11-8

December 22, 1992

'93 JAN -4 P1:24

OFC. OF ENVIRON. QUALITY CONT.

Mr. Brian J.J. Choy, Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Negative Declaration for Removal of Lands from Revokable Permit S-6238 and Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui
TMK's: 3-6-01:14 & 4-8-01:1

The Department of Land and Natural Resources has received no public comment on the Draft Environmental Assessment for the subject project after the required 30-day period. We have therefore determined the project will cause no significant impacts to the environment. Based on our determination, we are filing a Negative Declaration for this project.

Please note that we have included the herbicide names on page 3 as requested in your letter of October 26, 1992 (attached).

Enclosed are a completed "Document for Publication Form" for the OEQC Bulletin and four copies of the Final Environmental Assessment.

Please contact Mr. Wesley H.C. Wong, Jr. at 243-5352 or Mr. Michael Baker at 871-2521.

Sincerely,

Michael G. Buck, Administrator
Division of Forestry and Wildlife

Attachment
Enclosures

cc: Chairperson's Office
W. Wong/M. Baker, Maui Dist.
C. Meller, NAH

214

JAN 2 3 1993

1993-01-23-HA-FEA Old Lahaina Pali Trail Reestablishment Public Use

FINAL

ENVIRONMENTAL ASSESSMENT

for

REESTABLISHING PUBLIC USE

of the

OLD LAHAINA PALI TRAIL

Division of Forestry & Wildlife
Na Ala Hele Trails & Access Program
Maui District Office

December, 1992

Introduction

The Na Ala Hele Trails & Access Program was established in 1988 by Act 236, now Chapter 198D of the Hawaii Revised Statutes. At that time, the State Legislature assigned to the Department of Land and Natural Resources the responsibilities of planning, developing, acquiring land or rights for public use of land, constructing, and engaging in coordinating activities to implement a statewide trail and access system.

Through its island Advisory Councils represented by private citizens, a series of "Priority Trails" and one "Demonstration Trail" were recommended for immediate development by the State of Hawaii as public accesses on each major island.

At its regular meeting on January 12, 1989, the Maui Na Ala Hele Advisory Council approved the Old Lahaina Pali Trail as Maui's Demonstration Trail.

Background

The Old Lahaina Pali Trail is part of a trail system that once encircled the island of Maui. The trail once connected the townships of Lahaina and Wailuku and lies above the existing Honoapiilani Highway spanning the Ahupua'a of Ukumehame between Olowalu on the west and Maalaea to the east (see Exhibit 1). Written references to use of this historical trail date from the late 1830's to the early 1840's.

Today, the trail lies within State owned lease lands currently used for grazing cattle. The trail fell into disuse and disrepair during the 1890's when it was abandoned after construction of a carriage road (now known as the" Old Government Road") to Lahaina and subsequent building of the Honoapiilani Highway during the 1940's and 50's.

In May of 1991, an archaeological survey of the trail and its immediate surroundings was completed. Evidence of historic and prehistoric use was gathered along the trail corridor, with the trail itself has been listed as a significant archaeological feature. The management strategies discussed elsewhere in this document originated from this survey (see Appendix A).

In January of 1992, a five-month Right-of-Entry was granted by the Chairperson of the Department of Land and Natural Resources to conduct a botanical survey and trail brushing operations within the trail corridor. A six-month extension of supervised brushing activities was granted on April 9, 1992 beginning on June 1st of this year. The Right-of-Entry extension will continue to allow for volunteer service work to be performed in conjunction with DOFAW work crew activities. Presently, preparations for contracting a metes and bounds survey of the trail corridor area are underway.

The recreational potential of the trail consists mainly of hiking and sightseeing. The trail also provides great potential for developing interpretive historical information to serious hikers. Sections of the trail consist of hand-placed stone paving and curbing indicative of ancient and historical trails found elsewhere in the State. Most of the trail remains in excellent structural condition, although damage due mainly to erosion from cattle grazing

and trampling has severely damaged many sections of the trail structure. Dispersal of non-native weed species by cattle and birds has displaced most on the native vegetation throughout the area.

The Maui Branch of the Na Ala Hele Trails and Access Program on behalf of the Division of Forestry and Wildlife proposes to re-establish the Old Lahaina Pali Trail as a scenic and historic/interpretive hiking trail.

1. *Proposing Agency*

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife

2. *Approving Agency*

State Department of Land and Natural Resources,
by this Board

3. *Agencies Consulted in Making the Assessment*

State:

Department of Land and Natural Resources
Historic Sites Division
Aquatic Resources Division
Land Management Division
Conservation and Resources Enforcement Division
Department of Transportation
Department of Agriculture

County:

Department of Public Works
Planning Department
Department of Recreation

4. *General Description of the Actions Technical, Economic, Social and Environmental Characteristics*

Technical

The project is envisioned to be accomplished through several phases.

The first phase will involve the removal of vegetation and debris from the trail bed during the first phase of trail development is necessary to reveal the extent and condition of the trail bed and to identify any other historic structures not included within the original archaeological survey. Light use of herbicides including Roundup (Isopropylamine salt of Glyphosate) and Garlon 3A (Tricipyr) will be employed to prevent the regeneration of non-native woody shrubs in the trail bed. Removal of woody roots and tree stumps will be done only where necessary and where doing so will not destabilize the trail bed or associated structures.

The second phase will involve the supervised reconstruction of various sections of the trail bed and associated structures. Several existing historical structures (e.g., water bars, paving stones, etc.), having sustained displacement through erosion or trampling by cattle will be replaced as near to their original location as is possible.

Sections of the trail requiring complete reconstruction will involve the use of materials taken from the surrounding landscape. Care will be taken to reconstruct these sections to the closest approximation of the original trail structure as possible. Reconstruction will be monitored by personnel from the Historic Preservation Office.

Trail head and trail corridor signage will be placed at strategic locations to channel visitors and direct attention away from historic sites sensitive to direct public contact.

The installation of interpretive signs and displays, and eventually, several small covered rest stops, will characterize the final phase of trail development. Displays depicting the present location of the visitor, significant natural features of the landscape, and historical information will be constructed at conspicuous points along the trail. Periodic brushing of vegetation, clearing of debris, removal of trash, and spot-restoration of trail structures and interpretive displays will be routinely conducted.

Socio-economic

No direct economic effects are expected to result from the re-establishment of the trail for public use. However, the trail will represent a small portion of the statewide Na Ala Hele trail system which could be seen as an additional recreational resource to draw visitors interested an historical trail experience.

Costs relative to completing the project and maintaining the trail in the future will be borne by the State of Hawaii and will not involve the use of private funds. The estimated development costs for man-power, materials, planning, necessary documentation, and all phases of the project (not including long-term maintenance) is not be expected to exceed $200,000.00.

The strong educational/interpretive value inherent in the trail's history, engineering and architectural significance should foster a great interest in interpretive programs. Na Ala Hele, together with existing public hiking clubs, historical societies and other private citizens seeks to incorporate interpretive elements as a essential part of its management program for public trails.

The Na Ala Hele Program Plan also relies upon volunteers for brushing and otherwise helping to maintain its trails. The subject project is expected to rely on volunteer efforts for its successful completion. Individual and group volunteers will benefit from guided work/service excursions that include an interpretive hike along the trail corridor.

5. Summary Description of the Affected Environment

The Trail is located along the southern slope of the West Maui mountains (see Exhibit 1), spans the Districts of Lahaina and Wailuku, and lies within Tax Map Keys 3-6-01:14 and 4-8-01:1 (see Exhibits 2 and 2a). Its western trail head is located inland (mauka) of the Honoapiilani Highway southeast of Ukumehame State Beach Park. Its eastern trail head is located mauka of the C.Brewer pineapple fields nearly one mile north of Maalaea Harbor. The trail corridor The trail extends nearly 4.5 miles over an elevation change of from 50 feet to 1,600 feet above sea-level.

The western half of the trail begins at the mouth of Manawaipueo Gulch. The central portion of the trail, east of Manawainui Gulch, crosses the sloping terrain of Kealaloa Ridge and continues down-slope toward the pineapple fields of Maalaea. In the past, the trail continued on toward the Wailuku/Kahului area passing near Puu Hele, now a cinder pit.

Annual rainfall ranges from 15 inches in coastal areas to nearly 20 to 30 inches at the highest point of the trail. Winds originate predominately from the East-northeast for most the year and may occasionally blow from the South-southwest during "kona" conditions.

Access to the trail can be made at three separate locations: from the highway shoulder between the Lahaina Tunnel and the east end of Ukumehame State Beach Park; from a pineapple field road on C. Brewer Properties, Ltd. land directly west and northwest of Maalaea Harbor, and through a gated four-wheel drive road adjacent to McGregor Point traversing Keaalaloa Ridge.

Flora

Located approximately 1,500 to 2,000 feet below the West Maui Forest Reserve and the Native Plant Species Preserve, the trail corridor area includes several low-diversity native plant communities and a larger number of non-native species throughout the area. It is significant to note that none of the native species of flora encountered during the botanical survey are listed as threatened or endangered. Instead, these plants are considered quite common and occur in abundance elsewhere on Maui and other dry-land habitats throughout the State.

The trail corridor in both Districts is relatively free of native vegetation having been displaced in large part by non-native species. The trail itself, can be divided generally into two vegetative zones (see Exhibit 3). They are:

Zone 1 - Extremely dry, lowland and upland leeward zone of the Lahaina District (between 0 and 1,500 foot elevations) and the lowland windward zone of the Wailuku District (between 0 and 800 foot elevations).

Zone 2 - Dry upland windward zone lying primarily within the Wailuku District (between 800 and 1,600 foot elevations).

Zone 1 vegetation consists chiefly of non-native dry-land and species interspersed with xerophytic and native species. Zone 2 is distinct from Zone 1 because it contains relatively high concentrations of native Aalii and Aakia shrub patches found along and around the trail corridor. Species surveyed along the entire trail corridor are listed below.

Non-native:

Kiawe (Prosopis pallida)
Buffelgrass (Cenchrus ciliaris)
Koa-haole (Leucaena leucocephala)
Klu (Acacia farnesiana)
Zinnia (Zinnia peruviana)
Wild Bean (Macroptilium lathyroides)
Natal Redtop (Rhynchelytrum repens)
Lantana (Lantana camara)
Prickly-Pear Cactus (Opuntia ficus-indica)
Iron Wood (Casuarina glauca)
Tamarind (Tamarindus indica)
Apple of Sodom (Solanum linnaeanum)

Other common species include: Abutilon grandifolium and Chamaechrista nictitans.

Native:

Uhuloa (Waltheria indica)
Nehe (Lipochaeta venosa lavarum lobata)
Ilima (Sida fallax)
Pili (Heteropogon contortus)
Iliahi (Santalum ellipticum)
Naio (Myoporum sandwicense)
WiliWili (Erythrina sandwicensis)
Native Dry-land Fern (Dorypteris decipien)
Native Morning Glory (Ipomoea tuboides)
Aalii (Dodonaea viscosa)
Kookoolau (Bidens menziesii x mauiensis)
Akoko (Chamaecyce celastroides)

Significant native dryland habitat communities no longer exist within the area due to intensive cattle grazing activities during this century.

Fauna

A variety of avifauna and mammals occur throughout the project area. The endemic Hawaiian Owl or Pue'o (Asia flammeus sandwichens) has been observed on several occasions within the project area. However, the vast majority of bird species in the area are represented by exotic or introduced species. Avifaunal species inhabiting the area include:

Gray Francolin (Francolinus pondicerianus)
Black Francolin (Francolinus francolinus)
Pheasant (Phasianus colchicus)
Spotted Dove (Streptopelia chinensis)
Barred Dove (Geopelia striata)
Common Myna (Acridotheres tristis)
Japanese White-eye (Zosterops japonicus)
House Finch (Carpodacus mexicanus)
Warbling Silverbill (Lonchura malabarica)
Common Barn Owl (Tyto alba)
Pacific Golden Plover (Pluvialis fulva)
Japanese Bush Warbler (Cettia diphone)
Northern Mockingbird (Mimus polyglottus)
Northern Cardinal (Cardinalis cardinalis)

Mammals observed or otherwise known to inhabit in the project area include:

Feral Cat (Felis Catus)
Feral Dog (Canis familiaris)

Mongoose (Herpestes auropunctatus)
Rat (Rattus spp.)
Feral Goat (Capris spp.)
Domestic Cattle (Bovus bovine)

Historical/Archaeological and Cultural Sites

The Archaeological Survey of Two Demonstration Trails of the Hawaii Statewide Trail and Access System by M.J. Tomonari-Tuggle and H.D. Tuggle (1991) has been incorporated within this document as Appendix A. It describes a total of eighteen sites identified along a 50-foot wide corridor along the trail. The sites are comprised chiefly of stone walls, enclosures, terraces, curved structures, platforms, and other constructions. A series of petroglyphs, midden materials, considered to be of 19th century origin, have also been identified.

Recommendations presented in the Tuggle & Tuggle survey will be complied with in developing and managing the trail corridor, and in accordance with Chapter 6E, Hawaii Revised Statutes pertaining to establishing a mitigation agreement with the State Historic Preservation Division (see Appendix B - April 2, 1992 Letter).

Adjacent Natural Resources

The trail corridor lies entirely within a disturbed dryland area of State-owned lease lands. Approximately 4,863 acres in size, the area has been intensively used for cattle grazing during the bulk of this century. The most significant natural feature within the area is Manawainui Gulch. Extending down from an elevation of around 3,500 feet, its walls often rise 300 to 400 feet above its often dry intermittent stream bed.

The trail crosses numerous gulches containing weathered basalt formations and often takes advantage of the less weathered, more resistant flow structures offering an correspondingly easy trail grade. Interesting geologic features are traversed by the trail corridor.

Sensitive Habitats

No sensitive habitats lie within or immediately adjacent to the trail corridor.

Nearly 2,000 feet above the trail corridor, in the upper-most portion of Manawainui Gulch a 60 acre fenced enclosure has been set aside as a native plant sanctuary. Ohia, pukeawe, ohelo, native ferns, dubaudia and other high elevation, wetland species survive there.

The West Maui Forest Reserve also lies immediately up-slope of the sanctuary and contains the majority of the West Maui Mountains. Coastal areas to the north, east and west of the corridor contain soils used mainly for sugarcane and pineapple cultivation, cattle grazing,

and residential development. The rough southern coastal margins below the trail corridor contain broken sea cliffs, rocky reef and/or sandy reef flat habitats.

6. *Identification and Summary of Major Impacts and Alternatives Considered*

Major Impacts - Positive

The proposed trail development will provide a historically unique and well-preserved trail for public recreational use and enjoyment. The series of techniques for reconstruction, maintenance and management described in the action's technical characteristics above should at least be adequate to mitigate a variety of consequences of public use.

The trail will make available scenic vistas of the Islands of Kahoolawe, Lanai, East Maui and on occasional clear days, Hawaii. View elements also include the near shore zone below the trail from Maalaea Harbor in the east to the shores of Ukumehame State Beach Park in the west. The trail offers an unobstructed view of the Auau and Alalakeiki Channels between Lanai and Kahoolawe for whale-watching.

Learned trail reconstruction and management techniques would be transferrable to other locations across the state where similar conditions exist.

The positive benefits of an aggressive management program should successfully offset the negative impacts expected to be caused by occasional acts of vandalism, tampering with historical structures, littering, unauthorized fires and other degrading uses of the trail.

Major Impacts - Negative

Cattle continue to represent the most significant source of negative impacts to the landscape. Clearing of vegetation along the length of the trail may actually facilitate trampling by cattle in areas where dense vegetation has served to protect the trail bed. Cattle disperse non-native weed species, reduce growth and regenerative capacity of less-aggressive native plants, and promote soil erosion through overgrazing and compaction of soils. Cattle also generally harm the trail's structural integrity through uncontrolled trampling and the eventual erosion of the trail bed corridor.

It is possible that large numbers of hikers would represent an additional source of impacts to the trail corridor area. Hikers wandering off the trail or traversing switchbacks would accelerate erosion and help to destabilize the trail bed. Damage to existing historical sites outside the trail corridor must also be considered. Vandalism, fires, and littering, though not expected to occur with significant frequency are probable threats.

Although native species occurring in the area are common to other areas on Maui and in the State, it is important to note that examples of native dryland sandalwood were observed

within the trail corridor. Though not directly underfoot, their location next to the trail in several conspicuous locations exposes them to accidental damage.

Alternatives Considered

Disallowing public use of the trail is not considered an alternative. Although impacts to the trail area would not result from regular public use, environmental degradation would continue to result from cattle grazing in the area. Deprivation of public enjoyment of the various experiences offered by trail use would not be realized and a significant public resource wasted.

7. Proposed Mitigation Measures

No techniques for reducing impacts to the trail corridor can be considered totally effective. Mitigation of impacts resulting from cattle grazing would require a fence enclosure of nearly the entire trail corridor, or the termination of grazing activities within the lease land area. These solutions are somewhat controversial and impractical and, in the case of fencing, would detract from the aesthetic quality of the landscape. However, portions of the trail containing the most sensitive and well-preserved sections could be fenced-off for protection against further cattle damage. Narrow, angled openings in the fence would allow for public passage through these enclosures. A number of different management strategies will require ongoing experimentation to determine their effectiveness.

Several public use mitigation measures include: use of passive barriers, visitor channeling (e.g., historic site avoidance), use of signage and interpretive displays, and regular maintenance of the trail corridor. Additional management strategies including seasonal closures, restrictions/prohibition of certain types of use (e.g., equestrians, mountain bikers, and motorized vehicles) will be necessary. Creation of an adopt-a-trail program to stimulate participation of volunteers and docents who will be asked to monitor public use is also envisioned as a further approach to managing the trail.

8. Determination

No significant impact to the environment is expected to result from implementation of the project upon condition that the management strategies recommended in the archaeological survey are implemented.

9. Findings and Reasons Supporting Determination

Primary sources of impact to the environment are represented by visitor use of the trail. As the trail is not intended for use by inexperienced hikers, and given that a margin of difficulty

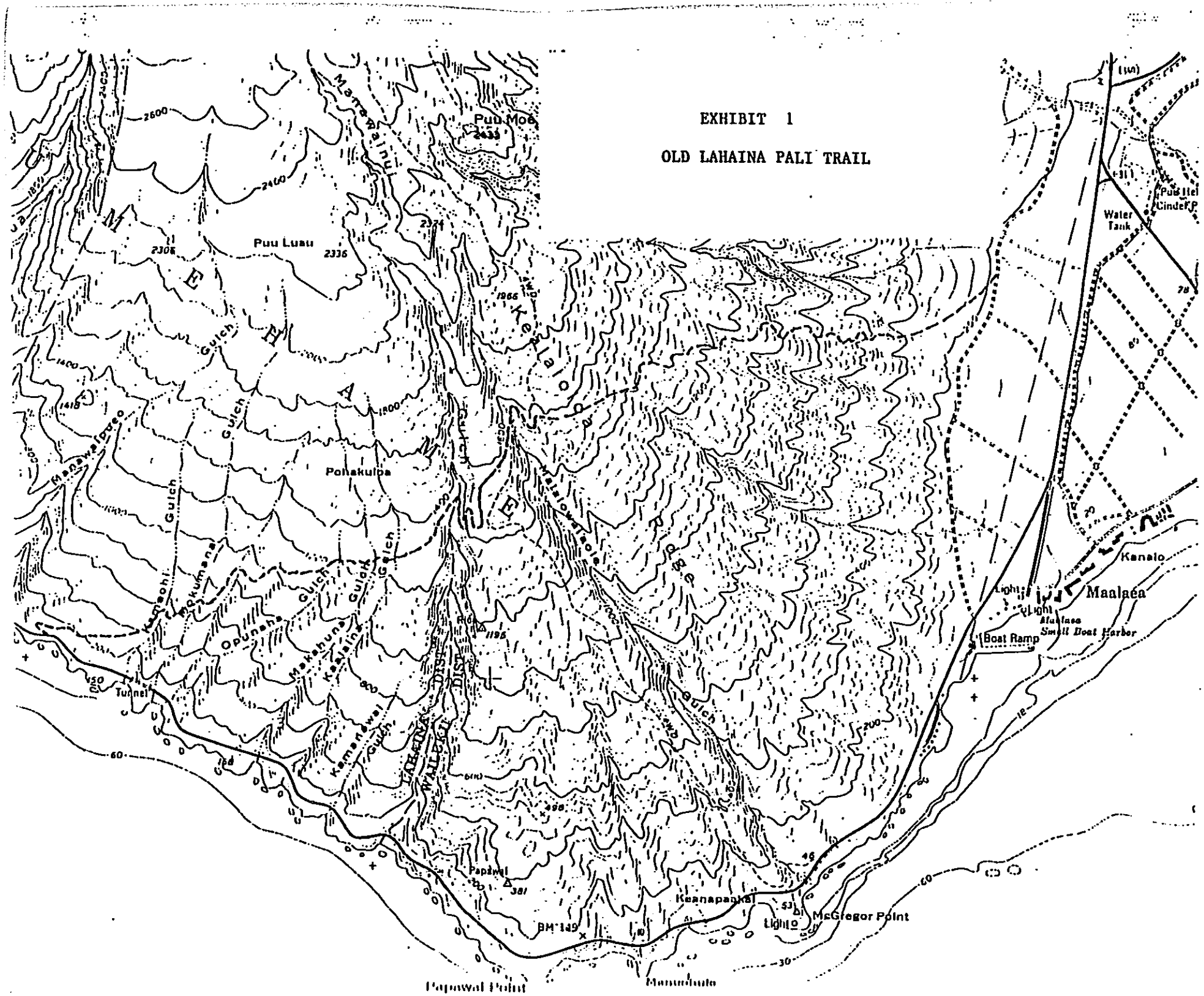
in reaching portions of the trail exist, the trail corridor is expected to suffer no significant negative impacts.

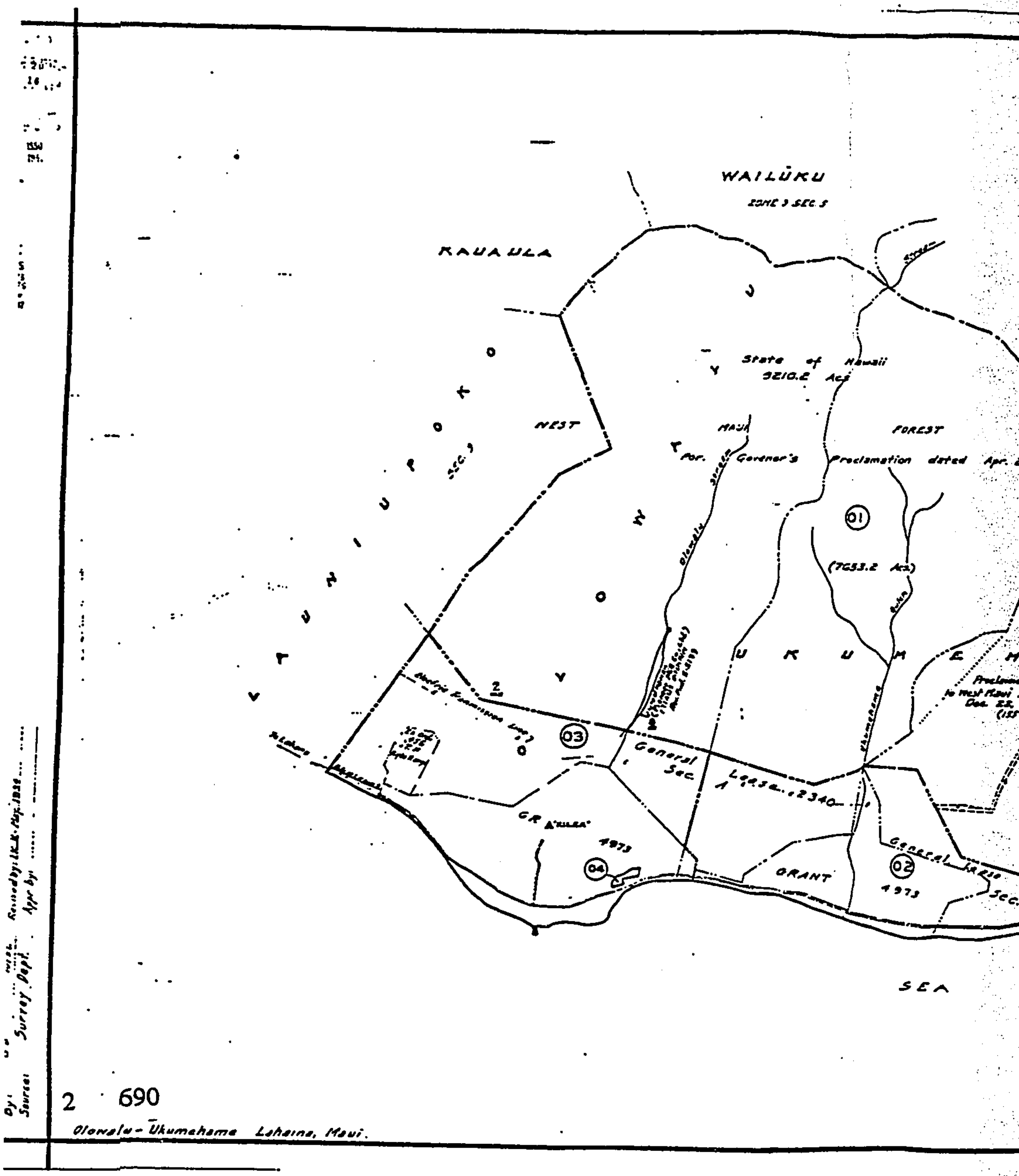
No rare or endangered plant or animal species have been found to occur within the trail corridor, nor are significant historical sites likely to be degraded by visitors who will be directed so as to avoid sites, as well as receive educational/interpretive information on their protection and preservation.

An aggressive trail management program based in large part on recommendations received from the Historic Preservation Office will compliment a program of regular maintenance of the trail corridor. Combined with an educational/interpretive sign program, these elements are considered adequate to offset visitor related impacts.

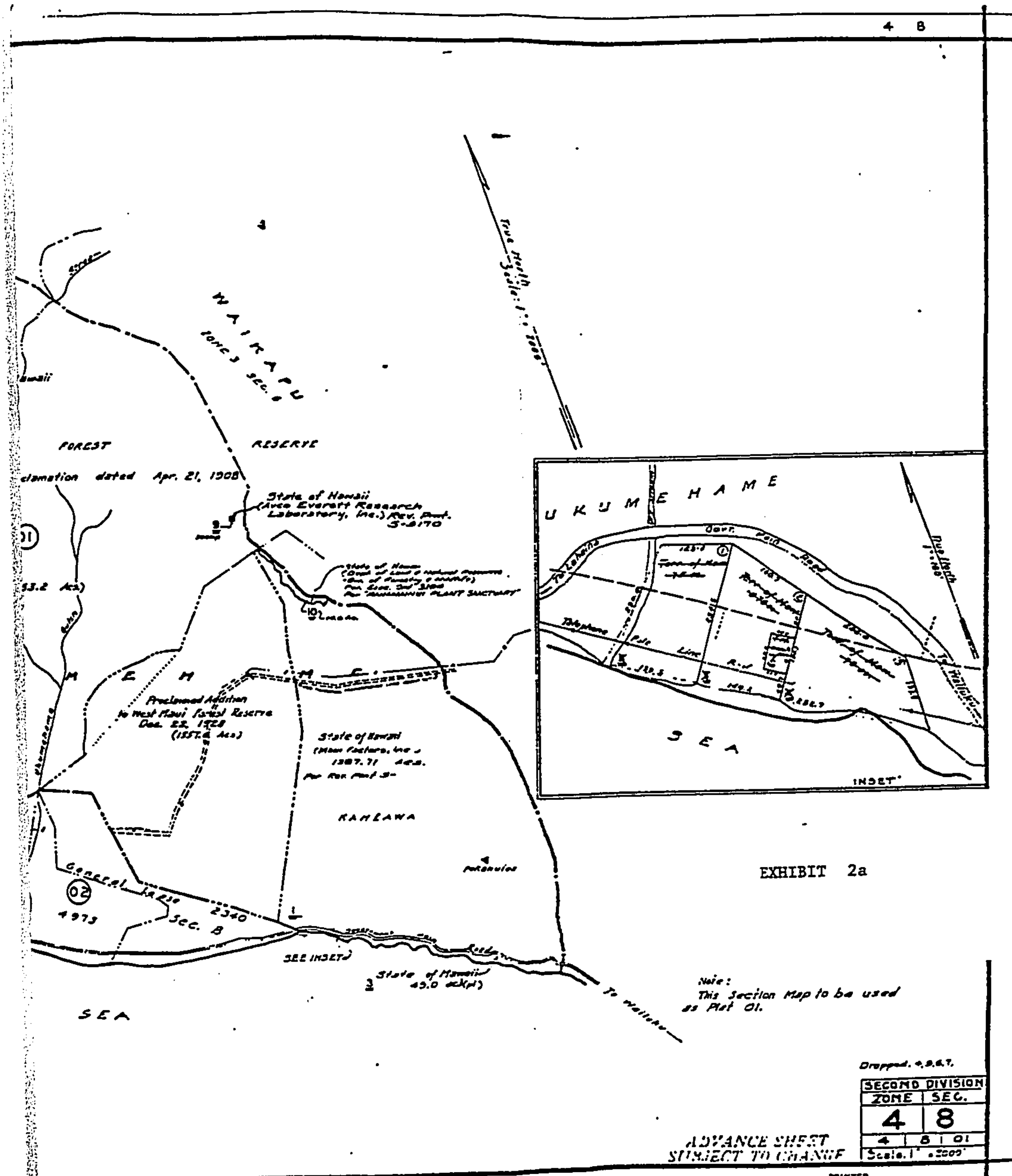
EXHIBIT 1

OLD LAHAINA PALI TRAIL



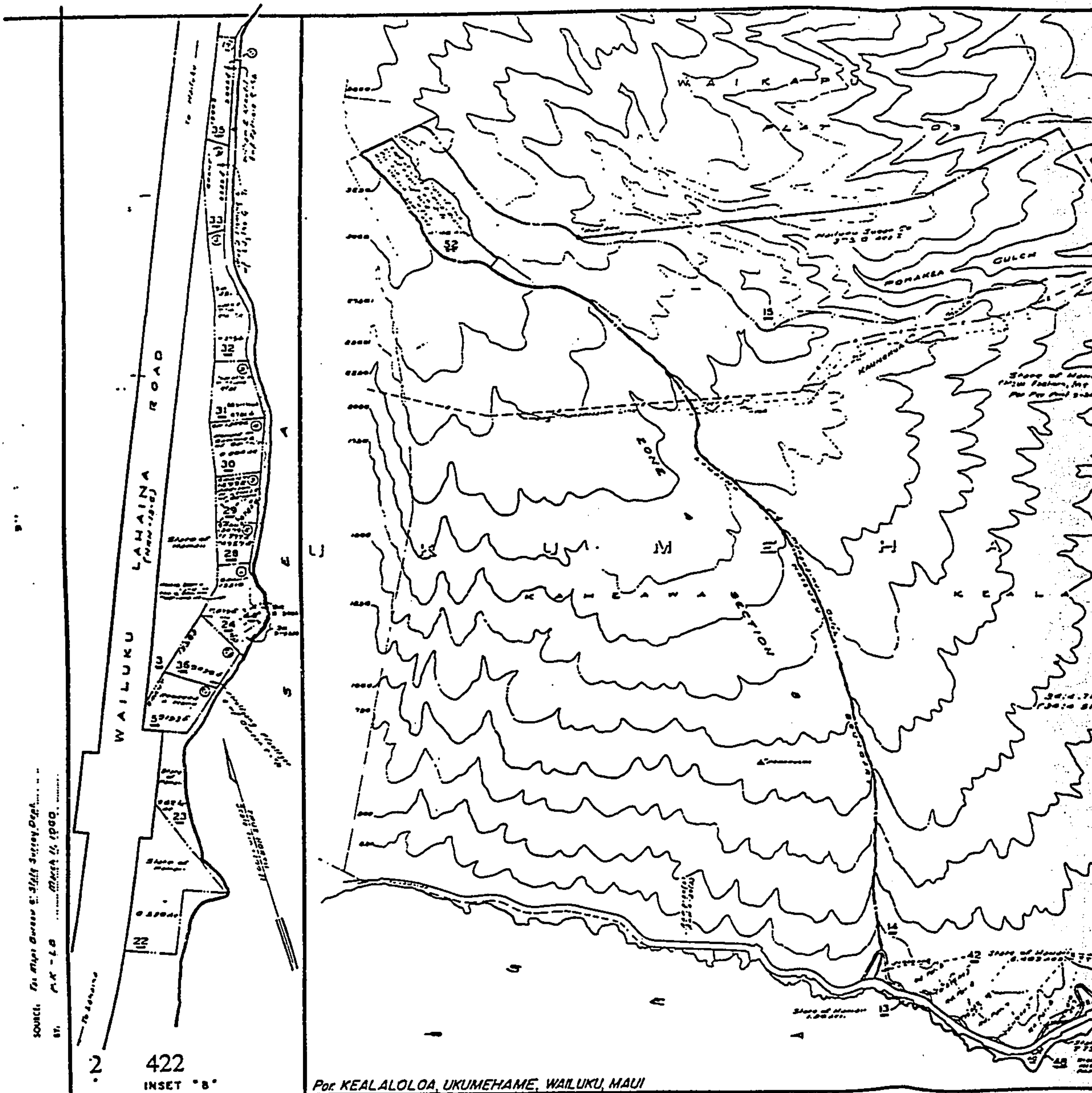


WAILŪKU
ZONE 2 SEC. 5
KAUAULA
LAUNIUPOKO
SEC. 9
WEST
MAUI
FOREST
State of Hawaii
5210.2 Acs.
For. Governor's Proclamation dated Apr.
01
(7653.2 Acs.)
OLOWALU
UKUMEHAME
General
Sec. 1
Lease 2340
03
04
02
GRANT
4973
GR. 4973
SEA
Olowalu - Ukumehame Lahaina, Maui.
2 690
Survey Dept.
Source:
Appr. by:



4 8
WAIKAPU
ZONE 3 SEC. 6
FOREST RESERVE
Proclamation dated Apr. 21, 1908
State of Hawaii
(Avco Everett Research Laboratory, Inc.) Rev. Perf. S-8170
Proclaimed Addition to West Maui Forest Reserve Dec. 22, 1928
State of Hawaii
KAMEAWA
General Lease 2340
Sec. B
4973
SEE INSET
State of Hawaii 45.0 Ac.
SEA
To Wailuku
UKUMEHAME
Govt. Road
Telephone Pole Line
SEA
INSET
Note:
This Section Map to be used as Plat 01.
SECOND DIVISION
ZONE 4
SEC. 8
ADVANCE SHEET
SUBJECT TO CHANGE
PRINTED

EXHIBIT 2a



Por. KEALALOLOA, UKUMEHAME, WAILUKU, MAUI

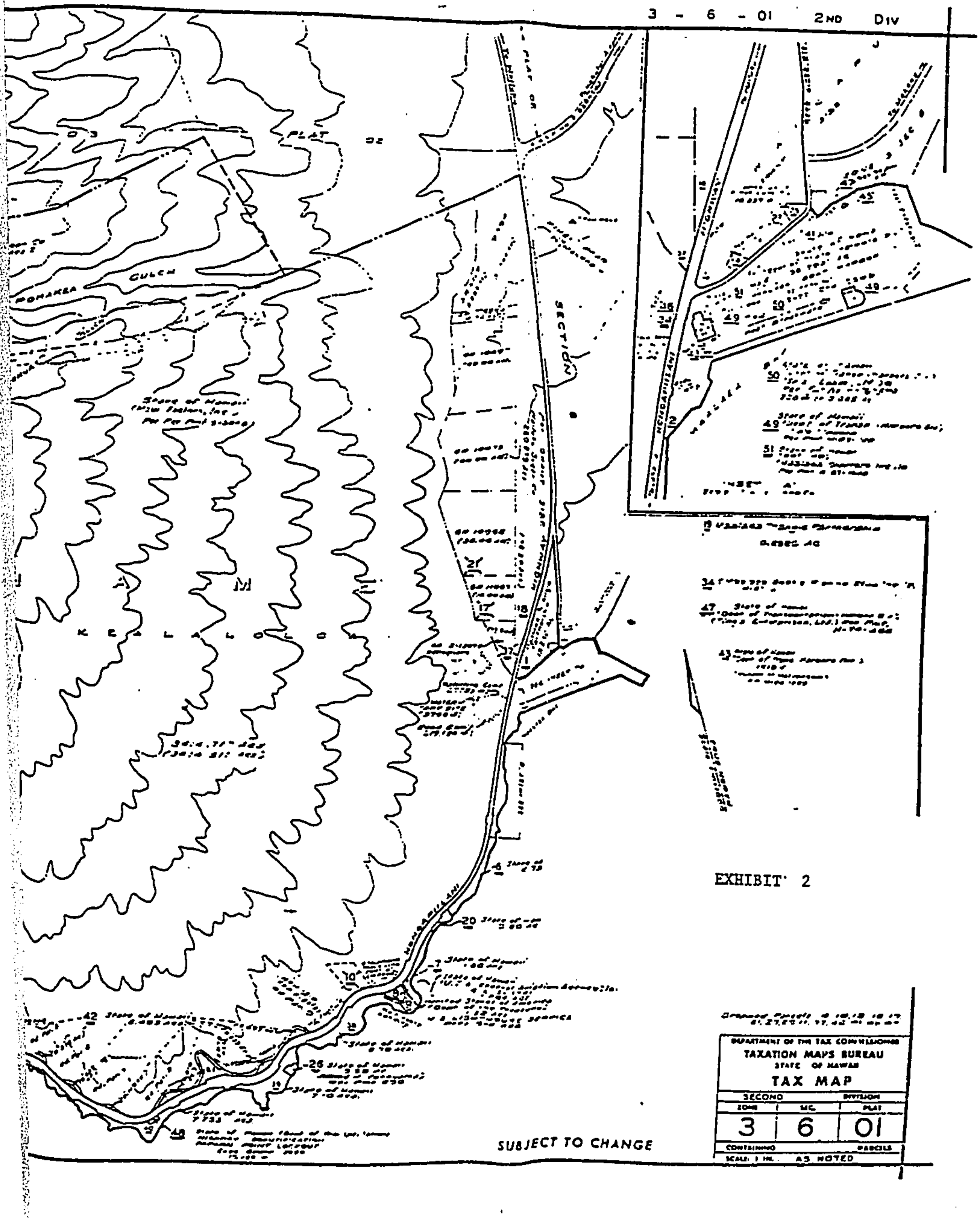

3 - 6 - 01 2ND DIV
POHAKEA GULCH
SECTION
HONOAPIILANI
SUBJECT TO CHANGE
DEPARTMENT OF THE TAX COMMISSIONER
TAXATION MAPS BUREAU
STATE OF HAWAII
TAX MAP
SECOND DIVISION
ZONE SEC. PLAT
3 6 01
CONTAINING PARCELS
SCALE: 1 IN. = AS NOTED

EXHIBIT 2

INTRODUCTION

INTRODUCTION

At the request of the State of Hawaii, Division of Forestry and Wildlife, Department of Land and Natural Resources (DLNR), the International Archaeological Research Institute, Inc. (IARII) conducted archaeological survey along two demonstration trails of the Statewide Trail and Access System. The two trails are the 3.5 mile long Kaiolohia-Kahue coastal trail on the island of Lana'i and the 4.5 mile long Lahaina Pali trail on the island of Maui (Figure 1).

The archaeological surveys are part of the Na Ala Hele program to establish a Hawaii Statewide Trail and Access System. Established in 1988, Na Ala Hele focuses on developing and improving mountain and shoreline trails and access. As part of this effort, a demonstration trails project on each island has been developed to show the potential of the program. Demonstration trails were selected by island-based advisory councils.

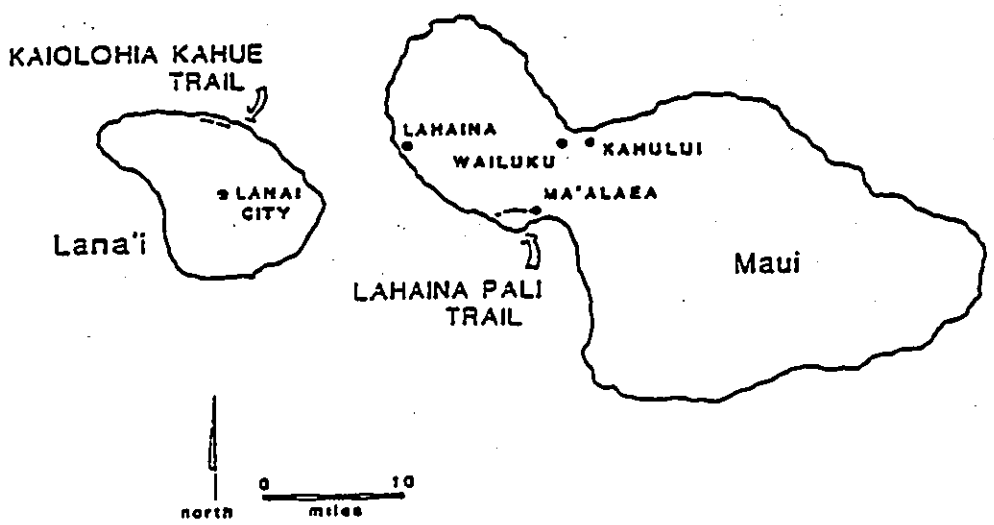


FIGURE 1. TRAIL LOCATIONS

The intent of the present project is to identify archaeological sites within the Lana'i and Maui demonstration trail corridors as part of developing long-term strategies for managing public use of these trails.

SCOPE-OF-WORK

The scope-of-work for the project calls for performance of the following services:

1. identify all historic sites along (a) approximately 3.5 miles of the Kaiolohia-Kahue coastal trail, within a 40 foot (15.2 meter) wide buffer zone on the inland side of the trail and (b) approximately 4.5 miles of the Lahaina Pali trail, within a 50 foot (18.5 meter) wide buffer zone on each side of the trail;

2. evaluate the significance of all sites according to the criteria of the National and Hawaii Registers of Historic Places;

3. provide detailed site descriptions, including sketch maps and photographs; include data from historical background research, local informant interviews, previous archaeological research, and limited subsurface testing; and

4. recommend strategies for long-term management, particularly site protection when the trail is opened for public access.

SUMMARY OF FIELD METHODS

The surveys were carried out between February 25 and March 11, 1991, by two archaeologists, H. David Tuggle, Ph.D., and M.J. Tomonari-Tuggle, M.A. Each trail and associated survey corridor was completely walked. In some areas survey was extended to areas adjacent to the corridor that had potential for sites that would be easily accessible from the trail. Written descriptions, sketch maps, and photographs were made of each site encountered. Limited subsurface testing was done in selected sites to determine the depth and nature of cultural deposits (if any) and to collect material for dating. No datable material, however, was recovered.

In addition to fieldwork, historical research and informant interviews were carried out.

SYNTHESIS OF SURVEY RESULTS

Maui's Lahaina Pali trail is a 19th century foot and horse trail, stone curbed or walled in open areas, and cut and faced in gulches. The trail is heavily overgrown but it is in fair to excellent structural condition, with exceptional preservation along some sections.

Eighteen sites were identified along the Lahaina Pali trail. These sites include walls, terraces, a possible rock quarry for road construction, 19th century petroglyphs, enclosures, storage cupboards, C-shaped structures, platforms, and a small midden scatter. With two exceptions, all sites appear to be 19th century and non-traditional in origin, related to the construction and use of the trail.

Lana'i's Kaiolohia-Kahue trail contrasts with the Lahaina Pali trail in nearly every respect. It was a 19th century horse trail, but almost certainly was developed from a traditional Hawaiian trail. The trail is poorly preserved, with only three short sections that are well-defined and in good condition. These sections are marked by parallel boulder curbing set on exposed bedrock.

Five sites along the trail had been previously recorded. Twenty-three additional sites were found along the trail during the present survey. These include walls, extensive midden scatters, terraces, ahu, platforms, and enclosures. Over the years, numerous burials have been reported eroding from the dunes along this coast; none, however, were found on this survey. One burial structure was observed. Unlike the sites associated with the Lahaina Pali trail, many of those along the Lana'i trail are pre-contact in age, and there is heavy emphasis on habitation.

It should be noted that the recorded sites do not necessarily fall within the precise survey corridors defined in the scope-of-work.

A NOTE ON THE NATURE OF POTENTIAL IMPACTS

The recommendations for site disposition and management that are presented in this report are predicated on the development and use of the demonstration trails as wilderness-type, historically oriented hiking trails. As such, it is anticipated that the development of the trails for public use will not likely destroy or affect the integrity of the identified sites. Rather, the primary impact on archaeological sites will be from the increased public access, either from outright vandalism or inadvertent damage from ignorance about site value.

The recommendations, therefore, emphasize preservation through management planning, interpretation (for public education), and trail design to avoid sites, wherever feasible.

REPORT ORGANIZATION

This report is organized in two primary sections, each dealing with one of the trail corridors. The sections contain the following sub-chapters: Chapter I summarizes the background data on the environment, history, and land use of the trail; Chapter II details the results of the survey along that particular trail corridor; Chapter III discusses the significance of the trail and the sites along the trail; and Chapter IV presents recommendations for the management of the sites, in the context of public use of the trail.

Appendix A describes sites located along the Lahaina Pali trail. Appendix B describes sites along the Kaiolohia-Kahue trail. Appendix C contains copies of State site forms for previously identified sites on the Kaiolohia-Kahue trail.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

APPENDICES

LIST OF FIGURES

TABLE OF CONTENTS (continued)

LIST OF PHOTOGRAPHS

LIST OF TABLES

EXECUTIVE SUMMARY

At the request of the State of Hawaii, Division of Forestry and Wildlife, Department of Land and Natural Resources (DLNR), the International Archaeological Research Institute, Inc. (IARII) conducted archaeological survey along two demonstration trails of the Statewide Trail and Access System. The two trails are the 3.5 mile long Kaiolohia-Kahue coastal trail on the island of Lana'i and the 4.5 mile long Lahaina Pali trail on the island of Maui.

The scope-of-work for the project calls for (1) identification and recording of all historic sites within specified trail corridors, (2) evaluation of significance of all sites according to the criteria of the National and Hawaii Registers of Historic Places; and (3) recommendation of strategies for long-term management, particularly site protection when the trails are opened for public access.

The surveys were carried out between February 25 and March 11, 1991, by two archaeologists. Each trail and associated survey corridor was completely walked. In some areas survey was extended to areas adjacent to the corridor that had potential for sites that would be easily accessible from the trail. Written descriptions, sketch maps, and photographs were made of each site encountered. Limited subsurface testing was done in selected sites to determine the depth and nature of cultural deposits (if any) and to collect material for dating. No datable material, however, was recovered. Historical research and informant interviews were also carried out.

Maui's Lahaina Pali trail is a 19th century foot and horse trail, stone curbed or walled in open areas, and cut and faced in gulches. Although heavily overgrown, the trail is in fair to excellent structural condition, with exceptional preservation along some sections. Eighteen sites were identified. With two exceptions, they appear to be 19th century and non-traditional in origin, related to the construction and use of the trail.

Lana'i's Kaiolohia-Kahue trail contrasts with the Lahaina Pali trail in nearly every respect. It was a 19th century horse trail, but almost certainly was developed from a traditional Hawaiian trail. The trail is poorly preserved, with only three short sections that are well-defined and in good condition. In addition to five previously recorded sites, twenty-three additional sites were found and recorded. Unlike the sites associated with the Lahaina Pali trail, many of those along the Lana'i trail are pre-contact in age, and there is heavy emphasis on habitation.

The recommendations for site disposition and management that are presented in this report are predicated on the development and use of the demonstration trails as wilderness-type, historically oriented hiking trails. Based on this, it is anticipated that the primary impact on archaeological sites will be from the increased public access (e.g. from outright vandalism or inadvertent damage from ignorance about site value) rather than from the development and preparation of the trails for public use. The recommendations, therefore, emphasize preservation through management planning, interpretation for public education, and trail design to avoid sites.

ACKNOWLEDGEMENTS

There are numerous individuals who were extremely helpful in the successful completion of this project. On Maui, we would like to thank Wesley Wong and Bob Hobdy of the Division of Wildlife and Forestry, Dr. David Henderson Brown of the Maui Advisory Council, and Elizabeth Anderson of the Maui Historical Society for providing invaluable background information and helpful historical references. Wesley Wong kindly made time in a busy schedule to give us logistical support.

On Lana'i, Bob Hera and Gary Inuma of the Lana'i Advisory Council were stalwart companions on the strenuous coastal hike. Bob Hera spent an evening briefing us on the conditions of the Lana'i trail. Sol Kaho'ohalahala offered valuable comments on site preservation and management concerns.

ARCHAEOLOGICAL SURVEY OF TWO DEMONSTRATION TRAILS OF THE HAWAII STATEWIDE TRAIL AND ACCESS SYSTEM

LAHAINA PALI TRAIL, ISLAND OF MAUI
KAIOLOHIA-KAHUE COASTAL TRAIL, ISLAND OF LANA'I

---

prepared by

M.J. TOMONARI-TUGGLE AND H.D. TUGGLE
International Archaeological Research Institute, Inc.
949 McCully Street, Suite 5
Honolulu, Hawaii 96826

prepared for

NA ALA HELE PROGRAM
Division of Wildlife and Forestry
Department of Land and Natural Resources
State of Hawaii

Contract No.: 28784

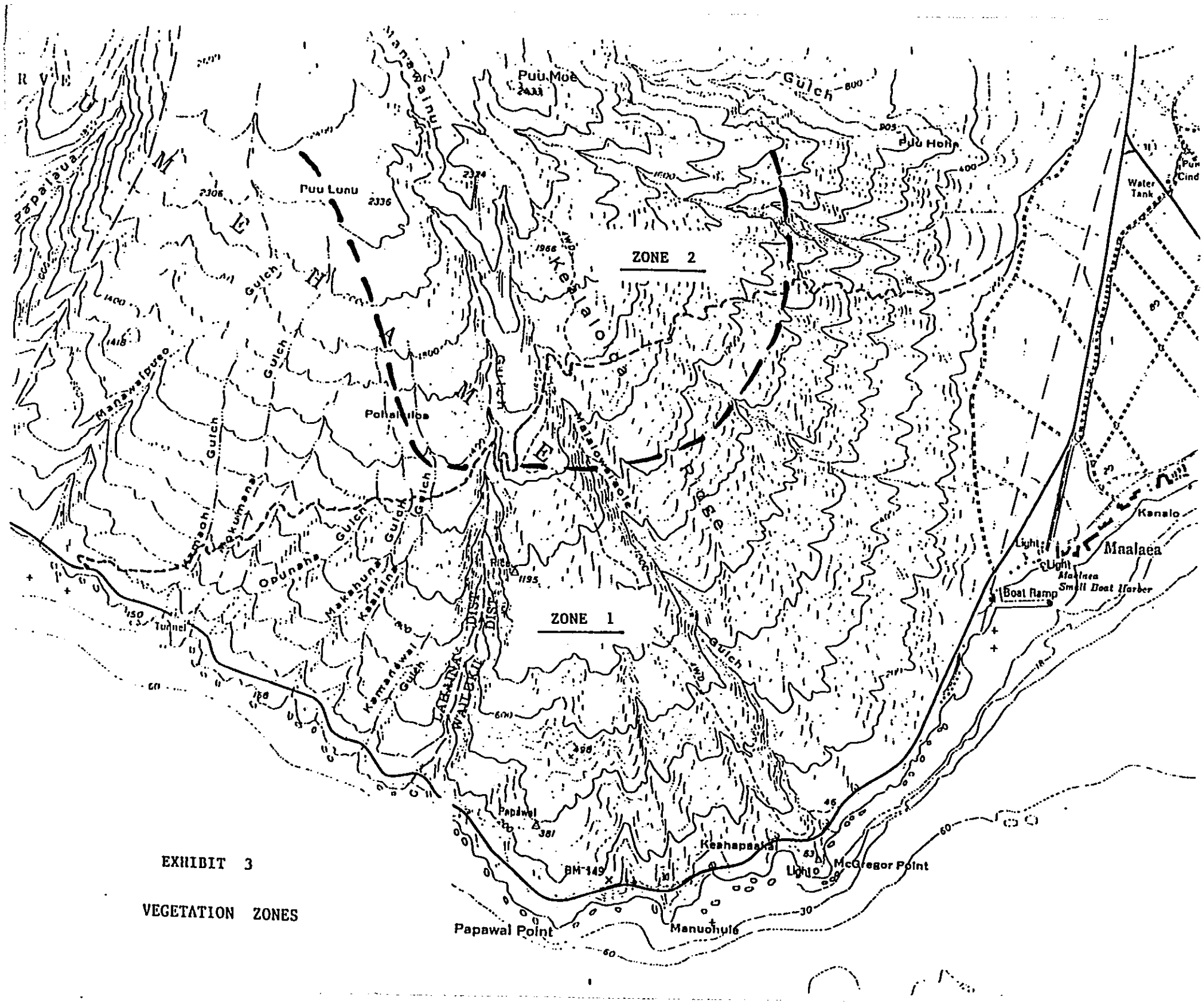
OCTOBER 1991

APPENDIX A

ARCHAEOLOGICAL SURVEY

OF THE

OLD LAHAINA PALI TRAIL


ZONE 2
ZONE 1
Puu Moe
Puu Lunu
Puu Hoha
Kealaloa
Gulch
Water Tank
Kanalo
Maalaea
Light
Maalaea Small Boat Harbor
Boat Ramp
Tunnel
Papawai
Keahapaakai
Light
McGregor Point
BM 149
Papawai Point
Manuohule
Pohakuloa
Opunaha
Makahuna
Kamaaiwai
Gulch
DISH
DISH
WAILUKU
Ridge
1195
2336
2306
1966
1418
381
EXHIBIT 3
VEGETATION ZONES

LAHAINA PALI TRAIL

I: THE LAHAINA PALI PROJECT AREA

The Lahaina Pali trail is part of a trail system that once encircled the island of Maui.* The trail connected Lahaina and Wailuku and was the precursor of the late 19th century road that is still visible along parts of the Honoapiilani Highway between Ukumehame and Ma'alaea.

The Lahaina Pali trail was recommended as a demonstration trail by an island-based advisory council to Na Ala Hele. It was selected as a demonstration trail for its scenic vistas, particularly during the whale-watching season, its accessibility to populated areas and public facilities, its potential for remote outdoor experience, and the possibilities for interpretation of native plants, geology, and archaeology. In August 1989, the Chairperson of the Board of Land and Natural Resources approved the designation of the Lahaina Pali trail as a state demonstration trail for the island of Maui.

This section of the report describes the Lahaina Pali trail and its environs, in terms of its physical setting, history, and changes in land use.

PHYSICAL SETTING

The Lahaina Pali trail extends 4.5 miles across the lower southern slopes of the West Maui Mountains (Photo 1). At its west end, the trail is anchored inland of the Honoapiilani Highway just east of Ukumehame State Beach Park. Its east end is located just inland of the pineapple fields near Ma'alaea Harbor. The trail covers an elevation range from about 100 feet to 1600 feet above sea level (Figure 2).

The western half of the trail begins at the mouth of Manawaipueo Gulch. It crosses steeply sloping terrain that is cut by numerous intermittent drainages, the deepest of which is Manawainui Gulch. The central portion of the trail, east of Manawainui Gulch, crosses the slightly sloping terrain of Kealaloloa Ridge; the ridge is undulating with shallow swales that are characteristic of the upper segments of the small coastal gulches. The eastern portion of the trail zigzags down the sides of an unnamed dry gulch in the descent to the Ma'alaea plain.

---

* There is no evidence that the name "Lahaina Pali trail" has any antiquity, but it is used for convenience in describing this section of the island trail.

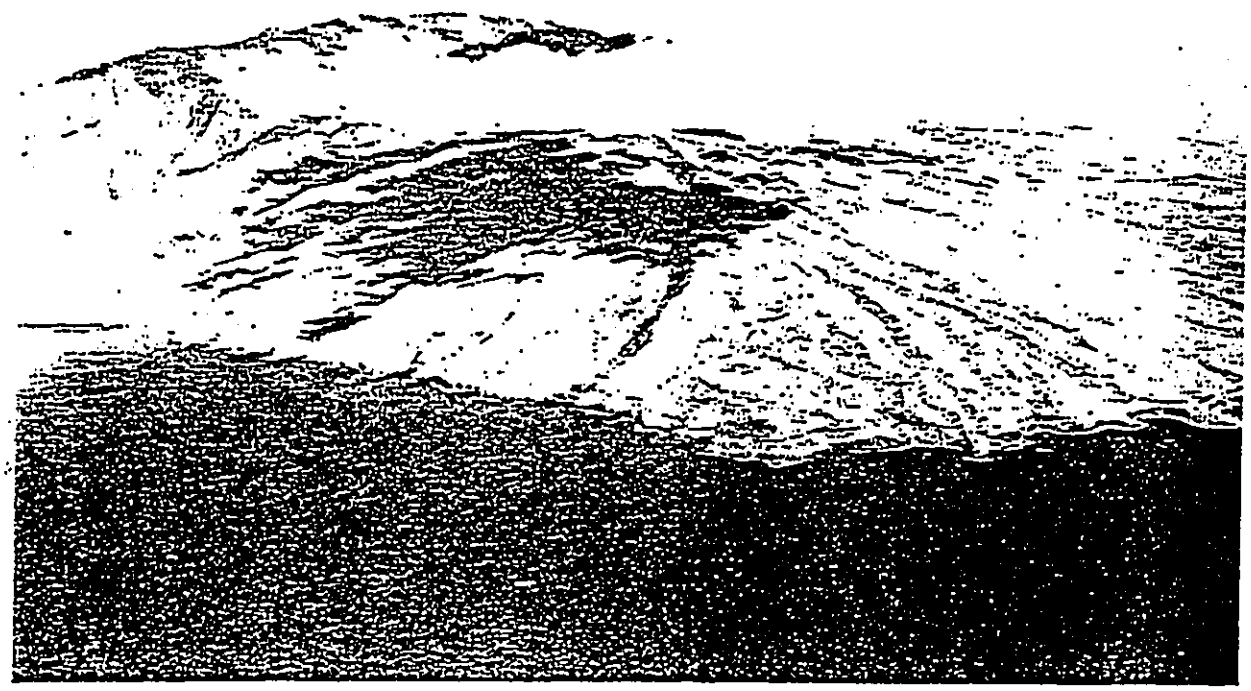


PHOTO 1. SOUTHERN SLOPES OF WEST MAUI MOUNTAINS.
Ukumehame is on the left. McGregor Point is at the right (photo by R.M. Towill, October 12, 1950; courtesy of the B.P. Bishop Museum, negative number CP103.7891).

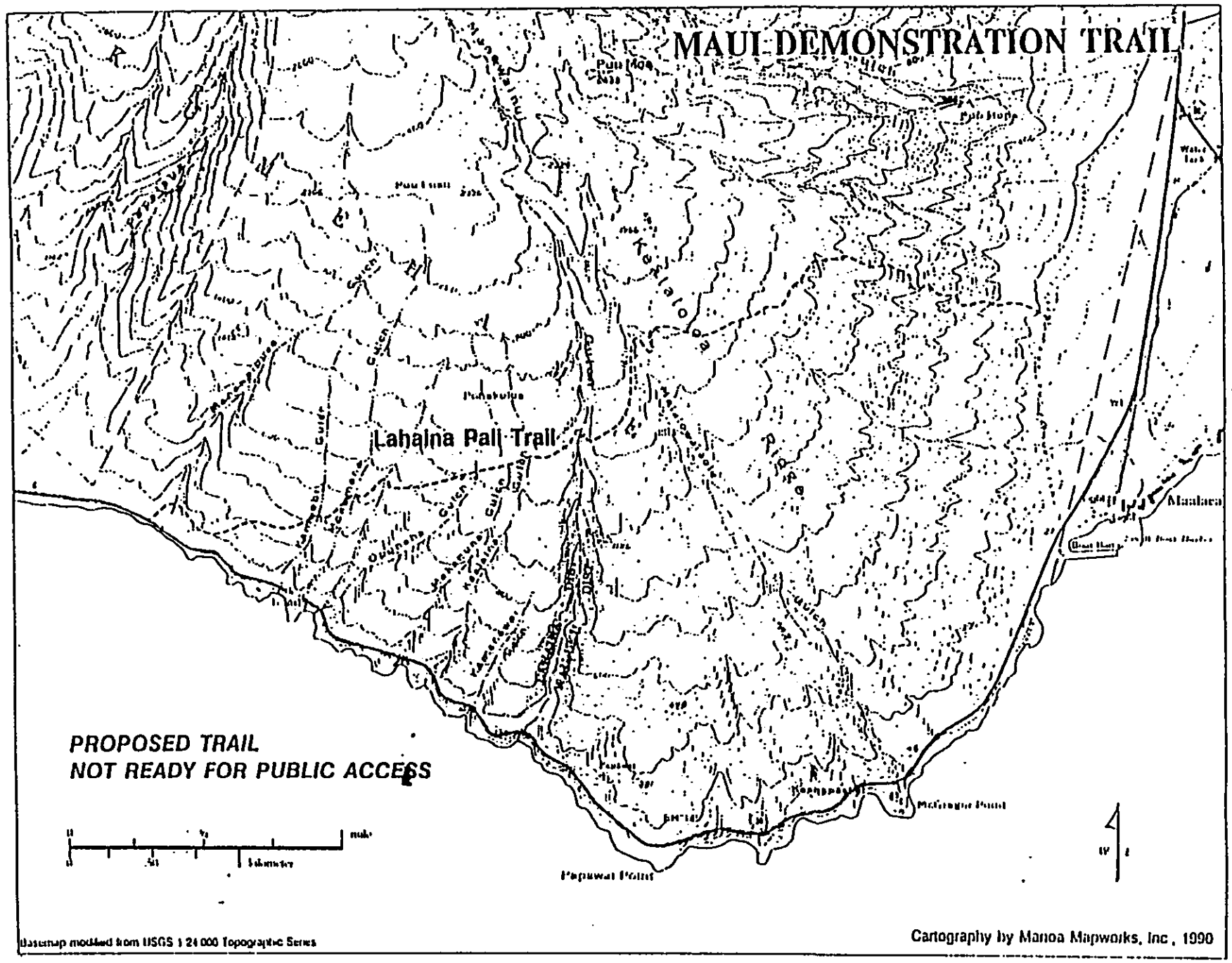


Figure 2. MAUI DEMONSTRATION TRAIL.

Annual rainfall ranges from 15 inches near the coast to about 20 to 30 inches at the highest point of the trail (Armstrong 1973:56). During the time of the survey, winds were predominantly from the south and southeast.

The survey area is covered in arid scrub vegetation, primarily koa haole (*Leucaena glauca*), klu (*Acacia farnesiana*), kiawe (*Prosopis* sp.), lantana (*Lantana camara*) and tall grasses. Along the central portion of the trail, at the higher elevations where moderately strong winds are constant, vegetation is low and sculpted, with some native dryland plants such as *'a'ali'i* (*Dodonaea viscosa*). Hau (*Hibiscus tiliacius*) and wiliwili (*Erythrina sandwicensis*) occur in some of the western gulches.

The trail can presently be reached from three points: from the highway pull-off between the Lahaina tunnel and the east end of Ukumehame State Beach Park; through the pineapple fields (private property) inland of Ma'alaea; and from McGregor Point on a four-wheel drive track through State property currently leased for cattle (see Figure 2).

CULTURAL GEOGRAPHY

The Lahaina Pali trail straddles the boundary between the modern judicial districts of Lahaina and Wailuku (marked by the deep gulch of Manawainui) (see Figure 2). However, the area crossed by the trail once fell entirely within the *ahupua'a* of Ukumehame, the easternmost land unit of the traditional Hawaiian district of Lahaina.

The main productive area of the *ahupua'a* and probably the focus of settlement was to the west of the project area. This is the broad coastal plain fronting Ukumehame Gulch and the smaller, neighboring gulches of Makiwa, Hanaula and Papalaua. A smaller settlement cluster occurred at Ma'alaea (Figure 3).

The Ukumehame plain and inland gulches were once cultivated in irrigated taro. Handy (1940:103) describes taro terraces still operating in 1940 on the flat at the entrance to Ukumehame Gulch; the upper terraces had long been abandoned and other areas had been turned over to sugar.

Typical of areas along district borders, the terrain crossed by the Lahaina Pali trail is relatively inhospitable for settlement or agriculture. Surface water is virtually non-existent and there are few fresh water sources. The slopes are steep and rugged. Access to the ocean is limited to small, narrow, and rocky gulches.

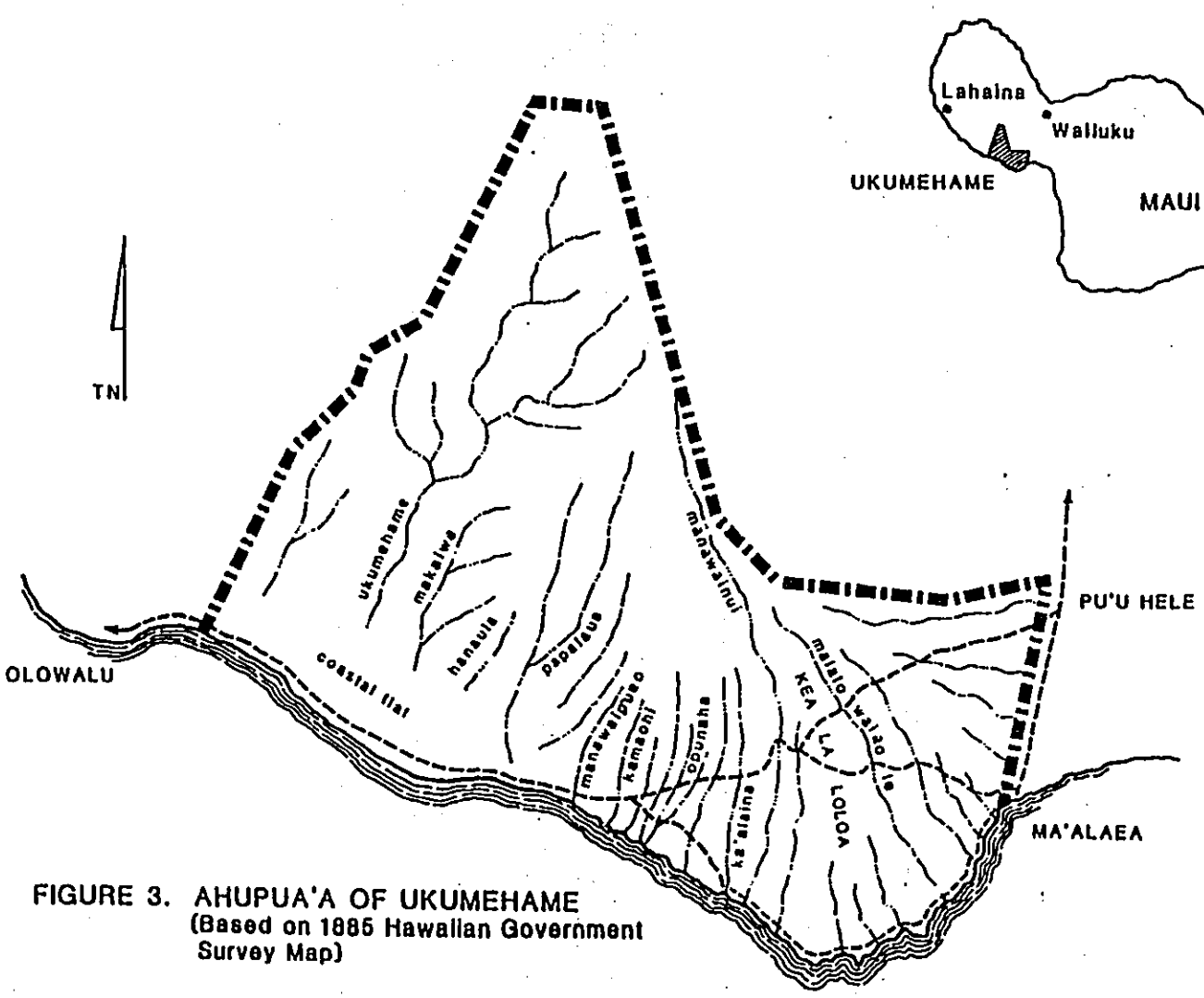


FIGURE 3. AHUPUA'A OF UKUMEHAME
(Based on 1885 Hawaiian Government Survey Map)

PLACE NAMES

Many of the landforms along and near the trail corridor have traditional Hawaiian place names. For reference, these are listed below in a west-to-east orientation (see Figures 3 and 4).

Ukumehame: gulch and *ahupua'a*; translated "to pay in *mehame* wood" (a wood formerly prized for making cabinets and anvils for preparing *olona* fiber)(Mookini 1962; Andrews 1974; Pukui and Elbert 1971).

Manawaipueo: easternmost gulch with access to the Ukumehame coastal flat; marks west end of Lahaina Pali trail; translated "owl stream branch" (Pukui et al. 1974:145).

> "...From there they flew to Molokai, to Lanai and Kahoolawe and gathered together at a place called Manawaipueo with all the owls of West Maui. This place Manawaipueo is where the cliffside road to Aalaloloa begins, leading to Wailuku and other places on the eastern bend of Maui" (W.H.Uaua, "The Legend of the Battle of the Owls", p. 3, Ke Au Okoa, June 29, 1871; from E. Sterling's notes, Maui Historical Society).
>
> It is interesting that the more well known versions of the legend of the battle of the owls have the meeting places on Oahu (cf. Thrum 1907: 201).

Kamaohi: dry gulch that drains at west end of tunnel on Honoapiilani Highway; translated "young child" (Pukui et al. 1974:80).

Mokumana: dry gulch that drains at east end of tunnel on Honoapiilani Highway: translated "divided island" or "divided district" (Pukui et al. 1974:155).

Opunaha: dry gulch; joins another branch before draining into sea to east of highway tunnel; translated "broken cluster" (Pukui et al. 1974:172).

Makahuna: dry gulch; translated "hidden point" or "hidden eyes" (Pukui et al. 1974:140).

Ka'alaina: dry gulch.

Pohakuloa: promontory above trail, inland of Opunaha Gulch; translated "long stone" (Pukui et al. 1974:186).

Kamanawai: short, dry gulch; does not extend inland to trail; translated "stream branch" (Pukui et al. 1974:80).

Manawainui: largest gulch along this coastline; marks current boundary between Lahaina and Wailuku districts.

Malalowaiaole: dry gulch draining to sea at McGregor Point.

Kealaloloa: ridge; translated "the long pathway" (Pukui et al. 1974:102); alternate spelling "Aalaloloa". There is a discrepancy in the location of this ridge between the 1885 Hawaii Government Survey map and the modern USGS map. The former map locates Kealaloloa between Manawainui and Malalowaiaole Gulches; the latter locates the ridge to the east of Malalowaiaole Gulch. The USGS location is used for the purposes of description in this report.

"[Aalaloloa is] the range of hills on the road from Lahaina to Wailuku, after passing Olowalu, and famous in tradition and legend as the place where Eleio first met the spirit of Kanikaniula. Kanikaniula was the first possessor of a feather cloak which finally came into the possession of Kakaalaneo, King of Maui. Thus, Kakaalaneo is always referred to in Hawaiian history as the first king to set the fashion of feather capes, cloaks, scarfs, etc." (Dictionary of Hawaiian Localities, Saturday Press, October 11, 1883; from E. Sterling's notes, Maui Historical Society).

Pu'u Hele: cinder cone at edge of Ma'alaea plain; translated "traveling hill" (Pukui et al. 1974:196). Ashdown (1971:59) identifies this as a *pu'uhonua*; Beckwith (1970:189) recounts several legends relating to this site. The cinder cone, which was once used as a quarry, is now described as a hole in the ground.

Ma'alaea: bay and southwest portion of isthmus of Maui; community and modern harbor at west end of bay; translated "red ocher" (Pukui and Elbert 1971).

HISTORY OF THE TRAIL

The first historical reference to the Lahaina Pali trail is an 1841 account by Laura Fish Judd, a missionary who was making a trek from Lahaina to Wailuku with her family:

> From Lahainaluna we went to Wailuku....A new road had been made around the foot of the mountain, the crookedest, the rockiest ever travelled by mortals. Our party consisted of five adults and five children. We had but two horses. One of these was in a decline on starting; it gave out in a few miles, and was left to die by the roadside. The other "Old Lion" deserves to be immortalized for the services he performed that day, in carrying three and four children at a time on his broad back up and down that unsheltered, zigzag mountain road (Judd, in Fleming 1933:20).

In 1847, Chester Lyman, a visitor to Maui, described the torturous trail on his horseback trip from Lahaina to Wailuku:

> At 11 [in the morning] we again started on, commencing here the ascent of the mountain. The route continues easterly, but is one of the roughest and most difficult imaginable. It is all the way zigzag and winding, up steep, rocky and barren precipices, being in places dangerous on horseback.
>
> We started from the top at 1 P.M. and reached a little conical hill [Pu'u Hele] at the bottom of the plain at 2...(Lyman, in Fleming 1933:21)

Ashdown reiterates the zigzag description of the trail in describing the "zigzag trail of Ma-ui...it comes from Kahakuloa via Lahaina to Pu'u Hele" (Ashdown n.d.a:1). She also gives an alternate name to the trail in writing that "to the mountain side of [Pu'u Hele] a trail called Puka-lani was used by early people, by early missionaries, and by young ladies returning home from Mauna'olu Seminary to Laha'ina side. It is a steep, rugged trail but one well worth travelling, if one cares to hike, or to hire a good horse" (Ashdown n.d.b).

Ashdown also writes that "the Mumuku Winds, along Olowalu and Ukumehame side, were fierce and blew much dirt from the roads leaving base-rock exposed and bumpy. Wild cattle and malo-clad natives on skinny horses often challenged a traveler's right-of-way" (n.d.a:3)

Other problems in crossing this lonely stretch of mountain included dealing with robbers. While some robber tales may or may not apply strictly to the Lahaina Pali trail, they certainly refer to the general area.

> Kaiaupe was a noted female robber who lived by the pali road of Aala-loloa, Maui. She would entice men to lay with her at the edge of the pali then kick them over the precipice with her foot. This act was known as Ka-ai-a-Kaiaupe (T. Kelsey, from E. Sterling's notes, Maui Historical Society).
>
> About 1836, when I was a young lad at Lahaina, a native employed to bring letters from Wailuku to my father, reported that he was attacked by a robber on the mountain coast route not from [sic] from Ma'alaea Bay. In the struggle, he bit off one of the robber's big toes. The robber at once relaxed his hold and fled. In proof of his story, the messenger exhibited the bloody toe (Dr. D.D. Baldwin, in Fleming 1933:22).

In 1885, the trail was cartographically documented on Alexander's map of Maui for the Hawaiian Government Survey (see Figure 3). The map shows two branches off the main trail: one connecting upland Kamaohi Gulch to the mouth of Ka'alaina Gulch (and possibly continuing along the coast) and the other connecting Manawainui Gulch to Ma'alaea. Out of the mountains, another trail connects Pu'u Hele and Ma'alaea. The map shows the Lahaina Pali trail to be a segment of a 138 mile road system, of which 100 miles circled East Maui and 38 miles circled West Maui (Fleming 1933:3).

The overprinting on the 1885 map makes uncertain the coastal trail from Ka'alaina to Ma'alaea. If this existed it would logically have been the traditional Hawaiian trail, but would have been too rugged to convert to a horse trail.

By the end of the century, the mountainous Lahaina Pali trail was abandoned. Thrum reports that in 1889, "a carriage road of easy grade is in the course of construction from Lahaina to Wailuku" (Thrum 1889:98). This was the first effort to cut a road along the base of the pali, probably following in part the route of the Hawaiian coastal trail and cutting off the Lahaina Pali horse trail.

Fleming (1933:22) continues the history into the automobile age (Photo 2):

> In 1911, when the first truck (a three-ton White) was brought over the Pali to Honolua, it had great difficulty in making some of the turns. From this time on, the road was gradually widened and straightened. It was oiled and paved about 1918.

By 1933, very little of the old 19th century trail around West Maui could still be traced. Golf courses, new roads, and sugar and pineapple fields had taken their toll on all but five miles of the trail (Fleming 1933:3-4). It is not clear if the five miles includes the Lahaina Pali segment but, regardless, the Lahaina Pali trail is certainly one of the few, if not the only, remaining links to this past travelers' route.

In sum, the evidence suggests that the Lahaina Pali trail was constructed for horse traffic around 1841, and was used for some fifty years as the shortest route between Lahaina and the isthmus of Maui. It fell out of use around the turn of the century following construction of a carriage road along the base of the pali. There is no evidence that the old horse trail followed a traditional Hawaiian trail, the Hawaiian route probably having been along the coast.

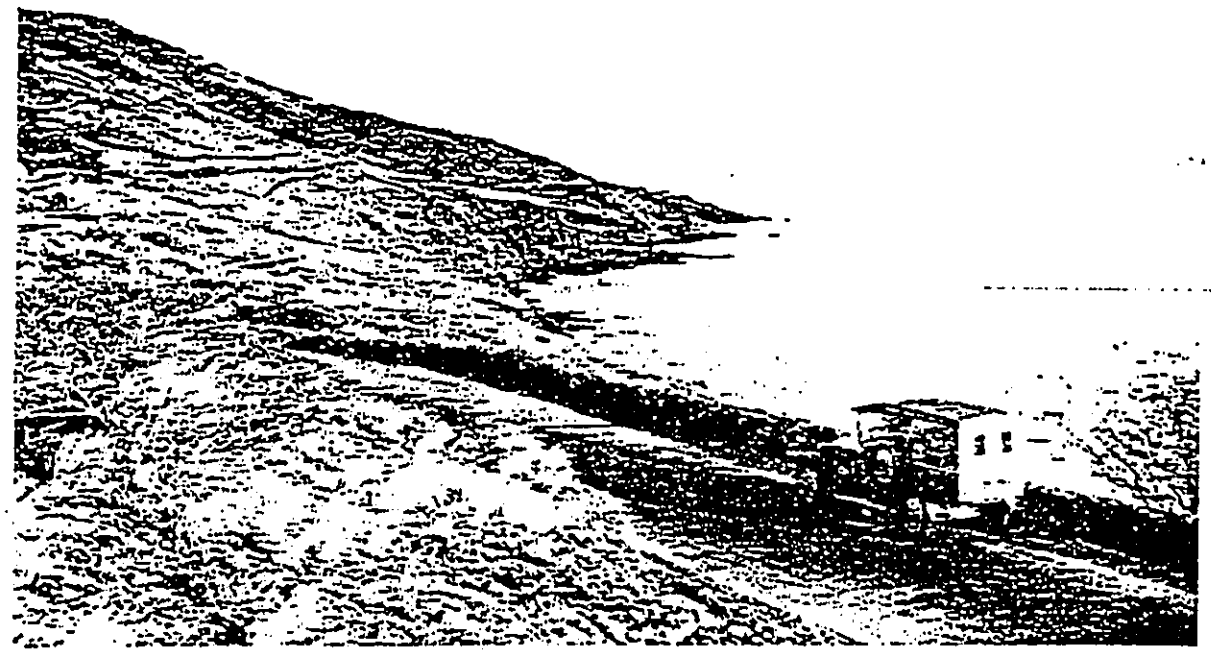


PHOTO 2. FISHER FLOUR TRUCK ON ROAD FROM LAHAINA, 1925. (photo by Mrs. Amy Bryan; courtesy of B.P. Bishop Museum, negative number CP103,794).

PREVIOUS ARCHAEOLOGICAL RESEARCH

Over 50 years ago Winslow M. Walker conducted an island-wide survey for the B.P. Bishop Museum that included the general area of the southwest coast of the West Maui mountains. He identified two *heiau* at Ukumehame and a *heiau* and associated petroglyphs at Ma'alaea. He wrote that along the coast between Ma'alaea and McGregor Point "at least 45 [shelters] were noted. The shelters are low walled semi-circular or oval enclosures built against some large rock or group of rocks. Shells and pebbles are found around these sites" (Walker n.d.:78).

Walker makes no mention of the Lahaina Pali trail and it is unlikely that he surveyed in the project area, a region with little archaeological potential. There is no record of any other formal archaeological survey in the general region, or in the project area specifically.

II: RESULTS OF SURVEY ALONG THE LAHAINA PALI TRAIL

This section of the report details the results of the survey of the Lahaina Pali trail. It presents the field methods, describes the trail in terms of architectural and natural features, summarizes the types of the archaeological features located, and discusses the nature of archaeological resources along the trail.

FIELD METHODS

The survey of the Lahaina Pali trail was carried out over a five-day period between February 25 and March 1, 1991. A total of 80 person-hours was expended on the survey.

Prior to the commencement of survey, consultation and a field trip with staff of the Maui office of the Division of Forestry and Wildlife were carried out. Survey was then initiated from the west end of the trail at Manawaipueo. Survey was conducted by running parallel transects within the 50 foot buffer zone along both sides of the trail, zig-zagging for complete coverage if vegetation obscured vision. Survey strategy variations included constricting the corridor in areas of steep slope and expanding areal coverage to include possible site areas noticeable or accessible from the trail. The survey was thus conducted to allow recording of basic trail features, associated sites, and any nearby sites that might be readily reached from the trail. The intent was to provide a base of site data for protection and interpretation planning.

All sites located along the trail were recorded by written description, sketch maps, and photographs. No surface collection was made. Limited test excavation in two sites (2819 and 2826) was carried out to determine the depth and nature of deposits and to collect any datable materials.

For ease of recording, the trail was divided into sections, each of which was described and photographed. Surface artifacts, primarily broken bottle glass, were noted.

RESULTS OF SURVEY

Eighteen sites were identified along the Lahaina Pali trail (Figure 4). With two exceptions (2816 and 2833), all sites are related to construction and use of the trail or the old coastal road. These 16 trail or road-related sites include alignments, enclosures, walls, petroglyphs, terraces, and C-shaped structures. They appear to have functioned as alternate trail routes, for water diversion, quarrying, trailside art, storage, and shelters (Table 1). The sites are in fair to excellent condition. Site descriptions and maps are presented in Appendix A.

Sites 2816 (a midden scatter) and 2833 (a rock shelter) may be pre-contact Hawaiian sites that may also have been used into the post-contact period. Both are located at the west end of the trail in Manawaipueo Gulch, which is the only locale along the trail with direct access to the traditionally productive coastal flat of Ukumehame (to the west of the project area).

Features in sites 2819 and 2826 were tested to examine the depth and nature of cultural deposits and to collect material for dating.

2819: A shovel probe was placed in the center of a 7 x 3 m terrace abutting the seaward side of the trail. The test revealed a 20 cm deep, single layer of dark reddish brown silt overlying bedrock. No cultural material or datable samples were recovered.

2826: A shovel probe was placed in the center of an enclosure measuring 3 m across. The enclosure is the main feature in a complex situated on the top of a narrow ridge, about 10 meters seaward of the trail. The test pit exposed a single layer of fine red silt on a bedrock base; there is bedrock exposed on the surface of the ridge to the east of the site. The 22 cm deposit appears aeolian in origin. No cultural material or datable samples were recovered.

The only cultural material observed on the trail was broken bottle glass and crockery. One whole bottle was found above the trail near its eastern end. The majority of the surface artifacts appear to be 19th century in age.

FORMAL SITE TYPES

Walls occur in six sites. With one exception, they are short (3.5 to 7 m long), but all are well-constructed, bi-faced, and stacked structures. The exception is a discontinuous retaining/standing wall in Manawainui Gulch (site 2825); it runs inland of the trail for about 70 m along the east edge of the narrow streambed. Two of the walls (sites 2817 and 2818) are probably related to construction of the late 19th century paved coastal road.

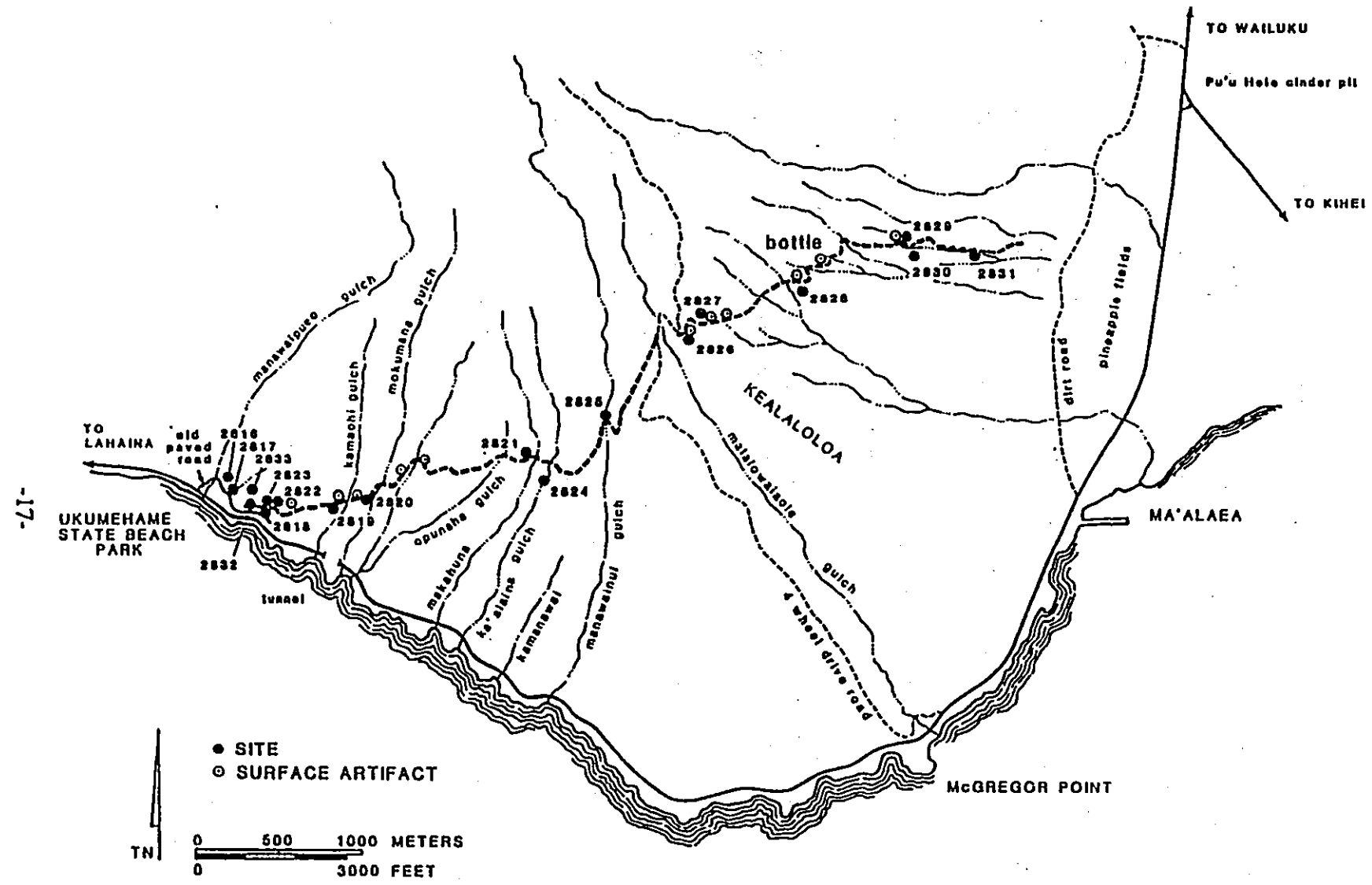


FIGURE 4. SITE LOCATIONS LAHAINA PALI TRAIL

TABLE 1. SUMMARY OF SITES, LAHAINA PALI TRAIL

SITE NO.	COMPONENT FEATURES	TOTAL SITE AREA	FUNCTION
2816	midden, coral	3x6 m	habitation
2817	wall, culvert in road	2x7 m	road/water diversion
2818	wall, modified outcrop	2x6 m	road/rock quarry
2819 *	terrace, petroglyph	15x5 m	shelter/art
2820	C-shape, wall, enclosure	30x50 m	shelter/unknown
2821	petroglyphs, crockery, glass	10x10 m	art/shelter
2822	alignment	50 m long	alternate trail
2823	alignment, one pc. shell	25 m long	alternate trail
2824	cupboards	30x10 m	storage
2825	petroglyphs, walls	20x10 m	art/shelter
2826 *	enclosure, walls, glass	24x10 m	shelter
2827	enclosure, glass	1.5x1.5 m	storage
2828	C-shapes, one pc. crockery	25x8 m	shelter/storage
2829	paved terrace	4.5x1 m	trail
2830	paved terrace	4x1 m	trail
2831	alignment	6.5 m long	alternate trail
2832	wall, alignments	2.2x1 m	trail
2833	rock shelter, one pc. shell and coral	2x3 m	habitation

* tested

NOTE: A complex of probable traditional Hawaiian dryland agricultural features was observed in Manawaipueo Gulch, inland of the historic paved road. It was not recorded because it is located about 45 m outside of the survey corridor. Site LP-1 may be related to this complex.

There are four C-shapes located in the trail corridor. All are roughly constructed, with piled rubble walls, ranging in size from 1 to 2 m across. Three are free-standing structures, clustered in one site (2828). The fourth is in a complex including a large enclosure and a wall (2820); this C-shape, the largest of the four of this type, is built against a rock outcrop.

Boulder alignments occur in four sites. All alignments appear to mark alternate trail routes.

There are three terraces in the project area. One terrace (in site 2819) is a boulder-lined, dirt-surfaced level area adjacent to the trail. The other two terraces (sites 2829 and 2830) are paved and small, and by their location appear to be trail structures, although their specific function cannot be discerned.

There is one isolated petroglyph and two sets of petroglyphs. The single petroglyph (in site 2819) is an animal-like figure pecked on a boulder in the middle of the trail. The two clusters (sites 2821 and 2825) are letters and Hawaiian names carved on outcrops adjacent to the trail; the outcrops shade the trail and may have served as convenient rest stops for travelers.

Enclosures occur in three sites. These structures have little in common, short of being areas defined by encircling walls. In site 2820, the enclosure is 30 by 12 to 20 meters, with one wall being the curbing of the trail. The site 2826 enclosure is 3 m across, well-constructed and the center of a small complex of walls. The site 2827 enclosure is a small (1.5 m across) isolated structure formed by rocks stacked against and between large outcrop boulders.

Cupboards occur only in site 2824. These features consist of stacked boulders against outcrops, forming small sheltered storage areas. There may be other similar features in the outcrops adjacent to this site.

TRAIL FEATURES

The Lahaina Pali trail is itself an archaeological structure that remains in generally fair to excellent condition. The following descriptions of the trail corridor are presented by segments heading from west to east. Trail segments are illustrated in Figure 5.

TrA: Manawaipueo Gulch. The late 19th century paved road (with asphalt surface and high boulder retaining wall on the downslope side) is the main feature of this segment of the trail corridor; the earlier horse trail (the Lahaina Pali trail) is not evident. Possible Hawaiian dryland agricultural terraces and shelters are located in Manawaipueo Gulch, about 50 m inland of the road bed.

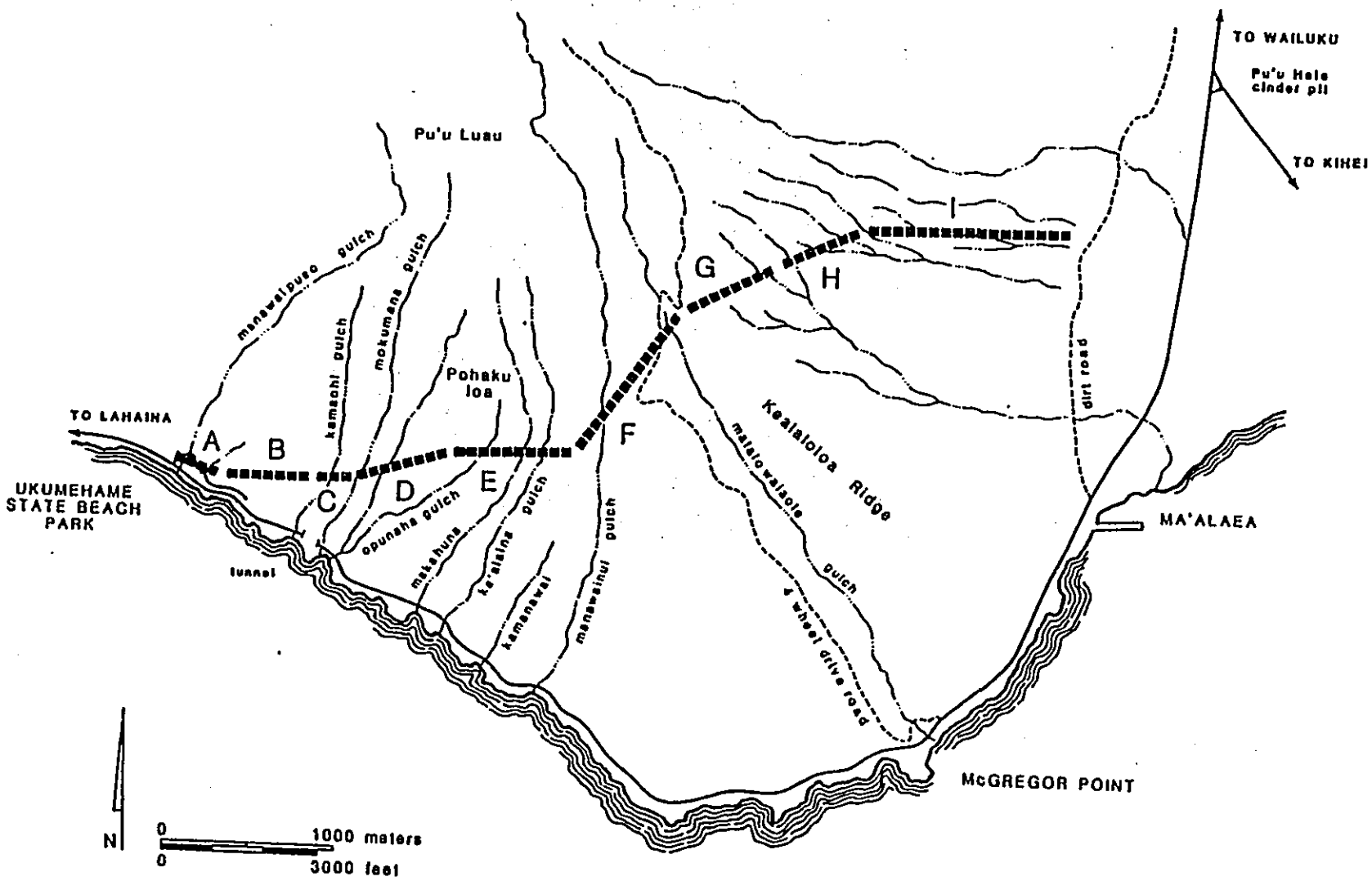


FIGURE 5. TRAIL SEGMENTS, LAHAINA PALI TRAIL

Sites along this segment include a rock shelter (2833), walls/alignments (2818, 2822, 2823, 2832), and a terrace (2819). In addition, concentrations of bottle glass fragments were seen at two locales (see Figure 4 for location of surface material along trail).

TrC: Kamaohi Gulch. As it traverses Kamaohi Gulch, the trail is relatively well-defined, although it is eroded and gullied along the west slope, where there may be two parallel alignments. The trail along the east slope is exceptionally well-constructed and in excellent condition: the retaining face is up to two m high on the downslope side (Photo 4). High basalt exposures on the west side of the gulch appear scratched but there are no decipherable petroglyph figures or writing (historic or modern).

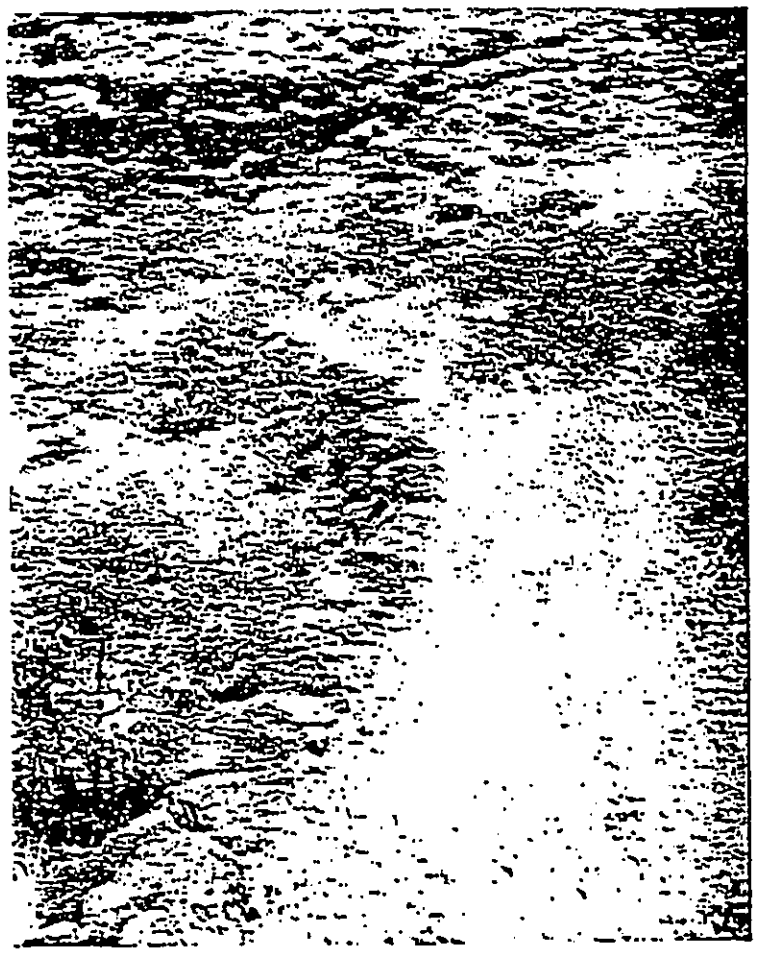


PHOTO 4.
RETAINING WALL
OF TRAIL,
EAST SIDE OF
KAMAOHI GULCH.

Sites in this segment include a midden scatter (2816) and wall (2817)(see Figure 4 for location of sites). The former may be a traditional Hawaiian site related to the agricultural terrace complex. The latter is probably related to water control or diversion for the paved road.

TrB: East of Manawaipueo Gulch to the west side of Kamaohi Gulch. This segment of the trail is well-defined, although overgrown with tall grass and koa haole. The trail is cut into the steep slope above the old paved road bed, with first evidence of the trail on the east side of the small east tributary to Manawaipueo Gulch. As it continues east, the trail branches and converges into two and sometimes three distinct trail alignments; it is difficult to determine a "main" trail although a primary alignment becomes more clear toward Kamaohi Gulch.

Most of the trail (including the alternate alignments) is marked by boulder curbing. Toward Kamaohi Gulch, the trail edge in some places is a wall up to 50 cm high (e.g. adjacent to site 2819)(Photo 3). Near site 2819 is a 1.5 m high boulder upright set into the makai trail curbing. Just west of Kamaohi Gulch, the trail is marked by parallel, stacked boulder walls; although the walls are in good condition, the trail itself is eroded and gullied (see Ashdown's comments about erosion, page 12).

PHOTO 3. DOWNSLOPE SIDE OF TRAIL CURBING, FACING NORTH FROM CENTER OF SITE 2819 TERRACE.

No sites were located in Kamaohi Gulch. Bottle glass fragments, including a piece of a square black bottle, were observed on the trail at the point where it drops into the west side of the gulch.

TrD: Mokumana Gulch to the west tributary of Opunaha Gulch. This section of the trail crosses through a series of small gulches, the largest of which is the west tributary of Opunaha Gulch. Along most of this segment, the trail is in a varied, though generally good, state of preservation. For example, in the first gulch east of Mokumana Gulch, the trail along the west slope of this gulch is well-constructed, 1.75 m wide, with water bars (boulder alignments built at an angle across the trail to control erosion); its downslope edge is built up to 1.5 m high. Where the trail crosses the gulch, however, it has been washed away and is now thickly overgrown with hau. Broken bottle glass is scattered along the trail.

Only one site, a complex consisting of a C-shaped structure, enclosure, and wall (site 2820), was located along this stretch of trail.

TrE: Opunaha Gulch to Manawainui Gulch. This section of the trail crosses the shallow upper reaches of Opunaha, Makahuna, Ka'alaina, and Kamanawai Gulches. The trail is generally discernible as a narrow swale, sometimes curbed, across the gentle to moderate slope; there are numerous water bars along this segment of trail. In the section between Ka'alaina and Manawainui Gulch is a short segment of boulder curbing on bedrock (Photo 5). Vegetation in the east half of this trail segment is low, very dense klu, kiawe, and lantana; passage is very difficult particularly where the trail crosses the shallow gulches.

Two sites are located along this trail segment: a set of post-contact petroglyphs (letters and the date "1874") scratched on a high boulder outcrop (site 2821) and a complex of cupboards (site 2824). A concrete water tank is located under a small grove of kiawe trees on the east slope of Opunaha Gulch, about 70 m makai of the trail; a pipe, presumably part of a pasture water system, crosses the trail above this tank.

TrF: Manawainui Gulch to Malalowaiaole Gulch. This central section of the trail crosses the two deepest gulches and the highest point along the length of the trail. The trail is well-defined, in generally excellent condition, and with minimal overgrowth.

Within Manawainui Gulch, the trail is curbed, with water bars on the west side of the gulch (Photo 6). Where the trail crosses the gulch floor, cattle have created a wallow in the trail; there is one wiliwili tree at this point.

PHOTO 5. TRAIL AREA, OPUNAHA TO MANAWAINUI GULCHES.
Note the boulder curbing on bedrock in center foreground.

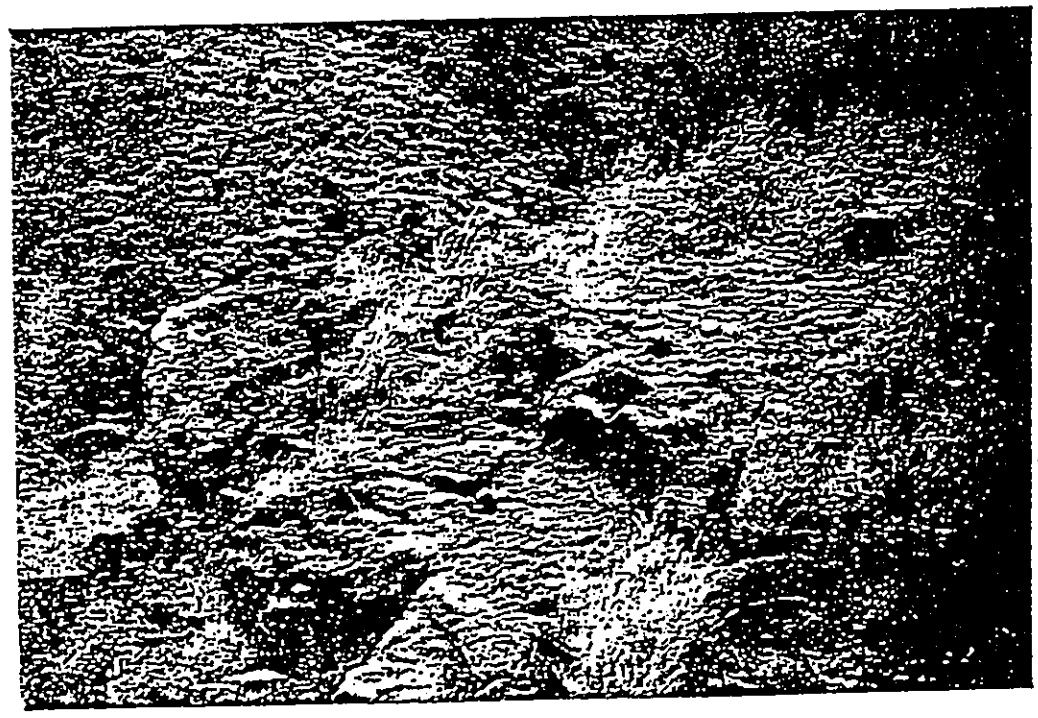


PHOTO 6. WATER BAR ACROSS TRAIL, MANAWAINUI GULCH.

On the gently sloping ridge between Manawainui and Malalowaiaole Gulches, the trail is a two meter wide swale, partially curbed; the area is presently used for cattle which, combined with the constant wind, keeps the vegetation close-cropped. The trail in Malalowaiaole Gulch has been obliterated by the McGregor Point jeep road. On the east ridge of Malalowaiaole Gulch, where the jeep road continues uphill, the trail diverges slightly makai as a deeply eroded swale on which are scattered bottle-glass fragments.

Two sites are located along this trail segment: a complex of post-contact petroglyphs (letters) and walls in Manawainui Gulch (site 2825) and an enclosure and adjacent walls on the east ridge above Malalowaiaole Gulch (site 2826).

TrG: Kealaloloa Ridge. This section of the trail is the beginning of the descent to the east end of the trail. Along this section, the trail is heavily eroded and difficult to follow. Vegetation is low grass, klu, and lantana, making trail identification as well as traverse difficult. At the west end of this segment, the trail appears to have become a 1.5 to 2 m deep, unvegetated gully; there are numerous bottle fragments scattered on the eroded surface.

A small enclosure (site 2827) is the only site along this segment of trail.

TrH: Unnamed gullies. This section of the trail crosses a series of undulating gullies and ridges. Some sections are in good condition and easily followed, particularly as they cross the less densely vegetated ridges. At the west end are several water bars. A whole bottle, dark greenish black, 30 cm tall, 8 cm wide at the base, was found adjacent to the trail at the east end of this section (see Figure 4).

Site 2828, a complex of three C-shaped structures, is located along this trail section.

TrI: This section marks the east end of the trail as it descends to the Ma'alaea plain. The upper portion is eroded, with extensive exposures of bare dirt or sparse vegetation. The middle section zigzags down the west side of a shallow gully, with several branches that converge and diverge from the main trail. The zigzags are of exceptional design and are probably the features so well-remembered by early travelers. The trail is curbed, well-constructed, and easily followed. Vegetation becomes more dense in the lower elevations.

At the base of the mountain, the trail disappears into the high canopy kiawe forest that borders the pineapple fields at Ma'alaea. Although several transects were run through this area, no trace of the trail could be found. The area appears to have been graded and there are military picket fenceposts and

rolls of rusted barbed wire scattered throughout the area, which was reported to have been used by the U.S. military for training during WWII (W. Wong, personal communication).

Three sites are located along this segment: two terraces (sites 2829 and 2830) and a boulder alignment (site 2831). All three appear to be associated with the trail.

THE NATURE OF ARCHAEOLOGICAL SITES ALONG THE LAHAINA PALI TRAIL

Most of the archaeological sites along the Lahaina Pali trail are probably related to the construction and use of the trail. These sites reflect a range of activities that took place along this transportation route.

The trail itself is an exceptional site in its own right. It is an illustration of 19th century craftsmanship, which in a sense (given the fact that the trail was built less than 50 years after Western contact) is an extension of traditional Hawaiian craftsmanship adapted to new circumstances.

Half of the sites are located along the western third of the trail. Two of the sites may be pre-contact in origin and if so, are related to settlement in the *ahupua'a* of Ukumehame, which focused on the coastal plain to the west of the project area; the two sites are located in the only portion of the trail corridor with direct access to the coastal plain. Six of the sites are related to the trail, as alternate alignments or possible rest stops. Two of the sites are probably associated with the late 19th century road. All of these sites are, of course, adjacent to the modern Honoapiilani Highway, which is visible from most of this end of the trail corridor.

The paucity of traditional Hawaiian sites along this trail is not unanticipated. The trail is located in a steep, dry, rocky environment, with limited access to the ocean. It is at the periphery of the productive area of the *ahupua'a* (the Ukumehame coastal flat) and, further, crosses the area that was the border between two traditional districts of the island.

Testing in two structures (sites 2819 and 2826) showed relatively shallow deposits that are probably aeolian in nature, with no apparent cultural material. Although the testing was also inconclusive regarding the chronological context of the sites, a temporal association with the trail can be made based on site structure, surface artifacts (broken bottle glass and crockery), and proximity to the trail. This association can be further examined in detailed excavation.

III: EVALUATIONS OF SIGNIFICANCE THE LAHAINA PALI TRAIL

This section of the report discusses the significance of sites recorded during the survey of the Lahaina Pali trail. The significance of individual sites is presented in Table 2 and Appendix A.

CRITERIA FOR SIGNIFICANCE EVALUATIONS

Draft rules and regulations of the Division of Historic Preservation, Department of Land and Natural Resources (May 1989), provide the framework for evaluations of significance used in this report. Criteria are based on those used for the National and Hawaii Registers of Historic Places. Significance is defined in the following manner:

> A site has integrity of location, design, setting, materials, workmanship, feeling, and association, and one or more of the following criteria:
>
> A. Site is associated with events that have made an important contribution to the broad patterns of our history.
>
> B. Site is associated with the lives of persons important in our past.
>
> C. Site embodies the distinctive characteristics of a type, period, or method of construction; it represents the work of a master; or it possesses high artistic value.
>
> D. Site has yielded, or may be likely to yield, information important for research on prehistory or history.
>
> E. Site has important historical cultural value to an ethnic group of the State.

TABLE 2. SITE SIGNIFICANCE: LAHAINA PALI TRAIL

SITE NO.	SITE TYPE.	SITE FUNCTION	ASSOCIATION*	SIGNIFICANCE
---	Lahaina Pali Trail	transportation	2	CDE
---	19th C roadbed	transportation	3	CDE
2816	midden scatter	habitation	1	D
2817	wall/culvert	water diversion	3	D
2818	wall/mod. outcrop	rock quarry	3	D
2819	terrace/petroglyph	shelter/art	possibly 1; 2	D
2820	C-shape/wall/ enclosure	shelter/unknown	possibly 1; 2	D
2821	petroglyphs	art/shelter	2	D
2822	alignment	alternate trail route	2	D
2823	alignment	alternate trail route	2	D
2824	cupboards	storage	possibly 1; 2	D
2825	petroglyphs	art/shelter	2	D
2826	enclosure/walls	shelter	possibly 1; 2	D
2827	enclosure	storage	possibly 1; 2	D
2828	C-shapes	shelter/storage	2	D
2829	paved terrace	part of trail	2	D
2830	paved terrace	part of trail	2	D
2831	alignment	alternate trail route	2	D
2832	wall	part of trail	2	D
2833	rock shelter	habitation	1	D
UNRECORDED SITES:				
Manawaipueo Gulch	walls/terraces	dryland field system	1	D

* 1 = traditional Hawaiian association
2 = association with Lahaina Pali trail; these features should be considered and their significance evaluated as part of the overall trail complex
3 = probable association with the construction of the 19th century carriage/auto road

SIGNIFICANCE OF ARCHAEOLOGICAL RESOURCES ALONG THE LAHAINA PALI TRAIL

The Lahaina Pali trail is one of the few remaining intact sections in West Maui of the 19th century island-wide road system. Because of its relative isolation, it retains its integrity of location, design, setting, materials, workmanship, feeling, and association. It meets criterion C in that it well represents 19th century road building in mountainous terrain; criterion D by containing important information for research; and criterion E by virtue of its cultural value to the Maui community as indicated by its selection as a demonstration trail.

The sites along the trail meet criterion D, as having potential to yield or be likely to yield "information important for research on prehistory and history". Based on historical accounts, the road was used between roughly 1841 and 1898. Further study on the features along this trail may contribute to an understanding of this rather tightly bracketed time frame.

Those sites or features that are integrally associated with the trail (see Table 2) should also be evaluated in the context of the significance assessment for the trail as a whole.

Further, sites 2816 and 2833 are believed to be traditional Hawaiian sites. Further archaeological work on these sites will be a beginning to a body of data on settlement in this part of the *ahupua'a* of Ukumehame. These sites are in Manawaipueo Gulch, which is at the periphery of the productive coastal flat of Ukumehame, the center of *ahupua'a* settlement. Manawaipueo is the transitional edge between the coastal flat and the relatively unproductive, mountainous border area between Lahaina and Wailuku districts.

IV: RECOMMENDATIONS FOR LAHAINA PALI TRAIL: LONG-TERM PLANNING AND MANAGEMENT

It is recommended that a cultural resource management plan (CRMP) be prepared in coordination with the detailed Na Ala Hele development or concept plan for the Lahaina Paii trail. The purpose of the CRMP is to provide a management framework for cultural resources that is integrated with plans for the actual physical development of the trail.

The CRMP should (1) present a final assessment of impacts based on the details of the development plan (e.g. location of trail facilities; access points; identification of heaviest use areas; etc.); (2) address the mitigation of those impacts, including data recovery as well as specific site protection measures; (3) incorporate an interpretive plan that identifies interpretive goals and the means to achieve those goals in the context of the trail purpose; and (4) develop final management strategies to ensure long-term protection for the trail and sites along the trail.

The following discussion and recommendations are presented as a preliminary CRMP. The recommendations are posed in the context of trail purpose as noted in the Lahaina Pali Trail "Fact Sheets" prepared by Na Ala Hele: that the trail is intended for "hiking, whale watching, bird hunting (needs further discussion)[sic], nature study, picnicking"; it is to be used by "hikers, sightseers, whale watchers, students in archaeology, geology, and botany...;" and it "has high potential for interpretive programs in archaeology, geology, and botany".

PRELIMINARY IMPACT ASSESSMENT

Once it is developed for public use, the Lahaina Pali trail will be an excellent trail for mid-level hikers. Given the close proximity of this trail to urban areas and its excellent scenic views (including vistas for whale-watching), high visitor use can be anticipated. However, as a mid-level hiking trail, the Lahaina Pali trail will not appeal to casual walkers or those who are uninterested in a more extended outing. This degree of difficulty will act as an initial buffer to a percentage of trail users who may be prone to vandalism. Thus, it is believed that much of the impact on sites will be from inadvertent actions, such as knocking trail curbing stones from place, or from intentional actions that are not recognized by the public as damaging, such as collecting surface artifacts as souvenirs.

Unlike the sites along Lana'i's Kaiolohia-Kahue trail, the sites of the Lahaina Pali trail are under no significant threat from natural processes and thus this impact needs little attention. The exception to this is the erosion of sections of the trail itself, resulting in the need for trail stabilization.

IMPACT MITIGATION STRATEGIES

Cultural resource management emphasizes the following strategies: management through visitor channeling, site interpretation, site avoidance, and data recovery. These strategies are incorporated below in the recommendations for different elements of trail development.

SITES ALONG THE TRAIL

There are 18 sites situated along the Lahaina Pali trail, aside from the curbing or facing of the trail proper. The following recommendations are made for the disposition of these sites:

Site development for interpretation: Sites 2818, 2819, 2820, 2821, 2825, 2826, and 2828 are recommended for interpretation. These sites should be cleared as a part of the trail clearing effort (see below) and mapped in detail at the same time. Further discussion on interpretive possibilities is presented below under "Trail Interpretation".

Site avoidance with no interpretation: Sites 2816, 2817, 2822, 2823, 2824, 2827, 2829, 2830, 2831, 2832, and 2833 should be avoided in the course of developing the trail for public use. Some of these sites are located away from the trail and may be further protected through the use of vegetation barriers, both visual and physical. These sites should not be cleared and the natural vegetation should be encouraged to "overgrow" these sites.

In some cases data recovery may be appropriate as a means of mitigating visitor impact. An evaluation of the need for data recovery should be made in the final CRMP.

Scatters of artifacts (glass and crockery) along the trail have not been given individual site numbers, but these artifacts should be collected at an early stage in trail planning (see recommendations below regarding trail development).

Petroglyphs are among the most difficult types of sites to protect. By their nature they invite copycat behavior (that is, leaving one's own mark) or they generate unintentional damage through efforts to duplicate them. The petroglyphs in the

project area are more susceptible to the first problem than the second. These petroglyphs are not in places that would be easy to avoid, so interpretation and limited barriers would be the only reasonable means of protection. Some interpretive programs are experimenting with setting aside an area for "modern petroglyphs" but we have not yet seen any studies of the results.

LAHAINA PALI TRAIL

The following recommendations are made for trail development as it relates to cultural resource management, i.e. actions that should be taken as part of preparing the trail for public use.

1a. **Trailhead definition.** On the west side, the intact trail ends just above the old paved road at the east side of Manawaipueo Gulch; on the east side, the intact trail terminates at the nose of a low ridge overlooking the kiawe forest inland of the pineapple fields. Both of these locations provide views of the surrounding area and would make excellent entry points to the trail. They are recommended as the two trailheads.

Locating the trailheads at these points would allow greater flexibility for design of additional facilities such as parking areas and restrooms without physically or visually impacting the trail itself.

1b. **Primary trailhead.** It is recommended that Manawaipueo (the west end of the trail) be developed as the main trailhead. The trail ascends in a more gradual slope from this end, with more opportunities for viewing and rest stops. In contrast, the ascent from the east end is very steep.

The western half of the trail also offers better interpretive possibilities than does the eastern half. Sites include traditional Hawaiian sites in Manawaipueo Gulch, features of the 1841 trail, monumental sections of the late 19th century road, and the intersection with the present Honoapiilani Highway.

The west end is also more appropriate for development of the main trailhead facilities, including parking and restrooms. This end is immediately accessible from the main highway, has a large area that can be developed for facilities, and is already state property.

A trailhead at the west end can also be linked to the nearby Ukumehame State Beach Park.

2. **Trail alignment definition.** There are several areas where the trail breaks into multiple alignments (e.g., TrB and TrC) or is heavily eroded (e.g., in section TrG)(see Figure 5 for trail segment locations). It is recommended that a single alignment be selected and developed for public use. Selection would be best accomplished by a cooperative field inspection involving the staff of Na Ala Hele, Division of Forestry, and Division of Historic Preservation.

3. **Trail clearing.** Vegetation and loose rock need to be cleared from the trail. Defining the best trail alignment (see recommendation 2, above) may probably be most effectively undertaken in coordination with trail clearing *rather than prior to it.*

   It is recommended that only the interior area of the trail (as defined by the boulder curbing, where present) be cleared; retaining the dense natural vegetation along the trail edge would help to keep visitors from straying off the trail. In areas where there is no boulder curbing, a maximum width of four feet should be cleared and maintained along the trail alignment. Reconstruction of curbing is not recommended.

4. **Archaeological work.** An archaeologist should monitor the trail clearing to ensure that there is no incidental damage to the trail. Concurrent with the trail clearing, the archaeologist should (a) make a detailed photographic record of the trail, as a baseline for future monitoring of visitor impact once the trail is opened to public use; (b) document alternate trail alignments by mapping and/or photography; (c) record and collect all surface artifacts; and (d) evaluate trail conditions and make recommendations for appropriate stabilization of trail features.

   Note: It is extremely important that the surface artifacts be collected as soon as possible, at the very latest in association with trail clearing as noted above. The survey suggests that the trail and associated sites are primarily 19th century in origin and that there is little in the way of cultural deposition. This means that the surface artifacts are the primary materials that are available for understanding the temporal context and use of the trail. These items are the most fragile component of the archaeology of the Lahaina Pali trail and need to be protected through immediate collection.

5. **Stabilization.** Sections of the trail in poor or dangerous condition should be stabilized, within the parameters for site protection recommended by the monitoring archaeologist.

TRAIL INTERPRETATION

The combination of exceptional views, trail condition, and historical records relating to the Lahaina Pali trail offers multiple interpretive possibilities. There are constantly changing views of not only areas of Maui but the neighboring islands of Lana'i and Kaho'olawe. The trail itself is in excellent condition, with sections that are of impressive construction. There are numerous historical stories and fables related to the trail and the area (for example, about robbers) that add a living, active quality to the archaeology.

Various cultural and historical themes that could be developed for interpretation include the following:

1. **Lahaina Pali trail.** Interpretation can focus on the story of the road itself, in the context of the problems of travel, history of roads and roadbuilding on Maui and/or in the islands as whole.

2. **Maui in the 1800s.** 1841 is earliest reference to the road (which, at that time, is called a "new road" by Laura Fish Judd). Interpretation can focus on stories of different places that are visible from the trail in that time period. For example, an interpretive sign at the west end of the trail could discuss the beginnings of the sugar plantation at Olowalu. Stories related to the trail could also be told; for example, a sign at Kealaloloa could relate tales of robbers.

3. **Modern Maui.** Like the theme of Maui in the 1800s, this theme can relate modern stories of places visible from the trail. These include, for example, whale watching off of Lahaina, astronomy on Haleakala, tourism in Makena, the U.S. Navy and Hawaiian cultural values on Kaho'olawe, and Kahului as the main city of modern Maui.

A number of themes centering on natural history could also be incorporated into the interpretive program.

It is recommended that the main center for interpretation be located at the proposed Manawaipueo trailhead. If this were carried out, then the 19th century roadbed could be incorporated as part of the center and the traditional Hawaiian sites inland of the roadbed could be developed for interpretation. These sites have been noted in the present report but, being well-removed from the survey area, were not recorded. Recording and excavation for interpretation would have to be carried out in this complex.

Finally, it is recommended that excavation for interpretation be conducted in selected interpretive sites.

GENERAL MANAGEMENT CONCERNS

The Na Ala Hele proposal for primary trail use is strongly supported, that is, that this be a "hiking trail." Any other uses should be prohibited, including horse-riding, vehicle operation (motorcycles, bicycles, etc.), and hunting.

Once the Lahaina Pali trail is opened to the public, long-term management of the trail can be ensured by an on-going maintenance program and periodic monitoring of trail condition. Interpretation of the trail as well as sites along the trail will also serve to protect the resources.

Maintenance of the trail and associated facilities is one of the important elements in a campaign against vandalism and related "trashing" of public areas. It has commonly been found that vandalism breeds vandalism in public areas. Removing traces of vandalism and trash helps suppress the damage cycle.

Monitoring of visitor use of the trail will be important for long-term management. Monitoring includes the following elements:

1. **Database.** Surface characteristics of all sites need to be documented prior to opening the trail for public use. These data will be used for comparison in later periodic monitoring as the baseline for evaluating the impact of visitor use on trail and site condition and integrity.

2. **Monitoring.** Monitoring involves periodic site inspections to evaluate the impact of public use. A monitoring program can be modeled on the program for the Na Pali Coast State Park on the island of Kaua'i.

3. **Reevaluation.** Following each monitoring inspection, a reevaluation of the effectiveness of site protection measures should be made. If it is found that the resources are being adversely impacted by public use, additional site protection measures can be implemented.

Interpretation of the trail and selected sites along the trail is a primary strategy for long-term management. In addition to contributing to the outdoor recreational experience, interpretation also serves to direct the public toward an appreciation and respect for historical resources. Such respect will, in turn, help to preserve the resources. Management through interpretation has been found to be a more successful means of protecting certain kinds of sites than the construction of physical barriers.

KAIOLOHIA - KAHUE
COASTAL TRAIL

I: THE KAIOLOHIA-KAHUE PROJECT AREA

The Kaiolohia-Kahue coastal trail is a 3.5 mile long segment of a 19th century Hawaiian government trail that ran along the north and east coasts of Lana'i. The government trail connected settlements from Awalua on the west to Naha on the east. Connecting roads to the upland center of Lana'i originated at Awalua, Kahue, Maunalei, and Naha.

The historical name for the coastal trail is not known. The portion of the trail in the project area is called Kaiolohia-Kahue for convenience; it is part of the coastline that has come to be called "Shipwreck Beach".

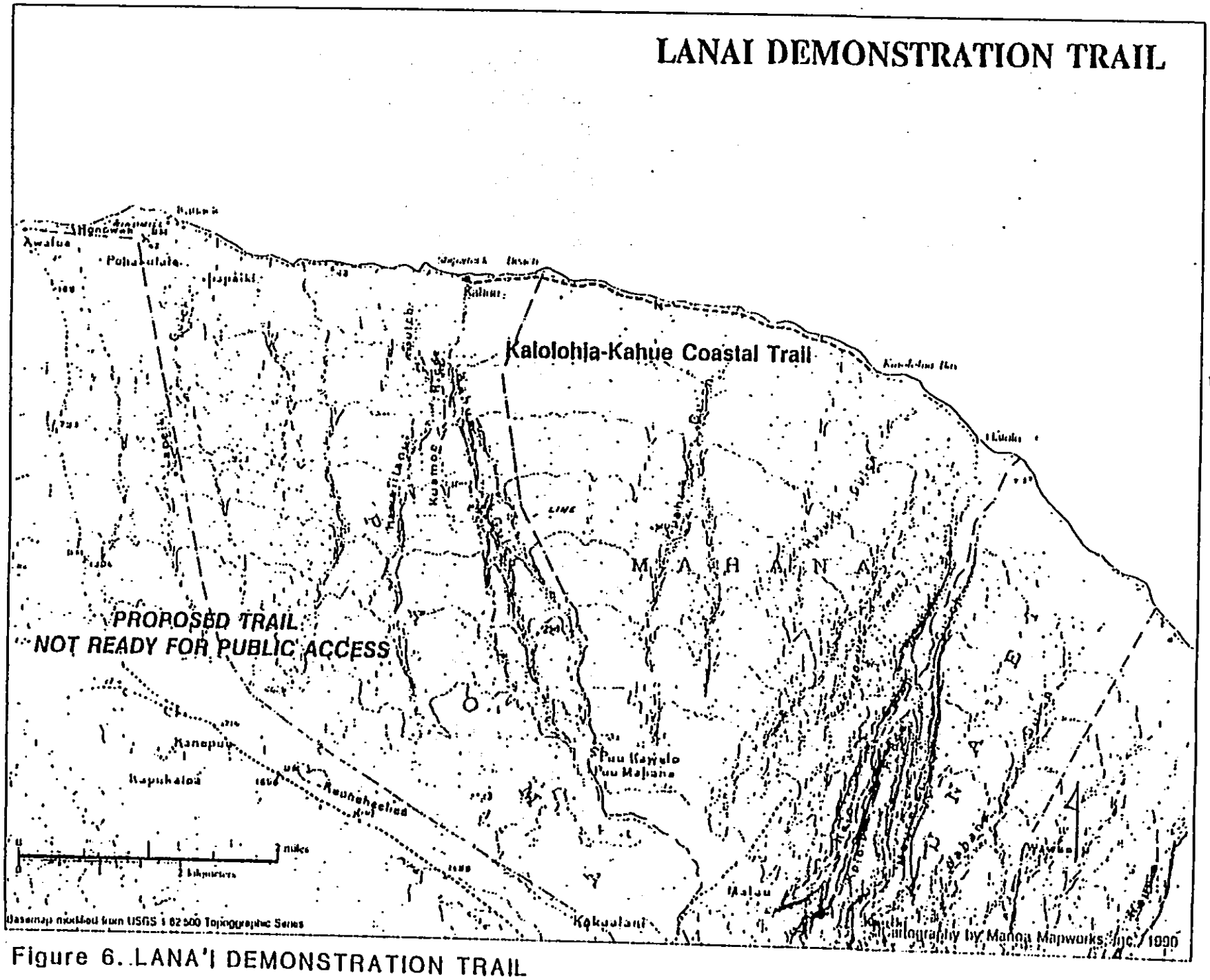
The Kaiolohia-Kahue section of the old coastal trail was recommended as a demonstration trail by an island-based advisory council to Na Ala Hele. It was selected as a demonstration trail for its scenic views and coastal access. It is easily reached by existing jeep roads, although the west access at Kahue is by a privately owned road. It also could be readily linked to a larger trail network in the future. In October 1989, the Chairperson of the Board of Land and Natural Resources approved the designation of the Kaiolohia-Kahue coastal trail as a state demonstration trail for the island of Lana'i.

This section of the report describes the Kaiolohia-Kahue project area, in terms of its physical setting, history, and changes in land use.

PHYSICAL SETTING

The Kaiolohia-Kahue trail extends 3.5 miles along the northern coast of the island of Lana'i between Kaiolohia Bay on the east and Kahue Gulch on the west (Figure 6). The 50-foot wide trail corridor rises from sea level to 20 feet above sea level. Some areas inland of the corridor that appeared to have easily accessible sites were also surveyed.

The trail corridor parallels the shoreline, which is a fringe of white sand along a shallow, silt-covered reef extending into the channel between Lana'i and Moloka'i. The white sand is intermittently interrupted by rocky outcrops projecting toward the sea, by a silt overlay from upland runoff, and by several shallow drainages.



Basemap modified from USGS 1:62,500 Topographic Series

Cartography by Manoa Mapworks, Inc./1990

Figure 6. LANA'I DEMONSTRATION TRAIL

The project area inland of the beach is generally rocky with shallow soil depth and exposed bedrock: slopes range from 0 to 35 degrees (Sahara et al. 1967:6). Along much of the corridor, however, is a high actively building sand dune that overlies this rocky base. The dune is exposed in some places and in others, is densely mantled in grass, low shrubs, and wind-stunted trees.

Shallow, intermittent streams cut through the gradually sloping dunes and stony land. The largest drainages are Kuahua Gulch near the midpoint of the trail corridor and Kahue Gulch, which marks the western end: at their outlets to the sea, sand and silt project onto the shallow reef. The mouths of the smaller drainages are blocked by low sand berms; behind several of these are shallow intertidal backwashes (Photo 7).

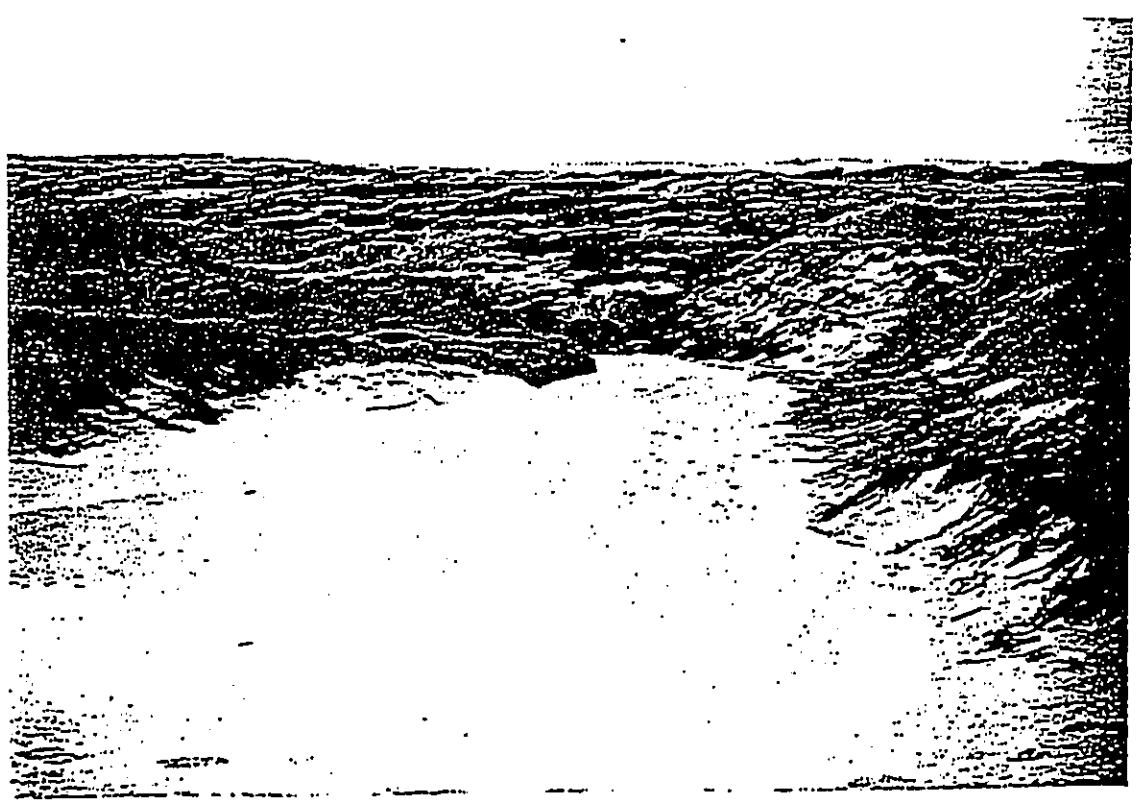


PHOTO 7. INTERTIDAL BACKWASH, EAST OF LAEWAHIE.
Note rocky terrain on slope rising from shoreline.

Lana'i lies in the rain shadow of West Maui and East Moloka'i, resulting in very dry conditions, only about 38 inches of rain per year at the summit of the island (Macdonald and Abbott 1970:341). Rainfall along the north shore ranges up to only 10 inches per year (Armstrong 1973:56). Strong winds are characteristic of this coastline: during the course of this survey, winds blew constantly from the northeast. The winds (combined with the historical denudation of the vegetation by goats and sheep) have transformed the landscape, creating odd landforms and transporting sand far inland.

Vegetation in the trail corridor includes low grass, lantana (*Lantana camara*), and kiawe (*Prosopis* sp.). The dense scrub lantana and kiawe are sculpted by the dominant winds and are virtually impassable in many areas. Generally, however, the extremely dense sections of vegetation form only narrow strips along the coast, with areas just inland devoid of vegetation (Photo 8).

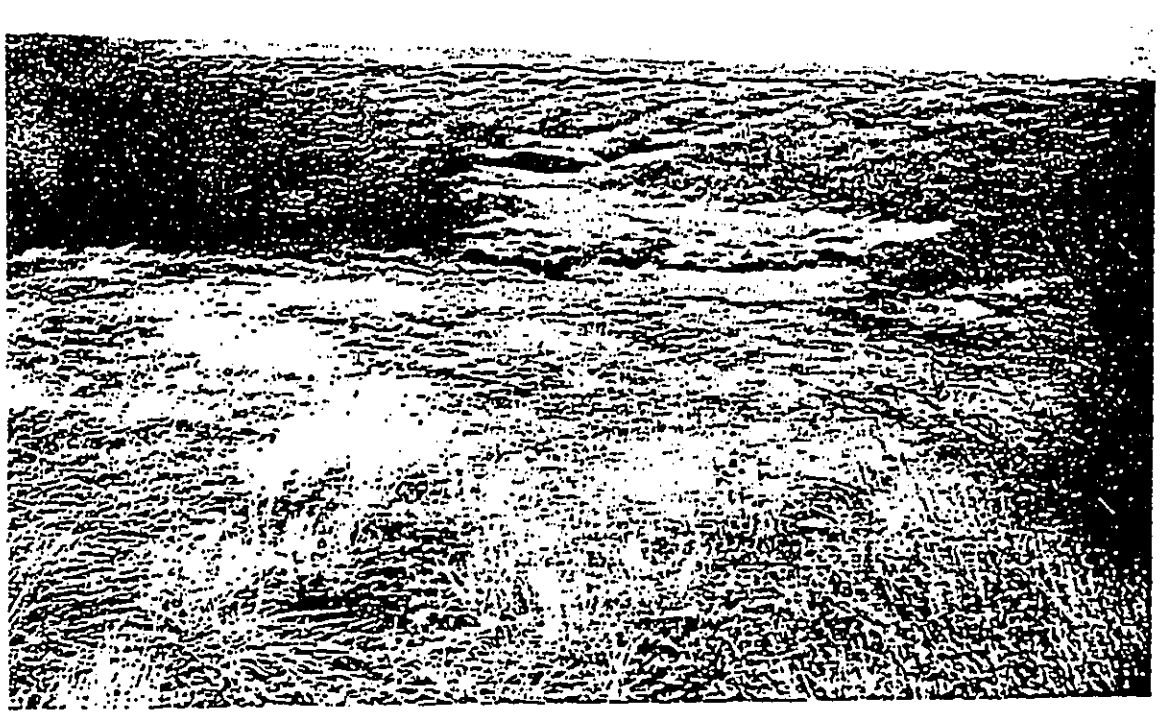


PHOTO 8. DENSE SCRUB KIAWE AND LANTANA.
This photo shows area just inland of impenetrable coastal strip; note open areas of low grass and exposed dirt.

CULTURAL GEOGRAPHY AND PLACE NAMES

Most of the Kaiolohia-Kahue trail falls in the triangular-shaped *ahupua'a* of Mahana, which extended further east to Maunalei Gulch.* Maunalei was the only source of permanent surface water on the island. The western end of the trail corridor, between Laewahie and Kahue, extends into the neighboring *ahupua'a* of Pa'omai.

There are numerous Hawaiian place names along this coast. All are listed in Emory (1969:29-37); additional sources are noted below. The place names include the following:

Kaiolohia: bay (USGS 1923); translated "tranquil sea" (Pukui et al. 1974), "choppy sea" (Emory 1969). "Kaiolahia" is a pronunciation variation obtained by Kimura and Lau in 1982.

Pohakuloa: point (Inventory, Land Court 1927); translated "long stone" (Pukui et al. 1974), "very stony" (Emory 1969).

Keanaolulo: cave (Land Court 1927); translated "cave of the shipwrecked" (Emory 1969).

Po'olalilali: beach (Land Court 1927); translated "greasy head" (Emory 1969).

Po'aiwa: gulch (USGS 1923, Inventory); translated "ninth night" (Emory 1969)

Kahaulehale: beach; translated "the house falling" (Emory 1969).

Kuahua: gulch (USGS 1923); translated "standing heap" (Pukui et al. 1974), "standing hillocks", "beach conspicuous for sand dunes" (Emory 1969); this gulch is at the center of the Mahana coast.

Kukui: point (USGS 1923, Land Court 1927); translated "candlenut lamp", "light of any kind" (Pukui et al. 1974); "kukui tree", Emory (1969) notes that "kukui nuts wash ashore here".

Kikalapa'akea: sandy point; translated "white posteriors" (Emory 1969); alternate spelling "Kikolapaakea" (Land Court 1927).

Laewahie: point (Brown and Monsarrat 1878, USGS 1923, Land Court 1927); translated "firewood point" (Pukui et al. 1974; Emory 1969); alternate spellings: Wahie, Lae'owahie (Kimura and Lau 1982); Lae Wahie (Land Court 1927, Emory 1969); also called "Yamada" by local residents after a Japanese fisherman who frequented the area (Clark 1980).

---

* The 1923 USGS map and 1927 Land Court map show the west half of Maunalei Gulch within the *ahupua'a* of Mahana. Emory (1969: pocket), based on an 1878 government survey map, shows the boundary on the west side of the gulch.

Keonohau: bay (Land Court 1927, Inventory); translated "six hau trees" (Emory 1969).

Kahue: gulch (Brown and Monsarrat 1878, USGS 1923, Land Court 1927, Inventory); translated "the gourd" (Pukui et al. 1974; Emory 1969).

SHIPWRECKS

The Kaiolohia-Kahue trail traverses a coastline commonly known as "Shipwreck Beach". Stretching eight miles along the northern coast between Polihua on the west and Kahokunui on the east, Shipwreck Beach is famous for the flotsam and jetsam of ocean vessels floundering in the channel between Lana'i and Moloka'i (Photo 9). It is one of the noted tourist attractions on the island (e.g. Clark 1980, Sunset 1986, Lueras 1980).

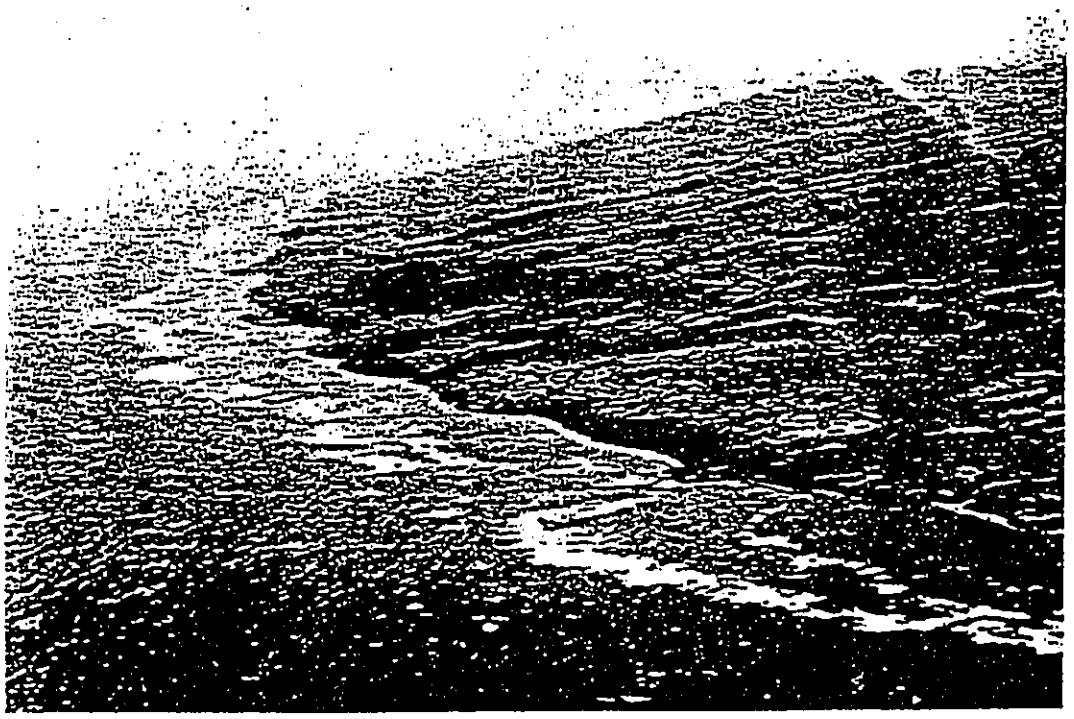


PHOTO 9. SHIPWRECK BEACH, VIEW TO EAST.
Note two shipwrecks offshore; Kuahua Gulch is at right.
(Photo courtesy of B.P. Bishop Museum, negative no. CP103,792)

The earliest recorded shipwrecks were the British ship "Alderman Wood" and the American ship "London" in the 1820s (Young 1959, Clark 1980:117). Loaded with a cargo of liquors, the "Alderman Wood" was a total wreck (Advertiser 1905). The "London", on the other hand, was rescued by an American armed schooner then in Honolulu Harbor (Emory 1969:8).

Other vessels followed the fate of these early ships, some accidental like these two and others intentionally grounded. Clark (1980:117) writes that "the beach served as an isolated disposal site for...unwanted relics and allowed their destruction by the ocean without posing any hazard to navigation...deliberate wreckings included wooden steamers from the former Inter-island Steamship Company, old pineapple barges, and assorted pleasure craft." Still on and along the beach today are two barge containers, the wreck of the "Romar III" (Photo 10), and the commanding hulk of a mud barge, wrecked in 1960 (Clark 1980:119).

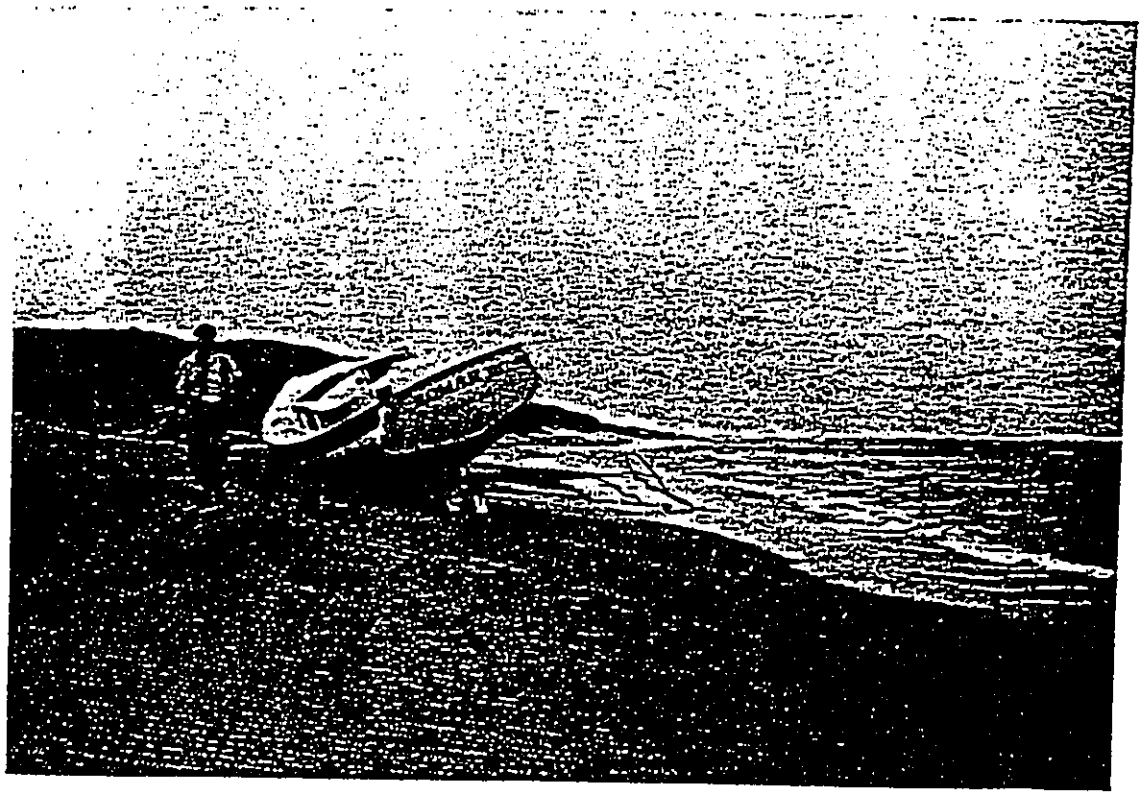


PHOTO 10. WRECK OF THE ROMAR III.

Even military vessels were not invulnerable to the currents. Three Navy LCMs ran aground during World War II (Young 1959). Gibbs writes of one of them:

> Towards the end of World War II, a small naval freight vessel was hauling cargo between the islands. Aboard was a large shipment of liquor. Susumu Nishimura and his brother Jimmy, the former having lived on the island of Lanai for more than six decades, recalled well that day in 1945 when the vessel in question ran hard aground on the island outcrops. It wasn't unusual for vessels to be wrecked there but when word got out that this vessel was carrying a sizeable cargo of liquor the news spread like wildfire. Suddenly work on the island came to a complete standstill and a stampede was started to the wreck scene (Gibbs 1977:157).

HISTORY AND LAND USE

The history of Lana'i is intimately tied to the history of the neighboring islands of Maui and Kaho'olawe. The three islands formed a closely allied cluster, with Maui as the politically dominant force.

The oral tradition of Kaululaau recounts the story of the first inhabitant of Lana'i and illustrates the subordinate position of Lana'i to Maui. Kaululaau, the son of Kakaalaneo, the king of Maui, was banished to Lana'i for destroying breadfruit trees in Lahaina. Once there, however, he drove away the evil spirits who lived on the island, making Lana'i habitable. From that time, Lana'i "was under the rule of Maui chiefs" (Emory 1969:123).

Based on Kaululaau's genealogy (with 25 years per generation) this tradition can be dated to the A.D. 1400s. However, it is unlikely that this represents a colonization date for the island, but may be a metaphorical reference to a period of rapid growth.

Maui's control of Lana'i had its consequences in late pre-contact inter-island wars. In 1778, in his war against Maui, Kalaniopu'u, the ruler of Hawai'i, raided and pillaged the islands of Kaho'olawe and Lana'i. Kamakau (1961:90) writes that "the whole island of Lanai was ravaged by the forces of Kalaniopu'u". The battle was confined to the Maunalei area (Napoka 1989) which might have included the project area.

In the post-contact period, Lana'i remained a subordinate or secondary locale, bypassed by the major events of Hawaiian history. Its environment was harsh, in comparison with available resources on the neighboring islands. Travel to and from the island was difficult; an 1869 visitor to Lana'i wrote:

> ...the only way to get to Lanai in those days was to make the trip in an open boat with a Hawaiian crew. We made it in three or four hours [from Moloka'i]...The way the wind pipes down that Molokai channel, when you are in an open boat, is a caution (Lydgate 1920:68).

The island population from the mid-19th century was never more than several hundred. Although estimates accounted for up to 1,600 residents in the 1830s (Emory 1969:8), the first exact census in 1846 listed only 616 residents (Jarves 1847:238). The discrepancy can probably be attributed to mortality and outmigration, which continued to effect the island population throughout the century. By the 1880s, the population had dropped to "350 people (all native) living on the island, and dependent upon the fisheries for support" (McKenney 1884, based on information from W.M. Gibson). By the end of the century, there were only 174 people on the island, but some 50,000 sheep (Napoka 1989).

Mid-century land records suggest that much of the permanent Hawaiian settlement clustered at the center of the island with its relatively rich resources. There were village concentrations along the coast, particularly on the windward shore to the east of the Kaiolohia-Kahue area, from Maunalei to Keomuku. Lydgate, the visitor who braved the open boat across the channel from Moloka'i, landed at "the little native hamlet of Ka-hale-palaoa...of half a dozen grass houses with the traditional easy-going population of men, women, children and dogs" (Lydgate 1920:69)(Kahalepalaoa is located just south of Keomuku). An 1878 map (Brown and Monsarrat 1878) shows a village at Maunalei.

This coastline offered the attractions of a good water source at Maunalei, shallow off-shore reefs, and fishponds at Lopa and near Keomuku.

The project area appears to have been on the periphery of this coastal settlement. Only three LCAs were awarded along the Kaiolohia-Kahue trail (Table 3). Other claims were made for land in Mahana *ahupua'a*, but their locations are unclear.

When Emory carried out archaeological fieldwork in the early 1920s, he noted that there were 102 Hawaiians on the island, 50 of whom lived on the east coast (Emory 1924:5). Keomuku was a major village during this time, with a school of 16 pupils and Saturday sampan connections across the channel to Lahaina (Emory 1921).

To the west of the project area, Awalua was a hub of activity. From the 1860s to the early 1900s, sheep ranching was the major commercial activity on the island. To service the ranching, a harbor was built at Awalua, connected to the ranch

TABLE 3. LAND COMMISSION AWARDS IN THE PROJECT AREA

6842 to Ikeole: 0.7 acres in 'ili of Pohakuloa; one grass area; shown on Land Court application map

10029 to Oapolo: 0.323 acres in 'ili of Kuahua; two parcels, one with home and cultivated area, one with a pauku of cultivated land; shown on Land Court application map

10133B to Kukalolua: three sections in 'ili of Kuahua; 1 grass area in Kuahua uka, 1 cultivated field and house site, 1 house site down makai; location unknown.

center at Koele by a government road. The Pacific Commercial Advertiser reported on May 20, 1875 that three ships lay at anchor at this harbor, loading wool and sheep and discharging cargo for the ranch (Munro n.d.:41). The 1878 Brown and Monsarrat map shows two villages in this area, one at Pokeana and one at Awalua.

As for the project area itself during late 1800s, only scattered habitation and fishing took place along this stretch of coastline. Monsarrat's survey notes of 1878 indicate only one house (probably LCA 10029) along the Mahana coastline.

In his 1921 survey, Emory (1924:13) noted that the three miles of rocky shore west of Pohakuloa Point were good fishing grounds. He found the artifacts of recent inhabitants at several locations: in a cave at Laewahie, he found a lauhala mat and a bag of salt wrapped in a Hawaiian newspaper dated October 1918; at Kahue, he found bottles, clothing, and modern furnishings in several caves along the streambed (1924:15). He also observed a remnant of sheep ranching days, a herd of 15 head of wild sheep, on the Maunalei side of Kahue Gulch.

For a long time, Lana'i fishermen often rode horses or mules along this coastal trail. Clark (1980:119) writes of one such fisherman, Yasukichi Yamada:

> Yamada...moved to Lana'i about 1929 to work in the plantation's butcher shop. He started selling fish there about the same time. Yamada used to travel on muleback to Lae Wahie, where he had a fishing shack, and transported his catches back to Lana'i City the same way.

Cowboys also rode along the coastal trail as recently as the early 1950s, and the trail still remained visible (R. Hera, personal communication).

Today there is little of the constructed trail in evidence. Much of it has been eroded away or covered by massive active sand dunes, associated with the increasing spread of kiawe. Now in addition to the few fragments of the trail, there is a beaten path in places, and in other places the path is on sand inundated at high tide. Much of the coastal "corridor", particularly in the eastern half of the project area, is defined by the dune or by dense kiawe.

The coastal area is now used primarily by fishermen, hunters, hikers, and tourists visiting Shipwreck Beach. A few well-used fishing shacks are still found along the coast.

CARTOGRAPHIC HISTORY OF THE TRAIL

It is not clear when the government trail was first constructed. An 1878 government survey map of Lana'i (Brown and Monsarrat 1878; GRM No. 1394) is the first cartographic documentation of the trail (Figure 7). It shows the Kaiolohia-Kahue segment as part of the government road system that connected the uplands with the north and east coasts of the island.

Given the extensive remains of traditional Hawaiian house sites along this coast, it is possible that "government road" was built on a traditional coastal trail that connected these houses and small villages.

The 1923 U.S. Geological Survey map of Lana'i shows the trail system, including the segment between Kaiolohia and Kahue. A 1927 Land Court application map shows the trail ("10 foot beach trail") as well as two Land Commission parcels and several place names (Land Court 1927)(Figure 8); it also notes that Mahana *ahupua'a*, "except for excluded LCA parcels and all existing roads, trails and rights-of-way as shown on GRM 1394" is owned by the Hawaiian Pineapple Company, Ltd. The company also owned the two Land Commission award parcels in the project area.

A government tax map of the island (TMK 4-9-02) shows the trail as a "10 foot government beach trail".

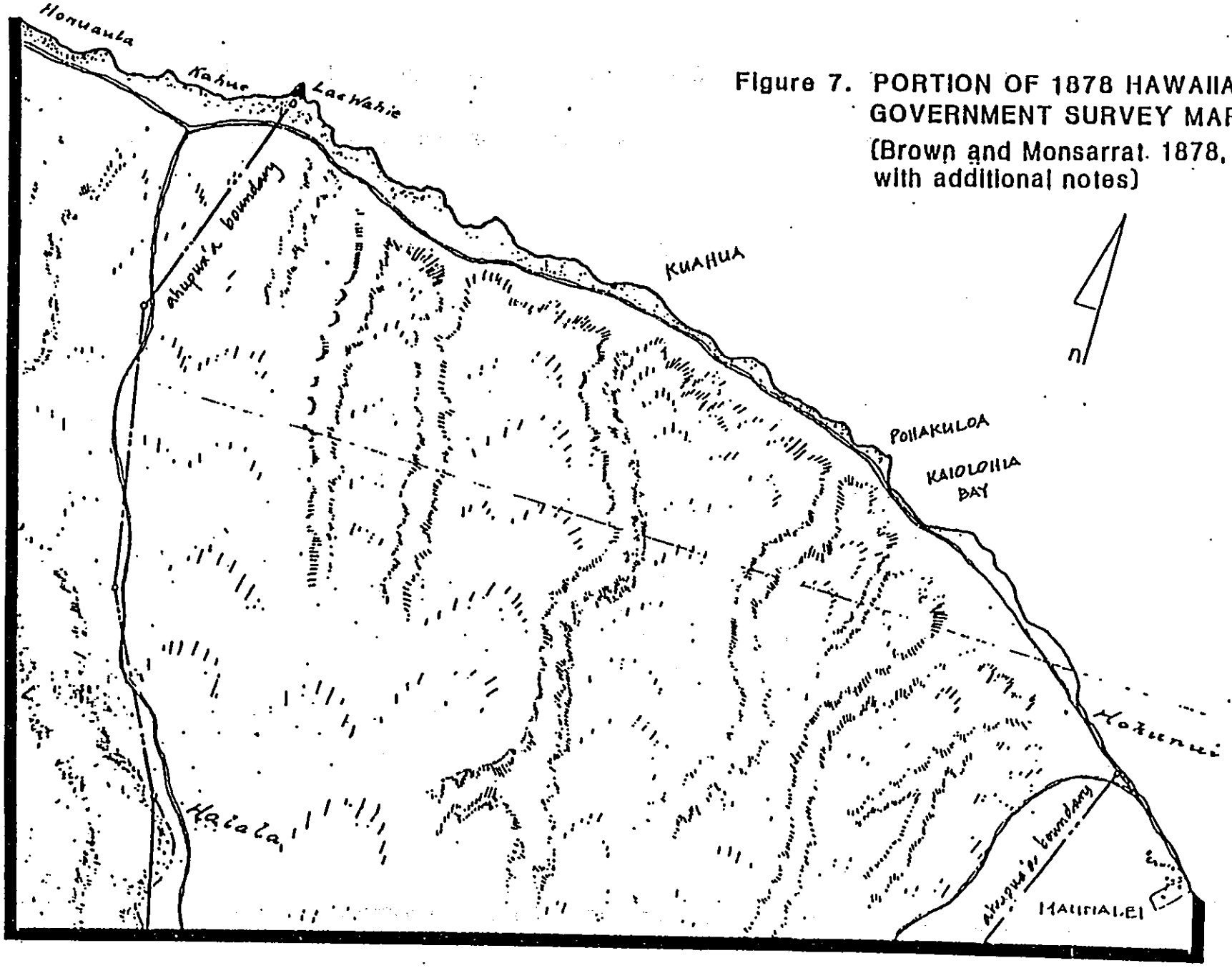


Figure 7. PORTION OF 1878 HAWAIIAN GOVERNMENT SURVEY MAP (Brown and Monsarrat. 1878, with additional notes)

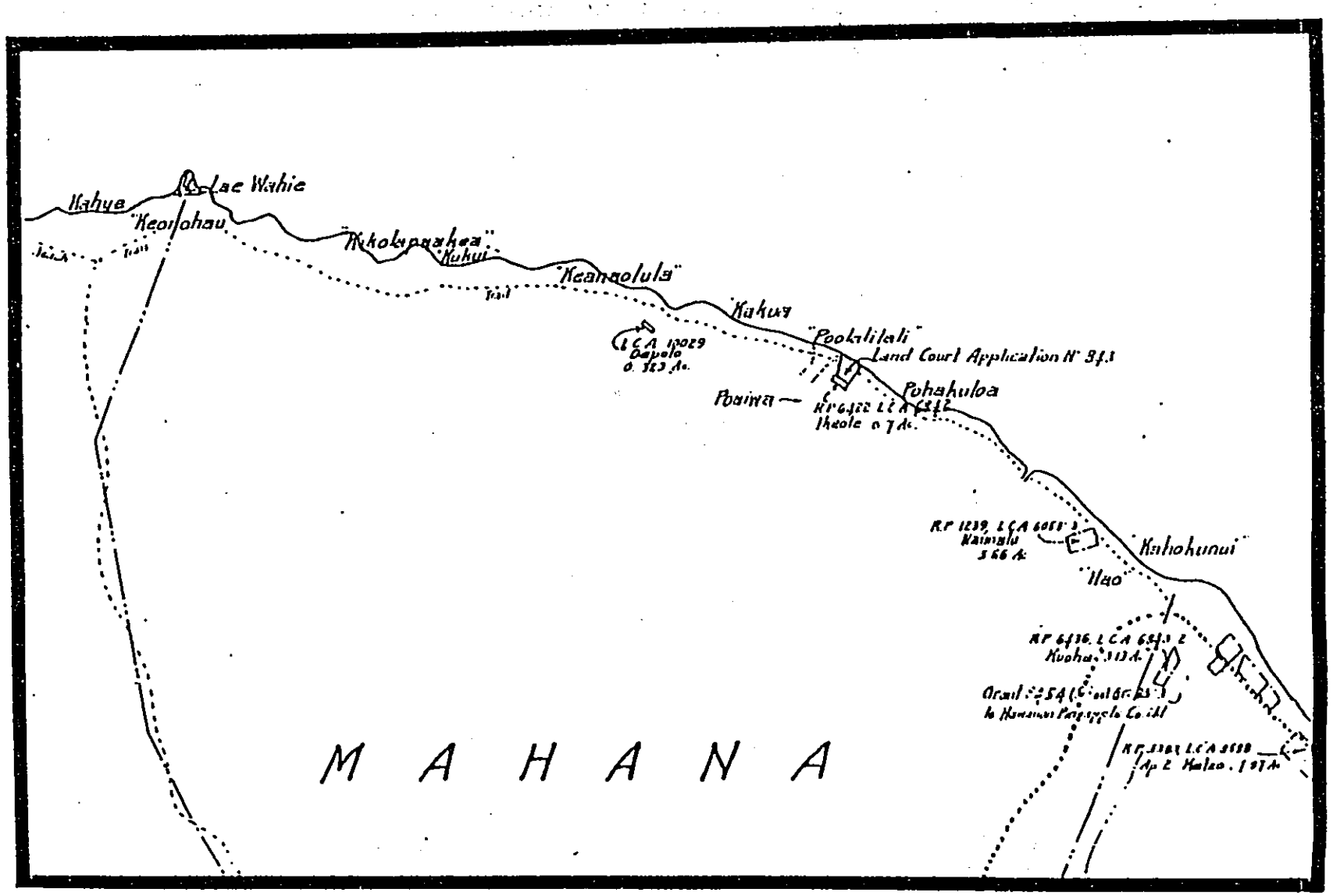


Figure 8. PORTION OF 1927 LAND COURT APPLICATION MAP

PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological research in the project area, as on most of the island of Lana'i, has been limited. The pioneering work of Kenneth P. Emory in the early 1920s is the only extensive survey to have been conducted along the north coast. Emory recorded several sites in the project area and noted the presence of several clusters of house sites. In his journal (Emory 1921) and reports (Emory 1924, 1969), Emory offers fascinating views on segments of life on Lana'i in the early 1920s, on the way in which archaeology was carried out at that time, and on the archaeology itself.

In the mid-1970s, the State of Hawaii carried out an inventory of historic sites. Emory's sites were revisited, recorded, and assigned state site numbers (Appendix C).

In 1987 and 1988, the University of Hawaii-Manoa Department of Anthropology conducted a field school at Lae Hi, to the east of the project area. The work identified habitation and agricultural structures and obtained radiocarbon dates that indicate occupation could have begun as early as the 14th century (Graves and Ladefoged 1988). During this fieldwork, a burial was found eroding from a dune between Pohakuloa Point and Kuahua (site 1539). A University crew disinterred the remains, which were then reinterred just inland of their original location (A. Estioko-Griffin, personal communication).

II: RESULTS OF SURVEY ALONG THE KAIOLOHIA-KAHUE COASTAL TRAIL

This section of the report summarizes the results of the survey of the Kaiolohia-Kahue coastal trail: field methods, types of sites that were recorded, and general character of the archaeological resources in the project area. Appendix B provides detailed descriptions of the sites recorded in this survey. Appendix C contains State site forms for previously identified sites.

FIELD METHODS

The survey of the Kaiolohia-Kahue coastal trail was carried out over a four-day period from March 7 to 11, 1991. A total of 72 person-hours was expended in the survey.

The initial effort of the survey was identifying the trail corridor. Only a few short segments of the trail remain well-defined. Based on descriptions provided by Na Ala Hele, the trail corridor was initially determined to be 40 feet (15.2 m) inland from the sand beach which along much of this coast is currently the primary route of transit. This definition of the trail corridor, however, was complicated by the discovery of a possible trail segment at Po'aiwa, located about 75 feet (22.7 m) inland of the beach, under a dense low canopy of kiawe.

Given the uncertainty of the location and preservation of the actual trail and the variable density of vegetation, the survey was completed using three survey methods. Where the trail was visible and where vegetation allowed, survey was carried out along two parallel transects of 15 m spacing, along and inland of the trail. Where there was no apparent trail and vegetation allowed, similar parallel transects were run, using the shore as the baseline. Where vegetation was impenetrable, survey was conducted along the shoreline and inland of the dense vegetation, including areas inland of the specified 40 foot wide corridor.

All sites encountered were recorded by written descriptions, sketch maps, and photographs. Previously recorded sites in the area, as documented by the Statewide Inventory, were relocated. Sites were compared with descriptions on State site forms and additional information was collected.

Several exploratory transects extending inland of the trail corridor were also carried out (Figure 9). The purpose of these transects, which ranged from 100 to 300 m, was to check for possible inland trail segments and to get a sense of the nature of site distribution inland of the coast.

Following the survey for surface structures, limited subsurface testing was carried out to examine the depth and nature of cultural deposits and to collect material for dating. A test pit was placed in a terrace in site 1546; erosional exposures in two features (in sites 1545 and 1548) were examined. No datable material was recovered from these tests.

RESULTS OF SURVEY

There are five previously recorded sites in or near the trail corridor. Site 173 is located within the trail corridor. The present survey showed that it is part of a larger complex, identified here as site 1562. Two of the recorded sites (53 and 139) are partially in the trail corridor but extend further inland. Site 44 lies inland of the survey area, but one structure (44-A) is conspicuously prominent from the trail. The fifth recorded site is a burial area (1539) near the trail between Pohakuloa and Kuahua; the present survey noted no evidence of other burials in the general vicinity.

Twenty-three new sites and the remnants of the government trail were recorded along the Kaiolohia-Kahue trail corridor (Figure 10; Table 4). All except two (the lighthouse foundation at Pohakuloa, 1543, and a set of slabs set on edge in the middle of a streambed, 1547) appear to be of traditional Hawaiian construction, although the occupation of some certainly date into the 19th century.

In addition to these sites is one complex of platforms, terraces, and rock shelters that was observed but not recorded (it falls well outside of the trail corridor). This site, which is located on the west edge of Kuahua Gulch, was first described by Emory (1924:14); it was not recorded during the Statewide Inventory. The location of this complex is noted on Figure 10.

The sites within and adjacent to the trail corridor are an impressive array of Hawaiian structures, most of which are in excellent condition. The sites appear to be primarily related to habitation and ceremonial functions; no agricultural features were recorded. Exposed burials have been recorded along this coast (Emory 1924:14, 1969:73 with reference to Kuahua and Kukui; A. Estioko-Griffin, personal communication); none were identified during the current survey.

The total 26 traditional Hawaiian sites consist of 75 discrete structures and four extensive deflated midden areas with no associated structures, plus the unrelocated burial area (1539).

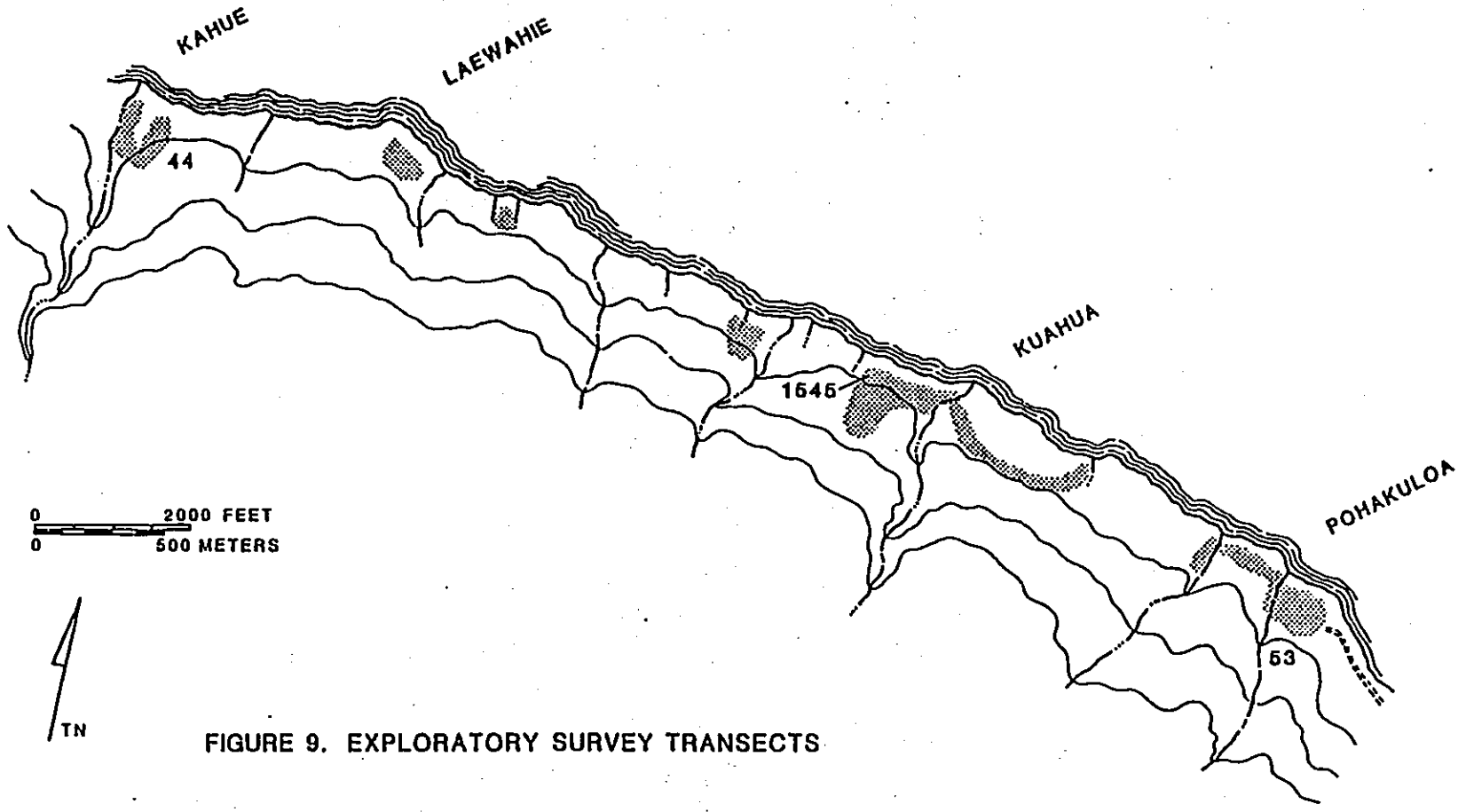


FIGURE 9. EXPLORATORY SURVEY TRANSECTS

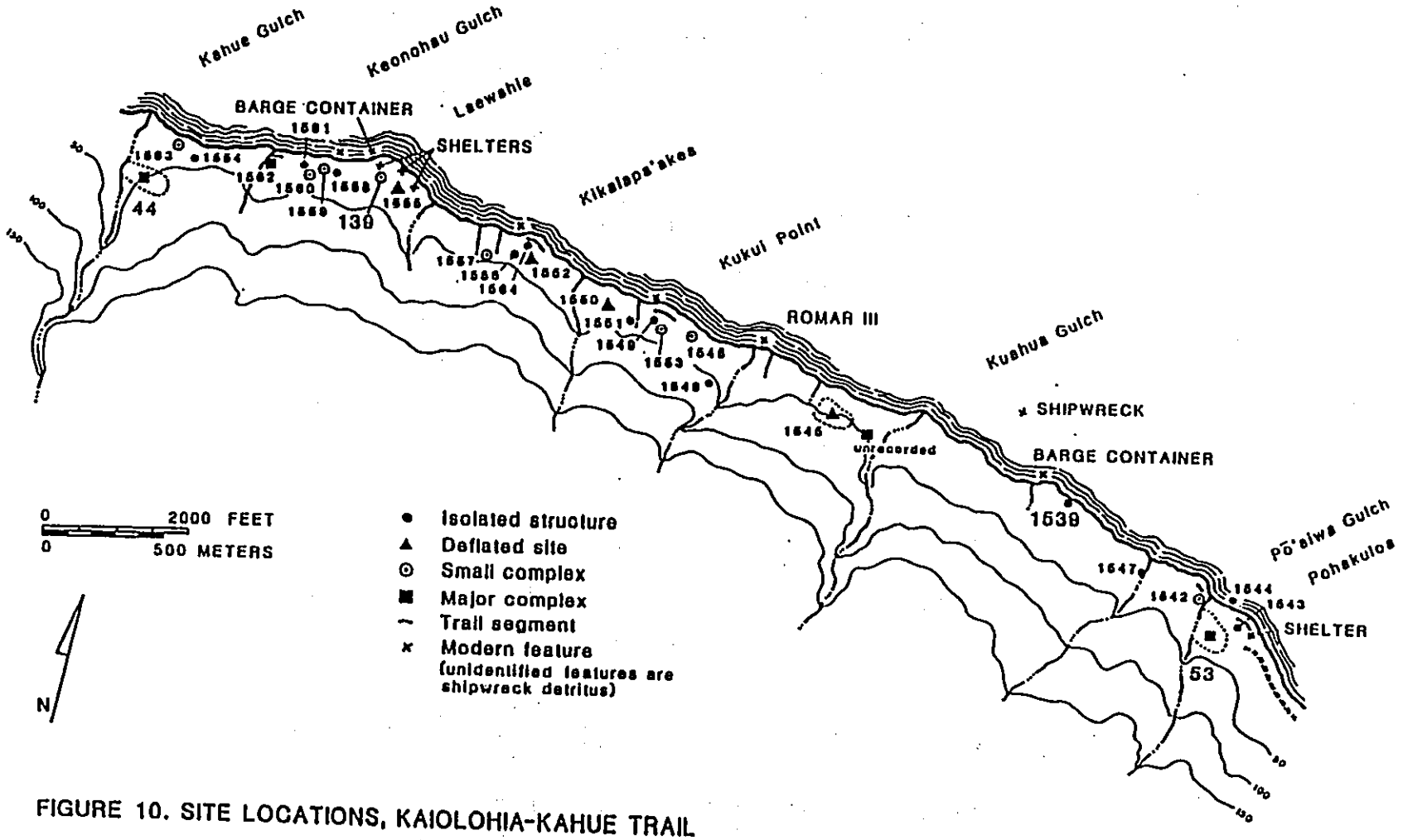


FIGURE 10. SITE LOCATIONS, KAIOLOHIA-KAHUE TRAIL

TABLE 4.
SUMMARY OF SITES, KAIOLOHIA-KAHUE COASTAL TRAIL

SITE NO.	DISTANCE FROM TRAIL	DISTANCE FROM SHORE	FEATURES TERR	WALL	DEPL SITE	AHU/ PILE	C-SHPE	ROCK SHEL	ENCL	PLAT	OTHER	SURFACE MATERIAL *
1542	—	30	—	1	—	1	—	—	—	—	firepit	m/c
1543	20	—	—	—	—	—	—	—	—	—	lighthouse	none
1544	—	—	—	—	—	—	—	—	—	—	boulders in surge zone	none
1545	—	10-150	—	—	x	—	—	—	—	—	—	m/c/l
1546	—	20	3	—	—	1	—	—	—	—	—	m
1547	—	50	—	—	—	—	—	—	—	—	slabs	none
1548	—	250	1	—	—	—	—	—	—	—	—	m/l
1549	25	—	1	—	—	—	—	—	—	—	—	m
1550	—	60	—	—	x	—	—	—	—	—	—	m/basit
1551	—	100	—	—	—	1	—	—	—	—	—	none
1552	25	—	—	—	x	—	—	—	—	—	—	m
1553	—	75	—	—	—	5	—	—	—	—	—	m
1554	2	—	1	—	—	—	—	—	—	—	—	m/c
1555	0	—	—	—	x	—	—	—	—	—	—	m/brn lime
1556	40	—	—	—	—	—	—	—	1	—	—	m/c
1557	—	150	—	—	—	2	—	—	—	—	—	m/c
1558	2	—	—	1	—	—	—	—	—	—	—	none
1559	7	—	3	—	—	—	—	—	—	—	—	none
1560	40	—	—	—	—	—	1	1	—	—	—	none
1561	10	—	1	—	—	—	—	—	—	—	—	none
1562	0-50	—	1	2	—	—	3	2	—	1	firepit	m/c/l
1563	—	5-15	1	2	—	—	—	—	—	—	—	none
1564	0	—	1	—	—	—	—	—	—	—	—	m
44 +	—	125-225	—	2	—	7	—	4	3	2	petroglyphs	m
53 +	—	30-130	—	—	—	—	—	2	3	2	alignments	m
139+	25-50	—	—	1	—	—	—	1	—	3	—	m/c
TOTAL FEATURES			14	9	4	17	4	10	7	7	7	17

* m=midden; l=lithics; c=coral; basit=unworked basalt; brn lime=burnt limestone
+ previously recorded sites (see Appendix C)

Ten of the 26 Hawaiian sites are isolated structures, primarily terraces; five of these have midden scatters on the surface. Eight of the sites are small complexes of two to five structures; five have surface midden. Four of the sites are deflated midden areas. Three of the sites are major complexes of nine or more structures, all of which have surface midden. The unrecorded complex on the west side of Kuahua Gulch has more than nine structures and considerable surface midden.

The major complexes are located at Pohakuloa/Po'aiwa (53), Kuahua (unrecorded), Keonohau (1562), and Kahue (44). The majority of individual structures and the small complexes occur in the west half of the survey area from Kukui to Kahue (five at Kukui, three at Kikalapa'akea, and six between Laewahie and Keonohau).

There is a noticeable paucity of discrete structures between Pohakuloa and Kukui: there are only five structures in this half of the survey area. The primary factor may be the high dunes in this area, which may have buried sites. In contrast, the west survey area has much less dune build-up and more open vegetation, making for better survey conditions and site visibility.

No sites were found in the exploratory transects inland of the project area (but see comments below under "Nature of Archaeological Resources"). However, structures in the major complexes of Kahue, Kuahua, and Pohakuloa/Pō'aiwa do extend inland of the coast.

The Kaiolohia-Kahue trail, as a constructed, boulder-curbed path, remains in only three sections (see Figure 10). Two are located in the west half of the corridor, between Kukui and Kahue. These sections are in excellent condition, with no vegetative cover; the longest segment runs for 60 m across Kukui Point. The third section is located at the east end of the corridor, just west of Po'aiwa Gulch. This section is buried under a dense canopy of stunted kiawe trees. Descriptions of these three sections are presented in Appendix B.

There are also several worn paths in bedrock promontories along the coast that may be part of the trail, but in the absence of constructed elements, this cannot be ascertained.

Subsurface deposits in sites 1545, 1546, and 1548 were examined. A 50 x 50 cm test pit was excavated in a terrace in site 1546. The deposit in the 6 x 4 m terrace is a reddish brown silty clay loam with large white sand particles and charcoal flecks mixed in; one pipipi shell was found. There was insufficient charcoal for radiocarbon dating.

Erosional faces in sites 1545 and 1548 were also examined. Strong winds have deflated the site area of 1545, leaving a high erosional bank or "island," 6 m across and 1.5 m high. A 20 cm thick midden deposit (predominantly pipipi shell) is exposed at the surface of this bank (Photo 11). In the surrounding area, deflated material includes midden, volcanic glass flakes and nodules; pockets of white sand are scattered across the deflated area. In site 1548, the seaward portion of a terrace at the top of a knoll has been eroded away, leaving an exposed pit feature, extending from 25 to 40 cm below surface. The pit feature is 70 cm across and is located in what would have been the center of the terrace; it contains large fire-cracked pebbles; any charcoal that might have been present has eroded away.

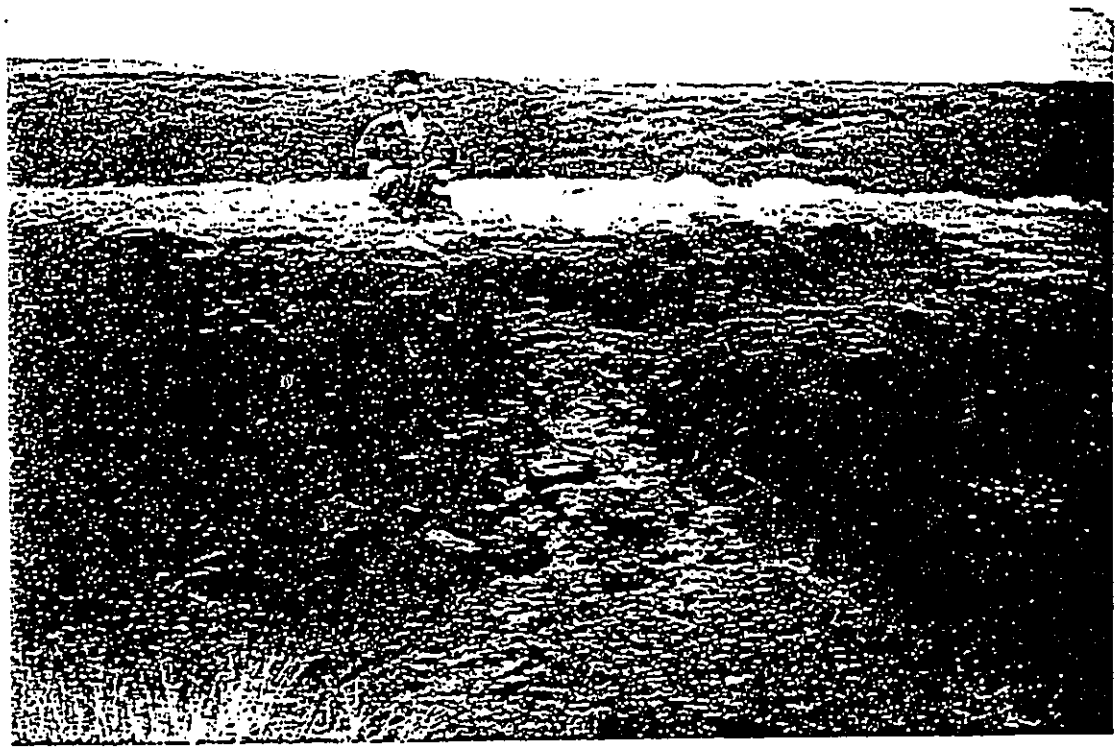


PHOTO 11. EXPOSED MIDDEN DEPOSIT IN ERODED "ISLAND", SITE 1545.
Note that intact deposit is just below surface;
light color on exposed face is eroding midden.

FORMAL SITE TYPES

Formal structure types include terraces, walls, deflated midden and artifact concentrations, ahu and rock piles, C-shaped structures, walled/rock shelters, enclosures, platforms, and miscellaneous other features.

Terraces are the most common architectural type in the project area. They occur in nine sites, primarily as discrete structures (i.e., not contiguous with other features). They range in size from 3.5 m across to 14 by 3 m; most of the terraces are 6 m long and between 2 to 6 m wide. The terraces generally have low, roughly stacked boulder facings and dirt surfaces that are flush with the ground surface on at least one side.

Walls occur in six sites. In sites 1542 and 1558 and in the Kahue and Laewahie complexes, they are short segments of low rubble construction. Except in site 1558, they have associated midden scatters. Walls in site 1562 (structures E and I), in contrast, are massive, well-built, standing, bifaced structures, probably related to a ceremonial function. Walls in site 1563 are also bifaced and well-constructed: surface debris suggests a historical or modern habitation use.

Deflated sites are extensive surface scatters of midden, lithics, and artifacts that have been exposed by erosion from wind and/or sheet wash. Erosion causes the removal of the soil matrix, leaving the heavier mass of the cultural material *in situ*. In some cases, vegetation has slowed the deflation of small areas, resulting in one or two meter high "islands" of the original landform; cultural material can be seen in profile in the sides of these "islands" (see Photo 11) (these deflated sites are similar to sites observed in areas of Kaho'olawe that have undergone similar erosional processes). Site areas range from 4 by 2 m to 200 by 150 m. No structural features were observed in direct association with the four deflated sites recorded in the current survey. Some sites, such as 1562 and the unrecorded complex on the west side of Kuahua Gulch, have features with deflated surfaces.

Ahu and rock piles were recorded in six sites. The ahu (in sites 1542, 1546, and 1551) are stacked structures with faced sides. The rock piles (in sites 1553 and 1557), on the other hand, are of more informal construction. These structures appear to be markers, but their specific function is not distinct. They are clearly not related to agricultural production.

C-shaped structures occur in two sites (1560 and 1562). The 1562 complex includes three C-shapes, one of which appears to be a shrine based on the presence of coral and waterworn cobbles in the structure. The C-shaped structure in site 1560 appears to be a shelter.

Walled/rock shelters occur in five sites. Sites 1560 and 1562, feature B, consist of low, roughly constructed boulder walls or alignments at the base of small outcrops. The rock shelters in sites 44, 53, and 139 are level protected areas at the base of low cliffs along the sides of gulches; rock shelters also occur in the unrecorded Kuahua complex.

Enclosures were recorded in three sites. Site 1556 encloses a small, partially paved area that does not appear to be a habitation nor is it large enough to have been an animal pen. Based on its interior paving, its prominent location on a high knoll, and the presence of large chunks of coral, it is interpreted as a shrine. Habitation enclosures occur in the Kahue (44) and Pohakuloa (53) complexes.

Platforms occur only in the four major complexes. All have surface midden associated with the structures.

Miscellaneous other features include the lighthouse foundation and associated concrete fixture (1543), a set of basalt and limestone slabs in the middle of a streambed (1547), and boulders in the surge zone at the mouth of Po'aiwa Gulch (1544).

THE NATURE OF ARCHAEOLOGICAL RESOURCES ALONG THE KAIOLOHIA-KAHUE TRAIL

The results of the survey along the Kaiolohia-Kahue trail offer a glimpse of coastal settlement in the *ahupua'a* of Mahana and north Lana'i. The archaeological resources suggest a coastal, fishing/marine resource orientation. No sites were noted in three exploratory inland transects, although structures do extend inland along the edge of the larger gulches (Kahue, Kuahua, and Po'aiwa). Seventeen of the 26 traditional Hawaiian sites have surface midden, primarily pipipi and cowrie. Four sites have features that are interpreted as fishing shrines or ko'a; Emory (1969:71) also describes numerous ko'a at Kahue, Pohakuloa, Kuahua, and Kukui. He also notes that "along the north and west coast...are scores of large boulders [sic] crowned with stones, usually a rim of stones. The natives suggest that these were ko'a, but no reliable information has been obtained" (1969:72).

There were no apparent agricultural features located in the survey, although Emory (1969:48) notes that cleared areas adjacent to house sites could have been used for gardens. Ephemeral agricultural structures were found just inland at Lae Hi (east of the project area) when intensive survey was conducted in the late 1980s (Graves 1990). The inland survey on the present project was very limited and could easily have missed any such structures. Intensive survey might well change the interpretation of the nature of the Mahana coastal settlement.

Small fishing-oriented settlements occur at Pohakuloa/Po'aiwa at the east end, at Kahue and Keonohau on the west end, and at Kuahua at the middle. Interspersed are smaller aggregations like site 1546 and numerous isolated structures. This concurs with Emory's (1969:51) description of villages and house sites on Lana'i:

> An examination of the ruins shows that the villages on Lanai were extremely small, rarely exceeding 10 houses. There were 60 of these communities along the coast and at least 20 inland, and both on the coast and on the top-lands solitary house sites were common.
>
> A village constituted little more than a group of scattered houses at some spot favorable for cultivation or for the landing of canoes. No fixed order of arrangement is observable. The finest house sites occupied the best situations and were therefore the abodes of chiefs. Of communal structures there were canoe houses and heiaus. Associated with a few villages was a common burial ground for the lower classes.

No burials were recorded in the current survey but Emory (1969:73) reports 20 flexed burials exposed in the sandy slope of the east side of Kuahua Gulch. He writes that "each burial lay somewhat apart from the next over an area of two hundred square feet." This burial area may be related to the Kuahua complex on the west side of the gulch. In addition, an eroding burial was recorded in 1988 along the coast between Pohakuloa and Kuahua (site 1539).

An interesting and enigmatic feature is site 1544, which consists of boulders in the surge zone off of Po'aiwa Gulch. The site is very similar in appearance to deteriorated fishponds on south shore of Moloka'i. There are, however, no written or oral traditions to corroborate such a function.

III: EVALUATIONS OF SIGNIFICANCE KAIOLOHIA-KAHUE COASTAL TRAIL

This section of the report discusses the significance of the archaeological resources along the Kaiolohia-Kahue trail. The significance assessments of individual sites are presented in Table 5 and Appendix B. Appendix C includes the significance statements from State site forms for previously recorded complexes.

CRITERIA FOR SIGNIFICANCE EVALUATIONS

Draft rules and regulations of the Division of Historic Preservation, Department of Land and Natural Resources (May 1989), provide the framework for evaluations of significance used in this report. Criteria are based on those of the National Register of Historic Places. Significance is defined in the following manner:

> A site meets the criteria of integrity of location, design, setting, materials, workmanship, feeling, and association, as well as one or more of the following criteria:
>
> A. Site is associated with events that have made an important contribution to the broad patterns of our history.
>
> B. Site is associated with the lives of persons important in our past.
>
> C. Site embodies the distinctive characteristics of a type, period, or method of construction; it represents the work of a master; or it possesses high artistic value.
>
> D. Site has yielded, or may be likely to yield, information important for research on prehistory or history.
>
> E. Site has important historical cultural value to an ethnic group of the State.

TABLE 5. SITE SIGNIFICANCE, KAIOLOHIA-KAHUE TRAIL

FIELD/ SITE NO.	SITE TYPE	SITE FUNCTION	SIGNIFICANCE
---	Kaiolohia-Kahue Trail	transportation	CDE
1542	small complex	habitation	D
1543	lighthouse	modern navigation	C
1544	boulders in surge	deteriorated fishpond?	D
1545	deflated site	habitation	D
1546	small complex	habitation	D
1547	slabs in stream	unknown, possibly modern?	D
1548	terrace	habitation	D
1549	terrace	habitation	D
1550	deflated site	habitation	D
1551	ahu	landmark?	D
1552	deflated site	habitation	D
1553	rock pile	markers?; unknown	D
1554	terrace	habitation	D
1555	deflated site	habitation	D
1556	enclosure	possible fishing shrine	DE
1557	rock piles	possible fishing shrines	DE
1558	wall	unknown	D
1559	terraces	habitation	D
1560	walled shelter, C-shape	habitation	D
1561	terrace	habitation	D
1562	major complex	habitation, ceremonial	DE
1563	terrace, walls	habitation	D
1564	terrace	habitation	D
PREVIOUSLY RECORDED SITES:			
44	major complex	habitation, ceremonial	DE
53	major complex	habitation, ceremonial, art	DE
139	platforms, shelter	habitation, ceremonial	DE
UNRECORDED SITES:			
LCA 10029	houselot	habitation	D
West Kuahua	major complex (see KK-4)	habitation, ceremonial, possible burial	DE

SIGNIFICANCE OF ARCHAEOLOGICAL RESOURCES ALONG THE KAIOLOHIA-KAHUE COASTAL TRAIL

The remnant sections of the government coastal trail in the survey area of Kaiolohia to Kahue are assessed as significant, still retaining their integrity of location, design, setting, materials, workmanship, feeling, and association. They also meet significance criteria C, D, and E. These sections are a good representation of 19th century trail construction, contain important information for research, and are of cultural value to the local community as indicated by the selection of this trail as part of the demonstration system of Na Ala Hele.

All sites in the project area are assesed as significant. They are in generally excellent condition and all meet the criterion of integrity. The sites have been relatively unaffected by intensive post-contact activity, although erosion has impacted some sites. However, even the deflated sites, which have been most affected by natural processes and have lost much of their stratigraphic context, retain their horizontal character; intact "islands" within the deflated sites provide stratigraphic control.

The sites are significant for their information content (category D). Very little archaeological research has been carried out on Lana'i. The sites in this area offer an opportunity to study traditional Hawaiian coastal settlement in the context of the *ahupua'a* as well as the region. The diversity of residential sites, in terms of formal type, clustering, location, and content, allows for a range of research questions dealing with settlement pattern, the nature of households, duration and intensity of occupation, and subsistence strategies. Further, while the exposed firepits found during this survey were too disturbed to produce sufficient material for dating, their numbers suggest a high potential for finding intact features from which adequate datable material can be collected.

The shrines are also significant for their historical cultural value to native Hawaiians (category E).

IV: RECOMMENDATIONS FOR THE KAIOLOHIA-KAHUE COASTAL TRAIL: LONG-TERM PLANNING AND MANAGEMENT

It is recommended that a cultural resource management plan (CRMP) be prepared in coordination with the detailed Na Ala Hele development or concept plan for the Kahiolohia-Kahue trial. The purpose of the CRMP is to provide a management framework for cultural resources that is integrated with plans for actual physical development of the trail.

The CRMP should (1) present a final assessment of impacts based on the details of the development plan (e.g. location of trail facilities; access points; identification of heaviest use areas; etc.); (2) address the mitigation of those impacts, including data recovery as well as specific site protection measures; (3) incorporate an interpretive plan that identifies interpretive goals and the means to achieve those goals in the context of the trail purpose; and (4) develop final management strategies to ensure long-term protection for the trail and sites along the trail.

The following discussion and recommendations are presented as a preliminary CRMP. The recommendations are posed in the context of trail purpose as defined in the Kaiolohia-Kahue "Fact Sheets" prepared by Na Ala Hele: that the trail is intended for "fishing, sightseeing, picnicking, hiking, archaeological and cultural interpretation."

PRELIMINARY IMPACT ASSESSMENT

The Kaiolohia-Kahue trail involves a complex set of potential and on-going impacts, more so than for the Lahaina Pali trail. Thus the issue of impacts is treated in more depth than in the discussion for the Maui trail. A more detailed impact assessment will need to be made following development of the final trail design, but the following is offered as a preliminary evaluation.

Along the Kaiolohia-Kahue trail, current impacts come from public use and natural forces. While development of the trail for public use should not in itself destroy or affect the integrity of sites, increased public access will certainly exacerbate current impacts.

In the four days of the current survey, the following observations were made. A total of 14 people were seen in the area: eight tourists in three groups, a lone hiker, one fisherman, and four hunters (passing the time until the weekend hunt). All came by vehicle to Pohakuloa, along the dirt road from the end of the paved highway.

The hunters and one group of tourists walked as far as the shipwreck off Kuahua; the other two tourist groups stayed at Pohakuloa (one group was having a picnic on the lighthouse foundation). Only the hiker and the fisherman walked beyond the shipwreck; the hiker as far as Kahue, the fisherman further.

Strong winds are common along this coast and much of the route along the east end of the trail is in sand. Both factors make for difficult walking along the trail and deter the casual walker from following the trail for any great distance.

Currently then, the heaviest visitor impact is on the complex at Pohakuloa (site 53) immediately adjacent to the parking area at the end of the dirt road. This heavy visitation derives not only from its proximity to the road but from existing interpretive development and publicity. Several years ago, the Hawaiian Civic Club placed a trail through the complex and painted information on rocks, primarily to direct people to the petroglyphs in the complex (S. Kahoohalahala, personal communication). This site is described in several sources used by tourists, including a book on petroglyphs (Cox and Stasack 1970; the locale, however, is misnamed "Kukui"), a guide to beaches (Clark 1980), numerous general tourist guidebooks (e.g. Sunset 1986), and island guide leaflets distributed locally.

Despite this attention, there has been relatively little impact on the complex as a whole, although the petroglyphs have been damaged in recent years (S. Kahoohalahala, personal communication). Unquestionably, increasing numbers of visitors will increase petroglyph vandalism.

No other sites in the survey area show notable evidence of visitor impact, including vandalism, collapse (except at 1562), or intentional digging. Again, however, the probability of these actions occurring will increase with additional visitation.

Natural processes are currently the major source of impact on sites. Sites are being damaged as wind and run-off sheet erosion deflate non-structural sites above the coastline (e.g. 1545), while the ocean and wind erode the seaward edges of cultural deposits in dunes or near coastal structures (e.g. 1562). Other sites are being buried under expanding kiawe growth and massive, rapidly building sand dunes. In fact, it is probable that much of the eastern portion of the original government trail is now buried under dunes. Another site that may have been buried by dunes is a

kuleana houselot and house foundation that once existed on the eastern edge of Kuahua Gulch (LCA 10029). The house was reported in the government survey of 1878 (Monsarrat 1878), but was not relocated in the present survey.

The complex at Keonohau Gulch (1562), particularly the midden deposit, is highly susceptible to both human and natural impacts. The trail is immediately adjacent to the midden deposit and trail users are inadvertently collapsing its seaward edge. High wave action is also gnawing away at the site deposit.

IMPACT MITIGATION STRATEGIES

Impact mitigation strategies include management through visitor channeling, site interpretation, site avoidance, and data recovery. These strategies are incorporated below in the specific recommendations for different elements of trail development.

SITES ALONG THE TRAIL

There are a total of 27 sites along the Kaiolohia-Kahue trail, including three major complexes, several small feature aggregations, and numerous individual structures. The sites are primarily pre-contact and early post-contact habitation complexes and ceremonial structures.

It is recommended that wherever feasible the alignment and design of the Kaiolohia-Kahue coastal trail should avoid sites. The following recommendations are based on this basic premise.

Site development for interpretation: Two of the major complexes (53 and 1562) and sites 1543, 1544, 1556, and 139 are recommended for interpretation. These sites are located in areas that are easily accessible and/or highly visible from the trail; site protection measures will be difficult to implement and maintain. An aggressive interpretive program is seen as an effective means to inform the public about historical and cultural values and thereby encourage public participation in site protection.

Site avoidance with no interpretation: Sites 1542, 1546, 1547, 1548, 1550, 1551, 1553, 1557, 1560, and complex 44 are all located a considerable distance from the trail or are protected by existing dense vegetation.

Data recovery: Sites 1545, 1549, 1552, 1554, 1555, 1558, 1559, 1561, 1563, and 1564 are located on or immediately adjacent to the existing path(s) along the coast. In places where the alignment and design of the trail cannot avoid sites, then data recovery may be appropriate for impact mitigation. The listed sites are recommended for this action, which should be carefully evaluated in the final CRMP in coordination with trail development planning.

THE KAIOLOHIA-KAHUE TRAIL

The following recommendations are made for trail development as it relates to the cultural resources, i.e. CRMP actions that should be taken as part of preparing the trail for public use.

The design of the public trail can be a passive but effective means of site protection through avoidance. Trail design channels visitors through the use of pathways, vegetation barriers, and marked rest stops.

Preparation of the Kaiolohia-Kahue trail for public use should build on existing conditions that are effective in site protection. Dense vegetation and high dunes are natural barriers that serve to keep trail users away from sites. Sections of the trail that are rocky or steep force trail users to concentrate on the trail rather than wandering onto nearby sensitive site areas. Sections of the trail that are in good condition invite trail users to stay on the trail.

In contrast, there are areas at the west end of the trail where vegetation is open, the slope is gradual, the trail is undefined or poorly defined (for example, with several alternate pathways). In these areas, users have a multitude of choices as to where to adventure, including the option of exploring sensitive archaeological sites.

Trail design recommendations are made in the context of protecting archaeological sites, not necessarily reduplicating the exact path of the historic trail. It should also be noted that these recommendations are made in reference to opening up the Kaiolohia-Kahue trail as an independent trail unit. If this section of the coastal trail is made part of a larger trail system (e.g., if the trail is extended beyond Kahue), then additional or alternative recommendations will be required.

1. **Trailhead.** It is recommended that the main trailhead be located at Pohakuloa, with only limited or unpublicized access from Kahue Road. This will focus primary visitor attention at the Pohakuloa/Po'aiwa complex (sites 53, 1543, and 1544), which can serve as an interpretive introduction to the trail. Except for Pohakuloa (site 53) the sites along the trail will be protected, as they are now, by the difficulty of the trail (i.e. deep sand, strong winds, distance) and by the fact that interest is drawn to the large shipwreck

at Kuahua and away from the inland side and west end of the trail. Serious hikers and those with interest in the historic character of the trail can be attuned to the preservation concerns through interpretive measures and trail design at appropriate points.

2. **Trail Route.** Only a few short sections of the original government trail were located in the present survey. Thus the present modern alignment follows a path (or paths) that requires little protective action for the trail itself. It is recommended that the majority of the trail route follow the current path primarily along the beach.

   In the eastern half of the survey, one small section of the historic trail was found under heavy kiawe, and partially buried by sand. It is probable that there is much more of the trail still existing, but completely hidden by sand dunes and kiawe. These conditions protect the trail and inland sites and thus it is recommended that no effort be made to clear this section of the historic trail.

   The exposed sections of the historic trail on the west end can continue to be used for the trail, given some interpretive development. Sections of the western half of the modern trail have multiple paths and in these places a single modern trail should be established and well marked.

   When the final trail alignment is being determined, the recommendations regarding site avoidance (in the section above) should be taken into consideration.

3. **Trail "Reconstruction."** Defining the trail for modern use on the west end is a critical element in site protection for that area, given general visibility and ease of inland exploration. This trail construction should be compatible with the historical trail construction, but not duplicate it (for example, coral could be used for trail curbing rather than basalt). Interpretive materials should clearly identify the difference between the old and new sections.

4. **Archaeological Work.** An archaeologist should monitor the trail route definition, reconstruction actions, and development of the trailhead facilities to ensure that there is no incidental damage to the archaeological resources. During monitoring the archaeologist should completely document the remaining sections of the trail and adjacent sites as a data base for subsequent evaluation of visitor impacts. All surface artifacts should also be documented and collected at this time.

TRAIL INTERPRETATION

The Kaiolohia-Kahue trail takes the hiker into 19th century Hawai'i. It also provides magnificent views of Maui and Moloka'i, a wind-swept, solitary beach, shipwreck flotsam and jetsam, and the physical remains of the Hawaiian past. The opportunities for interpretation are numerous. In addition, interpretation can be a means for effectively protecting sites.

It is recommended that the main focus of interpretation be located at Pohakuloa. As noted above, the public impact on this site will only be intensified in the future.

From a strictly interpretive viewpoint, the variety of features at Pohakuloa is particularly appropriate for focusing attention on this area; the different types of sites can introduce the different historical elements of the trail. For example, the lighthouse foundation (1543) is a prominent landmark and would be a natural introduction to the shipwrecks along this coast. Also, the Pohakuloa complex includes a diversity of sites that all contribute to an understanding of the Hawaiian coastal lifestyle; it can serve as an interpreted example for the other sites along the trail.

An interpretive master plan for the island specifically recommends that the petroglyphs at Pohakuloa be excluded from tours and guide maps to reduce the possibilities of vandalism (Bucy 1989:40). The recommendation to remove the petroglyphs from the interpretive complex is supported here. However, it will be difficult to keep visitors from the complex itself, and certainly difficult to have references to the petroglyphs removed from guides. The implementation recommended here is to develop Pohakuloa as the interpretive center for the trail, but exclude the petroglyphs from the interpretation. In other words, visitor attention could be directed toward other things. The petroglyphs can be further protected by developing a vegetative barrier around the boulder outcrops on which they occur. Specific recommendations on site interpretation and protection should, of course, be addressed in the cultural resource management plan.

Interpretive signs at or near the Pohakuloa parking area can serve several purposes: they can provide general information on the trail, such as directions, conditions, and safety rules; they can provide an introduction to the historical themes of the trail; they can specifically interpret the Pohakuloa complex.

Several of the sites along the western portion of the Kaiolohia-Kahue trail will require measures to protect them from the long-term effects of increased visitor use. However, protection through avoidance may be difficult to implement on a regular basis, given the accessibility and visibility of these sites from the trail. These may

be sites where protection through interpretation can be implemented or where data recovery may be called for. The final CRMP should evaluate the need for excavation of sites recommended for interpretation.

More detailed interpretation of the coastal trail can be provided through printed material such as a brochure or leaflet. It can be as simple as a single sheet of paper but it should definitely include the following elements: the story of the historic road system and the place of this trail in that system; the story of Shipwreck Beach; the types of Hawaiian sites along coast and what they mean in terms of Hawaiian coastal settlement (however, no detailed map of site locations should be included); and historic preservation concerns. This brochure can be distributed through State offices, at the Lana'i airport, and through tourist service agencies on Lana'i.

GENERAL MANAGEMENT CONCERNS

A long-term management program is needed to ensure that the archaeological sites along the Kaiolohia-Kahue trail continue to be protected. Management includes on-going maintenance and periodic monitoring of site and trail condition.

The Na Ala Hele proposal for the trail use is strongly supported, that is, that the trail is a "fishing and hiking trail." Other uses should be prohibited, including horse-riding and any vehicle operation (motorcycles, bicycles, etc.). This coastline is, of course, a hunting area, and some accommodation with this activity will have to be established.

On-going maintenance involves keeping the trail corridor and trailhead clear of vegetation and trash and maintaining the trail itself in stable condition. This will enhance visitor appreciation of the resource and indirectly serve as an example to visitors to treat the trail and sites with respect. A sign should be placed at the Pohakuloa trailhead encouraging visitors to pack out all trash.

Monitoring of visitor use will also be important for long-term management. Monitoring includes the following elements:

1. **Database.** Surface characteristics of all sites need to be documented prior to opening the trail for public use. These data will be used for comparison in later periodic monitoring as the baseline for evaluating the impact of visitor use on trail and site condition and integrity.

2. **Monitoring.** Monitoring involves periodic site inspections to evaluate the impact of public use. A monitoring program can be modeled on the program for the Na Pali Coast State Park on the island of Kauai.

3. **Reevaluation.** Following each monitoring inspection, a reevaluation of the effectiveness of site protection measures should be made. If it is found that the resources are being adversely impacted by public use, additional site protection measures can be implemented.

Interpretation of the trail and selected sites along the trail is a primary strategy of long-term management. In addition to contributing to the outdoor recreational experience, interpretation serves to educate the public toward an appreciation and respect for historic resources. Management through interpretation has been found to be a more successful means of protecting certain kinds of sites than barrier protection.

REFERENCES

Advertiser
1905 "Record of Wrecks on Hawaiian Shores". Pacific Commercial Advertiser. November 16.

Alexander, W.M.
1885 Island of Maui. Hawaiian Government Survey. In State Survey Office.

Andrews, Lorrin
1974 A Dictionary of the Hawaiian Language. Charles E. Tuttle Company. Rutland, Vermont.

Armstrong, R.W.
1973 Atlas of Hawaii. University Press of Hawaii. Honolulu.

Ashdown, Inez
n.d.a "Trails and Transportation". Typescript in Maui Historical Society. 6 pp.

n.d.b "Along Hoapili's Trail (Part 2)". Typescript in Maui Historical Society.

1971 Ke Alaloa o Maui. Kama'aina Historians. Wailuku, Hawaii.

Beckwith, Martha
1970 Hawaiian Mythology. University of Hawaii Press. Honolulu.

Brown, J.F. and M.D. Monsarrat
1878 Island of Lanai. Hawaiian Government Survey (Register No. 1394). Traced in 1902. In State Survey Office.

Bucy, D&M
1989 Interpretive Master Plan for the Island of Lanai, Hawaii. Prepared by D&M Bucy and Associates. Corvallis, Oregon. November 1.

Clark, John R.K.
1980 Beaches of Maui County. University Press of Hawaii. Honolulu.

Cox, J.H. and E. Stasack
1970 Hawaiian Petroglyphs. B.P. Bishop Museum Special Publication 60. Honolulu.

Emory, Kenneth P.
1921 "Visit to the Island of Lanai, Hawaiian Islands for the Bernice Pauahi Bishop Museum Archaeological and Ethnographic Survey." Typescript, Bernice P. Bishop Museum. Honolulu.
1924 "Village and House Sites Elsewhere than at Kaunolu, Lana'i". Typescript, Bernice P. Bishop Museum. Honolulu.
1969 The Island of Lanai. A Survey of Native Culture. Bernice P. Bishop Museum Bulletin 12. Honolulu.

Fleming, Martha Ross
1933 Old Trails of Maui. William and Mary Alexander Chapter, Daughters of the American Revolution.

Gibbs, Jim
1977 Shipwrecks in Paradise: an Informal Marine History of the Hawaiian Islands. Superior Publishing Company.

Graves, M.W.
1990 Food Production in an Arid Context: Farming on Lana'i. Paper presented at the 55th Annual Meeting of the Society for American Archaeology.

Graves, M.W. and T. Ladefoged
1988 Research Plan for Archaeological Fieldwork on the Island of Lanai by the University of Hawaii. Typescript. Department of Anthropology, University of Hawaii-Manoa.

Handy, E.S. Craighill
1940 The Hawaiian Planter, Volume 1. B.P. Bishop Museum Bulletin 161. Honolulu.

Inventory
1974 Statewide Inventory Site Files. Division of Historic Preservation, Department of Land and Natural Resources. Honolulu.

Jarves, J.J.
1847 History of Hawaii. Honolulu.

Kamakau, Samuel M.
1961 Ruling Chiefs of Hawaii. Kamehameha Schools Press. Honolulu.

Kimura, Larry and J. Lau
1982 Hawaiian Place Names of Lana'i. Project of the 'Ahahui 'Olelo Hawai'i. Typescript.

Land Court
1927 Map and Description with Application No. 862 (amended). Land Court, Territory of Hawaii. December 28, 1927 (original map); June 5, 1929 (amended map).

Lueras, Leonard (ed.)
1980 Insight Guides Hawaii. APA Productions (HK) Ltd. Hong Kong.

Lydgate, J.M.
1920 "Reminiscences of an Amateur Collector." Hawaiian Almanac and Annual for 1921. Press Publishing Company. Honolulu, H.I.

Macdonald, G.A. and A.T. Abbott
1970 Volcanoes in the Sea. University of Hawaii Press. Honolulu.

McKenney
1884 McKennev's Hawaiian Directory 1884-1885. With notes on Lana'i "kindly furnished by Honorable W.M. Gibson, proprietor of the island".

Monsarrat, M.D.
1878 Hawaiian Government Survey Field Book No.3, Lanai; Reg. No. 193. In State Survey Office.

Mookini, Samuel
1962 Informant of Elspeth Sterling. Lahainaluna, Maui. In E. Sterling's notes, Maui Historical Society.

Munro, George C.
n.d. Story of Lanai. Manuscript, Bernice P. Bishop Museum Library. Honolulu.

Napoka, Nathan
1989 "Lanai History". In D&M Bucy and Associates, Interpretive Master Plan for the Island of Lanai, Hawaii. November 1.

Pukui, M.K. and S.H. Elbert
1971 Hawaiian Dictionary: Hawaiian-English. English-Hawaiian. University of Hawaii Press. Honolulu.

Pukui, M.K., S.H. Elbert, and E.T. Mookini
1974 Place Names of Hawaii. The University Press of Hawaii. Honolulu.

Sahara, T., E.T. Murabayashi, A.Y. Ching, I. Kuwahara,F.N. Fujimura, E.L. Awai, and H.L. Baker
1967 Detailed Land Classification--Island of Lanai. L.S.B Bulletin No. 8. Land Study Bureau, University of Hawaii. Honolulu.

Saturday Press
1883 Dictionary of Hawaiian Localities. Saturday Press. October 11, 1883.

Sunset
1986 Sunset Hawaii A Guide to all the Islands. Lane Publishing Company. Menlo Park, California.

Thrum, Thomas G.
1889 "Retrospect of the Year 1889." Hawaiian Almanac and Annual for 1890. Press Publishing Company. Honolulu, H.I.

1907 Hawaiian Folk Tales: A Collection of Native Legends. Chicago.

Uaua, W.H.
1871 "The Legend of the Battle of the Owls, Etc." Ke Au Okoa, page 3. June 29, 1871.

USGS
1923 Island of Lanai. U.S. Geological Survey.

Walker, Winslow M.
n.d. Archaeology of Maui. Manuscript, Bernice P. Bishop Museum. Honolulu.

Young, Charles C.
1959 "Lanai's Shipwreck Beach". Honolulu Star-Bulletin. November 15, 1959.

APPENDICES

APPENDIX A.
SITE DESCRIPTIONS, LAHAINA PALI TRAIL

2816: thin scatter of midden (mostly cowrie and conus) and small pieces of coral; bouldery area, about 3 x 6 m.
Location: on nose of ridge above 2817 and old road; on E ridge of main Manawaipueo Gulch.
Significance: information content re: traditional Hawaiian occupation

2817: boulder bifaced, cobble core-filled wall, 7 m long, 40 to 110 cm high; well-constructed; built along E side of bedrock gully, upper end of wall abuts nose of small boulder outcrop ridge; very large boulders (up to 2 m across) block mouth of gully where it is intersected by the old paved road (Figure 11). May be a water diversion feature related to the road, since a culvert opening in line with the wall is evident on the makai facing of the roadbed (Photo 12); culvert opening is 50 cm high, 40 cm wide; wooden box frame for culvert under the road is visible about 1-1.5 m into the roadbed.
Location: abuts mauka side of paved road, east of main Manawaipueo Gulch
Significance: information content

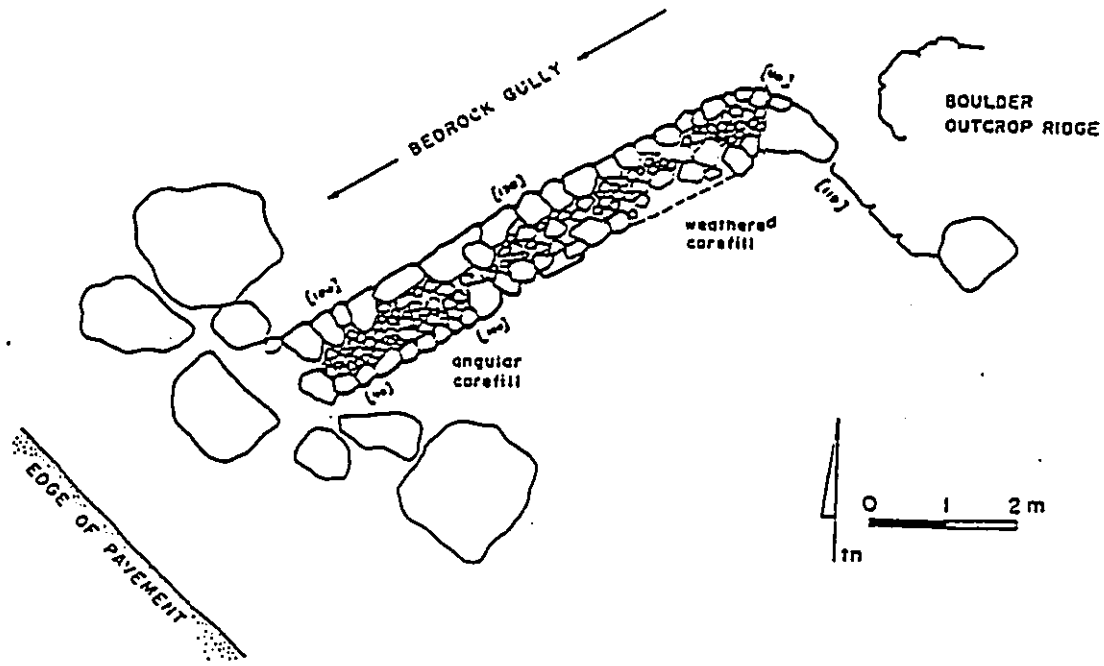


FIGURE 11. SITE 2817, BOULDER WALL ON MAUKA SIDE OF PAVED ROAD.

PHOTO 12. CULVERT AT BASE OF ROAD RETAINING WALL, SITE 2817

2818: wall and possible rock quarry; 6 m long wall is combined stacked boulders and some small boulder biface and pebble/cobble core-fill; ranges from 50-120 cm high (Figure 12); upper end of wall is flush with the sloping ground, lower end is at the top edge of a 1.25 m high outcrop (Photo 13). The outcrops above and below the wall look artificially cut (especially in the upper section), which may be result of quarrying for road material.
Location: built on moderately steep bedrock slope above old paved road; just W of very steep erosional drainage.
Significance: information content

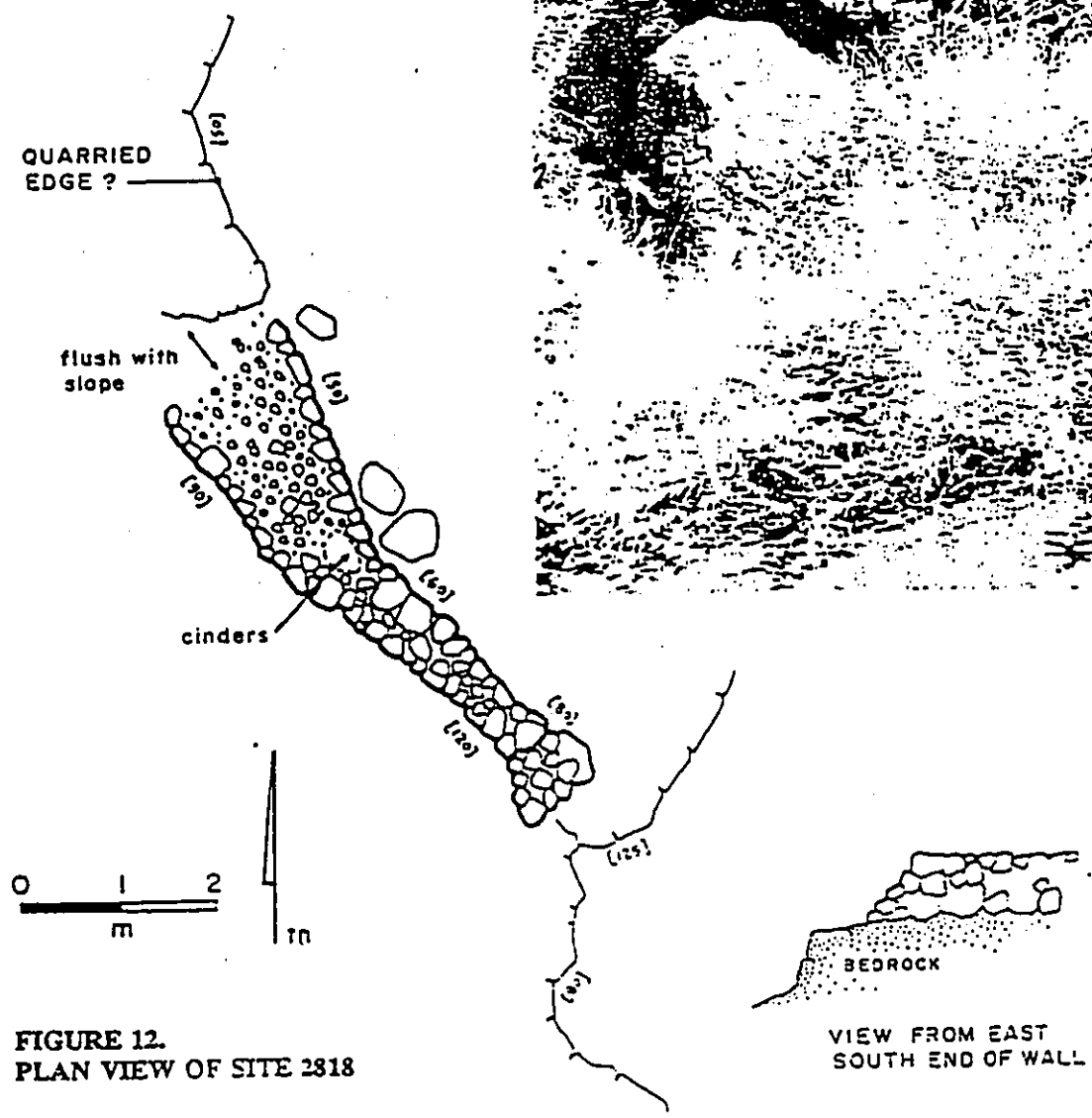
2819: terrace with dirt surface; measures 7 x 3 m, with one to two course high facings up to 40 cm high (Figure 13); no obvious feanures on terrace surface; ground drops moderately to very steeply to south. Test probe shows dark reddish silt on bedrock base, no cultural material. Petroglyph located 8 m to NNW of SW corner of terrace. Trail runs along N and NW side of terrace; trail is 3.5 m wide with stacked boulder wall edging on downslope side adjacent to terrace (see Photo 3).
Location: abuts makai side of trail, W of Kamaohi Gulch.
Significance: information content

2820: complex of three structures. Structure A is a boulder retaining wall built against a large boulder outcrop, forming a roughly C-shaped sheltered area, 2 m across, interior is level to slightly sloping (Figure 14). Structure B is a roughly stacked boulder wall, 1.25 m wide and 4.5 m long; built on moderately steep slope with a shallow erosional gully cutting downslope at both ends of the wall. Structure C is a large enclosure built below the trail, 30 x 12 to 20 m wide, on moderate slope into gully; E wall is roughly piled boulders on edge of natural outcrop; N wall is bifaced, core-filled; W edge is defined by trail, which is curbed by low, stacked boulder wall. At this point, appears to be several, eroding trail alignments descending into Mokumana Gulch.
Location: above, below trail on W side of Mokumana Gulch
Significance: information content

2821: probable historic petroglyphs on large outcrops (Photo 14); outcrops do not have well-defined overhang, but are high enough to provide shade in afternoon; trail at this point crosses the end of a ridge and is curbed; quantity of bottle glass and Chinese crockery on makai edge of trail. Trail is curbed through boulder outcrop area.
Location: on makai face of large boulder outcrop between Opunaha and Makahuna Gulches; trail runs along base of outcrop
Significance: information content

2822: roughly stacked, low boulder alignment about 50 m long; constructed on bedrock; may be an alternate trail. Trail at this point switches twice through heavily overgrown, shallow drainage.
Location: top of ridge on W side of very steep, shallow erosional drainage.
Significance: information content

PHOTO 13.
VIEW OF SITE 2818
FROM PAVED ROAD,
FACING MAUKA.



VIEW FROM EAST
SOUTH END OF WALL

FIGURE 12.
PLAN VIEW OF SITE 2818

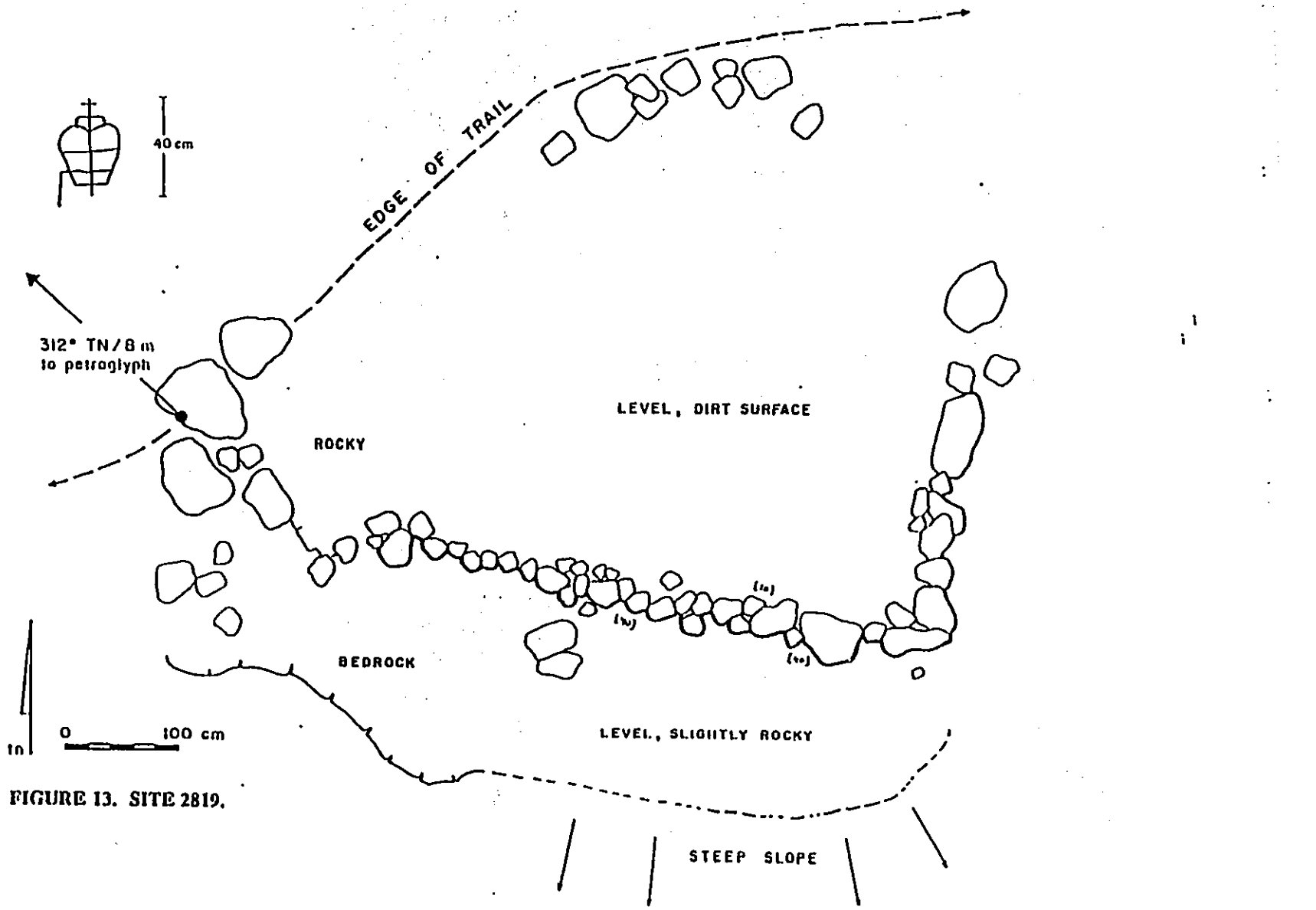
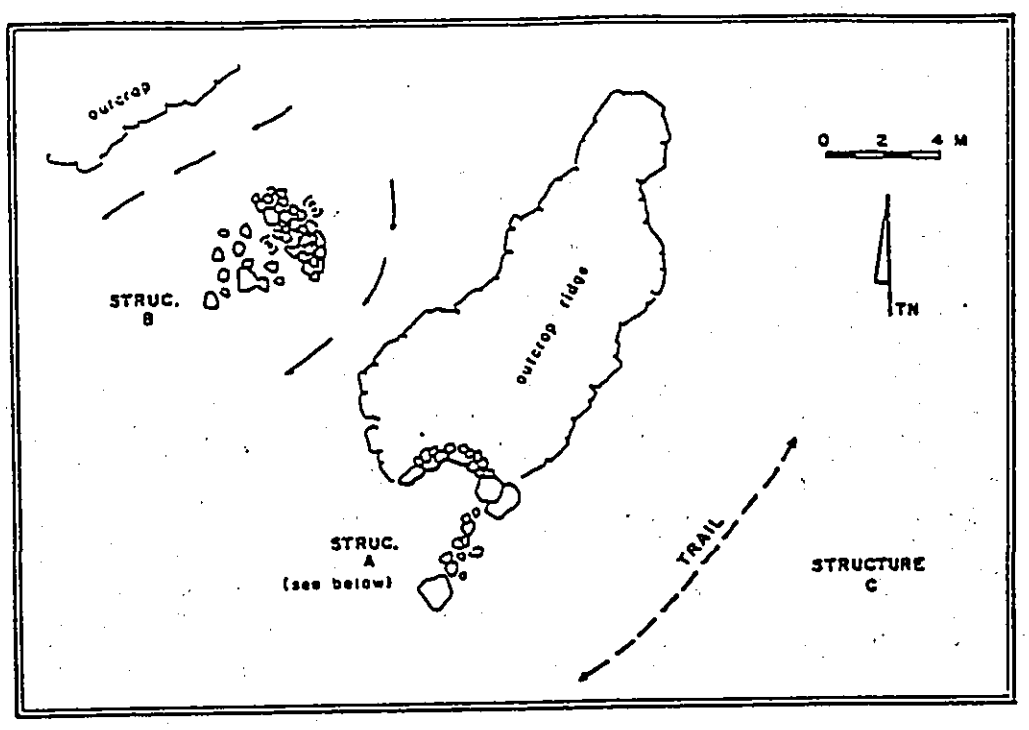
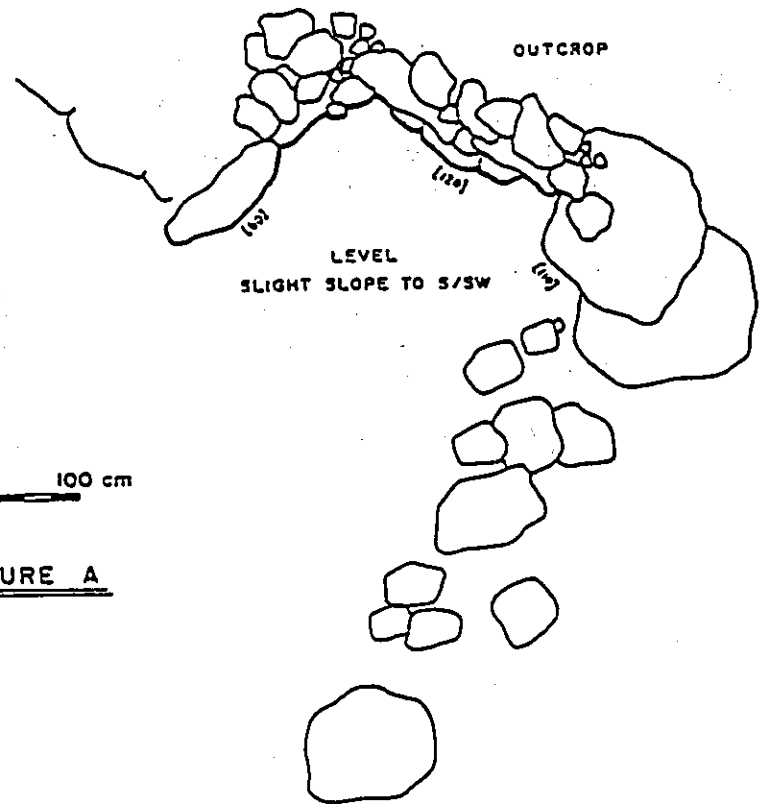
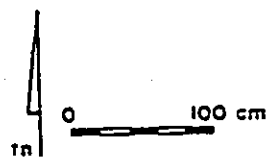


FIGURE 13. SITE 2819.







STRUCTURE A

FIGURE 14. SITE 2820

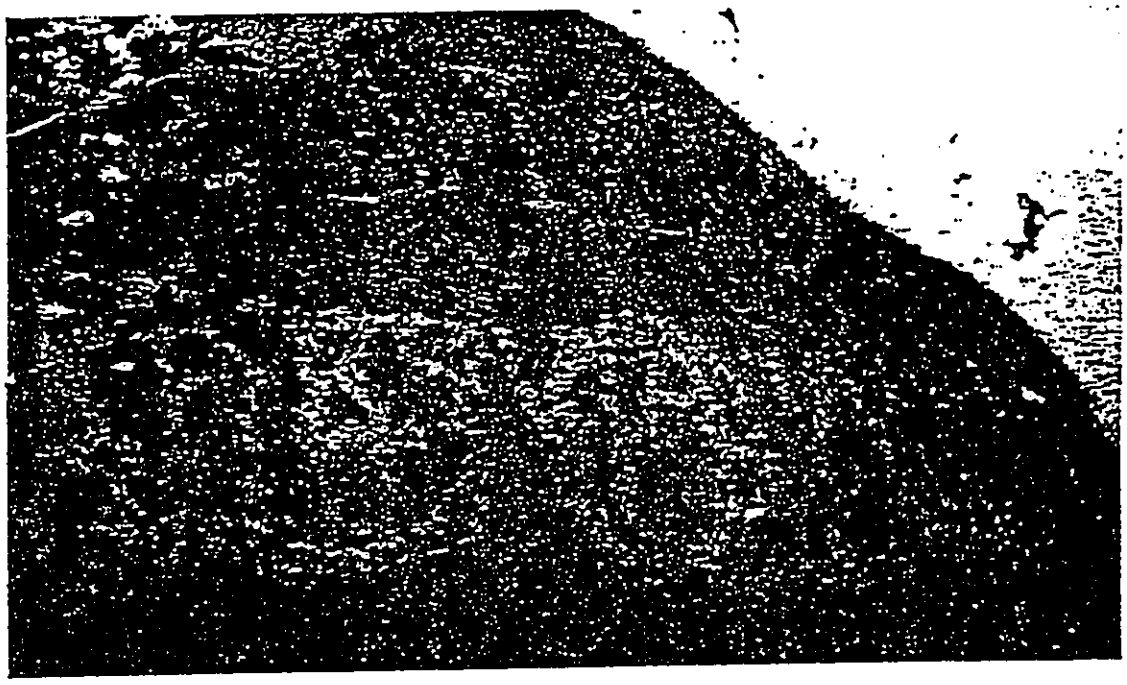


PHOTO 14. PETROGLYPH (NAME) ON BOULDER OUTCROP, SITE 2821.

2823: boulder alignment above and parallelling well-defined section of trail; alignment is about 25 m long; possible alternate trail; one piece of shell observed on ground.
Location: marked by large bedrock boulder above trail
Significance: information content

2824: complex of cupboards constructed of boulders stacked among large boulder outcrops. Structure A is cupboard, 1.5x2m, 1 m high; outcrop and piled boulders form sheltered area about 3.5 m across fronting cupboard (Figure 15; Photo 15); Structure B is smaller, less defined cupboards (Photo 16), located 25 m east of A across shallow, grassy swale; similar structures in large boulders and outcrops to W and SW.
Location: 60 m makai of trail on gentle slope at upper end of Kaalaina Gulch, large outcrop (2821) to WNW (see Photo 16).
Significance: information content

2825: complex of petroglyphs and retaining walls; petroglyphs are historic names scratched into boulder outcrop adjacent to trail and about 8 m above trail (Photo 17); one inscription in upper set is the date "1874"; stacked boulder retaining walls up to 1.5 m high, built into natural outcropping on E side of gulch; possible cupboard in outcrop, 1x.50m, top of cliff overhang is 1 m above cupboard surface; stacked boulder wall continues discontinuously upstream about 70 m to an old fencepost.
Location: in Manawainui Gulch, adjacent, mauka of trail
Significance: information content

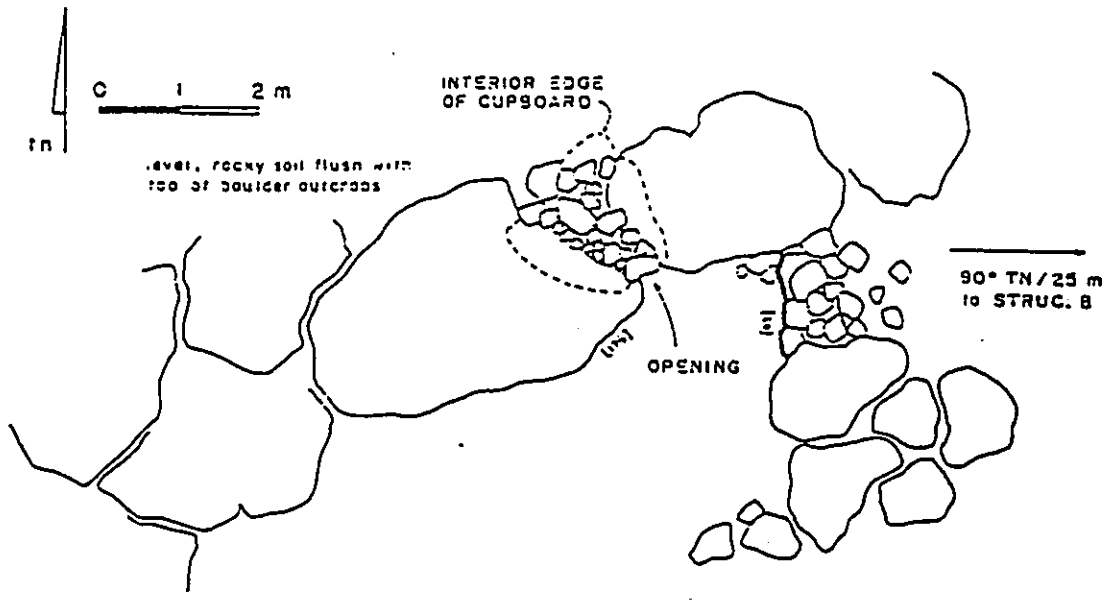


FIGURE 15. PLAN VIEW OF SITE 2824, STRUCTURE A.

2826: complex consisting of terraced enclosure and adjacent walls (Figure 16; Photo 18); enclosure is 3 m across, with well-constructed, stacked boulder walls up to 1.00 m high; adjacent walls are well-constructed, stacked boulder, varying from 40 to 100 cm high; structures are in excellent condition; scattered historic bottle glass. Complex built along west side of narrow, exposed bedrock ridge; ground slopes in all directions, except to mauka toward trail; vegetation is low grass, Dodonaea, lantana. 22 cm deposit exposed in test probe, no cultural features, fine red silt that appears aeolian in origin. Enclosure does not seem designed to protect from the prevailing wind as it opens into wind from west. Some bottle glass exposed in eroded trail to mauka of site.
Location: at nose of ridge on east side of Malalowaiaole Gulch, about 10 m makai of trail; McGregor Point jeep road continues mauka along this ridge
Significance: information content

2827: small, roughly constructed enclosure, 1.5 m across (Figure 17); stacked rock against two large (up to 1.75 m high), in situ boulders; vegetation is low, dense scrub grass and lantana; some bottle glass observed along trail which at this point is not curbed, possibly damaged.
Location: on moderate slope about 35 m above trail; on Kealaloloa Ridge.
Significance: information content

2828: complex of three small, crudely constructed C-shaped structures, measuring 1 to 1.5 m across (Figure 18); roughly piled boulders against natural outcropping; one crockery fragment. Trail at this point is single stone alignment along makai side; relatively easy to follow; bottle glass on eroded surface.
Location: slight slope of ridge between two shallow gullies; below trail.
Significance: information content

PHOTO 15.
SITE 2824.
STRUCTURE A.

PHOTO 16. SITE 2824. STRUCTURE B.
Note [illegible] at background left of photograph.

PHOTO 17. PETROGLYPHS ON BOULDER OUTCROP, SITE 2825.

PHOTO 18. SITE 2826 FROM TRAIL, VIEW TO MAKAI.

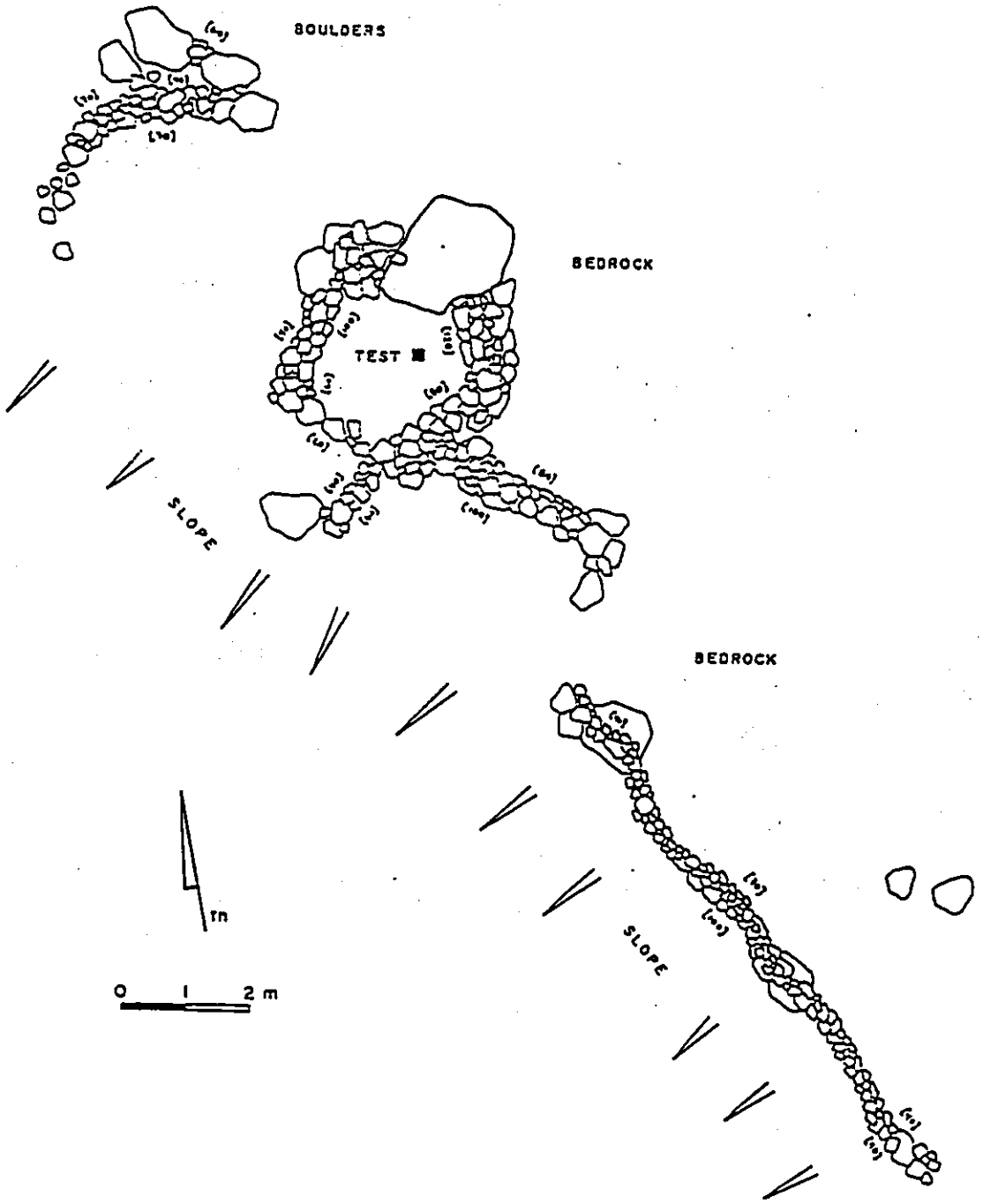
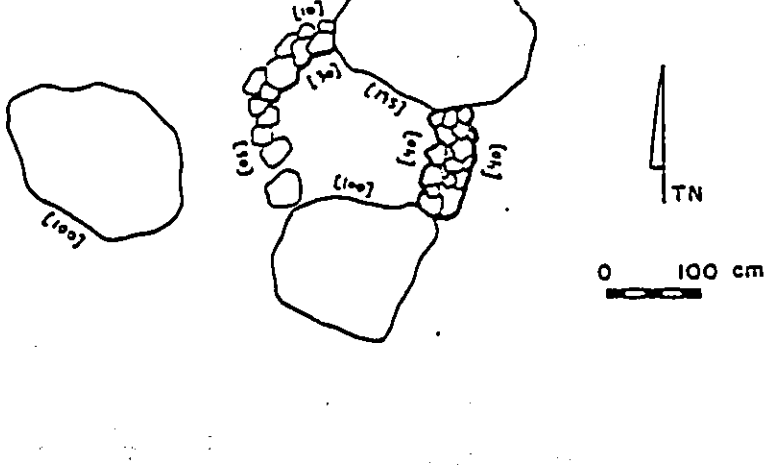


FIGURE 16. PLAN VIEW OF SITE 2826

FIGURE 17.
SITE 2827



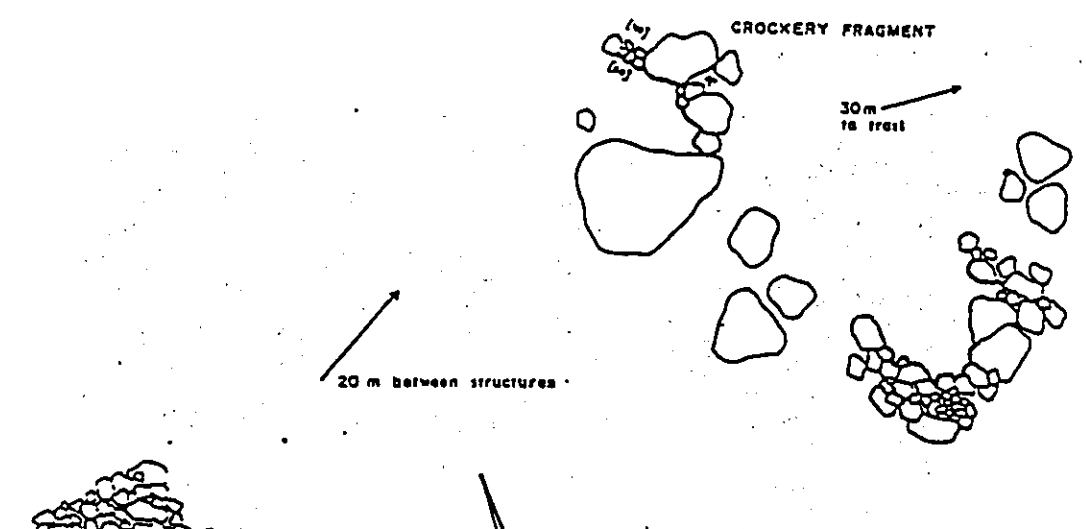


FIGURE 18. SITE 2828.

2829: 1 m wide paved terrace, 4.5 m long (Figure 19); original facing appears to have been 50 cm high but ground has eroded away leaving 60 cm exposure below base of structure (Photo 19); ground drops steeply into gully to NE; structure may be a trail-related feature, unknown function; oriented perpendicular to trail.
Location: at upper end of zigzag trail section, in heavily eroded area.
Significance: information content

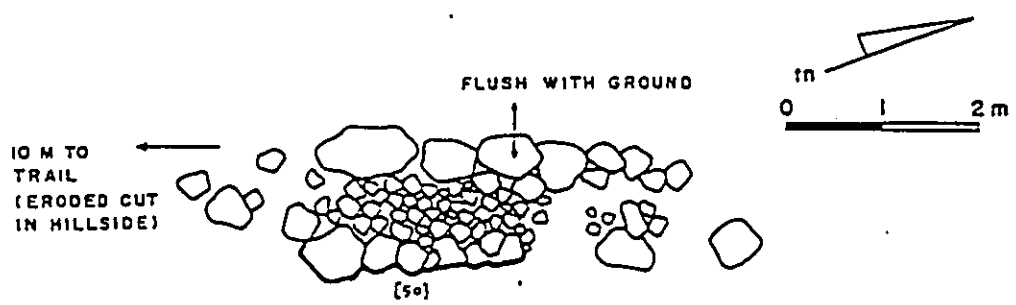


FIGURE 19. PLAN VIEW OF SITE 2829.

PHOTO 19. SITE 2829.

2830: low terrace, similar to 2829; located at end of 50 m long, well-constructed branch trail; almost certainly a trail feature but function unknown.
Location: approximately 60 m downslope of 2829
Significance: information content

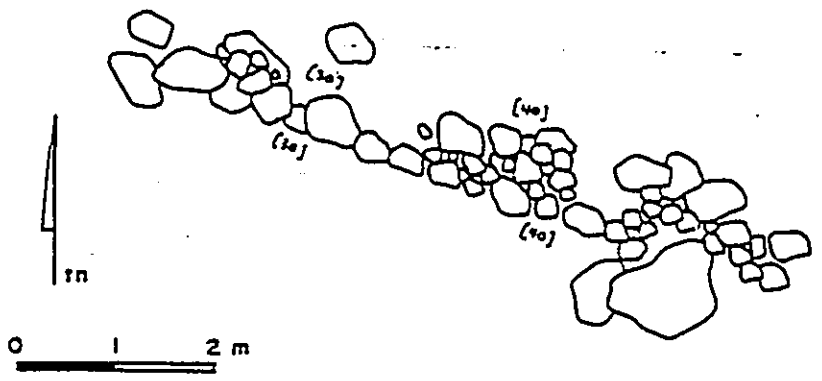


FIGURE 20. PLAN VIEW OF SITE 2831.

2831: roughly stacked boulder alignment, 6.5 m long, up to 40 cm high (Figure 20); alignment may be part of older trail. Trail at this point is well-constructed, cut into moderate sloping, north side of gully; trail facing is built of large boulders, some on edge.
Location: built parallel to slope and about 8 m below trail, about midway between trail and bottom of gully; at lower end of zigzag section of trail
Significance: information content

2832: short, bifaced, partially core-filled boulder wall, built across trail, 2.25 m long, 1 m wide, 40 to 70 cm high (Figure 21); terrain is steep and rocky; trail is level area, natural or constructed cut in slope; trail appears to diverge to east into two curbed alignments, possible third curbed alignment on slope above this structure.
Location: on steep slope above old paved road
Significance: information content

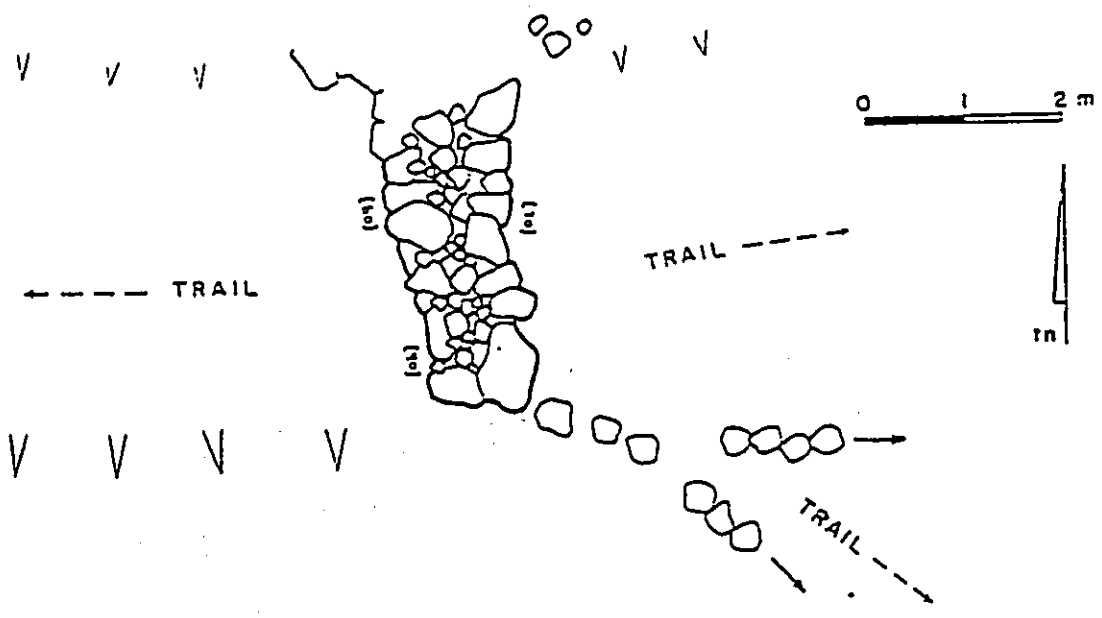


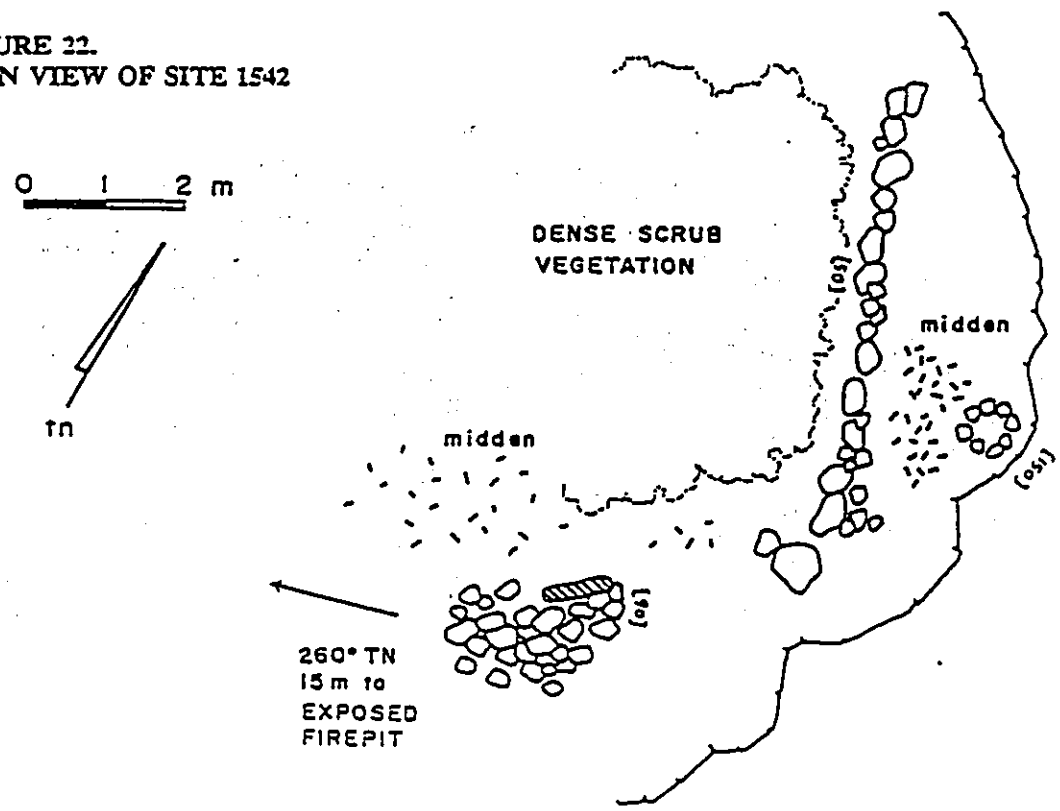
FIGURE 21. PLAN VIEW OF SITE 2832.

2833: possible rock shelter; sheltered area formed by cliff overhang, 2x3m area defined by boulder alignment; ground drops steeply into gulch from edge of alignment. Interior test probe shows possible cultural deposit, 1 fragment of shell; one piece of coral on slope to S of rock shelter.
Location: on E side of small east tributary to Manawaipueo Gulch
Significance: information content

APPENDIX B.
SITE DESCRIPTIONS
KAIOLOHIA-KAHUE COASTAL TRAIL

1542: 6 m long, 50 cm high, roughly stacked boulder wall; midden (cowrie, pipipi, wana, opihi) and coral pebbles at base of wall and scattered inland 10 m; white sand building up on mauka side of wall; to E of S end of wall is 2.5x1m boulder pile, W side looks like deteriorated facing, 90 cm high, with slab set on edge (Figure 22); 15 m, 260 degrees TN from boulder pile is midden/lithic concentration (deflated feature), 3x2m, with exposed firepit of greyish brown ash, with wana, pipipi, cowrie, fine charcoal fragments. Vegetation is dense scrub kiawe and lantana.
Location: W side of Po'aiwa Gulch on bedrock outcrop; about 30 m inland from shoreline; outcrop drops sharply to makai and E.
Significance: information content

FIGURE 22.
PLAN VIEW OF SITE 1542



1543: lighthouse foundation: concrete, pyramidal structure on piled boulder base (Photo 20); inscriptions on top "11/28/29", with names and initials "John Kupau", "C.M", "S.K.H.", "N.W.W.", "Kam Chee". Small, concrete foundation, 50 cm square with 15 cm square hole for pole support; located on W side of Pohakuloa Point, at edge of 3 m high sea cliff. Trail is a worn path in bedrock that extends from fishermen's shelter at east to base of this cliff below small concrete foundation. Two m SE of concrete foundation is 8 m long alignment that may be possible trail segment.
Location: Pohakuloa Point, just west of parking area
Significance: interpretive potential re: Shipwreck Beach

PHOTO 20. VIEW OF SITE 1543, LIGHTHOUSE FOUNDATION, FROM TRAIL, FACING SOUTHEAST.

1544: boulders in shallow surge zone off of sand beach, just W of Pohakuloa Point: appears similar to deteriorated fishponds on south coast of Moloka'i
Location: west of Pohakuloa Point, at mouth of Po'aiwa Gulch
Significance: information content

1545: major deflated site, with midden, basalt flakes and cores, volcanic glass: no structures observed except at east edge (see below). Surface is mostly red sandy silt with pockets of white sand. At upper end, 1.5 m high, 6 m across erosional "island" with level grassy surface (see Photo 11); 20 cm thick deposit exposed, suggesting small intact site area; midden is predominantly pipipi, also volcanic glass flakes and nodules. Small clumps of vegetation (grass, low kiawe) in deflated area; dense kiawe along shoreline and edge of Kuahua Gulch.

At W end, fire-cracked rock, midden, lithics in white sand dune deposit, above trail along coast; at top of dune, sand matrix transitions abruptly to red silt mixed with white sand.

At E end, on bluff overlooking Kuahua Gulch is complex of impressive structures including two high platforms (possible burials or fishing shrines), terraces, rock shelters, and enclosures; rock shelters at base of outcrop bluff (in Kuahua Gulch); covers area of at least 50 x 50 m, essentially inaccessible from coast because of vegetation; concentrations of midden, lithics, coral, one piece white porcelain jar and one piece of blue and white porcelain; site details not recorded; structures first described by Emory (1924):

> Across on the north bluff [of Kuahua] are 4 house sites, above them 2 platform graves paved with coral, joining each other end on. The first is 3 feet high, 6 x 12 feet, and the second is 2 feet high, 4 x 6 feet. The long axis of the graves point approximately north. Twenty-five feet below the grave the top of the ledge is marked with a papau, 8 x 8 holes (Emory 1924:14).

Location: entire ridge west of Kuahua Gulch, from top of dune face inland about 150 m; unrecorded complex about 180 m inland on west edge of Kuahua Gulch.
Significance: information content; unrecorded structures may include ceremonial features and if so, significant for cultural value

1546: complex of three terraces and ahu (Figure 23); terraces are sand-filled, roughly 6 by 4 m; midden (cowrie, pipipi) on surface; 60 cm across ahu constructed of boulders piled 30 cm high on top of 50 cm high boulder; possible enclosure, 2 m across, under dense vegetation at inland edge of site. 50x50cm test pit dug in inland terrace, reddish brown silty clay loam, large white sand particles, charcoal flecks mixed in; one pipipi. Low grass cover, with large patches of very dense lantana.
Location: on gentle, rocky slope E of Kukui, about 20 m inland on 2-3 m high dune
Significance: information content

1547: seven square outlines formed by limestone/sandstone and basalt slabs set on edge; squares are about 1.5 to 2 m across (Figure 24; Photo 21); function unknown
Location: about 50 m inland from shore in silt-filled streambed; stream mouth is blocked by raised limestone bed and sand berm, creating small backwash
Significance: information content

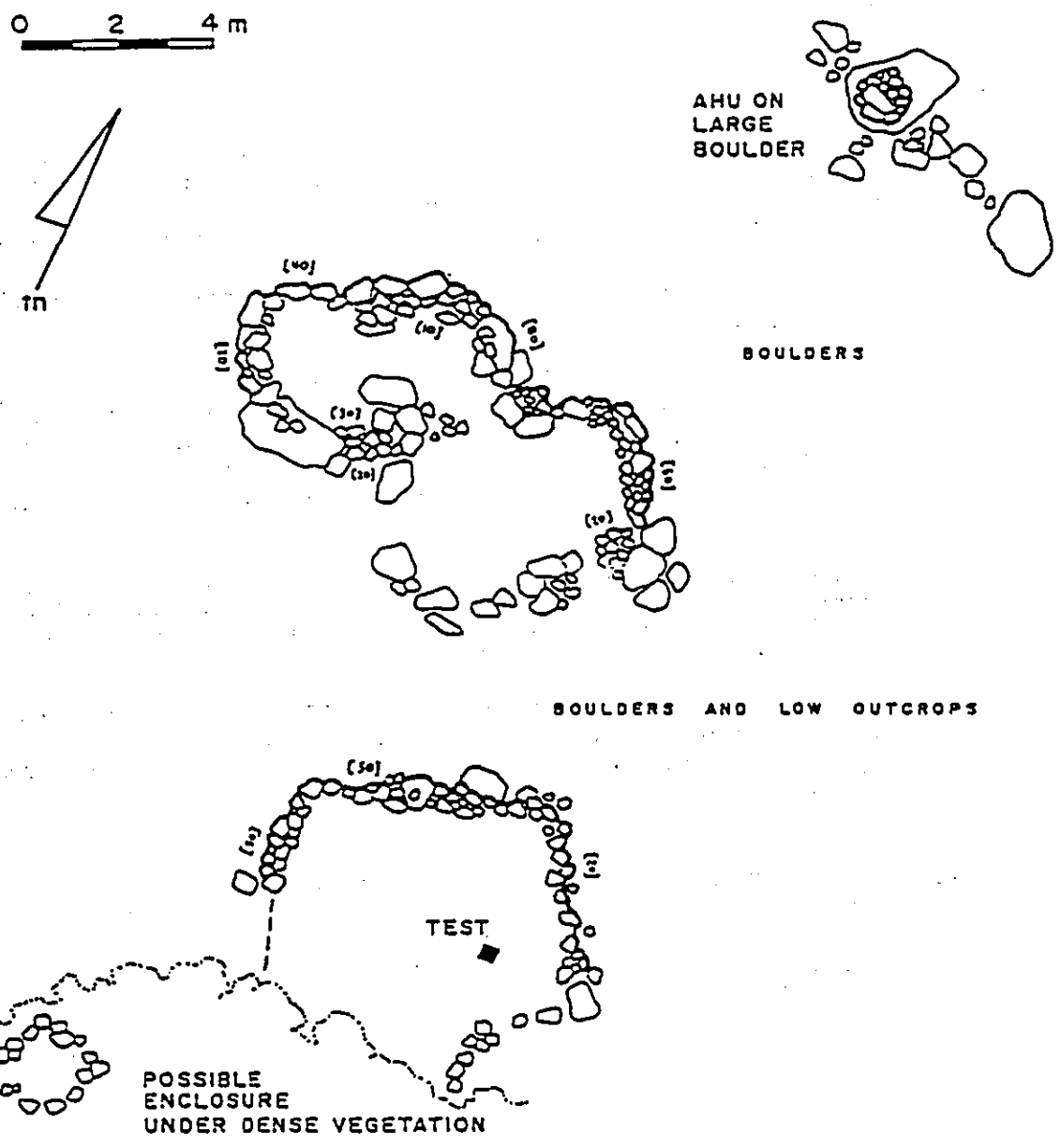


FIGURE 23. PLAN VIEW OF 1546.

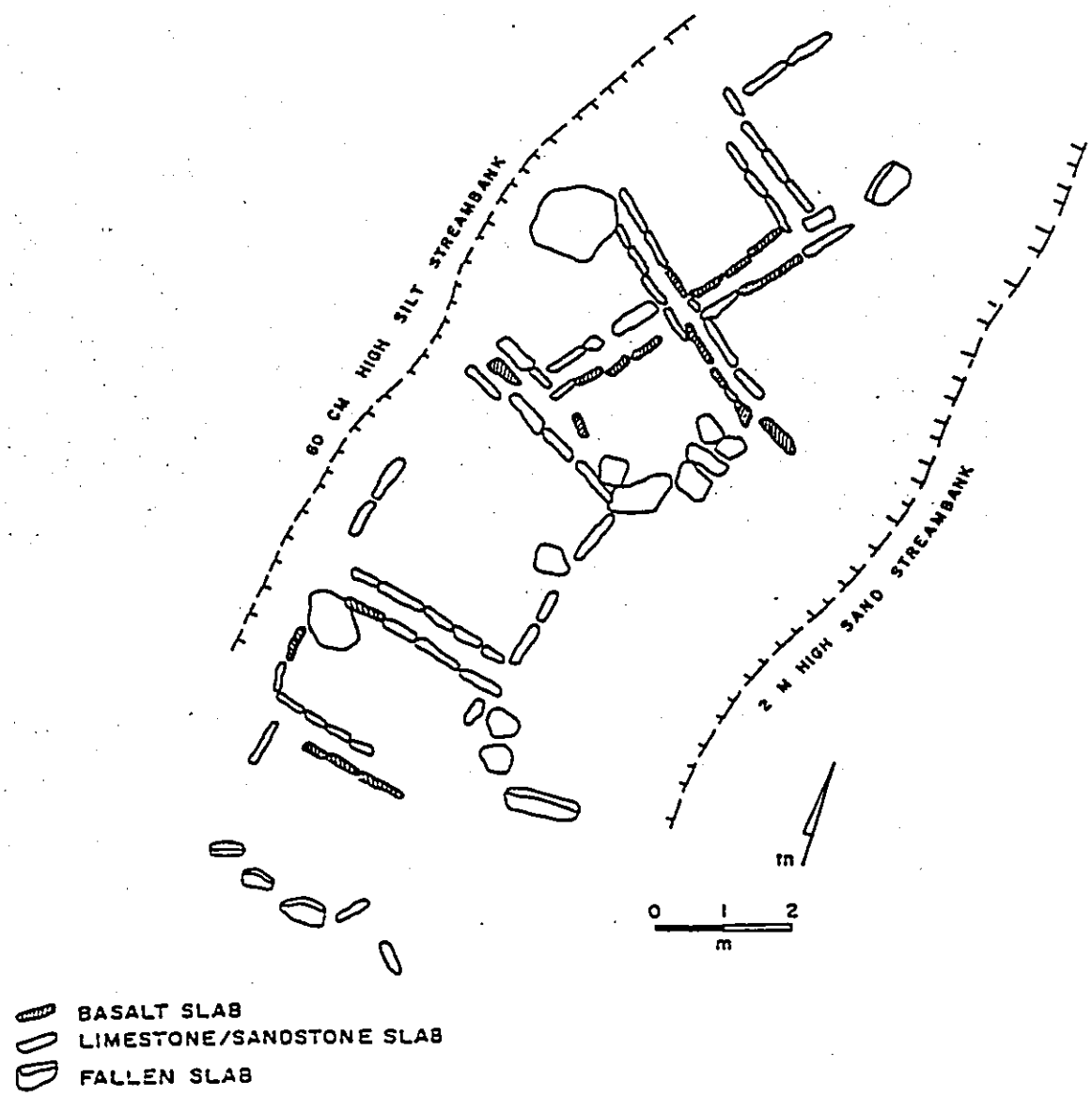


FIGURE 24. PLAN VIEW OF SITE 1547.

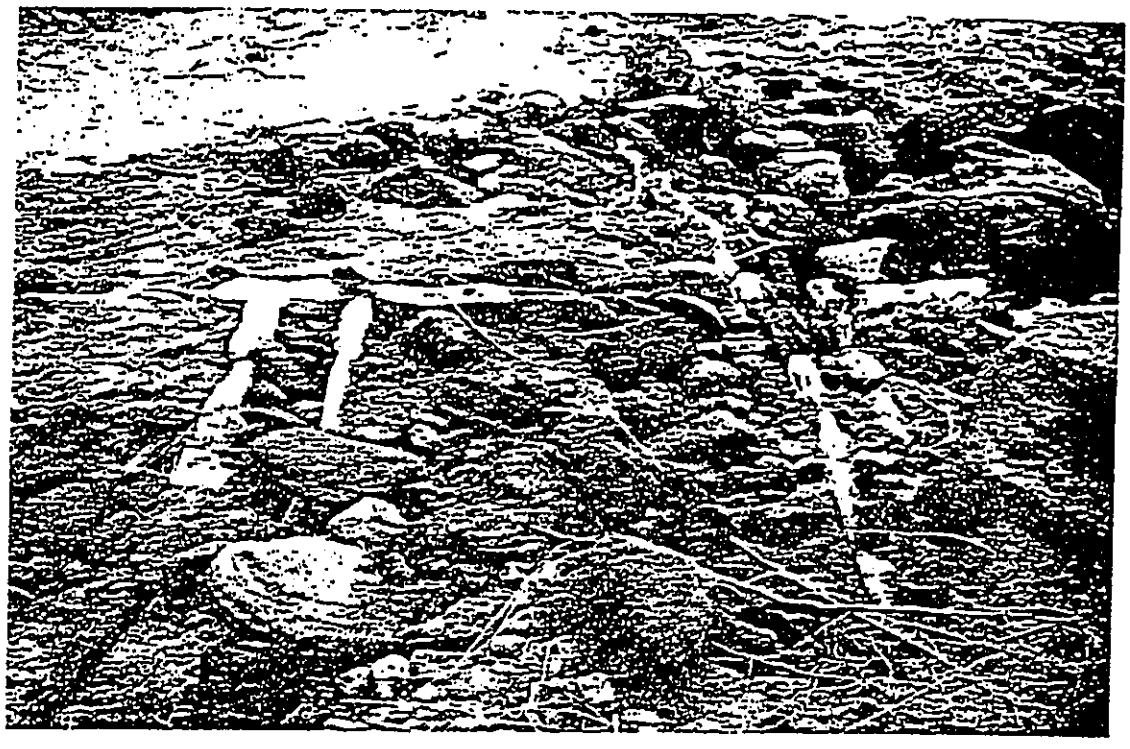


PHOTO 21. VIEW OF SITE 1547
FROM TOP OF EAST BANK OF STREAM

1548: 6 m long remnant terrace: only E side remains (Figure 25); firepit, 70 cm across, 25 to 40 cm below surface, exposed in eroded face, fire-cracked rock but very little charcoal; midden, lithics eroding downslope about 20 m; adze preform of very fine, dense basalt on slope about 20 m to E, may be another activity area but partially covered by dense vegetation
Location: top of knoll about 250 m inland of shore (Photo 22); on west side of small drainage (wreck of "Romar III" just east of stream mouth)
Significance: information content

1549: 6 by 5 m terrace with rough boulder alignment across center (Figure 26); scattered cowrie fragments on surface.
Location: about 25 m inland of W end of excellent section of trail across Kukui Point on bluff of moderately sloping, weathered basalt outcrops and boulders.
Significance: information content

1550: 10 by 10 m deflated midden scatter and basalt boulders in sand dune (Photo 23)
Location: located 60 m from high dune face at shoreline
Significance: information content

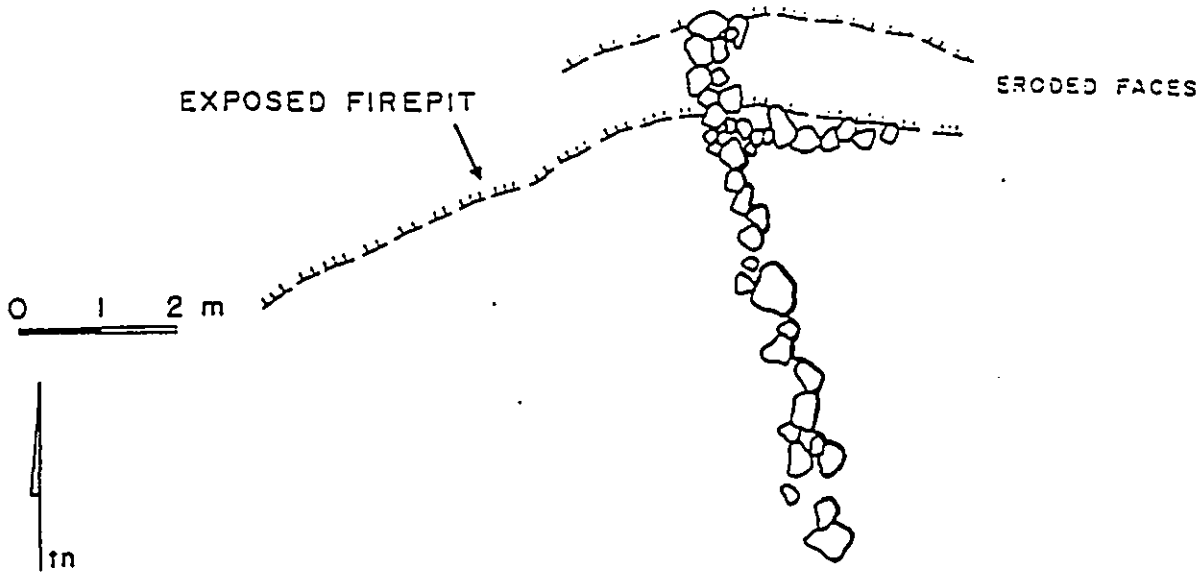


FIGURE 25. PLAN VIEW OF SITE 1548.

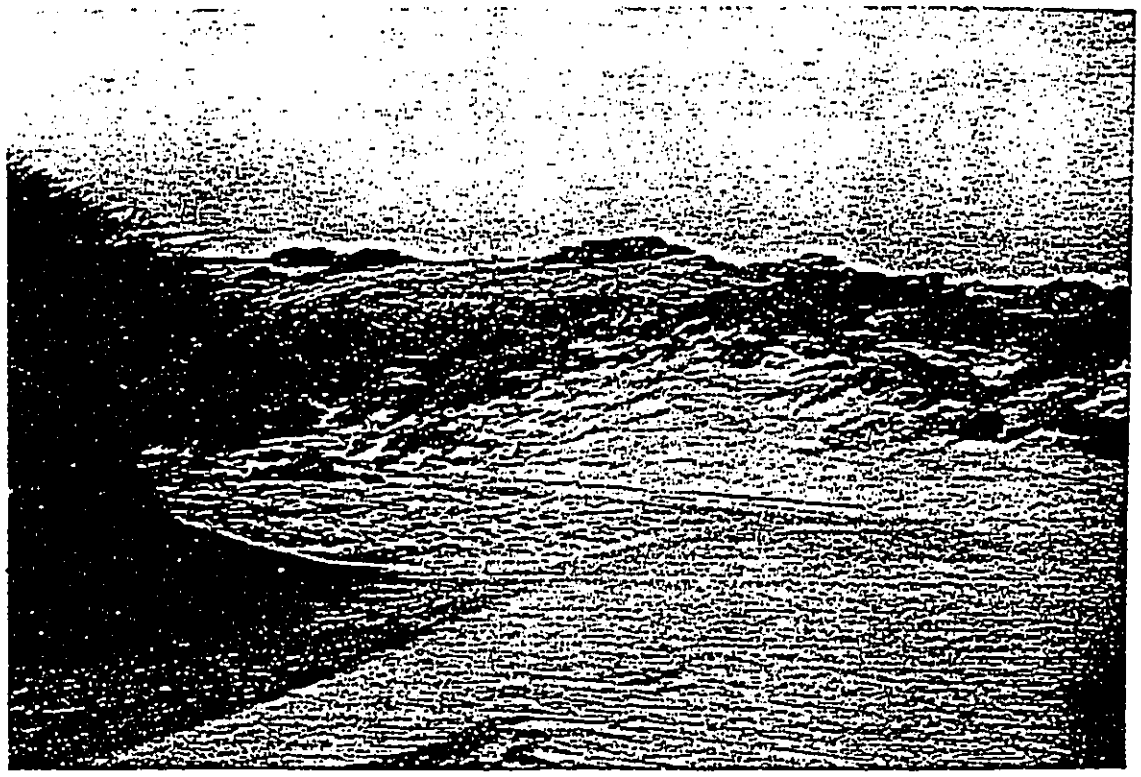


PHOTO 22. VIEW OF SITE 1548 KNOLL FROM SHORE.

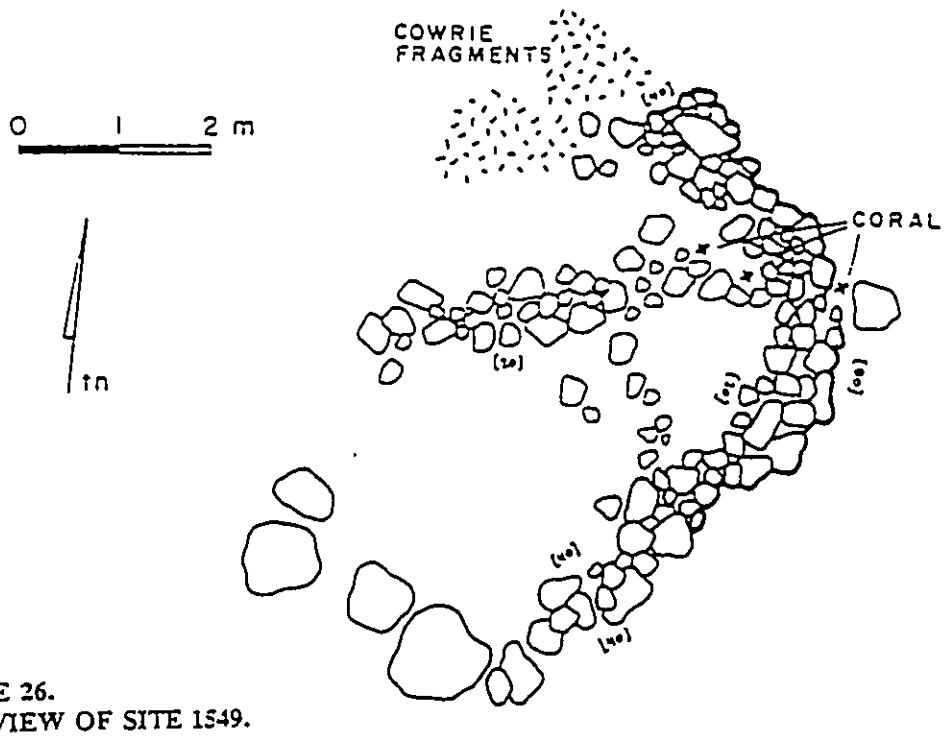


FIGURE 26.
PLAN VIEW OF SITE 1549.

PHOTO 23. SITE 1550.

1551: ahu built on edge of outcrop on W side of large gully (Photo 24)
Location: on west edge of large gully, about 100 m inland of shore
Significance: information content

1552: light midden scatter eroding from 3 to 4 m high dune; scattered basalt but no lithics; midden is mostly pipipi, with some opihi; covers area of about 60 m by 10-15 m
Location: about 25 m inland of trail at Kikalapa'akea
Significance: information content

1553: boulders stacked on top of 1.25 m high boulder outcrop, with small concentration of cowrie, opihi, pipipi in sand matrix at base of boulder outcrop. At least 4 other boulder outcrops with rocks piles in vicinity.
Location: 75 m from shore, area of boulder outcrops descending gentle-mod. slope to ocean
Significance: information content

1554: 6 x 4 m platform or terrace remnant, eroding on makai side (Figure 27); level sandy surface, with light scatter of midden (primarily cowrie) and coral.
Location: area where there is no clear trail, but rather, numerous worn paths, one of which is about 2 m makai of structure; ground slopes gently to N and E, rise up moderately steep, rocky slope to S, slight rise to boulder outcrops to W.
Significance: information content

1555: deflated midden and burned limestone pebble concentration, over area about 4 x 2 m, in eroding sand dune. To NW of midden scatter is old pier built of seaworn planks extending from the edge of dune onto rocky shoreline; also in vicinity are a cairn (50 cm high, 60 cm across) and three C-shapes that appear modern (possibly related to pier). There are eight small cairns and one C-shaped structure along the rocky seaward edge of Laewahie; at least three of the cairns support plastic pipes or pieces of lumber.
Location: midden site is approximately 45 m W of fishermen's shelter at E side of Laewahie; modern structures extend west of midden
Significance: information content

1556: 6 x 4 m enclosure with center division (Figure 28); formed by combination of slabs set on edge, boulder alignment, stacked boulders and natural outcrops; large chunks of coral, paving stones, scattered midden; possible ko'a (based on structure, presence of coral).
Location: 40 m inland of trail, W end of Kikalapa'akea; on high ground visible from distance.
Significance: information content, cultural value (as a ko'a)

1557: ring of cobbles set on top of flat boulder (boulder is 1.2 m across, 1-1.2 m high); few pieces of midden; just inland is pile of cobbles with scatter of large chunks of branch coral. Possible ko'a: Emory (1969:72) writes that "along the north and west coast...are scores of large bowlders [sic] crowned with stones, usually a rim of stones. The natives suggest that these were ko'a, but no reliable information has been obtained."
Location: 150 m inland from shore, W of Kikalapa'akea; near field of large boulders.
Significance: information content, possible cultural value (as a ko'a)

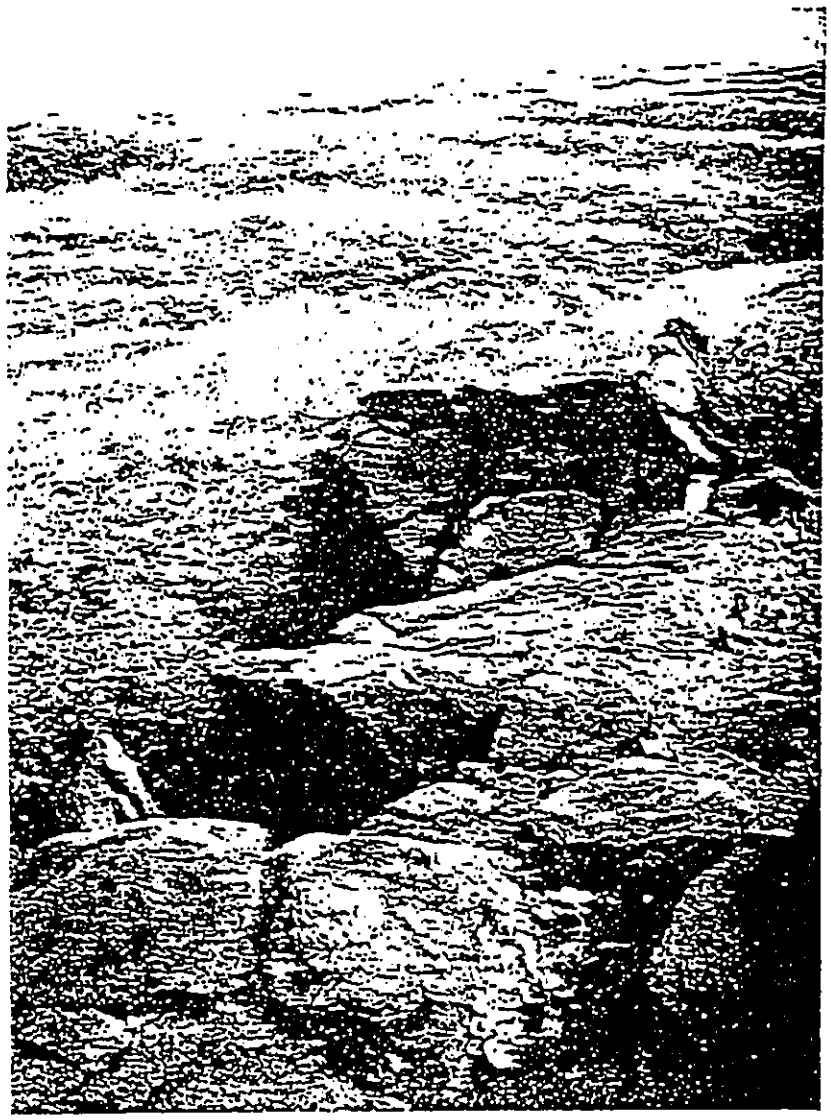


PHOTO 24. SITE 1551.

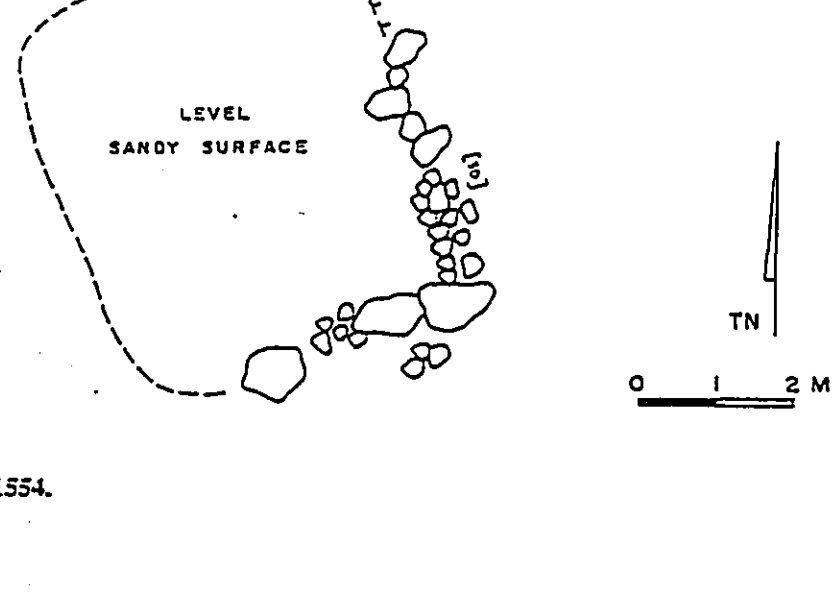


FIGURE 27. SITE 1554.

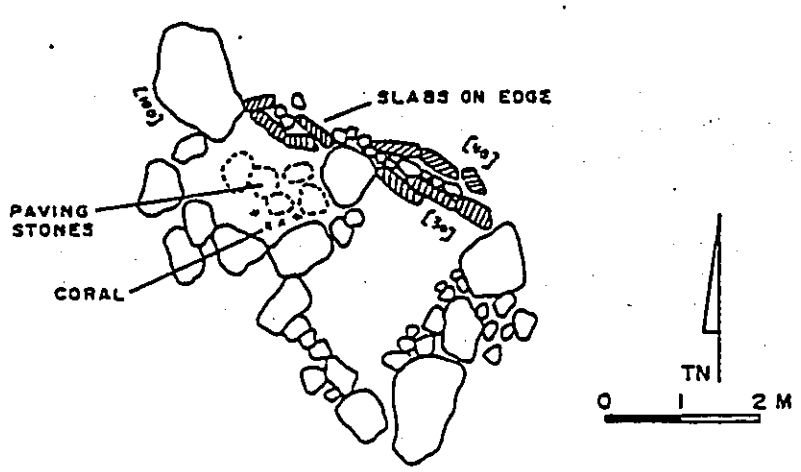


FIGURE 28. PLAN VIEW OF 1556.

1558: piled boulder wall, 5.5 m long, 50-60 cm high (Figure 29); sand build-up on W side, seaworn plank resting on sand
Location: 315 m E of Keonohau Gulch; on mauka side of coastal path
Significance: information content

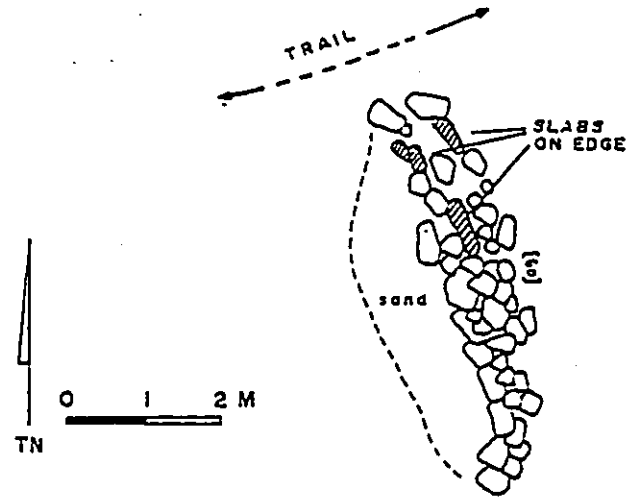


FIGURE 29. PLAN VIEW OF SITE 1558.

1559: three narrow terraces; 20 to 40 cm high, sand-filled; largest terrace is 5 x 2.5 m (Photo 25)
Location: about 7 m from trail on inland side
Significance: information content

1560: 4 m long wall, 70 cm high, built off of and on windward side of overhanging outcrop, forms sheltered area about 2 m across; C-shaped structure on top and slightly to leeward of outcrop
Location: 40 m inland of trail, at base of high outcrop; about 200 m E of Keonohau Gulch
Significance: information content

1561: terrace formed by naturally occurring and stacked boulders; 3x14m, 30 to 40 cm high (Figure 30).
Location: About 180 m E of Keonohau Gulch, about 10 m inland of trail
Significance: information content

PHOTO 25. SITE 1559, FACING NORTHEAST.

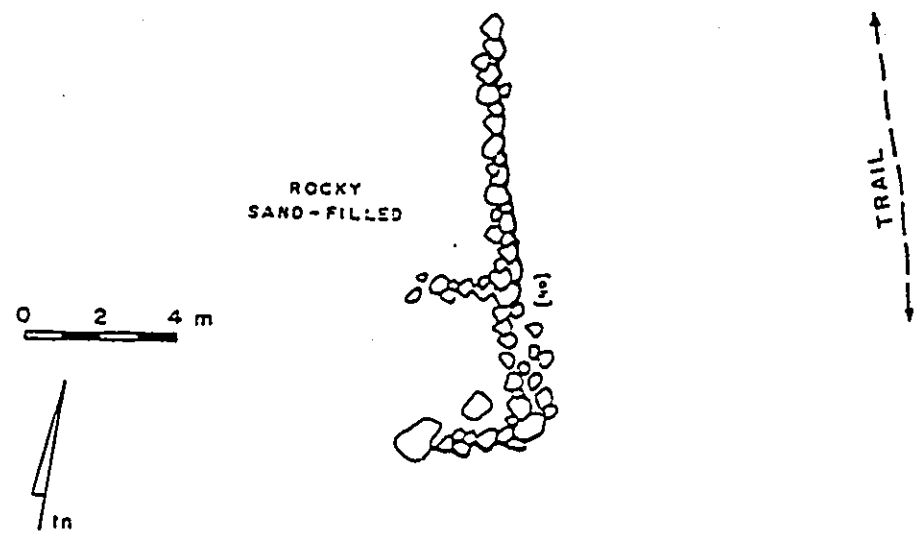


FIGURE 30. PLAN VIEW OF SITE 1561.

1562: complex in Keonohau Gulch, structures are on gulch bottom and on outcrops on E side of gulch (Figure 31).

A: 2.5 m across C-shape, on 1.10 m high, level outcrop; layer of coral on surface; 5 waterworn cobbles; wall is 70 cm high; C-shape opens to NW (makai); probable ko'a.

B: 75 cm wide sheltered area formed by stacked boulder wall at base of 1 m high outcrop; wall is 30 cm high, 30 cm wide; rock pile against outcrop immediately to S of wall.

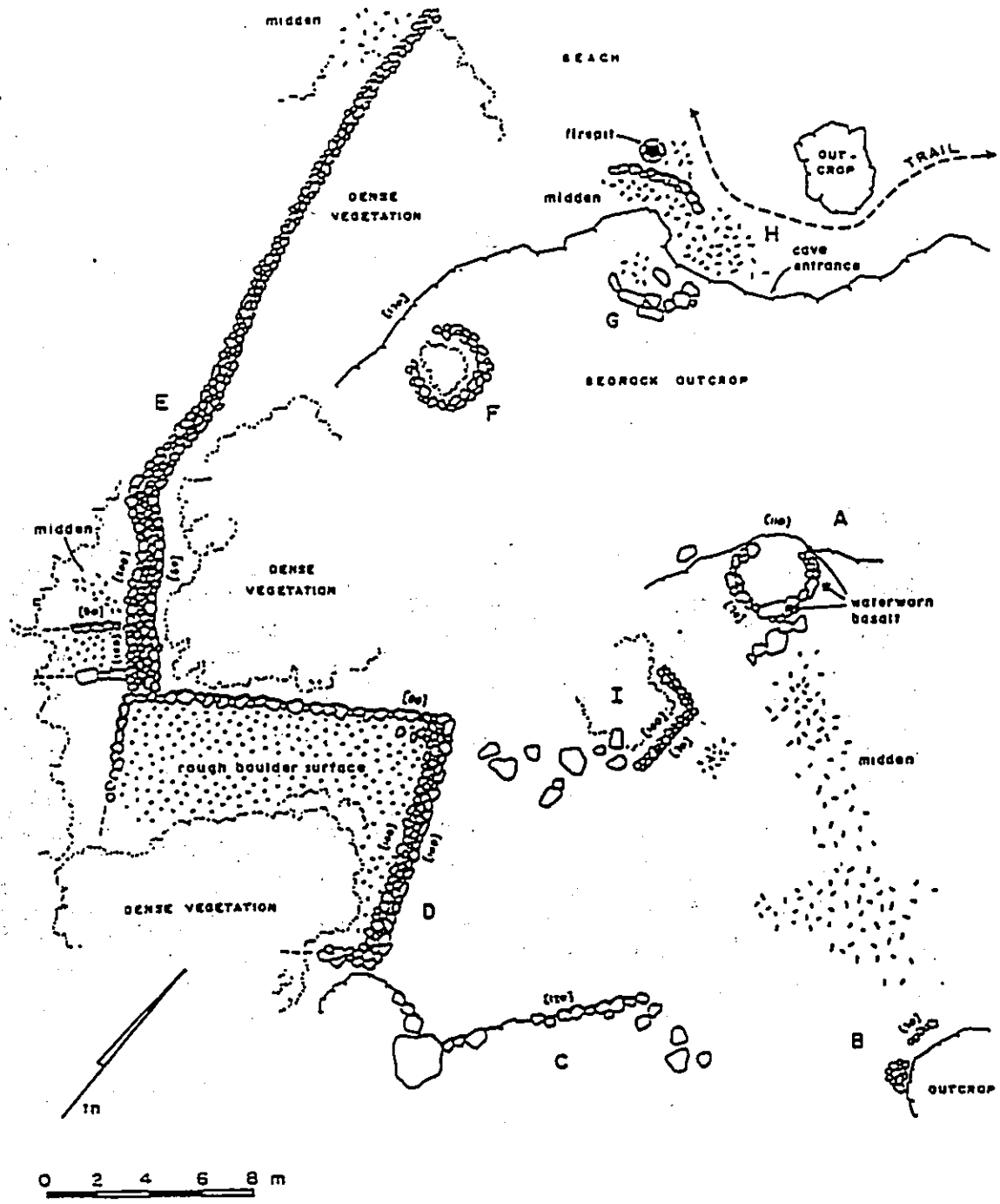
C: level terraced area, 9 m across; NW edge is 1.2 m high facing of natural boulders with some cobble stacking; may be natural; surface is exposed bedrock with scattered boulders, cobbles, and pebbles.

D: roughly paved boulder platform, about 13x13m; E edge is massive, roughly stacked wall, 1 m high, 1 m wide; dense scrub kiawe, only N side and portion of W side is clear.

E: massive, 30 m long, boulder wall, well-constructed, well-faced, up to 1.2 m wide (at S end)(Photo 26); N end ends at sand beach, S end abuts low, paved platform. Platform is about 2 m wide, well-faced but with rough surface; extends W into middle of gulch; midden at intersection of wall and platform and on W side of wall at beach.

PHOTO 26. SITE 1562, SOUTH END OF STRUCTURE E WALL.

FIGURE 31. PLAN VIEW OF SITE 1562



F: C-shaped structure, 3 m across; stacked boulders and boulders set on edge; built on pahoehoe outcrop surface on edge of gully; outcrop drops 1.7 m to gully floor; interior of C-shape is dense scrub kiawe.

G: very roughly constructed C-shaped structure, 3x1m; essentially an alignment of large boulder on pahoehoe outcrop; midden, sand, coral in interior; double-chambered cave at base of outcrop (structure H)

H: double-chambered cave, 50 cm high ceiling but floor appears silt-filled; extends about 15 m deep; cave opening is 3 m long; possible eroded terrace fronting cave, with remnant firepit (Photo 27); trail passes within 2 m of cave opening; dense midden scattered below cave opening and toward N end of structure E wall. Previously recorded as dune site with midden (site 173) during Statewide Inventory survey; dune has eroded since Inventory survey, now only about 50 cm high at beach edge, covered in grass and sedge-like plant.

I: L-shaped wall; stacked boulders up to 1 m high; 3x2m; interior is dense kiawe.

Location: Keonohau Gulch
Significance: information content, cultural value

PHOTO 27. SITE 1562,
REMNANT FIREPIT ASSOCIATED WITH FEATURE H CAVE.

1563: two L-shaped walls (probable remains of enclosures) and terrace (Figure 32); extremely dense vegetation. Structure A is stacked boulder wall, 9 m long, 60 cm wide, up to 1 m high; dense vegetation in interior but appears to contain collapsed house material, modern glass, debris. Structure B is L-shaped wall, collapsed on 5 m long S wing; 1 m high; extremely dense scrub kiawe in interior; planking (with intact rivets and bolts) along makai edge; rocky shoreline about 6 m to N. Structure C is a terrace, 6x2m, sand-filled, with firepit in center; 15 m to beach; heavily overgrown; rocky slope to S. Emory (1921) wrote of camping at Kahue during his survey of this coast; given the modern debris, this may be his camp site.
Location: on sandy flat behind rocky shoreline, about 150 m E of Kahue Stream
Significance: information content

1564: terrace, 3.5 m across; rough boulder facing 30 to 40 cm high; dense midden.
Location: adjacent to trail on W side of Kīkalapa'akea headland (large boilers in surge zone).
Significance: information content

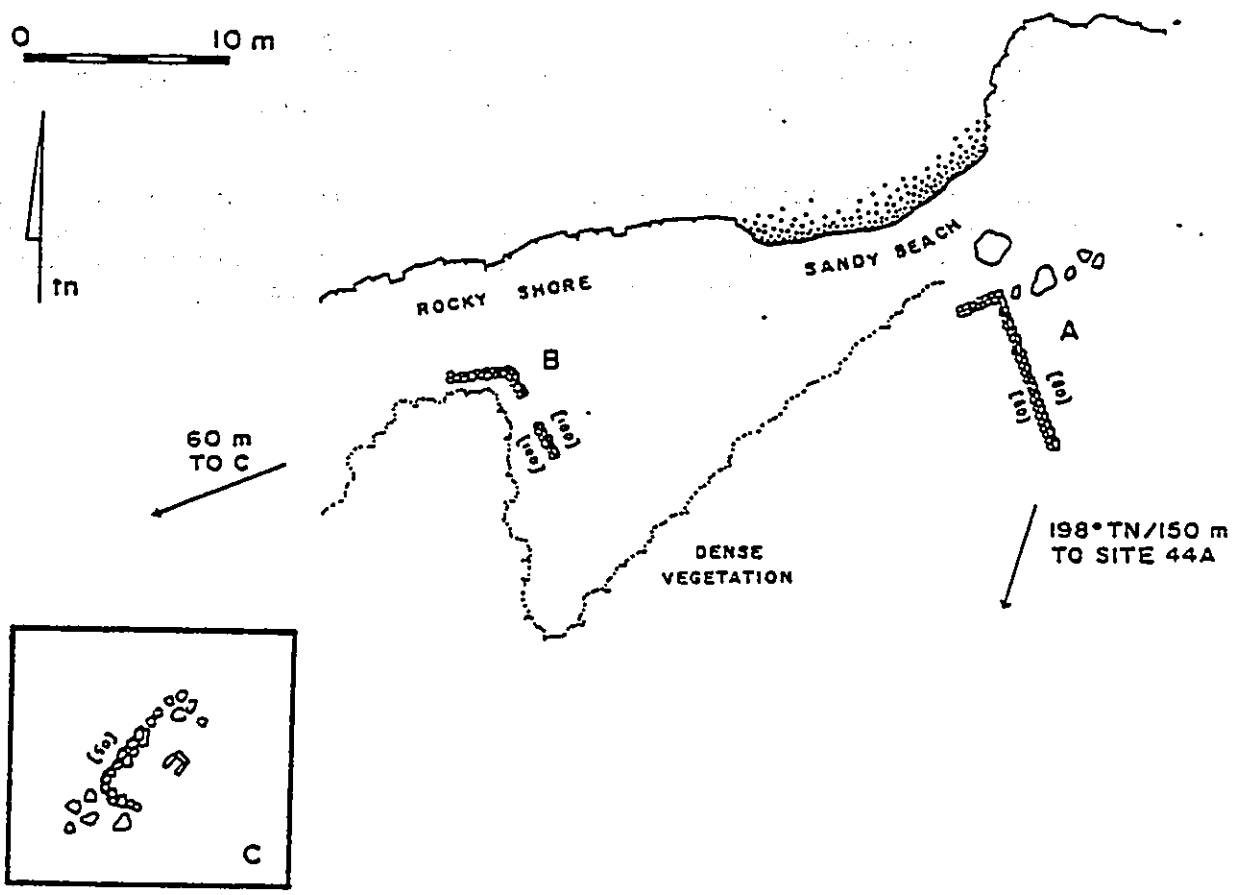


FIGURE 32. PLAN VIEW OF SITE 1563.

TRAIL DESCRIPTIONS

There are only three sections of the Kaiolohia-Kahue trail that remain in relatively good condition: at Po'aiwa on the east end and at Kukui and Kikalapa'akea toward the west end. There are also segments of a trail worn in bedrock along rocky portions of the coast (e.g. at Pohakuloa just west of the fishermen's shack and on the east side of Keonohau near site 1562); in the absence of well-defined construction, these segments cannot be definitely attributed to the 19th century government trail. Only the three built sections are described here.

PO'AIWA SEGMENT: 15 m long, 2.25 m wide, oriented 300 degrees TN; curbed with large boulders, some stacking; built on level bedrock with some sandy silt fill; very well-defined. Located 30-35 m W of Po'aiwa Gulch, 25 m inland of dune face, in dense kiawe and lantana (see Photo 10); ground rises gently to mauka, vegetation appears to open up to grassland about 15-20 m inland. About 20 m W is a short section of stacked boulder wall, 60-100 cm high, 6 m long, on 1 m high bedrock outcrop; may be part of trail (Figure 33).

KUKUI POINT SEGMENT: excellent trail section, about 60 m long, 2.25 m wide crossing Kukui Point primarily boulder curbing on bedrock (Photo 28). Kukui Point is a gently sloping coastal plain with about 120 m long rocky shoreline; generally bouldery surface.

KIKALAPA'AKEA POINT SEGMENT: 1.5 to 2 m wide, in moderate condition; worn path across bedrock headland, with only remnant boulder curbing; path follows shoreline. Kikalapa'akea Point is a 40 to 50 m wide level to gently sloping coastal plain; inland boundary is a 2-4 m high dune; shoreline is rocky; vegetation on point is low grass, bouldery.

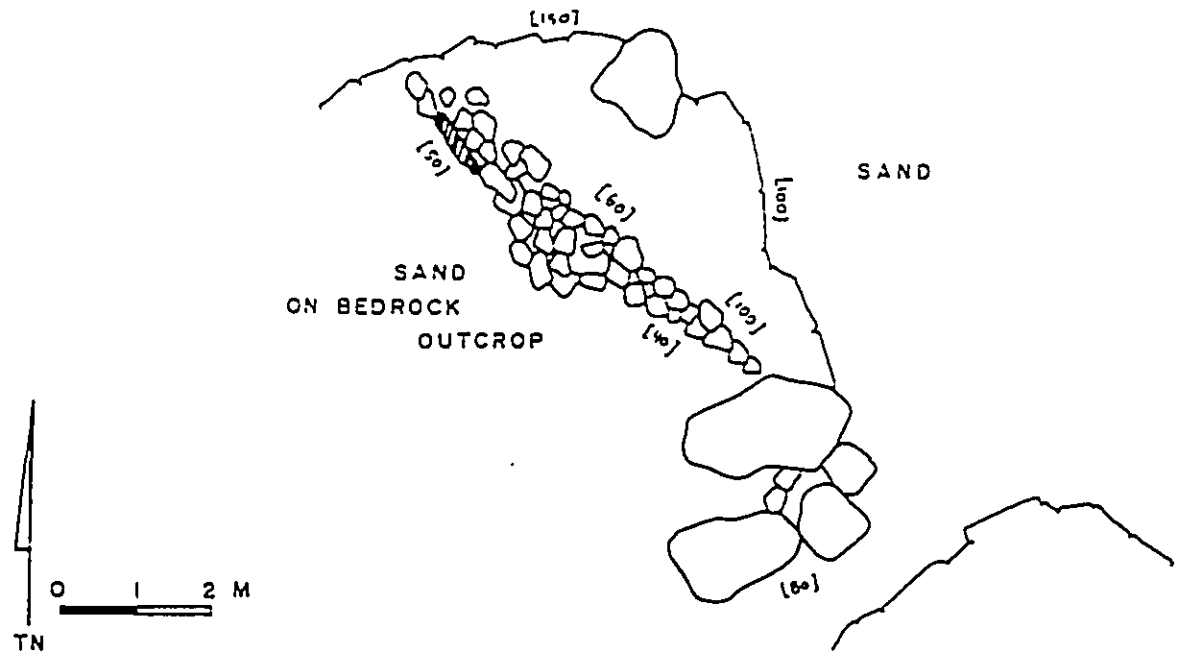


FIGURE 33. WEST SECTION OF PO'AIWA TRAIL SEGMENT.

PHOTO 28. EAST SECTION OF KUKUI POINT TRAIL SEGMENT, FACING WEST

APPENDIX C.

STATE SITE FORMS FOR PREVIOUSLY RECORDED SITES

FEATURE DESCRIPTION FORM

50 - 40 - 98 - 44
ISLAND QUAD IDENTIFICATION NO.

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction technique; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page Two

Feature C is an L-shaped rubble wall measuring c. 8.8 (NW-SE) and 7.0 m (NE-SW) x 1.3 - 1.5 m wide x 0.3 - 0.8 m high. To the NE of this wall is a large area of rubble (8.8 x 5.0 to 7.3 m) that may have served as a rough pavement. Within the roughly rectangular unpaved area formed by the wall and the rubble, are pipipi (Nerita, sp.), opihi and cowrie (Cypraea, sp.) shells, one sea urchin spine and numerous basalt cores and flakes. Most of the midden remains were concentrated in a small (c. 0.8 x 0.6 m) area near the NE corner of the unpaved area. At the NW corner of this area is a c. 55 x 40 x 15 cm high flat-topped fine-grained piece of basalt, most of the surface of which has been smoothed by grinding.

Feature D is a roughly rectangular platform (12 x 11 x 0.7 - 1.6 m high) built of large chunks of basalt. Near its E corner is an L-shaped wall (3.2 m (NE-SW) and 2.8 m (NW-SE) x 0.8 m x 0.7 - 1.0 m high) that appears to be the remnant of a formerly rectangular enclosure that probably measured c. 4.0 x 3.6 m. A roughly rectangular pavement (c. 3 x 2.4 m) of medium-sized basalt chunks abuts the L-shaped wall on the NW. Chunks and branches of coral are scattered throughout the structure and on its surface.

The cluster of shelters labelled (E) consists of small concentrations of surface midden on the lee sides of c. 6 boulders and associated small structures on top of the boulders. The scattered midden includes pipipi and cowrie shells. The boulder-top structures are small cairns (c. 0.5 - 0.8 m in diameter x c. 0.3 - 0.4 m high) and oval enclosures of single- and multiple-stacked walls. These enclosures vary from c. 1.5 x 1.0 m to 2.7 x 2.0 m; their walls are 0.3 - 0.4 m high. A small flake of obsidian was found here too.

Feature F is a (3.7 x 2.8 m) roughly rectangular enclosure formed by an L-shaped wall that abuts a natural basalt outcrop. The outcrop, on the E and S, is 1.8 - 2.0 m high, and the rubble wall is 0.3 - 0.8 m high x 1.0 - 1.5 m wide. A fragment of cowrie was found inside.

Feature G is a roughly circular cairn, c. 4 m in diameter x 0.4 - 1.2 m high. No surface artifacts or midden are associated with it.

Feature H, is a roughly rectangular enclosure of multiple-stacked walls. It measures c. 4 x 3.6 m and its walls are c. 1 m wide x 1.2 - 1.8 m high. Attached to its NE side is a rough (3.6 x 1.3 m) pavement of small chunks of basalt. One cowrie shell was found inside.

Feature I is a roughly oval enclosure measuring 11.2 x 5.8 m. Its multiple-stacked walls are 1.0 - 1.6 m wide x 0.3 - 0.8 m high. No surface artifacts or midden were found, though it is possible that the thick grass in and around the enclosure hid such remains.

SIGNED _____ DATE _____
ARCHAEOLOGIST

FEATURE DESCRIPTION FORM

50 - 40 - 98 - 44 -
ISLAND QUAD IDENTIFICATION NO. FEATURE NUMBER

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction technique; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page Three

Feature J is a small (c. 1.6 x 1.6 m) oval structure, the W half of which is protected by a 0.9 m thick bedrock overhang. This protected rock shelter is c. 0.9 m high (floor to ceiling) at the south and 0.5 m high at the rear. The E portion of the structure is surrounded by a semi-circular multiple-stacked wall c. 0.5 m wide x 0.4 m high. No surface artifacts or midden were found, though the thick grass may hide such remains.

About 2 - 3 m above the bed of the Gulch, in the area marked "K" on the map, are three other small rock shelters, ranging from c. 2 x 1 m x 1.0 m high to 3 x 2 x 1.3 m high. One had an opihi shell on its floor, another had a cowrie shell, and the third included a c. 1.5 long x c. 0.3 m high retaining wall in front of its mouth.

SIGNIFICANCE:

Feature D is probably a ko'a or fishermen's shrine, since it conforms to other structures of this function in the general size and form of the enclosure, and because of the coral present in and on the surface of the structure. The function of feature A is somewhat less certain, because of its unusual form, but it too is probably a ko'a if we may judge from the presence of coral and fishbones (possibly the remains of offerings) on its surface. The cairn (feature G) is of unknown function. The function of the small structures on tops of boulders in area E is unknown. Perhaps they were built to mark the shelters in the lee of the boulders that are represented today by the surface scatter of midden. These shelters as well as features B, C, F, H, I, J and K appear to have been used for temporary habitation, since they are all rather crude and simple in design, and have only scattered midden remains. The most interesting of these features is C, since its basalt flakes and cores and the grindstone indicate that basalt artifacts were prepared there.

This section of the Lanai coast is popular today with local fishermen, and the fishing was probably good here in the past as well. All these data indicate that Kaiua complex is a cluster of structures that were built and used on a temporary basis by fishermen. The complex is a moderately good example of this type of site.

The site has moderate research potential. In particular, features A, C and D should be more thoroughly investigated. Mapping and test excavations of the two probable ko'a (A and D) would contribute to a comparative study of ko'a, a fairly abundant religious feature type on Lanai. A detailed study of the evidence of the working of basalt at feature C would aid in our understanding of the use of basalt by the ancient inhabitants of the NE coast of Lanai. Data gathered at this feature could be compared with those from other sites on the NE coast such as Polakuloa complex (50-53), Ia Wahie complex (50-139) and Kaohana complex (50-129). Future research should also include a thorough survey to relocate all of the features that Emory found in 1922.

SIGNED _____ DATE _____
ARCHAEOLOGIST

FEATURE DESCRIPTION FORM

50 - 4 0 - 9 8 - 4 4 -
ISLAND QUAD IDENTIFICATION NO. FEATURE NUMBER

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction technique; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page Four

The site has relatively moderate interpretive potential, since most of the structures are simple and crude.

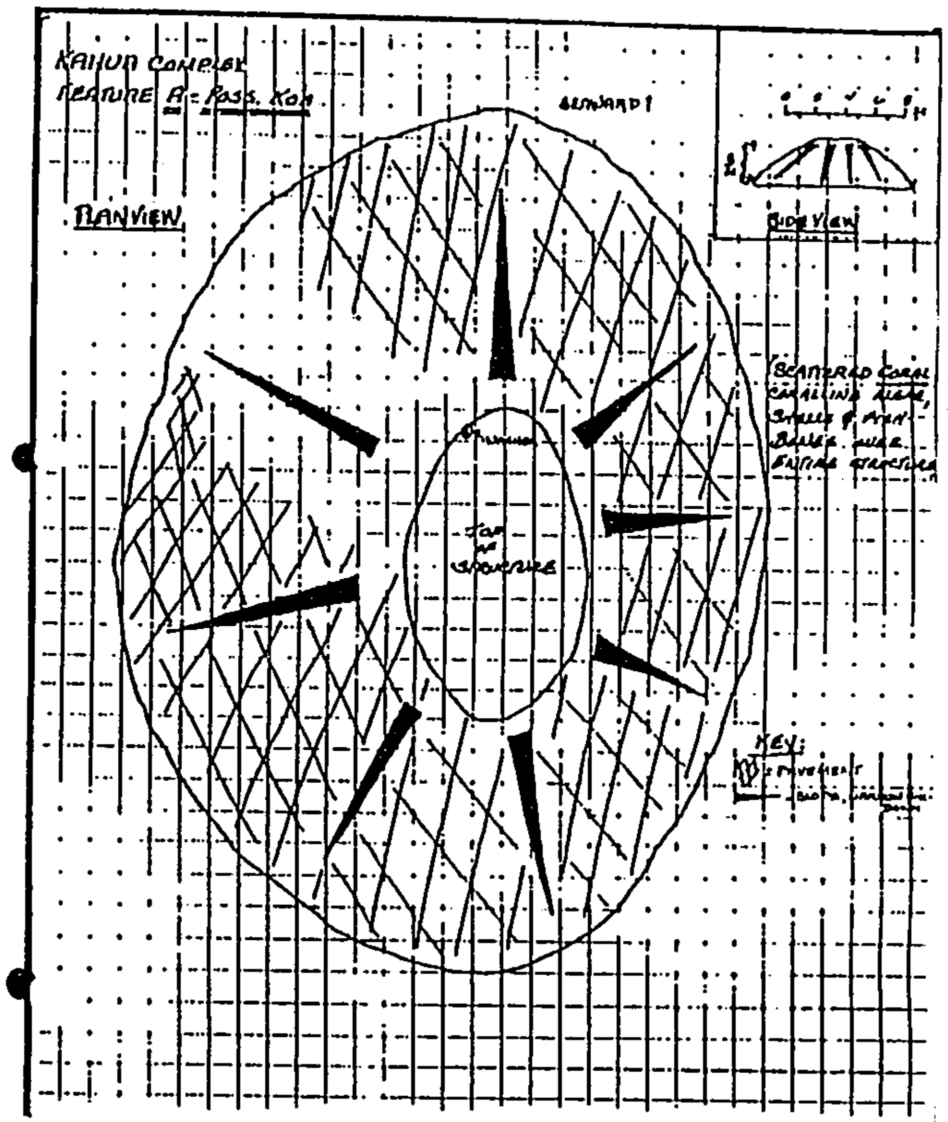
Recommended: Reserve

SIGNED ____________ ARCHAEOLOGIST DATE 4 Ap 1974

SUPPLEMENTARY FEATURE MAP FORM

1 2 4 0 9 8 4 4
IDENTIFICATION NO. FEATURE NUMBER

MAPPING TECHNIQUE: 02 & 03



FEATURE DESCRIPTION FORM

50 - 4 0 - 9 8 - 5 1 -
ISLAND QUAD IDENTIFICATION NO. FEATURE NUMBER

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction technique; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page 2

alignment of large basalt chunks. Abutting the SW side and W corner of the enclosure is a terraced platform, roughly paved with basalt chunks, measuring c. 6.5 x 4 m x 1.3 to 1.8 m high along the NW side. Just SW of the center of this structure is a faced roughly rectangular pit, the sides of which have partially collapsed. Its original depth appears to have been c. 1 m.

This feature is situated on top of a bedrock outcrop that forms the top of the gulch bank. Directly below the small enclosure, the outcrop is c. 1.6 m high. Beneath a shallow overhang (c. 50 cm deep and c. 30 cm high) at the base of the outcrop, are abundant pipipi shells and fishbones. These are the only fishbones we have seen associated with a ko'a on Lana'i. Numerous pipipi, 'opihi (Hellcionlscus sp.), and cone (Conus sp.) shells and dozens of basalt flakes are scattered over the surface of the ground to the N, S, and E of the ko'a.

Features D, E, F, G, and H are probably habitation features. They are all in good condition and are constructed of chunks of locally-available, weathered basalt. Features D and E are enclosures situated on the floor of Poaiwa gulch, c. 20 and 14 m (respectively) from feature C, the ko'a; the other structures are located 60 to 92 m S of Pohakuloa point. Structure D measures 7 x 6 m overall and its multiple-stacked walls are 0.7 to 0.8 m wide by 0.5 to 0.8 m high. Structure E measures 9 x 6 m (interior) and its walls are 1 to 1.7 m wide, and 0.6 to 1.3 m high. Numerous pipipi and cowrie shells are scattered over the surface of the ground between the ko'a (feature C) and the area of features D and E. Though none were observed within D and E themselves, this is probably because of the dense grass that covers their floors. A small (4 x 3.7 x 2.5 cm) piece of fine-grained basalt of the type used for making adzes, was found in the S corner of feature D.

In Emory's "Village Notes" (pp. 13-14), he notes that "[o]n [Pohakuloa] point are 8 house sites and some shelters." Features F, G, and H are three of Emory's "house sites". Some of the other structures that he reported are probably obscured by sand and low, extremely dense patches of wind-sculptured kiawe (Prosopis sp.). Others are probably represented by scattered alignments found in an area measuring c. 40 x 50 m, c. 8 m from feature F.

Features F and H are roughly rectangular outlines formed by alignments and multiple alignments. Feature F measures c. 9.5 x 3.5 m and H measures c. 8 x 6 m.

Feature G is a roughly rectangular structure consisting of a roughly-paved terraced platform surmounted by a smaller, terraced platform, the SE half of which is roughly paved. It measures 6 x 5.6 m overall. The lower terraced platform is 0.6 to 0.8 m high along its SE and NE retaining walls. The small terraced platform (c. 4 x 4 m) is 0.4 to 0.5 m high on its SE and NE sides.

SIGNED ______________________ DATE ______________________
ARCHAEOLOGIST

FEATURE DESCRIPTION FORM

50 - 4 0 - 9 8 - 5 3 -
ISLAND QUAD IDENTIFICATION NO. FEATURE NUMBER

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction technique; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page 3

Features F, G, and H are in good condition, and all are constructed of chunks of locally-available, weathered basalt. No surface midden or artifacts were found on the surface of these three features, probably because they are covered with grass. However, abundant midden remains, chiefly pipipi and cowrie shells, as well as numerous basalt flakes were found on bare patches of ground between these features.

SIGNIFICANCE: Feature 136 is the third largest petroglyph site on Lana'i in terms of numbers of petroglyph units (Cox and Stasack 1970: 90-91). It is possible that the finely executed human figures with unusual, wing-like heads in cluster #17 represent some aspect of the supernatural. Cox and Stasack (1970: 16-18) suggest that such figures may represent 'aumakua (ancestral guardian spirits) or akua (major gods such as Kane). It is possible that the presence of these figures indicate some ritual function for these petroglyphs alone or for feature 136 as a whole. It is too early in the study of the petroglyphs to determine such a function with an reasonable degree of certainty, however.

Structures that are known as ko'a or fishermen's shrines are relatively abundant along various sections of the coast of Lana'i. The ko'a in Pohakuloa Complex is a good example of one relatively standard type of ko'a in that it is basically a small enclosure incorporating abundant chunks of coral in its structure; with adjacent structures. The most interesting aspect of this ko'a is the fact that it is the only structure of its type that we have yet found on Lana'i with associated fish bones. It is probable that these bones represent the remains of fish left at the ko'a as offerings by men returning from successful fishing expeditions. Careful analysis of the relative abundance of the species of fish represented, their size and ages, would provide very interesting data concerning not only the use of the ko'a but also fishing practices along this section of the N coast of Lana'i.

It is probable that features D through H are the foundations for perishable house structures. The features resemble other Lana'i house foundations in both size and form; but the dense grass covering the floors of most of these structures frustrated efforts to find surface midden, artifacts and interior features (eg: fireplaces). The presence of abundant midden remains and numerous basalt flakes on vegetation-free patches of ground surrounding features C through H indicate not only the association of the house foundations with food-procuring, tool-making and other domestic activities, but also the probable presence of surface midden and artifacts within the features themselves.

Pohakuloa Complex is probably the remains of a fishing community. This economic orientation is indicated not only by the presence of the ko'a but also by the fact that this stretch of reef-lined coast is still very popular with local fishermen.

SIGNED ______________________ DATE ______________________
ARCHAEOLOGIST

50 - 40 - 98 - ___ - 139

ISLAND QUAD IDENTIFICATION NO.

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction techniques; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; probable function; importance as representative of its class; recommendation of Register status.

DESCRIPTION: This complex consists of four features, including a stone platform with a wind wall, a small coral-paved platform, a basalt quarry, and a low-walled enclosure built against a natural outcrop of basalt boulders. Emory, in his "Village Notes" (p. 15), describes the complex as follows: "Above Lae Wahie point stands a platform 10 feet square, 2 feet high, walled on the windward side. Under the lee of a lava drum (etc) 100 yards upland, natives have constructed low wall shelters...A few yards north is a house platform, 2 feet high, 6 x 12 feet, and behind it, separated by 2 feet, a stone pavement 3 x 4 feet. Excavation proved the latter structure was not a grave."

This complex is located on the gentle slop behind Lae Wahie point, after which we have named it. Vegetation in the area includes low grass, wild 'ilima (Sida sp.), naupaka (Scaevola sp.), and low, wind-blown klaws (Prosopis sp.). The constituent features in the complex are in generally good condition.

To reach the site, drive 0.8 mi W of Lana'i City on the "57 Road"(a main pineapple field road), to the "47 Road" (another main pineapple field road). Here turn right and drive 4.1 mi (NW) to the S end of the Kahue Road, which is marked by a small wooden road sign. Turn right and drive 4.6 mi to the end of the road, which is immediately to the W of Honopaula point. Then walk c. 1.5 km along the beach to Lae Wahie point and further, 25 m S, to feature A.

Feature A is a roughly rectangular stone platform, (3.4 x 3.2 x 0.5 to 1 m high), reconstructed of chunks of locally available weathered basalt. Coral pebbles litter its roughly paved surface. A low multiple-stacked wall (3.2 x 0.5 x 0.7 to 1 m high) is situated on its windward (NE) side. No midden was seen, but basalt flakes are scattered around the platform. Located just to the NE of the feature are the remains of a 1975 benchmark.

Feature B is located c. 8 m to the S of feature A. It is a roughly rectangular platform(3.2 x 2 x 0.4 to 0.5 m) built of locally available, weathered and waterworn basalt chunks and paved with pebbles and branches of coral. Located near the center of the platform c. 0.4 m from the SW edge is a group of five upright waterworn basalt stone (0.5 m in total diameter and 0.4 to 0.6 m high). A small (0.8 x 0.4) area SW of the upright slabs is paved with small basalt slabs. A small (1.2 x 1.1 x 0.3 m high) roughly rectangular structure of basalt chunks that seems to be an enclosure is located c. 0.4 m SE of the platform. No midden or artifacts are found on either structure, but cowrie (Cypraea sp.) and pipipi (Nerita sp.) shells litter the ground around them. The dimensions, general form, and location of feature B indicate that its two structures are the "house platform" and "stone pavement" that Emory describes on page 15 of "Village Notes". It is probable that the coral pavement and the uprights have been added to the platform since Emory's visit and that the "pavement" he described now appears to be an enclosure because of his excavation. There were no results of the excavation.

(continued)

50 - 40 - 98 - 139 - ___

ISLAND QUAD IDENTIFICATION NO. FEATURE NUMBER

VERBAL DESCRIPTION MUST INCLUDE: bearings and sources used to locate feature; size; shape; construction techniques; materials used; terrain features; condition; surface artifacts; midden. SIGNIFICANCE STATEMENT MUST INCLUDE: research potential; interpretive potential; unusual or important characteristics; importance as representative of its particular class; probable function; recommendation for Register status.

Page 2

Feature C, located c. 25 m S of B is a roughly oval enclosure formed by a low, curving single- and multiple-stacked wall built against a 1.4 m high basalt outcrop. The feature measures 3 x 2.8 m and its walls, of locally available weathered basalt, are c. 0.5 to 0.8 m wide and 0.3 to 1.1 m high. A concentration of pupu (Heliciniacea sp.), pipipi, and cowrie and several basalt flakes were found just outside the structure, but dense grass obscured any surface remains within.

The fourth feature in the complex (174) is described on a separate feature form.

SIGNIFICANCE: Feature A was probably the foundation for a perishable habitation structure. The coral pavement and uprights that have evidently been added to the feature B platform suggests that it may have served as a ko'a (fisherman's shrine), since both are characteristic of such shrines. If this feature is actually a ko'a, it is significant because it served this "ancient" function after 1922 (the year of Emory's visit). Feature C is probably a temporary shelter, used by either fishermen or people working at the basalt quarry (#174).

Feature 174 is the most important feature in this complex since it is the only basalt quarry that we have located on the island. It is interesting to note that, of the three basalt working features on the island, two (this feature and feature 175, the basalt workshop in Kahua Complex, site #98-44) are less than 1 km from each other, near the coast. (The other site, Pilimoe adz workshop, 98-162, is on the plateau near the center of the island.) It is also significant that abundant flakes and cores of basalt are found at more sites on the N coast than anywhere else on Lana'i (sites 139; 44; 53, Pohakuloa Complex; and 129, Kaokana Complex).

The research potential of feature 174 in itself is very good. A study of the distribution of flakes and cores in this feature might indicate the types of stone tools being made here and the process by which they were made. Such a study would be a valuable contribution to our understanding of Hawaiian lithic technology, an area that has so far been little explored. This research potential is enhanced by the possibility that some or all of the other features were used simultaneously with 174. This possibility is indicated by the absence of surface midden at feature 174 and the presence of basalt flakes near other features in the complex; suggesting that the people who quarried basalt at 174 occupied the other features in the complex.

After research is completed, this complex would have high interpretive potential. Signs and exhibits along a marked trail could explain the process of quarrying and tool-making as well as the function of features A, B, and C. This complex should not be made known to the general public prior to research since casual visitors could unknowingly disturb the present pattern of flakes and cores that probably reflect the stone working activities at feature 174.

Recommended: Valuable.

4 0 ISLAND 2 0 QUAD 1 1 9 IDENTIFICATION NO. 1 7 4 FEATURE NUMBER

11. FREE DESCRIPTION OF ANY PERTINENT DATA NOT RECORDED ELSEWHERE: 1-bearings and sources used to locate feature; 2-size; 3-shape; 4-construction technique; 5-materials used; 6-terrain features; 7-condition; 8-surface artifacts; 9-midden; 10-unusual or important characteristics; 11-evaluation of its importance as a representative of its particular class; 12-probable function and 13-how certain this function is for the feature

This feature, a basalt quarry c. 20 m S of feature C in Lae Wahie Complex was not recorded by Emory. It consists of a long, narrow (18 x 2 m) cluster of naturally occuring basalt stones surrounded by numerous basalt flakes, cores, and core fragments, most of which were within 5 m of the stones. Flakes had been removed from c. 25 of the stones, which varied from 0.3 to 0.8 m in diameter. Some of the cores were as large as a man's head. No flakes were seen to be secondarily flaked. No midden was found in the immediate vicinity.

11. FREE DESCRIPTION MUST INCLUDE PERTINENT DATA ON: bearings and sources used to locate feature; terrain and vegetation; size; shape; construction technique; materials used; condition; surface artifacts or midden visible. SIGNIFICANCE STATEMENT MUST INCLUDE: unusual or important characteristics; accessibility; interpretive and research potential; evaluation of the site's importance as a representative of its class; recommendations for register category.

LAE WAHIE COMPLEX; FEATURE 17 LOOKING N

SI.a(a)77-13

LAE WAHIE COMPLEX; FEATURE B, FACING N

SI.a(a)77-12

SIGNED: Robert J. Sussman DATE: 27 Mar 74

APPENDIX B

LETTER OF APRIL 2, 1992

FROM THE

STATE HISTORIC PRESERVATION DIVISION

TO THE

STATE DIVISION OF LAND MANAGEMENT

JOHN WAIHEE
GOVERNOR OF HAWAII

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

RECEIVED

'92 APR -7 P3:12 STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

FORESTRY & WILDLIFE STATE HISTORIC PRESERVATION DIVISION
STATE OF HAWAII 33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

April 2, 1992

LOG NO: 4960
DOC NO: 2188A

MEMORANDUM

TO: W. Mason Young, Administrator
Division of Land Management

FROM: Don Hibbard, Administrator
State Historic Preservation Division

SUBJECT: State Land Disposition - Executive Order for a Demonstration Trail for the Statewide Trail and Access System (Na Ala Hele, DOFAW, DLNR)
Ukumehame, Wailuku & Lahaina, Maui
TMK 3-6-01: 14 and 4-8-01: 1

We have no objection to the proposed Executive Order designating these lands for Na Ala Hele's demonstration trail. An archaeological inventory survey identifying significant historic sites along the trail's corridor has been completed. In our review of the final report (Tomonari-Tuggle and Tuggle 1991. Archaeological Survey of Two Demonstration Trails of the Hawaii Statewide Trail and Access System), we stated that Na Ala Hele must comply with the report's recommendations for mitigation measures (pages 31-35) so that the use of this trail for demonstration would have "no adverse" on significant historic sites. These are summarized below:

1) Trail interpretation along with interpretation of associated historic sites, specifically sites 2818, 2819, 2820, 2821, 2825, 2826, and 2828. Vegetation clearing, detailed mapping and limited testing of these sites are necessary prior to opening the trail to the public.

2) Sites 2816, 2817, 2822, 2823, 2824, 2827, 2829, 2830, 2831, 2832, and 2833 shall not be made accessible to the public and not included for interpretation.

3) An archaeologist shall monitor trail clearing, and concurrently (a) photograph the trail in detail, (b) document alternate trail alignments by mapping and/or photography; (c) record and collect all surface artifacts; and (d) evaluate trail conditions and recommend appropriate stabilization of trail features.

We will need to finalize this mitigation agreement, for Na Ala Hele to be in compliance with Chapter 6E, H.R.S. If you have any questions about these comments, please call Annie Griffin at extension 7-0013.

AG:jen

APPENDIX C

PUBLIC AGENCIES, PRIVATE GROUPS AND INDIVIDUALS CONSULTED

JOHN WAIHEE
Governor

BRIAN J. J. CHOY
Director

STATE OF HAWAII

OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185

Division of Forestry & Wildlife [illegible] District					
Date Rec'd: 6/5			Response:		
File Ref: N8H			Rush:		
Wong	✓		Baker	✓	
[illegible]			Evenson		
[illegible]			Purdy		
[illegible]			Duarte		
[illegible]			Nakagawa		
[illegible]			[illegible]		
[illegible]			Kwon		
Info			Signature		
Draft Reply	✓		[illegible]		
[illegible]	✓		File	✓	
[illegible]			Library		

June 5, 1992

Department of Land and Natural Resources (Maui District Office)
Division of Forestry and Wildlife
Attn: Mr. Wesley Wong
54 South High Street, First Floor
Wailuku, Hawaii 96793

Subject: Draft Environmental Assessment (EA) for Removal of Lands from Revokable Permit, Old Lahaina Pali Trail

Dear Mr. Wong:

We have reviewed the subject EA and have the following comments:

1) On page 3 of the EA you left out the type of herbicides which you will be using. When resubmitting this document to us for publication in the OEQC Bulletin, please include the name of the herbicides you will be using.

2) Please follow Section §11-200-9(4) of the Administrative Rules which states that, "In the assessment process, the agency shall consult with other agencies having jurisdiction or expertise as well as citizen groups and individuals." When submitting your EA to us for publication, please include the public agencies and private groups in your "list of agencies consulted."

I have enclosed a "Document for Publication Form" to be returned to us when you would like to have the document published in the OEQC Bulletin.

If you have any questions, please call Margaret Wilson at 586-4185. Thank you.

Sincerely,

Brian J.J. Choy
Director

Enclosure: Document for Publication Form

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

June 22, 1992

Mr. Brian J.J. Choy, Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Draft Environmental Assessment (EA) for Removal of Lands from Revokable Permit S-6238, Old Lahaina Pali Trail, Ukumehame, Maui

We have received your comments regarding the need to include two additional pieces of information: 1) the types of herbicides intended for use on the subject trail, and 2) a list of public and private agencies consulted when the subject Draft EA is to be submitted for publication in the OEQC Bulletin.

Herbicides intended for use on various weed species occuring within the trail bed corridor include ROUNDUP, RODEO, GARLON 3A, and GARLON 4 (mixed with diesel fuel and applied to cut stump). GARLON 4 is intended for direct application only to cut Keawe and Klu stumps, and only in trail areas not grazed by cattle.

We have enclosed a listing of public agencies and private entities consulted in developing the subject EA. This list will be included in our submittal of the EA for publication in the OEQC Bulletin.

If you have any further questions or concerns please contact Mr. Michael Baker, our Trails & Access Specialist at 243-5352 or 871-2521.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: C. Meller, NAH

List of Public Agencies, Private Groups and Individuals Consulted

Mr. Phillip Bose
Chairperson
Na Ala Hele
Maui Advisory Council
SR-1 Box 135
Haiku, HI 96708

Mr. Mark White
Maui Project Director
Nature Conservancy of Hawaii
P.O. Box 1716
Makawao, HI 96768

Mr. Richard Nakagawa
President
Native Hawaiian Plant Society
P.O. Box 5021
Kahului, HI 96732

Ms. Linda Conboy
Mauna Ala Hiking Club
P.O. Box 732
Puunene, HI 96784

Ms. Mary M. Evanson
Sierra Club of Hawaii
Maui Chapter
P.O. Box 2000
Kahului, HI 96732

Ms. Dana Naone Hall
Hui Alanui O Makena
2087 Wells Street
Wailuku, HI 96793

Mr. David Nobriga
c/o West Maui Soil & Water
Conservation District
P.O. Box 1170
Wailuku, HI 96793

Mr. David Blane
Vice-President
C. Brewer Properties, Inc.
P.O. Box 1347
Wailuku, HI 96793-1437

The Honorable
Linda Crockett Lingle
Mayor of County of Maui
200 South High Street
Wailuku, HI 96793

Mr. Brian Miskae
Director
Maui County Planning Department
200 South High Street
Wailuku, HI 96793

Ms. Charmaine Tavares
Director
Department of Parks & Recreation
County of Maui
1580 Kaahumanu Avenue
Wailuku, HI 96793

Mr. Alan Tokunaga
Maui District Land Agent
State of Hawaii
Division of Land Management
54 South High Street
Wailuku, HI 96768

Mr. Floyd Miyazono
Maui District Manager
State of Hawaii
Division of State Parks
54 South High Street
Wailuku, HI 96768

Mr. Robert Siarot
Maui District Manager
State of Hawaii
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, HI 96732

Mr. Paul Schwind
Administrator
State of Hawaii
Department of Agriculture
Planning & Development Office
1428 South King Street
Honolulu, HI 96809

Mr. Donald Hibbard
Administrator
State of Hawaii
Historic Preservation Division
P.O. Box 621
Honolulu, HI 96809

List of Public Agencies, Private Groups and Individuals Consulted

(Continued)

Mr. Neal Fujiwara
U.S. Department of Agriculture
Soil Conservation Service
70 South High Street
Wailuku, HI 96793

Mr. Donald Reeser
Superintendent
Haleakala National Park
P.O. Box 369
Makawao, HI 96768

Mr. Stephen Griswold
Facilities Manager
Haleakala National Park
P.O. Box 369
Makawao, HI 96768

APPENDIX D

COMMENTS RECEIVED AND RESPONSES SENT

TO

PUBLIC AGENCIES, PRIVATE GROUPS AND INDIVIDUALS CONSULTED

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF LAND MANAGEMENT
54 SOUTH HIGH STREET, 1ST FLOOR
WAILUKU, HAWAII 96793

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

July 17, 1992

Department of Land and Natural
Resources
Na Ala Hele Trails & Access Program
Div. of Forestry & Wildlife - Maui
54 South High St.
Wailuku, HI 96793

ATTENTION: Trails & Access Specialist

Gentlemen:

This area is presently encumbered under Revocable Permit No. S-6238 to Stephen Perreira for pasture purposes.

It is anticipated that a general lease will someday be offered at public auction for the same purpose.

How will this trail affect the present and future rancher? If fencing is necessary, who will pay for it?

Answers to these questions will enable us to properly advise prospective lessees.

Very truly yours,

Alan Tokunaga

ALAN TOKUNAGA
District Land Agent

AT:js

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

September 18, 1992

Mr. Alan Tokunaga
District Land Agent
Department of Land and
Natural Resources
Division of Land Management
54 South High Street
Wailuku, Hawaii 96793

Dear Mr. Tokunaga:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your letter of July 17, 1992. Your letter provide several useful points of information as well as two important questions. We respond to those questions below.

Question 1: "How will this trail affect the present and future rancher?

Response: We have indicated to the Division of Land Management our intention of having a 50-foot trail bed corridor (an area of approximately 27 acres) permanently removed from Lease No. S-6238. As such, present and future lessee would no longer be responsible for managing the trail corridor area as it will incorporated within the Na Ala Hele Trails & Access Program of the Division of Forestry and Wildlife. Public use of the trail will be restricted to the trail corridor area, with specific instructions to not leave the trail bed. The majority of interpretive signage will direct attention either to the historic trail itself, or to the unobstructed scenic views easily found along the trail.

Question 2: "If fencing is necessary, who will pay for it?

Response: The Division of Forestry and Wildlife will be responsible for the procurement and construction of all fencing resulting from the establishment of the trail corridor.

Copies of your comments and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for taking time to comment.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
70 S. HIGH STREET, RM. 215
WAILUKU, HAWAII
96793

Date: July 20, 1992

Mr. Wesley H.C. Wong, Jr.
District Forestry Manager
DLNR-DOFAW
54 South High Street
Wailuku, Hawaii 96793

Dear Wes,

RE: Na Ala Hele Trails & Forestry Program
Old Lahaina Pali Trail; TMK: 3-6-01:14 & 4-8-01:1

I would like to recommend that the area in which this trail is being restored be downzoned into the Protective (P), Limited (L), or Resource (R) subzone of the Conservation District.

Further cattle grazing within the area without any plan and works of improvement will create more soil erosion and destruction to the native fauna and trail system. The Maalaea Harbor, a responsibility of Department of Transportation, have experienced tons of soil into the harbor. Desilting basins have been constructed on Wailuku Agribusiness pineapple fields to alleviate sediment from entering the harbor, however, nothing has been done on the subject state lands to prevent it sediment from entering the harbor.

Thank you for the opportunity to comment on this environmental assessment.

Sincerely,

Neal S. Fujiwara
District Conservationist

cc: Mr. David Nobriga, WMSWCD

Division of Forestry & Wildlife Maui-Molokai-Lanai [illegible]					
Date Rec'd: 7/24/92			Suspense:		
File Ref:			Rush:		
Wong	/	W	Baker	/	[illegible]
Ueoka			Evanson		
Hobdy			Purdy		
Shishido			Duarte		
Duvall			Nakagawa		
Estrada			Manaba		
Cumming			Kwon		
Info			Signature		
Draft Reply			Post Baseyard		/
Ann Attn/Act		/	File		/

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

September 18, 1992

Mr. Neal S. Fujiwara
District Conservationist
U.S. Department of Agriculture
70 South High Street
Wailuku, Hawaii 96793

Dear Mr. Fujiwara:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your letter of July 20, 1992 on the subject EA and offer the following response.

We understand your recommendation that the subject area "be downzoned into the Protective (P), Limited (L), or Resource (R) subzone of the Conservation District as a response to the effect cattle grazing has on the landscape.

Although we agree that removal of cattle from the area could mitigate many soil erosion problems in the area, there may be preferred alternatives to the downzoning solution. For instance, the State Land Board could be petitioned for termination of grazing activities in the lease for a portion or all of the subject area.

While cattle can be destructive to the trail: 1) they reduce fire fuel load in the area, 2) cattle tend not to frequent areas of heavy visitor use, and 3) fencing as a measure for keeping cattle off the trail bed is a strong possibility and would be placed at higher elevations.

Incidentally, cattle appear unable to access approximately one (1) mile of the westernmost portion of the Trail. From the trail head to a point east of Mokumana Gulch , cattle are unable to negotiate the steep, boulder-strewn terrain.

Copies of your comments and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580 KAAHUMANU AVENUE, WAILUKU, HAWAII 96793

LINDA CROCKETT LINGLE
Mayor
CHARMAINE TAVARES
Director
ARMAND PADUA
Deputy Director
(808) 243-7230

Division of Forestry & Wildlife Maui-Molokai-Lanai District					
Date Rec'd: 8/4			Suspense:		
File Ref:			Rush:		
Wong	/	HA	Baker	/	[illegible]
Ueoka			Evanson		
Hobdy			Purdy		
Shishido			Duarte		
Duvall			Nakagawa		
Estrada			Manabe		
Cumming			Kwon		
Info		/	Signature		
Draft Reply			Post Baseyard		
App Atta/Act			File		/
Comts/Recom			Library		

July 30, 1992

Department of Land and
Natural Resources
Na Ala Hele Trails & Access Program
54 South High Street
Wailuku, Hawaii 96793
Attention: Trails & Access Specialist

Subject: Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

Gentlemen:

We have reviewed the subject Assessment and for the record, we have no comments to offer at this time.

Thank you for allowing us to comment on the draft Environmental Assessment.

Sincerely,

Charmaine Tavares

CHARMAINE TAVARES
Director

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 17, 1992

Charmaine Tavares, Director
Department of Parks and Recreation
County of Maui
1580 Kaahumanu Avenue
Wailuku, Hawaii 96793

Dear Ms. Tavares:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your letter of July 30, 1992 regarding the subject project and note that you have "no comments to offer at this time".

A copy of your letter and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

United States Department of the Interior

NATIONAL PARK SERVICE
Haleakala National Park
P.O. Box 369
Makawao, Maui, Hawaii 96768

IN REPLY REFER TO:

L58

July 28, 1992

Division of Forestry & Wildlife Maui-Molokai-Lanai District					
Date Rec'd: 8/3			Suspense:		
File Ref:			Rush:		
Wong	✓	Hu	Baker	✓	
Lieoka			Evanson		
Hobdy	✓	Rhi	Purdy		
Shishido			Duarte		
Duvall			Nakagawa		
Estrada			Manaba		
Cumming			Kwon		
Info		✓	Signature		
Draft Reply			Post Baseyard		
App Attn/Act			File	✓	
Comts/Recom			Library		

Pls. Return

Department of Land & Natural Resources
Na Ala Hele Trails & Access Program
Division of Forestry & Wildlife - Maui
54 South High Street
Wailuku, HI 966793

Attn: Trails & Access Specialist

We have reviewed the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui. We find the EA and the accompanying archaeological survey of the trail very thorough and the potential impacts to the environment adequately discussed. We believe that reestablishing this historic trail for public use as part of the Na Ala Hele Trails & Assess Program is a very worthy step in implementing the statewide trail system on Maui. Thank you for the opportunity to comment.

Sincerely,

Donald W. Reeser

Donald W. Reeser
Superintendent

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

September 17, 1992

Donald W. Reeser
Superintendent
Haleakala National Park
P.O. Box 369
Makawao, Maui, Hawaii 96768

Dear Mr. Reeser:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your letter of July 28,1992 and agree with your position that reestablishing the trail for public use is indeed a "very worthy step" for the Na Ala Hele Program.

Your comments and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

August 7, 1992

LOG NO.: 5829
DOC NO.: 2426a

Mr. Wesley H.C. Wong, Jr.
District Forestry Manager
Department of Land & Natural Resources
Na Ala Hele Trails & Access Program
Division of Forestry & Wildlife - Maui
54 South High Street
Wailuku, HI 96793
Attn: Trails & Access Specialist

Dear Mr. Wong:

SUBJECT: Historic Preservation Review of the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail
Ukumehame, Wailuku, Maui
TMK: 3-6-01: 14, 4-8-01: 1

Thank you for the opportunity to review and comment on this document which we received on July 15, 1992.

In the description of the existing historic sites along the Old Lahaina Pali Trail (page 7), this document summarized the findings of an archaeological survey and also referred to the archaeological survey report which was attached as Exhibit A. Site significance evaluations, however, are lacking and this information should be included. This could be clearly presented by taking the information out of the report's Table 2 on page 28, including the explanation of the different significance criteria on page 27.

The impacts, both positive and negative, of opening the trail to the public were adequately discussed. Under the Proposed Mitigation Measures, the EA proposes to implement the measures recommended in the archaeological report. We have previously found these mitigation measures to be acceptable for the project

to have "no adverse effect" on significant historic sites. Our Memorandum of April 2, 1992 which expressed our previous comments on the use of the Old Lahaina Pali Trail for a demonstration trail has been appended to the EA.

With the inclusion of the site significance evaluations in the EA, we believe that historic preservation concerns have been adequately addressed. If you have any questions about these comments, please contact Annie Griffin at 587-0013.

Sincerely,

DON HIBBARD, Administrator
State Historic Preservation Division

AG:aal

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 21, 1992

Mr. Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and
Natural Resources
33 South King St., 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Hibbard:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your August 7, 1992 letter and offer the following response.

As you noted, our inclusion in the EA of the complete archaeological survey report by Tuggle & Tuggle (containing the two-page site significance evaluations) as Appendix A was accompanied by a summary description of the findings of the survey. In accord with your letter's request, we have taken pages 27 and 28 and included them here as attachments.

A Copy of your comments and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your carefully considered comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

Attachments

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

III: EVALUATIONS OF SIGNIFICANCE THE LAHAINA PALI TRAIL

This section of the report discusses the significance of sites recorded during the survey of the Lahaina Pali trail. The significance of individual sites is presented in Table 2 and Appendix A.

CRITERIA FOR SIGNIFICANCE EVALUATIONS

Draft rules and regulations of the Division of Historic Preservation, Department of Land and Natural Resources (May 1989), provide the framework for evaluations of significance used in this report. Criteria are based on those used for the National and Hawaii Registers of Historic Places. Significance is defined in the following manner:

A site has integrity of location, design, setting, materials, workmanship, feeling, and association, and one or more of the following criteria:

A. Site is associated with events that have made an important contribution to the broad patterns of our history.

B. Site is associated with the lives of persons important in our past.

C. Site embodies the distinctive characteristics of a type, period, or method of construction; it represents the work of a master; or it possesses high artistic value.

D. Site has yielded, or may be likely to yield, information important for research on prehistory or history.

E. Site has important historical cultural value to an ethnic group of the State.

TABLE 2. SITE SIGNIFICANCE: LAHAINA PALI TRAIL

SITE NO.	SITE TYPE.	SITE FUNCTION	ASSOCIATION*	SIGNIFICANCE
---	Lahaina Pali Trail	transportation	2	CDE
---	19th C roadbed	transportation	3	CDE
2816	midden scatter	habitation	1	D
2817	wall/culvert	water diversion	3	D
2818	wall/mod. outcrop	rock quarry	3	D
2819	terrace/petroglyph	shelter/art	possibly 1; 2	D
2820	C-shape/wall/ enclosure	shelter/unknown	possibly 1; 2	D
2821	petroglyphs	art/shelter	2	D
2822	alignment	alternate trail route	2	D
2823	alignment	alternate trail route	2	D
2824	cupboards	storage	possibly 1; 2	D
2825	petroglyphs	art/shelter	2	D
2826	enclosure/walls	shelter	possibly 1; 2	D
2827	enclosure	storage	possibly 1; 2	D
2828	C-shapes	shelter/storage	2	D
2829	paved terrace	part of trail	2	D
2830	paved terrace	part of trail	2	D
2831	alignment	alternate trail route	2	D
2832	wall	part of trail	2	D
2833	rock shelter	habitation	1	D
UNRECORDED SITE:				
Manawaipueo Gulch	walls/terraces	dryland field system	1	D

* 1 = traditional Hawaiian association
2 = association with Lahaina Pali trail; these features should be considered and their significance evaluated as part of the overall trail complex
3 = probable association with the construction of the 19th century carriage/auto road

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMINE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

HWY-M 2.404-92

August 10, 1992

Mr. Wesley H. C. Wong, Jr.
District Forestry Manager
State of Hawaii
Department of Land and Natural Resources
54 South High Street
Wailuku, Hawaii 96793

Dear Mr. Wong:

SUBJECT: DRAFT EA FOR RE-ESTABLISHING PUBLIC USE OF THE OLD LAHAINA PALI TRAIL, UKUMEHAME, MAUI, TMK NO. 3-6-01:14 AND 4-8-01:1

Thank you for the opportunity to comment on the draft EA.

The eastern and western trail heads and the trail corridor are outside of the state highway right-of-way. We believe that re-establishing the trail will not impact Honoapiilani Highway. However, access to the trail from the highway should be made from existing driveways, if any. Otherwise, please discuss this matter with our office prior to construction.

If you have any questions, please contact Ferdinand Cajigal at 877-5061.

Very truly yours,

Robert O. Siarot
District Engineer, Maui

/fmc

Division of Forestry & Wildlife Maui-Molokai-Lanai District					
Date Rec'd: 8/14/92			Suspense:		
File Ref:			Rush:		
Wong	✓	W	Baker	✓	
Ueoka			Evenson		
Hobby		RL	Purdy		
Shishido			Duarte		
Duvall			Nakagawa		
Estrada			Maruba		
Cumming			Kwon		
Info		✓	Signature		
Draft Reply			Post Boneyard		
App Attn/Act		✓	File		
Comts/Recom			Library		

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

September 17, 1992

Robert O. Siarot
District Engineer - Maui
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Siarot:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received your letter of August 10, 1992 regarding the subject project and agree that reestablishing the trail will not impact Honoapiilani Highway. We also note your statement that "access to the trail should be made from existing driveways, if any".

There are in fact existing driveways at both trail head areas. On the Maalaea side, an access road to the trail head leads from the Honoapiilani Highway to the lease property through C. Brewer pineapple fields. C. Brewer is presently working with Na Ala Hele in selecting an appropriate access road to the proposed trail head parking area.

On the Ukumehame end of the Trail, a large turnout area exists mauka of the Honoapiilani Highway and makai of the old government road. The area can be accessed directly off the highway and will provide space for a trail head parking area.

A copy of your letter and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager

LINDA CROCKETT LINGLE
Mayor
TELEPHONE 243-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 25, 1992

Mr. Wesley H.C. Wong, Jr.
District Forestry Manager
State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
54 South High Street, 1st Floor
Wailuku, Maui, Hawaii 96793

Dear ~~Mr. Wong~~: WW,

Thank you for your letter of July 1, 1992, and for allowing us the opportunity to comment on the environmental assessment of the Old Lahaina Pali Trail. I apologize for our late response.

I have attached comments from our planning department for your review. If you have further questions please contact the deputy director of the Planning Department, Robert Kekuna, at 243-7735.

Sincerely,

LINDA CROCKETT LINGLE
Mayor, County of Maui

LCL:mlg

Attachment

cc: Robert Kekuna
Dave Deleon

LINDA CROCKETT LINGLE
Mayor

BRIAN W. MISKAE
Director

ROBERT K. KEKUNA, JR.
Deputy Director

BILL MEDERICS
Long Range Division

COLLEEN M. SUYAMA
Current Planning Division

KALVIN KOBAYASHI
Energy Division

COUNTY OF MAUI
PLANNING DEPARTMENT
250 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

July 20, 1992

TO: Mayor Linda Crockett Lingle

FROM: Robert Kekuna, Deputy Planning Director

SUBJECT: Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame Maui, TMK 3-6-01:14 and 4-8-01:1

Thank you for the opportunity to comment on the environmental assessment for the Na Ala Hele development of the Lahaina Pali Trail. We have no objection to the proposed Executive Order designating these lands for a demonstration trail and support the expansion of such recreational facilities.

The location of the trail as presented on the maps accompanying the EA as Exhibits indicate that development of this trail for public use should cause very little interference with any future expansion of the Honoapiilani Highway, with the exception of the trailhead on the Ukumehame side. Na Ala Hele should be aware that any facilities such as a parking area at this trailhead should be sited to allow for future widening of the existing highway.

Incidentally, a few descriptive elements of the EA could be clarified. The EA (p. 4) lists the lower elevation of the trail as 50 ft. above sea level, while the attached Archaeological Survey prepared by Tuggle indicates (p. 5) a lower limit of 100 feet above sea level. Further, the list of fauna (p. 6) does not specify native and introduced species in a thorough and clear manner. Geologic features are mentioned on page 7 under Adjacent natural resources, as "interesting" a more detailed treatment is preferred.

Mitigation of increased human use of the trail is dealt with in a satisfactory manner and we would concur with the State Historic Preservation Office regarding appropriate treatment of different historic sites. A concern which is not adequately addressed is the increased impact of cattle on the trail once it is cleared. Narrow fencing may detract from other features of the trail such as scenic and interpretive opportunities. Is it possible to limit a greater area in the vicinity of the trail from cattle? It is unlikely that the area is highly productive as pasture land and removal of herbivores would undoubtedly facilitate management of the natural resources of the area.

If you have any questions about this analysis, please contact Elizabeth Anderson of our office.

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., 1ST FLOOR
WAILUKU, HAWAII 96793

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 18, 1992

Mr. Robert Kekuna
Deputy Director
Planning Department
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Kekuna:

Subject: Comments on the Draft Environmental Assessment (EA) for Reestablishing Public Use of the Old Lahaina Pali Trail, Ukumehame, Maui, TMK's: 3-6-01:14 & 4-8-01:1

We have received an August 25, 1992 letter from Mayor Lingle's office containing your July 20, 1992 memorandum regarding the subject matter. We understand your comments represents the positions of the two offices equally. As your memorandum was quite thorough, we will respond to each comment individually.

Comment 1: "Na Ala Hele should be aware that any facilities such as a parking area at this [Ukumehame] trail head should be sited to allow for future widening of the existing highway (Paragraph 2, Lines 4-6).

Response: This information is noted and will be incorporated in future plans for development of a parking area, interpretive display areas and access roads.

Comment 2: "The EA (p.4) lists the lower elevation of the trail as 50 ft. above sea level, while the attached Archaeological Survey prepared by Tuggle indicates (p.5) a lower limit of 100 feet above sea level (Paragraph 3, Lines 1-4).

Response: At present, the existing remnant of Trail in western-most area has been completely destroyed by erosion. The terminus of the historical trail lies at approximately at the 100 foot elevation. In order to safely access the old trail, it

was necessary to construct a maintenance trail from the old government road to its terminus. The maintenance trail begins at approximately 50 feet above sea level, thus becoming the "lower limit" of the trail. The future will require other such adjustments to the trail (such as pathways from parking areas to the actual trail head) as the Tuggle Survey report did not specifically discuss optimum locations for accessing the trail from public right of ways.

Comment 3: "...the list of fauna (p.6) does not specify native and introduced species in a thorough and clear manner."

Response: We fail to understand the above statement as the EA lists separately a series of endemic (native) and exotic (introduced) species of birds and mammals. We disagree with the above comment and redirect the reader to page 6 for the species list and page 10, under Findings and Reasons Supporting Determination wherein we clearly state:

> "No rare or endangered plant or animal species have been found to occur within the trail corridor..."

Careful field observations have shown that no native species are found to exist in the area and were therefore not listed. A statement to that effect was inadvertently left out of the EA.

Comment 4: "Geologic features are mentioned on page 7 under Adjacent Natural Resources, as "interesting" a more detailed treatment is preferred.

Response: We feel our original discussion on the geology of the trail corridor was adequately discussed for purposes of the EA. It is reprinted below:

> "The trail crosses numerous gulches containing weathered basalt formations and often takes advantage of the less weathered, more resistant flow structures offering a correspondingly easy trail grade. Interesting geologic features are traversed by the trail corridor.

We did not feel it was appropriate to enter into a technical discussion of the composition of geologic features for the sake of our audience. However, we chose to rely on the descriptive redundancy offered by the EA and the Archaeological survey. A statement to that effect should have been included in the original EA.

Comment 5: "A concern which is not adequately addressed is the increased impact of cattle on the trail once it is cleared."

Response: While cattle can be destructive to the trail: 1) cattle help reduce fire fuel load in the area, 2) cattle tend not to frequent areas of heavy visitor use, and 3) fencing as a measure for keeping cattle off the trail bed is a strong possibility and would be placed at higher elevations. Fencing along the length of the trail is considered too costly and aesthetically intrusive. We strongly agree with the assertion that removal of cattle from the area would benefit its natural resources.

Incidentally, cattle appear unable to access approximately one (1) mile of the westernmost portion of the Trail. From the trail head to a point east of Mokumana Gulch , cattle are unable to negotiate the steep, boulder-strewn terrain.

Copies of your comments and this response will be incorporated within the Final Environmental Assessment that is to be sent to the Office of Environmental Quality Control for publication in the OEQC Bulletin.

Thank you very much for your carefully considered comments.

Sincerely,

Wesley H.C. Wong, Jr.
District Forestry Manager

cc: Mike Baker, NAH Specialist - Maui
Chris Meller, NAH Program Manager