, after which she was heard to murmur "*I wai* (water)." Water was poured carefully between her clenched teeth. After another two hours she opened her eyes and spoke. (Green and Pūku'i 1936:120)

Keakealani dreamt that she rose from out of her body, ran from the house, and began to ascend the slopes of Punchbowl.

On the summit were many people making merry. Just below the summit on the west side stood a dark man who waved to her to hasten and join the crowd; on the east side stood an older relative and immediately behind her aunt she saw her sister Anela who had died some years before. The aunt beckoned and her sister called "Sister, come!" She noticed that her aunt wore a short blue *mu'umu'u* which she had been fond of in life. She hurried toward them and as she drew near, her aunt gave her a violent push which sent her rolling down to the foot of the hill. She rose to reclimb the hill, but her aunt kept shoving and pushing her toward her home in Manoa until she had returned to the place where her body lay. Then the aunt forced her to reenter her body through the big toe. The antle-joint looked to her like a dark cave and she would have drawn back, but her aunt forced her on. She continued up through her body, each joint looking to her more terrifying than the last. The torso was like an inky-black cavern. At last as air filled her lungs, she felt herself crow and she awoke from her deathlike sleep. (Green and Pūku'i 1936:120-121)

Sometime later Keakealani felt death coming again. She insisted that a new purple silk *holoku* (loose dress) be made for her to wear, since she had learned during her last illness that what one wore at the time of death is what one would wear in the spirit world.

3.3.7 Kānewai Pūnāwai

Kōnāhuanui is the highest peak in the Ko'olau Mountains and is the northwest corner of the Mānoa Ahupua'a boundary. It was the home of the gods Kāne and Kanaloa. It was where their parents came on their way to and from the east from above and from the right (*mai kahiki a mai ka hiwamai*), meaning it was the starting and resting point of the gods since the formation of the islands (Bouslog et al. 1994:133). Kāne and Kanaloa fished in the ocean off Kahala (east of Mānoa Ahupua'a). One day the two gods traveled inland, looking for fresh water to wash off the saltwater on their bodies. They came to Kamō'ili'ili, and Kanaloa said:

"Where are the springs and streams of living waters? Our people are always singing the chants of your life-giving springs and stream. They tell me that they are in the clouds, the sun and the bowels of the earth. Can you give it to me now?...Kane turned to Kanaloa saying "Be patient, thirsty one." (Bouslog et al. 1994:134-135)

Kāne struck his staff into the soil and the water flowed so that the sand was washed from their bodies. The white sand is still found in the area today. The spring is called Kānewai, or "the waters of Kāne," and the stretch of sand is called Kanaloa. At this place Kanaloa placed a stone, called Pōhaku-kū-ula, a god to attract and snare fish (Bouslog et al.1994: 134).

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This underground pool Kānewai was known for the healing powers of its waters (Williams 1935). These legends do suggest that the locale of Kānewai would have attracted the infirm, some of whom may have expired there in the course of seeking healing and have been interred in the area. It is also notable that myths of the waters of Kāne emphasize a theme of eternal return, a theme played upon in the account of the repeated subterranean passage of fishes to Kānewai from the sea. Such associations may have increased the perceived auspiciousness of the area as a place to inter the dead.

This spring is also mentioned in a legend concerning the Hawaiian pig god, Kamapua'a, who made both a spring at Kānewai and a spring called Pa'akea (also called Kumulae or Hausten Spring) in the adjacent land section of Kamō'ili'ili.

3.3.8 Hualani Pūnāwai

Kāne and Kanaloa traveled further up the valley and Kanaloa suggested that Kāne again use his stick to produce water. Kāne struck the cane deep into the earth to bring forth a crystal water. Kāne commanded that a spirit guard the water gourd bottle Hualani, meaning "dug up by heaven." The name given to the land around was Maka'īlio, "the dog's watchful eye" (Bouslog et al. 1994:134).

3.3.9 Wailele Pūnāwai

Kāne and Kanaloa then traveled to the northwest, near to the present day athletic field of the Mid-Pacific Institute. He struck the ground so forcefully that the water came flying up, so it was called *wailele*, or "flying water." This spring became a fishpond filled with 'o 'opu (used by Hawaiians to describe a large variety of fishes included in the families Eleotridae, Gobiidae, and Blennidae), 'anae (mullet, *Mugil cephalus*), and *awa* (milkfish, *Chanos chanos*). Kāne put a *kapu* (prohibition) on this spring so that no woman should bathe in it, and he commanded that a sacrifice at Wailele should always be a yellow dog, "he 'īlio ka mōhai puakea."

One mo 'olelo related to Wailele Spring concerns a large pohaku.

"Near this spring stands a huge rock known as Kua'i o Mānoa, which at times took the form of a magnificent young chieftain whose favorite past time was surfing. From his home at Wailele he would watch the ocean and, when he saw the nalu ōpū, the budding waves, he would lift his surfboard and wander down to Ulukou at Waikīkī. When he saw the shadows of the Mānoa hills fall across the valley, he would say to the surf, "E ho'i i kua'i o Mānoa ua ahiahi"- "I must return to the beauty of Mānoa. It's evening." (Bouslog et al. 1994:134)

This version of the story is found in *Mānoa The Story of A Valley* (Bouslog et al. 1994). The spelling of Kua'i is questionable in that it is very similar to Kau'i [the beauty]. Pūku'i defines "kua'i" as "to remove internal organs of animals, disembowel; to clean, as chickens." *Kau'i* rather then *kua'i*, would be more logical especially when looking at the author's translation of "*kua'i*" as "beauty" in the saying "E ho'i i kua'i o Mānoa ua ahiahi- I must return to the beauty of Mānoa. It is evening." Also the above version states that the "huge rock" is "near this [Wailele] spring," but the accompanying photo is of a smallish rock located inside the spring (Figure 9).

A *mo* 'olelo similar to the one described above, identifies a large rock to the west of Wailele Spring as Ka U'i o Mānoa, and describe a very similar story with the exception that "chieftain" is a chiefess. See Nakuina's version below.

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An alternate origin for the name of Wailele ("leaping water") Springs was recorded by Mrs. Emma Nakuina:

The old belief was that these clear, bright waters had their origin on the heights above the valley, on the western side, at Kakea, and came leaping down through underground channels, to appear again in the Springs of Wailele, from which the adjacent lands took their name. (Nakuina 1907:25)

According to Nakuina (1907:24), there was one *heiau* and a sub-*heiau* associated with Wailele. The *heiau* was called Ka-ua-la'a, meaning "the sacred rain." It was located under a grove of mango trees towards the eastern and lower ridge of Mānoa. A picture of this stone structure is printed in the August 1907 Mid-Pacific Student, so it must have been still extant at that time. Thrum does not record a *heiau* in Wailele in his list of the *heiau* of O'ahu in 1907, but it may be one of the *heiau* mentioned by Thrum in his list of forts built by the chief Kūali'i after his victory over the *menehune* at Kūka'ō'ō Heiau in Mānoa. Thrum (1892:112) reported: "After Kuali'i obtained possession [of the menehune fort at Kūka'ō'ō], he made it the principal temple fort of a system of heiaus, extending from Mauoki, Puahia luna and lalo, Kumuohia, Kaualaa, Wailele, and one or two other points between Kaualaa and Kukao'o."

A land area adjacent to Wailele is Kauwala'a, which by Nakuina's description and the similarity of the name (Ka-ua-la'a) is probably where the *heiau* was located.

Here once stood the heiau or temple devoted to the cult of Ua-ku-a-hine or the "Rain of Manoa." She was a fabled goddess who was married to a human consort and here they dwelt together. In the lifetime of her husband she took on human form. But this happy union must perforce come to an end with the death of the poor mortal husband. The goddess, in her grief at this loss, dissolved in mist and rain, and floated away to her home in the Manoa range, where she dwells immortally on the ridge of Kumauna. From this vantage ground, high up amid the cold-capped peaks, she sweeps down daily, along the mountain side to her old home at Ka-ua-laa. (Nakuina 1907:24)

The sub-*heiau* of Ka-uwalo-malie was located west of Ka-ua-laa, across the baseball field on the Mid-Pacific Institute under a grove of Pride-of-Indian trees. The son of the goddess Ua-ku-ahine was the high priest of both of these *heiau*. The smaller *heiau* was named for his daughter, Ka-uwalo-malie (meaning "the place of the silent crying"), ". . . whose application suggests the grief of her grandmother, the goddess, as she melted away into the rain of the valley on the death of her husband" (Nakuina 1907:24-25).

The high priest also had a granddaughter, called variously Kumu-hau-nani (meaning "the beautiful hau tree") or Kau'i o Mānoa (meaning "the beauty of Mānoa"). She lived on a rounded knoll on the grounds of the Mid-Pacific Institute. She was betrothed to the chief Kāne-wai, who lived in Mō'ili'ili. She lived in sacred seclusion at Wailele, but longed to be allowed to go with the other maids of Mānoa to surf at the Waikīkī coast. Her grandfather, the high priest, granted her desire, with the condition that she should return at a certain hour to her *kapu*-guarded home at Wailele.

With this condition she willingly complied in spirit, but, at times, amid the excitement of the ocean – sport, she would forget the directions given and tarry beyond the stated hour. Then her retainers would seek their charge and would call

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to her in words which were destined to live through coming years. "E hoi, e ke Ui o Manoa, ua ahi-ahi." "Come, come home, O Beauty of Manoa; it is now sunset." "Ke hea mai nei ka Ua-ku-a-hine ia oe." "The rain Ku-a-hine is calling to you." (Nakuina 1907:26)

This poetic phrase became a common saying and was used to call out to friends as they wended their way homeward once the days' work was done.

Another reference says Kau'iomānoa lived near the large rock called Kau'iomānoa. She leant "her mantle of beauty to the Mānoa girls, as the valley was famous for its beautiful young women thirty years ago" (Dictionary of Hawaiian Localities, Saturday Press, Dec. 15, 1883).



Figure 9. Identified as "Kua'i o Mānoa" at Wailele Spring (from Bouslog et al. 1994:134)

3.3.10 Punahou Pūnāwai

Punahou is also associated with the gods Kāne and Kanaloa (Figure 10). Kāne and Kanaloa came to O'ahu on a pointed cloud from the land of Kuaihelani, one of Kāne's twelve islands in the heavens. They traveled from Hanauma to Waikīkī. Kanaloa would often complain of hunger, and Kāne, a kindly, courteous god, would strike the earth with his staff. This would cause water to gush forth, which they would use to mix their '*awa* (kava, *Piper methysticum*) drink.

As described by Pūku'i and Curtis (1951):

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Ma ko laua alahele, ua hoomaha ihola ma ka puu o Keapapa (o keia kahi e kapa ia nei o Punahou) a hoomaka hou no o Kanaloa e ne i wai, me ka hoouluhua pu nohoi i ka hiki ole ia Kane ke hoopii mai i wai na laua. Aka ihola o Kane, no ka mea, ua lohe aku nei kona pepeiao i ka halulu o ka wai ma kookoo, a hu maila ka wai a nui. Ua lilo keia wai i mea e hoopomaikai i na kanaka o ka aina, oiai, ua olelo ia o keia ke kumu a ka wai i koaa ai kala wai ma kahi i kapa ia nei i keia wa o McCully Tract. Ua kapa ia keia wai a Kane, o Ka-puna-hou.

Translation:

On their way they rested on the Keapapa hill (at the place now called Punahou) and again Kanaloa teased his brother for water and challenged his ability to produce it. Kane smiled, for he could hear the noise of water within the hill, and he thrust his staff into the ground and the water gushed forth in abundance. It has been a great blessing to the natives of that region . . . This water of Kane was called "The new spring," Ka-puna-hou. (Pūku'i and Curtis 1951:112-115)

There is a second version of the origin of the spring.

A chief Kaha'akea once lived in the Ka'ala Mountains and had two twin children, a boy named Kauawa'ahila (Wa'ahila Rain) and a girl Kauakiowao (Mountain Mist). The children's mother had died, and Kaha'akea married a woman named Hawea to help take care of his children. Hawea also had a son, but since he was deformed and ugly, she soon grew jealous of the twins' beauty. When Kaha'akea went on a visit, Hawea began to persecute her step-children:

Driven to desperation they fled to Konahuanui, the mountain peak above the Pali of Nuuanu, but were soon discovered and driven away from there by the cruel Hawea. They then went to the head of Manoa Valley. The step-mother was not at all pleased at their getting out of the way of her daily persecutions, and searched for them everywhere. She finally tracked them by the constant appearance of rainbows at the head of Manoa valley, those unfailing attendants of rain and mist. The children were again driven away and told to return to Kaala where they would be constantly under her eye, but the children ran and hid themselves in a small cave on the side of the hill of Kukaoo whose top is crowned by the temple of the Menehenes. Here they lived some time and cultivated a patch of potatoes. their food at this time being grasshoppers and greens. The greens were the leaves and the tender shoots of popolo, aheahea, pakai, laulele and potato vines by rolling hot stones around among them in a covered gourd. This is called the "puholoholo."...When the potato tubers were fit to be eaten, the brother (Waahila-rain) made a double "imu," having a "kapu," or sacred side for his food and a "noa" or free side for his sister. The little cave that was their dwelling was also divided in two, a sacred and a free part for brother and sister. The cave can still be seen and the wall of stone dividing it in two was still intact a few years ago, as also was the double imu. In older times it was tabooed to females to appear at any eating place of the males. (Nakuina 1893:102)

The stepmother drove them away again, and the children found two caves in the rocky hill back of Punahou, one occupied by the brother and the other by the sister (Thrum 1998:133-136).

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In his [Kauawa'ahila] trips around the neighborhood for fruit and greens he had noticed a large rain-water pond to the east of the hill on which they dwelt. This pond was called Kanewai. Here he sometimes came to snare wild ducks. He also had met and knew the Kakea water god, a moo, who had charge of and controlled all the water sources of Manoa and Makiki Valleys. This god was one of the ancestors of the children on the mother's side, and was on the best of terms with Waahila rain. The boy paid him a visit, and asked him to assist him to open a watercourse from the pond of Kanewai to a place he indicated in front of and below the caves inhabited by himself and his sister. The old water god not only consented to help his young relative, but promised to divide the water supply of the neighboring Wailele spring, and let it run into the watercourse that the boy would make, thus insuring its permanence. (Thrum 1998:136-137)



Figure 10. Kapunahou Spring (photograph from Bouslog et al. 1994:132)

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The mo'o (water spirit) made a passage to open the underground water source. Kauawa'ahila dove into Kānewai Pond and came out at the place now called Kapunahou (the new spring). The gushing water soon formed a basin, which Kauakiowao was most surprised to see upon awakening. Kauawa'ahila planted some *kalo* (taro) patches around the spring, which attracted people to live nearby and become vassals to the twins. At the return of the children's father, Kaha'akea learned of the cruelty of Hawea; he killed her and then killed himself. Rocky Hill (also called Kaha'akea), the home of the children, was named for him (Thrum 1998:137-138).

A third story for the origin of Punahou spring concerns an old couple who lived at the foot of Rocky Hill in Mānoa. At a time of drought, the husband had to walk far into the valley for famine food, such as $k\bar{i}$ (or ti) roots and ferns. The woman, Kealoha, had to walk all the way to Kamō'ili'ili to fill her gourd with water. One night, after another tiring walk to Kamō'ili'ili, the woman had a dream. In the dream, a man asked why she was crying. She replied that she was so weary from the daily long walks to get water. The man told her that she did not have to go again, because there was a spring below a *hala* (pandanus or screw pine, *Pandanus odoratissimus*) tree near their home. Kealoha told her dream to her husband, Mukaka, the next day, but he made light of it. That night, Mukaka had a similar dream; the man told him of the spring under the *hala* tree and told him to make an offering of a red fish, wrapped in *ti* leaves, and cooked. The next morning, Mukaka made the offering and pulled up the *hala* tree. When the water began to gush, he cried out "Ka punahou! The new spring!" (Pūku'i and Curtis 1960:83-87).

A version of this story with more details was told by W.F. Alexander in 1911, who recorded that it was told to his grandfather by an old Hawaiian and his wife that had a *kuleana* (small family parcel) close to the spring of Kapunahou. In this version, the ceremony and offering are described:

... He [Mukaka] went home with the fish, lighted the imu and cooked them in ti leaf wrappers. In the meantime the people gathered to eat the fish that had been prepared.

The ancestral god was brought from its customary place with the ipu-o-Lono container. When the fish was cooked, the offering to the god was put into the ipu-o-Lono. The remainder was eaten by the people. (*Ka Nūpepa Kū 'oko 'a* 1915:5; translation from Hawaiian Ethnological Notes, Bishop Museum Archives)

From this legend, Punahou School adopted for its seal the *hala* tree with two taro leaves in the water flowing under it (Alexander and Dodge 1941:35-36).

The stone Pōhakuloa was a boundary marker placed at Punahou soon after this area was given to the American missionaries by Chief Boki. An appropriate stone was sought to serve as a marker and was found on the northeastern slope of Rocky Hill; it measured nine feet long, seven feet high above ground, and two feet below ground. The workers dug hard the first day, but barely dislodged the stone. The second day, they were surprised to find their labors of the first day had been in vain, and the stone had worked its way even more firmly into the ground. The chief consulted a *kahuna* (priest) who said:

Kuka kamailio iho nei lakou i keia mea ano e, a noonoo iho nei he pohaku kupua keia. Hele aku nei ke alii i ke kahuna e ninau pono ai, a i maila no hoi ke kahuna, "Aole kela he pohaku, aka, he kanaka! Mai kena aku e hele, e hoomalimali mua ia, a pau ia, nana no e hele." Kuhikuhi mai ke kahuna e hana i paina. E kii i puaa

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hiwa, niu hiwa, awa hiwa, moa hiwa, ia ula, poi lehua, a e kono i na kanaka hana e ai me no poe i akoakoa mai. A i ka pau ana o ka paina, eli hou aku nei na kanaka, o ka hemo no ia o ua pohaku nei.

Translation:

They discussed the marvel and came to the conclusion that his was a kupua stone. The chief consulted a kahuna. He said, "This is not a stone, it is a man. He is not to be forced, but coax him and he will go." The kahuna proposed that a feast be prepared consisting of black pig, black awa, green coconut, black fowl, red fish, and pink poi, and the workmen and a number of others be invited to attend. After the feast the digging began again and the stone was soon out of the ground. (Green and Pūku'i 1936:116-117)

Chief Paki (father of Bernice Pauahi Bishop), a powerful man said to be seven feet tall, lifted the stone upright. With men supporting the stone on each side, the stone moved of its own accord to its prepared place at Punahou. Laura Green and Mary Pūku'i relate the later destruction of the stone:

Some years later, Pohaku-loa was broken up. Annie Harris thinks that a part of it was removed to the Kapi'olani Maternity Home and that the remainder is still to be seen standing at the front gate of the Punahou campus. (Green and Pūku'i 1936:117)

Another version of this $p\bar{o}haku$ is found in the archives of the Bishop Museum (Henriques Collection, 1925 Sites Commission Tablet).

The Pohakuloa stone was worshipped in the old days by Hawaiian women, who prayed for the endowment of their children with wisdom and strength.

Appropriately, this stone was used as part of the wall when Punahou School was founded in 1830. The tabu which endangered anyone who helped move the stone was removed by Kamehameha III, who challenged the tabu by sitting on the giant Pohakuloa stone—twelve feet long and weighing several tons. By the grace of the king's presence, the Hulumanu or body guard of the king were able to carry the stone to its place in the wall. The men were "numerous as ants tugging at a kernel of corn." Pohakuloa was broken up in 1856. This is the largest piece of Pohakuloa that is in existence today. (Henriques Collection, 1925 Sites Commission Tablet, cited in Sterling and Summers 1978:283)

3.3.11 Ka'aipū Pūnāwai and Pōhaku

After Kāne created the spring at Kapunahou, Kanaloa suggested that they return to their home at Kōnāhuanui. They traveled through Mānoa over 'Aihualama to the heights of Pu'u o Mānoa (Rocky Hill) onto the plains to the land of Kulumalu (where the Castle home was later built on 'Ulumalu Hill), which means "the shade of the breadfruit."

Kulumalu was o'io'ina o $n\bar{a}$ akua, the rest temple of the gods and the place where the food for the gods was cooked. Kanaloa, as usual, complained of being thirsty and Kāne answered gently, "Wait, thirsty one, until we get to Kala'i" ... [now the site of the Salvation Army's Mānoa headquarters]. Kala'i, known as the road of

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the gods, is where they rested and dined. At Kala'i, Kanaloa still chided Kāne by saying, "Where are the springs of living water, Kāne? My mouth is dry and I shall wither up." Kāne then turned to Kanaloa and said, "Let us go down the knoll and there we will find the entrance to the lizard goddess' home, where you will find cool waters to quench your thirst." After they had walked a few rods for Kala'i and down a hollow place, Kane struck his magic cane into the ground and there burst forth the spring of Ka'aipū, "the girdle of the cluster," meaning a gateway. Kāne then created a supernatural guardian called Ka'aipū, who was formed into a stone fish with its mouth wide open to guard the spring. This spring was the first gateway to the home of the Kihanuilanilulumoku, the Mo'o or lizard goddess of Mānoa, who lived in the upper springs with her other fairy companions. These were the wives of Kāne and Kanaloa. Ka'aipū the stone god is still on the premises of Ka'aipū. It is said that Ka'aipū often changed its form when it dwelled in the spring it would be an eel and represented a beautiful mermaid; at other times it would take the shape of a warrior. (Bouslog et al. 1994:135-136)

Thrum (1892:115) also discusses this sacred stone of Mānoa:

Kaipu figures also in the valley legends as possessing a stone of peculiar merit and power, from which the land takes its name, and was believed by the natives to bring good or ill-fortune to its possessor according to the honor bestowed upon it. The stone is about four feet in length, somewhat tapering toward one end, and having a rather smooth bore of about three inches in diameter running through its entire length. The larger end has sufficient irregular regularities to furnish those superstitiously inclined with the idea of a face, the bore mentioned serving for its mouth, into which sacrifices of food used to be placed. Thus the god Kaipu held power over Manoans in days gone by.

Ka'aipu was an akua wahine pohaku. A local pohaku god in Manoa, with an opening on the top of his "Head," which was considered as another mouth. (Malia Kamana, as told by Mrs. M. Pūku'i, 3/16/54, to C.C.S, cited in Sterling and Summers 1978:285)

A third legend says that Ka'aipū was the name of an area noted for the sweetness of its mountain apples. A great wizard who lived there was turned into the stone (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 15, 1883). This stone was in the '*ili* of Ka'aipū, which was later owned by a farmer Carlos A. Long, who used the land for a fruit orchard; and then owned by the Montanos, who used it to graze the cows for their business, the Ka'aipū Dairy. It later became the site for the Salvation Army's Wai'oli Tea Room.

This spring is also called Pū'ahu'ula (Sterling and Summers 1978:288, citing an article on "O'ahu Place Names," $H\bar{o}k\bar{u} \ o \ Hawai'i$, Feb. 11, 1930). The famous female *mo'o*, Kiha-nui-lūlū-moku (great island-shaking *mo'o*), lived here; she had eel, lizard, and woman forms, and made plants thrive in Wa'a-loa ravine. Pū'ahu'ula means "feather-cloak spring" (Pūku'i et al. 1974:190-191).

3.3.12 Wa'aloa Pūnāwai

After leaving the Pū'ahu'ula springs of the *mo'o* Kahanuilanilūlūmoku, Kāne and Kanaloa traveled up the valley, past Puka'oma'o, later the residence of Queen Ka'ahumanu.

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They traveled on to Kahoiwai, where again the petulant Kanaloa said, "Where are your waters, Kāne? Your waters do not follow you!" Then Kāne gently said to Kanaloa, "Thirsty one, why not drink from this stream of rushing water?" The mischievous Kanaloa answered, "I do not want these waters. I want the waters that you profess to bring forth by your magic power. I am wandering with the god of bubbling springs and still do not have water to mix my 'awa.""

Kāne turned to Kanaloa for the last time and said most kindly. "Wait a little longer, thirsty one, and I will give you of the life-giving water of Wa'aloa, or 'long canoe,' at the garden of Kihanuilanilūlūmoku, where she happily spends her hours near the falls of *nāniu a pō*, the coconut trees of night. At this place her retinue cultivates the *kalo*, $h\bar{o}$ 'i'o and sweet potato in our canoe for food." (Bouslog et al. 1994:136)

The gods entered a ravine shaped like a canoe and Kanaloa struck his cane into the bowsprit of the canoe, creating Wa'aloa Springs. Kāne and Kanaloa stayed awhile in this place in the company of the mermaids at the garden of Kihanuilanilūlūmoku.

A Hawaiian chant also speaks of Wa'aloa as the garden owned by a legendary woman named Kihanuilūlūmoku-wahine. This woman, in a company of mermaids and *menehune*, went to her garden each month a few nights before the full moon. They planted taro, sweet potatoes, bananas, $h\bar{o}$ 'i'o, bamboo, $k\bar{i}$, hala, ginger, lehua, and other plants. As they worked they chanted:

O moon of the night of Hua,	Until Māhealani, the Full Moon, comes;
That brings fruit and food to the plants	For when Māhealani is here, Kulu, the Moon of
Here is the kalo plant,	Moisture will follow
The life of the land,	And the plants will show a bud
I give to the earth, Honua;	Then comes Kaloukūlua, thy companion.
Here is the sweet potato branch	To the plants they will bring two shoots,
I plant for thee and me;	And help thee, Hua, to bear the fruit.
Here is the shoot of sugar cane,	So, Kāne, God of Water,
So sweet to taste and eat,	And Hina, Mother of Mists,
The emblem of desire's success;	Send your aloha down to us in moonlit mists.
I place it in the earth, Mother Earth.	Let it sweep along the hillside.
O Moon of the night of Hua,	Keep the new growth a-growing
Keep the plants green and alive	That your people from the night will live.

The mermaids would sing this as they came from the central springs of Mānoa Valley to the mountain freshets, all of which would provide water to the '*auwai* used to grow crops (Bouslog et al. 1994:213-214).

3.3.13 Waiakeakua Pünāwai

According to the "Legend of the Waters of the Gods," Waiakeakua is one of the many springs in Mānoa associated with the brother gods, Kāne and Kanaloa. When Kanaloa was weary of his stay with the mermaids at Wa'aloa, he journeyed into the next ravine.

As he traversed along the steps of the *menehune*, the legendary race of small people, and stood on the fern-clad slopes running down to the edge of the stream,

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he saw for the first time the beautiful virgin Kameha'ikana sitting on a rock next to a nearby spring, accompanied by her stubborn old nurse. Rogue that Kanaloa was, he immediately made up his mind to possess her and began to chant to her of her beauty. Although she was somewhat flattered by Kanaloa's attention, Kameha'ikana resented his boldness. Her watchful, stubborn old nurse, seeing his attitude, called out in anger. "You cannot have this water," meaning the young virgin. Whereupon Kanaloa became very angry at being repulsed and suddenly rolled a huge boulder down upon them and covered up this spring. This stone is called the sensitive stone of Waiakeakua, the waters of the gods Kane and Kanaloa. During the season when the 'ohia'ai mountain apple, is in bloom, the stone's color changes to a brownish red. Delicate wild flowers called "Kameha'ikana's tresses" grow around this rock. Upon being closed with the boulder, the water of the spring was forced up onto the moss-grown boulders, which form the basin at the base of the ravine. Two little trickling streams issue from this rock, which is known as the breast of the beautiful goddess Hina. These two streams then fall into the basin below, which is also known as Waiakeakua, the water of the gods. (Bouslog et al. 1994:136-137)

A second version of this story has both Kane and Kanaloa traveling to Waiakeakua Waterfall.

Ia laua e ku ana ma ia wahi, nana aku nei i ke alo pali, a ninau aku nei o Kanaloa i kona kaikuaana, ina ua manao oia he wahi noho ia no ke kupua. Pii aku nei laua i kekahi pali laumania, a ike aku nei i kekahi wahine ui e noho mai ana me kona kahu wahine. O Kamehaikana ka inoa o keia wahine kupua. I kahi wa he kino kanaka ko laua, a i kahi wa, he kino pohaku, oiai ua loaa in na kupua ka mana e hoololiloli ai i ko lakou ano. Komo ihola ka iini iloko o Kane a me Kanaloa no keia ui nohea o ke uka o Manoa. I kona haka pono ana mai nohai, ua komo no ka hoohihi no keia mau akua e ku aku nei. O ka hoomaka no ia Kamehaikana e mino aka ma ke ano hooha'i. Aohe i ike ke kahu o ke kanaka hea la o laua i hoohihi ai kana hanai, a i kona ike pu nohoi, i koi anei hooha'i maoli, ua piha oia i ka inaina. Minamina loa ia o lilo ka luhi ana, nolaila ua leleino aku nei oia mawaena o na malihini a me kana hanai, a kino ke poo ilalo a paa loa. Lele mai nei o Kane e hoopakale iaia, aka, aole nai i hiki. Ke ku nei no ke kino o ke kahu o Kamehaikana a hiki i keia la, ilalo ke poo a iluna ka wawae. Kahi a Kane i hehi ai, ke waiho ala

no kona kapuai. Ma kahi o na akua i ku ai, na kupu ae he mau kumu ohia e luhe ana na lala maluna o ka ili wai. Ua make keia mau kumu laau, a o na keiki keia e ulu nei, a e ku kiai nei i "Ka wai a ke akua."

Translation:

As they stood facing the cliff, Kanaloa asked his older brother if there were *kupua* [spirits that have human and other forms] in that place. The two climbed a perpendicular cliff and found a pretty woman living there with her woman attendant. Kamehaikana was the name of this *kupua*. Such was the nature of the two women that they could appear in the form of human beings or of stones. Both Kane and Kanaloa longed to possess this beauty of upper Manoa. The girl herself,

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after staring at them, was smitten with love for the two gods. Kamehaikana began to smile invitingly. The attendant saw that her charge did not know which one of the two gods she wanted and knew that if they both got hold of her she would be destroyed, and she was furious. Fearing death of her beloved one, she threw herself headlong between the strangers and her charge and blocked the way. Kane leaped to catch the girl but could not reach her. The body of Kamehaikana's attendant stands there to this day, with the head down and the feet up. The mark of Kane's footprint remains where he trod. At the place where the gods stood, mountain apple trees sprang up whose branches drooped over the surface of the water. The original trees are dead, but their seedlings are grown and guard "The water of the gods." (Green and Pūku'i 1936:114-115)

Kameha'ikana, meaning "a multitude of descendants," was one of the alternate names of Haumea, the goddess of childbirth ($\overline{1}$ 1959:44). Another name for Haumea is Walinu'u (Beckwith 1940:281-283), who was a *mo'o* goddess.

A third version of this story names Kawaiakeakua, or Waiakeakua, as the pool associated with this legend. Kāne and Kanaloa found excellent '*awa* (*Piper methysticum* plant used to make a soporific and relaxing drink) in Mānoa Valley, but Kanaloa wished to know where they could find water.

Kane replied, "Here in this hill side is water." So he took his staff and struck it fiercely against the precipice by which they had found awa. Rapidly the rocks were broken off. The precipice crept back from the mighty strokes of the god and a large pool of clear, cool water nestled among the great stones which had fallen. There they mixed awa and water and drank again and again until the sleep of the drunkard came and they rested by the fountain they had made. This pool is still at the head of Manoa Valley, and to this day is called Ka-Wai-a-ke-Akua (The water provided by a god). (Westervelt 1963a:41)

The waterfall above the pond was also known as Waiakeakua.

He ua paa unau iluna o keia kuahiwi ma kona moolelo ma kona moolelo oia wahi e iini ni o na malihini e makaikai ai he wai hi lele mailuna mai, a hokio keia wai a nona keia inoa Kawaiekeakua he ui ke nana aku laia e kaulana nei. O kahi keia o ka poe menehune e hiamoe a i ke ao, a po hele nui e hana i na heiau a loko ia a o ke ano ae a lakou e ike ai. (Hōkū o Hawai'i, February 18, 1930)

Translation:

Visitors like to go and see a certain waterfall that drops from above into a pool. The name of this famous place is Kawai-a-ke-akua and is beautiful to see. This was where the menehunes slept in the day time and when night came they went to build heiaus, ponds or whatever they chose. (translation in Sterling and Summers 1978:288)

The pond was formerly a favorite place for picnics, drinking water, and swimming for the *ali'i* visiting and living within the valley (Mrs. Marie H. Brown, Informant, J.F. Stokes, Sites Notes, cited in Sterling and Summers 1978:288). It was known as *wai hui a Kanaloa*, and wives were supposed to drink from the life-giving waters (Bouslog et al. 1994:137). The servants of

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King Kamehameha filled calabashes of water from here, using a stalk of $k\bar{i}$ or a banana leaf to funnel the water on the rock to a gourd. They then traveled down the valley swinging the gourds from the ends of sticks laid over their shoulders.

... When they came near any individual or group of Hawaiians they had to call out loudly, giving warning so that all by whom they passed could fall prostrate before the gift of the gods to the great king. (Westervelt 1963a:41)

3.3.14 Hills, Mountains, Peaks, Ridges and Caves

There are numerous hills, mountain peaks, and caves in Mānoa Valley which have legendary associations. On the *mauka* border in the Ko'olau Mountain range are the peaks, Pu'u Lepalepa, Awāwaloa (Mount Olympus) and Kōnāhuanui. The word *lepalepa* means "to hang in fringes or tatters" (Pūku'i and Elbert 1986:203). Awāwaloa means "long valley or gulch" (Pūku'i and Elbert 1986:35, 209). Kōnāhuanui, the home of the gods Kāne and Kanaloa, is the highest peak in the Ko'olau Mountains. The place name means "large, fat innards" and refers to a story about a giant who threw his testicles (*kona hua nui*) at a woman who escaped from him (Pūku'i et al. 1974:117).

Konahuanui, pali of O-ahu, was named because when a man, probably a giant, chased a woman who escaped into a cave, he tore off his testes and threw them at her. (I heard Dr. Brigham give this explanation long ago.)

Though the sexual explanations may be revolting it is perhaps better to make them than to have future malihinis [foreigners] delving into the meanings, and securing wrong translations....(Lyons 1916:936)

The peak of Konahuanui is pictured by Hawaiians as the highest point of the ridgepole of a house. The house is a legendary burial cave for the high *ali*'i that the Hawaiians believed existed under the Ko'olau Range between the districts of Kona and Ko'olauloa.

Hookahi anahuna kaulana ma Oahu. O Pohukaina ka inoa, aia ma ka pali o Kanehoalani mawaena o Kualoa a me Kaaawa, aia ka puka i manao ia ma ka pali o Kuolo e huli la i Kaaawa, a o ka loa o ka puka, aia ma ka punawai o Keahuulapunawai. He anahuna alii keia, a he nui ka waiwai huna iloko a me na'lii kuhiko.

... kekahi puka, a o kauhuhu o kauaoku o keia hale anahuna, oie no ka mauna o Konahuanui a iho i Kahuku. Ua olelo ia ma ka moolelo a kanaka, ua nui ka poe i komo iloko me ua ihioho kukui, inui Kona aku nei a puka i Kahuku.

A maloko a keia anahuna, he mau halokowai, he mau muliwai a mau kahawai, ua hana kinohinohi ia, a ma kauwahi aku, he mau aina palahalaha. (Kamakau, Ke Au 'Oko'a, Oct. 6, 1870)

Translation:

There is only one famous hiding cave, *ana huna*, on Oahu. It is Pohukaina. The opening on Kalaeoka'o'io that faces toward Ka'a'awa is believed to be in the pali of Kanehoalani, between Kualoa and Ka'a'awa, and the second opening is at the spring Ka'ahu'ula-punawai. This is a burial cave for chiefs, and much wealth was hidden away there with the chiefs of old. . . . The mountain peak of Konahuanui

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was the highest point of the ridgepole of this burial cave "house," which sloped down to Kahuku. Many stories tell of people going into it with kukui-nut torches in Kona and coming out at Kahuku. Within this cave are pools of water, streams, creeks, and decorations by the hand of man (*hana kinohinohi'ia*), and in some places there is level land. (Kamakau 1991b:38)

On the western border of Mānoa are four peaks, Kaumuhonu, Pu'u Makani (literally, windy hill), Pu'u Laulā (literally, broad hill), and 'Ualaka'a, or Round Top. Pu'u 'Ualaka'a, which is on the boundary between Makiki and Mānoa Valleys, has many legendary associations, and alternate stories of the origin of its name, which means "rolling sweet potato hill."

On the eastern border of Mānoa, along Wa'ahila Ridge, are six peaks: Keanapoi, Pu'u Pia (literally, arrowroot hill), Pūkele (literally, muddy), Akāka, Kūmauna, and Paliluahine. Pūkele is also called Palikū, which means "vertical cliff." Akāka, or Aka'aka (meaning "laughter"), and Kūmauna are peaks mentioned in the Legend of the Princess of Mānoa. Paliluahine, meaning "cliff of the old woman," has associations with Kamehameha I and older legends. In the central area of the western valley are a series of peaks and hills, Sylvas, Puka'ōma'oma'o, Pu'u Ahula, 'Ulumalu, Pu'u Pueo, and Pu'u o Mānoa (Rocky Hill or Keapapa). The legendary associations for these landmarks are described in more detail below.

3.3.15 Wa'ahila Ridge

Wa'ahila is the name of the ridge dividing Mānoa and Pālolo Ahupua'a. It is also the name of a beneficent rain associated with Mānoa and Nu'uanu Valleys. This association is mentioned in the saying "Ola ke kai o Kou i ka ua Wa'a-hila," meaning "the land of Kou [Honolulu] lives by the Wa'a-hila rain." Wa'ahila is also the name of a chiefess who excelled in a hula dance named for her (Pūku'i et al. 1974:218; Pūku'i and Elbert 1986:375).

The association of Wa'ahila with wind and rain is also mentioned in the Legend of Kuali'i. Kuali'i was a celebrated chief who possessed some knowledge of the gods and sometimes could assume the attributes of a deity. He was a great warrior, and two brothers composed an *oli* (chant) to honor the chief and recount his exploits. Within the chant (Fornander 1917a, Vol. IV:392-393) is the following description:

I ke ala ihi, i ke alaloa,	Along the sacred road, along the long road,
I ke alaloa e heleia la-la,	Along the highway traveled by him.
Aole i like Ku.	Not like these art thou, Ku.
Aole i like i na laki,	Not like the ti leaf—
I ka laki pala o Nuuanu.	The yellow ti leaf of Nuunau,
I heheia e ka ua e ka makani a helelei.	Softened by the rain and wind till it falls;
Ka laki pala i ka luna i Waahila-la.	The yellow ti leaf on the heights of Waahila.
Aole i like Ku.	Not like to these art thou, Ku.
Aole i like i ka Waahila.	Not like the Waahila [wind].

3.3.16 Kaumana Pōhaku

Kaumana may have been an alternate name for Wa'ahila Ridge, at least the *makai* portion of the ridge. Informant Solomon Kauai related an account of a fourth famous stone known as "Kaumana," which may have been located near the present-day location of the Sacred Hearts Academy in the neighborhood of Mō'ili'ili.

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3.3.17 Akāka and Kūmauna Peaks and the Princess of Mānoa, Kahala-o-Puna

Several places in Mānoa are mentioned in the legend of "The Princess of Mānoa," including the peaks Akāka and Kūmauna at the back of the valley. This story tells of the beautiful woman Kahalaopuna, also called Kaikawahine Ānuenue, meaning "the Rainbow Maiden" (Westervelt 1963b:84). This story has several versions with different place names emphasized and different endings.

The Princess of Mānoa was the daughter of Kahaukani (the *hau* tree wind of Mānoa) and Kauakuahine (the sister rain of Mānoa), who were the twin offspring of the mountain peaks 'Aka'aka (the peak now called Akāka), meaning "laughter," and Nalehua'aka'aka, meaning "the *lehua* bushes of 'Aka'aka," the neighboring promontory (Kalākaua 1990:511). In commemoration of this union, "the growth of *lehua* (*lehua* 'ōhi'a) bushes crowning the spur of 'Aka'aka, is said to still attest" (Thrum 1892:111). The twins were kept apart in their youth and raised by foster parents; the chief Kolowahi took the boy and his wife Pōhakuakalā took the girl. When the wind and rain twins of Mānoa were later married, it brought to Mānoa Valley "an inheritance of rainbows and showers for which it has since been distinguished" (Kalākaua 1990:512).

The union of the twin sister and brother resulted in a concentration of *mana* (power) in Kahalaopuna, so that she always gave off a rosy light.

Her cheeks were so red and her face so bright that a glow emanated from them and shone through the thatch of her house when she was inside; a rosy light seemed to envelop the house, and bright rays constantly played over the house. When she went to bathe in the spring below her house, the rays of light surrounded her like a halo. The natives maintain that his bright light is still occasionally seen at Kahaiamano indicating that the spirit of Kahalaopuna is revisiting her old home. (Thrum 1998:119)

She lived in a grove of '*iliahi* (sandalwood) trees at Kahaiāmano on the road to Waiakeakua, a pool within the tributary stream to Mānoa Stream. She often bathed at the sacred spring called Lua'alaea. Kahalaopuna was betrothed in infancy to Kauhi, a young chief from Kailua (or Waikīkī in some versions). She was famed for her beauty, and one day, two lesser chiefs, named Kūmauna and Keawaawaki'ihelei, claimed that they had been intimate with her. Her fiancé, hearing this rumor and believing that she had been untrue to him, went to Kahaiāmano and led her away from her house to Hualea, where he killed her and buried her. An owl god, her personal guardian spirit, or '*aumakua*, dug her up and resuscitated her. Kahalaopuna sang a lament of her cruel fiancé, Kauhi, who heard the lament and returned to Hualea and told Kahalaopuna to follow him again.

Kauhi killed her twice more, each time telling him to follow him, then killing and burying her; each time the owl again resuscitated her and brought her back to the living. On the third time, Kauhi buried his fiancé under the roots of a tree and the owl could not free the girl; instead, two spirits revived the girl. A young man, in some versions called Mahana, found her and took her back to his home in Kamō'ili'ili (old name for Mō'ili'ili, a land area in Mānoa). Kauhi was eventually punished for his cruelty and Kahalaopuna married her young rescuer (Thrum 1998:188-132). The lands and fishponds of Kauhi were given to Mahana, who ruled as a chief of these lands, with the beautiful Kahalaopuna as his wife for many years (Skinner 1971:220-222).

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A second version of this tale has a darker ending. Kahaiāmano, the home of Kahalaopuna, means "the shark sacrifice," which is related to one alternate ending of the story. In this version, Kahalaopuna was killed five times by her fiancé, and revived four times by the owl. On the fifth murder, Kauhi buried her underneath a *koa* tree, so that the owl could not dig her up. Kahalaopuna's spirit called to several passersby, including a young man who carried her to his home in Mō'ili'ili. The man's older brother and two spirit sisters carried Kahalaopuna to Mau'oki, an underground pool at Kamō'ili'ili to revive her. These healing waters were then called "the waters of Kahalaopuna."

The young man next provoked Kauhi into a dispute, claiming that Kahalaopuna was alive, which Kauhi denied. Kahalaopuna appeared and her grandfather 'Aka'aka testified that this was indeed his granddaughter, proving Kauhi to be a liar. Kauhi was put on trial with the *mo'o* of O'ahu as judges. As punishment, Kauhi, his followers, and the two men who falsely accused Kahalaopuna were baked in an *imu* (oven) at Ulukou ("grove of *kou* trees"), Waikīkī, near the side of the stream 'Āpuakēhau, a place close to where Mānoa Stream used to empty into the sea.

Some time following the night of the death of Kauhi, a tidal wave sent by a shark god swept over the land, carrying out the bones from the *imu* on the beach. The spirits of Kumauna and Keawaawakiihelie were transformed into two peaks at the back of the eastern side of Mānoa Valley (Thrum 1998:131). Kauhi, whose '*aumakua* was the shark god, was turned into a shark. 'Aka'aka learned of the transformation and urged his granddaughter to never go into the sea. The daughter obeyed her grandfather for two years, but one day when the surf was fine and there were many people in the ocean, Kahalaopuna decided the water was safe and took a surf board into the ocean. Kauhi now had his chance for revenge and bit her body in half, eventually dragging it to Wai'anae where it was completely devoured in a school of sharks.

In sorrow Kahalaopuna's parents and grandparents deserted their human forms. The father became the Mānoa Wind; his physical form was a grove of *hau* trees below Kahaiāmano. The mother became Mānoa Rain and her rain form could also sometimes be seen near Kahaiāmano. Kahalaopuna's grandfather 'Aka'aka became a mountain spur, and his wife, Nalehua'aka'aka, became a thicket of *lehua* bushes on the spur (Kalākaua 1990:511-522).

Fornander's version of the story tells of Kahala-o-Puna (the sweet-scented *hala* flower of Puna), called the princess of Mānoa (*ka'iu-ol-Mānoa*). She was the beautiful daughter of Ka-ua-kuahine (The rain of the mountain ridge) and Ka-hau-kani (the Mānoa wind), who were the twin sister and brother born to 'Aka'aka and Na-lehua-'aka'aka, which are the names of a projecting spur of the ridge and the red *lehua* bushes that grow upon it. Kahalaopuna was so beautiful that rainbows always played about her home, called Kahaimano, which was on the trail to the spring Kawaiakeakua. Mānoa girls later born in this area were also known for their beauty (Beckwith 1940:152-153), so much so that it was also called *ka ui o Manoa*, the "valley of beauties" (Nakuina 1904:42).

Kahalaopuna was affianced to Kauhi, a man from a powerful family of Koʻolau or Waikīkī. Two mischievous men said they had enjoyed her favor, which drove her fiancé into a jealous rage. Kauhi went to Kahalaopuna's house and asked her to follow him. He led her to the uplands of Pōhākea (area between 'Ewa and Wai'anae), where he struck her. Kahalaopuna chanted the following lines (Fornander 1918, Vol. V:190-191):

Kuu kane mai ka uka o Kahoiwai,	My husband
Mai ka uka laau hihi i ka nahele	From the up

My husband from the uplands of Kahoiwai, From the uplands where the creeping trees grow,

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Kuu kane o Kahaiamano e! Auwe!	My husband from Kahaimano, alas!
Me he mano la no ka lili ia'u,	Like unto a shark is your jealousy of me,
Ka hoi koke mai no nanahu ia'u	Quickly returning to bite at me,
O kuu nui aloha, ua hai iho nei e! Auwe!	My great love for you is, however, broken, alas!

Kauhi then beat her to death, and her spirit flew to the top of the tree and chanted her story, where passersby heard her and informed her parents. The parents dug up the body, found it still warm, and revived her (Beckwith 1940:152-153).

After Kahalaopuna's final death, her mother melted into the rain called Luahine-o-Mānoa. Her father became two things, a *hau* tree, and the wind in the valley. This *hau* tree supposedly could still be found up to the time of Queen Emma, and would groan and sigh whenever an *ali'i* died. According to Mary Kawena Pūku'i (March 16, 1954, cited in Sterling and Summers 1978:289), the property was later acquired and the tree was destroyed.

Kaho'iwai was the name of the home of Kahalaopuna and the name of the area where she still is supposed to be "mourning and wailing her death in consequence of her husband's rash anger" (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 1, 1883). A stream and adjoining land at the head of Mānoa Valley near Kaho'iwai, is known as Kahaiāmano (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 1, 1883), and is mentioned in the legend of Kahalaopuna.

In a third version of the "Legend of the Princess of Mānoa," the two men who accused Kahalaopuna of infidelity, were Kūmauna, who had a humped back and Keawaawaki'ihelei, who had a disfigurement called *maka-helei*, in which the eyelid is turned in such a way as to display the inner red membrane. These men were mountaineers, dwelling with a few retainers in the eastern corner of Mānoa Valley, in a place called the Canyon of the Makaweli. In this version of the tale, Kauhi leads Kahalaopuna first up the slopes of 'Aihualamaiki adjoining Kahaumakaawe. This slope was formerly covered by *koa* and *lama* (*Diospyros* spp.) trees. Near a large rock half way up the slope, Kauhi kills his fiancé with a blow to the head with a bunch of *hala* nuts.

It was the belief of the mountaineers of the olden time that the spirit of the murderer Kauhi haunted the trail between Manoa and Nuuanu, and that often maile and fern gatherers were startled by a faint and mournfully sweet song changed by the spirit of Kahalaopuna, and the answering despairing wail of Kauhi, "O, my wife, come back to me! I was wrong." "*E ku'u wahine-e, hoi ma-i. Ua hewa wa-u.*"

In the eastern corner of Manoa Valley can be the seen the peak of Kumauna, with a hump on the back of the ridge leading up the peak, and alongside of it the ravine of Keawawa-Ki'ihelei. These places belong to and are called after the two wicked men who were the cause of the sad death of Kahalaopuna.

And when the gods realized that their favored maiden had been murdered, they decreed that the rains would fall daily about the valley of beauty, their tears in memory of her graces. (Nakuina 1904:45)

An alternate version of this story transforms many of the main characters into gods. According to this version, at the head of Mānoa valley lived Hine, the spirit of the rain-clouds, and Kani, her husband, who was the god of the winds. They had one child Kaha, who was so beautiful that the god of the sea asked for her to be the wife of his son, Kauhi, the prince of the

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sea. Kaha cared nothing for Kauhi, but "loved best of a swift flight in the cloud-chariot of Hine, when, driven by the winds of Kani, it skimmed over the shining green earth and far out above the blue ocean. It was such fun to spy out the little grass huts of the earth-folk, and pour down swift gusts of rain, just to see the people scurry to shelter" (Day 1906:2). One day Kaha spied some Hawaiian youngsters dragging up their $h\bar{o}lua$ (traditional sliding) sleds to the top of a hill. The rain from Hine's cloud poured down and made the sleds too wet to use. One of the youngsters, a chief called Mahana, looked straight up into the clouds and shook his fist. When Kaha looked into the man's eyes, she thought he was much finer than her own fiancé, Kauhi.

Hine saw the look in Kaha's eyes and took her for a while to the other side of the mountain valley. Mānoa became parched and all of the waterfalls dried up. Kaha grew sad on the damp windward side of the mountain, missing the sunshine of her own home. One day while she was sitting on a high rock looking into Mānoa, a dense cloud surrounded her and lifted her out of the mountains. When she reached the earth, her form was that of a beautiful mortal girl. Kaha found Mahana and the other people and spent a wonderful day sledding down the hill over and over. At the end, Mahana asked her to be his wife. Kaha, who now realized that she was mortal and could not return to her own air-people, accepted and lived with Mahana and his people. One day, Kaha swam far past the reef to gather seaweed. A shark could be seen from the shore, but Kaha was gone. The shark was a form of Kauhi, who had seen Kaha and meant to return her to her own air-people, but since Kaha had become mortal, the bite of the shark was fatal, and he returned her body sorrowfully to the shore. The people laid her in a grave in the central part of the valley where the weeping of Hine and the wailing of Kani can still be heard. The children of Mānoa sometimes say "Oh, there comes Hine with her tiresome tears!" (Day 1906:1-11).

3.3.18 Pali Luahine and Kamehameha's Cave

On the eastern corner of Mānoa Valley there is a series of foothills called Kapaliluahine. The area was known for its very sweet ' δhi 'a (Dictionary of Hawaiian Localities, Saturday Press, Dec. 15, 1883). The name, meaning "cliff of the old woman" refers to the legend of a mo'o who once lived on the pali (cliff) back of the Maunalua fishpond. This woman annoyed the people of Maunalua and was driven out by Pele. She traveled to Mānoa and behaved herself there, calling her new home Pali Luahine.

Luahine had two sons, Kumauna and Palihala. There are three stones. The lower one is Luahine, and the two higher up are her sons. Mrs. Pukui thinks that Pali Luahine is back of the "little green hill." (M. Pūku'i 5/28/53, cited in Sterling and Summers 1978:290)

Westervelt (1904:2) claimed that Kamehameha, who landed at Waikīkī when he invaded O'ahu in 1795, lived with his warriors for a time in a great cave on the east side of Mānoa Valley: "The path to the entrance is marked by a few straggling coconut trees. The Hawaiians say this cave formerly extended through to the mountain spurs from Mānoa to Pālolo Valley."

This cave, located in the area called Kapaliluahine, has been surveyed and the back is solid stone, and could not have led to Pālolo Valley. The location of this cave is on Wa'ahila Ridge in the area now covered by Woodlawn Drive near the astronomy building of the University of Hawai'i.

According to a long-term resident of Mānoa Valley, Mary Jane Montano, the name Kapaliluahine came from this historic association with Kamehameha I. This story relates that the

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warriors were homesick, and Kamehameha sent a message to an old chiefess named Waluwalu on the island of Hawai'i. The wives of the warrior were brought to O'ahu on a fleet of war canoes, and the place that the women camped was called "the hillside of the old woman," or Kapaliluahine (Bouslog et al. 1994:14, 187).

3.3.19 Puka'ōma'o, or Puka'ōma'oma'o

Puka'ōma'o means "green apertures or openings" (Pūkui et al. 1974:190), and probably referred to the green shutters on the Queen Ka'ahumanu's house in Mānoa Valley (Sterling and Summers 1978:287). The longer name Puka'ōma'oma'o can mean "green gateway" and may refer to this point as the access point to the head of the valley. Ka'ahumanu's estate was large and extended across the upper valley, including Pu'ulena, which in 1845 became the old Chinese burial ground. On her estate, there was a "kind of village of forty or fifty huts, the houses of the chiefs, a schoolhouse and a chapel" (Diary of Elisha Loomis, cited in Bouslog et al. 1994:153). In 1829, the location was described as in the back of the valley in East Mānoa by Charles Stewart, a chaplain on the American naval vessel, the *Vincennes*.

The valley of Manoa, you recollect, was always a favorite resort of mine-this afternoon Mr. Bingham drove me in a wagon to it. There is now a good carriage road, in that direction, as far as the country house of Kaahumanu, nearly five miles from Honolulu. Her residence is beautifully situated, and the selection of the spot quite in taste. The house is an inferior building, but stands on the height of a gently swelling knoll, commanding, in front, an open and extensive view of all the rich plantations of the valley; of the mountain streams meandering through them, and the humble habitation of the farmer sprinkled around; of the district of Waititi; and of Diamond Hill, and a considerable part of the plain, with the ocean far beyond. On the right, the ground rises rapidly for a few rods, to a thicket of hibiscus and Eugenia, at the foot of a magnificent mountain, exhibiting from the base to its summit a perpendicular height of a thousand feet-as rich a variety of projecting cliff and wild recess, of dripping rocks and mantling foliage, of graceful creeper, pendant shrub, and splendid flower, as Arcadia itself can boast. On the left, there is a gradual descent, from the house, of two or three hundred feet to the depth of the valley. Here this is a half a mile wide, and bounded at that distance, by a spur of mountain, which, commencing at the entrance of the valley on the plain two or three miles in front, rises first in uncovered swellings, but rapidly assumes, as it runs inland, a boulder formation, till in several places it presents a succession of broad based and regularly defined pyramids, beautifully verdant and tufted with wood; giving a most peculiar character to that section of the scenery.

Immediately behind the house, and partially flanking it on either side, is a delightful grove of the dark leaved and crimson blossomed Ohia, so thick and so shady as insensibly to remind one of Cowper's Wilderness at Olney---filled with cool and retired walks and natural retreats, and echoing to the cheerful notes of the little songsters, who find security in its shades to build their nests and lay their young. The view of the head of the valley inland, from the clumps and single trees edging this copse, is very rich and beautiful; presenting a circuit of two or three

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miles delightfully variegated by hill and dale, wood and lawn, and enclosed in a sweep of splendid mountains, one of which in the centre rises to a height of three thousand feet. (Stewart 1831:140-141)

Ka'ahumanu retired to her estate in Mānoa to get away from the heat, dust, and political enemies that she made in Honolulu. In 1826, Ka'ahumanu ruled against a libel charge made by a British whaling man, Captain Buckle, in favor of the Lāhainā missionary, Mr. Richards. Mr. Richards had spread the news that the captain had purchased a Hawaiian woman for money, breaking the law against prostitution. This ruling by Ka'ahumanu caused great anger among the critics of the missionaries, including the British Consul to Hawai'i.

Ua lilo o Kaahumanu i enemi no ke Kanikela a me na haole kalepa a pau e noho ana ma Honolulu, a ua kokua ia mai e Boti a me Manuia, pakele loa aela o Kapena Bakala a me Kapena Kalaka....

O ke kumu nae o ka pepehi ia ana, ua ai ka bipi a ua Kanikela nei i na mea kanu a Kaahumanu o uka o Manoa, a hopuhopu ia ka bipi a puka loa i Pawaa. Ua hoohei ia ke kanaka nana i alualu i ka bipi e ke Kanikela Beritania. O Kanekuahine ka inoa, he kanaka kiai no Kapukaomaomao i uka o Manoa. (Kamakau, Ka Nūpepa Kū'oka'a, June 6, 1868)

Translation:

The queen by this decision made enemies for herself of the consul and the foreign merchants and of Boki and Manuia of her own people.... The consul beat up one of her [Ka'ahumanu's] keepers who had chased away the consul's cattle which roamed at large all the way to Pawa'a and were eating Ka-'ahu-manu's plantings at Kapuka'oma'oma'o in Manoa. (Kamakau 1992:280-283)

Ka'ahumanu died in this house. She had moved to Mānoa in 1832 from her house in Honolulu "... in hope that the salubrious air would prove beneficial, but which terminated fatally June 5th of that year" (Thrum 1892:113). John Papa 'Ī'ī (1959:158) stated "Kaahumanu died on June 5, 1832, at her house with the green shutters in Manoa valley, close to Kawaiho'olana. Because of her love for Mānoa she went there during her last illness after having been sickly for four or five years." The place name Kawaiho'olana could not be found on the 1883 Bishop map, but a long-term resident of the valley, Maka Woolsey, placed this area *mauka* of the *'ili* of Kukuio, shown on the 1882 Baldwin map (see Figure 8) as just *makai* of the *'ili* of Komoawa'a. Samuel Kamakau reported:

A hiki i ka poeleele ana iho, o ka loaa no ia i ka mai, a i ke ao ana ae, o ka hoihoi ia no ia i uka o Manoa, ma kahi i ku ai o kona hale hooluolu ma ka Pukaomaomao, ma ka lihi malu o ka ulu ohia apane me ka ulu kukui. Hookahi wale no ple me ka hapa ke kaa ana i ka mai, a i ka wanaao o ka Poalua, la 5 o Iune 1832, make ihola o Elisabeta Kaahumanu, i ke 64 o kona mau makahiki. Aohe i lu ia iho kona kino a me kona hanohano ui a maikai.

I ka wa kakahiaka nui, ua hoihoi ia mai i ke kulanakauhale, i auamo ia mai ma loko o ka manele hale lole, a no ka luliluli, ua komo pu laua me ke kaikamahine Kamanele i loko o ka hale lole [Kamakau, Ka Nūpepa Kū'oko'a, Aug. 29, 1868].

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Translation:

Late that night she became ill and at daylight was removed to her rest house up Manoa Valley at Puka-'oma'oma'o on the edge of the 'ohi'a and kukui groves. A week and a half later in the early hours of Tuesday, June 5, 1832, Elizabeth Ka-'ahu-manu died in her sixty-fourth year, while her body showed no look of age and her bearing was still impressive. Early in the morning she was brought into the city on a covered litter and it shook so much that her niece, Ka-manele, occupied it with her. (Kamakau 1992:308)

Thrum (1892:113) places her residence in the 'ili of Komoawa'a:

The locality where the good queen passed away shows little evidence now of ancient royal residence. It was situated well in the valley at a place known as Komoawaa; the residence itself being called Pukaomaomao, from its green painted doors and blinds. Puulena, the old Chinese burial ground, from the year 1845, situate at the head of the central road of the valley, is said to have been part of Kaahumanu's estate. (Thrum 1892:113)

An 1872 reminiscence in the Hawaiian newspaper, $Ka N \bar{u} pepa K \bar{u} o ko a$, implies that Ka'ahumanu's residence is at or near Kaho'iwai.

He aina maikai no o Manoa, oia ka helu elua o ke awawa a ka olu i noho ai, ua hoopulu mau ia oia e ka noe a me ka ohu, a he uliuli lipolipo hoi in na lauu, mai kona piko honua a i kona mau kuemaka pali; a nona hoi ka ua kaulana, he Kauhine a ka mahani kulakulei kauhale, he Kakea. A ma keia wahi no i luana mau iho ai ka Makuahine Alii Kaahumanu, e walea ana i ka olu o ka wai o Kahoiwai, a me ka huihui momona o ka wai peepee, palapalai o Waiakekua, a no ka honi mau paha i na ea oluolu o ka uka; a na kona a i alii no hoi a lei mau na lehua puakea o Naniuapo, a kuu aku la kona luhi. (Kaulilinoe, Ka Nūpepa Kū'oko'a, Nov. 16, 1872)

Translation:

Manoa is a fine land and one of the two vallies where coolness dwells. It is constantly kept moist by fog and mist and it is green with trees from the base to the top of the cliffs. To it belongs the famous Kuahine rain and the wind that pushes over houses, the Kakea. Here the Queen Mother, Ka'ahumanu spent the time, enjoying the cool waters of Kaho'iwai; the refreshing water of Waiakekua where the palai ferns hide [by the banks] and to inhale the cool air of the upland. Around her royal neck was always a lei of the white lehua of Naniuapo until she was released from this weary life. (translation from Hawaiian Ethnological Notes, Bishop Museum Archives, p. 605)

By 1932, only the stone foundation of the house remained. This newspaper article also places Ka'ahumanu's residence in the *'ili* of Kaho'iwai.

Just past the junction of Manoa Road and Oahu Avenue in upper Manoa valley, surrounded by market gardens and where automobiles whiz past, a green overgrown path leads off the highway to a tiny clearing, shaded by fine old hau

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trees and bushes in which there is a stone foundation of a former house. The stones are moss covered and the structure which once covered them has long since disappeared. Yet this is historic ground, the homesite of one of the island's greatest queens.

Kaahumanu, queen of Kamehameha the Great, had her summer house on this cool spot. It was doubtless the same sort of grass house which was in general use, although probably more spacious and elaborate as befitted a queen. The dimension in one direction is 60 feet; the place was known as Kahoiwai, or "Returning Waters." (cited in Sterling and Summers 1978:287)

As can be seen from the preceding citations, there are various interpretations about the exact location of Ka'ahumanu's house within her large estate. ' \overline{I} ' \overline{I} placed the house "near Kawaihoolana," but this place name could not be found on any historic maps. Figure 11 shows the possible locations of the house as suggested by several other authors. The 1932 newspaper article places the house near the junction of Mānoa Road and O'ahu Avenue. Bouslog et al. (1994:198) used this reference to suggest that Ka'ahumanu's house may have been in the general location of the Salvation Army's Wai'oli Tea Room in the *'ili* of Ka'aipū, where Mānoa Road and O'ahu Avenue cross. This seems to contradict the 1932 article, which places the house in the *'ili* of Kaho'iwai, *mauka* of Ka'aipū.

Several other references place the house in the 'ili of Pū'ahu'ula, which is the land adjacent and mauka of Ka'aipū.

Mahope iho oia noho ana, ua hoi aku ka Aliiwahine Kaahumanu uo uka a noho he hale pilimauu Hawaii nui o ka ui i Puu ahuula ma Manoa, he uluhau ie wahi o keia aina. (Hōkū o Hawai'i, Feb. 18, 1930)

Translation:

After a while Kaahumanu went to Manoa to Puahuula to live in a large Hawaiian grass hut. There was a hau grove there. (Translation in Sterling and Summers 1978:288)

TMK: [1] 2-8-023:003



Figure 11. Possible (approximate) locations of Puka'ōma'oma'o, house of Queen Ka'ahumanu (tracing from 1882 map of Mānoa Valley, surveyed by E. D. Baldwin)

TMK: [1] 2-8-023:003

According to legends concerning the gods Kāne and Kanaloa journey through Mānoa Valley, Laura Green and Mary Kawena Pūku'i state that:

Hoomau no laua i ka laua huakai hele, a i Manoa, i Puahuula (I Puahuula i noho ai o Kaahumanu, ka wahine a Kamehameha naiaupuni).

The two continued their journey up Manoa to Puahuula (the place where Kaahumanu lived, wife of Kamehameha the conqueror of the islands). (Green and Pūku'i 1936:114-115)

Mary Kawena Pūku'i describes the home of the queen within a grove of guava trees near a pool and spring.

Queen Kaahumanu lived in Manoa. Her home was called Pukaomao. The first guavas and the first goldfish were brought there by the queen. Mrs. Malia Kakoi Kamana remembers her mother telling her that a tapu was placed on the guava; no one could have any unless the queen gave them to her. But the birds pecked the fruit, and soon the guava spread all over the island. (Mrs. Mary Kawena, Hawaiian Ethnological Notes, Vol. 1, p. 1378)

Pu-ahu'ula (Pu here is short for Puna) 'Spring-of-the-Feather-Cape.' There was a mo'o who lived there. Somewhere mauka of Pukaoma'o. (M. Pūku'i, 3/26/54, cited in Sterling and Summer 1978:288)

A book on Ka'ahumanu's death mentions such a feather cape associated with this location:

. . . Realizing that the end was near, Ka-ahumanu asked to be taken to Pukaomaomao, her mountain home far up in Manoa Valley. . . .

The couch upon which Kaahumanu was to rest had been prepared with loving care. Spread first with sweet-scented maile and ginger leaves, it was then covered with a golden velvet coverlet. At the head and foot stood towering feather kahilis. Over a chair nearby was draped the Kamehameha feather cloak which had been worn by Kaahumanu since the monarch's death. (Mellen 1952:270, 272)

Mary Kawena Pūku'i believed that Ka'ahumanu's house was near the end of Huelani Drive in the '*ili* of Pū'ahu'ula, where there was once a spring called Huelani. She believed that the name, *huelani*, the royal gourd, referred to the well that was once near Ka'ahumanu's home. This would place the house in the '*ili* of Pū'ahu'ula, *mauka* of the hill Pu'u Ahula. Princess Victoria Kamāmalu, the granddaughter of Kamehameha I, was said to have had a home on a hill in Pū'ahu'ula, *makai* of Ka'ahumanu's house (Bouslog et al. 1994:198). This seems to confirm that Ka'ahumanu's house was *mauka* of the hill Pu'u Ahula.

A 1940 article by Ethel Damon also placed the house in $P\bar{u}$ 'ahu'ula, at the end of Olopua Street.

On the north slope of the valley, leading the way for present-day roads and houses, Kaahumanu built a home where she often retired for quietness, she said, and freely moving air. Here she planted choice *lehua* trees and the tiny red Hawaiian hibiscus which still grew there not so long ago. Her Green Gateway she called this home, Pukaomaomao, through which she looked out over the valley below. Until very recently one could clamber up to the foundations stones of

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Pukaomaomao, in a little Japanese flower garden above Olopua Street, a short mile mauka of the Waioli Tea room, and today a thicket of hau trees still twists itself protectingly about some of those stones. (Damon 1940:5-6)

Most of the recent research on this question has placed the house in the 'ili of Puka'ōma'oma'o. As noted previously, the 1932 newspaper article said that the house was at the junction of Mānoa road and O'ahu Avenue. Mānoa Road and O'ahu Avenue actually merge at a second point farther up the valley. This location is within the 'ili of Puka'ōma'oma'o, just makai of the 'ili of Kaho'iwai. This location is also just west of the border of the 'ili of Komoawa'a, where Thrum (1892:113) placed the house.

Bouslog (1983:13) believes that the question has finally been answered. On the 1882 map of Mānoa Ahupua'a (see Figure 11), there is a triangulation station marked "Pukaomaomao." This map was drawn by Erdman D. Baldwin, the grandson of the missionary Dwight D. Baldwin, who had personally visited the queen's house. Thus E. D. Baldwin would have known exactly where the queen's house was located. This mapped point is about at the modern junction of Kumuone and Loulu Streets in the '*ili* of Puka'ōma'oma'o. Of all the suggested locations, this last is the most *mauka*, which would agree with the descriptions of Ka'ahumanu's house as at the "head" of the valley.

3.3.20 'Ulumalu Hill and Kūkaō'ō Heiau

According to legends, the *menehune* built a fort and a temple at the top of the hill 'Ulumalu. They were driven away from their fort by the high chief Kuali'i during his reign (sometime in the 1700s). Kuali'i rebuilt it after his seizure of the fort.

Another legend says that the *menehune* were driven from their fort and temple by the owls, who became their bitter enemies.

The legends say that the fairy people, the Menehunes, built a temple and a fort a little farther up the valley above Pu'u-pueo, at a place called Kukaoo, where even now a spreading hau tree shelters under its branches the remaining walls and scattered stones of the Kukaoo Temple. It is a very ancient and very noted temple site. Some people say that the owl-god and the fairies became enemies and waged bitter war against each other. At last the owl-god beat the drum of the owl clan and called the owl-gods from Kauai to give him aid. (Westervelt 1963a:132)

With the aid of the Kaua'i owls, there was a great battle and the "fort and temple" were captured; the *menehune* were driven out of the valley. The *heiau* and the hill were also associated with a legendary cave. In "The Legend of Punahou Spring" (Thrum 1892:113), the twin sister and brother Kauawaahila and Kauakuahine hide themselves in this cave when they run away from their cruel stepmother.

In the late nineteenth century, the Castles (descendents of an early missionary family) built a large estate on this hill, called Pu'uhonua. The house was later torn down and many small houses were built in this area during the 1910s. Several owners of these houses have heard the "ghostly footsteps of children" running up and down their stairs in these houses over the years. Glen Grant (1996:113) has speculated that these sounds may be related to the child-sized *menehune*, running over the area on which their fort once stood.

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3.3.21 Pu'u Pueo

In several versions of the story of Kahala-o-Puna (Sterling and Summers 1978:285), the owl that revives the Princess of Mānoa lives on Pu'u Pueo, or "Owl Hill" (Pūku'i et al. 1974:205). Kauhi, the fiancé, first leads Kahala to the foot of the valley near a spot called 'Aihualama (the name of one of Mānoa's tributary streams). The owl god finds her, revives her, and carries her back to the head of the valley. In the second attempt by the fiancé to kill Kahala, he leads her along a ridge of the valley and kills her with a bunch of *hala* nuts. The owl again finds her and revives her. At the third attempt, the fiancé leads Kahala across the ridges of Mānoa to Nu'uanu, and kills her there. The longest waterfall in the back of Mānoa Valley is supposed to be the tears of Kahala for the suffering caused by her jealous fiancé (Westervelt 1963a:129-130).

The owl of Pu'u Pueo was sometimes known as Pueo Ali'i, the king of the owls. He was associated with other ghost spirits who he led as an army along the hillside below Pu'uhonua Temple (the Castle home). Kāhuna would consult with him by signs or oracles (Westervelt 1963a:130-131). The owl king ruled over the valley and acted as an avenging spirit. One time, the owl "sought to execute judgment upon a culprit for some alleged transgression, but upon the pledging of the accused for a hearing before executing judgment, it became thereafter the established custom that no one should be condemned till tried and proven guilty" (Thrum 1892:111).

Pu'u Pueo (or the nearby 'Ulumalu hill) may have been the site of the *heiau* mentioned in the "The Story of Kapo'i". Kapo'i, who lived in Makiki, had gathered some owl eggs for his supper. Pueo, the owl followed him to his home and begged for the return of the eggs. In kindness, Kapo'i returned the eggs, and in return the owl agreed to be Kapoi's personal '*aumakua*, or guardian god.

Ka lilo ana o ka pueo i akua no Kapoi.

Kauoha mai la ka pueo ia Kapoi e hana i Heiau; a e kukulu i kuahu a i lele, a o ka inoa o kahi e kukulu ai o Manoa. Kukulu iho la o Kapoi i ka Heiau a pua. A kau iho la i ka mohai a me ka maia iluna o ka lele, a kapu iho la, a noa ae la. (Kamakau, Ka Nūpepa Ku'oko'a, July 22, 1865)

Translation:

The owl then became a god for Kapo'i. He commanded Kapo'i to build a *heiau* and a *kuahu* and a *lele* [altar where sacrifices are placed] altar within it. The *heiau* was to be built in Manoa. Kapo'i built the *heiau* and placed his sacrifices and bananas on the *lele* altar; he imposed the *kapu* and freed it. (Kamakau 1991b:23)

This angered the king of O'ahu who was building his own *heiau*, and had announced that no one else could set a *tabu* on a *heiau* and lift that *tabu* before him. Since Kapo'i committed this very act, the king decided he must be killed and sacrificed at the chief's own *heiau*, at Kūpalaha in Waikīkī. The owl '*aumakua* made an appeal to the king of the owls, who lived in Mānoa Valley. The owl king summoned all the owls of the islands, who attacked the king's men and set Kapo'i free. The place of this great battle in Waikīkī was known as Kūkae-unahi-o-pueo, meaning "the-confused-noise-of-owls-rising-in masses" (Westervelt 1963a:127-137). Another version says that the owls scratched at the eyes and noses of the men and covered them in excrement, so the place of battle was called Kūkae-unahi-o-pueo, meaning "the scaly excrement

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of owls." The 'auamkua of Kapo'i was from then on worshiped as the god Kū-kaua-kahi. (Kamakau 1991a:23).

3.3.22 Pu'u o Mānoa (Rocky Hill)

According to the reminiscences of boys who attended Punahou School, there were many caves in Pu'u o Mānoa, which they called Rocky Hill. Some boys once found a wooden idol "in a cave on Rocky Hill, a vestige of the *heiau* that once stood in that area" (Foster 1991:128). The *heiau* they refer to must be Kūkaō'ō Heiau, which was actually on 'Ulumalu Hill, *mauka* of Rocky Hill. It is possible, since both hills are on the same ridge, that the boys considered 'Ulumalu part of Rocky Hill. The boys at the school gave this hill its current name, as they did many of the peaks and hills of Mānoa Valley, including Tantalus and Mount Olympus.

There is a small hill back of Punahou, which is very rocky. And for that reason the Punahou boys gave it the name of Rocky hill. . . . The sides are covered with cliffs about 40 or fifty feet high. Some times on Saturday the boys go up to Rocky hill and roll down the great rocks over the cliffs. Which come down with a great crash.

There are also some magnificent caves there. Which we boys have found. There are some Wilde cates [sic] which have dwelling in the caves. The boys Once had the success of killing one which we brot down to Punahou and bearid it with great seremony. (Boy's composition 1848, cited in Alexander and Dodge 1941:136)

As previously noted in the above section on legends concerning springs, Rocky Hill had several alternate names. In the Legend of the Waters of Kāne at Punahou, Rocky Hill is called Keapapa. In the Legend of Kauawa'ahila (Wa'ahila Rain) and his sister Kauakiowao (Mountain Mist), the twin children of the chief Kaha'akea hide in a cave in Rocky Hill to escape from their stepmother, Hawea. When Kaha'akea learns of his wife's cruelty to their children, he kills Hawea and then himself. The hill in which the children hid was named after the father, Kaha'akea.

3.4 Interview with Maka Woolsey about West Mānoa Valley

Maka Woolsey, a Chinese-Hawaiian businesswoman, was the granddaughter of Nāholowa'a, who had moved to O'ahu from Maui during the reign of Kamehameha II and received a threeacre *kuleana* in Mānoa Valley called Keaulana. With her second husband, George Woolsey, she became involved in the growing of taro and the sale of *poi* (pounded taro), becoming the proprietor of the Mānoa Woolsey Poi Factory. During the writing of the book "Manoa, the Story of a Valley" (Bouslog et al. 1994:99-104), she was interviewed about legendary places in the valley. The interview is written as if one is walking up the western valley on the old trail, now covered by Mānoa Road.

Maka Woolsey began her story at Punahou College. She pointed out the location of $P\bar{o}hakuloa$, a $p\bar{o}haku kapu$, or sacred stone in the long rock wall of Punahou School, marking the boundary of Kapunahou. The stone was placed there during the reign of the chief Paki. Another sacred stone, Keapoapo, was also on the Punahou campus. According to Maka Woolsey (Bouslog et al. 1994:111), the two stones call to each other: "You come here," says one, "No, you come here," answers the other.

Heading into the valley, one next stopped at Kapukahau at the present junction of Hastings and Punahou Streets. A hut owned by Ke'ilianu offered shade and rest to travelers. Further on was Keaeae, the "red in the rock." This $p\bar{o}haku$ was named for a legend concerning a young man named Keaeae, who was slain by his own family to save him from any possible misfortunes in his future life. When he was slain, this rock on the Mānoa path turned deepest red (Bouslog et al. 1994:111).

At the summit of the hill were once two high and two low stones, called $p\bar{o}haku kau kanaka$, which were placed as seats for resting (today just *makai* of Lanihuli Drive).

Across the road, in a Punahou pasture, was Nukalaiki, a $p\bar{o}haku$ with the face of a man. From this point Maka pointed out stones on Pu'u o Mānoa (Rocky Hill), which may have been $m\bar{a}hele\bar{a}ina$ or "division stones" used to mark the boundary line between Mānoa (chiefs and commoners division). The summit of Pu'u o Mānoa was also used to sight fish; if fish were sighted a signal was sent to the peak Pu'u o Pia, in the upper valley, to tell people to come down to fish.

At Keoneakeke, a sandy *makai* slope near the junction of Mānoa Road and East Mānoa Road, was a dangerous place. It was here that sweet potatoes growing on Round Top would be dislodged by high winds and come rolling and bouncing down to the road. This legend is also used to describe the one hollow area at the base of Round Top. According to Maka Woolsey:

The potato had once grown in a patch of an old couple. It grew larger and larger and the couple walled it up with sand, trying to cover it. One could see this sandy mound from great distances. One day the old couple went to Wai'alae to catch fish for the ceremony of 'uala. When they looked back to Mānoa, they saw that the potato had vanished. When they hurried back, they saw that it had rolled down the hill, resting in the hollow below. All the people of the area saw the great potato, made an *imu* (earth oven) and each one in the village had a piece of the great 'uala (Bouslog et al. 1994:112)

At Pu'u Pueo, the last hill of the lower valley was a cave where the owl, Pueo, watched over the valley. It is said that Queen Ka'ahumanu could see signals from Pueo from her house further

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up in the valley. Next was Kalumalu or "breadfruit shade," the hill location of Pu'uhonua, the Castle home. At a gulch near the head of Castle Trail was a $k\bar{u}$ 'ula or fish god stone name Kukalia. At this spot, fishermen could look down to the sea and search for schools of fish, such as *awa-no* 'okina (milkfish, *Chanos chanos*) and *āholehole* (Hawaiian flagtail, *Kuhlia sandvicensis*), fish that traveled into freshwater. These came up Mānoa Stream, then went past Ka'iukūkalu in Mō'ili'ili, then to Kamakawiliwili, then Kaumake, Hipawai, Halelena Stream to Kalehua, then Kukuio, and finally to Kawaiho'olana and Hopenui (Bouslog et al. 1994:112).

The hero Kawelo once threw his $5\bar{}\,5$, or digging stick, which landed at Kukakao'o on the ridge. This land once had a wall built by the *menehune* across it. On the same ridge was a peak called Kahuluokapua'a, which was *kapu* and "even the birds turned and flew around it" (Bouslog et al. 1994:113).

At Kūkaō'ō were two companion $p\bar{o}haku$ called Hauola or "new life." One could regain one's health by sitting on these stones. On the nights of $P\bar{o}$ Kāne (27th night of the lunar month), one could see Huaka'i, the headless man, on these slopes.

In the upper valley was the land called Ka'aipū, a well-watered area shaded by ' $\bar{o}hi'a$ trees where Kamehameha III once built his retreat. Ka'aipū is near the present site of the Wai'oli Tea Room. Near here was also a $p\bar{o}haku$ which spoke to a local woman in a dream. The stone was covered with rubbish, and told the woman that if she cleaned the stone and moved it to her *lānai*, it would provide good fortune to her family for many years. When the family moved away and left the stone behind, only misfortunes happened to the next owners of the property. Finally, the original owners moved the stone to their new home in Kalihi-kai.

The adjoining land is Pū'ahu'ula, which has a gulch named Kūwowowo, meaning "the place of the echo." Any sound here forms an echo. Next is the land Kaukahōkū, meaning "the hanging star," named because the *maka 'āinana* traveled by this place on the way to their taro patches in the upper valley in the early morning "by the light of the morning star." There were six great taro lands in the upper valley. The most *mauka* was Kahaulani or "spreading *hau*." Purple taro, called *mana ulu*, was grown at Hi'iakawai, a part of Pu'ulena. Ka'ahai'ioa was a taro patch at the site of the coconut grove near Woodlawn. Other taro patches were Puohau, Kukuio, and Kalehua.

Next was Puka'ōma'oma'o, the home of Queen Ka'ahumanu. *Makai* of the residence were the waters of Waiakeakua and a pool called Kawaiho'olana, which means "to float." Only the Queen could use this pool; it was *kapu* (taboo) to everyone else. On the mountainside of Puka'ōma'oma'o, was Pukakomo, a natural opening into Pālolo Valley, which was used as a trail to this neighboring *ahupua'a*. At Lili'uokalani's death in 1917, this opening was closed off by rocks. This may be the cave inhabited by Kamehameha and his troops during their invasion of O'ahu (Bouslog et al. 1994:113).

Maka also knew many other mysteries of Mānoa. Along the cliffs of the left side she could point out where the burial caves were located. From any of these caves, fragments of *tapa* waved ever so gently as a sign of remembrance. She spoke of Poki, the guardian dog of the valley, who if seen was a warning to the people of *kapu*. When you saw this dog, it was best to keep away from Mānoa. 'Ololi'i, the pig and dog *akua* [god], who had no hair, was also known to Maka. This god lived in upper Mānoa at the site of '*aki'aki* (rushes). (Bouslog et al. 1994:113)

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3.5 Settlement and Subsistence in Mānoa

Handy's (1940) description of Mānoa suggests it was once home to an extensive Hawaiian settlement supported by vast taro gardens:

In upper Manoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Manoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated, but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches." (Handy 1940:77)

The relative fertility and productivity of Mānoa is reflected in the "Indices of Awards," which lists 74 Land Commission Awards (LCAs) in 21 named localities at Mānoa (discussed in detail in Section 4.2 below). These and other Land Commission documents attest to the substantial population of the area in the middle nineteenth century and presumably earlier. Coulter's (1931) population estimates for O'ahu (Figure 12) show a large settlement in the Mānoa Valley. In the late eighteenth century, King Kamehameha I's warrior-chiefs were attracted to the land for the cultivation of food for their invading army ('Ī'ī 1959; Kamakau 1961).



Figure 12. Portion of Coulter's (1931) population-estimate map for O'ahu in 1853 showing approximately 350 people in Mānoa Valley (each symbol represents 50 people)

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3.6 Streams, Springs and Pohaku

Mānoa Valley is watered by five tributary streams that merge to form the lower Mānoa Stream. The five tributary streams are 'Aihualama (literally, eat the fruit of the lama tree), Waihī (literally, trickling water), Nāniu'apo (literally, the grasped coconuts), Lua'alaea (literally, pit [of] red earth), and Waiakeakua (literally, water provided by a god). There are seven waterfalls in the back of Mānoa Valley, named Wai'ihī'iki (literally, small trickling water), Wai'ihī'nui (literally, big trickling water), Lua'aulaia, Nāniu'apo, Wa'aloa, Kahuwai'iki (literally, little water tender) and Waiakeakua (literally, water [used] by the god) (Pūku'i et al. 1974). Several of these waterfalls in the back of Mānoa Valley are shown in Figure 13.

There are at least seven springs in Mānoa Valley all of which are associated with the gods Kāne and Kanaloa. The springs discussed in Section 3.3 of this report are Kānewai, Hualani, Wailele, Punahou, Ka'aipū, Wa'aloa, and Waiakeakua.

Kānewai Spring is of particular significance to the project because of its location on the UH Mānoa campus. Although it is no longer visible, Kānewai Spring is thought to be located near the Kamakakūokalani Center for Hawaiian Studies in the *'ili* of Kānewai. The *'ili* of Kānewai was given to Kaleiheana, a warrior ally of Kamehameha I, after the battle of Nu'uanu in 1795. When Kaleiheana died the land was deeded to the descendants of Kamehameha and finally became part of the Bernice Pauahi Estate. In 1945, the land was deeded to the University of Hawai'i, which evicted several farmers who were still growing taro and other food plants. The abandoned taro *lo'i* were rediscovered by students at the college in 1980, and were cleared and restored. This restored area was called the Kānewai Cultural Garden.

Pōhaku in Mānoa Valley are also discussed in Section 3.3. Pōhaku in the area include: Ka'aipū, Kaumana, and Kau'i o Mānoa.



Figure 13. Waterfalls in the back of Mānoa Valley as seen from Kanānā (photograph from Bouslog et al. 1994:4)

3.7 Trails of Mānoa

Several place names within Mānoa are located on a map of early nineteenth century trails as described by John Papa ' \overline{I} 'ī (Figure 14):

Our description of the trails of the royal town is finished, but we have not yet told of the trails going to lower Waikiki, Kamoiliili, and Manoa. . . . At Kawaiahao a trail passed in front of the stone house of Kaina, late father of Kikaha. The trial went above Kalanipuu's place, along the stream running down from Poopoo to the sea, close by Kaaihee in Makiki, to Puu o Manoa, then below Puupueo, where a trail branched off to upper Kaaipu and Kahoiwai, and another to go below Kaahulue, to Kapulena [Pu'ulena] and Kolowalu. ('Ī'ī 1959:92)

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Figure 14. Early nineteenth century trails on the southwest coast of O'ahu (illustration from 'Ī'ī 1959:93), showing locations of some place names in Mānoa

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Section 4 Historical Background

In 1792, Captain George Vancouver described Mānoa Valley on a hike from Waikīkī in search of drinking water:

We found the land in a high state of cultivation, mostly under immediate crops of taro; and abounding with a variety of wild fowl chiefly of the duck kind ... The sides of the hills, which were in some distance, seemed rocky and barren; the intermediate vallies, which were all inhabited, produced some large trees and made a pleasing appearance. The plains, however, if we may judge from the labour bestowed on their cultivation, seem to afford the principal proportion of the different vegetable productions ... At Wo'aho'o [O'ahu], nature seems only to have acted a common part in her dispensations of vegetable food for the service of man; and to have almost confined them to the taro plant, the raising of which is attended with much care, ingenuity, and manual labor. In the several parts of its culture, the inhabitants, whether planting, weeding, or gathering, must, during the whole of these operations, be up to their middles in mud, and exposed to the rays of a vertical sun ... (Bouslog et al. 1994:9-10)

Exactly one century later, before it was urbanized, the beauty of Mānoa Valley was described by Thrum:

Manoa is both broad and low, with towering hills on both sides that join the forest clad mountain range at the head, whose summits are often hid in cloud land, gathering moisture there from to feed the springs in the various recesses that in turn supply the streams winding through the valley, or watering the vast fields of growing taro, to which industry the valley is devoted. The higher portions and foot hills also give pasturage to the stock of more than one dairy enterprise.

 \ldots For nearly a mile the road leads by or along pasture fields with no vestige of tree or shrub other than the lantana pest and an occasional algeroba (kiawe), and passes along Round top or Ualakaa \ldots

At this summit of the road the whole valley opens out to view, the extensive flat area set out in taro, looking like a huge checker-board, with its symmetrical emerald squares in the middle ground, surrounded by pasture fields on the slopes at the base of the guarding hills. Here and there 'mid sheltering trees, humble dwellings dot the scene around, while up the rugged slopes the almost endless shades of green with black worn seams of rock oft times lightened by 'silvery thread of torrent', forms the background to one of the most charming pictures, either in the clear sunlight, heightened as it often is by cloud shadows chasing rifts of sunshine down the mountain sides; or, as frequently, may be, to watch the drifting mist or rain sweep down one side of the valley, while the other basked in the sun, throwing over its weeping neighbor a "bow of promise" so radiant and bright that its-double, or even triple, reflection is no rarity. (Thrum 1892:110-111)

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Mānoa Valley was a favored spot of the *ali'i*, including Kamehameha I, Chief Boki (Governor of O'ahu), Ka'ahumanu, Ha'alilio (an advisor to King Kamehameha III), Princess Victoria Kamāmalu, Kana'ina (father of King Lunalilo), Lunalilo, Ke'elikōlani (half sister of Kamehameha IV), and later Queen Lili'uokalani.

The site of the various houses that once sheltered Haalilio and his retinue is pointed out just above the old Ehu homestead, known later as the 'Charley Long' premises and, till very recently, part and parcel of Montana's Kaipu Diary. Rev. H. Bingham, of early Hawaiian Mission fame, is also referred to by old timers as having had a residence adjoining the Haalilio premises, though his history makes no mention thereof. (Thrum 1892:114)

4.1 Early Ownership and Use of Mānoa Valley

Mānoa was given to the chief Kame'eiamoku by Kamehameha I after his conquest of O'ahu. After Kame'eiamoku's death, the land was inherited by his son Ulumāhiehie (or Hoapili), who became the governor of Maui during the reigns of Kamehameha II and Kamehameha III. Liliha, the daughter of Hoapili, inherited the lands in 1811 and brought them with her to her marriage with the high chief Boki, governor of O'ahu. They had a residence at Punahou in Mānoa Valley which they often used (Bouslog et al. 1994:14-15). As noted previously, the entire floor of Mānoa Valley was a "checkerboard of taro patches."

Boki traveled with Kamehameha II on his ill-fated trip to England. While there, Boki met John Wilkerson, a British agriculturalist who had once been a planter in the West Indies. Boki and Wilkerson traveled back to Hawai'i on the English ship *Blonde*. In 1825, Wilkerson planted seven acres atop Punahou Hill (Pu'u Pueo) with sugar cane, the first sugar plantation in the Hawaiian Islands.

I ka makahiki 1826, ua hoomaka ia ke kanu koana ma Manoa, he haole Bertiania ka mea nana i hana. O Boti a me Kekuanaoa kekahi mau alii kokua nui i ka mahi ko, a o ia paha ka hoomaka mua ana o ka wili ko ma Hawaii nei. A i ka haalele ana o ka haole, ua lilo ka wili ko ia Boti, a o Kinepu ke kanaka nana e hooponopono. Ua kukulu ia ka hale puhi ko ma loko o ke kulanakauhale o Honoluu, ma ka pa kokoke i kahi o Keolaloa Sumner ma e noho nei. He mau hana maikai keia a Boti. (Kamakau, Ka Nūpepa Kū'oko'a, May 23, 1868)

Translation:

In 1826 the cultivation of sugar was begun in Manoa valley by an Englishman. Boki and Ke-ku anao'a were interested in this project and it was perhaps the first cane cultivated to any extent in Hawaii. When the foreigner gave it up Boki bought the field and placed Kinepu in charge. A mill was set up in Honolulu in a lot near where Sumner (Keolaloa) was living. For this action Boki is to be commended. (Kamakau 1992:278)

Wilkinson died in 1826, the mill for the sugar was moved to Honolulu, and Boki lost interest in the endeavor. In 1828, he sold the sugar plantation and sugar mill (or took as partners) to four Honolulu businessmen: William French, Stephen Reynolds, John C. Jones, and John Ebbets (Kuykendall 1938:172). French encouraged Boki to turn the sugar mill into a distillery. When

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Ka'ahumanu heard of this, she was outraged and took the Punahou lands away from Boki and gave them to Hiram Bingham and his wife as a base for mission work.

John Wilkerson was also the first to try to grow coffee in the islands.

At the foothills just above Kaipu, is the reputed location of the first Coffee nursery of the islands, also the work of John Wilkinson, with plants brought by him in the <u>Blonde</u>, from Rio de Janeiro. All the shady recesses and glens at the head of the valley show evidences, to-day, of this early agricultural effort, but to no pecuniary or commercial advantage, for it is all neglected and overgrown. (Thrum 1892:114)

Captain John Kidwell brought a variety of pineapple to the islands called Smooth Cayenne in 1885. He conducted experiments with 31 varieties of pineapples on his farm, in the vicinity of the future UH campus. Smooth Cayenne worked best, and this variety became the standard for the pineapple industry. The sugar cane plantation was destroyed, but some of the coffee plants were used to start coffee cultivation on the islands of Kaua'i and Hawai'i (Bouslog et al. 1994:15). The only remaining structures associated with this endeavor noted by Thrum in 1892 were a few filled-in cisterns and wells, and stones marking the western side of the sugar house foundation.

Prince Tute of Tahiti, who became the tutor of Kamehameha III, was also given a piece of land by Boki, in a lot adjacent to the sugar plantation. During the Māhele, he enclosed his lot with a stone wall. Tute died in 1859, but his descendants (the Sumners) continued to live in the area, which later became part of the Montano ranch, and then part of the fruit farms owned by Carlos Long (Bouslog et al. 1994:16). On the 1882 Baldwin map (see Figure 7), Ha'alilio and Tute are shown owning two pieces of adjoining land in Kalehua and Pu'upueo. Queen Lili'uokalani later owned land on the old Brenig premises bordering the land of John Stevenson.

Ka'ahumanu had a great estate in the upper valley, which included the lands of Pu'ulena. After the deaths of Boki, Liliha, and finally Ka'ahumanu in 1832, many of these royal lands were given to Charles Kana'ina, the father of King William Lunalilo. Kamehameha II was also said to have maintained a summer house in Wai'oli and Ka'aipū. Lunalilo gave some of these lands to Kapōkini, who gave them to Ha'alilio. When Ha'alilio went on a diplomatic mission to England, he returned the lands to Kamehameha III (Bouslog et al. 1994:16).

An 1817 map by Otto Kotzebue (Figure 15) and an 1855 map by La Passe (Figure 16) show a dense concentration of population in Mānoa Valley. In 1836, French missionaries visited Mānoa, counting 50 houses. If each house contained five people, this would put the population at 250 Hawaiians. The general population of Honolulu and the coastal plain was about 6-7,000 people (Coulter and Serrao 1932:109), which probably represented only a small percentage of the total population of the area that existed before the Hawaiian people were decimated with war, exotic diseases, and the disruption caused by the influx of Westerners and Asians, and their influence on the economy and culture of Hawai'i. An 1847 record lists 34 eligible landowners; only two were non-Hawaiian. An 1849 tax list includes 195 Hawaiian names, meaning the population of Mānoa was probably about 1,000.

4.2 Mid Nineteenth Century and Land Commission Awards

A total of 68 commoners were granted kuleana (Land Commission) awards in Mānoa makai of King Street, totaling 332.26 acres (Figures 17, 18 and 19; Table 1). Twenty-seven awards

were less than an acre; 31 awards were less than five acres, four awards were less than 10 acres; and one award was for more than 10 acres (to 'Akahi, a *wahine* [female] cousin of Bernice Pauahi Bishop, in Kaipua '*ili*, LCA 5368:1, RP 1262, 10.25 acres); five awards were for more than 30 acres (J. Stevenson [Ka'aipū, 34.96 acres, and Nāniu'apo, 30.17 acres], Kaleiheana, 66.59 acres, Kaunuohua, 35.40 acres, and Beckley, G. for heirs, 36.10 acres). Victoria Kamāmalu received most of Kānewai 'Ili. C. Kana'ina (father of King W.C. Lunalilo) received the '*ili aina* of Kolowalu and Pāmoa, and all of Kukuio and Kalehua. The largest grant went to the American Board of Commissioners for Foreign Missions who received a total of 301.68 acres; this became the campus for Punahou School (Bath and Kawachi 1990:3-5). Chief Boki gave Hiram Bingham this piece of land in 1829 (DeLeon 1978:3).

The Land Commission documents suggest that most of the agriculture and habitation at Mānoa was in the east-central part of the valley (along Mānoa Stream) between the present-day Mid Pacific Institute and the Chinese cemetery. There were a few claims and awards in the far northern part of the valley, at Punahou, and a few in the Kānewai/Kalaepōhaku area.

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Figure 15. Kotzebue map of 1817 showing vicinity of project area (should be understood as somewhat schematic)

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Figure 16. LaPasse map of 1855 showing vicinity of project area (should be understood as somewhat schematic

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Figure 17. 1882 E. D. Baldwin map, showing Land Commission Awards and Grants in Mānoa Valley

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Historical Background





Figure 19. 1847 Hawaiian Government Survey map; surveyed by Theophilus Metcalf

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Claim	Claimant	Location	Notes
17	Jones, Eli	Beretania St.	House
40	Kai, D.	Kaʻahaloa	Māhele Award
42	Maigret, Louis	Wailele	
228	Kaleiheana	Kānewai	Kānewai Pool
387	ABCFM (mission)	Punahou	Received from chief Boki: spring house
707	Kaiaina		Received and from Kamehameha
819	Beckley, George	Wailele	Farm called "Kawailele"
1130			House, 2 patches, pasture
1267	Kawela	Pa'akea	3 'āpana: taro lo'i; taro lo'i; house
1273	Spear	King St.	
1274	Hulilau	Piliamo'o	Dry taro, 12 taro lo 'i, hala trees
1356	Namaka	Piliamo'o	2 taro lo 'i
1525	Kuaana	Piliamo'o	2 taro, house, pasture
1617	Kenao	Piliamo'o	4 taro, 1 ditch, 2 houses
1627	Keonea	Kānewai	
1636	Haole	Pa'akea	2 'āpana: house, fence; house, fence
			3 'āpana: pahale (house); lo'i ma hale lena;
1728	Kuikuikahi	Halelena, Wailele	taro lo'i, pasture
1733	Kaheenalu	Halelena	4 loʻi
		Hamamakahwaha,	
1734	Kauhi	Hipawai	2 'āpana; house enclosed; 6 taro lo 'i
1744	Hakuole	Wailele	5 taro <i>loʻi</i>
1748	Ono	Kānewai	Houselot
1751	Aea	Piliamo'o	3 'āpana: house; taro lo 'i; taro lo 'i
1755	Kaluaapana, Peter	Hamamakowaha	
		Hamamakawaha,	
1769	Malaihi	Kahamama	Taro <i>loʻi</i>
1806	Hinai	Kānewai	3 taro lo'i
1813	Keaka, I.	Piliamo'o	2 taro lo'i
1816	Kaaha	Pa'akea	2 ' <i>āpana</i> : 6 taro, pasture; taro <i>lo</i> ' <i>i</i>
1925	V		'Apana 3-4 - Pasture with 2 houses; 'āpana 5 -
1825	Kuewa	Kanewai	
1827	Wananee	Wallele	
1828	Ewaloa	Wailele	3 'apana: taro lo'i; taro lo'i, house
1829	Hoonoku	wailele	8 taro <i>lo 1</i>
1831	Mamala	Pāmoa	<i>3 apana</i> , 8 taro <i>10 i</i> , <i>auwai</i> , nouse; taro <i>10 i</i> ; house
1906	Kaumakaokea	Hamamakowaha	House at Kolowalu
1908	Kalaau	Kamoʻoleno	4 lo'i
1909	Kajanuj	Kolowalu	'Auwai 6 taro la'i houselot
		Hamamakawaha.	
1910	Apiki	Kolowalu	'Auwai, pili, taro for konohiki
1911	Naihe	Hamamakowaha	Taro, house
1918	Kamahiai	Kolowalu	2 'āpana: pahale; 6 lo'i

Table 1. Land Commission Awards for Mānoa Ahupua'a

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Claim	Claimant	Location	Notes
1920	Paaluhi	Pu'ulena	3 taro lo 'i, pasture, house
1921	Moku	Kahawai	9 taro lo'i, kula, house
1922	Nawaanui	Kali'i	13 lo'i, sweet potato
1923	Kekua	Kahoʻiwai	6-8 lo'i, 'auwai, house
			3 'āpana,: 7 taro lo'i; taro lo'i, house on south
1924	Kealohapauole	Kauala'a	side; pasture
1925	Paniani	Koloalu, Koloaluiki	'Auwai, pili, pasture, 2 houses
1925	Koi	Kolowalu	Pili, taro, land sinking in
1926	Nanauki	Kolowalu	1 'āpana: pasture, house; taro
1927	Nawaakakele	Pāmoa	12 lo'i, kula, house
1928	Aiia	Pu'ulena	4 taro, pasture with house
1929	Kaanaana	Pu'ulena	Lo'i for konohiki, 'auwai, pasture
			2 'āpana: taro lo'i, pasture, houselot; lo'i for
1930	Kaaea	Pu'ulena	konohiki
1931	Kaiwi	Pu'ulena	9 taro, pasture, house
1025	D	Kamamakoaha,	7.0 4
1935	Puuwaewae	Hamamo	7-8 taro 10 1
1937	Капагеропаки	Puluiena	o taro <i>lo 1</i> , pasture, nouse
1938			
1940	Upepe	Pu ⁻ ulena	laro lo'i, pasture
1944	Maemae	Komoawaa	14 taro lo [°] 1, <i>kula</i>
1945	Kamaikaaloa	Komoawaa	6 taro <i>lo</i> i
1946	Makalii		16 taro <i>lo'i, kula</i> , houselot
1947	Puuki	Komoawaa	6 taro <i>lo</i> 'i, <i>kula</i> , houselot
1948		Komoawaa	7 taro <i>lo'i, kula</i> , houselot
1949	Kipi	Hipawai	13 taro <i>lo'i</i> , kula
1950	Kalua	Hipawai	3-4 taro <i>lo</i> 'i
1951	Nui	Kahoʻiwai	Taro <i>lo</i> 'i, house
1980	Haole	Piliamo'o	
2209	Keaulana	Kaaipuluna	Kalo taro & kula; pasture named
2216	Kaaba	DEmos	2 ' <i>āpana</i> : 16 taro, watercourse; house site near
2210	Kaone	Pāmoa	di fan guar tana la fi and nastura in asah
2210	Kaawanua	- Failioa	4 <i>upana</i> : taro <i>to t</i> and pasture in each
2219	Keawe		Z taro lo l
2209	Keaulalia	Datakaa	Adio taro & kuia; pasture named
2502	Kaaliilla	Piliamo (o	2 taro <i>to t</i> , pandanus, nouse
2020	Kaanu	Pinamo o	
3028		Punanou	
3322	Tute, T.	Haliimaile	Garden farm with stone wall
3906	Neki, K.	Kolowalu	Heiau of Kūkaō'ō, fence; house in
4211	Kaululaau	Kaahaloa iki, Manuahi	10 taro patches & pasture in one
4294B	Kalaweaumoku	Pāmoa, Ka'ahaloa	2 'āpana
1605		Kaho'iwai, Kaluohau,	6 ' \bar{a} pana: 5 taro lo'i; 3 taro lo'i; pasture; 1
4005	Hakau, wahine	Hokeulu, Pi'inaio	atten; 1 ditch; 1 fish pond
2308	Akanı	Ka'aipu	staro lo'i

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Claim	Claimant	Location	Notes
5579	Kahapapa	Hipawai	5 taro lo'i, Kahawai Stream
5937	Paukuwahie	Piliamo'o	
6450	Kaunuohua	Pu'ulena	Loko Kūwili
6616	Nuuanu	Kānewai	
6712	Paikau	Kalena, Wailele, Pu'ulena	3 'āpana: 2 lo'i, kula house; mountain land; 28 lo'i, kula, house
_7713	Kamāmalu, Victoria	Kānewai	
8555	Kaina, M.	Maka'īlio	4 loʻi, 'auwai, pasture
8559	Kanaina, C.	Kukuhio, Pāmopa	2 ' <i>āpana</i> : taro; 'ili of Kalowalu
8957	Kuhaumea	Kaʻahaloa	5 taro lo'i, house 2 hala trees
8958	Kahele	Ka'ahaloa	1 taro <i>lo'i, kula</i> , house
8959	Kuamoo	Ka'ahaloa	8 taro lo 'i, sweet potatoes
10289	Namokae	Halelepa (Halelena)	2 'āpana: 6 taro patches, pasture
11029	Stevenson, John	Kaʻaipū, Kapo, Kukona, Kamakela	3 ' <i>āpana</i> : <i>pali</i> , pasture (22 acres); pasture, <i>kalo</i> , stream (9 acres); <i>kalo</i> (2 acres)
11306	Kalama	Halelena, Kolowalu	2 'āpana
11307	Kea	Kolowalu	9 lo'i, house site

4.3 The University of Hawai'i at Mānoa Land Commission Awards

Charles S. Bouslog (in Kobayashi 1983:183) gives the following summary account of the history of Hawaiian tenure of the University of Hawaii at Mānoa lands:

The grantees of land at the mahele (mostly 1848-50) have their names recorded forever in all subsequent deeds and title search leads back to the first owner. All but one of these names for campus land were Hawaiian. Names seen are Ewaloa, Kapehana, Kaumakapili, Mooiki, Ono, Poonui, Puoa, Hakuole. Charles Kanaina (the father of King Lunalilo) at mid-century was the owner of much of the Mauka Campus and of the large areas now in the Lyon Arboretum. For most of these men, it is a one-time legal enshrinement; few of the names are seen again, except in deed.

I have attempted to trace the ownership changes of some of the original grants: 718, 882, 1744, 1748, 1828 (see the 1882 map).

In the "Native Register" (p. 270) Ewaloa signed with his mark. There is a reference to his widow in 1876, and to an heir in 1881, when the land passed into the hands of Emma Davison. No more Ewaloa.

Hakuole has modern descendants but the land is no longer theirs. For Land Grant 1744, he made his mark in the "Native Register" and testified: "I got this land in 1830...for taro land for cultivating sweet potato at Kawailele in the land of Lui Palani (Louise French), the konohiki." This was on December 3, 1847. An heir sold to Ilikealani in 1864. The family continued in the valley. One man is listed as

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a Manoa taro planter in the city directory of 1888. In 1894-95 one is listed as living in Manoa. The last kuleana seems to have been sold to a Magoon in 1896.

The largest parcel in Mānoa (LCA 228, 66.59 acres) for a private individual was awarded to Kaleiheana at Kānewai. John Papa 'Ī'ī (Native Register; August 14, 1846) relates the following

Kalaiheana's land, called Kanewai, is at Waikiki. It has some leles in Mānoa . . . that was the land of Keeaumoku at Waikiki, adjoining the north side of Kalaepohaku. This land became his upon the victory of Kamehameha I at the Battle of Nuuanu, also Waialua, as was the custom of granting land to chiefs at that time.

When the *peleleu* (Kamehameha's fleet of large canoes) came, the land passed from Ke'eaumoku to Papa and Kaleiheana and all the *lele*(s) were also conveyed. In Foreign Testimony, ' \overline{I} ' \overline{I} relates the following:

Kanewai is its name. It borders on the sea which enters part of it. On S. and E. is land of Kalaepohoku on NE & N is land of Waihi. From NW & W round is Piliamo. On W. Keokapu has land. This land belonged to Kiaumoku father of Kaahumanu. . . . When Kiaumoku obtained it was in 1804. Claimant is his descendant.

This later account is particularly interesting because of the reference to Kānewai bordering "on the sea which enters part of it." This corroborates the account in the *Star Bulletin* (Williams 1935) of a subterranean passage linking Kānewai and the sea, and suggests that the famous Kānewai pool lay in Kaleiheana's LCA. The reference to LCA 228 being bordered on the northeast and north by the land of Waihī is uncertain, but may refer to springs or seeps on the nose of Wa'ahila ridge (Waihī – "trickling water").

Testimony relating to Keliipo's land claim (LCA 1635, 0.43 acres) is of particular interest in that it provides the clearest picture of land use in Kānewai. The Native Register offers the following account:

'Ili of Kanewai, Ahupua'a of Waikiki. I have two lo'i. My lo'i on the west is bounded on the north by the lo'i of Kalama, on the east by the Kula of Maalahia, on the south by the lo'i of Kalama, on the west by the lo'i of Kanemakini, one small house.

The Foreign Testimony offers the following accounts:

This land is Kanewai, Waipio, Waititi. Kalo land only. No house or fence. Mauka is a stream dividing it from upland Waialae, Kalama [is] Konohiki; Makai Stream and wasteland; Honolulu, Kalama. Claimant had this from Kalama about 8 years ago on account of friendship and work.

One taro patch and the boundaries are Mauka is the ditch; Waialae, [lands of] Kalama; the Konohiki, Makai a stream; Honolulu, Kalama the Konohiki. Acquired in 1841, he has done Friday work for the Konohiki.

The testimony for Keliipio's land claim suggests there were a number of small *lo'i* (irrigated plots) in the area north of Mānoa Stream and south of the '*auwai* (irrigation ditch), which were

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cultivated by different people with a number of *lo* '*i* belonging to the *konohiki* (overseer) named Kalama.

The land claim of Nu'uanu (LCA 6616:1, 0.96 acres) lists three lo'i, four coconut trees, a small sweet potato *kula* (dryland plot), and a house lot. While it is not clear whether these are all in '*āpana* (lot) 1, it seems a virtual certainty that he claimed a *lo'i* there.

The testimony associated with Keonea's land application (LCA 1627) relates that "Kaleiheana gave claimant these lots" and the presence of *lo* '*i* and a house lot on the property.

Figures 20 through 24 illustrate some aspects of land use changes from the 1880s to the end of the nineteenth century in and around the UH campus. The current project area, shown within Puahia, was agricultural land.

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Figure 20. 1881 O'ahu Island Government Survey map

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Figure 21. 1882 E. D. Baldwin map showing vicinity of project area

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Figure 22. 1887 W. E. Wall map showing vicinity of project area

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Figure 23. 1897 M.D. Monsarrat map showing vicinity of the project area

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Figure 24. 1899 O'ahu Island map showing vicinity of project area.

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4.4 1900s to Present

Hawaiians and Chinese continued to grow taro on the floor of Mānoa Valley in the late nineteenth century (Figure 25). However, disease, out-migration to the centers of population, the loss of traditional culture, and other factors led to a decimation of the resident Hawaiian population. By the end of the century, half of the taro lands in Mānoa Valley were cultivated by Chinese. They also raised other vegetables and bananas. For a time pineapples were raised on the lower slope between Pu'u Pia and Wa'ahila Ridge (the eastern boundary of the *ahupua'a*) (Emery 1956:57).

The well watered, fertile and relatively level lands of Mānoa Valley supported extensive wet taro cultivation well into the twentieth century. Handy and Handy (1972:480) estimated that in 1931 "there were still about 100 terraces in which wet taro was planted, although these represented less than a tenth of the area that was once planted by Hawaiians."

In the early past of the nineteenth century, the Japanese began to move in to the upper valley to start truck farms, growing strawberries, vegetables, such as Japanese dry-field taro, Japanese burdock, radishes, sweet potatoes, lettuce, carrots, and soy beans, and flowers to sell to the Honolulu markets. Bananas were grown on the northeastern slopes of the valley. Several dairies were also opened in the area, including the first opened by William Harrison Rice in 1844. The result of the presence of these dairies was that many previously forested slopes were denuded by the grazing cattle (Emery 1956:57, 62).

Rice cultivation was attempted in Mānoa Valley by 1882, but the project was unsuccessful.

Though the valley is under almost complete cultivation of taro, largely by Chinese companies, an effort was made by them in 1882 to divert it to the growth of rice, but after two years struggle with high winds, cold rains and myriads of rice birds it was abandoned. In the spring of 1884 a north wind, with the local appellation of Kakea, visited the valley, which blasted all the taro, withered all the growing rice, moved a number of houses bodily and demolished several entirely. This is said to have terminated the rice industry of Manoa, since which time its fields have been devoted to taro, as it had been for many preceding generations. Sweet potatoes and bananas are also cultivated in a limited measure, and some attention is being given to fruit culture . . . (Thrum 1892:116)

In the 1903-04 Honolulu City Directory, 148 names are listed, 107 *haole* (Caucasian), 11 Chinese, 9 Japanese, and 21 Hawaiians. In 1932, the valley had 1,000 homes (with an estimated population of 5,000), about 300 Caucasian, 173 Japanese, ten Chinese, ten Portuguese, six Hawaiian, five Puerto Rican, two Filipino and one Spanish (Coulter and Serrao:1932:109). By 1944, the population of Mānoa was 15,000. By the year 2000, Mānoa had a population of 21,112 (City and Co. of Honolulu 2000). Figures 26 through 31 show the growth of roads and residential areas in Mānoa from the early to middle twentieth century. The maps also show little development in the vicinity of the project area until the 1953 U. S. Geological Survey map. The Chemistry Building, later called Bilger Hall is shown adjacent to the project area.

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Figure 25. Checkerboard taro fields on the floor of Mānoa Valley

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Figure 26. 1919 Fire Control map showing vicinity of project area

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Figure 27. 1927 US Geological Survey map showing vicinity of project area

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Figure 28. 1938 map showing vicinity of project area

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Figure 29. 1943 War Department map showing vicinity of project area

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Figure 30. 1953 U. S. Geological Survey map showing vicinity of project area

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Figure 31. 1956 map showing vicinity of project area

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4.5 Prominent Historic Structures

4.5.1 Mānoa Chapel and Cemetery of Kawaiaha'o Church

In 1832, the missionaries Hiram Bingham, Abraham Blatchely, Levi Chamberlain, and Elisha Loomis hiked into Mānoa Valley to look at two parcels of agricultural land that had been appropriated for the use of the Mission by Kalanimōkū, the Prime Minister of the Hawaiian Kingdom. One plot was on the western side of 'Ualaka'a in West Mānoa; the other was an acre and a half of low taro ground with thirty to forty taro patches in East Mānoa; this land was probably at the site that later became the Mānoa Chapel and the Mānoa Hawaiian Cemetery. At Ka'ahumanu's residence in Puka'ōma'oma'o, there was a "kind of village of forty of fifty huts, the houses of the chiefs, a schoolhouse and a chapel" (Diary of Elisha Loomis, cited in Bouslog et al. 1994:153). The cemetery, which may have predated the chapel, is said to have been established by Ka'ahumanu for a Christian cemetery.

In 1846, Reverend Richard Armstrong wrote: "In the beautiful valley of Mānoa, there is an encouraging state of things . . . A substantial stone meeting house has been erected under the direction of Bro. William Harrison Rice, intended also for a school house." This stone church may have been built on land once owned by John 'Ī'ī, who had early bought fee simple land near the present junction of the upper ends of Mānoa and East Mānoa Roads. In a letter from Armstrong to the Honolulu Mission in May of 1848:

Brother Rice has had charge of the meeting in Manoa Valley and I hope he will present an account of his labors there to the Mission. A substantial stone meeting house has been erected there under the direction of Brother Rice, intended also as a school house, and an adobe building for the same purpose at Waikiki.... While erecting the houses we feared they would prove too large, but during the present year they have been filled with attentive worshippers on Sabbath afternoons and, frequently, during the week. (Gulick 1918:235)

This building was destroyed in 1876 by a severe storm, but a wooden structure with some stone work was quickly rebuilt to replace the chapel. In 1914, the lot was granted to Kawaiaha'o Church, which managed it as an '*āpana*, or branch church. In the 1930s, a third church was built to replace the termite-eaten second church. This church, called Luakini Hou O Mānoa (The New Church of Mānoa) was dedicated in 1935. This building was a wooden structure over a lava rock foundation. The stones for this foundation may have come from Hipawai Heiau, which may have been destroyed around 1819 when Queen Ka'ahumanu broke the old *kapu*. As membership began to fail, the remaining congregation began to meet at a center on Mānoa Road instead. The old chapel was used as a baby clinic, a community center, and then as a theater. The theater proved popular, so the old building was razed and the Mānoa Valley Theater was completed in 1987. The church also has a small cemetery; the earliest grave can be dated to 1903 (Williams 1980:1).

4.5.2 Punahou School (Originally O'ahu College)

As previously noted, the Punahou lands once belonged to the High Chief Boki and his wife Liliha. They were given to Hiram Bingham in 1849 until Chief Boki's return. When Boki did not return, Bingham retained possession. He built a small adobe and thatch house on the property as early as 1831, where he worked on a Hawaiian translation of the bible. It was near this time that

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many walls were built on the property, to keep out roaming cattle, and two large stones were placed along what is now known as Punahou Street. One of these stones is still at the main gate of the school. In 1837, the idea of a school to educate the children of the missionaries was proposed in a letter (Foster 1991:17-21). The original building for the school was built in 1841 (Figure 32), and the first fifteen students began to study in the structure in 1842.

4.5.3 Sacred Heart Church at Punahou

In 1823, Kamehameha II, his wife, and entourage sailed to London. With this party was a Frenchman, named Jean Rives, a close friend of the king, and his servant, a young Hawaiian boy named Kanui. After the king and queen died in London, Rives left the party and traveled to France where he visited the Sacred Hearts Fathers in Paris. Rives left Kanui at the church and urged the fathers to send missionaries to Hawai'i to convert the natives to Catholicism. The fathers sent three brothers in 1827, and Kanui, now known as Father Maigret, returned home in 1837.

There is some evidence that Kanui may have had a grass-thatched chapel somewhere in Mānoa Valley, but most of the converts probably traveled to the Catholic Mission on Fort Street in downtown Honolulu. Kanui died in 1842, and many of his converts may have reverted to the dominant Congregational Church. The American missionary Richard Armstrong visited the area in 1846 and noted:

. . . in the beautiful valley of Manoa, there is an encouraging state of things. Meetings are full and interesting and some 18 papists have returned to the "old paths." (Armstrong 1846)

In 1883, Father Clement Evrand decided to establish a permanent church in Mānoa, a wooden structure built on Wilder Avenue. In 1910, a new Gothic-styled stone church was planned on land on Wilder Avenue across from the Punahou campus. The Sacred Heart Church was completed on 1914, with stained glass windows shipped from France. In 1923, a parish hall was completed, on 1927 a parochial school was built, and in 1953 a new high school was built on the Punahou School grounds (Bouslog et al. 1994:32-33).

4.5.4 Wai'oli Tea Room of the Salvation Army

In 1909, the Salvation Army purchased 28 acres in Mānoa on lands in Ka'aipū once owned by Kauikeaouli, Kamehameha III. On this land the Salvation Army built a home to shelter and educate needy children. In 1922, they built the Wai'oli (meaning "happy water") Tea Room and a bakery, so that the girls could learn "cooking, baking, and the arts of gracious living." "High Tea" was served at Wai'oli and later luncheons. The tearoom rapidly became a focal point of the community. In 1929, a grass hut once occupied by the famed writer Robert Louis Stevenson during his visits to the islands (in 1889 and 1893) was moved from its original location at 'Āinahau, the Waikīkī home of Princess Kai'ulani and her parents, to the Wai'oli Tea Room property (Bouslog et al. 1994:32).



Figure 32. 1866 Photograph of Punahou School, Photograph attributed to Charles Burgess (photograph from Foster 1991:32)

4.5.5 Chinese Cemetery

The society called Lin Yee Chung was organized in 1851. The purpose was to buy burial land, to conduct Chinese funeral rites, and to arrange for the return of bodies to China for final burial, if requested. In 1852, a group purchased the first lot of land in Mānoa from a Hawaiian called Moehonua. In 1854, they bought Land Grant #101, but disputes with the lot boundary delayed construction of the cemetery until 1896 (Figure 33).

In 1852, a man name Lum Ching, a practitioner of the astronomy/geology study called "kum yee hok", or geomancy (the art of divination by means of lines and figures), visited Mānoa Valley. When he climbed Akāka Peak, his instruments (including an astronomy-based compass and a light-reflecting mirror), told him he was at an:

... extraordinary spot. It is the pulse of the watchful dragon of the valley. People from all directions will come from across the seas and gather here to pay homage. Birds, too, will come to sing and roost. It is a haven suitable for the living as well as the dead. The Chinese people must buy this area and keep it as sacred ground. (Thom 1985:5)

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Figure 33. Entrance to Line Yee Chung Chinese Cemetery in Mānoa (photograph from Bouslog et al. 1994)

4.5.6 Lyon Arboretum

In 1919, the Hawaiian Sugar Planters' Association (HSPA) purchased the 124-acre Haukulu 'Ili, which had once been owned by Charles Kana'ina, father of King William Lunalilo. It was later owned by Fred Harrison, who built a country home and stable. Dr. Harold L. Lyon was the plant pathologist for the HSPA and head of the Department of Botany and Forestation for the Territory of Hawai'i. He leased 325 adjoining acres of land from the Territory and the Bishop Estate to use as a reforestation area and as an experimental station for the growing of sugar cane varieties. The HSPA gave the 124-acre arboretum to the University of Hawai'i in 1953 for the purpose of research, education, and public service (Bouslog et al. 1994:200-201).

Near the Lyon Arboretum, above 'Aihualama Stream, is a cul-de-sac known as "The Pen," which became famous during the overthrow of the Queen Lili'uokalani and the Hawaiian monarchy. In 1893, the Provisional Government was declared by several businessmen, and in 1894, they established the Republic of Hawai'i. Revolutionists who wished to restore the monarchy soon began to stockpile weapons. One of these was Robert W. Wilcox, a former member of the government. He and his associates planned to form an army large enough to overthrow the illegal government, capture 'Iolani Palace, and restore Lili'uokalani to her throne.

The new government found out that the Royalists had a cache of weapons at the house of H.F. Bertelmann at Waikīkī Beach, and they sent a squad of government police to secure the weapons and arrest the rebels. Some of the Royalists escaped to Diamond Head where they held out for

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several days, but finally running low on ammunition and food they retreated into Pālolo Valley, and then finally climbed through a pass into Mānoa Valley, ending at "The Pen." Many of them surrendered, and others scattered towards Pauoa Valley and on to Honolulu. Eventually all were rounded up or surrendered.

4.5.7 Mō'ili'ili Quarry

A major feature of the lower campus of the University of Hawai'i is the quarry that was operated by the Honolulu Construction and Draying Company, Ltd. (HC & D; now Ameron HC & D). A quarry was established there as early as 1889 (Kobayashi 1983:169) to exploit the thick dense deposit of epheline-meililite "blue rock" basalt. HC & D leased the Bishop Estate land from W. C. Cummings starting on June 1, 1910 and enlarged operations by buying out the neighboring Mō'ili'ili Quarry in 1914. Although Portuguese masons worked the rock into building blocks, curbing material and tombstones, most of the rock was used for road construction base course and general aggregate. Quarry operations ended on November 15, 1949, but the crusher continued to process rock from a Pālolo Valley quarry until 1951. After extensive negotiations over price, a final order of condemnation for the approximately 95 acres of Bishop Estate land was finalized in 1953 and the University took over the area.

4.6 Early Years of the University of Hawai'i at Mānoa

The University of Hawai'i at Mānoa developed out of the 1862 U.S. Federal Morrill Act funding for "land grant" colleges. In 1907, "an act to establish the College of Agriculture and Mechanic Arts of the Territory of Hawai'i" was passed by the Hawai'i's Territorial Legislature and was signed into law by Governor George Carter on March 25th. The regents chose the present campus location in lower Mānoa on June 19, 1907. Regular classes began in September 1908 with ten students and thirteen faculty members at a temporary Young Street facility near Thomas Square. In 1911, the name of the school was changed to the "College of Hawai'i" and in the following year the college moved to the present Mānoa location.

The future campus was a relatively dry and scruffy place: "The early Mānoa campus was covered with a tangle of *kiawe* trees (algarroba), wild lantana and *panini* cactus" (Kobayashi 1983:7). It appears the first structures built were a poultry shed and a dairy barn. The indications are clear that there were many stone walls and almost certainly other archaeological sites in the core area of the future campus:

The area that was to become the university farm (located on what is now the area east of Hawai'i Hall) was made up of small fields, from one-tenth to one-forth of an acre, each surrounded by loose rock walls. Each area had been farmed by individual Chinese and Hawaiian tenants. All of the rock had to be removed. There was also much rock both on the ground and buried in the soil. It took ten years to clear 22 acres. The late Dr. Frederick Krauss estimated that 5,000 cubic yards of stone were removed from the stone walls alone...The rock was piled in an area just east of Hawai'i Hall and covered almost an acre, with rock piled five feet high. The rock was sold to builders and contractors for ten cents a wagon load. (Kobayashi 1983:7)

The accounts cited above indicate fairly intensive agricultural use of the area just east of (the present) Hawai'i Hall. The current project area was located within the university farm.

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Residential use is suggested in an account that: "On May 15, 1911, the Regents discussed what to do about seven groups of Hawaiian squatters, including one group that tilled the land, on the College's Puahia lot" (Kobayashi 1983:7); the current project area is within Puahia. It appears that all seven groups were resident in the immediate vicinity of the campus but that only one group was involved in farming on campus. They were evidently evicted the same year.

An eyewitness account from Arthur L. Dean documenting conditions after June 1914 noted:

Immediately in front of [the present] Hawaii Hall was a strip of lawn perhaps 75 feet wide. The wooden building moved up from Young Street, stained a dull brown, was the only other building on what is now the Campus. Dirt roads, which were impassable in wet weather, straggled through the grounds and disappeared among the trees and bushes in the direction of the farm. A neighboring dairyman paid a small monthly rate for the privilege of running his cows through the lands and they wandered about at all hours and places. (Kobayashi 1983:7)

Development of the campus was restricted by a lack of funding in the early years. An early donation of \$1,500 from Alexander and Baldwin in 1915 allowed the college:

To clear and grade a large area of wild campus land approximately bounded by what is now University Avenue, Campus Road [running east-west on the seaward side of Hawai'i Hall], the Campus Center Building, and the parking lots behind Sinclair Library, converting it into the first Cooke Field...(Kobayashi 1983:7)

That the grading of this relatively small area cost \$1500 in 1915 dollars suggests that, like the first portion of the campus to be cleared to the northeast, this area also included "much rock." While the first conceptions of a campus plan in 1909 were for major campus buildings to define an elongated east-west esplanade extending east from Hawai'i Hall, by 1915 the campus had started to take on a more ad-hoc style with the H-shaped Young Engineering Quadrangle starting to be developed to the southeast (four of the five structures remain, the southwestern one having been torn down for the building of the present Campus Center) (Figure 34).

The College of Hawai'i was started with a clear focus on studies in agriculture and engineering to address local needs. In 1920, with the formal establishment of the University of Hawai'i, the vision changed to a much broader curriculum reaching out to Asian and Pacific countries.

In 1922, the construction of the third permanent building on campus, Gartley Hall, began the "old quad" that was subsequently expanded by construction of George Hall in 1925 and Dean Hall in 1929. The old gymnasium was built in 1928/29 (just northwest of the present Bachman Hall) and remained until 1959 when it was razed following the construction of Klum Gym. The depression years significantly slowed development. In 1930, the Normal School (today's "Wist Hall") was opened on the west side of present University Avenue. In 1931, with the merging of the Normal School with the University's School of Education (forming what was then Teachers College and what is now the College of Education), this western land became part of the University campus. The 1930s were also the time of the construction of many of the campus' most iconic structures, including Founders Gate (1933), Varney Circle Fountain (1934), Andrews Outdoor Theater (1935), George Hall (1936), Crawford Hall and Hemenway Hall (both 1938), and Miller Hall (1939).

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WWII brought such impacts to campus life as Hawai'i Hall becoming the U.S. Armed Forces Institute and the construction of fourteen wooden barracks up near the present Spaulding Hall. The army took over the gym, soldiers ate at the Hemingway Hall cafeteria, and bomb shelters were built. A portion of the campus was designated as a temporary military cemetery but fortunately no graves were ever dug (Kobayashi 1983:80).

The Bachman Hall administration building, designed by Honolulu architect Vladimir Ossipoff, and built in 1949, was the first permanent post-war building (Figure 35). A construction boom has been ongoing more or less continuously ever since. The core area of the campus was expanded in 1968, when approximately 30 acres were obtained near the Mānoa Library and Mānoa Marketplace; this land was developed in 1975 for the present Astronomy Institute at 2680 Woodlawn Drive.



Figure 34 View of the campus in 1917 from Wa'ahila Ridge (Adapted from Kobayashi 1983:23) showing Hawaii Hall (1912) at center, the beginnings of the Young Engineering quad at left of the relocated wooden building, and the farm lands of the current project area in the foreground

4.6.1 The Proposed IT Services Building

The proposed IT Services building is located on former UH farm lands. In 1951, the new Chemistry Building, later named Bilger Hall, was the first building constructed within the farm land after WWII, and is just north of the proposed IT Services building. The chemistry building was named for Leonora Neuffer Bilger (1893-1975), UH dean of women, chair of the chemistry department, and a noted chemist, and her husband Earl Bilger (1898-1964), UH chemistry professor (Norwood 1983:91, 96). The Physical Science Building, to the east of the project area, was constructed in 1960 (Ooka 1983:119). In 1972, the five-story Bilger Hall Addition was completed and extends just west of the proposed IT Services building (Kobayashi 1983:159).

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The project area is located on Correa Road, named for Senator Sylvestor Philip Correa (1876-1948), the Territorial Senator in 1917-1919 when Hawaii College, today's UH, became a university (Pukui et al. 1974:23). Research does not indicate when the two single-story wooden portable structures that are currently within the project area were moved to that location.



Figure 35. In this 1949 aerial photograph the campus is dominated by the central Hemenway Hall (1938), the old Gym and the ongoing construction for Bachman Hall are near University and Dole streets, the University Farms still dominate the eastern campus, where the current project area is located

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Section 5 Archaeological Research

5.1 Overview

In general, the vast majority of archaeological sites once located in the Mānoa Valley have been destroyed by modern development, including the construction of the university campus in the lower valley and residential/commercial centers elsewhere. The campus is located in what would have been the prime wet taro-growing area of the entire valley, and many *lo'i* (stone terraces) and *'auwai* (irrigation ditches) were located here; this agricultural heartland of the valley (i.e., the present-day campus) also would have been home to many small stone enclosures, terraces and platforms used by *maka'āinana* (commoners) as house sites. The valley also was home to numerous *heiau*, some of which have been preserved into modern times, and burials (see below).

5.2 Heiau of Mānoa

The first recording of information regarding archaeological sites of Mānoa was by Thomas G. Thrum in his informal study of Hawaiian *heiau*. It was presented in a number of short articles in his *Hawaiian Annual* between 1892 and 1909. Thrum (1907a, b) briefly described five *heiau* in Mānoa. In the early 1930s, McAllister (1933) reprinted this information in his *Archaeology of O'ahu*. McAllister could relocate only one of these *heiau*, Kūkaō'ō Heiau, which he mapped and described in more detail.

Emma Nakuina (1907:24) also describes a *heiau*, named Kauala'a, and a sub-*heiau*, named Kauwalomalie, on the site of the Mid-Pacific Institute near Wailele Spring (possibly in the '*ili* of Kauwala'a). These *heiau* were not listed by Thrum in his report on O'ahu *heiau*, but may be mentioned in a different article by Thrum (1892:112), which lists forts built by the high *ali'i* Kuali'i, who built "a system of heiaus, extending from Mauoki, Puahia-luna and lalo, Kumuohia, Kaualaa, Wailele, and one or two other points between Kaualaa and Kukao'o."

The possible locations of these six *heiau*, and place names associated with them mentioned in their descriptions, are shown in Figure 39. This figure is a modern O'ahu street map, with an overlay of the outline of the 1822 E.D. Baldwin map of Manoa Valley (see Figure 8). The overlay was created by lining up several major peaks (Round Top, Makani, and Wa'ahila) plotted on both maps; however, since this is a comparison of one map created in the nineteenth century and a more exact map created in the twentieth century, the correlation between the two maps may not be exact.

5.2.1 Kūkaō'ō Heiau

According to legend, six *heiau* on the island of O'ahu were built by the *menehune*, but only one, Kūkaō'ō Heiau, was built for their own use (Luomala 1951:20). The *menehune* were said to have built a fort and a temple at Kūkaō'ō, a place above (inland of) the hill called Pu'u Pueo (Westervelt 1963a:131). They were driven away from their fort by the high chief Kuali'i during his reign (sometime in the 1700s). Kuali'i rebuilt it after his seizure of the fort.



Figure 36. Overlay of 1822 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible *heiau* locations

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In 1892, Thrum described this still-standing *heiau* of Kūkaō'ō on the hill called 'Ulumalu:

A few hundred feet from the house, on a vast rock pile, still stands a walled enclosure known as the heiau of Kukaoo, now overgrown with lantana and night blooming cereus. This old heathen temple dates back many hundred years. Its erection is credited to the Menehune's—or class of pigmies—but was rebuilt during the reign of Kualii [circa A.D. 1700s], who wrested it from them after a hard fought battle. The Menehune's fort was on the rock hill, Ulumalu, on the opposite side of the road, just above Kukaoo. Previous to the battle, they had control of all upper Manoa. (Thrum 1892:112)

McAllister located Kūkaō'ō Heiau during his inventory of O'ahu in the early 1930s. He described it as a "small heiau 50 by 40 feet," built on a natural elevation about 30 feet high. "There remain[s] a small inclosure [sic] and two terraces to the west" (McAllister 1933:79). He located the *heiau* on the premises of the residence of C. M. Cooke, Jr.

This *heiau*, which is still standing and located at 2859 Mānoa Road, has been recorded during several subsequent archaeological surveys (Kennedy 1991; Cleghorn and Anderson 1992; Tomonari-Tuggle 1998). Various portions of the *heiau* have been recorded in TMK 1-2-019: 035, 036, and 043, in a large area between Mānoa and O'ahu Roads and *mauka* of Cooper Road. In addition, a burial has also been recorded from 2859 Mānoa Road (Jourdane 1994).

Although there is no confusion over the present-day location of the *heiau*, there is some disagreement regarding the number of structures, the name of the surrounding area, and the name of the hill on which the *heiau* and/or fort was built. In Thrum's 1892 account of Mānoa Valley, he described Mānoa Road as if he was traveling from the *makai* boundary to the upper valley. He states that Kūkaō'ō Heiau was built on a rock pile, and the *menehune* fort was built "on the opposite side of the road on the rock hill, Ulumalu, just above Kukaoo." This suggests there were actually two structures on 'Ulumalu hill: a *heiau* on the east side of Mānoa Road and a *menehune* fort on the west side of Mānoa Road.

In the legend of Pueo Ali'i, the king of the owls, Westervelt states that Pueo Ali'i "was thought to be a chief leading his army along the hillside below Pu'uhonua Temple." In a footnote on the same page of his book, he states "This place is now the site of the Castle home" (Westervelt 1963a:131). William and George Castle built a large mansion in Mānoa in 1898 for their ailing mother Mary Tenney Castle, the widow of Samuel Northup Castle, one of the group of the eighth missionary party to Hawai'i. They called the house Pu'uhonua, which means "place of refuge." It was built in a land area called Kaulumalu (Ka 'Ulumalu) on a hill called 'Ulumalu, at the place that would later be the end of Ferdinand Street. George Castle remembered that near the house was a "sacrificial stone and some ruins of the *heiau* to Kū'ula and above on the hillside the Pōhaku Kū'ula, a rock on which the watchman stood to command a view of the entire valley from mountain to sea" (Bouslog et al. 1994:88).

A hill labeled "Ulumalu" was plotted on the 1882 Baldwin map of Mānoa Valley on the west side of Mānoa Road. This map also shows that the hill was part of Grant 4166 to Mrs. Mary Castle. A *pōhaku* called Pōhaku o Kūkalia is also plotted on the 1882 Baldwin map of Mānoa Valley (see Figure 8) just *mauka* (northwest) of the hill labeled 'Ulumalu. This may be the "sacrificial stone" that George Castle called Pōhaku Kū'ula. The question remains if there was a fort also on 'Ulumalu hill, or if the *heiau* ruins Castle is referring to is actually Kūkaō'ō Heiau, on the east side of Mānoa Road. As mentioned previously, Westervelt refers to a structure called

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Pu'uhonua Temple at the Castle residence. However, the presence of such a "temple" at the Castle residence would be inconsistent with George Castle's reminiscences, since he refers to a sacrificial *heiau* dedicated to the war god Kū, not a *heiau* dedicated to "refuge."

Joseph Kennedy (1991) concluded that there was only one structure, that acted as both a *heiau* and fort, and that it was located on the east side of Mānoa Road (location of Kūkaō'ō Heiau). He believed that the surrounding area was called Kūkaō'ō and the hill that the *heiau* was built on was called 'Ulumalu (east side of Mānoa Road). The resolution to at least some of this confusion may have been addressed in a 1982 article on the Castle home. In this article, the author states that the location for the house was chosen in 1898 on the western side of the valley.

This is the *alii* (or noble's) side of Manoa, rich in legend and folklore, known to Hawaiians as Kaulumalu (Breadfruit shade). . . . One of the Castle sons, George (1851-1932) recalled "there being a beautiful grove of breadfruit and ohia trees where native birds congregated in great numbers." The man who planted the grove was very old and I was a boy. Sand [volcanic cinders] came down . . . and choked the trees. . . .

Another son, William (1849-1935), gave the name Puuhonua to the property. Pu'u—hill or protuberance, and *honua*—of earth, but also meaning a place set apart for refuge and safety....

The 8.16 acres had been purchased at auction on May 12, 1898, for \$6,250. A government survey station on the site had already been given a name from the past, *Ulumalu*. (Robb and Vicars 1992:173-174)

These passages suggest that the specific association of the place name 'Ulumalu with the hill on which the Castle home (west of Mānoa Road) was built may only date from the late nineteenth century; therefore, a hill on the east side of Mānoa road may well be the original (older) Pu'u 'Ulumalu. It seems to have been a mistake for Westervelt to call the Castle home "Pu'uhonua Temple" or to associate it with Kūkaō'ō Heiau, which was a sacrificial *heiau* dedicated to the war god Kū, and not a "place of refuge." The name Pu'uhonua was probably given to the house to represent that the place was a refuge for the Castle family (Stokes 1941:2). McAllister (1933:79) also showed some skepticism to the Westervelt reference for Pu'uhonua Temple stating, "I doubt that this was a heiau."

The *heiau* is also mentioned in Land Commission records as "LCA 3906 to K. Neki, *Heiau* of Kūkaō'ō, fence; house in" (see Table 1). On the 1882 Baldwin map, there is a property labeled "Gr. 638 Haalilio, see LCA 3906 W Neki." Land Commission documents reveal the following information regarding this award:

No. 3906, Neki, Honolulu, January 17, 1848

N.R. 187-188v4

To the Land Commissioners, Greetings and thanks: I, Neki hereby state my claims /at/ the land fence, mauka in Manoa, at the heiau of Kukaoo on the side below the heiau.

These two fences of which I tell you were from my makuas - they expended a great deal of revenue in making these fences, and I also did, and they are mine at this time - no one else has a right to them. That is my explanation to you.

I am, with thanks.

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NEKI

To the Land Commissioners - House lot, also. Greetings to you and thanks: I, Neki, hereby state my claim for a house lot which is mauka in Manoa in the Land of Kaloiiki. I have two house lots at this time. That is my explanation to you.

Aloha,

NEKI

N.T. 378v10

No. 3906, Neki (from page 306), 1 September 1854

Maki, sworn, I have seen his claim in Kaloiiki in Manoa of two lots with enclosures and in one piece.

Mauka, Mahune's land Waialae, Kaahaloa, Kalanikahua's land Makai, T. Tute's land Ewa, Mr. Marshall's land.

This land was given to Neki by J. Haalilio when Kaahumanu was yet alive before 1832. No objections.

Kahanaumaikai, sworn, I have seen this place since 1842 to the present time. I have done farming under Neki and that place is for Neki. Mahi's statements above are true.

Kana, sworn, I have known in the same way as they have stated since 1845 to the present time.

[Award 3906; R.P. 6502; Kolowalu Manoa Kona; 1 ap.; 7.25 Acs]

On the overlay map (see Figure 36), this LCA seems to be in the general location over Anuenue Street rather than between Mānoa and O'ahu Roads (where Kūkaō'ō Heiau is standing). From the description, Neki says that his lot is "on the side below the heiau," so it is possible that the *heiau* was not in this actual lot; rather the lot was *makai* of the *heiau*.

5.2.2 Kawapōpō Heiau

Upper Manoa, on premises formerly of Haalilio; a small *heiau* said to have been torn down prior to 1850 (Thrum 1907a:45].

McAllister (1933:80) could not relocate this heiau.

In 1975, Margaret Luscomb (1975) conducted an inspection of the Maretzki property on 2626 Anuenue Street. This property was a portion of Grant 638 to Hana Haalilio and K. Neki (LCA 3906), Royal Patent 6502, signed by Lunalilo. The Native Testimony for this award was presented above in the discussion of Kūkaō'ō Heiau. Luscomb recorded a raised platform, 7 by 6.5 m on the property. Since this structure was on Ha'alilio's land, Luscomb concluded that this

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platform might be Kawapōpō Heiau. In the description of his land, Neki says it was below Kūkaō'ō Heiau; there is no mention of the name Kawapōpō or of a second *heiau*.

One problem with identifying this structure as Kawapōpō Heiau is that Ha'alilio was granted other lands in Mānoa, before the *Māhele*, and the location given by Thrum may refer to these other lands. Thrum described the location of some of these lands as *mauka* of John Ehu's homestead:

The site of the various houses that once sheltered Haalilio and his retinue is pointed out just above the old Ehu homestead, known later as the 'Charley Long' premises and, till very recently, part and parcel of Montana's Kaipu Diary. Rev. H. Bingham, of early Hawaiian Mission fame, is also referred to by old timers as having had a residence adjoining the Haalilio premises, though his history makes no mention thereof. (Thrum 1892:114)

On the 1882 Baldwin map, two properties (Grants 15 and 54) are shown in the *'ili* of Ka'aipu awarded to John Ehu (see Figure 36). If Thrum is referring to land owned by Ha'alilio that is above John Ehu's homestead, Kawapōpō Heiau may have been located much farther *mauka* of the structure recorded by Luscomb in LCA 3906 to Neki. This would suggest that the structure recorded by Luscomb may be part of Kūkaō'ō Heiau instead. Because of Thrum's imprecise location and the fact that McAllister could not relocate Kawapōpō Heiau, it is impossible at this time to determine whether Luscomb correctly identified the structure on the Metzinger property as Kawapōpō Heiau.

5.2.3 Hakika Heiau

Paliluahine, east side of valley.-A round heiau of not large size. Foundations now barely traceable. (Thrum 1907a:45)

McAllister (1933:80) could not relocate this *heiau*, but according to Thrum's description, it was on the east side of the valley, in the area called Paliluahine (near the modern-day suburb of Woodlawn). On the 1882 Baldwin map (see Figure 36), there is a peak labeled Paliluahine; therefore, the *heiau* was probably in this general location, but the specific location is not known.

5.2.4 Hipawai Heiau

Thrum described Hipawai Heiau as:

Makai of Church, Manoa.-Of large size and pookanaka class, partly destroyed many years ago, then used as a place of burial. Remaining walls subsequently torn down. (Thrum 1907a: 45)

This *heiau* was possibly described in 1823 by Levi Chamberlain, when he and other missionaries came to inspect a lot of three acres given to them by the Hawaiian government. The official report of the Sandwich Island Mission described the structure as:

On one side of this secluded valley they visited an old *heiau* or place of worship of Kamehameha's time, consisting now simply of a stone wall enclosing a small area about 20 feet square. (cited in Bouslog et al. 1994:12)

In his own journal for June 6th, 1823, Levi Chamberlain described in more detail "the ruins of a moreai [heiau]" as:

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It was a regular wall built of loose stones about twenty four feet square from three to four feet high on the inside & from two and an [sic] half to three feet in thickness. On the north the outer side of the wall was much higher owing to a declivity at the foot of which were a few kou trees. The tall grass within and around was evidence that it is a long time since it had been frequented for the purpose of superstitious ceremonies. It is probably fifty years since it was erected. (cited in Bouslog et al. 1994:11-12)

The Mānoa Church was built in 1846 as an '*āpana* (branch) of the Kawaihao'o Church. A newspaper article says that Hipawai Heiau was torn down in 1819 and some of the stones were used to build the rock foundation of the Mānoa Congregational Church, a building that replaced the Mānoa Church in 1935. Some stones may also have been used in the Mānoa Hawaijan Cemetery. A new church was built in 1968 on nearby Huapala Street, and the old building, on 2833 E. Mānoa Road, was used to house the Mānoa Valley Theater (Williams 1980:1). Hipawai is also the name of a cave.

There is a large underground cavern with much of the water of Manoa passing through it under the area of Woodlawn Drive where the new (1975) astronomy building of the University is. People went down into the cavern in former times. (Mary Pūku'i, cited in Sterling and Summers 1978:287)

The former location of the 1846 Manoa Church is plotted on the 1882 Baldwin map (see Figure 36). The present day location of the astronomy building of the University of Hawai'i, and thus the possible location of Hipawai Cave, is shown on the base map of the same figure.

Hipawai Heiau was reported as makai of Mānoa Church. In 1968, Francis Ching recorded a rock mound, two to three feet high, 30-40 feet long, and 18 feet wide, with some remaining facing on the makai side. A platform was also present on the makai side. This heiau was located on the Magoon property on land donated to the University of Hawai'i. Ching identified this structure as a possible *heiau*, but did not suggest a name for the structure. Ching also stated "I was also told that there was another site similar to the one discovered a little further makai" (Ching 1968:1).

In 1988, a field check was conducted at the St. Francis High School campus (TMK 1-2-9-04:01), which is *makai* and adjacent to the northeastern corner of the campus (Kawachi 1988a). Carol Kawachi recorded several walls and terraces in this area, but the place was heavily vegetated. An inventory of the features was not made, and no map was drawn. Kawachi also reported on a 1908-1909 military map that showed a heiau in the general area. She then suggested that this heiau could be the same as the one recorded by Ching on the Magoon property, but since Ching did not give the TMK of the parcel he investigated, it was difficult to determine the exact location of this structure. According to a Land Court Map of 1926, Magoon once owned property in several locations, including upstream of the St. Francis campus.

The exact 1908-1909 military map referred to by Kawachi could not be determined, but a 1908-1913 Corps of Engineers map (Figure 37) does show an L-shaped structure mauka and upstream of the St. Francis campus. This map was made before the construction of the high school, which was founded in 1924 by the Franciscan Sisters of the Third Order. Although this structure is not labeled as a *heiau*, it may be the structure recorded by Ching, and may be Hipawai Heiau. A further confirmation of this attribution can be found on the 1822 Baldwin map (see Figure 36); the area where this L-shaped structure would be on this map (mauka of St.

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Figure 37. 1908-1913 Corps of Engineers Fire Control map, showing L-shaped structure, possibly Hipawai Heiau, on land later *mauka* of the St. Francis High School Campus

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Francis High School) is in the '*ili* named Hipawai (literally, water foolishness). In fact, the street just *mauka* of the high school is called Hipawai Place, which was "named for an O'ahu land section" (Budnick 1989:43).

5.2.5 Mau'oki Heiau (Kamō'ili'ili Heiau)

Mau'oki was a *heiau* of the *po'okanaka* type (large *heiau* for the paramount chief of the district or island), as discussed by Samuel Kamakau:

There were many heiaus and *luakini* heiaus in Honolulu in the ancient days.... Of *heiau po'okanaka* there were Pakaka and Kaheiki in Honolulu, and Mau'oki, Kupalaha and Le'ahi [Papa'ena'ena] at Waikiki. Mau'oki was a *luakini heiau* built by the Menehune, a numerous race of men often spoken of in the traditions of *ka po'e kahiko*. Kahanoniualewa [Kahano-a-Newa] is said to have brought them here; his arms were the bridge. Mau'oki was made of stone from Kawiwi in Wai'anae, and there were so many Menehene that each brought one stone, and Mau'oki was completed. *Ka po'e kahiko* called these people Menehene; it is said the came from the east. (Kamakau, *Ka Nūpepa Kū'oko'a* March 3, 1870; translation in Kamakau 1991c:144)

The association of the *heiau* with the high chiefs in O'ahu is illustrated in the story of the birth of Kiha-a Pi'ilani. Lā'ie-lohehoe was an *ali'i* born at Helumoa and raised at Kaluaokau in Waikīkī. She was betrothed to Pi'ilani, the son of the $m\bar{o}'\bar{i}$ (island-wide chief) of Maui and moved to his Pi'ilani's father's residence at Lāhainā in Maui for her wedding. They had four children; for the birth of her fourth child, a son, she returned to O'ahu. Samuel Kamakau reported that Kiha-a-Pi'ilani, the son of Lā'ie-lohehoe and Pi'ilani of Maui, was taken to Mau'oki Heiau after his birth at 'Āpuakēhau in Waikīkī.

No Kihapiilani. Ua laweia oai e ke kahuna e hanai i ka moku. O Mauoki hoi ka heiau i ku i ka moku ma ka olelo a ke kahuna. Ua hanai ia oia a nui, a ua ao ia i ke koa me na oihana, kakaolelo, me ke akamai hoi i ka oihana hana. (Kamakau, Ka Nūpepa Kū'oko'a, August 26, 1865)

Kiha-a-Pi'ilani was taken by the *kahuna* and raised at the *heiau* of Mau'oki at Kamō'ili'ili [Mō'ili'ili]. He was raised there until he was grown and taught to be a warrior and an orator; he was skilled in those professions. (Kamakau 1991c: 50)

The heiau was described by Thrum (1907a:44) as:

It is said to have been of traditional Menehune construction with stones brought one by one from Kawiwi, Waianae. It was a heiau of good size, walled on three sides and open to the west that stood at the foot of the slope dividing the Manoa and Palolo valleys, Kamoiliili.

Thrum also referred to this heiau as the Kamō'ili'ili Heiau.

Kamoiliili. Heiau and luakini [sacrificial heiau]; erected according to tradition by Menehunes with stones from Kawiwi Waianae. Torn down about 1883 by the Minister of Interior for street work. (Thrum 1907a:44)

According to Thrum, the *heiau* was in Mō'ili'ili, at the border of the *ahupua'a* of Mānoa and Pālolo. According to C. S. Stewart (Sterling and Summers 1978:279), Mau'oki Heiau was

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located possibly at the junction of Wai'alae Avenue and Third Street, which would place the *heiau* just south of Chaminade University in the *ahupua'a* of Pālolo. McAllister also located the *heiau* (Site 62) in Pālolo Ahupua'a, just *mauka* of Site 61, the Mō'ili'ili petroglyphs.

Dr. Richard Bordner, who was familiar with the Chaminade University area, said he believed a large agricultural *heiau* was once just north of an area of petroglyphs along Pālolo Stream. This *heiau* was on a relatively flat area on the west edge of Pālolo Stream near where there is presently a 22-caliber rifle range. Dr. Bordner's account of the relationship of these petroglyphs and a *heiau* are consistent with McAllister's (1933:57) description of Mau'oki Heiau (McAllister's Site 62), which was just *mauka* or north of the Mō'ili'ili petroglyphs (McAllister's Site 61). According to Dr. Bordner, until relatively recently, there were still some large boulders in the immediate vicinity that may be remnants of this *heiau* (Hammatt et al. 2002b: 23). A search for this *heiau* was made during the recent Ala Wai Watershed survey, but no *heiau* or cluster of boulders was found. In a recent conversation with Dr. Bordner, he stated that he believed that the remains of the *heiau*, and the petroglyphs, have been destroyed.

All of these reports have placed Mau'oki Heiau within the current boundaries of $P\bar{a}lolo$ Ahupua'a, near Chaminade University. McAllister (1933) located the *heiau* just north of the petroglyphs, which seem to be definitely near $P\bar{a}lolo$ Stream; however, McAllister never personally saw the *heiau*, since it had been destroyed in 1883.

On an 1883 survey map (Figure 38) by S. E. Bishop (traced by E. Kealoha in 1958), a structure labeled "heiau" is shown near a feature labeled "Mauoke Spring," both of which are *mauka* of "Moiliili Road" and King Street (along the present day alignment of Wai'alae Avenue) in the *'ili* of Pa'akea. In a comparison of this map with the 1882 S.E. Bishop map of Mānoa Valley (see Figure 8), this location is south of the *'ili* of Pilipili and west of the *'ili* of Kānewai (the present day athletic field for the University of Hawai'i at Mānoa). If the pictured *heiau* is Mau'oki Heiau (as suggested by its proximity to "Mauoke Spring"), then Mau'oki Heiau was actually once located much farther west than Chaminade University, near the *makai* border of Mānoa Ahupua'a (south of the University of Hawai'i) rather than near the *makai* border of Pālolo Ahupua'a (south of Chaminade University).

This location seems to be near the $M\bar{o}$ 'ili'ili Quarry, but the correlation of the 1882 map and the modern map is probably not exact. This also means that the agricultural *heiau* noted by Dr. Bordner near the $M\bar{o}$ 'ili'ili petroglyphs may be a different *heiau* than the *luakini* (sacrificial) *heiau* of Mau'oki. It is also possible that Mauoke spring was another name for Kumulae Spring, an ancient legendary pool that is associated with the extensive karst caves of $M\bar{o}$ 'ili'ili.

5.3 Early Archaeological Surveys of Mānoa Valley

In J. Gilbert McAllister's island-wide archaeological survey (1933), he recorded five sites in the vicinity of Mānoa including Site 61 petroglyphs, Mō'ili'ili, Site 62 Mau'oki Heiau, Site 63 Hipawai Heiau, Site 64 Kūkaō'ō Heiau, and Site 65, which seems to refer to the whole valley (Figure 39).

Under McAllister's Site 65, "Mānoa Valley," he discusses "Pu'uhonua Heiau," the sweet potato fields of Pu'u Ualaka'a, Thrum's sacred stone, a cave on the east side of Mānoa Valley, which Westervelt (1904:2) associates with Kamehameha the Great, and the Kawapōpō and Hakika Heiau. Little new information is presented regarding the other sites.

Until 1900, Punahou School had a small collection of Hawaiian artifacts in a glass cabinet in the Old School Hall. Some of these artifacts are shown in a circa 1900 photograph (Figure 40).

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In the foreground of the photograph is a carved wooden figure that may be the wooden figure found by Punahou students on Rocky Hill. Foster says this was found "on Rocky Hill" (Foster 1991:35) in one section and "in a cave on Rocky Hill, a vestige of the *heiau* that once stood in that area" (Foster 1991:128).

Samuel Armstrong mentions exploring its caves for wooden idols and ghosts, and Thomas Gulick tells in detail how the boys, climbing the slope, once came upon a cavern between the cliffs and, by excavating, penetrated to a point where they required torches to see their way. There they discovered a little idol. It must have come from the small *heiau* that once stood on Rocky Hill. Probably it and a large wooden idol brought to Punahou from a taro patch at Waialua had both been hidden at the time the edict had gone forth to destroy all the idols [Alexander and Dodge 1941:122].

Other early site designations in Mānoa included the Bishop Museum's designation of the former home of Queen Ka'ahumanu, "Pukaomaomao," in upper Mānoa as Site 405 and the designation of a complex of agricultural terraces in extreme northern Mānoa Valley (State Site #50-80-14-3953).



Figure 38. 1883 S.E. Bishop map of Pa'akea, showing location of a heiau near Mauoke Spring

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Figure 39. Project area (in red) in relationship to archaeological sites identified in Sites of O'ahu (Sterling and Summers 1978)

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Figure 40. Circa 1900 photograph of artifacts displayed at Punahou College including the wooden idol (left foreground) possibly found in a cavern in Rocky Hill

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5.4 Post 1960 Surveys of Mānoa Valley

Between 1963 and 1990 there were at least thirteen other archaeological studies in the Mānoa area, which are summarized in Table 2 and plotted in Figure 41 and Figure 42. Of particular interest is the recovery of a total of 25 presumed prehistoric burials from six other areas (Sites 3743, 4038, 4134, 4191, 4266 and the Koana Cave Site). The oldest report of burials in the Mānoa area of which we are aware concerns the discovery of human bones in a cave site located approximately 50 m *mauka* of the Dole Street burial site (4266). This cave is almost certainly the "cave called Koana" on a 1916 Podmore map (Figure 43). A habitation or burial function of the cave is suggested by one possible translation of ko'ana – "to stay or settle in one place, as people" (Pūku'i and Elbert 1986:157).

The five burial sites (3743, 4038, 4134, 4191 and 4266) were all interpreted as "prehistoric or early historic" (Bath and Smith 1988; Bath and Kawachi 1989; Bath and Kawachi 1990; Hammatt and Shideler 1991; Smith and Kawachi 1989). With one exception (the Dole Street burials), there were no associated cultural materials with any of these remains, nor was there any chronological dating. The Dole Street burials were associated with three formal artifacts of traditional design and with cultural layers dated to the fifteenth century A.D. (Hammatt and Shideler 1991).

Three of the archaeological studies bear upon *heiau* at Mānoa. Luscomb (1975) may have correctly identified the remains of Kawapōpō Heiau. Ching (1968) and Kawachi (1988a) both discuss possible identifications of a *heiau* on what appears to be two different properties located on the west side of Mānoa Stream just north of University of Hawai'i at Mānoa. It seems highly probable that Hipawai Heiau, where human sacrifices were offered, was in the immediate vicinity of these two study areas, but whether either report indeed describes remains of this temple is not altogether clear. There appears to have been no discussion of the other two known Mānoa Heiau: Kūkaō'ō Heiau (2859 Mānoa Rd.) and Hakika Heiau (near Paliluahine-Chinese Cemetery hill) since McAllister (1933). Other archaeological reports discuss minor agricultural sites or report no sites at all.

Archaeological data recovery was conducted at the Kāpapa Lo'i 'o Kānewai (a.k.a. Kānewai Cultural Garden) in association with construction of the University of Hawai'i Center for Hawaiian Studies building (Liston and Burtchard 1996). The project area was located adjacent to the east bank of Mānoa Stream, immediately makai of the Dole St. bridge. The Kāpapa Lo'i 'o Kānewai, designated State Inventory of Historic Properties (SIHP) 50-80-14-4498, consisted of a 1.7-acre parcel including active cultivation of taro lo'i and native Hawaiian plants. The area had been restored in the early 1980s by a group including community members. University students, and alumni. It was also noted by the Hawaiian Botanical Society that the garden was home to 69 varieties of taro, including 60 native Hawaiian cultivars (Fenstemacher 1989). Controversy arose when construction plans would have allowed encroachment into the garden area. Final plans limited disturbance to the recently restored southeastern portion of the garden area. The data recovery work was later conducted in a portion of the *lo'i* area that would be impacted by construction. Backhoe testing revealed evidence of a pre-contact irrigation system and pondfield agriculture. Radiocarbon dating of recovered samples indicated a period of pre-contact usage (A.D. 1443-1681), abandonment, and later reconstruction in the early historic period (Liston and Burtchard 1996).

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Figure 41. Archaeological studies in the vicinity of the project area

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Figure 42. Previously identified archaeological sites in Mānoa Ahupua'a (project areas with no identified sites are denoted by author and year of report)

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Mānoa Previous Archaeological Research



Figure 43. Podmore map (1916 or 1917) of the boundary between the '*ili* of Wa'ahila and Kānewai showing an '*auwai* and a "cave called Koana"

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Mānoa Previous Archaeological Research

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Deference	Tuna of Innotication	Cito ED OD	
	1 ype of 111 yesugator	14-	
Thrum 1907a, b McAllister 1933	Heiau Study Island-wide Study	0063	Briefly describes Hipawai Heiau, reportedly destroyed at the time Reprints Thrum's description
Thrum 1907a,b	Heiau Study	0064	Thrum briefly describes Kūkaō'ō Heiau (rebuilt around 1700)
McAllister 1933	Island-wide Survey		McAllister repeats Thrum's description and adds new information
Kennedy 1991a	Arch. Investigation		Investigation of Kūkaō'ō Heiau
	,		
Anderson 1992	Inventory Survey		Inventory Survey of Kūkaō'ō Heiau and Preservation Plan
Jourdane 1994a Tomonari-Tugale	burial Keport		Inadvertent discovery of human skeletal remains at 2859 Mānoa Rd
1998a	Historical Research		Historical background pertaining to Kūkaō'ō Heiau
McAllister 1933	Island-wide Survey	0065	Designates Mānoa Valley as Site 65.
Smith 1988a	Site Description	1170	Description of previously identified Manoa mound complex site
Smith 1988b	Site Description,	3726	Inspection of Pu'u Pia trail alignment. Description of a new site with a platform and
	Reconnaissance		mound.
Bath & Smith 1988	Burial Removal	3743	Burial removal from 2034 Round Top Drive
Ching 1968	Reconnaissance Survey	3874	Survey of sites on the Magoon Property given to the Univ. of Hawai'i. Site (3874)
			probably located near St. Francis High School grounds; possibly a pre-contact
			agricultural <i>heiau</i> .
Kawachi 1988b	Field Check		Field check of walls and terrace facings; St. Francis High School grounds may be location of a <i>heim</i> shown on 1909/10 military man
Scahran 1062	Etald Motor	2052	Notes in D D D M files on control transcent
206111911902	rieia noies	555	Notes III D.F.D.WI. HIES ON agricultural terraces
Thrum 1907a, b	Heiau Study		Kawapōpō Heiau
Luscomb 1975	Inspection Report	3986	Examination of site at 2626 'Anuenue St., probably Kawapopo Heiau
Bath et al. 1988	Burial Removal	4038	Burial removal from 2030 Wilder Ave. at Circle K convenience store.
Bath & Kawachi	Burial Report	4119	Inadvertent discovery of human skeletal remains on O'ahu Avenue
1990			
Bath et al. 1989	Burial Removal	4134	Burial removal from 2030 A Makiki St. (site 50-80-14-4134)
Smith & Kawachi	Burial Report	4191	Burial Removal Near Keller Hall on the campus
1989 Donolas 1990			
Hammatt et al. 1991	Burial Report	4266	18 human skeletal remains found on Dole Street, C14 dating, perhaps a village cemeterv includes osteolooical analysis
Vanachi & Danalaa	Duriol Domont	2227	
Nawachi & Douglas 1991	вигіаї керогі	42/2	Bunal found at Lower Manoa, 2414 Sonoma St; includes osteological analysis.
Culture A second funding	t for the December of IT Consists Duilding fo	a I IU Mēnee	

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Cultural Surveys Hawai'i Job Code MANOA 21

Mãnoa Previous Archaeological Research

Reference	Type of Investigation	Site 50-80- 14-	Findings
Burtchard 1992a	Data Recovery	4498	Letter to Tom Dye regarding test trenches at Kapapa lo'i Kānewai.
Burtchard 1992b	Testing		Letter report on trenching conducted to mitigate adverse effects of Hawaiian Studies Institute construction at Kanana lo 'i Kānewai
Burtchard 1994	Data Recovery		Paleoenvironmental samples, stratigraphic profiles at Mānoa stream.
Liston & Burtchard	Site Description, Historic		Prehistoric irrigation system that supported agriculture between A.D.1443-1681 at
1995	Literature		Kapapa <i>lo 'i</i> , Kānewai
Tomonari-Tuggle	Historical Research, Arch. Assessment		Recommends subsurface testing or archaeological monitoring at Kānewai for the
Pietrusewsky 1992c	Burial Report	4529	Inadvertent discovery of human remains at 1908 Judd Hillside Road
Daoher 1993a	Burial Report	4658	Inadvertant discovery of cave containing multinla humolo in Mãnoo Vollov
Dagher 1993b	Site description	4659	niau version uisoo very or cary comanning munippo ounais in manoa vancy. Historic hottle cache found in Mānoa Valley Pave
Dagher 1993c	Burial Report	4666	Discovery of human skeletal remains at 2048B Ualaka'a Street
Jourdane 1997	Burial Report	5497	Inadvertent discovery of skeletal remains at Wo/Sullivan House construction, 1908 Judd-Hillside Road. Skeletal remains are of undetermined age and ethnicity
Bishop Museum (Bowen?) 1964	Field notes		Visited Koana cave in response to discovery of human remains. No report.
Barrera 1985	Survey and Testing		No sites reported in project area within the Mānoa Hillside Subdivision.
Rosendahl 1987	Reconnaissance Survey		No sites found at the Wa'ahila Reservoir Project Area; no further archaeological work necessary.
Distructure 1080	Burial Report		Cremated dog and cat remains found at 2462 Mānoa Rd, no site number assigned to
Fager & Graves 1992	Inventory Survey		No sites found at mosnective well site moiect area
Grune 1992	Archaeological Synthesis		Synthesis of sites in Mānoa Valley
Dixon 1993	Reconnaissance Report		Absence of cultural remains at proposed Board of Water Supply well within Mānoa Valley Park, recommended an archaeological monitor be present during construction.
Spear & Chaffee 1993	Archaeological Assessment		No sites located at 2 Vancouver Drive lots; Vacant lots, some evidence of 1900s house foundations and walkways on surface.
Hammatt & & Chiogioji 1998a	Archaeological Assessment		No sites found on a 2.4 Long portion of the H-1 Highway from the Punahou Street Overpass to Vineyard Blvd. Off-Ramp

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5.4.1 Burials Found within the vicinity of the Project Area

Burials have been documented near Keller Hall, approximately 100 meters northeast of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southeast of the project area. The latter burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery.

5.4.1.1 Keller Hall Burial

A burial was encountered during a 1989 construction project at Keller Hall (Smith and Kawachi 1989) approximately 100 meters northeast of the project area. The flexed burial was 30 to 40 cm. below surface and 2.75 meters north of Keller Hall, near the northeast corner of the building. Three small *'ili'ili* stones that may have been interred with the burial were found nearby. The burial also appeared to have been interred in a rock-lined pit and had been previously disturbed by a cement slab (Smith and Kawachi 1989:3, 5, 8).

5.4.1.2 Dole Street Burials

In 1990, human remains were found on Dole Street during Board of Water Supply trenching for a 24 inch water main. Bones that appeared to be the remains of six individuals were exposed in the trench sidewall 1.7 m below road surface. Cultural Surveys Hawai'i subsequently disinterred twelve designated burials believed to include fourteen sets of remains. Small rough crypts were observed around four burials (Burial 1, 2, 13, 14), and a relatively substantial crypt feature of basalt boulders and cobbles was found around one burial (Burial 8). One hearth feature was observed, and a tooth plate bead was recovered in the course of screening burial fill. Several burials appeared to have been previously disturbed by construction trenching or during interment of other pre-contact burials (Hammatt and Shideler 1991:1, 5, 32, 34-36).

5.5 Division of Mānoa Valley

Mānoa Valley was once divided into two sections, one for the *ali'i* and their retainers and one for the commoners. The *ali'i* lived on the high, cooler western slopes; the commoners lived on the warmer eastern slopes and on the valley floor where they tended their irrigated taro fields (Bouslog et al. 1994 12). Mary Kawena Pūku'i (in Sterling and Summer 1978:283) has stated:

In Mānoa valley a low hill at the head of the valley and Rocky hill above Punahou are said by a kinswoman of mine to have marked the division between the chiefs and the commoners in that valley. The chiefs lived on the west half, the commoners on the east. The chief's excrement was buried secretly in the commoners' ground by the keepers...The imaginary line from Puu-o Mānoa to Ka-pali luahine marks the division of Mānoa; on the left called Mānoa-alii, and on the right, Mānoa-Kanaka.

Pu'u Mānoa is best known as Rocky Hill on the Punahou Campus. It seems that Kapaliluahine - the *mauka* reference point - is the small green hill in back of the Chinese cemetery (as illustrated by Sterling and Summers 1978).

Such a cognitive division of the valley suggests that the commoners - the vast majority of the populace - would have been buried on the east side of the valley. It also seems probable that the remains of the aristocracy would be buried on the east side as well, in as much as both corpses

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and excrement would have shared certain cultural values of dangerousness and defilement. It may well be that the division of the valley into Mānoa – Ali'i and Mānoa-Kanaka was drawn because the west side of the valley was generally higher and less swampy than the east side. It may have been drawn with regards to the experience of sunlight. The Mānoa Ali'i of the valley would have the experience of the rising morning sun, which was associated with values of ascendancy, tumescence, vigor and fertility, while the decline of the sun, which illuminates the Mānoa-Kanaka side, would have been associated with values of decay, senescence, and death.

The four known sites of prehistoric burials in Mānoa proper (Bath and Smith 1988; Smith and Kawachi 1989; the Koana Cave site; and the Dole Street site) all fall in Mānoa-Kanaka, as defined by Pūku'i.

Perhaps significantly two prehistoric burials have been reported just to the west of Mānoa Valley (Bath and Smith 1988; Bath 1989), standing in relation to Makiki Valley much as the Kānewai burials relate to Mānoa Valley. This suggests a possible pattern of prehistoric burial practices that may have been widespread - interring the dead near the east border of south-facing valley mouths.

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Section 6 Community Consultation

Throughout the course of this Cultural Impact Assessment project, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about cultural practices and resources specifically related to the project area. This effort was made by letter, e-mail, telephone and in person. Letters and emails were sent along with a map and aerial photograph of the project area with the following text:

At the request of Belt Collins Hawai'i Ltd., Cultural Surveys Hawai'i Inc. (CSH) is conducting a cultural impact assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai'i, Mānoa Campus. The CIA will be a part of the Environmental Assessment Belt Collins is preparing in compliance with Chapter 343, Hawai'i Revised Statutes. The proposed building will be located on the east side of Bilger Hall in an approximately 12,500 sq. ft. area presently occupied by two temporary office buildings (single story wooden portable structures) and a portion of an existing parking lot. The area is identified as Tax Map Key: (1) 2-8-23: 03.

The University is proposing to consolidate its information technology services presently scattered in eight locations, on and off its main campus in Mānoa, into a single location on the main campus. The location and conceptual design is consistent with the current Long Range Development Plan. The proposed IT Services Building will be seven stories high, be constructed of concrete, steel, and glass, and will have an architectural theme reflective of a classic modern style. Please see attached building design, USGS maps and aerial views of the project area.

The purpose of this cultural study is to assess potential impacts to cultural practices as a result of the University of Hawai'i's proposed development within the Mānoa area. We are seeking your kōkua and guidance regarding the following aspects of our study:

- General history and present and past land use of the project area.
- Knowledge of cultural sites which may be impacted by future development of the project area for example, historic sites, archaeological sites, and burials.
- Knowledge of traditional gathering practices in the project area, both past and ongoing.
- Cultural associations of the project area, such as legends and traditional uses.
- Referrals of kūpuna or elders and kama'āina who might be willing to share their cultural knowledge of the project area and the surrounding ahupua'a lands.

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• Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

Several attempts were made to contact individuals, organizations, and agencies apposite to the CIA for Mānoa. The results of the community consultation process are presented in Table 3 below. Summaries of more extensive interviews are presented in Section 7.

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Table 3.	Community	Consultation
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Name	Affiliation, Background	Comments
Name Ailā, William	Attiliation, Background Member of Hui Mālama I Nā Kūpuna o Hawai'i Nei	Comments Mr. Ailā responded to CSH's September 12, 2008 letter of invitation to comment, via an email received on September 15, 2008. The full text of the email is presented following this table (below). Mr. Ailā suggested that CSH speak with leadership at Kamakakūokalani Center for Hawaiian
		Studies. He also suggested that a thorough AIS be completed prior to completion of design plans, in order for plans to be altered to accommodate any <i>iwi kūpuna</i> or cultural sites that have been found during the AIS. Mr. Ailā also states that structures and utilities should be moved, if necessary, to allow for <i>iwi kūpuna</i> to remain in place.
Andrade, Carlos	Director, UH Mānoa Kamakūokalani Center for Hawaiian Studies	CSH mailed letter of invitation to comment, and project figures on August 6, 2008. In a personal communication with Mr. Andrade on August 18, 2008, he respectfully declined to comment on this project.
Freitas, Konia	Faculty, Kamakakūokalani Center for Hawaiian Studies and member of Hui Mālama I Nā Kūpuna o Hawaiʻi Nei	Ms. Freitas responded to CSH's invitation to comment in an email response received on August 18, 2008. The full text of the email is presented below. Ms. Freitas recalls that a burial was found at Keller Hall [near the project site]. She also recommends that a burial treatment plan and plan for curation of any Hawaiian artifacts be developed and completed prior to beginning any construction. Also see interview summary in Section 7.
Hughes, Claire	Kama'āina and resident of Mānoa	See interview summary in Section 7.
Kikiloi, Scott Kekuewa	Kama'āina and resident of Mānoa	See interview summary in Section 7.
McGregor, Davianna	Professor, Ethnic Studies at UH Mānoa	See interview summary in Section 7.
Mokuau, Noreen	Professor, School of Social Work at UH Mānoa	CSH sent a letter of invitation to respond via email on November 11, 2008.

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Name	Affiliation, Background	Comments
McQuivey, Jace	Vice President and General	CSH mailed letter of invitation to comment
	Legal Council - Hawaii	and project figures on August 6, 2008. CSH
	Reserves, Inc., and Chair,	then emailed letter and figures on
	O'ahu Island Burial	September 12, 2008. At the time of this
	Council	report there has been no response.
Nāmu'o, Clyde	Administrator, Office of	CSH contacted OHA with a request to
	Hawaiian Affairs	comment as part of the CIA process. The
		full text of their September 10, 2008
		response can be found below (See Figure
		45). OHA commented specifically on the
		UH Mānoa Long Range Development Plan
		and their hopes that mo'olelo would be
		incorporated into design planning. OHA
		also submitted comments as part of the EA
		pre-consolation effort. See comments below
		(and see Figure 44).
Oliveira, Kapā	Director, UH Mānoa	Ms. Oliveira was in receipt of CSH's
	Kawaihu'elani Center for	September 15, 2008 request to participate in
	Hawaiian Language	the CIA but respectfully declined to
		comment via an email sent on September
		15, 2008. She forwarded CSH's letter to
		other faculty and staff with in
		Kawaihu'elani. There were no additional
		replies regarding the CIA.
Paik, Kaleo	Cultural Specialist State	Ms. Paik responded to CSH's August 16,
	Historic Preservation	2008 letter of invitation to comment via an
	Division	email sent to CSH on August 11, 2008. The
		full text of the email is presented following
		this table (below). Ms. Paik recommended
		that CSH speak with Dr. Claire Hughes and
		Dr. Noreen Mokuau.
Vaughn, Palani	Mānoa Kama'āina	See interview summary in Section 7.

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6.1 Office of Hawaiian Affairs (OHA) Response

OHA's response letter (see Figure 44) contained four main comments:

- (1) Requested that a comprehensive AIS be conducted and submitted to SHPD for review and approval. OHA also requested that they be "allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey."
- (2) Should *iwi kūpuna* or Native Hawaiian cultural or traditional deposits be found during construction, work will cease, and the appropriate agencies will be contacted pursuant to applicable laws.
- (3) Recommended that native vegetation be used in landscaping to further the traditional concept of *mālama 'āina* as well as creating a more Hawaiian sense of place
- (4) Indicate within the EA that the project area is Ceded Lands.

At the request of the project proponent, CSH sought clarification and further explanation from OHA regarding items 1 and 4 above. In response to questions pertaining to the AIS, OHA provided the following clarification in email messages sent on December 29, 2008:

OHA requests clarification whether an archaeological inventory survey for the project will be submitted to the State Historic Preservation Division for review and approval. If so, OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.

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

OHA included further discussion of Ceded Lands.:

One of the problems with Ceded Lands is that there is no comprehensive inventory for them. As parcels are subdivided or consolidated, their Ceded Lands status can - and often do - get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands parcels. This documentation will also be beneficial when a comprehensive Ceded Lands inventory is finally conducted.

Moreover, informing the public on projects affecting Ceded Lands is critical because of the importance of these lands to not only Native Hawaiians, but to the broader public as well.

TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory. For verification, please contact DLNR's Land Management Division.

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6.2 State Historic Preservation Division (SHPD) Response

Ms. Linda Kaleo Paik, Cultural Specialist with the SHPD, kindly contributed the following response by email on August 11, 2008 (see Table 3, above, for details):

I do not have much to offer as far as new information but I think that I have a couple of individuals who may have suggestions on history and importance of sites within the area of Manoa. One is a dear friend of mine Dr. Claire Hughes, who lives in Manoa. She has gathered a lot of historical facts while working on the OHA newspaper each month. She also has a keen sense of Hawaiian thought and would be excellent in giving a cultural perspective to your project. Another individual who would be good is Dr. Noreen Mokuau, a professor at Manoa in the Social Work Department. Her insight to spirituality from a Hawaiian perspective would be valuable to your study. She incorporates Hawaiian values in her course work so that the up coming professionals can truly help the individuals they will serve from a sensitivity that stems from their own culture. If they are not able to assist you, I am sure with their contacts, they could offer you names of others.

6.3 William Ailā

Mr. William Ailā, member of Hui Mālama I Nā Kūpuna o Hawai'i Nei contributed the following response via email on September 8, 2008 (See Table 3, above, for details):

I would recommend that you contact Leadership at Hawaiian Studies as they would most likely have access to history of the area or contacts for Kupuna who do. I would recommend that the developer should conduct as complete a archeological inventory survey as possible to identify possible burials before architectural drawing are made so that they may be altered should Iwi Kupuna or cultural sites be discovered. Any Iwi should remain in place and the buildings or utilities moved.

6.4 Konia Freitas

Konia Freitas is a faculty member at Kamakakūokalani Center for Hawaiian Studies, and a member of Hui Malama I Nā Kūpuna O Hawai'i Nei. In an email response dated August 18, 2008, she kindly provided the following comments:

I am in receipt of your letter dated, Aug. 3rd regarding your CIA for the proposed IT Services Building for the University of Hawaii. Below are my brief comments.

- 1. I believe a Hawaiian burial was found at the northeast corner of Keller Hall many years ago.
- 2. I have no specific information regarding cultural practices within the vicinity of the project site.
- 3. While the area is full[y] developed, a burial treatment plan and a plan for the curation of any Hawaiian artifacts should be completed prior to construction.

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PHONE (808) 594-1888	RECEIVED FAX (808) 594-1865 2008 AUG 12 PH 2: 24
STATE OF HAWAI'I OFFICE OF HAWAIIAN AFFAIR 711 KAPI'OLANI BOULEVARD, SUITI HONOLULU, HAWAI'I 96813	BELT COLLINS HAWAII RS E 500
	HRD08/941
August 6, 2008	
 Glen T. Koyama Belt Collins Hawai'i Ltd. 2153 North King Street, Suite 200 Honolulu, HI 96819-4554 RE: Pre-consultation for the Environmental Assessment Technology Services Building for the University of I (1) 2 8 23.03 	for the proposed Information Hawal'i, Mänoa, O'ahu, TMK:
(1) 2-8-23:03. Aloha e Glen T. Koyama,	
The Office of Hawaiian Affairs (OHA) is in receipt of July 18, 2008. The University of Hawai'i proposes to build a s 12,500-square-foot property on its main Mānoa campus. The information technology services located at eight locations. Of offers the following comments.	the above-mentioned letter dated seven-story high building on a building will house all of its IA has reviewed the project and
OHA requests that a comprehensive archaeological inv be conducted and submitted to the Department of Land and Na Preservation Division for review and approval. OHA should b comment on the criteria assigned to any cultural or archaeolog archaeological inventory survey. Consideration must also be a	entory survey for the project area tural Resources – Historic e allowed the opportunity to ical sites identified within the fforded to any individual onal and customary purposes, in action 7.
accessing the project area for constitutionally protected traditionaccordance with the Hawai'i State Constitution, Article XII, se	ununa or Native Hawaiian cultural
accessing the project area for constitutionally protected traditional constitution, Article XII, see We request the applicant's assurances that should iwink or traditional deposits be found during the construction of the pappropriate agencies will be contacted pursuant to applicable in the second during the construction of the paper provide agencies will be contacted pursuant to applicable in the second during the construction of the paper provide agencies will be contacted pursuant to applicable in the second during the construction of the paper provide agencies will be contacted pursuant to applicable in the second during the second	project, work will cease, and the aw.
accessing the project area for constitutionally protected traditio accordance with the Hawai'i State Constitution, Article XII, se We request the applicant's assurances that should iwi k or traditional deposits be found during the construction of the appropriate agencies will be contacted pursuant to applicable k In addition, OHA recommends that the applicant use na plan for subject parcel. Landscaping with native plants further of mālama 'āina and creates a more Hawaiian sense of place.	project, work will cease, and the aw. ative vegetation in its landscaping s the traditional Hawaiian concept

Cultural Impact Assessment for the Proposed IT Services Building for UH Mānoa

Glen T. Koyama August 6, 2008 Page 2

Further, OHA notes that the subject land is designated as Section 5(b) Ceded Lands, which hold a considerable amount of sentimental, historical and legal significance for Native Hawaiians and OHA. These lands were illegally taken from the Hawaiian Kingdom after the 1893 overthrow and later transferred ("ceded") by the United States government to the State of Hawai'i upon statehood. Today, the state holds the Ceded Lands corpus in trust for Native Hawaiians and the general public. OHA requests that the Ceded Lands status of this property be indicated in the Environmental Assessment to better inform the public review process of this document.

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

'O wau iho nō me ka 'oia'i'o,

alyan Nor

Clyde W. Nāmu'o Administrator

Figure 44. Office of Hawaiian Affairs response letter to Environmental Assessment Preconsultation request, dated August 6, 2008.

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FAX (808) 594-1865 PHONE (808) 594-1888 STATE OF HAWAI'I **OFFICE OF HAWAIIAN AFFAIRS** 711 KAPI'OLANI BOULEVARD, SUITE 500 HONOLULU, HAWAI'I 96813 HRD08/3757B September 10, 2008 Lehua Ka'uhane Cultural Surveys Hawai'i P.O. Box 1114 Kailua, Hawai'i 96734 RE: **Cultural Impact Assessment** Information Technology Services Building; University of Hawai'i-Mānoa Campus Tax Map Key: (1) 2-8-23:03 Aloha c Lchua Ka'uhane, The Office of Hawaiian Affairs (OHA) is in receipt of your August 3, 2008 letter initiating consultation ahead of a cultural impact assessment for the proposed construction of the Information Technology Services Building on the University of Hawai'i-Mānoa Campus. Based on the information contained within your letter, it is our understanding that the proposed building will be located on an approximately 12,500 sq. ft. area presently occupied by two temporary office buildings and a portion of an existing parking lot. The traditional cultural landscape of lower Manoa Valley has been dramatically changed via development activities which continue into current times. It is our hope that traditional mo'olelo will be incorporated into the Long Range Development Plan for the University of Hawai'i- Manoa, so that kama'āina and visitor alike will have the opportunity to understand the cultural significance of this wahi pana. Thank you for initiating consultation at this early stage and we look forward to the opportunity to review the completed cultural impact assessment. Should you have any questions, please contact Keola Lindsey, Lead Advocate-Culture at (808) 594-1904 or keolal@oha.org. 'O wau iho nö me ka 'oia'i'o, your No Clyde W. Nāmu'o Administrator

Figure 45. Office of Hawaiian Affairs response to CSH dated September 10, 2008.

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Section 7 Summaries of Kama'āina "Talk Story" Interviews

7.1 Overview

Kama 'āina (native-born) and $k\bar{u}puna$ (elders) with knowledge of the Mānoa *ahupua* 'a and the proposed project area participated in "talk-story" sessions for this assessment. Cultural Surveys Hawai'i employs snowball and judgment sampling, an informed consent process and semi-structured interviews (as suggested by Bernard 2005). A total of twelve individuals and or institutions were contacted for this CIA (see Table 3, above); three did not respond or chose not to participate; four (OHA, SHPD, William Ailā, and Konia Freitas) responded in writing (see Sections 6.1 - 6.4, above); several people provided referrals to other individuals; and five agreed to have their comments from the UHM Long Range Development Plan Update (LRDP) CIA, previously completed by CSH, included in this report. Because the proposed IT Services Building is a part of the LRDP, it is useful to refer to comments shared in that process (see Monahan and Ka'uhane 2008).

A total of ten kama'āina (born in Hawai'i) and/or $k\bar{u}puna$ (elders) with knowledge of the Mānoa area participated in "talk story" sessions for the CIA for UHM LRDP. CSH contacted participants from the former CIA inviting them to comment specifically on the proposed IT Services Building and asking that their previous comments be included in this report. Below are interview summaries of five $k\bar{u}puna$ and/or kama'āina who participated in the LRDP CIA and agreed to have their comments included in this report for the proposed IT Services Building. Only one respondent, Konia Freitas, had additional comments regarding the IT Services Building [See section 6.4].

7.2 Konia Freitas

CSH conducted an interview with Konia Freitas at Kānewai Lo'i on May 30, 2008 regarding the cultural impacts of UHM's LRDP. Ms. Freitas is a faculty member at Kamakakūokalani Center for Hawaiian Studies and a member of Hui Mālama I Nā Kūpuna o Hawai'i Nei. Here are her comments:

Ms. Freitas pointed out that burials have been found at Keller Hall and Dole Street, and she believes that more burials may be found. UH is in a position to take proactive steps regarding the treatment of burials. Discussion of what should happen when human remains and burial goods are found should happen on the front end of the planning process. Procedures should be developed before any construction begins. UH is also in the position to develop progressive curation measures for any artifacts that may be found during construction.

Ms. Freitas also remarked that the current design of the campus is fragmented and disconnected from a sense of place. In thinking about the UHM Long Range Development Plan, there should be emphasis placed on integrating a meaningful sense of place into planned projects beyond just building vernacular. Planners should ask "how can each project in the UHM LRDP honor the place of Mānoa." There are many *mo 'olelo* (oral histories), *wahi pana* (legendary or storied places), and *akua* (gods) associated with the area. "How can a building reflect the character of a deity, for example, as opposed to just naming the building?" It would also be important to incorporate plants into the landscape that can be utilized for gathering practices and are associated with the place.

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7.3 Davianna McGregor

CSH met with Dr. McGregor for two talk story sessions in regard to the CIA for the UH Mānoa Long Range Development Plan. The first meeting was on April 23, 2008, and the second on May 8, 2008. Dr. McGregor is a professor in the Ethnic Studies Department at UH Mānoa. The following excerpts have applicability to the proposed IT Services building project:

The discovery of burials is very probable. There has been multiple burials discovered on the UH Mānoa campus already. Keller Hall is the location of one repatriation site. It is unmarked and is located on the NE side of the building. There used to be ginger planted on top of it, but there is nothing there anymore that distinguishes the site.

Are the trees on the campus going to be protected? Find out when the trees were planted and by whom. Many of these trees are rare and they have significance to particular sites and people (i.e. They were planted to commemorate someone or in memory of someone). Some of these trees have a function more than just to beautify the campus.

Much of the proposed project area is already developed, although there is the possibility that cultural sites still exist in the area and could be impacted by development. If impacted, appropriate mitigation should take place. Also, a thorough review of previous archaeological and cultural reports related to the area should be undertaken.

7.4 Scott Kekuewa Kikiloi

On June 9, 2008, CSH met with Kekuewa Kikiloi, a *kama'āina* and current resident of Mānoa. Although originally from He'eia (near Kāne'ohe) in Ko'olauloa, Mr. Kikiloi has lived in Mānoa for most of his life. His grandparents moved to the valley in the 1950s and he lived with them on occasion throughout his childhood. He currently resides in Mānoa.

7.4.1 Trails

Over the years Mr. Kikiloi has spent time hiking the valley and researching *mo'olelo* and *wahi pana*. When asked about the traditional uses of the trails accessed during contemporary times he responded:

There's only one way to go usually along ridgelines. But in terms of the middle of Mānoa...I looked at the old John Papa 'Ī'ī book, *Fragments of Hawaiian History*, and they have a map of Mānoa in there, where the trails actually correspond to the main roads in Mānoa. So Woodlawn, East Mānoa and Mānoa were the three trails. Makes sense, I think a lot of the trails in Hawai'i are now roads, main roads.

7.4.2 Gathering

Mr. Kikiloi gathers non-native bamboo in the area but explains:

Overall I don't know. There's not too many resources left in Mānoa because at one point, I think in the turn of the century, in the 1900s, a lot of it was deforested

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from the ranching. So when that guy Lyon, who the Lyon Arboretum is named after, he came and replanted the watershed in non-native plants just to restore the watershed. But I think since that time there isn't really a lot of native plants in Mānoa. I mean you can go hiking and you won't find too much stuff, only on the ridgelines. Yeah I can't even think of one native plant in the valley actually, except this $h\bar{o}$ 'i'o fern [Diplazium spp.], somebody planted a whole bunch of it at the head of the trail so that people could gather [it] up. That's about it I think.

7.4.3 Streams

When asked about stream resources in the valley, Kikiloi comments on the changes have been observed:

I think overall the stream has diminished a lot, even since I was a kid. There was a lot more water in it. And my mom said even more when she was a kid. But it's all fed by the tributary streams that go up the valley. I think there was about seven of them. The first one being 'Aihualama where Lyon Arboretum is. That one still flows and it feeds the *lo'i* that Hālau Kū Mana takes care of. Waihī, I think that's Mānoa Falls, Waihī. That one still flows. Waihī Iki flows sometimes. I haven't seen Lua'alaea or Nāniu'apo flow. And I haven't hiked all the way in there. There's actually a trail that goes back there but I always go to the Waiakeakua side. Waiakeakua still flows.

Despite changes in the stream, Mr. Kikiloi continues to gather water for 'awa (also known as kava, *Piper methysticum*) ceremonies. Oral tradition describes how certain springs in Mānoa are connected with the gods Kāne and Kānaloa who are credited for bringing 'awa:

So in terms of water resources, that place is still really important because it's tied to the story of Kāne and Kanaloa, much like Kānewai and Punahou. All these places that they went to are sacred spots for water. At least for me and my friends that do '*awa* ceremony we get our water from Waiakeakua spring. 'Cause it's the only really clean spring.

Mr. Kikiloi expanded on why Mānoa waters sources are so valued for their use in 'awa ceremonies:

You always want to try to go to springs or heads of water where it originates from. You know places that Kāne and Kanaloa went to are ideal places because they're the ones that brought the 'awa. So their water source and their 'awa are the best. And there isn't too many places mentioned in the stories where they went specifically, place names linked to the travelings of Kāne and Kanaloa. But Mānoa has a lot.

Other springs that Mr. Kikiloi pointed out to CSH are Wailele, located on the Mid-Pacific Institute campus, and Ka Punahou located on the Punahou campus (see Figures 48 and 49).

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Figure 46. Wailele Spring.



Figure 47. Punahou Spring.

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7.4.4 Wahi Pana (Storied Places)

Although recognizing that the valley seems to have changed significantly since photographs were taken of *lo'i* covering the entire valley floor, Mr. Kikiloi has still been able to identify cultural properties throughout the Mānoa. Many of these cultural properties are connected to the story of Kahalopuna (see Section 3.3.17):

I think overall it's always important to reference that story because that's the story of the valley pretty much. The cultural landscape is based off the names and characters that were in the story, historical figures. There's important place names. I think of the story of 'Akāka, which is the hill area by the Chinese cemetery. If you go up that hill, that ridge line that stretches up to Wa'ahila, that's called Nālehua. The ridgeline that stretches back to Mount Olympus, Wa'aloa, is called Pali Tuahine. The names of the wind and the rains of the valley- Ka Ua Tuahine [the Tuahine Rain], Makani o Kahaukani [the Kahaukani wind] are the names of the parents of Kahalaopuna. I mean its kinda neat to me because like the rain and the wind are the parents of her, she's the rainbow right, and the ua Tuahine is the rain that comes straight back through the valley kind of like in a slow kind of motion, real kind of fine misty kind of rain that creeps down the valley. You can see it come down and it's blown by the Haukani wind. And when it's the right conditions and those things happen then you see the rainbow yeah. So it's like a story for one, but it's also the natural phenomenon that occurs daily. In Wailele, which is the Mid Pac School area, there's the stone called Ka U'i o Mānoa, which is a reference to Kahalaopuna, the beauty of Mānoa. And that stone is still there, right next to the football field. I have a picture of it in ' \overline{O} iwi. I took a picture next to it. And then I wrote a story about Haukani because it's the name of the wind, but it's also the name of a tree that used to be back in valley-kind of a supernatural tree.

In the past Mr. Kikiloi has observed Ka U'i o Mānoa being used as a graffiti rock (Figure 50). Reflecting on this activity, he notes:

They used to use it as the graffiti rock. And I just find it ironic that they're graffiting the beauty of Mānoa- the rock that's representative of the story of the valley.

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Figure 48. Ka U'i o Mānoa.

There is another $p\bar{o}haku$ near Lyon Arboretum that Kikiloi believes may be connected to the story of Kahalaopuna:

So I checked it out and then it kind of occurred to me in the story of Kahalaopuna, in the Nakuina version, he was talking about how, you know she's buried at different places when she dies and the only place in Mānoa where she's buried is 'Aihualama actually. And up there next to a big rock is the burial place they said. So there is a small little platform next to this really big rock, which is weird, standing out in the middle of nowhere.

7.4.5 Concerns Regarding the UHM Long Range Development Plan Update

When asked about the UH Mānoa Long Range Development Plan, Kikiloi commented that he:

Would like to see some consideration of the style and the feel of the buildings that are constructed; whether they create a Hawaiian sense of place or ones that are consistent with the architecture of the valley. And then also the incorporation of native plants through out the campus. I mean there [are] a lot of different types of botanical specimens all over the place, but there needs to be more Hawaiian plants.

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7.5 Claire Hughes

On May 29, 2008, CSH met with Dr. Claire Hughes, a long-time resident of Mānoa Valley, to discuss her knowledge of the valley and the project area.

7.5.1 Background

Dr. Hughes shared with CSH her personal connection to Mānoa:

I have lived in Mānoa since 1970. I came to the University to get my Master's degree in 1966. I loved walking to and from my car, which was parked on the streets of Mānoa.

Then, as a child in 1940's, I remember coming to Mānoa to visit at my aunt's home (we lived on Kaua'i, so it was adventure to visit Mānoa). Her mother -inlaw was Mrs. (Ella?) Harris, who we called Kuku (not, Tutu). Kuku had farmed taro in the area and produced poi for many years. My aunt and her family lived at the makai end of Loomis Street. Kuku lived nearby in a two-story home on O'ahu Avenue. Kuku's house had a poi mill downstairs, although she was no longer making poi. We would visit Kuku, who sang and spoke to us in Hawaiian. She was wonderful. She was very old, but could walk up and down those many steps from her front door. We loved to go and see her, cuz she would sing a song about Honolulu to my older brother (that is his Hawaiian name). She always greeted us little ones with lots of aloha.

7.5.2 Destruction of Cultural Sites

Dr. Hughes is concerned about the continued destruction of cultural sites in Mānoa. She spoke about Pu'uhonua Heiau, the site of the Castle home (see Section 5.2.1 Kūkaō'ō Heiau for discussion), and *wahi pana* connected with Kahalaopuna as examples:

One of example is the *pu'uhonua*, excuse me, the *pu'uhonua* I was just mentioning, there is one that's on that map of O'ahu. The map shows the *pu'uhonua*.... It's up against the slopes of Ualaka'a [also known as Round Top], on Pu'uhonua Street.

Anyway I've walked up there to see if anything remains of it. It's on, it's on the map [Sites of O'ahu map] with one of the indications-numbers. I walked up there and there's just homes. And there are lots of homes. And, in the last big rain that we had... Remember when we had the 40 days and 40 nights of rain? Well, people (homeowners) that had altered hill back of their lots a little bit. And so the rains brought the earth down through their homes and down across that road into other homes on the other side of the street [Pu'uhonua Street] down the hill side, and then down across couple more homes at the end of my street. Homes were badly affected by mud. The mudslide went all the way down to Mānoa Road. The rainwater just came all the way down with mud and rubble. So anyway you cannot see it, the *pu'uhonua*. You have no idea when you look around up there, where that place was. So it's been obliterated. They've put up yards and yards of additional rock after that rain. So people have destroyed even further whatever was there.

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And I think, I'm not an engineer, but I certainly think they are front loading that hillside a lot. The weight of that stone will only serve to bring more of the hillside down [with the next big rain] because, there's no way they can build the rock walls appropriately [retaining walls] to hold it all back. They're just putting stone on like this because there's no easement on the roadside it's very narrow. So, my concern is that we're allowed destruction of the *pu'uhonua* to happen. In addition, there are many tales/mo \Box olelo about the mountain at the end of this valley, about it being the grandmother of the Mānoa maiden. You know the story about her? So Joe Pao, the developer came up here years ago and built a whole bunch of houses and, in the process he bulldozed down half of that mountainside.

7.5.3 Mo'o

Throughout the interview Dr. Hughes made reference to the different *mo 'olelo* connected to Mānoa. The story of Kahalopuna was of particular significance; however, she also spoke about the famous and well-known *mo 'olelo* of Pele and Hi'iaka and its connection with lower Mānoa:

'Cause you know right over here where they made the freeway overpass [Lunalilo]? That's the back of the mo'o, Kamō'ili'ili, who was slain by Hi'iaka. There is a statue of that mo'o on the grounds of the elementary school [Kūhiō] right over there.

So the school knows about it [the mo'o]. But in order to make the freeway they cut right through the back of the mo'o. And then there's supposed to be an opening in the mountain, a tunnel [where there is water] that comes in here [Kānewai Park}.

7.5.4 Holua Sledding at Puowaina

Dr. Hughes was also disappointed that the $h\bar{o}lua$ sled paths at Pūowaina [Punchbowl] are no longer identifiable because of development:

So did you know that on the slopes of Punchbowl there were sledding areas? I went up there one day and I said oh this is about where one slide is supposed to be. I guess you could go down on a Hawaiian sled about thirty feet and then slam in to the side of that fifteen-story building. So many apartment houses have been developed up there. So you know the sledding paths are destroyed.

7.5.5 Graveyards

Although Dr. Hughes noted that there are a number of sites that have already been destroyed, she believes that there continue to be places that should be protected:

Far back in the story, the projecting spear of Akaaka shows in the head of Mānoa valley. Well that was the one site they let be destroyed for houses. The point is we've already lost these [pu'uhonua and hillside]. There are some other sites I think that we need to discover/research a little bit more about and retain them if they are significant. Some sites are more modern actually. I think this little graveyard down here is one. I attended meetings before they worked on cleaning it up. And you know in the old days Hawaiians didn't have money to put up granite headstones, so they just put rocks, circling graves of their family

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members. And everybody knew which rock circles were theirs, parents and grandparents, etc. And so when they wanted to clean up the graveyard, Families came out and said you have to be very careful how you move the rocks, as they feared the volunteer crews could just go in there and tear stuff out and then destroy the stone markers for the families. So the clean up crew was very good, I must say. You can look in there now, I've gone to the service station next door recently and it's really visible compared to the old days. So, it's being maintained. It's been at least a year maybe... if not, a year and a half, two years.

It was just awful before. They have built a theater on the other side of it. One of the stories was that they built the theater over part of the graves. And the theater people were very adamant that they had not covered anything. And I guess they proved it that night in the discussion. They quieted down the fears of the woman who complained. Maybe they were able to show her some markers, I guess. But they have a concession stand that's built there. People wondered who's place the concession stand is standing on? And Kawaiha'o Church is the one who has the records of who was buried there. So their lawyer was involved in discussions preceding the clean up. I have an aunt who was buried there. So I called up my cousin to tell him I was going to represent the family. But I didn't have much to contribute except to tell them that the rock walls over there are not like other rock walls. There very easily damaged because there not made with reinforcing innards like most rock walls. They are piled up stones with cement put over. So there are no reinforcing rods, so you can't pile rubbish on top of the cement wall.

7.5.6 Natural Environment

When asked about other cemeteries in the valley, Dr. Hughes spoke about land use and the natural environment:

Actually I don't know where they would have been buried because this part of the valley was all taro. If you are familiar with this supermarket parking lot, they can't keep it smooth because there's so much water underneath. I mean they just resurfaced it and the area by the stream is all gone already. Big pukas. Big pukas are all along that area. So you know that our soil for taro requires a lot of underground water, and there's lots, apparently. There's a story in this about being an underground river in that area [Sites of O'ahu].

And that's why UH sustained so much damage [in the October storm]. It's the natural path for the runoff from the stream...the surface stream but also the under ground one. So there's stories in Sites of $O\square$ ahu (here) about that. So that... I've read that thing in and out about Mānoa, but I brought this (The Legends and Myths of Hawai \square i) for you to see, and that the story about the princess of Mānoa is told by one of the by a highest of authorities [referring to Kalākaua]. His story is much more detailed than any other you're going to read about the Manoa...what does he call it?...Kahalaopuna, the princess of Mānoa. And then did you know that up there is Kauhi's body. Did you know that? [referring to ridgeline across from Mānoa market place].

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His $\Box \bar{o} p \bar{u}$ [belly, stomach] is over here and his toes are down here. So the project that Hawaiian Electric was going to do, to put those huge, gigantic, enormous, immense poles across Wa'ahila ridge. It would have put the poles across Kauhi's profile.

7.5.7 Trails

Dr. Hughes remembered hearing about a cave at Wa'ahila, which connected Mānoa to Pālolo. Although never actually seeing it herself, she has frequented the Wa'ahila trails:

Oh that's a beautiful hike. I love it. I did it many, many times.

It requires a lot of athleticism because there [are] some places where you have to climb up where there's no foothold to go up. You have to really be able to pull yourself up and down. So I'm too old to do it now. But I loved it. I loved that hike. It was really one that was very exciting. So that's another area over there that I think we should maintain. And make sure nobody puts another theater over there.

Dr. Hughes also remembered hearing about an old horse path around Pūowaina (Punchbowl):

My mother who remembers coming up there as a young girl, she said the upper road that goes around Punchbowl was a horse path. Wide enough so two horses could pass by each other, and that's all. And then down below, right above the cemetery ['Auwaiolimu Street], between the Chinese and the other cemetery, was a cart path, meaning, that two carts could barely pass each other—horse drawn carts. So, now we have a four-lane highway there. If you wanted to you could make four lanes there. So yes, they did put the easement probably over some of the graves. So I think that's a bad thing. I think that's really bad. Yeah, so from that perspective, I think we all have a responsibility to call out historical sites and things that we know are of value and make sure that, even if it isn't named on any site maps, if it looks like something we should be saving, we should be saving it.

7.5.8 Aesthetics and Green Spaces

The visual impacts of the proposed project were also a concern for Dr. Hughes:

And besides, that's the only open area [green space, referring back to the Mānoa cemetery] you're gonna find anywhere, [development surrounds it]. Who knows if they're gonna put up 70 foot high buildings all over the place. Like the new Safeway sign? The Safeway changed their sign. They made it more than twice as large as it was. And look how far it's visible. It only goes one block. So why would we need that sign to be bigger? We have to really be aware that of this kind of development, like the big sign there. How far away do you need the signs to be read from less than a block away? When you go out to sea off the Kona coast you can see Home Depot and all the "big box store" signs from two or three miles out at sea.

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7.5.9 Puka'õma'o

During the interview Dr. Hughes described a number of cultural sites found in Mānoa. One was Puka'oma'o:

Another important site is Ka'ahumanu's home, Puka'ōma'o. It is over near Wai'oli Tea Room. It was a large grass house where she came in her last hours of life. There is a beautiful description of this in the Sites of O'ahu. Ka'ahumanu died there. That house or area should be restored and saved.

7.5.10 Cultural Sites at Mid-Pacific Institute

A number of the cultural properties and features on the landscape that Dr. Hughes mentioned were located on, or near the campus of Mid-Pacific Institute:

There are several sites on the grounds of Mid-Pacific Institute that need to be recognized and preserved. I believe that the school knows where some of the sites are and have been respectful in preserving their existence. However I don't think that the Hawaiian public knows about them nor has the history of them been written. These sites belong to the collective history of Hawai'i.

There is an area in the park that I believe is a *heiau*. I was told that a UH course for teachers identified it as Pu'u Pueo, although it is not a marked site. It is very small and faces destruction. It is in Kamanele Park. The Board of Water Supply contractor, Heron, is using the area for their dumping ground and equipment base area for about 4 or 5 years. And, it is an eyesore now. The large banyan and African Tulip trees threaten the rock formation there. It was previously used by homeless types, who put an old sofa and other things to sit on.

I hope that there will be some research into the sites in this area and preservation of them.

7.6 Palani Vaughn

Palani Vaughn is a noted composer and musician as well as historian and *kama'āina* of Mānoa for 57 years. CSH met with Mr. Vaughn on July 28, 2008 to talk-story about his experiences and knowledge of the valley. Mr. Vaughn also shared his concerns and recommendations concerning the project. The following are excerpts from an email response to questions CSH sent regarding Mr. Vaughn's knowledge of the Mānoa Valley area.

7.6.1 General Comments

I firmly believe in preserving and protecting legendary and historic sites, or *wahi* pana, of Mānoa Valley, particularly because...it was treasured by the ancient ones through the reign of Kamehameha I, during his residency here following his conquest and unification of the kingdom. Particularly in light of the increased development and modernization of our '*āina*. I say this, particularly, in light of the UH Mānoa's plans to develop land areas that fall under its purview. It seems to me that these historic *wahi pana* sites and the rich legendary and cultural assets of Mānoa Valley and this valley's place in the evolving political history of the Kingdom of Hawai'i during the post-Kamehameha-the-Great Era is of immense

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educational value to the university and to the general educational systems, both public and private, but of particular importance to our native-Hawaiian population, who would hopefully enjoy the intangible benefits of renewed national pride through re-identifying with their Hawaiian history, legends and culture.

7.6.2 Wahi Pana

Heiau 'O Kūka'ō'ō is situated near the center of the valley. There is another heiau located nearby but I haven't had much time to research its exact location and history. Unfortunately, this heiau is situated on land that was owned by the Sam Cooke family, whose home overlooks and adjoins this heiau. In 1993, the land was developed into a new residential area. The process of developing the area, I personally deplore, because DLNR, apparently allowed the heiau mound to be cut into around which a retaining wall was built at its base. One home is only three-feet away from the retaining wall of the heiau. This is just the kind of disrespect for our Hawaiian culture that current and future re-development of Mānoa Valley threatens (more comments regarding DLNR's negligence). I, personally, take my 2 granddaughters to visit Kū Ka 'ō'ō Heiau and to other historic sites to educate them about the above Mānoa wahi pana sites and to respect these sites.

"Ka Punahou" Spring, on the Punahou School grounds which Mānoa legend tells us that it was created by the Hawaiian god Kāne, although another legend exists.

"Pu'u o Mānoa", called "Rocky Hill", on the campus of Punahou School, situated behind the school's tennis courts

"Puka 'Ōma'oma'o" site in upper Mānoa on the 'Ewa- side of the valley, known as Mānoa Ali'i, where only Ali'i" could reside---the other side was Mānoa Kānaka. Puka 'Ōma'oma'o, which translated as, "The House of Green Shuttered Windows", was the chosen residence of former Queen Ka'ahumanu, who, following the demise of King Kamehameha I, had become the self-appointed *Kuhina Nui*, or Premier, of the Kingdom of Hawai'i who shared the rule with both of the sons of Kamehameha-the-Great, namely Liholiho and Kauikeaouli. Ka'ahumanu selected her house-site because it gave her a commanding view of Waikīkī and Leahi, now called Diamond Head, so that she could see any ships sailing to and from Honolulu, and she could also see anyone walking up the Mānoa trail to her home, and as a high-ground residence, it afforded Ka'ahumanu both privacy and security from attack, because she had, indeed, experienced rebellion among certain powerful chiefs in what was referred to as the *Pahi Kaua War*, led by chief Boki's widow Kuini Liliha and Princess Bernice Pauahi Bishop's father Abner Pākī.

Puka Ōma'oma'o is where the legendary *ali'i wahine* Ka'ahumanu passed away in the presence of King Kamehameha III and all of the other important chiefs of the kingdom. It is said that Ka'ahumanu's bed and the walls of the room were bedecked with fresh-scented *maile* [Alyxia olivaeformis] and 'awapuhi [Zingiber

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zerumbet] Kamehameha's yellow feathered cloak lay beside the bed draped over a settee, symbol of her station as *Kuhina Nui* (Together with Kamehameha I's feathered war helmet).

Mānoa legend tells us that there is a cave network and fresh-water spring situated underground in and around the Mō'ili'ili area, the healing waters in which, Kahalaopuna, "The Rainbow Maiden" daughter of Mānoa's wind, Kahaukani and Mānoa's rain, Ka Ua Tuahine, was immersed to resuscitate her from a death-state. There are, purportedly, other underground water springs according to other accounts.

Perhaps these healing waters, if we are to believe in the claims of the Kahalaopuna legend, could be of possible importance to UH Mānoa if it chose to research the claims of the legend in the future. An account that speaks of a cave and natural tunnel that connects Mānoa Valley with Pālolo Valley. Apparently, it was used by Kamehameha and his warriors.

Ka Wai-a-Ke-Akua-'o-Kāne pool and stream, were also created, according to Manoa legend, by the god Kane. This water was revered and protected by King Kamehameha-the-Great, who placed the prostrating *kapu* upon the water as it was conveyed by his runners to his court.

There is also the legend of an ancient *mo'o*, *or* "lizard", whose petrified severed remains are said to be in the grounds now occupied by the Hawai'i Humane Society, across from Kūhiō Elementary School, according to Pele legend.

"Kamanele Park" dedicated by our beloved deposed Queen, Lili'uokalani.

Location of the last home of Hawaiian scholar and preservationist, Kawena Pūku'i, who attended school in Mānoa in her youth, where the Mid-Pacific Institute is today.

7.6.3 Burials

I am not familiar with any burials, but I would bet that there are many. I would presume that such burials could be in and around the Puka ' \bar{O} ma'oma'o. I would also guess that there may be burials within the underground cave-network in and around Mō'ili'ili mentioned above or, even at and around "Kū Ka ' \bar{O} ' \bar{o} ", although DLNR would have or should have conducted an archaeological survey.

7.6.4 Hula

My daughter, Allison-Ka'ilihiwa, is an accomplished and award-winning hula dancer, and is now a practicing *kumu hula* whose $h\bar{a}lau$ is named, "Hālau Hula Ka-lehua-Tuahine". Her $h\bar{a}lau$ excelled in the newest hula competition recently created, called the "Mokihana Hula Festival" on the Island of Kaua'i and are now defending 2007 champions currently preparing to defend their $k\bar{a}ne$ title this year's competition. She also led her $h\bar{a}lau$ to multiple title wins in the "2007 Invitational World Hula Competition" at the Waikīkī Shell in Honolulu.

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She feels a deep affection for Mānoa, having lived there all of the 33 years of her life. She has told me that she is committing her life to keeping the flame of *hula* alive in Mānoa and identifies with the spirit guardian of Mānoa Valley, Tuahine, whose name she wove into the name of her $h\bar{a}lau$.

My daughter's *kumu hula*, Mae Klein, was a *haumāna* [student] of Māiki Aiu Lake, who was also my dear friend and one of my early cultural mentors.

My daughter's *hālau* is centered on the grounds of St. Francis School, which was also the original "home" for Māiki Aiu Lake's "Hālau Hula 'O Māiki". So, my daughter feels an identification with the spirit of Māiki Aiu both through me, her father, and through the location of her *hālau* on the historic original site of the legendary *kumuhula* Māiki Aiu of "Hālau Hula 'O Māiki".

I believe Māiki, who was Catholic may have attended St. Francis.

7.6.5 Trails

As children, we climbed around "Rocky Hill", where there are small caves, or at least there were then, when I was 12 years old. Like many others, we often walked the trails leading to the waterfall in the back of Mānoa Valley. There was a large housing area that covered the area which includes Noelani Elementary School and the surrounding buildings, including most of the Mānoa Shopping Center and extended up the valley where the newest housing next to and across the street of where the shopping center is located

Section 8 Cultural Landscape of the Project Area

8.1 Overview

Discussions of specific aspects of Hawaiian culture as they may relate to the project area and the Mānoa Ahupua'a are presented below. This section examines cultural resources and practices identified within or in proximity to the subject project area in the broader context of the encompassing Mānoa landscape. Excerpts from talk story sessions are incorporated throughout this section where applicable.

8.2 Plant Resources

As discussed in Section 3.5, Handy's (1940) description of Mānoa suggests the valley was once home to a substantial Hawaiian population supported by vast taro gardens:

In upper Manoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Manoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated [in the 1930s], but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches." (Handy 1940:77)

Legendary accounts also mention a variety of cultivars grown in Mānoa; one recounts the story of Kihanuilūlūmoku-wahine who—in the company of mermaids and *menehune*—went to her garden of taro, sweet potatoes, bananas, $h\bar{o}$ 'i'o, bamboo, $k\bar{i}$, hala, ginger, lehua, and other plants. As they worked they chanted, the mermaids singing as they came from the central springs of Mānoa Valley to the mountain freshets, all of which would provide water to the 'auwai used to grow crops (Bouslog et al. 1994:213-214). One version of the Legend of the Princess of Mānoa refers to the maile and fern gatherers of Mānoa and Nu uanu (Nakuina 1904:45). An oli to honor chief Kuali'i and recount his exploits refers to the "yellow ti leaf on the heights of Waahila [Wa'ahila Ridge]" (Fornander 1917a, Vol. IV:392-393). Ti or kī (Cordyline fruticosa), a Polynesian introduction, had and has multiple ethnobotanical uses; the roots can be baked as a comestible and used to make the distilled drink, 'okolehao; various parts of the plant are used in hula, fishing, thatching and healing (Abbott 1992).

While there may be no taro pondfields (lo'i) presently in or near the project area, several participants mentioned seeing old terraces in the forested uplands above the campus. Kekuewa Kikiloi, for example, tried to rehabilitate an old lo'i that he had identified while hiking in the back of the valley. During the conversation he also mentioned efforts being made to map old lo'i in the Mānoa area.

One area of active cultivation near the project area—and the primary exception to the generalization that the traditional practice of *kalo* cultivation has all but disappeared from the campus—is the Kānewai Cultural Garden, also known as Ka Papa Lo'i o Kānewai. The abandoned taro *lo'i* were rediscovered, cleared and restored by students at the UHM in 1980. Ka Papa Lo'i o Kānewai serves as a living storehouse of different varieties of taro that are today utilized by farmers through out the islands.

Scott Kekuewa Kikiloi mentioned that he gathers non-native bamboo in the area and explained that there are not too many plant resources remaining in Mānoa, especially native

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Hawaiian plants, "I can't even think of one native plant in the valley actually, except this $h\bar{o}$ 'i'o fern [*Diplazium* spp.], somebody planted a whole bunch of it at the head of the trail so that people could gather [it] up." Beyond Mr. Kikiloi's statement, participants for this assessment did not mention ongoing gathering practices in Mānoa.

8.3 Streams and Fresh Water Resources

Given its abundant natural resources—including five tributary streams ('Aihualama, Waihī, Nāniu'apo, Lua'alaea, and Waiakeakua) that feed into the main stream and several $p\bar{u}n\bar{a}wai$ (fresh-water springs)—Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O'ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley.

Several individuals contacted during the community consultation process talked about the diminished stream life resulting from altered stream flow. At least one participant (Mr. Kikiloi) continues to access the Waiakeakua Pūnāwai for 'awa ceremonies; and Ka Papa Lo'i o Kānewai is dependent on the stream for cold, fresh water, which is necessary for successful kalo cultivation.

8.4 Wahi Pana

Section 3 discusses the many *mo* 'olelo and legendary accounts of Mānoa's $p\bar{u}n\bar{a}wai$ (freshwater springs), which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'ō'ō Heiau, Punahou (a.k.a. Kapunahou), Ka'aipū, Wa'aloa and Waiakeakua. The valley is also home to many *pu'u*, peaks, ridges and caves—all with associated *mo'olelo* and legendary accounts; these include Wa'ahila Ridge (which defines the eastern border of the valley) and its six peaks [Keanapoi, Pu'u Pia, Pūkele, Paliluahine (also known as Kapaliluahine or Pali Luahine) Akāka and Kumauna], 'Ulumalu, Pu'u Pueo ("Roundtop") and Pu'u Mānoa. Mānoa is also associated with a variety of other *mo'olelo* and legends, including "Pīkoi the Rat Killer," "Maluae and the Underworld," and "The Woman Who Died and Came Back to Life;" as well as famous events and people of the early historic era, including Kamehameha I (and his famous dog Poki), Ka'ahumanu and Boki (Governor of O'ahu under Kamehameha I and brother of Kalanimoku).

Four of the community members contacted for the report talked about the different places and natural phenomena associated with *mo 'olelo* discussed in Section 3. In particular, references to the *mo 'olelo* of Kahalaopuna surfaced frequently throughout the community consultation process. Also, places associated with Kāne and Kanaloa continue to be of spiritual and cultural significance to a number of the participants.

8.5 Trails

As discussed in Section 3.7, several place names within Mānoa are located on a map of early nineteenth century trails as described by John Papa ' \overline{I} ' \overline{I} (Figure 14):

Our description of the trails of the royal town is finished, but we have not yet told of the trails going to lower Waikiki, Kamoiliili, and Manoa. . . . At Kawaiahao a trail passed in front of the stone house of Kaina, late father of Kikaha. The trail

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went above Kalanipuu's place, along the stream running down from Poopoo to the sea, close by Kaaihee in Makiki, to Puu o Manoa, then below Puupueo, where a trail branched off to upper Kaaipu and Kahoiwai, and another to go below Kaahulue, to Kapulena [Pu'ulena] and Kolowalu. (' \overline{I} 'ī 1959:92)

Kekuewa Kikiloi pointed out that the present streets of Woodlawn, Mānoa and East Mānoa were all trails documented in 'Ī'ī's work. Mr. Kikiloi and Dr. Claire Hughes both mentioned hiking different trails in Mānoa. Regarding the topic of trails in Mānoa, Palani Vaughn talked about how, at the age of 12, he and others would climb around "Rocky Hill" (behind Punahou School, formerly known as Pu'u o Mānoa), where there were small caves, which may or may not still be there. Palani Vaughn also talked about walking "the trails to the waterfall in the back" of the valley, as did many others prior to much of the development in the lower and central valley (e.g., area of present-day Noelani Elementary School, Mānoa Shopping Center).

8.6 Cultural and Historic Properties

The vast majority of the historic properties once located in the Mānoa Valley have been destroyed and/or partially or entirely covered over by modern development, including the construction of the university campus in the lower valley and residential and commercial centers elsewhere. The campus is located in what used to be the prime wet-taro-growing area of the entire valley, and many *lo'i* (pond fields) and *'auwai* (irrigation ditches) were located here; this agricultural heartland of the valley (i.e., the present-day campus) was also home to many small stone enclosures, terraces and platforms used by *maka'āinana* (commoners) as house sites. The valley also was home to numerous *heiau*, some of which have been preserved into modern times, and burials.

Four respondents also noted the many cultural sites located on or near Mid Pacific Institute, including Ka U'i o Mānoa, Wailele Pūnāwai, and possibly Pu'u Pueo *heiau*. Ka Papa Lo'i o Kānewai is perhaps the best-known cultural site on the entire campus, noted for its ongoing and active practice of *kalo* cultivation. From the time the *lo'i* were reopened in 1980, Kānewai has been a *pu'uhonua* (place of refuge) for plants, people and culture. The *lo'i* now serves approximately 15,000 visitors a year and acts as a repository for different varieties of *kalo*. At Kānewai students and community members learn and are able to practice many aspects of *nohona* Hawai'i (Hawaiian lifestyle). A few examples of activities that occur at Kānewai include *kalo* cultivation, *imu* cooking, implement making, rock wall building, and *hale* construction. Kānewai allows people a space to practice a lifestyle that is difficult to carry out in much of the surrounding urban environment.

In addition to Kānewai, Mānoa has also been the home of other modern initiatives aimed as preserving and perpetuating the traditions of Hawai'i Nei. For example, Palani Vaughn observed that St. Francis School—located immediately adjacent to the upper campus—was the "original home for Māiki Aiu Lake's 'Hālau Hula 'O Māiki." Kumu Hula Māiki Aiu was instrumental in reviving interest and knowledge of older, more traditional forms of *hula*.

8.7 Burials

Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southwest of the project area. The latter

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burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery. It is likely that more burials are located in subsurface deposits within the campus. Two participants in this study specifically mentioned the Dole Street and Keller Hall burials and a four participants felt that there will most likely be more burials found within the campus. Palani Vaughn believes additional (as yet undiscovered) burials may be located in and around the "Puka Oma'oma'o" and "within the underground cave-network in and around Mō'ili'ili."

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Section 9 Summary and Recommendations

At the request of Belt Collins Hawai'i Ltd., Cultural Surveys Hawai'i, Inc. (CSH) prepared this Cultural Impact Assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai'i at Mānoa. The project area consists a 12,500 square foot area (approximately 0.3 acres) on Correa Road within the central portion of the campus located in Mānoa [Waikīkī] Ahupua'a, Kona District, Hawai'i [TMK: (1) 2-8-023:003]. The project area consists entirely of State of Hawai'i-owned land.

The project area is located in lower Mānoa Valley, bounded by the Mānoa, St. Louis Heights, Mō'ili'ili and McCully communities. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle (Figures 1–3).

The University of Hawai'i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of the existing parking lot that currently appear on campus maps as the Bilger Annex (Figure 4).

In addition to conducting background research on the traditional and historic importance of the project area, in the context of Mānoa (Waikīkī) Ahupua'a and Kona District, including results from previous archaeological studies, CSH also made an effort to consult with community members and organizations.

A total of 12 individuals and/or institutions were contacted for this CIA (see Table 3, above); three did not respond or chose not to participate; four (OHA, SHPD, William Ailā and Konia Freitas) responded in writing (see Sections 6.1 - 6.4, above); several people provided referrals to other individuals; and five participated in formal "talk story" interviews.

9.1 Summary of Results

Background research conducted for this project yields the following results:

- Given its abundant natural resources—including several tributary streams that feed into the main stream and several *pūnāwai* (fresh-water springs)— Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O'ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley.
- 2. Mānoa is exceedingly rich in places names, wahi pana (legendary or storied places) and associated mo'olelo reflecting the valley's elevated cultural and historical significance to Hawaiians, in particular. Important mo'olelo focus on Mānoa's many pūnāwai, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'ō'ō Heiau, Punahou (a.k.a. Kapunahou), Ka'aipū, Wa'aloa and Waiakeakua. The valley is also home to many pu'u (hills, mountains), peaks, ridges and caves—all with associated mo'olelo; these include Wa'ahila Ridge (which defines the eastern border of the valley) and its numerous peaks. Finally,

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Mānoa is also associated with a variety of other *mo 'olelo*, including "Pīkoi the Rat Killer," "Maluae and the Underworld," and "The Woman Who Died and Came Back to Life;" as well as famous events and people of the early historic era, including Kamehameha I, Ka'ahumanu and Boki.

- 3. The archaeology of lower Mānoa is somewhat problematic in that most of the campus was developed before historic preservation awareness and laws were in place; thus many or most surface sites and features once present in the project area have been destroyed and/or damaged by being covered with sediments and structures. Before these historic impacts, however, the campus undoubtedly contained a patchwork of gardens, including many *lo'i* (pond fields) and *'auwai* (irrigation ditches), and house sites, including many small stone enclosures, terraces and platforms. Undoubtedly, there are still subsurface cultural deposits within the campus containing significant historic and cultural resources.
- 4. The proposed IT Building is located within the *'ili* of Puahia. Like much of the area located to the east of Hawai'i Hall, the project area was under intensive agricultural cultivation prior to the development of the UH Mānoa campus in the early half of the 1900s. In 1911 there were still 7 groups of Hawaiian "squatters" living in Puahia. At least one of those groups was actively cultivating land at the time. These groups were evicted that same year.
- 5. Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southwest of the project area. The latter burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery. It is likely that more burials are located in subsurface deposits within the campus.

Community consultation conducted for this project yields the following main concerns and suggestions regarding potential cultural impacts as result of the proposed development:

- Four participants voiced concern about the possibility of encountering asyet undiscovered cultural and historic sites including, most importantly, human skeletal remains and burials in subsurface deposits. One participant (Dr. Davianna McGregor) also pointed out that the burial site preserve near Keller Hall, which used to be marked by a ginger plant, is no longer being maintained (i.e., the ginger plant is not there anymore). Another participant (William Ailā) expressed a preference for preservation in place if human skeletal remains are found.
- 2. Four participants voiced concerns about future buildings and projects being more harmoniously designed and integrated into the natural surrounding and themes inherent to the valley. It is important to note that this type of concern is fundamentally a cultural one for Hawaiians, in particular, whose worldview and deeper philosophical spiritual beliefs are based on such concepts as *pono* (in this case, "right ways" of doing things)

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and *lōkahi* ("harmony"), among other related concepts (e.g., *mālama* '*āina*, or "taking care of the land"). For example, Dr. Claire Hughes was concerned about the visual impact of the proposed building/s on open areas and the *mauka-makai* views of Mānoa Valley.

- 3. Four participants talked about the importance of using native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of *mālama 'āina*.
- 4. Four participants talked about the importance of understanding and incorporating Hawaiian-language words, phrases and concepts that extends beyond the superficial (e.g., naming buildings).
- 5. Four participants provided detailed accounts of well-documented *mo 'olelo, wahi pana* and other cultural sites in Mānoa.
- 6. Three participants called into question the State's (i.e., Department of Land and Natural Resources, Historic Preservation Division) poor record of protecting and preserving important cultural sites in Mānoa, including *heiau* that have been damaged or compromised by recent construction projects.
- 7. Dr. McGregor also pointed out that there are many significant and commemorative trees on campus that should be systematically catalogued in order to ensure their protection during future development of the campus.
- 8. OHA seeks clarification on whether an AIS will be conducted and submitted to SHPD for review for the proposed action. Should an AIS be conducted for the project, OHA requests the opportunity to review the AIS and, "to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey."
- 9. OHA pointed out the significance of "Ceded Lands" to many Hawaiians because of its status as Hawaiian Crown and Government Lands and suggested that the status of the property be identified in the Environmental Assessment (EA). There is currently no comprehensive Ceded Lands inventory. According to OHA, as parcels are subdivided or consolidated, their Ceded Lands status can—and often does—get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands parcels. This documentation will also be beneficial when a comprehensive Ceded Lands inventory is finally conducted. TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory.

9.2 Recommendations

The following recommendations are based on a synthesis of all the information gathered during preparation of this CIA. Faithful attention to these recommendations, and efforts to develop appropriate measures to address these concerns, will help mitigate potential adverse impacts of the proposed action on Hawaiian cultural beliefs, practices and resources:

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- 1. The University should proactively develop a plan to avoid disturbing asyet undiscovered burials and other historic and cultural properties and features located in subsurface contexts. Such a plan should include an AIS before the project begins in addition to cultural monitoring to be conducted during ground disturbance and construction activities. Decisions should be made in consultation with appropriate government agencies (e.g., SHPD, OHA) and Kānaka Maoli (Native Hawaiian) organizations and individuals. In particular, every effort should be made to proactively avoid inadvertent finds of human skeletal remains and burials.
- 2. The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian sense of place as will as furthering concepts such as mālama 'āina. Minimally, this should include (a) use of native and Polynesian-introduced plants for landscaping, and (b) integration of mo'olelo, Hawaiian language and other Hawaiian concepts and ideas that goes far beyond superficial application (e.g., building names) into design plans.
- 3. Project proponents should consult UH Mānoa's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area (http://www.hawaii.edu/bgm/landscaping/pdf/memorialtrees.pdf).
- 4. Project proponents might consider including as background information in the EA that TMK: (1) 2-8-023:003 is on the DLNR's inventory of Ceded Lands. For verification of the project TMK as Ceded Lands, contact DLNR's Land Management Division.
- 5. Generally, it is recommended that project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UH Mānoa.

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