

**COUNTY OF HAWAI'I PLANNING DEPARTMENT
SUPPLEMENTAL BACKGROUND REPORT**

JAS W. GLOVER, LTD.

SPECIAL PERMIT APPLICATION NO. 14-000162 (SPP 14-000162)

This report supplements the Planning Director's Background Report provided to the Windward Planning Commission at the hearing held on July 3, 2014.

BACKGROUND INFORMATION

1. On July 3, 2014, the Windward Planning Commission approved Special Permit No. 14-000162 and forwarded its approval to the applicant and State Land Use Commission (LUC) for final determination. The Special Permit was to allow the establishment of a new quarry site on approximately 85.338 acres within a 140.368-acre property situated within the State Land Use Agricultural District. The project site is located southeast of the Hawai'i National Guard Site and Hilo International Airport and approximately 3,000 feet southwest of the County's Sewer Treatment Plant Site at Honohononui, South Hilo, Hawai'i, TMK: (3) 2-1-013: Portion of 004. **(P.D. Exhibit 1- July 22, 2014 letter from Windward Planning Commission to Jas W. Glover, Ltd) (P.D. Exhibit 2- July 30, 2014 letter from Windward Planning Commission to LUC, including Exhibits 1-46 of docket which are available at: <http://luc.hawaii.gov/pending-petitions-2/special-permits/sp14-404-jas-w-glover-ltd/>)**
2. The LUC held a hearing on this matter on November 20, 2014. The following information was provided to the LUC.
 - **P.D. Exhibit 3-** Petitioner's Memorandum in Support of Approval of Special Permit dated November 13, 2014. The petitioner, Jas W. Glover, Ltd., requested to amend several conditions related to the protection of endangered species.
 - **P.D. Exhibit 4-** Letter dated November 18, 2014 from Hawai'i Army National Guard (HIARNG) to LUC informing them of a boundary discrepancy between the HIARNG and Jas W. Glover, Ltd. common boundary and new archaeological study for the area.

EXHIBIT
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- **P.D. Exhibit 5-** Letter dated November 19, 2104 from LUC to HIARNG requesting that the new archaeological study and boundary survey be provided to the Parties.
 - **P.D. Exhibit 6-** Letter dated December 5, 2014 from HIARNG to the LUC and Parties transmitting the *Final Archaeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation, Hawai'i Army National Guard Facility, TMK's (3) 2-1-012:003, 131 and (3) 2-1-013:010* prepared July 2014 by Cultural Surveys Hawai'i, Inc. and a boundary survey prepared by on March 18, 2013 by Gary S. Takamoto, LPLS.
3. On January 23, 2015, the State Land Use Commission issued an Order remanding the Special Permit back to the Windward Planning Commission for the expressed purpose of considering information received from the HIARNG regarding new historic site findings and a boundary discrepancy with the permit area and modifying the Special Permit as appropriate. **(P.D. Exhibit 7- LUC Order dated January 23, 2015)**
 4. The following submittals have been submitted since the LUC Order was issued:
 - **P.D. Exhibit 8-** January 30, 2015 letter from Jas. W. Glover, Ltd. to HIARNG responding to the concerns raised in their November 18, 2014 letter (P.D. Exhibit 4).
 - **P.D. Exhibit 9-** April 8, 2016 letter from Cades Schutte LLLP to Windward Planning Commission transmitting the *Glover Hilo Quarry Ka Pa'akai Discussion* dated February 2016 prepared by ASM Affiliates.
 5. On April 12, 2016 the Planning Department transmitted P.D. Exhibits 7 and 8 to the HIARNG and on May 23, 2016 the Planning Department transmitted P.D. Exhibit 1 to the HIARNG, but has not received a response to date.
 6. On April 14, 2016 the Planning Department transmitted P.D. Exhibit 3 to the United States Fish and Wildlife Service (USFWS) to determine if the applicant's proposed amendments to conditions related to endangered species protection were adequate. The USFWS responded on April 15, 2016 that they are agreeable to the amendment of

Conditions 7, 8, and 10 and recommend the following condition replace Condition 9:

"All onsite project personnel will be apprised that Hawaiian geese may be in the vicinity of the project at any time during the year. If a Hawaiian goose appears within 100 feet of ongoing work, all activity will be suspended until the animal leaves the area of its own accord."

In an email dated May 25, 2016, the applicant indicated it is agreeable to including this condition in the permit.

7. On April 15, 2016 the Planning Department transmitted P.D. Exhibit 9 to the DLNR-State Historic Preservation Division, but has not received a response to date.
8. No public comments have been received to date.



County of Hawai'i

WINDWARD PLANNING COMMISSION

Aupuni Center • 101 Paahi Street, Suite 3 • Hilo, Hawai'i 96720
Phone (808) 961-8288 • Fax (808) 961-8742

JUL 22 2014

Mr. Byron Fujimoto
Jas W. Glover, Ltd.
890 Leilani Street
Hilo, HI 96720-4529

Dear Mr. Fujimoto:

Special Permit (SPP 14-000162)
Applicant: Jas W. Glover, Ltd.
Request: To Establish a New Quarry
Tax Map Key: 2-1-013:004

The Windward Planning Commission, at its duly held public hearing on July 3, 2014, considered your request to allow the establishment of a new quarry site on approximately 85.338 acres of a 140.368-acre property situated within the State Land Use Agricultural District. The project site is located southeast of the Hawai'i National Guard Site and Hilo International Airport and approximately 3,000 feet southwest of the County's Sewer Treatment Plant site at Honohonouui, South Hilo, Hawai'i.

The Commission voted to approve this request and to send a favorable recommendation to the State Land Use Commission for final disposition. The favorable recommendation is based on the following:

The applicant is requesting a Special Permit to establish a new quarry site on approximately 85.338 acres of land on a portion of a larger, 140.368-acre property "subject property" identified at Tax Map Key (3) 2-1-013:004. The material to be quarried is aggregate and rock for commercial applications and consists largely of basaltic "blue rock" with very little cinder. The material will be removed and either processed on site or transported to the applicant's Hilo operations site on Leilani Street. Normal quarry

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Planning Dept.
Exhibit 1

JUL 22 2014

production hours would be from 6:00 a.m. to 6:00 p.m., Monday through Friday. Work may occur at other times and days, depending upon demand. Approximately 2-8 employees will be on site for quarry uses. Additional employees may be required as production facilities are added. The State of Hawai'i owns the access road that leads from the County-maintained Leilani Street to the quarry site. Kamehameha Schools and its lessees have temporary rights of access via this road until such time as a more formal access is developed by the State. During normal production, the traffic impact on the access road will be between 15 and 50 truckloads of material per day. Dust mitigation measures, such as watering trucks, will be used to minimize dust generated by the operation. All activities will conform to the State Department of Health regulations.

Kamehameha Schools (BP Bishop Trust Estate) owns all 140.368-acres and has been licensing portions of the property to quarry operators over the last 18 years. According to the applicant, a quarry license was granted to Jas. W. Glover, Ltd., on June 1, 1997, for approximately 80 acres of the 140.368-acre property for a period of 30 years. A quarry license was granted to Jas. W. Glover, Ltd., on January 15, 2012, for 49.9982 acres, comprising the balance of the 140.368-acre property, for a period of 15 years. Both license agreements will end on May 31, 2027, with an option for a 10-year extension on the license for the 80-acre portion. Previously, Kamehameha Schools had leased the 49.9982-acre portion to Yamada & Sons, Inc. as a quarry site.

This subject application has been submitted to comply with Condition No. 2 of Special Permit No. 2012-000145, which required that the applicant submit a properly filed Special Permit application for the establishment of quarry activities for the un-quarried remainder (approximately 85.338 acres) of the 140.368-acre property to the Planning Department for consideration by the State Land Use Commission within one year (by March 7, 2014).

The grounds for approving a Special Permit are based on Rule 6-6 in the Planning Commission Rules of Practice and Procedure. It states that the Planning Commission shall not approve a Special Permit unless it is found that the proposed use (a) is an unusual and reasonable use of land situated within the Agricultural District; and (b) the proposed use would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes, as amended.

The proposed use is an unusual and reasonable use of land situated within the State Land Use Agricultural District and would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes (HRS), as amended. The State Land Use Law and Regulations are intended to preserve, protect and encourage the

development of lands in the state for those uses to which they are best suited in the interest of the public health and welfare of the people of the State of Hawai'i. In the case of the Agricultural District, the intent is to preserve or keep lands of high agricultural potential in agricultural use. In recognizing that lands within the Agricultural district may not be best suited for agricultural activities and yet classified as such, and in recognition that certain types of uses might not be strictly agricultural in nature, yet reasonable in such districts, the legislature has provided for the Special Permit process to allow certain unusual and reasonable uses within the Agricultural District.

Although the property is designated for Agricultural uses by both the State Land Use Commission and the County Zoning Code, its soils are considered very poor and not optimal to support agricultural activities. The request is considered unusual and reasonable in that the proposed quarry area has no direct relationship to any potential agricultural activities that could be conducted upon the property given its proximity to existing quarries and other nearby industrial uses such as the Hilo landfill, wastewater treatment plant, and airport. Therefore, based on the above circumstances, approval of the request would not be contrary to the objectives of the State Land Use Law Rules and Regulations given the subject conditions.

In addition to the above listed criteria, the Planning Commission shall also consider the following criteria listed under Section 6-3(b)(5) (A) through (G) of its rules of practice and procedure:

(A) Such use shall not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations. As mentioned previously, approval of this request will not be contrary to the objectives of the State Land Use Law and is considered an unusual and reasonable use of the agricultural land due to the poor soil quality that is not conducive towards agricultural activities. Therefore, the proposed request will not adversely affect the preservation and agricultural use of the County's prime agricultural lands.

(B) The desired use would not adversely affect surrounding properties. The surrounding properties include the County of Hawai'i landfill sites, other quarrying operations and vacant lands owned by the State and Kamehameha Schools. There are no dwellings or urban developments within the immediate area. Other existing uses within the general vicinity include the County's wastewater treatment plant, the landfill site, the airport, a skeet range and the Hawai'i National Guard training facility. Dust generated during quarry operations will be mitigated by watering down the roadway and complying with regulations of the Department of Health. A condition will be added to insure that

the applicant restores the area to a state that would blend with the surrounding topography of the area once the activity is completed. All required measures to minimize traffic, dust and noise shall be adhered to by the applicant. The existing quarry mining in various portions of the parcel has been ongoing with existing levels of noise, dust and fumes generated by the operation. The proposed quarry site and surrounding areas have been subject to quarrying activities under license issued by Kamehameha Schools and permitted through the issuance of Special Permits for the past 18 years. The Planning Department is not aware of any complaints that have been generated by these on-going quarrying activities in this particular area. The relative isolation of these quarry sites from residential uses and its proximity to other industrial-types of activities have, arguably, allowed this particular area within the City of Hilo to be accepted by the community as the prime locale for these types of operations. The past 18 years of quarrying activities have demonstrated that this particular location, and the project site in particular, is well-suited to support quarrying activities with minimal adverse impact to the surrounding community. Therefore, the proposed use is not anticipated to adversely affect surrounding properties.

(C) Such use shall not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, school improvements, and police and fire protection. According to the applicant, they have temporary rights of access until such time as a more formal access is developed by the State. The existing section of the access road is hard-packed gravel approximately 20 feet wide. The road then widens to between 25 and 30 feet wide and partially paved. In addition, the applicant has paved the driveway access on the subject property, which leads to the actual quarry site. This access road is adequate for its intended purpose, which is to accommodate traffic associated with the quarry operations and which does not support general vehicular access. For dust mitigation, the applicant will bring in tanker trucks to water down the roadway. Portable restrooms will be brought to the property. Water will be made available to the subject property by tanker trucks for dust mitigation. Therefore, the proposed use will not unreasonably burden public agencies to provide services or infrastructure.

(D) Unusual conditions, trends, and needs have arisen since district boundaries and regulations were established. In the 1960's and 1970's, the State's agricultural district boundaries and regulations were established and subsequently amended pursuant to HRS Chapter 205. The State Land Use Commission was created in 1961, and interim regulations and temporary district boundaries became effective in 1962. Subsequently, the regulations and Land Use District Boundaries became effective in August of 1964. The property and surrounding areas are designated for agricultural uses

by both State and County land use laws. Through the issuance of a Special Permit, various "non-agricultural" services may be allowed. There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying is resource-based, sites are restricted by location of the mineral resource. Existing quarrying activities are occurring on portions of the subject property and in the near vicinity of the project. There is no record of any agricultural uses on the subject property for decades.

(E) The land upon which the proposed use is sought is unsuited for the uses permitted within the district. The subject property is rated "E" or "Very Poor" for agricultural productivity by the Land Study Bureau and Other Important Agricultural lands by the ALISH Map. The soils in this area are not suitable for many types of agricultural uses. Surrounding parcels are also in quarry use and industrial-related activities.

(F) The use will not substantially alter or change the essential character of the land and the present use. The proposed use will not substantially change the character of the land, as the area is already used for quarry activities.

(G) The request will not be contrary to the General Plan and official Community Development Plan and other documents such as Design Plans. The Land Use Pattern Allocation Guide (LUPAG) Map component of the General Plan is a representation of the document's goals and policies to guide the coordinated growth and development of the County. It reflects a graphic depiction of the physical relationship among the various land uses. The LUPAG Map establishes the basic urban and non-urban form for areas within the County. The subject request is not contrary to the General Plan LUPAG Map, which designates the property as Extensive Agriculture, Important Agricultural Land and Industrial. The project would complement the following goals and policies of the General Plan:

Land Use - Industrial Element:

- Industrial activities may be located close to raw material or key resources. The ability of the subject property to provide the needed raw material vital to the construction industry while able to absorb the noxious nature of quarries speaks to the appropriateness of the area for such uses.

Economic:

- The County shall strive for diversification of its economy by strengthening industries and attracting new endeavors.
- Economic development and improvements shall be in balance with the physical and social environments of the island of Hawai'i

Natural Resources and Shoreline Elements:

- The County of Hawai'i should require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse impacts on the environment.
- Ensure that alteration to existing land forms and vegetation, except crops, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

In order to provide for raw construction materials that are vital to the construction industry, quarries must be established in locations where there is an abundance of these raw materials. For this reason, quarries, while industrial in character, cannot be confined to Industrial-designated areas. As evidenced by the issuance of Special Permits for other quarries within the subject property, this area contains the raw materials essential to the construction industry. The establishment of the proposed quarry in this particular location will not adversely impact agricultural resources, as many of the uses are industrial in nature. There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying operations are resource-based, sites are restricted in location by the availability of raw materials. Other previous and ongoing quarry activities in the vicinity of the project site have shown that the materials are available in this area, which makes this an appropriate site to establish a quarry. The basic nature of quarrying activities means that natural resources and the natural environment will be compromised. Reviewing agencies and the Planning Department have not identified any specific important habitat associated with endangered species and have found that the project site is not in close proximity to or contain a proposed or designated critical habitat. However, there is the possibility that the project site could provide a potential habitat for the Hawaiian hoary bat, the Hawaiian hawk, the Hawaiian petrel, the Newell's shearwater, and the Nēnē. To avoid and minimize potential significant adverse impacts upon these animal species and endangered

plants, a condition of approval will require faunal and floral surveys of the proposed quarry site prior to commencing operations in coordination with the U.S. Fish and Wildlife Service.

The proposed use is not contrary to the objectives sought to be accomplished by Chapter 205A, Hawai'i Revised Statutes, relating to the coastal zone management program. The subject property is located over one mile to the nearest shoreline and does not contain streams or waterways that empty into the sea and therefore will not cause beach erosion or affect marine resources, coastal ecosystems, and coastal recreational opportunities. Nor will the property be affected by coastal hazards. The property is located well outside of the Special Management Area (SMA) and tsunami evacuation zone. Additionally, there is no designated public access to the shoreline areas or mountain areas over the property. Therefore, the proposed use is not contrary to the objectives of Chapter 205A, Hawai'i Revised Statutes.

The request will not have a significant adverse impact to traditional and customary Hawaiian Rights. In view of the Hawai'i State Supreme Court's "PASH" and "*Ka Pa 'akai O Ka 'Aina*" decisions, the issue relative to native Hawaiian gathering and fishing rights must be addressed in terms of the cultural, historical, and natural resources and the associated traditional and customary practices of the site:

Investigation of valued resources: An Archaeological Assessment of the southern 50-acre portion of the subject property was conducted by Glenn G. Escott dated September 2012. An Archaeological Assessment of the northern 90-acre portion of the subject property was conducted by Glenn G. Escott dated September 2013. A flora and fauna study of the subject property has not been conducted.

The valuable cultural, historical, and natural resources found in the permit area: Both Archaeological Assessments concluded that no archaeological sites or features and no cultural resources or modern structures were located within the subject property. The 2012 report addressed the presence of the trail alignment stating that "A single site, the Historic Puna Trail (Site 50-10-99-18869), also referred to by the Old Government Road's State Number 50-10-36-21272) is located just outside the southern boundary of the current project area." The Department of Land and Natural Resources-State Historic Preservation Division issued a letter dated April 15, 2014 stating that they have completed review of two archeological inventory surveys for the entire 140-acre subject property and agreed with the conclusions and recommended archeological monitoring during initial ground clearing and grubbing. In their memo dated April 11, 2014 (P.D. Exhibit 25), the U.S. Fish and Wildlife Service identified five threatened or endangered

species that may be in the vicinity of the subject property, and recommended various conservation measures to eliminate or reduce adverse impacts to these species and unknown endangered or threatened plant species. One of the recommendations is for a qualified biologist to conduct Nēnē nest surveys and Hawaiian hawk nest surveys prior to vegetation clearing and beginning quarry activities in un-quarried areas of the property.

Possible adverse effect or impairment of valued resources: Historic and cultural resources may inadvertently be discovered during quarry operations. The site is not adjacent and/or proximate to the shoreline. As such, gathering of marine life, fishing and coastal access is not an issue. Endangered and threatened plant and animal species may be adversely affected during vegetation clearing and ongoing quarry operations.

Feasible actions to protect native Hawaiian rights and valued resources: To the extent to which traditional and customary native Hawaiian rights are exercised, the proposed action will not affect traditional Hawaiian rights and no action is necessary to protect these rights. A condition of the permit will require the applicant implement an Archeological Monitoring Plan approved by SHPD during ground clearing and grubbing activities on the property. Additionally, the applicant will be required to notify the DLNR-SHPD should any unidentified sites or remains be encountered, and proceed with quarry activities only upon receiving an archaeological clearance from the DLNR-SHPD. A condition of the permit will require floral and faunal surveys (including nest surveys) prior to vegetation removal of any un-quarried areas of the property. Conducting these surveys just prior to starting quarry activity of a forested area will ensure that the surveys accurately reflect any endangered or threatened species present in the area at the time.

Based on the above considerations, the quarry operation and accessory uses within the project site is an unusual and reasonable use of land, which would not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations.

Approval of this request is subject to the following conditions:

1. The applicant, its successor or assigns shall be responsible for complying with all stated conditions of approval.
2. Prior to commencing construction of any structures, Final Plan Approval for those structure(s) shall be secured from the Planning Department in accordance with Chapter 25-2-70 (Zoning Code). Plans shall identify any proposed structures and parking associated with the proposed quarry operation.

3. Quarrying activities shall be limited to the hours of 6:00 a.m. to 6:00 p.m. daily. Work may occur at other times depending on demand, except from September 15 to December 15.
4. Prior to commencement of quarry activity on any previously un-quarried land, a Site Restoration and Revegetation Plan, which assures the site will be left in a nonhazardous condition, shall be submitted for review and approval by the Planning Director. The Plan shall include photographs of the area and a topography map of the project site and its related surroundings. This Plan shall be reviewed by Kamehameha Schools, the Natural Resources Conservation Service and the Department of Public Works and their comments submitted to the Planning Director for review and approval.
5. Adequate dust control mitigation measures shall be implemented for the duration of the quarry operation in accordance with Department of Health requirements. An adequate supply of water shall be made available for dust control.
6. Prior to commencing any land alteration activity on any un-quarried portions of the property, the applicant shall secure approval by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) of an Archaeological Monitoring Plan to ensure that no historic sites are inadvertently damaged or destroyed. This plan will call for "on-call monitoring" in conjunction with DLNR-SHPD. A copy of the approved plan shall be provided to the Planning Department.
7. To protect any Hawaiian hoary bats in the vicinity of the property, barbed wire fencing shall not be used in the permit area and woody vegetation over 15 feet in height shall not be removed during bat breeding season of June 1st to September 15th without first conducting surveys for bat nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall be conducted by a qualified biologist.
8. To protect any Hawaiian hawk and Hawaiian goose in the vicinity of the property, vegetation clearing and beginning quarry activities shall not occur in the un-quarried areas of the permit area during hawk breeding season of March to September and goose breeding season of October to March without first conducting surveys for hawk and goose nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall be conducted by a qualified biologist.

9. Prior to removing vegetation on any un-quarried portions of the property, the applicant shall conduct a flora study and submit to the U.S. Fish and Wildlife Service (USFWS) for review and approval. The applicant shall implement any mitigation measures required by USFWS and provide a copy of the approved study and mitigation plan to the Planning Department.
10. No retail sale of quarrying materials is allowed from the project site. Removal of the materials shall be limited to licensed commercial haulers or by licensed contractors.
11. Should any remains of historic sites, such as rock walls, terraces, platforms, marine shell concentrations or human burials, be encountered, work in the immediate area shall cease and the DLNR-HPD shall be immediately notified. Subsequent work shall proceed upon an archaeological clearance from the DLNR-SHPD when it finds that sufficient mitigative measures have been taken.
12. Within ninety (90) days after termination of the quarry operation or abandonment of the project site, appropriate documentation which demonstrates compliance with the Site Restoration and Revegetation Plan shall be submitted to the Planning Department.
13. Comply with all applicable laws, rules, regulations and requirements of other affected agencies.
14. An extension of time for the performance of conditions within the permit may be granted by the Planning Director upon the following circumstances:
 - A. The non-performance is the result of conditions that could not have been foreseen or are beyond the control of the applicant, successors or assigns, and that are not the result of their fault or negligence.
 - B. Granting of the time extension would not be contrary to the General Plan or Zoning Code.
 - C. Granting of the time extension would not be contrary to the original reasons for the granting of the permit.
 - D. The time extension granted shall be for a period not to exceed the period originally granted for performance (i.e., a condition to be performed within one year may be extended for up to one additional year).

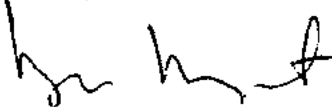
Mr. Byron Fujimoto
Jas W. Glover, Ltd.
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15. Should any of these conditions not be met or substantially complied with in a timely manner, the Planning Director may initiate procedures to revoke this permit.

This approval does not, however, sanction the specific plans submitted with the application as they may be subject to change given specific code and regulatory requirements of the affected agencies.

Should you have any questions, please contact Daryn Arai of the Planning Department at 961-8142.

Sincerely,



Myles Miyasato, Chairman
Windward Planning Commission

LJasGloverSPP14-162wpc

cc: Roy A. Vitousek III Esq., Cades Schutte LLP
Department of Public Works
Department of Water Supply
County Real Property Tax Division
State Land Use Commission
State DLNR-HPD
Mr. Gilbert Bailado
Plan Approval Section



County of Hawai'i

WINDWARD PLANNING COMMISSION

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawai'i 96720
Phone (808) 961-8288 • Fax (808) 961-8742

JUL 30 2014

Daniel Orodener, Executive Officer
State Land Use Commission
DBEDT
P.O. Box 2359
Honolulu, HI 96804

Dear Mr. Orodener:

Special Permit (SPP 14-000162)
Applicant: Jas W. Glover, Ltd.
Request: To Establish a New Quarry
Tax Map Key: 2-1-013:004

In accordance with Chapter 205, Section 205-6, Hawai'i Revised Statutes, we are transmitting the decision and findings of the County of Hawai'i Windward Planning Commission on the above-referenced request to allow the establishment of a quarry site on approximately 85.338 acres of a 140.368-acre property situated within the State Land Use Agricultural District. The project site is located southeast of the Hawai'i National Guard Site and Hilo International Airport and approximately 3,000 feet southwest of the County's Sewer Treatment Plant site at Honohononui, South Hilo, Hawai'i.

The Windward Planning Commission at its duly advertised public hearing held on July 3, 2014, in Hilo, Hawai'i, discussed the subject request and voted to approve the Special Permit and forward its action to the State Land Use Commission for final determination. Enclosed is the entire docket on the application with required copies.

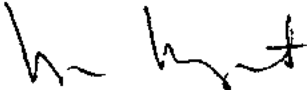
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Planning Dept. JUL 30 2014
Exhibit 2

Daniel Orodener, Executive Officer
State Land Use Commission
DBEDT
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Should you have any questions regarding this matter, please contact Daryn Arai of the Planning Department at (808) 961-8142.

Sincerely,



Myles Miyasato, Chairman
Windward Planning Commission

LJasGloverSPP14-162wpc2
Enclosures .

cc: Roy A. Vitousek III Esq., Cades Schutte LLP
Jas W. Glover, Ltd.
Department of Public Works
Department of Water Supply
County Real Property Tax Division
Office of Planning

Special Permit (SPP 14-000162)
Applicant: Jas W. Glover, Ltd.
Request: To Establish a New Quarry
Tax Map Key: 2-1-013:004

<u>EXHIBIT</u>	<u>DATE</u>	<u>DESCRIPTION</u>
1	2/27/14	Letter from Marissa Harman, Kamehameha Schools Land Assets Division, Kamehameha Schools has an agreement with Jas W. Glover
2		Planning Commission Application Intake Form
3	3/5/14	Transmittal by Roy A. Vitousek, III Esq., Cades Schutte requesting a Special Permit
4	3/18/14	Letter to Byron Fujimoto from Planning Director acknowledging special permit request
5	3/18/14	Memorandum to agencies for review/comment of special permit request
6	3/20/14	Department of Environmental Management Solid Waste comments
7	3/27/14	Police Department comments
8	3/27/14	Fire Department comments
9	3/27/14	State of Hawai'i, Department of Health comments
10	3/27/14	Department of Environmental Management Wastewater comments
11	3/31/14	Declaration of Byron Fujimoto Re: Sign Posting
12	4/4/14	Land Use Commission comments
13	4/9/14	Department of Public Works comments
14	4/11/14	Department of Water Supply comments
15	4/11/14	Office of Planning, State of Hawai'i comments
16	4/11/14	US Department of the Interior, Fish and Wildlife Service comments

17	4/14/14	DLNR agencies comments
18	4/15/14	State Historic Preservation Division comments
19	4/29/14	Email by Randy Vitousek enclosing Mailing of First Notice
20	4/29/14	Email by Randy Vitousek to respond to comment letters from various agencies and request 90 day extension of time
21	5/7/14	Letter from Quirino Antonio, Department of Water Supply, Re: Permit number correction
22	5/20/14	Letter from Roy A. Vitousek III, Esq. to B.J. Leithead Todd, DEM, response to agency comments
23	5/20/14	Letter from Roy A. Vitousek III, Esq. to Carty S. Chang, DLNR Engineering, response to agency comments
24	5/20/14	Letter from Roy A. Vitousek III, Esq. to Newton Inouye, Department of Health, response to agency comments
25	5/20/14	Letter from Roy A. Vitousek III, Esq. to Darren Rosario, Fire Department, response to agency comments
26	5/20/14	Letter from Roy A. Vitousek III, Esq. to Henry J. Tavares, Police Department, response to agency comments
27	5/20/14	Letter from Roy A. Vitousek III, Esq. to Kelly Gomes, Department of Public Works, response to agency comments
28	5/20/14	Letter from Roy A. Vitousek III, Esq. to Quirino Antonio Jr., Department of Water Supply, response to agency comments
29	5/20/14	Letter from Roy A. Vitousek III, Esq. to Gordon Heit, DLNR – Land Division, response to agency comments

30	5/20/14	Letter from Roy A. Vitousek III, Esq. to Theresa Donham, State Historic Preservation, response to agency comments
31	5/20/14	Letter from Roy A. Vitousek III, Esq. to Rachel Rounds, US Fish and Wildlife, response to agency comments
32	5/20/14	Letter from Roy A. Vitousek III, Esq. to Leo Asuncion, Office of Planning, response to agency comments
33	5/20/14	Letter from Roy A. Vitousek III, Esq. to Daniel Orodenker, Land Use Commission, response to agency comments
34	6/12/14	Letter to Byron Fujimoto, Jas W. Glover Ltd. from Planning Director enclosing public hearing notice for 7/3/14 Windward Planning Commission meeting
35	6/17/14	Letter from Daniel Orodenker, Land Use Commission, suggested recommendations prior to any decision making by Commission
36	6/24/14	Letter from Byron Fujimoto, Jas W. Glover to Maija Cottle, Planning Department, Re: Randy Vitousek email of 6/14/14 and 6/17/14 Land Use Commission comments
37	6/30/14	Email from Barbara Hiutt, Cades Schutte LLP, Enclosing mailing of First and Second notices
38	6/30/14	Email from Mike Pearing, PHRI, copy of Archaeological Monitoring Plan submitted to State Historic Preservation Division
39	7/1/14	County of Hawai'i Planning Department Background Report
40	7/1/14	County of Hawai'i Planning Department Recommendation
41	7/2/14	Email from Randy Vitousek, Cades Schutte, Re: Proposed conditions of approval; attached proposed amended conditions 3 & 8

42	7/2/14	Email from Randy Vitousek, Cades Schutte, Archeological Monitory Plan by PHRI for Windward Planning Commission
43	7/3/14	Windward Planning Commision Record of Voting
44	7/3/14	Windward Planning Commission Hearing Transcript (Draft)
45	7/3/14	Planning Department Powerpoint Presentation
46	7/22/14	Letter to Byron Fujimoto, Jas W. Glover Ltd. from Windward Planning Commission Re: Favorable recommendation to State Land Use Commission

CADES SCHUTTE
A Limited Liability Law Partnership

ROY A. VITOUSEK III 1862-0
75-170 Hualalai Road, Suite B-303
Kailua-Kona, HI 96740-1737
Telephone: (808) 329-5811

Attorneys for Petitioner
JAS. W. GLOVER, LTD.

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Petition of

JAS. W. GLOVER, LTD.

For a Special Permit for Quarrying and Other
Support Services and Accessory Uses on 85.34
Acres of a 140.368-Acre Parcel Owned by
Kamehameha Schools and Located Within the
State Agricultural District, East of the Hawai'i
National Guard Site and Hilo International
Airport, and 3,000 Feet West of the County of
Hawaii Sewer Treatment Plant;
TMK (3) 2-1-013: 004 (por.).

SP14-404

PETITIONER'S MEMORANDUM IN
SUPPORT OF APPROVAL OF SPECIAL
PERMIT; EXHIBITS 1 - 4;
CERTIFICATE OF SERVICE

HEARING:

DATE: November 20, 2014

TIME: 9:30 a.m.

PLACE: Haynes Meeting Room
Maui Arts and Cultural Center

PETITIONER'S MEMORANDUM IN SUPPORT OF
APPROVAL OF SPECIAL PERMIT

This is an application to the Land Use Commission ("LUC") to approve a special permit for quarrying operations on 85.34 acres of the 140-acre parcel identified as Tax Map Key No. (3) 2-1-013: 004 (referenced to herein as "TMK Parcel 4"), owned by Kamehameha Schools and leased to Petitioner Jas W. Glover, Ltd. ("Glover").¹ Glover is a general contractor based in

¹ By way of context, the subject parcel has been subject to ongoing quarrying activities for several decades, is adjacent to the County of Hawaii and East Hawaii landfill site and is very near the Hilo International Airport, the County shooting range, and the Hilo drag strip and racetrack. The area was all part of the U. S. Army's Keaukaha Military Reserve before, during, and some time after World War II. This is not a remote, pristine environment.

Planning Dept.
Exhibit 3

NOV 17 2014
095391

Hilo. A significant portion of Glover's work includes constructing and repairing State of Hawaii and County of Hawaii ("County") highways. Glover operates quarrying and rock-crushing operations at or near its headquarters in Hilo, including holding special permits issued by the County Planning Commission to conduct quarrying operations on the remaining 55.03 acres of TMK Parcel 4. *See attached Exhibit 1.*

In the past, petitioners, such as Glover, would apply to the Planning Commission (now called the Windward Planning Commission) for special permits covering areas of less than 15 acres. Special permits for areas less than 15 acres may be issued by the Planning Commission without review and approval by the LUC. *See Hawaii Revised Statutes ("HRS") section 205-6.*

In November 2012, Glover applied to the Windward Planning Commission for a special permit covering approximately 10.15 acres within TMK Parcel 4 (SPP 12-000145). The LUC commented on the application, expressing a preference for Glover to apply for one special permit covering the entire parcel rather than sequentially applying for special permits of less than 15 acres. By agreement among Glover, the County, and the LUC, Glover agreed to apply for a special permit covering the balance of the unpermitted, unquarried areas of TMK Parcel 4 within one year of the Windward Planning Commission's approval of SPP 12-000145 for the 10.15-acre project area. This agreement became a condition of approval in the Windward Planning Commission's approval of SPP 12-000145 on March 7, 2013. *See Exhibit 2* hereto. On March 5, 2014, Glover filed for the instant special permit, which covered the balance of the unpermitted, unquarried areas of TMK Parcel 4.

Following the procedures outlined in HRS § 205-6, the Windward Planning Commission rules, and LUC Rules and Regulations, the instant application for special permit for the remaining 85.338 acres was filed in March 2014 with the Windward Planning Commission (SPP

14-000162) for review and approval. The Windward Planning Commission approved SPP 14-000162 on July 3, 2014, subject to LUC final disposition. The Windward Planning Commission approval included a number of conditions. See **Exhibit 3** attached hereto. Glover is in agreement with a majority of the conditions in SPP 14-000162 but was concerned about conditions 7, 8, and 9 (amended below as proposed conditions 7, 8, 9, and 10) to the extent these conditions could be read as requiring Glover to get approvals from the United States Fish and Wildlife Service ("USFWS"). Glover believes that the County Planning Department, not the USFWS, would have the responsibility to review and approve flora and fauna surveys and any mitigation plans.

Glover believes that the USFWS does not have regulatory jurisdiction in this context and that the Planning Department and Planning Commission could not properly defer to the USFWS or confer jurisdiction on that agency.

Consequently, Glover proposed amended conditions which provide that the County Planning Department is the agency responsible to review and approve any flora and fauna surveys and/or mitigation plans. Counsel for Glover provided draft revised conditions to the Planning Department counsel and to the LUC staff. Counsel for the Planning Department proposed some changes to the proposed amended conditions which are acceptable to Glover.

The proposed amended conditions are listed below and a complete copy of the proposed conditions, as amended, is attached as **Exhibit 4**.

Specifically, Glover asks the LUC to modify conditions 7, 8, and 9 (shown below as proposed conditions 7, 8, 9, and 10) and to add a new condition 16 in the final disposition of this special permit application as follows:

...

7. To protect any Hawaiian hoary bats in the vicinity of the property, barbed wire fencing shall not be used in the permit area and woody vegetation over 15 feet in height shall not be removed during bat breeding season of June 1st to September 15th ~~without first conducting surveys for bat nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall be conducted by a qualified biologist.~~

8. To protect any Hawaiian hawk and Hawaiian goose in the vicinity of the property, ~~vegetation clearing and beginning quarry activities shall not occur in the unquarried areas of the permit area during hawk breeding season of March to September and goose breeding season of October to March without first conducting surveys for hawk and goose nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall, no~~ vegetation clearing shall occur on the property between March 1 and October 1 unless a hawk survey is conducted. If the survey discloses the presence of nests, there shall be no vegetation clearing conducted within 100 meters of any nest.

9. To protect any Hawaiian goose, a one-time survey should be conducted by a qualified biologist. The survey will be submitted to the Planning Department for review and approval in consultation with the U. S. Fish and Wildlife Service ("USFWS").

9.10. Prior to removing vegetation on any un-quarried portions of the property, the applicant shall conduct a flora study and submit to the U.S. Fish and Wildlife Service (USFWS) Planning Department for review and approval in consultation with USFWS. The applicant shall implement any mitigation measures required by USFWS the Planning Department and provide a copy of the approved study and mitigation plan to the Planning Department.

...

16. The applicant will submit annual status reports to the Planning Department and the Land Use Commission.

...

Glover is fully committed to taking appropriate measures to protect any endangered plant or animal species which may be located on TMK Parcel 4. Specifically, Glover is willing to commit to completely avoid removal of vegetation over 15 feet in height from June 1 to September 15, which are recognized as nesting times for the 'ōpe'ape'a, or Hawaiian hoary bat.

Glover is committed to conducting surveys for Hawaiian hawk nests before conducting any land clearing in the months of March through September. Glover is committed to refrain from conducting ground clearing or quarrying activities within 100 feet of an 'io (Hawaiian hawk) nest. Glover is committed to conduct one-time surveys for nēnē (Hawaiian goose) and for endangered plant species on the property before conducting ground-clearing activities.

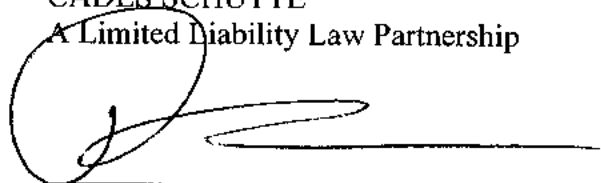
The proposed amended conditions would provide the same degree of protection to endangered species as the conditions currently incorporated in SPP 14-000162 specified by the Windward Planning Commission.

Under Glover's proposed revised conditions, the County Planning Department would have the responsibility to review and approve the results of flora and fauna surveys and/or any mitigation plan to determine compliance with the conditions in the special permit. The County Planning Department can consult with the USFWS before acting.

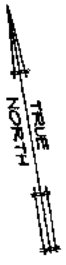
Based on the foregoing, it is respectfully requested that the LUC approve the application for special permit with amended conditions as proposed by Glover.

DATED: Kailua-Kona, Hawaii, November 13, 2014.

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A handwritten signature in black ink, appearing to read 'Roy A. Vitousek III', is written over a horizontal line. The signature is stylized with a large, circular initial 'R' and a long, horizontal stroke extending to the right.

ROY A. VITOUSEK III
Attorneys for Petitioner
JAS. W. GLOVER, LTD.



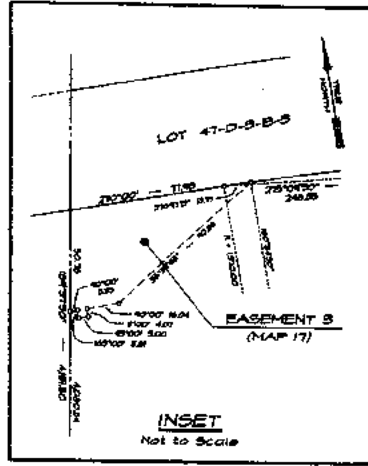
GENERAL LYMAN FIELD
Governor's Executive Order 2085
(C.S.P. 16,140)

THK-24-012-004
State of Hawaii (DOT AD), Owner
Zoning: M-20
State Land Use: Urban

SEE INSET

CLEAR ZONE EASEMENT
(C.S.P. 16,525)
THK-24-012-004
State of Hawaii, Owner
Zoning: A-20
State Land Use: Agricultural

LOT 47-D-3-B-3
THK-24-012-004
B.P. Bishop Estate, Owner
Zoning: A-20
State Land Use: Agricultural



INSET
Not to Scale

PARCEL A
THK-24-012-002
State of Hawaii, Owner
Zoning: A-20
State Land Use: Agricultural

Zoning: A-20
Zoning: A-20a

PARCEL A
THK-24-012-002
State of Hawaii, Owner
Zoning: A-20a
State Land Use: Agricultural

HAWAII NATIONAL GUARD SITE
Governor's Executive Order 1962
(C.S.P. 11,005)
THK-24-012-002
State of Hawaii, Owner
Zoning: A-20a
State Land Use: Agricultural

NOTES:

1. Adjacent property ownership shown is from County of Hawaii Real Property Tax Office's Site.
2. Zoning designation and state land use designation obtained from County of Hawaii Arc Reader.
3. Land Use Pattern Allocation Guide (LUPAG) designation obtained from County of Hawaii Arc Reader. Designation is: Exclusive Agricultural (A-20) and Important Agg. (A-20a).
4. Site is within Zone X areas determined to be outside of the 0.2% annual chance floodplain; no base flood elevations or depths are shown within the zone. Site is on Flood Insurance Rate Map, Community-Plan Number 0506-0005 G, Map Revision: September 16, 1988.

AREA SUMMARY	
LOT 47-D-3-B-2	140.568 Acres
SP - 1008	14.99 Acres
SP - 1231	14.99 Acres
SP - 1107	14.7 Acres
SP - 12-000148	10.80 Acres
Remainder Lot 47-D-3-B-2	89.588 Acres

PROJECT SITE
REMAINDER OF LOT 47-D-3-B-2
OF LAND COURT APPLICATION 433
AS SHOWN ON MAP 16
IN THE 'ILI OF HONOHONOHUI
SOUTH HILO, ISLAND OF HAWAII, HAWAII
Tax Map Key: 3rd DIV 2-1-013: 004

PREPARED FOR:
Jas. H. Glover, Ltd.
2100 Lili'uokalani Street
Hilo, Hawaii 96720

OWNER:
B. P. Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawaii 96813



INABA ENGINEERING, INC.
215 Macdonald Ave.
Hilo, Hawaii 96720



This work was prepared by
me or under my direct supervision.
Albert Z. Inaba
April 2, 1988
Licensed Professional Land Surveyor
Certificate Number 5626
License Expires: April 30, 1991
Land Court Survey Number 244
February 26, 2013
Revised: February 20, 2014

1/1 P8005

CADES SCHUTTE

MAR 22 2013

Time _____ m. Init. _____



County of Hawai'i

WINDWARD PLANNING COMMISSION

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawai'i 96720
Phone (808) 961-8288 • Fax (808) 961-8742

MAR 21 2013

Mr. Bryon Fujimoto
Jas W. Glover, Ltd.
890 Leilani Street
Hilo, HI 96720-4529

Dear Mr. Fujimoto:

Special Permit Application (SPP 12-000145)

Applicant: Jas W. Glover, Ltd.

Request: To Allow a New Quarry Site on a 10.15-Acre Portion of a
140.368 Acre Property

Tax Map Key: 2-1-013:004

The Windward Planning Commission, at its duly held public hearing on March 7, 2013, voted to approve the above-referenced request for a Special Permit to allow the establishment of a new quarry site on approximately 10.15 acres within a 140.368-acre property situated within the State Land Use Agricultural District. The project site is located east of the Hawai'i National Guard Site and Hilo International Airport and approximately 3,800 feet west of the County's Sewer Treatment Plant Site at Honohono-nui, South Hilo, Hawai'i.

Approval of the request is based on the following:

The applicant is requesting a Special Permit to establish a new quarry site on approximately 10.15 acres of land within a portion of a larger 140-acre property. The material to be quarried is aggregate and rock for commercial applications. The material to be quarried consists largely of basaltic "blue rock" with very little cinder. Approximately 800,000 cubic yards of material will be excavated and either processed on site or transported to Glover's Hilo operations site on Leilani Street over the term of its 15-year quarry lease.

Hawai'i County is an Equal Opportunity Provider and Employer

Exhibit 2

The 140.368-acre property is owned by the Kamehameha Schools. Kamehameha Schools had previously leased a 49.9982-acre portion of the 140.368-acre property to Yamada & Sons, Inc. as a quarry site. A quarry license was granted to Jas. W. Glover, Ltd. on January 15, 2012 for the same 49.9982-acre quarry site for a period of 15 years. There have been two (2) other Special Permits (SPP 936 and SPP 1107) approved for quarry operations in this 49.9982-acre lease area. This permit request is for the remaining 10.15-acre portion of the 49.9982-acre quarry license site within the 140.368-acre property. The applicant also has a lease for the remainder of the property, which also has two (2) Special Permits (SPP 1008 and SPP 1221) for quarry operations.

At the Windward Planning Commission's February 7, 2013 meeting, the Planning Director recommended that this Special Permit request be denied as its approval would be the fifth (5th) Special Permit to be issued for sub-15-acre quarrying operations within the larger 140-acre property, raising concerns about the "parceling" of the Special Permit process in an attempt to avoid the proper process that would take this matter before the State Land Use Commission.

The State Land Use Commission (LUC), in its memorandum regarding the subject application dated February 4, 2013, stated that "The continued application for special permits on acreage below 15 acres for the same use in a relatively short period of time could be seen as an attempt on the part of the landowners or petitioners to avoid the LUC process by 'parceling' the Special Permit activities. The LUC concluded its comments by recommending that this Special Permit application and any future similar applications be referred to the LUC for action and approval/disapproval.

The applicant met recently with the staff and the Executive Director of the LUC to discuss its concerns regarding the applicant's Special Permit request. In summary, the applicant represented that the LUC was amendable towards supporting the issuance of this 10.15-acre Special Permit application with a stipulation that a Special Permit application be submitted for all quarrying activities, existing and proposed, within the 140-acre property. We support this proposal as it represents a reasonable compromise that addresses concerns about proper permit processing while also recognizing the past support by this office over the years for other quarry operations within this particular section of Hilo. As a condition of approval, the applicant will be required to submit a properly completed Special Permit application for quarrying activities within the affected property within one (1) year from the effective date of this Special Permit. Failure to promptly file this Special Permit application for consideration by the LUC will cause this department to initiate revocation proceedings for the 10.15-acre quarry that is the subject of this Special Permit.

This Special Permit request is prompted by the awareness that the currently permitted quarries within portions of the 140-acre property are running out of material.

2. A complete (100%) systematic pedestrian inspection of the project area to identify any potential surface historic properties. Surface historic properties will be recorded with an evaluation of age, function, interrelationships and significance. Documentation will be provided using warranted, limited controlled excavation of select sites and/or features.
3. Based on the project area's environment and the results of background research, subsurface testing with a combination of hand and backhoe excavation may be used to identify and document subsurface historic properties that would not be located by surface pedestrian inspection. Appropriate samples from these excavations will be analyzed for cultural and chronological information. All subsurface historic properties identified will be documented to the extent possible, including geographic extent, content, function/derivation, age, interrelationships and significance.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past use, and the function and age of the historic properties documented within the project area.
5. As appropriate, laboratory work to process and gather relevant environmental and/or archaeological information from collected samples.
6. Preparation of an inventory survey report, which will include the following:
 - a) A project description;
 - b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties;
 - c) Historical and archaeological background sections summarizing pre-historic and historic land use of the project area and its vicinity;
 - d) Descriptions of all historic properties, including selected photographs, scale drawings and discussions of age, function, laboratory results and significance, per the requirements of HAR § 13-276. Each historic property will be assigned a Hawai'i State Inventory of Historic Properties (SIHP) number;
 - e) If appropriate, a section concerning cultural consultations (per the requirements of HAR § 13-276-5[g] and HAR § 13-275/284-8[a][2]);
 - f) A summary of historic property categories, integrity and significance based upon the Hawai'i Register of Historic Places criteria;
 - g) A project effect recommendation;
 - h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible for the Hawai'i Register of Historic Places.

The proposed 10.15-acre quarry will provide the applicant with an estimated 1-½ to 2 years worth of material, during which the applicant will prepare and hope to secure a Special Permit from the LUC for quarrying activities within the remainder of the 140-acre property yet to be quarried.

The grounds for approving a Special Permit are based on Rule 6-6 in the Planning Commission Rules of Practice and Procedure. It states that the Planning Commission shall not approve a Special Permit unless it is found that the proposed use (a) is an unusual and reasonable use of land situated within the Agricultural District; and (b) the proposed use would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes, as amended.

The proposed use is an unusual and reasonable use of land situated within the Agricultural District. In recognizing that lands within Agricultural districts might not be best suited for agricultural activities and yet classified as such, and in recognition that certain types of uses might not be strictly agricultural in nature, yet reasonable in such districts, the legislature has provided for the Special Permit process to allow certain unusual and reasonable uses within the Agricultural district.

Although the property is designated for Agricultural uses by both the State Land Use Commission and the County Zoning Code, its soils are considered very poor and not optimal to support agricultural activities. The request is considered unusual and reasonable in that the proposed quarry area has no direct relationship to any potential agricultural activities that could be conducted upon the property given its proximity to existing quarries and the Hilo landfill.

The granting of this request would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes, as amended. The State Land Use Law and Regulations are intended to preserve, protect and encourage the development of lands for those uses to which they are best suited in the interest of the public welfare of the people of the State of Hawai'i. In the case of the Agricultural District, the intent is to preserve or keep lands of high agricultural potential in agricultural use.

The property is situated within an area where soils are classified as "E" or "Very Poor" by the Land Study Bureau's Overall Master Productivity Rating and is unclassified by the Department of Agriculture's ALISH Map. The proposed use will be located on a 10.15-acre portion of a 140.368-acre property.

The 10.15 acres of land for quarry use and would not significantly affect the agricultural resources or potential of the area nor displace any active agricultural activity since this parcel has not been in agricultural use. Therefore, based on the above circumstances, approval of the request would not be contrary to the objectives of the State Land Use Law Rules and Regulations given the subject conditions.

In addition to the above listed criteria, the Planning Commission shall also consider the criteria listed under Section 6-3(b)(5) (A) through (G). In considering the criteria, the Planning Director recommends the following:

(A) **Such use shall not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations.** As mentioned previously, approval of this request will not be contrary to the objectives of the State Land Use Law and is considered an unusual and reasonable use of the agricultural land due to the poor soil quality that are not conducive towards agricultural activities. Therefore, the proposed request will not adversely affect the preservation and agricultural use of the County's prime agricultural lands.

(B) **The desired use would not adversely affect surrounding properties.** The surrounding properties include the County of Hawai'i landfill sites, other quarrying operations and vacant lands owned by the State and Kamehameha Schools. There are no dwellings or urban developments within the immediate area. Other existing uses within the general vicinity include the County's wastewater treatment plant, the landfill site, the airport, a skeet range and the Hawai'i National Guard training facility. Dust generated during quarry operations will be mitigated by watering down the roadway and complying with regulations of the Department of Health. A condition will be added to insure that the applicant restores the area to a state that would blend with the surrounding topography of the area once the activity is completed. All required measures to minimize traffic, dust and noise shall be adhered to by the applicant.

(C) **Such use shall not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, school improvements, and police and fire protection.** According to the applicant, they have temporary rights of access until such time as a more formal access is developed by the State. The existing section of the access road is hard-packed gravel approximately 20 feet wide. The road then widens to between 25 and 30 feet wide and partially paved. In addition, the applicant has paved the driveway access on the subject property, which leads to the actual quarry site. This access road is adequate for its intended purpose, which is to accommodate traffic associated with the quarry operations and which does not support general vehicular access. For dust mitigation, the applicant will bring in tanker trucks to water down the

roadway. Portable restrooms will be brought to the property. Water will be made available to the subject property by tanker trucks for dust mitigation. Agencies reviewing the request had no objections to the quarry.

(D) Unusual conditions, trends, and needs have arisen since district boundaries and regulations were established. In the 1960's and 1970's, the State's agricultural district boundaries and regulations were established and subsequently amended pursuant to HRS Chapter 205. The State Land Use Commission was created in 1961, and interim regulations and temporary district boundaries became effective in 1962. Subsequently, the regulations and Land Use District Boundaries became effective in August of 1964. The property and surrounding areas are designated for agricultural uses by both State and County land use laws. Through the issuance of a Special Permit, various "non-agricultural" services may be allowed.

There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying is resource-based, sites are locationally restricted. Existing quarrying activities are occurring on portions of the subject property and in the near vicinity of the project. The additional quarry activities will be in keeping with surrounding uses. As such, no existing or proposed areas for agricultural activities will be curtailed or diminished as a result of establishing these activities on the property.

(E) The land upon which the proposed use is sought is unsuited for the uses permitted within the district. As previously mentioned, the lands are rated "E" or "Very Poor" for agricultural productivity and other important ag lands by the ALISH Map. The soils in this area are not suitable for many types of agricultural uses. Surrounding parcels are also in quarry use and industrial-related activities.

(F) The use will not substantially alter or change the essential character of the land and the present use. The proposed expanded uses will not substantially change the character of the land, as the area is already used for quarry activities. Additional equipment, however, will be brought on site to accommodate the proposed uses.

(G) The request will not be contrary to the General Plan and official Community Development Plan and other documents such as Design Plans. The Land Use Pattern Allocation Guide (LUPAG) Map component of the General Plan is a representation of the document's goals and policies to guide the coordinated growth and development of the County. It reflects a graphic depiction of the physical relationship among the various land uses. The LUPAG Map establishes the basic urban and non-urban form for areas within the County. The subject request is not contrary to the General Plan LUPAG Map, which designates the property as Extensive Agriculture,

Important Agricultural Land and Industrial. The project site is located in an area designated as Extensive Agriculture. The project would complement the following goals and policies of the General Plan:

Land Use - Industrial Element:

- Industrial activities may be located close to raw material or key resources. The ability of the subject property to provide the needed raw material vital to the construction industry while able to absorb the noxious ~~nature~~ of quarries speaks to the appropriateness of the area for such uses.

Economic:

- The County shall strive for diversification of its economy by strengthening industries and attracting new endeavors.
- Economic development and improvements shall be in balance with the physical and social environments of the island of Hawai'i

Natural Resources and Shoreline Elements:

- The County of Hawai'i should require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse impacts on the environment.
- Ensure that alteration to existing land forms and vegetation, except crops, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

In order to provide for raw construction materials that are vital to the construction industry, quarries must be established in locations where there is an abundance of these raw materials. For this reason, quarries, while industrial in character, cannot be confined to Industrial-designated areas. As evidenced by the issuance of Special Permits for other quarries within the affected area, this particular area contains the raw materials essential to the construction industry. The establishment of the proposed quarry in this particular location will not adversely impact agricultural resources, as many of the uses are industrial in nature. There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying operations are resource-based, sites are restricted in location by the availability of raw

materials. Other previous and ongoing quarry activities in the vicinity of the project site have shown that the materials are available in this area, which makes this an appropriate site to establish a quarry.

The proposed use is not contrary to the objectives sought to be accomplished by Chapter 205A, Hawai'i Revised Statutes, relating to the coastal zone management program. The subject property is located over one mile to the nearest shoreline and therefore will not cause beach erosion or affect marine resources, coastal ecosystems, and coastal recreational opportunities. Nor will the property be affected by coastal hazards. Additionally, there is no designated public access to the mountain areas over the property.

The request will not have a significant adverse impact to traditional and customary Hawaiian Rights. In view of the Hawai'i State Supreme Court's "PASH" and "*Ka Pa 'akai O Ka 'Aina*" decisions, the issue relative to native Hawaiian gathering and fishing rights must be addressed in terms of the cultural, historical, and natural resources and the associated traditional and customary practices of the site:

Investigation of valued resources: The Department of Land and Natural Resources-State Historic Preservation Division issued a letter dated December 3, 2012 stating that they have completed review of the draft report (Escott, March 2012) and they requested further clarification of the possible presence of a trail alignment that may be present in the northeast corner of the proposed project area.

An archaeological assessment (final) of the project site was conducted by Glenn G. Escott dated September 2012 that conclude that no archaeological sites or features and no cultural resources or modern structures were located within the project site. The final report addressed the presence of the trail alignment stating that "A single site, the Historic Puna Trail (Site 50-10-99-18869), also referred to by the Old Government Road's State Number 50-10-36-21272) is located just outside the southern boundary of the current project area."

The valuable cultural, historical, and natural resources found in the permit area: As mentioned, no valuable cultural, historic, or natural resources related to traditional and customary practices were identified on the site.

Possible adverse effect or impairment of valued resources: Native plants may be destroyed by quarry operations. There is no evidence that the flora in the area are particularly desired or used for cultural practices. The site is not adjacent and/or proximate to the shoreline. As such, gathering of marine life, fishing and coastal access is not an issue.

Feasible actions to protect native Hawaiian rights: To the extent to which traditional and customary native Hawaiian rights are exercised, the proposed action will not affect traditional Hawaiian rights and no action is necessary to protect these rights. A condition of approval will be included to require the applicant to notify the DLNR-SHPD should any unidentified sites or remains be encountered, and proceed only upon an archaeological clearance from the DLNR-SHPD.

There is no record of traditional Hawaiian rights being practiced on the property. Therefore, the proposed use is not contrary to the objectives of Chapter 205A, Hawai'i Revised Statutes.

Based on the above considerations, the quarry operation and accessory uses within the project site is an unusual and reasonable use of land, which would not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations. Approval of this request is subject to the following conditions:

1. The applicant, its successor or assigns shall be responsible for complying with all stated conditions of approval.
2. The applicant, within one (1) year from the effective date of this permit, shall submit a properly filed Special Permit application to the Planning Department for consideration by the State Land Use Commission, requesting the establishment of quarry activities for the un-quarried remainder of the 140.368-acre property identified as TMK: 2-1-013: 004. Failure to comply with this condition shall result in proceedings to revoke this Special Permit.
3. The life of this Special Permit shall be co-terminus with the Kamehameha Schools License Agreement issued to Jas W. Glover, Ltd. for quarrying activities within the project site.
4. Prior to commencing construction of any structures, Final Plan Approval for those structure(s) shall be secured from the Planning Department in accordance with Chapter 25-2-70 (Zoning Code). Plans shall identify any proposed structures and parking associated with the proposed quarry operation.
5. Quarrying activities shall be limited to the hours of 6:00 a.m. and 6:00 p.m. daily.
6. An Erosion Control and Site Restoration Plan, which assures the site will be left in a nonhazardous condition, shall be submitted for review and approval by the Planning Director, one year prior to the termination of quarry activities. The Plan shall include photographs of the area and a topography map of the project site and its related surroundings. This Plan shall be reviewed by Kamehameha Schools,

the Natural Resources Conservation Service and the Department of Public Works and their comments submitted to the Planning Director for review and approval.

7. Adequate dust control mitigation measures shall be implemented for the duration of the quarry operation in accordance with Department of Health requirements. An adequate supply of water shall be made available for dust control.
8. Prior to commencing any land alteration activity, the applicant shall submit an Archaeological Monitoring Plan for review to the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) to ensure that no historic sites are inadvertently damaged or destroyed. This plan will call for "on-call monitoring" in conjunction with DLNR-SHPD.
9. No retail sale of quarrying materials is allowed from the project site. Removal of the materials shall be limited to licensed commercial haulers or by licensed contractors.
10. Should any remains of historic sites, such as rock walls, terraces, platforms, marine shell concentrations or human burials, be encountered, work in the immediate area shall cease and the DLNR-HPD shall be immediately notified. Subsequent work shall proceed upon an archaeological clearance from the DLNR-HPD when it finds that sufficient mitigative measures have been taken.
11. Within ninety (90) days after termination of the quarry operation or abandonment of the project site, appropriate documentation which demonstrates compliance with the Site Restoration and Revegetation Plan shall be submitted to the Planning Department.
12. Comply with all applicable laws, rules, regulations and requirements of other affected agencies.
13. An extension of time for the performance of conditions within the permit, with the exception of Condition No. 2, may be granted by the Planning Director upon the following circumstances:
 - A. The non-performance is the result of conditions that could not have been foreseen or are beyond the control of the applicant, successors or assigns, and that are not the result of their fault or negligence.
 - B. Granting of the time extension would not be contrary to the General Plan or Zoning Code.

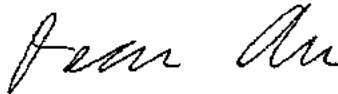
Mr. Byron Fujimoto
Page 10

- C. Granting of the time extension would not be contrary to the original reasons for the granting of the permit.
 - D. The time extension granted shall be for a period not to exceed the period originally granted for performance (i.e., a condition to be performed within one year may be extended for up to one additional year).
14. Should any of these conditions not be met or substantially complied with in a timely manner, the Planning Director may initiate ~~procedures~~ to revoke this permit.

This approval does not, however, sanction the specific plans submitted with the application as they may be subject to change given specific code and regulatory requirements of the affected agencies.

Should you have any questions, please contact Daryn Arai of the Planning Department at 961-8288.

Sincerely,



Dean Au, Chairman
Windward Planning Commission

Lglverspp12-145wpc

cc: Roy A. Vitousek, III, Esq. ✓
Department of Public Works
Department of Water Supply
County Real Property Tax Division
State Land Use Commission
Department of Land & Natural Resources-HPD
Mr. Gilbert Bailado



County of Hawai'i

WINDWARD PLANNING COMMISSION

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawai'i 96720
Phone (808) 961-8288 • Fax (808) 961-8742

HILO OPERATIONS

14 JUL 24 AM 7:59

RECEIVED
JAS. W. GLOVER, LTD.

JUL 22 2014

Mr. Byron Fujimoto
Jas W. Glover, Ltd.
890 Leilani Street
Hilo, HI 96720-4529

Dear Mr. Fujimoto:

Special Permit (SPP 14-000162)
Applicant: Jas W. Glover, Ltd.
Request: To Establish a New Quarry
Tax Map Key: 2-1-013:004

The Windward Planning Commission, at its duly held public hearing on July 3, 2014, considered your request to allow the establishment of a new quarry site on approximately 85.338 acres of a 140.368-acre property situated within the State Land Use Agricultural District. The project site is located southeast of the Hawai'i National Guard Site and Hilo International Airport and approximately 3,000 feet southwest of the County's Sewer Treatment Plant site at Honohononui, South Hilo, Hawai'i.

The Commission voted to approve this request and to send a favorable recommendation to the State Land Use Commission for final disposition. The favorable recommendation is based on the following:

The applicant is requesting a Special Permit to establish a new quarry site on approximately 85.338 acres of land on a portion of a larger, 140.368-acre property "subject property" identified at Tax Map Key (3) 2-1-013:004. The material to be quarried is aggregate and rock for commercial applications and consists largely of basaltic "blue rock" with very little cinder. The material will be removed and either processed on site or transported to the applicant's Hilo operations site on Leilani Street. Normal quarry

Hawai'i County is an Equal Opportunity Provider and Employer

Exhibit 3

production hours would be from 6:00 a.m. to 6:00 p.m., Monday through Friday. Work may occur at other times and days, depending upon demand. Approximately 2-8 employees will be on site for quarry uses. Additional employees may be required as production facilities are added. The State of Hawai'i owns the access road that leads from the County-maintained Leilani Street to the quarry site. Kamehameha Schools and its lessees have temporary rights of access via this road until such time as a more formal access is developed by the State. During normal production, the traffic impact on the access road will be between 15 and 50 truckloads of material per day. Dust mitigation measures, such as watering trucks, will be used to minimize dust generated by the operation. All activities will conform to the State Department of Health regulations.

Kamehameha Schools (BP Bishop Trust Estate) owns all 140.368-acres and has been licensing portions of the property to quarry operators over the last 18 years. According to the applicant, a quarry license was granted to Jas. W. Glover, Ltd., on June 1, 1997, for approximately 80 acres of the 140.368-acre property for a period of 30 years. A quarry license was granted to Jas. W. Glover, Ltd., on January 15, 2012, for 49.9982 acres, comprising the balance of the 140.368-acre property, for a period of 15 years. Both license agreements will end on May 31, 2027, with an option for a 10-year extension on the license for the 80-acre portion. Previously, Kamehameha Schools had leased the 49.9982-acre portion to Yamada & Sons, Inc. as a quarry site.

This subject application has been submitted to comply with Condition No. 2 of Special Permit No. 2012-000145, which required that the applicant submit a properly filed Special Permit application for the establishment of quarry activities for the un-quarried remainder (approximately 85.338 acres) of the 140.368-acre property to the Planning Department for consideration by the State Land Use Commission within one year (by March 7, 2014).

The grounds for approving a Special Permit are based on Rule 6-6 in the Planning Commission Rules of Practice and Procedure. It states that the Planning Commission shall not approve a Special Permit unless it is found that the proposed use (a) is an unusual and reasonable use of land situated within the Agricultural District; and (b) the proposed use would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes, as amended.

The proposed use is an unusual and reasonable use of land situated within the State Land Use Agricultural District and would promote the effectiveness and objectives of Chapter 205, Hawai'i Revised Statutes (HRS), as amended. The State Land Use Law and Regulations are intended to preserve, protect and encourage the

development of lands in the state for those uses to which they are best suited in the interest of the public health and welfare of the people of the State of Hawai'i. In the case of the Agricultural District, the intent is to preserve or keep lands of high agricultural potential in agricultural use. In recognizing that lands within the Agricultural district may not be best suited for agricultural activities and yet classified as such, and in recognition that certain types of uses might not be strictly agricultural in nature, yet reasonable in such districts, the legislature has provided for the Special Permit process to allow certain unusual and reasonable uses within the Agricultural District.

Although the property is designated for Agricultural uses by both the State Land Use Commission and the County Zoning Code, its soils are considered very poor and not optimal to support agricultural activities. The request is considered unusual and reasonable in that the proposed quarry area has no direct relationship to any potential agricultural activities that could be conducted upon the property given its proximity to existing quarries and other nearby industrial uses such as the Hilo landfill, wastewater treatment plant, and airport. Therefore, based on the above circumstances, approval of the request would not be contrary to the objectives of the State Land Use Law Rules and Regulations given the subject conditions.

In addition to the above listed criteria, the Planning Commission shall also consider the following criteria listed under Section 6-3(b)(5) (A) through (G) of its rules of practice and procedure:

(A) Such use shall not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations. As mentioned previously, approval of this request will not be contrary to the objectives of the State Land Use Law and is considered an unusual and reasonable use of the agricultural land due to the poor soil quality that is not conducive towards agricultural activities. Therefore, the proposed request will not adversely affect the preservation and agricultural use of the County's prime agricultural lands.

(B) The desired use would not adversely affect surrounding properties. The surrounding properties include the County of Hawai'i landfill sites, other quarrying operations and vacant lands owned by the State and Kamehameha Schools. There are no dwellings or urban developments within the immediate area. Other existing uses within the general vicinity include the County's wastewater treatment plant, the landfill site, the airport, a skeet range and the Hawai'i National Guard training facility. Dust generated during quarry operations will be mitigated by watering down the roadway and complying with regulations of the Department of Health. A condition will be added to insure that

the applicant restores the area to a state that would blend with the surrounding topography of the area once the activity is completed. All required measures to minimize traffic, dust and noise shall be adhered to by the applicant. The existing quarry mining in various portions of the parcel has been ongoing with existing levels of noise, dust and fumes generated by the operation. The proposed quarry site and surrounding areas have been subject to quarrying activities under license issued by Kamehameha Schools and permitted through the issuance of Special Permits for the past 18 years. The Planning Department is not aware of any complaints that have been generated by these on-going quarrying activities in this particular area. The relative isolation of these quarry sites from residential uses and its proximity to other industrial-types of activities have, arguably, allowed this particular area within the City of Hilo to be accepted by the community as the prime locale for these types of operations. The past 18 years of quarrying activities have demonstrated that this particular location, and the project site in particular, is well-suited to support quarrying activities with minimal adverse impact to the surrounding community. Therefore, the proposed use is not anticipated to adversely affect surrounding properties.

(C) Such use shall not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, school improvements, and police and fire protection. According to the applicant, they have temporary rights of access until such time as a more formal access is developed by the State. The existing section of the access road is hard-packed gravel approximately 20 feet wide. The road then widens to between 25 and 30 feet wide and partially paved. In addition, the applicant has paved the driveway access on the subject property, which leads to the actual quarry site. This access road is adequate for its intended purpose, which is to accommodate traffic associated with the quarry operations and which does not support general vehicular access. For dust mitigation, the applicant will bring in tanker trucks to water down the roadway. Portable restrooms will be brought to the property. Water will be made available to the subject property by tanker trucks for dust mitigation. Therefore, the proposed use will not unreasonably burden public agencies to provide services or infrastructure.

(D) Unusual conditions, trends, and needs have arisen since district boundaries and regulations were established. In the 1960's and 1970's, the State's agricultural district boundaries and regulations were established and subsequently amended pursuant to HRS Chapter 205. The State Land Use Commission was created in 1961, and interim regulations and temporary district boundaries became effective in 1962. Subsequently, the regulations and Land Use District Boundaries became effective in August of 1964. The property and surrounding areas are designated for agricultural uses

by both State and County land use laws. Through the issuance of a Special Permit, various "non-agricultural" services may be allowed. There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying is resource-based, sites are restricted by location of the mineral resource. Existing quarrying activities are occurring on portions of the subject property and in the near vicinity of the project. There is no record of any agricultural uses on the subject property for decades.

(E) The land upon which the proposed use is sought is unsuited for the uses permitted within the district. The subject property is rated "E" or "Very Poor" for agricultural productivity by the Land Study Bureau and Other Important Agricultural lands by the ALISH Map. The soils in this area are not suitable for many types of agricultural uses. Surrounding parcels are also in quarry use and industrial-related activities.

(F) The use will not substantially alter or change the essential character of the land and the present use. The proposed use will not substantially change the character of the land, as the area is already used for quarry activities.

(G) The request will not be contrary to the General Plan and official Community Development Plan and other documents such as Design Plans. The Land Use Pattern Allocation Guide (LUPAG) Map component of the General Plan is a representation of the document's goals and policies to guide the coordinated growth and development of the County. It reflects a graphic depiction of the physical relationship among the various land uses. The LUPAG Map establishes the basic urban and non-urban form for areas within the County. The subject request is not contrary to the General Plan LUPAG Map, which designates the property as Extensive Agriculture, Important Agricultural Land and Industrial. The project would complement the following goals and policies of the General Plan:

Land Use - Industrial Element:

- Industrial activities may be located close to raw material or key resources. The ability of the subject property to provide the needed raw material vital to the construction industry while able to absorb the noxious nature of quarries speaks to the appropriateness of the area for such uses.

Economic:

- The County shall strive for diversification of its economy by strengthening industries and attracting new endeavors.
- Economic development and improvements shall be in balance with the physical and social environments of the island of Hawai'i

Natural Resources and Shoreline Elements:

- The County of Hawai'i should require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse impacts on the environment.
- Ensure that alteration to existing land forms and vegetation, except crops, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

In order to provide for raw construction materials that are vital to the construction industry, quarries must be established in locations where there is an abundance of these raw materials. For this reason, quarries, while industrial in character, cannot be confined to Industrial-designated areas. As evidenced by the issuance of Special Permits for other quarries within the subject property, this area contains the raw materials essential to the construction industry. The establishment of the proposed quarry in this particular location will not adversely impact agricultural resources, as many of the uses are industrial in nature. There are many areas in the County where lands within the Agricultural District are not in active agricultural productivity. Because quarrying operations are resource-based, sites are restricted in location by the availability of raw materials. Other previous and ongoing quarry activities in the vicinity of the project site have shown that the materials are available in this area, which makes this an appropriate site to establish a quarry. The basic nature of quarrying activities means that natural resources and the natural environment will be compromised. Reviewing agencies and the Planning Department have not identified any specific important habitat associated with endangered species and have found that the project site is not in close proximity to or contain a proposed or designated critical habitat. However, there is the possibility that the project site could provide a potential habitat for the Hawaiian hoary bat, the Hawaiian hawk, the Hawaiian petrel, the Newell's shearwater, and the Nēnē. To avoid and minimize potential significant adverse impacts upon these animal species and endangered

plants, a condition of approval will require faunal and floral surveys of the proposed quarry site prior to commencing operations in coordination with the U.S. Fish and Wildlife Service.

The proposed use is not contrary to the objectives sought to be accomplished by Chapter 205A, Hawai'i Revised Statutes, relating to the coastal zone management program. The subject property is located over one mile to the nearest shoreline and does not contain streams or waterways that empty into the sea and therefore will not cause beach erosion or affect marine resources, coastal ecosystems, and coastal recreational opportunities. Nor will the property be affected by coastal hazards. The property is located well outside of the Special Management Area (SMA) and tsunami evacuation zone. Additionally, there is no designated public access to the shoreline areas or mountain areas over the property. Therefore, the proposed use is not contrary to the objectives of Chapter 205A, Hawai'i Revised Statutes.

The request will not have a significant adverse impact to traditional and customary Hawaiian Rights. In view of the Hawai'i State Supreme Court's "PASH" and "*Ka Pa 'akai O Ka 'Aina*" decisions, the issue relative to native Hawaiian gathering and fishing rights must be addressed in terms of the cultural, historical, and natural resources and the associated traditional and customary practices of the site:

Investigation of valued resources: An Archaeological Assessment of the southern 50-acre portion of the subject property was conducted by Glenn G. Escott dated September 2012. An Archaeological Assessment of the northern 90-acre portion of the subject property was conducted by Glenn G. Escott dated September 2013. A flora and fauna study of the subject property has not been conducted.

The valuable cultural, historical, and natural resources found in the permit area: Both Archaeological Assessments concluded that no archaeological sites or features and no cultural resources or modern structures were located within the subject property. The 2012 report addressed the presence of the trail alignment stating that "A single site, the Historic Puna Trail (Site 50-10-99-18869), also referred to by the Old Government Road's State Number 50-10-36-21272) is located just outside the southern boundary of the current project area." The Department of Land and Natural Resources-State Historic Preservation Division issued a letter dated April 15, 2014 stating that they have completed review of two archeological inventory surveys for the entire 140-acre subject property and agreed with the conclusions and recommended archeological monitoring during initial ground clearing and grubbing. In their memo dated April 11, 2014 (P.D. Exhibit 25), the U.S. Fish and Wildlife Service identified five threatened or endangered

species that may be in the vicinity of the subject property, and recommended various conservation measures to eliminate or reduce adverse impacts to these species and unknown endangered or threatened plant species. One of the recommendations is for a qualified biologist to conduct Nēnē nest surveys and Hawaiian hawk nest surveys prior to vegetation clearing and beginning quarry activities in un-quarried areas of the property.

Possible adverse effect or impairment of valued resources: Historic and cultural resources may inadvertently be discovered during quarry operations. The site is not adjacent and/or proximate to the shoreline. As such, gathering of marine life, fishing and coastal access is not an issue. Endangered and threatened plant and animal species may be adversely affected during vegetation clearing and ongoing quarry operations.

Feasible actions to protect native Hawaiian rights and valued resources: To the extent to which traditional and customary native Hawaiian rights are exercised, the proposed action will not affect traditional Hawaiian rights and no action is necessary to protect these rights. A condition of the permit will require the applicant implement an Archeological Monitoring Plan approved by SHPD during ground clearing and grubbing activities on the property. Additionally, the applicant will be required to notify the DLNR-SHPD should any unidentified sites or remains be encountered, and proceed with quarry activities only upon receiving an archaeological clearance from the DLNR-SHPD. A condition of the permit will require floral and faunal surveys (including nest surveys) prior to vegetation removal of any un-quarried areas of the property. Conducting these surveys just prior to starting quarry activity of a forested area will ensure that the surveys accurately reflect any endangered or threatened species present in the area at the time.

Based on the above considerations, the quarry operation and accessory uses within the project site is an unusual and reasonable use of land, which would not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations.

Approval of this request is subject to the following conditions:

1. The applicant, its successor or assigns shall be responsible for complying with all stated conditions of approval.
2. Prior to commencing construction of any structures, Final Plan Approval for those structure(s) shall be secured from the Planning Department in accordance with Chapter 25-2-70 (Zoning Code). Plans shall identify any proposed structures and parking associated with the proposed quarry operation.

3. Quarrying activities shall be limited to the hours of 6:00 a.m. to 6:00 p.m. daily. Work may occur at other times depending on demand, except from September 15 to December 15.
4. Prior to commencement of quarry activity on any previously un-quarried land, a Site Restoration and Revegetation Plan, which assures the site will be left in a nonhazardous condition, shall be submitted for review and approval by the Planning Director. The Plan shall include photographs of the area and a topography map of the project site and its related surroundings. This Plan shall be reviewed by Kamehameha Schools, the Natural Resources Conservation Service and the Department of Public Works and their comments submitted to the Planning Director for review and approval.
5. Adequate dust control mitigation measures shall be implemented for the duration of the quarry operation in accordance with Department of Health requirements. An adequate supply of water shall be made available for dust control.
6. Prior to commencing any land alteration activity on any un-quarried portions of the property, the applicant shall secure approval by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) of an Archaeological Monitoring Plan to ensure that no historic sites are inadvertently damaged or destroyed. This plan will call for "on-call monitoring" in conjunction with DLNR-SHPD. A copy of the approved plan shall be provided to the Planning Department.
7. To protect any Hawaiian hoary bats in the vicinity of the property, barbed wire fencing shall not be used in the permit area and woody vegetation over 15 feet in height shall not be removed during bat breeding season of June 1st to September 15th without first conducting surveys for bat nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall be conducted by a qualified biologist.
8. To protect any Hawaiian hawk and Hawaiian goose in the vicinity of the property, vegetation clearing and beginning quarry activities shall not occur in the un-quarried areas of the permit area during hawk breeding season of March to September and goose breeding season of October to March without first conducting surveys for hawk and goose nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall be conducted by a qualified biologist.

9. Prior to removing vegetation on any un-quarried portions of the property, the applicant shall conduct a flora study and submit to the U.S. Fish and Wildlife Service (USFWS) for review and approval. The applicant shall implement any mitigation measures required by USFWS and provide a copy of the approved study and mitigation plan to the Planning Department.
10. No retail sale of quarrying materials is allowed from the project site. Removal of the materials shall be limited to licensed commercial haulers or by licensed contractors.
11. Should any remains of historic sites, such as rock walls, terraces, platforms, marine shell concentrations or human burials, be encountered, work in the immediate area shall cease and the DLNR-HPD shall be immediately notified. Subsequent work shall proceed upon an archaeological clearance from the DLNR-SHPD when it finds that sufficient mitigative measures have been taken.
12. Within ninety (90) days after termination of the quarry operation or abandonment of the project site, appropriate documentation which demonstrates compliance with the Site Restoration and Revegetation Plan shall be submitted to the Planning Department.
13. Comply with all applicable laws, rules, regulations and requirements of other affected agencies.
14. An extension of time for the performance of conditions within the permit may be granted by the Planning Director upon the following circumstances:
 - A. The non-performance is the result of conditions that could not have been foreseen or are beyond the control of the applicant, successors or assigns, and that are not the result of their fault or negligence.
 - B. Granting of the time extension would not be contrary to the General Plan or Zoning Code.
 - C. Granting of the time extension would not be contrary to the original reasons for the granting of the permit.
 - D. The time extension granted shall be for a period not to exceed the period originally granted for performance (i.e., a condition to be performed within one year may be extended for up to one additional year).

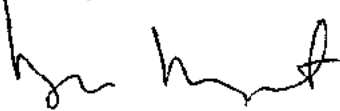
Mr. Byron Fujimoto
Jas W. Glover, Ltd.
Page 11

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

This approval does not, however, sanction the specific plans submitted with the application as they may be subject to change given specific code and regulatory requirements of the affected agencies.

Should you have any questions, please contact Daryn Arai of the Planning Department at 961-8142.

Sincerely,



Myles Miyasato, Chairman
Windward Planning Commission

LJasGloverSPP14-162wpc

cc: Roy A. Vitousek III Esq., Cades Schutte LLP
Department of Public Works
Department of Water Supply
County Real Property Tax Division
State Land Use Commission
State DLNR-HPD
Mr. Gilbert Bailado
Plan Approval Section

Suggested Edits to Conditions of Approval in Planning Department Letter Dated 7/22/14

Approval of this request is subject to the following conditions:

1. The applicant, its successor or assigns shall be responsible for complying with all stated conditions of approval.
2. Prior to commencing construction of any structures, Final Plan Approval for those structure(s) shall be secured from the Planning Department in accordance with Chapter 25-2-70 (Zoning Code). Plans shall identify any proposed structures and parking associated with the proposed quarry operation.
3. Quarrying activities shall be limited to the hours of 6:00 a.m. to 6:00 p.m. daily. Work may occur at other times depending on demand, except from September 15 to December 15.
4. Prior to commencement of quarry activity on any previously un-quarried land, a Site Restoration and Revegetation Plan, which assures the site will be left in a nonhazardous condition, shall be submitted for review and approval by the Planning Director. The Plan shall include photographs of the area and a topography map of the project site and its related surroundings. This Plan shall be reviewed by Kamehameha Schools, the Natural Resources Conservation Service and the Department of Public Works and their comments submitted to the Planning Director for review and approval.
5. Adequate dust control mitigation measures shall be implemented for the duration of the quarry operation in accordance with Department of Health requirements. An adequate supply of water shall be made available for dust control.
6. Prior to commencing any land alteration activity on any un-quarried portions of the property, the applicant shall secure approval by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) of an Archaeological Monitoring Plan to ensure that no historic sites are inadvertently damaged or destroyed. This plan will call for "on-call monitoring" in conjunction with DLNR-SHPD. A copy of the approved plan shall be provided to the Planning Department.
7. To protect any Hawaiian hoary bats in the vicinity of the property, barbed wire fencing shall not be used in the permit area and woody vegetation over 15 feet in height shall not be removed during bat breeding season of June 1st to September 15th ~~without first conducting surveys for bat nests and coordinating with US Fish and Wildlife Service if nests are found.~~ Surveys shall be conducted by a qualified biologist.
8. To protect any Hawaiian hawk ~~and Hawaiian goose in the vicinity of the property;~~ ~~vegetation clearing and beginning quarry activities shall not occur in the unquarried areas of the permit area during hawk breeding season of March to September and~~ ~~goose breeding season of October to March without first conducting surveys for~~

~~hawk and goose nests and coordinating with US Fish and Wildlife Service if nests are found. Surveys shall, no vegetation clearing shall occur on the property between March 1 and October 1 unless a hawk survey is conducted. If the survey discloses the presence of nests, there shall be no vegetation clearing conducted within 100 meters of any nest.~~

9. To protect any Hawaiian goose, a one-time survey should be conducted by a qualified biologist. The survey will be submitted to the Planning Department for review and approval in consultation with the U. S. Fish and Wildlife Service ("USFWS").
- ~~9-10.~~ Prior to removing vegetation on any un-quarried portions of the property, the applicant shall conduct a flora study and submit to the ~~U.S. Fish and Wildlife Service (USFWS)~~ Planning Department for review and approval in consultation with ~~USFWS~~ the Planning Department and provide a copy of the approved study and mitigation plan to the Planning Department.
- ~~10-11.~~ No retail sale of quarrying materials is allowed from the project site. Removal of the materials shall be limited to licensed commercial haulers or by licensed contractors.
- ~~11-12.~~ Should any remains of historic sites, such as rock walls, terraces, platforms, marine shell concentrations or human burials, be encountered, work in the immediate area shall cease and the ~~DLNR-HPD~~ SHPD shall be immediately notified. Subsequent work shall proceed upon an archaeological clearance from the ~~DLNR-SHPD~~ SHPD when it finds that sufficient mitigative measures have been taken.
- ~~12-13.~~ Within ninety (90) days after termination of the quarry operation or abandonment of the project site, appropriate documentation which demonstrates compliance with the Site Restoration and Revegetation Plan shall be submitted to the Planning Department.
- ~~13-14.~~ Comply with all applicable laws, rules, regulations and requirements of other affected agencies.
- ~~14-15.~~ An extension of time for the performance of conditions within the permit may be granted by the Planning Director upon the following circumstances:
 - A. The non-performance is the result of conditions that could not have been foreseen or are beyond the control of the applicant, successors or assigns, and that are not the result of their fault or negligence.
 - B. Granting of the time extension would not be contrary to the General Plan or Zoning Code.
 - C. Granting of the time extension would not be contrary to the original reasons for the granting of the permit.

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

16. The applicant will submit annual status reports to the Planning Department and the Land Use Commission.

~~15-17.~~ Should any of these conditions not be met or substantially complied with in a timely manner, the Planning Director may initiate procedures to revoke this permit.

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Petition of

JAS. W. GLOVER, LTD.

For a Special Permit for Quarrying and Other
Support Services and Accessory Uses on 85.34
Acres of a 140.368-Acre Parcel Owned by
Kamehameha Schools and Located Within the
State Agricultural District, East of the Hawai'i
National Guard Site and Hilo International
Airport, and 3,000 Feet West of the County of
Hawaii Sewer Treatment Plant;
TMK (3) 2-1-013: 004 (por.).

SP14-404

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing document was served on this day, by
Certified Mail, upon the following at the addresses shown:

Myles Miyasato, Chairman
Windward Planning Commission
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawaii 96720

Duane Kanuha
Planning Director
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawaii 96720

William V. Brilhante, Jr.
Office of Corporation Counsel
County of Hawaii
333 Kilauea Avenue, Floor 2
Hilo, Hawaii 96720

Attorney for Planning Director

DATED: Kailua-Kona, Hawaii, November 14, 2014.

CADES SCHUTTE
A Limited Liability Law Partnership

A handwritten signature in black ink, appearing to read 'Roy A. Vitousek III', is written over a horizontal line.

ROY A. VITOUSEK III
Attorneys for Petitioner
JAS. W. GLOVER, LTD.

NEIL ASHCROMBIE
GOVERNOR

PLANNING DEPARTMENT

2015 FEB 12 AM 9:17



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MAJOR GENERAL
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STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4485

November 18, 2014

State of Hawaii Land Use Commission
Department of Business, Economic Development & Tourism
Daniel E. Orodener, Executive Officer
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Subject: SP14-404 JAS. W. GLOVER (Hawaii)

Dear Mr. Orodener:

Thank you for the November 20, 2014 notice for the upcoming Land Use Commission Meeting. The Hawaii Army National Guard (HIARNG) would like to provide comments on docket SP14-404 JAS. W. GLOVER.

The HIARNG notes that the proposed action will consider a request for a Special Permit for quarry and other support services and accessory uses on the remaining 85 acres that are not currently covered under the existing special permit.

The HIARNG, Environmental Branch indicates that the docket indicates an older archeological report. However, the HIARNG would like to note that there is a newer report that could be referenced: Final Archeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR), Hawaii Army National Guard Facility, Waiakea Ahupuaa, South Hilo District, Island of Hawaii, TMKs (3) 2-1-012:003, 131 and (3) 2-1-013:010. The new report indicates there are three new historic properties (SIHP# 50-10-35-30038, SIHP# 50-10-35-30009, SIHP# 50-10-35-30008) located within 300 meters of the HIARNG/Quarry property line. New historic property site SIHP# 50-10-35-30038 and a previously identified historic property site SIHP# 50-10-35-21658 are both located within 100 meters of the HIARNG/Quarry property line. The HIARNG would like to ensure that adequate measures (i.e. buffer zone, property boundaries are identified) will be taken to protect the newly identified sites.

In addition, the Environmental Branch has Compliance questions/comments that are addressed in the enclosure. Providing this information will help our office comply with existing regulatory rules and regulations for the KMR property.

097012

Planning Dept.
Exhibit 4

HIARNG ENVIRONMENTAL COMPLIANCE QUESTIONS/COMMENTS

PROJECT NAME: SP14-404 JAS. W. GLOVER Request for Special Permit for quarry and other support services and accessory uses on a 140 acre parcel at Honohononui, Waiakea, South Hilo, island of Hawaii, Tax Map Key No.s: (3) 2-1-013:004 (por.)	
PROJECT NUMBER:	SUBMISSION DATE: 17 NOV 2014
REVIEWER: HIARNG ENV-Compliance	DATE REVIEWED:
	DATE RECEIVED:

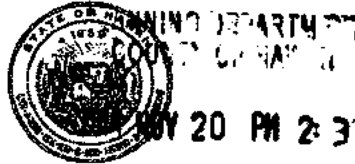
	COMMENTS
X	Request that the permit applicant provide a Hazardous Material (HM) Inventory of chemical products, including petroleum, oil and lubricants (POLs), to be used/stored on the project site. Inventory information requested includes the product name and manufacturer ID number, container size, amount used, and maximum number of containers to be stored on site at any given day. Also request Safety Data Sheets (SDSs) for the inventoried HM.
X	Request that the permit applicant provide HIARNG an estimate of the maximum amount of hazardous waste, universal waste, and other regulated waste (e.g., asbestos, lead paint chips, fluorescent lamps, PCB ballasts) expected to be generated per month, and the total amount anticipated will be stored on-site at any given time. Also request names of disposal/recycling facilities and transporters to be used for hazardous waste, including their EPA ID numbers; disposal/recycling facilities and transporters used. Recommend that all waste is stored in a secured area until disposal, with signage indicating contact information.
X	Request that the permit applicant provide HIARNG a copy of any site specific Spill Prevention, Control and Countermeasure (SPCC) plan pursuant to 40 CFR 112 (Oil Pollution Prevention).
X	Request that the permit applicant provide HIARNG copies of any site specific environmental permits, including, but not limited to any NPDES permits, and associated documents.
X	Provide HIARNG information on permit applicant constructed NPDES/stormwater best management practices (BMP's) implemented to prevent contaminated stormwater from leaving the site.
X	Request that the permit applicant provide HIARNG the name and phone number for the applicant's emergency POC. Request that the applicant also report and provide information on all POL and HM spills and releases at the project site, to HIARNG.

NEIL ABERCROMBIE
Governor

SHAN TSUTSUI
Lieutenant Governor

RICHARD LIM
Director

MARY ALICE EVANS
Deputy Director



LAND USE COMMISSION
Department of Business, Economic Development & Tourism
State of Hawai'i

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November 19, 2014

State of Hawai'i, Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawai'i 96816-4495

Planning Dept.
Exhibit 5

Dear Lieutenant Colonel Stubbart:

Thank you for your letter dated November 18, 2014, providing comments on the consideration by the State Land Use Commission's Special Permit SP14-404 application by Jas W. Glover, Ltd. for quarry and other support services on approximately 85 acres on lands adjacent to the Hawai'i Army National Guard (HIARNG) Keaukaha Military Reservation (KMR).

The HIARNG, Environmental Branch references a Final Archaeological Inventory Survey and Monitoring Plan, Phase I that contains newer information on archaeological resources in the vicinity of the proposed Special Permit parcel. In addition, you have indicated that topographic/boundary surveys done for you have resulted in a property line discrepancy between KMR and the property currently leased to Jas W. Glover, Ltd.

We would like to request that you send copies of the Final Archaeological survey and monitoring plan for KMR and any boundary surveys to: the Hawai'i County Windward Planning Commission, Mr. Randy Vitousek (Jas Glover, Ltd. representative), the State Office of Planning, and the Land Use Commission. In addition, could you please send a copy of your November 18, 2014 letter to those same parties, so that they can address the additional information you requested be provided to HIARNG in your attachment.

We will keep you informed as to any action taken by the Commission at its hearing on the matter scheduled for November 20, 2014. Should you have any questions or additional comments, please contact Scott A.K. Derrickson, AICP of our office at 587-3822.

095507

Sincerely,



Daniel Orodener
Executive Officer

Cc: Randy Vitousek, Esq. – Cades Schutte
Duane Kanuha – Hawai'i County Planning
Myles Miyasato – Windward Planning Commission, Chairman
Leo Asuncion, State Office of Planning, Acting Director

DAVID Y. IGE
GOVERNOR



PLANNING DEPARTMENT
COUNTY OF HAWAII

DARRYL D. M. WONG
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2014 DEC 11 PM 2:25

JOSEPH K. KIM
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STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

December 5, 2014

State of Hawaii Land Use Commission
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Daniel E. Orodener, Executive Officer

Subject: SP14-404 JAS. W. GLOVER (Hawaii)

Dear Mr. Orodener:

The Hawaii Army National Guard (HIARNG) is in receipt of the November 19, 2014 letter regarding the Land Use Commission's (LUC) comments on docket SP14-404 JAS. W. GLOVER.

The HIARNG notes the LUC has requested the Final Archeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR), Hawaii Army National Guard Facility, Waiakea Ahupuaa, South Hilo District, Island of Hawaii, TMKs (3) 2-1-012:003, 131 and (3) 2-1-013:010, and any boundary surveys to the LUC, Hawaii County Windward Planning Commission, Mr. Randy Vitousek, and the State Office of Planning. The requested report is enclosed herewith.

HIARNG notes regarding the point of contact for further questions regarding the boundary issue is Mr. Lloyd Maki, HIARNG Engineering Office at (808) 733-8441. If you have any further questions regarding our comments, please contact Ms. Dawn Hegger, Ecosystem Specialist (NEPA) at (808) 672-1284.

Sincerely,

A handwritten signature in black ink, appearing to read "Marjean R. Stubbert".

Marjean R. Stubbert
Lieutenant Colonel, Hawaii Army National Guard
Construction and Facilities Management Office

Enclosure

cc:
Mr. Randy Vitousek, Attorney
Hawaii County Windward Planning Commission
State Office of Planning

Planning Dept.
Exhibit 6



Final

**Archaeological Inventory Survey and Monitoring Plan,
Phase I, Keaukaha Military Reservation (KMR)**

Hawai'i Army National Guard Facility

Waiākea Ahupua'a, South Hilo District, Island of Hawai'i

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

Prepared for
Hawai'i Army National Guard, ENV Office

Prepared by
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Cultural Surveys Hawai'i, Inc.
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Management Summary

Reference	Archaeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR) Hawai'i Army National Guard Facility Waiākea Ahupua'a, South Hilo District, Island of Hawai'i, TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010 (Wheeler et al. 2014)
Date	July 2014
Project Number (s)	Cultural Surveys Hawai'i (CSH) Job Code: WAIAKEA 10
Investigation Permit Number	The fieldwork for this project was carried out under archaeological permit number 13-06 issued by the State of Hawai'i Department of Land and Natural Resources/ State Historic Preservation Division (SHPD) per Hawai'i Administrative Rules (HAR) § 13-282
Project Location	The Keaukaha Military Reservation (KMR) is located in the town of Hilo on the windward side of Hawai'i Island. It is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast, and undeveloped forest land on the southwest.
Land Jurisdiction	The Hawai'i Army National Guard (HIARNG)
Agencies	The State of Hawai'i Department of Land and Natural Resources/ State Historic Preservation Division (SHPD)
Project Description and Related Ground Disturbance	This archaeological study supports planning for potential long-range improvements at the HIARNG KMR Facility. No specific improvements are known at this time.
Area of Potential Effect (APE) and Project Acreage	The KMR encompasses TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010, for a total area of 504 acres. However, the project or survey area encompassed vegetated portions of the KMR (not currently maintained). Therefore the project area comprises a 405.3-acre portion of the overall 509.17-acre property (refer to Figure 5), and excludes TMK: [3] 2-1-012:131 in its entirety
Document Purpose	Under Section 106 of the National Historic Preservation Act (NHPA), Federal agencies must consider the impact of a project on the historic resource(s). Section 110 of the NHPA requires Federal agencies to provide for the identification, evaluation and protection of the agency's historic properties. The proposed project is being performed under Section 106 of the NHPA in regard to new construction projects. The purpose of this Phase I archaeological inventory survey (AIS) was to identify and document any surface archaeological features within the project area, evaluate the potential for subsurface historic properties, and assess the potential for impact to such sites. The study was also made to identify any sensitive areas that may require further investigation or mitigation before the project proceeds. This document is intended to facilitate the project's

	planning and support the project's historic preservation review compliance. Based on the findings of this Phase I study, cultural resource management recommendations are presented.
Fieldwork Effort	The fieldwork component of the AIS was accomplished from 19 August 2013 to 24 September 2013 by CSH archaeologists Andrew Soltz, B.A., David Doig, B.A., Doug Inglis, B.A., Johnny Dudoit, B.A., Nigel Kingsbury, B.A., and Olivier Bautista, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required approximately 76 person-days to complete.
Number of Historic Properties Identified	The pedestrian inspection identified 11 historic properties, of which five were previously identified and six are newly identified.
Historic Properties Recommended Eligible to the National Register of Historic Places and Hawai'i Register of Historic Places	<p>With the exception of SIHP # 50-10-35-18869, all of the historic properties documented during the inventory survey fieldwork are recommended eligible for the National Register of Historic Places (NRHP) and the Hawai'i Register of Historic Places (HRHP).</p> <p>SIHP # 50-10-35-21657 is a C-shaped enclosure identified by Hammatt and Bush (2000) likely associated with military occupation.</p> <p>SIHP # 50-10-35-21658 is a complex of five stacked stone ahu or markers identified by Hammatt and Bush (2000) and associated with the Puna Trail.</p> <p>SIHP # 50-10-35-21771 is a complex identified by Tolleson and Godby (2001) associated with late nineteenth century construction along the Puna Trail. In the current AIS, CSH documented eight additional features at this site.</p> <p>SIHP # 50-10-35-23273 is a trail exhibiting historic modification identified by Escott and Tolleson (2002). Two associated agricultural features were not relocated.</p> <p>SIHP # 50-10-35-30008 is a pre-Contact to historic era lava tube shelter.</p> <p>SIHP # 50-10-35-30009 is a pre-Contact to historic era modified outcrop complex used for temporary habitation.</p> <p>SIHP # 50-10-35-30010 is a complex with five features associated with late nineteenth century construction along the Puna Trail.</p> <p>SIHP # 50-10-35-30011 is a late nineteenth century complex of two features of indeterminate function.</p>

	<p>SIHP # 50-10-35-30012 is a trail exhibiting historic modification.</p> <p>SIHP # 50-10-35-30038 is a trail interpreted as an intact segment of the historic Puna Trail alignment. Because the previous documentation of the Puna Trail at the KMR (SIHP # 50-10-35-18869) has indicated the site as a modern jeep road, this newly-identified segment has been assigned as a separate historic property.</p>
Historic Properties Recommended Ineligible to the Hawai'i Register of Historic Places	SIHP # 50-10-35-18869 is the Puna Trail within Hilo District. Hammatt and Bush (2000) found the portion of this site within KMR to be no longer significant due to modern impacts (lack of integrity); these impacts were confirmed by the present investigation.
Effect Recommendation	This investigation was undertaken for planning purposes, and does not address a specific project. For this reason, a project-specific effect recommendation cannot be made. However, future developments may potentially impact known or potential historic properties within the KMR. The recommended mitigation measures are intended to reduce potential adverse effect on significant historic properties during any future development projects.
Mitigation Recommendation	<p>No further historic preservation work is recommended for seven of the eleven total historic properties identified within the project area (SIHP #s -18869, -21657, -23273, -30008, -30009, -30011, and -30012). Sufficient information regarding the location, function, age, and construction methods of these historic properties has been generated by the current archaeological inventory survey investigation to mitigate any adverse effect caused by proposed development activities. In the case of SIHP # -18869, no further work is recommended also because it is assessed as no longer retaining integrity.</p> <p>Three historic properties are recommended for preservation through avoidance, given their unique nature and/or potential for future study. These are the newly identified historic segment of the Puna Trail (SIHP # -30038), thought to have been completely obliterated; SIHP # -21658, which was recommended for preservation through avoidance by Hammatt and Bush (2000); and SIHP # -21771 which is already largely protected within a modern chain link fence. At this latter site, it is recommended the fence line be modified to contain the newly identified associated features present to the north.</p> <p>Two historic properties are recommended for Phase II subsurface investigation, SIHP #s -21771 and -30010. The purpose of this testing is to gain a better understanding of the age and/or function of the selected sites, and to investigate the possibility of the presence of human burial deposits.</p> <p>Due to the potential for additional surface and subsurface historic</p>

	<p>properties within the undeveloped areas at the KMR, including human burials, it is recommended initial ground disturbance within these area be attended by an archaeological monitoring program. The monitoring program will begin with the production of an archaeological monitoring plan for the review and acceptance of SHPD prior to the beginning of construction (Appendix A). Field monitoring should be carried out in accordance with the plan. An archaeological monitoring report should be submitted for review and acceptance by SHPD following the completion of all monitoring activities related to project development.</p>
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Section 1 Introduction

1.1 Project Background

At the request of the Hawai'i Army National Guard, ENV Office, Cultural Surveys Hawai'i, Inc. (CSH) conducted an archaeological inventory survey (AIS), Phase I, Keaukaha Military Reservation (KMR) Hawai'i Army National Guard Facility, Waiākea Ahupua'a, South Hilo District, Hawai'i Island, TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010. The KMR is located in the town of Hilo on the windward side of Hawai'i Island. It is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast and undeveloped forest land on the southwest. The KMR is depicted on a U.S. Geological Survey (USGS) 7.5-Minute Topographic Map, a Hawai'i tax map plat, and an aerial photograph (Figure 1 through Figure 4).

The KMR encompasses a total area of 509.17 acres. However, the project or survey area encompassed vegetated portions of the KMR (not currently maintained). Therefore the project area comprises a 405.3-acre portion of the overall 509.17-acre property (Figure 5 and Figure 6), and excludes TMK: [3] 2-1-012:131 in its entirety.

The current Phase I study was completed for use in future construction projects at the KMR Facility. The purpose of the Phase I AIS is to identify any surface archaeological features within the project area, evaluate the potential for subsurface properties, and assess the potential for impact to such sites. This study includes an archaeological monitoring plan (AMP) (Appendix A) that will address sensitive areas for future projects planned at KMR. This document is intended to facilitate future project planning efforts and support historic preservation review compliance. This Phase I AIS report was prepared per the requirements of Hawai'i Administrative Rules (HAR) § 13-276-5 and is intended for review and acceptance by the SHPD.

1.2 Scope of Work

The following scope of work satisfies the State of Hawai'i requirements for archaeological inventory surveys (HAR § 13-276 and § 13-275/284):

1. Historical and previous archaeological background research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological investigations. This research will focus on the specific project area's past land use, with general background on the pre-Contact and historic settlement patterns of the *ahupua'a* (land division usually extending from the uplands to the sea) and district. This background information will be used to compile a predictive model for the types and locations of historic properties that could be expected within the project area.

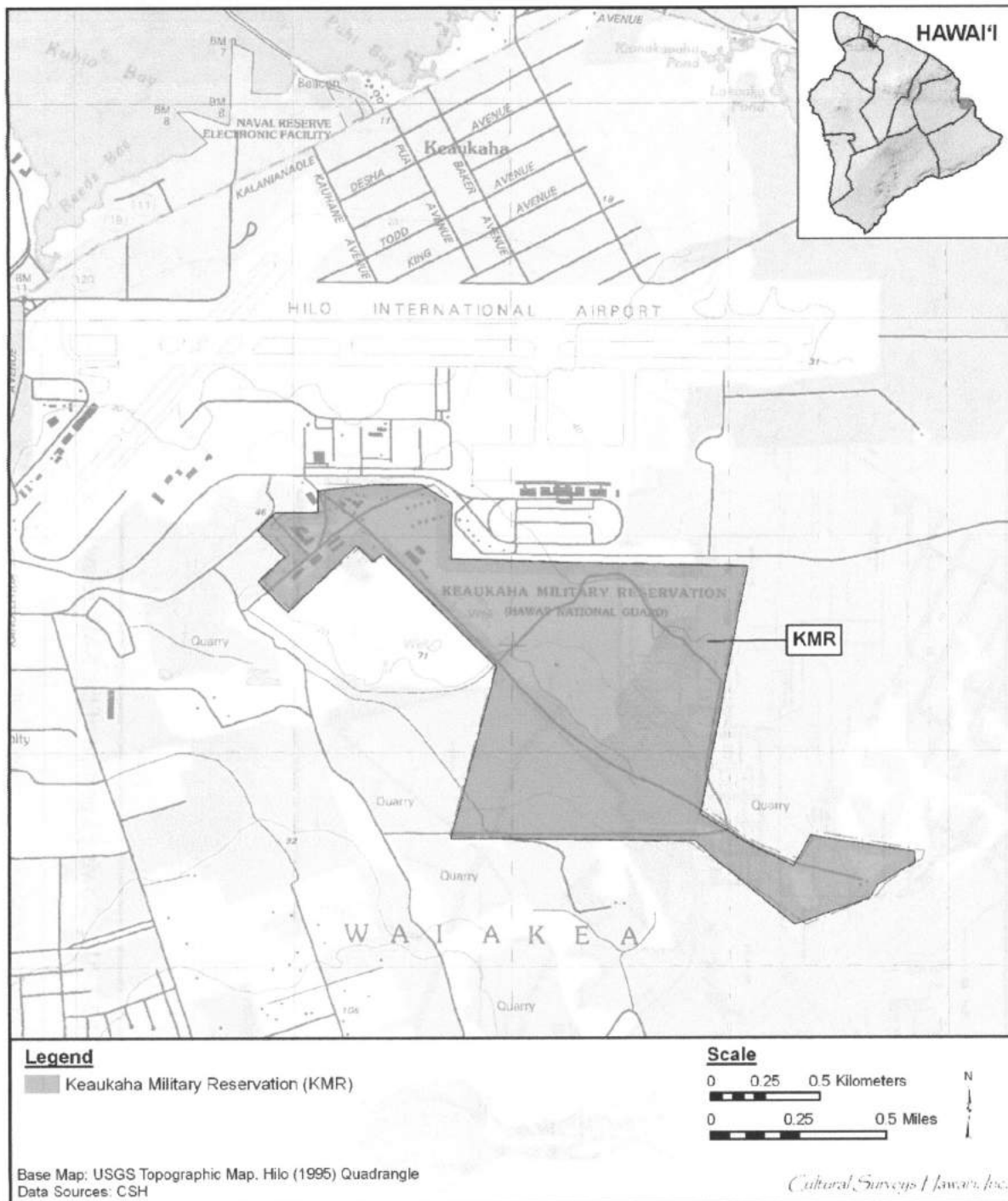


Figure 1. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing the location of the Keaukaha Military Reservation (KMR)

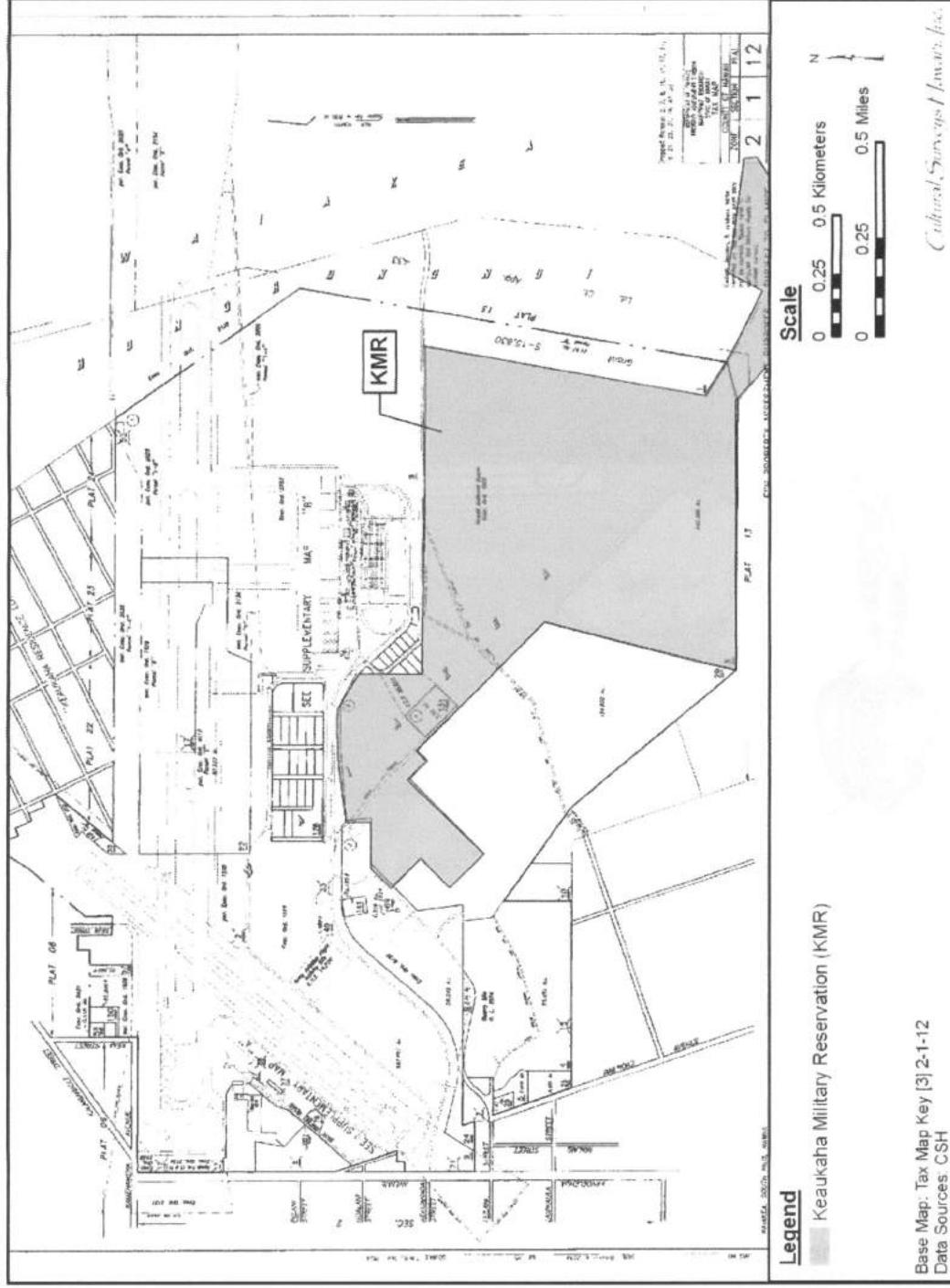


Figure 2. Tax Map Key (TMK): [3] 2-1-012, showing a portion of the KMR (Hawai'i Tax Map Key Service 2010)

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

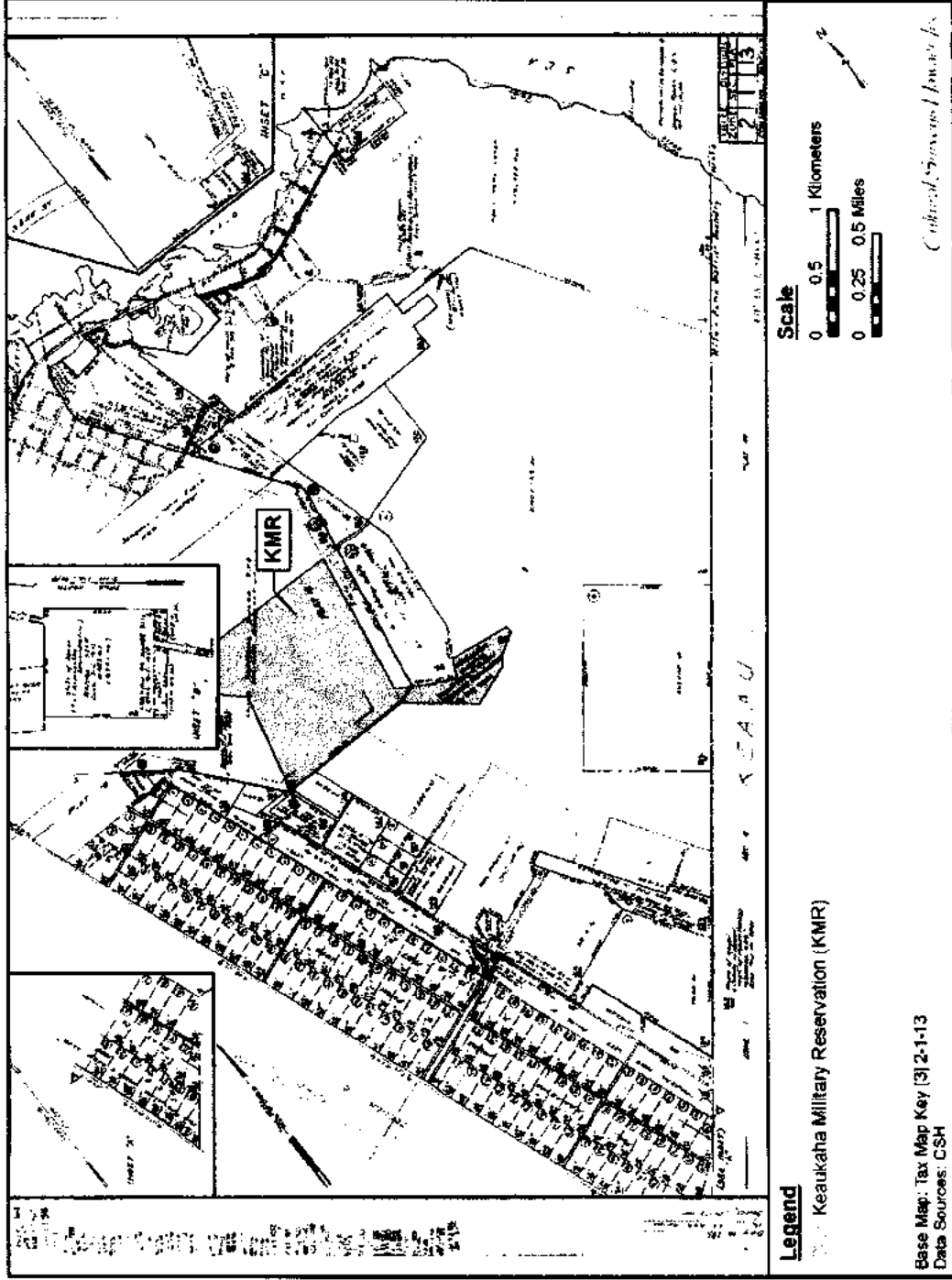


Figure 3. TMK: [3] 2-1-013, showing a portion of the KMR (Hawai'i Tax Map Key Service 2010)

AJS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

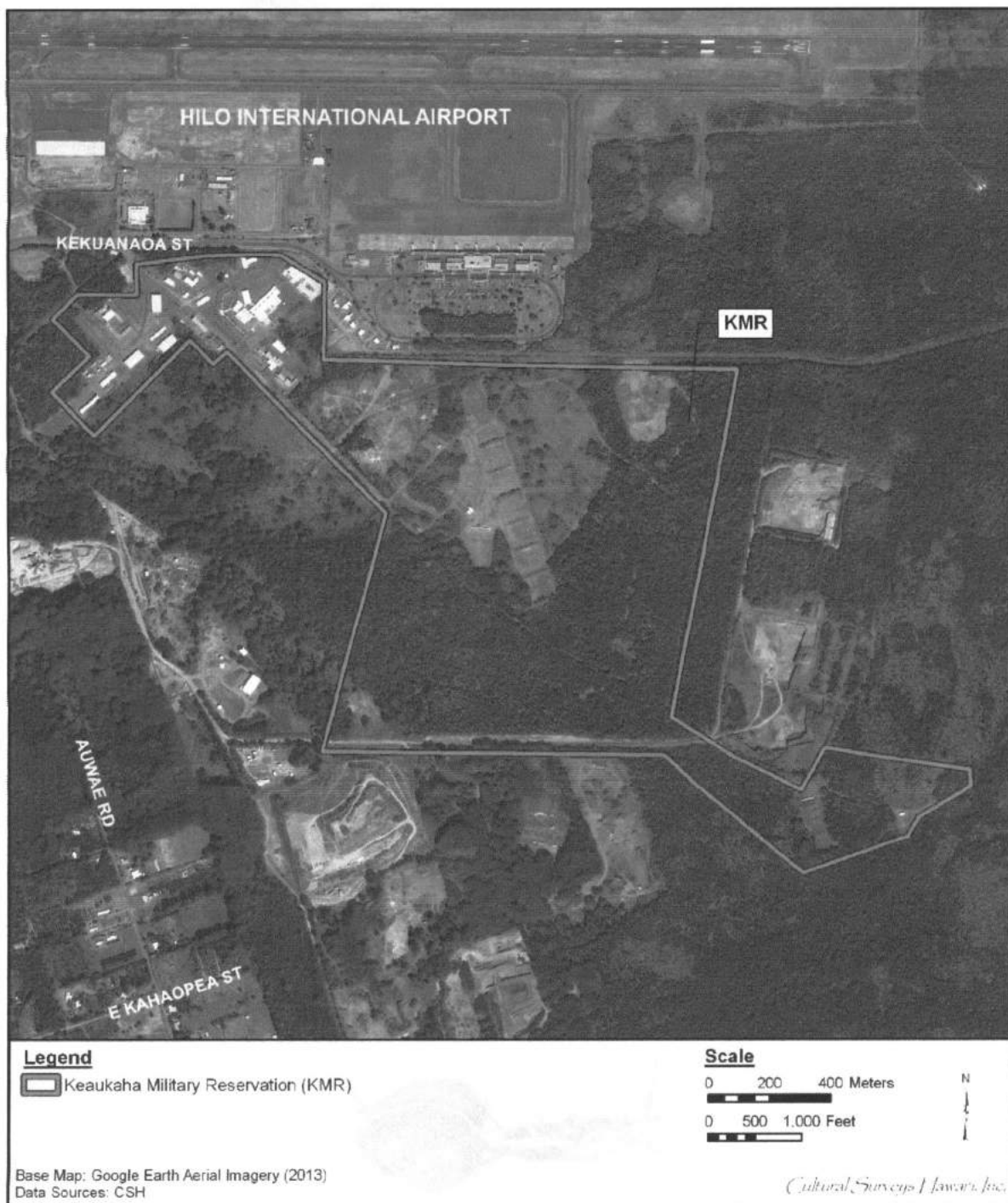


Figure 4. Aerial photograph (Google Earth 2013) showing the location of the KMR

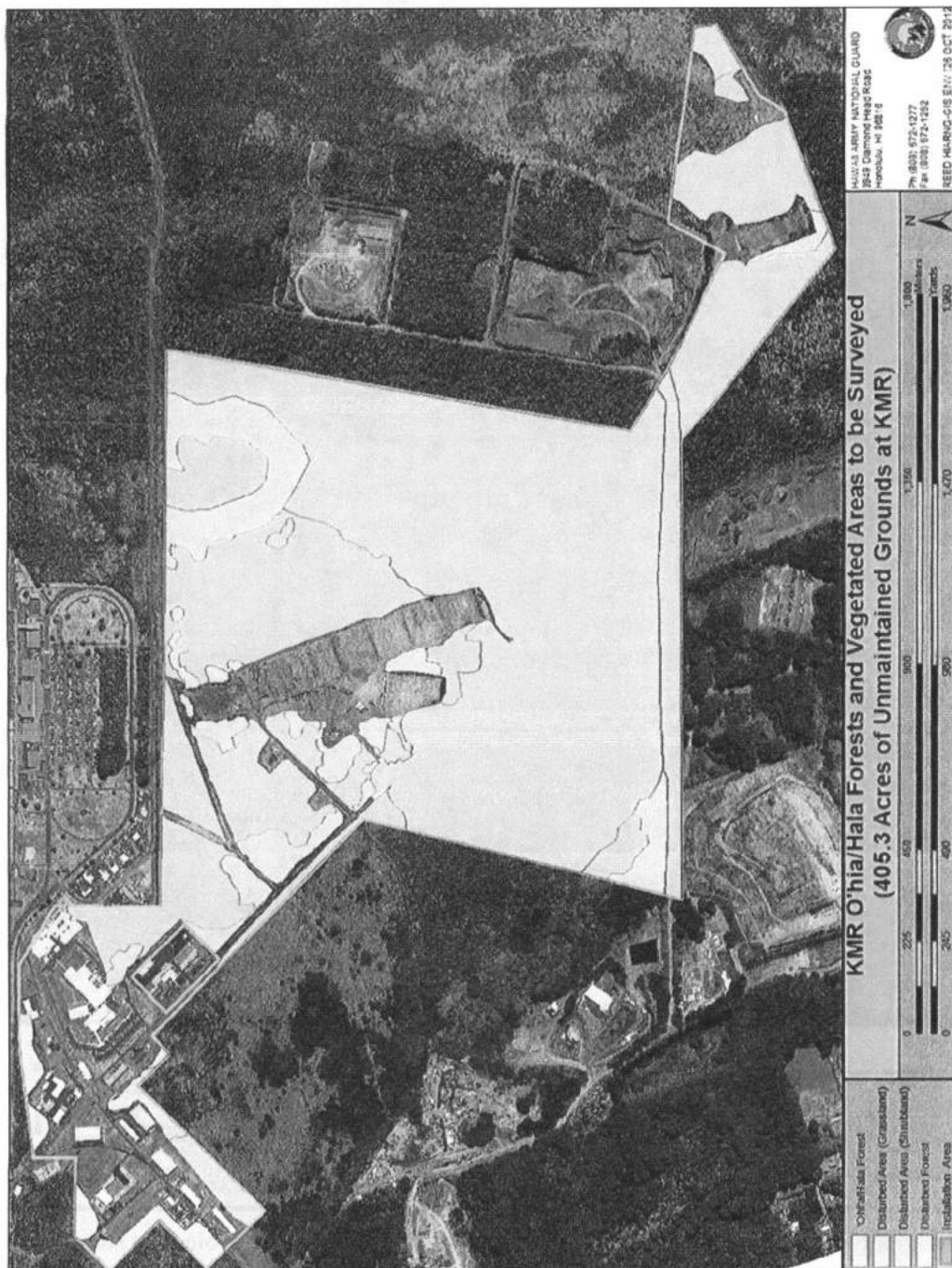


Figure 5. Map of KMR (courtesy of client) showing the unmaintained areas (in colored shading, total 405.3 acres) to be surveyed under the Phase I AIS

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

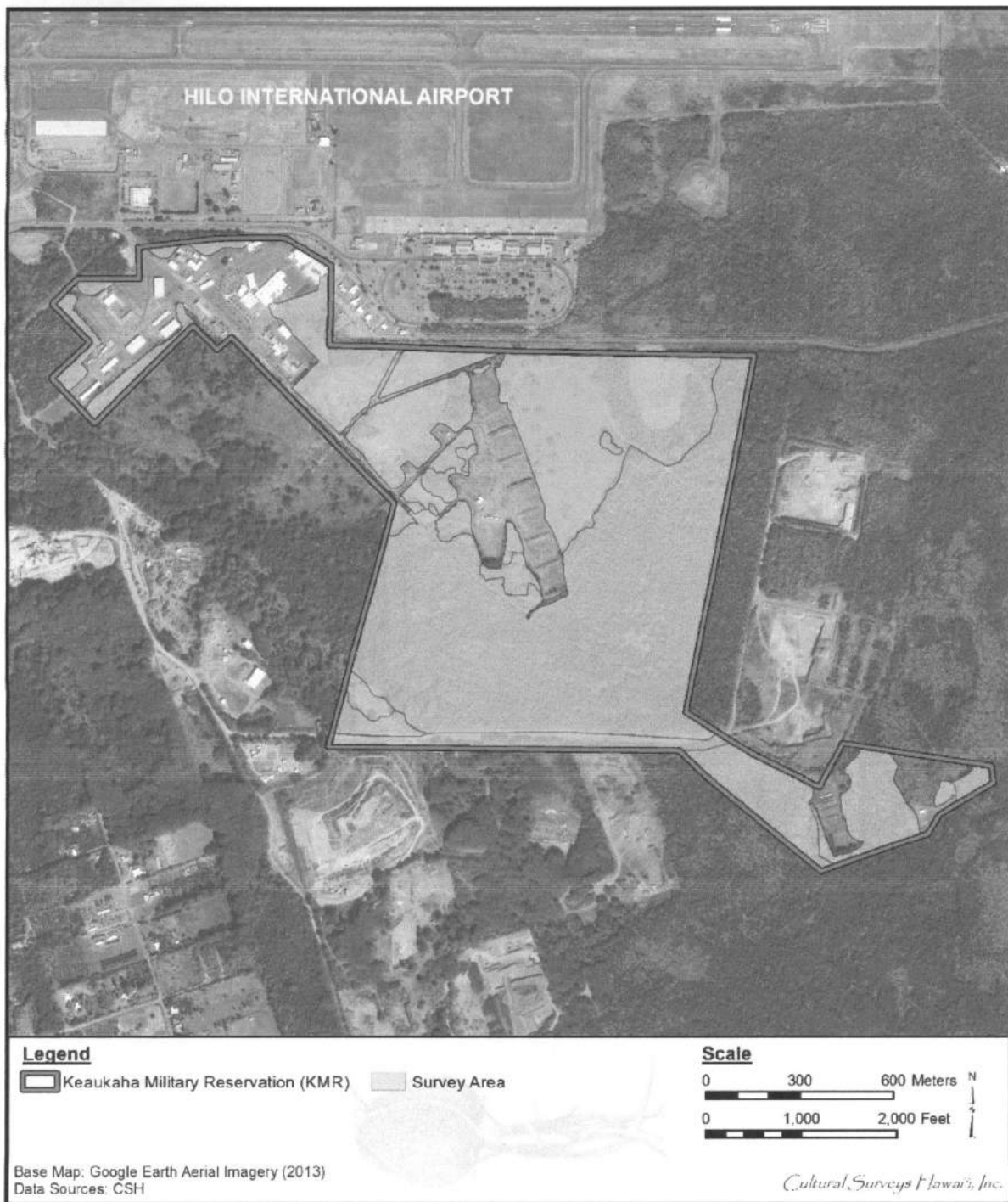


Figure 6. Aerial photograph (Google Earth 2013) showing the extent of the project or survey area (shaded in pink) within the KMR

2. A complete (100%) systematic pedestrian inspection of the project area to identify any potential surface historic properties. Surface historic properties will be recorded with an evaluation of age, function, interrelationships and significance. Documentation will be provided using warranted, limited controlled excavation of select sites and/or features.
3. Based on the project area's environment and the results of background research, subsurface testing with a combination of hand and backhoe excavation may be used to identify and document subsurface historic properties that would not be located by surface pedestrian inspection. Appropriate samples from these excavations will be analyzed for cultural and chronological information. All subsurface historic properties identified will be documented to the extent possible, including geographic extent, content, function/derivation, age, interrelationships and significance.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past use, and the function and age of the historic properties documented within the project area.
5. As appropriate, laboratory work to process and gather relevant environmental and/or archaeological information from collected samples.
6. Preparation of an inventory survey report, which will include the following:
 - a) A project description;
 - b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties;
 - c) Historical and archaeological background sections summarizing pre-historic and historic land use of the project area and its vicinity;
 - d) Descriptions of all historic properties, including selected photographs, scale drawings and discussions of age, function, laboratory results and significance, per the requirements of HAR § 13-276. Each historic property will be assigned a Hawai'i State Inventory of Historic Properties (SIHP) number;
 - e) If appropriate, a section concerning cultural consultations (per the requirements of HAR § 13-276-5[g] and HAR § 13-275/284-8[a][2]);
 - f) A summary of historic property categories, integrity and significance based upon the Hawai'i Register of Historic Places criteria;
 - g) A project effect recommendation;
 - h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible for the Hawai'i Register of Historic Places.

1.3 Environmental Setting

1.3.1 Natural Environment

The study area, located within the district of South Hilo on the windward coast of Hawai'i Island, on the lower eastern slope of Mauna Loa, comprises 405.3 acres in the *ahupua'a* of Waiākea. The study area is near Hilo Town in the Hawai'i National Guard Keaukaha Military Reservation (KMR) and is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast and dense forest on the southwest (see Figure 5).

Elevations within the study area range from roughly 40 ft to 80 ft above mean sea level (amsl). Rainfall in the *ahupua'a* of Waiākea below to 5,000 ft elevation averages 150–200 inches per year (Kelley et al. 1981).

Lava flows thickly covered by vegetation dominate the terrain. The study area is comprised of three land or soil types classify the lands in the study area (Sato et al. 1973) (Figure 7). The vast majority of the study area comprises Papai extremely stony muck, 3 to 25 percent slopes (rPAE). Small pockets of Keaukaha extremely rock muck, 6 to 20 percent slopes (rKFD) and Lava flows, Pāhoehoe (rLW) are present in the southeastern portion of the study area (see Figure 7). Natural terrain varies from level *pāhoehoe* (smooth, unbroken type of lava) to broken undulating '*a'a*' (rough) lava. Within the forested areas mobility and ground surface visibility is typically poor.

Vegetation is dense due to vast amounts of rain on the windward side of Hawai'i Island and consists mainly of Shoebutton *Ardisia* (*Ardisia elliptica*), Palm Fern (*Blechnum appendiculatum*), Hapu'u (*Cibotium* spp.), Uluhe (*Dicranopteris linearis*), Lama (*Diospyros sandwicensis*), 'ie 'ie (*Freycinetia arborea*), Bing-a-bing (*Macaranga mappia*), Melastoma spp., Melochia (*Melochia umbellata*), 'Ōhi'a (*Metrosideros polymorpha*), Kōlea (*Myrsine lessertiana*), Hala (*Pandanus tectorius*), Strawberry Guava (*Psidium cattleianum*) and Kopiko (*Psychotria hawaiiensis*). Other non-forested sections of KMR consist mainly of various introduced grasses, wild orchids, and maintained lawn areas around buildings.

1.3.2 Built Environment

Between one-third and one-half of the study area has been graded to level lawn, paving or building areas related to military facilities (see Figure 5). Figure 8 indicates the training ranges and other maintained military facilities within KMR, as well as unmaintained areas (including Area A, B, and C) which overlap (in part or whole) undisturbed forest. The undisturbed forest areas at KMR, comprising a mixture of native and introduced species, are shown on Figure 9 (see also Figure 5).

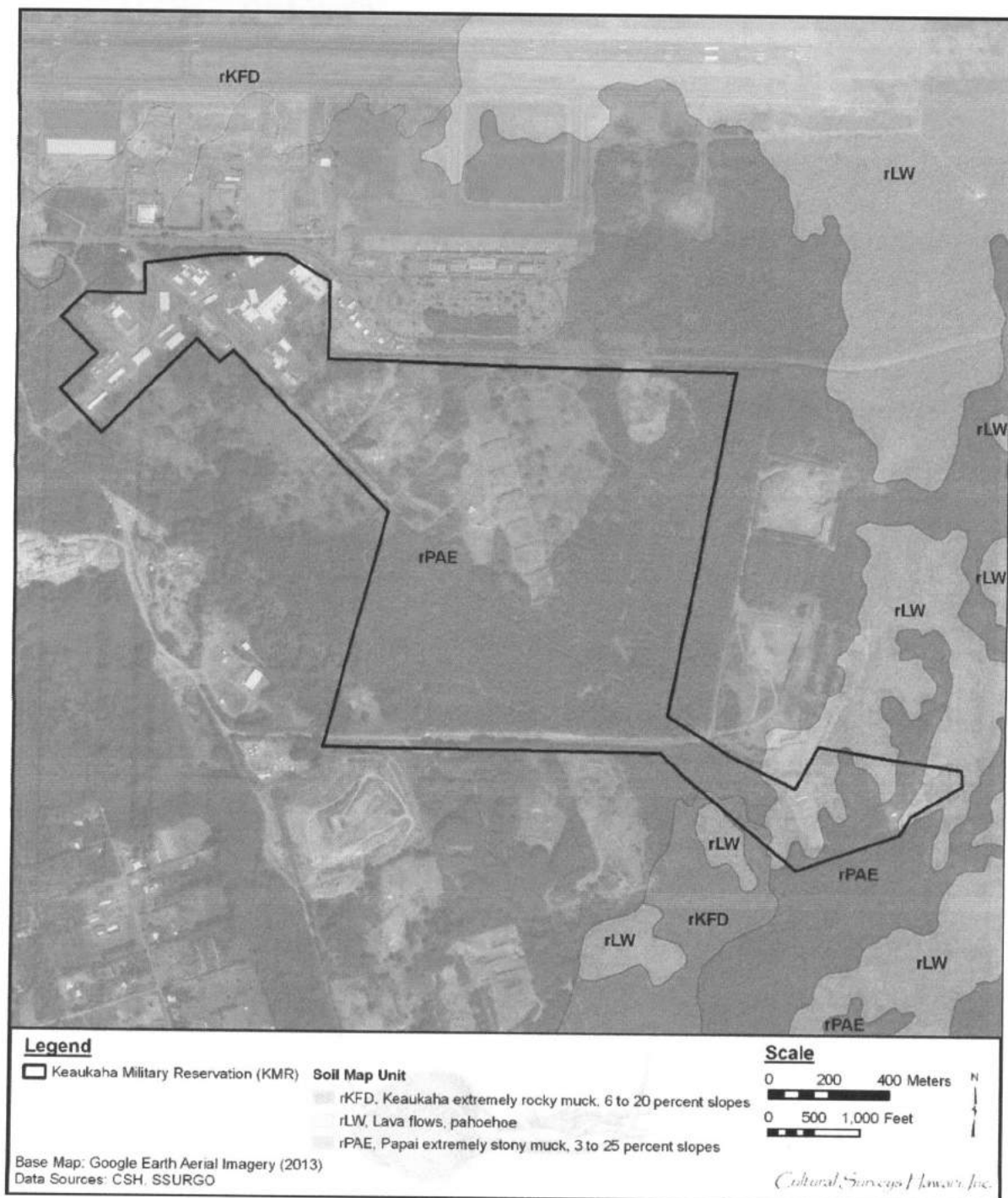


Figure 7. Aerial photograph (Google Earth 2013) overlain with soil survey data (Sato et al. 1973), showing the land and sediment types within the proposed project area



Figure 8. KMR map showing the locations of various buildings, ranges and other named areas within the KMR boundary (courtesy of client)

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiakea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

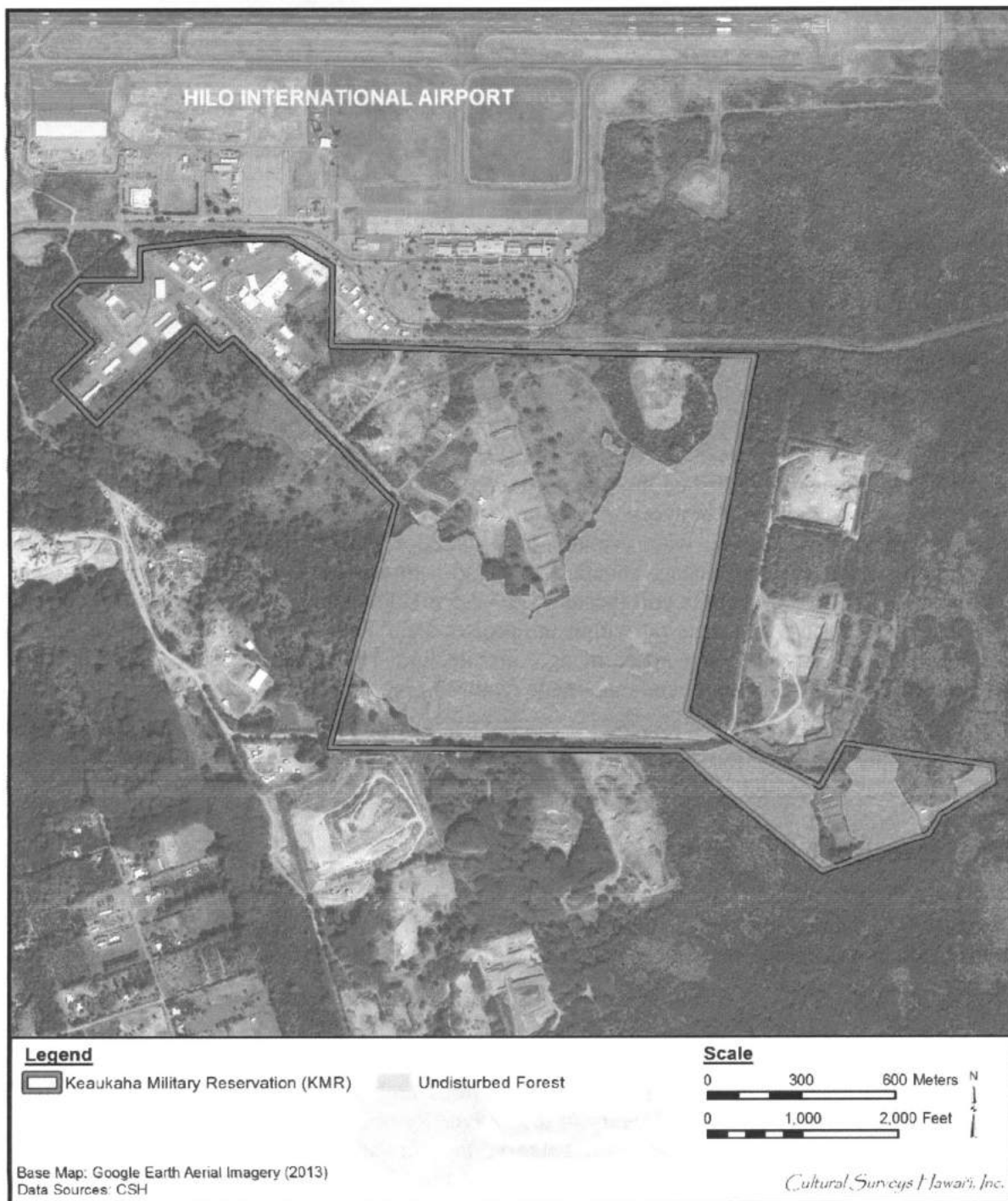


Figure 9. Aerial photograph (Google Earth 2013) showing the extent of the undisturbed forest areas within KMR (shaded in green, as indicated by the client Map of KMR; see Figure 5)

Section 2 Methods

2.1 Field Methods

The fieldwork component of the AIS investigation was carried out under archaeological research permit number 13-06, issued by the State of Hawai'i Department of Land and Natural Resources/State Historic Preservation Division (SHPD), per HAR § 13-13-282. The fieldwork component of the AIS was conducted from 19 August 2013 through 24 September 2013 by CSH archaeologists Andrew Soltz, B.A., David Doig, B.A., Doug Inglis, B.A., Johnny Dudoit, B.A., Nigel Kingsbury, B.A., and Olivier Bautista, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required approximately 76 person-days to complete.

A complete ground survey of the project area was undertaken for the purpose of historic property identification and documentation. While a 100% survey was attempted, ground visibility was very poor throughout much of the project area given extremely dense vegetation. The ground survey of the project area was accomplished through systematic pedestrian sweeps. The interval between the archaeologists was generally between 5 to 10 m. All historic properties were documented through detailed written descriptions, with evaluation of function, interrelationships, and significance; photographs; scale drawings using standard tape-and-compass mapping procedures; and located with a GARMIN GPSMAP60Cx unit (accuracy +/- 2-5 m). The areal designations shown on Figure 8 were used to discuss site location within the project area. The determination of site boundaries was based on factors including apparent age, architectural style, and the spatial and functional interrelationships of both natural and man-made features.

All of the site documentation prepared in the field is included in Appendices B through D of this report. As this investigation consisted of a surface survey only, no subsurface testing (i.e., excavation) was conducted.

2.2 Laboratory Methods

A small number of artifacts were collected from the surface to be analyzed at the CSH Hawai'i Island Office laboratory. All collected materials were analyzed using current and standard archaeological laboratory techniques. Historic artifacts were identified using standard reference materials and resources.

2.3 Document Review

Background research included a review of previous archaeological studies on file at SHPD; review of documents at Hamilton Library of the University of Hawai'i at Mānoa, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai'i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele (portion, division, section, land division of 1848) records were examined from the Waihona 'Aina database (Waihona 'Aina 2000).

2.4 Consultation

Consultation was not conducted as part of the present investigation. The reasoning behind this is two-fold. First, the Phase I survey does not address a specific project being undertaken at this time. As specific developments are proposed by the HIARNG, the DLNR/SHPD and other entities have been and will continue to be consulted. Second, no historic properties have been previously or currently identified within the project area having an important value to the native Hawaiian people or to another ethnic group (i.e., assessed as significant under Criterion E).

Section 3 Background Research

3.1 Traditional Background

Waiākea literally means broad waters (Pukui et al. 1974:219), but is also a type of taro (*kalo*) grown in Kona, Hawai'i (*lehua ke'o ke'o*, a variety of taro called *waiākea*) (Pukui and Elbert 1986:377). Waiākea, with its rich natural resources of forests and the sea, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. According to many legends, Waiākea was also associated with Hawaiian royalty (*ali'i*). The study parcel is located within a portion of Waiākea that lies between the area of Keaukaha at the coast to the north, and the lower reaches of the forests of Pana'ewa to the south.

3.1.1 The Epic Tale of Hi'iakaikapoliopole

Waiākea and Pana'ewa are given significant attention in "The Epic Tale of Hi'iakaikapoliopole," which tells of the journey of Hi'iakaikapoliopole (or Hi'iaka), the youngest sister of Pele, around the island of Hawai'i. Pana'ewa was the legendary home of the *mo'o*, or lizard, vanquished by Hi'iaka. The tale is given its most comprehensive treatment in M. Puakea Nogelmeier's 2006 translation of the story as recounted by Ho'oulu māhiehie during the early 1900s in the Hawaiian-language newspaper *Ka Na'i Aupuni*. In this account, Hi'iaka set out for Hilo from the vicinity of the historic Olaa sugar mill, near the present town of Kea'au. Hi'iaka chose, against the advice of her companion Wahine'ōmao, to take the "path of death" through the *lehua* (*'ōhi'a* [*Metrosideros macrocarpa*] blossom) forests controlled by the *mo'o* Pana'ewa (Nogelmeier 2006:51).

Two of Pana'ewa's guardians, said to be birds, immediately noticed the trespassers and went to report their presence to the *mo'o*, though only one believed that Hi'iaka was among them. Pana'ewa, unsure of whether Hi'iaka had entered his forest or not, told the guardians:

She and her people should know that the chiefs of Hilo have no regard for them.

And my *kapu*, my sacred law, is firmly set, that no man or woman may arrogantly tread amid the *lehua* trees of Pana'ewa without my consent. But as to those stone-eating, land-eating, *lehua*-grove-eating women, I would never allow them to enter here into Pana'ewa. [Nogelmeier 2006:52]

At this time, a chant voiced by Hi'iaka rang out through the forest, requesting passage. Pana'ewa immediately responded:

You have no pathway here in Pana'ewa. You are an arrogant woman, coming down from inland Puna, a marginal land used up by the gods, and you proudly assume this to be your road to travel. Certainly you know that Pana'ewa is a sacred forest, not to be wantonly traversed by the stone-eaters. There is no road here. As though your eyes didn't see that the road for travel is seaward of Hā'ena [currently known as Shipman Beach]. [Nogelmeier 2006:52]

Despite Pana'ewa's threats, Hi'iaka continued through the forest, noting that she felt sorry for the "inhabitants of this place, for they will all be sacrificed as victims to accompany the death

Pana'ewa hopes to inflict upon us. The twilight of morning shall be Pana'ewa's, and it is the evening twilight that shall be ours" (Nogelmeier 2006:53).

At this time Pana'ewa sent a flood of blood toward Hi'iaka, which his guardians created by severing the heads of all of the ghosts of Pana'ewa. Afloat in the flood, Hi'iaka called upon Pele for help (Nogelmeier 2006:53). Pele heard, and commanded their brother Lonomakua to stoke the fires of Kīlauea:

In no time, the red flames leapt up and the clouds glowed crimson, as the uplands of Maunakea, Maunaloa, and Hualālai were blanketed by smoke.

The glow of the sun was blocked and darkness covered the *lehua* forest of Pana'ewa. Because of the sudden gloom that covered the *lehua* groves, the songs of the birds dropped to a twitter, showing the extent of the inky blackness . . .

Then Hi'iaka chanted another prayer.

CHANT TWELVE

Great Pana'ewa, wildwood of *lehua*,
'Ōhi'a that grows jaggedly toward heaven
In the rain, scarlet *lehua* in the rain
At the twitter of the birds, night has come
Hilo is darkened by the smoke of my land
Those multitudes will survive, for the fires are ablaze.
[Nogelmeier 2006:56]

Pele then instructed Hi'iaka to call to her brothers Kauilanuimaka'ehaikalani, Kamohoali'i, Kahuilaokalani, and Ka'ekaokalani. In this next chant Hi'iaka called for rain, and as soon as the prayer reached her brothers "and all of the other denizens of heaven" a torrent of rain beset the forest, sweeping Pana'ewa away and "out to the darkest depths of the ocean, where the *mo'o* was swallowed whole into the belly of a big-mouthed fish. With this flood of water, the blood Pana'ewa had brought about . . . was washed away . . ." (Nogelmeier 2006:57). Hi'iaka then continued onward toward Waiākea:

When Hi'iaka and her companions escaped the doom which Pana'ewa . . . had prepared for them, as shown above, they continued on their travels . . .

'. . . [Hi'iaka speaking] We have faced the red waters and the white waters here in Pana'ewa. We have donned the red *lehua* and the white *lehua* of this place, and shall now leave and go to the shore of Waiākea. We will encounter many baneful ones in these places prior to reaching Waiākea. There is Pā'ie'ie, a supernatural woman, and Pua'aloa, a supernatural male; Ka'ililahilahi, a woman, and Pu'umoho, a male; Nā'ū is a woman, as is Haili, while Kū'ēho'opiokalā is a male; Ma'ū is the wife of Makali'i; Kapakapakaua is a male, and Honokawailani is also male. However, if I pray diligently and they heed me, then our descent through these places toward the sea should be safe, but if they pay no mind to my plea for compassion, then they shall be made victims of this magical skirt of mine.'

. . . The supernaturals gathered together on the plains of Pā'ie'ie [according to Pukui et al. (1974:175), a '[l]and near Pana'ewa, Hilo'] and arranged themselves

in readiness to attack Hi'iaka when she stepped onto the field. All of these supernatural beings who had assembled were *mo'o*. [Nogelmeier 2006:58-59]

The *mo'o* showered Hi'iaka's party with arrow-like *lehua* stamens and caused trees to topple in their direction, but Hi'iaka used her divine powers to evade the attacks and, ultimately, defeated the *mo'o* by striking at them with her skirt. Only Haili was spared, as she had refused to join in the attack. For this, Hi'iaka embraced her and declared to her that

'... you shall become a foundation upon which will be built a temple for the gods our ancestors... because you have a kind heart, and you are a refuge for those in distress. Your name shall come to be known by distant future generations as Haili, temple of the great *kupua* (demigod or culture hero).' [Nogelmeier 2006:60-61]

Interestingly, in 1824 the Haili Congregational Church of Hilo was founded in neighboring Ponahawai *ahupua'a*; according to Pukui et al. (1974:35), the church was named after the "[f]orest area near Hilo" from which its timbers came.

The party leaves Pā'ie'ie, continuing towards Hilo. "When they got to Pū'āinakō [not far from the current study parcel to the south], a man was coming uphill with a bundle of mullet" (Nogelmeier 2006:62). Hi'iaka asked for some of the fish, and the man, who had an abundance, gave her five ((Nogelmeier 2006:62). By this time night had fallen, and Hi'iaka and her companions stopped to rest at the home of Haili's relatives, where they ate of the "heaps of cooked taro greens" (*lū'au*); Wahine'ōma'o also ate "the thick *poi* [Hawaiian staff of life made from cooked taro corms, pounded and thinned with water] of that place, consuming plenty" (Nogelmeier 2006:63). After their meal, Hi'iaka healed a member of the household suffering from consumption by placing her magic skirt upon his chest (Nogelmeier 2006:65).

The next morning, the party continued toward the Hilo Bay area and was invited to dine at the home of another family. The girl of the home, Papanuioleka, offered them *poi*, and indicated her father was fishing at Kalauokukui Point, which is across from Coconut Island (Mokuola) at Hilo Bay. The father, 'Ohele, returned having caught only a single bait fish, blaming the rough seas (Nogelmeier 2006:67). Hi'iaka, who had not yet revealed her name to the family, told the fisherman to return to the bay and try again. 'Ohele suspected this woman might indeed be "from the crater," and therefore wanted to please her, so he went back out to fish some more, and this time immediately caught an *uhu* (parrotfish) (Nogelmeier 2006:68). Right away Papanuioleka took this fish back to Hi'iaka as an offering, and shortly after, 'Ohele returned laden with a bounty of *uhu*. He offered this catch to her, and though she refused it, she told him that "[i]n the future, there will be an abundance of fish for you in the sea" (Nogelmeier 2006:69). Papanuioleka joined Hi'iaka's party and they left, continuing on to the Wailoa River.

The account of Hi'iaka moving through Pana'ewa to the vicinity of Hilo Bay tells us some important things about these areas. Pana'ewa was a sacred 'ōhi'a forest known for its *lehua* blossoms and home to many birds and ghostly spirits. Moving closer to the Hilo Bay area, and in closer proximity to the study area, references to the abundance of fish underscore this significant resource of the area. Descriptions of large amounts of other foods, including taro greens and *poi*, indicate cultivated crops were also grown with great success throughout this area.

3.1.2 Other Myths and Legends

The "Legend of Halemano," as given by Fornander (1916-1919:V:2:250-251), tells of love between Halemano and his wife Kamalalawalu and their home in Waiākea, in an area called 'Uluomālama, apparently above the cliffs of Pana'ewa, Hilo. Halemano looked at his wife, and when he saw the tears in her eyes, his love for her again welled up within him as he remembered how they had lived at 'Uluomālama in Waiākea, Hilo. He chanted as follows:

We once lived in Hilo, in our own home,
Our home that was in Panaewa . . .
The streams of Hilo are innumerable,
The high cliff was the home where we lived . . .
From the waters of Wailuku where the people are carried under,
Which we had to go through to get to the many cliffs of Hilo,
Those solemn cliffs that are bare of people . . .

*Noho i Hilo i o maua hale-e,
He hale noho i Panaewa e; . . .
He kini, he lehu, kahawai o Hilo e,
Pali kui ka hale a ke aloha i alo ai. . . .
Mai ka wai lumalumi kanaka o Wailuku,
A kua i alo aku ai i na pali kinikini o Hilo,
O ia mau pali anoano kanaka ole, . . .*

There are abundant references to Waiākea in general in the myths and legends of Hawai'i recorded by the early ethnographers Thrum, Emerson, Westervelt, and Fornander. One early account of the Hawaiian chiefdom Waiākea is told by Samuel Kamakau (1961:15-17) in a story of the unification of the Island of Hawai'i under chief 'Umi-a-Līloa, beginning with the chiefly residences of Waiākea in the sixteenth century. The legend establishes Waiākea as a relatively early residence of Hawaiian *ali'i* (chief, chiefess). Hilo's Kānoa Heiau, where human sacrifices were offered, was also mentioned in the story, indicating its early existence (Kelly et al. 1981:1).

Table 1 is a comprehensive list of Hawaiian tales that include Waiākea as a place setting. These legends were primarily found in the *Hawaiian Legends Index* (revised edition) compiled by Lillian Ching and edited by Dr. Masae Gotanda, Director of Hawai'i State Library (1989). Many of these stories merely mention Waiākea in passing, including Fornander's "Legend of Pamano" (1916-1919:304-305) and "Brief Stories of Ghosts and Cunning" (1916-1919:422-423).

Another brief mention of Waiākea is found in Pukui and Green's "The Story of Pele and Hi'iaka" in *Folktales of Hawai'i*. Hi'iaka, Pele's sister, "slept at Waiākea, Hilo, and in the morning kept on as far as Kukui-lau-mania, where she turned to gaze back over the country, then continued her journey toward the cliffs of Hilo" (Pukui and Green 1995:25). Waiākea was often visited by Hawaiian chiefs of high rank. In Westervelt's "Keaomelemele, The Maid of the Golden Cloud," chief Kahanai-a-ke-Akua (adopted son of the gods), and his friend Waiola (water of life), "went down to Waiākea, a village by Hilo . . . The men were invited to sport, but only Waiola went because Kahanai himself was of too high rank" (Westervelt 1915:133).

Table 1. Legends of Wai'akea, Hawai'i (Ching 1989)

Author	Original Publication and Year	Legend Title
Emerson, Nathaniel	<i>Pele and Hi'iaka</i> (1915)	Pele and Hi'iaka
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. I (1916-1919)	The Story of Umi
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. II (1916-1919)	Legend of Kuapakaa
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. II (1916-1919)	Legend of Halemano
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. I (1916-1919)	Legend of Kapuaokaoheloai
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. I (1916-1919)	Legend of Kaipalaoa, the Hoopapa Youngster
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. II (1916-1919)	Famous Men of Early Days
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. II (1916-1919)	Legend of Pamano
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , Vol. II (1916-1919)	Brief Stories of Ghosts and Cunning
Gowen	<i>Hawaiian Idylls of Love and Death</i> (1908)	Keala
Hale'ole, S. N.	<i>The Hawaiian Romance of Laieikawai</i> (1919)	Kaipalaoa
Ho'oulumāhiehie, translated by Nogelmeier, P.	<i>The Epic Tale of Hi'iakapoliopole</i> (2006)	The Epic Tale of Hi'iakapoliopole
Pukui and Green	<i>Folk tales of Hawai'i</i> (1995)	The Story of Pele and Hi'iaka
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	Umi's Necklace War Tradition
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	Kai a Kahinali'i
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	Ulu's Sacrifice
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	The Hina's of Hawaiian Folklore

Author	Original Publication and Year	Legend Title
Thrum, Thomas G.	<i>Hawaiian Folk Tales</i> (1998)	Stories of the Menehune's: As Heiau Builders
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	Keaomelemele, The Maid of the Golden Cloud
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	Keaunini

In the legend "Keala" (Gowen 1908:43-50), "well-known landmarks" of Waiākea are viewed by Ahi, a Hawaiian priest, in his spirit form:

The green water below was the bay of Hilo, the mountain was the terrible Kilauea, where in Halemaumau, the house of everlasting fire, the goddess Pele was wont to ride the red surges with her sisters and tilt with lances of flaming lava. The road was the mountain-path from Waiakea to Kapapala . . . [Gowen 1908:47]

John Papa 'Ī'i makes two general references to Waiākea, Hilo. According to 'Ī'i, at the time of Kamehameha I (ca. 1800):

The lands of the chief of Kau were divided within their own district, each being given a portion and each asking for what he wanted. For this reason, a skilled war leader whose name I have forgotten said to Keoua Kuahuula, son of Kalaniopuu and half brother of Kiwalao, perhaps you should go to the chief and ask that these lands be given us. Let Waiākea and Keaau be the container from whence our food is to come and Olaa the lid. ['Ī'i 1959:13-14]

'Ī'i's second reference notes the well-known surf of "Kanukuokamanu in Waiākea, Hilo" ('Ī'i 1959:134). Kanukuokamanu, on the western side of Wailoa River, was also mentioned in the sixteenth century story by Kamakau (1961:15-17) as a beach where chiefs and people gathered "at night . . . to amuse themselves with *hula* dancing, chanting, and the playing of games calling for forfeits of entertainment or sexual favors" (Kelly et al. 1981:1). This summary was likely drawn from two legends: "Story of Umi" and "Umi's Necklace War Tradition."

The "Story of Umi" describes the chiefly residences at Hilo and the king of Hilo, Kulukulua. The legend tells of the chiefs of Hilo gathering at a place called Kanukuokamanu, in Waiākea:

One night there was a grand entertainment for all the chiefs of Hilo at Kanukuokamanu, in Waiākea; there was dancing and games of *papahene*, *kilu* and *lōkū*. (*A he po le 'ale'a nui no na 'īi o Hilo a pau ma Kanukuokamanu ma Waiākea, he hula, he papahene, a he kilu, a me a ka lōkū*). [Fornander 1916-1919:220-221]

A similar story, "Umi's Necklace War Tradition," also mentions the festive night at Kanukuokamanu, Waiākea, and Umi's marriage to 'Ī'iwalani, the daughter of the king of Hilo (Thrum 1923).

The "Legend of Kapuaokaokeloi" makes a passing reference to Waiākea as a place where the people of "high chief rank of Hilo" lived (*O Waiākea, i Hilo ka 'āina, o ka mua ke*

kaikunāne, o ka muli ke kaikuahine, he mau ali 'i lākou no Hilo) (Fornander 1916-1919:540-541). Again, this passage reiterates the importance of Hilo as a chiefly residence. This story is also told in "The Hina's of Hawaiian Folklore" (Thrum 1923).

Another reference to the associated royalty of Waiākea can be found in the "Legend of Kaipalaoa, the Hoopapa Youngster" (Fornander 1916-1919:574-575). According to the legend, "Kaipalaoa" (a relative of Kukuipahu, the king of Kona) "was born in Waiākea, Hilo."

Many legends tell of the abundant fish and shrimp of Waiākea. The fishpond of Waiākea was so valued that Kamehameha I sent runners from Kawaihae and Kailua to fetch live mullet from Waiākea. Fornander's (1916-1919:490-491) work describes Kamehameha I sending his fastest runners, Makoa and Kāneaka'ehu, to "Hilo to get mullet from the pond of Waiākea, on the boundary adjoining Puna" (*o ka nanawa ia o Makoa e holo ai i Hilo i ka 'anae o ka loko o Waiākea, aia ma ka palena e pili la me Puna*).

The rich and varied resources Waiākea offered made it one of the most important locales on Hawai'i Island. Traditional accounts concerning Waiākea include references to it being the seat of chiefly residences as early as ca. AD 1550 (Kelly et al. 1981). Chiefly associations with Waiākea continued through traditional times and into the historic era.

3.2 Historical Background

The *ahupua'a* of Waiākea, South Hilo, is large, encompassing some 95,000 acres. It extends from the coast to approximately the 6,000-ft elevation on the windward slope of Mauna Loa. In 1979 Holly McEldowney prepared an archaeological and historical literature search and research design, as part of a lava flow control study (McEldowney 1979). In her report, McEldowney describes five zones of land use and associated resources. The five zones (Figure 10) include I. Coastal Settlement; II. Upland Agricultural; III. Lower Forest; IV. Rain forest; and V. Sub-Alpine or Montaine (McEldowney 1979:14). McEldowney generally bases the extent of these zones on elevation and distance from the coast. Following this model, the lands of the study parcel, situated at approximately 40 to 80 ft amsl, would lie along the *makai* (seaward) margin of Zone II, which was characterized by open grassland used for planting (see Figure 10). An 1851 Government Survey map (Figure 11) shows the study parcel overlapping both the "Hala Woods" and the "Panaewa Woods." Presumably, these forests were being used to some extent agriculturally. Figure 11 also depicts the "Road to Puna" in the southern portion of the present KMR.

McEldowney (1979:19-20) discusses the characteristics of Zone II and the anomaly of the Hilo forests as observed during the early historic period:

The constituents of gardens and tree crops in the village [Zone I] basically continued in the upland [Zone II] except that dry-land taro was planted more extensively and bananas were more numerous. Wet or irrigated taro occurred along small streams, tributaries, and rivers that cut into the ash-capped substrates

...

This same pattern occurred between Waiākea Pond and the Pana'ewa Forest in the four or five miles of open country dominated by tall grasses. Here stands of *kukui* (*Aleurites moluccana*), pandanus, and mountain apple became more

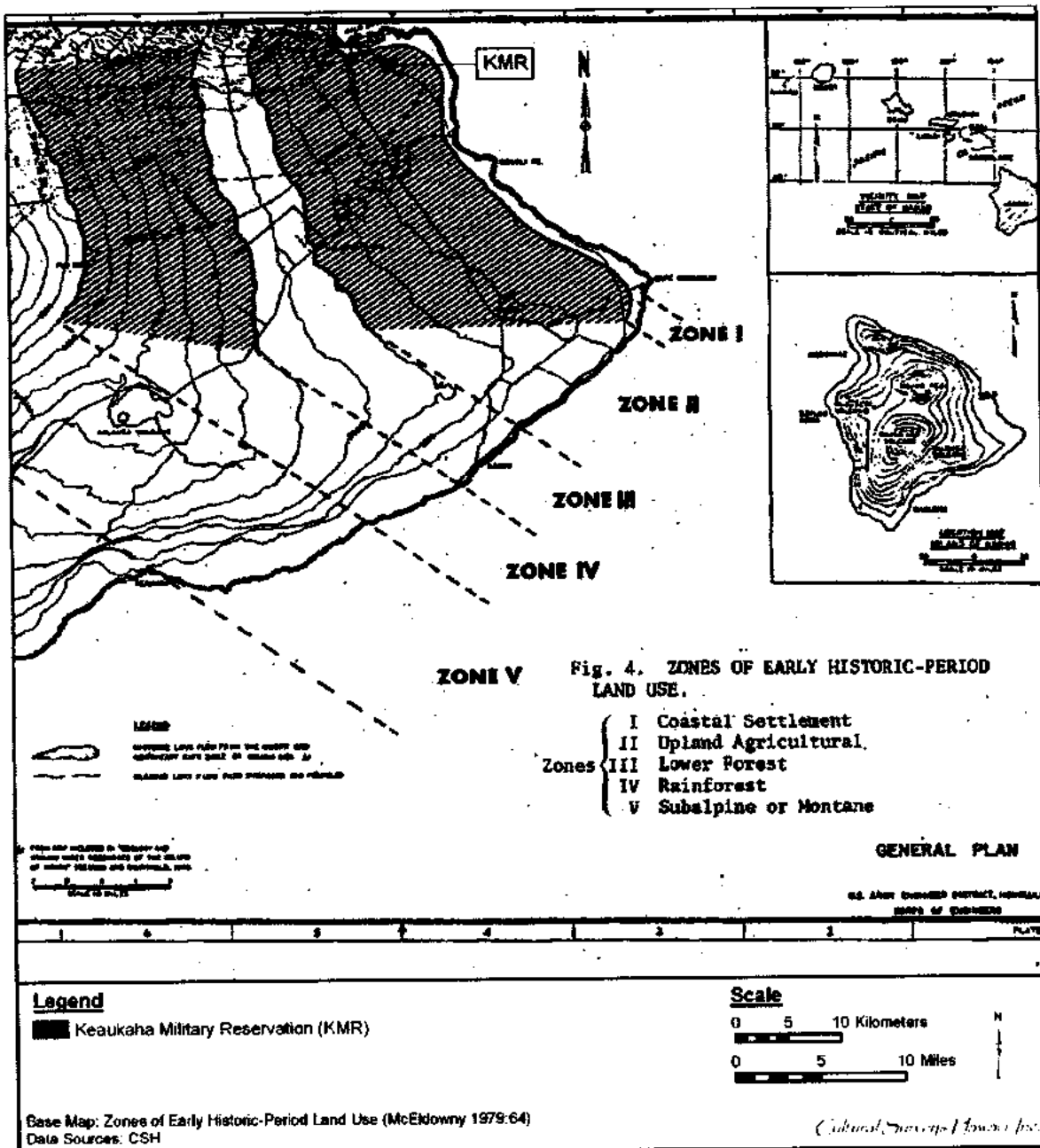


Figure 10. Settlement zone map reprinted from McEldowney (1979:64), showing the location of the KMR (in red) within Zone II

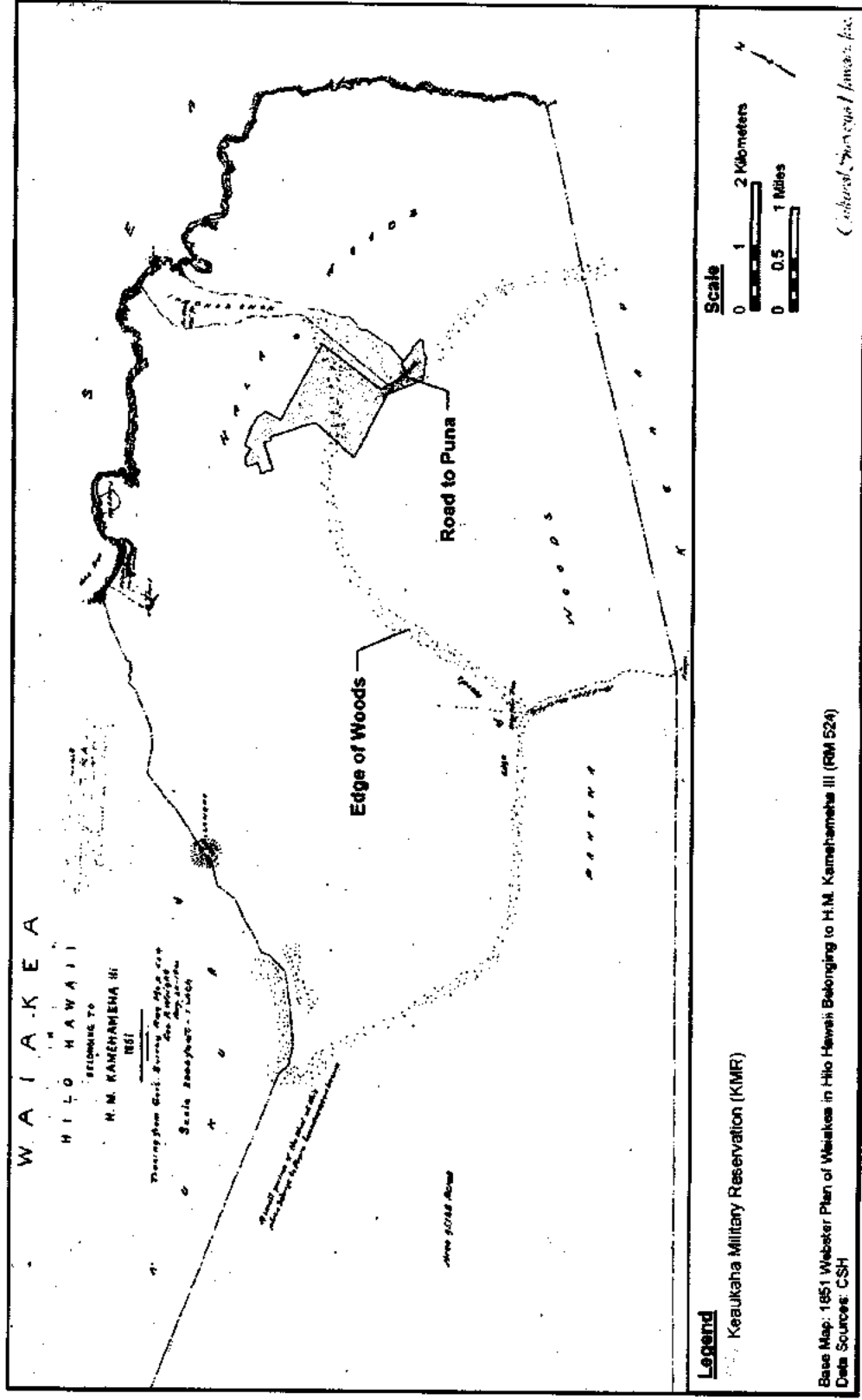


Figure 11. 1851 map of Waiākea by Webster (RM 524) showing the location of the KMR (in red) in relation to the “Hala Woods” and the “Pana’ewa Woods”; note also the depiction of the “Road to Puna”

conspicuous, with large areas of dryland taro planted in rocky crevices on the younger Mauna Loa flows. The 4-mile-wide forest, corresponding to the present Pana'ewa Forest Reserve, grows on a single flow roughly 2,700 years old (Jack Lockwood, pers. comm.) and in the early 1800s was one of the few forests to nearly reach the ocean. The trail leading from Hilo to the Volcano through this dense stand of 'ōhi'a trees, and 'ie'ie (*Freycinetia aborea*) again comes upon an unwooded landscape near what is now Kea'au. [McEldowney 1979:19-20]

In her study, McEldowney provides some discussion about underlying factors that could have resulted in the presence of the open grasslands of Zone II. She states that, "due to the tendency of [tropical or sub-tropical] soils to be rapidly leached of nutrients,"

. . . shifting agriculture (i.e., swidden or slash-and-burn) is practiced by most Polynesian and Pacific peoples. In forested areas, this cyclical process involves the opening of the forest canopy, burning of the resulting debris and leaf litter, planting one or more crops either simultaneously or sequentially, and harvesting. When nutrient levels drop below those needed to support further crops, the plot is left fallow, and the entire process is repeated in another plot chosen in either secondary or primary forest.

The process by which forests can be reduced to open grass or shrub lands through either long-term swiddening, or by the repeated effects of intentional and/or accidental fires, has been discussed for New Zealand (Cumberland 1963), New Guinea (Robbins 1963), Indonesia (Geertz 1969), and Hawai'i (Yen 1974:316; Handy 1972:17; Newman 1971:108-111). Changes most frequently occur when, through the shortening of the fallow periods or repeated burning, the forest fails to regenerate, the important organic layer does not accumulate, and soil properties are altered by exposure to sun and wind. The reduced rate of regeneration in semi-tropical environments (e.g., Hawai'i), when compared to truly tropical environments, can accelerate this degradation. [McEldowney 1979:21]

Several factors are then discussed in support of McEldowney's interpretation that, absent human interference, ". . . forest was capable of developing on, and did originally cover, most of these [grassland] slopes down to the coast"; she cites the lowland presence of the Pana'ewa forest as an example (McEldowney 1979:24). The resources of this forest, characteristic of Zone III, would have been readily available to the population of the lower zones in Waiākea.

Since the majority of fishponds in Waiākea were concentrated northwest of the KMR, primarily at and around Hilo Bay, settlement was also concentrated northwest of the KMR. The project area may have been marginally occupied in the prehistoric period but likely did not support substantial habitation or intensive agricultural activity. However, Handy and Handy cite a 1922 article in the Hawaiian language newspaper, *Ka Nūpepa Kū'oko'a*, that refers to numerous residences found within the "woods of Pana'ewa" and to planting sweet potatoes and sugar cane on *pāhoehoe* lava fields in Waiākea:

There are *pāhoehoe* lava beds walled in by the ancestors, in which sweet potatoes and sugar cane were planted and they are still growing today. Not only one or two but several times forty (*mau ka'au*) of them. The house sites are still there, not

one or two but several times four hundred in the woods of Pana'ewa. Our indigenous bananas are growing wild, these were planted by the hands of our ancestors. [Handy and Handy 1972:131-132]

Handy and Handy (1972) recorded the agricultural methods used to grow taro, sweet potatoes, and sugar cane in Waiākea in the 1930s. They describe the natural habitat and agricultural development of Waiākea and South Hilo, and again make reference to the Pana'ewa forest:

In lava-strewn South Hilo there were no streams whose valleys or banks were capable of being developed in terraces, but [taro] cuttings were stuck into the ground on the shores and islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Waiākea Bay, east of Hilo, taro was planted in a unique way known as *kanu kipi* (mounded taro patches) . . . On the lava-strewn plain of Waiākea and the slopes between Waiākea and the Wailuku River, dry taro was formerly planted wherever there was enough soil. There were forest plantations in Pana'ewa and in the lower fern-forest zone above Hilo town and along the course of the Wailuku River. [Handy and Handy 1972:538-539]

The accounts above underscore the somewhat unique nature of lowland Waiākea and Pana'ewa in terms of their traditional land use. Despite the presence of forests here, the relatively low elevation and proximity to Hilo Bay and the coastline meant this area was also desirable for planting and related settlement.

3.2.1 Early 1800s

Land use during the early historic period was still essentially subsistence-based, although aspects of major changes were occurring. Settlement continued to be primarily focused on the coastal zone, as was most of the agricultural production of both indigenous food crops and newly introduced plants. Significant alterations to these lifeways began occurring in the 1800s. The sandalwood (*'ilahi*, *Santalum* spp.) trade, establishment of the American Board of Commissioners for Foreign Missions (ABCFM) station in Hilo and the arrival of whalers began the shift from subsistence to a market-based economy.

During this early historic period the forest and sub-alpine zone land use changed as well. Besides the more traditional procurement of timber products and bird feathers for taxes (McEldowney 1979:35), cattle, goats, and sheep were hunted in the upper zones. These animals, first introduced in the 1790s, had spread over large portions of the interior of Hawai'i Island, especially in the Waimea area due to an imposed 10 year prohibition on killing them. However, "by the 1830s substantial amounts of hides, jerked meat and tallow were exported from Hilo" (McEldowney 1979:36).

3.2.2 1820s

In 1823, Reverend William Ellis conducted a two-month journey around the entire island of Hawai'i, following a route primarily along the coast. During his journey Ellis made observations of indigenous Hawaiian agriculture and population densities. The following is his account of the coastal inhabitants of the North Hilo and Hāmākua districts:

... the inhabitants, excepting at Waiakea, did not appear better supplied with the necessities of life than those of Kona, or the more barren parts of Hawaii. They had better houses, plenty of vegetables, some dogs, and few hogs, but hardly any fish, a principle article of food with the natives in general. [Ellis 1963:252]

T. Stell Newman (2000) conducted an ethnohistorical study utilizing the observations of Ellis in conjunction with modern environmental data in an attempt to define indigenous Hawaiian land use patterns ca. 1823. Through an analysis of Ellis's journal writings Newman was able to reconstruct Ellis's route around the island. Ellis's route was then plotted onto a map and all references by Ellis about indigenous Hawaiian agriculture, population density, soil type, water resources, and botany were matched to the route allowing Newman (2000) to establish four agricultural zones: Irrigation, Dryland Farming, Scattered Farms, and Field Systems (Figure 12). Based on a review of Newman's map it appears the KMR falls into the Scattered Fields agricultural zone, which is defined as having a low population density, dispersed settlement with few fishing villages at the coast, and scattered fields and gardens with no major field systems (Newman 2000). Crops that would have been cultivated consisted of dryland taro, sweet potato, bananas, yams, breadfruit, sugarcane, and paper mulberry. Note that number 25 shows the location of Hilo, which is identified as "Waiakea."

C.S. Stewart, an American missionary, traveled to Hilo in 1825 with Lord Byron on the *HMS Blonde*. He described the Waiākea vicinity as the ship landed at Coconut Island, approximately 2.5 km northwest of the KMR:

The beach is covered with varied vegetation, and ornamented by clumps and single trees of lofty cocoa-nut, among which the habitations of the natives are seen, not in a village, but scattered everywhere among the plantations, like farm-houses in a thickly inhabited country . . . At a very short distance from the beach, the bread-fruit trees were seen in heavy groves, in every direction intersected with pandanus and tutui [*kukui*], or candle-tree, the hibiscus and the acacia, &c. The tops of these rising gradually one above another, as the country gently ascended towards the mountains in the interior, presented for twenty or thirty miles in the south-east, a delightful forest scene. [Stewart 1970:362-363]

The American Board of Commissioners for Foreign Missions (ABCFM) established themselves in Hilo in the mid-1820s. The years following the missionaries' arrival were spent introducing a new religion that was not accepted by the general population until the late 1830s (McEldowney 1979:33-34, 36).

3.2.3 1830s

A "religious revival" occurred in Hilo in the late 1830s due in part to the preaching of Titus Coan and several other factors. The Hawaiian population had been considerably reduced at this point due to the introduction of new diseases and a decline in the birth rate. Alterations to traditional religion and lifeways were prevalent and this devotion to the new religion intensified these changes:

During the revivals height [between 1837 and 1840], as many as 10,000 people congregated in Hilo at one time. Among other consequences, this led to the severe

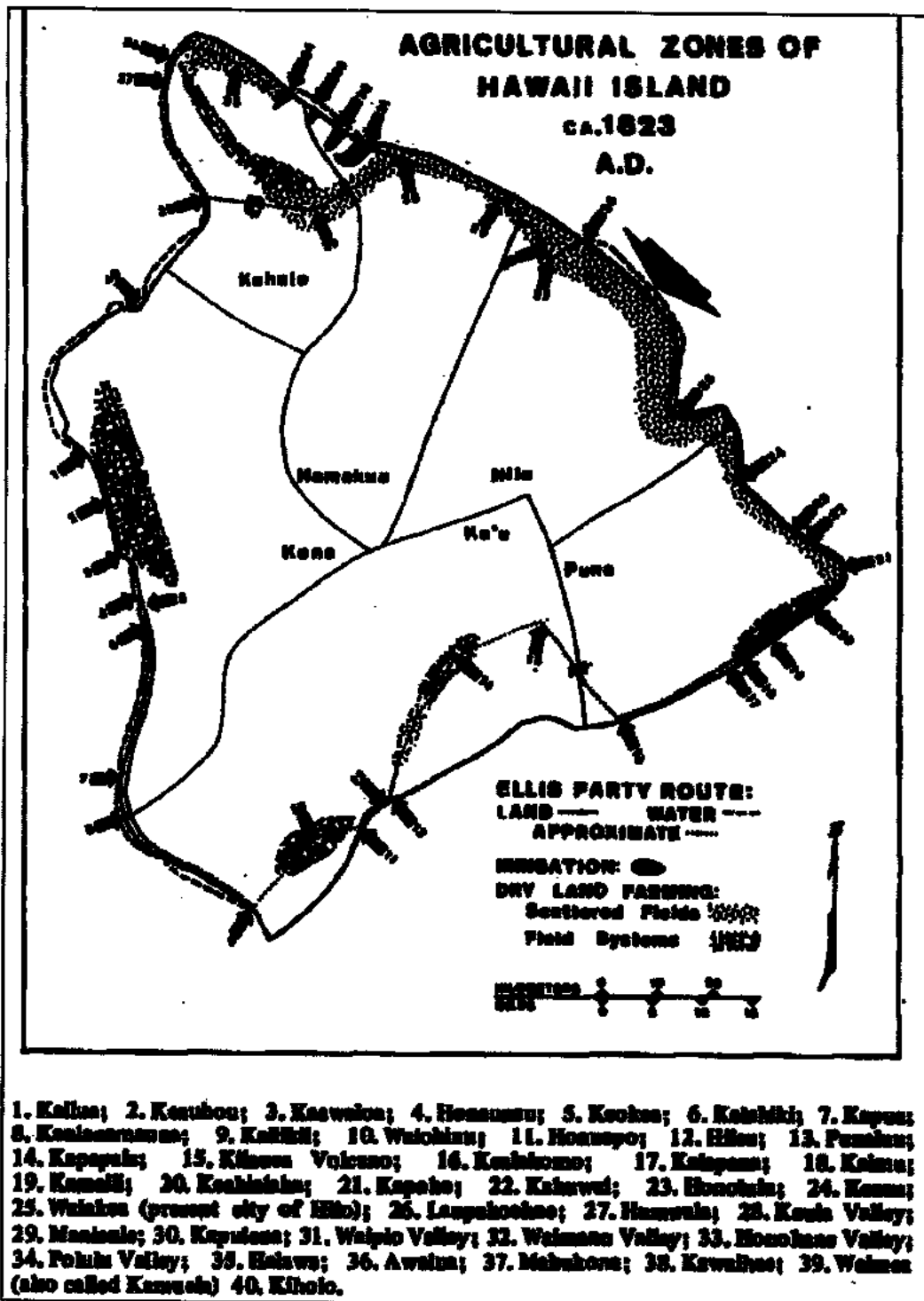


Figure 12. Map of Hawai'i Island showing the route of Reverend William Ellis and the agricultural zones delineated by Newman (Newman 2000)

alteration of traditional habitation and garden sites within the Hilo area, the permanent or temporary abandonment of entire villages in outlying areas, and a deeper disruption of traditional Hawaiian beliefs and subsistence patterns [McEldowney 1979:37].

3.2.4 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali'i* received their land titles. *Kuleana* (title or ownership) awards to commoners for individual parcels within the *ahupua'a* were subsequently granted in 1850. It is through records for Land Commission Awards (LCAs) generated during the Māhele that the first specific documentation of life in Hawai'i, as it had evolved up to the mid-nineteenth century, come to light. Although many Hawaiians did not submit or follow through on claims for their lands, the distribution of LCA parcels can provide insight into patterns of residence and agriculture. Many of these patterns of residence and agriculture probably had existed for centuries past. By examining the patterns of *kuleana* LCA parcels in the vicinity of the study parcel, insight can be gained to the likely intensity and nature of Hawaiian activity in the area.

Waiākea *Ahupua'a* was held by Kamehameha. When he died in 1819, his son Liholiho received the lands. The Kamehameha dynasty's control over the valuable property was affirmed in the status of the *ahupua'a* as Crown Land during the Māhele, with the *'ili* (land section, next in importance to an *ahupua'a* and usually a subdivision of an *ahupua'a*) of Pi'opi'o, awarded to Victoria Kamāmalu (LCA 7713:16), a granddaughter of Kamehameha I and heir to Ka'ahumanu as well.

Twenty-six LCA parcels were granted within Waiākea, none of them within or in the vicinity of the present study parcel. Most LCA parcels were within the coastal zone and for the most part focused around the edges of the large fishponds of Waiākea. The two exceptions are LCA 2663 and 2402; they were in the lower portion (i.e., approximately 100 ft amsl) of the upland agricultural zone. Land use information for the *kuleana* generally refers to cultivated fields with house lots, indicating habitation and agricultural production within the same zone, unlike leeward Hawai'i Island where in many cases *kuleana* included coastal house lots with associated upland agricultural lots, because of elevation-dependent rainfall.

The coastal zone continued to contain the vast majority of the population. Houses and stores were concentrated in the northern half of Hilo Bay, somewhat removed from Waiākea, because at the time the main pier for Hilo was at the mouth of the Wailuku River. Hilo was being transformed into an entirely wood-framed "New Bedford type Whaling Town." Whaling ships requiring supplies visited the port causing the export economy to grow. More foreigners were settling in Hilo and began purchasing Hawaiian lands (McEldowney 1979:38).

3.2.5 Late 1800s

Early "eco-tourist" Isabella Bird described the country area around Hilo in 1873 and its variety of crops. She wrote, "[a]bove Hilo, broad lands sweeping up cloud wards with their sugar-cane, *kalo* (taro), melons, pine-apples, and banana groves suggest the boundless liberality of nature" (Bird 1964:38).

Large-scale commercial sugar cane production began in Waiākea in the late 1870s with the establishment of the Waiākea Mill Company. The Waiākea Mill Company leased Waiākea Crown lands extending from the town of Hilo up to 1,100 ft elevation. The mill was located at the head (*mauka* or upland end) of Waiākea Fishpond and sugar was transported by barge through the pond and down Wailoa River to Hilo Bay. In 1879, a 3-mile segment of railroad was constructed from the Waiākea Mill to the cane fields, "the first in the 'Sandwich Islands' to haul sugar cane with a steam locomotive" (Condé and Best 1973:117). Three years later, on 1 October 1882, Queen Emma visited the Waiākea plantation "to take a ride on the railroad . . . and a pleasant trip was made into the cane fields, a distance of four miles from the mill" (Condé and Best 1973:118). Registered Map (RM) 1438, dating to 1886, shows the western edges of KMR adjacent to the Waiākea plantation lands (Figure 13). A 1933 map of the plantation (Figure 14) indicates that it was situated entirely west of the KMR. Even if the plantation included lands east toward KMR prior to that time, any impacts to the reservation by the cane industry would likely have been to the areas comprising the presently developed portions of the facility, as the majority of undeveloped lands at the KMR appear to be relatively undisturbed forest. Figure 13 also depicts the "Road to Puna" crossing diagonally through the KMR.

McEldowney describes other land usage activities in Waiākea during this time period. "Other examples of business, not directly related to sugar cultivation, were the continued use of the Waiākea fishponds, an active Chinese fish market, small pastures above Hilo supporting dairy cattle, and scattered vegetable gardens" (McEldowney 1979:39). Cattle ranching and timber for firewood and housing were the primary interior land uses during this period.

3.2.6 Early to Mid-1900s

Sugar and its associated industries continued to expand during the early 1900s. Haun and Henry (2000) discuss the impetus behind the extension of the railroad to Hilo Bay and development of the wharfs:

Between 1900 and the 1930s, the population of Hilo grew dramatically with the expansion of sugar cane cultivation, pineapple production, the timber industry, and other commercial developments. In the 1910s, the Hilo Railroad Company expanded the rail system to Puna and Hilo Town. A railroad wharf was built north of the mouth of the Wailoa River. Between 1909 and 1913, the railroad was extended to North Hilo and Hamakua Districts.

The pending opening of the Panama Canal and anticipated increase in trans-Pacific shipping lead to serious efforts to build a breakwater to protect shipping in Hilo Bay. Construction of the breakwater began in 1908. The breakwater was initially planned for a location just east of Coconut Island, but the plan was modified and the selected site was approximately 6,000 ft east of the island. The initial plans called for a 10,000 ft long breakwater along Blonde Reef. Stone for the structure was brought by railroad from quarries in Puna and Waiākea. The breakwater was completed in 1929 . . .

By the 1910s, the existing railroad and government wharf facilities were inadequate to support shipping. In 1912, the Territorial Government contracted

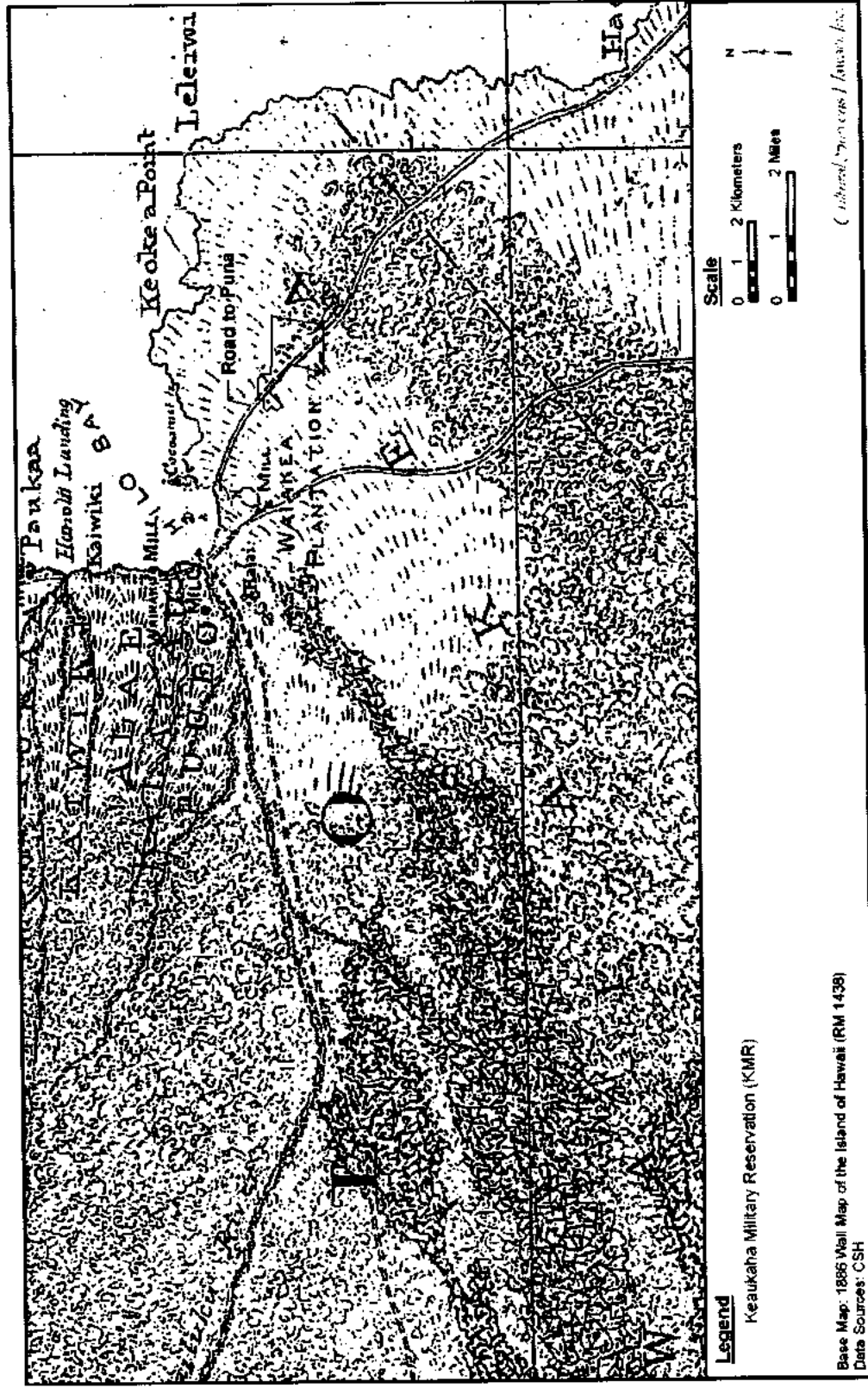


Figure 13. Portion of Walter A. Wall's 1886 map of Hawai'i (RM 1438), showing the approximate location of the proposed project area (in red) adjacent to the lands of the "Waialeale Mill Plantation"

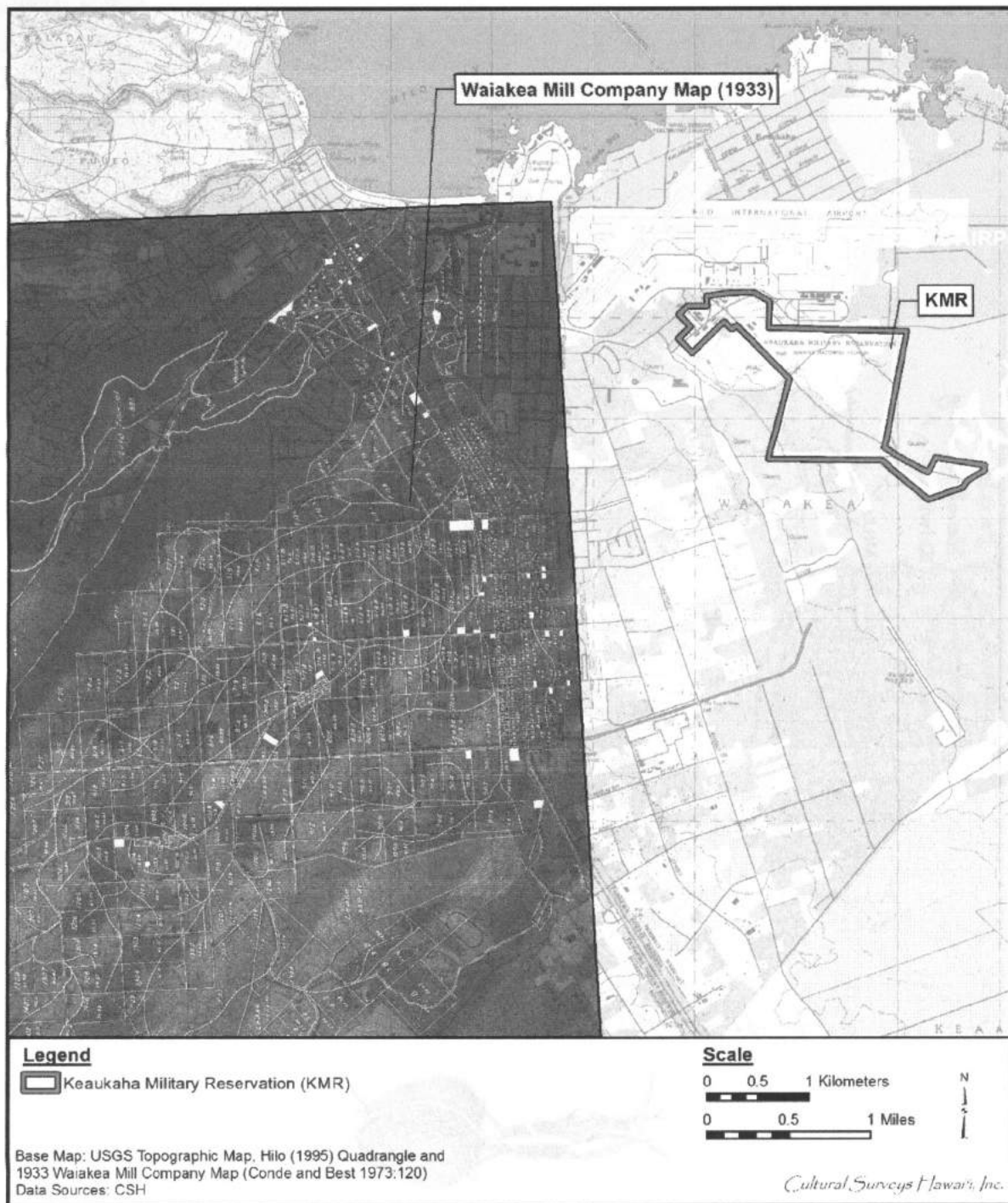


Figure 14. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, overlain with the Waiakea Mill Company Map (in Conde and Best 1973:120), showing the location of KMR in relation to the limits of the plantation as of 1933

the construction of a new wharf approximately one mile east of Coconut Island and the dredging of the adjacent portion of the bay. The new wharf, designated Kuhio Wharf was completed in 1916. From the beginning, the wharf was congested and plans for a second wharf were made. Construction of the wharf began in 1921 and it was completed in 1923. A third wharf was completed in 1927. [Haun and Henry 2000:10]

Ranching in the Hilo area, although not specifically in Waiākea, came under the control of two large enterprises, the Parker and Shipman ranches. In Waiākea a large portion of the upland agricultural zone that was too rocky for sugar cane cultivation became available for lease as Waiākea pasture lands. The specific use of the pasture land is not known but McEldowney notes a "substantial amount of grazing land adjacent to Hilo or to sugarcane fields supported dairy cows for Hilo's several dairies" (McEldowney 1979:41).

In 1918 the 30-year lease of the Waiakea Mill Company expired and, because Hawai'i had become a territory,

. . . the land fell under homesteading laws that required the government to put some of it up for lease to homesteaders who would be willing to grow sugar cane on it. Waiākea Mill was to grind the crop for them. A total of about 700 acres of land was divided into cane lots (between 10 and 76 acres each) and house lots ranging from 1 to 3 acres . . . [Kelly et al. 1981:121]

A 1915 Hawaii Territory Survey map (Figure 15) shows the KMR west of the Waiakea House Lots, which were located *mauka* of the Waiakea Mill. The plantation railroad system (the present Railroad Avenue; see Figure 2 and Figure 15), was located just west and north of the KMR. This map also depicts the "National Guard of Hawaii Rifle Range" overlapping the northernmost portion of the KMR. The homestead and cane lots eventually reverted to the overall mechanized cultivation and the homestead and cane lot experiment "was declared a failure" (Kelly et al. 1981:121).

By the 1920s the Waiakea Mill Company had some 7,000 acres in cane production. Rechtman and Lang (2009) discuss some of the consequences of sugar production in this region:

Sugar cultivation brought dramatic changes to the Hilo area. Some of its large fishponds (Hanalei, Kalepolepo, Mohouli, Waiāhole, and Hoakumau) were filled and thus destroyed. Many old residences, burial sites, trails, *heiau* (high place of worship), and more were destroyed by the development of sugar plantation fields. [Rechtman and Lang 2009:12]

In the 1920s large tracts of remaining forests in Waiākea were "designated as 'forest reserve' to maintain the forest as a 'watershed' to capture, retain, and support the continuous flow of water necessary to the sugar industry" (McEldowney 1979:42). Clearly, sugar was the dominant economic factor during this period including the institution of settlements (i.e., camps).

In 1931, the Hawaiian Cane Products Company, Ltd. began a firm that developed a new product, a fiber board product called "canec." Canec was made from bagasse, the fibrous byproduct of sugar production usually burned by sugar factories for fuel. The Waiakea Mill began selling their bagasse to the canec plant, which was located approximately 200 yards from Waiakea Sugar Mill (Condé and Best 1973:119).

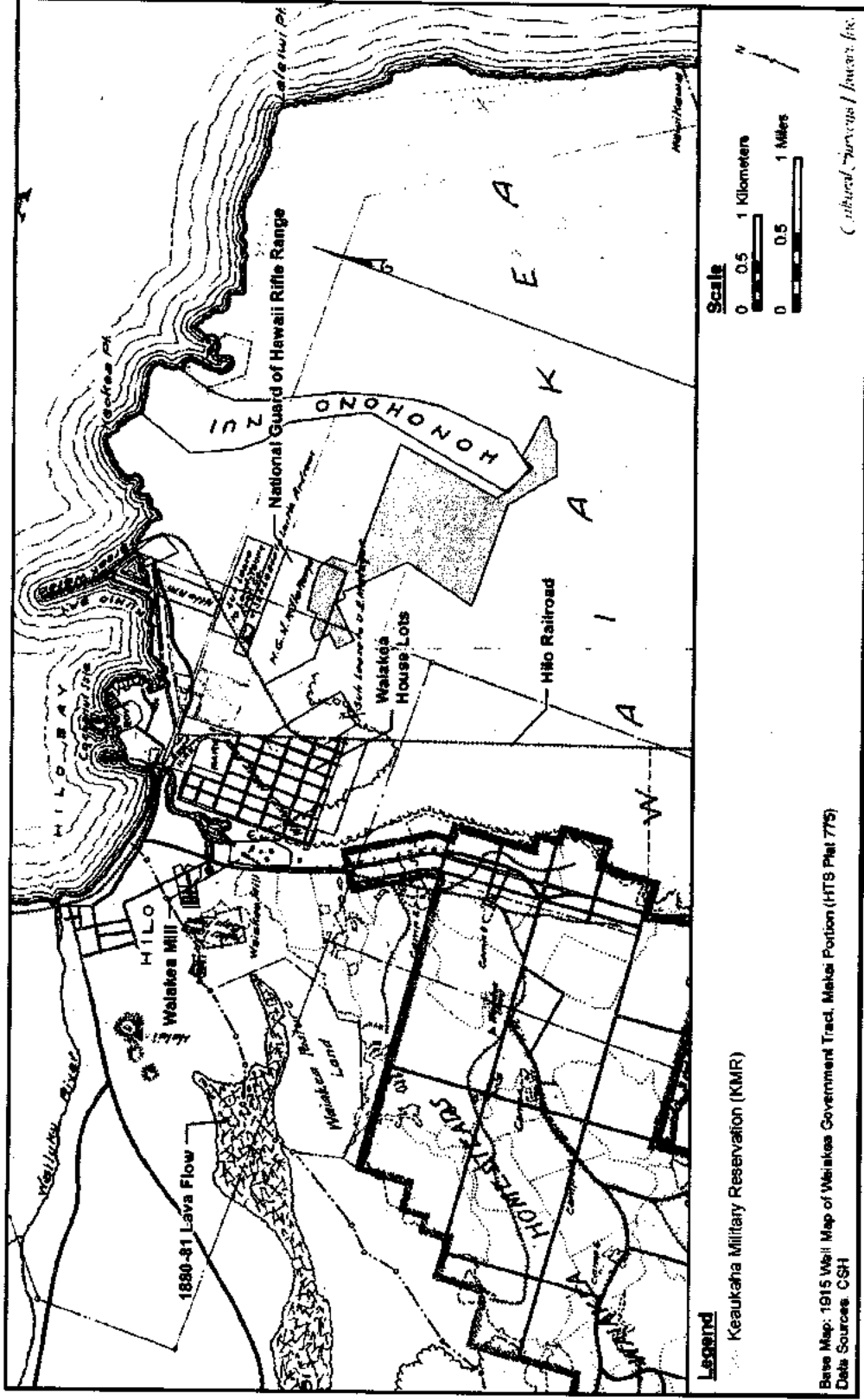


Figure 15. Portion of the 1915 Map of Waiakea Government Tract (HTS Plat 775) by W.E. Wall, showing the approximate location of the proposed project area in relation to features discussed in the text

Several major construction projects were completed in the Hilo area in the 1920s and 1930s, including Hilo Bay wharfs, bridges, and completion of the breakwater. Some of the projects were related to winter weather damage of 1923 that included storm surf in January and a tidal wave in February (Kelly et al. 1981:171).

3.2.1 The Hilo Airport and the Militarization of Waiākea

The following information comes from two main resources, a 1997 preliminary assessment for the Keauhaka Military Reserve (KMR) (located just northwest of the study area next to the Hilo Airport) by Inter Island Environmental Services, Inc. (IIES 1997), summarized in Bush and Hammatt (2000:15-19); and an online archive of historic photos and facts about aviation in Hawai'i operated by the State of Hawai'i (State of Hawai'i 2012).

In 1914, the Governor of the Territory of Hawai'i set aside 216.43 acres of land in Waiākea for a National Guard of Hawai'i rifle range (see Figure 15). A few years later in 1925, 33 acres were withdrawn from the Guard for the construction of an aviation landing field, named Hilo Field (located just north of the present KMR) (Figure 16). In 1927, an Executive Order (EO) was issued that again increased the acreage under control of the Guard to 994.6 acres. Two years later in 1929, 10,000 sq ft of land was withdrawn from the Guard to be used for the Territorial Powder Magazine controlled by the Department of Public Works.

In the mid-1930s, the chairman of the Aeronautical Commission reported on four planned developments upcoming at the Hilo Airport: 1) development of the main runway; 2) the development of a "cross-wind" runway; 3) development by Inter-Island Airways, Ltd., of a terminal building and an airplane shelter; and 4) a request for additional land for expansion (Inter-Island Airways, Ltd. 1930). With growing international tensions about to lead to a world war in the early 1940s, precedence for further development was given to Hilo Airport over the nearby KMR.

The decision to refurbish the Hilo Airport was made partially because the airport was the best developed in the Territory. To complete the runway, prisoners were brought in and housed at KMR (Hawai'i Territorial Aeronautical Commission 1930:13-15).

In 1938, the Guard entered into a Temporary Use Agreement (TUA) with the Territory of Hawai'i for the construction of the civilian Waiākea or Territorial Prison Camp, to be located in the northwestern section of the Guard property, presumably to house the prisoners closer to their work projects. Structures included a jailer's cottage and an acting jailer's cottage, two prisoners' dormitories, a kitchen, a laundry, and a recreation and workshop building. The Guard's powder magazine, consisting of three structures, was constructed south of the prison camp. The Guard rifle range, which included a pistol range, storehouse, and two sheds, was constructed east of the powder magazine.

In 1941, the Governor of the Territory of Hawai'i authorized the U.S. Army to use and occupy all Hawai'i Army National Guard armory sites and military reservations. The Army Corps of Engineers constructed an airfield and facilities that included 30 assorted buildings south of Hilo Airfield at a projected cost of \$670,400. This airfield was later incorporated into Hilo Airport. By 1942, the United States and the Territory of Hawai'i were involved in World War II. During this time, expansion of the Hilo airport and the construction of the Saddle Road were major projects undertaken as part of the military presence on the island. The



Figure 16. Aerial photograph, 2922-1 Hilo Airport Hawai'i, Photo section A.C. 6-25-29, U.S. Army Museum of Hawai'i (Judd 1971)

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiákea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

expansion of Hilo Airport caused the termination of 50 leases in Keaukaha and homes were demolished and replaced with officers' quarters and mess facilities.

The Navy Department, Bureau of Aeronautics, authorized the establishment of the Hilo Naval Air Station in 1943. The Navy allotment included a total of 1,975.88 acres for its use. The Fifty-ninth Naval Construction Battalion (NCB) constructed various Naval Air Station facilities and infrastructure in conjunction with the Hilo Army Air Base. Facilities and infrastructure completed in 1943 included the enlisted men's mess hall and barracks, water works system, communication lines, sewer system, and roads. The Guard Rifle Range was demolished during this construction. Navy facilities bordered the Hilo Airfield, renamed General Lyman Field in 1943, on the west and southwest, and abutting the west and south boundaries of the Army Air Station.

According to the State of Hawai'i aviation website, Brigadier General Albert Kualii Brickwood Lyman "was born on the island of Hawaii on May 5, 1885, was educated at Kamehameha and Punahou Schools, and the West Point Military Academy. General Lyman was the first man of Hawaiian blood to be appointed a brigadier general of the United States Army" (State of Hawai'i 2012)

By 1944 the Fifty-ninth NCB had completed a pistol and machine gun range and a skeet range. In April 1944, the 141st NCB replaced the Fifty-ninth NCB. During 1944 the 141st NCB completed a tank farm consisting of three gasoline storage tanks, the Radio Transmitter Building, the Station photo lab, Naval Land Bombing Targets, a second tank farm consisting of four gasoline storage tanks (most likely Buildings 511 through 514 currently located on DLNR land), a 10-ton jib crane, ammunition storage magazines, a third tank farm, loading racks for the tanks, control houses for all three tank farms, gasoline lines, a dispensary, an oxygen and acetylene warehouse, a Quonset dynamite storage building, the main gate house, extensions to taxiways and aircraft parking, the torpedo workshop, tennis courts, an automotive service station, a rocket assembly hut and magazine, 15 Quonset hut warehouses, two water wells, water mains, and a reservoir (Building 702 currently located on DLNR land). During the latter part of 1944 the Waiākea Prison Camp was moved, with assistance from the 141st NCB, to the upper 'Ōla'a Forest Reserve. Also during this period, replacement draftees and troops of the Fifth Marine Division, Fleet Marine Force, Pacific arrived in Hilo and were quartered in the U.S. Army barracks.

After the completion of Naval Air Station-Hilo in mid-1945, the Construction Battalion Maintenance Unit (CBMU) Number 562, responsible for upkeep of the Naval Air Station, replaced the 141st NCB. During World War II, the number of personnel at Naval Air Station-Hilo reached a peak of 4,500. The war ended shortly after the completion of Naval Air Station-Hilo, prompting the decommissioning of CBMU Number 562 and the disposal of magazines. The squadron departed in October 1945 and Naval Air Station-Hilo was reduced to caretaker status. Naval Air Station-Hilo facilities bordering Runways 3 and 8 were all cleared and moved south of Runway 8, except for the Brigade.

In 1946, the Seventh Army Air Force (AAF) arrived at General Lyman Field (GLF) to begin operations as a satellite field to support Hickam and Wheeler Air Force Bases on O'ahu. The area of operations for the AAF included the control tower, operations building, barracks and

several other smaller buildings. In August 1946 the Navy turned over a dispensary and adjacent barracks at GLF to the Territory for use as a tuberculosis hospital.

In 1947 the Hawai'i National Guard was reactivated on Hawai'i Island and obtained the use of 15 buildings on KMR previously used by the Navy for offices and warehouses. These buildings lay within the boundaries of EO #286, and were intended for the 299th Regimental Combat Team. In August 1947 Naval Air Station-Hilo officially closed, however, the Navy retained 20 acres on GLF. Previous Naval Air Station-Hilo property reverted back to the Territory of Hawai'i. After the Navy evacuation of GLF, the Guard retained the Navy facilities existing on the property for its use.

In April 1953 the old Naval Air Station-Hilo facilities housed 11 Hawai'i National Guard units. These included the 299th Infantry Medical Company, Service Company, Tank Company, Engineer Combat Company, 110th Army Band, Headquarters Company Second Battalion, Company F, HQ Battery, 487th Field Artillery Battalion, Service Battery, 487th Field Artillery Battalion, Battery B, 487th Field Artillery Battalion, and the Medical Detachment, 487th Field Artillery Battalion. The Guard later constructed combined field, machine gun, mortar, and combat facilities. Additionally, in April 1953 the Adjutant General requested 954.67 acres of land be set aside by the Commissioner of Public Lands for the Hawai'i Army National Guard. In 1962, 184.82 acres were withdrawn from the HIARNG for use by the Hilo Industrial Development Subdivision; in 1964, 2.874 acres were withdrawn for the extension of Runways 8 through 26. In 1973, 257.810 acres were withdrawn for construction of new airport terminal facilities. Afterwards 509.17 acres remained under EO #1562 for HIARNG use.

3.2.2 Mid-1900s to the Present

Sugar production began to decrease and the Waiakea Mill Company ceased operations in 1948. Following statehood in 1959 and the demise of the sugar mill and canec plant, tourism became the next economic mainstay. In Waiākea, C. Brewer & Company built a hotel complex at the site of the old canec plant. Other hotels were built along the Hilo Bay frontage of Waiākea near Coconut Island or Moku'ola. Large tracts of former Waiākea Homestead and cane lots were converted to housing and sub-division tracts. The portion of Hilo including the study parcel began to experience commercial and industrial development, as indicated by Figure 17, although most of the development in Hilo still tended to be concentrated to the west.

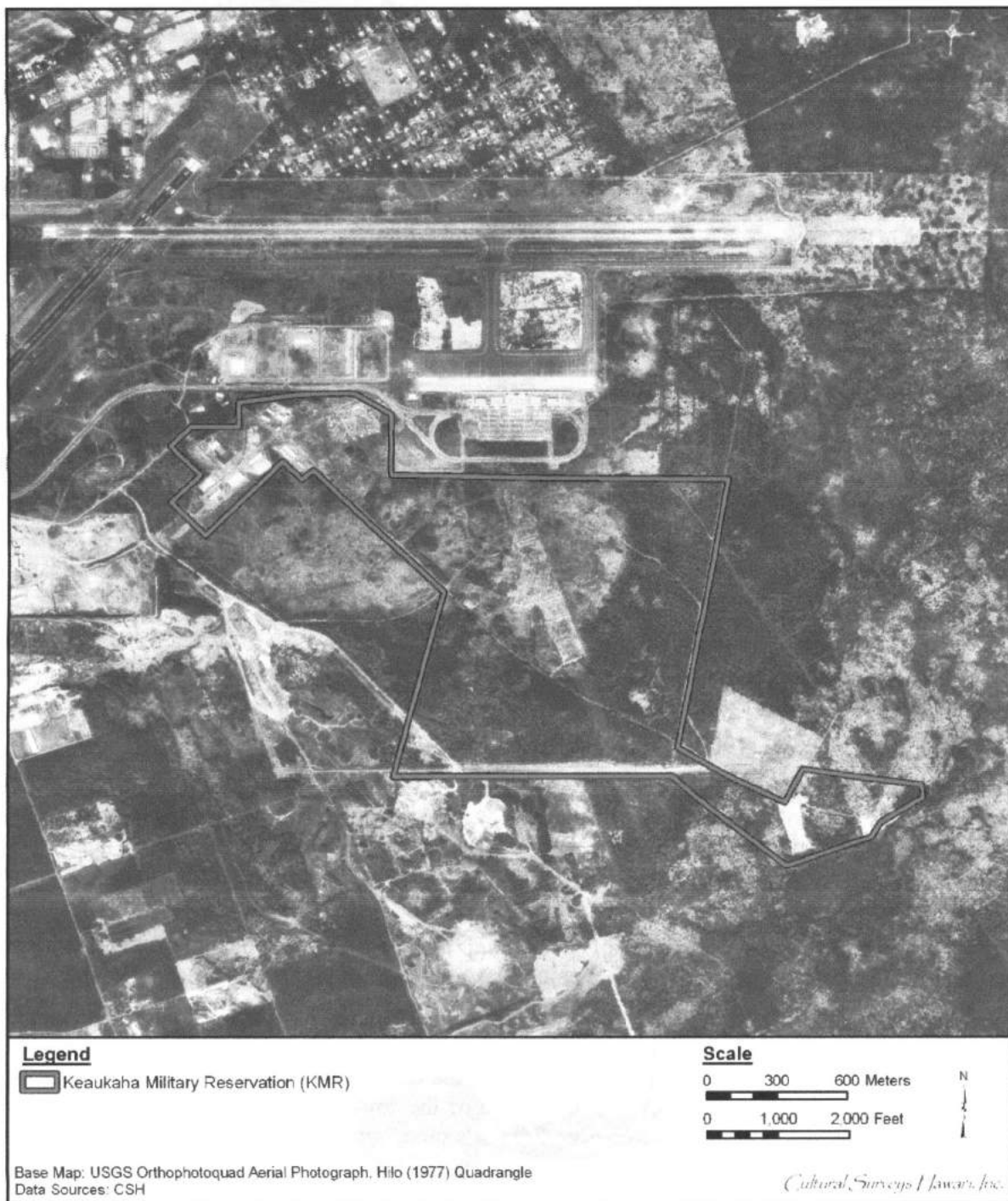


Figure 17. 1977 USGS Orthophoto, showing the extent of development in the vicinity of the proposed project area

Section 4 Previous Archaeological Research

4.1 Heiau of Waiākea

Thrum (1907a:40-41) lists and describes 16 *heiau* (high place of worship) in the district of Hilo (Figure 18) and remarks that “little evidence of their existence now remains” (Thrum 1907b:55). The three *heiau* located near Waiākea’s coastline are Kapa’ie’ie Heiau (unknown class, SIHP # 50-10-35-18883), Makaokū Heiau (*luakini* class [large *heiau* where ruling chiefs prayed and human sacrifices were offered], SIHP # 50-10-3-188843) on the shore opposite Coconut Island (Mokuola), and Ohele Heiau (*luakini* class, SIHP # 50-10-3-18884). Rosendahl’s thorough Waiākea Ahupua’a research mentions one specific *heiau* within Waiākea, Kapa’ie’ie (Rosendahl 1994:5). Kapa’ie’ie Heiau was originally recorded by A.E. Hudson in a 1932 archaeological and historical literature research manuscript on east Hawai’i (Hudson 1932). According to Rosendahl (1994:5), Kapa’ie’ie Heiau was located “along the old Hilo-‘Ōla’a trail (not far from the route of modern-day Kīlauea Avenue).” Hudson writes:

There was a *heiau* named Kapaieie near Honokawailani in Waiākea. Bloxam who passed the site on his way from Hilo to the volcano says that its center was marked by a single coconut tree. At the time of his visit nothing remained but ruined walls choked with weeds. He was told that the priests would lie in wait for passersby and dispatch them with clubs. Thrum [1908:40] states that the site was famed in the Hilo-Puna wars but its size and class are unknown. No remains of any kind could be found and no Hawaiians with whom I talked had ever heard of it. [Hudson 1932:240]

According to Thrum (1907a), Makaokū Heiau was located

on the shore opposite Coconut Island, Hilo, of *luakini* class, connected with the noted Mokuola place of refuge; dimensions unknown, though it is said to have had a high pyramid of stone as if for a place of observation. The stones of this *heiau* were taken by Capt. Spencer in the sixties for a boat landing. [Thrum 1907a:40]

Thrum further notes, “the area of [Mokuola] included also a portion of the mainland adjoining. The *heiau* connected with it, named Makaoku, was of the *luakini* class” (1907b:56).

Thrum also reported on ‘Ohele Heiau in Waiākea (see Figure 18) near the “old Pitman store.” It was reportedly “a small *luakini* class *heiau* measuring 60 feet square,” and it “stood near the Puna-side shoreline where the Wailoa River enters the ocean, approximately where Suisan Fish Market now stands. This was just above the site of the former Pitman store . . .” (Rechtman 2009:18). The *heiau* “was destroyed before Pitman’s time,” or by the early to mid-1800s (Stokes and Dye 1991:155).

The name of this *heiau* is notable—it appears to have been situated in the vicinity of the home of the fisherman ‘Ohele mentioned in the Hi’iaka tale (see Section 3.1.1). According to the Hi’iaka narrative as related by Ho’oulumāhie, the party “arrived at ‘Ohele,” where they met the family of the fisherman of the same name; his fishing grounds were Kalauokukui Point, near

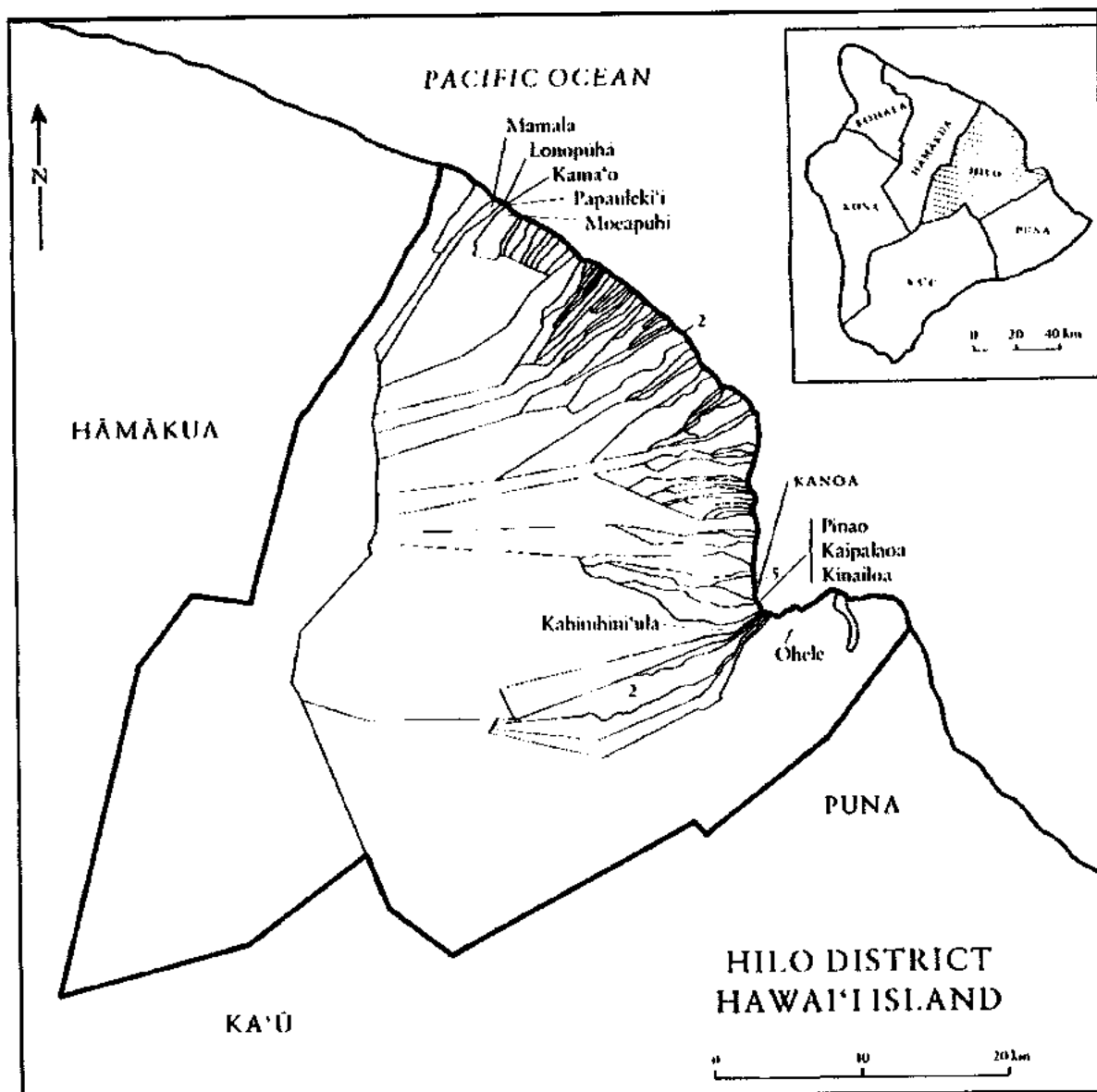


Figure 18. Locations of *heiau* documented by John F.G. Stokes in Hilo District (Stokes and Dye 1991:155)

the mouth of the Wailoa River (Nogelmeier 2006:67). None of the *heiau* described by Thrum is in close proximity to the study parcel.

4.2 Puna Trail

Accounts by nineteenth century historians 'I'i, Kamakau and Malo, as well as accounts of early missionary and explorers relate that travel by sea was the preferred method of transportation during prehistoric and early historic times. However, these same sources also point out the importance of overland trails as means of movement and communication. Apple describes the importance of the circle-island coastal trail (*ala loa*, or "long trail") for traditional tax collection associated with the annual Makahiki (Apple 1965:22-23). This system consisted of circle-island coastal trails, as well as numerous trails to facilitate *mauka-makai* (upland-sea) travel, connecting the coast with terrestrial resources.

Ross Cordy, in his study of the *ala kahakai* (beach), or *ala loa* (long road) trail system on the leeward coast of the Island of Hawai'i, briefly discusses windward trails, noting that previous archaeological research shows permanent habitation on the windward side existed earlier in places such as Hilo and eastern Puna. Thus, it might be surmised that some form of trail system—perhaps including the Puna Trail—may date back as early as the years 900-1000 (Cordy 1995:8).

Wendy Goodman (Tolleson), in her study of two lots in Chalan Pago/Ordot, Guam, and her study of prehistoric trails systems in Waiawa Ahupua'a, O'ahu, suggested factors affecting placement and preservation of aboriginal trails (Goodman and Nees 1991; Goodman and Olmo 1993). It is common for trails in Hawai'i to be constructed, or relocated, based on related features such as ease of overland route compared to the coast, temporary rock shelters, sources of fresh water, or markers created by travelers to make the trails less obscure.

In prehistoric times a tradition of exchange was centered in the Hilo area. The banks of the Wailuku river appear to have been the site of extensive trade between the different regions of East Hawai'i. This trade flourished in prehistoric and early historic times, but apparently declined during the reign of Liholiho, Kamehameha II (Ellis 1974:325-326).

It should be noted that the Puna Trail mentioned by Ellis in 1823 was a coastal trail which skirted the Hilo and Puna coastline. In subsequent maps (e.g., Figure 11 and Figure 13), the road or trail to Puna appears as a transportation route that cross-cuts the Hilo and Puna regions rather than following the coastline. The ease of traveling through this cooler region, and the decreased distances it provided in spite of exhausting climbs, could have made for expedient trade and communication especially at a time in Hawaiian history when missionary activities were prevalent. Traders from such far districts as Ka'u traveled to Hilo, thus it is not unreasonable to suppose some traveled overland, probably along the Puna Trail.

Hudson's (1932) manuscript noted the presence of the Puna Trail, and it was later documented to some extent by McEldowney (1979) during her study of the larger Hilo area. This portion of the Puna Trail was assigned as SIHP # 50-10-35-18869 (the site number is commonly listed incorrectly with the quadrant numbered as "99").

Lass' study of a portion of the "Old Government Road" in the coastal area of Kea'au (Lass 1997:14-15), approximately 7 miles southeast of the KMR facility, discusses changes to the

routing and construction style of the Puna Trail. What she calls the "Old Government Road" is clearly a portion of the Puna Trail, assigned SIHP # 50-10-36-21273 during her study.

In the early 1840s, horses and mules began to be used in the Hilo region, though the vast majority of land travel was still by foot. The initial improvements to the Puna Trail date to the early 1840s, when the Wilkes U.S. Exploration Expedition traveled along the coast of Puna to Hilo. However, accounts of the expedition's progress along this route do not go into detail about which trail was used. It is clear that by the mid- to late 1870s, the Puna Trail was used for horse travel (Lass 1997:17). Lass describes how the shifting importance of transportation routes after 1880 resulted in a marked decline in use of the Puna Trail immediately south of Hilo.

Despite the decline in usage of the trail for major market and horse traffic after 1890, local foot traffic continued to use the Puna Trail, including the portions that extend through the KMR, into the twentieth century. The alignment of the route is charted and labeled "Puna Trail" on the 1932 Hilo USGS Topographic Quadrangle as well as the 1961 State of Hawai'i Department of Defense Map of the KMR facility.

4.3 Previous Archaeological Studies in the Vicinity of the KMR

A number of past archaeological studies have been conducted in Wai'akea and the greater Hilo area, with a small handful at or overlapping the KMR. These studies are shown on Figure 19 and listed in Table 2. The past studies undertaken at KMR appear in bold in Table 2 and are discussed in Section 4.3.1.

In 1974, the Archaeological Research Center of Hawai'i completed an archaeological reconnaissance for a proposed drag strip in Pana'ewa, south of the KMR (Ching and Stauder 1974; see Figure 19). No archaeological sites were encountered within the 135-acre project area.

In 1979, the University of Hawai'i at Hilo undertook an archaeological survey of a 39-acre portion of Hawaiian Home Lands (HHL) west of the KMR (Bonk 1979; see Figure 19). A section of a rock wall and a "broken wire fence line" were identified, though these were assessed as modern. Furthermore, the remains of an "old road" were identified. The roadway was described as 15 to 20 ft wide, marked by rock alignments 1 to 2 ft high (Bonk 1979:3). No further work was recommended for the project area.

In 1983, the SHPD investigated a claim of a *heiau* depicted on a modern TMK: [3] 2-1-007, north of KMR along the coast (Kam 1983; see Figure 19). This unnamed *heiau* also appears on a 1936 Ocean View Lease Lots map. No records were found at that time pertaining to the *heiau*; Kam (1983:1) recommended it be recorded and photographed. This site was assigned as SIHP # 50-10-35-18695, but no formal documentation ever occurred. In 2000, Haun and Associates came upon the *heiau* just outside the bounds of their survey of two parcels near Hilo Harbor (see below). Haun and Henry (2000:22) described the *heiau* but did not formally document it.

In 1988, a single set of human remains was identified near the mouth of Wailoa Stream across from the Suisan Fish Market, which is located approximately 1 mile northwest of the KMR. The remains were documented (Pietrusewsky 1989; see Figure 19) and then excavated and studied (Smith and Tourtellotte 1988; see Figure 19). As Rechtman (2009:27) writes, "[t]his discovery, while only that of a single set of remains, does indicate that the possibility exists for additional remains, especially in coastal areas of former dune deposits along the Hilo bay front."

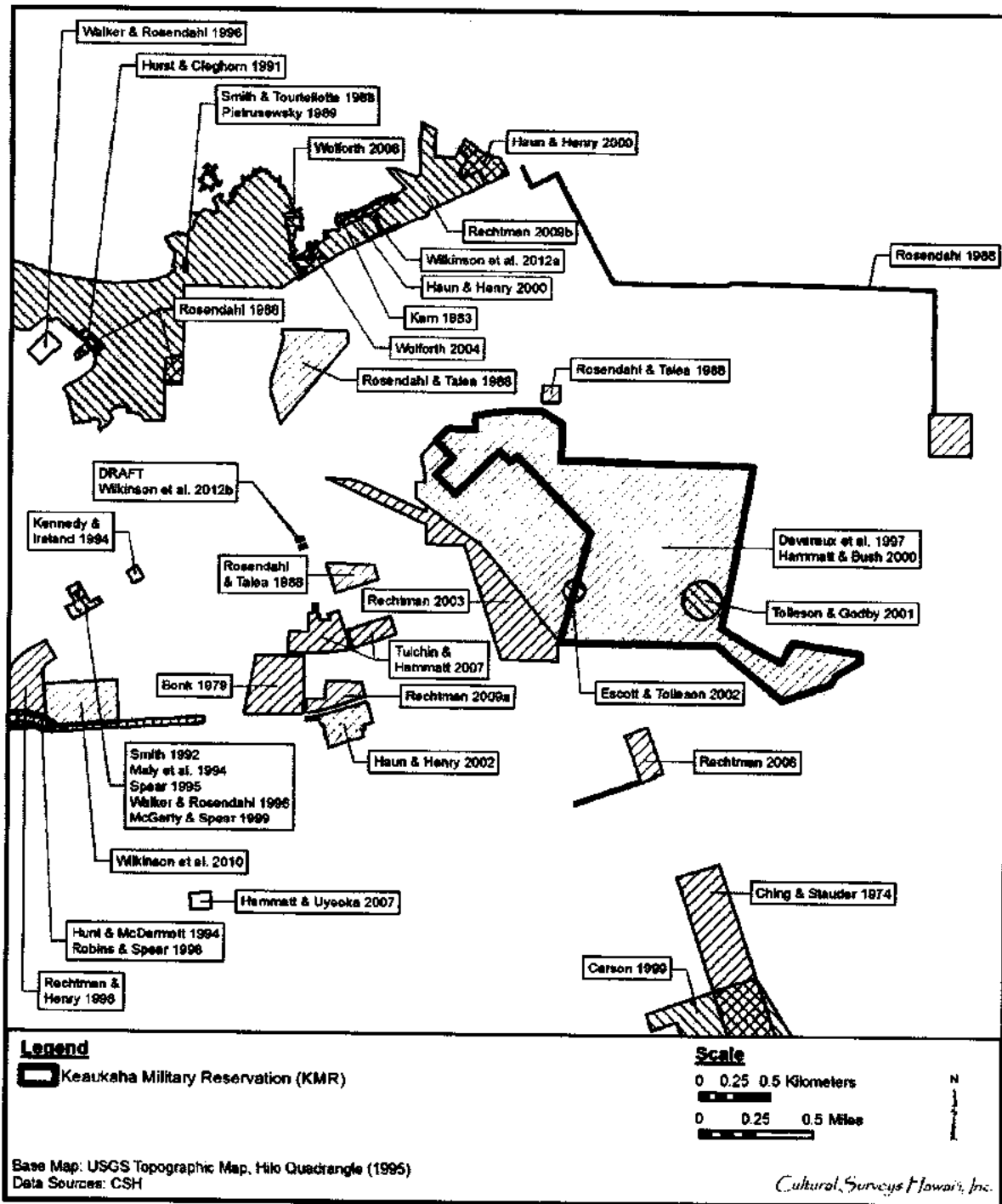


Figure 19. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing previous archaeological studies within and in the vicinity of the KMR

Table 2. Archaeological Studies Conducted Within and in the Immediate Vicinity of the KMR

Source	Nature of Study	Location	Results
Ching and Stauder 1974	Archaeological reconnaissance	Between Keaukaha and South Hilo-Puna boundary for proposed 2.5-mile alignment referred to as Alternative A between Keaukaha and South Hilo-Puna boundary; proposed alignment began at end of Kalaniana'ole Avenue	Four sites identified, concentrated near South Hilo-Puna Boundary; sites included stacked <i>pāhoehoe</i> wall on South Hilo-Puna boundary, platform/monument burial, animal enclosure and habitation site; recommendations included archaeological inventory survey, moving alignment <i>mauka</i> to avoid sites and clearing land by hand to avoid sites
Bonk 1979	Archaeological inventory survey	Survey of HHL Pana'ewa Tract 1, Waiākea, South Hilo	Historic wall segment and "old" road
Kam 1983	Records check	State lands at Reed's Bay, Waiākea, TMK: [3] 2-1-007:011	Records check confirmed no previous records for unnamed <i>heiau</i> depicted on modern tax map; <i>heiau</i> assigned SIHP # 50-10-35-18695
Rosendahl 1988	Archaeological reconnaissance survey	Hilo Judiciary Complex five locations each 5+ acres TMKs: [3] 2-2; [3] 2-2-002:001, 054, 055, 056, 062; [3] 2-2-010:016; [3] 2-2-033:011, 012, 013, 014, 019, 020; [3] 2-3-015:001 and [3] 2-3-044:009	No historic properties identified
Rosendahl and Talea 1988	Archaeological reconnaissance survey	Proposed Irradiation Plant site, TMKs: [3] 2-1-012:106 (Potential Site A), 2-1-012:Var. (Potential Site B), 2-1-025:Por. 86 (Potential Site C)	No historic properties identified
Smith and Tourtellotte 1988	Burial removal	Wailoa Bridge, Lihikai Street, Waiākea, TMK: [3] 2-4-001:012	Excavation and study of SIHP # 50-10-35-11115
Pietrusewsky 1989	Burial documentation	Wailoa Bridge, Lihikai Street, Waiākea, TMK: [3] 2-1-001:012	Documentation of single set of human remains in area near mouth of Wailoa Stream, in vicinity of current Suisan Fish Market; burial designated SIHP # 50-10-35-11115
Hurst and Cleghorn 1991	Historical literature and documents survey	Hilo Judiciary Complex, Waiākea; Part 1	Preservation of pre-historic remains created by pre-existing wet marshlands recommended

Source	Nature of Study	Location	Results
Smith 1992	Field inspection for State land disposition of proposed Dept. of Water Supply office site in Hilo	Waiākea Cane Lots, Waiākea, TMK: [3] 2-4-057:001	Several stacked stone walls, mounds, large rectangular enclosure, and several C-shapes
Hunt and McDermott 1994	Archaeological inventory survey	Lands of Waiākea, Kūkūau 1 and 2; Ponahawai, South Hilo (Puainako Street Extension project)	Inventory survey (final report of Hunt 1992); historical, oral interview and archaeological data combine to demonstrate numerous stack stone features in project area (comprising of 13 properties) all related to historic sugar cane agriculture
Kennedy and Ireland 1994	Archaeological inventory survey	Proposed Hilo Forestry Office Complex Extension located at TMK: [3] 2-2-027:001 (por.) in Waiākea Ahupua'a corner of Kāwili and Kīlauea, 0.5 acres	No historic properties identified
Maly et al. 1994	Archaeological inventory survey	Waiākea Cane Lots portion of Parcel 6, TMK: [3] 2-4-057:001; 4.5 acres	Four sites comprising 47 features (C-shaped and L-shaped walls, mounds, terraces and walls); similar to Hunt and McDermott (1994) commercial agricultural sites but date and artifacts suggested pre-contact component
Spear 1995	Data recovery excavations	SIHP #s 50-10-35-19431, -19432, -19433, and -19434, Land of Waiākea, TMK: [3] 2-4-057:001	Data recovery of Maly et al. (1994) parcel; SIHP #s 50-10-35-19431, -19432, -19433, and -19434; all features post-Contact, few T-habitations but most related to sugar cane agriculture
Robins and Spear 1996	Archaeological inventory survey	Puainako Street Realignment/Extension project expanded corridor, Waiākea, Kūkūau 1 and 2 and Ponahawai	Additional historic sugar cane agricultural features located in expansion of Hunt and McDermott (1994) corridor study area
Walker and Rosendahl 1996	Archaeological assessment study	Hilo Judiciary Complex project, seven locations TMKs: [3] 2-6-015:001, 002; [3] 2-6-016:002; [3] 2-4-049:018, 019; [3] 2-2-015:033; 2-4-001:012; [3] 2-3-036:3;00 2-3-032:001; [3] 2-4-057:001)	Four previously identified sites: SIHP #s 50-10-35-19431 C-shape, -19432 U-shape, -19433 complex, -19434 complex; one new site: -1721-1 sugar cane mill (no SIHP number given)

Source	Nature of Study	Location	Results
Devereux et al. 1997	Archaeological reconnaissance survey	Keaukaha Military Reservation South Hilo District (Hawai'i National Guard) 503.6-acre parcel, TMKs: [3] 2-1-012:003 and [3] 2-1-013:010	Identified two sites, C-shape enclosure and coral mound (see Hammatt and Bush 2000)
Rechtman and Henry 1998	Archaeological inventory survey	University of Hawai'i-Hilo Kāwili Street development, TMK: [3] 2-4-001:005	Four previously identified sites: SIHP #s 50-10-35-19431, -19432, -19433, -19434, and new site (-21461); 117 features all related to commercial sugar cane agriculture
Carson 1999	Archaeological inventory survey	176-acre Pana'ewa Campus site, Waiākea Ahupua'a, just SW of Pana'ewa Drag Strip, TMK: [3] 2-3-013:154	No historic properties identified
McGerty and Spear 1999	Archaeological inventory survey	Additional unsurveyed portion of TMK: [3] 2-4-057:001, Land of Waiākea	Four previously identified sites SIHP #s 50-10-35-19431, -19432, -19433, -19434; 13 features all related to commercial sugar cane agriculture
Hammatt and Bush 2000	Archaeological inventory survey	Selected portions of the Hawai'i Army National Guard 503.6-acre Keaukaha Military Reservation, Waiākea Ahupua'a, TMKs: [3] 2-1-012:003 and [3] 2-1-013:010	Same study parcel as Devereux et al. 1997 de-accessions coral mound and records four sites: SIHP #s 50-10-35-18869 Puna Trail, -21657 C-shape (military), -21658 five <i>ahu</i> , -21659 modified blister (agricultural)
Haun and Henry 2000	Archaeological inventory survey	Hilo Harbor, Waiākea, TMKs: [3] 2-1-009:002, 012, 041, 042 and [3] 2-1-009:020-037	SIHP # 50-10-35-22486, early 1900s U.S. engineer facilities
Tolleson and Godby 2001	Documentation of SIHP # 50-10-35-21771	Hawai'i Army National Guard Keaukaha Military Reservation, Hilo, TMK:[3] 2-1-013 and 010 and 2-1-012:003	Artifacts including horse/mule shoes, sharpening implements, sharpening wheel and hoof files suggest relation to historical road construction along Puna Trail; site also interpreted as possibly only extant example of historic <i>pau hana</i> (recreational drinking) activity

Source	Nature of Study	Location	Results
Escott and Tolleson 2002	Archaeological inventory survey	Keaukaha Military Reservation, TMKs: [3] 2-1-012:003 and 2-1-013:010, South Hilo District, Island of Hawai'i	Four sites: SIHP #s 50-10-35-18869, -21657, -21658, -21659
Haun and Henry 2002	Archaeological inventory survey	DHHL project at Pana'ewa Land of Waiākea, TMK: [3] 2-2-047:001, 28 acres	No historic properties identified
Rechtman 2003	Archaeological and limited cultural impact assessment	Proposed Regional Solid Waste Sorting Station, TMKs: [3] 3-1-012:004 por. and 3-2-113:011, 150, 151, 162, 167, 168	No historic properties identified
Wolforth 2004	Archaeological inventory survey	Kanakea Fishpond at Reed's Bay, TMK: [3] 2-1-006:013 and 015	Previously identified Kanakea Pond (SIHP # 50-10-35-18896), another small, unnamed pond (SIHP # 50-10-35-24230) and remnant feature (SIHP # 50-10-35-7413) of former railroad
Rechtman 2006	Archaeological survey for determination of no historic properties affected (letter report)	Yamada and Sons Roadway and Quarry site, Waiākea Ahupua'a, TMKs: [3] 2-1-013:002 por. and 2-1-013:148 por.	No historic properties identified
Wolforth 2006	Archaeological inventory survey	Expansion of existing Reed's Bay Beach Park, TMK: [3] 2-1-006:013 and 015	Two previously identified sites, Kanakea Pond (SIHP # 50-10-35-18896, Hawaiian fishpond) and small portion of historic railroad (SIHP # 50-10-35-7413); three new historic properties identified: Reed's Bay Beach (SIHP # 50-10-35-24917), Scott-Legionnaire-Orchid Hotel (SIHP # 50-10-35-24918) and three pecked basins (SIHP # 50-10-35-24919)
Hammatt and Uyeoka 2007	Archaeological monitoring	Waiākeawaena Elementary School, DOE Cesspool project, Waiākea Ahupua'a, TMK: [3] 2-2-042:017	No historic properties identified

Source	Nature of Study	Location	Results
Tulchin and Hammatt 2007	Archaeological literature review and field inspection	Wal-Mart Expansion project, Waiākea Ahupua'a, TMKs: [3] 2-2-047:059, 072, 074 and [3] 2-1-025: 090	No finds in either project parcel (A or B); lack of findings in Parcel A likely due to intensive land modification; no further work recommended; Parcel B densely vegetated and therefore further AIS work recommended
Rechtman 2009a	Archaeological survey for determination of no historic properties affected (letter report)	Kamoleao Laulima Community Resource Center, Waiākea Ahupua'a, TMK: [3] 2-2-047:075	No historic properties identified
Rechtman 2009b	Archaeological assessment survey	Hilo Bayfront Trails project, Pi'ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea Ahupua'a	No historic properties identified; preparation of archaeological monitoring plan recommended given potential for disturbed and/or undisturbed subsurface burials
Wilkinson et al. 2010	Archaeological monitoring	Waiākea Elementary and Intermediate School, DOE Cesspool project, Waiākea Ahupua'a, TMK: [3] 2-4-001:015 por.	No historic properties identified
Wilkinson et al. 2012a	Archaeological literature review and field inspection	Kumau Street Entrance Improvements, Pier 4, Hilo Harbor, Waiākea Ahupua'a, TMK: [3] 2-1-007	No historic properties identified
Wilkinson et al. 2012b	Archaeological literature review and field inspection	County of Hawai'i Bus Maintenance Yard project, Waiākea Ahupua'a, TMK: [3] 2-2-058:018 por.	No historic properties identified

*References in bold are studies within the KMR

Also in 1988, Paul H. Rosendahl, Ph.D., Inc. (PHRI) reported on the results of an archaeological reconnaissance of five proposed locations surrounding the KMR for the Hilo Judiciary Complex (Rosendahl 1988; see Figure 19). No finds were reported. That same year, PHRI conducted an archaeological reconnaissance survey for a proposed irradiation plant site at three locations in Hilo, including one area north and east of the KMR (Rosendahl and Talea 1988; see Figure 19). Similarly, no historic properties were identified due to extensive land modifications associated with urban development.

In 1991 the Bishop Museum completed a literature and documents search for the proposed Hilo Judiciary Complex northwest of the KMR (Hurst and Cleghorn 199; see Figure 19). The report concluded with a recommendation of test excavations and borings to identify any potential pre-Contact cultural layers.

In 1992 the SHPD undertook a field inspection in the Waiākea Cane Lots west of the KMR (Smith 1992; see Figure 19). Several stacked stone walls, mounds, a large rectangular enclosure, and several C-shapes were encountered during the inspection, and inventory survey was recommended prior to any land-disturbing activity.

In 1994, PHRI completed an archaeological inventory survey at Parcel 6 within the Waiākea Cane Lots (Maly et al. 1994; see Figure 19), per the earlier recommendations of the SHPD (Smith 1992). According to the report:

During the field work, four sites consisting of 47+ features were identified in the study parcel. The sites consist of both single and multiple- components, and their physical condition ranges from poor to good. Formal feature types include C-shape enclosures, cupboards, L-shape enclosures, mounds, terraces, and walls. Functional feature types include both temporary and long-term habitation and agriculture. As a part of the survey, two subsurface test units, totaling three square meters, and one shovel test were excavated at Sites 19431 and 19432. No substantial cultural deposits or portable remains were identified as a result of these investigations. [Maly et al. 1994:ii]

Furthermore, a "volcanic glass flake and a charcoal sample were recovered from Site 19431, a possible historic habitation with an associated agricultural site . . . [yielding] a conventional radiocarbon date of 490 ± 70 B.P." (McGerty and Spear 1999:4-6). This date range indicated the potential presence of a pre-Contact cultural layer.

In 1994 Archaeological Consultants of Hawai'i, Inc. conducted an archaeological inventory survey for the proposed Hilo Forestry Office Complex Extension west of the KMR (Kennedy and Ireland 1994; see Figure 19). No historic properties were identified due to extensive land modifications associated with the urban development of Hilo. However, one historic property, SIHP # -19626 (stone wall), was identified bordering the perimeter of the study area. The site consists of a bi-faced, core-filled wall constructed of stacked, and in some sections, mortared basalt boulders. The site was determined to be of historic origin.

Two surveys were completed west of the KMR for the proposed Puainako Street Extension (Hunt and McDermott 1994, Robins and Spear 1996; see Figure 19). These studies along with an earlier survey (Hunt 1992) covered various road corridor alignments from 200-1,500 ft elevation, through multiple *ahupua'a* including Waiākea, Kūkūau 1 and 2, and a small part of Ponahawai. A total of 13

sites were observed and recorded. Site types included stacked stone walls, mounds, platforms, modified outcrops, and faced terraces. Also documented were railroad-related features such as berms, sections of track, and cross-ties. The historical research and oral interviews with knowledgeable local residents provided ample evidence that all of these features were historic and related to the development of commercial sugar cane agriculture in this portion of Hilo after the 1870s. The stacked stone structures are predominantly related to field clearance. The stony soil of this region yielded large quantities of basalt cobbles and boulders that had to be stored in an efficient manner to maximize the arable land. The limited evidence of prehistoric land use within the Pu'ainako Street Extension project clearly predated construction of the numerous stacked stone features (Hunt and McDermott 1994:104-105, 108).

In 1995, Scientific Consultant Services, Inc. (SCS) conducted data recovery at the four sites investigated by Maly et al. (1994) (Spear 1995; see Figure 19). Excavation at SIHP # -19431 found no evidence of a buried pre-Contact cultural layer. As described by McGerty and Spear (1999:6), the volcanic glass flake identified during the 1994 survey and its associated radiocarbon date were interpreted as examples of the "subtle evidence on Hawaiian use of the area . . . found only in sparse and unpredictable spatial distribution" (Hunt and McDermott 1994:108).

In 1996 PHRI conducted an assessment study at seven newly proposed locations for the Hilo Judiciary Complex (Walker and Rosendahl 1996; see Figure 19). A total of five historic sites were documented, including 47+ features relating to sugar cane cultivation and production (SIHP #s -19431 through -19434) and the old Hilo Sugar Company Mill (SIHP # -21133) (Walker and Rosendahl 1996:20-22). SIHP # -19431 is a C-shaped structure. While the architectural remains are historic, a subsurface prehistoric fire pit and volcanic glass artifact were discovered at the site, indicating "prehistoric occupation prior to early historic sugar cane cultivation" (Walker and Rosendahl 1996:22).

In 1998 PHRI conducted an archaeological inventory survey for the University of Hawai'i at Hilo Kāwili Street Development, west of the KMR (Rechman and Henry 1998; see Figure 19). One historic property was identified, SIHP # -21461, an agricultural field complex associated with historic sugar cane agriculture, consisting of piled rock mounds and stacked rock walls and enclosures.

In 1999 Haun and Associates returned to the vicinity of the Maly et al. (1994) and Spear (1995) study parcels to conduct an archaeological inventory survey of an adjacent unsurveyed portion of TMK: [3] 2-4-057:001 (McGerty and Spear 1999; see Figure 19). Four historic properties were identified, SIHP #s -19431, -19432, -19433, and -19434. All four sites were determined to be associated with historic sugar cane agriculture.

The same year, SCS completed an archaeological inventory survey for a proposed 176-acre Pana'ewa Campus located south of the KMR (Carson 1999; see Figure 19). No finds were reported and no further work was recommended.

In 2000, Haun and Associates undertook a survey of two parcels near the Hilo Harbor, one parcel just west of the breakwater, and the second parcel at the Ocean View Lease Lots and within the lands abutting the eastern end of Ocean View Drive (Haun and Henry; see Figure 19). A concrete slab complex, SIHP # -22486, is located in this latter parcel, adjacent to the current project area. According to Haun and Henry (2000:22), the site "consist[s] of two concrete slabs (Features A and

B), a set of parallel concrete curbs (Feature C), and two displaced sections of concrete slab located at the water's edge (Feature D)." The report noted that despite signs of disturbance, the features remain in fair condition.

In 2002 Haun and Associates conducted an archaeological inventory survey west of the KMR (Haun and Henry 2002; see Figure 19). No historic properties were identified due to extensive land modifications associated with urban development.

The following year, Rechtman Consulting undertook an archaeological inventory survey directly west of the KMR (Rechtman 2003; see Figure 19). Within the project area, a 90-acre corridor was investigated. No finds were reported and no further work was recommended.

In 2004 and 2006 SCS undertook archaeological studies for proposed parks around Reed's Bay north of the KMR (Wolforth 2004 and 2006; see Figure 19). The 2004 study for Kūhiō-Kalaniana'ole Park documented three sites, Kanakea Pond (SIHP # -18896), a second unnamed pond (SIHP # -24230), and a remnant (SIHP # -7413) of the former railroad that once crossed the small bay. The 2006 study for Reed's Bay Beach Park re-identified the Kanakea Pond and the railroad remnant, as well as three newly identified sites, SIHP # -24917 (Reed's Bay Beach), SIHP # 24918 (location of the former Scott-Legionnaire Hotel), and SIHP # -24919 (pecked basins). Both of the ponds and the railroad remnant were recommended for preservation.

In 2006, Rechtman Consulting completed an archaeological survey for development of a roadway and quarry site in Pana'ewa south of the KMR (Rechtman 2006; see Figure 19). Extensive disturbance was noted and no historic properties were identified.

In 2007 CSH undertook an archaeological literature review and field inspection for the approximately 33-acre Wal-Mart Expansion project, located just west of the KMR (Tulchin and Hammatt 2007; see Figure 19). The study parcel was comprised of two parcels, A and B; no historic properties were identified within either parcel. Parcel A exhibited extensive past disturbance, and no further work was recommended there. Parcel B was observed to be relatively unmodified, consisting of rocky terrain with extremely dense vegetation; thus, while no historic properties were observed in Parcel B, archaeological inventory survey was recommended.

Also in 2007, CSH monitored septic upgrades at Waiākeawaena Elementary School, southwest of the KMR (Hammatt and Uyeoka 2007; see Figure 19). No finds were reported.

In 2009 Rechtman Consulting completed a pedestrian survey of approximately 13 acres for the proposed Kamoleao Laulima Community Resource Center, west of the KMR (Rechtman 2009a; see Figure 19). No finds were reported.

The same year, Rechtman Consulting undertook an archaeological assessment for the proposed Hilo Bayfront Trails project, which comprised the coastal portions of Pi'ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea Ahupua'a (Rechtman 2009b; see Figure 19). While no historic properties were identified, the study noted the potential for subsurface burials, citing the earlier investigations by Pietruszewsky (1989) and Smith and Tourtellote (1988). Development of an archaeological monitoring plan was recommended for the project. Not shown on Figure 19, a cultural impact assessment (CIA) was also completed (Rechtman and Lang 2009).

Also in 2009, CSH monitored septic upgrades at Waiākea Elementary and Intermediate Schools, west of the KMR (Wilkinson et al. 2010; see Figure 19). No finds were reported.

In 2010, CSH undertook an archaeological literature review and field inspection for the proposed Kumau Street pier, north of the KMR along the coast (Wilkinson et al. 2012a; see Figure 19). No historic properties were identified, and no further archaeological work was recommended.

In 2012, CSH carried out an archaeological literature review and field inspection west of the KMR (Wilkinson et al. 2012b); the report has not yet been finalized. While no significant historic properties were identified, the project area was found to contain WWII-era Quonset huts and other military remnants.

4.3.1 Past Archaeological Studies at KMR

As mentioned in Section 4.2, in 1932 Alfred Hudson conducted an archaeological survey of the eastern part of the Island of Hawai'i based on fieldwork carried out during parts of 1930, 1931 and 1932 (Hudson 1932:x). Within the present area of the KMR, Hudson identified the Puna Trail and an additional site that now appears to be destroyed (SIHP # -18844; see Section 4.3.2). The later McEldowney (1979) and Barrère et al. (1980) investigations of the greater Hilo area revisited many of the sites recorded by Hudson, including the Puna Trail within the KMR.

The first archaeological survey specifically conducted at the KMR was undertaken in 1997. That year, CSH conducted a Phase I archaeological reconnaissance survey of KMR (Devereux et al. 1997; see Figure 19). Two historic properties were observed and given temporary site numbers: CSH 1 (C-shape) and CSH 2 (coral mound). Both sites were determined to be associated with the Puna Trail (also known as the "Old Puna Trail"), a route utilized for travel between the Hilo coastline and the Kīlauea Caldera (see Section 4.2). The relative age (pre-Contact or historic) of the sites was not determined.

In 2000, CSH returned to the KMR to complete a Phase II archaeological inventory survey at KMR (Hammatt and Bush 2000; Figure 19). Sample transects were conducted in the relatively unmodified areas that had been identified during the Phase I survey. Areas that had been identified during Phase I as graded were not investigated during the Phase II survey. In addition, some forested areas west of the KMR boundary were surveyed. Four archaeological sites were documented: SIHP # -18869, a section of the Puna Trail; SIHP # -21657, a C-shaped enclosure located in the southeastern portion of KMR near the alignment of the Puna Trail, which was likely constructed as a military artillery position; SIHP # -21658, a grouping of five *ahu* or mounds situated parallel to the Puna Trail, and possibly marking a freshwater source or temporary shelter; and SIHP # -21659, a modified natural blister on a *pāhoehoe* flow believed to be a traditional Hawaiian agricultural planting feature. This last site was encountered in a forested area outside of the KMR to the west; as such, it is not presented with the remaining three historic properties documented by Hammatt and Bush (2000) in Section 4.3.2.

In 2001, SCS documented SIHP # -21771, a historic complex comprising an enclosure, low platform, two modified oblong depressions (one possibly representing an *imu* or underground oven) and associated fruit trees and a meadow located adjacent to the Puna Trail within the KMR (Tolleson and Godby 2001; see Figure 19). The site was initially identified during a biological and natural resources survey. The 2001 survey area consisted of a 100-sq-m area surrounding the previously identified feature. At SIHP # -21771, Tolleson and Godby (2001) documented artifacts including numerous historic bottles, various manuports and unworked waterworn stones, a *poi* pounder, pottery sherds, a cooking pot, horse/mule shoes, and sharpening implements including a grinding

wheel and hoof files. Subsurface testing was conducted at Features 2 and 3, and yielded pottery sherds and fragments of what may have been a Chinese funerary jar, respectively (Tolleson and Godby 2001:34-38). No burials were encountered, nor midden deposits, hearths, or other remains considered indicative of permanent habitation. Citing the results of background research and the dates reflected by the bottle assemblage, the authors concluded that SIHP # -21771 was a place used by road crew for short-term layovers associated with the construction and maintenance of the Puna Trail in the late nineteenth century. The presence of an extensive assemblage of liquor bottles and a pot possibly used to prepare *okolehao* (an alcoholic drink) also led to the interpretation of the site as a place for historic *pau hana* (finish work) activity (Tolleson and Godby 2001:49, 51). The significance of the site as a rare, extant example of its type was noted, though the report did not outright call for its preservation (Tolleson and Godby 2001:51).

The following year, SCS conducted an archaeological inventory survey to document SIHP # -23273, which had been identified during a reconnaissance survey conducted by HIARNG for a proposed fence line (Escott and Tolleson 2002; see Figure 19). The site consists of a remnant portion of a curbstone trail likely associated with the Puna Trail (Feature 1), and two agricultural planting features (Features 2 and 3) exhibiting "ambiguous architectural style" (Escott and Tolleson 2002:17). While no further work was recommended for the identified features, additional survey was recommended "for the area between Site 23273 and the Historic Puna Trail to locate additional remnant portions of the Feature 1 trail, and to determine its relationship and possible physical connection to the Historic Puna Trail" (Escott and Tolleson 2002:17).

4.3.2 Historic Properties Previously Documented at KMR

As discussed in Section 4.3.1 above, six historic properties have been previously documented within the KMR. These historic properties are presented in Table 3. The locations of five of these sites are known from background research, and indicated on Figure 20. The remaining site, SIHP # -18844, has very little existing documentation. The information on file at the SHPD indicates only that it was first documented by Hudson (1932). Considering its numerical sequence, the site was likely assigned its present SIHP number around the time of McEldowney's (1979) study of Hilo; however, based on the existing information it could not be correlated with any features documented in either the Hudson (1932) or McEldowney (1979) report. The SHPD provided CSH with a screen shot from its GIS database (Figure 21), indicating the potential location of SIHP # -18844; because its location has never been verified, the site is not included on Figure 20.

Table 3. Historic Properties Previously Documented Within the KMR

SIHP #	Study Reference(s)	Site/Feature Type and Probable Age	Significance Criteria	Recommendation	Comments
-18844	Hudson 1932	Unknown	Not evaluated	Likely destroyed	SHPD GIS shows location of this site in previously disturbed portion of KMR (see Figure 21) and cites the 1932 Hudson survey; no additional information found
-18869	Hudson 1932; McEldowney 1979; Hammatt and Bush 2000	Historic trail	Portion within KMR no longer eligible based on consideration of modern impacts	No further work	Transportation route known as historic "Puna Trail," "Puna-Ka'u Trail," or "Old Government Road"; initially pre-Contact trail, improved in late nineteenth century as Government road with continued use in modern times; section nearer to Hilo destroyed; trail section through KMR largely modified into Jeep road; portion of trail in Puna District assigned SIHP # 50-10-36-21273
-21657	Hammatt and Bush 2000	Historic C-shaped enclosure	d	No further work	Probable military artillery position, based on construction style, context, and association with military refuse
-21658	Hammatt and Bush 2000	Likely late nineteenth century complex of five stone <i>ahu</i> or mounds (Features A through E)	d	Preservation through avoidance OR development of a mitigation plan	Series of <i>ahu</i> or mounds likely associated with Puna Trail; mounds of differing sizes and heights; may mark location of standing water or temporary shelter for travelers in adjacent collapsed lava blister

SIHP #	Study Reference(s)	Site/Feature Type and Probable Age	Significance Criteria	Recommendation	Comments
50-10-35 -21771	Tolleson and Godby 2001	Late nineteenth century complex: enclosure (Feature 1), low platform (Feature 2), and two oblong depressions (Features 3 and 4)	a, c, d	Preservation (implied)	Site associated with fruit trees and meadow; numerous artifacts ranging from <i>poi</i> pounder to grinding wheel to pottery sherds and horseshoes; site interpreted as "way station" associated with construction and maintenance of Puna Trail, and as possibly only extant example of historic <i>pau hana</i> (finish work) area; Feature 4 interpreted as possible <i>imu</i>
-23273	Escott and Tolleson 2002	Trail with sections of curbing (Feature 1) and associated agricultural features (Features 2 and 3)	Feature 1: d Feature 2 and 3: Not significant	No further work	Pre-Contact and/or historic trail possibly associated with historic Puna Trail System, with associated planting features over 50 years old; no further work recommended for these features, though additional survey recommended for area between the trail and SIHP #s -18869 and -21273

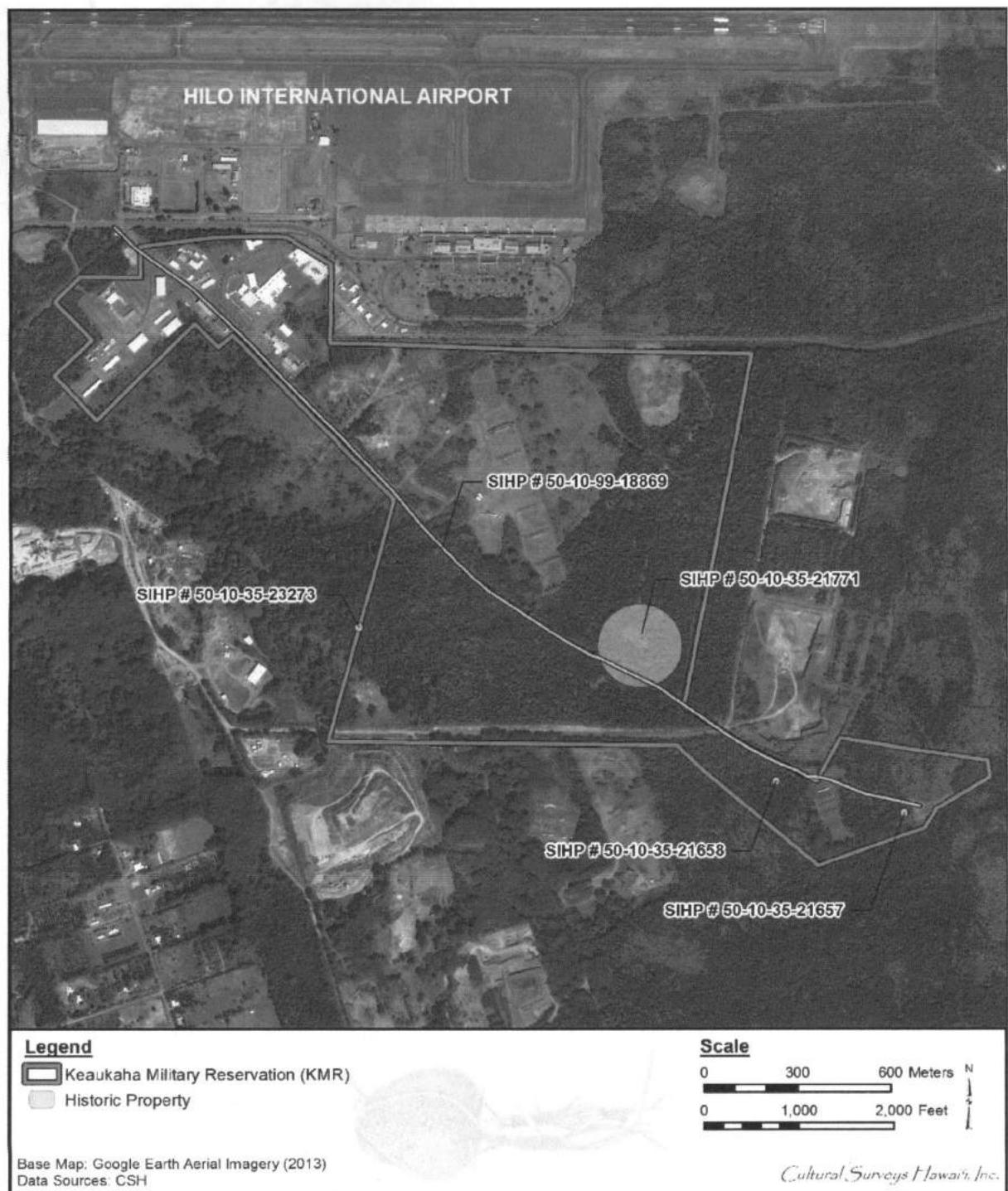


Figure 20. Aerial photograph (Google Earth 2013) showing the approximate locations of historic properties previously documented within the KMR (note: the locations and extent of the depicted historic properties are shown as understood from previous archaeological reports)

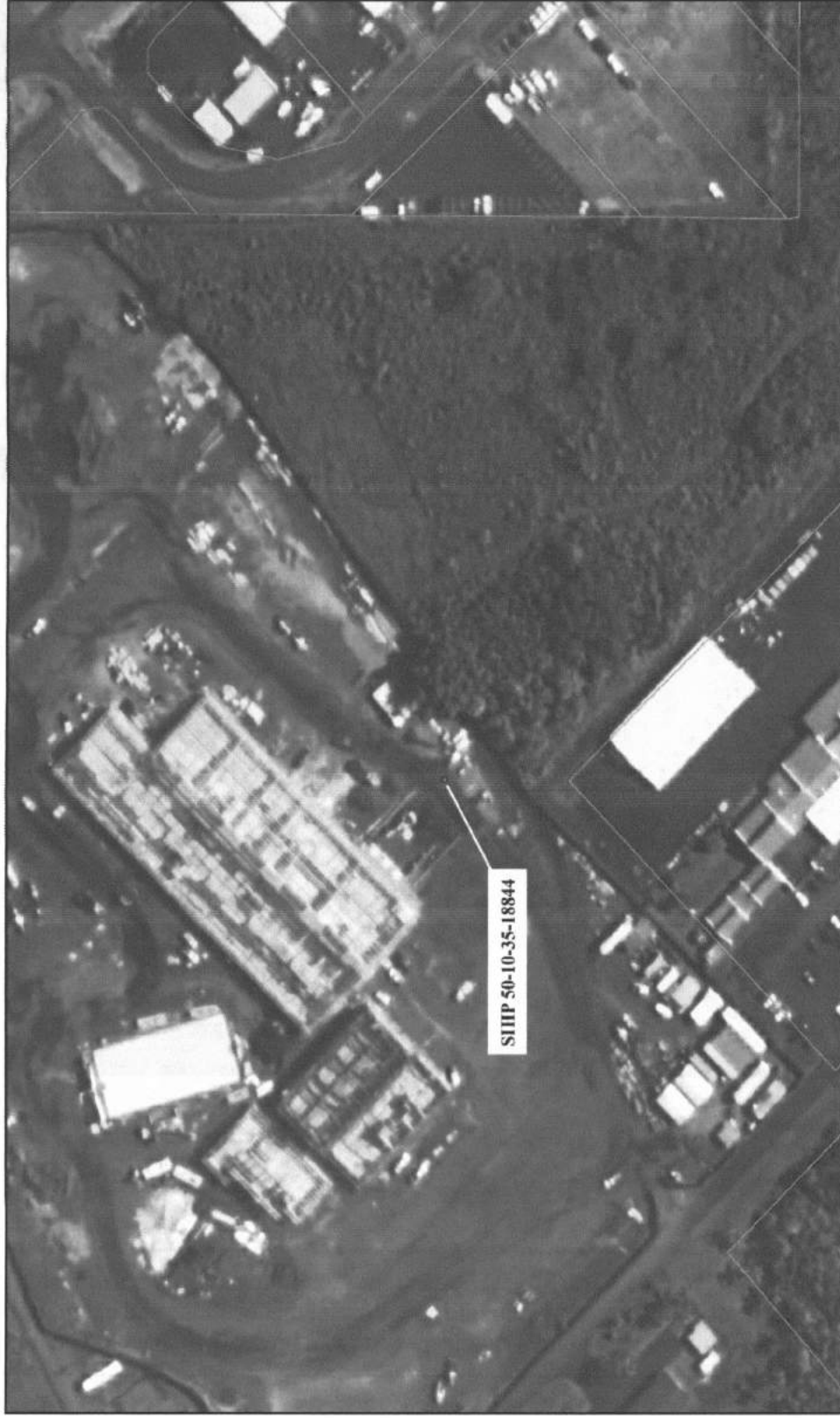


Figure 21. Adapted GIS database screen shot showing the potential location of SIHP # -18844, visible as a red dot near the center of photograph (Courtesy of SHPD)

4.4 Background Summary and Predictive Model

Waiākea, with its rich natural forest and ocean resources, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. Hawaiian gods and goddesses frequented Waiākea including Pele, Hi'iaka and Pana'ewa. Many legends have associated Waiākea with Hawaiian *ali'i* since the sixteenth century and describe it as a gathering place for ceremonies. The rich mountain resources of taro and sweet potato and the abundant marine resources, particularly shrimp and fish, made Waiākea very valuable to the Hawaiian people. Some 16 *heiau* of various sizes and classes stood within Waiākea.

Prehistorically the project area does not appear to have supported extensive habitation or large-scale agriculture. Habitations would have been located closer to the coast or further inland amid the more productive upland agricultural zones. This pattern is attributable to an excess of rainfall and lack of arable land within the dense forest that remains in the undisturbed portions of the project area. At present this forest is a mostly natural combination of endemic, indigenous, and introduced vegetation including such plants as *hala* (*Pandanus odoratissimus*), *Melochia* (*Melochia umbellata*), endemic 'ie 'ie (*Freycinetia arborea*), *ōhi'a* (*Metrosideros macropus*), guava, various ferns, glory bush (*Tibouchina lepidota*) and bing-a-bing (*Macaranga mappia*).

The KMR parcel would have been used for intermittent, small-scale agriculture, with the natural depressions in lava flows used for mulch-type agriculture. Natural resources, such as the prevalent *lauhala* (leaves of the *hala* plant) used for weaving, would have been collected. The project area remained marginal in the historic period, with the probable continuation of intermittent use for traditional Hawaiian agriculture. The Puna Trail (SIHP #s 50-10-99-18869 and 50-10-36-21273) was modified and became the most notable man-made feature on KMR's landscape. By the 1870s, the trail was a functioning horse trail. At this time the trail was a paved, 4-ft-wide trail, classified as a Type C trail following Apple's typology (1965:65). A small handful of sites previously documented within KMR (including a series of *ahu* or cairns; a section of curbstone trail with associated planting areas; and a historic complex comprising a low platform, enclosure, and modified depressions) have all been at least tentatively associated with the Puna Trail.

Unlike portions of Waiākea further to the west, the vicinity of the KMR was not utilized for sugar cane; therefore, stacked stone mounds associated with this late nineteenth and early twentieth century agricultural activity are not expected to be extant within the project area.

The KMR parcel was subjected to extensive development beginning in 1914 with the establishment of the National Guard of Hawaii Rifle Range and continuing through World War II with Army and Navy use. Large portions of the KMR were graded for buildings, roads, firing ranges and lawns. The most extensive modifications occurred in the northwest portion of the parcel. Any archaeological remains once present in the areas at KMR that have undergone extensive military-related development have been effectively removed. All of the structures in KMR date to the military use period. While the alignment of the Puna Trail through KMR survived these changes as a Jeep road, the nineteenth century characteristics of the trail, such as paving and curbstones, apparently did not. Because it has been modified for vehicle travel (Apple 1965:65), the Puna Trail through KMR has become a Type D trail, following Apple's trail typology.

The southeast portion of KMR is relatively undisturbed in comparison, and it is here that past survey work has located the remains of possibly prehistoric and early historic sites. However, given

the marginal nature of this area of Waiākea and the distribution of features indicated by past studies, a low site density is expected within the project area. The types of traditional archaeological sites likely to be found within KMR include small, temporary habitations or shelters, which could be associated with occupation near the Puna Trail. Agricultural areas may consist of groupings of mounds, low mounded walls, or modified pits, depressions or outcrops in exposed lava areas. These types of features are often found in marginal areas and are testimony to the Native Hawaiians' ability to utilize such areas for subsistence agriculture. If features of these types are found during the survey fieldwork, the potential for modification in early historic times or during the military era must be evaluated.

Military features may also be found within the project area. In addition to the more obvious buildings, Jeep roads, lawns, and shooting ranges, military use can leave less obtrusive remains. For example, small, crudely constructed stacked stone enclosures, similar to Native Hawaiian structures, are constructed as artillery positions during training exercises. It would not be unusual to find such structures within KMR. These features are usually distinguishable from Native Hawaiian ones by their cruder construction style, geographic association with other military structures, and their association with military debris, such as spent ammunition casings, MRE (meals ready to eat) packets and/or C-ration tins.

Section 5 Results of Fieldwork

5.1 Survey Findings

During the current AIS, CSH attempted to relocate SIHP # 50-10-35-18844. The general site location indicated on the SHPD GIS screenshot (see Figure 21) and the greater surrounding area was surveyed for any potential archaeological features. As no site description for SIHP # -18844 has been identified, this site is not presented below. Based on the findings of the present survey, this site appears to have been negatively impacted by past development at KMR and no longer exists (see Figure 5, Figure 21 and Figure 22). Other previously identified features that could not be relocated include Features B and C at SIHP # -23273 (see Section 5.2.5).

The pedestrian inspection identified 11 historic properties, including five previously identified and six newly identified sites. These sites are located on Figure 23 and Figure 24 and are summarized in Table 4. The locations of the documented sites in relation to the disturbed and undisturbed unmaintained grounds at KMR are indicated on Figure 25. The information used to obtain SIHP numbers for the newly identified sites is included in Appendix E.

The alignment of the historic Puna Trail (SIHP # -18869) was previously thought to be completely obliterated by modern improvements to the road (Hammatt and Bush 2000). During the current survey, a segment of the historic curbstone alignment was identified parallel to the modern Jeep road (see Figure 23 and Figure 24, Section 5.2.1). In order to better distinguish this historic segment from the modern jeep trail, it has been assigned a new site number (SIHP # -30038). Furthermore, at one previously identified site (SIHP # -21771) eight additional features were newly documented (see Section 5.2.4). These features were probably not identified during the Tolleson and Godby (2001) investigations at this site because of the somewhat limited (100 sq m) survey area and because of dense vegetation in the surrounding area. The boundary of SIHP # -21771 has been updated accordingly, representing a more accurate depiction of its extent (compare Figure 20 and Figure 24).



Figure 22. Photo showing the disturbed vicinity of SIHP # -18844; view to north

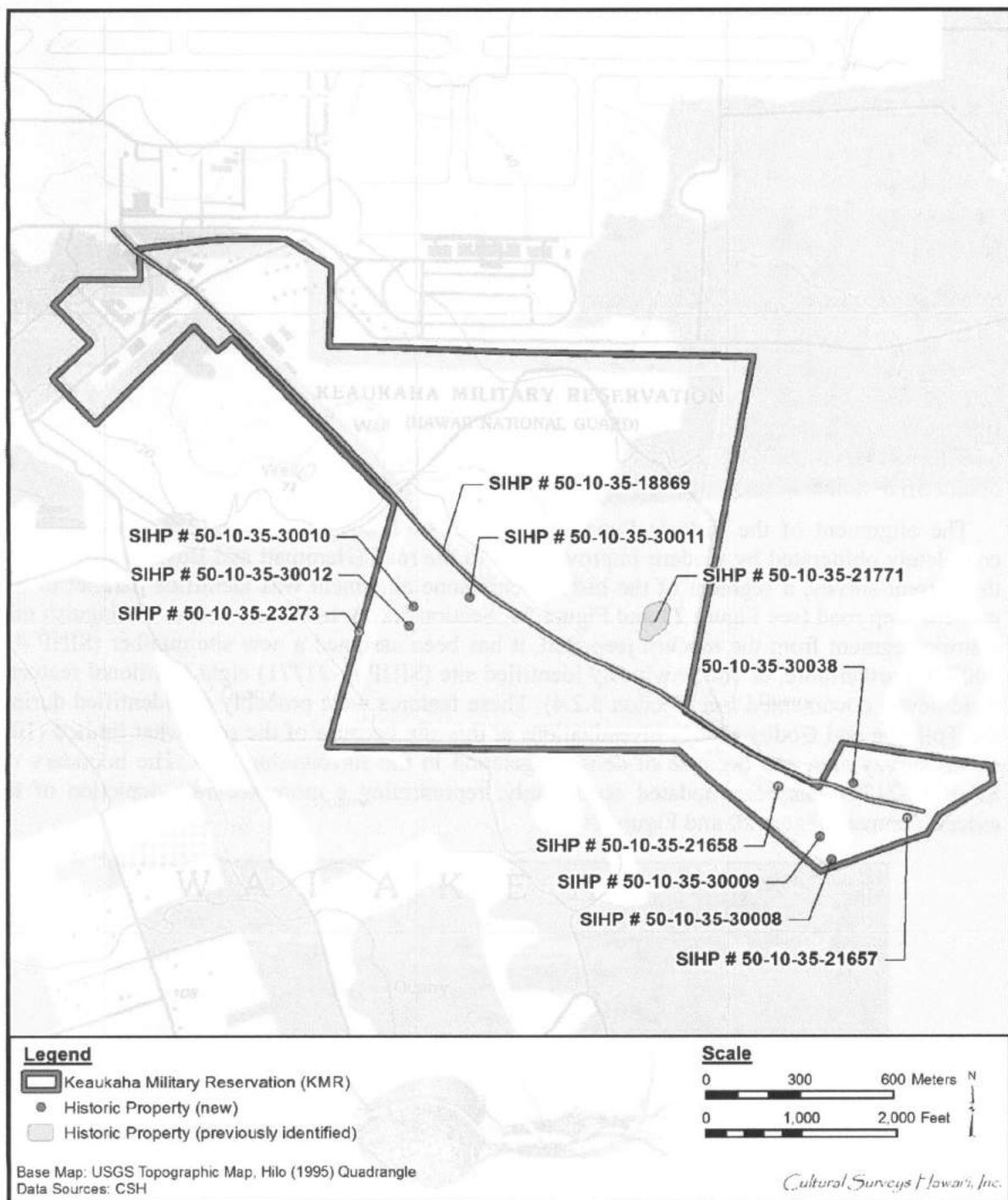


Figure 23. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing the locations of historic properties relocated or newly documented during the AIS within the KMR

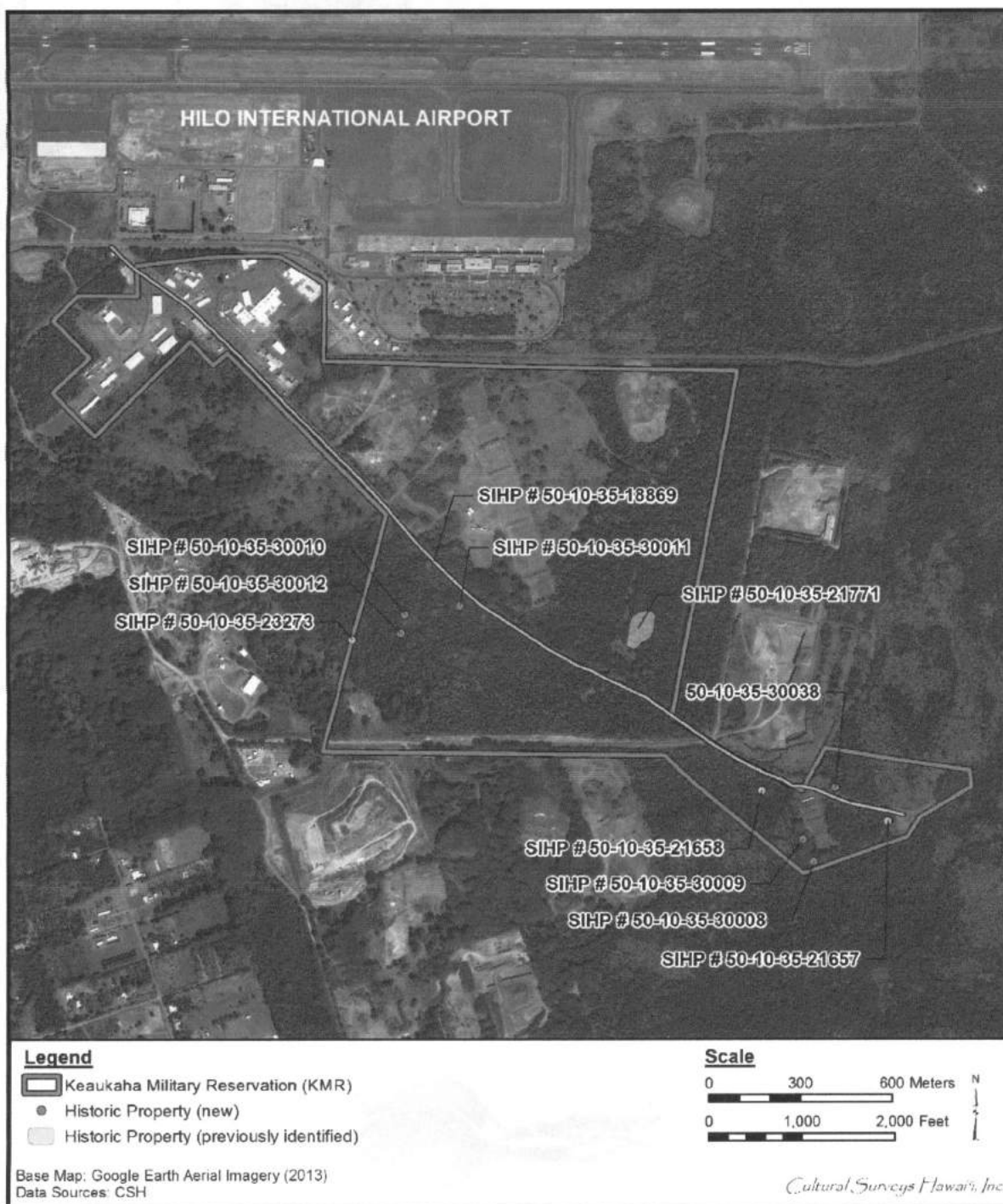


Figure 24. Aerial photograph (Google Earth 2013) showing the locations of historic properties relocated or newly documented during the AIS within the KMR

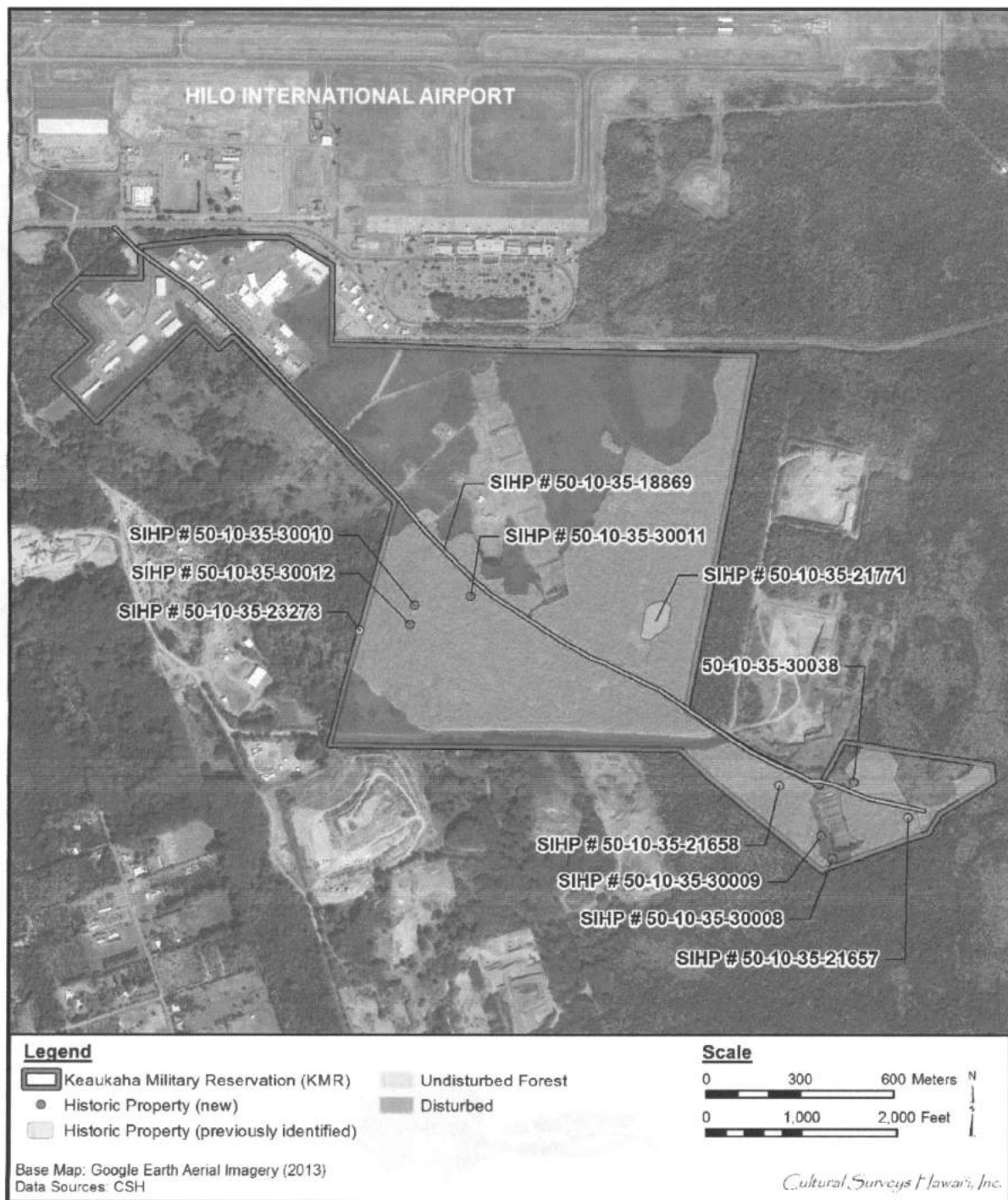


Figure 25. Aerial photograph (Google Earth 2013) showing the locations of historic properties relocated or newly documented during the AIS, in relation to both the disturbed and undisturbed portions of the survey area

Table 4. Summary of Historic Properties Documented During the Phase I AIS

SIHP # 50-10-35	Temporary CSH Site Number (2013)	# of Features	Formal Type	Function	Probable Age
-18869	CSH-003 (newly identified historic segment)	One	Trail	Transportation	Late nineteenth century/modern
-21657	—	One	C-shaped enclosure	Military artillery position	Twentieth century
-21658	—	Five (A–E)	Complex	Markers	Late nineteenth century or older
-21771	CSH-005 (newly recorded associated features)	Twelve (A–L)	Complex	Temporary habitation; activity area; possible agriculture	Late nineteenth century
-23273	—	Three; only Feature 1 was relocated	Complex	Transportation; agriculture	Pre-Contact to late nineteenth century
-30008	CSH-001	One	Modified lava tube	Recurrent shelter	Pre-Contact to historic
-30009	CSH-002	Three (A–C)	Complex	Temporary habitation	Pre-Contact to historic
-30010	CSH-004	Five (A–E)	Complex	Temporary habitation; activity area; possible agriculture	Late nineteenth century
-30011	CSH-006	Two (A–B)	Complex	Indeterminate	Late nineteenth century
-30012	CSH-007	One	Trail	Transportation	Pre-Contact to late nineteenth century
-30038	CSH-003	One	Trail	Transportation	Late nineteenth century

5.2 Historic Properties Descriptions

5.2.1 SIHP # 50-10-35-18869

Hudson (1932) first described the Puna Trail as follows:

Site 38. The beginning of the Puna-Kau trail is now in back of the [HIARNG] rifle range, the section nearer Hilo having been destroyed. It is about 4 feet wide, paved with bits of aa lava and flat stones, banked on the sides, and built up in crossing gullies. For the first 5 miles toward Keaau the trail runs through dense jungle which has disrupted much of the stonework. It can be followed with difficulty. [Hudson 1932:246]

The trail was briefly noted by McEldowney (1979) as "Segments of trails" occurring "at frequent intervals along the coast west of Leleiwi Point." Hammatt and Bush (2000:27-28) described SIHP # -18869 (citing also its additional segment in Puna District, SIHP # -21273) as follows:

Site Type: Puna Trail (Historic Trail)

Function: Transportation

Features (#): 1

Site Length: Approximately 3000 m within project area

Ahupua'a: Waiākea

Elevation: 60 ft. amsl

The Puna Trail forms the primary roadway through the KMR facility. It extends from the facility entrance, off the airport access road in the northwest corner of the facility, through the center of KMR to the southeast corner of the facility. The northwestern portion of the trail through the facility is paved. The southeastern portion of the trail is unpaved, consisting of a Jeep-road similar to the other unpaved roads which cross KMR. From the bull-dozer push-piles found at intervals along the unpaved portion of the trail, it appears that the trail was bulldozed or graded in the past, probably by the military. No sign of the historically described paving and curbstones was observed. It appears that modifications of the route have removed all traces of the historic trail which preceded the Jeep road.

The Puna Trail, taken in its entirety as it stretches from Hilo through Puna and possibly into Kau, is a significant historical property under the criteria of the State and National Register of Historic Places, for both its information content regarding historic transportation (criterion D) and for its contribution to broad patterns of history (criterion A). Lass's (1997:24) investigations of the "Old Government Road", a portion of the Puna Trail approximately 7 miles to the southeast of the KMR facility, demonstrate that portions of this historic trail are well preserved and available for future research and public education and enjoyment. However, within KMR, the remains of the Puna Trail have been altered by military use. Only the alignment of the trail remains. The available

information for the trail, which now consists of its alignment, has been recorded on project area maps. For this reason, within KMR, the segment of the Puna Trail is considered no longer significant. [McEldowney 1979:10]

During the current AIS, CSH relocated SIHP # -18869 within the project area (Figure 26 and Figure 27). Hammatt and Bush (2000) accurately describe the general state of the Puna Trail alignment within the KMR. Based on the current findings, the site no longer retains integrity as a historic property.



Figure 26. Photograph of a portion of SIHP # -18869 within KMR, view to east



Figure 27. Photograph of a portion of SIHP # -18869 within KMR, view to west

5.2.2 SIHP # 50-10-35-21657

Hammatt and Bush (2000) described SIHP # -21657 as follows:

Site Type: C-Shape

Function: Military Artillery Position

Features (#): 1

Site Dimension: 4.25 m (meters) by 5.2 m (14 ft. x 17 ft.)

Ahupua'a: Waiakea

Elevation: 60 ft. a.m.s.l.

Site 50-10-35-21657 is located approximately 45 m. (150 ft.) from a HIARNG quonset hut at 1,030 magnetic north, near the quarry at the southeast end of KMR. It is surrounded by sharply undulating *pahoehoe* composed of raised areas, deep crevices, and several collapsed lava tubes. The surrounding vegetation consists of *ohia*, strawberry guava, vines, *ti* and orchids.

Site -21657 is a "C-shaped" stacked-stone enclosure measuring approximately 4.25 m. (14 ft. east-west) by 5.2 m. (17 ft. north-south) [Figure 28]. The interior of the structure measured 3.6 m (12 ft. east-west) by 3.0 m. (9.5 ft.) north-south. The average height of the interior face is 118 cm (centimeters), while the exterior face is somewhat sloped with heights ranging from 125-190 cm. The enclosure is built against the south edge of a raised *pahoehoe* flow, with its south and east sides stacked up to create a protective wall of uniform height. The site is in fairly good condition though there is evidence of some collapse.

Site -21657 is constructed of roughly stacked *pahoehoe* boulders and cobbles. At the top of the structure the rocks are one course thick, while the bottom (due to sloping walls) is thicker. This feature is one to five courses wide, with the south and east sides being the steepest. The interior floor surface of the structure is sloped and consists of boulder, cobbles, smaller rocks and pockets of humus. Several small trees (*ohia*, strawberry guava), orchids and *ti* are growing within the structure. No indigenous artifacts or marine shell midden was observed. Immediately to the west of the structure several military trash items were noted, including MRE's, tuna cans, and miscellaneous unidentifiable metal fragments.

Due to the crude construction of the walls, the lack of indigenous artifacts, or other cultural material, the sloping and rocky interior, and the garbage and debris left from military activities, it is likely that the structure is military in origin.

This feature was not tested. The generally thin humus layer over bedrock that was found within and around the structure had no excavation potential.

There were difficulties with dating the construction of this site. Based on the association with the MRE packets, which came into use after the Vietnam War, it would seem the structure was used within the last 20 to 25 years. The older, C-rations, type tins also found at the structure date back to World War II, suggesting that the structure may be older than 50 years. For this reason the site was given a

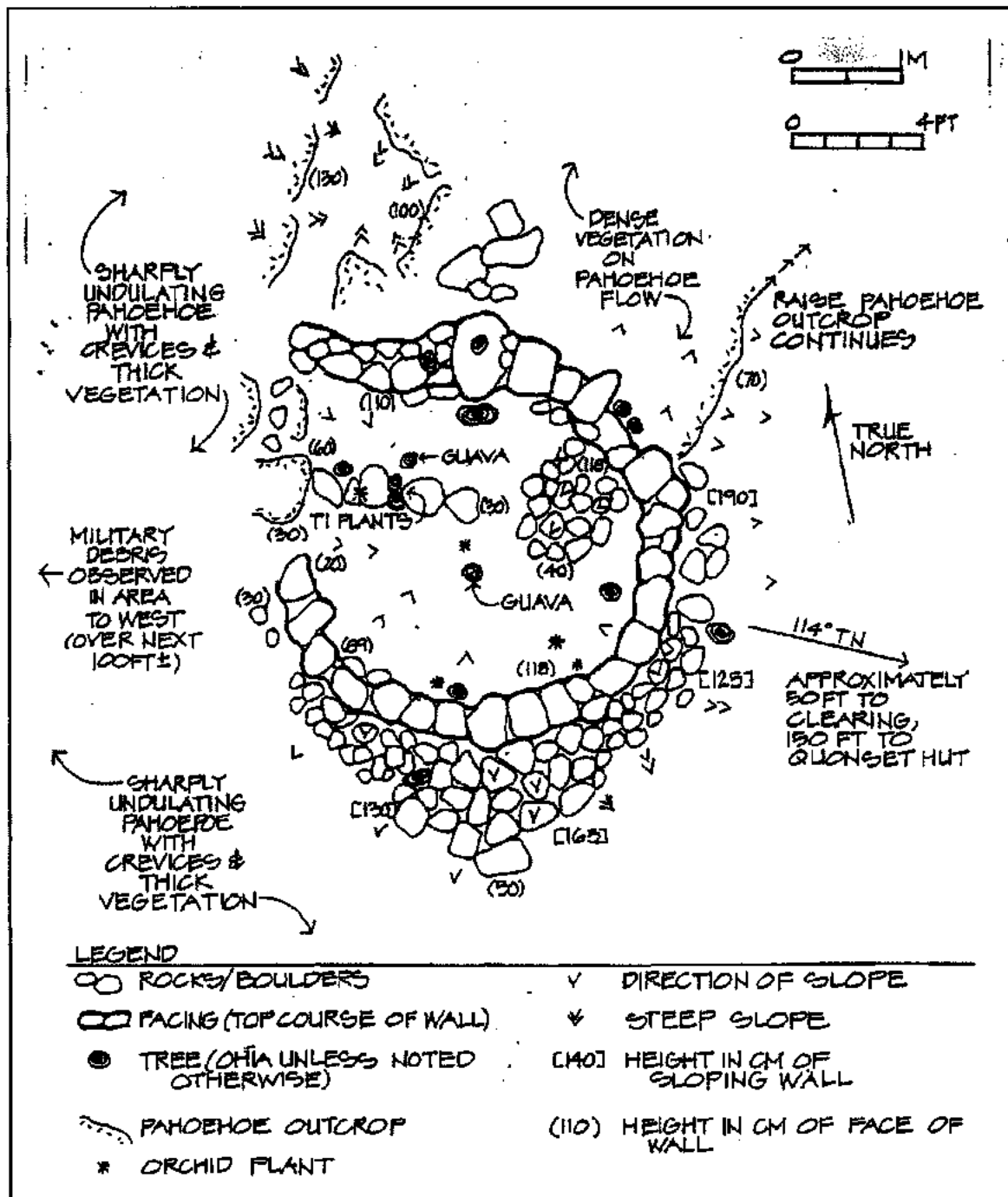


Figure 28. Plan view map of SIHP # -21657 from Hammatt and Bush (2000:30)

state site number. The site was significant for its information content, criterion D of the National and State Registers of Historic Places. The information content of the site, including site map, photographs, and location, have been recorded during the Phase II work and is no longer considered significant. [Hammatt and Bush 2000:24-25]

During the current AIS, CSH relocated SIHP # -21657 within the project area (see Figure 23 and Figure 29). The Hammatt and Bush (2000) site description and plan view map were determined to be accurate.



Figure 29. Photograph of SIHP # -21657, view to southeast

5.2.3 SIHP # 50-10-35-21658

Hammatt and Bush (2000) described SIHP # -21658 as follows:

Site Type: Possible Mounds/*Ahu*

Function: Marking points

Features (#): 5 (Features A-E)

Site Dimension: 19 m. east-west x 4 m north-south

Ahupua'a: Waiakea

Elevation: 60 ft. a.m.s.l.

State Site 50-10-35-21658 is a complex of five stacked-stone mounds built along the edge of a collapsed lava tube/blister [Figure 30]. The mounds are all approximately 7 m. from the Puna Trail road and approximately 200 m. northwest of site 50-10-35-21657 in the southeast region of KMR. The surrounding vegetation consisted of *uluhe* ferns, strawberry guava, various grasses and vines. The mounds are built up on a *pahoehoe* flow, but *a'a* lava is also present in the immediate area.

The mounds are in good condition but do have evidence of tumbling, especially the ones closest to the edge of the blister. All mounds are constructed of small to medium *pahoehoe* boulders and each ranges in height from 20 cm to 147 cm above the top of ledge. Individual features are described below:

Feature A is a mound measuring 1.0 m x 1.1 m with no definite facings. It is approximately 53 cm (centimeters) high on the north side and 90 cm on the south side.

Feature B is a mound measuring 1.1 m x 1.0 m with no facing. This feature is approximately 45 cm in height on the north side, 60 cm on the east side and 20 cm on the south side. The mound is tumbled on the south side.

Feature C is a mound measuring 0.8 m x 1.0 m with no facing. It is approximately 67 cm in height on the north side, 60 cm on the south side and 80 cm on the west side.

Feature D is a mound measuring 1.0 m x 1.7m with facing on the east, south and part of the west side. It is approximately 43 cm on the north side, 68 cm on the south side, 93 cm on the west side and 147 cm on the east side.

Feature E is a mound measuring 1.2 m x 1.0 m with facing on all sides. It is approximately 116 cm in height on the north side, 123 cm on the south side, 97 cm on the west side and 122 cm on the east side.

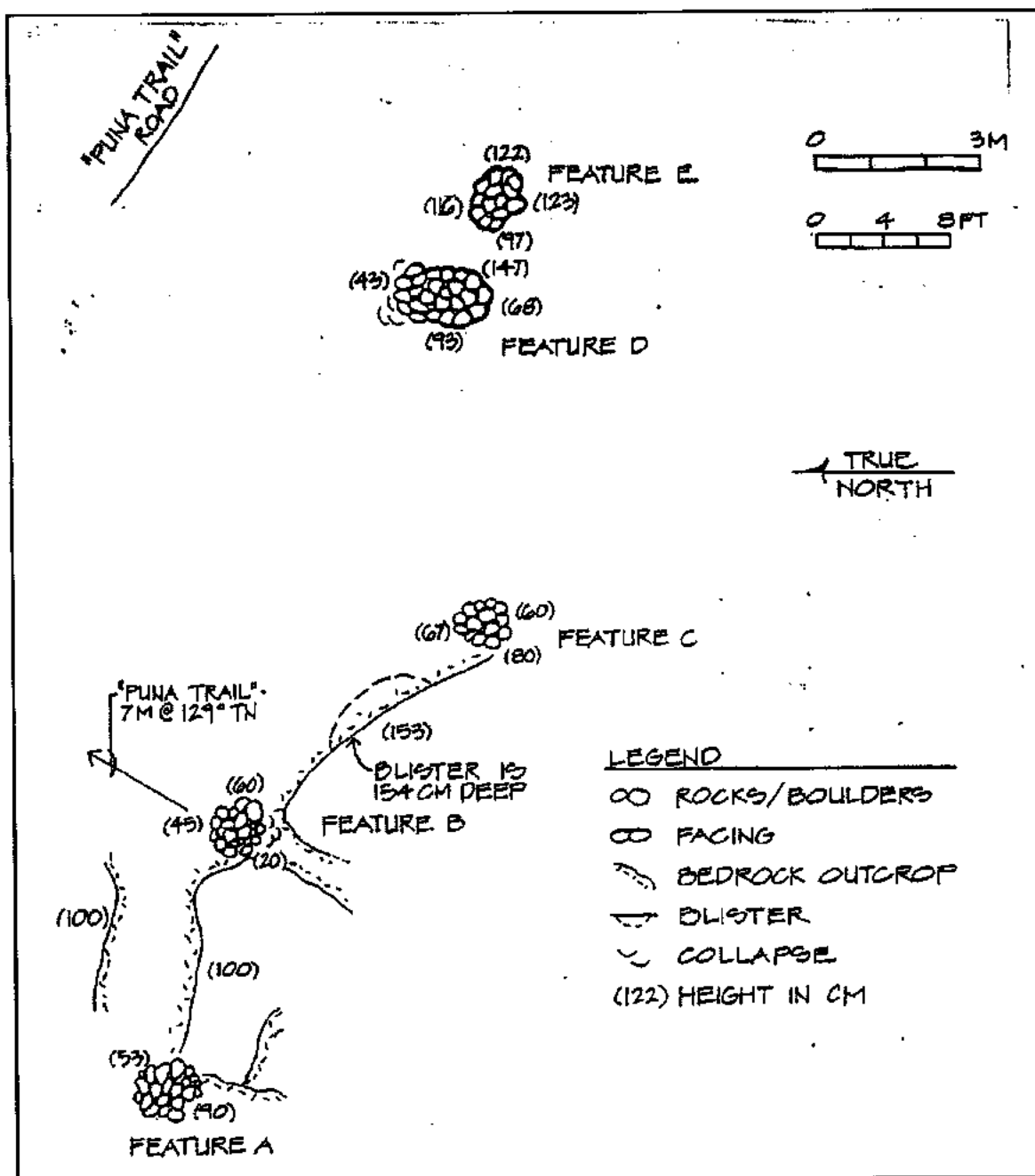


Figure 30. Plan view map of SIHP # -21658 from Hammatt and Bush (2000:32)

Features A-C were constructed along a bedrock lava ledge of a collapsed blister. This ledge drops off 100-153 cm with the deepest drop on the northernmost side of the ledge. Two of the mounds are incorporated into a lava blister, the largest blister lying between Features B and C. This blister measures 1.5 meter across and is approximately 1.5 meter deep. No midden or modifications and very little soil were noted in the blisters or crevices.

These mounds or ahu are thought to be associated with the Puna Trail. They form a rough alignment that parallels the trail. Their function is unclear, but the alignment suggests they served as markers, not for the trail itself, but rather for a specific location on the trail, perhaps of a water source or possibly the crude shelter afforded by the collapsed lava blister. This suggests that the *pahoehoe* blister associated with the features could have trapped rain water for agricultural use, for drinking water, or for horses traveling along the trail.

Because the features are constructed on *pahoehoe* bedrock, there was no potential for subsurface testing.

These features probably date to 19th century use of the Puna Trail, though they may be older. The features are significant for their information content, criterion D of the National and State Registers of Historic Places. They have the potential to yield information about historic trail use and/or sites associated with historic trail. [Hammatt and Bush 2000:25-26]

During the current AIS, CSH relocated SIHP # -21658 within the project area (see Figure 23, Figure 31 through Figure 35). The Hammatt and Bush (2000) site description and plan view map were determined to be accurate.



Figure 31. Photograph of SIHP # -21658 Feature A, view to east



Figure 32. Photograph of SIHP # -21658 Feature B, view to east



Figure 33. Photograph of SIHP # -21658 Feature C, view to south



Figure 34. Photograph of SIHP # -21658 Feature D, view to west



Figure 35. Photograph of SIHP # -21658 Feature E, view to north

5.2.4 SIHP # 50-10-35-21771

At SIHP # -21771, Tolleson and Godby (2001) documented a total of four features (Features 1 through 4). During the present survey, CSH relocated the site (Figure 23 and Figure 37) and documented an additional eight associated features, for a total of 12 features within the complex (see Figure 23, Figure 36, and Figure 37). The complex covers an area of 2.16 acres. A chain link fence encloses Features A through G, which are accessed through a gate at the end of a jeep trail. As CSH typically designates features alphabetically, Features 1 through 4 have been reassigned as Features A through D. This enables consistency with the designation of features at other sites within the project area. Features A through D (Tolleson and Godby's Features 1 through 4) are presented first, followed by the newly identified Features E through L.

5.2.4.1 Features Recorded by Tolleson and Godby (2001)

Feature A (Tolleson and Godby's Feature 1)

Tolleson and Godby (2001) described Feature A as follows:

Feature 1 [A] (enclosure) lies in an area of undulating *a'a*, flows and crevices, severe uplift and heavy vegetation consisting of *bing-a-bing* (*[M]acaranga mappia*), *hala* (*Dicranopteris llineraris*) [sic], guava (*Psidium spp.*), *ti* (*Cordyline [t]erminalis*), *'ie'ie* (*Freycinetia arborea*), mango (*[M]angifera [spp.]*) *liliko'i* (*[P]assiflora edulis*), lantana, and *lehua* [*'ōhi'a*] (*metrodideros*) [sic; *Metrosideros spp.*] and avocado (*[P]ersea americana*). The feature measures 6.47 m (21 ft) E/W by 6.20 m (20 ft) N/S, and approximately 1 m (3 ft) in height. It is constructed of stacked *pahoehoe* cobbles on a *pahoehoe* flow. A datum marker placed for mapping, with the corners of each quadrant meeting at this central datum point. The northeast quadrant was designated quadrant A, the southeast quadrant B, southwest quadrant C, and the southwest quadrant D.

Quadrant A is the least disturbed area of the enclosure, constructed of a small amount of water rounded cobbles and boulders. Quadrant A's height is uniformly 1 m, sloping south 60 cm to end as tumble at the southern edge of the quadrant.

Quadrant B consists of collapsed outcrop and rubble. Several large boulders remain in place in the wall, retaining the overall shape and height in this quadrant. Quadrant C contains the large entrance to the enclosure at the west edge. The entrance is in the N/W portion of the quadrant and is approximately 80 cm wide. There is collapse along most of this quadrant except for a small section containing five boulders ranging from 60 cm to 1 m in size. The eastern end of the entrance terminates in small klinker and rubble, and the western end terminates with klinker upon *pahoehoe*. Quadrant D contains a natural hole, or *puka*, under the flow. The hole measures approximately 50 cm by 50 cm and extends 90 cm into the flow. No soil deposits or cultural materials are present. Materials recorded within the vicinity of FE1 included a poi pounder, an egg shaped water worn stone (possibly a poi pounder blank), a large oval water-worn manuport, and a broken patent medicine bottle. Only the poi pounder was collected. [Tolleson and Godby 2001:25-27]

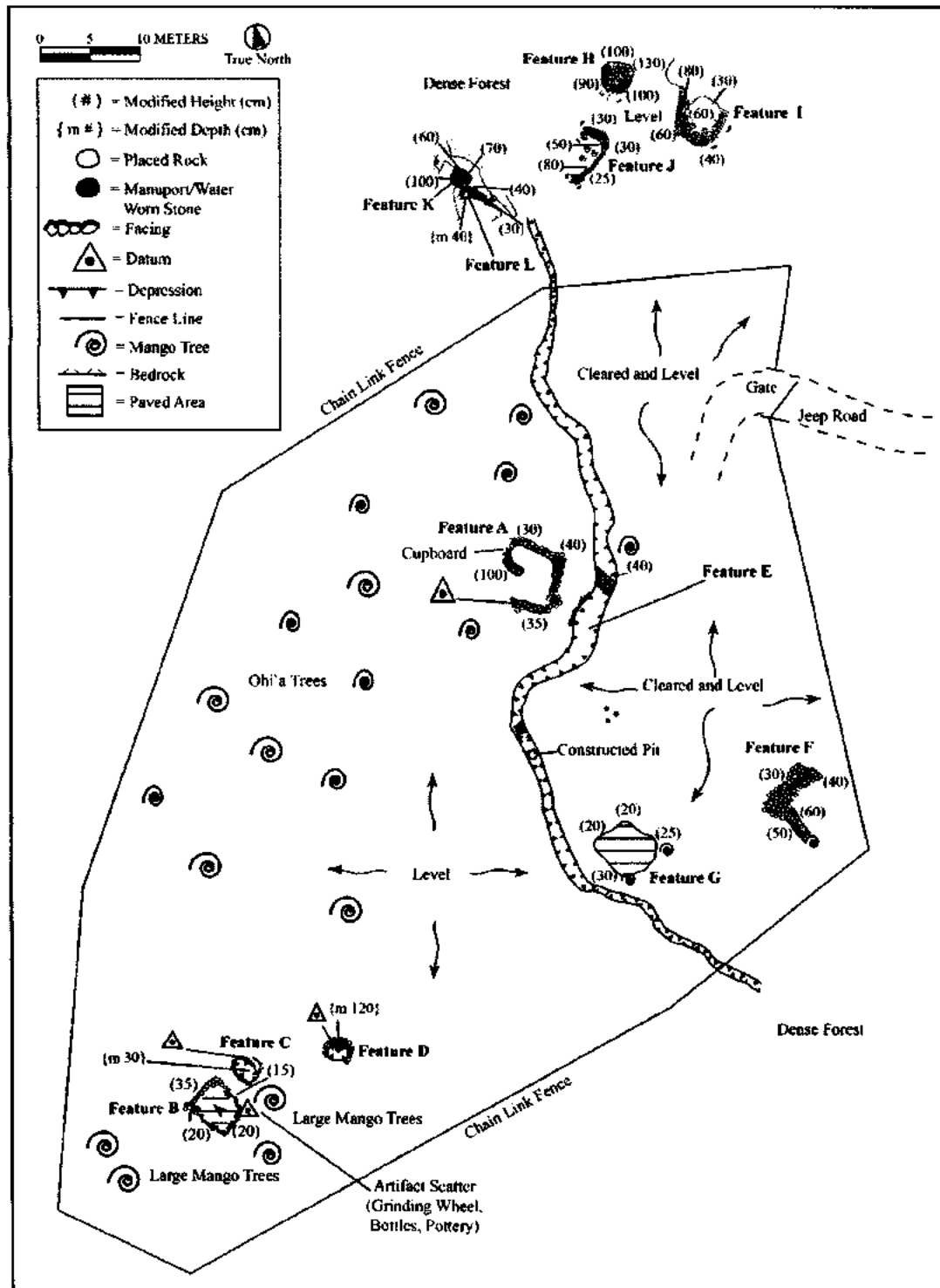


Figure 36. Plan view map of SIHP # -21771; note, top of map is oriented to 13 degree true north



Figure 37. Overview photograph of SIHP # -21771, view to northwest

During the current AIS, the Tolleson and Godby (2001) description of Feature A was determined to be generally accurate, although deterioration was noted along the eastern and western sides of the feature. Feature A was photographed and remapped (see Figure 36, Figure 38, and Figure 39).



Figure 38. Photograph of SIHP # -21771 Feature A, view to east

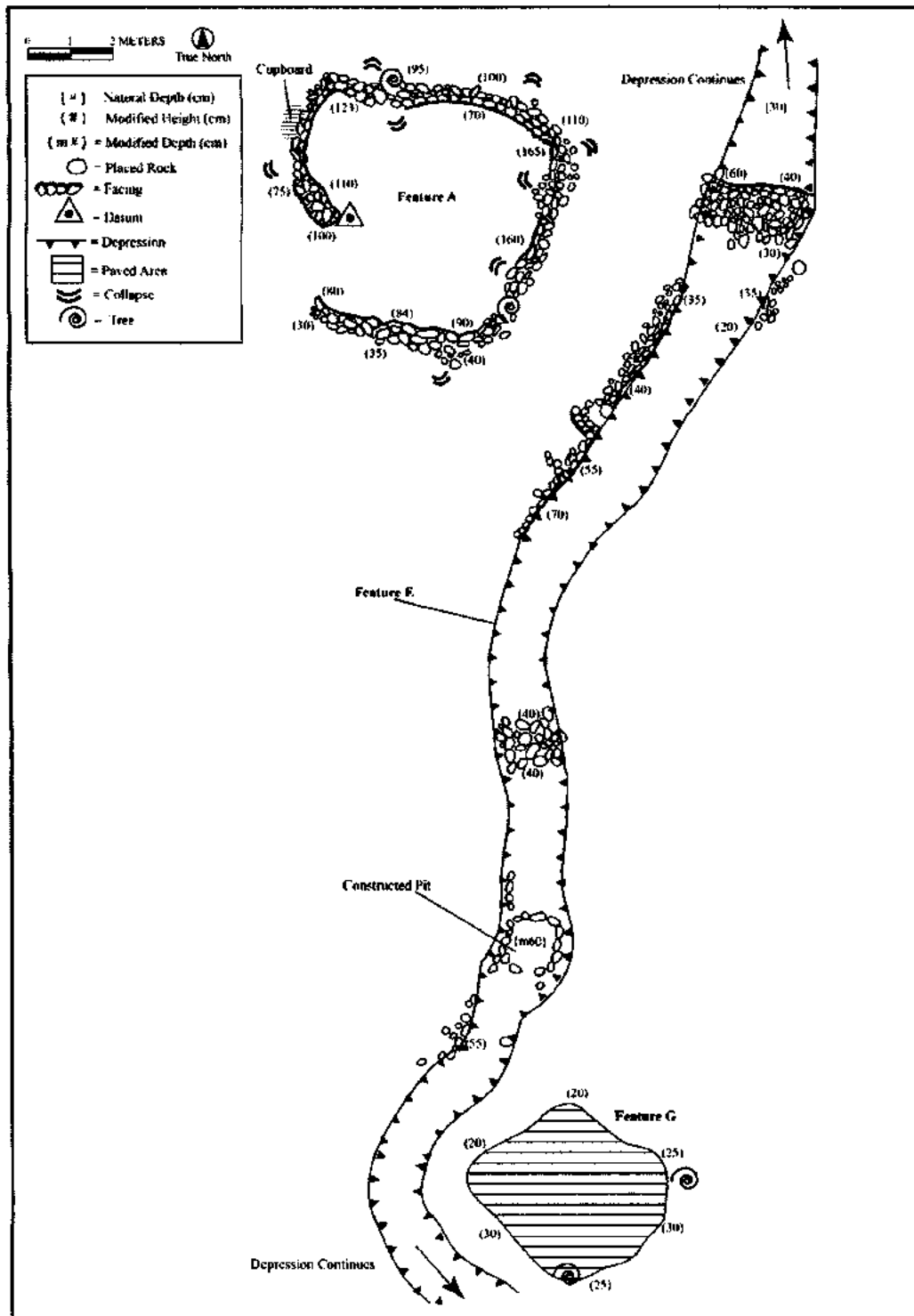


Figure 39. Plan view map showing SIHP # -21771 Features A, E, and G

Feature B (Tolleson and Godby's Feature 2)

Tolleson and Godby (2001) described Feature B as follows:

Feature 2 [B] is roughly square platform measuring 4.0 m (13 ft) by 4.0 m (13 ft) located 60 m (197 ft) southwest of Feature 1 [A]. The N/W platform edge is approximately 20 cm (centimeters) in height above three agricultural pits. It is constructed of water rounded and rough *a'a* cobbles and boulders ranging in size from 10 cm (5 inches) to 20 cm (10 inches) in diameter. Built atop an *a'a* flow, the platform trends downward and to the northwest. The platform surface is generally flat and paved with small *a'a* klinker. There are five interior sub-features consisting of 5 postholes that are aligned along the edge of the platform. No hearths or cooking areas are present. Artifacts recovered include four horseshoes and a metal file, a manuport located in the tumble of the northeast wall and a metal pot recovered from the foot of a large mango tree located on the edge of the platform. The file and the pot both have a metal tang where a wooden handle would have been attached. [Tolleson and Godby 2001:27-28]

During the current AIS, the Tolleson and Godby (2001) description of Feature B was determined to be generally accurate. The platform measures more like 6.0 m (NW-SE) and 4.0 m (NW-SE), with the northwest edge rising 40-50 cm above the ground surface. No agricultural pits were identified along this side of the feature. Feature B was photographed and remapped (see Figure 36, Figure 40, and Figure 41). A grinding wheel identified by Tolleson and Godby (2001) was observed between Features B and C (not collected; Figure 42).

Feature C (Tolleson and Godby's Feature 3)

Tolleson and Godby (2001) described Feature 3 as follows:

Feature 3 [C] is an oblong depression measuring 2.8m (9 ft) along an axis WSW by ENE and 1.5 m (5 ft) along an NS axis. This feature lies immediately north of the platform [Feature B]. The depression is lined with klinker and cobbles and symmetrical upright slab is placed at the one end of the depression. Pottery sherds were collected from the surface at the S/W of the feature as well as subsurface during excavation. [Tolleson and Godby 2001:28]

During the current AIS, the Tolleson and Godby (2001) description of Feature C was determined to be somewhat accurate. The orientation of the pit, which is located not north of Feature B but northeast, was presently assessed as lying along a reverse axis (ESE by WNW). The location of the former test unit (TU-1) was observed. Feature C was photographed and remapped (see Figure 36, Figure 40, Figure 43 and Figure 44).

Feature D (Tolleson and Godby's Feature 4)

Tolleson and Godby (2001) described Feature D as follows:

Feature 4 [D] is an oblong depression located approximately 9 m north of Feature 2 [B]. The depression measures approximately 2.5 m E/W (8 ft) by 1.5 m N/S (5 ft) with the long axis orientated E/W and a depth (below surface) of 1.25 m. The steeply rising sides are lined with loosely piled medium to small sized cobbles. The bottom of the feature is flat, with some soil development. No artifacts were

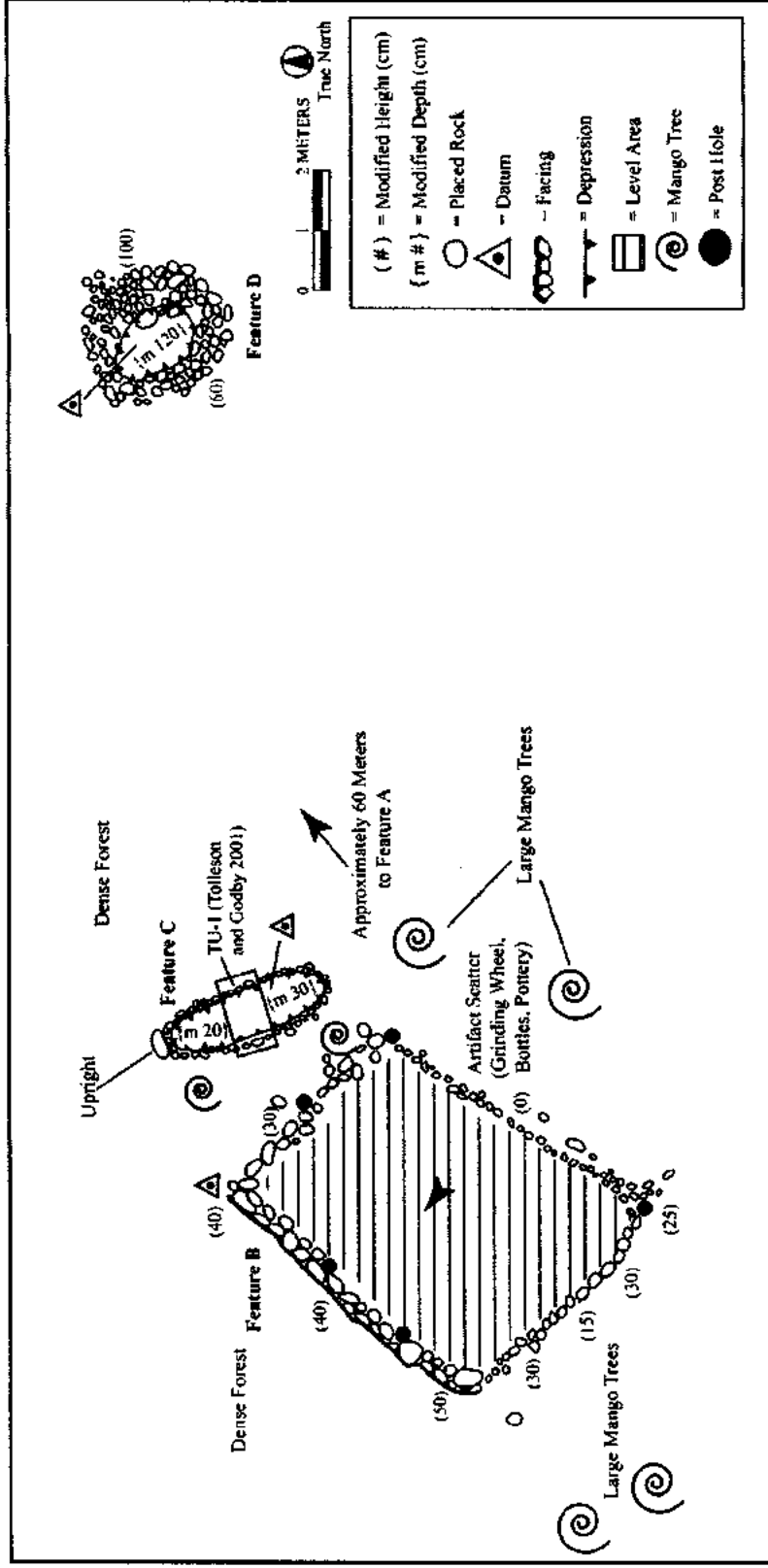


Figure 40. Plan view map showing SIHP # -21771 Features B, C, and D and the location of Tolleson and Godby's (2001) TU-1 at Feature C



Figure 41. Photograph of SIHP # -21771 Feature B, view to northwest



Figure 42. Photograph of grinding wheel near SIHP # -21771 Features B and C, view to south



Figure 43. Photograph of SIHP # -21771 Feature C, view to northwest



Figure 44. Photograph of SIHP # -21771 Feature C, showing the upright slab located along the northern end of the feature, view to northwest

located in the depression, however, an historic bottle was found on the surface south of the feature. [Tolleson and Godby 2001:28]

During the current AIS, the Tolleson and Godby (2001) description of Feature D was determined to be somewhat accurate. The feature is located east of Feature B, not north, and it appears the dense vegetation has further deteriorated the constructed edges of the depression. Feature D was photographed and remapped (see Figure 36, Figure 40, and Figure 45).

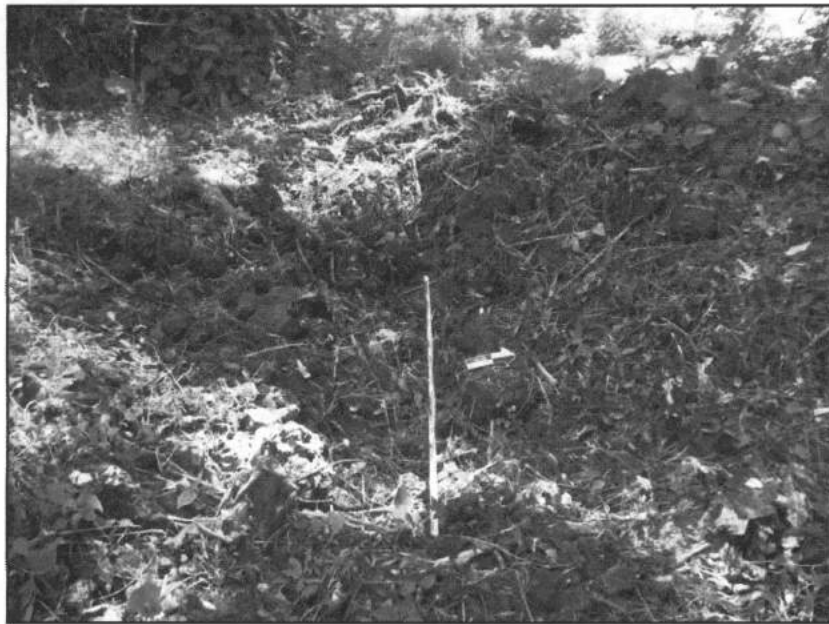


Figure 45. Photograph of SIHP # -21771 Feature D, view to west

5.2.4.2 Newly Documented Features

During the present AIS, CSH documented eight additional features associated with SIHP # -21771 (Features E through L). Of these, three (Features E through G) are located within the fence line erected around the four previously identified features. The remaining five (Features H through L) are clustered within a densely vegetated area outside the fence line, approximately 10.0 to 15.0 m to the north (see Figure 36). The descriptions of the newly documented features are as follows:

TOPOGRAPHY: Fairly level to undulating

VEGETATION: 'Ōhi 'a, hala, liliko 'i, uluhe, guava, mango, maile pilau, bing-a-bing, autograph tree, octopus tree, Koster's curse

ELEVATION: 60 to 70 ft amsl

CONDITION: Poor to good

INTEGRITY: Disturbances from dense vegetation and possibly from military training

PROBABLE AGE: Late nineteenth century

FUNCTIONAL INTERPRETATION: Activity area, temporary habitation, possible agriculture

DESCRIPTION:

Feature E is a modified, linear depression that runs through the overall complex past the eastern side of Feature A (see Figure 36 and Figure 39). The depression itself is likely a natural feature, and measures approximately 100.0 m in length (north/south) by up to 1.5 m wide (east/west) and 0.7 m deep. The depression levels out within the densely forested area south of the site, and along the eastern side of Features K and L to the north.

Along the western edge of the depression and approximately 3.5 m east of Feature A, a linear retaining wall has been constructed with three to four courses of stacked and faced basalt cobbles and boulders (Figure 46). The wall measures 7.2 m long (north/south), 0.4 to 0.6 m thick (east/west), and up to 0.7 m high from the floor of the depression. Two stone causeways have been constructed across the depression. The southern causeway is constructed of stacked basalt cobbles and boulders, measuring 1.8 m long (north/south) by 1.5 m wide (east/west) with a maximum height of 0.4 m. A second causeway is located to the north adjacent to Feature A (Figure 47). This causeway is more substantially constructed using basalt cobbles and boulders, perhaps due to its proximity to the enclosure. This causeway measures 2.3 m long (east/west) by 1.5 m wide (north/south) with a maximum height of 0.6 m. A pit has been constructed within the depression between Features A and E, approximately 3.0 m north of Feature G (Figure 48). It is unclear whether the pit was a modified natural feature within the depression, or if it was excavated. The pit has been lined with neatly stacked basalt cobbles, and measures 1.6 m long (north/south) by 1.1 m wide (east/west) with a maximum depth of 0.6 m below the surrounding depression floor. All the modifications within the depression are in good condition. No artifacts or cultural deposits were observed.



Figure 46. Photograph of SIHP # -21771 Feature E, showing the retaining wall along the western bank of the depression, view to north



Figure 47. Photograph of a portion of SIHP # -21771 Feature E, showing the northern stone causeway crossing the depression, view to south



Figure 48. Photograph of SIHP # -21771 Feature E, showing the constructed pit within the depression, view to north

Feature F is an L-shaped enclosure located within and approximately 3.0 m from the fence line that surrounds the bulk of the site complex (see Figure 36, Figure 49, and Figure 50). Feature F measures 7.0 m long (north/south) by 5.0 m wide (north/east) with maximum height of 0.5 m, and the walls are 1.0 to 2.5 m thick. It consists of three to four courses of neatly stacked basalt cobbles and boulders. Some evidence of facing was noted but the northern end of the feature exhibits collapse and the southern end has been disturbed by the growth of a large tree. The interior area slopes to the north and is generally clear of stones. It appears the fence line was erected to avoid and include this feature, although it had not been previously documented. Given the areas of collapse and disturbance from vegetation, the feature is in fair condition. No artifacts or cultural deposits were observed.

Feature G is a level, paved area located 1.5 m west of the southern terminus of Feature E (see Figure 36, Figure 39, and Figure 51). This roughly square feature is indicated by a basalt cobble surface contained along its edges with larger stones; the constructed edges are now largely collapsed. The pavement measures 4.5 m long (north/south) by 4.0 m wide (east/west), with the collapsed edges rising 0.2 to 0.3 m above the surrounding ground surface. Postholes were not observed. Feature G is in poor condition as a result of the heavy surrounding vegetation. No artifacts or cultural deposits were observed.

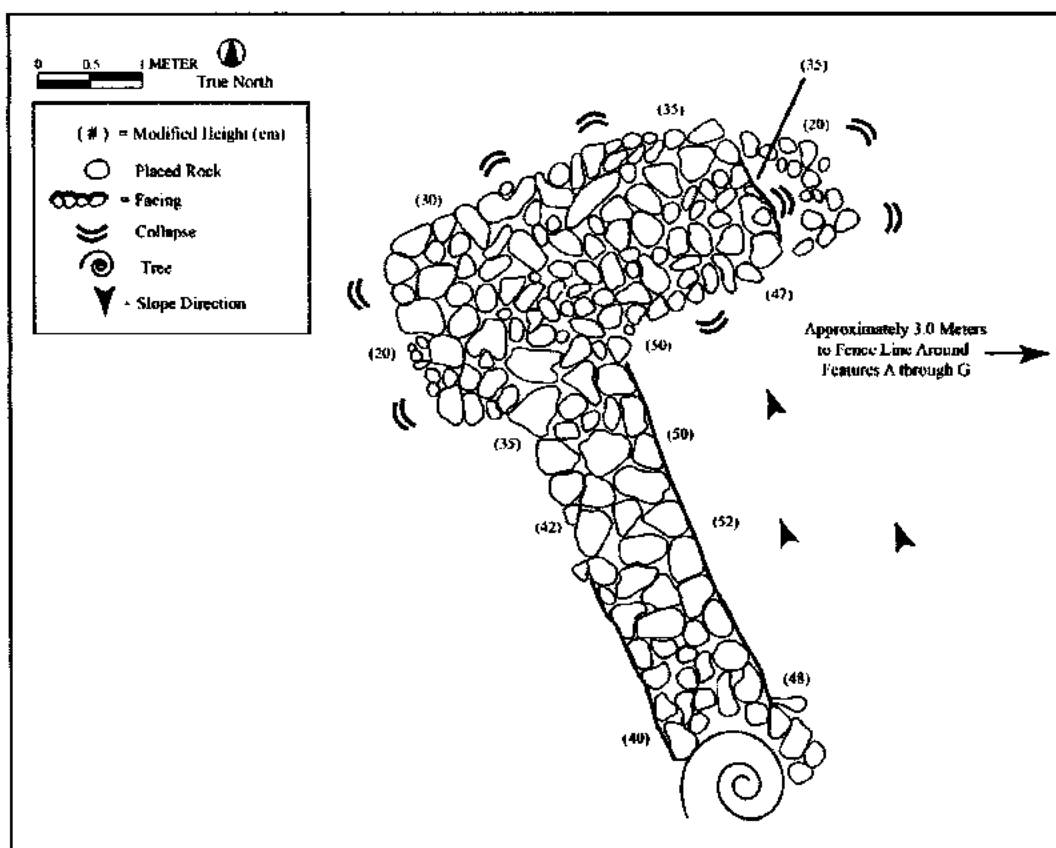


Figure 49. Plan view map of SIHP # -21771 Feature F



Figure 50. Photograph of SIHP # -21771 Feature F, view to northwest



Figure 51. Photograph of SIHP # -21771 Feature G, view to southwest

Feature H is a circular platform located approximately 15.0 m north of the protective fence line (see Figure 36, Figure 52, and Figure 53). The feature is constructed with up to seven courses of neatly stacked and faced basalt cobbles and boulders. The fairly level surface is of smaller cobbles. The feature measures 2.9 m long (north/south) by 2.8 m wide (east/west) with a maximum height of 1.2 m. Despite the presence of two large trees growing from the feature, it is in generally good condition. No artifacts or cultural deposits were observed.

Feature I is a C-shaped enclosure located 5.5 m east of Feature H (see Figure 36, Figure 52, and Figure 54). The feature abuts a natural bedrock outcrop to the north, forming a complete enclosure. It is constructed of stacked basalt cobbles and boulders, measuring 2.5 m long (north/south), 2.4 m wide (east/west) and up to 1.6 m thick with a maximum height of 0.6 m. Intact portions of the exterior northern and western wall sections exhibit formal facing; as the feature has experienced substantial collapse it is difficult to ascertain the overall formality of the original structure. The interior is full of collapsed rubble. The poor condition of the enclosure is attributable to heavy surrounding vegetation. No artifacts or cultural deposits were observed.

Feature J is a J-shaped enclosure situated 5.0 m south of Feature H (see Figure 36, Figure 52, and Figure 55). The feature is comprised of loosely piled basalt cobbles and boulders. The enclosure measures approximately 6.0 m long (east/west), 3.5 m wide (north/south) and up to 2.0 m thick with a maximum height of 0.8 m. The feature exhibits numerous areas of collapse attributable to heavy surrounding vegetation. No artifacts or cultural deposits were observed.

Feature K is a circular stone platform located approximately 15.0 m east of Feature J (see Figure 36, Figure 52, and Figure 56). The feature is constructed with four courses of neatly stacked and faced basalt cobbles and boulders. Feature K measures approximately 2.0 m long (north/south) by 2.1 m wide (east/west) with a maximum height of 1.0 m. It is in overall good condition with little collapse. No artifacts or cultural deposits were observed. A scattering of rocks surround this feature and the adjacent Feature L.

Feature L is a circular stone-lined pit located approximately 1.0 m east of Feature K (Figure 36, Figure 52, and Figure 57). What was likely a natural depression has been lined with two to four courses of stacked basalt cobbles. The constructed pit measures 0.8 m long (E/W) by 0.7 m wide (N/S) with a maximum constructed depth of 0.4 m. Above or directly north of the pit, a short wall adjoins the southeastern edge of Feature K, extending approximately 4.0 m southeast beyond the pit. This wall is of stacked basalt cobbles, measuring generally 1.0 m thick and up to 0.4 m high. Feature L is in overall good condition. No artifacts or cultural deposits were observed.

Tolleson and Godby (2001:46-47) determined SIHP # -21771 functioned as a late-nineteenth century way-station for road crew working on improvements to the pre-Contact Puna Trail. The features they identified were used as activity areas (repair/maintenance of equipment and tools, tending to horses and mules) and associated temporary habitation. The newly documented features at the site would have probably dated and functioned correspondingly.

Feature E (modified depression) was likely a natural drainage extending through the site. In fact, the overall location of the site may have been chosen in part because of the presence of this drainage, which would have provided water and an effective runoff channel in times of heavy rain. The modifications in and along the depression served to reinforce the drainage channel and

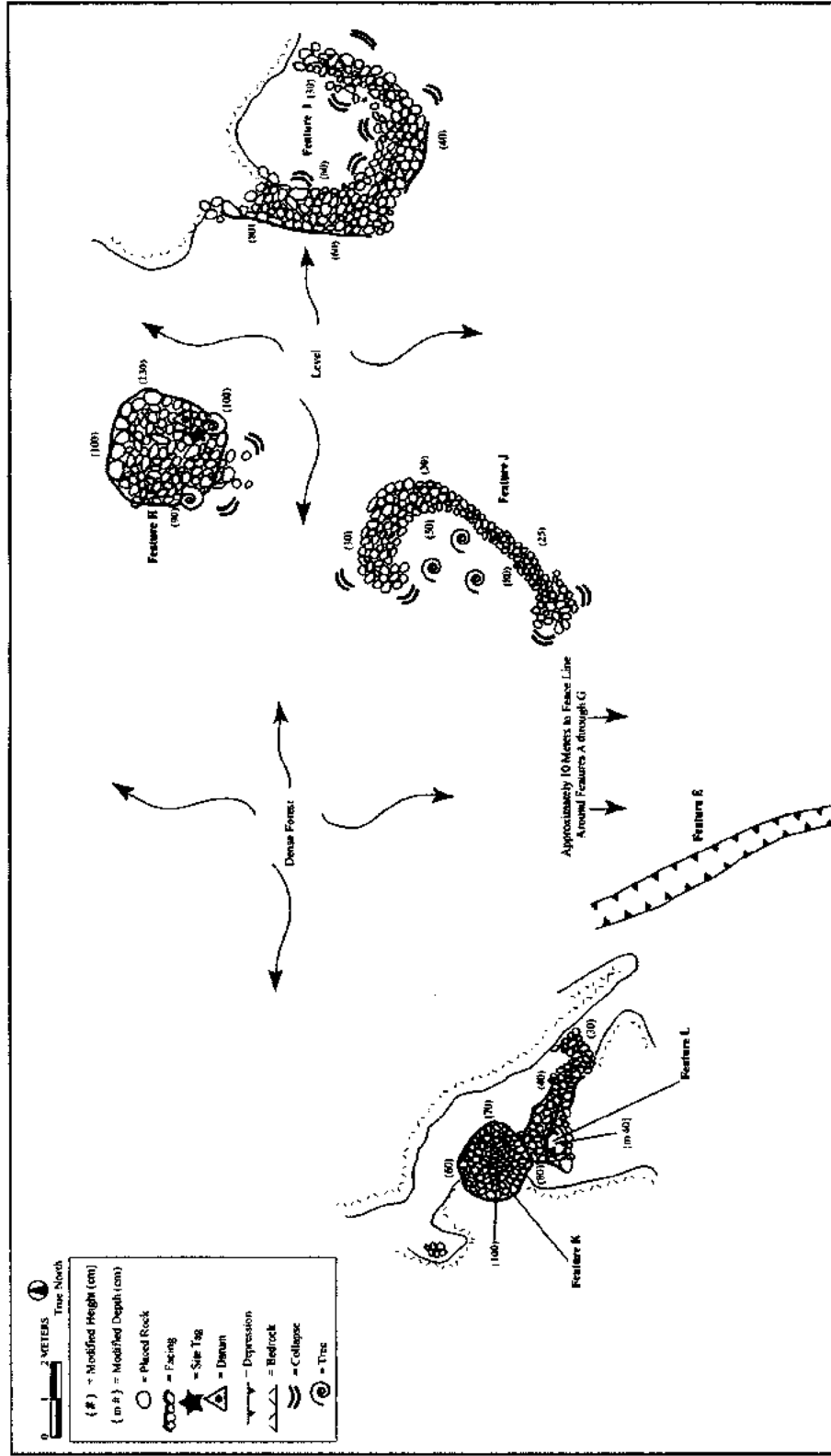


Figure 52. Plan view map of SIHP # -21771 Features H through L



Figure 53. Photograph of SIHP # -21771 Feature H, view to north



Figure 54. Photograph of SIHP # -21771 Feature I, view to east



Figure 55. Photograph of SIHP # -21771 Feature J, view to northwest



Figure 56. Photograph of SIHP # -21771 Feature K, view to northwest



Figure 57. Photograph of SIHP # -21771 Feature L, view to northeast

provide access across it. The constructed pit may have been used as an irrigated planting feature or as a trough for animals. Features F, I and J may represent temporary habitation spaces or activity areas, or may have delineated or protected planting areas. Feature G might have supported a living structure as at Feature B, although postholes were not observed. Alternatively, it may have been used agriculturally or as an activity area. Features H and K may have supported small structures such as water tanks, or served as activity areas. There is some possibility these features contain burials, given their size and formal construction. Feature L may have been used for storage associated with activities at Feature K.

Excavation potential is assessed as generally good at SIHP # -21771. Testing within the interior of Features F, G, I, and J (and possibly also E) could provide further insight into the functions of those features. Dismantling of Features H and/or K could yield similar results, and definitively rule out the presence of burials within.

The dense vegetation surrounding the features at SIHP # -21771 has caused considerable disturbance to a number of the features there. It is also possible military training exercises or other activities have also impacted the site, though no evidence of such was observed. The component features are of variable condition. Despite evidence of disturbance, the site retains of location, design, setting, workmanship, and feeling.

5.2.5 SIHP # 50-10-35-23273

Escott and Tolleson (2002:9-12) described SIHP # -23272 as follows:

Site 23273 covers an area approximately 103 meters [338 feet] north/south and 146 meters [479 feet] east/west. There are three features associated with the site: a remnant portion of trail (Feature 1) and two planting features (Features 2 and 3). The site's boundaries are represented by *ti* plants and Feature 3 to the north, Feature 2 to the south and the remnant ends of trail Feature 1 to the east and west. There are no additional features apparent within or immediately outside of the site's boundaries. However, its proximity to the Puna Trail (300 meters east of the site) and the condition of the site's features suggest that it is an historic site.

... Feature 1 is a remnant portion of trail this bisects the site at an axis of 72°/252°. It is in fair condition, is visible on the landscape for 146 meters and ranges in width from 0.8 to 0.9 meters. The width and structure of the trail are consistent with that of a foot trail. The majority of the trail consists of the unimproved ground surface and is visible as a slight depression on it. It contains no water worn stones and none of the *a'a* pebbles and cobbles in the trail surface have been worn to a high degree. The trail is bent and curved to pass over the broken and uneven *a'a* topography, and to allow passage through the less densely forested areas of the natural environment. Two large mango trees exist less than a meter north of the trail, one near the center of the site and one on the western edge of the site. There were no artifacts evident on or around the trail surface.

A small segment of the trail situated in a shallow depression in the northeast quadrant of the site has been improved through the use of curbstones. The curbstones of *a'a* cobbles placed on the *a'a* flow surface one to two courses wide, one course high and aligned parallel to edges of the trail. They range in height from 0.11 to 0.17 meters above the ground surface. The alignment of curbstones on the southern edge is 7.0 m in length, and the northern alignment is 4.0 meters long. The different length of the two alignments is most likely a function of the topography on which they exist. The longer southern alignment is at the base of a small steeply sloping hillock, while the shorter northern alignment is located along the more level ground surface at the base of the depression.

The eastern terminus of the remnant trail is located approximately 3.0 meters east of the curbstone alignments. At this point the trail is situated at the top of the depression through which it passes. A search for additional remnant portions of trail in all directions from the trail terminus situated atop this thickly forested low *a'a* ridge did not locate any signs of the trail's continuation. A search along the trail's western terminus had similar results. The western end of the remnant trail segment is no longer visible where it is situated across a very uneven and broken *a'a* surface. There is no apparent wear on the ground surface and it appears that trees have grown on the trail's surface.

... Feature 2 is a rectangular agricultural planting feature located on a level *a'a* outcrop at the northern base of an *a'a* ridge. The ground surface slopes downward

to the north and west of the level outcrop. The surrounding landscape consists of very dense mixed forest vegetation covering a very rugged and uneven *a'a* flow. The rectangular planting feature is 0.8 meters in length (north/south), 0.3 meters in width (east/west) and 0.16 to 0.35 meters below surface at its interior. The edges of the feature are lined with a course of *a'a* cobbles and boulder surrounding an interior surface of *a'a* pebbles and cobbles. Fourteen ornamental palm trees of various sizes are growing around the feature and on the ridge to its south. Several palm seeds were observed to be sprouting on the ground surface near the planting feature.

... Feature 3 is a circular agricultural planting feature located at the southeastern edge of a relatively level *a'a* flow. The ground surface to the south of the feature slopes gently downward. The feature is approximately 1.7 meters in diameter and is constructed of a single course of *a'a* pebbles and cobbles 0.2 meters in height enclosing a soil filled area. Two fragments of undeteriorated *kukui* shell were observed on the surface of the feature. No other artifacts were apparent on the surface near Feature 3. [Escott and Tolleson 2002:9-12]

Escott and Tolleson (2002:12) interpreted this trail as being "most likely associated with the cultivation and acquisition of forest plants," with at least the curbstone section created or improved contemporaneous with the late nineteenth century construction along the Puna Trail. This trail is assessed as a Type B or AB trail using Apple's (1965) typology. During the current AIS, CSH relocated SIHP # -23273 Feature 1 within the project area (see Figure 23). CSH was unable to relocate Features 2 and 3, likely due to their ambiguous nature and disturbances caused by the dense vegetative growth. The Escott and Tolleson (2002) Feature 1 site description was determined to be accurate, and the trail was photographed and remapped (Figure 58 and Figure 59).

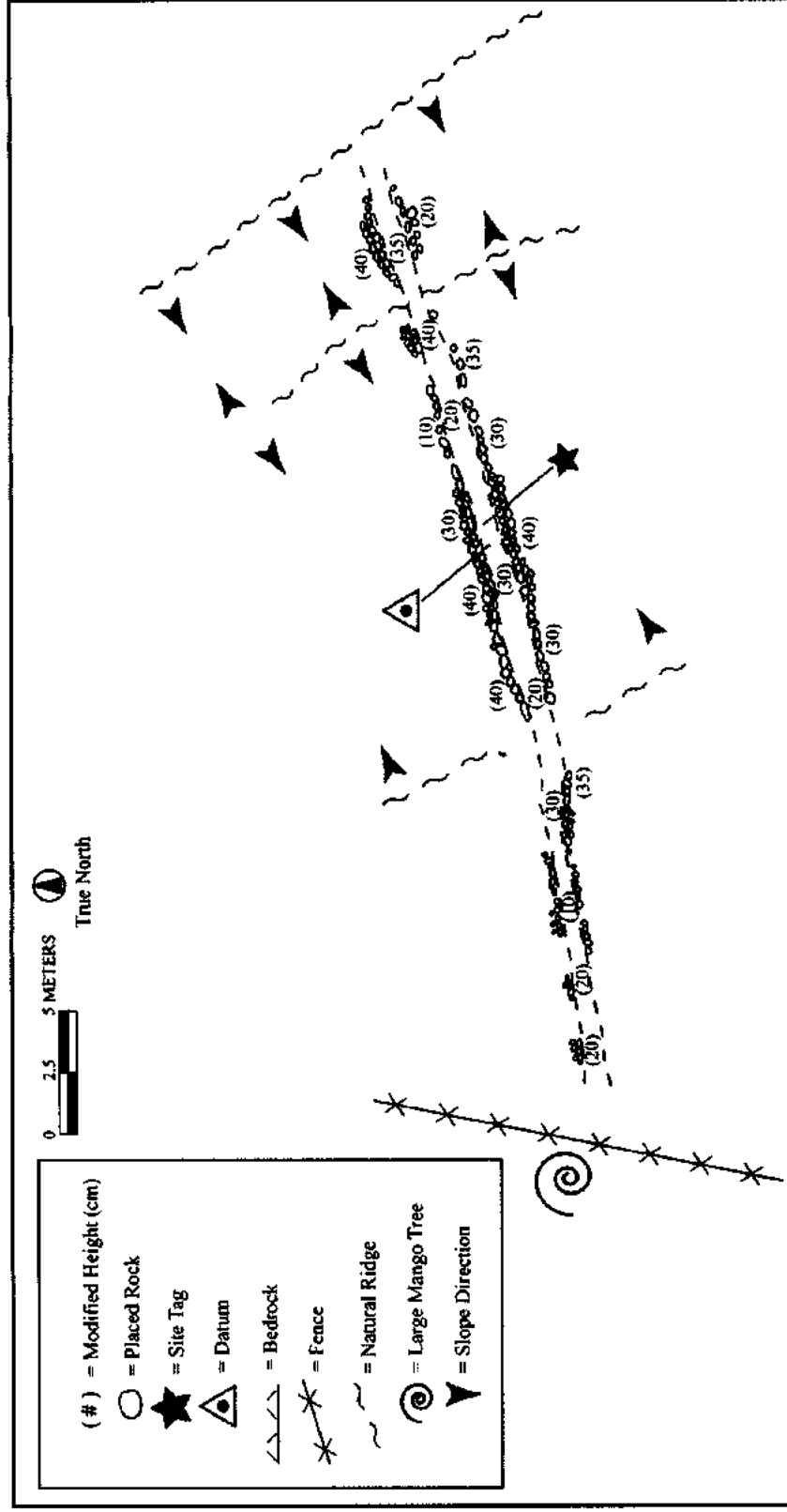


Figure 58. Plan view map of SIHP # -23273



Figure 59. Photograph of a portion of SIHP # -23273, view to southwest

5.3 Description of Newly Identified Sites

5.3.1 SIHP # 50-10-35-30008

TEMPORARY SITE NUMBER: CSH-001

SITE TYPE: Modified lava tube

NUMBER OF FEATURES: 1

TOPOGRAPHY: Uneven *pāhoehoe* flow

VEGETATION: 'Ōhi'a, hala, uluhe, bing-a-bing, *maile pilau*, autograph tree, guava, mango, octopus tree, Koster's curse

ELEVATION: 63 ft amsl

CONDITION: Good

INTEGRITY: Possible disturbance related to modern usage

PROBABLE AGE: Pre-Contact to historic

FUNCTIONAL INTERPRETATION: Recurrent shelter

DIMENSIONS: 12.0 m (E/W) by 4.0 m (N/S) by 0.4-2.0 m high

DESCRIPTION: SIHP # -30008 consists of a modified lava tube located approximately 50 m south of KD #2 Range within disturbed forest (see Figure 8, Figure 24 and Figure 25) characterized by uneven *pāhoehoe* flow and dense vegetation.

The interior of SIHP # -30008 measures 12.0 m long (northwest/southeast) by 4.0 m wide (southwest/northeast) with ceiling heights ranging from 0.4 to 2.0 m (Figure 60 through Figure 62). The opening measures approximately 4.0 m wide with heights of 0.2 m to 1.5 m. The floor of the lava tube is level with some very thin soil deposits. A substantial natural outcropping is present near the center of the tube, which is relatively devoid of rubble and roof fall. A triangular-shaped stone terrace situated just inside the northern end of the opening was likely constructed to facilitate entry into the tube. The terrace is constructed of stacked and roughly faced medium- to large-sized basalt cobbles and has a fairly level surface. It measures approximately 2.0 m long (east/west) by 2.0 m wide (north/south) with heights from 0.20-0.50 m. Numerous modern beer bottles were located hidden in the western portion of SIHP # -30008. Charcoal, marine shell midden, faunal bone and a waterworn basalt cobble were also discovered within the lava tube.

Based on its relative proximity to the Puna Trail and the presence of marine shell midden, this site was likely used in pre-Contact and/or historic times. The modern beer bottles indicate it has been used in modern times as well. Considering the apparent continued usage of the tube, it cannot be said with certainty when the terrace feature was constructed. Given the somewhat limited nature of the modifications within the tube and a lack of exterior ancillary features, SIHP # -30008 was likely used as a recurrent shelter. It would have provided a relatively dry and comfortable place to rest while traveling along the Puna Trail. Excavation potential is poor given a lack of sedimentary deposit and the relatively low height of the terrace feature. This site is in good condition. Despite indications of modern usage this site retains integrity of location, design, setting, workmanship, and feeling.

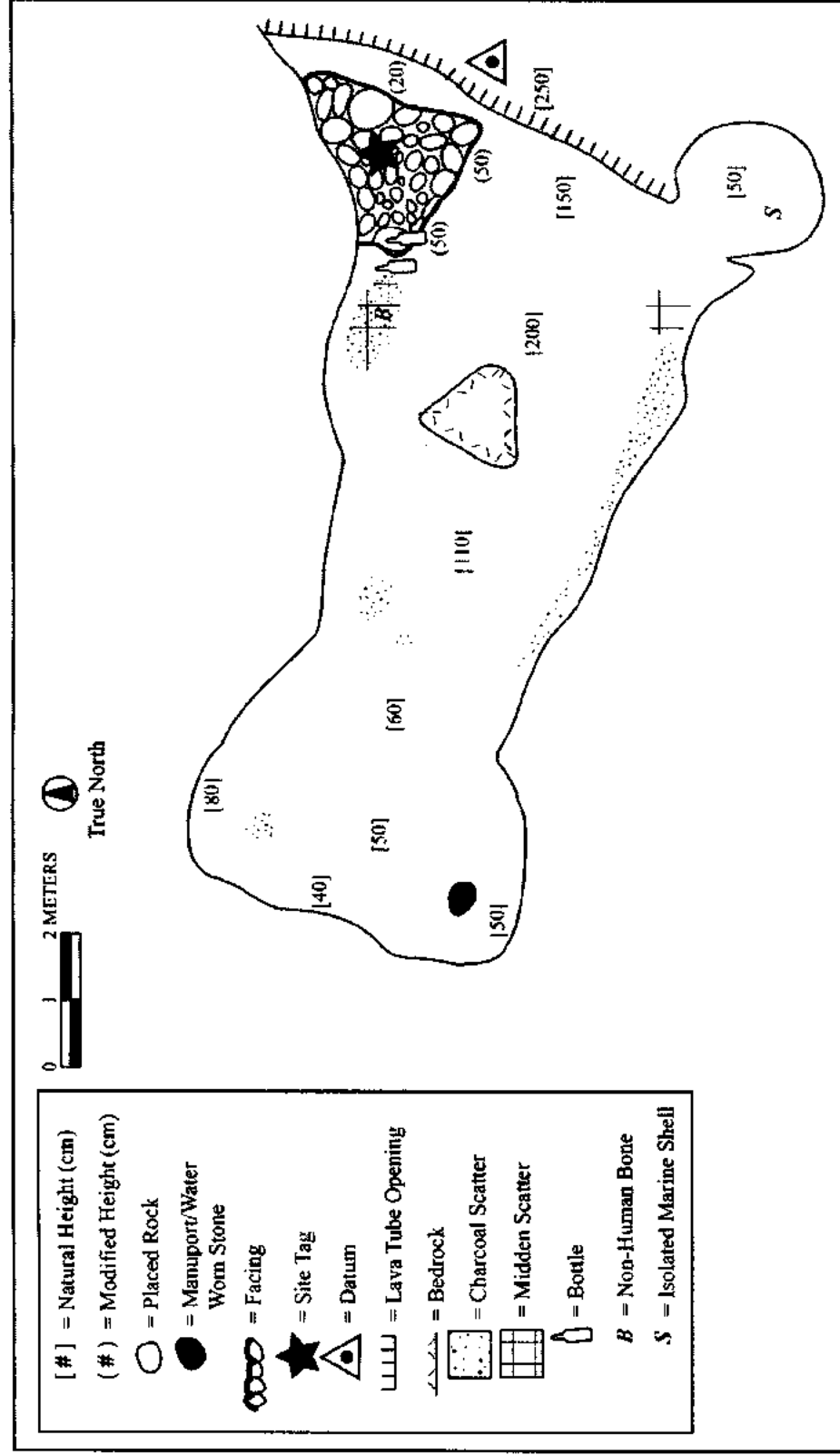


Figure 60. Plan view map of SIHP # -30008



Figure 61. Photograph of SIHP # -30008, lava tube opening, view to south



Figure 62. Photograph of SIHP # -30008, interior of tube showing the constructed terrace, view to northeast

5.3.2 SIHP # 50-10-35-30009**TEMPORARY SITE NUMBER:** CSH-002**SITE TYPE:** Complex**NUMBER OF FEATURES:** 3 (A–C)**TOPOGRAPHY:** Uneven *pāhoehoe* flow**VEGETATION:** 'Ōhi'a, *hala*, bing-a-bing, *maile pilau*, autograph tree, *uluhe*, *waiwī* or yellow strawberry guava (*Psidium cattleianum*), mango, octopus tree, Koster's curse**ELEVATION:** 65 ft amsl**CONDITION:** Good**INTEGRITY:** Possible disturbance related to dense vegetation and military training**PROBABLE AGE:** Pre-Contact to historic**FUNCTIONAL INTERPRETATION:** Temporary habitation**DIMENSIONS:** 40.0 m (N/S) by 25.0 m (E/W) by 1.0-2.0 m high (above surrounding ground surface)

DESCRIPTION: SIHP # -30009 is a complex located in the southeastern portion of the KMR, approximately 10.0 m west of a berm that is part of KD #2 Range within disturbed forest (see Figure 8, Figure 24 and Figure 25). The site comprises three features situated on a large, 1,000-sq-m rock outcrop with a wide, fairly level surface (Figure 63). Feature A consists of modifications to the outcrop surface, and Features B and C are culturally modified lava tubes located within the outcrop. A number of additional lava tubes are present within the outcrop; these were fully investigated and found to be culturally sterile. The site is situated on an uneven *pāhoehoe* flow supporting predominantly *hala* and strawberry guava, though numerous other plant species were observed in the vicinity.

Feature A is a modified outcrop (see Figure 63 through Figure 65). The overall outcrop is approximately 40 m long (north/south) by 25 m wide (east/west) and rises approximately 1.0 m to 2.0 m above the surrounding landscape. Portions of Feature A are depressed, with depths of 0.5 to 1.0 m below the surrounding outcrop surfaces. The surface is heavily vegetated with a scatter of small cobbles and a few boulders present. Two modifications were observed upon the outcrop surface. A low-lying rock wall is situated along the eastern edge of the outcrop. It is oriented north/south and defines the interior edge of a 1.0- to 2.0-m-wide, naturally level area that is slightly lower than the main outcrop area and may represent a terrace of some sort. The wall is constructed of loosely stacked cobbles and boulders and measures approximately 10 m long (north/south) by 1.0 m wide (east/west) with a maximum height of 0.75 m. Near the southern edge of the outcrop, an alignment of basalt cobbles and boulders has been placed along the edge of a shallow depression. This curved alignment measures approximately 3.0 m long (northeast/southwest) by 0.50 m wide and exhibits a maximum height of 0.50 m.

Feature B is a lava tube with an opening along the northeastern edge of the outcrop (see Figure 63, Figure 66 through Figure 68). The opening measures approximately 2.5 m wide and 0.80 m high. The interior of Feature B generally measures 4.0 m wide (southeast/northwest) with ceiling heights of 0.4 to 1.7 m. The tube extends 7.0 m (northeast/southwest), at which point it becomes impassible; the portion of the tube beyond was visually inspected as best as possible

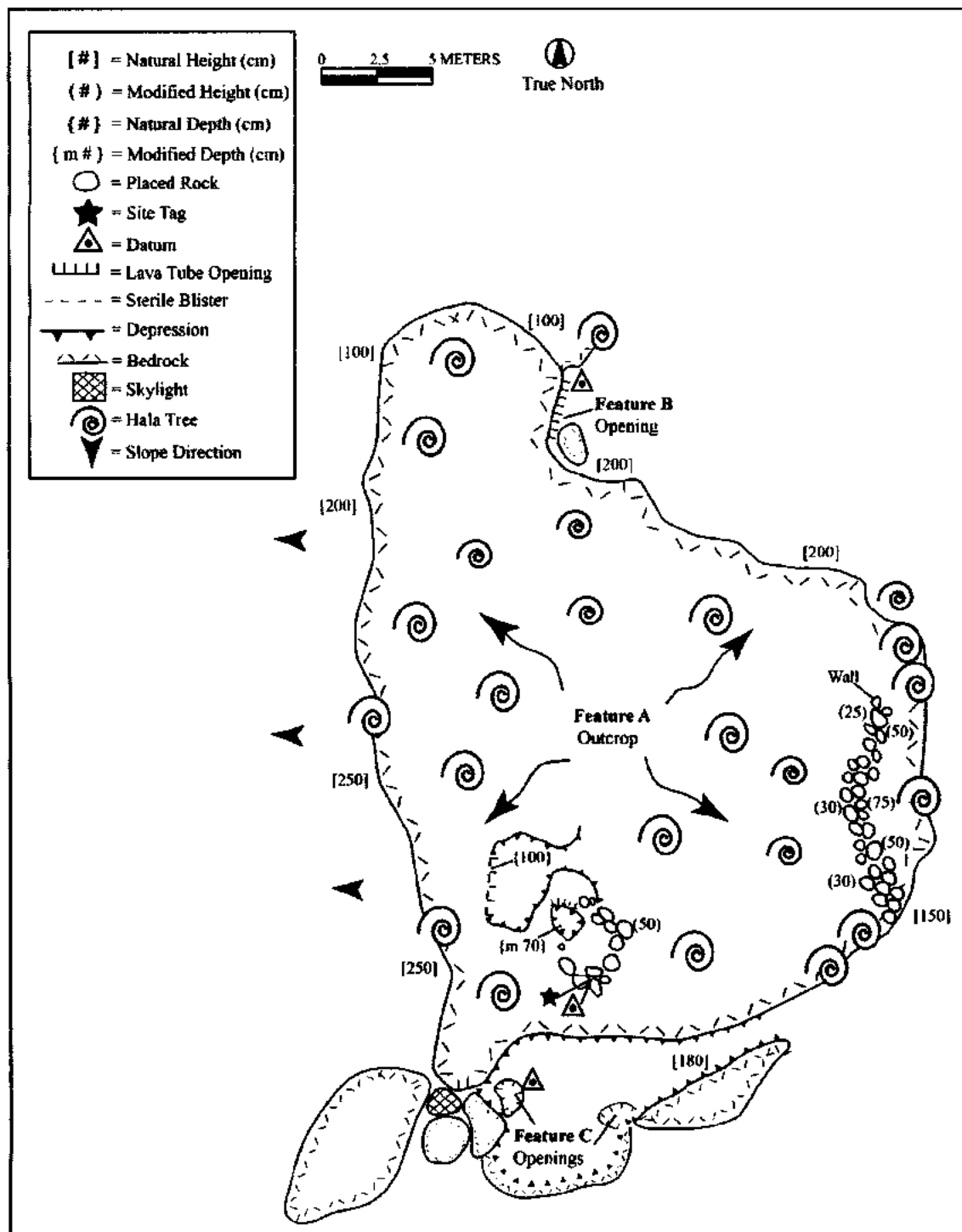


Figure 63. Plan view map of SIHP # -30009



Figure 64. Overview photograph of SIHP # -30009 Feature A, outcrop surface, view to east



Figure 65. Photograph of SIHP # -30009 Feature A, rock wall, view to north

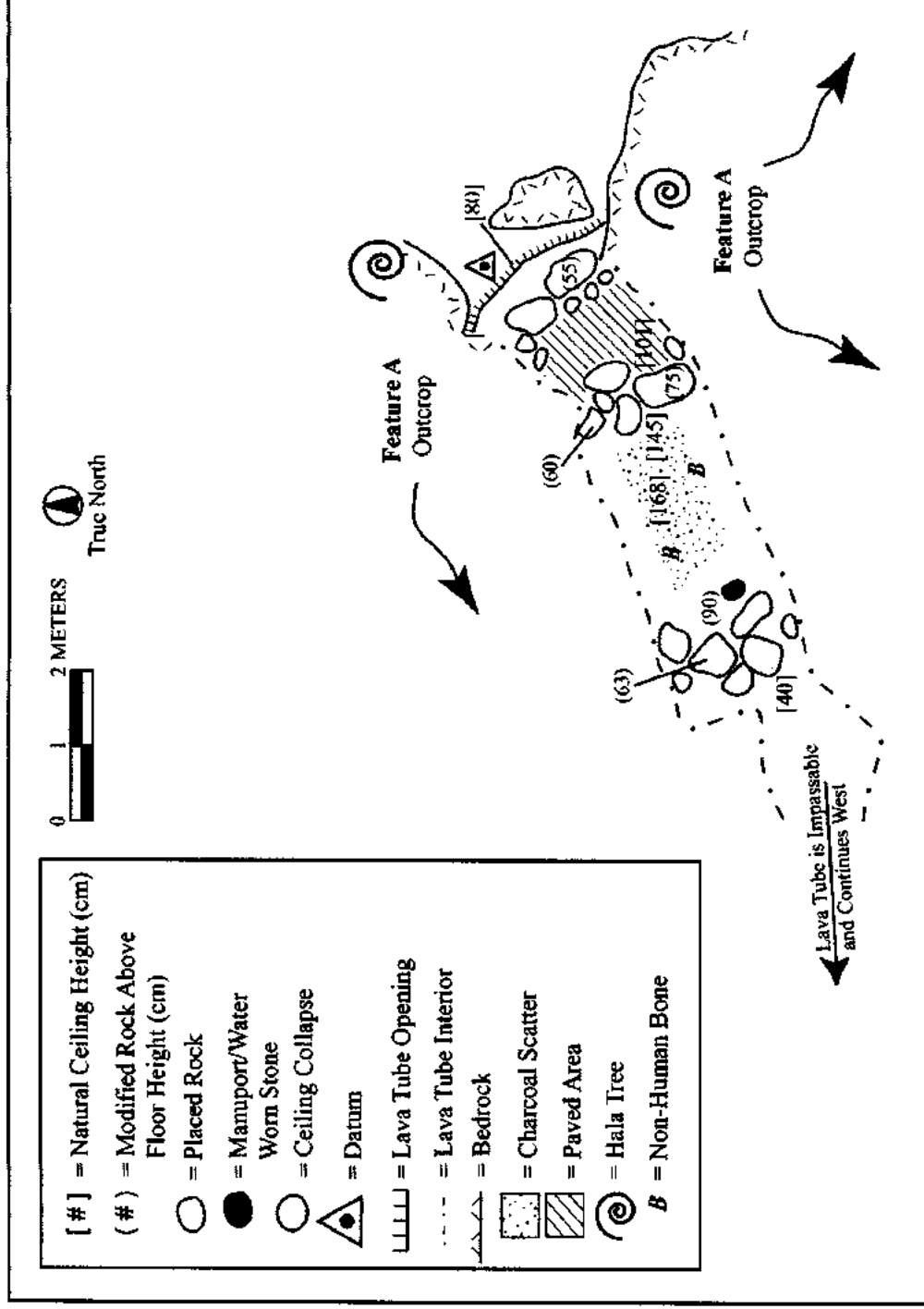


Figure 66. Detail plan view map of SIHP # -30009 Feature B interior



Figure 67. Photograph of SIHP # -30009 Feature B, lava tube opening, view to west



Figure 68. Photograph of SIHP # -30009 Feature B, paved area at entrance, view to southwest

and no cultural materials or deposits were observed. Just inside the entrance is an area roughly paved with basalt cobbles measuring 2.0 m long (southeast/northwest) by 1.6 m wide (southwest/northeast). Some boulders have been placed along the peripheries of the paved area, and may serve to support it on the interior edge as the floor of the tube beyond drops approximately 0.5 m. The floor in this back portion of the tube is fairly level. Charcoal scatter, fragments of non-human mammal bone and a waterworn basalt cobble that may have been polished were observed in this portion of the tube. Natural ceiling collapse is present along the back of the chamber.

Feature C is a lava tube with openings along the southern edge of the outcrop (see Figure 63, Figure 69 through Figure 71). Two small openings set approximately 3.0 m apart provide access to the tube. The western entrance measures approximately 0.50 m wide and 1.50 m high. The eastern entrance is larger and could be considered the "main" entrance; it measures 0.75 m wide and 1.0 m high. The interior extent of the lava tube is roughly T-shaped, with the openings set at either end of the upper portion. This portion of the tube between the openings is of roughly paved basalt cobbles, and measures up to 1.5 m wide with modified ceiling heights of 0.36 m to 0.97 m (above the pavement). The pavement at the entry area likely facilitated access into the tube. The "lower" portion of the tube beyond the pavement is approximately 3.5 m long (north/south) and up to 1.5 m wide (east/west), with natural ceiling heights of 0.50 to 0.98 m. The floor here is fairly level, and visibility is enhanced by natural skylights. A scattering of cobbles were observed, but no additional anthropogenic features or cultural deposits were noted.

Given the close proximity of SIHP # -30009 to the Puna Trail and the level of modification observed at the site, it likely functioned as a pre-Contact and/or historic temporary habitation. The presence of constructed features on the outcrop surface indicates activities beyond simple shelter were undertaken at the site; these modifications could represent activity or storage areas. The paved entry areas at Features B and C suggest a recurrent usage. Given its proximity to components of the KD #2 Range it is very possible SIHP # -30009 has been impacted by military training; it is also possible the lava tubes have been used for shelter by military personnel. This site is assessed as not exhibiting excavation potential. The tube floor sedimentary deposit at Feature B is very thin and none of the constructed features at the site are of substantial enough construction to contain burials or other cultural deposits. Overall the site is in good condition. Despite possible disturbance related to dense vegetation and military training/usage, it retains integrity of location, design, setting, workmanship, and feeling.

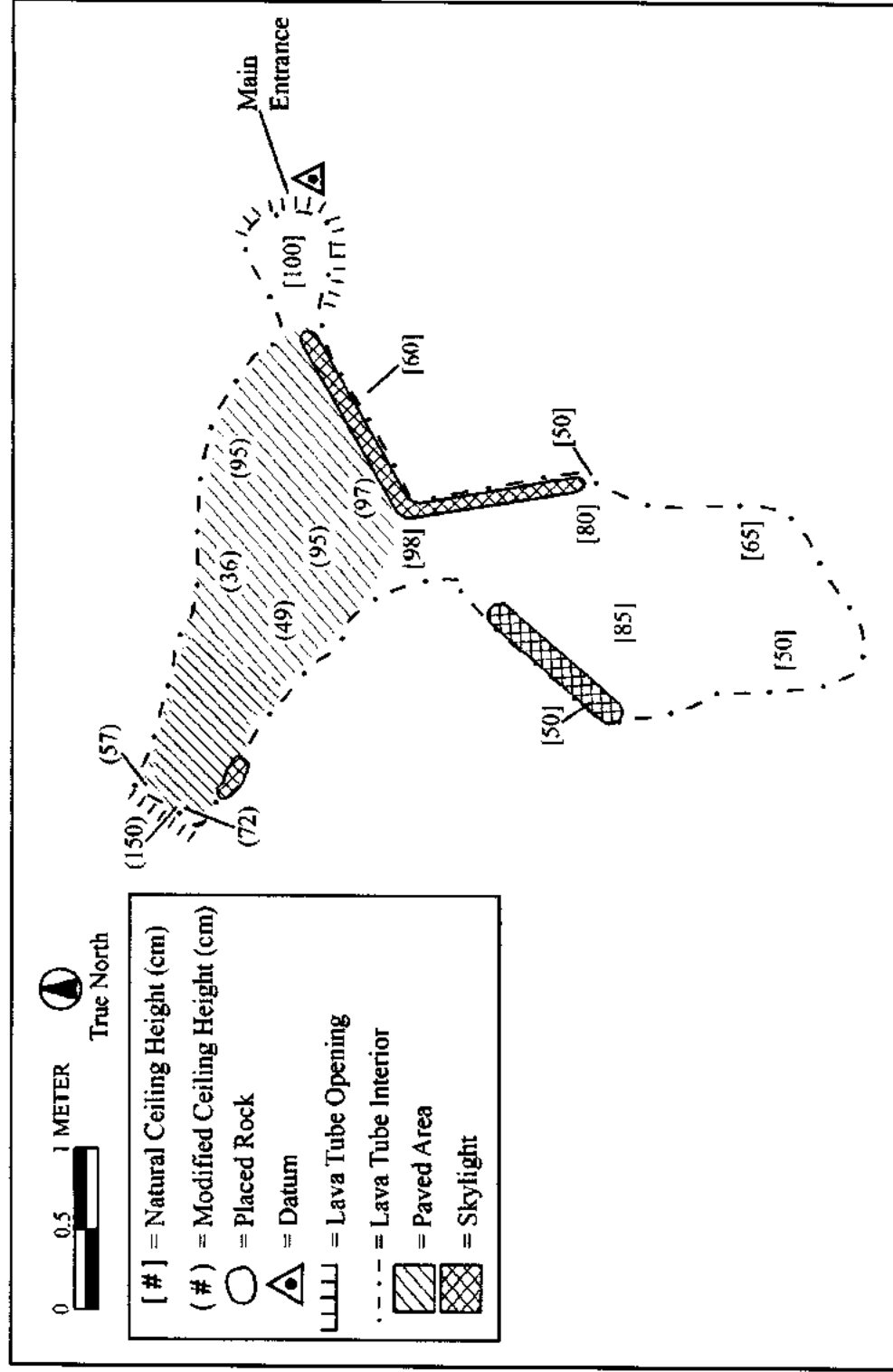


Figure 69. Detail plan view map of SIHP # -30009 Feature C interior



Figure 70. Photograph of SIHP # -30009 Feature C, lava tube entrance, view to north



Figure 71. Photograph of SIHP # -30009 Feature C, paved area at entrance, view to east

5.3.3 SIHP # 50-10-35-30010**TEMPORARY SITE NUMBER:** CSH-004**SITE TYPE:** Complex**NUMBER OF FEATURES:** 5 (A–E)**TOPOGRAPHY:** Undulating**VEGETATION:** *Ōhi'a*, *hala*, *uluhe*, bing-a-bing, *maile pilau*, guava, mango, octopus tree, Koster's curse**ELEVATION:** 75 ft amsl**CONDITION:** Fair to good**INTEGRITY:** Possible disturbance related to dense vegetation**PROBABLE AGE:** Late nineteenth century**FUNCTIONAL INTERPRETATION:** Temporary habitation, activity area, possible agriculture**DIMENSIONS:** 44.0 m (N/S) by 30.0 m (E/W)

DESCRIPTION: SIHP # -30010 is a complex located in Area A approximately 280 m south of the Puna Trail (see Figure 8 and Figure 24). The site, which overall measures approximately 44.0 m (north/south) by 30.0 m (east/west), is comprised of five features (Figure 72). Feature A is a cleared, level area; Feature B is a linear mound; Feature C is a small enclosure; and Feature D is a stone-lined pit. The topography in this densely forested area is undulating soil with continuous scattered basalt rock and numerous depressions and outcrops. Numerous artifacts were observed around the component features; four were collected for laboratory analysis (see Figure 72 and Section 6).

Feature A is a roughly rectangular-shaped, cleared, level area situated between two natural depressions (see Figure 72 through Figure 74). The feature is indicated as an area devoid of vegetation and rocks, and measures approximately 8.0 m (north/south) by 5.5 m (east/west). Areas of possible pavement were observed within the feature, but are somewhat ephemeral given apparent sedimentation and a cover of leaf litter. A retaining wall has been constructed at the northern edge of the level area, along its interface with the natural depression to the north. The wall consists of basalt cobbles and boulders stacked three to four courses high inside the depression. The wall measures approximately 1.8 m (northwest/southeast) by 0.5 m (northeast/southwest) with a maximum height of 0.5 m. Numerous artifacts were found scattered on the surface of Feature A, including: fragmental bottles; three large, modified waterworn basalt cobbles, of which two were collected (ART 2, 3 and 4; see Section 6.1.2); four water worn basalt cobble manuports, and a salt-glazed pottery shard. Two whole bottles were documented on the surface approximately 15.0 m west, and were collected as ART 1; see Section 6.1.2). No post holes were observed at Feature A. Overall, it is in fair condition.

Feature B is a somewhat deflated, linear rock mound located approximately 4.5 m northeast of the retaining wall at Feature A (see Figure 72 and Figure 75). Feature B is situated near the center of a shallow natural depression that measures approximately 4.5 m (north/south) by 3.5 m (east/west) and up to 0.4 m deep. The mound is constructed of loosely piled small to large cobbles, and measures 2.3 m (north/south) by 1.2 m (east/west) with a maximum height of 0.3 m. Feature B is in fair condition. A horseshoe, possibly from a mule, was observed on the surface of the mound (Figure 76).

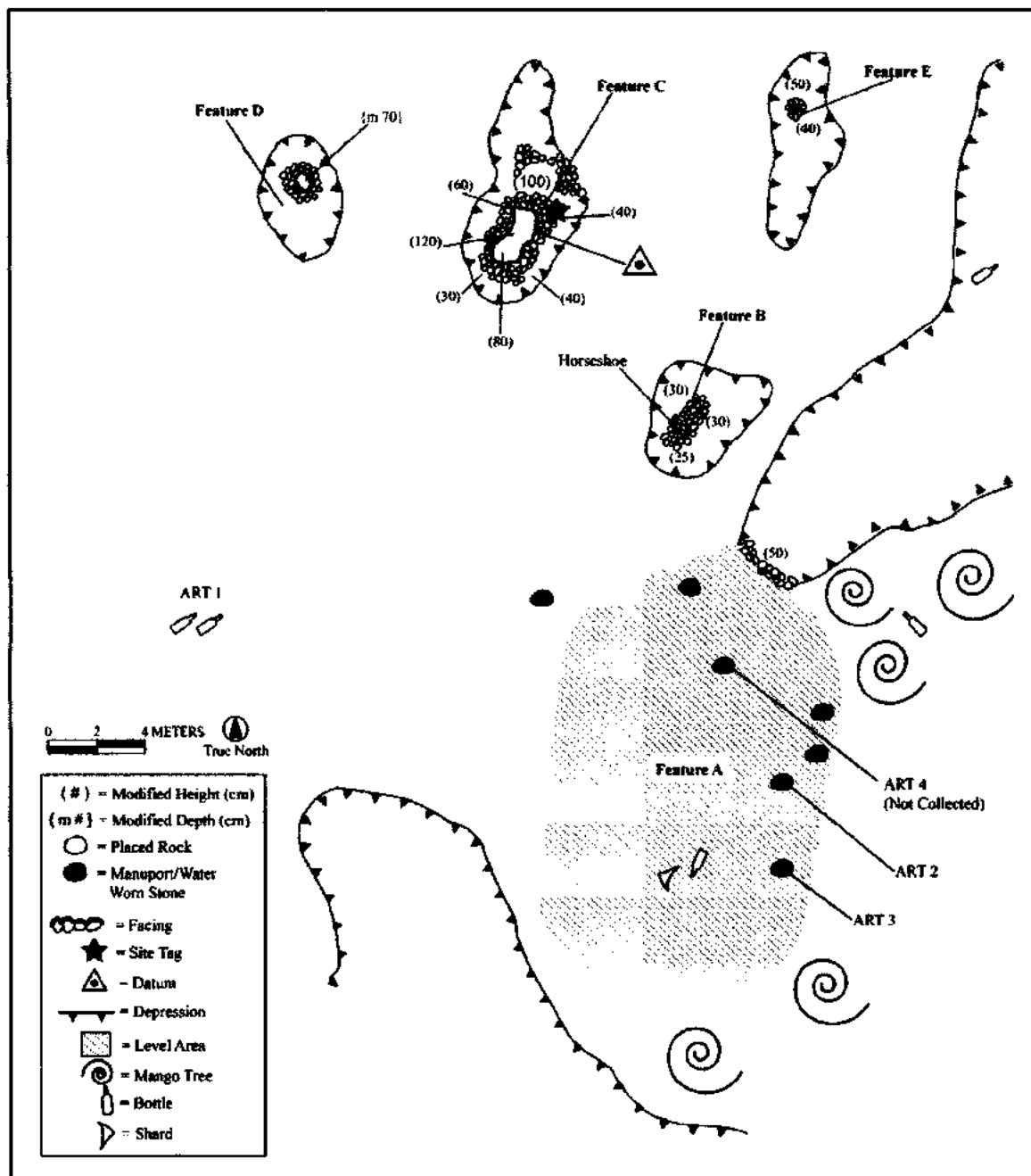


Figure 72. Plan view map of SIHP # -30010



Figure 73. Photograph of SIHP # -30010 Feature A, view to southeast



Figure 74. Photograph of SIHP # -30010 Feature A, ART 4 (modified waterworn basalt cobble, not collected) in situ, view to east



Figure 75. Photograph of SIHP # -30010 Feature B, view to east



Figure 76. Photograph showing a horseshoe located on the surface at SIHP # -30010 Feature B (not collected), view to northeast

Feature C is a rectangular enclosure (Figure 72, Figure 77, and Figure 78). The feature is located approximately 8.5 m northwest of Feature B inside a natural depression which measures approximately 10.0 m (north/south) by 5.0 m (east/west) and up to 0.5 m deep. The enclosure is constructed of two to four courses of neatly stacked and faced basalt cobbles and boulders. It measures 3.8 m (north/south) by 2.3 m (east/west) with a maximum interior height of 1.2 m and exterior height of 1.0 m. The fairly level interior contains a scatter of small to medium cobbles. The walls are generally about 0.5 m thick. Overall, this feature is in fair condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature D is a circular, stone-lined pit situated within a natural depression approximately 8.5 m west of Feature C (see Figure 72 and Figure 79). The natural depression measures approximately 5.0 m (north/south) by 3.0 m (east/west) with a depth of 0.5 m. The pit utilizes a natural crevice or more depressed portion of the overall depression. The bottom and sides of this natural feature have been lined with cobbles. The construction is roughly flush with the surrounding surface of the depression. The pit measures approximately 2.1 m (north/south) by 2.0 m wide (east/west) with a maximum constructed depth of 0.7 m. Feature D is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature E is a small stone mound located approximately 9.0 m northeast of Feature C within the northern portion of a linear natural depression (see Figure 72 and Figure 80). The depression measures 8.0 m (north/south) by 2.0 m (east/west) with a maximum depth of 0.6 m. The mound is constructed of loosely stacked basalt cobbles and boulders, measuring 1.0 m (north/south) by 0.9 m (east/west) with a maximum height of 0.5 m. Feature E is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

This complex of features likely represents a late nineteenth century activity area with associated temporary habitation and possible agriculture. The construction styles, distribution of features, and assemblage of artifacts documented at the site are highly reminiscent of SIHP # -21771. While this site is situated somewhat further from the Puna Trail, it may have been located along a secondary, connecting trail once present in this portion of the KMR. Two nearby isolated trail segments (SIHP #s -23273 and -30012) may have once been a part of this secondary trail. Feature A may have served as a site for some sort of structure. The function of Feature B is indeterminate; it may represent a planting or clearing mound. It appears too low and informally constructed to contain a burial. The Feature C enclosure is too small to have served as a habitation area; it may have been used as a stall for animals or fowl or may have been used for storage. Feature D is likely a privy or a storage feature; there is no evidence that it represents a well. Feature E is interpreted as a clearing or planting mound. The presence of ancillary features around a presumed occupation site (Feature A) would suggest a more permanent or at least heavily used temporary habitation function.

SIHP # -30010 is considered to have good excavation potential. While the soil substrate at Features A or C is likely not very deep, its excavation could yield subsurface deposits that would provide insight into the age and function of these features. Excavation or dismantling of Features B and/or E could yield similar results. Despite potential disturbance inflicted by surrounding dense vegetation, the site retains integrity of location, design, setting, workmanship, and feeling.

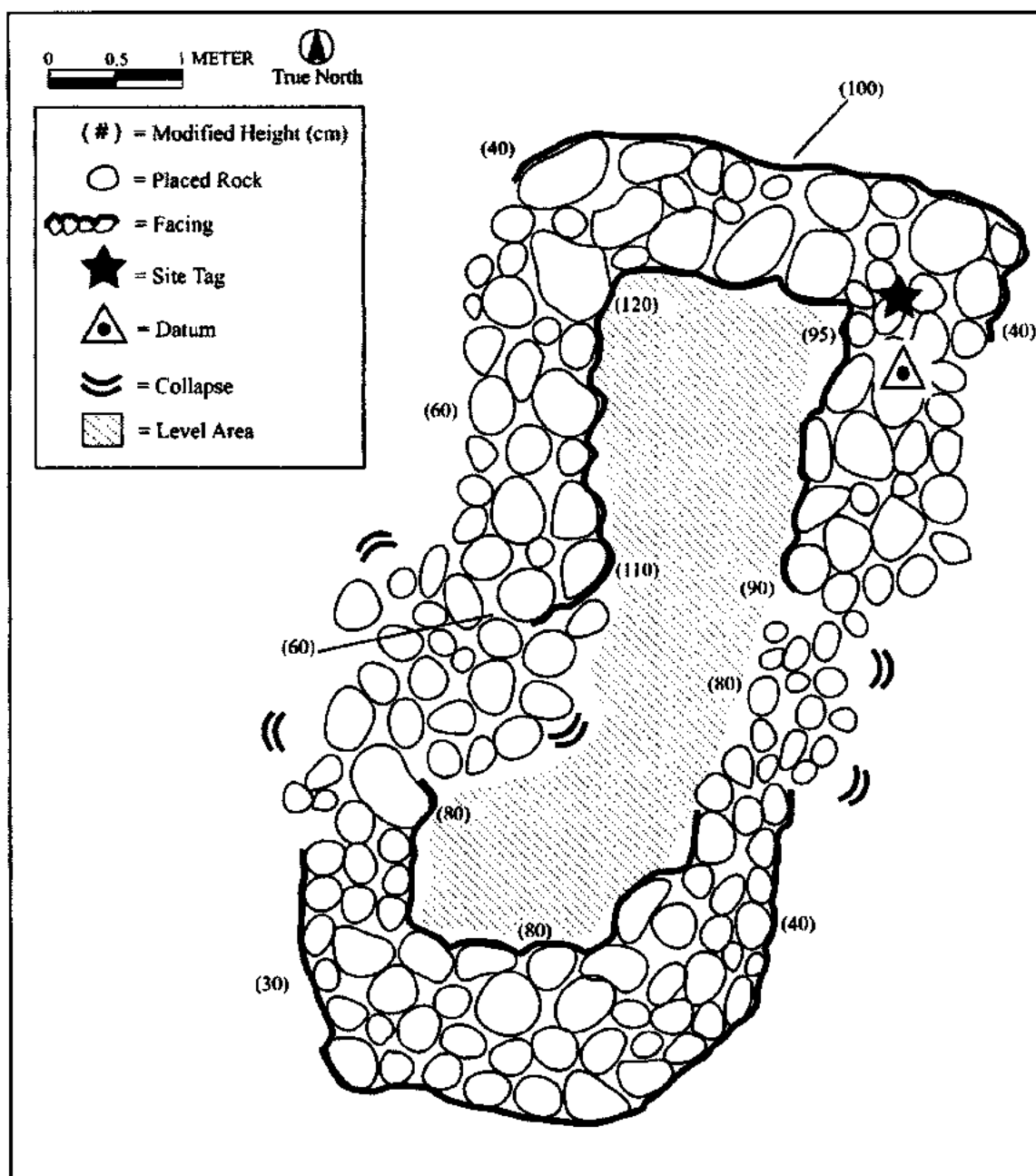


Figure 77. Plan view map of SIHP # -30010 Feature C



Figure 78. Photograph of SIHP # -30010 Feature C, view to southeast



Figure 79. Photograph of SIHP # -30010 Feature D, view to northwest



Figure 80. Photograph of SIHP # -30010 Feature E, view to north

5.3.4 SIHP # 50-10-35-30011**TEMPORARY SITE NUMBER:** CSH-006**SITE TYPE:** Complex**NUMBER OF FEATURES:** 2**TOPOGRAPHY:** Undulating**VEGETATION:** *Hala*, 'ōhi'a, kī, uluhe, waiawī, bing-a-bing, *maile pilau*, guava, mango, octopus tree, Koster's curse**ELEVATION:** 73 ft amsl**CONDITION:** Good**INTEGRITY:** Disturbance from surrounding vegetation and vegetation clearing activities**PROBABLE AGE:** Late nineteenth century**FUNCTIONAL INTERPRETATION:** Indeterminate**DIMENSIONS:** 10.0 m (E/W) by 3.0 m (N/S)

DESCRIPTION: SIHP # -30011 is a complex situated 75.0 m south of the Puna Trail in an area cleared of its understory by KMR Environmental Department (see Figure 24, Figure 81 through Figure 83). It is comprised of two features, Feature A, a rock wall, and Feature B, a constructed pit. The topography is undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions. A bulldozer road was observed approximately 5.0 m to the east.

Feature A is a linear rock wall (Figure 81 and Figure 82). The wall is constructed of basalt boulders and cobbles neatly stacked and faced three to four courses high. It is situated on a natural outcrop and measures approximately 5.0 m (east/west) by 0.70 m (north/south) with a maximum height of 0.7 m and thickness of 0.7 m. The wall segment abuts a *hala* tree to the east and a large 'ōhi'a tree to the west. While a scattering of rocks is present around these trees on the outcropping, no evidence of a continuation of the wall was observed in the surrounding areas.

Feature B is a constructed pit located 4.5 m east of Feature A (see Figure 81 and Figure 83). The pit utilizes an oblong natural depression or crevice. The natural feature has been lined with three courses of stacked basalt cobbles. It measures approximately 0.5 m (east/west) by 0.3 m (north/south) with a maximum exterior height of 0.3 m and 0.4 m maximum constructed depth.

No artifacts or cultural deposits were observed in the vicinity. Given the construction style and condition of the features, and proximity of the site to the Puna Trail and, SIHP # -30011 likely dates to the late nineteenth century. The wall is not too heavily collapsed, and the constructed pit is constructed similarly to those at nearby sites assessed to be from that time. Feature A may have delineated a planting, activity, or occupation area. Feature B may have functioned as a related storage feature, or as a privy or planting area. Excavation potential is assessed as poor, given the location of the wall on a rocky outcropping and a lack of sedimentation within the pit feature. Despite potential disturbance inflicted by surrounding dense vegetation and vegetation clearing activities, SIHP # -30011 is in overall good condition and retains integrity of location, design, setting, workmanship, and feeling.

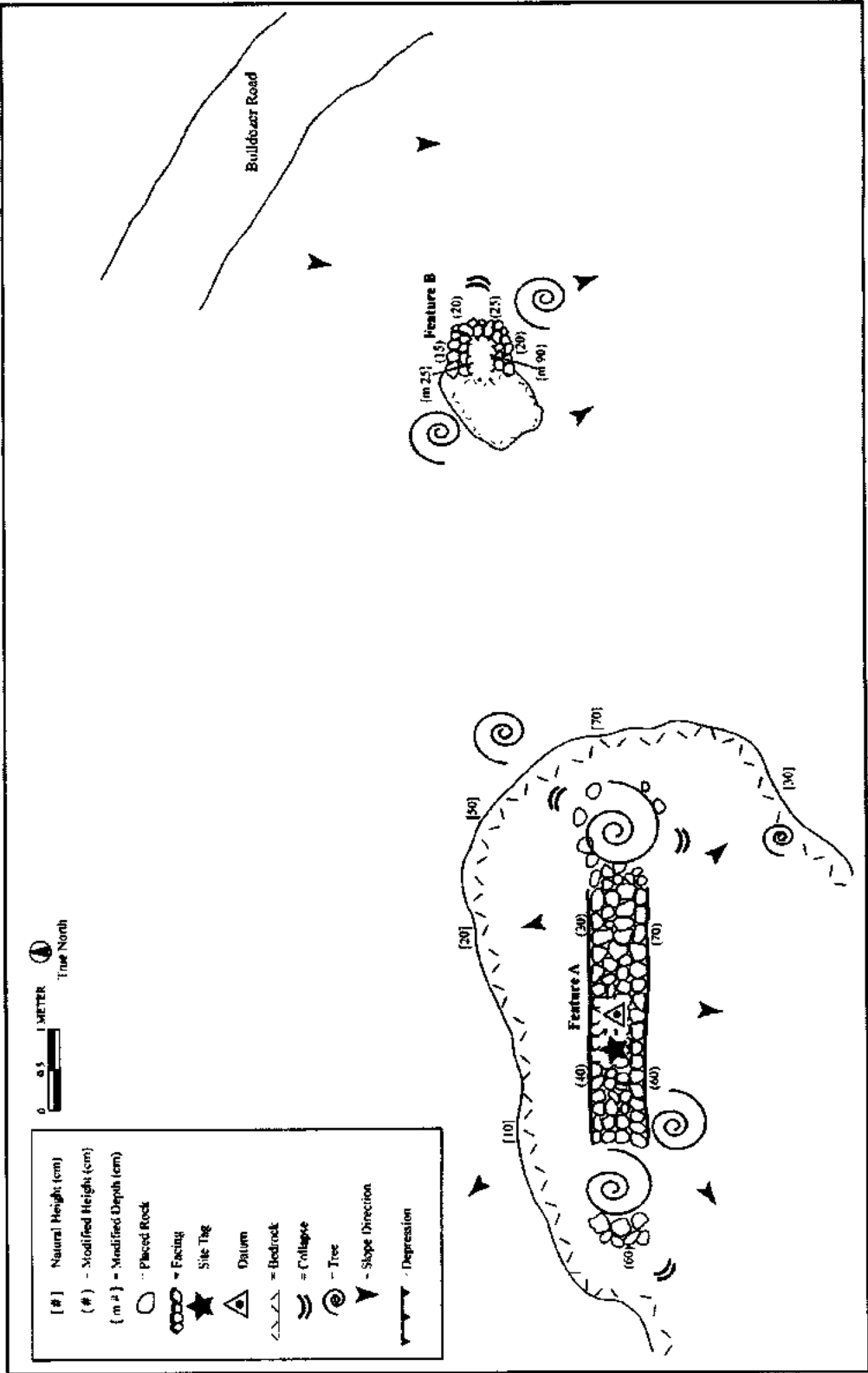


Figure 81. Plan view map of SIHP # -30011



Figure 82. Photograph of SIHP # -30011 Feature A, view to south



Figure 83. Photograph of SIHP # -30011 Feature B, view to south

5.3.5 SIHP # 50-10-35-30012**TEMPORARY SITE NUMBER:** CSH-007**SITE TYPE:** Trail**NUMBER OF FEATURES:** 1**TOPOGRAPHY:** Undulating**VEGETATION:** *Hala*, *'ōhi'a*, *kī*, *uluhe*, *waiawī*, bing-a-bing, *maile pilau*, guava, mango, octopus tree, Koster's curse**ELEVATION:** 76 ft amsl**CONDITION:** Fair**INTEGRITY:** Disturbance from surrounding vegetation**PROBABLE AGE:** Pre-Contact to late nineteenth century**FUNCTIONAL INTERPRETATION:** Transportation**DIMENSIONS:** 15.0 m (NE/SW) by 1.0-1.5 m (NW/SE) by up to 0.4 m high (along curbstone alignments)

DESCRIPTION: SIHP # -30012 is a trail remnant situated approximately 60 m south of SIHP # -30010 in Area A at KMR (see Figure 8, Figure 24, Figure 84, and Figure 85). The trail is located in a densely vegetated area of undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions.

Both edges of the trail are marked with alignments of basalt cobble curbstones. The center of this trail is slightly depressed, probably due to compression of its surface from regular use. Numerous trees are present within and surrounding the trail alignment. The extant portion of the trail is 15 m long (northeast/southwest). Of this total length, 10 m is 1.5 m wide (southeast/northwest); a 5.0 m section at the western end narrows to 1.0 m wide. The curbstone alignments measure from 0.2 to 0.4 m high. Based on its formal style, this is a Class AB or B curbstone trail (Apple 1965).

No artifacts or cultural deposits were observed in the vicinity. Given its close proximity, the trail may be associated with SIHP # -30010. It is also possible this trail remnant may be in fact be an isolated remnant segment of the previously documented SIHP # -23273 trail (see Section 5.2.5); it trends in generally the same direction, is in the vicinity, and exhibits similar construction. These potential associations can only be inferred, as the trail becomes unrecognizable beyond its documented limits. It likely continued in either direction as a simple, unmarked path over the ridges of outcrops common in this area. SIHP # -30012 likely functioned as a pre-Contact transportation route modified in the nineteenth century contemporaneous with SIHP # -23272 and sometime before or during improvements to the Puna Trail. The trail is in fair condition. Despite disturbance from surrounding vegetation, it retains integrity of location, design, setting, workmanship, and feeling.

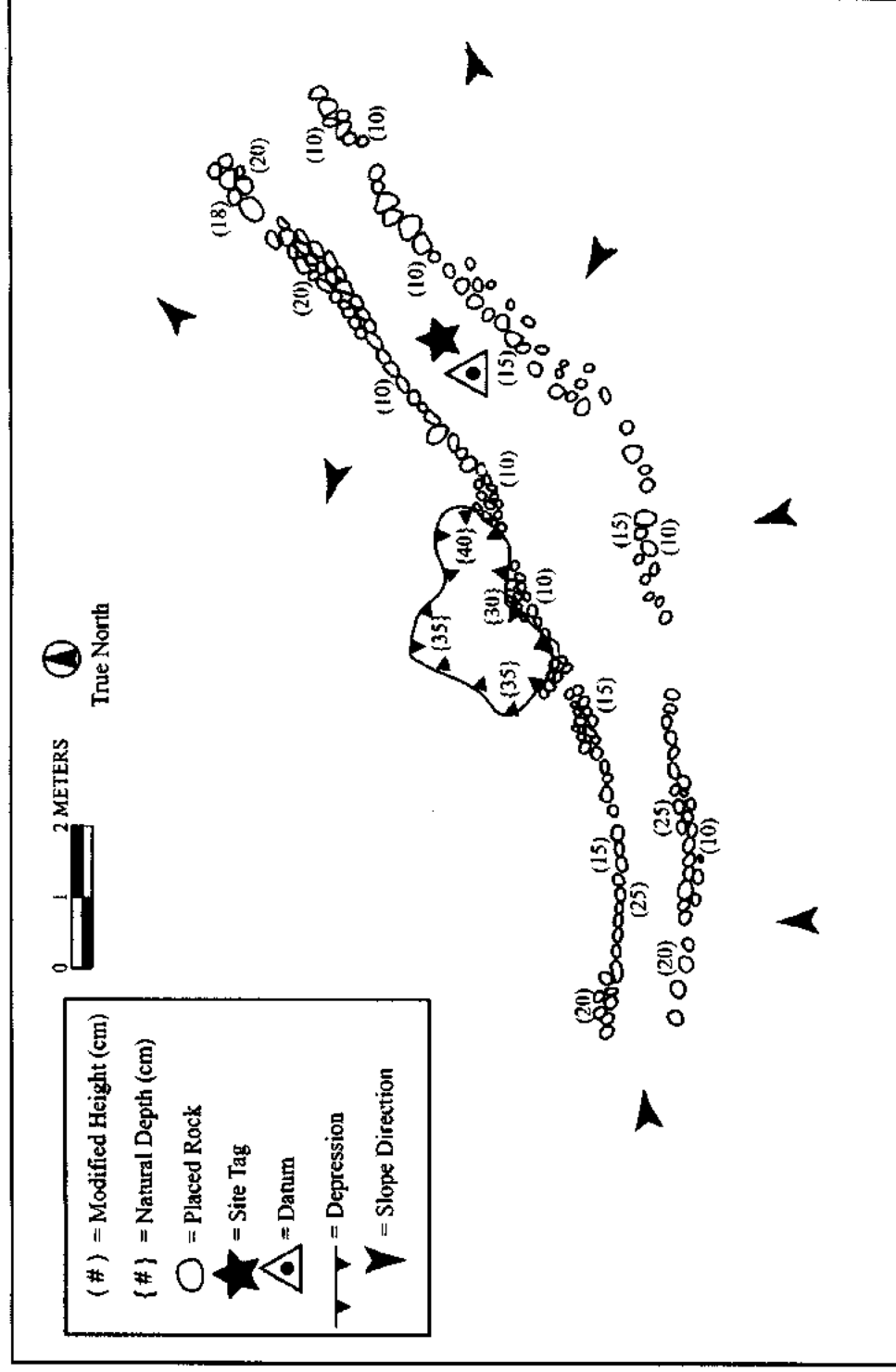


Figure 84. Plan view map of SIHP # -30012



Figure 85. Photograph of SIHP # -30012, view to northeast

5.3.6 SIHP # 50-10-35-30038**TEMPORARY SITE NUMBER:** CSH-003**SITE TYPE:** Trail**NUMBER OF FEATURES:** 1**TOPOGRAPHY:** Undulating with numerous voids**VEGETATION:** 'Ōhi'a, hala, uluhe, bing-a-bing, maile pilau, autograph tree, guava, mango, octopus tree, Koster's curse**ELEVATION:** 65 ft amsl**CONDITION:** Poor to remnant**INTEGRITY:** Disturbance from dense vegetation**PROBABLE AGE:** Late nineteenth century**FUNCTIONAL INTERPRETATION:** Transportation**DIMENSIONS:** 22 m (72.2 ft) in length (E/W) by 2.3 m (7.5 ft) wide (N/S)

DESCRIPTION: A remnant segment of the historic Puna Trail was identified parallel to the modern Jeep trail near a disturbed area adjacent to the KD #2 Range. The east-west trending segment is situated approximately 15.0 m (50 ft) north of the Jeep road (see Figure 24, Figure 86 and Figure 87) in an area of uneven *pāhoehoe* flow and dense vegetation. Because the Puna Trail alignment in KMR (SIHP # -18869) has been assessed as no longer eligible as a historic property based on modern impacts, this intact historic segment has been assigned as a separate historic property.

The fairly level surface of the trail is comprised of compressed and worn 'a'ā cobbles. The sides of the trail are defined in places by alignments of neatly placed (and in some places stacked) basalt cobble curbstones. The curbstone alignments are spaced up to 2.3 m (7.5 ft) apart (north/south), rising 0.35 m (1.1 ft) above the interior trail surface and 0.20 m to 0.40 m (0.7 ft to 1.3 ft) above the exterior surface. The alignments are generally 0.50 m (1.6 ft) wide, making the overall width of the trail up to 3.30 m (10.8 ft) (north/south). Only a 7.5 m (24.6 ft) portion of this trail segment is curbed on both sides. The southern curb could be traced for approximately 22.0 m (72.2 ft) (east/west), while only 7.5 m (24.6 ft) of the northern curb remain. The western end of the trail has been bulldozed, likely when the area adjacent to the KD #2 Range was cleared. At the eastern terminus the trail meets a small linear depression and disappears, possibly as a result of erosion.

No artifacts or cultural deposits were observed in the vicinity. Given its location directly adjacent and parallel to the modern alignment of the Puna Trail, this segment is interpreted as an extant portion of the historic alignment. It therefore dates to the late nineteenth century, when the pre-Contact trail was improved through this area. Excavation potential is poor considering the limited prospect for new information about the Puna Trail. Overall, the trail segment is in poor to remnant condition, due mainly to the disturbance at the western terminus and the surrounding dense vegetation. Despite its disturbed condition, this segment of the historic Puna Trail retains integrity of location, design, setting, workmanship, and feeling.



Figure 86. Photograph of the newly identified remnant portion of the historic Puna Trail (SIHP # -30038), view to east

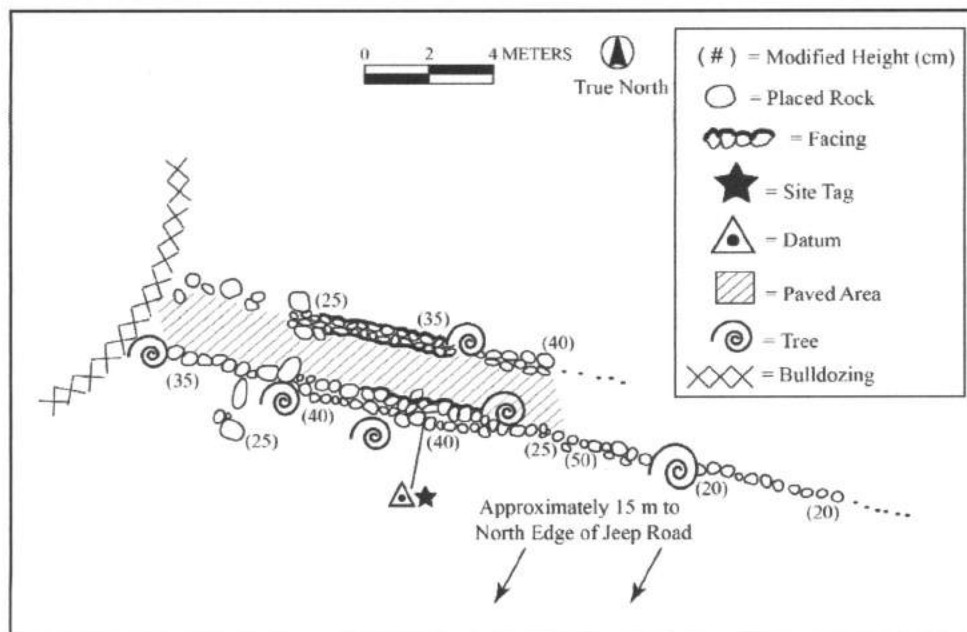


Figure 87. Plan view map of the newly identified remnant portion of the historic Puna Trail (SIHP # -30038)

Section 6 Results of Laboratory Analysis

6.1 Artifacts Collected from the Surface at SIHP # 50-10-35-30010

Four artifacts were collected during the Phase I AIS. These artifacts, all from the surface of Feature A at SIHP # -30010, are presented in Table 5.

6.1.1 Bottles

Two glass bottle artifacts (ART #1) were collected from the surface in an area relatively clear of underbrush west of SIHP # -30010 Feature A (see Table 5). The bottles were deposited in the same location, side by side, and may have been carried here from Feature A after the site was occupied. These were the only intact bottles found at the site.

Accession #1 is an amber-colored whiskey bottle (Figure 88). The quart-sized bottle is machine-made and exhibits a two-piece, applied top. The bottle is embossed on the front panel with "MACEFARLANE & Co. HONOLULU" and the monogram "M" over "C" with small "o" (Figure 89). Accession #1 is one of three types of quart-sized whiskey bottles produced by the company between 1880 and 1900. This bottle is considered to be rare (Elliot 1971:72-78, Lindsey 2014).

Accession #2 is a brown-colored whiskey bottle (Figure 90). The seamless bottle was turned in a mold. It exhibits a tooled top and is not embossed. These characteristics indicate this bottle was manufactured between 1850 and 1918 (Lindsey 2014).

6.1.2 Modified Water Worn Basalt Cobbles

Three modified waterworn stone artifacts were observed on the surface of SIHP # -30010 Feature A; two were collected (see Table 5). The remaining stone artifact was too large to collect, (ART #4); a single indentation similar to those on Accession #3 was noted upon the surface (see also Section 5.3.3 and Figure 74). That these stones are water worn indicates that they were transported from the coast or a river, either before or after their modification; such sources lie at some distance from the site.

Accession #3 is a large, modified waterworn cobble of dense basalt. The artifact exhibits two anthropogenic indentations spaced approximately 2 cm apart on one side, and a slightly flattened "base" (Table 5, Figure 91, and Figure 92). The inner or "central" indentation is slightly larger (3.5 cm in diameter) than the outer indentation (3.0 cm in diameter). Both are fairly shallow, at about 1.0 cm deep.

Accession #4 is a large, modified waterworn cobble of slightly vesicular basalt. One side of the artifact exhibits what appears to be an anthropogenic indentation that has breached at least one natural internal void. The narrow end of the artifact exhibits signs of battering (Table 5, Figure 93, and Figure 94). The modified indentation is approximately 5.0 cm in diameter, and may be up to 4.0 cm deep; it is difficult to ascertain whether the indentation breached a shallower natural void that was widened to some degree before the innermost void was breached. Nothing was observed deposited within the void.

Table 5. Artifacts Collected from the Surface of SIHP # 50-10-35-30010

Accession #	Material Type	Provenience	Attributes	Approximate Maximum Dimensions	Manufacture Date
1	Amber glass	Surface at SIHP # -30010 Feature A (ART #1)	Whisky bottle; considered rare; two-piece applied top; front panel embossed with "MACEFARLANE & Co. HONOLULU" and monogram "M" over "C" with small "o"	Length: 29 cm Width: 7.5 cm Thickness: 0.2 cm	1880-1900
2	Brown glass	Surface at SIHP # -30010 Feature A (ART #1)	Whiskey bottle; tooled top; turned in mold; seamless; no embossing	Length: 28 cm Width: 7.5 cm Thickness: 0.3 cm	1850-1918
3	Basalt	Surface at SIHP # -30010 Feature A (ART #2)	Modified basalt waterworn cobble; two shallow indentations on surface with flat base	Length: 16 cm Width: 14 cm Thickness: 11.5 cm	Like pre-Contact to early historic
4	Basalt	Surface at SIHP # -30010 Feature A (ART #3)	Modified basalt waterworn cobble; natural exposed void within deep indentation; one end exhibits battering marks	Length: 19.5 cm Width: 14 cm Thickness: 12 cm	Like pre-Contact to early historic



Figure 88. Photograph of Accession # 1, historic bottle collected from surface at SIHP # -30010 Feature A



Figure 89. Photograph of Accession # 1, showing embossed markings

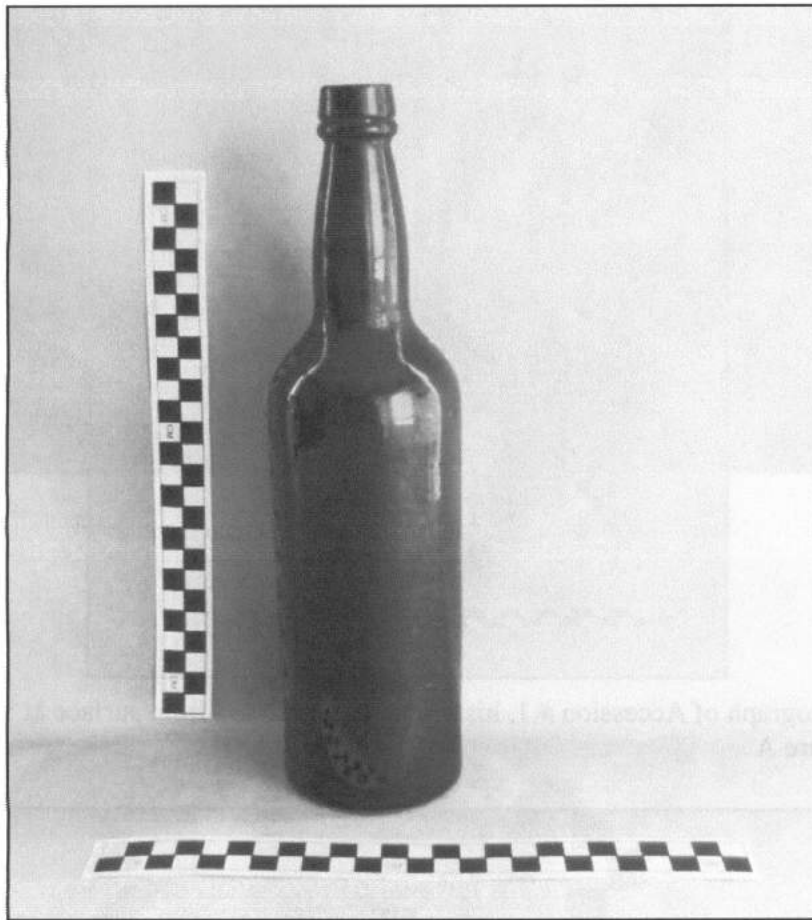


Figure 90. Photograph of Accession #2, historic bottle collected from surface at SIHP # -30010 Feature A



Figure 91. Photograph of Accession #3, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing indentations

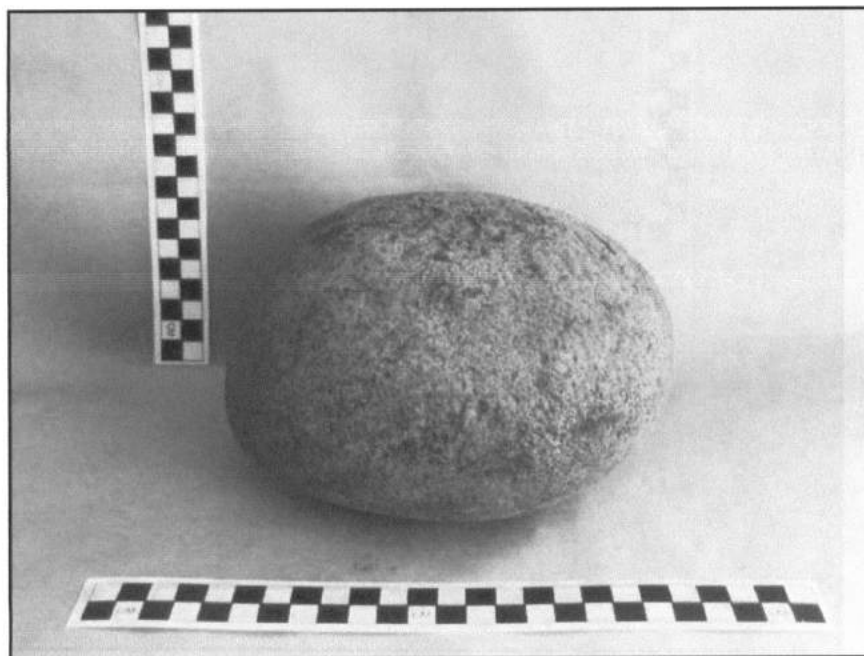


Figure 92. Photograph of Accession #3, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing flattened base



Figure 93. Photograph of Accession # 4, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing exposed void within indentation



Figure 94. Photograph of Accession #4, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing battering marks on end

The function of these artifacts is somewhat indeterminate. The indentations on Accession #3 are too shallow for a lamp or for a mortar stone. Dr. Hammatt has suggested this artifact may have been used with a hand drill to spark a fire. Alternatively, it may have been used to hold a *kukui* or other nut to facilitate extraction of the kernel. The slightly flattened base indicates it may have been modified somewhat to create a more stable base. Accession #4 could have been used in a similar fashion; however, the deeper indentation indicates it could have been worked for use as a lamp or mortar stone likely abandoned when the inner void was breached. It also appears to have functioned to some degree as a battering stone.

6.2 Discussion

The assemblage of artifacts collected during the Phase I investigation is reflective of the artifacts documented at nearby SIHP # -21771 by Tolleson and Godby (2001). Both assemblages include late nineteenth century liquor bottles and "traditional Hawaiian-type" stone artifacts (at SIHP # -21771 *poi* pounders and manuports were observed). Of this latter category, it is important to note the relative portability and durability of such items. Once a desirable stone was found and modified for use, it would have become a valuable tool that would not have been casually abandoned, and that could have seen continued use over many years. Therefore, the age and place of origin of the modified basalt waterworn stones found at SIHP # -30010—whatever their purpose may have been—is difficult to interpret. We know from the presence of *poi* pounders at SIHP # -21771 that traditional methods of food preparation were occurring at that site contemporaneous with late nineteenth century construction along the Puna Trail; Hawaiians were among the roadway workforce. The stone artifacts presented above may represent pre-Contact tools found elsewhere at a later date and brought to the site in historic times. Alternatively, they could be historic models of traditional tools. If anything, the presence of these artifacts speaks of the diversity of the road crew and other travelers along the Puna Trail in the late 1800s, and to the related potential for historic (as well as modern military) occupation and modification of traditional features within the project area.

Section 7 Summary and Interpretation

Prehistorically the project area does not appear to have supported extensive habitation or large-scale agriculture. Habitations would have been located closer to the coast or further inland amid the more productive upland agricultural zones. The KMR parcel would have been used for intermittent, small-scale agriculture, with the natural depressions in lava flows used for mulch-type agriculture. Natural resources, such as the prevalent *lauhala* for weaving, would have been collected.

The project area remained marginal in the historic period, with the probable continuation of intermittent use for traditional Hawaiian agriculture. Originally a pre-Contact *ala loa*, the Puna Trail (SIHP # 50-10-35-18869) was modified, and became the most notable man-made feature on the KMR landscape. By the 1870s, the trail was a functioning horse trail. Four feet wide and paved, it represented a Type C trail, following Apple's trail typology (1965:65).

Sometime during the use of the trail, *ahu* (SIHP # -21658) were constructed to mark a point along it, and natural features in the surrounding environment were modified for use as shelters (SIHP # -30008) or temporary habitations (SIHP # -30009), and for agricultural pursuits. Secondary trails were also constructed laterally from the Puna Trail, likely to access forest resources (SIHP #s -23273 and -30012). Activity areas associated with the late nineteenth century construction of the trail led to the presence of activity areas (or "way-stations") for activities related to maintenance and associated habitation (SIHP #s -21771, -30010, and -30011).

The project area was subjected to extensive development beginning in 1914 with the establishment of the National Guard of Hawaii Rifle Range and continuing through World War II with Army and Navy use of the KMR. Large portions of the project area were graded for buildings, roads, firing ranges, and lawns. The most extensive modifications occurred in the northwest portion of the KMR. The southern and eastern portions are relatively undisturbed in comparison, and it is in these areas that CSH located the remains of the pre-Contact and/or historic sites described above.

The alignment of the Puna Trail through KMR survived the changes of the twentieth century as a Jeep road; however, the nineteenth century characteristics of the trail, such as paving and curbstones, generally did not. A previous study at KMR (Hammatt and Bush 2000) determined the historic alignment had been completely obliterated by the Jeep road construction, but a remnant segment of the trail was documented during the current investigation in the southeastern portion of the reservation. Since much of the Puna Trail through KMR has been modified for vehicle travel, it has largely become a Type D trail, following Apple's trail typology (Apple 1965:65). The extant segment represents the former Class C alignment.

A substantial portion of the KMR has been extensively modified by military development. This development has effectively removed any archaeological remains that may once have been present in these areas. The present Phase I survey focused on the portions of the KMR that have not been heavily modified. Generally, the Phase I survey findings support the assessment that KMR was a marginal area prehistorically and through the nineteenth century. The types of historic properties encountered within the KMR pre-dating the late nineteenth century

modification of the Puna Trail suggest intermittent use for forest resource procurement and possible distribution to adjacent *ahupua'a* or districts. The lands along the Puna Trail saw increased usage as the trail was modified for equestrian travel, necessitating the creation of associated way-stations for maintenance and rest.

A low site density within KMR was expected; results of the AIS support this expectation, particularly when considering traditional land use. Examination of the traditional settlement pattern and present results suggests habitation focused along the coast, and not within the more densely forested *mauka* areas. It is likely this is the result of drier conditions along the coastline. The lack of arable land within the interior areas was also a factor in the paucity of permanent habitation and agricultural sites within the *mauka* regions of Waiākea Ahupua'a. However, indications of agricultural pursuits have been identified within the KMR and it is not unreasonable to assume that more of these agricultural sites were once present. Additional features of this type have likely deteriorated over time and/or become obscured by the dense vegetation characterizing the undeveloped portions of the KMR. The fact that historic properties were newly-recorded in previously-surveyed areas underscores the problematic nature of feature identification within the forests of the KMR.

Section 8 Significance Assessments

The current archaeological inventory survey investigation has documented 11 historic properties within or adjacent to the project area (see Figure 23 and Figure 24, Table 4). Five historic properties (SIHP #s 50-10-35-18869, -21657, -21658, -21771, and -23273) were previously identified and evaluated during SHPD-approved archaeological inventory surveys (Escott and Tolleson 2002; Hammatt and Bush 2000; Tolleson and Godby 2001). Additional features were found during the present investigation at SIHP # -21771. The six newly identified sites were evaluated for significance according to the historic property significance criteria listed under HAR §13-275-6 and (Table 6). The criteria are the following:

1. Criterion "a." Associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b." Associated with the lives of persons important in our past;
3. Criterion "c." Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;
4. Criterion "d." Have yielded, or is likely to yield information important for research on prehistory or history;
5. Criterion "e." Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts—these associations being important to the group's history and cultural identity.

The National Register of Historic Places (NRHP) is maintained by the U.S. Secretary of Interior under authority of section 2(b) of the Historic Sites Act of 1935 (49 Stat. 666, 16 U.S.C. §461) and section 101(a)(1) of the National Historic Preservation Act (16 U.S.C. §470a). Criteria for evaluation are as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B) That are associated with the lives of persons significant in our past; or
- C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D) That has yielded or may be likely to yield information important in prehistory or history.

Table 6. Historic Property Significance Criteria and Recommended Treatment

SIHP # (50-10-35)	Site Type	Features	Probable Age	Functional Interpretation	Significance Criteria	Recommended Treatment
-18869	Trail ("Puna Trail")	One	Late nineteenth century	Transportation	N/A	No further work
-21657	C-shaped enclosure	One	Twentieth century	Military artillery position	d	No further work
-21658	Complex	Five	Likely late nineteenth century or older	Markers	d	Preservation through avoidance
-21771	Complex	Twelve	Late nineteenth century	Activity area, temporary habitation, possible agriculture	a, c, and d	Preservation through avoidance; extend existing protective fence line to encompass newly recorded features; Phase II subsurface testing
-23273	Complex	Three; only one identified during present AIS	Historic	Transportation	d (Feature 1)	No further work
-30008	Modified lava tube	One	Pre-Contact	Temporary habitation	d	No further work
-30009	Complex	Three	Late pre-Contact/early historic	Activity area, temporary habitation, possible agriculture	d	No further work
-30010	Complex	Five	Historic	Temporary habitation	d	Phase II subsurface testing
-30011	Complex	Two	Pre-historic/historic	Indeterminate	d	No further work

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SIHP # (50-10-35)	Site Type	Features	Probable Age	Functional Interpretation	Significance Criteria	Recommended Treatment
-30012	Trail	One	Historic	Transportation; potential remnant section of SIHP # -23273	d	No further work
-30038	Trail	One	Late nineteenth century	Transportation; remnant historic-era segment of the Puna Trail, which has been largely obliterated in the KMR (SIHP # -18869)	a, d	Preservation through avoidance

The Hawai'i Register of Historic Places (HRHP) criteria for consideration, listed under HAR §13-198-8, are almost identical to those for the NRHP.

SIHP # -18869 is the Hilo District portion of the Puna Trail, a pre-Contact trail that was modified for horse travel in the late nineteenth century. The historic property was documented under studies by Hudson (1932), McEldowney (1979), and Hammatt and Bush (2000). As a whole, the trail is significant under both Criteria "a" and "d". Within the KMR, the trail's original alignment has been developed into a modern Jeep road. These alterations have generally obliterated its nineteenth century characteristics, such as paving and curbstones. As such, Hammatt and Bush (2000) reported that the portion of the Puna Trail through the KMR was not considered eligible for the HRHP and NRHP.

SIHP # -21657 is thought to be an historic military artillery position. The historic property was previously identified by Hammatt and Bush (2000) and evaluated generally significant for information content. The results of the current AIS support the recommendation of eligibility under National/Hawai'i Register Criterion D and determination of significance under HAR §13-275-6 Criterion "d."

SIHP # -21658 is a series of five possible *ahu* or trail markers along the Puna Trail. The historic property was previously identified by Hammatt and Bush (2000) and evaluated generally significant for information content. The results of the current AIS support the recommendation of eligibility under National/Hawai'i Register Criterion D and determination of significance under HAR §13-275-6 Criterion "d."

SIHP # -21771 is a late nineteenth century complex located adjacent to the paved portion of the Puna Trail. Four features at this historic property were previously identified by Tolleson and Godby (2001) and evaluated generally significant for their association with events that made an important contribution to the broad patterns of our history, their embodiment of the distinctive characteristics of a type, period, or method of construction, and their information content. In the current AIS, CSH documented eight additional features at this site. The results of the current AIS support the recommendation of eligibility under National/Hawai'i Register Criterion D and determination of significance under HAR §13-275-6 Criteria "a," "c," and "d."

SIHP # -23273 is an historic era complex consisting of a remnant trail (Feature 1) and two agricultural planting areas (Features 2 and 3). The historic property was previously identified by Escott and Tolleson (2002); Feature 1 was evaluated generally significant for information content under Criterion D, while Features 2 and 3 were considered not significant. The results of the current AIS support the recommendation of eligibility under National/Hawai'i Register Criterion D and determination of significance of Feature 1 under HAR §13-275-6 Criterion "d."

SIHP # -30008 is a pre-Contact to historic era lava tube shelter identified during the current AIS. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "d" for its information content.

SIHP # -30009 is a pre-Contact to historic era complex of three features situated on a large natural outcropping identified during the current AIS. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "d" for its information content.

SIHP # -30010 is a late nineteenth century complex of five features identified during the current AIS. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "d" for its information content. While similar in some ways to SIHP # -21771, it is not assessed as significant under Criteria "a" and "c" as it does not embody these characteristics as well as that historic property.

SIHP # -30011 is a late nineteenth century complex of two features identified during the current AIS. Feature A is a wall and Feature B is a circular depression. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "d" for its information content.

SIHP # -30012 is a historic era or older trail identified during the current AIS. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "d" for its information content.

SIHP # -30038 is an isolated remnant segment of the late nineteenth century Puna Trail within KMR. While the Puna Trail through KMR (SIHP # -18869) had been assessed as no longer eligible to the National/Hawai'i Register due to its modern improvements, SIHP # -30038 does represent a relatively intact portion of the historic alignment. This trail segment has been heavily disturbed by bulldozing and dense surrounding vegetation. Despite these disturbances, this segment of the historic trail retains integrity and is therefore eligible as an historic property. It is recommended eligible under National/Hawai'i Register Criterion D and determined significant under HAR §13-275-6 Criterion "a" for its association with changes in infrastructure (e.g., *ala loa*) through the historic period, and Criterion "d" for its information content.

Section 9 Project Effect and Mitigation Recommendations

9.1 Project Effect

This investigation was undertaken for planning purposes, and does not address a specific project. For this reason, a project-specific effect recommendation cannot be made. However, future developments may have the potential to impact known or potential historic properties within the KMR. The recommended mitigation measures are intended to reduce potential adverse effect on significant historic properties during any future development projects.

9.2 Mitigation Recommendations

9.2.1 Historic Properties at which Sufficient Data Has Been Recovered

No further historic preservation work is recommended for seven of the 11 total historic properties identified within the project area (SIHP #s 50-10-35-18869, -21657, -23273, -30008, -30009, -30011, and -30012). Sufficient information regarding the location, function, age, and construction methods of these historic properties has been generated by the current archaeological inventory survey investigation to mitigate any adverse effect caused by proposed development activities.

9.2.2 Preservation through Avoidance

Because of their evaluated significance during past and present studies, three historic properties within the KMR are recommended for preservation through avoidance.

SIHP # -21658 was recommended for preservation through avoidance by Hammatt and Bush (2000). CSH presently concurs with this recommendation, to allow for future study.

CSH also concurs with the recommendation for preservation of SIHP # -21771 implied by Tolleson and Godby (2001). This historic property provides a unique picture of the history of this portion of Hilo in the late nineteenth century. The bulk of this historic property is already preserved within a modern chain link fence. It is recommended that the fence line be modified to contain the newly identified associated features present to the north. Figure 95 shows how alteration of the existing fenceline at SIHP # -21771 would fulfill this recommendation. The portion of fencing presently situated between the Features A through G and Features H through L clusters could be removed, if desired, to create a single continuous enclosed space.

SIHP # -30038 is an isolated remnant segment of the late nineteenth century Puna Trail. All of the historic components of this trail were previously thought to have been obliterated by the modernization of the overall trail into a Jeep road (SIHP # -18869). Because this segment likely represents the only "intact" segment of the historic trail within the KMR, it should also be avoided to allow for future study.

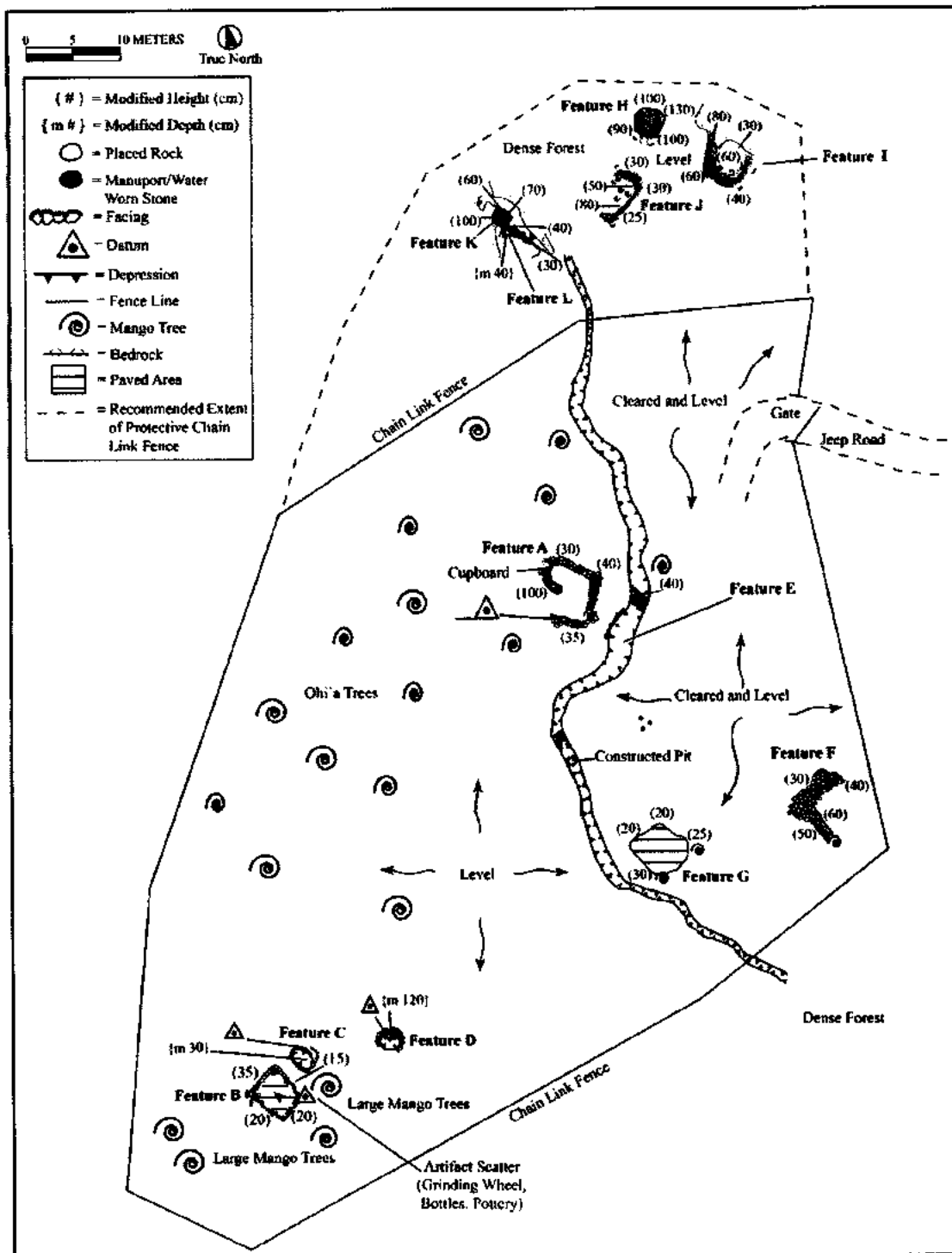


Figure 95. Plan map of SIHP # -21771, showing the recommended extension of the protective chain link fence line (dashed line)

9.2.3 Phase II Subsurface Investigation

Given their potential for containing additional information regarding feature age and/or function, and to rule out the possibility (however unlikely) of the presence of human burial deposits, subsurface investigation (i.e., test excavation) is recommended for two historic properties, SIHP #s -21771 (also recommended for preservation through avoidance) and -30010. This work would be completed under a Phase II contract with the HIARNG, *if* concurrence that such testing is warranted has been obtained in consultation with that agency and the SHPD.

9.2.4 Archaeological Monitoring

The results of the current Phase I investigation underscored the difficult nature of site identification within the heavily forested, undeveloped portions of the KMR. Due to the potential for additional surface and subsurface historic properties within these areas, including human burials, it is recommended that initial ground disturbance within the presently unmodified portions of the KMR be attended by an archaeological monitoring program. The monitoring program will begin with the production of an archaeological monitoring plan for the review and acceptance of SHPD prior to the beginning of construction (Appendix A of this report). Field monitoring should be carried out in accordance with the plan. An archaeological monitoring report should be submitted for review and acceptance by SHPD following the completion of all monitoring activities related to project development.

9.3 Disposition of Materials

Materials collected during the current archaeological inventory survey will remain temporarily curated at the CSH storage facility in Pāhoa, Hawai'i. CSH will make arrangements with the landowner regarding the disposition of this material. Should the landowner request archiving of material, an archive location will be determined in consultation with SHPD.

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Appendix A Phase I Archaeological Monitoring Plan

**Archaeological Monitoring Plan, Phase I,
Keaukaha Military Reservation (KMR)
Hawai'i Army National Guard Facility
Waiākea Ahupua'a, South Hilo District, Island of Hawai'i
TMK (3) 2-1-012: 003, 131 and (3) 2-1-013:010**

**Prepared for
Hawai'i Army National Guard, ENV Office**

**Prepared by
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**Cultural Surveys Hawai'i, Inc.
Kailua, Hawai'i
(Job Code: WAIAKEA 11)**

March 2014

Introduction

At the request of the Hawai'i Army National Guard, ENV Office, Cultural Surveys Hawai'i, Inc. (CSH) has prepared this archaeological monitoring plan (AMP) as part of Phase I investigations at Keaukaha Military Reservation (KMR) Hawai'i Army National Guard Facility, Waiākea Ahupua'a, South Hilo District, Hawai'i Island, TBD: TMK (3) 2-1-012:003, 131 and (3) 2-1-013:010. The proposed project area is near Hilo Town in the Hawai'i Army National Guard (HIARNG) KMR and is bound by General Lyman Field/Hilo International Airport on the northwest, County Quarry and Borrow Pit Site on the southeast, the Airport Access Road on the northeast and dense forest on the southwest. The proposed project area is depicted on a U.S. Geological Survey (USGS) 7.5 Minute Topographic Map, Hawai'i Tax Key Map (TMK), an aerial photograph and project area site plan of KMR (see Figure 1 through Figure 4).

The KMR encompasses a total area of 509.17 acres. However, the project or survey area encompassed the portions of the KMR that are vegetated (not currently maintained). Therefore the Phase I Archaeological Inventory Survey (AIS) project area, and subject of the present AMP, comprises a 405.3-acre portion of the overall 509.17-acre property (see Figure 5 and Figure 6), and excludes TMK (3) 2-1-012:131 in its entirety. The Phase I investigation is understood as being undertaken in support of planning for potential long-range improvements at the HIARNG KMR Facility. No specific improvements are known to us at this time. Development of this AMP will assure compliance with State of Hawai'i and Federal Historic Preservation regulations, and aid in the discovery and treatment of any historic properties encountered during future projects within the project area.

This undertaking is subject to both Federal and State of Hawai'i Historic Preservation Regulations. With regard to Federal regulations, this undertaking is subject to historic preservation review under Section 106 of the National Historic Preservation Act of 1966, as amended, and implementing regulation 36 CFR Part 800. In the event that human burials of Native Hawaiian descent are encountered, all consultation and subsequent work would be conducted under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as well as State of Hawai'i Administrative Rules (HAR) Title 13 §13-300.

Scope of Work

The following scope of work satisfies the State of Hawai'i requirements for archaeological monitoring plans (Hawai'i Administrative Rules [HAR] § 13-279-4). The written plan shall specify:

1. The type of archaeological remains or historic properties anticipated or require protection;
2. The location of these properties within the project area or where they are anticipated to be;
3. The fieldwork need to protect or document known or anticipated historic properties; which may include, but not limited to, profile documentation of stratigraphy, drawings, lithic sourcing and excavations or exposed feature;

4. That the archaeological monitor has the authority to halt ground-disturbing activities in the immediate area of the find, in order to implement the plan;
5. That a coordination meeting between the archaeological team and the construction team will be held to inform the contractor of the plan;
6. Any laboratory work that is expected;
7. That a final report of monitoring activities will be prepared;
8. Archiving of any collections.

This plan must be approved by SHPD before subsurface work in the project area can begin.

Results of Phase I AIS and Recommendations

CSH conducted the Phase I surface AIS from August 19, 2013 to September 24, 2013. The pedestrian inspection identified 11 historic properties, of which five were previously-identified and six are newly-identified. While these sites are largely associated with the late nineteenth century modification of the Puna Trail for equestrian travel, some appear to pre-date this activity and were likely related to traditional and/or earlier historic resource procurement within the forests of Waiākea. Evidence of possible shelter, temporary habitation, and agriculture were also documented. See Section 5 of the AIS report for further discussion of these historic properties and their context within the lands of the KMR.

Of the 11 historic properties documented, seven were recommended for no further work, two were recommended to undergo Phase II subsurface testing, and three were recommended for preservation through avoidance (note that one site, SIHP # 50-10-35-21771, was recommended for both subsurface testing and preservation through avoidance) (see also Section 9.2). The locations of all eleven historic properties are given on Figure 23 and Figure 24. Figure 25 depicts these historic properties in relation to both the disturbed and undisturbed portions of the unmaintained grounds at KMR.

Following concurrence of the SHPD with the evaluations and recommendations as presented in the AIS report, only the sites recommended for Phase II subsurface testing and preservation through avoidance would require protection during future development projects at KMR. If Phase II subsurface testing was completed prior to any development, the results of those investigations could decrease the number of historic properties requiring protection. Presently, subsurface testing is recommended for SIHP #s -21771 and -30010; as SIHP # -21771 is also recommended for preservation through avoidance, the results for testing at this site would not bear on the present plan. However, if testing yielded a recommendation of no further work at SIHP # -30010, protection of that site may no longer be required.

Archaeological Monitoring Provisions

In consultation with SHPD, on-site archaeological monitoring is recommended for all ground disturbances in unmaintained areas within KMR (see Figure 6) to facilitate the identification and treatment of any burials that might be discovered during project construction, and to alleviate the project's effect on non-burial archaeological deposits. The AIS identified previously unrecorded archaeological features within previously surveyed areas in both disturbed and undisturbed

portions of the unmaintained grounds at KMR (see Figure 25). These results indicate some potential for additional features within any of these unmaintained areas, regardless of past disturbance. Archaeological monitoring is not recommended for any ground disturbance within the presently-maintained grounds, including the existing ranges indicated on Figure 5.

Under Hawai'i State historic preservation legislation, "Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities which may adversely affect historic properties" (HAR § 13-279-3). For this project, the proposed monitoring program will serve as a mitigation measure that insures proper documentation should historic properties be encountered during the road reconstruction/rehabilitation work. The archaeological monitoring firm would need to be permitted to conduct archaeological studies in the State of Hawai'i and compliant with any federal regulations governing archaeological monitoring.

Specific Provisions

Hawai'i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR § 13-279-4). The monitoring provisions below address these eight requirements.

1. Anticipated Historic Properties:

Based on background research and the results of the current Phase I AIS, historic properties (i.e., archaeological sites) in the form of pre- and post-Contact surface or subsurface features may be encountered during archaeological monitoring of ground disturbance within the project area. Subsurface features including anthropogenic constructions, cultural deposits and burials can occur within lava tubes.

Evidence of indigenous Hawaiian land use could include surface architectural features or cultural deposits obscured by dense vegetation; subsurface cultural deposits might contain midden, artifacts and/or human burials. Evidence of post-Contact land use could include surface features associated with the Puna Trail or subsurface cultural deposits in the form of trash pits and/or human burials.

2. Locations of Historic Properties:

Historic properties may be encountered anywhere within the entire project area.

3. Fieldwork:

Full-time on-site archaeological monitoring is recommended whenever disturbance of original (previously undisturbed) ground is conducted in the project area. The archaeological monitor shall continuously observe and monitor ground disturbing activities. Any departure from full time on-site archaeological monitoring will only follow consultation with and written concurrence from SHPD.

Each piece of mechanical earth-disturbing machinery shall be monitored by an archaeological monitor. If more than one piece of machinery needs to be monitored, additional monitors shall be employed.

The monitoring fieldwork may encompass the documentation of surface or subsurface archaeological features (e.g., anthropogenic constructions, or cultural deposits such as midden scatters or trash pits) and will employ current standard archaeological recording techniques. For surface features, this would include documentation of features by written description, tape and compass mapping, photographs, and GPS. For subsurface features, this would include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed, as well as representative profiles. These exposures will be photographed, located on project area maps and sampled. Photographs and representative profiles of excavations will be taken even if no historically-significant sites are documented. As appropriate, sampling will include the collection of representative artifacts, bulk sediment samples and/or the on-site screening of measured volumes of feature fill to determine feature contents.

If human remains are identified, no further work will take place, including no screening of back dirt, no movement of rocks, no cleaning and/or excavation of the burial area and no exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains that are encountered during construction will be handled in compliance with NAGPRA, HAR § 13-300, and in consultation with SHPD.

4. Archaeologist's Role:

The on-site archaeologist(s) will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to insure that the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting, the monitor will emphasize his or her authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the landowner and may not be removed from the construction site. At this time it will be made clear that the archaeologist must be on site whenever disturbance of original (previously undisturbed) ground is conducted in the project area; and that multiple machines working in different areas need multiple monitors.

6. Laboratory Work:

Laboratory work will be conducted in accordance of HAR § 13-279-5-(6). Laboratory analysis of non-burial related finds will be tabulated into table form and standard artifact and midden recording will be conducted as follows: artifacts will be documented as to provenience, weight, length, width, type of material, and presumed function. Photographs of representative artifacts will be taken for inclusion into the

archaeological monitoring report. Bone and shell midden materials will be sorted down to species, when possible, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits will be analyzed for species identification. Charcoal samples ideal for dating analyses will be sent to Beta Analytic, Inc. for radiocarbon dating. If appropriate, artifacts may be sent to the University of Hawai'i-Hilo Geoarchaeology lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. All analyzed samples, provenience information, and results will be presented in table form within the archaeological monitoring report.

7. Report Preparation:

One of the primary objectives of the report will be to present a stratigraphic overview of the project area which will allow for predictive assessments of adjacent properties, which may be the subject of future development. The report will contain a section on stratigraphy, description of archaeological findings, monitoring methods and results of laboratory analyses. The report will address the requirements of a monitoring report (HAR § 13-279-5). Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should burials and/or human remains be identified, then other letters, memos, and/or reports may be requested by SHPD's Burial Sites Program.

8. Curation:

All burial materials will be addressed as directed by the SHPD. Materials not associated with burials will be temporarily stored at the contracted archaeologist's facilities until an appropriate curation facility is selected, in consultation with the landowner and SHPD.

Research Objective

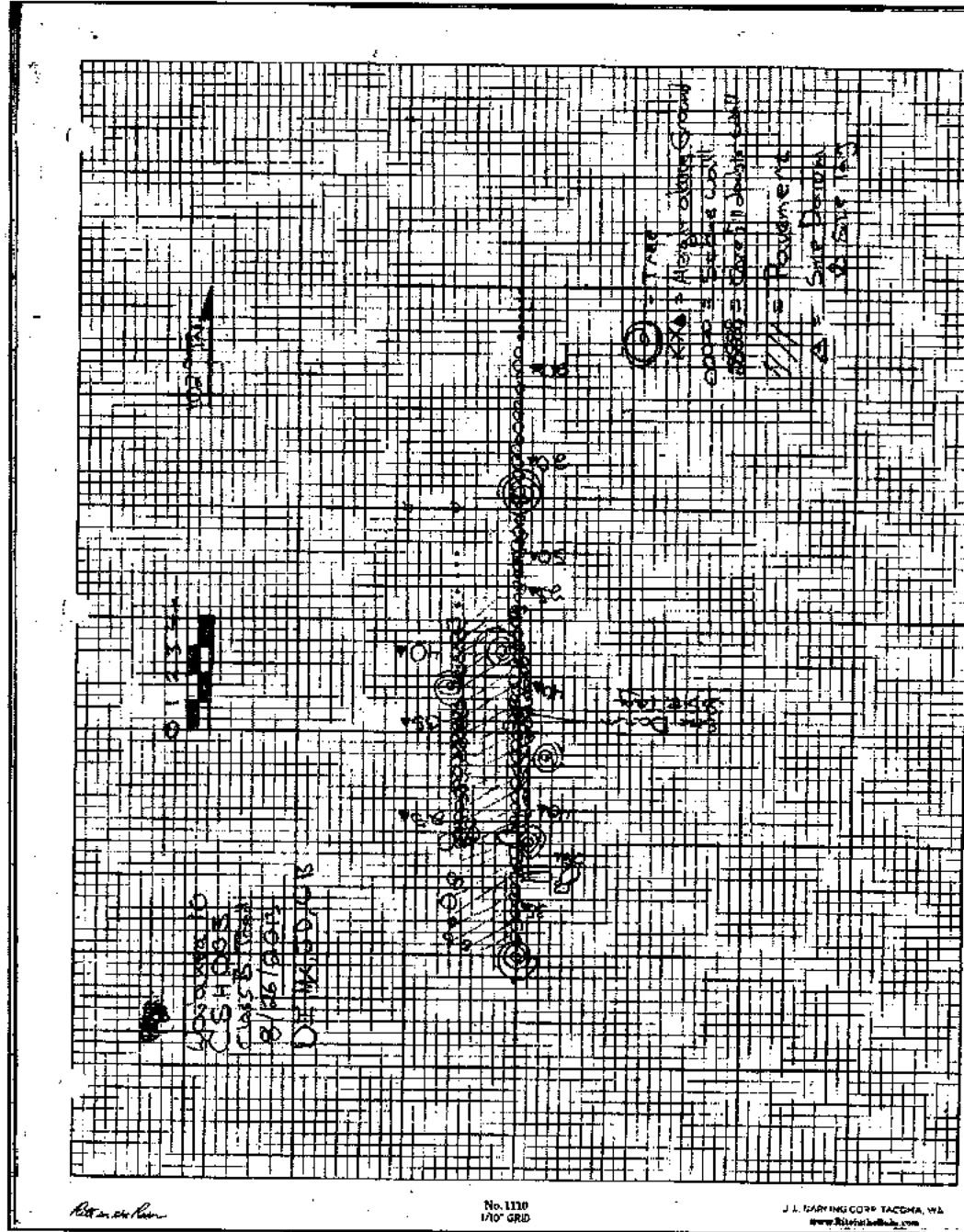
The research objective for archaeological monitoring fieldwork will focus on gathering information related to the cultural history of the area surrounding the current project area. In particular, the focus would be to clarify our understanding of pre-Contact land use in the forests of Waiākea, and to further document historical activities within the KMR and relationship of such activities to the Puna Trail.

Temporal analysis (radiocarbon dating) will also be conducted if dateable material (e.g., charcoal) can be collected from discrete subsurface features that are associated with a particular event (such as the construction of fire pits), rather than from bulk sediment samples which reflect extended depositional events. The results of this research will be presented in the project's final archaeological monitoring report.

Appendix B CSH Site Inventory Records and Plan View Maps

SIHP # 50-10-35-18869 (CSH-003)

Cultural Surveys Hawai'i Site Inventory Record					
Date: 8/27/13		Name: OMB		Checked By:	
Job Code Project: Waikeke 10	CSH Site # 003	Feature:			
Area/Transect:	State Site #				
Elevation: 0.150 AMSL	Landmark: Puna Trail	Sheet 1 of			
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified:					
Shelter Lava Tube Cairn Rock Art (Trail) Other:					
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other:					
Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other:					
Evidence of Age: core filled construction of corals					
Geology: n/a		Topography: undulating numerous voids			
Vegetation: uluhe ohia, Persea		Disturbance: Puna Trail road			
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length	22m	E/W	Height	60 max extension	
Width	1.80 wide	N/S	Thickness		
Site Complex Dimensions		Length:	Width:		
Condition: Excellent / Good / Poor / Ruined					
Excavation Potential: Excellent / Good / Fair / Poor / None					
Photo (Roll or Disk / Frame)		Midden:	Artifact:		
Description: CSH-003 is a class B type trail segment. The feature is located 0.20m north of the existing Puna Trail road. Vegetation is very dense (mostly uluhe). The trail consists of neatly stacked corals spaced 1.80m apart and rising 35cm above the trail surface. The surface of the trail is comprised of old corals (only level). Only a 7.5m portion of the trail is visible on both sides. The northern end extends for 22m. The western end may have been bulldozed during construction of the Puna trail road and KD2 Range. The eastern terminus abuts a small depression and disappears. Site is in good condition. Historic time frame. No artifacts present. Excavation Potential poor for burial / it's a trail. Possibly original Puna Trail alignment.					
Map Checklist:	N. arrow	Scale:	Legend:	Site #:	Height: Name Date Job Code
HPF-01 Rev. 0 07/02/13 X:\P\Shoe Office\Field Forms\Site Inventory Record Form.doc					
Trends E/W for 22m					



SIHP # 50-10-35-21771 (Features H to L = CSH-005)

Cultural Surveys Hawai'i Site Inventory Record					
Date: 09/06/13		Name: ASOLTZ/NORRIS		Checked By: [Signature]	
Job Code Project: Waikea 10	CSH Site #	Feature: (1) Enclosure			
Area/Transect:	State Site # 5010-35-21771	Sheet 1 of 1			
Elevation:	Landmarks:	Modified:			
Site/Feature Type: Enclosure	Platform	Terrace	Wall	Alignment	Mound
Shelter	Lava Tube	Cairn	Rock Art	Trail	Other:
Function: Religion	Activity Area	Marker	Ceremonial	Shelter	Burial
Animal Husbandry	Transportation	Rock Art	Indeterminate	Other:	
Age: Prehistoric	Historic	Military	Plantation	Ranch	Indeterminate
Evidence of Age: lichen & moss present on undisturbed portions / Natural disturbance					
Geology: Pahoehoe / Broken a'a / [unclear]		Topography: level surface, w/ feature in P. [unclear]			
Vegetation: Mango / Ohia / Lilioka / [unclear]		Disturbance: area is heavily disturbed by clearing			
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length			Height		
Width			Thickness		
Site Complex Dimensions		Length: 8m	Width: 6.5m		
Condition: Excellent / Good (Poor) / Remnant					
Excavation Potential: Excellent / (Good) / Fair / Poor		Evidence:			
Photo (Roll or Disk / Frame) /		Midden:	Artifact:		
Description: Basalt enclosure, with U-shaped and modified basalt storage pit within the western facing of enclosure. Enclosure composed of basalt boulders approximately 30cm stacked. Portions of western and eastern facing have been disturbed by natural collapse (see map). Stacked pahoehoe with entrance located on western portion of feature, a 90cm Puka in the northwest portion of the feature was likely used as a storage pit. There is collapse of most of the Eastern wall visible. Unable to relocate previously recorded poi powder. No contextual cultural material observed with proximity of enclosure feature. Eastern and western extremities of site terminate in klinkers and rubble with evident natural deterioration.					
Map Checklist: N. arrow: / Scale: / Legend: / Site #: / Heights: / Name: / Date: / Job Code: /					
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Cultural Surveys Hawai'i Site Inventory Record

✓ MW
Feat. B

Date: 04/06/13 Name: ASOLTZ/NGARCIA Checked By: em

Job Code Project: <u>Waikae 10</u>	CSH Site #	Feature: <u>(2) platform</u>
Area/Transect:	State Site # <u>50-10-35-2174</u>	
Elevation:	Landmarks:	Sheet <u>1</u> of <u>1</u>
Site/Feature Type: <u>Platform</u>	Enclosure	Terrace
Shelter	Lava Tube	Calm
Rock Art	Trail	Other:
Function: <u>Habitation</u>	Activity Area	Marker
Ceremonial	Shelter	Burial
Agriculture	Water Control	
Animal Husbandry	Transportation	Rock Art
Indeterminate	Other:	
Age: Prehistoric	<u>Historic</u>	Military
Plantation	Ranch	Indeterminate
Other:		
Evidence of Age: <u>overgrown vegetation, lichen and moss in undisturbed areas, historic artifacts</u>		
Geology: <u>Pahoehoe/Broken a'a</u>	Topography: <u>level plane slight undulation in a flow</u>	
Vegetation: <u>Mango/ohia/binga/bing/biko/grow</u>	Disturbance: <u>Natural fluctuation/overgrown vegetation</u>	
HISTORIC PROPERTY MEASUREMENTS		
Meters	Orientation	Meters
Length	Height	
Width	Thickness	
Site Complex Dimensions	Length: <u>4 m</u>	Width: <u>5 m</u>
Condition: Excellent / Good / Poor / Remnant		
Excavation Potential: Excellent / <u>Good</u> / Fair	Evidence: <u>historic artifacts on surface in area</u>	
Photo (Roll or Disk/Frame) <u>1</u>	Midden:	Artifact:
Description: <u>Platform has a generally flat surface with a associated a'a klinker lining the ground surface. Platform is built on top of a'a flow and degrades in slope to northwest. Constructed of sub-angular, rounded and rough a'a cobbles and boulders from 10cm to 30cm in diameter. Platform feature is roughly square in shape and measures 4m by 5m with klinker extending to a point in the northeast portion. Feature 2 is approximately 6.5m south west of the enclosure (Feat. 1). Artifacts observed include (1) ceramic earthenware pot sherd, (3) two piece mold glass bottle fragments and (1) stone grinding wheel with steel crank to rotate stone for crushing protruding from central portion, 40cm circumference. No bones or evidence of animal material outside of the historic artifacts listed were observed. Historic artifacts found within northeastern portion of feature platform. (3) water worn stones in a group were observed and documented 2.6m East of feature (1), likely many parts.</u>		
Map Checklist: N. arrow: <u>✓</u> Scale: <u>✓</u> Legend: <u>✓</u> Site #: <u>✓</u> Heights: <u>✓</u> Name: <u>✓</u> Date: <u>✓</u> Job Code: <u>✓</u>		

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✓mw
East C

Cultural Surveys Hawai'i Site Inventory Record

Date: 09/06/13 Name: ASaltZ/NGarcia Checked By: mw

Job Code Project: <u>Waiakea</u>		CSH Site #		Feature: <u>(3) depression</u>	
Area/Transect:		State Site # <u>50-10-35-21771</u>			
Elevation:		Landmarks:		Sheet <u>1</u> of <u>1</u>	
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____					
Shelter Lava Tube Cairn Rock Art Trail Other: <u>depression</u>					
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other: <u>Possible Storage</u>					
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____					
Evidence of Age: <u>lichen & moss within undisturbed portions/natural vegetation growth</u>					
Geology: <u>Pahoehoe/Broken a'a</u>		Topography: <u>level plane w/ slight undulations</u>			
Vegetation: <u>Mangrove/Lilikoi/bingabing</u>		Disturbance: <u>Naturalurbation</u>			
HISTORIC PROPERTY MEASUREMENTS					
Meters		Orientation		Meters	
Length		Height			
Width		Thickness			
Site Complex Dimensions		Length: <u>2.2 m</u>		Width: <u>1.4 m</u>	
Condition: Excellent / Good / <u>Poor</u> / Remnant					
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor		Evidence: <u>historic artifacts on surface / remains testing</u>			
Photo(Roll or Disk/ Frame) <u>1</u>		Midden:		Artifact:	
Description: <u>W-W - ENE</u>					
<p>Feature 3 is composed of an approximately 2.2m^{N-S axis} long by 1.4m^{E-W axis} wide by 30cm deep oblong in shape depression. This feature is located approximately 2m north of feature (2). The ground surface has klinker and cobble size a'a. There is an upright basalt slab placed within the depression on the western portion. Evidence of a previous test unit (1m x 50cm) was observed bisecting the feature, as evidenced by soil turbation. No cultural material observed on surface associated w/ feature 3. Upright basalt slab measures 50cm high by 80cm wide.</p>					
Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name: ✓ Date: ✓ Job Code: ✓					

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Cultural Surveys Hawai'i Site Inventory Record

Date: 09/06/13 Name: ASolt2/HGarcia Checked By: mw /mw Fed.D

Job Code Project: <u>Waiakea 10</u>		CSH Site #		Feature: <u>(4) depression</u>	
Area/Transect: <u>10v</u>		State Site # <u>50-10-35-2171</u>		Sheet <u>1</u> of <u>1</u>	
Elevation:		Landmark: <u>large clearing</u>		Modified:	
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound					
Shelter Lava Tube Cairn Rock Art Trail Other: <u>depression</u>					
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other: <u>Possible Storage</u>					
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other:					
Evidence of Age:					
Geology: <u>Pahoehoe / Broken a'a</u>			Topography: <u>level plane w/ slight undulation</u>		
Vegetation: <u>mangrove/ohia/like'i/biwaia</u>			Disturbance: <u>recent vegetation clearing</u>		
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length			Height		
Width			Thickness		
Site Complex Dimensions		Length: <u>3m</u>	Width: <u>2m</u>		
Condition: Excellent / Good / <u>Poor</u> / Remnant					
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor			Evidence:		
Photo (Roll or Disk / Frame)		Midden:	Artifact:		
Description:					
<p>Feature 4 is composed of an approximately 3m x 2m oblong depression, roughly 11m north east of feature (2). The depression measures 3m east/west by 2m north/south and a depth of 1.15m b.s. The sides and ground surface are lined by a.klinker small to medium size basalt cobbles. Feature has suffered degradation, which is evidenced by the poor condition and deterioration of the klinker and sidings. The eastern face of the depression sharply slopes upwards. No soil development within depression. No cultural material was observed in association with feature 4.</p>					
<p>Map Checklist: N. arrow: <input checked="" type="checkbox"/> Scale: <input checked="" type="checkbox"/> Legend: <input checked="" type="checkbox"/> Site #: <input checked="" type="checkbox"/> Heights: <input checked="" type="checkbox"/> Name: <input checked="" type="checkbox"/> Date: <input checked="" type="checkbox"/> Job Code: <input checked="" type="checkbox"/></p>					

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Cultural Surveys Hawai'i Site Inventory Record

Date: 9/11/13 Name: OWP

Checked By: /mw

Job Code Project: <u>Waiakea 10</u>	CSH Site #	Feature: <u>5</u>
Area/Transect: <u>B</u>	State Site # <u>50-10-25-21791</u>	
Elevation:	Landmarks:	Sheet <u>1</u> of <u>1</u>
Site/Feature Type: Enclosure Platform Terrace <u>Wall</u> Alignment Mound Modified:		
Shelter Lava Tube Cairn Rock Art Trail <u>Other</u> <u>Stone bridge</u>		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial <u>Agriculture</u> <u>Water Control</u>		
Animal Husbandry <u>Transportation</u> Rock Art Indeterminate Other:		
Age: Prehistoric <u>Historic</u> Military Plantation Ranch Indeterminate Other:		
Evidence of Age: <u>Historic</u> "greenhouse" site component		
Geology: <u>Q/A + PHH (weathered)</u>		Topography: <u>level</u>
Vegetation: <u>Same as rest of site</u>		Disturbance: <u>vegetation</u>
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length	<u>60m</u>	<u>N/S</u>
Width	<u>1.5m</u>	<u>E/W</u>
Site Complex Dimensions		Height
Length:		Width:
Condition: Excellent / <u>Good</u> / Poor / Remnant		
Excavation Potential: Excellent / Good / <u>Fair</u> / Poor		Evidence: <u>none</u>
Photo (Roll or Disk/ Frame)	Midden: <u>none</u>	Artifact: <u>none</u>
Description: <u>Feature 5 is a linear depression that has been modified to possibly serve as an aui. Construction consists of a stacked and faced wall segment located on the west side of the depression. The wall is c. 7.2m long (N/S) by 40-60cm wide. Near the wall's northern terminus a bridge of basalt cobbles and boulders spans the depression. The stone bridge measures c. 1.5m wide (N/S) by 2.3m long (E/W) max height on faced and stacked north side is 60cm. The bridge leads to and from feature 1 which is located c. 3.5m to the west. The depression itself trends (N/S) and is 1.5m wide and c. 60m long. Near the east terminus of the depression approx 10m north exists the depression - a circular pit lined with basalt measuring 1m dia by 1.1m 5' deep by 60cm deep. Possible agricultural feature.</u>		
Map Checklist:	N. arrow:	Scale: Legend: Site #: Heights: Name Date Job Code

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Cultural Surveys Hawai'i Site Inventory Record

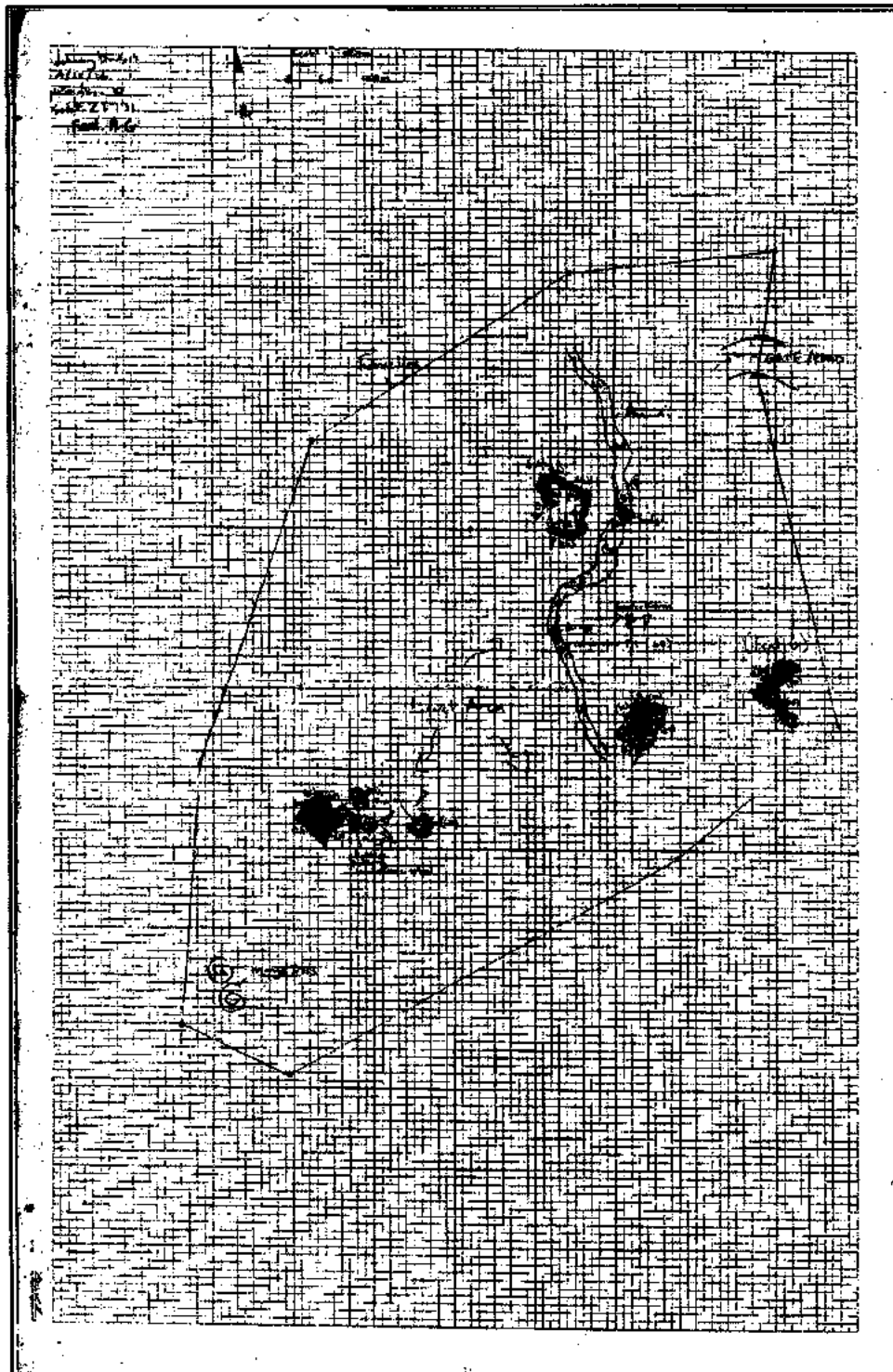
Date: 9/11/13 Name: O. BAUTISTA Checked By: *1 min #Feat. F*

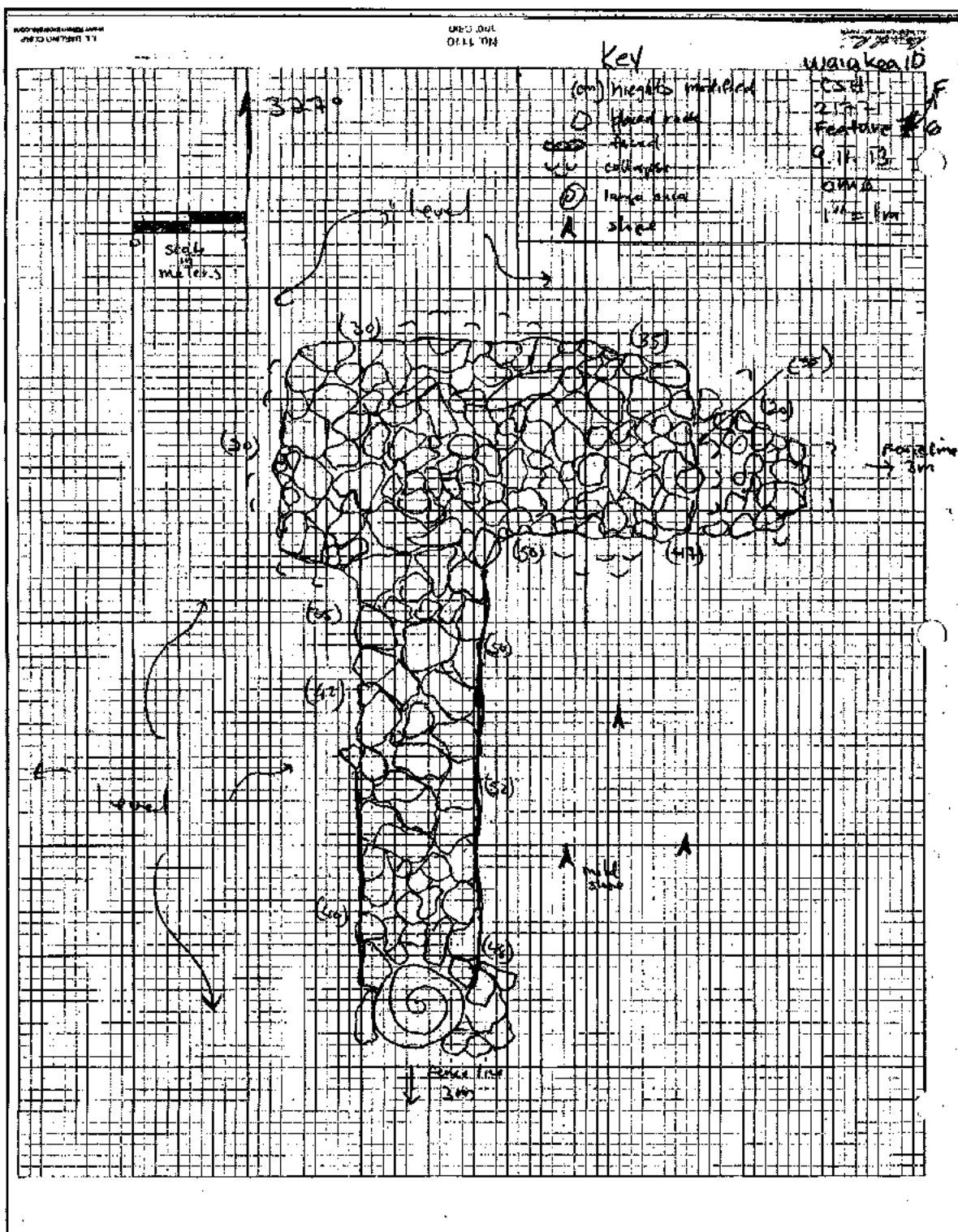
Job Code Project: <u>Waiakea 10</u>	CSH Site # <u> </u>	Feature: <u>6</u> <i>(see 2)</i>
Area/Transect: <u>B</u>	State Site # <u>50-10-33-21771</u>	Sheet <u>1 of 1</u>
Elevation: <u> </u>	Landmarks: <u> </u>	Modified: <u> </u>
Site/Feature Type: <input checked="" type="checkbox"/> Enclosure <input type="checkbox"/> Platform <input type="checkbox"/> Terrace <input type="checkbox"/> Wall <input type="checkbox"/> Alignment <input type="checkbox"/> Mound <input type="checkbox"/> Other: <u> </u>		
Shelter <input type="checkbox"/> Lava Tube <input type="checkbox"/> Cairn <input type="checkbox"/> Rock Art <input type="checkbox"/> Trail <input type="checkbox"/> Other: <u> </u>		
Function: <input type="checkbox"/> Habitation <input type="checkbox"/> Activity Area <input type="checkbox"/> Marker <input type="checkbox"/> Ceremonial <input type="checkbox"/> Shelter <input type="checkbox"/> Burial <input type="checkbox"/> Agriculture <input type="checkbox"/> Water Control		
Animal Husbandry <input type="checkbox"/> Transportation <input type="checkbox"/> Rock Art <input type="checkbox"/> Indeterminate <input checked="" type="checkbox"/> Other: <u> </u>		
Age: Prehistoric <input type="checkbox"/> <u>Historic</u> <input type="checkbox"/> Military <input type="checkbox"/> Plantation <input type="checkbox"/> Ranch <input type="checkbox"/> Indeterminate <input type="checkbox"/> Other: <u> </u>		
Evidence of Age: <u>Associated with "PAU HANA" site</u>		
Geology: <u>P4H + A'A</u>		Topography: <u>Fairly level</u>
Vegetation: <u>OHA, LAUHALA, Binga Binga</u>		Disturbance: <u>None</u>
Ruins, mounds, lilihoi <u>HISTORIC PROPERTY MEASUREMENTS</u>		
	Meters	Orientation
Length	<u>8m</u>	<u>N/S</u>
Width	<u>5m</u>	<u>E/W</u>
Site Complex Dimensions	Length: <u> </u>	Width: <u> </u>
Condition: Excellent / <u>Good</u> / Poor / Remnant		
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor Evidence: <u>good place to dig for historic artifacts</u>		
Photo (Roll or Disk/Frame) <u>1</u>	Midden: <u>NONE</u>	Artifact: <u>NONE</u>
Description: <u>The 21771 Feat. #6 is a previously unrecorded L-shaped enclosure located within the chain link fence that surrounds the site complex, it is at the south east corner (see map). The feature consists of neatly stacked basalt cobbles + boulders. (stacked 3-4 courses high). The feature measures c. 7.0m long (N/S) by 5.0m (E/W) max height 50cm. Walls are 1-2.5m thick. The area within the enclosure slopes to the north and is clear of stones. The feature may represent an activity area. Historic in nature. No artifacts were observed. Very surprised that this was missed in the initial survey. It would be interesting to see what's in the interior of this enclosure - good potential for historic artifacts.</u>		
Map Checklist:	N. arrow:	Scale:
Legend:	Site #:	Height:
Name:	Date:	Job Code:

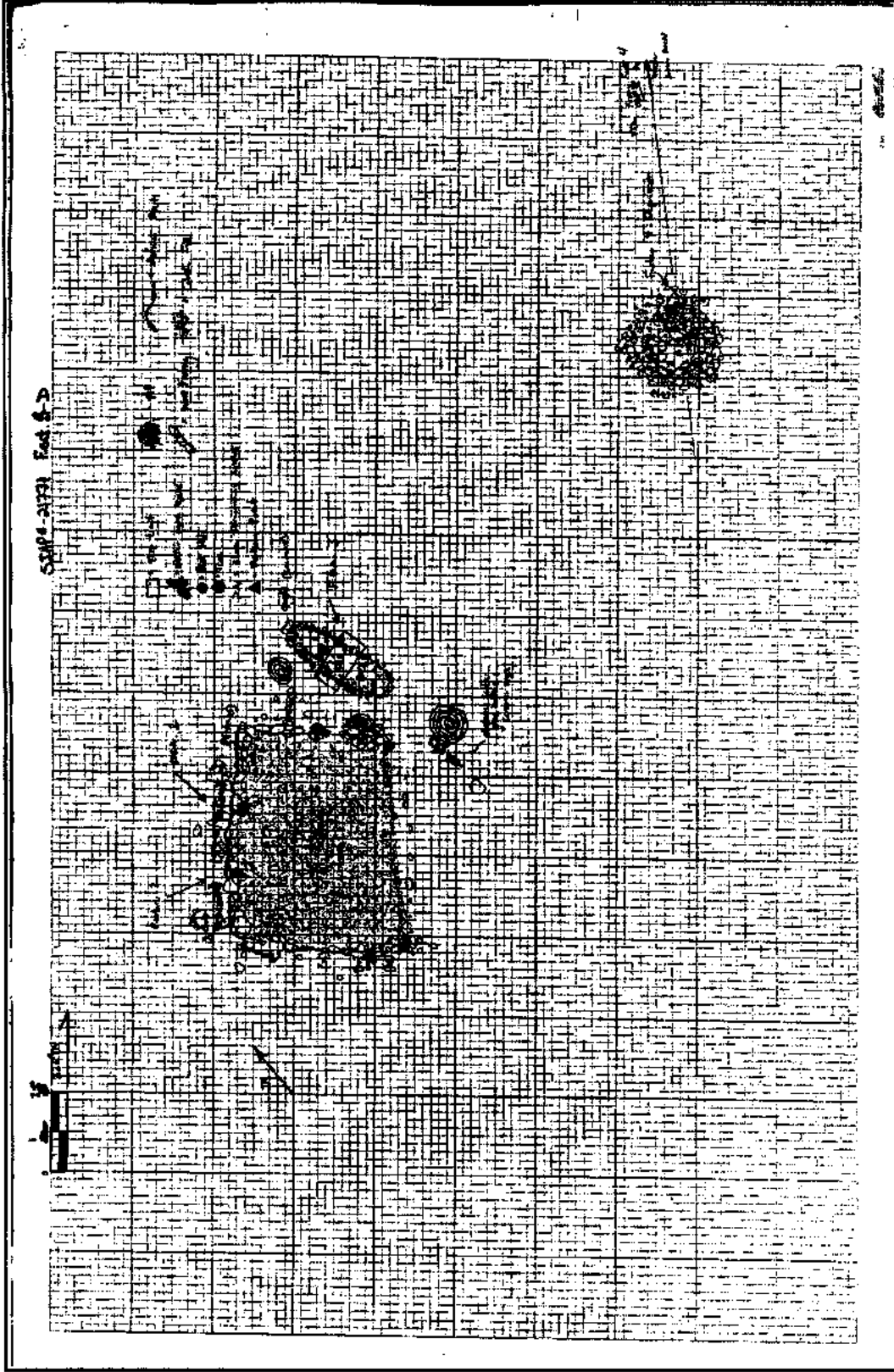
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*Part of SJHP # 21771

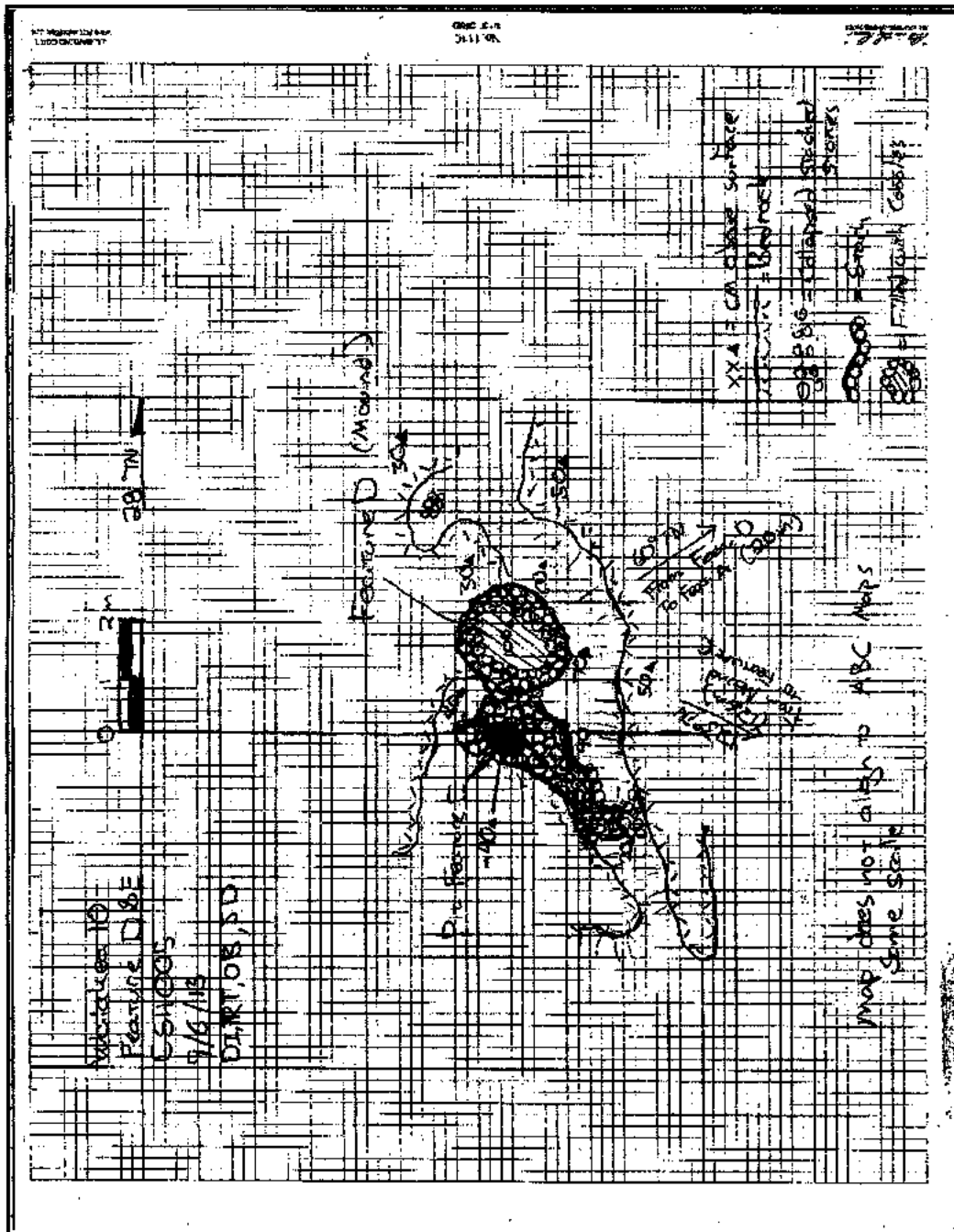
Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT Checked By: H I J K L

Job Code Project: <u>WAI'AKEA 10</u>		CSH Site # <u>005</u>		Feature: <u>A, B, C, DE</u>	
Area/Transect: <u>B</u>		State Site # <u>21771</u>			
Elevation: _____		Landmarks: _____		Sheet <u>1</u> of <u>2</u>	
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____					
Shelter Lava Tube Cairn Rock Art Trail Other: _____					
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other: _____					
Age: Prehistoric <u>Historic</u> Military Plantation Ranch Indeterminate Other: _____					
Evidence of Age: _____					
Geology: _____			Topography: <u>Ungulating</u>		
Vegetation: <u>Custards curd, kinga kinga, lehua</u>			Disturbance: _____		
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length			Height		
Width			Thickness		
Site Complex Dimensions		Length:	Width:		
Condition: Excellent / <u>Good</u> / Poor / Remnant					
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor			Evidence: _____		
Photo (Roll or Disk/ Frame) /		Midden: <u>None</u>		Artifact: <u>None observed</u>	
Description: <u>Just outside of "Pau hana" site north corner. All features in full canopy top. w/ ungulating terrain.</u>					
<u>Feature A - Circular basalt platform, 7 courses high, no artifacts possible burial, 14 see meters N of N corner of fence line.</u>					
<u>Tree disturbance. L: 2.9m X 0.2.8m X H: 2m level on top.</u>					
<u>Feature B - Stone C shaped inclosure situated 5.5m E of Feature A. Stacked of both basely stacked and neatly stacked cobbles. Stacked 4 courses high. Incorporates bedrock outcrop to the N. Interior of inclosure has depression 75cm deep at mgt. Likely historic in good condition. No artifacts, fair for excavations. L: W: H:</u>					
<u>Feature C - I shaped stone enclosure situated 5m S of Feat. A. Construction consists of basely compiled cobbles and boulders. L: W: H: interior level, good condition. No artifacts, excavation fair.</u>					
Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code					

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*Area within the 3 features is level



Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT

Checked By:

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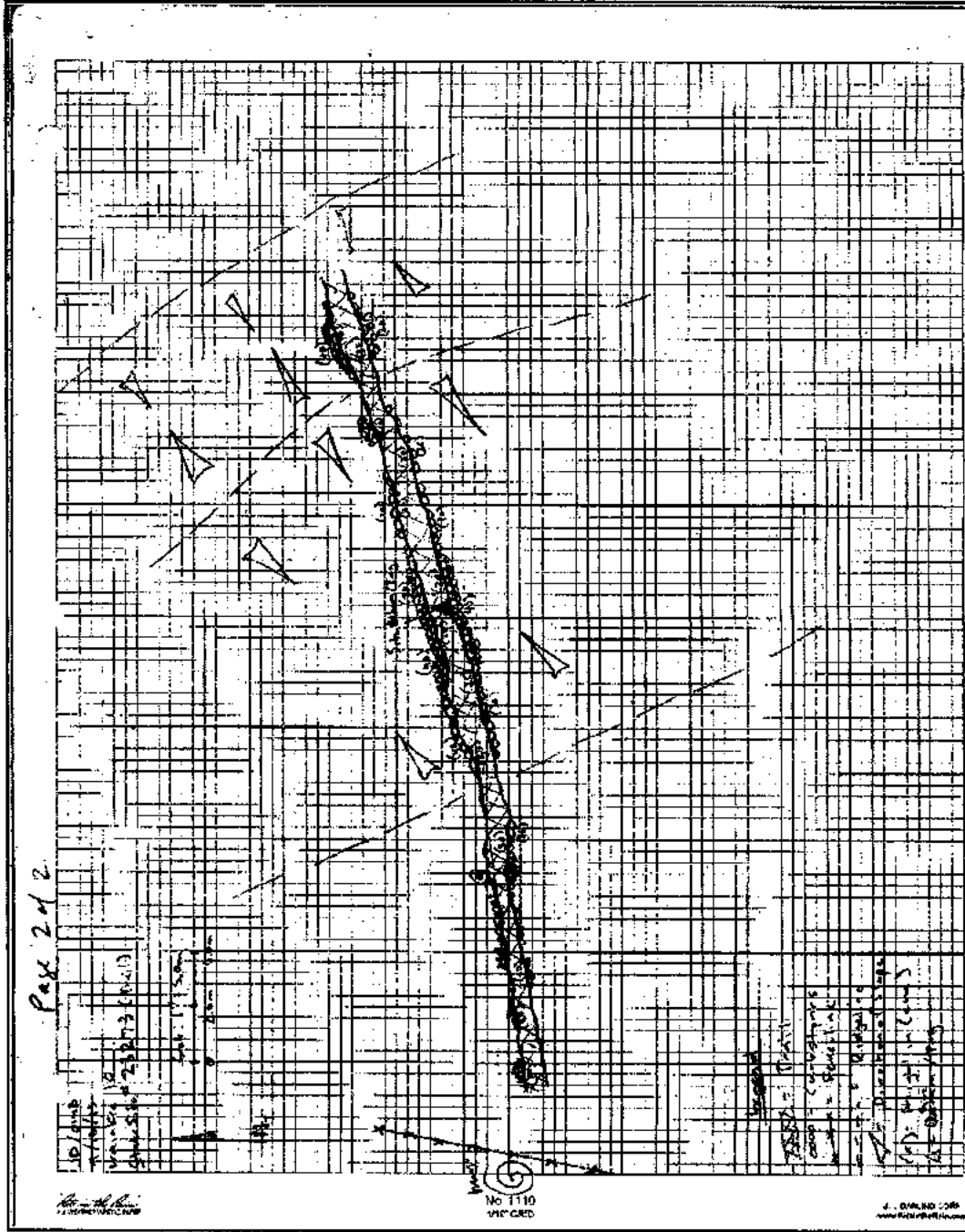
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SIHP # 50-10-35-23273

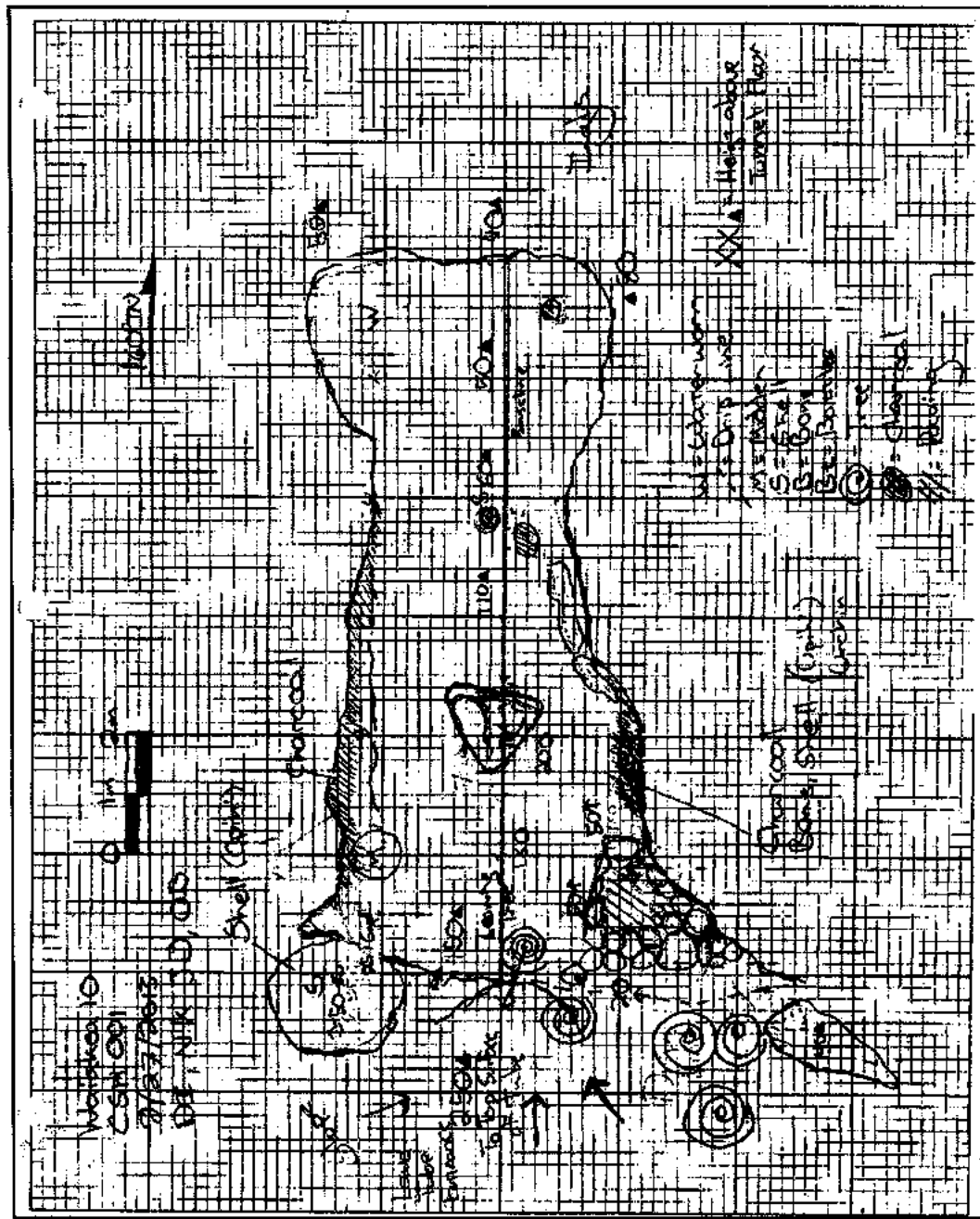
Cultural Surveys Hawai'i Site Inventory Record					
Date: <u>9/19/13</u> Name: <u>OMR/JO</u>		Checked By: <u>02</u>			
Job Code Project: <u>Wai'akea 10</u>	CSH Site # <u>23273</u>	Feature: <u>—</u>			
Area/Transect: <u>B</u>	State Site # <u>23273</u>	Sheet <u>1 of 2</u>			
Elevation: <u>—</u>	Landmarks: <u>—</u>	Modified: <u>—</u>			
Site/Feature Type: <input type="checkbox"/> Rock/Stone <input type="checkbox"/> Platform <input type="checkbox"/> Terrace <input type="checkbox"/> Wall <input type="checkbox"/> Alignment <input type="checkbox"/> Mound <input type="checkbox"/> Modified: <u>—</u>					
Shelter: <input type="checkbox"/> Lava Tube <input type="checkbox"/> Cairn <input type="checkbox"/> Rock Art <input checked="" type="checkbox"/> Trail <input type="checkbox"/> Other: <u>—</u>					
Function: <input type="checkbox"/> Habitation <input type="checkbox"/> Activity Area <input type="checkbox"/> Marker <input type="checkbox"/> Ceremonial <input type="checkbox"/> Shelter <input type="checkbox"/> Burial <input type="checkbox"/> Agriculture <input type="checkbox"/> Water Control					
Animal Husbandry <input type="checkbox"/> Transportation <input type="checkbox"/> Rock Art <input type="checkbox"/> Indeterminate <input type="checkbox"/> Other: <u>—</u>					
Age: Prehistoric <input checked="" type="checkbox"/> Historic <input type="checkbox"/> Military <input type="checkbox"/> Plantation <input type="checkbox"/> Ranch <input type="checkbox"/> Indeterminate <input type="checkbox"/> Other: <u>—</u>					
Evidence of Age: <u>—</u>					
Geology: <u>weathered o'a</u>			Topography: <u>undulating</u>		
Vegetation: <u>Mangrove, grass, ferns</u>			Disturbance: <u>vegetation - roots</u>		
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length	<u>38m</u>	<u>SW/NE</u>	Height	<u>10-20cm</u>	<u>—</u>
Width	<u>1.0-1.2m</u>	<u>SE/NW</u>	Thickness	<u>—</u>	<u>—</u>
Site Complex Dimensions		Length:	<u>—</u>	Width:	<u>—</u>
Condition: Excellent / Good / <u>Poor</u> / Remnant					
Excavation Potential: Excellent / Good / Fair / <u>Poor</u>			Evidence: <u>N/A</u>		
Photo (Roll or Disk / Frame) <u>1</u>		Midden: <u>None</u>	Artifact: <u>None</u>		
Description: Site 23273 is a trail. The trail is situated under dense canopy c. 3m NE of an existing fence line that is the PF Boundary. The trail remnant measures c. 38.0m long (SW/NE) by 1.0-1.20m wide (SE/NW) with a maximum curbstone height of 20cm. Curbstones are evident in only a 8m section of the trail. The rest of the trail is recognizable only as a worn area with mildly raised edges. No artifacts observed. The trail is in poor condition due to heavy vegetation.					
Map Checklist: N arrow: <u>—</u> Scale: <u>—</u> Legend: <u>—</u> Site #: <u>—</u> Heights: <u>—</u> Name: <u>—</u> Date: <u>—</u> Job Code: <u>—</u>					

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SIHP # 50-10-35-30008 (CSH-001)

Cultural Surveys Hawai'i Site Inventory Record					
Date: <u>8/28/05</u>		Name: <u>JD</u>		Checked By: <u>OT</u>	
Job Code Project: <u>Wai'akea 10</u>	CSH Site #: <u>CSH-001</u>	Feature: <u>✓</u>			
Area/Transect: <u>✓</u>	State Site #: <u>✓</u>				
Elevation: <u>✓</u>	Landmarks: <u>✓</u>	Sheet <u>1</u> of <u>2</u>			
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: <u>✓</u>					
Shelter: <u>Lava Tube</u> Cairn Rock Art Trail Other: <u>✓</u>					
Function: <u>habitation</u> Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other: <u>✓</u>					
Age: Prehistoric Historic Military Plantation Ranch <u>(Indeterminate)</u> Other: <u>✓</u>					
Evidence of Age: <u>NONE</u>					
Geology: <u>PAM</u>		Topography: <u>Shrubby Lowland</u>			
Vegetation: <u>NONE</u>		Disturbance: <u>NONE</u>			
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length	<u>12.0</u>		Height	<u>0.4 to 2.0</u>	
Width	<u>4.0</u>		Thickness		
Site Complex Dimensions		Length: <u>✓</u>	Width: <u>✓</u>		
Condition: Excellent / Good / Poor / Remnant					
Excavation Potential: Excellent / Good / Fair / Poor		Evidence: <u>NONE</u>			
Photo (Roll or Disk / Frame) <u>1</u>		Midden: <u>YES</u>	Artifact: <u>modern bottles</u>		
Description: Site CSH-001 consists of a lava tube located approximately (60.0m / 165') of K9 range. The lava tube runs 160°/SE & measures (12.0m) long, (4.0m) wide with heights ranging from (0.4m to 2.0m). The entrance of lava tube measures approx (4.0m wide) w/ height of (0.2m to 1.5m) & exterior entrance height of (2.5m). A constructed terrace of med / large subangular basalt cobbles is constructed along western edge (0.5m) from entrance measuring (2.0m x 2.0m) w/ height of (0.5m) charcoal, bone, marine shell, bottles observed within cave (see map).					
Map Checklist: N. arrow: <u>✓</u> Scale: <u>✓</u> Legend: <u>✓</u> Site #: <u>✓</u> Heights: <u>✓</u> Name: <u>✓</u> Date: <u>✓</u> Job Code: <u>✓</u>					
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SIHP # 50-10-35-30009 (CSH-002)

Cultural Surveys Hawai'i Site Inventory Record					
Date: 8/28/13		Name: DI		Checked By:	
Job Code Project: Waiākea	CSH Site #: 002	Feature: A			
Area/Transect:	State Site #				
Elevation:	Landmarks: Large Rock outcrop near shooting range	Sheet 1 of 2			
Site/Feature Type: Enclosure Platform	Terrace Wall Alignment Mound	Modified: Outcrop			
Shelter Lava Tube Cairn Rock Art Trail Other:					
Function: Habitation Activity Area Marker Ceremonial Shelter Burial For Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other:					
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other:					
Evidence of Age:					
Geology: Pahoehoe Outcrop			Topography: Level, depressed center		
Vegetation: Leucaena, Guava? Ohia, breadfruit			Disturbance: 10m from shooting range		
Cautograph tree, Maile Plant HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length	40m	N-S	Height	1-2m above str. Area	
Width	25m	E-W	Thickness		
Site Complex Dimensions		Length:	Width:		
Condition: Excellent (Good) Poor / Remnant					
Excavation Potential: Excellent / Good / Fair / Poor			Evidence: pos. Soil area, no disturbance		
Photo (Roll or Disk / Frame)		Midden:	Artifact:		
Description: A large 25m x 40m Rock Outcrop with a flat, wide central area. Part of a multi-component site including two lava tubes that served as temporary habitation (see feat. B & C) and a rock alignment near a collapsed blower. Outcrop is 1 to 2m above the surrounding landscape. Central areas contains moderate jungle with sparse undergrowth. There is a rock wall along the eastern side; it runs south and segregates 1-2m wide terrace (which is slightly lower) from the rest of the outcrop. Although flat, the outcrop shows minimal signs of modification. In addition to the modified lava tubes at the S (Feat. C) and N (Feat. B) ends, there are a number of other lava tubes that were inspected, but did not show signs of use. Site is in close proximity to the trail, and may have been used as a stopover site. Lava tubes offer immediate shelter from the weather. Modern trash in the tubes suggests continued use during military occupation of area.					
Map Checklist: N arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name: ✓ Date: ✓ Job Code: ✓					
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Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: _____

Checked By:

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06/27/11

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Cultural Surveys Hawai'i Site Inventory Record

Date: 06/27/2012 Name: Nigel T. Kingsbury

Checked By: _____

Job Code Project: WAIAKEA 10	CSH Site # CSH 002	Feature: B
Area/Transect: N/A	State Site #	
Elevation:	Landmarks: CSH Feature A	Sheet 1 of 2
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound	Modified lava tube	
Shelter Cave Tube Cairn Rock Art Trail Other:		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art Indeterminate Other:		
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other:		
Evidence of Age: Pahouae		
Geology: Pahouae	Topography: Part of A	
Vegetation:	Disturbance:	
HISTORIC PROPERTY MEASUREMENTS		
Meters	Orientation 260°	Meters
Length 7.5 m	Height	
Width 2 m	Thickness	
Site Complex Dimensions	Length:	Width:
Condition: Excellent / Good / Poor / Remnant		
Excavation Potential: Excellent / Good / Fair / Poor	Evidence:	
Photo (Roll or Disk / Frame) /	Midden: Faunal bone	Artifact: Polished basalt
Description: CSH 002 is a modified lava tube. The lava tube is located on the Northern edge of CSH Feature A (a modified basalt outcrop). The floor of lava tube (CSH 002) had deposits of charcoal scatter, faunal bone fragments, and a polished basalt. Entrance to CSH 002 appeared to have a roughly constructed raised basalt paving.		
Entrance of CSH 002 measured 0.5 m across. x 0.5 m high. Just inside large paved area 2 m wide x 1.6 m long and 101 cm high. Edges of paved area is constructed w/ large Pahouae rock, following the paved area. The floor of the tube drops down to a level that is 20 cm below the paved area. Removed of stone and charcoal scatter throughout. The ceiling height in this area ranges between 147 and 164 cm. Unidentified mammal bone fragment (likely non-human) and a polished basalt stone were observed following trap hole area - there is a large Pahouae boulder that restrict the tube to 40 cm high. The tube also squeezes and is 3 m long that could not be accurately mapped.		
Map Checklist: N. arrow:	Scale:	Legend:
Site #:	Height:	Name
Date	Job Code	

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Cultural Surveys Hawai'i Site Inventory Record									
Date: / /		Name:			Checked By:				
Job Code Project:		CSH Site # CSH 002			Feature:				
Area/Transect:		State Site #							
Elevation:		Landmarks:			Sheet 2 of 2				
Site/Feature Type:	Enclosure	Platform	Terrace	Wall	Alignment	Mound	Modified:		
Shelter	Lava Tube	Cairn	Rock Art	Trail	Other:				
Function:	Habitation	Activity Area	Marker	Ceremonial	Shelter	Burial	Agriculture	Water Control	
	Animal Husbandry	Transportation	Rock Art	Indeterminate	Other:				
Age:	Prehistoric	Historic	Military	Plantation	Ranch	Indeterminate	Other:		
Evidence of Age:									
Geology:					Topography:				
Vegetation:					Disturbance:				
HISTORIC PROPERTY MEASUREMENTS									
	Meters	Orientation			Meters	Orientation			
Length				Height					
Width				Thickness					
Site Complex Dimensions		Length:			Width:				
Condition: Excellent / Good / Poor / Remnant									
Excavation Potential: Excellent / Good / Fair / Poor					Evidence:				
Photo (Roll or Disk/Frame)		/		Midden:			Artifact:		
Description: The CSH 002 is presumed to be a temp hab/shelter area based on charcoal, bone fragments, polished stone and work put into the construction of the raised paved entrance area.									
CSH 002 is a component of of CSH 002 Feature a (modified outcrop) which is an area that shows signs of temp habitation and activity area. dense canopy, lauhala, str. guava, ohia, guayulder tree, soil accumulation just outside outcrop area which may have been used as agriculture.									
Map Checklist:		N. arrow:	Scale:	Legend:	Site #:	Heights:	Name:	Date:	Job Code:

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Cultural Surveys Hawai'i Site Inventory Record

Date: 08/28/2012 Name: Nigel Kingbury

Checked By:

Job Code Project: WAIAKEA 10	CSH Site # CSH 002	Pasture: C
Area/Transect: N/A	State Site #	
Elevation: N/A	Landmarks:	Sheet ____ of ____
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound	Modified: overhang	
Shelter Lava Tube Cairn Rock Art Trail Other: Temporary shelter		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art Indeterminate Other: Temporary shelter		
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other:		
Evidence of Age: Basalt cobble paved entrance area		
Geology: Pahoehoe	Topography:	
Vegetation: Iaukaha, Tiliak, Bingham, Vailly	Disturbance: none - low	
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length	2.5 x	Height
Width	1.1	Thickness
Site Complex Dimensions	Length:	Width:
Condition: Excellent / Good / Poor / Remnant		
Excavation Potential: Excellent / Good / Fair / Poor	Evidence: Basalt paved floor, lack of underlying bedrock.	
Photo (Roll or Disk/Frame) 1	Midden: N/A	Artifact: N/A
Description:		
Feature C is consists of a basalt overhang. The overhangs are located on the Southern most edge of CSH 002 Feature A, a modified basalt outcrop. The Southern most overhang has a rectangular threshold line, measured 2.5m x 1.1m. Paved w/ small to large basalt cobbles. Paving begins at entrance and runs the entire length and width of the overhang area. At the rear (North end) of overhang there is a small lava tube entrance (too small to explore). Intersecting heights within ranges from 49cm - 98cm.		
(55x) The Southern most overhang measures 2.5m in (L) and 1.1m in (W). The overhang has two entrances. The east facing entrance (measured at dripline) measured 1.3m w/ a height of 50cm. The west facing entrance measured (@dripline) 1.1m w/ a height of 50cm. The floor that the overhang area has been cleared out (rocks removed).		
The paved floor in the northern most overhang is only form of cultural material observed w/ in either overhang. Feature C is presumed to be a temp shelter site based on paved flooring. Building heights ranged from 150 - 185cm in clearing.		
Map Checklist: N arrow	Scale:	Legend: Site #: Heights: Name: Date: Job Code:

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Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: DI

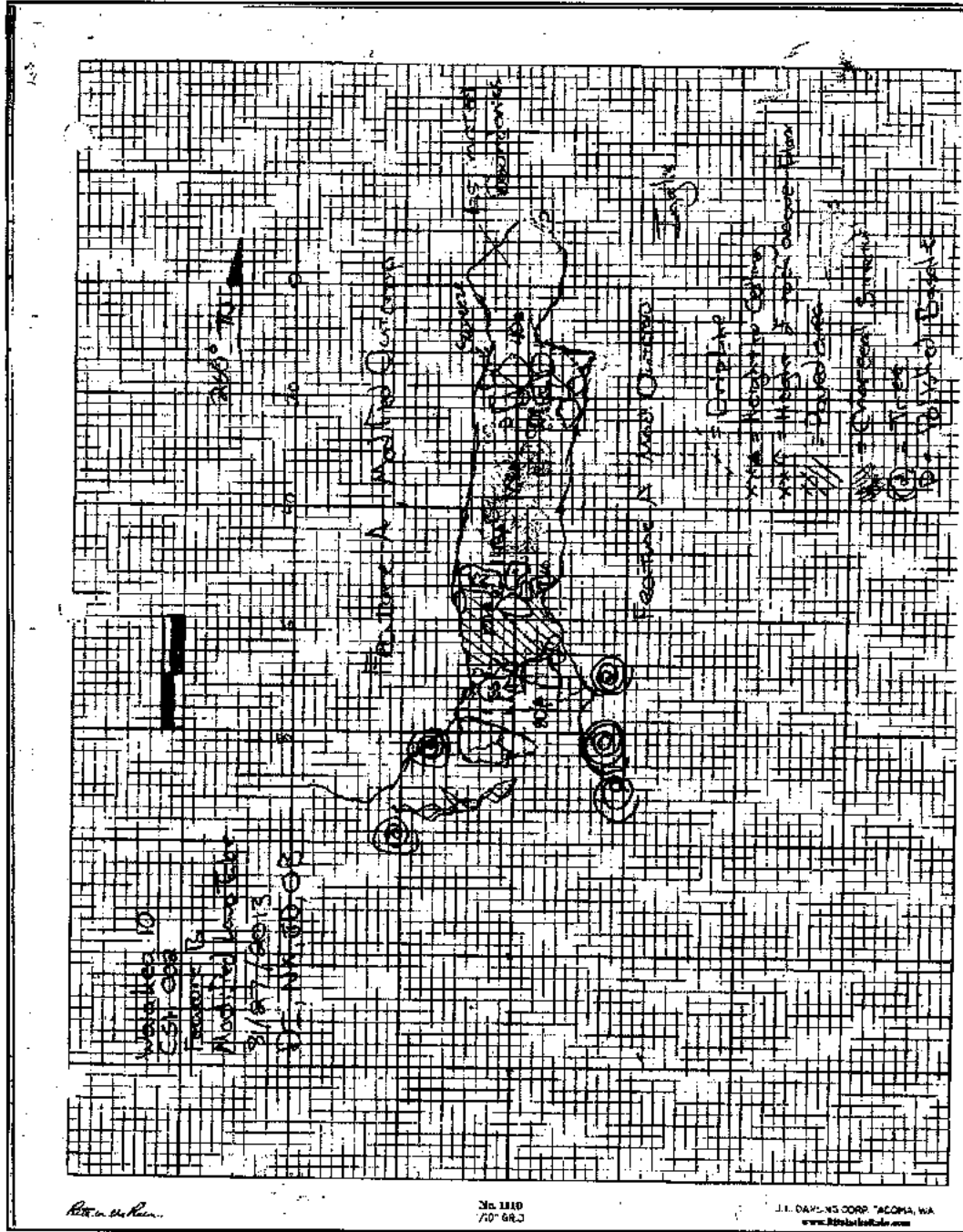
Checked By: _____

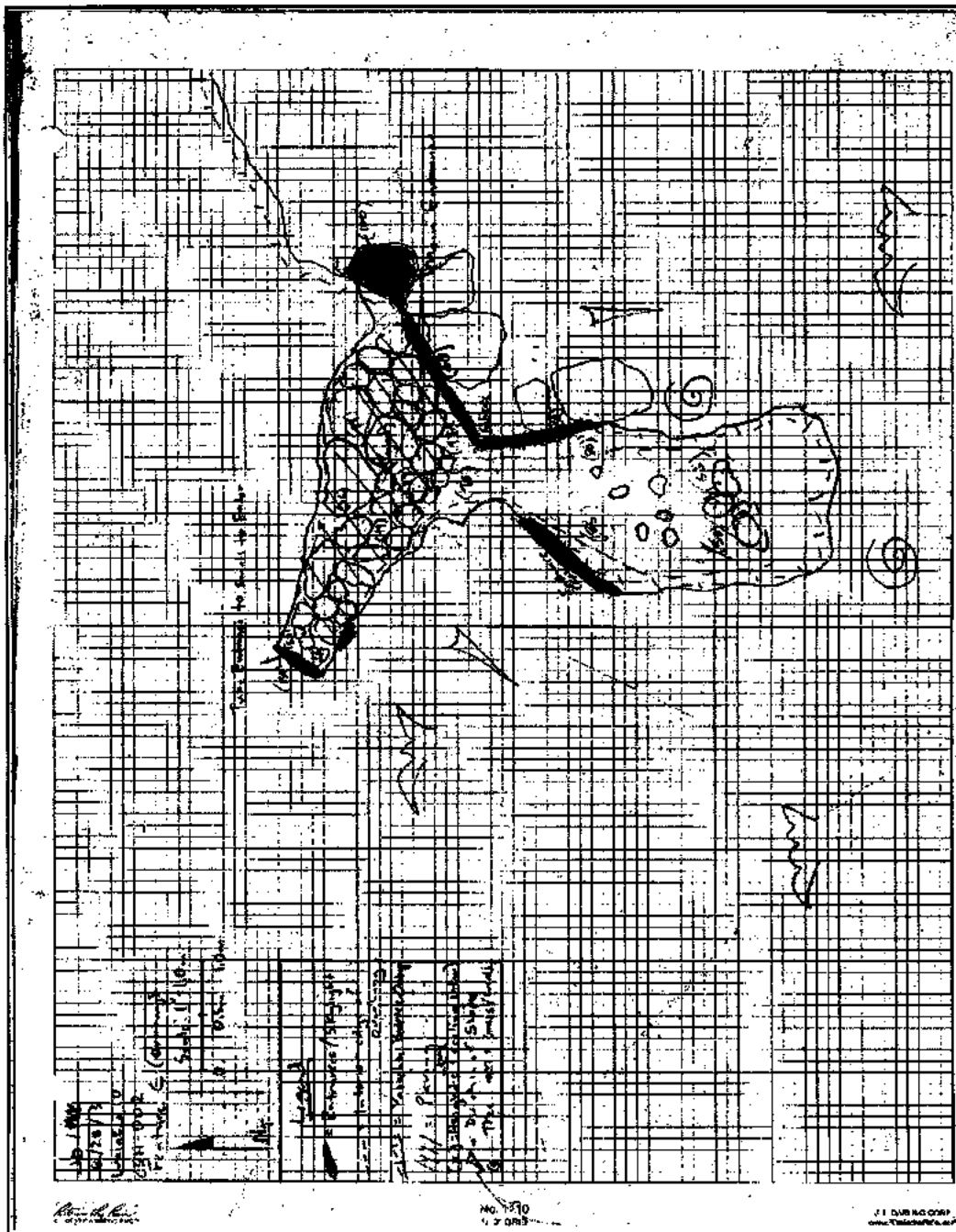
Job Code Project: <u>Waiakea 10</u>	CSH Site # <u>002</u>	Feature: <u>0</u>
Area/Transect:	State Site #	
Elevation:	Landmarks: <u>Large Rock outcrop near lava tube</u>	Sheet <u>1</u> of <u>1</u>
Site/Feature Type: Enclosure Platform Terrace Wall <u>Alignment</u> Mound	Modified: <u>Blister</u>	
Shelter: <u>Lava Tube</u> Cairn Rock Art Trail Other:		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art <u>Indeterminate</u> Other:		
Age: Prehistoric Historic Military Plantation Ranch <u>Indeterminate</u> Other:		
Evidence of Age:		
Geology: <u>Pahoehoe Blister</u>	Topography: <u>O. Over</u>	
Vegetation: <u>Kuhala, Gahwi (?) Ohia lehua</u>	Disturbance:	
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length	<u>2.3 m</u>	<u>N-S</u>
Width	<u>2.5 m</u>	<u>E-W</u>
Site Complex Dimensions	Length:	Width:
Condition: Excellent (<u>Good</u>) Poor / Remnant		
Excavation Potential: Excellent / Good / Fair (<u>Poor</u>)	Evidence:	
Photo (Roll or Disk / Frame) /	Midden:	Artifacts:
Description: <u>Rock alignment beside collapsed blister. Part of a multi-component site that includes a large (25x25m) depressed flat outcrop with a wall (Aard), a temp hab. lava tubes to N & S (B & C). Blister sinks 1m below surrounding surface. A line of rocks has been stacked along the W. & S. sides. Rock edge 50cm above surrounding land surface. A large exposed lava tube entrance is 3.5m to East. It does not exhibit signs of use. Blister opening is 1.5m in diameter. The exposed tunnel is only 1.2m long. There is an open at its southern end. It seems about 60cm in diameter, though the southern opening is just a crevice. Site tag tied to small rock at N. End of alignment. Function is indeterminate, as is age. Perhaps used for storage.</u>		
Map Checklist: N. arrow: <input checked="" type="checkbox"/> Scale: <input checked="" type="checkbox"/> Legend: <input checked="" type="checkbox"/> Site #: <input checked="" type="checkbox"/> Heights: <input checked="" type="checkbox"/> Name: <input checked="" type="checkbox"/> Date: <input checked="" type="checkbox"/> Job Code: <input checked="" type="checkbox"/>		

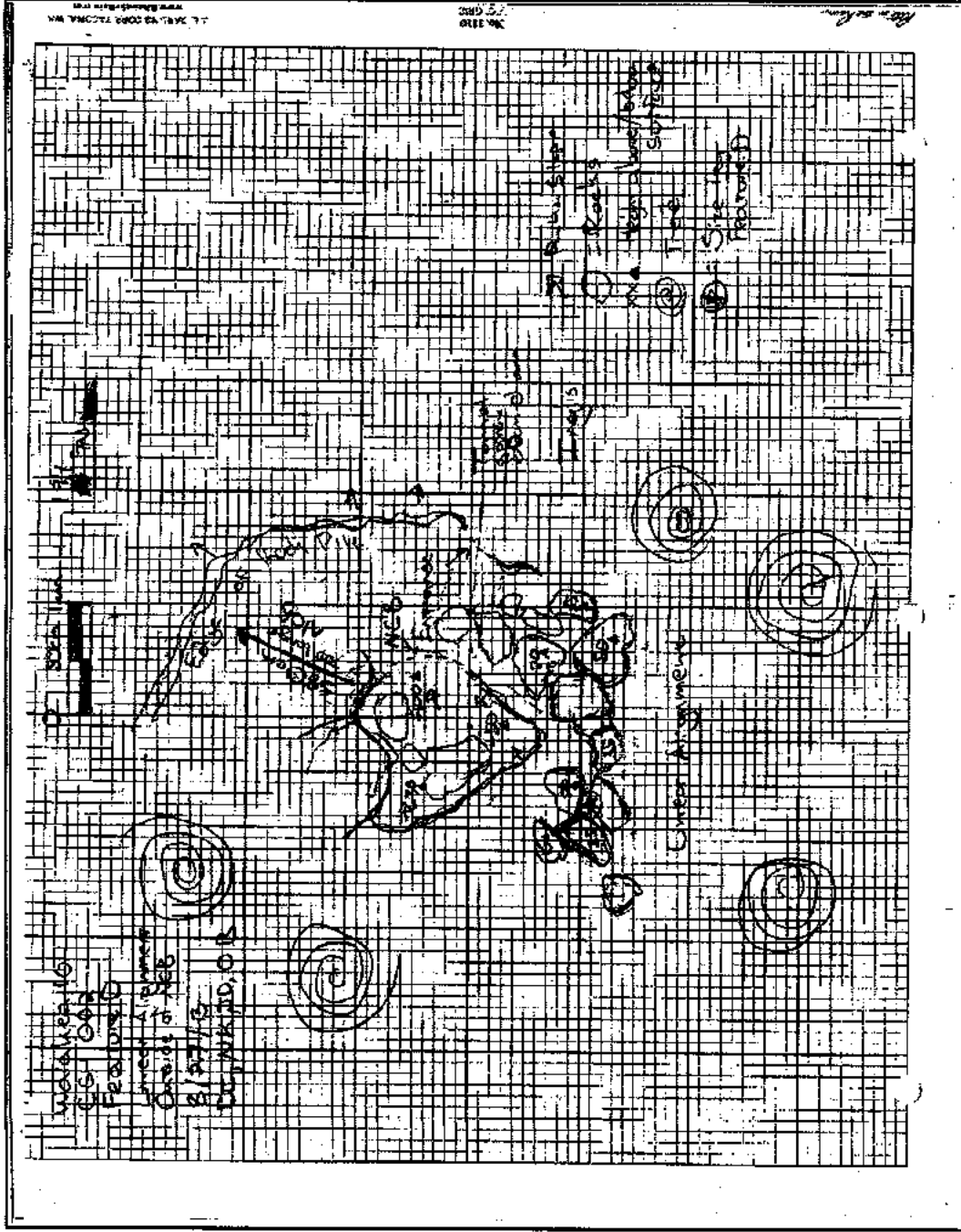
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SIHP # 50-10-35-30010 (CSH-004)

Cultural Surveys Hawai'i Site Inventory Record					
Date: <u>9/6/13</u> Name: <u>TRT</u>		Checked By: _____			
Job Code Project: <u>WAIKAKA 10</u>		CSH Site # <u>004</u>		Feature: <u>A, B, C, D, E</u>	
Area/Transect: <u>B</u>		State Site # _____			
Elevation: _____		Landmarks: _____		Sheet <u>1</u> of <u>2</u>	
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____					
Shelter Lava Tube Cairn Rock Art Trail Other: _____					
Function: <u>Habitation</u> Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control					
Animal Husbandry Transportation Rock Art Indeterminate Other: _____					
Age: Prehistoric <u>Historic</u> Military Plantation Ranch Indeterminate Other: _____					
Evidence of Age: <u>Historic, due to artifacts encountered and prox. to Puu o Paea trail</u>					
Geology: _____			Topography: _____		
Vegetation: _____			Disturbance: _____		
HISTORIC PROPERTY MEASUREMENTS					
Length		Meters		Orientation	
Width		Meters		Orientation	
Height		Thickness			
Site Complex Dimensions		Length:		Width:	
Condition: Excellent / <u>Poor</u> / Poor / Remnant					
Excavation Potential: Excellent / <u>Poor</u> / Fair / Poor				Evidence: <u>Surface artifacts</u>	
Photo (Roll or Disk/Frame) /		Midden:		Artifact:	
Description: <u>Possible hab. site due to features, landscape, vegetation, and artifact observation.</u>					
<u>landscape: Basalt land with vegetation.</u>					
<u>Vegetation: Site has covered canopy. Veg. consists of several magnolia trees, luhala trees, Ohia trees, Strawberry guava, assorted ferns, etc.</u>					
<u>Artifacts: bottles, stone wear (salt glazed), water rounded basalt, horse or mule shoe, (oil lamp (basalt) possible)</u>					
Map Checklist:		N. arrow:		Scale:	
Legend:		Site #:		Height:	
Name:		Date:		Job Code:	

Cultural Surveys Hawai'i Site Inventory Record

Date: 7/6/13 Name: TRT

Checked By: _____

Job Code Project: WAIAKEA 10	CSH Site # 004	Feature: A, B, C, D, E
Area/Transect: B	State Site # _____	
Elevation: _____	Landmarks: _____	Sheet 2 of 2
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____		
Shelter Lava Tube Cairn Rock Art Trail Other: _____		
Function: Habitat Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art Indeterminate Other: _____		
Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____		
Evidence of Age: <i>historic, due to artifacts encountered and proximity to Puna trail</i>		
Geology: _____		Topography: _____
Vegetation: _____		Disturbance: _____
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length		Height
Width		Thickness
Site Complex Dimensions	Length:	Width:
Condition: Excellent / Good / Poor / Remnant		
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor		Evidence: <i>surface artifacts</i>
Photo (Roll or Disk/ Frame) /	Midden:	Artifact:
Description: <i>Possible habitation camp site that consists of five features. Feature A - a level area scattered with nonports such as water worn basalt stones. At the NW corner is a basalt retaining wall. Feature B - A rock stacking in a rectangular shape with a metal horseshoe piece in the middle of it. Stacking was in a depression linear in shape, and about 20cm high. Feature C - irregular shaped basalt incloser. Neatly stacked at North end. Incloser is 230 x 380cm. Feature D - Possible low circular basalt incloser, 2 to 3 courses of stacking visible depth 60cm. Feature E - small basalt pile in gravel depression 60cm across.</i>		
Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code		

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SIHP # 50-10-35-30011 (CSH-006)

J.M.L.

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/9/13 Name: O. BAUTISTA Checked By: _____

Job Code Project: <u>Waiakea 10</u>	CSH Site # <u>006</u>	Feature: <u>A</u>
Area/Commitment: <u>A</u>	State Site # _____	
Elevation: _____	Landmarks: _____	Sheet <u>1</u> of <u>2</u>
Site/Feature Type: Enclosure Platform Terrace <u>Wall</u> Alignment Mound Modified: _____		
Shelter Lava Tube Cairn Rock Art Trail Other: _____		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art <u>Indeterminate</u> Other: _____		
Age: Prehistoric / <u>Historic</u> Military Plantation Ranch Indeterminate Other: _____		
Evidence of Age: <u>Puna trail c. 75 m. to the North</u>		
Geology: <u>PHIT</u>		Topography: <u>undulating</u>
Vegetation: <u>OHIA, Ti, Lohala, guava</u>		Disturbance: <u>Vegetation, large trees</u>
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length	<u>5.0 m</u>	<u>E/W</u>
Width	<u>0.70 m</u>	Height
		<u>0.70 m</u>
Site Complex Dimensions		Width: _____
Condition: Excellent / <u>Good</u> / Poor / Remnant		
Excavation Potential: Excellent / Good / Fair / <u>Poor</u> Evidence: <u>none</u>		
Photo (Roll or Disk / Frame) _____ Midden: <u>none</u> Artifact: <u>none</u>		
<p>Description: <u>CSH-006</u> is a small wall remnant. The wall is situated c. 75 m south of Puna trail in a cleared area. The understory has been cleared, but large trees remain. The wall is constructed of basalt boulders and cobbles neatly stacked and faced. 3-4 courses. The wall is on a small natural outcrop. The wall measures 5.0 m long (E/W) by 0.70 m wide (N/S) with a max height of 0.70 m. The wall segment abuts a Lohala tree to the east and a very large Ohia to the west. No evidence of the wall exist past these trees. Age possibly pre-contact or early historic period as the wall is not conc. filled. The wall is in good condition. No artifacts observed.</p>		
<p>Map Checklist: N. arrow: _____ Scale: _____ Legend: _____ Site #: _____ Heights: _____ Name _____ Date _____ Job Code _____</p>		

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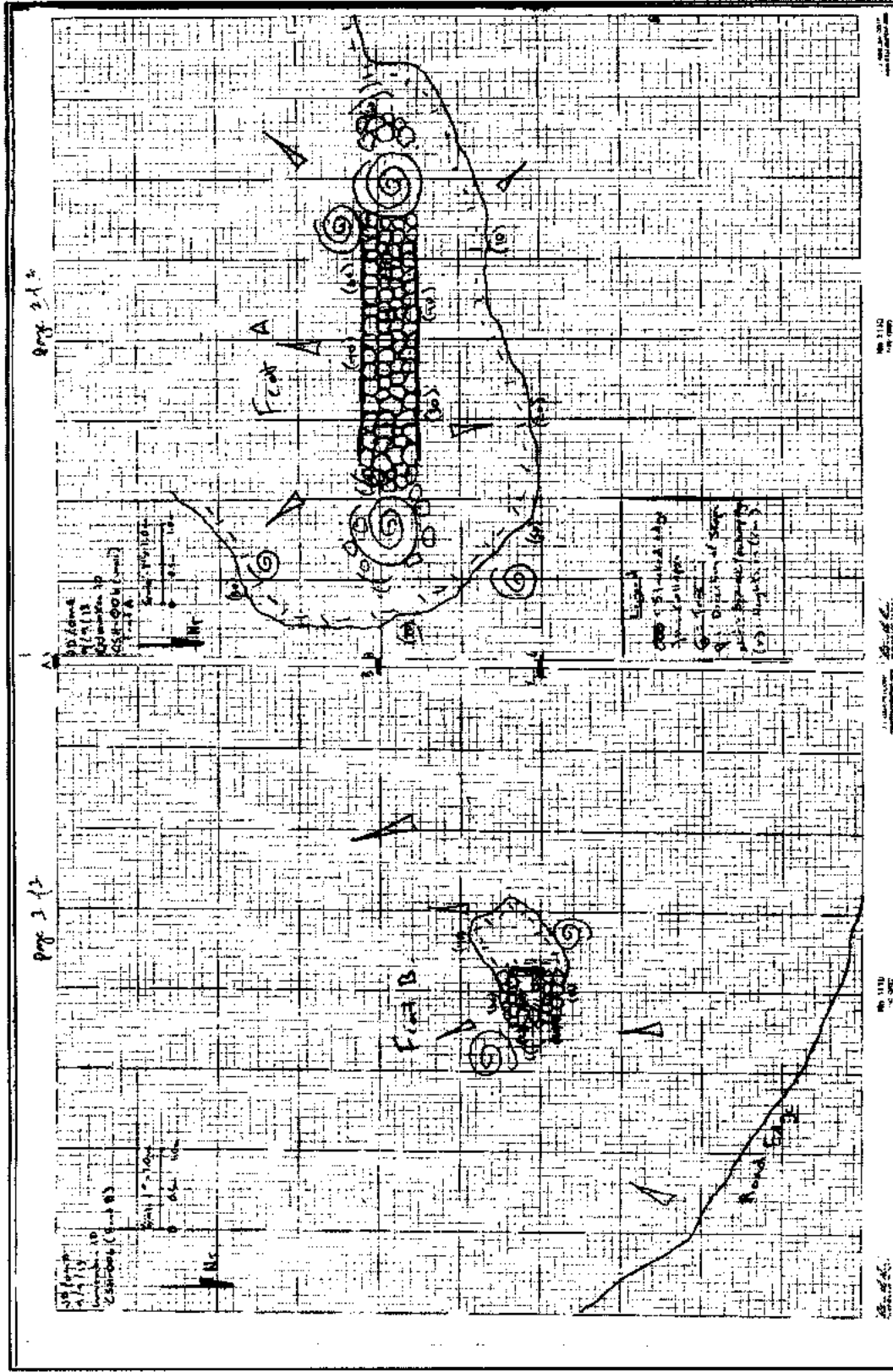
Date: 9/9/13 Name: O. B. AUSTIN Checked By:

Job Code Project: <u>Waiakea 10</u>	CSH Site #: <u>CSH-006</u>	Feature: <u>B</u>
Area/Transect: <u>A</u>	State Site #: <u> </u>	
Elevation: <u> </u>	Landmarks: <u> </u>	Sheet <u>1 of 2</u>
Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: <u> </u>		
Shelter Lava Tube Cairn Rock Art <u>Trail</u> Other: <u>modified depression</u>		
Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control		
Animal Husbandry Transportation Rock Art Indeterminate Other: <u>Storage</u>		
Age: Prehistoric <u>Historic</u> Military Plantation Ranch Indeterminate Other: <u> </u>		
Evidence of Age: <u>associated with Feature A</u>		
Geology: <u>Same as Fea A</u>	Topography: <u>undulating</u>	
Vegetation: <u>" "</u>	Disturbance: <u>partial tree</u>	
HISTORIC PROPERTY MEASUREMENTS		
	Meters	Orientation
Length	<u>.50</u>	<u>E/W</u>
Width	<u>.30</u>	<u>N/S</u>
Site Complex Dimensions	Length: <u> </u>	Width: <u> </u>
Condition: Excellent / <u>Good</u> / Poor / Remnant		
Excavation Potential: Excellent / <u>Good</u> / Fair / Poor	Evidence: <u>none</u>	
Photo (Roll or Disk/Frame): <u>1</u>	Midden: <u>none</u>	Artifact: <u> </u>
Description: <u>(CSH-006 Feature B, is a circular depression lined with stacked basalt cobbles. The feature is located c. 4.5m west of Feature A. Feature B measures 50cm long (E/W) by 30cm wide (N/S) with a maximum height of 30cm and 40cm max depth. Feature B is in good condition. No artifacts observed. Could be a storage feature.</u>		
<u>Historic - possible -</u>		
<u>Excavation may reveal function</u>		
Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code		

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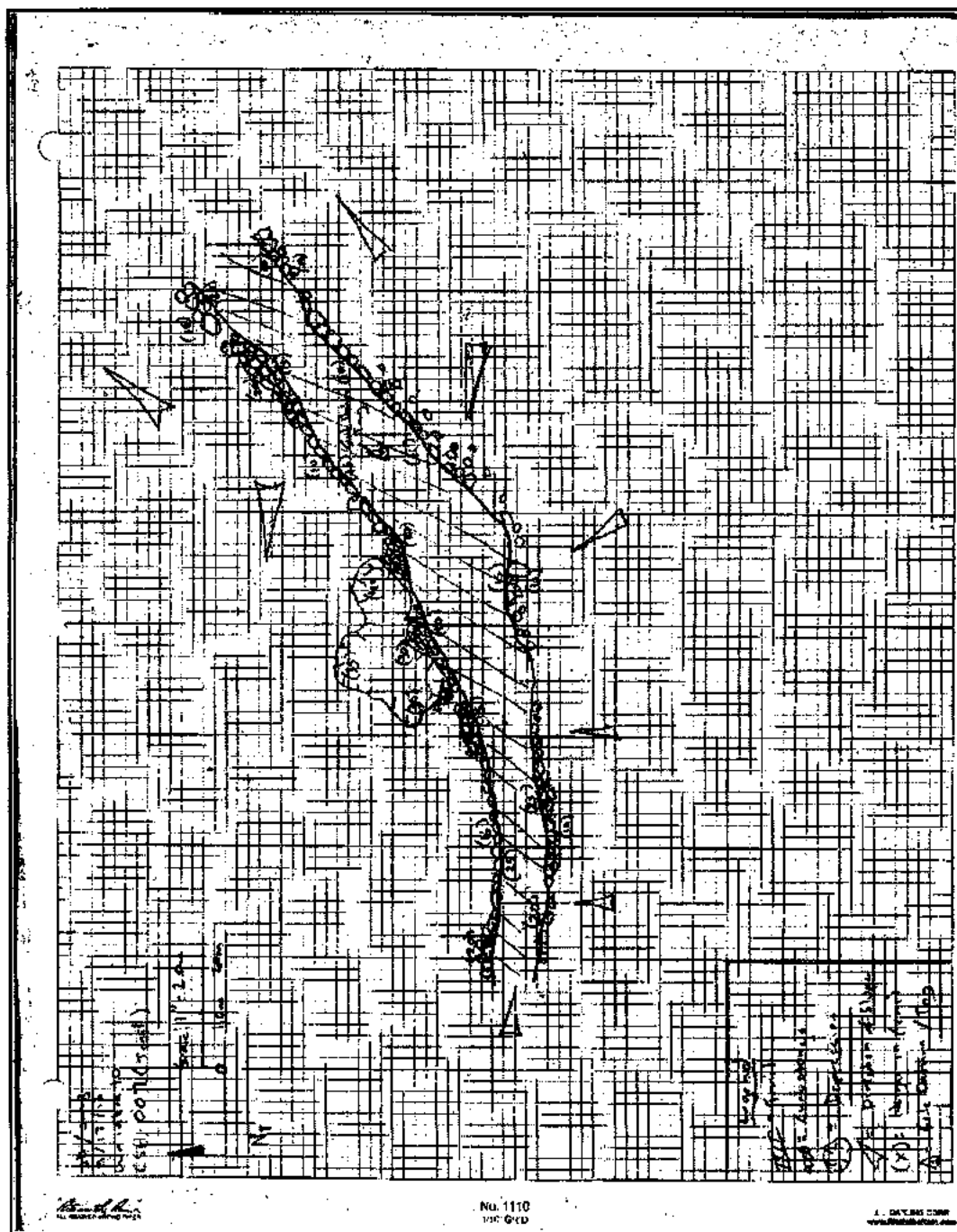
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SIHP # 50-10-35-30012 (CSH-007)

Cultural Surveys Hawai'i Site Inventory Record					
Date: <u>9/17/13</u> Name: <u>O. BAUTISTA</u> Checked By: _____					
Job Code Project: <u>WAI'AKEA 10</u>		CSH Site # <u>007</u>		Feature: _____	
Area/Transect: <u>A</u>		State Site # _____		_____	
Elevation: <u>1150 AMSL</u>		Landmarks: _____		Sheet _____ of _____	
Site/Feature Type: <input type="checkbox"/> Enclosure <input type="checkbox"/> Platform <input type="checkbox"/> Terrace <input type="checkbox"/> Wall <input type="checkbox"/> Alignment <input type="checkbox"/> Mound <input type="checkbox"/> Modified: _____					
Shelter <input type="checkbox"/> Lava Tube <input type="checkbox"/> Cairn <input type="checkbox"/> Rock Art <input checked="" type="checkbox"/> Trail <input type="checkbox"/> Other: _____					
Function: <input type="checkbox"/> Habitation <input type="checkbox"/> Activity Area <input type="checkbox"/> Marker <input type="checkbox"/> Ceremonial <input type="checkbox"/> Shelter <input type="checkbox"/> Burial <input type="checkbox"/> Agriculture <input type="checkbox"/> Water Control					
Animal Husbandry <input type="checkbox"/> Transportation <input type="checkbox"/> Rock Art <input type="checkbox"/> Indeterminate <input type="checkbox"/> Other: _____					
Age: <input type="checkbox"/> Prehistoric <input checked="" type="checkbox"/> Historic <input type="checkbox"/> Military <input type="checkbox"/> Plantation <input type="checkbox"/> Ranch <input type="checkbox"/> Indeterminate <input type="checkbox"/> Other: _____					
Evidence of Age: <u>Associated with other trail & sites in area</u>					
Geology: <u>M'A</u>			Topography: <u>undulating</u>		
Vegetation: <u>N/A</u>			Disturbance: <u>none - vegetation</u>		
HISTORIC PROPERTY MEASUREMENTS					
	Meters	Orientation		Meters	Orientation
Length	<u>15.0</u>	<u>NE/SW</u>	Height	<u>40cm max</u>	<u>curbstones</u>
Width	<u>1.0-1.5</u>	<u>NE/SW</u>	Thickness		
Site Complex Dimensions		Length:	Width: _____		
Condition: <input type="checkbox"/> Excellent <input checked="" type="checkbox"/> Good <input type="checkbox"/> Poor <input type="checkbox"/> Remnant					
Excavation Potential: <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor			Evidence: _____		
Photo (Roll or Disk / Frame): _____		Midden: <u>N/A</u>	Artifact: <u>N/A</u>		
Description: <u>CSH-007 is a curbstoned trail remnant.</u>					
<u>Situated 60m south of CSH-001. Vegetation is</u>					
<u>dense jungle canopy. The trail is lined with</u>					
<u>the edges with small circular holes in curbstones.</u>					
<u>The center of the trail is fairly level. The trail</u>					
<u>measures ^(NE/SW) 15m overall; 10m of which is c. 50cm</u>					
<u>wide (SE/NW) and a 5m section at the</u>					
<u>south-western portion is only 1.0m wide.</u>					
<u>Curbstone height is 20-40cm. Trail remained in</u>					
<u>in good condition, no artifacts. Trail may</u>					
<u>lead to CSH-001 historic site, but it is</u>					
<u>too hard to see. No other curbstones are</u>					
<u>evident.</u>					
Map Checklist: <input type="checkbox"/> N. arrow: <input type="checkbox"/> Scale: <input type="checkbox"/> Legend: <input type="checkbox"/> Site #: <input type="checkbox"/> Heights: <input type="checkbox"/> Name: <input type="checkbox"/> Date: <input type="checkbox"/> Job Code: <input type="checkbox"/>					

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Appendix C CSH Photo Logs

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KMR		CSH Job Code: Wai'akea 10	
Camera: CSH-D		Photographer(s): OMB, NK, DI, JD	
File Name (Job Code - Camera - Date of Photos): Wai'akea 10 - CSH-D - 8.27.2013			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
132	8/27		SW	CSH-002 REA. D LAUN TICE (back of la)
133	"		SW	" "
134	"		SW	" "
135	"		SW	" "
136	"		-	" open view of mammal bone
137	"		-	" " " "
138	"		-	" charcoal scatter
139	"		-	" mammal bone recovered
140	"		-	" polished basalt
141	"		-	" "
142	"		SW	" interior of site
143	"		IE	" interior looking out
144	"		E	" " "
145	"		E	" paved area
146	"		SW	" paved area
147	"		SW	" paved area - entrance
148	"		SW	" "
149	"		SW	" entrance

1: For example "KOHAN 1 - CSH G - 3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KMR		CSH Job Code: Wai'akea 10	
Camera: CSH-D		Photographer(s): OMB, OI	
File Name (Job Code- Camera- Dates of Photos): Wai'akea 10 - CSH-D - 06282013			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
150	8/28			CSH-002 Feat A ^{CSH} 10/OMB
151			N	CSH-002 Feat D mid Blister
152			NE	" " " "
153			NW	" " " "
154			N	" " " "
155			SW	" " " "
156			N	" " " "
157			N	" " " "
158			W	CSH-002 Feat A Feat A ^{Feat A} Outcrop (near east Blister)
159			NE	" " " " Overlook Large Blister Outcrop
160			E	" " " " " "
161			E	" " " " " "
162			N	" " " " " Wall/Terrace
163			NW	" " " " " "
164			NW	" " " " " "
165			SE	" " " " " "
166			W	" " " " " Outcrop overlook
167			S	" " " " " "
168			NE	" " " " " "
169			W	" " " Feat B Lava Tube
170			SW	" " " Feat A Large Outcrop
171			SW	" " " " "
172			NW	" " " " "
173			E	KD Range Bore (-)
174			W	CSH-002 Feat A Large Outcrop

1: For example "KORAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KMR		CSH Job Code: Wai'akea 10	
Camera: CSH-D		Photographer(s): DI	
File Name (Job Code- Camera-Dates of Photos):		Wai'akea 10 - CSH-D - 08282013	

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
175	8/28		N	CSH-002 Fent L. Overhang (N) Northern overhang
176			W	" " " (S) Southern overhang
177			N	" " " (N)
178			NW	" " " "
179			E	" " " "
180			NW	" " " "
181			NW	" " " " Small Tub, entrance
182			N	" " " "
183			W	" " " "
184			NW	" " " "
185			E	" " " "
186			NW	" " " "
187			E	" " " "
188			N	" " " "
189			N	" " " "
190			NE	" " " "
191			NW	" " " "
192			S	" " " " Overhang (S) Southern overhang
193			S	" " " "
194			E	Overview of site CSH 003
195			E	Close up of two walls together CSH 003
196			N	N Curb Stone alignment
197			E	Curb stones on side E
198			S	Trail looking over both N & W wall
199			S	Close up of S wall curb stones
200			W	ephemeral wall east end
201			W	" " " "
202				N wall face

1: For example "KOHAN I" - CSH G-3-2-07 to 3-17-07

200
201
202

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: age KMR		CSH Job Code: Wai'akea 10		
Camera: CSH-0		Photographer(s): C. W.		
File Name (Job Code- Camera-Date of Photo):				
Frame No.	Date	Time (Military)	Direction (Facing to)	Description
204	7/6/13		E	CSH-004 IF#2 mod. waterman, Blotter Bank, terrace
205			E	" " " "
206			SE	CSH-004 Feat A hab. site
207			SE	" " " "
208			SE	CSH-004 IF#3 mod. waterman (2) depression
209			N	CSH-004 Feat A IF#3 in foreground
210			E	CSH-004 Feat A mod waterman not collected.
211			N	CSH-004 Feat B mound w/in depression.
212			E	" " " "
213			Overview	" " " close up terrace
214			NW	CSH-004 Feat D constructed Pit
215			NW	" " " "
216			N	CSH-004 Feat E mound w/in depression
217			SE	" " " "
218			E	CSH-004 Feat C Enclosure
219			W	" " " "
220			W	" " " "
221			SE	" " " "
222			SE	" " " "
223			S	" " " "
224			W	" " " "

1: For example "KOHAN I--CSH 0--3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: <u>Waiakea 10</u>		CSH Job Code: <u></u>	
Camera: <u>Nikon D90</u>		Photographer(s): <u>M. Garcia</u>	
File Name (Job Code- Camera--Dates of Photos): <u></u>			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
3227	9/6/13		NW	Platform General View Feat 2
3228	9/6/13		NW	" " " " "
3229	9/6/13		NW	" " " " "
3230	9/6/13		NE	" " " " "
3231	9/6/13		NE	" " " " "
3232	9/6/13		SW	Side Wall " " " "
3233	9/6/13		SW	" " " " "
3234	9/6/13		SW	" " Profile " " "
3235	9/6/13		SW	" " " " " "
3236	9/6/13		Over View	Historic Artifacts
3237	9/6/13		Over View	" "
3238	9/6/13		Over View	Bottle (Glass)
3239	9/6/13		Over View	Bottle (Glass) - Makers Mark
3240	9/6/13		Over View	Stone Grinding Wheel
3241	9/6/13		NW	Depression Feat 3 General View
3242	9/6/13		NW	" " " " "
3243	9/6/13		SW	" " " " " of Feat. 4 in Background
3244	9/6/13		SW	" " " " " " " "
3245	9/6/13		NW	Upright on Westside of Feat 3
3246	9/6/13		W	General View Depression Feature 4
3247	9/6/13		W	" " " " "
3248	9/6/13		S	" " " " "
3249	9/6/13		S	" " " " "
3250	9/6/13		SE	Profile " " " "
3251	9/6/13		SE	" " " " "

1: For example "KOHAN 1—CSH 0—3-2-07 to 3-17-07"

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1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KMR		CSH Job Code: Waiakea 10	
Camera: CSH-C		Photographer(s): om3	
File Name (Job Code-Camera-Dates of Photos): Waiakea 10-CSH-C-9-9-13			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
627 1	9/1/13		S	CSH-006 Fra. A; wall segment
628 2			SE	" " " "
629 3			S	" " " "
630 4			SW	" " " "
631 5			S	CSH-006 Feat. B Constructed Pit
632 6			W	" " " " Feat. B in background
633 7			S	" " " " close up
634 8			S	" " " "
635 9			E	EMPD Site # 21658 Ahu Feat. A
636 10			E	" " " " Feat. B in background
637 11			E	" " " "
638 12			E	" " " " Feat. B
639 13			ESE	" " " "
640 14			ESE	" " " "
641 15			S	" " " " Feat. C
642 16			S	" " " "
643 17			SW	" " " "
644 18			SW	" " " "
645 19			N	" " " " Feat. E
646 20			N	" " " "
647 21			W	" " " " Feat. D in background
648 22			W	" " " " Feat. D
649 23			SW	" " " "
650 24			SE	" " " " Feat. E in background
651 25			SE	" " " "

1: For example "KOHAN I-CSH G-3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KMR		CSH Job Code: WAIAKEA 10	
Camera: CSH-C		Photographer(s): CM.B	
File Name (Job Code—Camera—Dates of Photos): WAIAKEA 10 - CSH-C - 9.13.2013			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
49	9/13		SW	SHDD#23273 Trail "curbstone"
50	"		SW	" (tape @ 1m)
51	"		NE	" "
52	"		SW	" "
53	"		NE	" "
54	"		SW	" (tape @ 2m)
55	"		NE	" "
56			NW	CSH-005 Feat C. L shape
57			N	" " "
58			NE	" " " Feat A. enclosure
59			NW	" " "
60			S	CSH-005 Feat A. Platform
61			SW	" " " "
62			SE	" " " " surface
63			E	" " " " "
64			N	" " " "
65			E	CSH-005 Feat B. Enclosure
66			E	" " " close up structure
67			E	" " " "
68			NE	" " "
69			SW	" " "
70			NW	CSH-005 Feat D. mound
71			NW	" " "
72			NE	" " (constructed Pit)
73			NE	" " "

1: For example "KOHIAN 1—CSH G—3-2-07 to 3-17-07"

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[illegible]

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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[illegible]

1: For example "KOHAN I—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
 PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: Km2 CSH Job Code: Waiakea 10
 Camera: 08-100-000 Photographer(s): 0MB
 File Name (Job Code--Camera--Dates of Photos): Waiakea 10 - 08 phone - 10-31-13

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
2066	10/31		N	Km2: Area where Hudson side used to be
2067	"		NW	" "
2068	"		W	" "
2069	"		S	Site 21771 ^{Feature E} modified depression in stone causeway
2070	"		S	" "
2071	"		W	" "
2072	"		SE	" "
2073	"		S	" "
2074	"		S	Site 21771 pit in depression; Feature E
2075	"		S	" "
2076	"		N	" "
2077	"		N	" "
2078	"		-	011's Thumb - Delete
2079	"		N	stone causeway near pit 21771 Fea. E
2080	"		W	21771 Fea. E stone alignments on west bank
2081	"		W	21771 Fea. E with Fea. A in background
2082	"		W	" "
2083	"		N	21771 Fea. E stone alignments on west bank
2084	1		NW	" "

1: For example "KOHAN 1--CSH G--3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name: KAHALUU 13		CSH Job Code: KAHALUU 13	
Camera: CSH-C		Photographer(s): OMB	
File Name: (Job Code- Camera-Dates of Photos):		KAHALUU 13-CSH-C-10-30-13	

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
922	10/30	-	-	Macfarlane bottle (Also Acc #1) IF #1
923	"	-	-	" "
924	"	-	-	" "
925	"	-	-	" "
926	"	-	-	" "
927	"	-	-	Unmarked whiskey btl. (Also Acc #2) IF #1
928	"	-	-	" "
929	"	-	-	" "
930	"	-	-	Waterworn cobble w/indentations (Acc #3) IF #3
931	"	-	-	" "
932	"	-	-	" "
933	"	-	-	" "
934	"	-	-	Waterworn/mod. find (Acc #4) IF #2
935	"	-	-	" "
936	"	-	-	" "
937	"	-	-	" "
938	"	-	-	" "
939	"	-	-	" "
940	"	-	-	" "
941	"	-	-	" "
942	"	-	-	Acc #1 / IF #1 Macfarlane + Co base of btl.
943	"	-	-	" "

1: For example "KOHAN 1-CSH G-3-2-07 to 3-17-07"

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Appendix D CSH GPS Logs

[illegible]

CSH GPS LOG

Project Name: Kmr CSH Job Code: WmKen ID
GPS Unit: CSH-2 (Paton) Operator: JD Date: 7/6/13 Sheet ___ of ___
Downloaded to File:

UTM Coordinates
Northing/Easting
(NAD 83 Zone 4 or 5 north
unless otherwise indicated)

[illegible]

P:\DOC\RESOURCES\Field and Lab Forms\1. Field Forms\GPS Record Form.pdf

CSH GPS LOG

Project Name: Waialeale, 10 CSH Job Code: Waialeale, 10
GPS Unit: Garmin CSH4 Operator: A. Smith Date: 9/1/13 Sheet 1 of 1
Downloaded to File:

UTM Coordinates
Northing/Easting
(NAD 83 Zone 4 or 5 north
unless otherwise indicated)

[illegible]

1: File name on server:

[illegible]

CSH GPS LOG

Project Name: KMR CSH Job Code: Water & Gas
GPS Unit: CSH-1 Operator: omg Date: 9/13/13 Sheet 1 of 1
Downloaded to File: _____

UTM Coordinates
Northing/Easting
 (NAD 83 Zone 4 or 5 north
 unless otherwise indicated)

[illegible]

1: File name on server:

CSH GPS LOG

Project Name: KmR CSH Job Code: walakea 10
GPS Unit: CSH-1 Operator: amr Date: 9.17.13 Sheet ___ of ___
Downloaded to File: _____

**UTM Coordinates
Northing/Easting
(NAD 83 Zone 4 or 5 north
unless otherwise indicated)**

[illegible]

1: File name on server;

CSH GPS LOG

Project Name: KMIR CSN Job Code: Waialeale 10
GPS Unit: CSH-1 Operator: OMR Date: 7.24.13 Sheet 1 of 1
Downloaded to File: _____

UTM Coordinates
Northing/Easting
(NAD 83 Zone 4 or 5 north
unless otherwise indicated)

[illegible]

1: File name on server,

Appendix E SIHP Site Number Requests

Sarah Wilkinson

From: Sean P.Naleimaile@hawaii.gov
Sent: Wednesday, December 18, 2013 2:15 PM
To: Sarah Wilkinson
Subject: Re: SIHP number request for AIS study at KMR in Hilo

SIHP Site #50-10-35-30008-30012

30008	CSH-001	CSH	South Hilo	Wai'akea	TMK (3) 2-1-013:10	9/24/2013
	CSH-002	CSH	South Hilo	Wai'akea	TMK (3) 2-1-013:10	8/27-28/2013
30009						
30010	CSH-004	CSH	South Hilo	Wai'akea	TMK (3) 2-1-012:3	9/8/2013
30011	CSH-005	CSH	South Hilo	Wai'akea	TMK (3) 2-1-012:3	9/9/2013
30012	CSH-007	CSH	South Hilo	Wai'akea	TMK (3) 2-1-012:3	9/17/2013

Sean P. Naleimaile
Hawai'i Island Archaeologist
State Historic Preservation Division
(808)933-7651

State Historic
Preservation
Division



"Sarah Wilkinson" <swilkinson@cultsurveys.com>
<Theresa.K.Dorham@hawaii.gov>
"Sean P. Naleimaile@hawaii.gov" <sean@hawaii.gov>
12/18/2013 01:22 PM
SIHP number request for AIS study at KMR in Hilo

Aloha Theresa,
CSH would like to request SIHP numbers for sites documented during our recent AIS at Keaukaha Military Reservation in Hilo. The required information is attached.

As you will note, we are seeking SIHP numbers for 5 newly-identified sites. However, during our study we found new/additional features at two previously-recorded sites (SIHP 50-10-99-18869—Puna Trail and 50-10-35-21771). I have included information on the new features in the excel spreadsheet, including GIS location data, so that you can update your database with this information.

To keep the size down I haven't included photos with the site descriptions, but there are plan view maps.
Thanks!
Sarah

Sarah Wilkinson
Cultural Surveys Hawai'i, Inc.
swilkinson@culturalsurveys.com
office (808)965-6478
cell (808)756-8468
fax (808)965-6582

[attachment "WAIAKEA 10 Site Number Request.xlsx" deleted by Sean P Naleimaile/DLNR/StateHHS] [attachment "WAIAKEA 10 SHP Site No. Request Form.doc" deleted by Sean P Naleimaile/DLNR/StateHHS]

STATE HISTORIC PRESERVATION DIVISION**PRELIMINARY SITE INFORMATION FORM
FOR REQUESTING HAWAII STATE INVENTORY OF HISTORIC PLACES
(SIHP) NUMBERS
(revised 4/30/08)**

Instructions: Submit this completed .doc with attached USGS map, TMK map (with site location(s) plotted on both) and site Plan(s). In addition, please fill out the .xls site data form and include with submission. Email the request to your island's DLNR/SHPD.

Total SIHP #'s being requested: 5

Date: 12/18/2013

Firm/Agency: Cultural Survey's Hawai'i, Inc.

PI: Hallett H. Hammatt, Ph.D.

Island: Hawai'i

Ahupua'a: Waiákea

District: South Hilo

Project Area size (acreage): A 405.3 acre portion of the overall parcels

TMK(s): (3) 2-1-012:003; (3) 2-1-013:010

Owner/Developer: The Hawai'i Army National Guard (HIARNG)

Address: Hawai'i Army National Guard, ENV Office
Kristine Macdonald, Cultural Resources Specialist
3949 Diamond Head Road
Honolulu, HI 96816-4495

Site Description: Include (attach) a description of each historic property that will be designated by a site number. Include individual descriptions of features and/or components of the site, measurements, etc., and any other relevant information gathered to date.

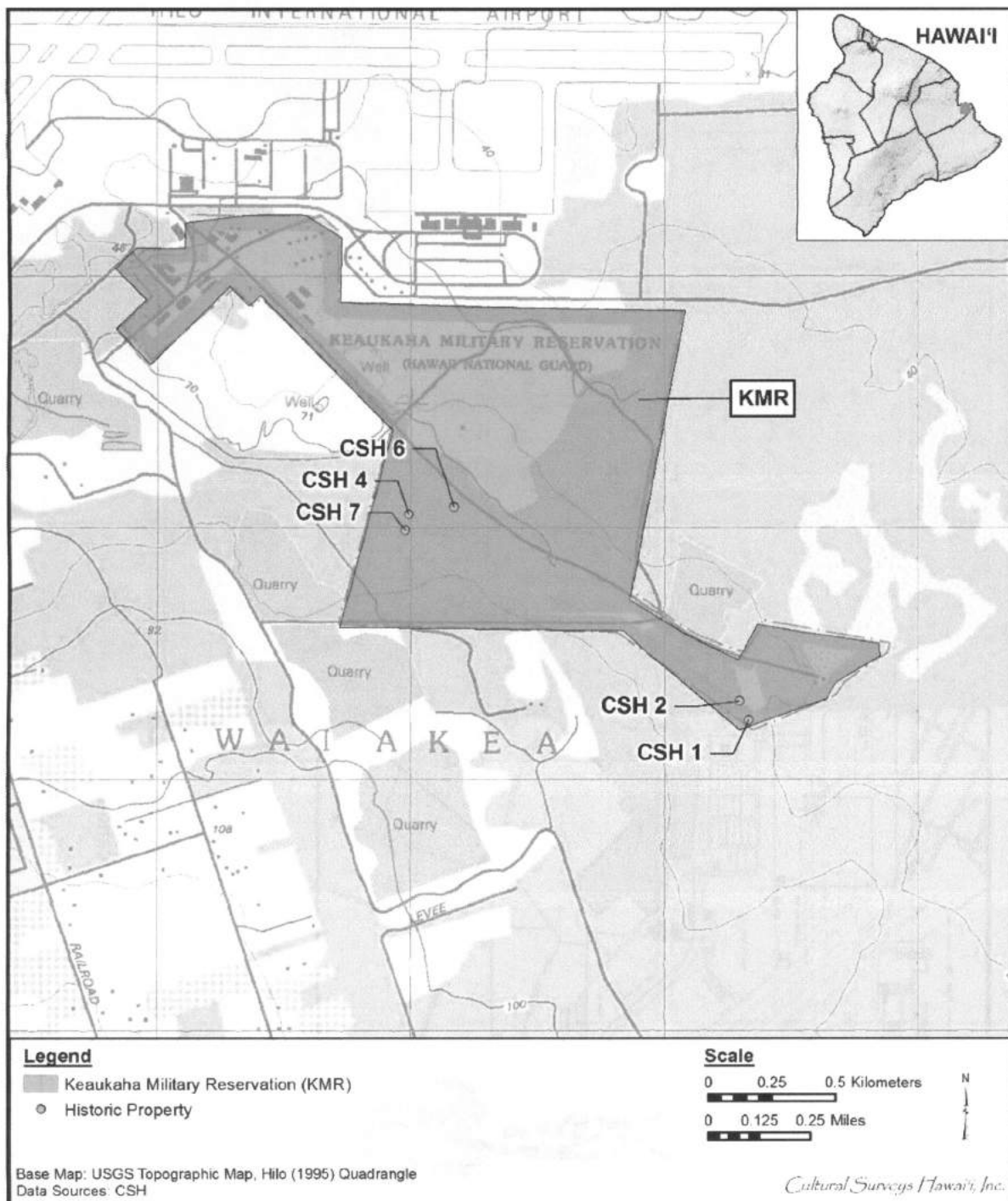


Figure 1. Portion of the 1995 U.S. Geological Survey 7.5-minute Topographic Map, Hilo Quadrangle, showing the locations of the newly-identified sites at KMR; the Puna Trail (SIHP 50-10-99-18869) is visible as a diagonal line bisecting the KMR

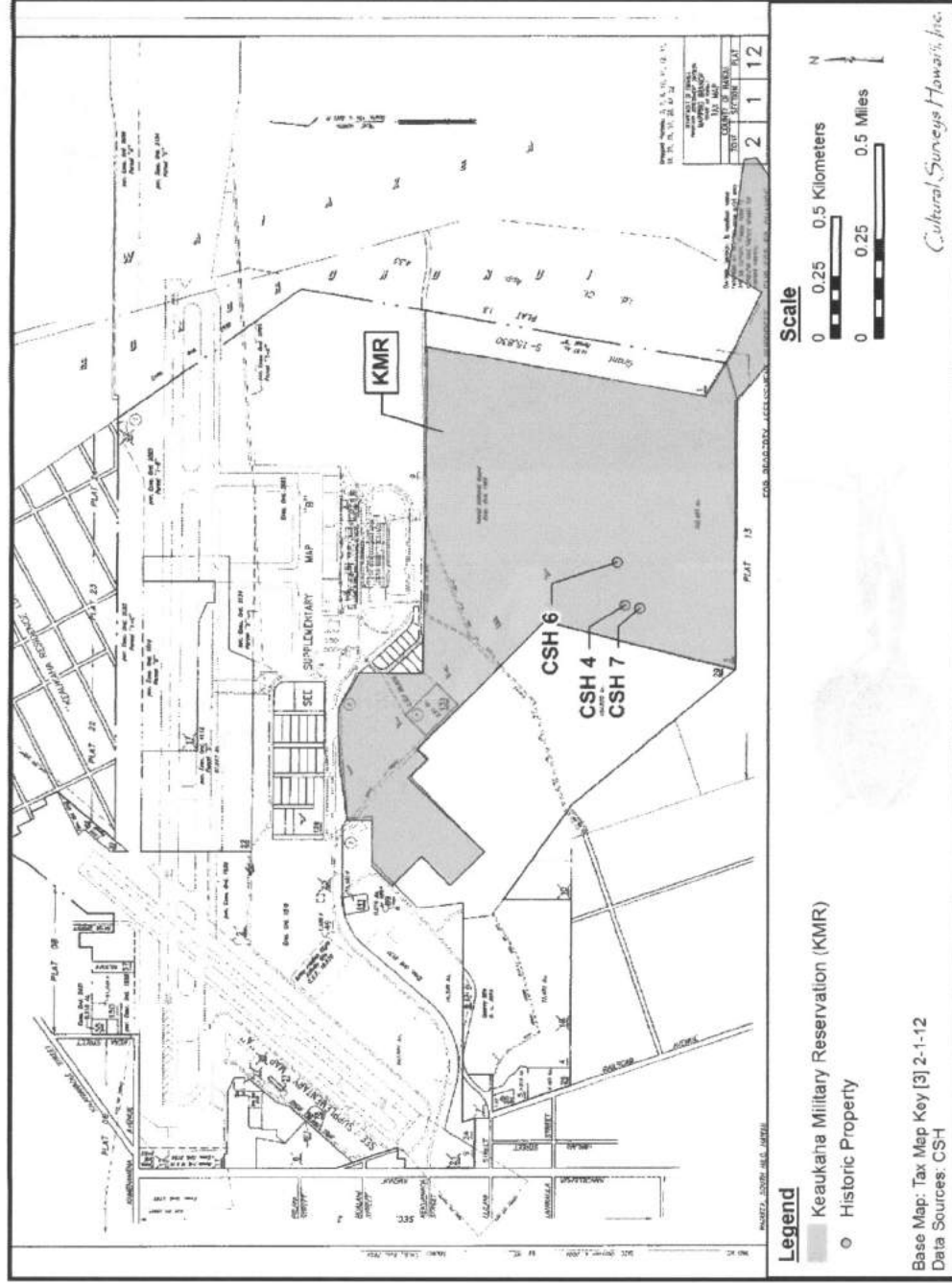


Figure 2. Tax Map Key [3] 2-1-012, showing the locations of newly-identified sites at KMR

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

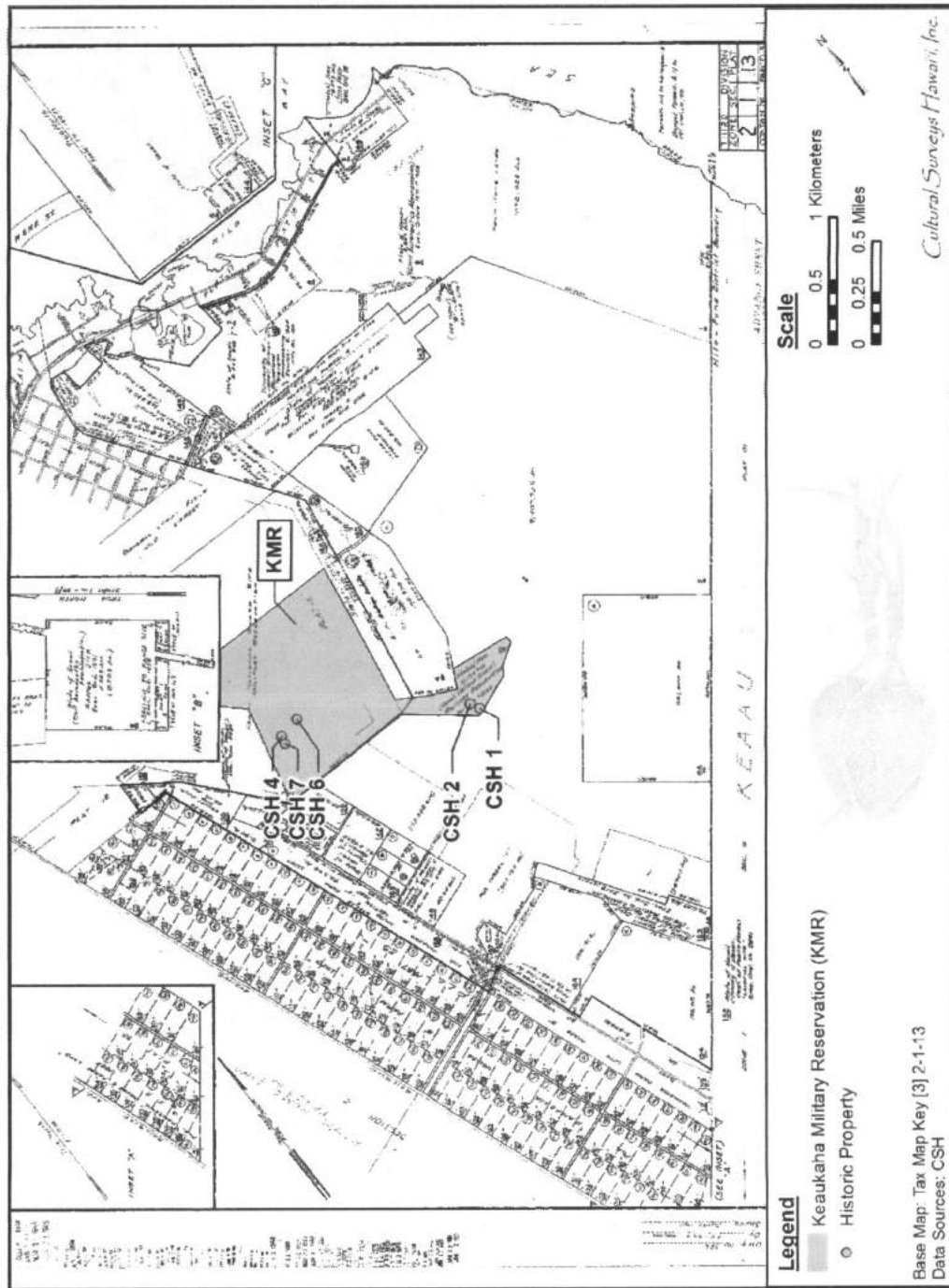


Figure 3. Tax Map Key [3] 2-1-013 showing the locations of newly-identified sites at KMR

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

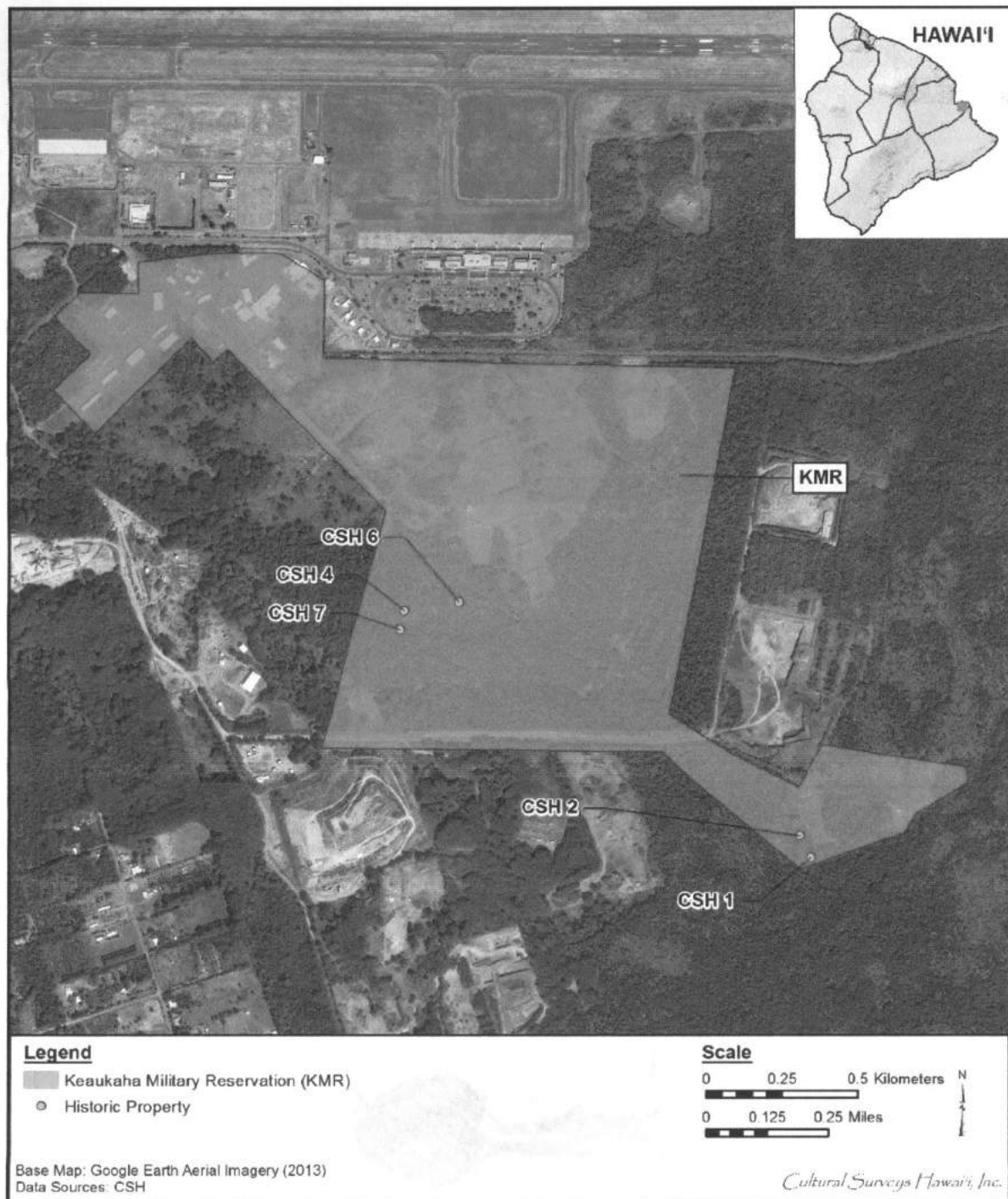


Figure 4. Aerial photograph showing the locations of the newly-identified sites at KMR (Google Earth 2013)

CSH-1**SITE TYPE:** Modified Lava Tube**NUMBER OF FEATURES:** 1**TOPOGRAPHY:** Uneven pāhoehoe flow**VEGETATION:** 'Ōhi'a (*Metrosideros macropus*), hala (*Pandanus odoratissimus*), uluhe (*Dicranopteris linearis*), bing-a-bing (*Macaranga mappia*), maile pilau (*Paederia scandens*), autograph tree (*Clusia rosea*), guava (*Psidium* spp.), mango (*Mangifera indica*), octopus tree (*Brassaia actinophylla*), Koster's curse (*Clidemia hirta*)**ELEVATION:** 63 ft amsl**CONDITION:** Good**INTEGRITY:** Possible disturbance related to modern usage**PROBABLE AGE:** Late pre-Contact to early Historic**FUNCTIONAL INTERPRETATION:** Temporary Habitation**DIMENSIONS:** 12.0 m (E/W) by 4.0 m (N/S) by 0.4-2.0 m high

DESCRIPTION: CSH-1 consists of a modified lava tube located approximately 50 m south of KD #2 range (see Figure 1, Figure 4 and Figure 5) in an area of uneven pāhoehoe flow and dense vegetation.

The interior of CSH-1 measures 12.0 m long (NW/SE) by 4.0 m wide (SW/NE) with ceiling heights ranging from 0.4 to 2.0 m. The opening measures approximately 4.0 m wide with heights of 0.2 m to 1.5 m. The floor of the lava tube is level with some very thin soil deposits. A substantial natural outcropping is present near the center of the tube, which is relatively devoid of rubble and roof fall. A triangular-shaped stone terrace is situated just inside of the northern end of the opening, and was likely constructed to facilitate entry into the tube. The terrace is constructed of stacked medium- to large-sized basalt cobbles with a fairly level surface. It measures approximately 2.0 m long (E/W) by 2.0 m wide (N/S) with heights from 0.20-0.50 m. Numerous modern beer bottles were located hidden in the western portion of SIHP # CSH-1. Charcoal, marine shell midden, faunal bone and a water worn basalt cobble were also discovered within the lava tube.

Based on the relative proximity to the Puna Trail and the presence of marine shell midden, this site was likely used in late pre-Contact and/or early Historic times. The modern beer bottles indicate that it has been used in modern times as well. Considering the apparent continues usage of the tube, it cannot be said with certainty when the terrace feature was constructed. Given the nature of the modifications within the tube, CSH-01 was likely used as a recurrent shelter. Excavation potential is poor given the lack of sedimentary deposit and the relatively low height of the terrace feature. This site is in good condition. Despite indications of modern usage this site retains integrity of location, design, setting, workmanship, and feeling.

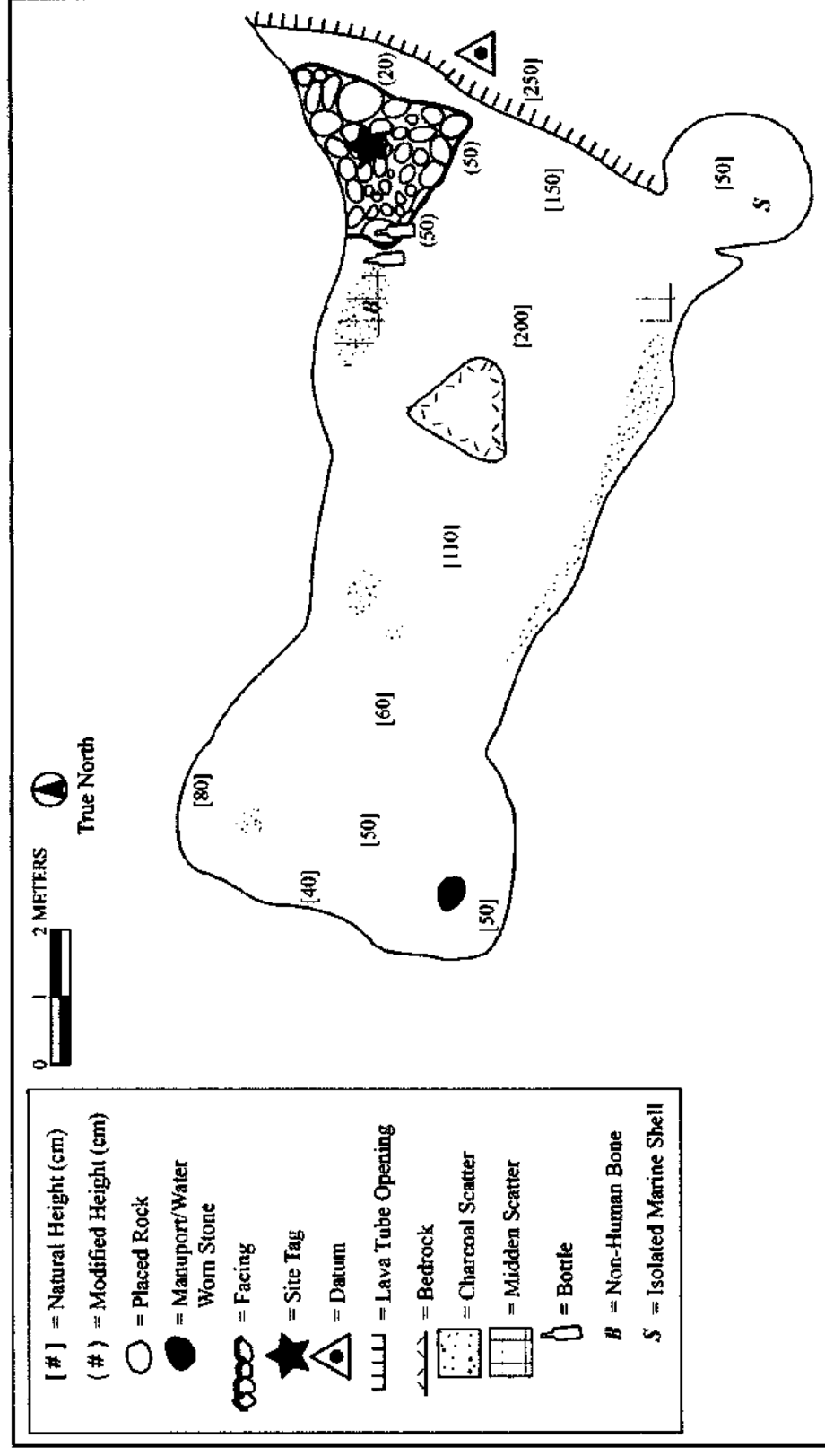


Figure 5. Plan view map of CSH-1

CSH-2**SITE TYPE:** Complex**NUMBER OF FEATURES:** 3 (A-C)**TOPOGRAPHY:** Uneven pāhoehoe flow**VEGETATION:** 'Ōhi'a, hala, bing-a-bing, maile pilau, autograph tree, uluhe, waiwī or yellow strawberry guava (*Psidium cattleianum*), mango, octopus tree, Koster's curse**ELEVATION:** 65 ft amsl**CONDITION:** Good**INTEGRITY:** Possible disturbance related to dense vegetation and Military training**PROBABLE AGE:** Late pre-Contact to early Historic**FUNCTIONAL INTERPRETATION:** Temporary Habitation**DIMENSIONS:** 40.0 m (N/S) by 25.0 m (E/W) by 1.0-2.0 m high (above surrounding ground surface)

DESCRIPTION: CSH-2 is a complex situated on a large, 1,000-sq-ft rock outcrop with a wide, fairly level surface (see Figure 1, Figure 4 and Figure 6). The site comprises three features: Feature A consists of modifications to the outcrop surface; Features B and C are culturally modified lava tubes located within the outcrop. A number of additional lava tubes are present within the outcrop; these were fully investigated and to be culturally sterile. The site is located approximately 10 m west of a berm that is part of KD#2 Range. The site is situated on uneven pāhoehoe flow supporting predominantly hala and strawberry guava, though numerous other plant species were observed in the vicinity.

Feature A is a modified outcrop (see Figure 6). The overall outcrop is approximately 40 m long (N/S) by 25 m wide (E/W) and rises approximately 1.0 m to 2.0 m above the surrounding landscape. Portions of Feature A are depressed, with depths of 0.5 to 1.0 m below the surrounding outcrop surfaces. The surface is heavily vegetated and a scatter of small cobbles and a few boulders is present. Two modifications were observed upon the outcrop surface. A low-lying rock wall is situated along the eastern edge of the outcrop. It is oriented (N/S) and defines the interior edge of a 1.0 to 2.0 m-wide, naturally level area that is slightly lower than the main outcrop area and may represent a terrace of some sort. The wall is constructed of loosely-stacked cobbles and boulders and measures approximately 10 m long (N/S) by 1.0 m wide (E/W) with a maximum height of 0.75 m. Near the southern edge of the outcrop, an alignment of basalt cobbles and boulders has been placed along the edge of a shallow depression. This curved alignment measures approximately 3.0 m long (NE/SW) by 0.50 m wide and exhibits a maximum height of 0.50 m.

Feature B is a lava tube with an opening along the northeastern edge of the outcrop (see Figure 6 and Figure 7). The opening measures approximately 2.5 m wide and 0.80 m high. The interior of Feature B generally measures 4.0 m wide (SE/NW) with ceiling heights of 0.4 to 1.7 m. The tube extends 7.0 m (NE/SW), at which point it becomes impassible; the portion of the tube beyond was visually inspected as best as possible and no cultural materials or deposits were observed. Just inside the entrance is an area roughly paved with basalt cobbles measuring 2.0 m long (SE/NW) by 1.6 m wide (SW/NE). Some boulders have been placed along the peripheries of the paved area, and may serve to support it on the interior edge as the floor of the tube beyond drops approximately 0.5 m. The floor in this back portion of the tube is fairly level. Charcoal

scatter, fragments of non-human mammal bone and a water worn basalt cobble that may have been polished were observed in this portion of the tube. Natural ceiling collapse is present along the back of the chamber.

Feature C is a lava tube with openings along the southern edge of the outcrop (see Figure 6 and Figure 8). Two small openings set approximately 3.0 m apart provide access to the tube. The western entrance measures approximately 0.50 m wide and 1.50 m high. The eastern entrance is larger and could be considered the "main" entrance; it measures 0.75 m wide and 1.0 m high. The interior extent of the lava tube is roughly T-shaped, with the openings set at either end of the upper portion. This portion of the tube between the openings is of roughly paved basalt cobbles, and measures up to 1.5 m wide with modified ceiling heights of 0.36 m to 0.97 m (above the pavement). The pavement at the entry area likely facilitated access into the tube. The "lower" portion of the tube beyond the pavement is approximately 3.5 m long (N/S) and up to 1.5 m wide (E/W), with natural ceiling heights of 0.50 to 0.98 m. The floor here is fairly level, and visibility is enhanced by natural skylights. A scattering of cobbles were observed, but no additional anthropogenic features or cultural deposits were noted.

Given the close proximity of CSH-2 to the Puna Trail and the level of modification observed at the site, it likely functioned as a late pre-Contact and/or historic temporary habitation. The presence of constructed features on the outcrop surface indicates that activities beyond simple shelter were undertaken at the site; these modifications could represent activity or storage areas. The paved entry areas at Feature B and C suggest a recurrent usage. Given its proximity to components of the KD #2 Range it is very possible that CSH-2 has been impacted by Military training; it is also possible that the lava tubes have been used for shelter by Military personnel. This site is assessed as not exhibiting excavation potential. The tube floor sedimentary deposit at Feature B is very thin, and none of the constructed features at the site are of substantial enough construction to contain burials or other cultural deposits. Overall the site is in good condition. Despite possible disturbance related to dense vegetation and Military training/usage, it retains integrity of location, design, setting, workmanship, and feeling.

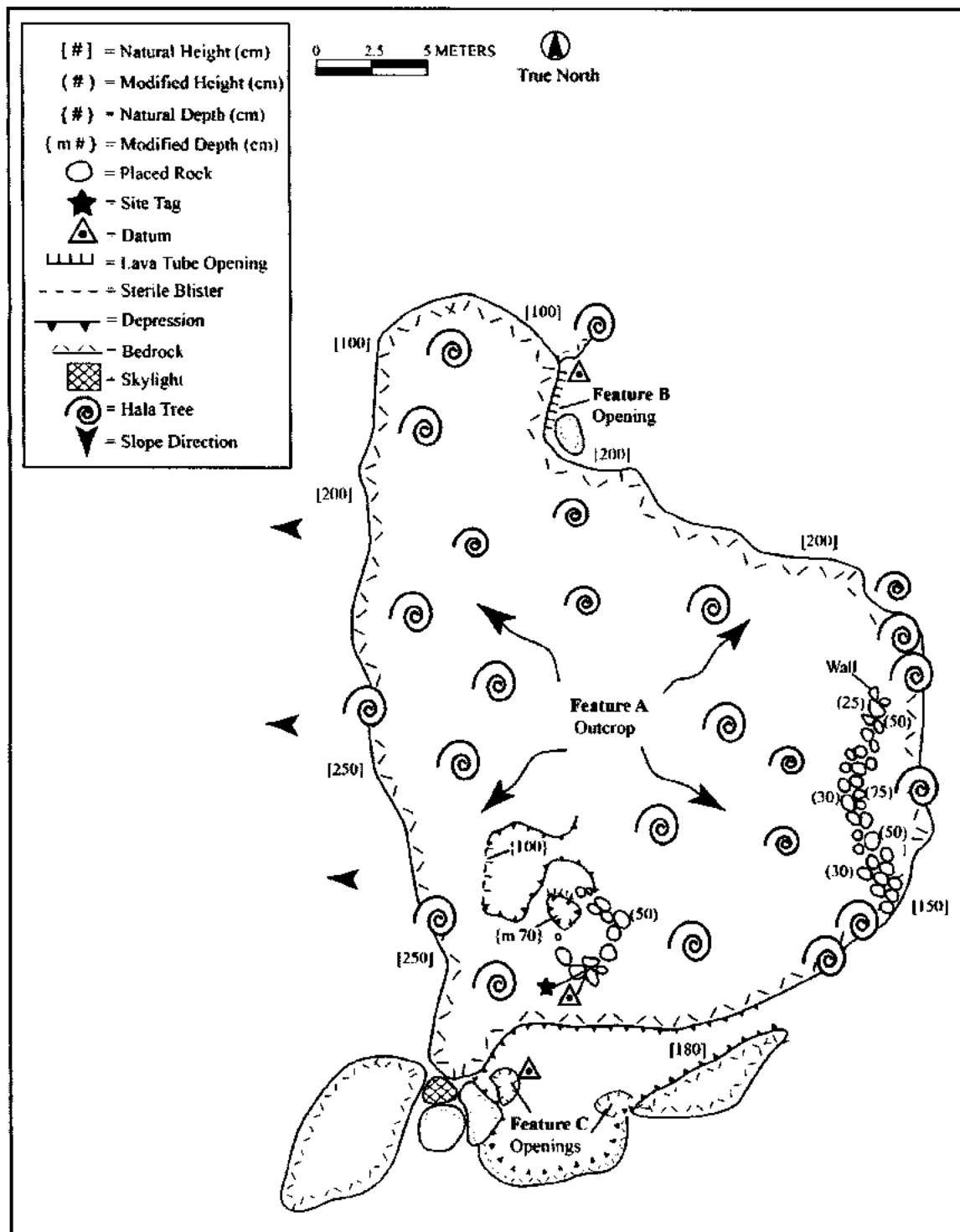


Figure 6. Plan view map of CSH-2

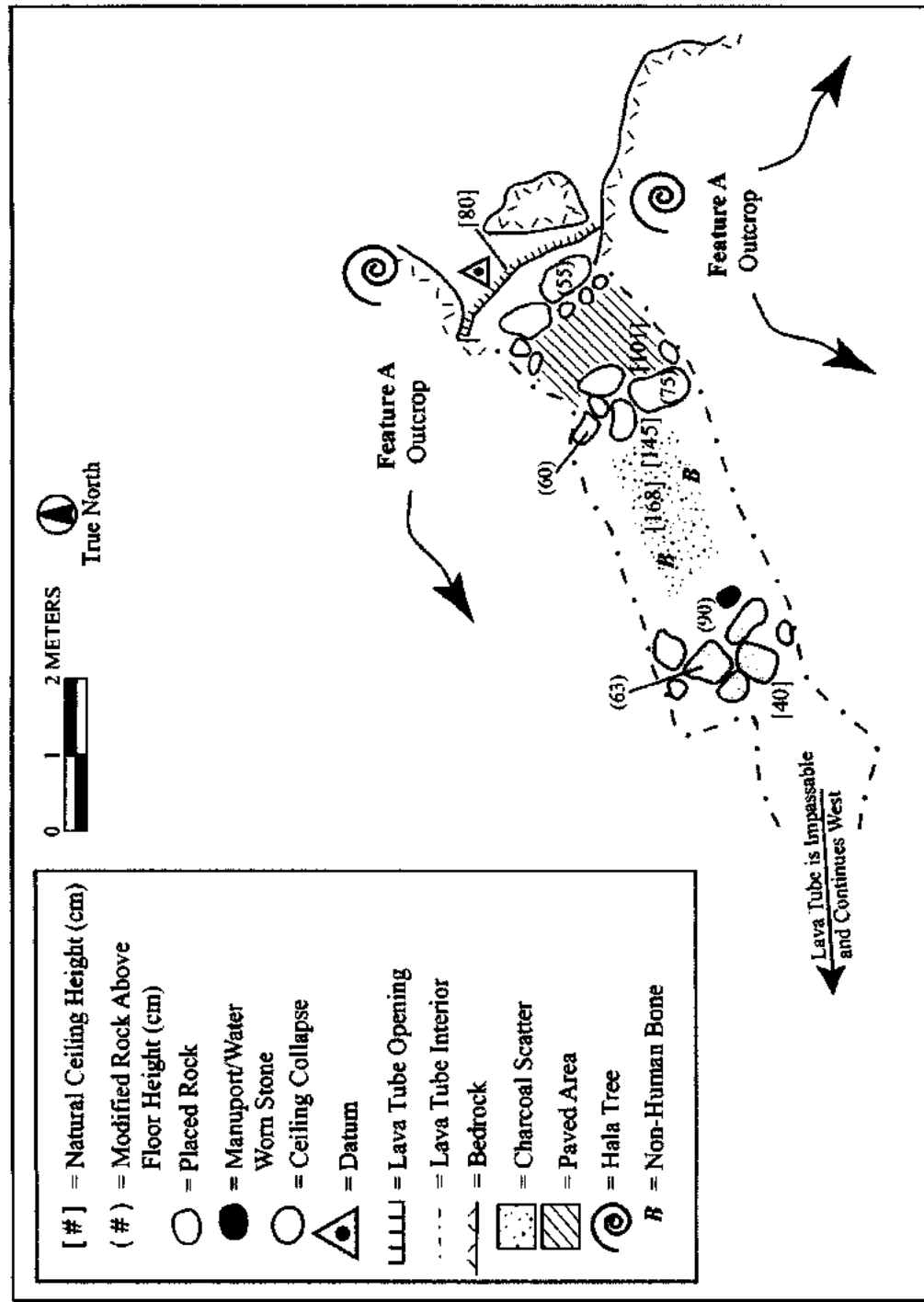


Figure 7. Detail plan view map of CSH-2 Feature B

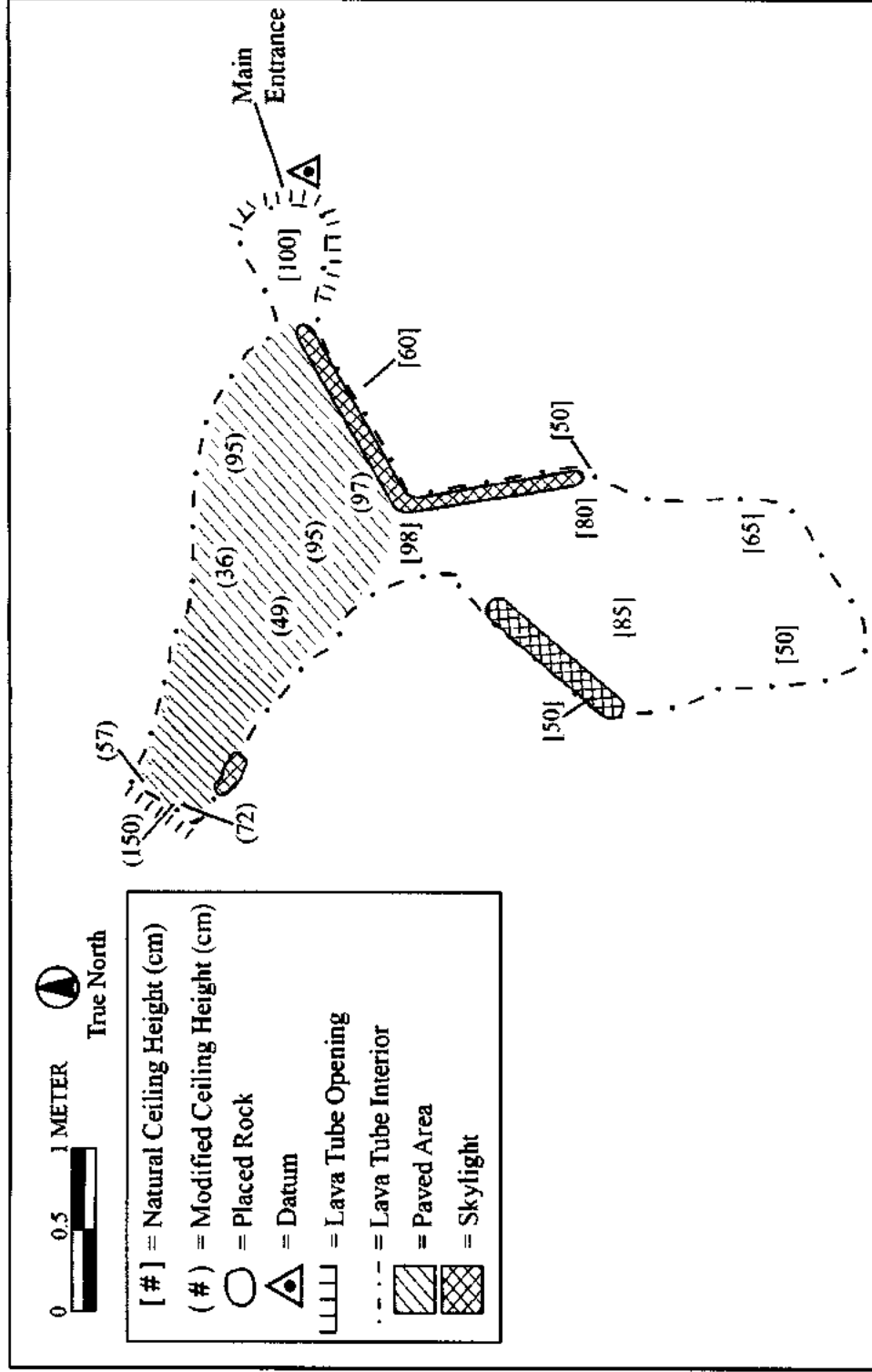


Figure 8. Detail plan view map of CSH-2 Feature C

CSH-4**SITE TYPE:** Complex**NUMBER OF FEATURES:** 5 (A-E)**TOPOGRAPHY:** Undulating**VEGETATION:** 'Ōhi'a, hala, uluhe, bing-a-bing, maile pilau, guava, mango, octopus tree, Koster's curse**ELEVATION:** 75 ft amsl**CONDITION:** Fair to good**INTEGRITY:** Possible disturbance related to dense vegetation**PROBABLE AGE:** Late Pre-Contact/Early Historic**FUNCTIONAL INTERPRETATION:** Habitation, possible agriculture**DIMENSIONS:** 44.0 m (N/S) by 30.0 m (E/W)

DESCRIPTION: CSH-4 is a complex located in Area A approximately 280 m south of the Puna Trail (see Figure 1, Figure 4 and Figure 9). The site, which overall measures approximately 44.0 m (N/S) by 30.0 m (E/W), is comprised of five features: Feature A is a cleared, level area; Feature B is a linear mound; Feature C is a small enclosure; and Feature D is a stone-lined pit. The topography in this densely forested area is undulating soil with scattered basalt rock and numerous depressions and outcrops. Numerous artifacts were observed around the component features and collected for laboratory analysis.

Feature A is a roughly rectangular-shaped cleared, level area situated between two natural depressions (see Figure 9). The feature is indicated as an area devoid of vegetation and rocks, and measures approximately 8.0 m (N/S) by 5.5 m (E/W). Areas of possible pavement were observed within the feature, but are somewhat ephemeral given apparent sedimentation and a cover of leaf litter. A retaining wall has been constructed at the northern edge of the level area, along its interface with the natural depression to the north. The wall consists of basalt cobbles and boulders stacked three to four courses high inside the depression. The wall measures approximately 1.8 m (NW/SE) by 0.5 m (NE/SW) with a maximum height of 0.5 m. Numerous artifacts were found scattered on the surface of Feature A, including three large, modified waterworn basalt cobbles (Isolated Find [IF] #2, #3 and #4), four water worn basalt cobble manuports, a blob-top bottle fragment and a salt-glazed pottery shard. Overall, Feature A is in fair condition. It may have served as a site for some sort of structure. No post holes were observed.

Feature B is a somewhat deflated, linear rock mound located approximately 4.5 m northeast of the retaining wall at Feature A (see Figure 9). Feature B is situated near the center of a shallow natural depression that measures approximately 4.5 m (N/S) by 3.5 m (E/W) and up to 0.4 m deep. The mound is constructed of loosely piled small to large cobbles, and measures 2.3 m

(N/S) by 1.2 m (E/W) with a maximum height of 0.3 m. Feature B is in fair condition. A horseshoe, possibly from a mule, was observed on the surface of the mound.

Feature C is a rectangular enclosure (see Figure 9 and Figure 10). The feature is located approximately 8.5 m northwest of Feature B inside of a natural depression which measures approximately 10.0 m (N/S) by 5.0 m (E/W) and up to 0.5 m deep. The enclosure is constructed of two to four courses of neatly stacked and faced basalt cobbles and boulders. It measures 3.8 m (N/S) by 2.3 m (E/W) with a maximum interior height of 1.2 m and exterior height of 1.0 m. The fairly level interior contains a scatter of small to medium cobbles. The walls are generally about 0.50 m thick. Overall, this feature is in fair condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature D is a circular, stone-lined pit situated within a natural depression approximately 8.5 m west of Feature C (see Figure 9). The natural depression measures approximately 5.0 m (N/S) by 3.0 m (E/W) with a depth of 0.5 m. The pit utilizes a natural crevice or more depressed portion of the overall depression. The bottom and sides of this natural feature have been lined with cobbles. The construction is roughly flush with the surrounding surface of the depression. The pit measures approximately 2.1 m (N/S) by 2.0 m wide (E/W) with a maximum constructed depth of 0.7 m. Feature D is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature E is a small stone mound located approximately 9.0 m northeast of Feature C within the northern portion of a linear natural depression (see Figure 9). The depression measures 8.0 m (N/S) by 2.0 m (E/W) with a maximum depth of 0.6 m. The mound is constructed of loosely stacked basalt cobbles and boulders, measuring 1.0 m (N/S) by 0.9 m (E/W) with a maximum height of 0.5 m. Feature E is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

This complex of features likely represents a late pre-Contact to early Historic habitation site with possible related agriculture. The assemblage of artifacts documented at the site indicates a historic occupation, but may be the result of continued usage from pre-Contact times. Feature A may represent a former house site at which the structure has been removed. The function of Feature B is indeterminate; it may represent a planting or clearing mound. It appears too low and informally constructed to contain a burial. The Feature C enclosure is too small to have served as a habitation area; it may have been used to contain small animals or fowl or may have been used for storage. Feature D is likely a privy or a storage feature; there is no evidence that it represents a well. Feature E is interpreted as a clearing or planting mound. The presence of ancillary features around a presumed occupation site (Feature A) would suggest a more permanent or at least heavily-used temporary habitation function.

CSH-4 is considered to have good excavation potential. While the soil substrate at Features A or C is likely not very deep, its excavation could yield subsurface deposits that would provide insight into the age and function of these features. Excavation or dismantling of Features B and/or E could yield similar results. Despite potential disturbance inflicted by surrounding dense vegetation, the site retains integrity of location, design, setting, workmanship, and feeling.

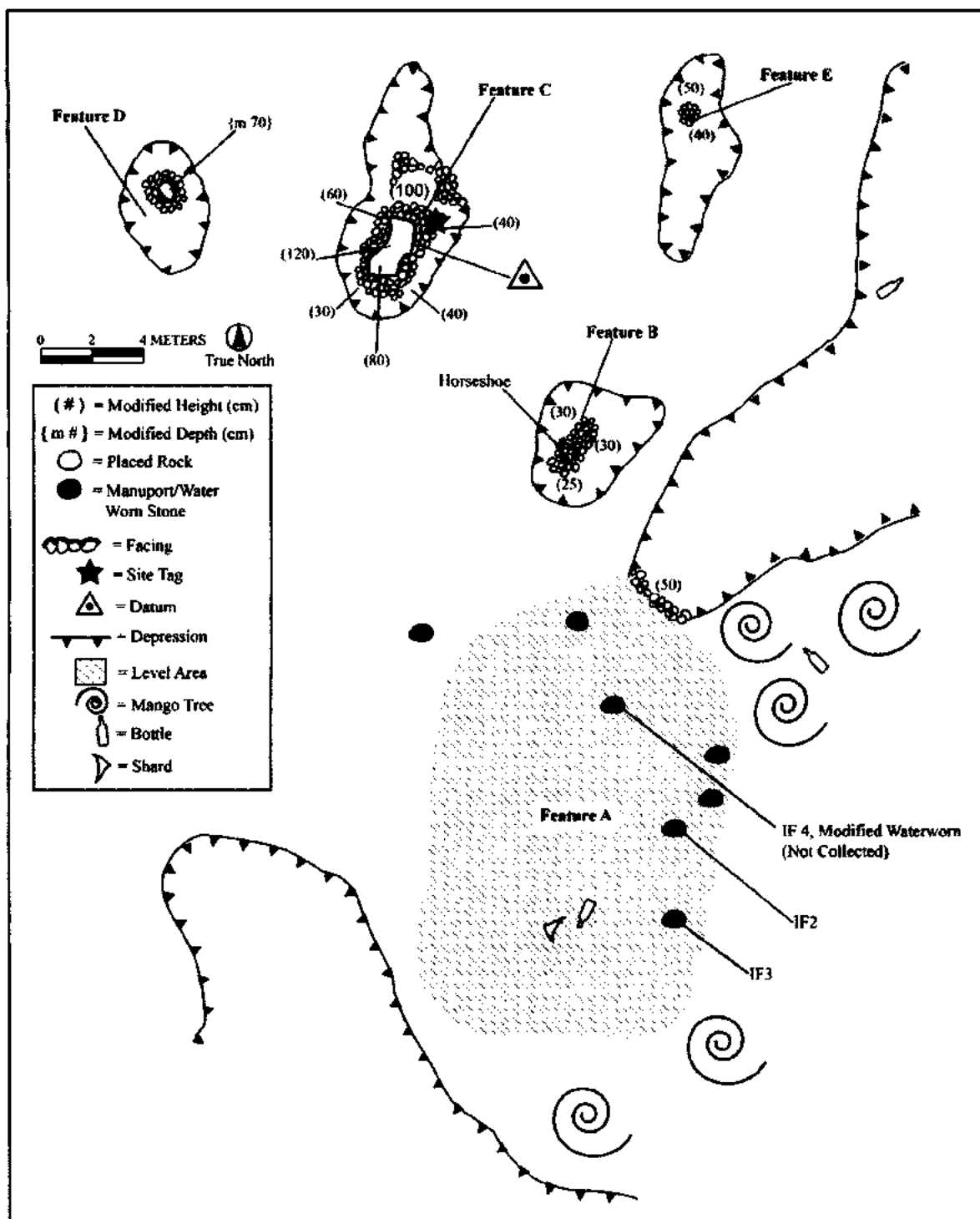


Figure 9. Plan view map of CSH-4

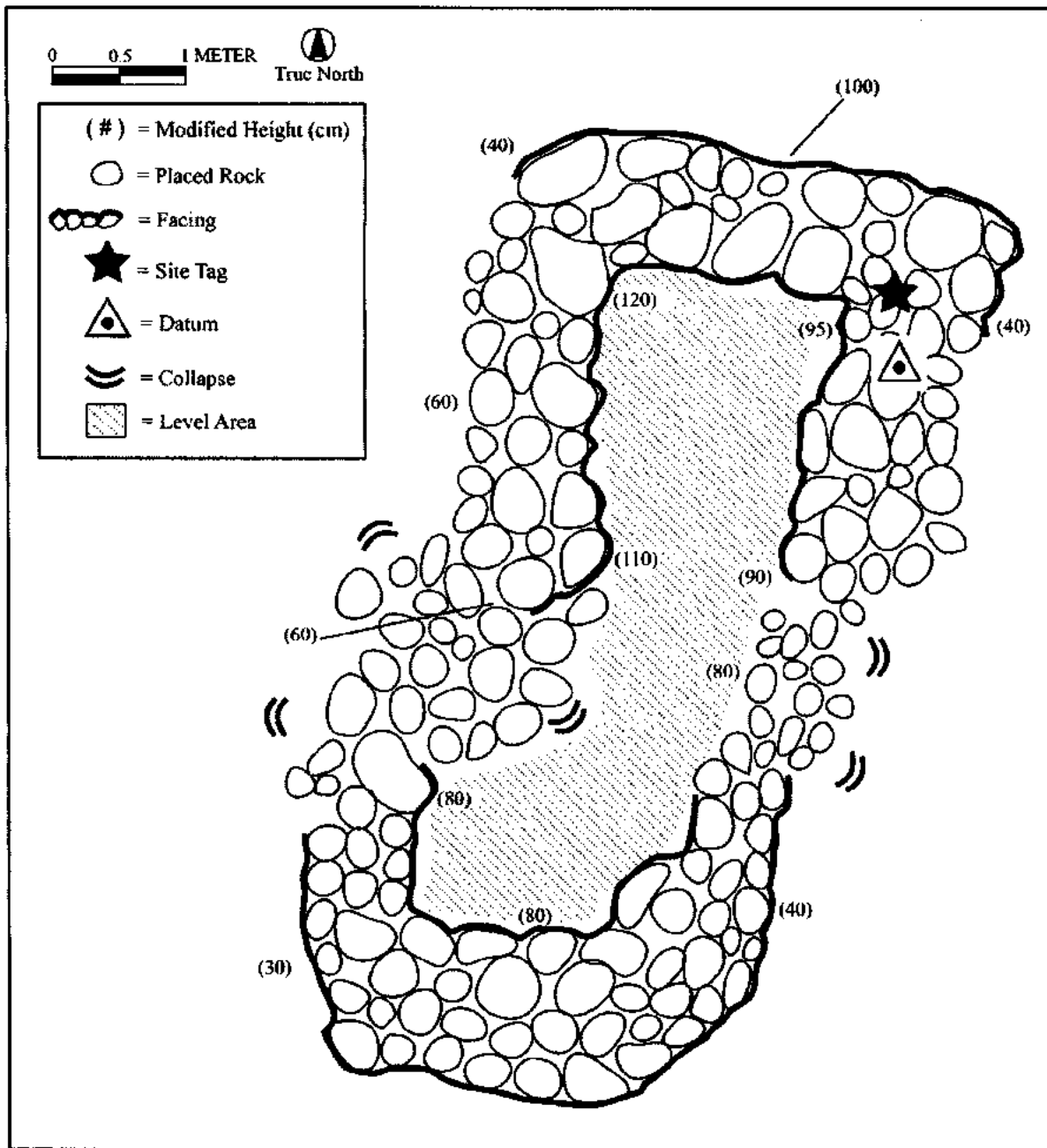


Figure 10. Detail plan view map of CSH-4 Feature C

CSH-6**SITE TYPE:** Complex**NUMBER OF FEATURES:** 2**TOPOGRAPHY:** Undulating**VEGETATION:** Hala, 'ōhi'a, kī, uluhe, waiawī, bing-a-bing, maile pilau, guava, mango, octopus tree, Kosters curse**ELEVATION:** 73 ft amsl**CONDITION:** Good**INTEGRITY:** Disturbance from surrounding vegetation and vegetation clearing activities**PROBABLE AGE:** Late Pre-Contact/Early Historic**FUNCTIONAL INTERPRETATION:** Indeterminate**DIMENSIONS:** 10.0 m (E/W) by 3.0 m (N/S)

DESCRIPTION: CSH-6 is complex situated 75.0 m south of the Puna Trail in an area cleared of its understory by KMR Environmental Department (see Figure 1, Figure 4 and Figure 12). It is comprised of two features: Feature A, a rock wall, and Feature B, a constructed pit. The topography is undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions. A bulldozer road was observed approximately 5.0 m to the east.

Feature A is a linear rock wall (see Figure 12). The wall is constructed of basalt boulders and cobbles neatly stacked and faced three to four courses high. It is situated on a natural outcrop and measures approximately 5.0 m (E/W) by 0.70 m (N/S) with a maximum height of 0.7 m and thickness of 0.7 m. The wall segment abuts a hala tree to the east and a large 'ōhi'a tree to the west. While a scattering of rocks is present around these trees on the outcropping, no evidence of a continuation of the wall was observed in the surrounding areas.

Feature B is constructed pit located 4.5 m east of Feature A (see Figure 12). The pit utilizes an oblong natural depression or crevice. The natural feature has been lined with three courses of stacked basalt cobbles. It measures approximately 0.5 m (E/W) by 0.3 m (N/S) with a maximum exterior height of 0.3 m and 0.4 m maximum constructed depth.

No artifacts or cultural deposits were observed in the vicinity. Given the proximity of CSH-6 to the Puna Trail and its construction style, it likely dates to the late pre-Contact or early Historic period. Feature A may have delineated a planting, activity or occupation area. Feature B may have functioned as a related storage feature, or as a privy or planting area. Excavation potential is assessed as poor, given the location of the wall on a rocky outcropping and a lack of sedimentation within the pit feature. Despite potential disturbance inflicted by surrounding dense vegetation and vegetation clearing activities, the site is in overall good condition and retains integrity of location, design, setting, workmanship, and feeling.

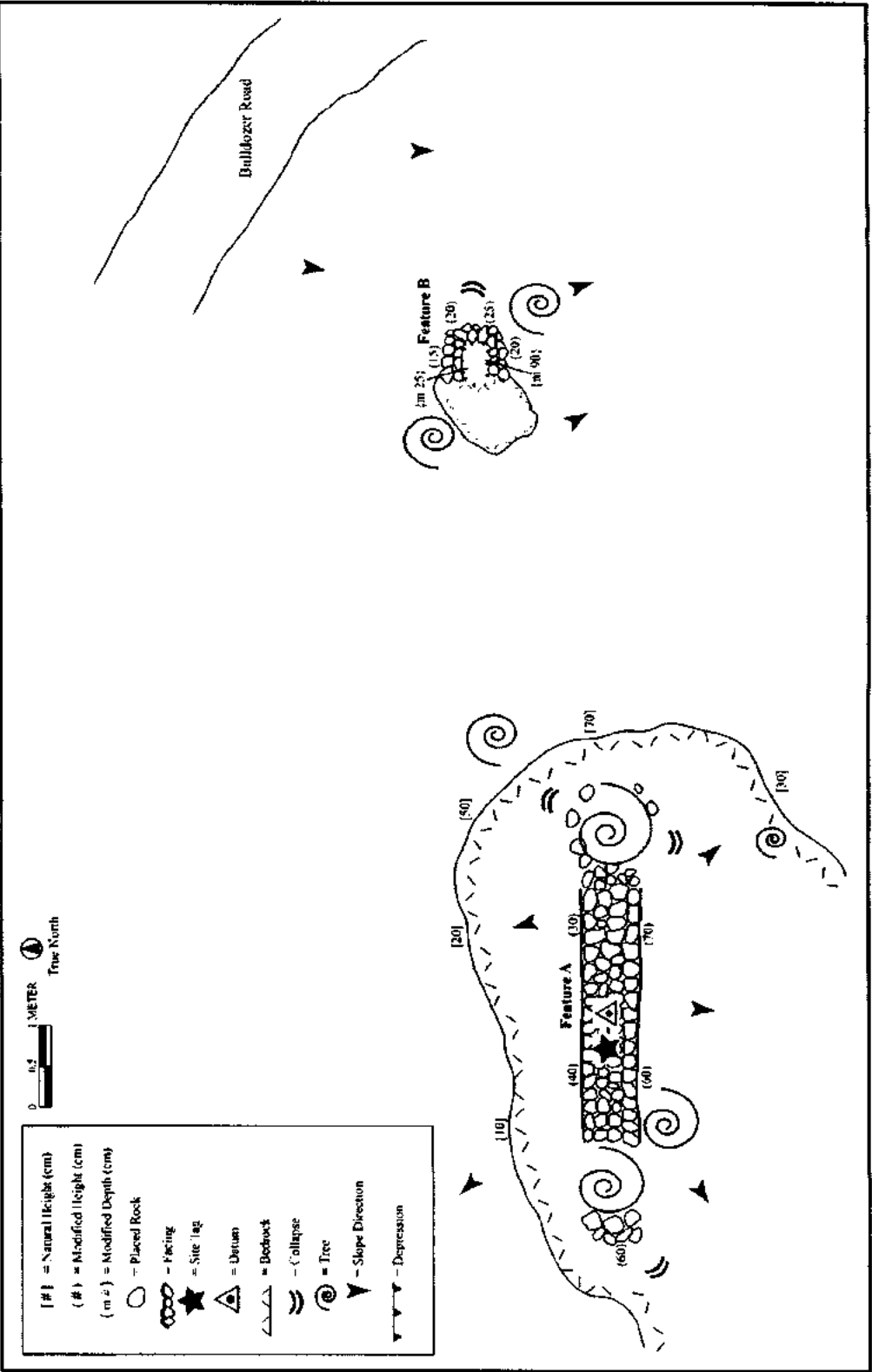


Figure 12 [sic]. Plan view map of CSH-6

CSH-7**SITE TYPE:** Trail**NUMBER OF FEATURES:** 1**TOPOGRAPHY:** Undulating**VEGETATION:** Hala, 'ōhi'a, kī, uluhe, waiawī, bing-a-bing, maile pilau, guava, mango, octopus tree, Kosters curse**ELEVATION:** 76 ft amsl**CONDITION:** Fair**INTEGRITY:** Disturbance from surrounding vegetation**PROBABLE AGE:** Early Historic**FUNCTIONAL INTERPRETATION:** Transportation**DIMENSIONS:** 15.0 m (NE/SW) by 1.0-1.5 m (NW/SE) by up to 0.4 m high (along curbstone alignments)

DESCRIPTION: CSH-7 is a trail remnant situated approximately 60 m south of CSH-4 in Area A at KMR (see Figure 1, Figure 4 and Figure 15). The trail is located in a densely-vegetated area of undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions.

Both edges of the trail are lined with alignments of basalt cobbles, making this a Class B curbstone trail (Apple 1965). The center of this trail is slightly depressed, probably due to compression of its surface from regular use. Numerous trees are present within and surrounding the trail alignment. The extant portion of the trail is 15 m long (NE/SW). Of this total length, 10 m is 1.5 m wide (SE/NW); a 5.0 m section at the western end narrows to 1.0 m wide. The curbstone alignments measure from 0.2 to 0.4 m high.

No artifacts or cultural deposits were observed in the vicinity. CSH-7 functioned as an historic transportation route, and was likely constructed in the 1830s or 1840s. Given its close proximity and age, the trail may be associated with CSH-4. It is also possible that this trail remnant may be in fact be an isolated remnant segment of the previously-documented SIHP #50-10-35-23273 trail; it trends in generally the same direction, is in the vicinity, and exhibits similar construction. These potential associations can only be inferred, as the trail becomes unrecognizable beyond its documented limits. It likely continued in either direction as a simple, unmarked path over the ridges of outcrops that are common in this area. The trail is in fair condition. Despite disturbance from surrounding vegetation, it retains integrity of location, design, setting, workmanship, and feeling.

Seg. Site	Temp ID	Consultant	District	Aliquots	TMK (3) 2-1-123	Date Assigned	Formal Site Type	Site Function	USGS Quad Namefile	Number of Features	Shape	UTM Datum/Zone	Easting	Northing
50-10-99-18869	CSH-003 (Newly identified segment)	Hudson (1932), McEldowney (1978), CSH (2000 and 2013)	South Hilo	Waialea	TMK (3) 2-1-013.10 (Newly identified segment)	8/28/2013 (newly identified section)	Trail	Transportation	Hilo (1985) (Portion in KMR)	1	linear	NAD 83/Zone 5N	287295	2179484
50-10-35-21771	(New features initially grouped under CSH 006)	Tolson and Godby 2001, CSH 2013	South Hilo	Waialea	TMK 2-1-123	New coordinates assigned 9/8/2013	Complex	Historic habitation/work areas/ agriculture/ indeterminate	Hilo (1985)	Total 12 4 features found by Tolson and Godby 2001 (originally numbered 1 to 4, CSH has renamed them as Features A to D). CSH 2013 documented 8 new additional features (E to L)	irregular	NAD 83/Zone 5N	Feature A: 0286750; Feature B: 0286748; Feature C: 0286753; Feature D: 0286757; Feature H: 0286784	Feature A: 2180019; Feature B: 2178976; Feature C: 2179579; Feature D: 2179577; Feature H: 2180052
	CSH-001	CSH	South Hilo	Waialea	TMK (3) 2-1-013.10	9/24/2013	Lava Tube	Temporary Habitation	Hilo (1985)	1	linear	NAD 83/Zone 5N	287333	2179237
	CSH-002	CSH	South Hilo	Waialea	TMK (3) 2-1-013.10	8/27-28/2013	Complex	Temporary Habitation, Activity Area, Shelter, Possible Agriculture	Hilo (1985)	3	irregular	NAD 83/Zone 5N	Feature A: 0287295; Feature B: 0287288; Feature C: 0287295	Feature A: 2178312; Feature B: 2179326; Feature C: 2179289
	CSH-004	CSH	South Hilo	Waialea	TMK (3) 2-1-012.3	9/5/2013	Complex	Temporary Habitation	Hilo (1985)	5	irregular	NAD 83/Zone 5N	285993	2180055
	CSH-006	CSH	South Hilo	Waialea	TMK (3) 2-1-012.3	9/9/2013	Complex	Indeterminate	Hilo (1985)	2	irregular	NAD 83/Zone 5N	286171	2180085
	CSH-007	CSH	South Hilo	Waialea	TMK (3) 2-1-012.3	8/17/2013	Trail	Transportation	Hilo (1985)	1	linear	NAD 83/Zone 5N	285977	2179693

Sarah Wilkinson

From: Sean.P.Naleimaile@hawaii.gov
Sent: Thursday, February 06, 2014 10:16 AM
To: Sarah Wilkinson
Subject: Re: Site Number Request

Here you go..

50-10-35-30038

30038 CSH-3 CSH South Hilo Waiakea TMK (3) 2-1-013:10 8/28/2013 Tr

Sean P. Naleimaile
 Hawai'i Island Archaeologist
 State Historic Preservation Division
 (808)933-7651

State Historic
 Preservation
 Division



From: "Sarah Wilkinson" <swilkinson@cultural-surveys.com>
 To: "Sean P. Naleimaile" <sean.p.naleimaile@hawaii.gov>;
 "Theresa K. Donham" <thkdonham@hawaii.gov>
 Sent: 02/06/2014 03:37 PM
 Subject: Site Number Request

Aloha e Sean,

We've decided that we need another site number for a feature found during our AIS at KMR in Hilo. Please see the attachments.

Thanks!!

Sarah

Sarah Wilkinson
 Cultural Surveys Hawai'i, Inc.
swilkinson@cultural-surveys.com
 office (808)965-6478
 cell (808)756-8968
 fax (808)965-6582

[attachment "SIHP Site No Request WAIAKEA 10_CSH-3.doc" deleted by Sean P Naleimaile/DLNR/StateHIUS] [attachment "Site# Request Spreadsheet - WAIAKEA 10_CSH-3 Trail.xls" deleted by Sean P Naleimaile/DLNR/StateHIUS]

STATE HISTORIC PRESERVATION DIVISION**PRELIMINARY SITE INFORMATION FORM
FOR REQUESTING HAWAII STATE INVENTORY OF HISTORIC PLACES
(SIHP) NUMBERS**

(revised 4/30/08)

Instructions: Submit this completed .doc with attached USGS map, TMK map (with site location(s) plotted on both) and site Plan(s). In addition, please fill out the .xls site data form and include with submission. Email the request to your island's SHPD.

Total SIHP #'s being requested: 1**Date: 2/5/14****Firm/Agency:** Cultural Survey's Hawai'i, Inc.**PI:** Hallett H. Hammatt, Ph.D.**Island:** Hawai'i**Ahupua'a:** Waiākea**District:** South Hilo**Project Area size (acreage):** A 405.3 acre portion of the overall parcels**TMK(s):** (3) 2-1-012:003; (3) 2-1-013:010**Owner/Developer:** The Hawai'i Army National Guard (HIARNG)**Address:** Hawaii Army National Guard, ENV Office
Kristine Macdonald, Cultural Resources Specialist
3949 Diamond Head Road
Honolulu, HI 96816-4495

Site Description: Include (attach) a description of each historic property that will be designated by a site number. Include individual descriptions of features and/or components of the site, measurements, etc., and any other relevant information gathered to date.

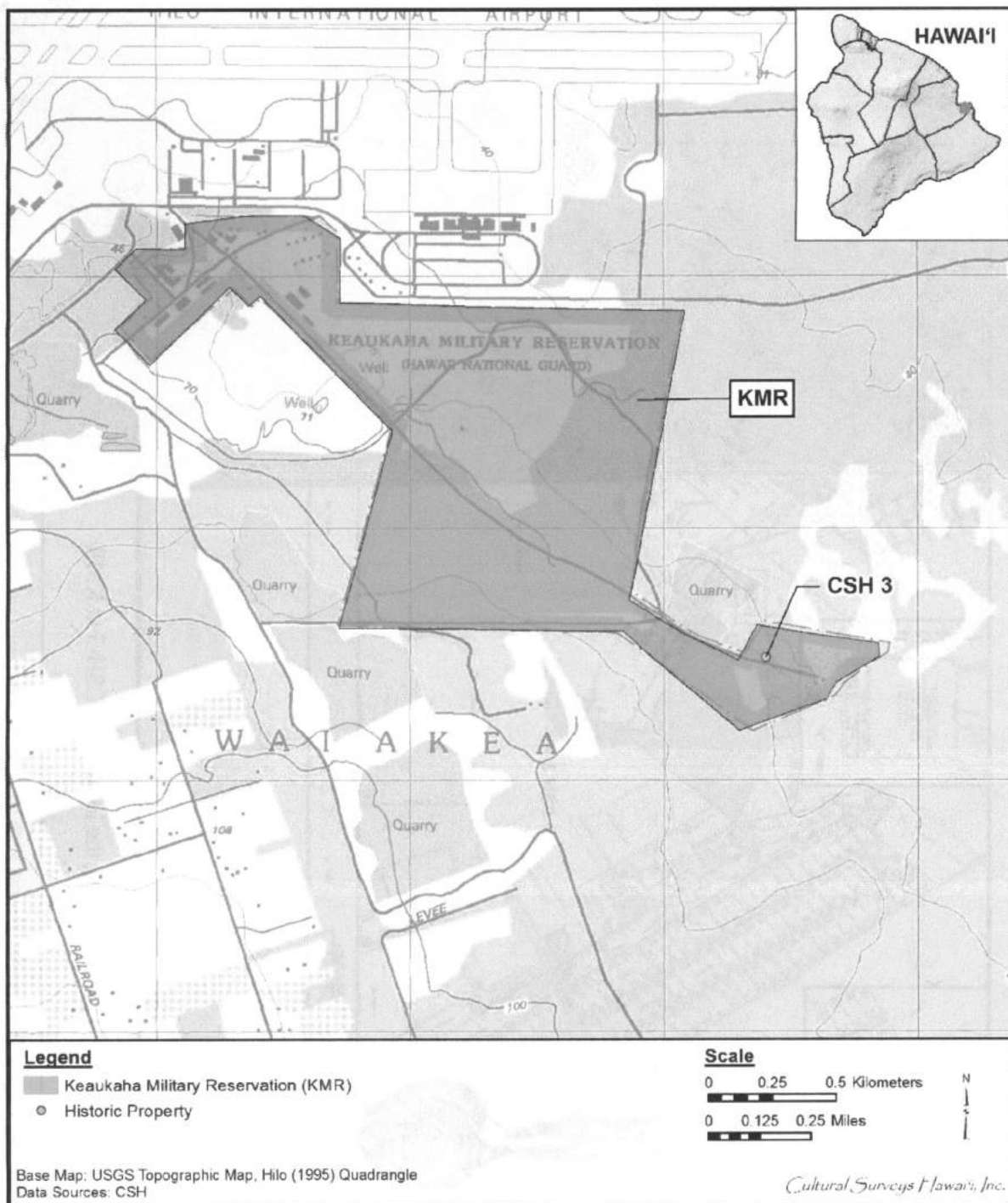


Figure 1. Portion of the 1995 U.S. Geological Survey 7.5-minute Topographic Map, Hilo Quadrangle, showing the location of CSH-3 along the Jeep trail/Puna Trail alignment (SIHP 50-10-99-18869) at KMR

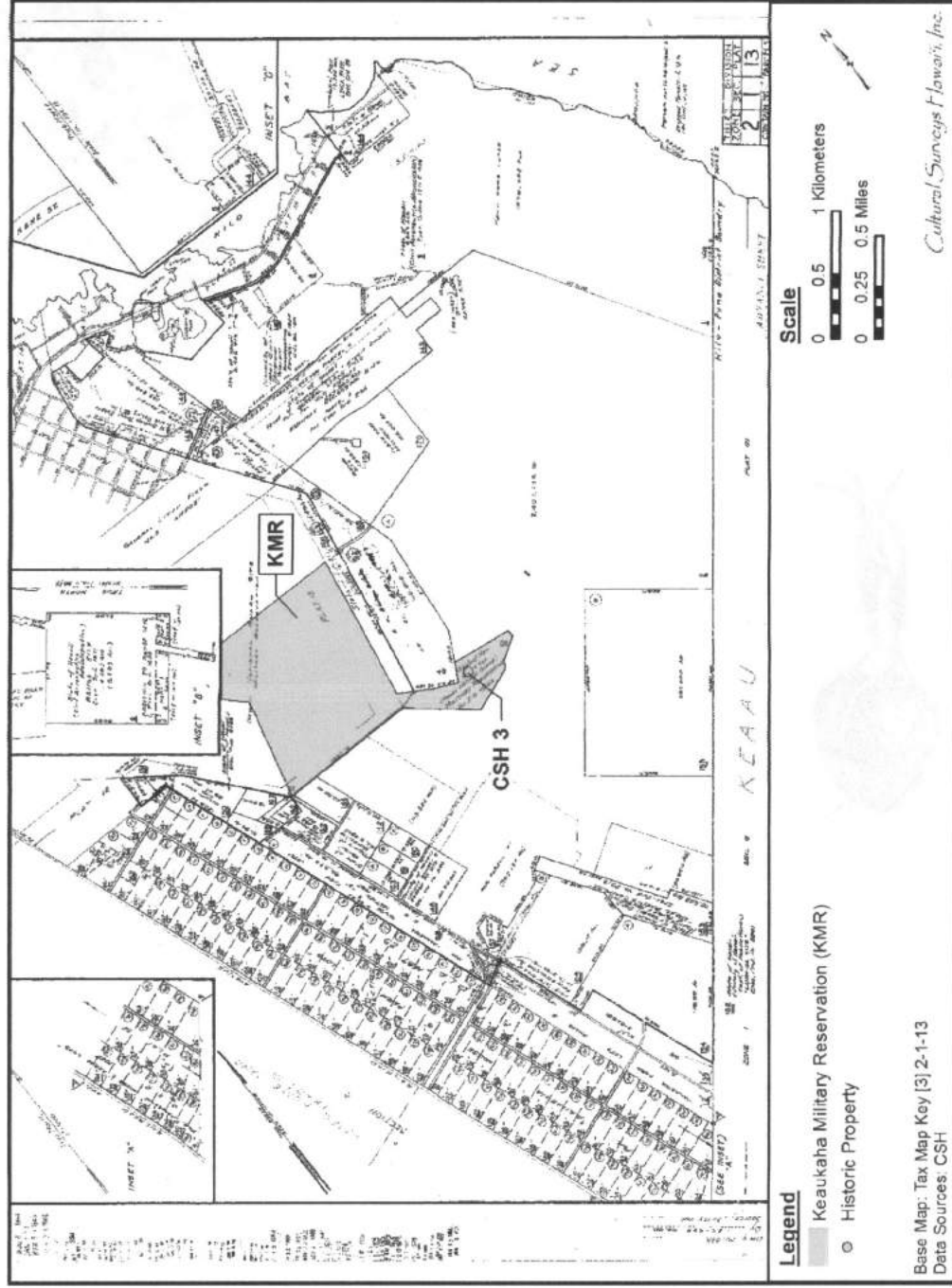


Figure 3 [sic]. Tax Map Key [3] 2-1-013 showing the location of CSH-3 at KMR

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiākea, South Hilo, Hawai'i Island

TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

TEMPORARY SITE NUMBER: CSH-3

SITE TYPE: Trail

NUMBER OF FEATURES: 1

TOPOGRAPHY: Undulating with numerous voids

VEGETATION: 'Ōhi'a, hala, uluhe, bing-a-bing, maile pilau, autograph tree, guava, mango, octopus tree, Koster's curse

ELEVATION: 65 ft amsl

CONDITION: Poor to remnant

INTEGRITY: Disturbance from dense vegetation and bulldozing related to nearby Range development

PROBABLE AGE: Late nineteenth century

FUNCTIONAL INTERPRETATION: Transportation

DIMENSIONS: 22 m in length (E/W) by 2.3 m wide (N/S)

DESCRIPTION: A remnant trail segment was identified parallel to the modern Jeep trail/Puna Trail alignment (SIHP # -18869) near a disturbed area adjacent to the KD #2 Range. The east-west trending segment is situated approximately 15.0 m north of the Jeep trail (see Figure 1, Figure 3 and Figure 4) in an area of uneven pāhoehoe flow and dense vegetation.

The fairly level surface of the trail is comprised of compressed and worn 'a'ā cobbles. The sides of the trail are defined in places by alignments of neatly placed (and in some places stacked) basalt cobble curbstones. The curbstone alignments are spaced up to 2.3 m apart (north/south), rising 0.35 m above the interior trail surface and 0.20 m to 0.40 m above the exterior surface. The alignments are generally 0.50 m wide, making the overall width of the trail up to 3.30 m (north/south). Only a 7.5 m portion of this trail segment is curbed on both sides. The southern curb could be traced for approximately 22.0 m (east/west), while only 7.5 m of the northern curb remain. The western end of the trail has been bulldozed, likely when the area adjacent to the KD #2 Range was cleared. At the eastern terminus the trail meets a small linear depression and disappears, possibly as a result of erosion.

No artifacts or cultural deposits were observed in the vicinity. Given its location directly adjacent and parallel to the modern alignment of the Puna Trail, this segment is interpreted as an extant portion of the historic Puna Trail alignment, which was believed to be completely obliterated by the modern Jeep trail. It therefore dates to the late nineteenth century, when the pre-Contact trail was improved through this area. Overall, the trail segment is in poor to remnant condition, due mainly to the bulldozer disturbance at the western terminus and the surrounding dense vegetation. Excavation potential is poor considering the limited prospect for new information about the Puna Trail. Despite its disturbed condition, this segment of the historic Puna Trail retains integrity of location, design, setting, workmanship, and feeling.



Figure 3. Photograph of CSH-3, view to east

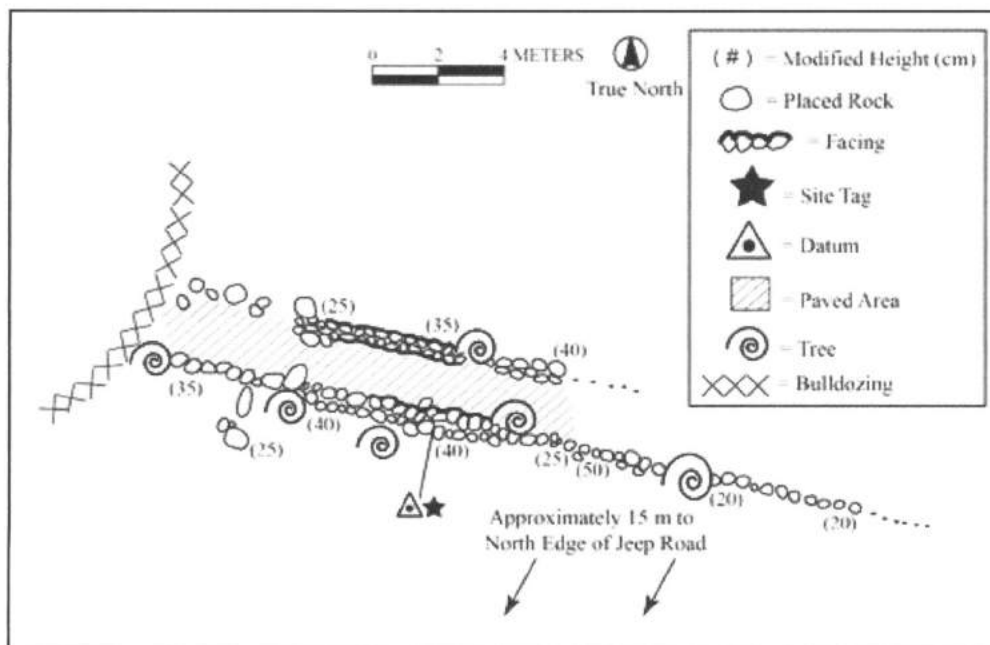


Figure 4. Plan view map of CSH-3

Site	Temp ID	Consultant	District	Alahele	TMK (d) x-x-xx-xx	Date Assigned	Formal Site Type	Site Function	USGS Quad Name/No.	Number of Features	Shape	UTM Datum/Zone	Easting	Northing
CSH-3	CSH	CSH	South Hilo	Waiakea	TMK (3) 2-1-013:10	8/28/2013	Trail	Transportation No. 35	Hilo (1985) Quad	1	Linear	NAD 83/Zone 6N	287298	2179484

AIS, Phase I, KMR Hawai'i Army National Guard Facility, Waiakea, South Hilo, Hawai'i Island
 TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010



PLANNING DEPARTMENT
STATE OF HAWAII

2015 JAN 23 PM 2:17

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In The Matter Of The Petition of	)	DOCKET NO. SP14-404
)	
JAS. W. GLOVER, LTD	)	ORDER REMANDING SPECIAL
	)	PERMIT SP14-404 TO THE
For A Special Permit for Quarrying and	)	COUNTY OF HAWAII
Other Support Services and Accessory Uses	)	WINDWARD PLANNING
on 85.34 Acres of a 140.368- Acre Parcel	)	COMMISSION; CERTIFICATE
Owned by Kamehameha Schools and	)	OF SERVICE
Located Within the State Agricultural)	
District, East of the Hawai'i National Guard)	
Site and Hilo International Airport, and)	
3,000 Feet West of the County of Hawaii)	
Sewer Treatment Plant;)	
TMK: (3) 2-1-013: 004 (por).)	

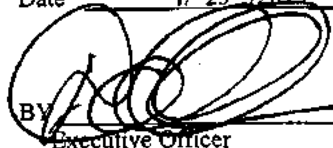
ORDER REMANDING SPECIAL PERMIT SP14-404 TO THE COUNTY OF HAWAII
WINDWARD PLANNING COMMISSION

AND

CERTIFICATE OF SERVICE

THIS IS TO CERTIFY THAT THIS IS A TRUE AND
CORRECT COPY OF THE DOCUMENT ON FILE IN THE
OFFICE OF THE STATE LAND USE COMMISSION,
HONOLULU, HAWAII.

Date 1/ 23 /2015

BY 
Executive Officer

Planning Dept.
Exhibit 7

096516



LAND USE COMMISSION
STATE OF HAWAII

2015 JAN 23 A 10:43

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In The Matter Of The Petition of)	DOCKET NO. SP14-404
)	
JAS. W. GLOVER, LTD)	ORDER REMANDING SPECIAL
)	PERMIT SP14-404 TO THE
For A Special Permit for Quarrying and)	COUNTY OF HAWAII
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on 85.34 Acres of a 140.368- Acre Parcel)	COMMISSION; CERTIFICATE
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Located Within the State Agricultural)	
District, East of the Hawai'i National Guard)	
Site and Hilo International Airport, and)	
3,000 Feet West of the County of Hawaii)	
Sewer Treatment Plant;)	
TMK: (3) 2-1-013: 004 (por).)	

ORDER REMANDING SPECIAL PERMIT SP14-404 TO THE COUNTY OF HAWAII
WINDWARD PLANNING COMMISSION

AND

CERTIFICATE OF SERVICE



LAND USE COMMISSION
STATE OF HAWAII

2015 JAN 23 A 10:43

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In The Matter Of The Petition of	)	DOCKET NO. SP14-404
)	
JAS. W. GLOVER, LTD	)	ORDER REMANDING SPECIAL
	)	PERMIT SP14-404 TO THE
For A Special Permit for Quarrying and	)	COUNTY OF HAWAII
Other Support Services and Accessory Uses	)	WINDWARD PLANNING
on 85.34 Acres of a 140.368 Acre Parcel	)	COMMISSION
Owned by Kamehameha Schools and)	
Located Within the State Agricultural)	
District, East of the Hawai'i National Guard)	
Site and Hilo International Airport, and)	
3,000 Feet West of the County of Hawai'i)	
Sewer Treatment Plant;)	
TMK: (3) 2-1-013: 004 (por).)	

ORDER REMANDING SPECIAL PERMIT SP14-404 TO THE COUNTY OF
HAWAII WINDWARD PLANNING COMMISSION

On November 20, 2014, the State Land Use Commission ("LUC") met in Kahului, Hawai'i, to consider and deliberate on the application for a Special Permit for quarrying and other support services and accessory uses on approximately 85.34 acres of a 140.368 acre parcel owned by Kamehameha Schools located within the State Land Use Agricultural District, at Hilo, Hawai'i,

1

Docket No. SP14-404 Jas. W. Glover

Order Remanding Special Permit SP14-404 To The County of Hawai'i Windward Planning Commission

identified as TMK (3) 2-1-013:0004 (por).¹ Roy A. Vitousek III, Esq., and Michael Pearing, appeared on behalf of the Jas. W. Glover Ltd. LLC ("Applicant"). William Brilhante, Esq., on behalf of the County of Hawai'i Planning Department.

At the hearing, the LUC heard public testimony from Clare Apana,² and OP.

Following the receipt of public testimony, the parties provided oral argument. Applicant's representative, Mr. Vitousek, represented that the Applicant was agreeable if the LUC decided to remand the permit application for clarification and further proceedings regarding matters raised in correspondence from Lt. Colonel Stubbert of the Hawai'i Army National Guard about historic site findings and property line discrepancies near the permit area. Mr. Brilhante, Hawaii County's representative, stated that he had been unaware of the letter

¹ On 8/1/14, the LUC received Hawai'i County Windward Planning Commission's Decision and Findings for the establishment of a quarry site described in the Special Permit application and on 11/14/14, the LUC received Petitioner's Memorandum in Support of Approval of Special Permit, Exhibits 1-4. On 11/18/14, the LUC received correspondence from Lt. Colonel Marjean R. Stubbert, Construction and Facilities Management Officer, Hawai'i Army National Guard regarding historic site findings and property line discrepancies near the permit area. On 11/19/14, the LUC requested copies of the Final Archaeological survey and monitoring plan for the Keaukaha Military Reservation and any boundary surveys be sent to the Applicant's representative, the State Office of Planning ("OP") and the LUC. On 12/5/14, the LUC received the Final Archaeological Inventory Survey and Monitoring Plan Phase I and boundary surveys from the Hawai'i Army National Guard.

² Ms. Apana shared her opinion that the LUC should hold meetings on the same island where the agenda item is located.

from Lt. Colonel Stubbart until Mr. Vitousek advised him of it on the morning of the LUC meeting, and had not had a chance to discuss it with the Hawaii County planner assigned to this application.

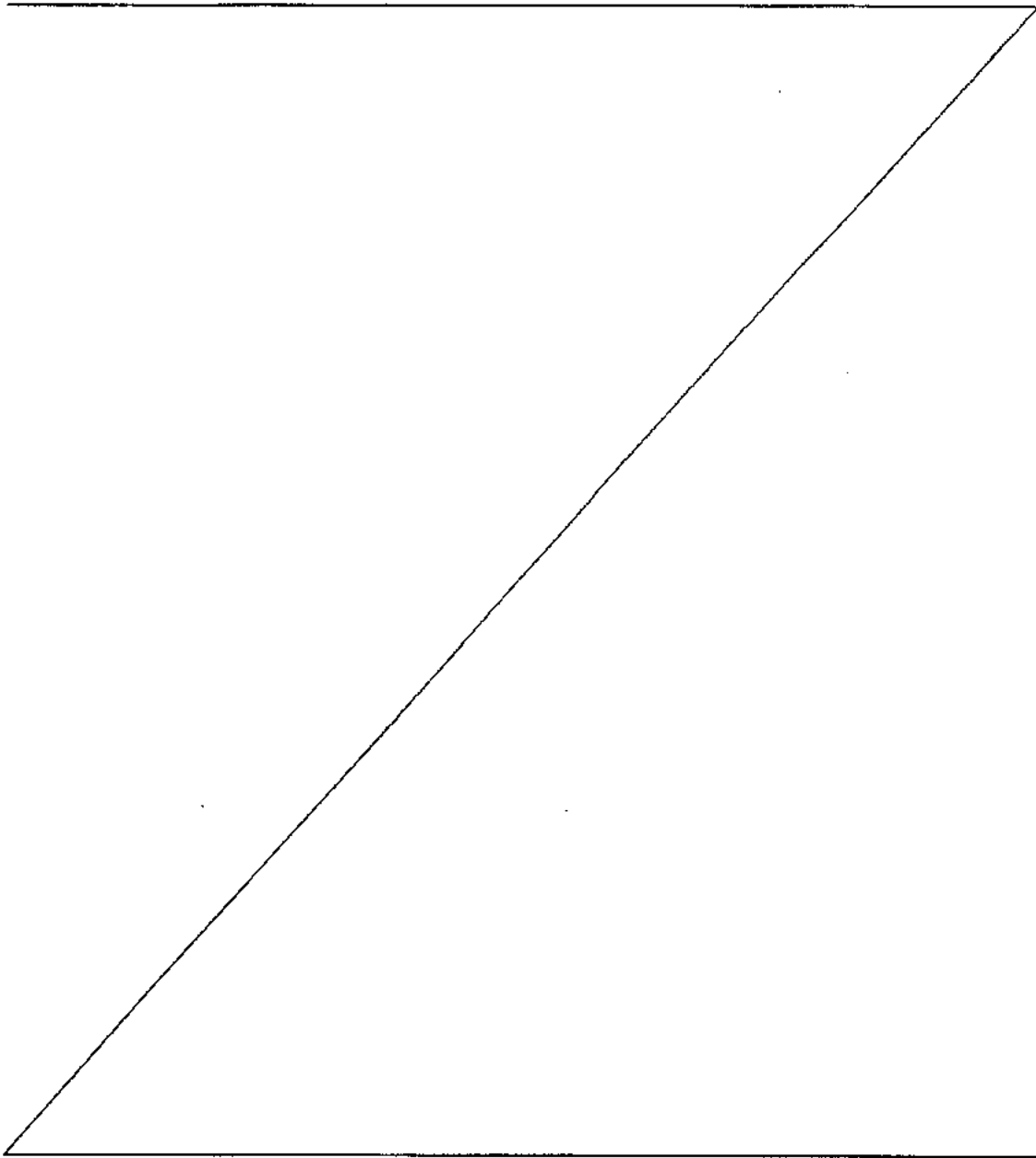
Following discussion, a motion was made and seconded to remand Special Permit No. SP14-404 to the Hawai'i County Windward Planning Commission with the expressed purpose of considering information received from the Hawai'i Army National Guard regarding new historic site findings and boundary discrepancies with the permit area and modifying the Decision and Findings as appropriate.

ORDER

The LUC, having duly considered the written and oral arguments presented by the Applicant, and Hawai'i County, and a motion having been made and seconded at a meeting on November 20, 2014, in Kahului, Maui, Hawai'i, and the motion having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the motion,

HEREBY ORDERS that Special Permit SP14-404 be REMANDED to the Hawai'i County Windward Planning Commission for the expressed purpose of considering information received from the Hawai'i Army National Guard

regarding new historic site findings and boundary discrepancies with the permit area and modifying the Special Permit as appropriate.



ADOPTION OF ORDER

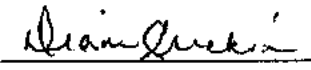
This ORDER shall take effect upon the date this ORDER is certified by this Commission.

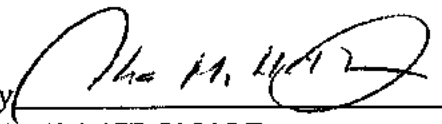
Done at Honolulu, Hawai'i, this 23rd, day of January, 2015, per motion on November 20, 2014.

LAND USE COMMISSION

APPROVED AS TO FORM

STATE OF HAWAII

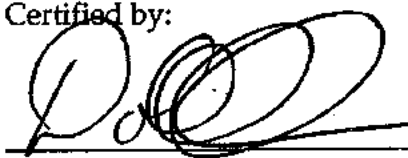

Deputy Attorney General

By 
CHAD MCDONALD
Chairperson and Commissioner

Filed and effective on:

January 23, 2015

Certified by:


DANIEL ORODENKER
Executive Officer



LAND USE COMMISSION
STATE OF HAWAII

2015 JAN 23 A 10:43

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In The Matter Of The Petition of	)	DOCKET NO. SP14-404
)	
JAS. W. GLOVER, LTD	)	CERTIFICATE OF SERVICE
)	
For A Special Permit for Quarrying and)	
Other Support Services and Accessory Uses)	
on 85.34 Acres of a 140.368- Acre Parcel)	
Owned by Kamehameha Schools and)	
Located Within the State Agricultural)	
District, East of the Hawai'i National Guard)	
Site and Hilo International Airport, and)	
3,000 Feet West of the County of Hawaii)	
Sewer Treatment Plant;)	
TMK: (3) 2-1-013: 004 (por).)	
_____)	

CERTIFICATE OF SERVICE

I hereby certify that an ORDER REMANDING SPECIAL PERMIT SP14-404 TO THE COUNTY OF HAWAII WINDWARD PLANNING COMMISSION was served upon the following by either hand delivery or depositing the same in the U.S. Postal Service by regular or certified mail as noted:

CERTIFIED MAIL: ROY A. VITOUSEK III, Esq.
CADES SCHUTTE
75-170 Hualalai Road, Suite B-303
Kailua-Kona, HI 96740-1737
Petitioner Representative

DEL.: LEO ASUNCION, Acting Director
State Office of Planning
P. O. Box 2359
Honolulu, Hawai'i 96804-2359

REGULAR BRYAN C. YEE, Esq.
MAIL: Deputy Attorney General
425 Queen Street
Honolulu, Hawai'i 96813
Attorney for State Office of Planning

REGULAR William V. Brilhante, Jr., Esq.
MAIL: Office of the Corporation Counsel
County of Hawaii
Hilo, Hawai'i 96720
Attorney for the Planning Director, County of Hawaii

REGULAR Duane Kanuha, Director
MAIL: Department of Planning
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720

REGULAR Myles Miyasato, Chairman
MAIL: Windward Planning Commission
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720

Dated: Honolulu, Hawai'i, January 23, 2015

A handwritten signature in black ink, appearing to read 'D. Orodanker', written over a horizontal line.

DANIEL ORODENKER

Executive Officer



January 30, 2015

JAS. W. GLOVER, LTD.

GENERAL CONTRACTORS

License No. ABC-3

PLANNING - ENVIRONMENT

2015 JAN -2 PM 2:12

Marjean R. Stubbett
Lieutenant Colonel, Hawaii Army National Guard
Construction and Facilities Management Officer
Department of Defense
Office of the Adjutant General
State of Hawaii
3949 Diamond Head road
Honolulu, Hawaii 96816-4495

Subject: SP14-404 Jas. W. Glover (Hawaii)
Special Use Permit Amendment Application No. SPP 14-000162
To Establish New Quarry
Jas. W. Glover, Ltd.
South Hilo, Hawaii
Tax Map Key: (3) 2-1-013:004 (por.)


Dear Lt. Col. Stubbett,

Thank you for your comments in your letter dated November 18, 2014 to Mr. Daniel E. Orodener, Executive Officer, State of Hawaii Land Use Commission regarding our Special Use Permit Application. We offer the following in response to your concerns about the project site:

1. Quarrying activities such as proposed have been conducted on the subject parcel since at least the 1960's. We presently hold four active Special use Permits for quarrying on properties located within the 140 acre+ parcel. Our quarrying activities include the use of buffer zones on the perimeter of our quarry sites and we will maintain that practice on future quarrying activity under the new permit.
2. We are aware of the property line discrepancy at the southeast corner of the property and we will not commence any quarrying activity in this area until the matter is resolved.
3. We comply with all federal, state, and county regulations including those pertaining to environmental management and hazardous reporting and these reports are all in the public record.

Thank you again for reviewing our application. Should you or any of our staff have any questions, please feel free to contact me at 808-935-0871.

Sincerely,


Byron Fujimoto
Vice President

cc: Daniel E. Orodener, State of Hawaii Land Use Commission.
Maija Cottle, County of Hawaii Planning Dept.

Planning Dept.
Exhibit 8

096889

Honolulu
P.O. Box 579 • Honolulu, HI 96809
tel (808) 591-8977 • fax (808) 591-8978

Hilo
890 Leilani Street • Hilo, HI 96720
tel (808) 935-0871 • fax (808) 931-9237

Kona
P.O. Box 4116 • Kailua-Kona, HI 96745
tel (808) 329-4113 • fax (808) 328-6017

Lihue
P.O. Box 1929 • Lihue, HI 96766
tel (808) 245-3608 • fax (808) 246-6209

An Equal Opportunity Employer

2016 APR 8 AM 10:47

PLANNING DEPARTMENT
COUNTY OF HAWAII

Transmittal Memorandum

TO : Windward Planning Commission
County of Hawaii

FROM : Roy A. Vitousek III

DATE : April 8, 2016

RE : TMK: (3) 2-1-013: 004
Special Permit Application SPP 14-000162
Applicant: Jas. W. Glover, Ltd.

Hand Delivered to West Hawaii Office

We are sending you the following:

ORIG.	COPIES	DATED	DESCRIPTION
1	15	February 2016	Glover Hilo Quarry <i>Ka Pa'akai</i> Discussion by ASM Affiliates

- ☐ For your information
- ☐ For your files
- ☐ Per your request
- ☐ Per our conversation
- ☒ For necessary action
- ☐ Are returned herewith

- ☐ For signature and return
- ☐ For signature, forwarding,
as noted below & return
- ☐ For review & comment
- ☐ For distribution
- ☐ For recording/filing

REMARKS: Please call our office with any questions. Thank you.

SCANNED

APR 7 2016

By: ~~104729~~

C S

Cades Schutte Building
1000 Bishop Street, Suite 1200
Honolulu, Hawaii 96813
Tel: 808.521-9200
Fax: 808.521-9210
www.cades.com

Kona Office
75-170 Hualalai Road, Suite 8-303
Kailua Kona, Hawaii 96740
Tel: 808.329-5811
Fax: 808.326-1175

Planning Dept.
Exhibit 9

GLOVER HILO QUARRY
Ka Pa‘akai Discussion

February 2016

Teresa Gotay, M.A.
Robert B. Rechtman, Ph.D.
ASM Affiliates

Jas. W. Glover, Ltd. intends to expand their existing Glover Hilo Quarry Property to include an additional 85.34 acres within a 140 acre parcel of Kamehameha Schools Bishop Estate land (TMK: (3) 2-1-013:004) located in the 'ili of Honohononui of Waiākea Ahupua'a, South Hilo District, Island of Hawai'i (Figure 1). Jas. W. Glover, Ltd. has been leasing portions of the parcel and carrying out quarrying operations since the early 1960s. Currently, four Special Permits for quarrying operations covering roughly 55 of the 140 acres are still active, and Jas. W. Glover plans to conduct quarrying operations (quarrying aggregate and rock for use in construction) on the remaining portions of the property that are not covered under the existing Special Permits. Jas. W. Glover must obtain approval from the County of Hawai'i Planning Commission, the Windward Planning Commission, and the State Land Use Commission (LUC) in order to secure a Special Permit for quarrying operations that will include the proposed 85.34 acre expansion.

Article XII, Section 7 of the Hawai'i Constitution obligates the State and its agencies, such as the LUC, "to protect the reasonable exercise of customarily and traditionally exercised rights of native Hawaiians to the extent feasible when granting a petition for reclassification of district boundaries." (*Ka Pa‘akai O Ka‘āina v Land Use Commission*, 94 Hawai'i 31, 7 P.3d 1068 [2000]). Under Article XII, Section 7, the State shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by *ahupua'a* tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights. In the context of land use permitting, these issues are commonly addressed when the LUC is asked to approve a petition for the reclassification of district boundaries, as such an action most often initiates activities that precede initial intensive development. While the approval of a Special Use Permit for quarrying operations does not involve the reclassification of any lands, Jas. W. Glover thought it prudent to provide a discussion of such rights to facilitate the Special Use Permit decision making processes for both the County Planning Commission, the Windward Planning Commission, and the LUC.

In the September 11, 2000 Hawai'i Supreme Court landmark decision (*Ka Pa‘akai O Ka‘āina v Land Use Commission*), an analytical framework for addressing the preservation and protection of customary and traditional native practices specific to Hawaiian communities was created. The court decision established a three-part process relative to evaluating such potential impacts: first, to identify whether any valued cultural, historical, or natural resources are present; and identify the extent to which any traditional and customary native Hawaiian rights are exercised; second, to identify the extent to which those resources and rights will be affected or impaired by the proposed action; and third, to specify the feasible action, if any, to be taken by the regulatory body to reasonably protect native Hawaiian rights if they are found to exist.

In an effort to identify whether any valued cultural, historical, or natural resources are present within the proposed project area, and identify the extent to which any traditional and customary native Hawaiian rights are, or have been, exercised (the first part of the analytical process); historical archival information was investigated, and prior cultural studies that included consultation and oral-historical interviews were reviewed. A summary of this analysis is presented below.

The legendary account of Ka-Miki, as translated from the Hawaiian Language newspaper *Ka Hōku o Hawai'i* by Kepā Maly, states that the district of Hilo was traditionally divided into three distinct 'okana (sub-districts; Maly 1996). The current project area, falls within the traditional 'okana of Hilo Hanakahi (Hilo of the chief Hanakahi), which extended from the Wailoa River to include Keaukaha and all of Waiākea Ahupua'a as well. Hilo Hanakahi was one of the larger population centers on the Island of Hawai'i. The population was sustained by the abundant marine resources of Hilo Bay, extensive spring-fed fishponds that also supported water fowl, and wetland and dryland agricultural resources. According to historical accounts published by Handy and Handy (1972) dry taro was planted wherever there was enough soil in the lava fields of Waiākea, on the slopes between the rivers. This rich land also served as one of Hawai'i Island's royal seats with chiefly residences that lasted up through the time of Princess Ruth Ke'elikōlani in the 1870s (Kelly et. al. 1981; Cordy 2000).

The rainy environs of Hilo Hanakahi were also known to many throughout the Hawaiian Islands as shown in the following translated excerpt from an 1877 Hawaiian language newspaper article:

... Hilo Hanakahi is known for its torrential downpours, and this is but six of the rains of the area: 1) Kanilehua, 2) Alanilehua, 3) Hāiaulani, 4) Mololani, 5) Lanipili, and 6) Lanipolua. There is no other wahi pana in the whole archipelago that is as proud of its copious rain and its charming names. Most of the rain names are related to the lehua, the chirping of birds, living conditions, and the atmosphere where the rains originate. . . There are a lot of other rains, but these are the main ones of Hilo. (in EKF 2012: 44-45)

Sometime during the A.D. 1400s, the island's *moku* (districts) were divided into distinct land units known as *ahupua'a* (Kirch 1985). *Ahupua'a* were ideally long wedge-shaped slices of land that incorporated all of the eco-zones from the mountains to the sea and several hundred yards beyond, which afforded their inhabitants unlimited access to a diverse subsistence resource base (Cordy 2000). Of the twenty plus *ahupua'a* that make up the Hilo district, only two approach this ideal including Waiākea, where the current study area is located. Waiākea, one of the largest *ahupua'a* in all the Hawaiian Islands, stretches from the eastern shores of Hilo Bay up the slopes of Mauna Kea to an elevation of 6,000 feet and is markedly broader than its neighboring *ahupua'a* to the north (Figure 2).

According to Pukui et al. (1974:220) the name Waiākea literally translates as "broad waters", which is likely a reference to the bays and freshwater streams and rivers that water this land. However, Maly mentions that *waiākea* "is also a native variety of taro, similar to the better known *lehua*" (1996:4), which may refer to the agricultural resources of the region. Maly also provides the following translation of ethnographic notes taken by Theodore Kelsey that explain how the *ahupua'a* of Waiākea was established:

Kapapala and Waiakea were sub-chiefs who were told by their superior to run around the tracts of land bearing their names (from Tom Cook, surveyor) (BPBM SC Kelsey Box 1.5, July 2, 1921:2 in Maly 1996:6)

Kelsey also recounted that "Waiākea was so named 'because you could dig any where [sic] and find water'" (Maly 1996:6). Maly also offers the following origin for the name of the subject *ahupua'a*,

The lands of Waiākea were named for the high chief Waiākea-nui-kumuhonua, the brother of Pi'ihonua-a-ka-lani [k] and Pana'ewa-nui-moku-lehua [w]. (Maly 1996:11)

The large land area of Waiākea was divided into several smaller land units, which included three 'ili *kūpono* or independent land divisions that owed tributes directly to an *ali'i nui* (high chief) rather than to the *ali'i-'at-ahupua'a* (chief who controlled the *ahupua'a* resources). The current project area is located in the 'ili *kūpono* of Honohononui; the two other 'ili *kūpono* within the *ahupua'a* of Waiākea are Makaokū and Pi'opi'o (EKF 2012). As previously mentioned, Waiākea served as a chiefly residence beginning in the 16th century. However, chiefly activity was focused far from the current project area, along the western side of the Wailoa River, within and around Pi'opi'o (Kamakau 1961; Cordy 2000).

Pukui et al. offer the following literal translation for the 'ili name Honohononui, "much honohono grass" (1974:48). Interestingly, *honohono* or wandering Jew (*Commelina diffusa*) a creeper that grows along the edges of the inland ponds is a non-native plant, introduced during the Historic Period. However, another native plant *Haplostachys haplostachya*, an endangered scentless mint that prefers a dry environment, is also known as *honohono*. The Honohononui land unit extends inland from the Keaukaha shoreline and terminates adjacent to the eastern boundary of the Keaukaha Military Reservation, covering an area of over 400 acres, all of which are owned by Kamehameha Schools Bishop Estate. Early maps of the 'ili of Honohononui illustrate that during the Precontact and early Historic Periods the *makai* portion of the current project area may have been covered in *kala* trees (*Pandanus tectorius*), while the *mauka* portion of the current project area included the *makai* edge of the 'ōhi'a (*Metrosideros polymorpha*) forest labelled Pana'ewa Woods (Figure 3).

By the seventeenth century, the six *moku* of Hawai'i Island were controlled by a few powerful *ali'i 'ai moku*. There is island-wide evidence to suggest that growing conflicts between independent chiefdoms were resolved through warfare, culminating in a unified political structure at the district level. 'Umi a Liloa, a renowned *ali'i* of the Pili line who ruled from Waipi'o Valley, is often credited with uniting the island of Hawai'i under one rule (Cordy 1994). According to Kamakau (1961) 'Umi's conquest began with his defeat of the Hilo chiefs and that his reign lasted until around ca. A.D. 1620, and was followed by the rule of his son, Keawenui a 'Umi, who ruled Hamakua, Pana, and Hilo from his royal residence in Hilo. 'Umi's descendants continued to rule until Alapa'inui, a descendant of the Mahi family of Kohala, conquered the island in the early 1700s (Cordy 2000).

After Kalani'ōpu'u died in 1782, his son Kiwala'o ruled until his death, upon which the rule of Hawai'i was divided between three rulers. The sacred half-brother of Kalani'ōpu'u, Keawemauhili (Keawe), ruled over Hilo and Hamakua and resided in Hilo; Kalani'ōpu'u's son and Keawe's nephew, Keōuakū'ahu'ula (Keōua), ruled over Ka'u and resided there; while Keawe's nephew and Keōua's cousin, Kamehameha, ruled over Kohala and Kona (Maly 1996). Around 1790, Keōua murdered his uncle Keawe and divided the lands in Hilo District between the chiefs and warriors; then in 1791, Keōua was murdered and the Hilo lands of Waiākea, Punahoa, and Pi'opio became Kamehameha's personal land holdings (ibid.). Another account, recorded by Kamakau mentions Pana'ewa during the period that Kamehameha fought to bring the island of Hawai'i under his rule. Kamehameha and some of his warriors were travelling from Ka'u to meet his fleet near Hilo, "As he was descending, just out of Pana'ewa at a place called Pua'aloa, he met the war party of Ka-hekili. . ." (Kamakau 1961:125) and a brutal battle ensued, but Kamehameha survived. Another interesting account mentions Waiākea, recorded by I'i:

... A skilled leader whose name I have forgotten said to Keoua Kuahuila, son of Kalaniopu'u and half brother of Kiwalao, "Perhaps you should go to the chief and ask that these lands be given us. Let Waiākea and Keau be the container from whence our food is to come and Oiaa the lid." (1963:14)

Certainly the parallel drawn between Waiākea and a food container in the above excerpt is a testament to the bounty of marine and agricultural resources in the vicinity of the project area in Precontact Hawai'i. While Honohonou is located proximate to the lands in these stories, it receives no specific mention suggesting that it was peripheral to the areas and events described.

Marking the end of the Precontact Period, Hawaiians' first significant encounter with Europeans occurred in 1778 when Captain James Cook and his crew on board the ships *H.M.S. Resolution* and *Discovery* arrived in Kaula. With the arrival of foreigners, Hawai'i's culture and economy were drastically altered. Demographic trends during this period indicate population reduction in some areas, due to war and disease, yet increases in others, with relatively little modification of material culture. There was a continued trend toward craft and status specialization, intensification of agriculture, *ali'i* controlled aquaculture, upland residential sites, and the enhancement of traditional oral history. The Kū cult, *luakini heiau*, and the *kapu* system were at their peaks, although Western influence was already altering the cultural fabric of the Islands (Kirch 1985; Kent 1983). Foreigners very quickly introduced the concept of trade for profit, and by the time Kamehameha I had conquered O'ahu, Maui and Molokai, in 1795, Hawai'i saw the beginnings of a market system economy (Kent 1983). This marked the end of an era of uniquely Hawaiian culture. Some of the work of the commoners shifted from subsistence agriculture to the production of foods and goods that they could trade with early visitors. Introduced foods often grown for trade with Westerners included yams, coffee, melons, potatoes, corn, beans, figs, oranges, guava, and grapes (Wilkes 1845).

Captain George Vancouver, an early European explorer who met with Kamehameha I at Waiākea in 1794, recorded that Kamehameha was there preparing for his invasion of the neighbor islands, and that Hilo was an important center because his *Peleleu* fleet of 800 canoes were being built there (Moniz n.d.; Tolleson and Godby 2001). The people of Hilo had long prepared for Kamehameha's arrival and collected a large number of hogs and a variety of plant foods, to feed the ruler and his retinue. Kelly et al. (1981) surmised that the people of Hilo had actually prepared for a year prior to Kamehameha's visit and expanded their fields into the open lands behind Hilo to accommodate the increased number of people that would be present. It was during this early Historic Period that Waiākea Ahupua'a became part of Kamehameha I's personal land holdings (Moniz n.d.).

In 1797, Liholiho (Kamehameha II) was born in Hilo, he would grow up to play a pivotal role in Hawaiian history. In May of 1819, Kamehameha died in Kona and his young son Liholiho assumed rule over the kingdom. In concert with Kamehameha's widows Ka'ahumanu and Keōpūolani, Liholiho abolished the ancient religion and quelled a rebellion to reinstate the traditional *kapu* system in December of 1819. In October of 1819, seventeen Protestant missionaries set sail from Boston to Hawai'i and arrived in Kailua-Kona on March 30, 1820, to a country in religious turmoil. William Ellis, one of the first missionaries to arrive in Hawai'i, spent five days in Waiākea in 1823; he

described it as a well-watered place, with some of the heaviest rains and densest fog he had encountered on the island (Ellis 1963). Ellis estimated that a population of 2,000 residents inhabited nearly 400 houses scattered among the breadfruit trees and coconut palms along Hilo Bay and were fortunate to have well-stocked fishponds, fertile soil, and the proximity of timber forest (Cordy 2000).

At the end of the 1830s, industrial development was on the rise in nearby Hilo, despite the decline in whaling and the end of the sandalwood trade. In a letter written in 1840, Reverend Titus Coan remarked on the conditions in Hilo:

Industry is increasing. Our ports and places of trade begin to put on the air of activity and life. Temporal improvements and comforts are fast increasing at Hilo, that is, near the station. Two stores of goods are opened here, and three sugar-mills have recently gone into operation near us. Sugar-cane is being planted to a considerable extent; business assumes more tone and energy, and many of the people are approximating towards industry and competence. Probably the amount of cloth worn by the people has increased ten or twenty fold during four years past. Labor is in better demand and wages are rising continually. (Kelly et al. 1981:49)

A period of great social change in Hilo began with the aforementioned arrival of the first missionaries to Waiākea in 1823 and ended in 1848 with the formal land division known as the Great *Māhele*. The introduction of new spiritual concepts combined with an increased involvement in international trade and global politics lead to a shift in settlement patterns from traditionally dispersed Hawaiian villages to more concentrated urban population centers. Then, on November 7, 1837 at 7 p.m. a *tsunami* wave hit nearby Hilo Bay. Shortly thereafter, Hilo became the site of a large scale religious revival that lasted from 1837 until 1840 and included mass conversions and meetings of up to 10,000 worshippers. Other events that had a profound effect on the demography of Hilo were the measles epidemic of 1848, which claimed one third of the population of the island, followed by an outbreak of smallpox in 1853; later outbreaks of plague and leprosy caused the population to dwindle even further (McEldowney 1979).

Historically, the entire *ahupua'a* of Waiākea, including the project area, was treated as personal land by Kamehameha I and passed on to his son Liholiho prior the Great *Māhele* in 1848. Waiākea was later inherited by chiefess Kaunūhūa, a grand-daughter of Keawe who later relinquished the *ahupua'a* during the *Māhele* (Maly 1996). As a result of the *Māhele*, Waiākea *Ahupua'a* was set aside as Crown Lands for Kauikesouli (Kamehameha III). In addition, only twenty-five *kuleana* were awarded throughout Waiākea *Ahupua'a*, the majority of which were located along Hilo Bay and *makai* of the current project area. No *kuleana* were awarded within or in close proximity to the current project area.

During the *Māhele 'Aina*, the '*ili kīpono* of Honohononui was an *ali'i* award to Kamehameha I's granddaughter, Victoria Kamāmalu (LCAw. 7713:15; Royal Patent Grant 4475 to Victoria Kamāmalu). Kamāmalu died in 1866 at the age of 27 without a written will, as a result her father Mataio Kekuanao'a inherited her landholdings, which eventually passed to her half-sister Ruth Ke'elikōlani who, in turn, willed them to Bernice Pauahi Bishop. It was in this way that the '*ili kīpono* of Honohononui became part of the lands of the Bishop Estate and Kamehameha Schools.

In the decades following the *Māhele* of 1848, much of the *mauka* lands in Waiākea were leased for ranching and sugar interests. Sugarcane cultivation had a profound impact on Waiākea *Ahupua'a*. The declining population of Waiākea began to increase as a result of the industrial and economic growth brought about by the sugar industry (Wolforth 2007). By 1857, there were three sugar mills producing sugar for export in the Hilo area. With the Kingdom-wide economic depression that occurred as a result of the U.S. whaling fleet pulling out of the Hawaiian Islands in 1859, the focus of commercial cultivation shifted from general agriculture to sugarcane (McEldowney 1979). The 1860s saw an increase in the appropriation of land by foreigners for commercial sugar cultivation. By 1874, "Hilo ranked as the second largest city in the islands, as a result of its central position in the rapidly expanding and intensified sugar industry at Waiākea" (McEldowney 1979:39).

An article written by a resident of Keaukaha, W.K. Lawellilili Jr., published in the May 29, 1880 edition of the Hawaiian language newspaper *Ko Hawaii Pae* (later translated by Mary Kawena Pukui) describes the lands of Honohonui in the late 1880s thusly:

Of Honohononui – This is a good land, it has plenty fish, and is a pleasant place to dwell, but it has no people. This land is at the north-west of Lokowaka. Just outside of this land is the pahoehoe (lava) semblance of seaweed (*limu kohu*) of a sweetheart embrace, amid the lipoa fragrance of mokiāhā, and just beyond it is the surf, ¼ mile from the shore. Anciently this was a celebrated land for the number of people, some 4,000, and this is the story of this land at that time: When the people of this place ate till satisfied, then covered the calabashes alike in all the houses, and at once the rattling was heard above Kaumana, over nine miles distant; and so also of Kaumana the closing of their calabashes was heard below (HEN Thrum #107 n.d.:2-3).

Lawelili's description of Honohononui suggests that the *'ili kūpono* once supported a substantial population, which by the late 1800s had largely abandoned the area. However, by 1901 nearby Hilo was the epicenter of sugar production and export on the island of Hawai'i. By 1918 the land cultivated for sugar reached 7,000 acres and fell under new homesteading laws that required the government to lease portions of it to individual homesteaders who would grow sugarcane in exchange (Kelly et al. 1981). These house lots, homesteads, and cane lots centered along present day Kīlauea Avenue and extended to the southwest of the current project area to the west of the Wailoa River, *mauka* of Hilo Town. Contractual and legal problems combined with the declining sugar market and the devastating *tsunami* of 1946 led the Waiākea Mill Company to cease operations in 1947.

The majority of the eastern portions of Waiākea, including Honohononui remained outside the region of sugar cultivation, most likely due to the shallow soils therein. However, portions of Honohononui located between the coast and Lyman field were used as pasture lands in the early 1900s; despite the underlying *pāhoehoe*, bunch grass grew enough for grazing. A 1919 Land Court survey map (No. 433) shows the extent of the lands of Honohononui, 470 acres, at that time (Figure 4). Historic accounts, such as the following excerpt from a 1922 Hawaiian newspaper (*Ka Nupepa Ku'oko'a*), tell of the ingenuity possessed by native Hawaiian farmers who planted the lava flows in the project area vicinity:

... Another way of doing this was to rot weeds where the soil was good and then carry them to fill the hollows made on the *pāhoehoe* and then plant whatever plants he chose. O my reader, the proofs of these are on Hawaii. There are the *pāhoehoe* lava beds walled in by the ancestors, in which sweet potatoes and sugar cane were planted and they are still growing today. Not only one or two but several times forty (*mau ka'au*) of them. The house sites are still there, not one or two but several times four hundred in the woods of Pana'ewa. (Handy and Handy 1972:131-132)

In 1914, the Territory of Hawai'i set aside roughly 213 acres of government land in eastern Waiākea known as the Keaukaha Military Reserve (KMR), located to the north of the current project area, to be used by the National Guard of Hawai'i as a rifle range (Escott 2013b). In 1923, the Territory withdrew 33 acres from the rifle range lands combined with an additional 100 acres of land in Keaukaha for use as an airfield. The construction and gradual expansion of General Lyman Field (Hilo International Airport) has had a significant impact on Honohononui. The *'ili* is now bisected by an extension of the airport's main runway, and Kekuanaoa Place, which extends along the southern edge of the airport property marks the northern boundary of the current project area (see Figure 1). Over time, particularly during the two world wars, KMR was expanded to cover over 500 acres, including an extensive stretch of land south and east of Honohononui. Currently, KMR has an armory, offices, barracks, support facilities, firing ranges and training areas and acts as the headquarters for two infantry battalions of the Hawaii National Guard and two Aviation Detachments of the Army Air Guard (*ibid.*). The lands of KMR have been the subject of the limited archaeological investigations in the vicinity of the current project area, the results of which will be summarized below.

Around 1921, the Bishop Estate began subdividing the coastal portion of Honohononui into residential lots through Land Court Action (LCA) No. 433. This LCA would have several iterations over the decades to come. By 1964, the current project area was identified as Lot 47-D-3-B (LCA 433 Map 13); and by 1999, as Lot 47-D-3-B-2 (LCA 433 Map 17), which can be seen in a 2014 survey map for the current proposed quarry expansion (Figure 5).

Soon thereafter the coastal area to the west of Honohononui was divided into residential lots for the native Hawaiians, which became the thriving Keaukaha Hawaiian Homes community. According to lifelong Keaukaha resident Rhea Akoi, the families of Keaukaha buried their loved ones within a system of inland lava tubes located where the Hilo Airport is now (Akoi 1989). It is likely that the majority of these lava tube burials were destroyed or sealed during the construction of the airport.

In 1955, Robert Yamada leased roughly 380 acres of Honohononui *mauka* of Kalaniana'ole Avenue, which extended south of the Hilo airport, for pasture land. In 1961, most of this land was chain dragged. Between 1965 and 1970, Yamada used the land as a place to stockpile sugar cane bagasse. In 1975, Yamada and sons reduced their lease to roughly 180 acres, which included nearly 150 acres for agriculture and about 30 acres for a quarry site. In that year most the leased lands were cleared using bulldozers and turned to pasture. In 1986, roughly 160 acres located *mauka* of Kalaniana'ole Avenue and north of the airport was leased by Frank Deluz for pasture.

Since the 1980s, several studies have been conducted that contain archaeological, cultural, and oral-historical information relevant to Waiākea Ahupua'a with a primary focus on the Hilo town area (Wolforth 2006 provides a detailed list of these studies). The earliest archaeological study conducted in the vicinity of the current project area was done in 1988. Paul H., Rosendahl Ph.D. Inc. (PHRI), conducted an archaeological reconnaissance survey (Rosendahl 1988) of a square 23-acre parcel and sewer line corridor for the then proposed Hilo Wastewater Treatment

Facility, located to the northwest of the current project area and southeast of Lyman field. No historic properties or cultural resources were encountered during that study.

As previously mentioned, several archaeological studies have been conducted within the lands of the KMR. Beginning in 1996, Cultural Surveys Hawai'i (CSH) conducted a selective archaeological reconnaissance survey (Devereux et al. 1997) of a 500-acre parcel within KMR. Portions of their survey area bordered the current project area to the west, south, and east. As a result of their study, two archaeological sites were identified; however, one of these was subsequently reinterpreted to be a modern bulldozer push pile. The other, temporary site CSH-1, is a C-shape enclosure located near a Jeep road interpreted to have been a temporary shelter. Devereux et al. suggested that the Jeep road may be a remnant of the old Puna Trail (SIHP Site 18869), and that the C-shelter may have been associated with this historic trail. In addition to the C-shape, Devereux et al. also recorded ten historic buildings associated with KMR. No further work was the recommended treatment for the historic buildings. However, they also recommended that a more intensive archaeological inventory survey be conducted within the undisturbed forested areas along what they believed to be the old Puna Trail alignment, located to the south of the current project area.

In 2000, CSH conducted a subsequent archaeological inventory survey (Hammatt and Bush 2000) of selected portions of KMR near the Puna Trail alignment. As a result of their revisit, they fully documented the previously identified C-shape as SIHP Site 21657 and interpreted it as military in origin. In addition, they identified two new sites: SIHP Site 21658 comprised of five *ahu* (rock mounds) interpreted as a location marker for a water source or temporary shelter; and SIHP Site 21659, a modified lava blister interpreted as a traditional Hawaiian agricultural feature. Hammatt and Bush also recorded a section of the previously recorded Puna Trail (SIHP Site 18869).

In 2001, Wendy L. Tolleson conducted limited data recovery (two test units) of SIHP Site 21771, located to the west of the current project area within KMR (Tolleson and Godby 2001). Site 21771 consists of four features (a platform, an enclosure, a possible *imu*, and a meadow) and was interpreted as dating to the late 1800s and associated with the construction and maintenance of the Puna Trail. Tolleson opines that the Puna Trail was widened from a foot trail to a Government Road during this time in order to accommodate horses and wagons.

In 2002, Scientific Consulting Services conducted an additional archaeological inventory survey (Escott and Tolleson 2002) of KMR. As a result of their study, four sites previously identified by Hammatt and Bush (2000) were recorded (SIHP Sites 18869 and 21657-21659). Also in 2002, PHRI conducted a 23-acre archaeological reconnaissance survey (Rosendahl 2002) located immediately west of the current project area and to the southeast of Lyman field. No historic properties or cultural resources were encountered as a result of that study.

In 2013, CSH conducted an archaeological inventory survey and prepared a monitoring plan (Wheeler et al. 2014) for KMR (TMKs: (3) 2-1-012:003, 131 and 2-1-013:010). As a result of their study, they identified eleven historic properties, five of which (SIHP Sites 18869, 21657, 21658, 21771, and 23273) were previously identified and six (SIHP Sites 30008-30012 and 30038), which were previously unrecorded. Wheeler et al. deemed all of the sites encountered as eligible for the National and Hawai'i Registers of Historic Places, with the exception of the portion of the old Puna Trail (Site 18869), whose lack of integrity as a result of modern impact rendered it no longer significant. The newly identified sites included the following: a lava tube shelter (Site 30008), a modified outcrop shelter (Site 30009) a five-feature complex associated with the Puna trail (Site 30010), a two-feature complex of unknown function (Site 30011), and two trails (Sites 30012 and 30038). The trail segment designated Site 30038 was interpreted as an intact remnant of the Puna Trail alignment and was assigned a separate site number because it diverts from the modern Jeep road alignment that had been assigned the earlier Puna Trail designation (Site 18869). No further work was recommended for seven of the eleven sites; while three of the sites were recommended for preservation through avoidance (Sites 21658, 21771, and 30038) and the remaining site (Site 30010) was recommended for subsurface testing.

Two previous archaeological surveys and one ethnohistorical study have been conducted within the 'ili of Honohono itself. The two prior archaeological surveys (Escott 2013a and 2013b) covered the entirety of the current project area between them. The findings of each study are presented in detail below.

In 2012, the Edith Kanaka'ole Foundation (EKF) prepared a comprehensive ethnohistorical study of Honohono for Kamehameha Schools Land Assets Division. This study included several oral history interviews with Keaukaha residents and others with strong familial ties to the Honohono area. The cultural information shared pertained mostly to the coastal portions of the 'ili, primarily because that is where the population was and is concentrated; however, their discussion of culturally significant places referenced the entire land unit. With respect to the more *mauka* areas of the 'ili *kūpono*, one informant, Leilani Aina Cleveland, did recall the following memory from her childhood, "... at the back of the house – about three miles more or less, there was a big forest with lots of Mountain Apples and Rose Apple trees and we used to go there and pick up the fruits – tasted so good" (Cleveland

2006 in EKF 2012: 91). While substantial cultural information was shared by the interviewees about the general area of Honohonou, no specific cultural places or practices were identified to exist or have taken place within the current project area or its immediate vicinity. As a part of their study, EKF offered a native perspective (with reference and structural tie to the *kumulipo*) with respect to potential land use practices within Honohonou that they suggest effect the groundwater (Moanalaha) water recharge cycle, which is a vital element to a healthy and productive environment, both physical and cultural. Specifically, they modeled that if native forest was restored within Honohonou, the annual recharge rate would increase and thus restore the viability of coastal ponds and off-shore reefs and associated fauna. As they relate:

The analysis of recharge indicated a higher influx of wai to the Moanalaha with a restoration that focuses on the establishment of native species. . . The general goal is to encourage native plant species, and a general decrease in areas having higher temperatures/evaporation and species that are high users of water through transpiration. In general, restoration options should be focused on the preservation of existing native forest or plant species—especially to limit the spread of non-native vines and other plants that change fundamental structures. Within the existing ‘ōhi‘a forests patches, encourage outgrowth into neighboring non-native forest stands. This is particularly prevalent in the southern half of the ‘ili kūpono near the gravel mines. Other opportunities exist within the open shrub/grassland communities to convert back to native forests . . .

In June of 2012, Scientific Consulting Services, Inc. (SCS) conducted archaeological fieldwork (Escott 2013a) in the southernmost fifty acres of the current project area (TMK: (3) 2-1-013:004 por.) for a then proposed 10.05-acre expansion of the extant quarry. As a result of the pedestrian survey no archaeological sites or features were observed within their study area. In addition, very little natural landscape was present in the project area as a result of past and ongoing quarrying activity. Escott summarized his field observations thusly,

Three quarters of the 50-acre parcel has been quarried in the past. Only the northeast corner of the project area is unaltered forest. The entire 50.0 acres were surveyed during the current study. At present, there are no cultural resources or modern structures on the study parcel.

In July of 2013, SCS conducted archaeological fieldwork in the northernmost portion of the current project area (TMK: (3) 2-1-013:004 por.) for the proposed expansion of the existing quarry (Escott 2013b). As a result of the roughly ninety-acre pedestrian survey, no archaeological sites or features were identified within the current project area. Escott summarized the terrain of the project area thusly:

Roughly one quarter of the project area is previously quarried ground surface. The remainder of the project area has north-south bulldozer cuts through it, or has been completely bulldozed in the past. (2013b:6)

Escott also included the following conclusion based on his review of previous archaeological studies within the vicinity of the current project area, all of which report a low site density:

The studies suggest that the lack of sites in this region is the result of the rugged and inhospitable landscape, having little fertile soil or arable land, being thickly forested, and subject to high rates of rainfall. (Escott 2013b:21)

Escott (2013b) goes on to suggest that although no cultural resources were identified within the project area, undiscovered archaeological features may exist within the limited previously undisturbed areas of thick vegetation. As a result he recommended that a qualified archaeological monitor be present during initial ground clearing and grubbing operations for the proposed expansion.

In August of 2015, Glenn G. Escott prepared a report that consisted of descriptions of four of the aforementioned previously recorded sites (SIHP Sites 21658, 30008, 30009, and 30038) located in closest proximity to the current study area, within the adjacent KMR property. According to Escott, “The sites are located between 100 and 300 meters southeast of the existing Glover quarry boundary and between 300 and 600 meters southeast of the proposed quarry expansion project area boundary” (2015:1).

The current project area comprises the *mauka* portion of the ‘ili of Honohonou, including the lands west of the Keaukaha Military Reservation and south of Lyman Field. The land of Honohonou has been subjected to intensive ground disturbing activities associated with use as cattle pasture, particularly *makai* of the airport while the current project area has been subject to quarrying activities for over fifty years. Evidence of quarrying and other land disturbing activities are clearly illustrated in aerial photographs (Figure 6). At present, the land located adjacent to the current project area are zoned as agricultural and/or light industrial and consist of a landfill and transfer station, a sket

range, vacant State-owned lands, and existing quarries. Ground cover within the current project area is dominated by bare land with some areas of forest and scrubland vegetation.

A review of historic maps reveals the existence of what many refer to as the Old Puna Trail located near the southern boundary of the current project area. The 1901 tracing of an 1851 Hawai'i Register Map reproduced in Figure 3 shows a small segment of a "Road to Puna" clearly marked outside of the southern boundary of Honohononui. While Map 001 of the 1919 Land Court Application 433 reproduced in Figure 4 shows a road alignment clearly marked as "Old Puna Road" along the outer edge of the southern boundary of Honohononui. However, neither depiction shows the extent of the Road to Puna or Old Puna Road beyond the current project area in either direction. What appears to be the same alignment can be seen in a 1932 USGS topographic map marked as "Puna Trail" (Figure 7), which extends northwest to the Hilo Airport and southeast into Puna District. This same alignment is depicted as an unnamed trail in 1954 and 1959 USGS maps (Figure 8), which leads south to Kea'au and continues along the coast until just south of Māku'u where it becomes a graded road at Waiakahiula but also splits towards Pāhoa Junction. The same unnamed trail also appears on a 1961 map; however, by 1963 an unnamed unimproved dirt road, which terminates at a point roughly 350 beyond the current project area (Figure 9), has taken the place of the unnamed trail alignment. By 1981, the unimproved dirt road has become a light-duty road (Figure 10), which occupies the same alignment as in the 1963 map (see Figure 9).

The various iterations of the Road to Puna/Puna Trail alignment as seen in the Historic maps reproduced in the current discussion suggest a Historic origin for the trail with subsequent modifications over the passing decades. It appears that portions of the Puna Trail fell into disuse, with the exception of the northernmost portion, which largely falls within the KMR in close proximity to the current project area. As previously mentioned, in 1914 the National Guard began using the nearby KMR as a rifle range and by 1925, a portion of the KMR was developed into an airfield. The National Guard appears to have used the former Puna Trail alignment as an access road, which facilitated access across the entire KMR property. Today the road through KMR, which extends to the south just outside of the current project area still bears the name "Puna Trail".

Upon collective review of the prior cultural, archaeological, and historical studies, it appears that transportation-related sites such as trails and temporary shelters along with resource collection and burial areas are the archaeological features and traditional cultural places most commonly identified the general project area vicinity. Such sites and places are highly valued and culturally significant and can contribute to our understanding of Hawaiian resource procurement, travel, settlement patterns, and social organization. While a possible remnant of the historic Puna Trail appears to lie just outside of the current project area, archaeological investigations (Escott 2013a, 2013b) found no evidence of trails or any other archaeological features or burial areas within the current project area. Likewise, the extensive cultural/oral historical study of Honohononui conducted by the Edith Kanaka'ole Foundation (EKF 2012) did not identify any specific valued natural or cultural resources with the current project area. The EKF study did point out the importance of maintaining a balanced environment from a cultural perspective, with respect to "natural" environmental zones and the water recharge cycle, specifically, maintaining a proper proportion of native forest to attract and trap precipitation. However, by design their study was focused on a single land unit within a larger landscape, and it is within this larger landscape of Waiākea Ahupua'a, Hilo Hanakahi, and the South Hilo District that the consideration of environmental balance should be considered.

Given the culture-historical background presented above combined with the results of prior archaeological and cultural/oral-historical studies conducted specific to Honohononui as well as within the greater Waiākea/Hilo Hanakahi area, it is the finding of the current analysis that there are no specific valued cultural, historical, or natural resources present; nor are there any traditional and customary native Hawaiian rights being exercised within the current project area. The more than fifty year history of intensive land use within and adjacent to the current project area also supports this conclusion.

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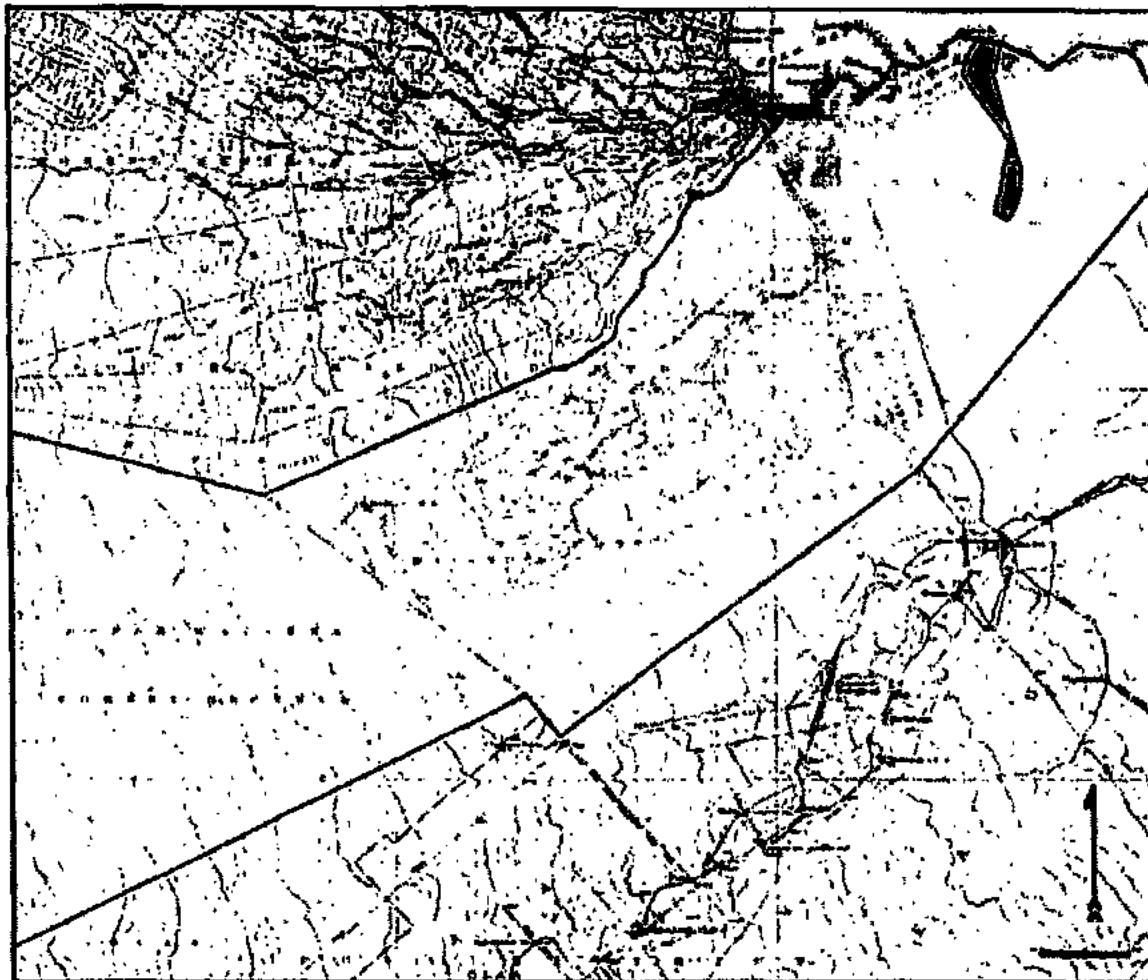


Figure 2. 1932 USGS Hilo quadrangle with Waiākea Ahupua'a shaded grey, Honohonoūi shaded red, and project area outlined in green.

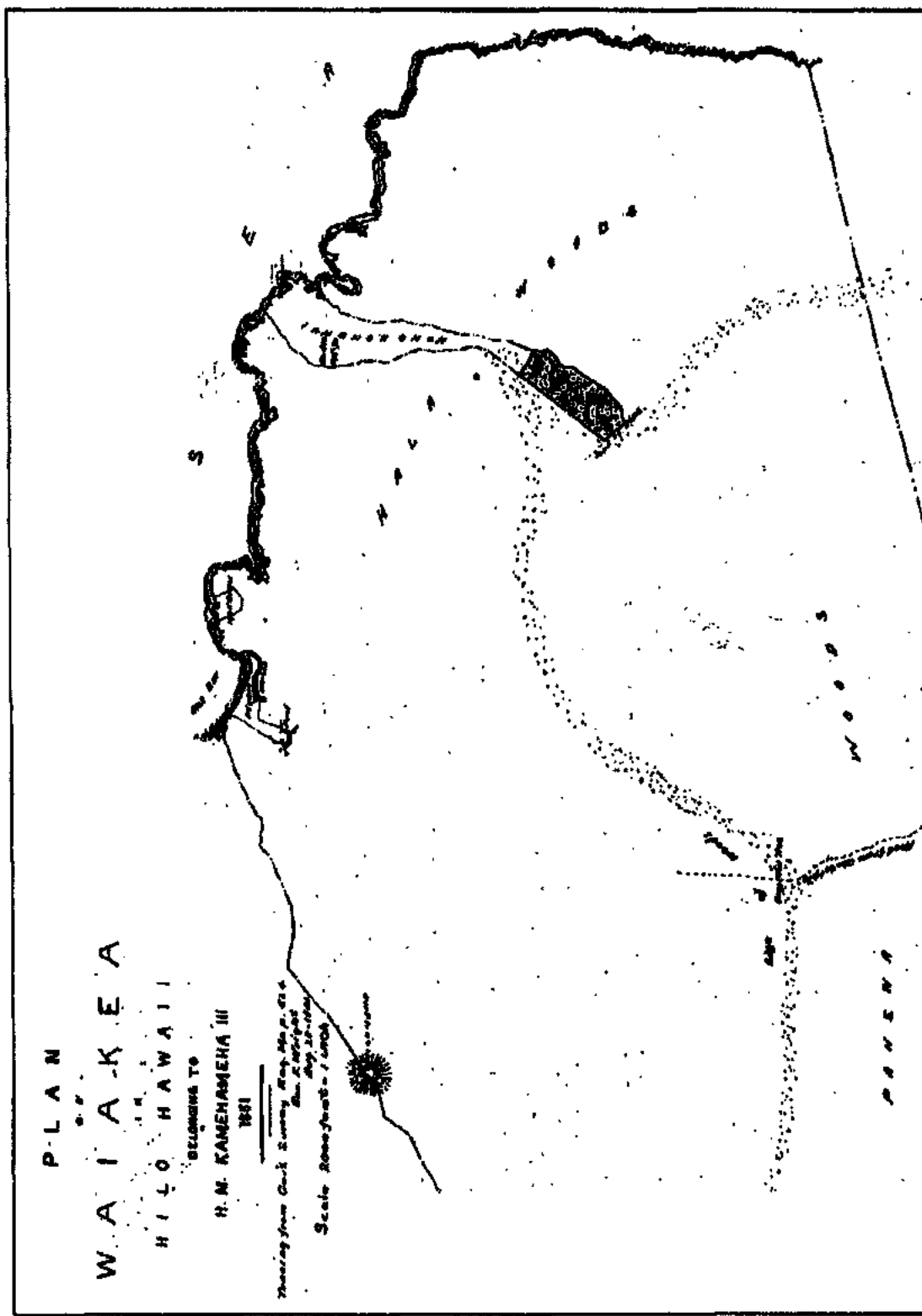


Figure 3 1901 tracing of 1851 Hawai'i Register Map No. 524 showing the current project area shaded red and illustrating the extent of Hala forest and Pena'ewa forest in Honohonou and the Pena trail just south of the project area.

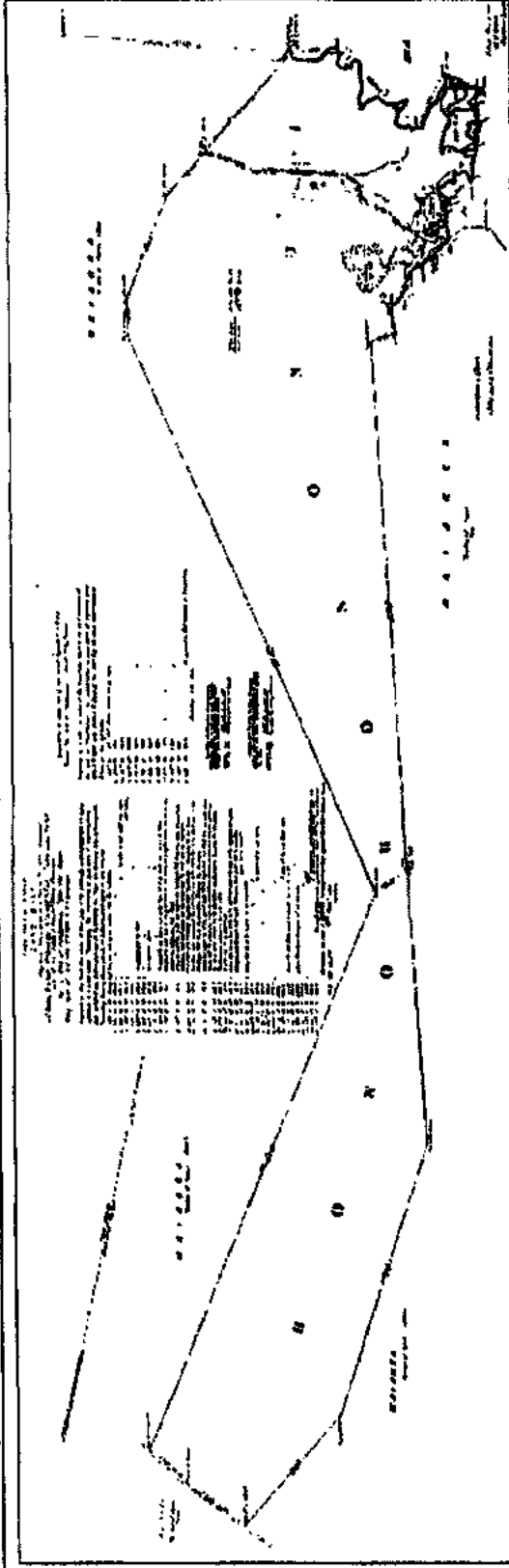


Figure 4 Land Court Application Map for Petition No. 433 showing LCAw. 7713:15 (the 'Id' Appraisal of Hancock) ca. 1919

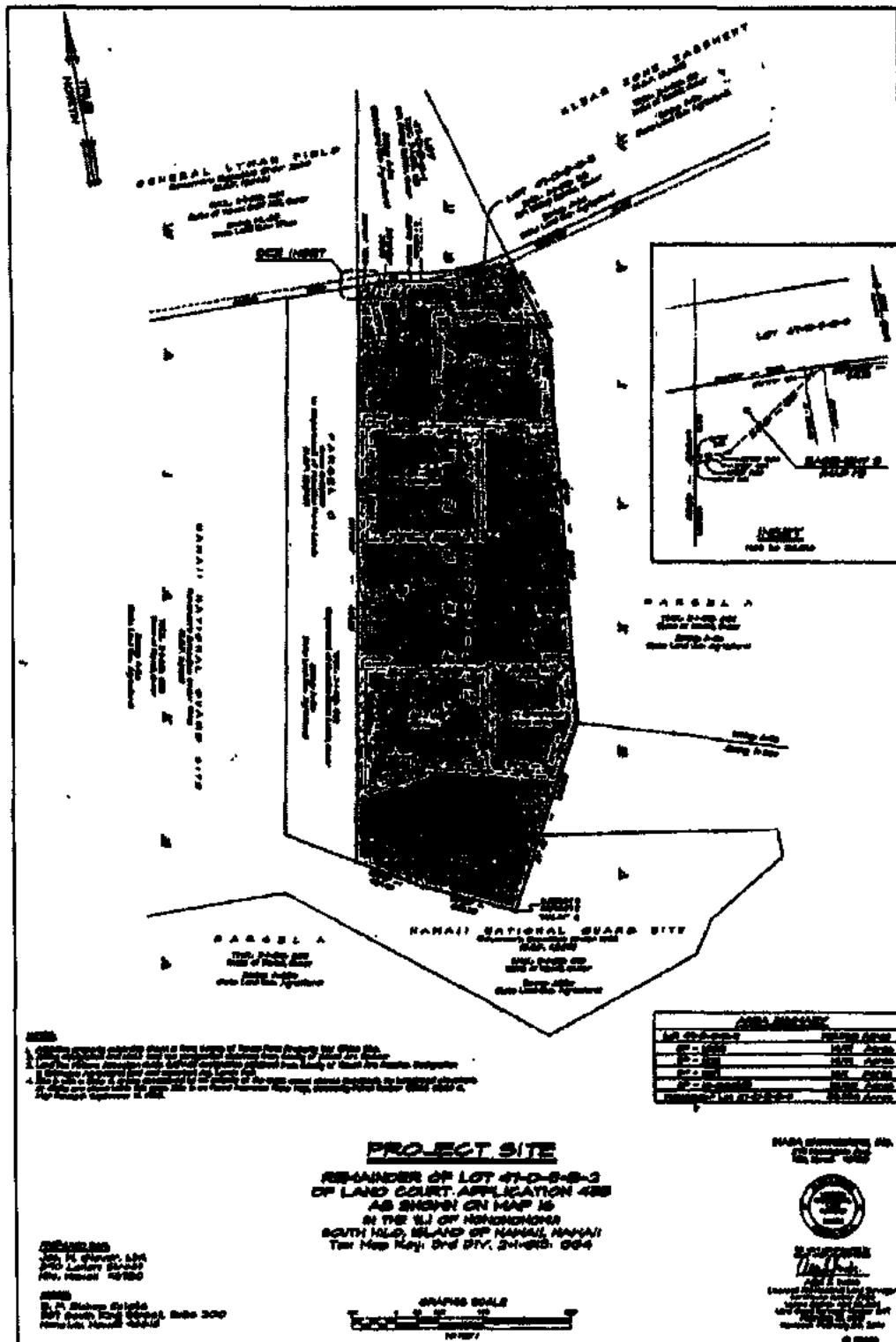


Figure 5. 2014 survey map showing current study area shaded red.

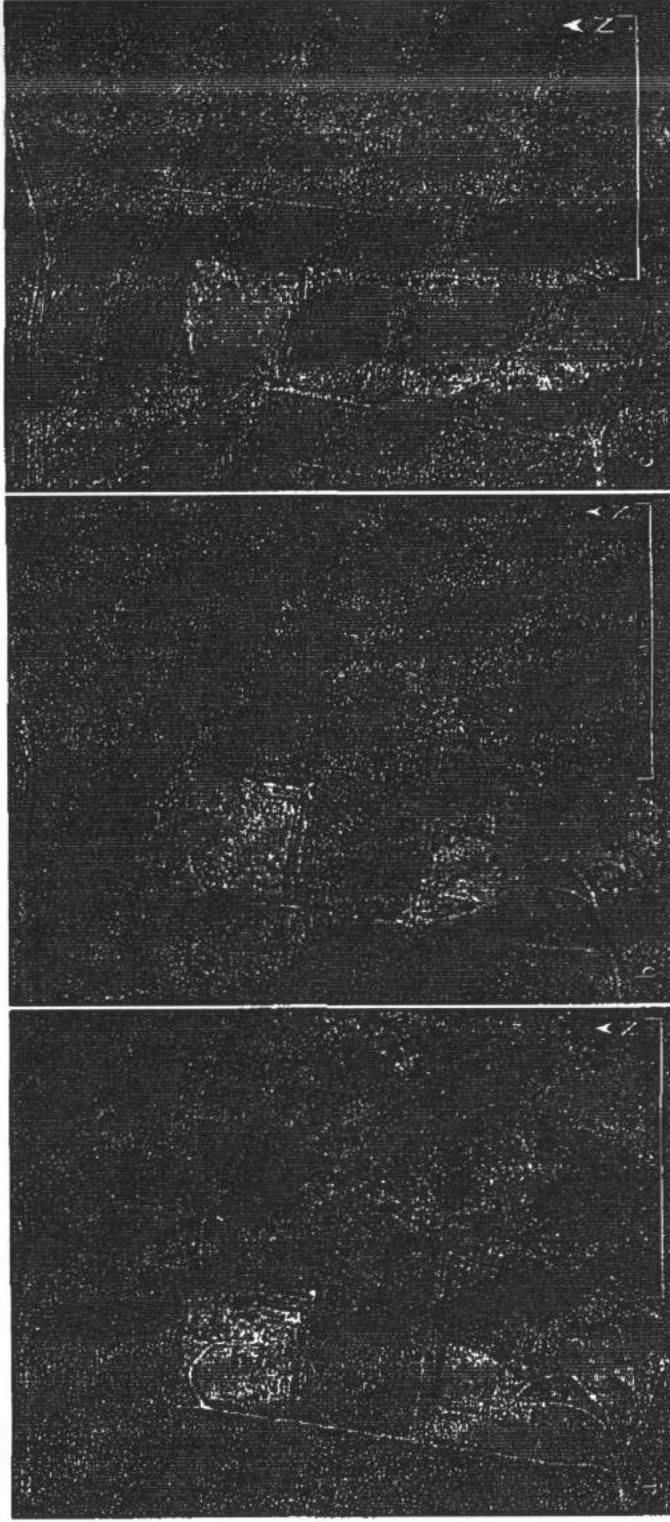


Figure 6. Comparison of satellite images of the current project area showing access roads and quarried areas in May of 2012 (a.), January of 2013 (b.), and August of 2014 (c.).

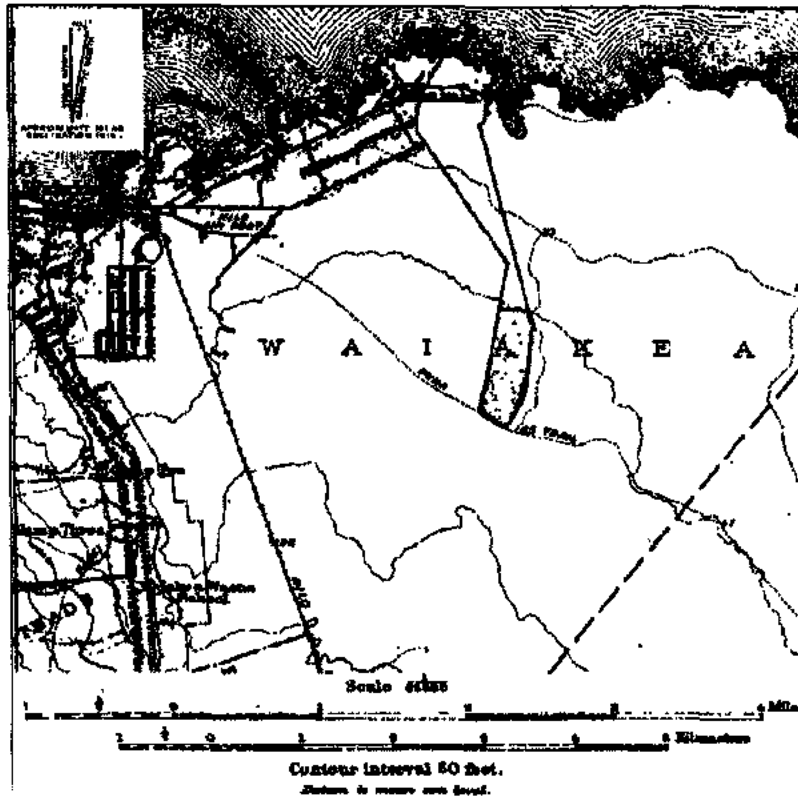


Figure 7. 1932 depiction of "Puna Trail" south of the current project area (shaded red).

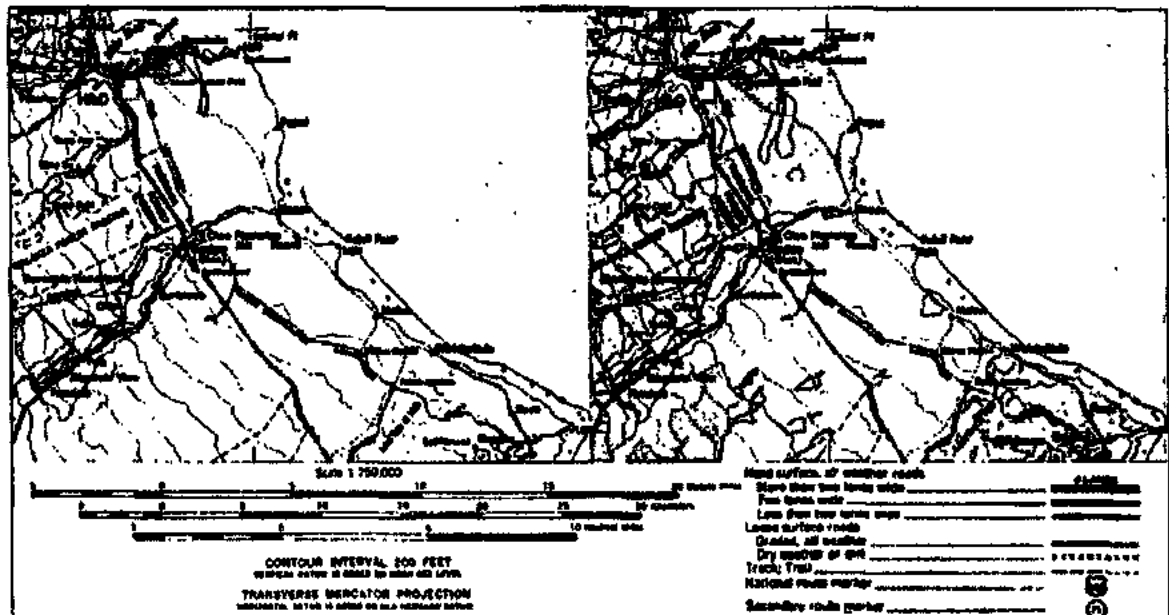


Figure 8. Depictions of the Puna Trail alignment as an unnamed trail leading far beyond the current project area in 1934 (left) and 1959 (right).

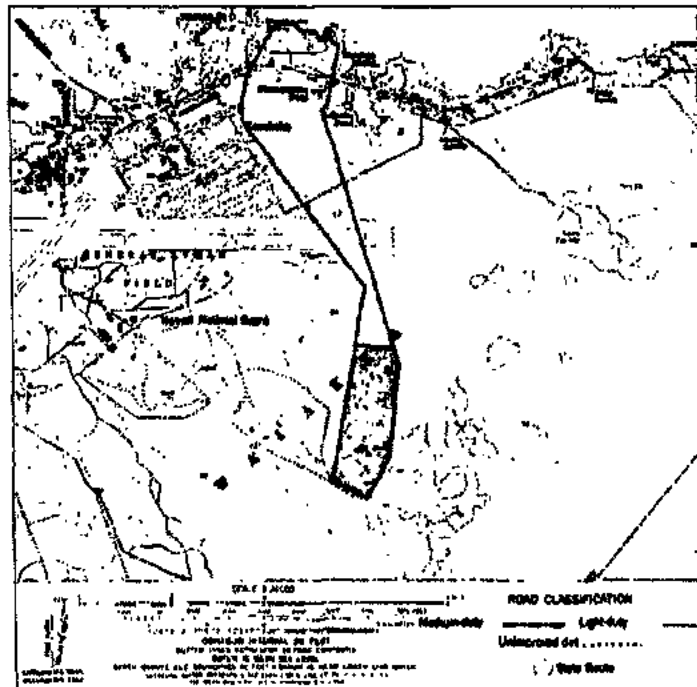


Figure 9. 1963 depiction of the former Puna Trail alignment as an unmarked dirt road terminating near the current project area (shaded red).

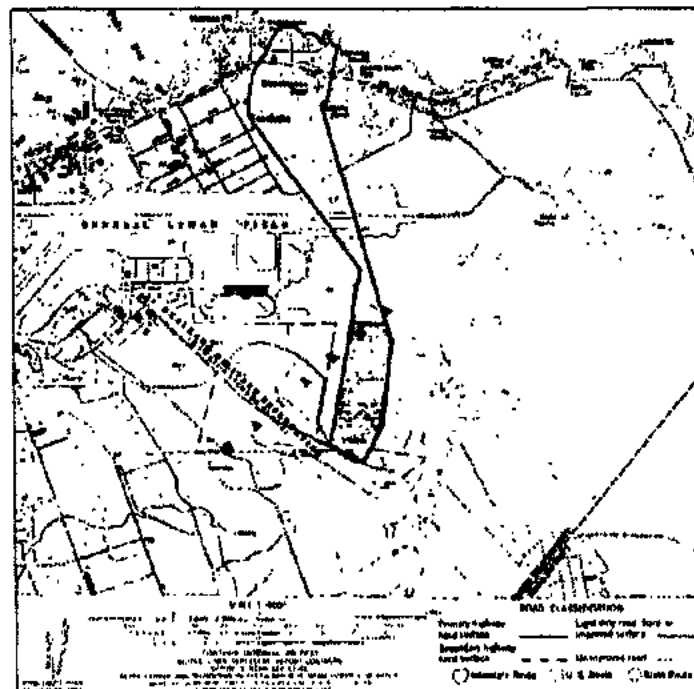


Figure 10. 1981 depiction of the former Puna Trail alignment as a light-duty road, current project area shaded red.