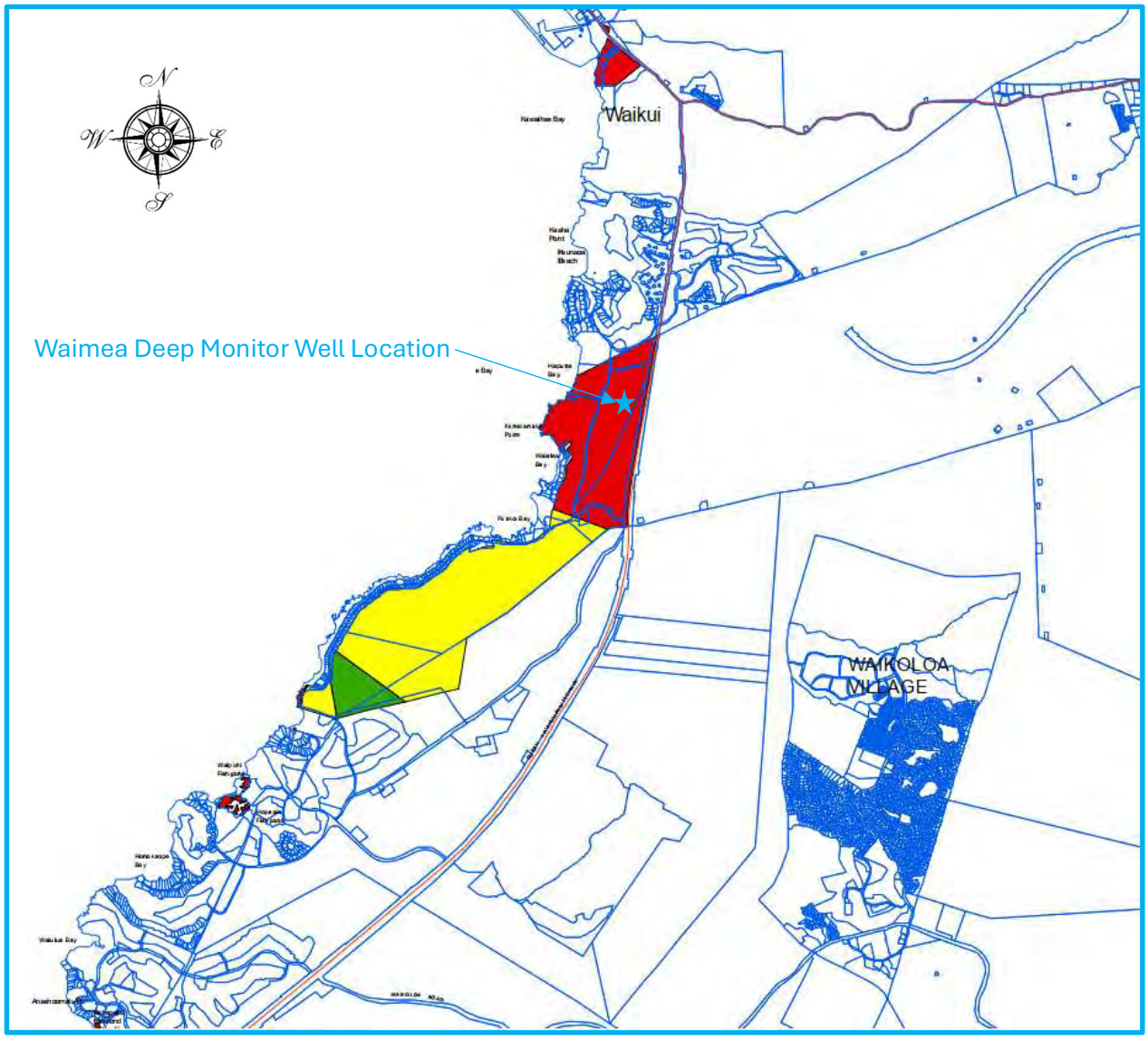
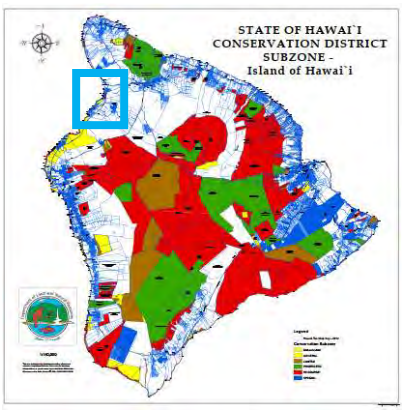


STATE OF HAWAI`I CONSERVATION DISTRICT SUBZONE - Island of Hawai`i

Department of Land and Natural Resources
State of Hawaii

1:180,000

This map is intended for visual representation of proposed subzone designation. It should not be used for boundary interpretations or any other use beyond the limits of this data. (Prepared on the State of Hawai'i's GIS - NOVEMBER 2012)



Legend

Hawaii Tax Map Key - 2012

Conservation Subzone

- Conservation
- GENERAL
- LIMITED
- PROTECTED
- RESOURCE
- SPECIAL

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA
Office of Conservation and Coastal Lands
P.O. BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RYAN K.P. KANAKAʻOLE
FIRST DEPUTY

DEAN D. UYENO
ACTING DEPUTY DIRECTOR - WATER

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

REF:OCCL:AA

Correspondence: HA 24-47

Mar 11, 2024

MEMORANDUM

TO: Dani Yoo, Engineer, dani.yoo@hawaii.gov
Engineering Division

FROM: S. Michael Cain, Administrator *S Michael Cain*
Office of Conservation and Coastal Lands

SUBJECT: Proposed Waimea Deep Monitor Well Project Located at Lālāmilo, South Kohala, Hawaiʻi, TMK: (3) 6-6-002:041

The Office of Conservation and Coastal Lands (OCCL) has reviewed your letter regarding the subject matter and subsequent e-mail responses to our inquiry for more information. The Commission on Water Resource Management (CWRM) is evaluating the permitting requirements and requesting confirmation of the proposed exemptions for the Deep Monitor Well (DMW) project. The OCCL notes that TMK: (3) 6-6-002:041 lies within the Resource Subzone of the State Land Use Conservation District.

A DMW is a well that penetrates through the freshwater zone into the saltwater zone. The purpose of this project is to monitor aquifer health statewide to ensure the sustainability of groundwater resources. CWRM notes that the project consists of planning, design, and permitting of a DMW with a diameter casing of less than 12 inches (approximately between 6-8 inches), a 10'x20' concrete pad and related improvements inclusive of 15'x15' chain-link fence with barbed wire and a gate enclosure, and an 8 ft wide graded access road.

CWRM proposes that the project and associated work appear to be consistent with Hawaiʻi Administrative Rules (HAR) Chapter 11-200.1-15 and the Department of Land and Natural Resources Exemption List, **General Exemption Type 5 Part 2 No. 1.** *Construction of test wells with casing diameter of not more than 12 inches to provide ground truth for water resources investigations, the suggested size will enable the aquifer to be tested for its physical, chemical, biological qualities, as well as providing a pumping test to determine the specific capacity of the aquifer. Test wells shall not be developed to serve water unless an EIS or negative declaration is prepared.* OCCL concurs that the proposed project meets the exemption.

The project is an identified land use that could be applied for within the Conservation District pursuant to HAR §13-5-22. P-1 DATA COLLECTION (C-1) *Basic data collection, research, education, and research evaluation that involves a land use causing ground disturbance from*

installation of equipment (e.g., meteorological towers, radio towers, or test wells). This would require the submittal of a Conservation District Use Application (CDUA) for a Departmental Permit. Therefore, to allow, modify, or deny the project would be at the Chairperson's discretion. As a government agency proposal, the project must comply with Hawai'i Revised Statues (HRS) Chapter 6E-8 and with the provisions of Hawai'i's Coastal Zone Management law (HRS Chapter 205A) that pertain to the Special Management Area (SMA) requirements administered by the various counties.

Should you have any questions regarding this memorandum, contact Alyssa Accardo of our Office of Conservation and Coastal Lands at alyssa.m.accardo@hawaii.gov or at (808)-587-0048.

CC: Hawai'i Division Land Office
County of Hawai'i, Planning Department

State Historic Preservation Division
HRS 6E Submittal Form

Per §6E, Hawai‘i Revised Statutes, if the Project requires review by the State Historic Preservation Division (SHPD), please review and fill out this form and submit all requested information to SHPD. All forms and project documentation must be submitted **electronically** via HICRIS. Please visit our website.

https://shpd.hawaii.gov/hicris

If you are unable to submit electronically, please contact SHPD at (808) 692-8015. Mahalo.

The submission date of this form is:

1. APPLICANT (select one)

☐ Property Owner ☑ Government Agency

2. AGENCY (select one)

☐ Planning Department ☐ Department of Public Works ☑ Other (specify): DLNR - CWRM

Type of Permit Applied For: CDUP

3. APPLICANT CONTACT

3.1) Name: Ryan Imata 3.2) Title: Ground Water Program Manager, CWRM

3.3) Street Address: 1151 Punchbowl St. Room 227

3.4) County: Honolulu 3.5) State: HI 3.6) Zip Code: 96813

3.7) Phone: 3.8) Email: ryan.r.imata@hawaii.gov

4. PROJECT DATA

4.1) Permit Number (if applicable): 137.832

4.2) TMK [e.g. (3) 1-2-003:004]: (3) 6-6-002:041

4.3) Street Address: Hapuna Beach Rd, Waimea

4.4) County: Hawaii 4.5) State: HI 4.6) Zip Code: 96743

4.7) Total Property Acreage: 137.832

4.8) Project Area (acreage, square feet): 100 SF finished well, 7,500 SF

4.9) List any previous SHPD correspondence (LOG Number & DOC Number, if applicable):

LOG NO. HICRIS 2024PR00806 DOC NO.

5. PROJECT INFORMATION

5.1) Does the Project involve a Historic Property? A Historic Property is any building, structure, object,

district, area, or site, including heiau and underwater site, **which is over 50 years old** (*HRS §6E-2*).

☐ Yes ☑ No

5.2) The date(s) of construction for the historic property (building, structure, object, district, area, or site, including heiau and underwater site) is NA

5.3) Is the Property listed on the Hawai'i and or National Register of Historic Places? To check: http://dlnr.hawaii.gov/shpd/

☐ Yes ☑ No

5.4) Detailed Project Description and Scope of Work:

The project scope consists of the construction of a 10-inch diameter deep monitor well and related improvements including 5'x5' concrete pad and 10'x10' chain-link fence enclosure to allow data collection of temporal water-levels and depth profiles of conductivity and temperature changes over time. The well will penetrate through the basal aquifer lens and transition zone into the underlying

5.5) Description of **previous** ground disturbance (e.g. previous grading and grubbing):

none or no evidence based upon site selection to avoid any visible ground disturbances in the project area.

5.6) Description of **proposed** ground disturbance (e.g. # of trenches, Length x Width x Depth):

10' x 10' S.F. area for the monitor well. Approximately 7,500 S.F. for temporary staging area for casing, drilling equipment, and drilling activities to be restored to former conditions upon completion of the project. See attached plans.

5.7) The Agency shall ensure whether historic properties are present in the project area, and, if so, it shall ensure that these properties are properly identified and inventoried. Identify all known historic properties:

Please refer to the attached 1994 PHRI AIS (Appendix G from the May 2001 FEIS Hapuna Beach State Recreation Area Expansion, Lalamilo, South Kohala, Hawaii, Division of State Parks, Department of Land and Natural Resources, State of Hawaii) and specifically Fig 2. No historic

5.8) Once a historic property is identified, then an assessment of significance shall occur.

Integrity (check all that apply):

☐ Location ☐ Design ☐ Setting ☐ Materials ☐ Workmanship ☐ Feeling ☐ Association

Criteria (check all that apply):

☐ a – associated with events that have made an important contribution to the broad patterns of our history
☐ b – associated with the lives of persons important in our past
☐ c – embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value
☐ d – have yielded, or is likely to yield, information important for research on prehistory or history
☐ e – have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts - - these associations being important to the group's history and cultural identity

5.9) The effects or impacts of a project on significant historic properties shall be determined by the agency.

Effect Determination (select one):

☑ No Historic Properties Affected
☐ Effect, with Agreed Upon Mitigation Commitments (§6E-42, HRS)
☐ Effect, with Proposed Mitigation Commitments (§6E-8, HRS)

5.10) This project is (check all that apply, if applicable):

☐ an activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency;

☐ carried out with Federal financial assistance; and or

☐ requiring a Federal permit, license or approval.

If any of these boxes are checked, then the Project may also be subject to compliance with Section 106 of the National Historic Preservation Act (NHPA).

6. PROJECT SUBMITTALS

6.1) Please submit a copy of the Tax Map Key (TMK) map

6.2) Please submit a copy of the property map showing the project area and indicate if the project area is smaller than the property area.

6.3) Please submit a permit set of drawings. A permit set is a set of drawings prepared and signed by a licensed architect or engineer and is at least 65% complete.

6.4) Are you submitting a survey?

☐ Yes ☑ No

Specify Survey:

6.5) Did SHPD request the survey?

☐ Yes ☑ No

If 'Yes', then please provide the date, SHPD LOG NO, and DOC NO:

Date: LOG NO. DOC NO.

6.6) **SURVEY REVIEW FEES**. Fee for Review of Reports and Plans (§§13-275-4 and 284-4). A filing fee will be charged for all reports and plans submitted to our office for review. Please go to:

The Submittal Filing Fee Form is located on the Forms page

A check payable to the Hawaii Historic Preservation Special Fund should accompany all reports or plans submitted.

6.7) Please submit color photos/images of the Historic Property (any building, structure, object, district, area, or site, including heiau and underwater site) that will be affected by the Project.

The following are the minimum number and type of color photographs required:

Quantity	Description
1-2	Street view(s) of the resource and surrounding area
1-2	Over view of exterior work area
1	exterior photo of the North elevation (if applicable)
1	exterior photo of the South elevation (if applicable)
1	exterior photo of the East elevation (if applicable)
1	exterior photo of the West elevation (if applicable)
1-2	interior photos(s) of areas affected (if applicable)

CHECKLIST

☑ **SHPD FORM 6E** (this form)

☑ **PROJECT SUBMITTALS** (any requested documentation for items 6.1 - 6.7 of this form)

☑ **FILING FEE FORM** (if applicable)

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

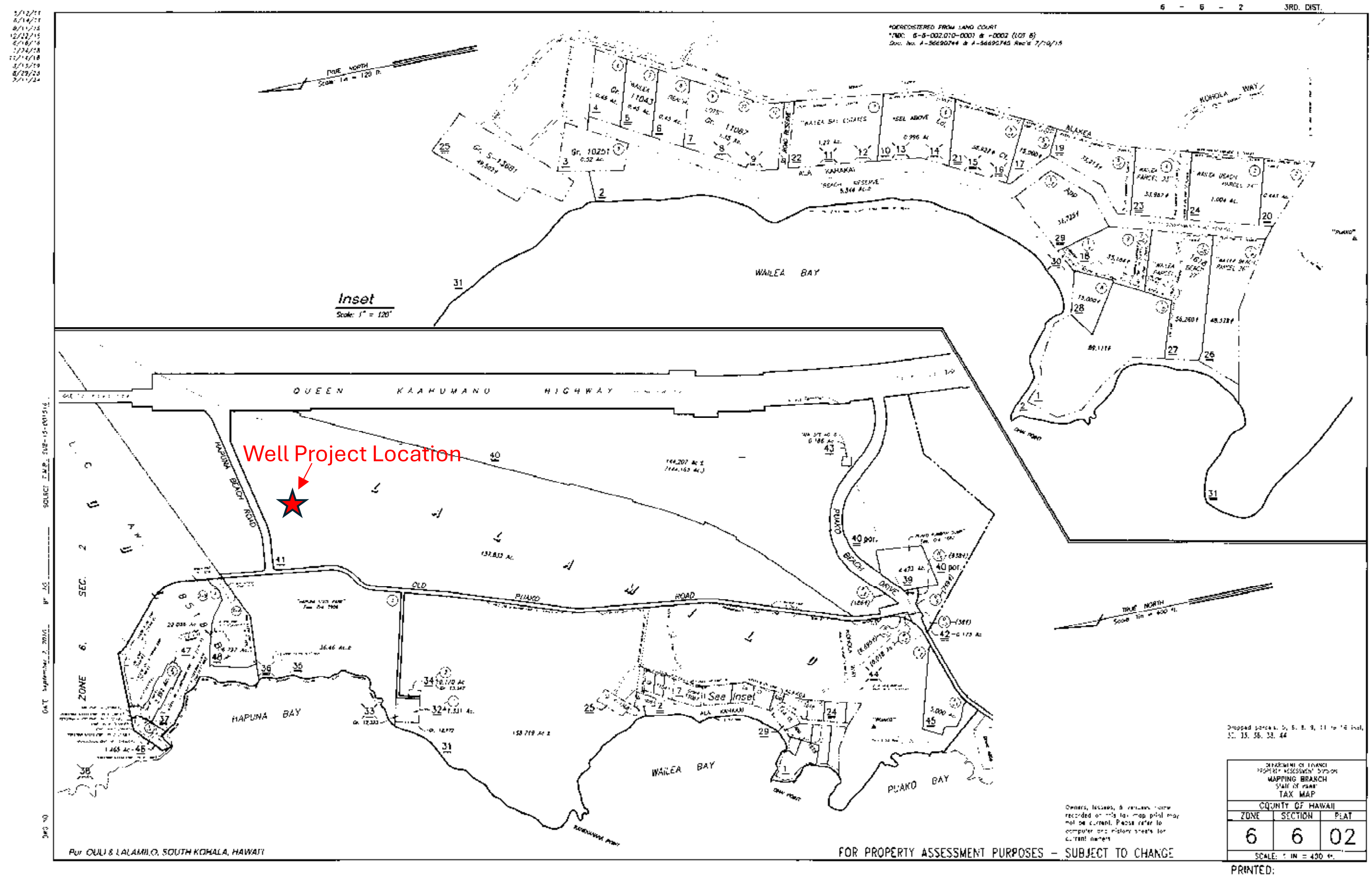
STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

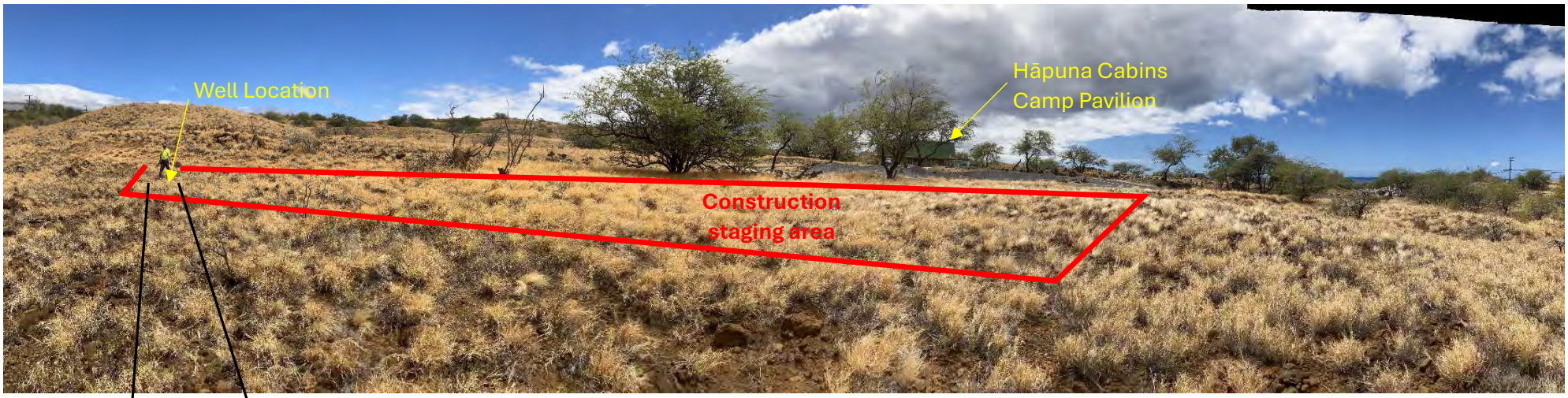
HRS 6E Submittal Filing Fees

All submittals must have the appropriate filing fee in accordance with HAR §13-275-4 or HAR §13-284-4.

_____		Check if Report/Plan is a re-submittal (no fee)
_____		Check if Field Inspection Report requested by SHPD (no fee)
_____		Check if **Final Report** (no fee)
_____	$0	Archaeological Monitoring Report, no resources reported
_____	$25	Archaeological Monitoring Plan
_____	$25	Burial Disinterment Report
X	$25	Request from Agency for Determination Letter per HAR §13-275
_____	$50	Archaeological Assessment (AIS with negative findings)
_____	$50	Osteological Analysis Report
_____	$100	Archaeological Monitoring Report, resources reported
_____	$150	Archaeological Inventory Survey Plan, Archaeological Data Recovery Plan, or Preservation Plan
_____	$250	Burial Treatment Plan (BTP)
_____	$450	Archaeological, Architectural, or Ethnographic Survey Report
_____	$450	Archaeological Data Recovery Report
_____		Fee Total: Make check payable to “Hawaii Historic Preservation Special Fund”

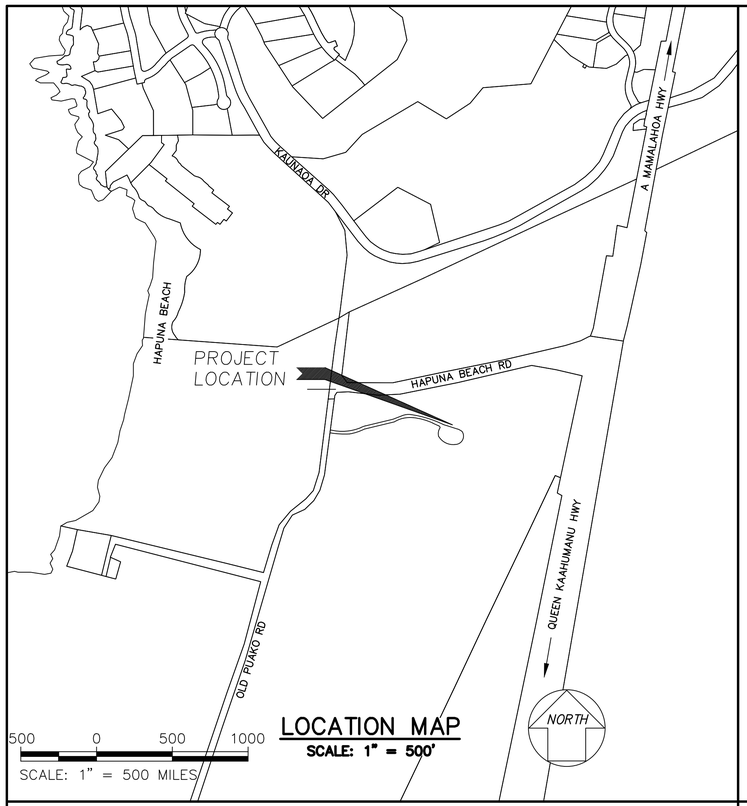
For Office Use Only:
rev. 11/9/2017


6 - 6 - 2 3RD. DIST.
Inset
Scale: 1" = 120'
WAILEA BAY
QUEEN KAAHUMANU HIGHWAY
Well Project Location
HAPUNA BEACH ROAD
OLD PUAKO ROAD
PUAKO BEACH DRIVE
HAPUNA BAY
WAILEA BAY
PUAKO BAY
See Inset
Dropped parcels: 5, 6, 8, 9, 11 to 16 incl, 30, 35, 36, 38, 44
DEPARTMENT OF FINANCE
PROPERTY ASSESSMENT DIVISION
MAPPING BRANCH
STATE OF HAWAII
TAX MAP
COUNTY OF HAWAII
ZONE
SECTION
PLAT
6
6
02
PRINTED:
Por OULI & LALAMILO, SOUTH KOHALA, HAWAII
FOR PROPERTY ASSESSMENT PURPOSES - SUBJECT TO CHANGE



Well Site and Construction Staging Area
Field Photo

– September 26, 2023



LOCATION MAP
SCALE: 1" = 500'

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
FOR
COMMISSION ON WATER RESOURCE MANAGEMENT

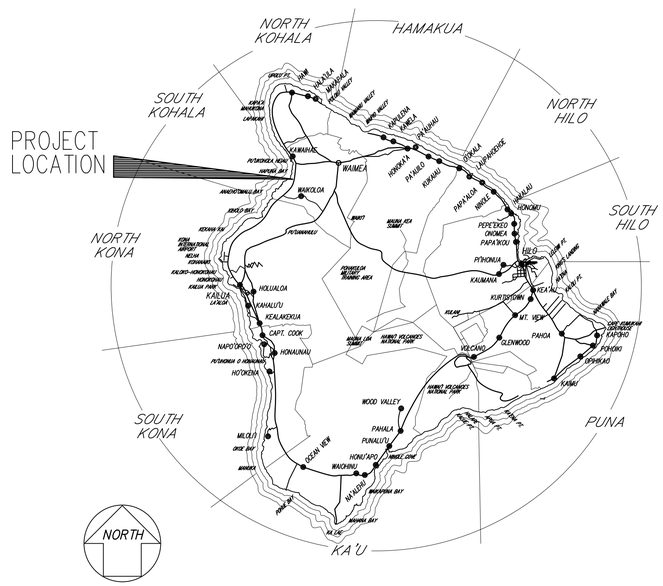
JOB NO. G55BH18A

WAIMEA DEEP MONITOR WELL

(STATE WELL NO. 5949-004)

SOUTH KOHALA, HAWAII
T.M.K.: (3) 6-6-002: 041

JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL



ISLAND OF HAWAII
1" = 2 MILES

INDEX OF DRAWINGS

DESCRIPTION	DRAWING NO.	SHEET NO.
TITLE SHEET	T-1	1
CONSTRUCTION NOTES	C-1	2
GENERAL SITE PLAN	C-2	3
WELL SECTION AND DETAILS	C-3 TO C-4	4-5
MISCELLANEOUS DETAILS	C-5	6
SIGN DETAILS	C-6	7

APPROVED:

CURT A. COTTRELL — DATE
ADMINISTRATOR
DIVISION OF STATE PARKS
DEPARTMENT OF LAND AND NATURAL RESOURCES

DEAN D. UYENO — DATE
ACTING DEPUTY DIRECTOR
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES

CARTY S. CHANG, P.E. — DATE
CHIEF ENGINEER
ENGINEERING DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

DRAWING NO.
T-1

FILE ____ DRAWER ____ FOLDER ____

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF HAWAII, DEPARTMENT OF PUBLIC WORKS "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," DATED SEPTEMBER 1984, AND "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1986. UNLESS INDICATED OTHERWISE IN THE PLANS, THESE NOTES, OR THE SPECIAL PROVISIONS.

2. PRIOR TO MOBILIZATION ON SITE AND DRILLING THE WELL, THE CONTRACTOR, AT NO COST TO THE STATE, SHALL VERIFY THE LOCATION AND ELEVATION OF THE WELL. UPON WELL COMPLETION, A BRASS SURVEY PLAY/MARKER SHALL BE EMBEDDED IN THE RELATIVELY LEVEL CONCRETE SLAB. THE LOCATION AND ELEVATION OF THE BRASS PLAT AND TOP OF CASING SHALL BE SURVEYED.

3. EXISTING TOPOGRAPHIC SURVEY WAS CONDUCTED ON 3/4/24 BY ISLAND SURVEY, INC. THIS TOPOGRAPHIC SURVEY WAS BASED ON THE BEST AVAILABLE INFORMATION AND ACCURACY MUST BE VERIFIED PRIOR TO STARTING CONSTRUCTION.

4. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLAN OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGES DUE TO HIS CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH RESPECTIVE UTILITY COMPANIES.

5. THE CONTRACTOR SHALL MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO EXISTING FACILITIES AT ALL TIMES AND SHALL SCHEDULE AND PROSECUTE HIS WORK IN SUCH A MANNER AS TO AVOID INTERRUPTION OF NORMAL ACTIVITIES AT THE EXISTING FACILITIES. THE CONTRACTOR SHALL PROVIDE EARLY NOTIFICATION OF AND OBTAIN APPROVAL FOR ANY ANTICIPATED INTERRUPTIONS. TEMPORARY SAFE PEDESTRIAN PASSAGEWAYS AROUND OR THROUGH A CONSTRUCTION SITE SHALL COMPLY WITH 2010 AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (2010 ADAAG) AS REQUIRED BY HAWAII REVISED STATUTES (HRS) 103–50 STANDARDS.

6. ALL EXISTING UTILITIES, AND OTHER FACILITIES WHETHER SHOWN ON THE PLANS OR NOT, WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE RECONSTRUCTED OR REPLACED BY THE CONTRACTOR AT HIS/HER OWN EXPENSE TO THE ORIGINAL UNDAMAGED CONDITION.

7. EXISTING CONDITIONS ARE SHOWN TO THE BEST OF OUR KNOWLEDGE. DISCREPANCIES SHALL BE PROMPTLY BE REPORTED TO THE DIRECTOR AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.

8. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES, WHICH MAY BE AFFECTED BY HIS WORK. INTERFERENCE WITH THE STRUCTURE SHALL PROMPTLY BE REPORTED TO THE DIRECTOR AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.

9. SHOULD A DISCREPANCY OCCUR ON THE DRAWINGS BETWEEN ANY PROJECT SPECIAL NOTES/SPECIAL DETAILS, AND THE TYPICAL SPECS/TYPICAL DETAILS, SAID SPECIAL NOTES/SPECIAL DETAILS SHALL TAKE PRECEDENCE.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL."

    THE CONTRACTOR SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

    A. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

    IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11–54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT HTTP: //HEALTH.HAWAII.GOV/CWB. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

10. ELEVATIONS SHOWN ARE BASED ON MEAN SEA LEVEL (MSL).

11. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES TO ITS ORIGINAL CONDITIONS OR BETTER AT NO COST TO THE STATE.

12. CONTRACTOR SHALL MAKE PROVISIONS FOR PACKER OR MEANS TO CONTROL ARTESIAN FLOW SHOULD DEEP–CONFINED FRESHWATER AQUIFER BE ENCOUNTERED PRIOR TO OBTAINING SALTWATER CONCENTRATIONS OF 17,000 mg/L.

13. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORK HOURS.

14. THE JOB SITE MUST BE LEFT IN A SAFE, SECURE CONDITIONS AT THE END OF EACH CONSTRUCTION WORK DAY. CLEAN UP AND REMOVE FROM THE JOB SITE ALL RUBBISH AND MAINTAIN THE PREMISES IN A CLEAN ORDERLY CONDITION AT ALL TIMES.

15. NO WORK SHALL BE DONE ON SATURDAYS, SUNDAYS, LEGAL STATE HOLIDAYS AND/OR IN EXCESS OF EIGHT HOURS EACH DAY WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

16. THE CONTRACTOR SHALL PERFORM PLUMBNESS TEST(S) AND VIDEO LOG THE WELL. DEVIATION FROM VERTICAL FOR THE CASED AND UNCASED PORTION OF THE WELL SHALL BE NO MORE THAN 6 INCHES PER ANY 100 FEET OF DEPTH. ONLY AN INSTRUMENT THAT CAN MEASURE BOTH AZIMUTH AND INCLINATION TO 0.5° AND 0.25°, RESPECTIVELY, SHALL BE ACCEPTED. A CAGE WILL NOT BE ACCEPTED.

17. SHOULD HISTORIC REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATIONS OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE STATE HISTORIC PRESERVATION DIVISION AT (808) 692–8015, WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES, IF NECESSARY.

18. THE LOCATION OF THE WELL IS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. THE ENGINEER RESERVES THE RIGHT TO CHANGE WELL LOCATION TO SUIT FIELD CONDITIONS, AT NO COST TO THE STATE.

19. THE COMPRESSIVE STRENGTH OF CONCRETE, f'c SHALL BE 3,500 PSI.

NOTES ON CONTROLS FOR LAND DISTURBANCES

1. HAR CHAPTER 11–55 APPENDIX C REQUIREMENTS THE FOLLOWING SPECIAL CONDITIONS APPLY TO ALL LAND DISTURBANCES WORK CONDUCTED UNDER THIS GENERAL PERMIT:

    A. CONSTRUCTION MANAGEMENT TECHNIQUES

    1. CLEARING AND GRUBBING SHALL BE HELD TO THE MINIMUM NECESSARY FOR GRADING AND EQUIPMENT OPERATION.

    2. CONSTRUCTION SHALL BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF THE CLEARED SURFACE AREA.

    3. CONSTRUCTION SHALL BE STAGED OR PHASED FOR LARGE PROJECTS. AREAS OF ONE PHASE SHALL BE STABILIZED BEFORE ANOTHER PHASE IS INITIATED. STABILIZATION SHALL BE ACCOMPLISHED BY TEMPORARILY OR PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF.

    4. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

    5. ALL CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY, FOR EXAMPLE, WEEKLY IN DRY PERIODS AND WITHIN TWENTY–FOUR PERIOD DURING PROLONGED RAINFALL, DAILY CHECKING IS NECESSARY. THE PERMITTEE SHALL MAINTAIN RECORDS OF CHECKS AND REPAIRS. CHECK AND REPAIRS.

    6. THE PERMITTEE SHALL MAINTAIN RECORDS OF THE DURATION AND ESTIMATED VOLUME OF STORM WATER DISCHARGE(S).

    7. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON EACH PROJECT SITE.

    B. VEGETATION CONTROLS

    1. PRE–CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED, OR DISTURBED MORE THAN TWENTY CALENDAR DAYS PRIOR TO LAND DISTURBANCE.

    2. TEMPORARY SOIL STABILIZATION WITH APPROPRIATE VEGETATION SHALL BE APPLIED ON AREAS THAT WILL REMAIN UNFINISHED FOR MORE THAN THIRTY CALENDAR DAYS.

    3. PERMANENT SOIL STABILIZATION WITH PERENNIAL VEGETATION OR PAVEMENT SHALL BE APPLIED AS SOON AS PRACTICAL AFTER FINAL GRADING. IRRIGATION AND MAINTENANCE OF THE PERENNIAL VEGETATION SHALL BE PROVIDED FOR THIRTY CALENDAR DAYS OR UNTIL THE VEGETATION TAKES ROOT, WHICHEVER IS SHORTER.

    C. STRUCTURAL CONTROLS

    1. STORM WATER FLOWING TOWARD THE CONSTRUCTION AREA SHALL BE DIVERTED BY USING APPROPRIATE CONTROL MEASURES, AS PRACTICAL.

    2. EROSION CONTROL MEASURES SHALL BE DESIGNED ACCORDING TO THE SIZE OF DISTURBED OR DRAINAGE AREAS TO DETAIN RUNOFF AND TRAP SEDIMENT.

    3. WATER MUST BE DISCHARGED IN A MANNER THAT THE DISCHARGE SHALL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE BASIC WATER QUALITY CRITERIA AS SPECIFIED IN SECTION 11–54–04.

ARCHAEOLOGICAL NOTES

1. IN THE EVENT THAT AN ARCHAEOLOGICAL OR HISTORICAL STRUCTURE WITHIN THE WORK AREA IS INADVERTENTLY DAMAGED DURING CONSTRUCTION, CEASE WORK IN THE VICINITY OF THE SITE AND NOTIFY THE DEPARTMENT OF WATER SUPPLY AND THE STATE HISTORIC PRESERVATION DIVISION (SHPD) OF THE DEPARTMENT OF LAND AND NATURAL RESOURCES OF THE DAMAGE. SHPD WILL DETERMINE THE APPROPRIATE MITIGATION MEASURES.

2. IN THE EVENT THAT A PREVIOUSLY UNKNOWN ARCHAEOLOGICAL FEATURE IS EXPOSED BY CONSTRUCTION, CEASE WORK IN THE VICINITY OF THE NEW FEATURE AND NOTIFY THE DEPARTMENT OF WATER SUPPLY, THE SHPD, AND THE HAWAII COUNTY PLANNING DEPARTMENT OF THE NEW DISCOVERY.

3. IN THE EVENT THAT PREVIOUSLY UNKNOWN HUMAN REMAINS ARE EXPOSED BY CONSTRUCTION, CEASE ALL WORK IN THE AREA OF THE REMAINS, AND PROTECT THE AREA WITH AN APPROPRIATE MATERIAL. NOTIFY THE DEPARTMENT OF WATER SUPPLY AND THE SHPD.

GOOD HOUSEKEEPING BMPS:

1. STREET SWEEPING AND VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF–SITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.

2. MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT. PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF–SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.

3. SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT A MINIMUM, ALL PROJECTS SHALL CLEAN UP ALL LEAKS AND SPILLS IMMEDIATELY.

4. HAZARDOUS MATERIALS. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.

5. NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FRO THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.

6. VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFF–SITE FACILITIES WHEN FEASIBLE, WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.

7. VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFF–SITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.

8. VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFF–SITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.

9. SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS, COLLECT SITE TRASH DAILY, AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.

10. SANITARY/SEPTIC WASTE MANAGEMENT. TEMPORARY AND PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN, WELL–MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORED NEAR THE MS4 OR RECEIVING WATERS.

11. STOCKPILE MANAGEMENT. STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS, WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT–OF–WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT.

    STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8 FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER 14, ARTICLE 15. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.

12. LIQUID WASTE MANAGEMENT. LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL–OFF BIN, OR PORTABLE TANK OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.

13. CONCRETE WASTE MANAGEMENT. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.

14. CONTAMINATED SOIL MANAGEMENT. AT MINIMUM CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHOULD BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

UNEXPLODED ORDINANCE (UXO) NOTES

1. THE HAPUNA AREA WAS A TRAINING AREA FOR THE AMERICAN MILITARY.

2. THE CONTRACTOR SHALL REVIEW THE STATE OF HAWAII DEPARTMENT OF HEALTH AREAWIDE ENVIRONMENTAL HAZARD MANAGEMENT PLAN FOR THE WAIKOLOA MANEUVER AREA. (HTTPS: //HEALTH.HAWAII.GOV/HEER/FILES/2019/11/WMAAEHMP.PDF)

3. CONTRACTOR SHALL CONSULT WITH THE ARMY CORP OF ENGINEERS AND ALL OTHER AGENCIES, AS NECESSARY, PRIOR TO THE COMMENCEMENT OF ALL WORK. THE CONTRACTOR SHALL ENGAGE A QUALIFIED MUNITIONS CONTRACTOR PERFORM A PRECONSTRUCTION AND EVALUATION AND SURVEY AT THE DRILLING SITE AND SURROUNDING AREA AT NO EXTR COST TO THE STATE.

4. EXTRA ATTENTION SHOULD BE GIVEN TO THE POSSIBILITY OF BURIED UXO'S IN THE AREA WHEN INSTALLING OR CONSTRUCTING SUBSURFACE OR GROUND PENETRATING STRUCTURES.

5. THE CONTRACTOR SHALL COMMUNICATE WITH HAWAII ONE CALL CENTER AND HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO ANY INTRUSIVE OPERATIONS.

6. IF UXO IS FOUND AND ON SITE DETONATION DISPOSAL IS REQUIRED, CONTRACTOR SHALL CONTACT THE POLICE DEPARTMENT (911) FOR RESPONSE.

7. ALL CONSTRUCTION AND DRILLING ACTIVITIES SHALL CEASE IF AN UXO IS FOUND. A 100 FT RADIUS PERIMETER SHALL BE SET UP AROUND THE AREA.

8. THE CONTRACTOR SHALL COMPLETE THE 'UXO REPORT FORM' FROM DOH ENVIRONMENTAL HAZARD MANAGEMENT PLAN.

9. SAFEGUARDING OF THE COMMUNITY, E.G., GUARDING THE ITEM, SHALL BE THE PRIME CONTRACTOR'S RESPONSIBILITY.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

KEN C. KAWAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/26

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAI'I, HAWAI'I

CONSTRUCTION NOTES

DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: NONE
APPROVED:	DRAWING NO. C–1
CHIEF ENGINEER	DATE

JOB NO. G55BH18A SHEET NO. 2 OF 7 SHEETS

WAIMEA DEEP MONITOR WELL
JOB NO. G55BH18A

Last Save by: RIT
Last Saved: 4/29/2024
Plotted on: 4/29/2024

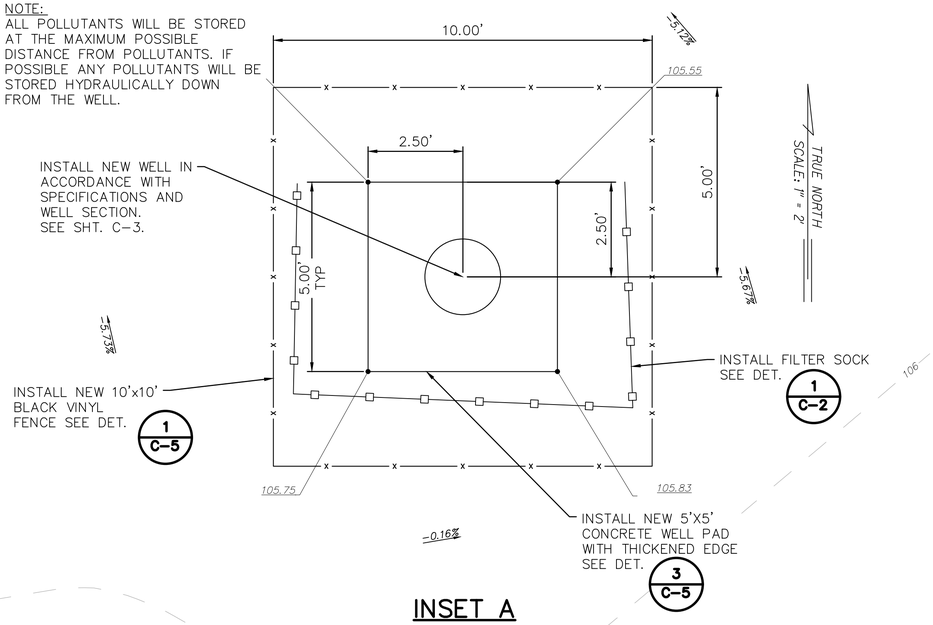
G:\DLNR2301 Waimea Deep Monitor Well\300 DSGN\310 PLANS\310–2\DLNR2301 General Notes.dwg

NOTE:
1. LOCATION OF THE WELL AND STAGING AREA SHALL BE CONFIRMED WITH ENGINEER AND ARE SUBJECT TO CHANGE BASED ON EXISTING SITE CONDITIONS.

2. THE HAPUNA AREA WAS ONCE USED AS A TRAINING AREA FOR AMERICAN MILITARY FORCES. CONTRACTOR SHALL ENGAGE A QUALIFIED MUNITIONS CONTRACTOR TO PERFORM A PRE-CONSTRUCTION AND EVALUATION AND SURVEY AT EACH SITE OF TRENCHING, SHOULD ANY UNEXPLODED ORDINANCE BE UNCOVERED, ALL WORK SHALL CEASE IN THE IMMEDIATE AREA, CALL 911, AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY. NO WORK SHALL RESUME UNTIL CLEARANCE HAS BEEN OBTAINED FROM THE ENGINEER AT NO EXTRA COST TO THE STATE.

GENERAL SITE PLAN
SCALE: 1" = 10'

NOTE:
ALL POLLUTANTS WILL BE STORED AT THE MAXIMUM POSSIBLE DISTANCE FROM POLLUTANTS. IF POSSIBLE ANY POLLUTANTS WILL BE STORED HYDRAULICALLY DOWN FROM THE WELL.



INSET A
SCALE: 1" = 2'

PLAN

1 / C-2 FILTER SOCK DETAIL
NOT TO SCALE

GRAPHIC SCALE:

2' 0 2' 4'
SCALE: 1" = 2'-0"

10' 0 10' 20'
SCALE: 1" = 10'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

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LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAI'I, HAWAI'I

GENERAL SITE PLAN

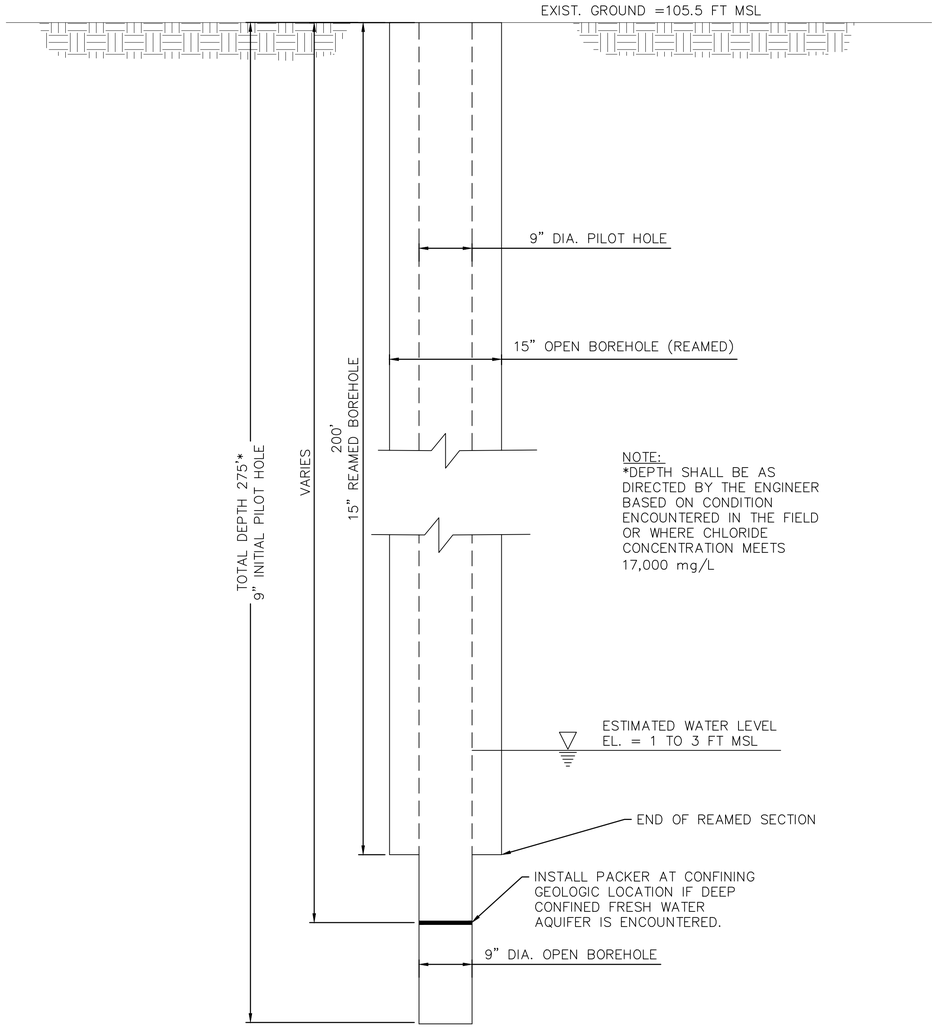
DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: AS NOTED
APPROVED:	DRAWING NO. C-2

CHIEF ENGINEER DATE

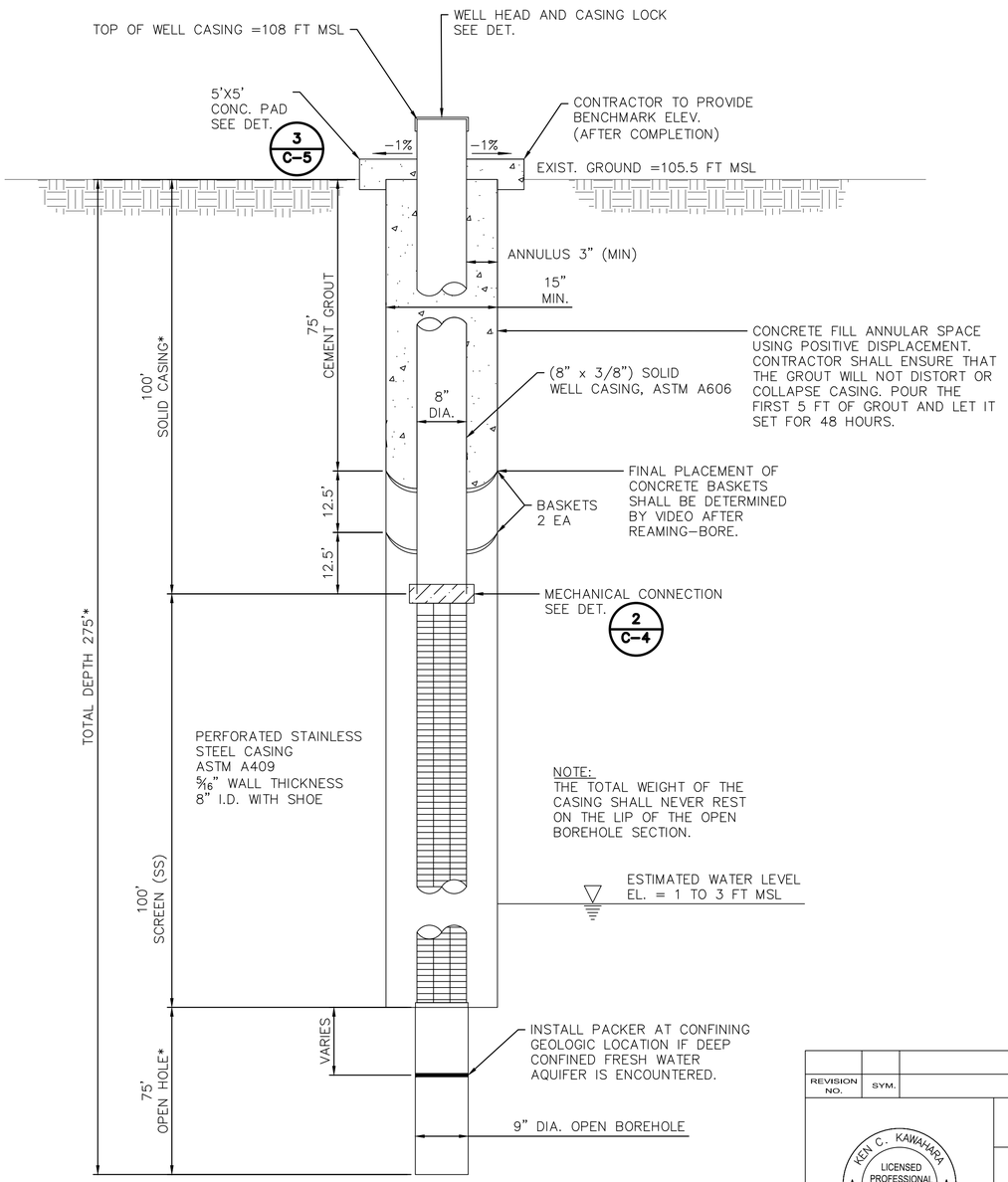
JOB NO. G55BH18A

JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL

Last Save by: RIT
Last Saved: 4/29/2024
Plotted on: 4/29/2024
G:\DLNR2301 Waimea Deep Monitor Well\300 DSGN\310 PLANS\310-2\DLNR2301 General Site Plan.dwg



1/C-3 BOREHOLE SECTION
NOT TO SCALE



2/C-3 NEW WELL SECTION
NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAI'I, HAWAI'I

WELL SECTION AND DETAILS

KEN C. KAWAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
LICENSE EXPIRES 4/30/26

DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: NOT TO SCALE

APPROVED: _____ DATE _____
CHIEF ENGINEER

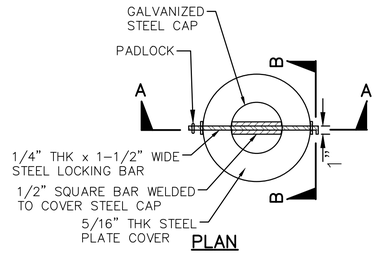
DRAWING NO. C-3

JOB NO. G55BH18A SHEET NO. 4 OF 7 SHEETS

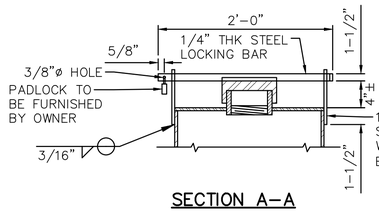
JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL

Last Save by: RIT
Last Saved: 4/29/2024
Plotted on: 4/29/2024
G:\DLNR2301 Waimea Deep Monitor Well\300 DSGN\310 PLANS\310-2\DLNR2301 Well Section and Details.dwg

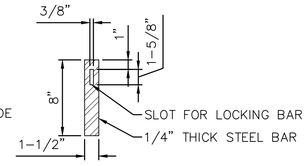
NOTE:
THE CONTRACTOR SHALL FURNISH AND INSTALL A COMBINATION LOCK FOR THE WELL CAP. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE LOCKING CAP AND BASE PAD.



PLAN

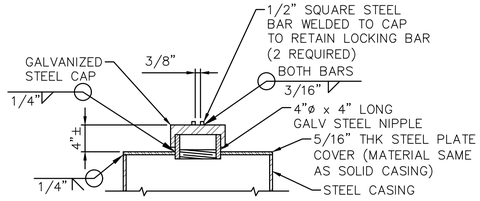


SECTION A-A

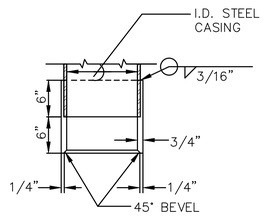


SECTION B-B

BAR CAP LOCK DETAILS

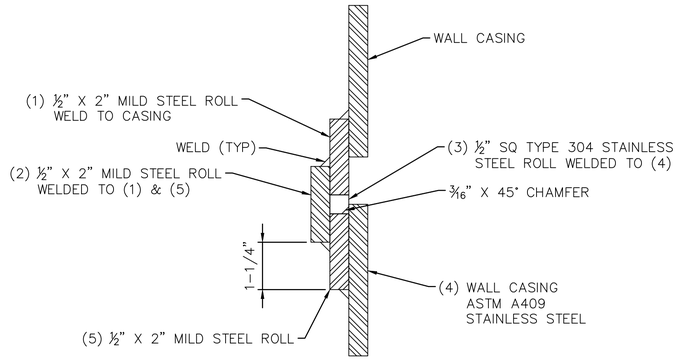


COVER DETAIL



STEEL SHOE DETAIL

1/C-4 WELL HEAD DETAIL
NOT TO SCALE



MECHANICAL CONNECTION
SOLID STEEL CASING TO STAINLESS STEEL CASING

2/C-4
NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

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No. 9148-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAI'I, HAWAI'I

WELL SECTION AND DETAILS

DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: NOT TO SCALE
APPROVED:	DRAWING NO. C-4
CHIEF ENGINEER	DATE

JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL

JOB NO. G55BH18A SHEET NO. 5 OF 7 SHEETS

Last Save by: RIT
Last Saved: 4/29/2024
Plotted on: 4/29/2024
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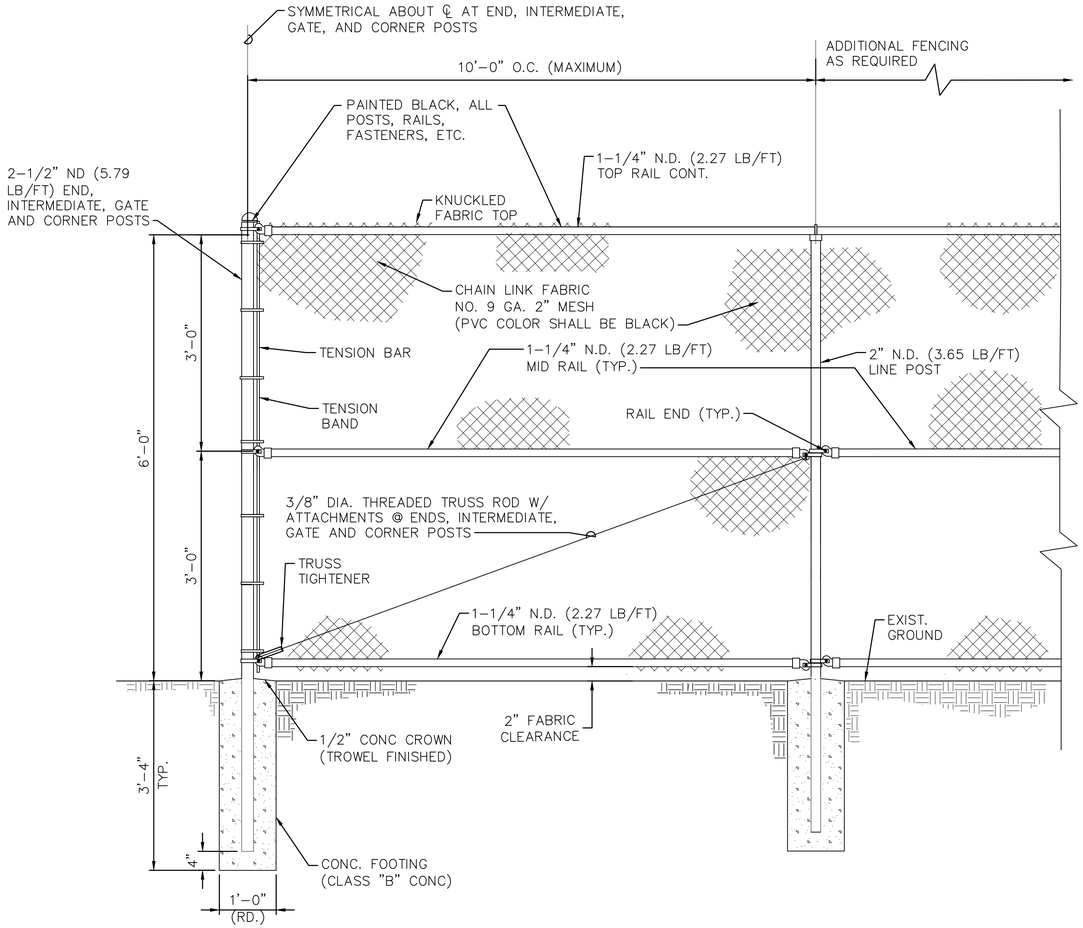
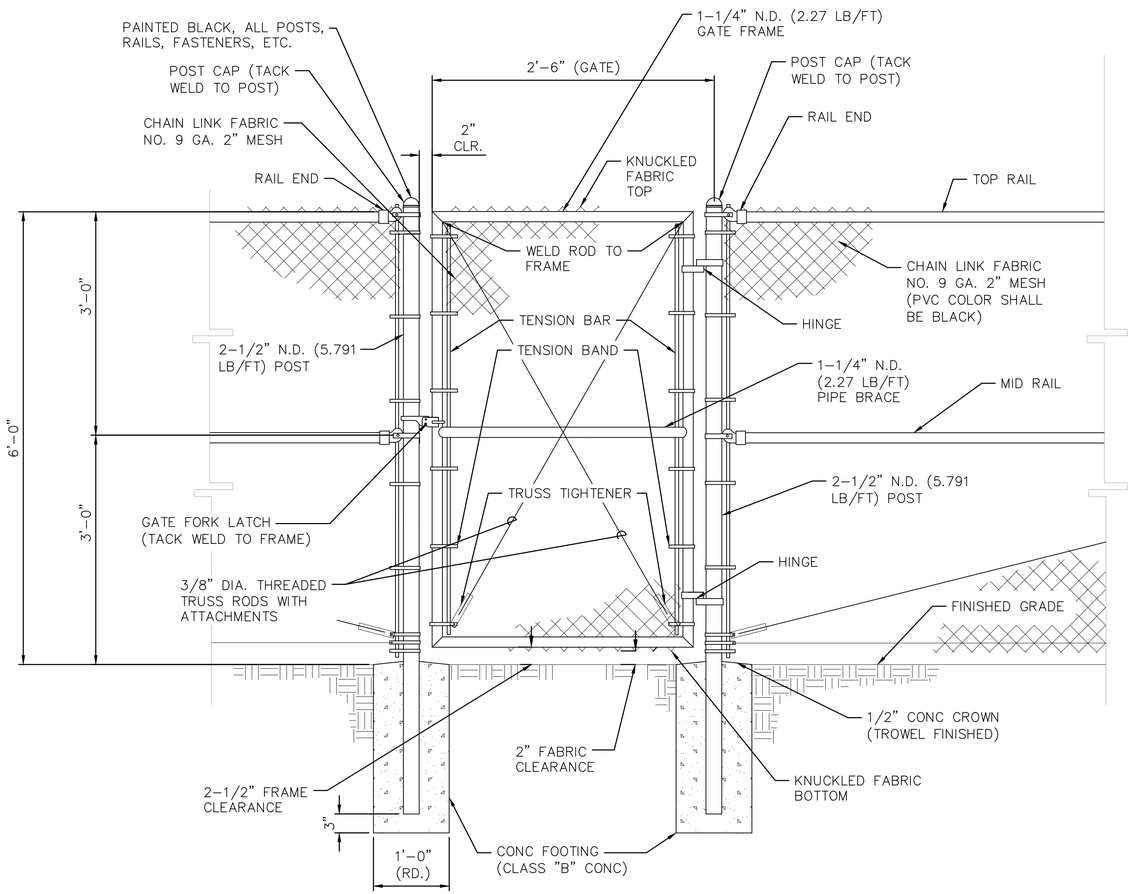


1 / C-5 — 6'–0" HIGH CHAINLINK FENCE

NOT TO SCALE

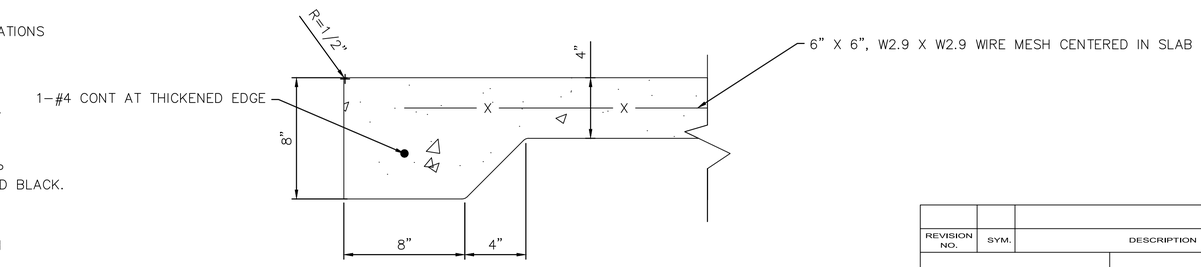


2 / C-5 — 2'–6" WALK GATE DETAIL

NOT TO SCALE

NOTES:

1. ALL PIPES AND POST SIZES ARE NOMINAL DIAMETER (N.D.).
2. GATE FRAME SHALL BE OF WELDED PIPE CONSTRUCTION. ALL WELDING SHALL CONFORM TO THE SPECIFICATIONS OF THE AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE".
3. FOR ALL WELDED CONNECTIONS: CORNERS SHALL BE MITERED AND ALL PIPE BRACES PROPERLY COPED.
4. ALL WELDED CONNECTIONS SHALL BE PAINTED WITH TWO COATS OF Z.R.C. COLD GALVANIZING COMPOUND.
5. GATE HINGES SHALL BE TACK WELDED TO GATE POSTS AND FRAMES.
6. CHAIN LINK FABRIC, PIPES, FITTINGS, FASTENERS, TRUSS ROD, POSTS AND HOG RINGS SHALL BE HOT–DIP GALVANIZED. FABRIC SHALL BE COATED WITH BLACK PVC. ALL OTHER FENCE MATERIAL SHALL BE PAINTED BLACK.
7. WIRE FASTENINGS SHALL BE NO. 12 GAUGE GALVANIZED TIE WIRE.
8. CHAIN LINK FABRIC SHALL BE CONTINUOUS AND FASTENED TO SIDE FRAME PIPES BY TENSION BARS WITH TENSION BANDS EVENLY SPACED AT 15" O.C. (MAX.).
9. CHAIN LINK FABRIC SHALL BE FASTENED TO TOP AND BOTTOM FRAME PIPES WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
10. CHAIN LINK FABRIC SHALL BE FASTENED TO TRUSS RODS WITH NO. 9 GAUGE HOG RINGS EVENLY SPACED AT 12" O.C.
11. TOP AND BOTTOM SELVAGES OF CHAIN LINK FABRIC SHALL BE KNUCKLED.
12. ALL WIRE FASTENINGS SHALL BE WRAPPED AROUND CHAIN LINK A MINIMUM OF ONE COMPLETE TURN. (HOOKING OF WIRE ENDS SHALL NOT BE PERMITTED).
13. AFTER INSTALLATION, ALL BOLT ENDS SHALL BE CUT FLUSH WITH THE NUTS AND GROUND SMOOTH.
14. THE CONTRACTOR SHALL INSTALL A COMBINATION LOCK ON THE FENCE CONSIDERED INCIDENTAL TO THE FENCE.



3 / C-5 — CONCRETE WELL PAD TYPICAL SECTION

SCALE: 1" = 5"

NOTES:

1. CONCRETE SHALL BE DWS3500
2. REINFORCING SHALL BE GALVANIZED 6" X 6", W2.9 X W2.9 WELDED WIRE MESH

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER No. 9148-C — HAWAII, U.S.A.

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LICENSE EXPIRES 4/30/26

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAII, HAWAI'I

MISCELLANEOUS DETAILS

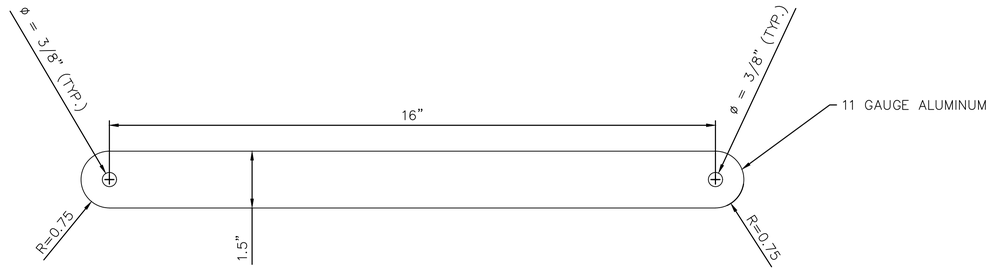
DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: NOT TO SCALE
APPROVED:	DRAWING NO. C–5
CHIEF ENGINEER	DATE

JOB NO. G55BH18A

SHEET NO. 6 OF 7 SHEETS

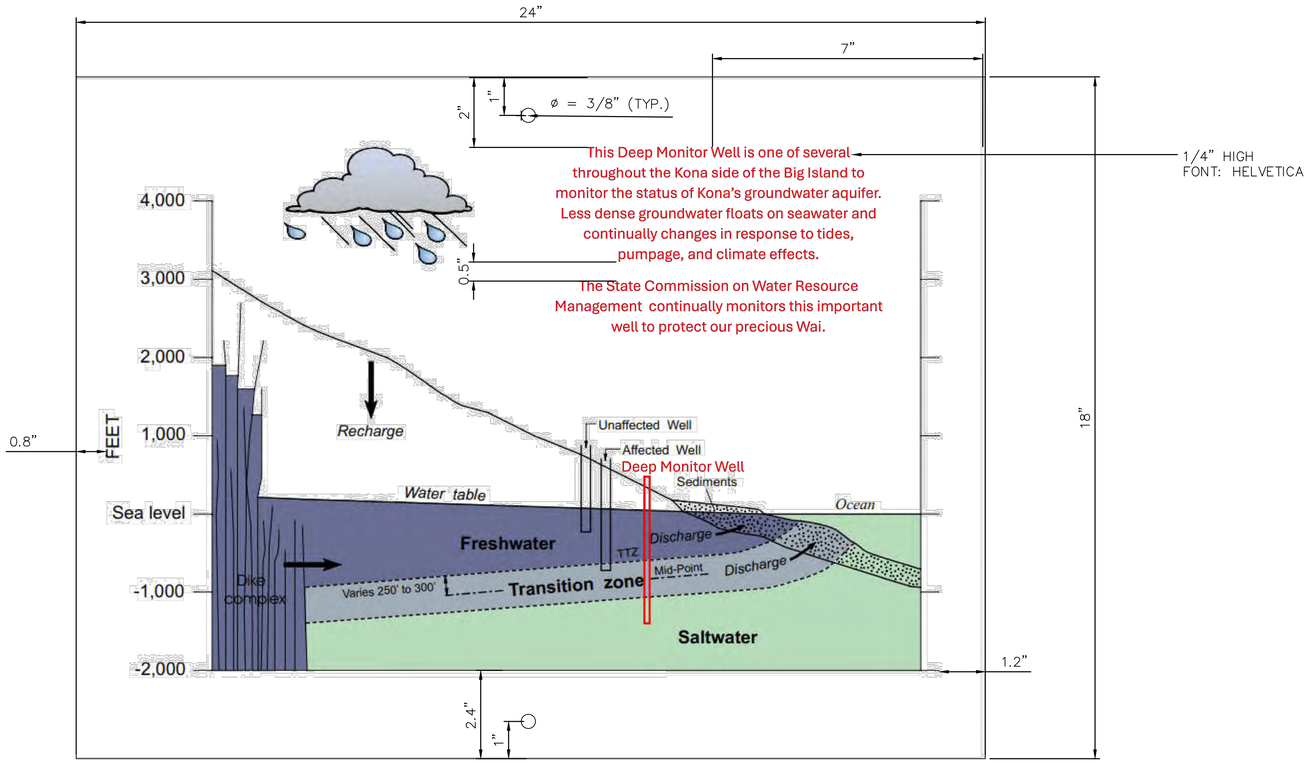
JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL

Last Save by: RIT
Last Saved: 4/29/2024
Plotted on: 4/29/2024
G:\DLNR2301 Waimea Deep Monitor Well\300 DSGN\310 PLANS\310-2\DLNR2301 Misc Details.dwg



1 / C-6 **INTERPRETIVE SIGN SUPPORT BRACKET**

SCALE 1" = 2"



2 / C-6 **INTERPRETIVE SIGN DETAIL**

SCALE: 1" = 2"

NOTE:

1. INTERPRETIVE SIGN SHALL BE PRINTED ON 0.08-INCH THICK ALUMINUM PLATE.
2. CURRENT DESIGN IS A SAMPLE. CONTRACTOR SHALL COORDINATE WITH DLNR TO DETERMINE FINAL DESIGN.
3. THE FASTENERS SHALL BE STAINLESS STEEL.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

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LICENSE EXPIRES 4/30/26

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

WAIMEA DEEP MONITOR WELL
HAWAI'I, HAWAI'I

SIGN DETAILS

DESIGNED: KCK	SUBMITTED:
DRAWN: RIT	DATE: APRIL 2024
CHECKED: WRH	SCALE: 1" = 2"
APPROVED:	DRAWING NO. C-6
CHIEF ENGINEER	DATE

JOB NO. G55BH18A SHEET NO. 7 OF 7 SHEETS

JOB NO. G55BH18A WAIMEA DEEP MONITOR WELL

Last Save by: RIT
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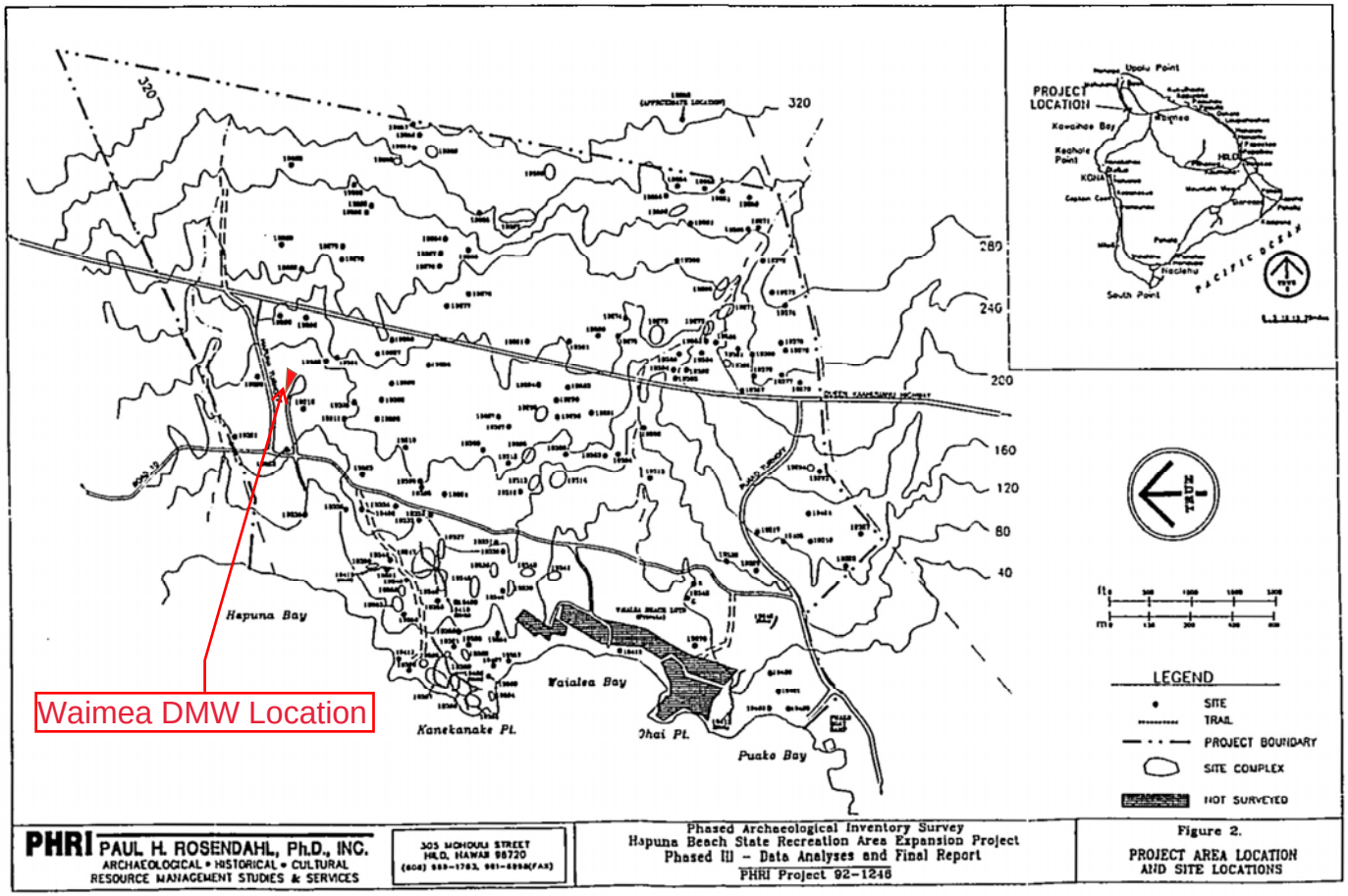

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Phased Archaeological Inventory Survey
Hapuna Beach State Recreation Area Expansion Project
Phased III – Data Analyses and Final Report
PHRI Project 92-1246

Figure 2.
PROJECT AREA LOCATION
AND SITE LOCATIONS

APPENDIX G

Phased Archaeological Inventory Survey
Hapuna Beach State Recreation Area Expansion Project
Phase III - Data Analyses and Final Report

Report 1246-011594

Phased Archaeological Inventory Survey
Hapuna Beach State Recreation Area
Expansion Project
Phase III - Data Analyses and Final Report

Land of Lalamilo
South Kohala District, Island of Hawaii

BY

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SUMMARY

At the request of Mr. Warren Harrison, of Harrison Associates, on behalf of their client, the State of Hawaii, Paul H. Rosendahl, Ph.D., Inc. (PHRI) recently conducted an archaeological inventory survey of the c. 750-acre Hapuna Beach State Recreation Area Expansion project area, located in the Land of Lalamilo, South Kohala District, Island of Hawaii. Phase I of the inventory survey was undertaken in 1990 and involved initial site identification field work (Burgett and Rosendahl 1990). The primary goal of the Phase I work was to attempt to identify all archaeological sites within the overall project area, and to determine whether any of the identified complexes might be of sufficient significance as to seriously constrain or prevent proposed park expansion and development. The Phase I work identified 259 sites and site complexes containing an estimated 627 component features. None of the sites/features were considered extraordinarily significant, and it was concluded that a mitigated negative declaration could be rendered in the EIS. The Phase I findings justified continuing with Phase II of the archaeological inventory survey program.

Phase II of the inventory survey was undertaken in 1992 and involved completion of inventory-level field work at those sites which required additional evaluation and documentation. Phase II field work reduced the total number of project area sites to 164 sites from the original figure of 259. Completion of Phase II field work was followed by preparation of an Interim Report (Dunn 1992), which explained the basis for reducing the number of project area sites.

The present project represents Phase III of the archaeological inventory survey. This phase has involved analysis of all recovered cultural materials, including site and feature distributions, as well as description and analysis of recovered portable cultural material and ecofactual remains. As noted, the overall objective of the three-phased program was to provide information appropriate to and sufficient for the preparation of an environmental impact statement (EIS) which is being prepared in conjunction with the State's proposal to expand existing park facilities.

One hundred sixty-four sites containing approximately 425 component features have been identified and recorded within the current project area. This total includes 121 of the 259 sites that had originally been identified during the Phase I survey work (Burgett and Rosendahl 1990. Of the remaining 138 previously identified sites, 13 were determined to be located outside the project area, and 30 were determined to be either wholly contemporary hunting blinds or other recreational-related features. The remaining 95 previously identified sites were either not relocated, were reinvestigated and determined not to be cultural features, or they had been destroyed during the interval between Phase I and Phase II field survey work. In addition to the 121 previously identified sites, 43 sites were newly identified and recorded during the Phase II field work.

The sites included the following feature types: adjoining C-shapes, alignment, cairn, cairn with adjoining wall, cleared area, circular alignment, circular enclosure, circular wall, C-shape, C-shape wall, C-shape with adjoining wall, depression, enclosure, enclosure with adjoining C-shape, foundation, hearth, D-shaped alignment, L-shaped wall, L-shaped alignment, midden scatter, modified outcrop, mound, overhang, parallel walls, paved area, paved terrace remnant, pylons, ramp, remnant enclosure, remnant terrace, remnant U-shape, rubble concentration, semi-circular alignment, terrace, terrace with adjoining wall, trail, trail segment, U-shape, upright stones, wall, wall remnant, and wall segment. A range of functional interpretations have been made for these formal feature types, including agriculture, fence line, habitation, hunting blind, indeterminate, marker, military, park maintenance, possible agriculture, possible ceremonial, possible marker, possible military, possible post support, possible temporary habitation, recreation, temporary habitation, trail marker, transportation, and water transportation. In some cases more than one functional interpretation was assigned to a single feature. As inferred from inventory-level data, the predominant functional activities represented appear to include temporary habitation, agriculture, habitation, and transportation (evidenced by markers, cairns and trails).

Of the 164 sites identified and recorded within or immediately adjacent to the project area, 156 are assessed as being significant or potentially significant solely for information content. However, for 138 of these sites, the present level of documentation (detailed recording of sites and features, surface collections, and limited test excavations) is considered sufficient to have recovered all of the significant information values represented by these sites, and no further archaeological data collection is warranted or recommended. Of the remaining 18 sites considered significant solely for information content, further data collection/recovery work is recommended. The remaining eight project area sites are considered significant under multiple criteria. Sites 19367 and 19368 represent two of four large coastal complex sites believed to contain permanent or semi-permanent habitation features. Both retain potentially significant information value, and both may possess feature configurations which warrant some level of preservation and interpretive development. For both of these sites, further data recovery work, followed by some level of preservation with interpretive development, has been recommended. Site 19366, as with Sites 19367 and 19368, represents a large coastal complex habitation site which retains significant information value and value as a site type. As well, this site contains two trail segments and two possible ceremonial features (Features F and J), rendering the site significant for cultural value as well. Additional data recovery work, followed by some level of preservation with interpretive development, is therefore recommended for this site.

Site 19365, as with Sites 19366, 19367 and 19368, represents a large coastal complex habitation site which retains significant information value and value as a site type. This site also contains a trail segment, rendering the site significant for cultural value. As well, this site contains two possible burial features (Features E and M). Additional data recovery work, followed by some level of preservation with interpretive development and possible preservation "as is" for any identified human remains, has been recommended for this site. Three single-component sites consisting of trails or trail segments are assessed as being significant for information value as well as culturally significant (19406, 19410, 19413). For these three sites, the present level of recording is considered sufficient to have recovered all of the significant information values represented by these sites, and no further data collection is warranted or recommended. Site 19305 consists of a modified outcrop and has been assessed as significant for residual information value as well as potentially cultural significant because the feature present may be ceremonial in nature. For this site, further data recovery work is recommended, with a provisional recommendation of preservation with interpretive development, pending the results of additional data recovery work.

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INTRODUCTION

BACKGROUND

At the request of Mr. Warren Harrison, of Harrison Associates, on behalf of their client, the State of Hawaii, Paul H. Rosendahl, Ph.D., Inc. (PHRI) recently conducted an archaeological inventory survey of the c. 750-acre Hapuna Beach State Recreation Area Expansion project area, located in the Land of Lalamilo, South Kohala District, Island of Hawaii. The present document represents the final phase of a three-phased archaeological inventory survey program.

Phase I of the inventory survey was undertaken in 1990 and involved initial site identification field work (Burgett and Rosendahl 1990). The primary goal of the Phase I work was to attempt to identify all archaeological sites within the overall project area, and to determine whether any of the identified complexes might be of sufficient significance as to seriously constrain or prevent proposed park expansion and development. The Phase I work identified 259 sites and site complexes containing an estimated 627 component features. None of the sites/features were considered extraordinarily significant, and it was concluded that a mitigated negative declaration could be rendered in the EIS. The Phase I findings justified continuing with Phase II of the archaeological inventory survey program.

Phase II of the inventory survey was undertaken in 1992 and involved completion of inventory-level field work at those sites which required additional evaluation and documentation. Phase II field work reduced the total number of project area sites to 164 sites from the original figure of 259. Completion of Phase II field work was followed by preparation of an Interim Report (Dunn 1992), which explained the basis for reducing the number of project area sites (this issue is also addressed in the Findings section of the present document).

The present project represents Phase III of the archaeological inventory survey. This Phase has involved analysis of all recovered cultural materials, including site and feature distributions, as well as description and analysis of recovered portable cultural material and ecofactual remains.

As noted, the overall objective of the three-phased program is to provide information appropriate to and sufficient for the preparation of an environmental impact statement (EIS) which is being prepared in conjunction with the State's proposal to expand existing park facilities.

SCOPE OF WORK

The basic purpose of an inventory survey is to identify — to discover and locate on available maps — all sites and features of potential archaeological significance present within a specified project area. An inventory survey is an initial level of archaeological investigation, and as such is extensive rather than intensive in scope. The primary aim of an inventory survey is to determine the presence or absence of archaeological resources within a specified project

area. A survey of this type indicates both the general nature and variety of archaeological remains present, and the general distribution and density of such remains. An inventory survey also permits a general significance assessment of identified archaeological resources and facilitates the formulation of recommendations and estimates for any *mitigation* work that might be necessary or appropriate. Such mitigation work typically includes further data collection (i.e., detailed recording of sites and features), and selected test excavations. In addition, mitigation often involves data recovery research excavations, as well as construction monitoring, interpretive planning and development, and/or preservation of sites and features with significant scientific research, interpretive, and/or cultural values.

In keeping with the primary goals of inventory surveys generally, the basic objectives of the present three-phased inventory survey program were fourfold: (a) to identify (find and locate) all sites and site complexes present within the project area; (b) to evaluate the potential general significance of all identified archaeological remains; (c) to determine the possible impacts of propcsed park expansion upon the identified remains; and (d) to define the general scope of any subsequent further data collection and/or other mitigation work that might be necessary or appropriate.

Based on a review of available background literature, on PHRI's familiarity with the general and specific project area, and the requirements of State and County review authorities, coupled with discussions with Mr. Harrison of Harrison Associates, the following specific tasks were determined to constitute an adequate and appropriate scope of work for the present inventory survey program:

1. Review archaeological and historical literature relevant to the project area, and conduct limited historical documentary research, with emphasis on readily available literature and documentary sources. As well, conduct limited interviews with any appropriate and available local informants;

2. Conduct 100% coverage, low-level (30-50 ft) aerial survey (helicopter) of the entire project area, with special emphasis on (a) following out any foot trails present and plotting them on aerial photographs and/or maps, (b) identifying all sites observed, and (c) identifying areas devoid of sites (e.g., any relatively recent lava flows and/or mechanically altered lands);

3. Conduct variable coverage (partial to 100%), variable intensity pedestrian survey of the project area in order to identify and record to inventory-level standards (a) any previously identified sites and features, and (b) any previously unidentified sites and features. Survey coverage would be based, in part, on the findings of the aerial survey;

4. Conduct limited subsurface testing (manual excavation) at selected sites and features in order to (a) determine the presence or absence of potentially significant buried cultural features or deposits, and (b) obtain suitable samples for age determination analyses;

5. Analyze background research and field data; and

6. Prepare Interim and Final Reports.

In order to ensure compliance with the rules and regulations of governmental review agencies, all aspects of the inventory survey were conducted in accordance with the standards for inventory-level survey recommended by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD). The significance of all archaeological remains identified within the project area were therefore assessed in terms of (a) the National Register of Historic Places eligibility criteria contained in the Code of Federal Regulations (36 CFR Part 60), and (b) the criteria for evaluation of traditional cultural values prepared by the national Advisory Council on Historic Preservation. DLNR-SHPD and the Hawaii County Planning Department (HCPD) use these criteria to evaluate eligibility for both the Hawaii State as well as the National Registers of Historic Places.

To further facilitate client management decisions regarding the subsequent treatment of identified resources, the general significance of all archaeological remains identified during the survey was also evaluated in terms of three PHRI Cultural Resource Management (CRM) value modes, which are derived from the above federal evaluation criteria. Sites were thus evaluated in terms of potential scientific research, interpretive, and/or cultural values. Scientific research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, past lifeways, and cultural processes at the local, regional, and interregional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation. Cultural value refers to the potential of archaeological resources for the preservation and promotion of cultural and ethnic identity and values.

PROJECT AREA DESCRIPTION

The Hapuna State Park Expansion Area consists of approximately 750 acres of land situated along the leeward (*kona*) shore of the district of South Kohala. The project area is in the coastal zone and a portion of the intermediate zone of the land unit now identified as Lālāmilo (*milo [Thespesia populnea]* branch). The project area includes portions of Hāpuna, Waiale'a, and Puako Bays, three prominent bays of South Kohala, and their immediate coastal flat lands (*ko kula kai*). Although identified as Lālāmilo today, early traditional accounts and mid-1800s land records generally identify the land as *Pua-kō* (Cane tassels or blossoms), rather than Lālāmilo. It appears that the name change had occurred by c. 1928, when territorial survey maps began identifying Lālāmilo as the land unit rather than Puakō. The circumstances surrounding this change are presently unknown.

The Phase I survey work involved a project area of approximately 700 acres. By the time the Phase II field survey work was undertaken, however, three additional areas, contiguous to the original project area and totaling approximately 50 acres, had been added. One of these areas involved an extension to the southwest portion of the original project area, involving lands adjacent to the boat ramp at Puako. The second area was located in the far northeast corner of the original project area, inland of Queen Kaahumanu Highway. The third area was in the far southeast portion of the original project area, also inland of Queen Kaahumanu Highway. These three areas had not been previously subjected to helicopter survey, but were evaluated during the Phase II field work by walking a series of pedestrian sweeps oriented north-south and east-west.

Figure 1 identifies all of the Phase I and Phase II project area lands. As finally configured, the project area is bounded along the west by the Pacific Ocean, along the north by the northern

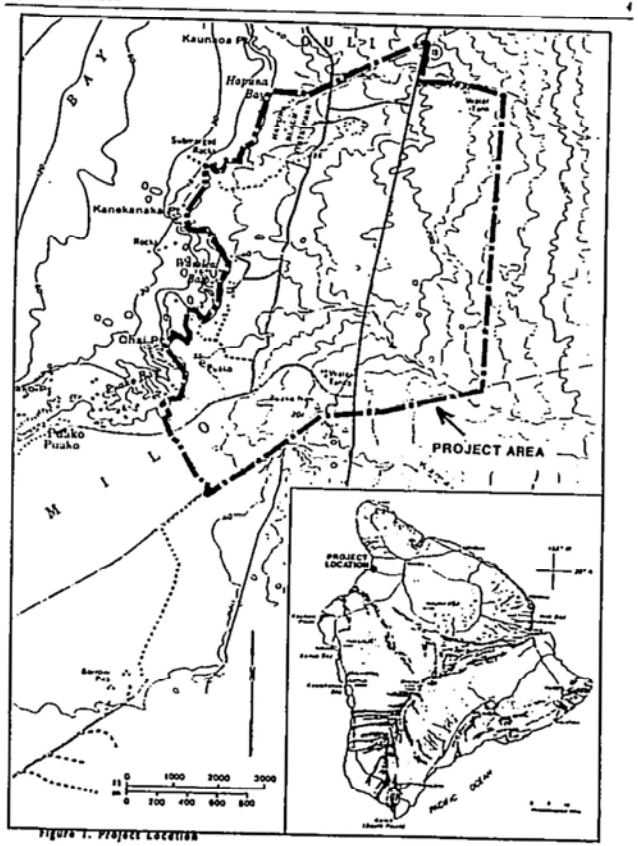


Figure 1. Project Location

portion of Hapuna Bay and the South Kohala Resort Complex, and along the south by the boundary between Lalamilo anJ Waikoloa. The eastern boundary roughly parallels Queen Kaahumanu Highway at a point c. 2,200 feet east of the highway.

The hot, dry climate of the project area is directly related to physiographic and orographic phenomena associated with the proximity and relative position of Kohala Mountain, Mauna Kea, and Mauna Loa. These land masses interrupt the moisture-laden northeast tradewinds that predominate much of the year, creating a "rain shadow" to the west and southwest. Mean annual rainfall is less than about ten inches, with approximately 75% occurring during the six-month winter season which typically starts in October-November and continues through March-April. Mean annual temperature is about 77 degrees F., with a maximum seasonal variation ranging from ca. 64 degrees to about 89 degrees F.

The geologic base of the project area consists of Pleistocene Mauna Kea flows of the upper member of the Hamakua volcanic series. These chiefly basaltic lava flows are capped by Pahala ash deposits in many areas. Extensive areas of beach sand are found along the coast, and exposures of the underlying pahoehoe lava bedrock are common throughout the project area. The limited surface water has slowed the erosion of the most prominent land forms in this area, which occur within moderately to gently sloping pahoehoe flows and are represented by collapsed blisters, small overhangs, caves, and upthrusts. As well, several ephemeral drainage channels proceed roughly east-west through the project area.

The soil within the coastal zone consists primarily of a sparse aeolian-deposited silt loam which is present on exposed pahoehoe bedrock and in some of the caves. A few of the coastal caves also contain pools of water, with strand lines revealing the maximum extent of tidal intrusion. More significant soil development has occurred within the inland portions of the project area, although even here large expanses of exposed pahoehoe are present. Generally, the principal soil is Kawaihae extremely stony very fine sandy loam (6-12% slopes).

Currently, vegetation throughout the project area, including both coastal and inland zones, is dominated by light to moderate stands of kiawe bushes and trees (*Prosopis pallida* Humb. and Bonpl. ex Willd.). Also present is the native shrub, *'ilima* (*Sida fallax* Walp.). Another introduced tree species, *koa-haole* (*Leucaena glauca* [L.] Benth.), is represented in the wetter gully bottoms, where it commingles with a variety of grasses.

Little specific information is available concerning the local marine environment. Generally, however, this section of coastline reflects only moderate development of littoral and marine habitats. Along Hapuna Bay, for example, sandy bottoms and beach segments dominate the shore. However, these features are intervened by rocky shores, sea cliffs, and boulder beaches separating Hapuna from Kaunaoa Bay to the north, and even more extensive reef development at Puako Bay to the south. These habitats generally support a variety of species of molluscs, sea urchins, seaweeds, and crustaceans that were important to the prehistoric inhabitants of the region, particularly around Puako. While the inshore waters support a diverse community of fish, echinoderms, crustaceans, and bottom-dwelling molluscs, the deeper offshore waters contain larger pelagic and bottom fishes, as they do elsewhere in West Hawaii.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Extensive archaeological research has been undertaken within West Hawaii generally, including coastal and upland portions of several land units within South Kohala, principally

Anaehoomalu, Waikoloa, Kalahuipuaa, Lalamilo, and Ouli. Some of this work is very recent and ongoing, while other studies date to the 1950's and early 1960's, and earlier. Particularly relevant to the present project area are those studies at and around Puako and adjacent lands to the south, as well as studies involving lands immediately north of the project area and north of Hapuna Bay. Also relevant are some of the studies involving inland portions of these *ahupua'a*.

Kenneth Emory in 1955 briefly investigated a number of sites at Kalahuipuaa and conducted excavations at a large shelter cave (HA-E1-342). During the same period he also excavated a cave shelter (Site H101) at Puako. Although the results of these excavations were not published, Emory's findings are summarized in Kirch's "Notes On the Excavation of Site H101, Paniau Shelter" (Kirch 1979.198). Kirch also summarizes other early investigations at Puako, including excavations conducted by Colin Smart in 1962-63 at the Puako Bay coastal midden site (HA-E3-2), as well as a 1964 Bishop Museum study of the Puako Petroglyph Fields (E3-1). Excavations at HA-E3-2 yielded portable artifacts and faunal remains but no absolute age estimates. During the study of the petroglyph field, the Bishop Museum team mapped and photographed c. 3,000 petroglyphs (ibid.).

During the survey of the Kailua-Kawaihae Road Corridor (Ching 1971), which proceeds through the eastern portion of the present project area, 665 features were recorded, several of which are believed to have been re-located during the present project. Features types encountered during this survey include dwelling caves, house platforms, rock and cave shelters, walled shelters, enclosures, burials, trails, cairns, refuge cave, *holua* slide, possible *holua* slide, abrader manufacturing areas, petroglyph areas, stone mounds, terraces, walls, unassociated firepits, storage vault, and unknown function. A total of 28 features and three complexes were encountered within the Lalamilo section of the road corridor.

Subsequently, Rosendahl (1972a) conducted salvage excavations at the three site complexes within the Lalamilo section of the road corridor, including one complex on the border of Waikoloa and Lalamilo *ahupua'a*. Rosendahl's work focused primarily on defining the nature of aboriginal residential occupation and the interrelationships among resource zones. Rosendahl's findings confirmed that the primary focus of occupation within the barren inland zone involved (a) the use of temporary shelters by people traveling between the coastal and upland zones, (b) temporary and extended residential occupation by people engaged in marine and other exploitation activities along the coast, and (c) storage facilities for marine-exploitation gear and other recurrently used possessions. The results of limited dating suggested primary use from c. AD 1500 through the post-1778 contact period (Rosendahl 1972a:iv).

In 1972, the Bishop Museum conducted a brief survey of the proposed and alternate alignments of the Puako Beach Lots Spur Road located south of the present project area (Rosendahl 1972b). Six sites were identified, briefly described, and plotted on maps. The formal feature types encountered included cairns, pavements, and walled shelters.

In 1973 and 1975, the Bishop Museum conducted an extensive two-phase archaeological survey in the *ahupua'a* of Kalahuipuaa, Waikoloa, and Lalamilo, on lands owned or leased by Mauna Lani Resorts. With the exception of privately owned lands south of Puako Bay, the survey included most of the coastal lands between the shore and the Kailua-Kawaihae Highway, from Puako in the north to Honokaope Bay near Anaehoomalu. One hundred seventy-nine sites containing approximately 449 features were recorded during the survey

(Kirch 1979:3). Fifteen of the 149 sites were located in Lalamilo. With the exception of Site E3-21, an historic cemetery, the sites appeared to be dominated by temporary habitation areas. Six of the sites were C-shape shelters, four were sites composed of more than one C-shape shelter, one was an oval structure, two were enclosures, and one was a shelter cave. All the sites were more than 300 m inland from the shoreline (Kirch 1979:3,21,22,27).

In 1975 Kirch conducted excavations at Kalahuipuaa at ten shelter cave sites containing midden deposits. The sites represented both coastal and inland environments, and the excavation sample is believed to represent approximately 70% of all midden-bearing caves within the entire 3,800 acre project area. The results of the survey and excavations later formed the basis for Kirch's (1985) synthesis of areal prehistory. The sites at Kalahuipuaa yielded age ranges indicating that occupation occurred between AD 1110-1800, with the most intensive period of occupation occurring between about AD 1500-1800 (Kirch 1979). The earliest period of occupation (AD 1100-1300) appears to have been marked by the nearly exclusive use of shelter caves. The later period saw a wider range of habitation features being utilized, including surface structures.

In 1988 Welch conducted archaeological research at the site of the Ritz-Carlton Hotel, located south of the present project area (Welch 1988a, 1988b, 1989) and within a portion of the lands previously examined by the Bishop Museum. This work provided little new information concerning site types and densities, but did provide new precautions regarding hydration rates for volcanic glass. Specifically, Welch concluded that careful consideration must be given to the source of the volcanic glass, as well as relevant temperature data, since both significantly affect rates of hydration and hence the age estimates derived from volcanic glass.

At Anaehoomalu, a number of archaeological surveys have been completed over the last two decades. By 1989, 46 sites containing 97 component features had been identified within the Waikoloa Beach Resort parcels (Jensen 1989). Jensen subsequently completed archaeological data recovery at 18 of these 46 sites, concluding that the project area was utilized as early as AD 600-700 and continued through a series of semi-discrete episodes of use which eventually ended shortly after AD 1800. Additional, intensive survey work combined with testing programs and mitigative-level data recovery excavation has been undertaken within western-most Waikoloa, adjacent to Anaehoomalu (Jensen 1988). These studies have augmented and supplemented some of the earlier findings for this area (e.g., Barrera 1971; Kirch 1975).

Closer to the present project area; a reconnaissance survey involving lands located adjacent to the Puako petroglyph fields was conducted in 1982 by Tomonari-Tuggle (1982). The survey, which involved two parcels totaling c. 15,000 sq ft, was undertaken in conjunction with a proposal by Mauni Lani Resorts to improve access to the two large Puako petroglyph fields. Two sites were identified during the survey, one being an isolated petroglyph and the second a discontinuous, low rubble wall believed to represent an historic fence foundation.

In 1984 the B.P. Bishop Museum undertook reconnaissance survey in Lalamilo, examining c. 60 acres immediately south of the Puako petroglyph fields and north of Pauoa Bay (Welch 1984). The entire area had been included in the 3,800 acres previously examined by Kirch (1975), although reexamination was required in order to ensure compliance with new state and county regulations. Welch's field work identified one modern site and six sites of possible prehistoric origin, all on pahoehoe flows. The features included cairns, stone alignments (surface shelters), and a possible burial cave. Welch's findings illustrated the restricted range of site and feature types within inland contexts.

Paniau, located at the southwestern tip of Lalamilo, has been investigated by several researchers. Kennedy (1980) reports that Emory surveyed Paniau in 1956 and mapped 34 sites. During Kennedy's 1980 survey, 24 sites were identified within the Ruddle Property boundaries. In 1990, PHRI conducted an inventory survey (Burgett and Rosendahl 1992) identifing 26 sites containing at least 47 component features. All but one of the sites were surface structures representing four permanent/semi-permanent and 15 temporary habitations. Numerous petroglyphs, several modified sinkholes, and mounds were also identified. Few features were interpreted as agricultural, supporting the notion that there was trade of subsistence products between resource areas. Adjacent to Paniau, PHRI has also undertaken inventory survey work along a proposed extension of Puako road into the Paniau development parcel. Findings similar to those encountered during the Paniau survey were described in the road extension inventory survey report (Boudreau and Graves 1993).

To the east and northeast of the project area, investigations along the Kawaihae-Mudlane Road Corridor were undertaken in the early 1970's (Barrera and Kelly 1973). This important study identified 4,561 archaeological features. The majority of these features were situated either along the coastal margin in the vicinity of Kawaihae, or in upland zones of Lalamilo. A portion of the road corridor was re-routed to preserve a unique configuration and representative examples of features known as the Lalamilo agricultural area, the core of which was subsequently designated as an historic district (Waimea Archaeological District). Subsequent investigations along the highway corridor (Clark 1981, Clark and Kirch 1983) involved excavation of selected features and further historic documentary studies. These multidisciplinary studies were designed to further evaluate aboriginal use of different environmental zones, and to establish a chronological framework for activities occurring within the various zones. Accomplishments of the research project were numerous, including description of a previously unrecognized form of aboriginal Hawaiian intensive agriculture, referred to as "supplemental irrigation".

Immediately north of the present project area and involving portions of the north end of Hapuna Beach, a number of important studies have been undertaken. Of particular relevance are the studies involving Ouli coastal lands, from the boundary separating Lalamilo from Ouli which is located at Hapuna Bay, northward along the coast to Kaunaoa Bay.

Early surveys in this area, as elsewhere within West Hawaii, were undertaken by J.E. Reinecke, who inspected the coast from Kalahuipuaa near Puako, to Kawaihae. However, Reinecke did not record any archaeological sites along this segment of shoreline. Subsequently, research by L.J. Soehren of the Bishop Museum resulted in identifying two sites in the vicinity of the bluffs north of Hapuna Beach and along Maunaoa Point. These sites later figured importantly in more extensive evaluations of these areas.

Between December 1968 and January 1969, Rosendahl conducted a more extended surface survey of this section of coastline. A total of nineteen sites and site complexes were recorded for the coastal land between Kaunaoa Bay and Hapuna Bay, and portions of Site E4-14 at Kaunaoa Point (HRHP 50-10-11-5629) were extensively tested (Rosendahl 1969).

In January 1980, Archaeological Research Center, Hawaii (ARCH) conducted an archaeological reconnaissance survey of lands under consideration for golf course expansion by Mauna Kea Land Corporation (Ching and Hammatt 1980). Approximately 18 archaeological sites were identified between Kaunaoa Bay and Kaunaoa Point. Based on previous archaeological

work and on their own reconnaissance survey, ARCH recommended "archaeological testing combined with selective excavation of sites (15 total) in the coastal portion" (Ching and Hammatt 1980:3). This work, along with additional reconnaissance survey, was conducted by ARCH early in 1980, and involved test excavations of varying extent at 16 sites (Hammatt and Folk 1980:42-45).

In December of 1981, PHRI conducted additional intensive survey and test excavations in the coastal portion of the Land of Ouli, between Hapuna Bay and Kaunaoa Bay (Rosendahl and Kaschko 1983). Of the 37 sites which had been identified in this area, subsequent testing was recommended for 15 of them. The Kaunaoa Point Complex (Site 5629) had been tested previously (Rosendahl 1969) and had already indicated potential for more extensive work.

Following the Rosendahl and Kaschko's survey and testing work along Ouli coastal lands, Walker and Rosendahl completed additional intensive survey work within the southernmost portion of the ahupua'a of Ouli (Walker and Rosendahl 1987). This work involved a 100% survey coverage of two land parcels totaling c. 95.2 acres and comprising the South Kohala Resort Complex development project lands. This work is particularly relevant to the present project area as the two properties adjoin one another. Twenty-five sites containing at least 28 component features were identified within the overall project area. Of these, six sites had been previously recorded, and 19 sites were newly identified. The range of formal feature types included platform/enclosure, L-shaped wall segment, wall segment, surface artifact/midden concentration, trail, road, terrace wall, double C-shape, C-shape, rectangular mound, cairn, boulder alignment, recent historic refuse, and historic wooden structure.

Following submission of the report on the South Kohala Resort project area (Walker and Rosendahl 1987), PHRI undertook additional inventory survey work. This involved testing potential burial features at several of the sites that had been previously located within the Mauna Kea development lands adjacent to the north side of the South Kohala Resort parcel (Rosendahl and Graves 1990). The previous inventory survey work had identified 16 features representing possible human burials. Formal types among the possible burial features included 11 platforms, three mounds, a terrace complex, and an oval rock alignment. Archaeological testing was conducted at each of the 16 features, three of which were found to contain human skeletal remains. Eighteen of the excavated test units did not yield human skeletal remains, although in several instances unsuspected cultural deposits and/or unsuspected depth of cultural deposits were documented (Rosendahl and Graves 1990:6).

Finally, limited previous research has been undertaken within the boundaries of the present project area. This work includes Reinecke's 1930 coastal survey for the Bishop Museum (Reinecke n.d.), and Yent and Griffin's (1978) survey of an earlier proposal to expand and further develop the Hapuna Beach State Park property.

During his 1930 survey for the Bishop Museum, J.E. Reinecke inspected the coast from Kalahuipuaa, near Puako, to Kawaihae, passing through the present project area. Reinecke did not, however, record any archaeological sites within the present project area, except that coastal and several branching trails are noted on his map near Puako.

In June of 1978, staff archaeologists of the Department of Land and Natural Resources conducted archaeological reconnaissance survey at Hapuna Beach State Park (Yent and Griffin 1978). The 1978 project area was considerably smaller than the present project, comprising c. 175 acres (less than 1/3 the present project's c. 750 acres) and being bounded along the east

by the old Puako Road. A total of 76 sites were identified during the survey, all of which were assigned temporary field designations (HAP #1 through #76). Extensive military-related impacts to prehistoric features was noted, and the authors commented that many of the small surface features were likely constructed during military drills and manuevers. However, the surveyors also identified native Hawaii artifact types at several of the features, including cowry shell fragments (octopus lures), echinoid scrapers, and additional items. Clearly, temporary as opposed to permanent occupation characterized most if not all of this area during prehistoric times, although no formal archaeological testing was undertaken to evaluate this assumption. Many of the sites originally identified by Yent and Griffen were relocated during the present survey work, and an appropriate correlation table is presented in the Findings section of this report.

Table 1, provides a summary of some of the research efforts reviewed above in terms of their relevance to the current project.

CULTURE-HISTORICAL SUMMARY AND SETTLEMENT PATTERNS

As noted in the discussion above, several of the previous archaeological studies of coastal, intermediate, and upland zones have established base-line data for more thorough evaluations of settlement and land use patterns in this portion of West Hawaii. The following synthesis has been generated on the basis of archaeological data from Anaehoomalu, Kalahuipuaa, Lalamilo, Ouli, Kawaihae, and Waimea. As well, the synthesis has drawn from historic documentary research for the present project area undertaken by Kepa Maly and included in the present report as Appendix D.

For the earliest time periods, it is possible to envision sporadic exploitation of the coastal and upland resources of West Hawaii by small groups who resided elsewhere most of the year, probably along the windward coast (Jensen 1989a). Indeed, the early sites in this region of West Hawaii appear to be restricted to small coastal settlements at select areas. Based on radiocarbon and volcanic glass dates, initial occupation of the region probably occurred c. AD 600 at Anaehoomalu and was restricted to temporary habitation features. Jensen (1989a), following Kirch (1975), Cordy (1971), and others, has suggested that early habitation likely emphasized use of natural caves and overhangs, as well as construction of small, simple surface features (i.e., C-shapes, small terraces, etc.).

In addition to early use of the coastal environments at Anaehoomalu (Jensen 1989a), settlements were also being established at other coastal locales. Further north in the ahupua'a of Kawaihae 2nd (Queen's Lands at Mauna Kea), radiocarbon age determinations suggest initial occupation c. AD 800-900 (Carlson and Rosendahl 1990), and in the area between Pauoa Bay and Makaiwa Bay (Mauna Lani Cove), a radiocarbon date suggesting initial settlement by c. AD 960 was reported by Jensen (Jensen 1991).

The early inhabitants of the area exploited the shorelines, shallow water areas, solution beaches, and fringing reefs of the coastal zone, although it has also been documented that terrestrial resources (i.e., birds, pigs, and dog) also supplemented their diets. There is little evidence for agricultural activity directly associated with the initial period of occupation, although areal residents may have secured vegetative nutrients from the sea (sea weed), practiced limited agriculture at select locales (if present), and/or imported vegetative items from inland zones.

Table 1. Previous Archaeological Work in Nearby Portions of South Kohala and North Kona

Year	Author	District	Ahupua'a	*Type	Institution
1930	Reinecke	General	General	R	Bishop Museum
1955	Emory	South Kohala	Lalamilo	E	Bishop Museum
1962	Smart	South Kohala	Lalamilo	E	Bishop Museum
1971	Ching	General	General	I	
1972	Rosendahl	South Kohala	Waikoloa Lalamilo	E	Bishop Museum
1972	Rosendahl	South Kohala	Lalamilo	R	Bishop Museum
1973	Barrera	South Kohala	General	I	Bishop Museum
1975	Kirch	South Kohala	Waikoloa	I,E	Bishop Museum
1979	Kirch	South Kohala	Lalamilo	E	Bishop Museum
1980	Kennedy	South Kohala	Lalamilo	I	Archaeological Consultants of Hawaii
1982	Kaschko & Rosendahl	South Kohala	Kawaihae 2 Ouli	R,H	PHRI
1982	Tomonari-Tuggle	South Kohala	Lalamilo	R	
1983	Rosendahl	South Kohala	Ouli		I PHRI
1983	Clark & Kirch	General	General	I	Bishop Museum
1984	Welch	South Kohala	Lalamilo	I	Bishop Museum
1985	Rosendahl	North Kona	Kukio 1st	R	PHRI
1988	Welch	South Kohala	Lalamilo	I,E	International Archaeological Research Institute (IARI)
1989	Welch	South Kohala	Lalamilo	I,E	IARI
1989	Jensen	South Kohala	Waikoloa	I	PHRI
1989	Jensen	South Kohala	Anaehoomalu	E	PHRI
1989	Jensen	South Kohala	Waikoloa	I	PHRI
1990	Carlson & Rosendahl	South Kohala	Kawaihae 2	I	PHRI
1990	Graves	South Kohala	Ouli	E	PHRI
1991	Jensen	South Kohala	Waikoloa	E	PHRI
1991	Dunn & Rosendahl	South Kohala	Lalamilo	I,E	PHRI
1992	Burgett, Rosendahl, & Goodfellow	South Kohala	Lalamilo	I,E	PHRI

* R = reconnaissance survey
I = intensive survey
H = historic documentation
E = excavation

Kirch proposed that the overall population of West Hawaii was relatively low and remained fairly stable until c. AD 1200, at which point a significant, steady increase began to occur (Kirch 1985:288). Prior to this time period, primary settlements may have been limited to coastal zones, as at Anaehoomalu, Queen's Land at Mauna Kea, Mauna Lani Cove, Puako/Paniau, Puako Bay, Kawaihae, etc. However, due to insufficient data, initial occupation dates for Kawaihae and Puako Bay are presently lacking.

Coeval with the beginning of population increase at c. AD 1200 may have been a shift toward increasing reliance on surface habitation structures, at least at Anaehoomalu and Kalahuipua'a (Kirch 1979), Puako/Paniau (Goodreau and Graves 1993), and within the present project area at Hapuna Beach. Cordy (1975) has proposed that this trend — increased use of surface habitation structures such as enclosures, platforms, C-shapes, terraces, and walled shelters — may reflect of increased sedentism within these coastal environments. Despite these suggested trends, subsistence was probably still largely based on marine resources, although still supplemented with collected and gathered terrestrial items. Significantly, aquacultural features (fish ponds) have been documented as present at numerous coastal locales — e.g., Anaehoomalu (Jensen 1989a) and Kalahuipua'a (Kirch 1979).

The scarcity of agricultural features at coastal sites suggests that area residents obtained agricultural products from elsewhere. It is possible that the upland agricultural complexes of Waimea, or the legendary agricultural complex at Pu'upo'o near Keamuku may have been developed during this time period, perhaps in response to or a result of the growing population proposed by Kirch (1985) and others (see Barrera 1971). This is supported by the presence of dispersed temporary habitations in the Waimea uplands, several of which have been radiocarbon dated to AD 1200 - 1500 (Clark and Kirch 1983).

This pattern of exploiting coastal resources and importing agricultural products from more upland zones may account for the temporary nature of most of the recorded sites attributed to this time period. Rosendahl (1972c) has described the behavioral consequences of this residential pattern in the form of a "shifting residence" settlement model, predicated upon mobile population units systematically moving between key environmental zones.

Through c. AD 1500, populations continued to increase and expand. Accompanying this expanding population was an increased incidence of permanent habitation structures across several environmental zones. Investigations within the Kailua-Kawaihae road corridor between Hapuna and Anaehoomalu resulted in the identification of temporary habitations, storage features, and several water diversion features, apparently used for seasonal flood-water farming (Roscodahl 1972a). Rosendahl's findings suggest that the primary focus of occupation within this otherwise "barren" zone involved (a) the use of temporary shelters by people travelling between the coastal and upland zones, (b) temporary and extended residential occupation by people engaged in marine and other exploitation activities, and (c) storage facilities for marine-exploitation gear and other recurrently used possessions. The results of dating analysis suggest initial construction of these features around AD 1500 (Rosendahl 1972a:iv).

In contrast to Rosendahl's hypothesis that populations moved between resource zones, Hommon suggests that the period of inland expansion saw concurrent occupation of coastal residences and inland sites, with the separate populations of these two areas exchanging their specialized commodities and thus creating a social trading network (Hommon 1976:258). Hommon's hypothesis may be supported by the presence of several coastal/inland trail systems

in this region (i.e., the coastal-inland Trail #8 at Mauna Kea, the Puako-Waimea and the Puako-Keamuku trails), as well as numerous coastal trails (including the Kawaihae-Puako and the Kiholo-Puako systems). Additional evidence for product exchange during this period exists at Anaehoomalu, where specialized abrader tools were manufactured in abundance. Numerous abrader basins, associated with temporary habitations, have been identified at coastal Waikoloa, Anaehoomalu, Kalahuipua'a, and the Mauna Lani Cove area (Jensen 1989a, 1991; Dunham 1987; Kirch 1979). The temporary habitation shelters associated with the abrader basins have been dated to c. AD 1400-1800 (Jensen 1991). However, it should be emphasized that both sets of data are also compatible with Rosendahl's model of population movement between resource zones.

In any case, it is clear that while shifting residence may have characterized the initial phase of population increase and population expansion, a more sedentary existence was emerging within both coastal and upland zones during the later stages of this period. Thus, between about AD 1500-1650, many of the surface habitation structures identified at Kalahuipua'a document more permanent occupation of this section of coast line (Kirch 1979). Long term/permanent occupation in the Waimea uplands is also clearly evident by c. AD 1700 (Clark and Kirch 1983). These findings clearly suggest that a major settlement pattern shift had occurred in West Hawaii by about AD 1650. As Rosendahl had earlier suggested (Rosendahl 1972c), at some point it apparently became more efficient to transport resources between the environmental zones, rather than acquiring the resources from these various zones through periodic migration of people.

This new settlement pattern is likely to have required concomitant changes in the social system. Kirch (1985) and Hommon (1976) have suggested that by AD 1700-1800 there was an elaboration of social stratification, and intensified food production and resource exploitation. The new settlement pattern may have resembled the *'ili* ohana model described by Handy and Pukui (1958).

Concurrent permanent occupation of upland and coastal environments may not have continued into the historic period. According to Kirch (1985) the population of West Hawaii began declining c. AD 1700, although Welch has identified and discussed a number of potential errors in dating and other data sources (Welch 1989:100). The issue may actually be much more complex than problems associated with dating. As Kirch notes, the growth of major economic and political centers such as Kawaihae, Waimea, and Kailua may have contributed to the population decline within more marginal zones, such as the Ouli/South Kohala region (Kirch 1985:288). Additionally, development of major prehistoric transportation routes (by sea and land) linking the major population centers may have contributed to reduced contact with coastal areas between Kailua and Kawaihae. Thus, the population decline proposed by Kirch (1985) may have actually been a population realignment, at least in the North Kona/South Kohala region.

Clearly, numerous additional questions have arisen from attempts to determine whether early historic-era populations were actually declining or increasing. Ancillary issues have included, for example, observations by Reeves (IN Clark and Kirch 1983:236) as to whether or not the drive by Kamehameha I to finance his territorial expansion may have led to the increased use of marginal lands in the Waimea area, and may have precipitated the use of supplemental irrigation systems there. Further, around AD 1791, Kamehameha I constructed the large Pu'ukohala *heiau* south of Kawaihae, an undertaking which obviously required the labor of "thousands of people encamped on the neighboring hillsides", according to Fornander (1969:2,238). The implications of these events and circumstances re. population fluctuations within the project area must also be considered.

Finally, there is no question that aboriginal Hawaiian settlement and subsistence were radically altered by the influx of Europeas following Cook's arrival (AD 1779). The Europeans introduced numerous plants and animals that not only changed the Hawaiian life style but altered the native vegetation (Newman 1970). Several introduced plants and animals were listed by Newman, including squash, melons, pumpkins, cattle, sheep, and goats. Newman also reports that overgrazing by livestock affected to some degree all of the vegetation on the island of Hawaii. Some portions, particularly the drier areas, underwent complete alteration. One of the most obvious consequences of introducing exotic plants and animals was architectural innature. The Hawaiian farmer now had to build protective walls (enclosures) around their lands to exclude animals. Evidence for this is found throughout West Hawaii (e.g., Carlson and Rosendahl 1990).

The final period of use of the project area dates from about 1941. WWII resulted in intensive activities along this section of shoreline, including construction of many small defensive outposts along ridges and elsewhere. As well, some of these features were subsequently utilized and modified, and new ones constructed, by campers and others engaged in essentially recreational activities during the past 20-30 years. Many of these features were incorporated as component features within recorded archaeological sites, both by Yent and Griffin in 1978, and during the present survey project. As discussed below, these features are evaluated and discussed separately within the Findings section, below.

FIELD METHODS AND PROCEDURES

As noted under "Scope of Work", above, field work was undertaken in two primary phases. Phase I involved a 100% coverage, low-level aerial survey of the entire project area, followed by limited pedestrian survey (Burgett and Rosendahl 1990). The purpose of Phase I was to identify and record areas of site concentration, areas which might be devoid of sites, and the general density and characteristics of sites present. This work resulted in identifying a total of 259 sites containing approximately 627 component features within or close to the project area boundaries.

The Phase I survey work was followed by Phase II inventory survey work, which involved a complete coverage, variable intensity pedestrian survey of the entire project area in order to accurately identify, further assess, and record to inventory-level standards all significant and potentially significant cultural resources located within or immediately adjacent to the project area. The findings of this second phase of field work is the subject of the present final inventory survey report.

During Phase II, the temporary site numbers assigned during Phase I were retained (i.e., site numbers prefixed with PHRI project number "855"). Sites newly identified during Phase II were assigned temporary numbers prefixed by "1245". As discussed below, the Phase I finding of 259 sites was reduced to 164 sites during Phase II. This total includes 121 of the previously identified sites ("855" sites), and 43 newly identified sites (prefixed by "1245").

During the Phase II survey work, all project area sites were plotted onto topographic and more detailed project area maps (1"= 200 ft). The sites were located using a tape, hand-held compass, and topographic landmarks within and near the project area. Sites were then recorded on standard PHRI site-record forms, scaled sketch maps were drawn, and the sites were

photographed with 35mm black-and-white film. To aid in reidentification, all features were tagged with an aluminum strip bearing the temporary site number, feature letter, PHRI project number (i.e., "92-1245"), the letters "PHRI," and the date.

As part of the inventory survey, test excavation units were placed at various features/sites in the project area. The purpose of the units was to gather information on the nature and extent of cultural deposits and to collect carbon samples for radiocarbon dating. The test units were excavated by natural layers unless cultural deposits were uncovered, in which case arbitrary levels were excavated within layers. All fill was processed through 1/8-inch mesh screens to facilitate recovery of portable artifacts and midden. Portions of structural features were dismantled as part of the test excavation work, and cross-sections were documented graphically. All soil layers encountered were described following the format used in the Soil Survey Manual (Soil Survey Staff 1962).

Table 2 provides a correlation of all known site numbers for the 164 sites which have now been formally recorded within the project area.

Table 2. Correlation of Site Numbers

*SIHP	PHRI
19250	855-003
19251	855-004
19252	855-005
19253	855-006
19254	855-007
19255	855-008
19256	855-009
19257	855-010
19258	855-011
19259	855-012
19260	855-013
19261	855-014
19262	855-016
19263	855-017
19264	855-022
19265	855-027
19266	855-028
19267	855-029
19268	855-030
19269	855-031
19270	855-034
19271	855-035
19272	855-036
19273	855-037
19274	855-038
19275	855-039
19276	855-041
19277	855-042
19278	855-043
19279	855-044
19280	855-045
19281	855-047
19282	855-049
19283	855-051
19284	855-052
19285	855-053
19286	855-054
19287	855-055
19288	855-056
19289	855-057

* *State Inventory of Historic Places (SIHP) numbers. SIHP numbers are five-digit numbers prefixed by 50-10-11 (50=State of Hawaii; 10=Island of Hawaii; 11=USGS 7.5' series quad map ["Puu Hinai, Hawaii"]).*

Numbers preceded by 855 or 1245 are PHRI temporary site numbers.

Table 2. (cont.)

SIHP	PHRI
19290	855-058
19291	855-059
19292	855-064
19293	855-069
19294	855-070
19295	855-073
19296	855-074
19297	855-075
19298	855-077
19299	855-078
19300	855-080
19301	855-081
19302	855-082
19303	855-088
19304	855-089
19305	855-092
19306	855-093
19307	855-096
19308	855-098
19309	855-100
19310	855-101
19311	855-102
19312	855-103
19313	855-106
19314	855-107
19315	855-109
19316	855-113
19317	855-115
19318	855-117
19319	855-119
19320	855-121
19321	855-122
19322	855-123
19323	855-125
19324	855-126
19325	855-127
19326	855-136
19327	855-140
19328	855-144
19329	855-149
19330	855-154
19331	855-155
19332	855-158
19333	855-160
19334	855-161
19335	855-165
19336	855-168

Table 2. (cont.)

SIHP	PHRI
19337	855-174
19338	855-175
19339	855-176
19340	855-178
19341	855-179
19342	855-185
19343	855-193
19344	855-209
19345	855-212
19346	855-213
19347	855-214
19348	855-215
19349	855-217
19350	855-221
19351	855-222
19352	855-223
19353	855-224
19354	855-226
19355	855-234
19356	855-236
19357	855-237
19358	855-241
19359	855-242
19360	855-248
19361	855-250
19362	855-251
19363	855-253
19364	855-254
19365	855-255
19366	855-256
19367	855-257
19368	855-258
19369	855-259
19370	855-260
19371	1245-261
19372	1245-262
19373	1245-263
19374	1245-264
19375	1245-265
19376	1245-266
19377	1245-267
19378	1245-268
19379	1245-269
19380	1245-270
19381	1245-271
19382	1245-274
19383	1245-275

Table 2. (cont.)

SIHP	PHRI
19384	1245-276
19385	1245-277
19386	1245-278
19387	1245-279
19388	1245-280
19389	1245-281
19390	1245-282
19391	1245-283
19392	1245-284
19393	1245-285
19394	1245-286
19395	1245-287
19396	1245-301
19397	1245-303
19398	1245-304
19399	1245-305
19400	1245-306
19401	1245-307
19402	1245-308
19403	1245-309
19404	1245-310
19405	1245-311
19406	1245-312
19407	1245-313
19408	1245-315
19409	1245-316
19410	1245-318
19411	1245-325
19412	1245-326
19413	1245-327

FINDINGS

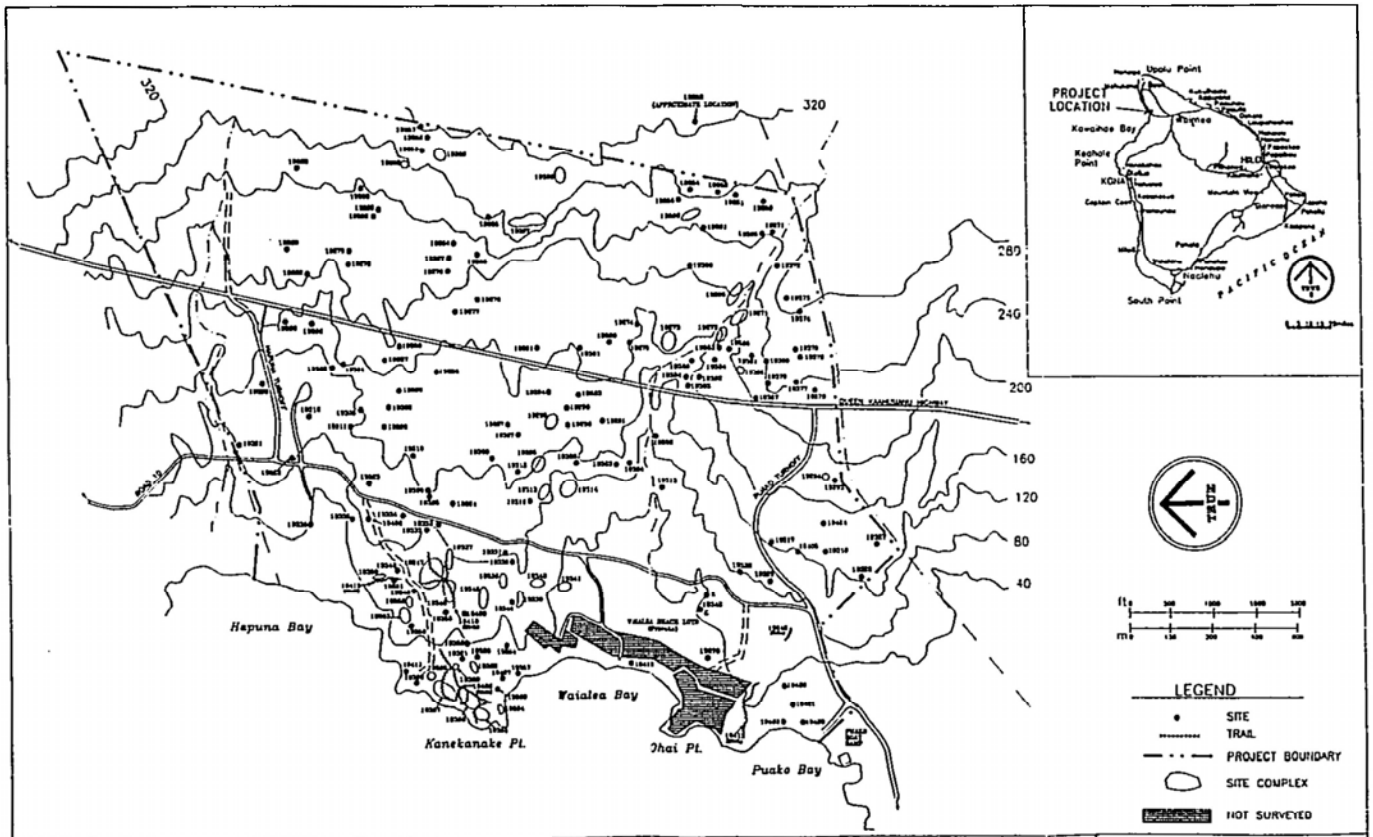
One hundred sixty-four sites containing approximately 425 component features have been identified and recorded within the current project area. This total includes 121 of the 259 sites which had originally been identified during the Phase I survey work (Burgett and Rosendahl 1990, sites prefixed with temporary number designations of "-855"). Of the remaining 138 previously identified sites, 13 were determined to be located outside the project area, and 30 were determined to be either wholly contemporary hunting blinds or other recreational-related features. The remaining 95 previously identified sites were either not relocated, were reinvestigated and determined not to be cultural features, or they had been destroyed during the interval between Phase I and Phase II field survey work. In addition to the 121 previously identified sites, 43 sites were newly identified and recorded during the Phase II field work (Dunn 1992, sites prefixed with temporary number designations of "-1245").

As part of the inventory survey, 75 shovel tests were excavated within Sites 19365, 19366, 19367, and 19368. In addition, 30 test units involving a total of 20.7 square meters of surface area were excavated at 24 features distributed among 17 separate sites. Indigenous portable artifacts collected from the excavations and surface collections include ground basalt tools, octopus lures, gourd fragments, worked marine shell, coral abraders, *puka* beads, volcanic glass flakes, and *opihi* shell scrapers, discussed below under "Data Analyses."

As will be noted in discussions below, many of the sites have been affected by bulldozing and/or "chain dragging" operations in the area. Included among the extensively impacted sites are the major coastal complexes which include most of the features believed to represent permanent as opposed to temporary habitation within the project area. Nevertheless, substantial detailed descriptive information was recovered during the inventory survey work. This information is presented in detail for the 164 sites and their 425 component features recorded to inventory-level standards in Appendix A, and is summarized in the Summary of Identified Sites and Features table (Appendix B). Site locations are shown below in Figure 2.

The descriptions in Appendix A include the following information:

1. Site number - State Inventory of Historic Places (SIHP) numbers. SIHP numbers are four-digit numbers prefixed by 50-80-06 or 10 (50=State of Hawaii; 80=Island of Oahu; 06=USGS quad map [Kahana], or 10=USGS quad map [Kaneohe]);
2. A site type designation - provides formal feature type for sites consisting of a single feature, or designates the site as a complex if the site is comprised of more than one feature. Also lists the total number of features present;
3. A description of site topography - a brief description of the terrain in the immediate vicinity of the site;
4. A listing of site vegetation - lists principal components of the vegetation at and within the vicinity of the site;
5. A statement of site condition - overall state of preservation of the site (poor, fair, good, or excellent);



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Phased Archaeological Inventory Survey
Hapuna Beach State Recreation Area Expansion Project
Phased III – Data Analyses and Final Report
PHRI Project 92-1246

Figure 2.
PROJECT AREA LOCATION
AND SITE LOCATIONS

6. An assessment of the site integrity - degree of post abandonment modification by human agencies (unaltered, partially altered, and completely altered) and the nature of modifications, if any;

7. A probable age indicates probable/possible (?) age of the site (i.e. historic or prehistoric);

8. A functional interpretation - probable or possible function(s) for each site; or, if a function cannot be determined, assigns an indeterminate function. For sites with multiple possible functions, the functions are separated by "/";

9. A site description - a brief overall description of the site listing types of constituent features, portable remains present, if any, and other site data; and

10. Feature dimensions - maximum length, width, and height or depth. Dimensions are immediately followed by a description of feature construction, associated portable remains, and other descriptive information.

SURFACE FINDINGS

A total of 164 sites have been identified in the project area (see Figure 2). Of this total, 104 (63.4%) consist of single structural features, with the remaining 60 (36.6%) representing complexes of two or more features. Several of the coastal complexes contain accumulated cultural deposits at and around fairly substantial habitation features and feature remnants, all of which appear to represent permanent habitation dating to prehistoric through early historic time periods. The largest of this group of permanently occupied coastal sites (Site 13366) contains a total of 28 separately identified features and feature remnants.

Despite the extensive impacts which have occurred to many of the sites/features, a fairly wide range of formal feature types could be defined on the basis of surface observations of feature architecture and construction techniques. These formal types include adjoining C-shapes, alignment, cairn, cairn with adjoining wall, cleared area, circular alignment, circular enclosure, circular wall, C-shape, C-shape wall, C-shape with adjoining wall, depression, enclosure, enclosure with adjoining C-shape, foundation, hearth, D-shaped alignment, L-shaped wall, L-shaped alignment, midden scatter, modified outcrop, mound, overhang, parallel walls, paved area, paved terrace remnant, pylons, ramp, remnant enclosure, remnant terrace, remnant U-shape, rubble concentration, semi-circular alignment, terrace, terrace with adjoining wall, trail, trail segment, U-shape, upright stones, wall, wall remnant, and wall segment.

A range of functional interpretations have been made for these formal feature types, including agriculture, fence line, habitation, hunting blind, indeterminate, marker, military, park maintenance, possible agriculture, possible ceremonial, possible marker, possible military, possible post support, possible temporary habitation, recreation, temporary habitation, trail marker, transportation, and water transportation. In some cases more than one functional interpretation was assigned to a single feature.

As inferred from inventory-level data, the predominant functional activities represented appear to include temporary habitation, agriculture, habitation, and transportation (evidenced by markers, cairns and trails). Clearly, exploitation of the area's marine resources, coupled with agricultural activity within gulch areas, while operating from both permanently occupied feature complexes as well as temporarily occupied sites, represent important activities for Native Hawaiian occupants of the region. Equally clearly, however, is the fact that a variety of non-subsistence-related, non-indigenous, post-1940's activities are also represented among the project area's cultural resource base.

Indeed, extensive "noise" was introduced into the data by the fact that the exigencies of site recording required that both indigenous as well as non-indigenous features were grouped together at many of the individually recorded sites. This intermixing of components rendered many of the resultant site complexes behaviorally meaningless. In order to neutralize this effect — i.e., in order to be able to evaluate prehistoric and early historic patterns of land use and settlement — it was necessary to *segregate* Native Hawaiian from non-Native Hawaiian components, and, once segregated, to treat each group of features as an independent data base. This task was accomplished simply by creating two separate feature summary tables based upon inferred feature function.

Table 3 provides a listing of 188 of the project area's 425 recorded features distributed among 111 recorded sites. These features represent post-1940's activities, including features constructed during episodes of military training at Hapuna, and fully modern activities such as hunting, State Park maintenance, and recreation. A variety of formal feature types are represented in this group of 188 components, including especially mounds, C-shapes, cairns, walls, modified outcrops, and enclosures. The frequencies of occurrence of these various formal types are summarized in Table 4. As noted above, the functional assignments made on the basis of associated artifacts and/or architectural details suggest that these features represent 1940's and more recent activities. Approximately 24 features are believed to represent modern hunting blinds or probable hunting blinds, while an additional 110 features have been assigned a "military" function, or probable military function. Additional feature types include cairns believed to represent fence post supports, or ground supports for posts which stabilized military tarps or covers, as well as 17 small surface habitation features lacking typical indigenous midden remains but containing modern artifacts. These latter features have been assigned a temporary habitation function, although cultural affiliation is considered to be military. Also represented are modern water transportation features ("pylons"), as well as flattened "staging" areas which are believed related to Hapuna Beach State Park maintenance activities. An additional 15 features (primarily mounds and modified outcrops) could not be assigned a function with any degree of certainty, but the absence of typical indigenous midden debris suggests likely military or contemporary affiliation. The frequencies of occurrence of the various functional types are summarized in Table 5.

Many, but not all, of these features were mapped to inventory-level standards, during which representative dimensional data was obtained for each of the sub-types identified. Available metric information is summarized in Table 3, while additional descriptive detail is provided in Appendix A.

Lastly, during the process of evaluating feature function, one of these features was subjected to subsurface archaeological testing. A single shovel test pit (ST-D8) was excavated within Feature A mound at Site 19367. No cultural materials were identified or recovered, and architectural details of the feature led to the conclusion that it probably represents post-indigenous activities.

Table 3. Summary of Non-Indigenous Components, Grouped by Inferred Feature Function

Inferred Feature Function	SIHP	PHRI T#	Feat	Formal Feature Type	Fea. Length	Fea. Width	Fea. Ht-Depth
Hunting Blind	19250	855-003	A	C-shape	2.1	1.95	0.41
Hunting Blind	19250	855-003	B	C-shape	1.9	1.25	0.35
Hunting Blind	19251	855-004	-	C-shape			
Hunting Blind	19252	855-005	-	C-shape			
Hunting Blind	19254	855-007	-	C-shape			
Hunting Blind	19392	1245-284	-	C-shape			
Hunting Blind	19269	855-031	-	Wall			
Hunting Blind	19272	855-034	A	Wall	17.3	0.7	0.16
Hunting Blind	19272	855-036	B	Wall	7.5	0.3	0.35
Hunting Blind	19348	855-215	C	Wall	2.3	1.25	0.42
Hunting Blind	19381	1245-271	-	Wall			
Hunting Blind	19384	1245-276	-	Wall			
Hunting Blind	19386	1245-278	-	Wall			
Hunting Blind	19387	1245-279	-	Wall			
Hunting Blind	19393	1245-285	-	Wall			
Hunting Blind	19394	1245-286	-	Wall			
Sub-total = 16							
Hunting Blind/Military	19253	855-006	A	C-shape	1.9	1.3	0.7
Hunting Blind/Military	19253	855-006	B	C-shape	1.85	1.45	0.41
Hunting Blind/Military	19292	855-064	-	C-shape			
Hunting Blind/Military	19322	855-042	-	Modified outcrop			
Hunting Blind/Military	19350	855-221	A	H-shape	7.25	3.3	0.16
Hunting Blind/Military	19268	855-030	-	Wall			
Hunting Blind/Military	19285	855-053	-	Wall			
Hunting Blind/Military	19325	855-127	-	Wall			
Sub-total = 8							
Military	19276	855-041	-	Alignment			
Military	19325	855-125	-	Alignment			
Military	19345	855-212	E	Alignment	10.7	0.75	0.41
Military	19287	855-055	-	C-shape			
Military	19295	855-071	D	C-shape	2.9	2.4	0.45
Military	19293	855-076	-	C-shape			
Military	19320	855-121	A	C-shape	4.3	1.8	0.5
Military	19331	855-122	-	C-shape			
Military	19332	855-158	-	C-shape			
Military	19346	855-213	B	C-shape	5.2	3.3	0.45
Military	19346	855-213	E	C-shape	3.3	1.6	0.4
Military	19352	855-223	A	C-shape			
Military	19352	855-223	B	C-shape			
Military	19352	855-223	C	C-shape			
Military	19352	855-223	D	C-shape			
Military	19352	855-223	E	C-shape			
Military	19353	855-224	A	C-shape			

Table 3. (cont.)

Military	19353	855-224	B	C-shape			
Military	19353	855-224	C	C-shape			
Military	19353	855-224	D	C-shape			
Military	19353	855-224	E	C-shape			
Military	19355	855-234	D	C-shape	1.9	1	0.35
Military	19366	855-256	V	C-shape	4	1.4	0.35
Military	19284	855-052	-	C-shape wall			
Military	19256	855-009	-	Cairn			
Military	19257	855-010	-	Cairn			
Military	19259	855-012	A	Cairn	0.6	0.6	0.36
Military	19259	855-012	B	Cairn	1	0.8	0.4
Military	19260	855-013	A	Cairn	1.2	1	0.4
Military	19260	855-013	C	Cairn	0.96	0.98	0.38
Military	19264	855-022	A	Cairn	1.3	0.8	0.3
Military	19264	855-022	B	Cairn	0.6	0.45	0.2
Military	19335	855-037	C	Cairn	0.6		0.35
Military	19283	855-051	-	Cairn			
Military	19290	855-058	-	Cairn			
Military	19306	855-093	C	Cairn	0.8	0.3	0.3
Military	19310	855-100	-	Cairn			
Military	19311	855-102	-	Cairn			
Military	19346	855-213	C	Cairn	1.4	1.2	0.3
Military	19355	855-234	A	Cairn	1	1	0.35
Military	19395	1245-287	E	Cairn	0.65	0.6	0.41
Military	19395	1245-287	F	Cairn	0.62	0.51	0.36
Military	19301	855-081	-	Circular enclosure			
Military	19265	855-016	-	Depression			
Military	19396	1245-301		Depression			
Military	19298	855-077	A	Enclosure	3	3	0.3
Military	19346	855-213	G	Enclosure	4.1	2.9	0.33
Military	19346	855-213	N	Enclosure			
Military	19397	1245-303	E	Enclosure	5.5	5.1	0.18
Military	19298	855-077	B	L-shape wall	1.9	1.6	0.4
Military	19278	855-045	-	Modified outcrop			
Military	19350	855-221	B	Modified outcrop	2.8	1.3	0.32
Military	19397	1245-303	B	Modified outcrop	2.6	2.2	0.3
Military	19397	1245-303	C	Modified outcrop	1.5	1	0.32
Military	19397	1245-303	D	Modified outcrop	1.5	2.2	0.3
Military	19398	1245-304	B	Modified outcrop	1.8	1.1	1.1
Military	19255	855-008	-	Mound			
Military	19258	855-011	A	Mound	2	2	0.6
Military	19258	855-011	B	Mound	1	0.9	0.2
Military	19260	855-013	B	Mound	1.6	1	0.41
Military	19267	855-029	-	Mound			
Military	19303	855-082	-	Mound			
Military	19341	855-179	C	Mound	1	1	0.15
Military	19346	855-213	H	Mound	1	1.25	0.16

Table 3. (cont.)

Military	10395	1245-287	G1	Mound	15.5	8.5	
Military	10395	1245-287	G2	Mound	15.5	8.5	
Military	10395	1245-287	G3	Mound	15.5	8.5	
Military	10395	1245-287	G4	Mound	15.5	8.5	
Military	10395	1245-287	G5	Mound	15.5	8.5	
Military	10395	1245-287	G6	Mound	15.5	8.5	
Military	10395	1245-287	G7	Mound	15.5	8.5	
Military	10395	1245-287	G8	Mound	15.5	8.5	
Military	10398	1245-304	D	Parallel walls	2.1	0.5	0.47
Military	10289	855-087	-	Ramp			
Military	10397	1245-303	G	Road bed	3.75	6.75	1.2
Military	10270	855-034	-	Rubble concentration			
Military	10397	1245-303	A	Rubble concentration	2.7	2.3	0.41
Military	10286	855-054	-	Terrace			
Military	10324	855-125	B	Wall	1.1	0.7	0.29
Military	10324	855-126	C	Wall	2	0.35	0.4
Military	10395	1245-287	A	Wall	3.6	1.1	0.49
Military	10395	1245-287	B	Wall	2.5	1.1	0.47
Military	10397	1245-303	F	Wall	10	4	0.5
Military	10396	1245-304	A	Wall	3.5	1	0.9
Military	10275	855-073	B	Mound	2	2	0.3
Military	10317	855-115	B	Mound			
Military	10338	855-125	A-02	Mound			
Military	10336	855-125	A-03	Mound			
Military	10336	855-125	A-04	Mound			
Military	10338	855-125	A-05	Mound			
Military	10338	855-125	A-06	Mound			
Military	10338	855-125	A-07	Mound			
Military	10338	855-125	A-08	Mound			
Military	10338	855-125	A-09	Mound			
Military	10338	855-125	A-10	Mound			
Military	10338	855-125	A-11	Mound			
Military	10336	855-125	A-12	Mound			
Military	10338	855-125	A-13	Mound			
Military	10338	855-125	A-14	Mound			
Military	10338	855-125	A-15	Mound			
Military	10338	855-125	A-16	Mound			
Military	10338	855-125	A-17	Mound			
Military	10338	855-125	A-18	Mound			
Military	10338	855-125	A-19	Mound			
Possible military	10300	855-259	-	[illegible]			
Possible military	10385	1245-274	A	Modified outcrop	2.5	1.8	0.35
Possible military	10308	855-038	-	Mound			
Possible military	10345	855-212	J	Mound	1.2	1.8	0.42
Possible military	10273	855-037	B	Upright stones	0.16	0.7	0.35
Possible military	10307	855-036	-	Wall			
Sub-total = [illegible]							

Table 3. (cont.)

Military/agriculture	10346	855-231	B	U shape	3.3	2.75	0.3
Possible agriculture/military	10345	855-212	F	Terrace	3.4	2.3	0.36
Sub-total = 2							
Temp. habitation/military/hunting blind	10327	855-140	-	Terrace			
Temporary habitation/hunting blind	10316	855-113	-	Circular enclosure			
Temporary habitation/military	10337	855-174	B	C shape	2.7	2	0.2
Temporary habitation/military	10337	855-174	H	C shape			
Temporary habitation/military	10346	855-213	D	C shape	3.5	2.75	0.3
Temporary habitation/military	10346	855-213	E	C shape	3.25	3.25	0.47
Temporary habitation/military	10346	855-213	G	C shape	2.8	3	0.45
Temporary habitation/military	10317	855-115	C	C shape w/adjoining wall	7.5	3	
Temporary habitation/military	10335	855-174	A	Enclosure	3.75	3.9	0.28
Temporary habitation/military	10337	855-172	B	Enclosure	2.6	2.31	0.32
Temporary habitation/military	10337	855-174	C	Enclosure	3	2.5	0.48
Temporary habitation/military	10341	855-195	A	Enclosure	6.5	4.5	0.5
Temporary habitation/military	10344	855-207	-	Enclosure w/adjoining C shape	4	3.25	0.92
Temporary habitation/military	10370	855-236	H	Modified outcrop	4	6.75	0.3
Temporary habitation/military	10348	855-215	A	Terrace	5	3.5	0.43
Temporary habitation/military	10348	855-215	B	Terrace	5	5	0.28
Temporary habitation/military	10341	855-195	B	U shape	7.5	7.5	1
Sub-total = 17							
Post support	10345	855-212	B	Cairn	1.6	1.4	0.93
Post support	10346	855-212	C	Cairn	2	2	0.81
Possible post support	10315	855-102	A	Cairn	1.2	1.1	0.34
Possible post support	10315	855-100	D	Cairn	1	0.85	0.35
Possible post support	10281	855-047	B	Modified outcrop	0.5	0.67	0.35
Possible post support/agriculture	10315	855-100	C	Cairn	1.3	1.1	
Possible post support/agriculture	10315	855-102	D	Cairn	0.9	0.8	0.38
Possible post support/agriculture	10315	855-102	E	Cairn	1.1	0.9	0.32
Possible post support/agriculture	10315	855-102	F	Cairn	0.51	0.3	0.27
Possible post support/agriculture	10315	855-102	H	Cairn	0.9	0.6	0.31
Sub-total = 10							
Water transport	10291	855-059	A1	Pylon	15.3	1.42	1.52
Water transport	10291	855-059	A2	Pylon	15.3	1.42	1.52
Water transport	10291	855-059	A3	Pylon	15.3	1.42	1.52
Water transport	10291	855-059	B1	Pylon	15.6	0.9	1.21
Water transport	10291	855-059	B2	Pylon	15.6	0.9	1.21
Water transport	10291	855-059	B3	Pylon	15.6	0.9	1.21
Sub-total = 6							
Path maintenance	10310	855-101	A	Terrace	3.4	1.3	0.3
Path maintenance	10310	855-101	B	Terrace	3	0.7	0.3
Sub-total = 2							

Table 3. (cont.)

Table 4. Frequencies of Formal Feature Types—Non-Indigenous Components

Formal Type	Number	%	SIHP
Mound	46	24.5	19255,19258(A,B), 19260(B),19267,19288, 19295(B),19300(A,B), 19302,19308,19317(B), 19331,19338(A2-A19), 19341(C),19345(H,J,K), 19346(M),19367(A,B), 19395(G1-G8)
C-shape	34	18.1	19250(A,B),19251,19252, 19253(A,B),19254,19287, 19292,19295(D),19299 19320(A),19321,19332, 19337(D,H),19346(B,D,E, L,O,Q),19352(A-E), 19353(A-E),19355(B), 19366(V),19392
Cairn	28	14.9	19256,19257,19259(A,B), 19260(A,C),19264(A,B), 19273(C),19283,19290, 19306(C),19309,19311, 19315(A-H),19346(C), 19349(B,C),19355(A), 19395(E,F)
Wall	21	11.2	19268,19269,19272(A,B), 19285,19307,19324(B,C), 19343,19346(P),19348(C), 19381,19384,19386,19387, 19393,19394,19395(A,B), 19397(F),19398(A)
Modified outcrop	13	7.0	19277,19278,19281(B), 19320(B),19322,19338(F), 19339(B,D),19382(A), 19397(B,C,D),19398(B)
Enclosure	8	4.3	19298(A),19337(A,B,C), 19341(A),19346(G,N), 19397(E)
Terrace	8	4.3	19286,19310(A,B),19327, 19345(P),19348(A,B), 19367(O)
Pylon	6	3.2	19291(A1-A3,B1-B3)

Table 4. (cont.)

Formal Type	Number	%	SIHP
U-shape	4	2.1	19337(G),19341(B), 19350(A,B)
Alignment	3	1.6	19276,19323,19345(L)
Circular enclosure	3	1.6	19301,19316,19330
Depression	2	1.1	19262,19396
Rubble concentration	2	1.1	19270,19397(A)
Wall segment	1	0.5	19325
C-shape w/adjoining wall	1	0.5	19317(C)
Enclosure w/adjoining C-shape	1	0.5	19344
C-shape wall	1	0.5	19284
Foundation	1	0.5	19369
L-shape wall	1	0.5	19298(B)
Parallel walls	1	0.5	19398(D)
Ramp	1	0.5	19289
Roadbed	1	0.5	19397(G)
Upright stones	1	0.5	19273(B)
Total	188	100.0	

Table 5. Frequencies of Functional Feature Types—Non-Indigenous Components

Function Type	No.	%	SIHP
Military	83	44.1	19255,19256,19257, 19258(A,B),19259(A,B), 19260(A-C),19262, 19264(A,B),19267,19270, 19273(C),19276,19278, 19283,19284,19286,19287, 19289,19290,19295(D), 19298(A,B),19299,19301, 19302,19306(C),19309, 19311,19320(A,B),19321, 19323,19324(B,C),19341(C), 19345(L),19346(B,C,G,L-N), 19352(A-E),19353(A-E), 19355(A,B),19366(V), 19395(A,B,E,F,G1-G8), 19396,19397(A-G), 19398(A,B,D)
Military clearing piles	20	10.6	19295(B),19319(B), 19338(A2-A19)
Hunting blind	16	8.5	19250(A,B),19251,19252 19254,19269,19272(A,B), 19348(C),19381,19384, 19386,19387,19392 19393,19394
Indeterminate	15	8.0	19288,19300(A,B), 19315(G),19322,19331, 19337(G),19338(F), 19339(D),19345(J,K), 19346(P),19367(A,B,O)
Temporary habitation/military	15	8.0	19317(C),19337(A-D,H), 19339(B),19341(A,B), 19344,19346(D,E,O), 19348(A,B)
Hunting blind/military	8	4.3	19253(A,B),19268,19277, 19285,19292,19325, 19350(A)
Possible military	7	3.7	19273(B),19307,19308, 19332,19345(H),19369, 19382(A)

Table 5. (cont.)

Function Type	No.	%	SIHP
Water transport	6	3.2	19291(A1-A3,B1-B3)
Possible post support/ agriculture	5	2.7	19315(C-F,H)
Possible post support	3	1.6	19281(B),19315(A,B)
Park maintenance	2	1.1	19310(A,B)
Post support	2	1.1	19349(B,C)
Agriculture/military	1	0.5	19330
Fenceline	1	0.5	19343
Military/agriculture	1	0.5	19350(B)
Possible agriculture/military	1	0.5	19345(P)
Temporary habitation/ hunting blind	1	0.5	19316
Temp. habitation/military/ hunting blind	1	0.5	19327
Total	188	99.9	

The modern/contemporary features represented in the 188 features summarized above are clearly not significant for information value, per eligibility criteria of the National Register of Historic Places. The features dating to about 1940 and which are believed to be related to WWII training and maneuvers represent features of potential information value. However, in all cases these military features exhibit limited to no residual information value — i.e., significant quantities of portable cultural material have simply not accumulated at them. Further, none of these features exhibit unique architectural attributes or unusual construction detail. In view of the absence of significant information values, these features are not further discussed or evaluated in this report, except that relevant treatment options have been entered in Appendix B (Summary of Identified Sites and Features), and Table 14 (Summary of General Significance Assessments and Recommended General Treatments).

Table 6 summarizes the second primary grouping of cultural features within the project area, in this case representing Native Hawaiian use and occupation. As further summarized in Table 7, a range of formal feature types is represented among the 237 features in this group, dominated by terraces (49, 20.7%), C-shapes (36, 15.2%), modified outcrops (27, 11.4%), enclosures (20, 8.4%), cairns (15, 6.3%), and walls (11, 4.6%). The remaining 79 (33.4%) project area features attributed to indigenous activities include a few examples each of 29 additional formal types (see Table 7).

Tentative functional assignments have been made for all but four of the 237 indigenous features (see Table 8). The predominant functional categories are temporary habitation (104, 43.9%), agriculture (39, 16.5%), and habitation (29, 12.2%). Combined, these three functions encompass 172 (c. 72.6%) of the 237 features representing Native Hawaiian presence and occupation within the project area. The remaining 65 functional categories identified in Tables 6 and 8 represent 27.4% of the total, and include possible agriculture (23, 9.7%), marker (17, 7.2%), transportation (8, 3.4%), hearth (or possible recreational features) (7, 2.9%), possible ceremonial (3, 1.3%), possible burial (2, 0.8%), and indeterminate (4, 1.7%).

Habitation Features

As noted above, 37 features are believed to represent habitation, possible habitation, or habitation in direct association with agriculture (see Table 6). Terraces, enclosures, and paved areas represent the most frequently occurring associated formal feature types, although also present are a number of slight variations on these forms, as well as midden and artifact scatters.

This functional assignment was based on the presence or absence of a number of attributes, including (a) accumulated cultural deposits (consisting of food remains [midden], surface-occurring artifacts, or both), and (b) an evaluation of the structural complexity of the feature and details of construction. It should be noted, however, that existing data allow only a preliminary evaluation of function, and it is possible that some assignments could change given additional data from one or more of the features.

While habitation was not the most common function represented within the project area, it is in fact represented in a significant percentage of the features (37, or about 15.6%, of the 237 indigenous features). Significantly, the distribution of habitation features was generally predictable on the basis of existing models of prehistoric and historic patterns of land use and settlement. Throughout much of the dry, leeward coastal zone of West Hawaii, habitation features are frequently concentrated in the vicinity of brackish water ponds or fresh-water seeps near areas which also exhibit good coastal or off-shore fishing. The present project area is no

Table 6. Summary of Indigenous Components, Grouped by Inferred Feature Function

Inferred Feature Function	SHAP	FEATU	Fea	Site Function	Formal Feature Type	Length	Width	Thickness
Agriculture	19363	855-255	D	Complex (13)	Mound	15	1	0.35
Agriculture	19343	855-252	O	Complex (14)	C shape	1.9	2.7	0.53
Agriculture	19359	855-242	-	C-shape	C-shape			
Agriculture	19366	855-256	Y	Complex (28)	Cleared area	4.5	3.5	0.41
Agriculture	19366	855-256	Z	Complex (28)	Cleared area	1.5	1	0.33
Agriculture	19366	855-256	AA	Complex (28)	Cleared area	0.8	0.4	0.1
Agriculture	19366	855-256	BB	Complex (28)	Cleared area	1.75	1.5	0.26
Agriculture	19328	855-144	C	Complex (2)	Modified outcrop	0.5	1.9	1.1
Agriculture	19349	855-257	D	Complex (4)	Modified outcrop	2	0.7	0.46
Agriculture	19354	855-226	C	Complex (3)	Modified outcrop	0.8	2	0.35
Agriculture	19374	1245-266	D	Complex (4)	Modified outcrop	0.9	0.75	0.6
Agriculture	19360	1245-270	-	Modified outcrop	Modified outcrop			
Agriculture	19382	1245-274	B	Complex (3)	Modified outcrop	1.2	1.25	0.4
Agriculture	19383	1245-273	-	Modified outcrop	Modified outcrop			
Agriculture	19360	855-248	C	Complex (5)	Mound	5.5	4.5	0.65
Agriculture	19293	855 069	-	Terrace	Terrace			
Agriculture	19306	855-093	F	Complex (7)	Terrace	3.5	2.5	0.32
Agriculture	19306	855 093	G	Complex (7)	Terrace	1.75	1.25	0.14
Agriculture	19328	855-144	A	Complex (2)	Terrace	16.5	12	0.6
Agriculture	19340	855-178	C	Complex (5)	Terrace	5.5	3.5	0.86
Agriculture	19340	855 178	E	Complex (5)	Terrace	7	4.5	1.28
Agriculture	19341	855-179	E	Complex (4)	Terrace	4	4	0.15
Agriculture	19345	855-212	F	Complex (14)	Terrace	4	2.2	0.37
Agriculture	19345	855-212	M	Complex (14)	Terrace	4.2	2.2	0.3
Agriculture	19345	855-212	N	Complex (14)	Terrace	4.5	4.4	0.38
Agriculture	19354	855-226	B	Complex (3)	Terrace	1.8	3	0.3
Agriculture	19362	855-231	C	Complex (4)	Terrace	2.6	0.5	
Agriculture	19362	855-231	B	Complex (4)	Terrace	2.5	1.75	0.41
Agriculture	19363	855-253	-	Terrace	Terrace			
Agriculture	19366	855-256	W	Complex (28)	Terrace	33.5	10.5	0.32
Agriculture	19367	855-257	H	Complex (12)	Terrace	2.5	1.4	0.46
Agriculture	19368	855-258	C1	Complex (9)	Terrace	6.5	6.5	0.45
Agriculture	19368	855-258	C2	Complex (9)	Terrace			
Agriculture	19368	855-258	C3	Complex (9)	Terrace			
Agriculture	19398	1245-304	C	Complex (4)	Terrace	3.75	2	0.36
Agriculture	19400	1245-306	-	Terrace	Terrace			

Table 6. (cont.)

Agriculture	19313	855-106	F	Complex (5)	Wall	12	1	0.4
Agriculture	19362	855-231	D	Complex (4)	Wall	2.3	0.7	0.5
Agriculture	19367	855-257	G	Complex (12)	Wall	5.4	1.1	0.26
Possible agriculture	19377	1245-267	A	Complex (2)	Alignment	5.1	1	
Possible agriculture	19378	855-171	D	Complex (25)	C-shape	1.2	0.8	0.22
Possible agriculture	19338	855-171	h	Complex (25)	Circular alignment	0.75	0.5	0.13
Possible agriculture	19295	855 073	E	Complex (5)	Modified outcrop	0.95	0.8	0.2
Possible agriculture	19345	855-212	O	Complex (14)	Modified outcrop	4.3	1	0.6
Possible agriculture	19377	1245-267	B	Complex (2)	Modified outcrop	0.6	0.5	0.44
Possible agriculture	19385	1245 277	-	Modified outcrop	Modified outcrop			
Possible agriculture	19388	1245-280	A	Complex (3)	Modified outcrop	1.1	0.4	1.18
Possible agriculture	19388	1245-280	C	Complex (3)	Modified outcrop	0.7	0.4	0.56
Possible agriculture	19390	1245-282	-	Modified outcrop	Modified outcrop			
Possible agriculture	19395	1245-287	C	Complex (14)	Modified outcrop	12.9	1.4	0.35
Possible agriculture	19271	855-037	D1	Complex (2)	Terrace			
Possible agriculture	19271	855 037	D2	Complex (2)	Terrace			
Possible agriculture	19271	855 037	D3	Complex (2)	Terrace			
Possible agriculture	19273	855 037	D4	Complex (2)	Terrace	4	3	0.3
Possible agriculture	19281	855-047	H	Complex (4)	Terrace	4.7	3.9	0.4
Possible agriculture	19306	855 093	H	Complex (7)	Terrace	10.5	1.2	0.44
Possible agriculture	19347	855 211	C	Complex (12)	Terrace	2	0.74	0.34
Possible agriculture	19360	855 248	E	Complex (5)	Terrace	1	2.5	0.8
Possible agriculture	19374	1245-264	-	Terrace	Terrace			
Possible agriculture	19382	1245-274	C	Complex (3)	Terrace	5.61	3.2	0.5
Possible agriculture	19388	1245-280	B	Complex (3)	Terrace	2.2	0.65	0.4
Possible agriculture	19400	1245 306	-	Terrace	Terrace			
Sub-total = 62								
Temporary habitation	19295	855 073	C	Complex (5)	Adjoining C shapes	6.5	5	0.85
Temporary habitation	19313	855-106	B	Complex (5)	Adjoining C shapes	4	3.5	0.7
Temporary habitation	19317	855-145	A	Complex (4)	Adjoining C shapes	7.25	2.5	
Temporary habitation	19360	855-248	D1	Complex (5)	Alignment	3	1	0.6
Temporary habitation	19361	855-250	D2	Complex (2)	Alignment			
Temporary habitation	19361	855-250	D3	Complex (2)	Alignment			
Temporary habitation	19361	855-250	D4	Complex (2)	Alignment			
Temporary habitation	19361	855-250	D1	Complex (2)	Alignment	1.8	0.9	0.35
Temporary habitation	19296	855-071	A	Complex (2)	C-shape			0.35
Temporary habitation	19304	855 089	-	C shape	C shape			

Table 6. (cont.)

Temporary habitation	19306	855-093	D	Complex (7)	C-shape	84	29	0.43
Temporary habitation	19312	855-103	E	C-shape	C-shape	2.23	1.5	0.3
Temporary habitation	19313	855-106	A	Complex (5)	C-shape	2.63	1.9	0.35
Temporary habitation	19313	855-106	D	Complex (5)	C-shape	2.23	2.5	0.45
Temporary habitation	19314	855-107	D	Complex (6)	C-shape	2.5	2.75	0.24
Temporary habitation	19314	855-107	E	Complex (6)	C-shape	2.15	2.65	
Temporary habitation	19314	855-107	F	Complex (6)	C-shape			
Temporary habitation	19314	855-107	H	Complex (6)	C-shape	3.6	1.9	0.36
Temporary habitation	19317	855-115	D	Complex (4)	C-shape			
Temporary habitation	19326	855-136	-	C-shape	C-shape			
Temporary habitation	19329	855-149	A	Complex (2)	C-shape	3.2	2.3	0.48
Temporary habitation	19329	855-149	B	Complex (2)	C-shape	1.75	2.45	0.5
Temporary habitation	19336	855-168	-	C-shape	C-shape			
Temporary habitation	19337	855-174	G	Complex (8)	C-shape			0.27
Temporary habitation	19337	855-174	F	Complex (8)	C-shape			
Temporary habitation	19340	855-178	B	Complex (5)	C-shape	84	25	0.3
Temporary habitation	19340	855-178	D	Complex (5)	C-shape	3.65	2.15	0.35
Temporary habitation	19342	855-185	G	Complex (2)	C-shape	1.6	2	0.28
Temporary habitation	19346	855-213	Q	Complex (12)	C-shape	9.75	2.5	0.35
Temporary habitation	19347	855-214	D	Complex (15)	C-shape	4.5	4.5	0.24
Temporary habitation	19347	855-214	I	Complex (15)	C-shape	8.6	6	0.24
Temporary habitation	19347	855-214	J	Complex (15)	C-shape	1.95	1.4	0.3
Temporary habitation	19347	855-214	K	Complex (15)	C-shape	2.35	2	0.21
Temporary habitation	19347	855-214	L	Complex (15)	C-shape	3	2.1	0.4
Temporary habitation	19347	855-214	M	Complex (15)	C-shape	3	1.9	0.31
Temporary habitation	19347	855-214	Q	Complex (15)	C-shape	2	2.5	0.24
Temporary habitation	19370	855-260	-	C-shape	C-shape			
Temporary habitation	19371	1245-261	-	C-shape	C-shape			
Temporary habitation	19378	1245-264	A	Complex (2)	C-shape	4.5	0.9	0.38
Temporary habitation	19378	1245-264	D	Complex (2)	C-shape	3	3	0.4
Temporary habitation	19347	855-214	A	Complex (15)	C-shape w/adjoining wall	10.88	4.7	0.27
Temporary habitation	19391	1245-283	D	Complex (2)	Circular alignment	2	1.75	0.37
Temporary habitation	19294	855-070	D	Complex (4)	Circular enclosure	4.75	3.5	0.66
Temporary habitation	19330	855-154	-	Circular enclosure	Circular enclosure			
Temporary habitation	19343	855-212	B	Complex (14)	Circular wall	3.6	2.9	0.36
Temporary habitation	19343	855-212	D	Complex (14)	Circular wall	3.2	2.5	0.44
Temporary habitation	19293	855 073	A	Complex (5)	Enclosure	3	0.5	0.2
Temporary habitation	19306	855 093	A	Complex (7)	Enclosure	5	0.5	0.48

Table 6. (cont.)

Temporary habitation	19313	855-106	C	Complex (5)	Enclosure	2.25	1.85	
Temporary habitation	19339	855-176	B	Complex (3)	Enclosure	4.8	4	
Temporary habitation	19345	855-212	C	Complex (14)	Enclosure	3.6	3.2	0.44
Temporary habitation	19345	855-212	E	Complex (14)	Enclosure	2.8	3.6	0.56
Temporary habitation	19347	855-214	N	Complex (15)	Enclosure	3	2	0.24
Temporary habitation	19347	855-214	O	Complex (15)	Enclosure			
Temporary habitation	19361	855-250	A	Complex (2)	Enclosure			
Temporary habitation	19362	855-251	A	Complex (4)	Enclosure	4.5	3.75	0.4
Temporary habitation	19294	855-070	C	Complex (4)	Enclosure w/adjoining C-shape	5.5	4	0.84
Temporary habitation	19338	855-175	C	Complex (23)	L-shape	3.5	3	0.45
Temporary habitation	19347	855-214	P	Complex (15)	L-shape	1.6	4	0.38
Temporary habitation	19314	855-107	D	Complex (6)	L-shape alignment	6.5	7	0.21
Temporary habitation	19314	855-107	G	Complex (6)	L-shape alignment	2.75	1.6	0.77
Temporary habitation	19318	855-117	-	Modern water	Modern water			
Temporary habitation	19395	1245-287	D	Complex (11)	Modern water	4	3	
Temporary habitation	19265	855 027	-	Modified enclosure	Modified enclosure			
Temporary habitation	19273	855 037	A	Complex (7)	Modified enclosure	1.2	1.1	0.6
Temporary habitation	19319	855-119	-	Modified enclosure	Modified enclosure			
Temporary habitation	19333	855-160	-	Modified enclosure	Modified enclosure			
Temporary habitation	19334	855-161	-	Modified enclosure	Modified enclosure			
Temporary habitation	19338	855-175	D	Complex (23)	Modified enclosure	4	2.6	0.38
Temporary habitation	19356	855 216	D	Complex (7)	Modified enclosure	2.75	0.5	0.45
Temporary habitation	19360	855-248	A	Complex (5)	Modified enclosure	7	2.7	0.36
Temporary habitation	19360	855-248	D	Complex (5)	Modified enclosure	5.5	3	0.3
Temporary habitation	19376	1245-266	A	Complex (4)	Overhang	2.6	2.6	1.4
Temporary habitation	19340	855-178	A	Complex (5)	Rectangular alignment	6	4	0.3
Temporary habitation	19318	855-175	A1	Complex (23)	Remnant enclosure wrecked out	1.9	1.85	0.4
Temporary habitation	19303	855 088	-	Rubble cemented stone	Rubble cemented stone			
Temporary habitation	19266	855 028	-	Terrace	Terrace			
Temporary habitation	19356	855-236	F	Complex (2)	Terrace	9	1.5	0.25
Temporary habitation	19357	855-237	-	Terrace	Terrace			
Temporary habitation	19358	855-241	-	L-shaped terrace	Terrace			
Temporary habitation	19376	1245-266	C	Complex (4)	Terrace	4.2	1.6	0.8
Temporary habitation	19389	1245-281	-	Terrace	Terrace			
Temporary habitation	19294	855-070	A	Complex (4)	Terrace w/adjoining wall	8	4	0.75
Temporary habitation	19294	855-070	D	Complex (4)	Terrace w/adjoining wall	10.75	3	0.75
Temporary habitation	19335	855-163	-	U-shape	U-shape			
Temporary habitation	19346	855-213	A	Complex (12)	U-shape			

Table 6. (cont.)

Temporary habitation	19347	855-214	D	Complex (15)	U-shape	4.2	2.2	0.24
Temporary habitation	19354	855-226	A	Complex (3)	U-shape	3.9	3.7	0.6
Temporary habitation	19376	1245-266	B	Complex (4)	U-shape	1.4	2	0.63
Temporary habitation	19281	855-047	C	Complex (4)	Wall	4	1	0.84
Temporary habitation	19306	855-093	B	Complex (7)	Wall			
Temporary habitation	19342	855-185	A	Complex (2)	Wall	9.3	3	1.22
Temporary habitation	19347	855-214	E	Complex (15)	Wall	4	1	0.53
Temporary habitation	19391	1245-283	A	Complex (2)	Wall	4.5	3.25	0.3
Temporary habitation	19296	855-074	D	Complex (2)	Wall segment	2.8	0.75	0.53
Possible temporary habitation	19404	1245-310	-	Circular enclosure	Circular enclosure			
Possible temporary habitation	19373	1245-263	-	Rubble concentration	Rubble concentration			
Sub-total = 87								
Habitation	19366	855-256	E	Complex (28)	C-shape	4	2.5	0.8
Habitation	19366	855-256	G	Complex (28)	Circular alignment	2.5	2	0.22
Habitation	19366	855-256	P	Complex (28)	Circular enclosure	2.5	2.8	0.55
Habitation	19365	855-255	A	Complex (13)	Enclosure	10.5	8	0.75
Habitation	19366	855-256	A	Complex (28)	Enclosure	3.8	5.3	0.5
Habitation	19366	855-256	D	Complex (28)	Enclosure	3	2	0.58
Habitation	19366	855-256	I	Complex (28)	Enclosure	2.5	1.5	0.35
Habitation	19366	855-256	O	Complex (28)	Enclosure	5	4.35	0.7
Habitation	19366	855-256	U	Complex (28)	Enclosure	1.5	3.25	0.11
Habitation	19401	1245-307	-	Enclosure	Enclosure			
Habitation	19408	1245-315	-	Enclosure	Enclosure			
Habitation	19366	855-256	T	Complex (28)	Midden concentration	5.5	2.5	0.3
Habitation	19151	855-222	-	Midden scatter	Midden scatter			
Habitation	19365	855-255	Q	Complex (13)	Modified outcrop	2.5	0.5	0.64
Habitation	19367	855-257	K	Complex (12)	Modified outcrop	3.9	3.3	1.02
Habitation	19367	855-257	J	Complex (12)	Paved area	6.65	5.2	0.24
Habitation	19368	855-258	G	Complex (9)	Paved area	6.3	4.7	
Habitation	19368	855-258	L	Complex (9)	Paved area	3	1.8	
Habitation	19365	855-255	P	Complex (13)	Terrace	6.5	3.5	1
Habitation	19365	855-255	I	Complex (13)	Terrace	6	5.5	0.7
Habitation	19365	855-255	O	Complex (13)	Terrace	14	9.5	
Habitation	19366	855-256	L	Complex (28)	Terrace	3	1.5	0.18
Habitation	19366	855-256	M	Complex (28)	Terrace	5	3	0.5
Habitation	19366	855-256	R	Complex (28)	Terrace	5	5.5	0.4
Habitation	19367	855-257	M	Complex (12)	Terrace	4.7	2.55	0.5

Table 6. (cont.)

Habitation	19368	855-258	E	Complex (9)	Terrace	3	2	0.23
Habitation	19367	855-257	D	Complex (12)	U-shape	6.1	5.5	0.8
Habitation	19367	855-257	E	Complex (12)	U-shape	2.75	2	0.65
Habitation	19367	855-257	F	Complex (12)	U-shape	7.9	6.5	0.65
Habitation	19366	855-256	B	Complex (28)	Wall	5.5	2	0.54
Habitation	19367	855-257	L	Complex (12)	Wall	2.35	1.75	0.41
Habitation	19402	1245-308	-	Wall	Wall			
Possible habitation	19403	1245-309	-	Enclosure	Enclosure			
Possible habitation	19364	855-254	C	Complex (2)	Paved terrace	2.4	1.6	0.2
Possible habitation	19399	1245-305	-	Terrace	Terrace			
Possible habitation	19366	855-256	C	Complex (28)	Wall	2.8	1.4	0.46
Habitation/agriculture	19349	855-217	A	Complex (4)	Enclosure	2.5	3.3	0.73
Sub-total = 37								
Marker	19261	855-014	-	Cairn	Cairn			
Marker	19263	855-017	-	Cairn	Cairn			
Marker	19271	855-035	A	Complex (2)	Cairn	1.41	1.18	1.02
Marker	19271	855-035	B	Complex (2)	Cairn	1.9		1.2
Marker	19274	855-038	-	Cairn	Cairn			
Marker	19275	855-039	-	Cairn	Cairn			
Marker	19280	855-045	-	Cairn	Cairn			
Marker	19281	855-047	A	Complex (4)	Cairn	1.2	1.16	0.82
Marker	19282	855-049	-	Cairn	Cairn			
Marker	19297	855-075	-	Cairn	Cairn			
Marker	19366	855-256	N	Complex (28)	Cairn	1.1	0.9	0.62
Marker	19372	1245-262	-	Cairn	Cairn			
Marker	19373	1245-263	-	Cairn	Cairn			
Marker	19379	1245-269	-	Cairn	Cairn			
Marker	19407	1245-313	-	Cairn w/wall	Cairn w/abutting wall			
Marker	19279	855-044	-	Mound	Mound			
Sub-total = 16								
Possible ceremonial	19366	855-256	J	Complex (28)	D-shape alignment	5	2	0.26
Possible ceremonial	19305	855-092	-	Modified outcrop	Modified outcrop			
Possible ceremonial	19366	855-256	F	Complex (28)	Mound	2	1.5	0.56
Sub-total = 3								

Table 6. (cont.)

Possible burial	19365	855-255	M	Complex (13)	Mound	2.3	2.5	0.7
Possible burial	19365	855-255	E	Complex (13)	Terrace	3	3	0.59
Sub-total = 2								
Hearth/possible recreation	19364	855-254	D	Complex (2)	Hearth	0.8	0.75	0.08
Hearth/possible recreation	19366	855-256	CC	Complex (28)	Hearth	1.4	1.1	0.27
Hearth/possible recreation	19368	855-258	D	Complex (9)	Hearth	1.5	1.2	0.43
Hearth/possible recreation	19368	855-258	M	Complex (9)	Hearth	1.6	1.25	0.47
Hearth/possible recreation	19368	855-258	N	Complex (9)	Hearth	1.1	1.1	0.33
Hearth/possible recreation	19411	1245-325	-	Hearth	Hearth			
Hearth	19366	855-256	Q	Complex (28)	Circular enclosure	1.35	1.35	0.94
Sub-total = 7								
Transportation	19365	855-255	H	Complex (13)	Alignment	7.5	0.2	0.1
Transportation	19365	855-255	I	Complex (13)	Alignment	7	0.3	0.2
Transportation	19366	855-256	H	Complex (28)	Trail	7	0.75	0.7
Transportation	19366	855-256	X	Complex (28)	Trail	23.5	0.6	
Transportation	19406	1245-312	-	Trail	Trail			
Transportation	19410	1245-318	-	Trail	Trail			
Transportation	19413	1245-327	-	Trail	Trail			
Transportation	19365	855-255	K	Complex (13)	Trail segment	12	0.2	0.23
Trail marker	19366	855-256	K	Complex (28)	Semi-circular alignment	2	0.5	0.8
Sub-total = 9								
Indeterminate	19405	1245-311	-	Alignment	Alignment			
Indeterminate	19412	1245-326	-	Paved area	Paved area			
Indeterminate	19365	855-255	B	Complex (13)	Wall segment	2.7	0.9	0.52
Indeterminate	19365	855-255	C	Complex (13)	Wall segment	4	1.5	0.45
Sub-total = 4								
Indigenous Features = 237								

Table 7. Frequencies of Formal Feature Types—Indigenous Components

Formal Type	Number	%	SIHP
Terrace	49	20.7	19266,19273(D1-D4), 19281(D),19293,19306(E,F,G), 19328(A),19340(C,E), 19341(E),19345(F,M,N), 19347(C),19354(B), 19356(F),19357,19358, 19360(E),19362(B,C),19363, 19365(E,F,J,O), 19366(L,M,R,W),19367(H,M), 19368(C1-C3,E),19374, 19376(C),19382(C), 19388(B),19389,19398(C), 19399,19400,19409
C-shape	36	15.2	19296(A),19304,19306(D), 19312,19313(A,D), 19314(D,E,F,H),19317(D), 19326(B),19329(A,B),19336, 19337(E,F),19338(D), 19340(B,D),19342(G), 19345(O),19346(Q), 19347(D,I-M,Q), 19359,19366(E),19370, 19371,19378(A,B)
Modified outcrop	27	11.4	19265,19273(A),19295(E), 19305,19319,19328(C),19333, 19334,19338(B),19345(G), 19349(D),19354(C), 19356(B),19360(A,D), 19365(G),19367(K),19376(D), 19377(B),19380,19382(B), 19383,19385,19388(A,C), 19390,19395(C),
Enclosure	20	8.4	19295(A),19306(A), 19313(C),19339(E), 19345(C,E),19347(N,O), 19349(A),19361(A),19362(A), 19365(A),19366(A,D,I,O,U), 19401,19403,19408
Cairn	15	6.3	19261,19263,19271(A,B), 19274,19275,19280,19281(A), 19282,19297,19347(G), 19366(N),19372,19373,19379

Table 7. (cont.)

Formal Type	Number	%	SIHP
Wall	11	4.6	19281(C),19306(B), 19313(F),19342(A), 19347(E),19362(D), 19366(B),19367(G,L), 19391(A),19402
Alignment	9	3.8	19360(B),19361(B1-B4), 19365(H,I),19377(A),19405
U-shape	8	3.4	19335,19346(A),19347(B), 19354(A),19367(D,E,F), 19376(B)
Hearth	6	2.5	19364(D),19366(CC), 19368(D,M,N),19411
Mound	5	2.1	19279,19360(C),19365(D,M), 19366(F)
Trail	5	2.1	19366(H,X),19406,19410, 19413
Circular enclosure	4	1.7	19294(D),19366(P,Q),19404
Cleared area	4	1.7	19366(Y,Z,AA,BB)
Paved area	4	1.7	19367(J),19368(G,L),19412
Adjoining C-shapes	3	1.3	19295(C),19313(B),19317(A)
Circular alignment	3	1.3	19338(E),19366(G),19391(B)
Midden scatter	3	1.3	19318,19351,19395(D)
Wall segment	3	1.3	19296(B),19365(B,C)
Circular wall	2	0.8	19345(B,D)
L-shape	2	0.8	19338(C),19347(P)
L-shape alignment	2	0.8	19314(B,G)
Rubble concentration	2	0.8	19303,19375
Terraces w/adjoining wall	2	0.8	19294(A,B)
Cairn w/adjoining wall	1	0.4	19407

Table 7. (cont.)

Formal Type	Number	%	SIHP
C-shape w/adjoining wall	1	0.4	19347(A)
D-shape alignment	1	0.4	19366(J)
Enclosure w/adjoining C-shape	1	0.4	19294(C)
Enclosure w/ modified outcrop	1	0.4	19338(A1)
Midden concentration	1	0.4	19366(T)
Overhang	1	0.4	19376(A)
Paved terrace	1	0.4	19364(C)
Rectangular alignment	1	0.4	19340(A)
Semi circular alignment	1	0.4	19366(K)
Trail segment	1	0.4	19365(K)
Wall remnant	1	0.4	19366(C)
TOTAL	237	99.6	

Table 8. Frequencies of Functional Feature Types—Indigenous Components

Function Type	Number	%	SIHP
Temporary habitation	104	43.9	19265,19266,19273(A), 19281(C),19294(A-D), 19295(A,C),19296(A,B), 19301,19304,19306(A,B,D), 19312,19313(A-D) 19314(B,D-H),19317(A,D), 19318,19319,19326(B), 19329(A,B),19333,19334, 19335,19336,19337(E,F), 19338(A1,B,C),19339(E), 19340(A,B,D),19342(A,G), 19345(B-E),19348(A,Q), 19347(A,B,D,E,I-Q), 19349(A),19354(A), 19356(B,F),19357,19358, 19360(A,B,D),19361(A,B1-B4), 19362(A),19364(C), 19370,19371,19375, 19376(A,B,C) 19378(A,B),19389, 19391(A,B),19395(D),19399 19401,19402,19403,19404,19408
Agriculture	39	16.5	19293,19306(F,G), 19383(F),19328(A,C), 19340(C,E),19341(E), 19345(F,M,N,O),19349(D), 19354(B,C),19359,19360(C) 19362(B,C,D),19363, 19365(D),19366(W,Y,Z, AA,BB),19367(G,H), 19368(C1-C3),19376(D), 19380,19382(B),19383, 19398(C),19400
Habitation	30	12.2	19358,19365(A,F,G,J,O), 19366(A-E,G,I,L,M,O,P, R,T,U),19367(D,E,F,J,K L,M),19368(E,G,L).
Possible agriculture	23	9.7	19273(D1-D4),19281(D), 19295(E),19306(E), 19318(D,E),19345(G), 19347(C),19360(E), 19374,19377(A,B),19382(C) 19385,19388(A,B,C),19390, 19395(C),19409

Table 8. (cont.)

Function Type	Number	%	SIHP
Marker	17	7.2	19264,19263,19271(A,B), 19276,19275,19279,19280, 19281(A),19282,19297, 19347(G),19366(N),19372, 19373,19379,19407
Transportation	8	3.4	19365(H,I,K),19366(II,X), 19406,19410,19413
Recreation	6	2.5	19364(D),19366(CC), 19368(D,M,N),19411
Indeterminate	4	1.7	19365(B,C),19405,19412
Possible ceremonial	3	1.3	19305,19366(F,J)
Possible burial	2	0.8	19365(E,M)
Hearth	1	0.4	19366(O)
Trail marker	1	0.4	19366(K)
TOTAL	237	100.0	

exception. In Figure 3, the 12 sites containing all 37 habitation features have been plotted within the boundaries of the project area. These twelve sites (19349, 19351, 19364, 19365, 19366, 19367, 19368, 19399, 19401, 19402, 19403, and 19408) dominate the rocky points or headlands overlooking Waialea and Puako Bay, and all would have been easily accessed via the primary coastal trails. Indeed, it is this easy accessability, combined with the long history of modern recreational activities at and around Hapuna, which accounts for the extensive surface and subsurface disturbances to which all of these sites have been subjected.

Midden accumulations were present in moderate to dense amounts at most of the habitation features, as were a variety of portable artifact types. In order to recover specialized dating samples and to further evaluate midden constituents and artifact types present, many of the habitation features were subjected to a combination of shovel test pit or test unit excavation. The results of this research are presented below.

Site 19366 typifies the multi-functional feature complexes dominated by a habitation function and located along the coastal bluffs at Hapuna. This site happens also to contain the greatest number of individual features of any project area site, although three other coastal habitation complexes (19365, 19367, and 19368) exhibit generally similar feature associations.

Extending a considerable length along the coastal cliff plateau ,among rolling terrain (see Figure 3), this site contains 23 separate feature areas and was easily accessed via the well-defined coastal trail system. Features present include terraces and terrace remnants, walls, mounds, C-shapes, circular alignment, D-shaped alignment, cairns, circular enclosures, a midden concentration, cleared areas, and a well-defined fire hearth. Fourteen shovel test pits ranging in depth from 10 to over 60 cm depth were excavated among various features throughout the site area. These excavations yielded waterworn cobbles and coral, as well as artifacts and ecofactual remains consistent with an interpretation of habitation. Figures 4, 5, and 6 illustrate several of the primary features at this site, including Feature A enclosure (Figure 4), Feature O enclosure (Figure 5), and a series of contiguous cleared areas and other features accessed by a primary coastal trail system (Figure 6).

Temporary Habitation Features

As noted in the introduction to the discussion of surface findings, a total of 97 features are believed to represent temporary habitation or possible temporary habitation (see Table 6). A fairly narrow range of formal feature types occur in association with these site types, including principally C-Shapes and variants thereof, low circular walls, modified outcrops, small terraces, and light surface midden scatters.

This functional assignment was based on the absence of high densities of clustered features, the generally small size and simple architecture of individual features, and the absence of substantial accumulations of midden or portable artifactual material. It should be noted, however, that existing data allow only a preliminary evaluation of function, and it is possible that some assignments could change given additional data from one or more of the features.

Temporary habitation represents the most frequently encountered functional feature type within the project area, with 97, or about 40.93%, of the 237 indigenous features being assigned this function. As with the features ascribed a permanent habitation function (see discussion, above), the distribution of temporary habitation features was also generally predictable on the

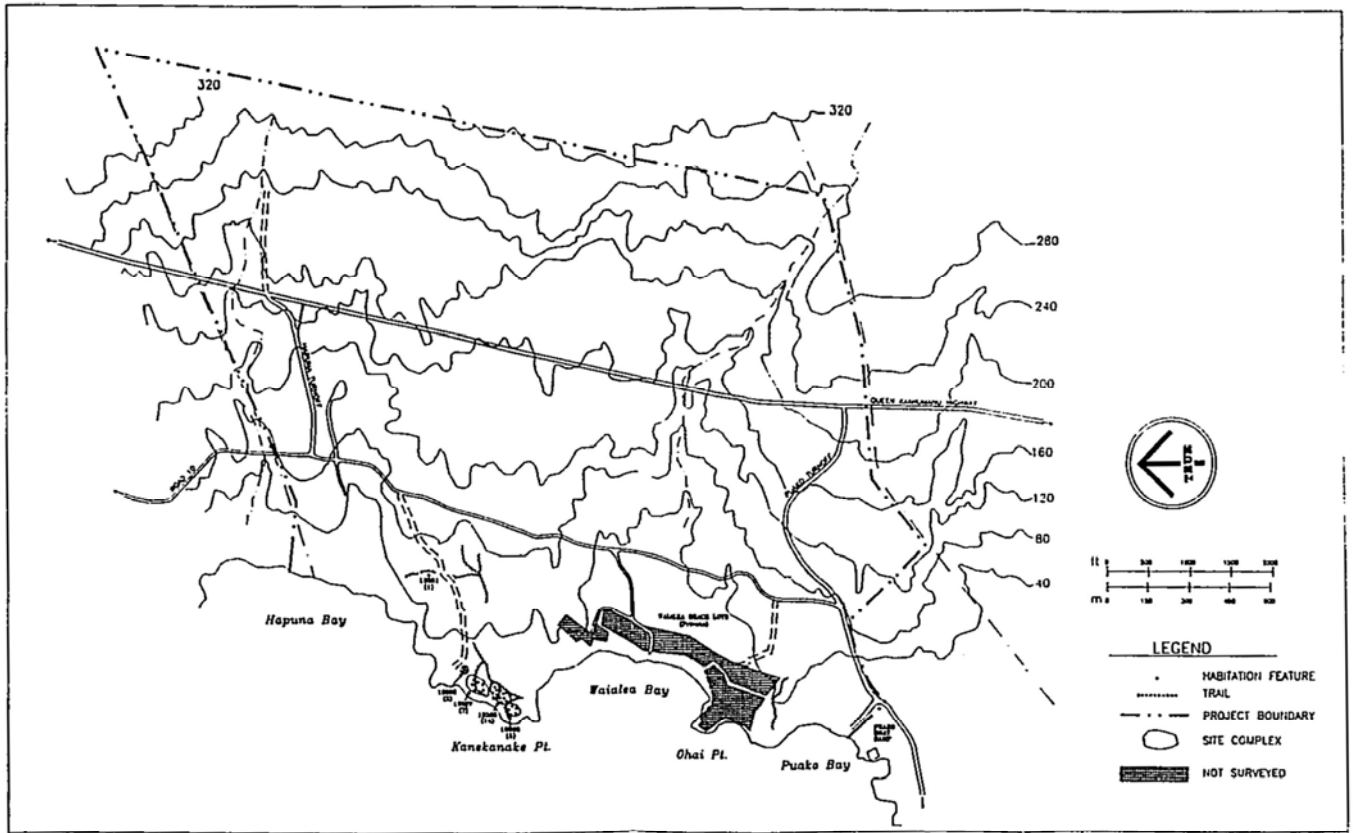

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Figure 3.
DISTRIBUTION OF HABITATION SITES

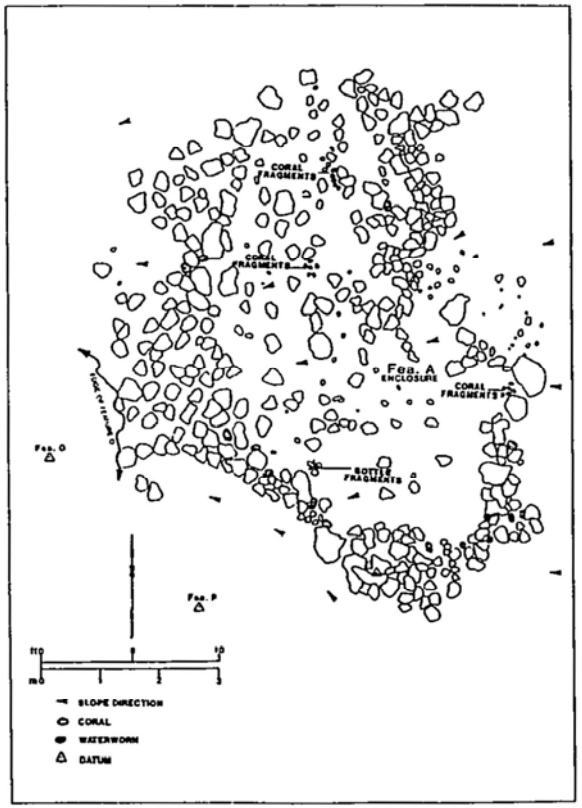

Figure 4. Feature A Enclosure at Site 19366

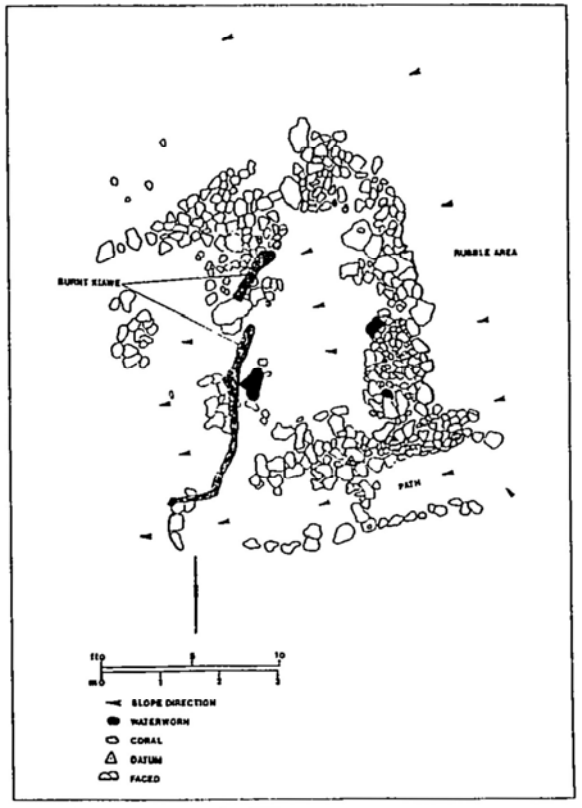

Figure 5. Feature O Enclosure at Site 19366

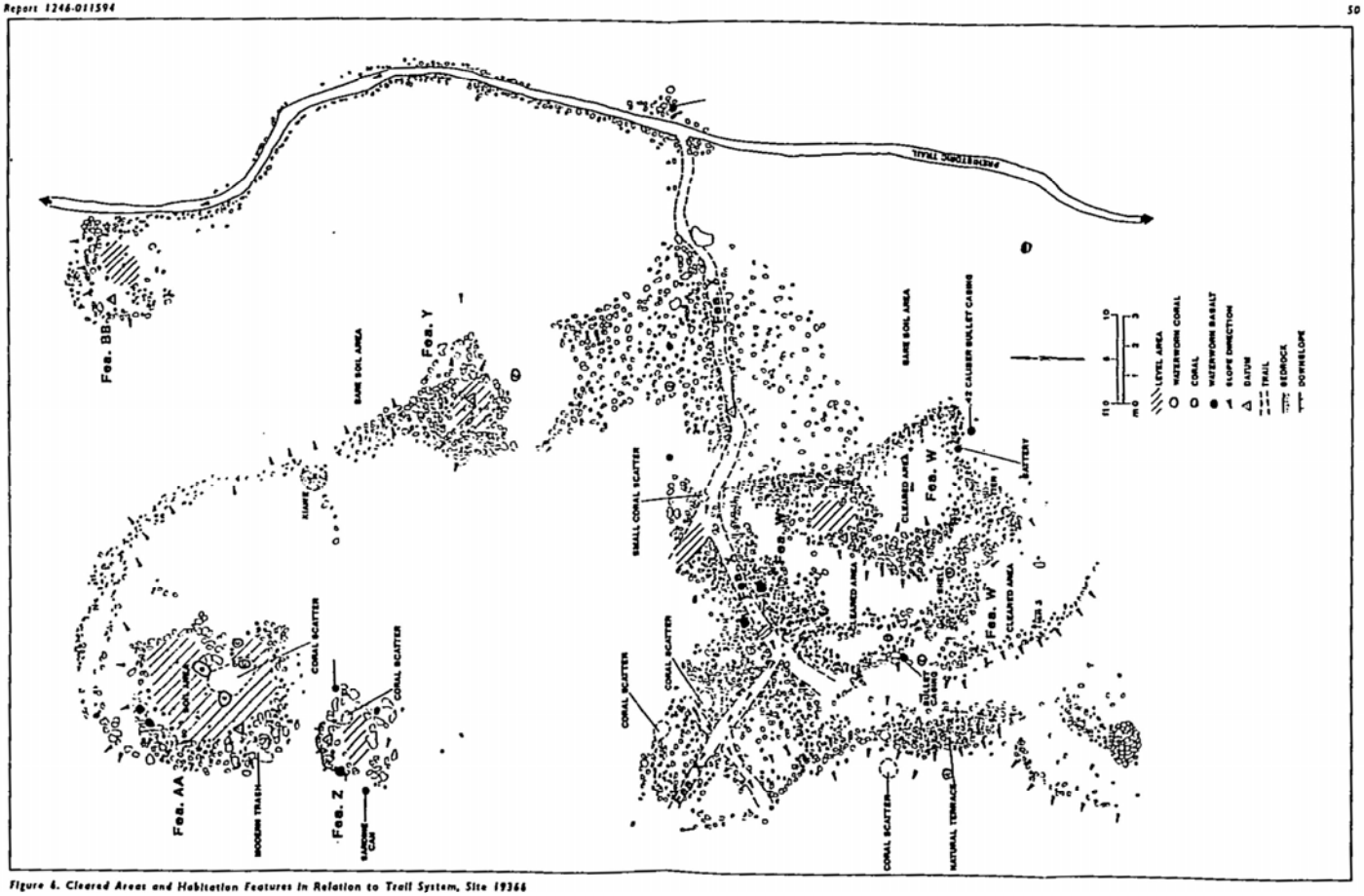

Figure 6. Cleared Areas and Habitation Features in Relation to Trail System, Site 19366

basis of existing regional models of prehistoric and historic patterns of land use. While permanent features within this area of Hawaii Island tend to cluster at coastal fresh-water seeps near areas which also exhibit good coastal or off-shore fishing, temporary habitation features are typically much more extensive in their distribution (see, for example, Jensen 1988; Kirch 1976). The present Hapuna Beach project area proved to be no exception.

In Figure 7, the 47 sites containing all 97 temporary habitation features have been plotted within the boundaries of the project area. These 47 sites include 19265, 19266, 19273, 19281, 19294, 19295, 19296, 19303, 19304, 19306, 19312, 19313, 19314, 19317, 19318, 19319, 19326, 19329, 19330, 19333, 19334, 19335, 19336, 19337, 19338, 19339, 19340, 19342, 19345, 19346, 19347, 19354, 19356, 19357, 19358, 19360, 19361, 19362, 19370, 19371, 19375, 19376, 19378, 19389, 19391, 19395, and 19404. The pattern of distribution in Figure 7 clearly contrasts with the pattern exhibited in Figure 3 for the 37 habitation features. While there is no question that coastal examples of temporary habitation are present, these features are much more widely distributed. Although more widely distributed, it is also clear that the pattern of distribution is not random — i.e., even the inland examples tend to cluster, in this case along the margins of a surface water source located within the project area.

As with all of the habitation features, most of the temporary habitation features have been subjected to extensive surface and subsurface disturbances, most often as a result of having been re-utilized during WWII training operations in this area.

Limited, usually surface-occurring midden scatters are present at some of the features, particularly the small enclosures which provided some protection from strong diurnal winds. Due to the observed midden deposits, several of the features were subjected to shovel test pit and/or test unit excavation in order to recover dating samples, and to assess artifact and midden constituents and depth.

Site 19342 typifies the feature types occurring at small, multiple-component sites assigned a predominant temporary habitation function. In this case, a well-defined C-shape structure is present, and this structure contains a small surface scatter of midden. In apparent association was a short wall segment, which also contained at least one surface artifact and a very light surface midden scatter (Figure 8).

Agricultural Features

As noted in the introduction to the discussion of surface findings, a total of 62 features are believed to represent agriculture or possible agricultural activities within the project area (see Table 6). As with temporary habitation features, a fairly narrow range of formal feature types represents this functional activity, including primarily poorly defined and/or poorly built terraces, cleared areas, modified outcrops, short wall segments which may be remnants of terraces or terrace systems, occasional mounds, and several low C-shape structures. Agriculture represents the second most frequently encountered functional feature type within the project area, with 62, or about 26.16%, of the 237 indigenous features being assigned this function.

These features typically co-occur with temporary habitation or habitation complexes, and are especially concentrated at coastal sites and along the margins of a well-defined gulch system which proceeds roughly east-west through the south-central portion of the project area. This pattern of distribution conforms with expectations derived from data for other similar settings in West Hawaii. While permanent habitation features tend to cluster at coastal

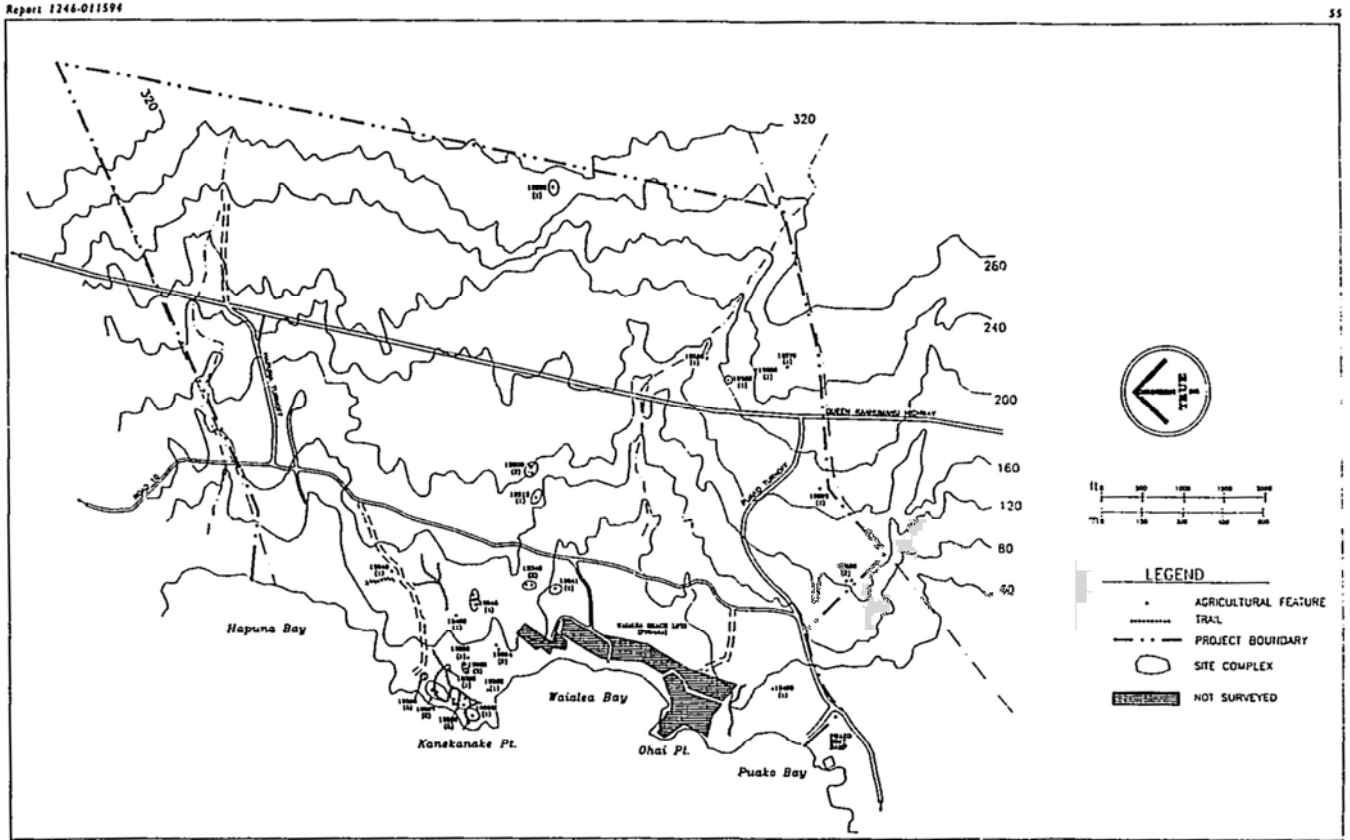

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Figure 9.

DISTRIBUTION OF AGRICULTURAL SITES

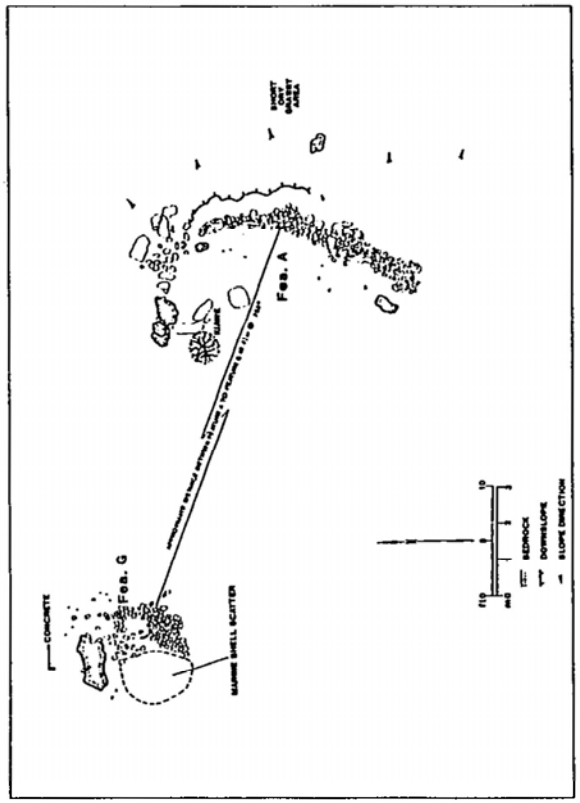

Figure 8. Site 19342, Features A and G, Multi-Component Site Exhibiting a Temporary Habitation Function

locations in association with fresh-water seeps near areas which also exhibit good coastal or off-shore fishing, agricultural activities and associated temporary habitation features are frequently found not only in coastal contexts but in more inland zones, especially along natural surface water courses (see, for example, Jensen 1990). In Figure 9, the 36 sites containing the 62 agricultural feature components have been plotted within the boundaries of the project area. These 36 sites include 19271, 19273, 19281, 19293, 19295, 19306, 19313, 19328, 19338, 19340, 19341, 19345, 19347, 19349, 19354, 19359, 19360, 19362, 19363, 19365, 19366, 19367, 19368, 19374, 19376, 19377, 19380, 19382, 19383, 19385, 19388, 19390, 19395, 19398, 19400, and 19409. The pattern of distribution in Figure 9 is more closely aligned with the distribution of temporary habitation features than habitation features (compare Figure 9 with Figures 3 and Figure 7). As with temporary habitation features, agricultural feature distribution is not random, but rather is simply more extensive, with the inland focus being along the margins of the primary surface water source in this area. Agricultural and temporary habitation features are undoubtedly directly associated at many of the inland sites.

As with all of the habitation features and many of the temporary habitation components as well, a variety of impacts have affected the agricultural features, including especially WWII training, subsequent recreation and road grading projects, and most recently fire-suppression activities, and equipment used to engage the Puako brush fires via Hapuna access roads.

Other Features

The remaining functional feature types include marker, transportation, hearth/possible recreation, possible ceremonial, possible burial, and indeterminate. Together, these types total 41 separate features, or approximately 17.3% of the 237 features attributed to indigenous use and occupation of the project area.

Transportation among site and feature complexes located within the project area is clearly documented by a series of partially interconnected trail segments. Two of these trail segments were recorded in association with larger site complexes (Sites 19365 and 19366), and in the three remaining cases the trails were recorded as separate sites (Sites 19406, 19410 and 19413). A semi-circular alignment directly associated with one of the trail segments and located at coastal site complex (Feature K of Site 19366) has been included with features assigned a transportation function (see Table 6). Lastly, while listed separately in Table 6, the sixteen features described as "markers" during formal site recording may actually have served a "transportation" function since at least some appear to have been constructed to identify the locations of trails or habitation and temporary habitation features.

The location of trail segments is depicted in Figure 2. It should be emphasized that a much more extensive network may at one time have existed within the project area, prior to impacts associated with military and subsequent recreational activities at and around Hapuna.

As noted above, a possible ceremonial function has been ascribed to three features, two of which are located at Site 19366 (Features F and J), and one at Site 19305.

The Feature F mound at 19366 (see Figure 10) is located near the shore and may have been faced prior to having been disturbed. Waterworn coral, branch coral, marine shell, and waterworn cobbles are interspersed throughout the structure. A coral-lined path leads into the feature from the northeast.

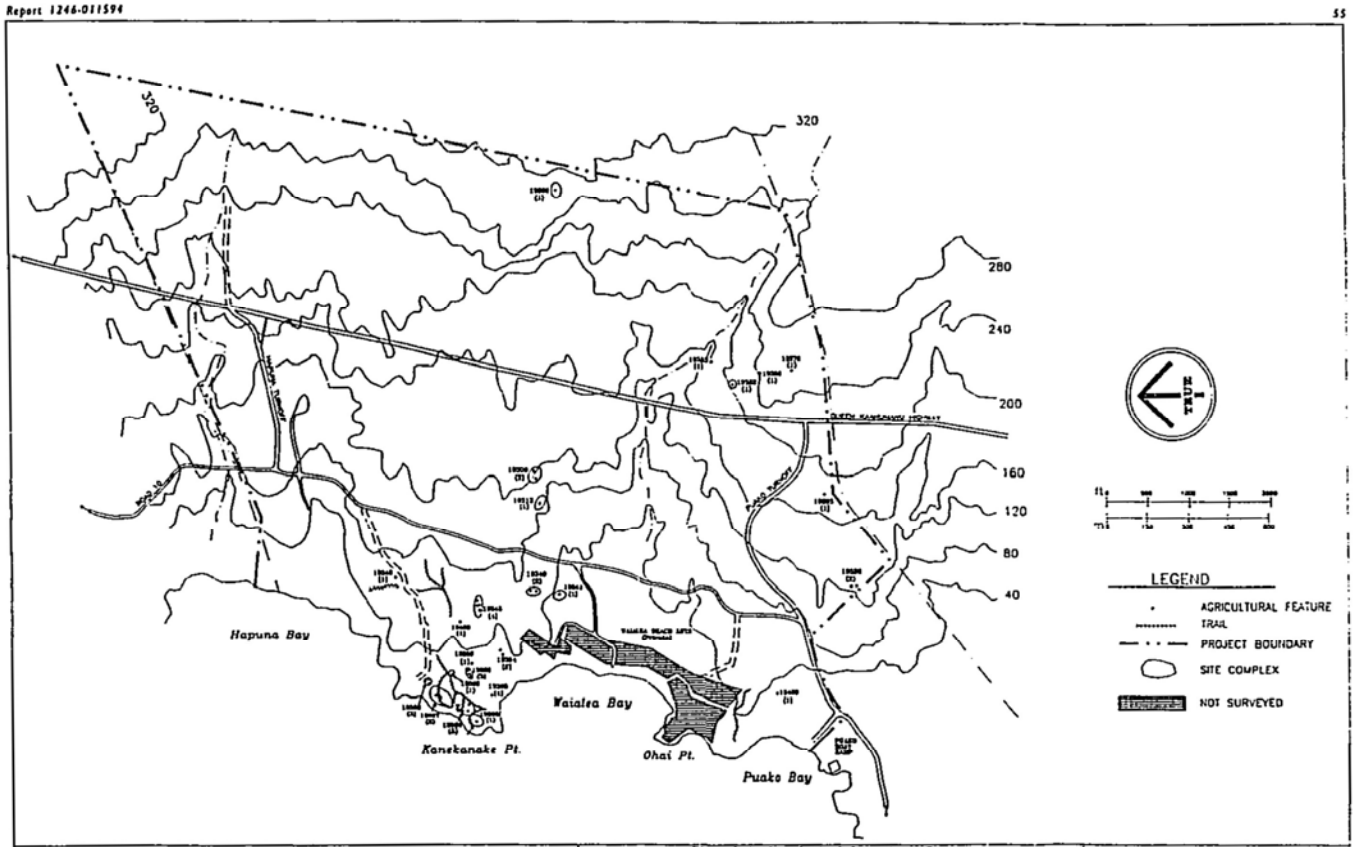

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Figure 9.
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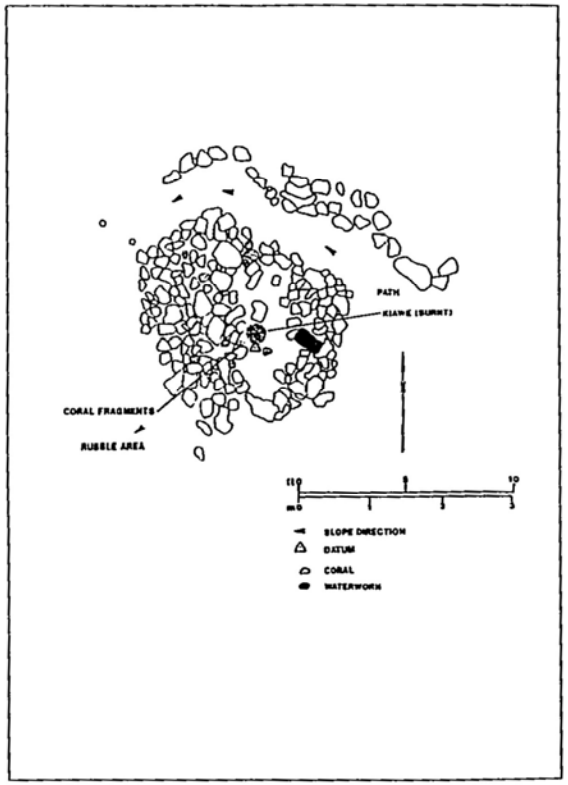

Figure 10. Feature F Mound at Site 19366, Possible Ceremonial Function

The Feature J alignment at this same site is less formally constructed than Feature F, but does contain a cluster of waterworn cobbles near the center of the D-shaped alignment of pahoehoe boulders and cobbles. Construction details and associated coral and branch coral suggest possible ceremonial activities were performed at these features. Finally, Site 19305 consists of a modified outcrop constructed by stacking waterworn boulders and cobbles on top of a basalt outcrop. Several large pieces of coral were incorporated into mixed boulders and cobbles, along with smaller coral pieces, several waterworn cobbles, and small quantities of marine shell.

Two additional project area features may represent burials. These include Features E and M at Site 19365. Feature E terrace measures approximately 3 meters-square and extends slightly more than 0.5 meters above the surrounding ground surface. There is a circular area at the east end of the feature from which some of the cobbles appear to have been removed. Trowel testing of the surface components to c. 10 cm depth identified loose silt covering cobble bedding containing numerous coral rock fragments

Feature M at 19365 is a mound constructed with irregular-shaped basalt cobbles, with numerous coral rock and waterworn cobbles incorporated into the feature. Remnant facing is visible along a portion of an exposed interior wall, while small quantities of marine shell and contemporary trash are scattered over the surface.

Figure 11 illustrates Features E and M at Site 13965 in plan view, and in the context of additional features located in the immediate vicinity of these two possible burials.

SUBSURFACE EVALUATIONS

As noted in the Introduction to this section, subsurface evaluations were undertaken both within specific site boundaries, and outside of site boundaries within areas believed to contain buried cultural deposits.

Non-Site-Specific Subsurface Testing

One of the goals of the inventory survey was to determine whether or not significant cultural deposits may have accumulated within sand or soil near the shore area. In order to evaluate this possibility, five north-south transects, each extending approximately 300 meters in length (labeled A-E in order to maintain field provenience) were established. The transects roughly paralleled the shoreline and were located within the southwest portion of the project area. Variable numbers of shovel test pits and hand-dug trenches were excavated along each of the transects. Designations for shovel test pits were "ST-" followed by the transect letter designation (A-E), which in turn was followed by the sequential numeric designation of the test pit for that transect. Ultimately, a total of 55 shovel test pits were excavated within non-site areas. Depths were quite variable, depending on underlayment, and ranged from 2 cm to 54 cm below the current ground surface. Very small quantities of shell midden and/or naturally-deposited marine shell fragments were encountered within 7 of the 55 test pits, while contemporary artifacts were recovered from only two of the excavations.

This work failed to identify any previously unidentified prehistoric or historic sites or features. The work is believed to have satisfactorily achieved the objective of ensuring that significant buried deposits are not likely to be present outside of established archaeological site

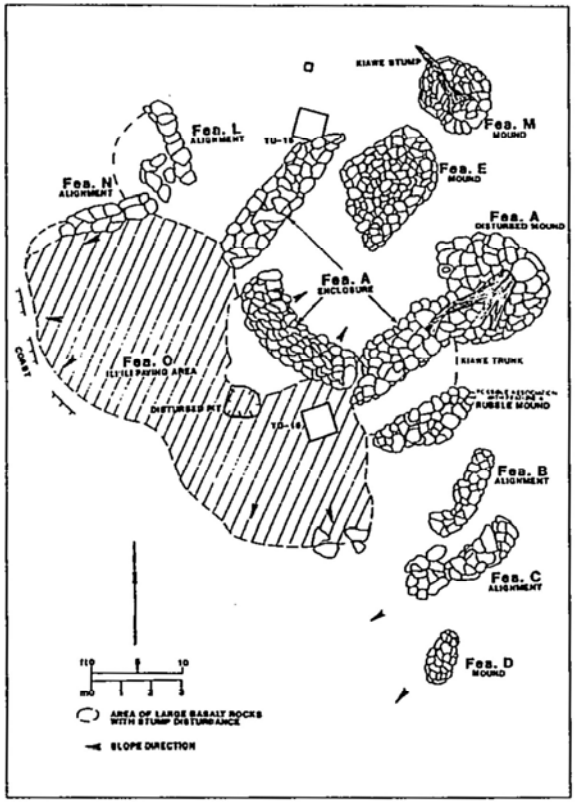

Figure 11. Features E and M at Site 19365, Possible Burial Features

boundaries, within beach areas or other soil types within the undeveloped coastal portions of the project area.

Site-Specific Subsurface Testing

As noted in the Introduction to this section, 32 shovel tests were excavated within Sites 19365, 19366, 19367, and 19368. In addition, 30 test units involving a total of 20.7 square meters of surface area were excavated at 24 features distributed among 17 separate sites. Indigenous portable artifacts collected from the excavations and surface collections include ground basalt tools, octopus lures, gourd fragments, worked marine shell, coral abraders, puka beads, volcanic glass flakes, and opihi shell scrapers. These are discussed below under "Data Analyses."

Generally, excavation work documented the presence of subsurface deposits of cultural material at several project area features. Although multiple layers were encountered at several of the features, along with buried features of various types (principally, hearths or hearth remnants), deep, stratified deposits appear to be absent from the project area. Detailed stratigraphic descriptions for all of the excavation units are presented in Appendix C.

Table 9 summarizes the shovel test pits and excavation units placed within and outside of specific site boundaries. The summary groups the data by site, and includes a general reference to the kinds (but not quantities) of cultural material and special samples recovered.

Table 9. Summary of Excavation

*SIHP Site No.	Fea.	Unit	Size (m^2)	Depth (mbs)	(Presence +/- Absence) Arts	Eco	C¹⁴	Hf
Other	-	ST-AO#	0.00	-	-	-	-	-
	-	ST-AO1	0.25	0.22	-	-	-	-
	-	ST-AO2	0.25	0.19	+	+	-	-
	-	ST-AO3	0.25	0.21	-	-	-	-
	-	ST-AO4#	0.00	-	-	-	-	-
	-	ST-AO5#	0.00	-	-	-	-	-
	-	ST-AO6#	0.00	-	-	-	-	-
	-	ST-AO7	0.25	0.20	-	+	-	-
	-	ST-AO8	0.25	0.10	-	-	-	-
	-	ST-AO9	0.30	0.90	-	-	-	-
	-	ST-A10	0.30	0.30	-	-	-	-
	-	ST-A14	0.30	0.30	-	+	-	-
	-	ST-BO#	0.00	-	-	-	-	-
	-	ST-BO1	0.25	0.23	-	+	-	-
	-	ST-B15	0.25	0.33	+	-	-	-
	-	ST-CO1	0.25	0.15	-	-	-	-
	-	ST-CO3	0.25	0.54	-	-	-	-
	-	ST-CO5	0.25	0.25	-	-	-	-
	-	ST-CO9	0.25	0.26	-	-	-	-
	-	ST-C11	0.25	0.22	-	-	-	-
	-	ST-C13	0.25	0.70	-	+	-	-
	-	ST-C15	0.25	0.10	-	-	-	-
	-	ST-C17	0.25	0.18	-	-	-	-
	-	ST-C19	0.25	0.15	-	-	-	-
	-	ST-DO1	0.25	0.31	-	-	-	-
	-	ST-DO2	0.25	-	-	-	-	-
	-	ST-DO3	0.25	0.42	-	-	-	-
	-	ST-DO4	0.25	-	-	-	-	-
	-	ST-DO6	0.25	-	-	-	-	-
	-	ST-DO7	0.25	0.27	-	-	-	-
	-	ST-DO9	0.25	0.25	-	-	-	-
	-	ST-D10	0.25	-	-	-	-	-
	-	ST-D11	0.25	0.37	-	-	-	-
	-	ST-D12	0.25	-	-	-	-	-

* State Inventory of Historic Places (SIHP) numbers. SIHP numbers are five-digit numbers prefixed by 50-10- (50=State of Hawaii; 10=Island of Hawaii; 82=USGS 7.5' series quad map ["Pu'u Hina],Hawaii"]).

\# Set up, but never excavated.

** Features determined to be non-cultural; eliminated from Inventory Survey Listing.

Table 9. (cont.)

SIHP Site No.	Fea.	Unit	Size (m^2)	Depth (mbs)	(Presence +/- Absence) Arts	Eco	C¹⁴	Hf
Other(cont.)	-	ST-D13	0.25	0.42	-	-	-	-
	-	ST-D14	0.25	-	-	-	-	-
	-	ST-D18	0.25	-	-	-	-	-
	-	ST-D19	0.25	0.25	-	-	-	-
	-	ST-D20	0.25	-	-	-	-	-
	-	ST-D21	0.25	-	-	-	-	-
	-	ST-D25	0.25	-	-	-	-	-
	-	ST-D27	0.25	0.42	-	-	-	-
	-	ST-EO1	0.25	0.15	-	-	-	-
	-	ST-EO3	0.25	0.34	-	-	-	-
	-	ST-EO7	0.25	0.90	-	-	-	-
	-	ST-EO9	0.25	0.11	-	-	-	-
	-	ST-E11	0.25	0.19	-	-	-	-
	-	ST-E13	0.25	0.18	-	-	-	-
	-	ST-E16	0.25	-	-	-	-	-
	-	ST-E18	0.25	-	-	-	-	-
	-	ST-E19	0.25	0.20	-	-	-	-
	-	ST-E20	0.25	0.33	-	+	-	-
	-	ST-E21	0.25	0.36	-	+	-	-
	-	ST-E23	0.25	-	-	-	-	-
	-	ST-E24	0.25	0.19	-	-	-	-
	-	ST-E25	0.25	-	-	-	-	-
	-	ST-E26	0.25	0.38	-	-	-	-
	-	ST-E27	0.25	-	-	-	-	-
	-	ST-E28	0.25	0.21	-	-	-	-
	-	ST-D26	0.25	0.10	-	-	-	-
Summary for Other	-	55 ST's	13.90	11.78	2	7	0	0
19265	-	TU-04	1.00	1.00	-	+	-	-
	-	TU-10	0.25	0.25	-	+	-	-
	-	TU-03	1.00	1.00	-	-	-	-
Summary for 19265	-	3 TU's	2.25	2.25	0	2	0	0
19273	A	TU-05	0.50	0.50	-	+	-	-
19294	A	TU-08	1.00	1.00	-	+	-	-
	B	TU-09	1.00	1.00	-	+	-	-
	B	TU-11	1.00	1.00	-	-	-	-
	C	TU-13	0.25	0.25	-	+	-	-

Table 9. (cont.)

SIHP Site No.	Fea.	Unit	Size (m^2)	Depth (mbs)	(Presence +/- Absence) Arts	Eco	C[11]	Hf
Summary for 19294	3 Feas Tested	4 TU's	3.25	3.25	0	3	0	0
19295	A	TU-12	1.00	1.00	-	+	-	-
19312	E	TU-26	0.25	0.25	-	+	-	-
19313	C	TU-23	1.00	1.00	-	-	-	-
19314	B	TU-28	1.00	1.00	-	+	-	-
	C	TU-27**	0.25	0.25	+	+	-	-
	E	TU-24	1.00	1.00	-	-	-	-
Summary for 19314	3 Feas. Tested	3 TU's	2.25	2.25	1	2	0	0
19315	I	TU-14**	1.00	1.00	-	+	-	-
19318	-	TU-22	0.25	0.25	+	+	+	-
	-	TU-25	0.25	0.25	-	+	-	-
Summary for 19318	-	2 TU's	0.50	0.50	1	2	1	0
19365	-	ST-C25	0.25	0.22	-	+	+	-
	-	ST-C26	0.25	0.20	-	+	-	-
	-	ST-C27	0.25	0.30	-	+	+	-
	A	ST-D29	0.25	0.15	+	+	-	-
	A	TU-15	1.00	1.00	+	+	+	-
	A	TU-16	1.00	1.00	+	+	-	-
	C	ST-E29	0.25	0.28	-	-	-	-
	L	ST-C28**	0.25	0.22	-	+	+	-
	N	ST-C25**	0.25	0.25	+	+	+	-
Summary for 19365	4 Feas. Tested	7 ST's 2 TU's	1.75 2.00	1.62 2.00	2 2	6 2	4 1	0 0
19366	-	ST-C14	0.25	0.25	-	-	-	-
	-	ST-C16	0.25	0.10	-	-	-	-
	-	ST-C18	0.25	0.22	-	-	-	-
	-	ST-C20	0.25	0.20	-	-	-	-
	-	ST-C21**	0.25	0.12	-	+	-	-
	-	ST-C22	0.25	0.61	-	+	-	-

Table 9. (cont.)

SIHP Site No.	Fea.	Unit	Size (m^2)	Depth (mbs)	(Presence +/- Absence) Arts	Eco	C[11]	Hf
19366(cont.)	-	ST-D21**	0.25	0.10	-	+	-	-
	-	ST-D22	0.25	0.23	-	-	-	-
	A	ST-D23	0.25	0.21	-	+	-	-
	O	ST-C23	0.25	0.24	-	+	+	-
	P	ST-D24	0.25	0.25	-	-	-	-
	S	ST-E22**	0.25	0.24	-	-	-	-
	W	ST-D17	0.25	0.22	-	-	-	-
	W	ST-E17	0.25	0.27	-	-	-	-
	X	ST-D16	0.25	-	-	-	-	-
	Y	ST-E15	0.25	0.12	-	-	-	-
	Z	ST-D15	0.25	0.38	-	-	-	-
Summary for 19366	8 Feas. Tested	17 ST's	4.25	3.76	0	5	1	0
19367	-	ST-C07**	0.25	0.23	-	-	-	-
	A	ST-D08	0.25	-	-	-	-	-
	F	ST-A12	0.25	0.22	-	-	-	-
	G	TU-17	1.00	1.00	-	+	-	-
	H	ST-A11	0.30	0.28	-	-	-	-
	H	ST-A15	0.35	0.21	-	-	-	-
	N	ST-A13**	0.35	0.24	-	-	-	-
Summary for 19367	5 Feas. Tested	6 ST's 1 TU's	1.75 1.00	0.45 0.73	0 0	0 1	0 0	0 0
19368	D	TU-18	1.00	1.00	+	-	-	-
	G	TU-19	1.00	1.00	+	-	-	-
	L	ST-D05	0.25	0.23	-	-	-	-
	L	ST-E05	0.25	0.17	-	-	-	-
Summary for 19368	3 Feas. Tested	2 ST's 2 TU's	0.50 2.00	0.40 2.00	0 2	0 0	0 0	0 0
19376	A	TU-01	0.25	0.25	-	+	-	-
	B	TU-02	1.00	1.00	+	+	-	-
	C	TU-07A	0.25	0.25	-	-	-	-
	C	TU-07B	0.25	0.25	-	-	-	-
Summary for 19376	3 Feas. Tested	4 TU's	1.75	1.75	1	2	0	0
19389	-	TU-06A	0.50	0.50	+	-	-	-
	-	TU-06B	0.25	0.25	+	-	-	-

Table 9. (cont.)

SIHP Site No.	Fea.	Unit	Size (m^2)	Depth (mbs)	(Presence +/- Absence) Arts	Eco	C^{14}	Hf
Summary for 19389	-	2 TU's	0.75	0.75	2	0	0	0
19391	B	TU-20	1.00	1.00	-	-	-	-
19409	TRAIL	TRENCH**	0.20	0.60	-	-	-	-
19410	-	TU-21	0.20	0.20	-	-	-	-

DATA ANALYSES

AGE DETERMINATIONS

Objectives and Methods

The purpose of age determination analysis is to provide initial chronological data to aid in assessing the relative significance of sites in the project area. As part of the inventory survey investigations, four samples were selected from discrete cultural deposits within Sites 19295 and 19365 for age determination using radiocarbon analysis. Samples were selected based on the amount and nature of datable material present, stratigraphic context, and association with portable remains. The samples were submitted for radiocarbon analysis to Beta Analytic, Inc. of Coral Gables, Florida.

Using standard procedures, the samples were pretreated with an acid, alkali, acid series of soakings to remove carbonates and humic acids. All of the samples except for Sample RC-1413 were determined to contain sufficient carbon for further analysis. After pretreatment, the samples were combusted to form carbon dioxide gas, were combined with lithium to separate the carbon, and were hydrolized for conversion to liquid form. The liquid was then catalyzed to form benzene and was placed in a liquid scintillation counter to determine the amounts of carbon-13 and carbon-12. The isotope values obtained during the counting process were then used to calculate the carbon-13/ carbon-12 ratio for the sample, with the final result being determined relative to international standards in order to reduce errors produced by carbon isotope fractionation. Processing of samples RC-1414, -1415 and -1416 proceeded normally.

Results

The results of the radiocarbon age determination are summarized in Table 10. The age for each sample is reported as a range corresponding to the calendric age +/- two standard deviations. Ages were calibrated using the formulas (Method B) provided in Stuiver and Reimer (1993), which correct for variations in marine and atmospheric carbon over time.

As shown in Table 10, Sample RC-1416 yielded a modern date (post AD 1950) while Samples RC-1414, and -1415 produced multiple calendric ranges. Multiple ranges are caused by "flat" regions in the calibration curve, which correspond to periods when atmospheric carbon decreased at a rate greater than 1.2 ppm/10 years, resulting in more than one possible fit of a sample to the calibration curve. While multiple ranges are more difficult to interpret archaeologically, detailed examination of the statistical curves, combined with evidence from feature stratigraphy, generally provides a means of selecting one range as more probable than the others. Based on these criteria, the most likely calendric ranges for Samples RC-1414 and -1415 are AD 1269-1515 (94% probability), and AD 1291-1526 (85% probability), respectively.

The results of the age determination analysis span a 681-year period extending from AD 1269 to the present (present = AD 1950). Within this period, the results from specific samples can be grouped into two clusters. The first cluster consists of Samples RC-1414 and -1415 from

Table 10. Summary of Radiocarbon Age Determinations

PHRI Lab.No. RC-	Lab. No. BETA-	Provenience	C-14 Age Yrs. B.P. (one sigma)	C-13/ C-12 Ratio	C-13 Adjusted C-14 Age Yrs. B.P.	*Calendric Range Yrs. AD
SITE 19295						
1413	—	Feature C, TU-11, Layer I, Level 2, 23-33 cmbs	—	—	—	Insufficient carbon
1414	55805	Feature C, TU-11, Layer II, Level 3 33-45 cmbs	560 ± 90	-27.7	540 ± 90	1269-1515 1598-1617
1415	55806	Feature C, TU-11, HF-1, Layer II, 24-45 cmbs	500 ± 80	-26.4	480 ± 80	1291-1526 1560-1631
SITE 19365						
1416	55807	Feature A, TU-15 Layer I, Level 5 30-40 cmbs	104.7±1.0%	-26.4	105 ± 1.0%	—

* *Calibrated according to Stuiver and Reimer (1993). Range at two sigmas.*

Feature C of Site 19295, both of which yielded prehistoric calendric ranges (AD 1269-1526). The samples were associated with sparse midden remains, but no other portable remains. Feature C is an enclosure with adjoining C-shapes, and is interpreted as a temporary habitation. The second cluster consists of Sample RC-1416 from Feature A of Site 19365, which yielded a modern date (post AD 1950). The sample was not associated with any portable remains. Feature A is an enclosure interpreted as a permanent habitation. With the exception of Sample RC-1416, which appears to have been contaminated by modern carbon, the interpreted age ranges for samples in all three clusters are consistent with known stratigraphic relationships, and do not appear to be affected by contamination.

Initial occupation of the project area most likely occurred during the mid-prehistoric period, beginning potentially as early as AD 1269 at Feature C. The association of the dating sample from this feature with sparse midden remains support the interpretation of the feature, and indicates that the focus of initial occupation was temporary habitation, possibly for exploitation of marine resources. The presence of both prehistoric and historic artifacts at several other sites suggests that the project area was utilized sporadically throughout the prehistoric and historic periods. Many of the sites have been interpreted as temporary habitations and, based on the presence of midden remains, were most likely utilized in association with marine resource exploitation. Until more of these sites have been excavated, and dating samples are submitted for analysis, however, our ability to reconstruct the chronology of settlement within the project area remains limited.

PORTABLE ARTIFACTS

A total of 150 artifacts were recovered from the project area, 138 of which are classified as indigenous artifacts. The remaining 12 artifacts are non-indigenous in classification and will be discussed in a later section. Indigenous artifacts are those fabricated using traditional Hawaiian manufacturing techniques and local raw materials, and range in type from tools and fishing gear to various decorative or religious items. The inventory of indigenous artifacts from the current project area is fairly narrow in content, and consists of fishing gear, flaked stone, tools, personal adornments, and several artifacts of uncertain function. A detailed tabulation of artifacts by archaeological site, feature, and unit is presented in Table 11. The results of the artifactual analysis are discussed below.

Fishing Gear

Three specimens of indigenous fishing gear (Cat# 2, 24, and 40) were recovered from the project area during the current investigation. The artifacts are complete cowrie shells (Cypraeidae) that have been perforated on opposing sides of the dorsal surface just above the natural indentation of the lip (Figure 12). Cat# 2 is an isolated find collected from the surface of the project area. It exhibits the double perforation noted above, but has also been modified by the removal of a hemispherical portion from one ventral lip; presumably to aid in attaching the lure to the toggle assembly. The specimen measures 6.0 x 4.4 x 3.3 cm. Cat# 24 is also perforated on both ends, but lacks the ventral notch. It measures 2.7 x 2.0 x 1.3 cm. Cat# 40 has only one perforation, but is notched. It measures 2.7 x 2.1 x 1.4 cm. Octopus lures hooks are composites which consist of a point and shank, generally manufactured from wood, which are lashed together at the base and attached to a hackle. A perforated cowry shell (Cypraeidae), or octopus lure, is tied to one side of the toggle assembly, and a basalt sinker is attached to the opposing side of the toggle. According to Buck (1957:359), the cowrie lure assemblage was

Table 11. Detailed Distribution of Portable Remains

State No.	Other Total	19315 Total	19306 Total	19314 Total	19310 Total	19321 Total	19351 Total	19365 Total	19360 Total	19376 Total	19389 Total	Grand Total
INDIGENOUS												
FISHING GEAR												
Shell												
Octopus lure	1	0	0	0	0	1	0	1	0	0	0	3
SUBTOTAL FISHING GEAR	1	0	0	0	0	1	0	1	0	0	0	3
FLAKED STONE												
Basalt												
Core	0	0	0	0	0	0	0	0	0	0	4	4
Flake	0	0	0	0	0	0	0	0	0	2	7	9
Volcanic glass												
Core	0	0	0	0	0	0	0	1	0	0	0	1
Flake	0	0	0	1	0	0	0	69	0	10	0	80
SUBTOTAL FLAKED STONE	0	0	0	1	0	0	0	70	0	12	11	94
PERSONAL ADORNMENT												
Shell												
Perforated	0	0	0	0	0	0	0	2	0	0	0	2
SUBTOTAL PERSONAL	0	0	0	0	0	0	0	2	0	0	0	2
TOOLS												
Basalt												
Whetstone	0	0	1	0	0	0	0	0	0	0	0	1
Coral												
Abrader	1	0	0	0	0	0	0	2	0	0	0	3
Echinoid												
Abrader	0	0	0	0	1	0	0	4	0	0	0	5
SUBTOTAL TOOLS	1	0	1	0	1	0	0	6	0	0	0	9
UNCERTAIN FUNCTION												
Basalt												
Manuport	0	0	0	0	0	0	0	1	0	1	0	2
Modified	0	0	0	0	0	0	0	1	0	0	0	1
Shell												
Modified	0	0	0	1	0	0	0	23	2	0	0	26
Wood/Gourd												
Modified	1	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL UNCERTAIN FUNCTION	1	0	0	1	0	0	0	25	2	1	0	30
TOTAL INDIGENOUS	3	0	1	2	1	1	0	104	2	13	11	138
NON-INDIGENOUS												
MISCELLANEOUS												
Metal												
Can	0	0	0	0	0	0	1	0	0	0	0	1
Fragments	0	1	0	0	0	0	1	0	0	0	0	2
Plastic												
Fragments	0	0	0	0	0	0	0	2	0	0	0	2
SUBTOTAL MISCELLANEOUS	0	1	0	0	0	0	2	2	0	0	0	5
MONEY												
Metal												
Nickel	0	0	0	0	0	0	0	0	1	0	0	1
Penny	0	0	0	0	0	0	0	2	0	0	0	2
SUBTOTAL MONEY	0	0	0	0	0	0	0	2	1	0	0	3
PERSONAL ADORNMENT												
Metal												
Pendant	1	0	0	0	0	0	0	0	0	0	0	1
Safety Pin	0	0	0	0	0	0	0	0	1	0	0	1
SUBTOTAL PERSONAL ADORNMENT	1	0	0	0	0	0	0	0	1	0	0	2
WEAPONS												
Metal												
Shot casing	2	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL WEAPONS	2	0	0	0	0	0	0	0	0	0	0	2
TOTAL NON-INDIGENOUS	3	1	0	0	0	0	2	4	2	0	0	12
GRAND TOTAL	6	1	1	2	1	1	2	108	4	13	11	150

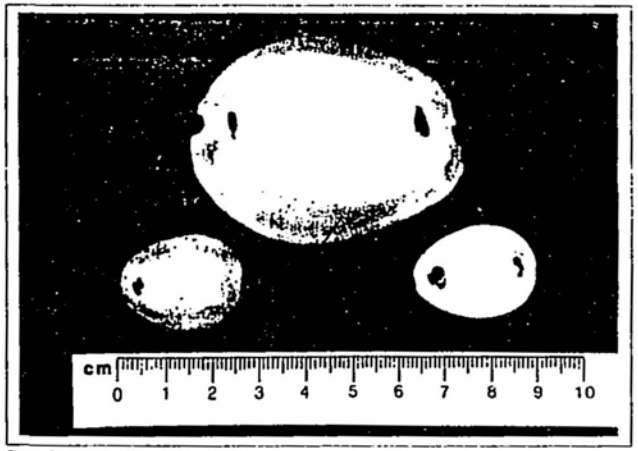

Figure 12. Octopus Lures (Neg. 4405-4a)

generally used to catch squid in water 80-120 fathoms deep, but was also used by aristocrats to catch squid for sport in more shallow waters.

Flaked Lithics

A total of 94 flaked lithic artifacts was recovered from Sites 19365 and 19376. Thirteen were manufactured from aphanitic basalt, while 81 were manufactured from volcanic glass.

All flaked stone material was evaluated with respect to flake/core type. Following established procedures for evaluating flaked stone material (Phagan 1980), diagnostic (primary) flakes are defined as those flakes having a complete or partial striking platform and a bulb of percussion. Non-diagnostic (secondary) flakes are broken flakes or fragments which lack the platform and/or bulb. Shatter represents the debris associated with flaked stone tool manufacture, and may include partial flakes, or "flake-like" chips. Cores tend toward multi-faceted polyhedral shapes dominated by one or more platforms, and typically show little evidence of subsequent use as tools. Primary cores exhibit only flake scars, while secondary cores are actually flakes with a bulb from which other flakes have been removed. Based on the these criteria, the 94 specimens can be separated as follows: four primary and one secondary cores, five diagnostic flakes, and 84 pieces of shatter.

Cores - Compositionally, the four primary cores are manufactured from basalt and the secondary core is manufactured from volcanic glass. The primary cores range from 2.3-5.4 cm in length, 1.0-2.5 cm in width and 1.1-2.1 cm in thickness; and they are generally polyhedral in shape (Figure 13). The secondary core measures 1.3 x 1.2 x 0.7 cm and is distally contracted in plan view. All five of the cores exhibit multiple platforms (2-3), the majority of which are intact and unmodified. The platforms are associated with one to three flake scars. Cortex was noted on the body of one primary core and the secondary core, suggesting that these specimens were utilized to a lesser extent than the other cores prior to discard.

Flakes - One of the diagnostic flakes and eight pieces of shatter were manufactured from basalt, while four of the diagnostic flakes and 76 pieces of shatter were manufactured from volcanic glass. The volcanic glass flakes are primarily trachytic in appearance (95%), and were matched in hand specimen to trachyte from Puu Anahulu. The remaining flakes are manufactured from poor quality volcanic glass and basalt, and could not be matched to a specific source area.

The diagnostic flakes range from 1.7-2.7 cm in length and 1.3-2.4 cm in width, while shatter ranges from 0.6-2.5 cm in length and 0.3-2.2 cm in width. Flakes and shatter manufactured from aphanitic basalt are generally larger than those manufactured from volcanic glass, due to the relative flaking properties of the materials.

Uses for flaked lithic artifacts have been suggested both by Barrera (1971) and Kirch (1973), who observed:

> The possible functions ... are many and varied. Basaltic glass holds a fine sharp edge and the tools make excellent cutting and scraping implements. They may have been used in food preparation, for cutting and scraping plant materials, or for delicate woodworking ... [t]hese artifacts are extremely common, being found in virtually every type of [Hawaiian] site. The suggestion, then, is that the ubiquitous basaltic glass flakes functioned as a prehistoric "pocketknife", to use a modern analogy... (1973:185-6).

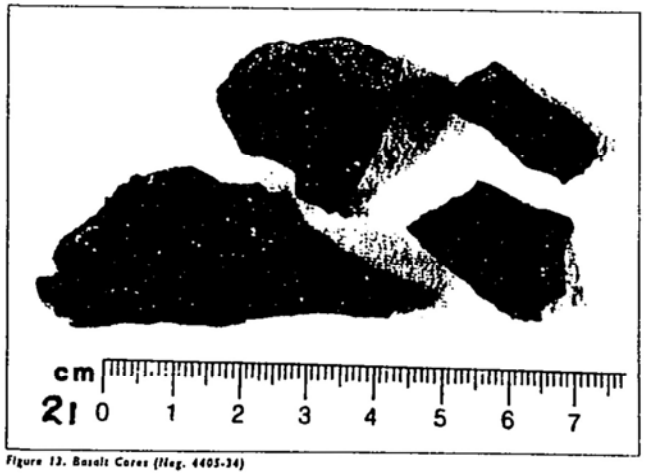

Figure 13. Basalt Cores (Neg. 4405-34)

Personal Adornment

Two artifacts interpreted as personal adornments (Cat# 59) were recovered from Site 19365. Both artifacts are *Nerita picea* shells that have been perforated at one end, presumably for stringing (Figure 14). Cat# 59a measures 1.2 x 0.9 x 0.7 cm and Cat# 59b measures 0.9 x 0.7 x 0.5 cm. *Nerita* shells were commonly used in shell *leis*. As Buck (1957) notes:

> *Nerita* shell necklaces (*lei pipipi*)... were popular because of their numerous shades of color and varied markings. In this shell a hole was made through the large whorl behind the shell aperture. ...the convex surface of the whorl was filed down thin and the hole punched through. Thus many of the holes are irregular in shape and show no signs of drilling. The cord or ribbon is threaded through the hole and the shell aperture to form a long single chain. In some necklaces the shells are turned alternately on the cord so that the apertures of each pair face each other. The shell commonly used was *Nerita polita* (*lupe'e*); but *N. picea* and *N. neglecta*, both called *pipipi* were used occasionally... (1957:543).

Tools

Nine artifacts identified as tools were recovered from Sites 19306, 19318, 19365 and from the surface of the project area. The tools include eight abraders and a whetstone. The tools are described by type and function below.

Abraders - Coral and scoria abraders are evaluated according to their overall shape in plan view, following the classification system and nomenclature set forth by Suggs (1961) to describe coral abraders found at Nuku Hiva in the Marquesas Islands, French Polynesia. In this system, abraders are either informal, meaning that the shape of the raw material is dominant; or formal, indicating that the characteristics of the raw material have been extensively modified by use. Cross-sections are generally taken perpendicular to the tip and butt of the abrader, while the number of abrasion faces is indicative of preferential abrasion on a given surface.

Of the eight abraders encountered in the project area, three are manufactured of coral and five are manufactured from echinoid spine. Two of the coral abraders are complete (Cat# 47 and 54), and one is an abrader fragment (Cat# 56) (Figures 15 and 16). Cat# 47 is informal in description, with a plano-convex cross-section and one heavily abraded face. It is roughly triangular in plan view and measures 14.1 x 9.7 x 4.3 cm. Cat# 54 is a formal abrader recovered in two pieces and subsequently mended. It is convex-lateral in cross-section and blunt in plan view, and has been ground on all surfaces. It measures 1.5 x 0.7 x 0.5 cm. Cat# 56 is a fragment of an informal abrader. It is irregular in cross-section and plan view, and has four heavily to moderately abraded faces. It measures 5.8 x 5.5 x 3.1 cm.

The echinoid abraders include one complete specimen, one partial specimen, and three fragments. The complete specimen measures 3.2 x 0.7 x 0.6 cm, while the partial specimens and fragments range from 2.1-4.0 cm in length and 0.5-0.6 cm in width. The number of abraded faces on the echinoid abraders and abrader fragments varies from 1-3 (the complete abrader is evenly abraded on all surfaces), with the most common type of face being a bevel extending from the midsection to the distal end. The fragments represent portions of the proximal end or midsection, due apparently to the preferential use of distal ends on the abraders. All of the echinoid abraders are informal in shape, but show a great deal of variation in the degree of abrasion represented.

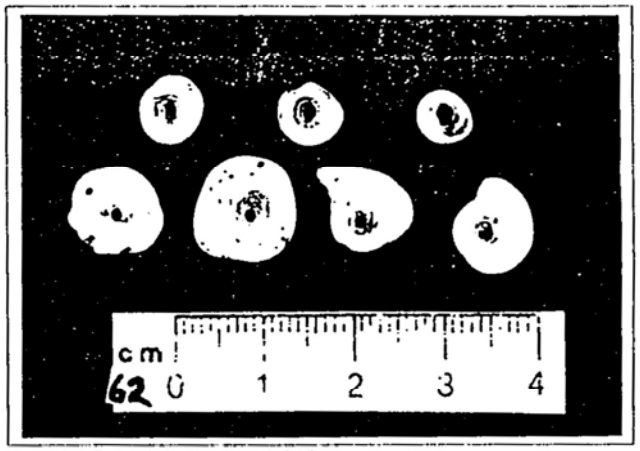

Figure 14. Perforated Nerita picea (Neg. 4406-18)

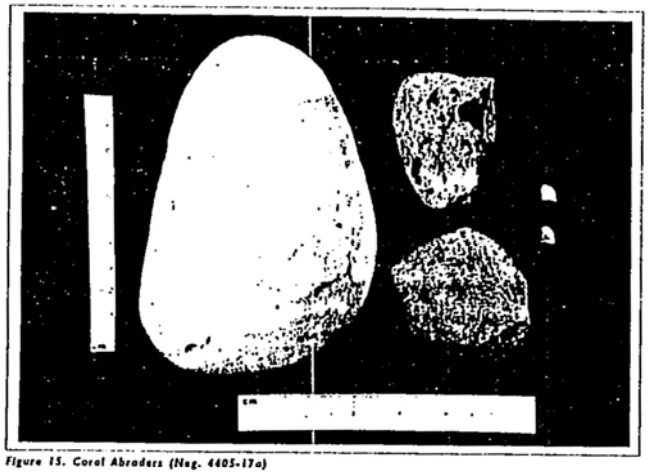

Figure 15. Coral Abraders (Neg. 4405-17a)

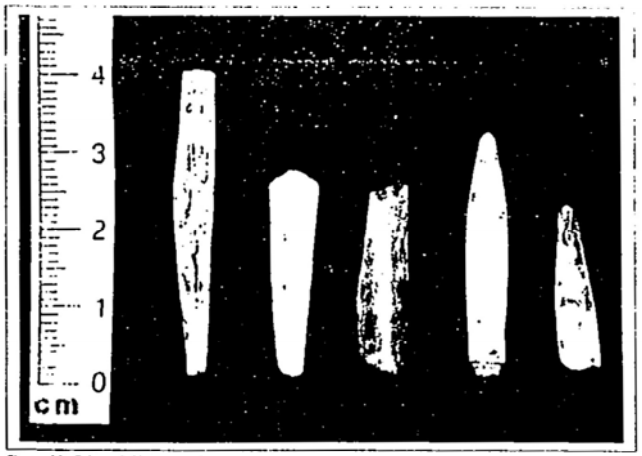

Figure 16. Echinoid Abraders (Neg. 4405-9a)

Coral abraders apparently served multiple purposes prehistorically, ranging from "rubbers" used to finish canoes and wooden bowls (Buck 1957), to saws or files used in the manufacture of bone and shell fishhooks (Emory, Bonk, and Sinoto 1968; Suggs 1961). The variety of shapes, edges and worn surfaces represented by the abraders in the assemblage suggest that the abraders served as multipurpose tools. Use of a particular surface over a period of time might generate a sawing or filing edge, which in turn would wear down during use to a new shape which could serve a new purpose. Echinoid abraders, in contrast, are small and fairly soft, and were probably used for finishing and more specialized tasks.

Whetstone - The whetstone fragment is manufactured from dark gray, aphanitic basalt and derives from the surface of Feature A of Site 19306 (Figure 17). It is formal in description and has one concave surface. It is irregular in cross section and measures 13.5 x 8.5 x 5.2 cm, and is good condition. Whetstones were used for sharpening the cutting edges of other tools, such as adzes or flaked tools.

Uncertain Function

Modified Basalt - One modified basalt artifact was recovered from Site 19365. The artifact is manufactured of vesicular basalt and, based on the presence of several ground surfaces, may have functioned as an abrader or a small pestle (Figure 18). It measures 6.0 x 5.1 x 3.2 cm and is good condition.

Modified Gourd - One modified gourd artifact was recovered from the surface of the project area (IF# 2). It appears to be a portion of a small gourd bowl or container, given the presence of an abraded "rim" at one opening, but did not retain sufficient portions of the base to definitively identify (Figure 19). It measures 7.7 x 6.5 x 5.1 cm and is in fair condition.

Modified Shell - Twenty-six modified shell artifacts were recovered from 19314, 19365, and 19368. All are disk-like apices of Conus shells which have been perforated through the center (Figure 20). These shells are often washed onto the beach, where the hole is created by progressive erosion in the surf rather than by human action, but they were occasionally collected and strung as necklaces. They range in diameter from 0.5-1.6 cm.

Manuports - Two basalt manuports (Cat# 15 and 35) were recovered from Sites 19365 and 19376. Both artifacts are small waterworn pebbles, similar to those used in *'ili'ili* pavements. Cat# 15 measures 2.1 x 1.5 x 1.6 cm and Cat# 35 measures 2.8 x 2.6 x 1.1 cm.

Non-Indigenous Artifacts

Eleven artifacts of recent historic manufacture were recovered from the project area. The artifacts include money, personal adornments, weapons and miscellaneous items recovered from Sites 19351, 19365, 19368 and from ST-17F.

Miscellaneous - Miscellaneous items recovered from the project area include a metal can fragment, two metal fragments and two plastic fragments. The items were recovered from Sites 19351 and 19365 and, except for indicating historic period or recent activity at these sites, provide little information concerning place or date of manufacture or function.

Money - A nickel and two pennies were recovered from Sites 19368 and 19365, respectively. The nickel was minted in 1969. One of the pennies was minted in 1973; the other was extremely corroded and could not be dated.

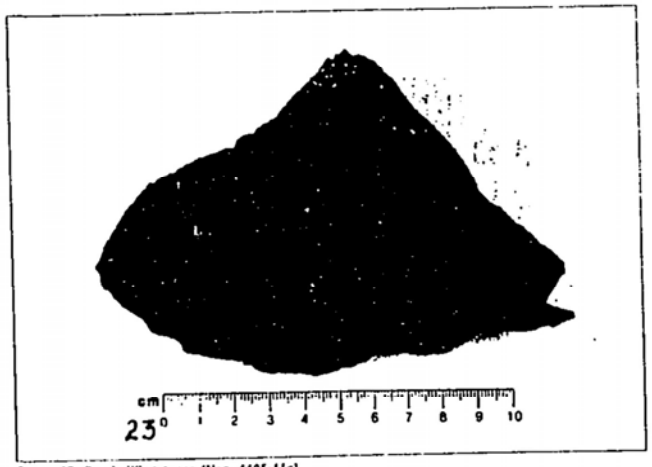

Figure 17. Basalt Whetstones (Neg. 4405-11a)

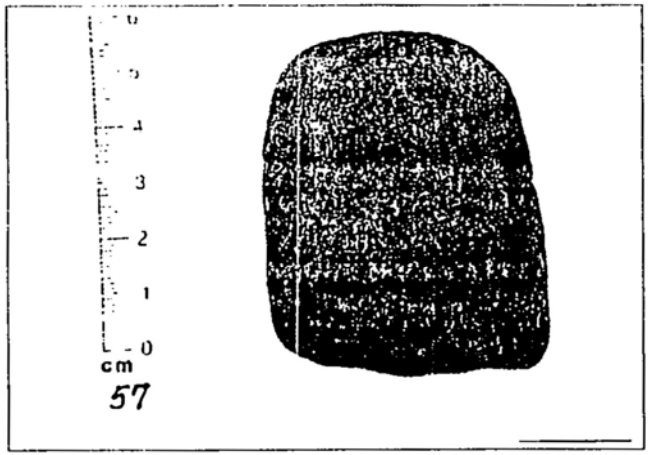

Figure 18. Modified Basalt Artifact (Neg. 4405-16)

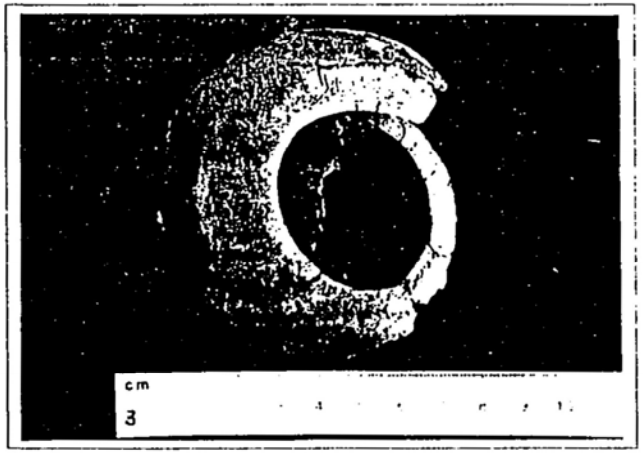

Figure 19. Modified Gourd Artifact (Neg. 4405-16)

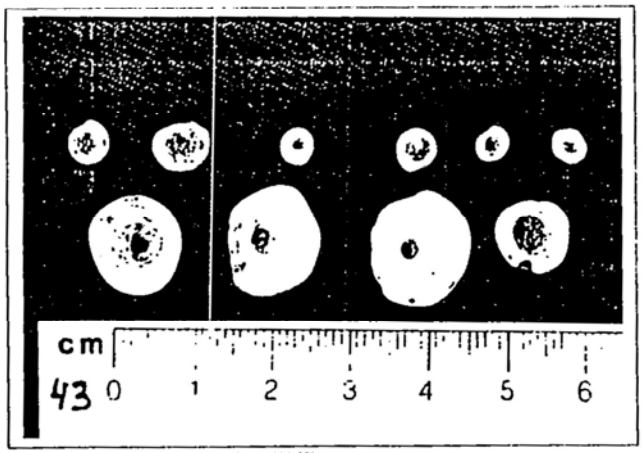

Figure 20. Modified Shell Artifacts (Neg. 4406-13)

Personal Adornment - Two items utilized for clothing or personal adornment (Cat# 10 and 45) were recovered from Site 19368. Cat# 10 is a metal pendant (or keychain ornament) manufactured from cast iron. One side is decorated with a relief design of an eagle in flight on a background of pine trees and mountains. An emblem below the eagle reads "Alaska". The back of the pendant has a makers mark "@ 1984 Siekiyou Eucycle Co." Cat# 45 is a large metal safety pin, and based on the lack of rust noted on its surface, is probably a recent addition to the site.

Weapons - Two shell casings (Cat# 31a,b) were recovered from ST-17F. Both are from 42-caliber shells and are in good condition.

Discussion

Analysis of the artifact assemblage encountered during the current investigation suggests that prehistoric activities in the project area were focused primarily on subsistence. The range of activities represented is fairly narrow and probably included manufacture of shell artifacts, as well as the production of fishing gear, although these types of artifacts were encountered in limited numbers. Stone tool manufacture and use is indicated by the basalt and volcanic glass material, as well as the whetstone, and may have been accompanied by food processing and craft production activities which relied on the use of flaked stone tools. Woodworking, such as canoe manufacture or wooden tool production, is suggested by the coral abraders present in the project area assemblage.

The non-indigenous assemblage is also very narrow in content, and was most likely deposited in the project area through recent recreation or dumping activities rather than occupation. Those items that could be dated (money, pendant) were manufactured in the 20th century; the remaining artifacts are interpreted as recent based on condition.

Comparison of the project area assemblage with assemblages encountered elsewhere in West Hawaii indicates that a general similarity in the range, but not abundance of artifacts. Assemblages from Anaehoomalu (Jensen 1990), Makalawena (Donham 1986), Ooma II (Donham 1987b), Awakee (Donham 1987a), and Kalahuipuaa (Kirch 1984) have fairly high proportions of fishing gear and artifacts manufactured from marine materials (shell, sea urchins, etc.) but have lesser amounts of materials manufactured from bird or mammal bone. The relative abundance and variety of artifacts in the current assemblage is greater than that noted for Awakee (where wave action has destroyed many of the potential prehistoric sites), but is less than that encountered in the other areas. Based on this comparison, the current assemblage may indicate that the current project area was used for a more limited range of activities and/or more temporary occupation, or may indicate that the activities undertaken in the project area involved fewer formal artifacts and thus left fewer traces.

ECOFACTUAL REMAINS

Objectives and Methods

Ecofactual remains are archaeologically significant on a number of levels, as the variety and content of food remains contained within a given cultural deposit provide useful information concerning prehistoric diet and resource utilization patterns. The analysis of ecofactual remains for inventory survey projects thus has two primary objectives:

1. To determine the variety and distribution of ecofactual remains present in each cultural deposit encountered within the project area; and

2. To provide an indication of dietary and resource exploitation patterns for each site, and for the project area as a whole.

All ecofactual remains recovered from the project area underwent detailed analysis in the laboratory. Detailed analysis involved splitting the sample into two size classes by it through 1/4-in and 1/8-in screens. One hundred percent of the material retained in the 1/4-in screen was completely sorted to the lowest taxonomic level possible, while the material retained in the 1/8-in screen was inspected both for artifactual material and for taxa not encountered in the larger portion of the sample. Each category of identified invertebrate material was then bagged and individually weighed. Relative percentages of invertebrate types were calculated for each provenience, as well as for the site as a whole. Marine shell identifications were verified and augmented using Kay (1979). The vertebrate faunal remains derived from PHRI's investigations were submitted to Dr. Alan Ziegler of Kaneohe, Oahu for identification.

The sampling design outlined above is adapted from Kirch (1979), based on a series of experiments measuring the relative distribution of molluscan and bone material retained on each screen. Kirch concluded that use of the screening process increased the speed of the sorting process without decreasing either the accuracy or statistical validity of the overall analysis. The taxonomic distribution and weight of material retained on the 1/4-in screen should thus be considered as representative of the variety and relative percentages of each taxon present in the entire sample.

Results

Weight Data - Ecofactual remains were encountered in the deposits at Sites 19265, 19273, 19294, 19295, 19312, 19314, 19315, 19318, 19321, 19351, 19365, 19366, 19367, 19368, and 19376. The results of the analysis are presented in Table 12. Total weights for each taxon (in grams) are tabulated by unit, with subtotals indicating the combined weight per feature for each larger material class (e.g., gastropods). The total weight of each taxon within the assemblage is provided in the final column of each table, while the grand total represents the combined weight of all the ecofactual materials derived from the analyzed deposits.

By weight, 84.8% of the 2,555.46 grams of ecofactual remains recovered from the project area is contributed by marine gastropods, 17.8% by bivalves, 10.1% by other invertebrates, 0.07% by Chrondrichthyes, 1.5% by Osteichthyes, 0.21% by Mammalia, 0.01% by Indeterminate vertebrates, and 1.53% by vegetal remains. Thirty-seven species representing 32+ families were identified including 12 gastropod (marine), five bivalve, seven Osteichthyes, three Mammalia and two vegetal families. Members of the Family Cypraeidae were the most common invertebrate taxa identified, while members of the family Diodontidae were the most commonly identified vertebrate taxa. Vegetal remains were comprised primarily of charcoal, supplemented by small amounts of macadamia (*Macadamia integrifolia*), kukui (*Aleurites moluccana*) and unidentified wood.

The ecofactual assemblages associated with individual sites and features are fairly similar in content and relative distribution to the total assemblage discussed above. All of the deposits, except those at Site 19321, were dominated by marine gastropods (71-100% of each site deposit by weight). The deposits at Site 19321 comprised entirely Osteichthyes remains. Of the site

Table 12. Detailed Distribution of Portable Remains

Site No.	Other Total	19265 Total	19273 Total	19294 Total	19295 Total	19312 Total	19314 Total	19315 Total	19318 Total	19321 Total	19351 Total	19365 Total	19366 Total	19367 Total	19368 Total	19376 Total	Grand Total
INVERTEBRATES																	
MOLLUSCA																	
GASTROPODA																	
PATELLIDAE																	
Cellana sp.	0.00	0.12	1.25	0.37	5.43	0.00	0.00	3.21	7.31	0.00	0.31	33.33	1.06	0.16	3.63	5.24	[illegible]
TROCHIDAE																	
Trochus intextus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.12	2.96
TURBINIDAE																	
Turbo sandwicensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.25
NERITIDAE																	
Nerita picea	0.83	0.00	0.00	1.23	0.00	5.13	0.00	0.25	12.65	0.00	0.00	178.70	11.25	0.41	0.00	11.74	214.05
N. polita	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.16	0.00	0.00	0.31	2.53
LITTORINIDAE																	
Littorina pintado	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.10	0.00	0.00	3.51	0.00	0.00	0.00	0.00	4.27
PLANAXIDAE																	
Planaxis labiosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.14	0.00	0.00	0.00	0.00	3.14
STROMBIDAE																	
Strombus maculatus	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00	0.00	0.00	0.00	2.44
HIPPONICIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	2.94
CYPRAEIDAE	31.39	4.81	51.87	25.98	89.05	0.74	12.38	62.72	174.22	0.00	42.13	944.66	57.15	4.93	0.00	82.61	1608.95
CYMATIIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.21	0.00	0.00	0.00	0.49	5.70
THAIDIDAE	0.00	0.26	0.00	17.22	10.03	0.00	3.73	0.00	6.91	0.00	3.67	64.39	4.21	0.00	0.00	0.54	112.36
Drupa sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.75	0.00	0.00	0.00	0.00	34.75
CONIDAE	4.06	0.00	0.20	16.93	6.33	0.00	0.00	0.00	6.13	0.00	0.00	97.50	0.00	0.00	0.00	0.00	135.45
SUBTOTAL GASTROPODA	36.38	5.29	57.42	73.30	113.29	17.87	16.14	66.18	201.78	0.00	46.11	1555.14	74.81	5.64	3.63	104.87	2167.88
BIVALVIA																	
MYTILIDAE																	
Brachidontes crebristriatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.08
ISOGNOMONIDAE	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	11.54	0.35	0.00	0.00	0.00	11.94
Isognomon californicum	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.81	0.36	0.00	0.00	0.15	1.92
CHAMIDAE	0.00	0.00	14.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.11	0.00	0.00	0.00	0.00	23.79
TELLINIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00	1.25	0.00	0.00	0.00	1.88	3.69
VENERIDAE	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	3.65	0.00	0.00	1.81	0.00	0.39	0.00	0.00	5.34
SUBTOTAL BIVALVIA	0.19	0.00	14.38	0.00	0.19	0.13	0.00	0.51	4.06	0.00	0.00	23.13	0.51	0.39	0.00	2.03	45.51
OTHER INVERTEBRATES																	
ECHINOIDEA	0.00	0.00	0.00	2.73	2.58	0.00	0.00	3.11	17.36	0.00	0.00	315.01	2.76	0.00	0.00	18.20	354.61
CRUSTACEA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	3.33	0.00	0.00	0.00	0.00	3.46
SUBTOTAL OTHER INVERTEBRATE	0.00	0.00	0.00	2.73	2.58	0.00	0.00	3.11	17.59	0.00	0.00	318.54	2.76	0.00	0.00	18.20	357.87
TOTAL INVERTEBRATES	36.47	5.29	66.90	75.63	116.06	18.00	16.14	67.80	223.35	0.00	46.11	1594.30	78.06	6.08	3.63	113.38	2472.96
VERTEBRATES																	
CHONDRICHTHYES																	
SHARK/RAY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	0.00	0.00	1.73
OSTEICHTHYES																	
MURAENIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.28
CIRRHITIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.38
LABRIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.69
SCARIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.17
ACANTHURIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.17
BALISTIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.14
DIODONTIDAE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.48	19.06	0.00	0.00	0.00	0.00	0.00	0.00	34.54
UNIDENTIFIED FISH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00	0.00	0.00	0.00	1.77
SUBTOTAL OSTEICHTHYES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.81	19.06	0.00	3.99	0.00	0.00	0.00	0.00	38.76
MAMMALIA																	
CANIDAE																	
Canis familiaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
SUIDAE																	
Sus scrofa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.09
BOVIDAE																	
Bos taurus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00	0.00	0.00	1.92
ORDER AND FAMILY INDETER.																	
Small to medium mammal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.35
SUBTOTAL MAMMALIA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.36	0.00	0.00	0.00	0.00	5.36
INDETERMINATE																	
ORDER AND FAMILY INDETER.																	
Medium vertebrate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL VERTEBRATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.81	19.06	0.00	9.35	0.00	1.80	0.00	0.00	45.93
VEGETAL REMAINS																	
PROTEACEAE																	
Macadamia integrifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	0.00	0.00	0.00	0.00	1.29
EUPHORBIACEAE																	
Aleurites moluccana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.46
OTHER																	
Charcoal	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.17	0.00	0.00	24.81	0.63	0.00	0.00	0.00	25.87
Wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.00	0.00	0.00	0.00	4.06
TOTAL VEGETAL REMAINS	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.17	0.00	0.00	29.36	0.63	0.46	0.00	0.00	39.08
GRAND TOTAL	36.47	5.29	66.90	75.63	116.66	23.96	16.37	67.80	239.33	19.06	46.11	1633.91	78.69	14.54	3.63	113.38	2555.46

deposits dominated by marine gastropods, three (19265, 19351 and 19368) were comprised entirely of marine gastropods; three (19295, 19315, and 19376) contained bivalves and other invertebrates; two (19273 and 19312) contained bivalves; two (19318 and 19365) contained bivalves, other invertebrates, vertebrates and vegetal remains; one (19294) contained other invertebrates; one (19314) contained vegetal remains; one (19366) contained bivalves, other invertebrates and vegetal remains; and one (19367) contained bivalves, vertebrates and vegetal remains.

Ubiquity Data - In addition to weight data, ubiquity values were calculated in order to correct for possible skewing of the data which can occur when weights alone are used to characterize importance of individual taxa in a site. Using weight calculations only, for example, a single large *Turbo* shell would be accorded more importance than many smaller shells which weigh less, but which may have been equally important food resources. Further, differential preservation of archeological remains results in the overrepresentation of more durable materials (like the larger, heavier shells) in sites. As Hastorf and Popper state:

> "In sum, ubiquity analysis is useful, within limitations, for showing general trends when one has little control over the sources of patterning in one's data. By measuring the frequency of occurrence instead of abundance, it reduces but does not eliminate the effects of differences in preservation and sampling" (Hastorf and Popper 1988: 64).

Ubiquity calculations treat all samples as independent, and of equal value; only the presence or absence of a taxon in a given level is noted. The number of samples in which a taxon appears is divided by the total number of samples from a site, giving a percentage of samples in which a taxon is represented at the site. In this manner, problems of differential preservation are partially offset.

In general, ubiquity values show a positive correlation with relative weight percentages (Table 13). Ubiquity calculations demonstrated that Echinoidea and members of the family Cypraeidae, both of which comprised high percentages of the assemblage by weight, were also the most consistently represented genera. Other taxa with high ubiquity scores and relatively high relative weight percentages included *Nerita picea*, Thaididae and Conidae.

Ubiquity calculations were additionally useful in highlighting instances where smaller shell taxa, such as *Cellana sp.*, appear scarce when characterized by weight percentage, but are present in more than 48% of the samples. The ubiquity of these taxa is important in terms of characterizing subsistence patterns throughout the project area, and making comparisons between site assemblages, and suggest that shellfish may have been collected based on flavor or availability, as well as amount of actual protein derived.

Discussion

The results of the ecofactual analysis indicate that subsistence patterns in the project area included the collection and consumption of a large variety of shell fish, ranging from several taxa of marine gastropods and bivalves to sea urchins and crustaceans. In general, the marine invertebrates included in the assemblage are common inhabitants of the shorelines, shallow-water areas, solution benches and fringing reefs of the windward islands of the Hawaiian chain and would have been easily accessible to local populations. The most common taxa are noted below, with comments on their occurrence and probable economic value (taken from Titcomb *et al.* 1978: 337-353):

Table 13. Ubiquity Values for Ecofactual Remains

CLASS	FAMILY/SPECIES	n	ubiquity
GASTROPODS	PATELLIDAE		
	Cellana sp.	31	48 43
	TROCHIDAE		
	Trochus intextus	3	4 69
	TURBINIDAE		
	Turbo sandwicensis	1	1 56
	NERITIDAE		
	Nerita picea	31	48 43
	Nerita polita	3	4 69
	LITTORINIDAE		
	Littorina pascha	6	9 37
	PLAKAXIDAE		
	Plakaxis kosea	2	3 13
	STROMBIDAE		
	Strombus maculatus	2	3 13
	HIPPONICIDAE	4	6 25
	CYPRAEIDAE	47	73 44
	CYMATIDAE	3	4 69
	THAIDIDAE	20	31 25
	Drupa sp.	1	1 56
	CONIDAE	14	21 88
BIVALVES	MYTILIDAE		
	Brachidontes crebristriatus	1	1 56
	ISOGNOMONIDAE	8	12 50
	Isognomon californicum	6	9 37
	CHAMIDAE	3	4 69
	TELLINIDAE	3	4 69
	VENERIDAE	5	7 81
OTHER INVERTEBRATES	ECHINOIDEA	32	50 00
	CRUSTACEA	3	4 69
CHONDRICHTHYES	Shark/Ray	1	1 56
OSTEICHTHYES	MURAENIDAE	1	1 56
	CIRRHITIDAE	1	1 56
	LABRIDAE	3	4 69
	SCARIDAE	1	1 56
	ACANTHURIDAE	1	1 56
	BALISTIDAE	3	4 69
	DIODONTIDAE	2	3 13
	Undentified Fish	3	4 69
MAMMALIA	CANIDAE		
	Canis familaris	2	3 13
	SUIDAE		
	Sus scrofa	1	1 56
	BOVIDAE		
	Bos taurus	1	1 56
	ORDER AND FAMILY INDETERMINATE		
	Small to medium mammal	1	1 56
INDETERMINATE	ORDER AND FAMILY INDETERMINATE		
	Medium Vertebrate	1	1 56
VEGETAL	PROTEACEAE		
	Macadamia integrifolia	1	1 56
	EUPHORBIACEAE		
	Aleurites moluccana	1	1 56
	OTHER		
	Charcoal	8	12 50
	Wood	1	1 56

Cypraeidae - Members of the family Cypraeidae were known as *leho* by the Hawaiians and were of major importance in the economy as food, ornaments, tools and octopus fishing lures. To prepare *leho* for consumption, the shells were broken open and the meat was removed and worked with salt. The flesh was then wrapped in *ti* leaves and cooked over coals. Some people merely boiled the shell and then removed the meat. For the shells, small yellow and white *leho* were reserved for the *ali'i* to use as ornaments and were occasionally used as currency. Larger shells were used to make scrapers for removing the skin from cooked taro and breadfruit, and for grating cocorut. Cowrie scrapers with a sharp, serrated edge were also used to incise wauke bark to remove it from the plant. The *mauritius* and sometimes the tiger cowries were used as part of octopus lure assemblies.

In terms of habitat, the cowrie range from the intenidal to depths of about 100 m. The most common species in the Hawaiian Islands are found in shallow water under loose rocks and boulders along the shoreline and in crevices at the seaward edge of solution benches and fringing reefs.

Patellidae - Members of the family Patellidae, or limpets, were grouped together and called *'opihi* by the Hawaiians. The *'opihi* were extremely well-liked as a food item and were reportedly the most commonly eaten shells. The favorite method of preparation was raw and salted, either with or without seaweed. They were sometimes washed clean and then cooked in the shell, using a calabash with hot stones. The shells were picked out later. This method enabled the broth (*kai*) to be used, especially by the sick and young. The meat was pulled from the shells or sometimes scooped out with a smaller, empty *'opihi* shell. *'Opihi*, especially *'opihi'awa*, were used extensively as medicine, and were also associated with sorcery. Although no examples of utilized *'opihi* shells were encountered in the current project area, empty *'opihi* shells were often used for scooping, peeling and scraping because of their sharp edges.

Within the Hawaiian island chain, *Cellana spp.* are restricted in their occurrence to the shorelines of volcanic islands. They are generally found on basalt shorelines from the spray zone seaward to the calcarcous algal zone, except for *C. talcosa* which occurs at depth of 1 to 10 cm along abrupt coastlines. Taxa recognized by the Hawaiians included *C. talcosa* (*'opihi ko'ele*), *C. sandwicensis* (*'opihi 'alinalina*) and *C. exarata* (*'opihi makaiauli*).

Neritidae - *N. picea* and *Theodoxus neglectus* are both known to the Hawaiians as *pipipi*. *Pipipi* is a general name for small mollusks used with modifying terms to indicate various species with habits and habitats similar to nerites. *N.picea* is the most common taxon of *pipipi* as well as the dominant nerite along Hawaiian shorelines, and is abundant on all rocky substrates from the splash zone to the high water mark just above the littorines. *Theodoxus neglectus* are euryhaline and are found not only at seaward edges, but also in brackish water assemblages. They are found immersed, both on the surface of the substratum and under rocks and rubble. *Pipipi* were used as a food item, and required a needle or pick to remove the meat. Some were eaten as they were collected, while others were cooked by boiling or by wrapping the shell in leaves and broiling. Some people made a broth and added other shells for flavor. Empty shells were then commonly strung in *leis* or bracelets.

N. polita, a larger nerite, was known as *kupe'e*. *Kupe'e* were used as food items, much in the way described for *pipipi* above, but were most prized for their ornamental value. The Hawaiians had names for many *kupe'e* according to their color or markings: *kupe'e 'ula* (red), *anuenue* (rainbow - red or black striped), *palaoa* (whale tooth ivory - creamy white color), *'ele'ele* (black), *kani'o* (vertical stripes), *mahiole* (warrior's helmet - white with red stripes) and the rare *puna*. The rarest of these were the *'ula*, *anuenue*, *mahiole* and *puna*, and were saved for chiefs. Drilled and made into bracelets, the *kupe'e* were an emblem of mourning for the *ali'i*. *Kupe'e* occur beneath the surface of the sand among boulders at the high tide line and are generally nocturnal, plowing through the sand and crawling up the algae covered rocks on which they feed.

Thaididae - Members of the Thaididae family were known variously as *aupupu*, *'awa*, *makaloa* and *pupu makaloa*. They were primarily used as a food source, but larger specimens with a long, sharp, strong lip were often made into small adzes. *Morula spp.* are common in the intertidal zone on hard substrates where there is strong wave action, while *Drupa spp.* are common on benches, reefs and basalt shores where there is heavy surf action and on rocky substrates to depths of 15 m. The shells are often covered with a growth of coralline algae.

Conidae - Members of the family Conidae were known either as *pupu-'ala* (cones that did not sting) or as *pupu poniuniu* (cones that did sting). Cones, although extremely common in the Hawaiian islands, were seldom used as food items, but were instead prized as ornaments. Kay (1949) reports that one species, *C. millepunctatus*, was used for food, but was not a preferred or common item in the diet. Cones are among the most conspicuous gastropods on reefs and benches that fringe the shoreline, and occur in deeper waters offshore. Of the 25 species identified in Hawaii, six are dominant on marine benches and two are dominant on subtidal reefs.

Bivalves - While none of the more common bivalves encountered in the current assemblage were extensively described by Titcomb, she does refer to use of bivalves as a general category. Bivalves were not extensively used as food items, although members of the families Chamidae (rock oysters), Mytilidae and Isognomonidae (mussels) were eaten when available. More common uses of bivalves included use as a raw material in fishhook manufacture, or collection for the sake of pearls lodged inside oysters. Most bivalves are found near the shorelines and within fringing reefs, where there are sandy areas for burrowing.

Fish, eels and shark/ray provided additional marine resources, with the majority being obtained from inshore habitats. Inshore taxa were generally obtained using a variety of techniques, including gathering, trapping, poisoning, snaring, spearing, netting, or shallow-line angling; while deeper sea taxa were obtained with long-line angling and trolling from canoes (Kirch 1979:208). The actual contribution of fish to the diet cannot be determined, due to the differential preservation of fish remains in archaeological contexts. It should be noted that marine vertebrates are neither abundant by weight or in terms of ubiquity, which suggests that invertebrates were the more important resource.

In addition to marine resources, the presence of terrestrial mammal and vegetal remains in the deposits from Sites 19314, 19318, 19365, 19366, and 19367 indicates that terrestrial resources were also utilized by local populations. All of the terrestrial taxa included in these deposits, with the exception of *Bos taurus* and *Macadamia integrifolia*, are prehistoric introductions but, given their continued use throughout both the prehistoric and historic periods, provide little definitive information concerning site age.

CONCLUSION

GENERAL SUMMARY OF FINDINGS

The present inventory survey has generally confirmed the previous survey findings of Yent and Griffin (1978). These researchers observed that the project area (1) contains a number of intact and partially intact archaeological sites, which are (2) comprised of both single and multiple component examples, and (3) reflect both prehistoric occupation and exploitation as well as post-1940's activities (especially military). Also clearly documented in 1978 and during the present work is the fact that the post-1940's activities within the project area have extensively impacted many of the pre-existing components.

Despite prior impacts, formal feature types still represented in the project area include adjoining C-shapes, alignment, cairn, cairn with adjoining wall, cleared area, circular alignment, circular enclosure, circular wall, C-shape, C-shape wall, C-shape with adjoining wall, depression, enclosure, enclosure with adjoining C-shape, foundation, hearth, D-shaped alignment, L-shaped wall, L-shaped alignment, midden scatter, modified outcrop, mound, overhang, parallel walls, paved area, paved terrace remnant, pylons, ramp, remnant enclosure, remnant terrace, remnant U-shape, rubble concentration, semi-circular alignment, terrace, terrace with adjoining wall, trail, trail segment, U-shape, upright stones, wall, wall remnant, and wall segment. These feature types exceed those identified by Yent and Griffin during their earlier survey report, in part because the present survey involved a much larger project area.

Functional feature types include agriculture, fencing, habitation, hunting blind, indeterminate, marker, military, park maintenance, possible agriculture, possible ceremonial, possible marker, possible military, possible post support, possible temporary habitation, recreation, temporary habitation, trail marker, transportation, and water transportation. In some cases more than one functional interpretation was assigned to a single feature.

From the listing of functional feature types, above, it is clear that occupation of the project area represents not only Native Hawaiian activities, but also intensive post-1940's, non-subsistence-related, non-indigenous uses. Indeed, up to 188 of the project area's 425 recorded features are believed to represent post-1940's presence. Many of these features are believed to have been constructed during episodes of military training at Hapuna and Puako during and following WWII, while other features appear to have been created during the 1950's-1980's by hunters and others engaged in recreational activities. Some of the identified rock features are even believed to represent State Park maintenance activities. As noted above, these same observations were made by Yent and Griffin during their 1978 survey (Yent and Griffin 1978: 3-4). Also shared with Yent and Griffin is the conclusion that none of these features are considered to retain significant information, interpretive, or cultural values.

Needless to say, assessments of Native Hawaiian settlement and land use within the project area proceeded only after extracting non-indigenous features from the data base. Considering only features which represent indigenous occupation, Native Hawaiian functional activities appear to have included exploitation of the area's marine resources, coupled with limited agriculture along a single-stream course which proceeds roughly east-west through the south central portion of the project area. Marine resource extraction and agricultural activities appear

to have been engaged while operating from temporarily occupied features and small site complexes which are widely scattered throughout the project area, as well as from permanently to semi-permanently occupied, larger site complexes located primarily along the coastal cliffs and coastal plateau. The relative percentage of occurrence of the inferred functions for indigenous feature types are graphically illustrated in Figure 21.

Radiocarbon age determinations document that these various functional activities span at least 681 years, beginning potentially as early as AD 1269 and continuing through to the present. Fully prehistoric occupation has been confirmed for Feature C at Site 19295, from which one radiocarbon age range suggests occupation between AD 1269 and AD 1526. This particular site represents a small complex containing five features believed to represent temporary habitation. Presumably, more intensive use, including possible permanent or semi-permanent occupation, occurred at a later date at several of the larger coastal complex sites. These complexes are represented principally by the remains at Sites 19365, 19366, 19367, and 19368. Unfortunately, the extensive post-1940's disturbances to all of these sites, combined with limited data collected during the present inventory survey, have conspired to limit the data supporting the above hypothesis. Since this issue remains unresolved, and since additional, though limited, information is still present at several of these sites, additional data recovery work is justified and is being recommended for several project area sites.

As noted above, Figure 21 graphically portrays the relative proportion of indigenous functional feature types. This portrayal, which is based on data from Table 6, compares fairly closely with other nearby coastal zones where inventory surveys have been similarly restricted to coastal margins and only a narrow band of the mikkle zone (cf., Jensen 1988). At many of these other locales (i.e., Puako, Paniau, Kapalaoa, Kalahuipuaa, Anaehoomalu, coastal Waikoloa), it appears that the inhabitants relied most heavily, for subsistence, on collected marine resources. Despite the absence of definite evidence of agriculture at many of the coastal sites, however, minimal agricultural features have been documented during surveys further inland (e.g., Rosendahl 1972), and of course several such features were identified along the shallow gulch/stream course located within the present project area.

In addition to engaging in subsistence-related activities, the residents of these coastal zones, especially at Waikoloa and Anaehoomalu, also undertook numerous specialized tasks, including scoria quarrying and abrader manufacture (as at Waikoloa and Anaehoomalu), extensive petroglyph etching (as a Puako, Paniau, Waikoloa, and Anaehoomalu), and production of a variety of tool types, particularly fishing-related gear. Interestingly, the absence of significant fishing gear constitutes one of the most significant contrasts between the present project area and these other coastal locations. Cultural deposits at Anaehoomalu, Waikoloa, Kalahuipuaa, and northward along the coast toward Kawaihae have typically yielded a wide range and relatively high density of fishhooks and secondary tools related to fishhook manufacture. The present project area, however, yielded very few such items. These discrepancies could possibly be explained by sampling error, itself at least partially accounted for by the extensive disturbance to which many of the Hapuna project area sites have been subjected. Further evaluation of this possibility provides some of the justification for recommending additional data recovery work at several of the Hapuna area sites and features.

The information above, combined with the results of previous archaeological research within West Hawaii generally and the specific findings of historic documentary research within the project area (see Appendix D), have been utilized in developing final conclusions concerning the residual research potential, information value, and cultural/historical values of specific sites and features within the project area. These conclusions concerning residual

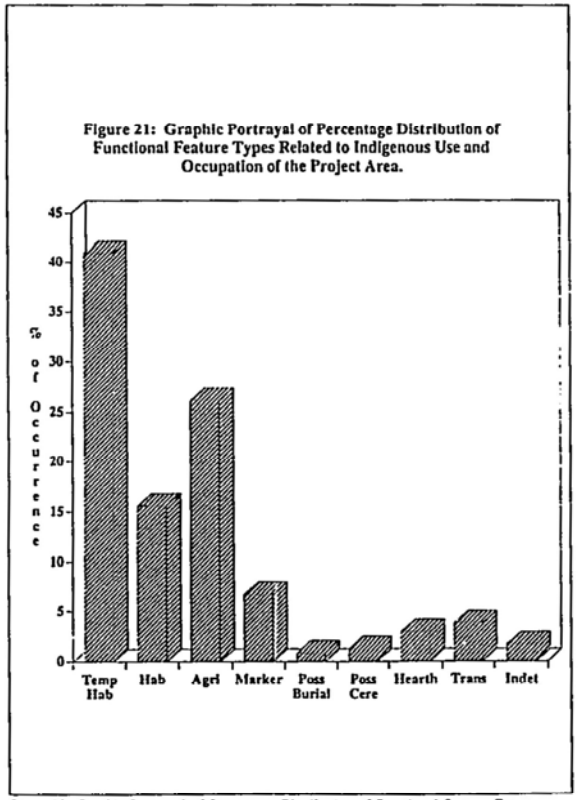

Figure 21. Graphic Portrayal of Percentage Distribution of Functional Feature Types Related to Indigenous Use and Occupation of the Project Area

significance have, in turn, been utilized to develop final treatment recommendations for the 164 sites which have been identified within the project area.

GENERAL SIGNIFICANCE ASSESSMENTS AND RECOMMENDED GENERAL TREATMENTS

Significance categories used in the site evaluation process are based on the National Register criteria for evaluation, as outlined in the Code of Federal Regulations (36 CFR Part 60). The DLNR-SHPD, and the Hawaii County Planning Department, use these criteria for evaluating cultural resources. Sites determined to be potentially significant for information content are evaluated under Criterion D, which defines significant resources as ones which "...have yielded, or may be likely to yield, information important in prehistory or history." Sites potentially significant as representat.ve examples of site types are evaluated under Criterion C, which defines significant resources as those which "...embody the distinctive characteristics of a type, period, or method of construction...or that represent a significant and distinguishable entity whose components may lack individual distinction."

Sites with potential cultural significance are evaluated under guidelines prepared by the Advisory Council on Historic Preservation (ACHP) entitled "Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review" (Draft Report, August 1985). The guidelines define cultural value as "...the contribution made by an historic property to an ongoing society or cultural system. A traditional cultural value is a cultural value that has historical depth." The guidelines further specify that "[a] property need not have been in consistent use since antiquity by a cultural system in order to have traditional cultural value."

To further facilitate management decisions regarding the subsequent treatment of resources, the general significance of the archaeological resources identified during the reconnaissance survey have also been evaluated in terms of potential scientific research, interpretive, and/or cultural values (PHRI Cultural Resource Management Value Modes). Research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, past lifeways, and cultural processes at the local, regional, and interregional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation. Cultural value, within the framework for significance evaluation used here, refers to the potential of archaeological resources for the preservation and promotion of cultural and ethnic identity and values.

The project's findings and conclusions concerning general site significance and recommended general treatments are summarized in Table 14. These findings and recommended treatments may be summarized further, as follows.

Of the 164 sites identified and recorded within or immediately adjacent to the project area, 156 are assessed as being significant or potentially significant solely for information content. However, for 138 of these sites, the present level of documentation (detailed recording of sites and features, surface collections, and limited test excavations) is considered sufficient to have recovered all of the significant information values represented by these sites, and no further archaeological data collection is warranted or recommended. Moreover, since none of these 138 sites represent unique, one-of-a-kind, or excellent site type examples, no preservation or interpretive development has been recommended for any of these 138 sites. These sites are listed in Table 14 under Significance Category "X" and Recommended Treatment Category "NFW".

Table 14. Summary of General Significance Assessments and Recommended General Treatments

*SIHP Site Number	Significance Category A	X	B	C	Recommended Treatment FDC	NFW	PID	PAI
19250	-	+	-	-	-	+	-	-
19251	-	+	-	-	-	+	-	-
19252	-	+	-	-	-	+	-	-
19253	-	+	-	-	-	+	-	-
19254	-	+	-	-	-	+	-	-
19255	-	+	-	-	-	+	-	-
19256	-	+	-	-	-	+	-	-
19257	-	+	-	-	-	+	-	-
19258	-	+	-	-	-	+	-	-
19259	-	+	-	-	-	+	-	-
19260	-	+	-	-	-	+	-	-

General Significance Categories:
- A = Important for information content, further data collection necessary (PHRI=research value)
- X = Important for information content, no further data collection necessary (PHRI=research value, SHPO=not significant)
- B = Excellent example of site type at local, region, Island, State, or National level (PHRI=interpretive value); and
- C = Culturally significant (PHRI=cultural value).

Recommended General Treatments:
- FDC = Further data collection necessary (detailed recording, surface collections, and limited excavations, and possibly subsequent data recovery/mitigation excavations);
- NFW = No further work of any kind necessary, sufficient data collected archaeological clearance recommended, no preservation potential;
- PID = Preservation with some level of interpretive development recommended (including appropriate related data recovery work);
- PAI = Preservation "as is", with no further work (and possible inclusion into landscaping), or possibly minimal further data collection necessary

* State Inventory of Historic Places (SIHP) numbers. SIHP numbers are five- digit numbers prefixed by 50-10-82 (50=State of Hawai; 10=Island of Hawaii; 82=USGS 7.5' series quad map ["Pu'u Hinai, Hawaii"]).

* Provisional assessment; definite assessment pending completion of further data collection.

Table 14. (cont.)

SIHP Site Number	Significance Category A	X	B	C	Recommended Treatment FDC	NFW	PID	PAI
19261	-	+	-	-	-	+	-	-
19262	-	+	-	-	-	+	-	-
19263	-	+	-	-	-	+	-	-
19264	-	+	-	-	-	+	-	-
19265	-	+	-	-	-	+	-	-
19266	-	+	-	-	-	+	-	-
19267	-	+	-	-	-	+	-	-
19268	-	+	-	-	-	+	-	-
19269	-	+	-	-	-	+	-	-
19270	-	+	-	-	-	+	-	-
19271	-	+	-	-	-	+	-	-
19272	-	+	-	-	-	+	-	-
19273	-	+	-	-	-	+	-	-
19274	-	+	-	-	-	+	-	-
19275	-	+	-	-	-	+	-	-
19276	-	+	-	-	-	+	-	-
19277	-	+	-	-	-	+	-	-
19278	-	+	-	-	-	+	-	-
19279	-	+	-	-	-	+	-	-
19280	-	+	-	-	-	+	-	-
19281	-	+	-	-	-	+	-	-
19282	-	+	-	-	-	+	-	-
19283	-	+	-	-	-	+	-	-
19284	-	+	-	-	-	+	-	-
19285	-	+	-	-	-	+	-	-
19286	-	+	-	-	-	+	-	-
19287	-	+	-	-	-	+	-	-
19288	-	+	-	-	-	+	-	-
19289	-	+	-	-	-	+	-	-
19290	-	+	-	-	-	+	-	-
19291	-	+	-	-	-	+	-	-
19292	-	+	-	-	-	+	-	-
19293	-	+	-	-	-	+	-	-
19294	-	+	-	-	-	+	-	-
19295	-	+	-	-	-	+	-	-
19296	-	+	-	-	-	+	-	-
19297	-	+	-	-	-	+	-	-
19298	-	+	-	-	-	+	-	-
19299	-	+	-	-	-	+	-	-
19300	-	+	-	-	-	+	-	-
19301	-	+	-	-	-	+	-	-
19302	-	+	-	-	-	+	-	-
19303	-	+	-	-	-	+	-	-
19306	-	+	-	-	-	+	-	-
19307	-	+	-	-	-	+	-	-
19308	-	+	-	-	-	+	-	-

Table 14. (cont.)

SIHP Site Number	Significance Category A	X	B	C	Recommended Treatment FDC	NFW	PID	PAI
19309	-	+	-	-	-	+	-	-
19310	-	+	-	-	-	+	-	-
19311	-	+	-	-	-	+	-	-
19315	-	+	-	-	-	+	-	-
19316	-	+	-	-	-	+	-	-
19317	-	+	-	-	-	+	-	-
19320	-	+	-	-	-	+	-	-
19321	-	+	-	-	-	+	-	-
19322	-	+	-	-	-	+	-	-
19323	-	+	-	-	-	+	-	-
19324	-	+	-	-	-	+	-	-
19325	-	+	-	-	-	+	-	-
19326	-	+	-	-	-	+	-	-
19327	-	+	-	-	-	+	-	-
19328	-	+	-	-	-	+	-	-
19329	-	+	-	-	-	+	-	-
19330	-	+	-	-	-	+	-	-
19331	-	+	-	-	-	+	-	-
19332	-	+	-	-	-	+	-	-
19333	-	+	-	-	-	+	-	-
19334	-	+	-	-	-	+	-	-
19336	-	+	-	-	-	+	-	-
19337	-	+	-	-	-	+	-	-
19339	-	+	-	-	-	+	-	-
19340	-	+	-	-	-	+	-	-
19341	-	+	-	-	-	+	-	-
19342	-	+	-	-	-	+	-	-
19343	-	+	-	-	-	+	-	-
19345	-	+	-	-	-	+	-	-
19346	-	+	-	-	-	+	-	-
19347	-	+	-	-	-	+	-	-
19348	-	+	-	-	-	+	-	-
19350	-	+	-	-	-	+	-	-
19351	-	+	-	-	-	+	-	-
19352	-	+	-	-	-	+	-	-
19353	-	+	-	-	-	+	-	-
19355	-	+	-	-	-	+	-	-
19356	-	+	-	-	-	+	-	-
19357	-	+	-	-	-	+	-	-
19358	-	+	-	-	-	+	-	-
19359	-	+	-	-	-	+	-	-
19360	-	+	-	-	-	+	-	-
19361	-	+	-	-	-	+	-	-
19362	-	+	-	-	-	+	-	-
19363	-	+	-	-	-	+	-	-
19369	-	+	-	-	-	+	-	-

Table 14. (cont.)

SIHP Site Number	Significance Category A	X	B	C	Recommended Treatment FDC	NFW	PID	PAI
19370	-	+	-	-	-	+	-	-
19371	-	+	-	-	-	+	-	-
19372	-	+	-	-	-	+	-	-
19373	-	+	-	-	-	+	-	-
19374	-	+	-	-	-	+	-	-
19375	-	+	-	-	-	+	-	-
19376	-	+	-	-	-	+	-	-
19377	-	+	-	-	-	+	-	-
19378	-	+	-	-	-	+	-	-
19379	-	+	-	-	-	+	-	-
19380	-	+	-	-	-	+	-	-
19381	-	+	-	-	-	+	-	-
19382	-	+	-	-	-	+	-	-
19383	-	+	-	-	-	+	-	-
19384	-	+	-	-	-	+	-	-
19385	-	+	-	-	-	+	-	-
19386	-	+	-	-	-	+	-	-
19387	-	+	-	-	-	+	-	-
19388	-	+	-	-	-	+	-	-
19389	-	+	-	-	-	+	-	-
19390	-	+	-	-	-	+	-	-
19392	-	+	-	-	-	+	-	-
19393	-	+	-	-	-	+	-	-
19394	-	+	-	-	-	+	-	-
19395	-	+	-	-	-	+	-	-
19396	-	+	-	-	-	+	-	-
19397	-	+	-	-	-	+	-	-
19398	-	+	-	-	-	+	-	-
19400	-	+	-	-	-	+	-	-
19402	-	+	-	-	-	+	-	-
19404	-	+	-	-	-	+	-	-
19405	-	+	-	-	-	+	-	-
19408	-	+	-	-	-	+	-	-
19409	-	+	-	-	-	+	-	-
19411	-	+	-	-	-	+	-	-
Subtotal:	**0**	**138**	**0**	**0**	**0**	**138**	**0**	**0**
19304	+	-	-	-	+	-	-	-
19312	+	-	-	-	+	-	-	-
19313	+	-	-	-	+	-	-	-
19314	+	-	-	-	+	-	-	-
19318	+	-	-	-	+	-	-	-
19319	+	-	-	-	+	-	-	-
19335	+	-	-	-	+	-	-	-
19338	+	-	-	-	+	-	-	-

Table 14. (cont.)

SIHP Site Number	Significance Category A	X	B	C	Recommended Treatment FDC	NFW	PID	PAI
19344	+	-	-	-	+	-	-	-
19349	+	-	-	-	+	-	-	-
19354	+	-	-	-	+	-	-	-
19364	+	-	-	-	+	-	-	-
19391	+	-	-	-	+	-	-	-
19399	+	-	-	-	+	-	-	-
19401	+	-	-	-	+	-	-	-
19403	+	-	-	-	+	-	-	-
19407	+	-	-	-	+	-	-	-
19412	+	-	-	-	+	-	-	-
Subtotal:	18	0	0	0	18	0	0	0
19406	-	+	-	+	-	+	-	-
19410	-	+	-	+	-	+	-	-
19413	-	+	-	+	-	+	-	-
Subtotal:	0	3	0	3	0	3	0	0
19367	+	-	+	-	+	-	+	-
19368	+	-	+	-	+	-	+	-
Subtotal:	2	0	2	0	2	0	2	0
19365	+	-	+	+	+	-	+	*
Subtotal:	1	0	1	1	1	0	1	1
19366	+	-	+	+	+	-	+	-
Subtotal:	1	0	1	1	1	0	1	0
19305	+	-	-	*	+	-	*	-
Subtotal:	1	0	0	1	1	0	1	0
Total:	23	141	4	6	23	141	5	1

Of the remaining 18 sites considered significant solely for information content, further data collection/recovery work is recommended. This recommendation is based on the finding that these sites, or specific features within site complexes, retain additional information which may be important to an understanding of local and/or regional prehistory or history. Implementation of additional data collection work is intended to result in a finding of "Affect, No Adverse Effect Through Data Recovery" for the proposed State Park expansion project.

The remaining eight project area sites are considered significant under multiple criteria, for which the following treatment recommendations have been made.

Coastal Complex Sites Significant for Information and Interpretive Value (2 sites):

> Sites 19367 and 19368 represent two of four large coastal complex sites believed to contain permanent or semi-permanent habitation features. Both retain potentially significant information value, and both may possess feature configurations which warrant some level of preservation and interpretive development. For both of these sites, further data recovery work, followed by some level of preservation with interpretive development, has been recommended.

Coastal Complex Site Significant for Information, Interpretive, and Cultural Value (1 site):

> Site 19366, as with Sites 19367 and 19368, represents a large coastal complex habitation site which retains significant information value and value as a site type. As well, this site contains two trail segments and two possible ceremonial features (Features F and J), rendering the site significant for cultural value as well. Additional data recovery work, followed by some level of preservation with interpretive development, is therefore recommended for this site.

Coastal Complex Site Significant for Information, Interpretive, and Cultural Value, and Possibly Containing Two Burial Features (1 site):

> Site 19365, as with Sites 19366, 19367 and 19368, represents a large coastal complex habitation site which retains significant information value and value as a site type. This site also contains a trail segment, rendering the site significant for cultural value. As well, this site contains two possible burial features (Features E and M). Additional data recovery work, followed by some level of preservation with interpretive development and possible preservation "as is" for any identified human remains, has been recommended for this site. In conducting any additional data recovery work, it is recommended that the procedures of Act 265 S.L.H. 1988 (Chapter 6E, Sec. 43 - Historic Preservation, Haw. Rev. Stat., as amended) be followed.

Trails (3 sites):

> Three single-component sites consisting of trails or trail segments are assessed as being significant for information value as well as culturally significant (19406, 19410, 19413). For these three sites, the present level of recording is considered sufficient to have recovered all of the significant

information values represented by these sites, and no further data collection is warranted or recommended. Although culturally significant per criteria of DLNR-SHPD, preservation is not considered essential because the trail sections present are not primary trail routes nor are they excellent examples of a particular type. Moreover, additional, equally representative examples are already preserved elsewhere within the immediate vicinity of the project area, and specifically will be preserved within other project area sites for which preservation with interpretive development is being recommended (see above, sites 19365 and 19366).

Single-Component Site Comprised of a Possible Ceremonial Feature (1 site):

Site 19305 consists of a modified outcrop and has been assessed as significant for residual information value as well as potentially cultural significant because the feature present may be ceremonial in nature. For this site, further data recovery work is recommended, with a provisional recommendation of preservation with interpretive development, pending the results of additional data recovery work.

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APPENDIX A: Site Descriptions

STATE NO.: 19250 PHRI TEMP. NO.: 855-003
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating low ridges and swales. Much exposed and deteriorating bedrock.
VEGETATION: Moderate density of grass, sparse *kiawe*.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DESCRIPTION: This site complex consists of two C-shapes (Feature A and B).

FEATURE A: C-shape
ADJACENT TERRAIN: Undulating bedrock pahoehoe outcrops on a west facing slope
VEGETATION: Short brown grass, *kiawe*.
FUNCTION: Hunting blind
DIMENSIONS: 2.10 m (200-20 degrees) by 1.95 m by 0.41 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high, one to two courses wide. The rocks are c. 0.45 m in length/diameter. The feature is located c. 1/4 mile *mauka* (E) of the highway, c. 36.00 m, 13 degrees from Feature B. Surface remains were not detected. A cultural deposit was not excavated. It rests on bedrock; trowel was prodded to a depth of c. 0.05 mbs.

FEATURE B: C-shape
ADJACENT TERRAIN: Undulating bedrock outcrops on a west facing slope.
VEGETATION: Short brown grass, *kiawe*.
FUNCTION: Hunting blind
DIMENSIONS: 1.90 m (206-26 degrees) by 1.25 m by 0.55 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. Rocks c. 0.30 m in length/diameter. Feature A is c. 36.00 m 13 degrees to Feature B. Surface remains were not detected. A cultural deposit was unexcavated. It lies on bedrock; trowel was prodded to a depth of c. 0.10 mbs.

STATE NO.: 19251 PHRI TEMP. NO.: 855-004
SITE TYPE: C-shape
TOPOGRAPHY: Knoll is located to the north. Undulating terrain sloping to the west with much exposed bedrock.
VEGETATION: Moderate density of grass, sparse *kiawe*.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.00 m (354 degrees) by 1.40 m by 0.47 m

DESCRIPTION: A c-shape consisting of c. 20 subangular basalt cobbles ranging from c. 0.10-0.20 m in diameter. Crudely stacked one to two courses high. Cobbles are stacked two courses high towards the middle of the feature. C-shape opens to the east. Height ranges from c. 0.05-0.47 m. Site is north of the southernmost gully/gulch in project area c. 100.0 m at 188 degrees. Also Site 3 Feature B is 188 degrees at 59.00 m from this site. Surface remains were not observable. The site was trowel tested and no cultural deposit found.

STATE NO.: 19252 PHRI TEMP. NO.: 855-005
SITE TYPE: C-shape
TOPOGRAPHY: Undulating bedrock outcrops on a west facing slope.
VEGETATION: Moderate density of grass, sparse *kiawe*.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.50 m (220-40 degrees) by 1.90 m by 0.78 m
DESCRIPTION: Pahoehoe small boulders and cobbles stacked one to three courses high. Largest rocks are c. 0.80-1.30 m in length/diameter. The feature sits on the highest part of a short ridge which runs E-W. Located c. 1/4 mile E (*mauka*) of highway. Surface remains were not detected. Military debris present. Nature of cultural deposit was unexcavated. Trowel prodded into soil hits rock c. 0.10 mbs.

STATE NO.: 19253 PHRI TEMP. NO.: 855-006
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating knolls and swales with much exposed bedrock, sloping to the west.
VEGETATION: Moderate density of grass, sparse *kiawe*.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/Military
DESCRIPTION: This site complex consists of two C-shapes (Feature A and B). The overall site dimensions are 38.0 m at 90 degrees by 5.00 m.

FEATURE A: C-shape
ADJACENT TERRAIN: Hills and valleys
VEGETATION: Sparse *kiawe* trees and ankle-high grasses.
FUNCTION: Hunting blind/Military
DIMENSIONS: 1.90 m (224 degrees) by 1.30 m by 0.60 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This feature contains c. 30 angular basalt stones ranging in size from 0.10-0.50 m in diameter. The entire feature is stacked three to four courses high. The feature opens to the east and is built north-south, lengthwise. It is located on top of a small ridge and slopes westward. Feature B is c. 36.80 m at 90 degrees from this feature. Site 8 is c. 100.0 m at 292 degrees. Site 7 is c. 60.0 m at 240 degrees. Surface remains were not observable. The feature was trowel tested and no cultural deposit was found.

FEATURE B: C-shape
ADJACENT TERRAIN: Gently sloping from the NE, undulating with many low exposures of decomposing bedrock. Sloping more steeply to the south where a small dry gulch is oriented east/west.
VEGETATION: Low dry thick grass. Sparse clumps of *kiawe* trees are located upslope; *kiawe* tree is located c. 7 m to the SSE of feature.
FUNCTION: Hunting blind/Military
DIMENSIONS: 1.85 m (239 degrees) by 1.45 m by 0.43 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: The feature is oriented SSE/NNW, and opens to the SSE. Construction consists of subangular basalt cobbles. The stacking ranges from two to three courses high and is fairly uniform. The SE side/arm of the structure appears to be constructed on bedrock. The distance between the arm ends is greater than the overall depth of the interior space of the feature. The feature is located c. 40.00-50.00 m ENE from 855-7, and c. 36.8 m at 90 degrees mag. from Feature A. No surface remains or cultural deposits were noted.

STATE NO.: 19254 PHRI TEMP. NO.:855-007
SITE TYPE: C-shape
TOPOGRAPHY: Undulating exposed bedrock within mantle of aeolian silt.
VEGETATION: Moderate density of grass, sparse *kiawe*.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 1.80 n (N/S) by 1.35 m (E/W) by 0.70 m
DESCRIPTION: This C-shape was constructed with weathered subangular basalt cobbles and small boulders (ranging in size c. from 0.10-0.35 m in diameter). It is stacked two to four courses high. The feature opens to the east. The west side of the feature is partially collapsed but the arms of the c-shape are extant and are 0.35 m high (S), and 0.55 m high (N). The interior space is c. 0.70 m (N/S) by 0.70 m (E/W). The feature appears to have a good view of the surrounding terrain, but does not provide much protection from the prevailing wind. The feature is located in the SE portion of the *mauka* parcel. Portable remains or cultural deposits were not noted.

STATE NO.: 19255 PHRI TEMP. NO.:855-008
SITE TYPE: Mound
TOPOGRAPHY: Slope to the west. Undulating bedrock outcrops.
VEGETATION: Moderate density of grass, *kiawe*.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTEIRPRETATION: Military
DIMENSIONS: 1.90 m (194-14 degrees) by 1.40 m by 0.55 m
DESCRIPTION: Loosely piled basalt cobbles, c. 0.40 m in diameter. Constructed mostly on bedrock. Located in the SE portion of the *mauka* parcel, c. quarter mile (E) of the highway. No portable remains noted. Unexcavated. A trowel driven into the ground at numerous points around the site hit rock at c. 0.10 mbs.

STATE NO.: 19256 PHRI TEMP. NO.:855-009
SITE TYPE: Cairn
TOPOGRAPHY: Undulating, low ridges and swales. Much exposed and deteriorating bedrock.
VEGETATION: Moderate density of low grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.35 m (E/W) by 0.77 m by 0.46 m
DESCRIPTION: Roughly oval in shape. Subangular weathered basalt cobbles are stacked two courses high in an informal method of construction, partially constructed on bedrock. Cobbles average c. 0.20 m in diameter. Located in the ESE boundary area of *mauka* parcel c. 20.0-30.0 m SW of 855-10. Portable remains were not noted.

STATE NO.: 19257 PHRI TEMP. NO.:855-010
SITE TYPE: Cairn
TOPOGRAPHY: Undulating hills, basalt rock scatter and outcroppings
VEGETATION: *Kiawe*, dry grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.00 m by 0.60 m by 0.45 m
DESCRIPTION: Loosely stacked subangular basalt rock, slightly rectangular shaped. Stacked on small basalt outcrop. The immediate surrounding area is relatively flat. 0.03-0.05 m of gravely soil on bedrock. Oriented at 290 degrees c. 30.0 m north of Site #9. Central east section of project is inland from main highway, very close to eastern project boundary. No portable remains were noted.

STATE NO.: 19258 PHRI TEMP. NO.:855-011
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills, ridges, ravine.
VEGETATION: Unknown grass with *kiawe* (c. 15 m west)
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two mounds (Feature A and B). The overall site dimensions are c. 25.00 m (N/S) by 10.0-12.0 m (E/W).

FEATURE A: Mound
ADJACENT TERRAIN: Undulating hills, ridges and ravines.
VEGETATION: Unknown grass.
FUNCTION: Military
DIMENSIONS: 2.00 m (N/S) by 2.00 m (N/S) by 0.60 m
CONDITION: Good
INTEGRITY: Unaltered

DESCRIPTION: Feature A was a circular mound with uneven surface (i.e. not level or consistently sloping). It was constructed with subangular pahoehoe cobbles and boulders (ranging in size from c. 0.10-0.40 m) piled one to five courses high. Feature A was one of five mounds located on the side slops of a hill and ridge spur. It was the largest of these mounds and was located downhill of all but one; this other mound is located c. 9.80 m (center to center) at 5 degrees (off TN). It is c. 1.20 m (E/W) and c. 1.10 m (N/S). The feature is located c. 19.00 m at 189 degrees (off TN). Surface remains are two cowrie shells and concrete on rocks. The cowrie shells may be the only remnant of prehistoric occupation in this area, but they may also be from tire or cattle transportation. No cultural deposits were noted.

FEATURE B: Mound
ADJACENT TERRAIN: Undulating hills, ridges and ravines
VEGETATION: Unknown grass
FUNCTION: Military
DIMENSIONS: 1.00 m (N/S) by 0.90 m (E/W) by 0.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Feature B was a circular-shaped mound with an uneven surface (i.e. not level or consistently sloping) constructed with subangular pahoehoe cobbles and boulders piled two to three courses high. It is located c. 19.00 m at 9 degrees (off TN) to Feature A. Surface remains or cultural deposits were not noted.

STATE NO.: 19259 PHRI TEMP. NO.:855-012
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills with basalt outcroppings and basalt rock scatter.
VEGETATION: *Kiawe*, dry grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two cairns (Features A and B).

FEATURE A: Cairn
ADJACENT TERRAIN: Undulating hills
VEGETATION:
FINCTION: Military
DIMENSIONS: 0.60 m by 0.60 m by 0.36 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Stacked subangular basalt rocks; one large rock resting on an outcrop and three slightly smaller rocks. Average size of rocks is 0.30-0.40 m. The feature is in the central east portion of the inland parcel. Feature B is c. 2.00 m at 309 degrees. Portable remains were marine shell. No deposits were noted.

FEATURE B: Cairn
ADJACENT TERRAIN: Undulating hills, basalt outcropping
VEGETATION: *Kiawe* and dry grass.
FUNCTION: Military
DIMENSIONS: 1.00 m by 0.80 m by 0.60 m
CONDITION: Good

INTEGRITY: Unaltered
DESCRIPTION: Loosely stacked subangular (fairly large) basalt rocks, c. 2.00 m NW of associated Feature A (also cairn). Trowel test for cultural remains was negative; c. 0.07-0.10 m gravely silt on bedrock. The feature is in the central east project area, near the most eastern boundary inland from the main highway on top of the ridge. Portable remains were not noted.

STATE NO.: 19260 PHRI TEMP. NO.:855-013
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: Small ridges and knolls sloping to the west.
VEGETATION: Moderate-sparse grass, sparse *kiawe*, no trees in immediate area of features.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two cairns (Features A and C), and a mound (Feature B). The overall site dimensions are c. 40.00 m by 20.00 m.

FEATURE A: Cairn
ADJACENT TERRAIN: Undulating hills and basalt outcroppings, top of fairly high knoll.
VEGETATION:
FUNCTION: Military
DIMENSIONS: 1.20 m by 1.00 m by 0.60 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Loosely stacked subangular basalt rock, more oval than round or square. The cairn abuts a basalt outcrop. A trowel test revealed c. 0.03-0.05 m gravely silt. The feature is oriented at 322 degrees c. 32.00 m east of Feature B and c. 30.00 m from Feature C at 174 degrees. It is located in the central east portion of the project area inland from the main highway near the easternmost boundary. Portable remains were not noted.

FEATURE B: Mound
ADJACENT TERRAIN: Fairly flat, rock ridge top. Slopes to the W and N. Gulch bottom to N, which is oriented roughly E/W
VEGETATION: Sparse grass.
FUNCTION: Military
DIMENSIONS: 1.60 m (N/S) by 1.00 m by 0.43 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Roughly linear mound of subangular basalt cobbles. Cobbles range from c. 0.14-0.46 m in diameter. The west portion of the feature is constructed on decomposing bedrock. Cobbles are stacked one to two courses high; very informal construction. The feature is located c. 20.00 m NW from Feature A. Portable remains were not noted.

FEATURE C: Cairn
ADJACENT TERRAIN: Small knoll. Flat to the east, gently sloping to the north and west, steep slope to the south.
VEGETATION: Sparse grass.
FUNCTION: Military
DIMENSIONS: 0.96 m (N/S) by 0.94 m by 0.38 m

CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Small roughly circular in overall shape. Subangular and subrounded basalt cobbles are stacked two to three courses high. The cairn is constructed on rocky, decomposing bedrock. It is located c. 20.00 m south of Feature A. No portable remains were noted.

STATE NO.: 19261 PHRI TEMP. NO.:855-014
SITE TYPE: Cairn
TOPOGRAPHY: On top of a hill at the western edge. Terrain slopes down west.
VEGETATION: Sparse *Mowe* and ankle-high grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 2.20 m (360 degrees) by 1.10 m
DESCRIPTION: Medium-sized basalt angular stones arranged in a circular cone. These stones range in size from c. 0.20-0.40 m in diameter. A *Mowe* tree is growing in the center of the feature. Height of the cairn is from c. 0.39-0.48 m. It is located c. 30.00 m north of the second gully in the southern end of the project area, c. 1000 feet east of the highway. Observatories are at 102 degrees. Southern water tanks are at 240 degrees. Foxhole 1245-301 is c. 50.00 m at 86 degrees. Portable remains were not observed. It was trowel tested to c. 0.08 m deep and no cultural material was found.

STATE NO.: 19262 PHRI TEMP. NO.:855-016
SITE TYPE: Depression
TOPOGRAPHY: Undulating hills with basalt outcroppings.
VEGETATION: *Klaww*, and dry grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.50 m (diameter)
DESCRIPTION: Depression on north side of east end of ridge. It is lined with small (> 0.20 m) basalt rocks on all sides but the southeast. It is situated right below a concentration of broken (large rocks) outcropping. It appears to be filled in somewhat by natural erosion. Trowel test c. 0.10 m soil in center. Average height c. 0.30 m. This feature appears to be a military foxhole. It is in the central east portion of project inland almost to most eastern boundary from main highway, next ridge north of Site #15. Portable remains were not noted.

STATE NO.: 19263 PHRI TEMP. NO.:855-017
SITE TYPE: Cairn
TOPOGRAPHY: Fairly flat wide knoll, top sloping down in all directions.
VEGETATION: Sparse grass clumps.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.50 m by 0.43 m by 0.61 m

DESCRIPTION: Ten subangular basalt cobbles ranging from 0.08-0.40 m in diameter, stacked three courses high and two courses wide on bedrock. The cairn is just south of the fence line (located south of water tank by Hapuna turn-off) c. 500 ft. SE of water tank. Portable remains were not noted.

STATE NO.: 19264 PHRI TEMP. NO.:855-022
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills, ridges and ravines. Old roadway between cairns and dozed areas to all sides.
VEGETATION: Unknown grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two small cairns (Feature A and B).

FEATURE A: Cairn
ADJACENT TERRAIN: Undulating hills, ridges and ravines.
VEGETATION: Unknown grass.
FUNCTION: Military
DIMENSIONS: 1.50 m (E/W) by 0.80 m (N/S) by 0.30 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This oval cairn was constructed with subangular pahoehoe boulders and cobbles (ranging c. 0.15-0.30 m diameter/length) piled two courses high. It is located on the north edge of a roadway that extends to the SW. The NE extension of the road is problematic because of the extensive bulldozer modification. The cairn is located within the northern half of the upland parcel (east of highway) near the southern edge of this half. Feature B is 165 degrees (off TN) c. 4.40 m (center to center). No portable remains or cultural deposits were noted.

FEATURE B: Cairn
ADJACENT TERRAIN: Undulating hills, ridges and ravines.
VEGETATION: Unknown grass.
FUNCTION: Military
DIMENSIONS: 0.60 m (N/S) by 0.45 m (E/W) by 0.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This cairn was constructed with subangular pahoehoe cobbles and boulders (ranging c. 0.10-0.40 m diameter/length) piled next to a bedrock outcrop. It is located south of the roadway, which extends to the SW, but if the road continued, bulldozer activity has removed traces. The cairn is located within the northern half of the upland parcel (east of highway) near the southern edge of this half. Feature A is 345 degrees (off TN) c. 4.40 m (center to center). No surface remains or cultural deposits were noted.

STATE NO.: 19265
PHRI TEMP. NO.:855-027
SITE TYPE: Modified outcrop
TOPOGRAPHY: Sloping to the west, generally. Immediate area of site is a knoll top sloping

steeply to the south. A fairly large gulch is c. 30.00 m to the south of the site and is oriented roughly E/W.
VEGETATION: Sparse grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 7.00 m (N/S) by 5.75 m
DESCRIPTION: Bedrock outcrop with two small low walls circling off of it. The first wall circles from the north and south ends of the outcrop, extending a maximum of c. 4.00 m from the outcrop face. Another small wall segment is located c. 1.00 m downhill (to the NW) of the first wall and runs parallel to the slope. The low walls are constructed of subangular basalt cobbles and small boulders crudely stacked one to three courses wide and one to two courses high. The interior area is clear and fairly level. The site is located in the central portion of the *mauka* parcel. Portable remains are 42 mm caliber shells, marine shell (N. picea, cowrie, and turbinidae). A possible temporary habitation deposit is inside the area between the bedrock outcrop and the first wall. Two test units were subsequently placed at the feature, TU-4 and TU-10. They revealed a very sparse deposit.

STATE NO.: 19266 **PHRI TEMP. NO.:**855-028
SITE TYPE: Terrace
TOPOGRAPHY: Gently sloping to the west. A gulch (oriented roughly E/W) is located c. 2 m to the south.
VEGETATION: Thick grass, a small *kiawe* in center of feature.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: Rectangular in overall shape; oriented north-south. The north boundary consists of bedrock and a few stacked basalt cobbles; the west boundary consists of a linear outcrop of bedrock flush with the terrace interior and c. 0.40 m above the exterior ground surface. The south and east boundaries consist of an L-shaped terrace, the south side being flush with the interior and the east side c. 0.24-0.56 cm higher than the interior and roughly flush with the exterior. The NW end is stacked above the surrounding ground surface. Overall the L-shape's retaining walls are stacked two to four courses high and one to three courses wide. The interior is flat and soil covered. The site is located in the central portion of the *mauka* parcel, c. 50.0-60.0 m to the SW of Site 855-27. No portable remains were noted. There is a c. 0.10+ m soil deposit on the terrace that should be tested. The feature was tested. A test unit, TU-3, was excavated in the center of the terrace. No cultural habitation deposit was revealed.

STATE NO.: 19267 **PHRI TEMP. NO.:**855-029
SITE TYPE: Mound
TOPOGRAPHY: Undulating hills.
VEGETATION: Grass, *kiawe*.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.70 m (292 degrees) by 1.90 m by 0.70 m

DESCRIPTION: Stacked angular/subangular basalt rocks (three to four courses). Average size of rocks is c. 0.20-0.30 m. The mound is situated on top of a knoll. The mound is located in the central portion of the inland parcel. No portable remains or cultural deposits were noted.

STATE NO.: 19268 **PHRI TEMP. NO.:**855-030
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, ridges and ravines; Site 30 overlooks (to the northwest) a gulch.
VEGETATION: Unknown grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/military
DIMENSIONS: 250 degrees (E/W) by 1.40 m (N/S) by 0.50 m
DESCRIPTION: Site 30 was an "L" shaped wall built on a bedrock ledge at the northern edge of a ridge. It was constructed with subangular pahoehoe cobbles and boulders stacked two to three courses high. The wall were one to two stones wide. It is more subsequently built than other walls (i.e. military or hunting blinds within the project area. The north edge included reinforcement stones. The primary wall is oriented 145/326 degrees. The secondary wall was oriented 65/245 degrees (off TN). Located within center of northern half (1/2) of parcel east (upland) of highway. Site 31 is c. 23.00 m at 279 degrees (off TN), (Feature 30 east edge of Feature 31 west edge). No portable remains were noted. Small test revealed no cultural deposit.

STATE NO.: 19269 **PHRI TEMP. NO.:**855-031
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, ridges and ravines. Located on northern edge of ridge before drop-off.
VEGETATION: Unknown grass, *kiawe* shrubs at 10 m to north.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 1.95 m (E/W, 76/256 degrees) by 0.90 m (N/S)
DESCRIPTION: This crescent shaped wall was constructed with two to three courses of piled subangular pahoehoe cobbles and boulders (ranging from 0.10-0.40 m diameter/length). The arms of the wall face south and the wall overlooks a gulch area to the north. The north side of the wall utilized a bedrock outcrop. The NE area is the thickest (c. 0.90 m wide), but this is from slumpage or reinforcement. The wall itself is only one stone wide. The height is c. 0.25-0.44 m. The wall is located within the center section of the northern half of the parcel east (upland) of the highway. Feature 30 is c. 23.00 m at 99 degrees (off TN). No portable remains or cultural deposits were noted. The site is oriented at 76 degrees/256 degrees.

STATE NO.: 19270 **PHRI TEMP. NO.:**855-034
SITE TYPE: Rubble concentration
TOPOGRAPHY: Undulating low knolls with much exposed bedrock.
VEGETATION: Sparse-moderate density of low dry grass.

CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.00 m by 1.14 m by 0.20 m
DESCRIPTION: Amorphous area of small-medium subangular basalt cobbles placed one to two courses high on the south top side of a WWII knoll. Located in the central *mauka* parcel, c. 1000 ft. east of highway. No portable remains or cultural deposits were noted.

STATE NO.: 19271 PHRI TEMP. NO.:855-035
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills, with scattered basalt outcroppings.
VEGETATION: *Kiawe*, dry grasslands.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DESCRIPTION: This site complex consists of two cairns (Feature A and B). The overall site dimensions are 1.90 m in diameter, 1.20 m (north), and 0.60 m (south).

FEATURE A: Cairn
ADJACENT TERRAIN: On the top of a gulch that slopes to the NNE in an open field area.
VEGETATION: *Kiawe* and short, brown sage-like grasses.
FUNCTION: Marker
DIMENSIONS: 1.41 m (150 degrees) by 1.18 m by 1.02 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Piled and stacked subangular basalt cobbles ranging in size from c. 0.08-0.47 m appear to be constructed on top of bedrock. Smaller cobbles are towards the middle of the feature while the larger ones are towards the outside. The feature appears to be marking an area where the top of the gulch is. It is circular in shape and three to four courses high. It is located c. 34.00 m at 150 degrees away from Feature B cairn. No surface remains or cultural deposits were noted.

FEATURE B: Cairn
ADJACENT TERRAIN: Undulating hills with basalt outcroppings (small and scattered).
VEGETATION: *Kiawe* trees, dry grassland.
FUNCTION: Marker
DIMENSIONS: 1.90 m by m by 1.20 m (north), 0.60 m (south)
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Basalt rock stacked seven to eight courses high and rounded in appearance. The cairn is faced on the north side, with some slumping on the south side. Rocks are subangular and are stacked on basalt outcropping. Rock size ranges from 0.15-0.40 m length, with some fist-sized basalt cobbles. The surrounding soil is gravely sandy silt with intermittent basalt outcroppings. The feature is located c. 35.00 m at 330 degrees from Feature A. c. half mile east of the main highway, c. 60.00 m west of large gully. Surface remains are a paper shotgun shell (spent) on ground right behind (west side) cairn (not collected). No cultural deposit was noted in a probe of the surrounding area.

STATE NO.: 19272 PHRI TEMP. NO.:855-036
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: On a rise sloping greatly to the north and south.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DESCRIPTION: This site complex consists of two walls (Features A and B). The overall site dimensions are c. 40.00 m by 0.30 m.

FEATURE A: Wall
ADJACENT TERRAIN: On top of the gulch on a small rise just below a northerly sloping hill.
VEGETATION: *Kiawe*, brown sage-like grass.
FUNCTION: Hunting blind
DIMENSIONS: 1.33 m (90 degrees) by 0.30 m by 0.58 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Subangular basalt cobbles (ranging in size from c. 0.15-0.32 m) are roughly stacked three to four courses high on top of an outcrop ledge. The ledge is c. 0.44 m above ground surface on the north side and level with the ground surface on the south side. The construction appears to be recent in that it is only one course wide and thus very flimsy. It was identified earlier as military. It may have been a hunting blind due to the fact that the shotgun shells were not used by the military. It was built on a rise that slopes down into a gulch to the north end; it slopes greatly at the south end. It is located c. 40.00 m at 280 degrees away from 855-36B. Nine shotgun shells (Peter victor 16) made in U.S.A. were the surface remains. A cultural deposit was not observed (minimal soil).

FEATURE B: Wall
ADJACENT TERRAIN: North side slopes down to the gully 60.00 m. The highway is 1/4 mile to the west.
VEGETATION: *Kiawe*, grass.
FUNCTION: Hunting blind
DIMENSIONS: 1.50 m (330 degrees) by 0.30 m by 0.55 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Low wall three to four courses high, one course wide. It is constructed of angular/subangular basalt rocks, average size c. 0.25 m. At the foot of the wall on the south side are fist-sized subangular basalt cobbles, not stacked, possibly adding support between the slope and the base of the wall. The wall is located on the north side of the ridge which runs E/W. The wall is c. 2.00 m from the crest, and is parallel to the ridge. Surface remains and cultural deposits were not noted.

STATE NO.: 19273 PHRI TEMP. NO.:855-037
SITE TYPE: Complex (7 Features)
TOPOGRAPHY: Undulating pahoehoe bedrock outcrops.
VEGETATION: Short brown grass, *kiawe*.
CONDITION: Fair
INTEGRITY: Unaltered

PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of four features: a modified outcrop (Feature A), a pair of upright stones (Feature B), a cairn (Feature C), and four terraces (Feature D). The overall site dimensions are c. 40.00 m by 20.00 m.

FEATURE A: Modified outcrop
ADJACENT TERRAIN: Rolling pahoehoe bedrock outcrops on a west-facing slope.
VEGETATION: *Klawe*, short brown grass.
FUNCTION: Temporary habitation
DIMENSIONS: 1.20 m (186-06 degrees) by 1.10 m by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A knob of bedrock sticking out the ground, with a small boulder and numerous cobbles piled against it. It is located within 100.00 m of highway. Several marine shell fragments were scattered about. There was one piece of coral c. 0.09 m by 0.06 m by 0.04 m thick. TU-5 was excavated; the cultural deposit was very sparse.

FEATURE B: Upright stones
ADJACENT TERRAIN: Rolling pahoehoe bedrock outcrops on a west-facing slope.
VEGETATION: *Klawe*, short brown grass.
FUNCTION: Possible military
DIMENSIONS: 0.16 m (thickness) by 0.30 m by 0.41 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Two slabs of pahoehoe c. 0.51 m and 0.41 m long, placed in upright positions catty corner to each other. The feature is located within c. 100.00 m of the highway. Surface remains were not noted. The feature was unexcavated; a trowel probed into soil around the feature hits rock at c. 0.05 mbs.

FEATURE C: Cairn
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops on a west-facing slope.
VEGETATION: *Klawe*, short brown grass.
FUNCTION: Military
DIMENSIONS: 0.60 m (diameter) by 0.53 m (height)
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked four courses high. Cobbles are c. 0.30 m length/diameter. The cairn is located within c. 100.00 m of the highway. No surface remains were noted. The feature was unexcavated; a trowel probed into soil hits rock at c. 0.05 mbs.

FEATURE D: Terraces (4)
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops.
VEGETATION: *Klawe*, short brown grass.
FUNCTION: Possible agriculture
DIMENSIONS: 5.00 m (310-130 degrees) by 3.00 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Four short terraces made from a single row of pahoehoe cobbles extending downslope in a zig-zag pattern. The feature is located within c. 100.00 m of the highway. No surface remains were noted. The feature was unexcavated; a trowel probed into the soil in several spots is stopped by rock at c. 0.10 mbs.

STATE NO.: 19274 PHRI TEMP. NO.:855-038
SITE TYPE: Cairn
TOPOGRAPHY: Sloping to the south on side of gulch. Exposed and decomposing bedrock.
VEGETATION: Sparse-medium density of low dry grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.52 m by 0.50 m by 0.37 m
DESCRIPTION: Low and rather cylindrical in overall shape. It is two to three courses high and one to two courses wide. It is constructed of large subangular basalt cobbles. The cairn is constructed on top and along the edge of an exposed tier of bedrock. The site is located c. 50.00 m ESE of Site 855-39, cairn. No portable remains or deposits were noted.

STATE NO.: 19275 PHRI TEMP. NO.:855-039
SITE TYPE: Cairn
TOPOGRAPHY: Gently sloping to the south to gulch bottom, undulating surface of exposed and deteriorating bedrock.
VEGETATION: Sparse-medium density of low dry grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.90 m by 0.80 m by 0.48 m
DESCRIPTION: Of crude construction, rather conical in overall shape. It is four courses high, with the base of cairn four courses wide. Construction material consists of small-medium subangular basalt cobbles. It is located in the SW corner of the *mauka* parcel, c. 400 feet *mauka* of the highway. Portable remains or deposits were not noted.

STATE NO.: 19276 PHRI TEMP. NO.:855-041
SITE TYPE: Alignment
TOPOGRAPHY: Gently sloping to the west.
VEGETATION: Sparse-moderate clumps of grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.40 m by 0.40 m by 0.44 m
DESCRIPTION: The alignment is a single course high and wide, and constructed on the ground surface. It consists of nine subangular basalt cobbles oriented WNW/ESE, and ranges in height from c. 0.31-0.44 m. It is located in the central west portion of the *mauka* parcel. No portable remains or cultural deposits were noted.

STATE NO.: 19277 PHRI TEMP. NO.:855-042
SITE TYPE: Modified outcrop
TOPOGRAPHY: On top of east side of knoll, sloping to the NE and north. Many low outcrops of bedrock.
VEGETATION: Moderate density of low grass and 1 *KIAWE* tree on top of knoll.

CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/military
DIMENSIONS: 1.70 m (E/W) by 0.90 m
DESCRIPTION: Bedrock outcrop oriented E/W, with a couple subangular basalt cobbles stacked on top. Extending from the north side of the outcrop is a small, short low wall. This portion of the feature is two courses wide and one to two courses high. It is of very crude construction, with a length of c. 1.05 m by 0.53 m and c. 0.28 m high. The site is located in the central west portion of the *mauka* parcel, c. 300 feet east of the highway. No portable remains or cultural deposits were noted.

STATE NO.: 19278 PHRI TEMP. NO.:855-043
SITE TYPE: Modified outcrop
TOPOGRAPHY: Undulating ridge with much decomposing bedrock.
VEGETATION:
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 0.80 m by 0.70 m by 0.57 m
DESCRIPTION: Six subangular basalt cobbles stacked two courses high atop a low, small bedrock outcrop. One of the stacked cobbles has concrete and a piece of shrapnel on it. The site is located on the top south edge of same the gulch as Site 855-44, located c. 40.00-50.00 m SSW. Military shrapnel was noted as portable remains. No deposit was noted.

STATE NO.: 19279 PHRI TEMP. NO.:855-044
SITE TYPE: Mound
TOPOGRAPHY: Undulating flat ridge top on south side of steep gulch face.
VEGETATION: Sparse-moderate density of grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 1.60 m by 1.60 m by 0.46 m
DESCRIPTION: Small circular mound, formally constructed, with no apparent facing. Subangular basalt cobbles (0.30 m in diameter) are stacked two to three courses high, partially on a bedrock outcrop. Some collapsed cobbles are around the north, east, and west base of the mound. This feature could have possibly been a cairn at one time. It is located up the second gulch south of the Hapuna turn-off c. 400-500 feet *mauka* of the highway. Conus shell was noted as portable remains. No deposit was noted.

STATE NO.: 19280 PHRI TEMP. NO.:855-045
SITE TYPE: Cairn
TOPOGRAPHY: Flat wide ridge with smaller gulches on either side, oriented roughly E/W, much exposed bedrock.
VEGETATION: Sparse-moderate density of grass.
CONDITION: Fair-good

INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 1.70 m (E/W) by 1.30 m 0.71 m
DESCRIPTION: Circular in overall construction, atop bedrock. It is four to five courses high, with subangular basalt cobbles and small boulders. The center has a open cavity c. 0.30 m deep. The west side at base has a few stones stabilizing the cairn. The cairn is located in the NW portion of the project area by the water tank, c. 40 degrees magnitude and c. 5-700 feet. No portable remains or deposits were noted.

STATE NO.: 19281 PHRI TEMP. NO.:855-047
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Undulating pahoehoe bedrock outcrops on a W-facing slope. Site is on the E end of an E-W running ridge which is bisected by the highway.
VEGETATION: *Kiawe*, short brown grass.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of four features. A cairn (Feature A), modified outcrop (Feature B), wall (Feature C), and a terrace (Feature D). The overall site dimensions are c. 5.00 m by 6.80 m.

FEATURE A: Cairn
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops.
VEGETATION: *Kiawe*, short brown grass.
FUNCTION: Marker
DIMENSIONS: 1.20 m (10-190 degrees) by 1.16 m by 0.82 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe bedrock cobbles stacked five to six courses high. Cobbles are c. 0.35 m length/diameter, most c. 0.25 m. The feature is located c. 50.00 m east of the highway. It sits at the east end of a short ridge which is bisected by the highway. No surface remains were noted. The subsurface was unexcavated.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass.
FUNCTION: Possible post support
DIMENSIONS: 0.20 m by 0.07 m by 0.35 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A slit-shaped depression in the ground, the rim of which is lined with gravel and small cobbles. The long axis of the opening is oriented west 258 degrees and east 78 degrees. The north side has a small overhang c. 0.24 m deep. Rocks lining the opening are c. 0.15-0.26 m in length/diameter. The feature is located c. 50.00 m east of the highway. It is on the east end of a short ridge which bisects the highway. No portable remains were noted.

FEATURE C: Wall
ADJACENT TERRAIN: Undulating hills.

VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 4.00 m (350 degrees) by 1.00 m by 0.84 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: S-shaped wall constructed of subangular basalt rocks (two to four courses). Rocks average c. 0.20-0.30 m in size. It is situated on the north side of the ridge running E/W. The wall runs along the slope which declines to the north. The highest point of the ridge is about 7.00 m to the S/E, where features A, B, and D of site are located. The feature is located in the central portion of the east parcel c. 50.00 m inland from the highway. No portable remains were noted. The surface of the site consists of basalt rocks, cobbles, and outcrops. Very thin layer of silt is present.

FEATURE D: Terrace
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass.
FUNCTION: Possible agriculture
DIMENSIONS: 4.70 m (E-W) by 3.90 m (N-S) by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. Cobbles are c. 0.45 m in length/diameter. One section runs E-W along the upper south slope of the ridge. At its west end, another section runs north perpendicular to the ridge. The long axis runs 278-98 degrees. The terrace is located c. 50.00 m east of the highway. It sits on the east end of the ridge which is bisected by the highway. No portable remains were noted. The feature was unexcavated; a trowel poked into the soil around the feature is stopped by rock c. 0.05 mbs.

STATE NO.: 19282 PHRI TEMP. NO.:855-049
SITE TYPE: Cairn
TOPOGRAPHY: Ridge of exposed bedrock oriented E/W. N/S fence line to c. 10.00 m to W. Gulches to N and S.
VEGETATION:
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.53 m by 0.52 m by 0.58 m
DESCRIPTION: Subangular basalt cobbles averaging c. 0.25 m in diameter stacked three to four courses high on bedrock outcrop. The cairn is only two courses wide. It is on the *mauka* side and a little south of the turn-off to Hapuna. No portable remains were noted.

STATE NO.: 19283 PHRI TEMP. NO.:855-051
SITE TYPE: Cairn
TOPOGRAPHY: Undulating hills with basalt outcroppings and basalt rock scatter.
VEGETATION: *Kiawe*, dry desert-like grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military

DIMENSIONS: 1.60 m by 0.95 m
DESCRIPTION: Subangular basalt rock stacked on basalt outcropping. Some downhill slumping is on the east side, which is c. 0.80 m high. Trowel test on east slope; c. 0.05-0.07 m on compact soil. The cairn is oriented at 86 degrees. It is located in the central portion of the project area c. 50.00 m west of the main highway. No portable remains or cultural deposits were noted.

STATE NO.: 19284 PHRI TEMP. NO.:855-052
SITE TYPE: C-shape wall
TOPOGRAPHY:
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.75 m by 0.75 m
DESCRIPTION: C-shape wall constructed of subangular basalt rocks (two courses). Rocks are c. 0.30-0.40 m in size. The wall is situated on a hilltop. Immediately to the NE is a bedrock outcrop which is badly broken up. The wall is located in the center portion of the west parcel, c. 160.00 m west of the highway. A large amount of 30 cal. cartridges was noted as portable remains.

STATE NO.: 19285 PHRI TEMP. NO.:855-053
SITE TYPE: Wall
TOPOGRAPHY: Undulating surface of soil and decomposing bedrock.
VEGETATION: Knee high dried grass, sparse *kiawe*.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/military
DIMENSIONS: 1.90 m by 0.30 m (+1.05 m collapsed portion)
DESCRIPTION: Five to six (c. 0.15-0.25 m) angular basalt cobbles are aligned 0 degrees/180 degrees, with the north end stacked four courses high. The south end is collapsed, but it appears that it was once stacked like the north end. There are rifle cartridges, shrapnel, and an artillery shell located in the vicinity of the south end of the wall. They appear to have impacted this end of the wall, resulting in the present collapse. The wall is located in the NE portion of the *makai* parcel.

STATE NO.: 19286 PHRI TEMP. NO.:855-054
SITE TYPE: Terrace
TOPOGRAPHY: Hilly-located on top of hill (ridge) with steep slope south at north
VEGETATION: Grass
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.40 m (N/S) by 1.80 m (E/W)

DESCRIPTION: A small terrace is built off the south slope of a hill, with the north portion flush to ground surface. The terrace is one to three courses high, resting on a natural bedrock outcrop. It is constructed of subangular basalt cobbles and boulders (some with cement on them) c. 0.05-0.30 m in diameter. The surface is fairly nicely paved. The terrace is located in the NE portion of the *makai* parcel, 100 feet from the highway (E). No portable remains were noted.

STATE NO.: 19287 PHRI TEMP. NO.:855-055
SITE TYPE: C-shape
TOPOGRAPHY: Very hilly. On top of hill with steep S/W slope and gentle N/E slope.
VEGETATION: *Kiawe* in center of feature, grass all through and around.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 3.00 m (310 degrees) by 1.50 m
DESCRIPTION: C-shape wall built off of and around a natural bedrock outcrop, of subangular basalt cobbles and boulders two to five courses high. Width of the wall is c. 0.40 m. The NE wall is roughly faced. The wall continues from the NW around east to the SE. The SW portion has a small pile (six cobbles) in a square, stacked mound. The wall is built going down a steep slope (S/E). It is located in the NE portion of the *makai* parcel. No portable remains were noted.

STATE NO.: 19288 PHRI TEMP. NO.:855-056
SITE TYPE: Mound
TOPOGRAPHY: Hilly-located on fairly flat bulldozed land with slope going S (toward cut for drainage under highway).
VEGETATION: *Kiawe*, grass.
CONDITION: Poor
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Indeterminate
DIMENSIONS: 1.75 m (320 degrees) by 0.90 m
DESCRIPTION: Piled subangular cobbles and boulders amorphous in shape. Incorporating bedrock in the S/SE portion. The east portion is destroyed by bulldozing. The site is located in the north portion of the *makai* parcel, c. 75.00 m from west of highway. No portable remains were noted.

STATE NO.: 19289 PHRI TEMP. NO.:855-057
SITE TYPE: Ramp
TOPOGRAPHY: Moderate hills built on N slope down, also sloping W.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.50 m (N/S) by 2.30 m (E/W)
DESCRIPTION: Rectangular shaped with walls constructed due N/S and E/W. The east wall is faced and c. 0.90 m tall and five courses high. The north and south walls slope down from

c. 0.90 m westward to ground surface, and the west wall is at ground surface. The surface of the feature is paved with small (0.05-0.10 m in diameter) subangular basalt cobbles. The perimeter at the base is made with subangular basalt boulders c. 0.20-0.50 m in diameter. The feature does not look collapsed, but ramp-like. There is a small amount of fall by the NE corner; also a few pieces of coral scattered in, on, and around the feature. It is located in the north portion of the *makai* parcel c. 20.00 m west of the highway, c. 50.00 m south of Hapuna beach road. No portable remains were noted.

STATE NO.: 19290 PHRI TEMP. NO.:855-058
SITE TYPE: Cairn
TOPOGRAPHY: Undulating hills with basalt outcroppings and basalt rocks scattered.
VEGETATION: *Kiawe*, dry desert-like grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.00 m by 0.60 m
DESCRIPTION: Subangular basalt rock stacked on basalt outcropping. c. 0.50 m high, oriented at 330 degrees. Trowel test c. 0.07 m of semi-compact soil. Located central section c. 100.00 m west of main highway. Metal fragment (possibly half of a clamp found c. 0.60 m west of site) was noted as portable remains.

STATE NO.: 19291 PHRI TEMP. NO.:855-059
SITE TYPE: Pylons (6)
TOPOGRAPHY: Undulating pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Water transport
DESCRIPTION: This site complex consists of two features: two sets of three pylons (Features A and B). The overall site dimensions are 160.00 m by 3.00 m.

FEATURE A: Pylon (3)
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass.
FUNCTION: Water transport
DIMENSIONS: 13.30 m (15-195 degrees) by 1.42 m by 1.56 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles mortared together two to eight courses high. The three structures are in a line running 15-195 degrees. The line traverses a gully running E-W between two low ridges. Each structure has an indentation along the top which is in a direct line with the indentations on the other two structures, as if they had once been holding up a single pipe. The tops of all three are roughly level with one another; the middle one is c. 0.10-0.15 m below the other two. The south structure is c. 1.00 m (E-W) by 0.50 m by 0.40 m high on the north side. The middle structure is c. 1.42 m (E-W) by 0.91 m by 1.56 m high on the north side. The north structure is c. 0.76 m (E-W) by 0.62 m by 0.77 m high on the south side. The base of the each is rectangular. The tops are also rectangular but smaller, so the walls are sloping as on a

pyramid. Mortared rocks are scattered in line with these structures at least 10.00 m to the north and 50.00 m south. It is c. 5.35 m from the south structure to the middle structure, and c. 6.50 m from the middle structure to the north structure. Cobbles used in construction are c. 0.20-0.35 m length/diameter. This feature is directly in line with Feature B, which is c. 133.00 m south. This feature is located c. 100.00 m west of the highway. Two rusty pipe couplings were noted as portable remains. The feature is unexcavated. A trowel poked in the ground hits rock at c. 0.10 mbs.

FEATURE B: Pylon (3)
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass.
FUNCTION: Water transport
DIMENSIONS: 13.60 m (15-195 degrees) by 0.90 m by 1.21 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles c. 0.20-0.40 m length/diameter, mortared together four to eight courses high. The three structures are directly in line with one another, traversing a small gully which runs roughly E-W. The south structure is c. 0.98 m (E-W) by 0.76 m 1.21 m high on the north side. The middle structure is c. 0.86 m (E-W) by 0.82 m by 0.94 m high on the south side. The north structure is c. 0.87 m (E-W) by 0.60 m by 0.69 m high on the south side. The middle is slightly higher than the south structure. The north structure is c. 0.20 m higher than the middle. Each has an indentation across the top which is in line with the other two, as if they were all carrying a single pipe. The distance between the south and middle structure is c. 5.75 m. The distance between the middle and north structure is c. 5.70 m. This feature is directly in line with Feature A, which is c. 133.00 m north. Mortared rocks and spilled mortar are scattered between the two features. The structures are rectangular at the base but smaller at the top, so the sides slope upward, as on a pyramid. Construction is basically identical to Feature A. The feature is located c. 150.00 m west of the highway. Several #16 shotgun shells were noted as portable remains. The feature is unexcavated; a trowel poked in ground hits rock at c. 0.10 mbs.

STATE NO.: 19292 PHRI TEMP. NO.:855-064
SITE TYPE: C-shape
TOPOGRAPHY: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe*, short brown grass
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/military
DIMENSIONS: 2.50 m (N-S) by 1.90 m (E-W)
DESCRIPTION: Subangular pahoehoe cobbles and small boulders stacked one to six courses high. The opening of the C-shape faces east, toward the highway. Cobbles are c. 0.18-0.53 m in length/diameter. The axis is 24-204 degrees. The interior height is c. 0.63 m; the exterior c. 0.85 m. The lowest height near the ends is c. 0.45 m. It is located c. 50.00 m west of Queen Kaahumanu highway. Portable remains were noted as one half gallon glass jug, several spent military shells, several #20 shotgun shells (paper). The site was unexcavated; a trowel poked in soil hits rock at c. 0.05 mbs.

STATE NO.: 19293 PHRI TEMP. NO.:855-069
SITE TYPE: Terrace

TOPOGRAPHY: Gently undulating hills.
VEGETATION: *Kiawe*, scrub grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 6.90 m by 6.65 m
DESCRIPTION: Stacked and partially faced pahoehoe boulders and cobbles forming a double terrace. The structure is built on naturally terraced bedrock. The first terrace is relatively flat on top and is oval in shape. To the east is a high bedrock outcrop; all other sides slope 30 degrees. The second terrace is narrow and extends along the west face of the top terrace. It is more randomly stacked than the top terrace and has no facing. The top terrace has a squarish *puka* near the SW end, but appears to be recent (five years or less) and was probably used for marijuana growing. The south end of the terrace curves around to the east for c. 2.00 m. A U.S. coast and geodetic survey reference mark (1948) lies c. 5.00 m to the east on top of the high bedrock outcrop. Facing on the top terrace consists of large, thin pahoehoe slabs placed vertically against the bedrock and supported on the outside by boulders. The second terrace has no thin slabs and relies more on the bedrock. Site 855-70, Feature C lies 312 degrees of TN at c. 12.00 m from Site 855-69. The site is located just east of a dump. Portable remains noted were a waterworn cobble, two marine shell, a waterworn coral, and three shotgun shells.

STATE NO.: 19294 PHRI TEMP. NO.:855-070
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Surrounded by undulating hills, ridges, and ravines. Located on side of ridge spur and hill.
VEGETATION: *Kiawe*, unknown grass.
CONDITION: Poor-good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site complex consists of four features: terraces with adjoining wall (Features A and B), enclosure with adjoining c-shapes (Feature C), and circular enclosure (Feature D).

FEATURE A: Terraces w/adjoining wall
ADJACENT TERRAIN: Undulating hills, ravines, and ridges.
VEGETATION: *Kiawe*, unknown grass.
FUNCTION: Temporary habitation
DIMENSIONS: 6.00 m (E/W) by 4.00 m (N/S) by 0.73 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: This feature is composed of at least two terrace retaining walls with a wall extending along the eastern end of the terraces. The primary terrace is located below (downslope and south) of large bedrock outcrops at the point of the ridge spur. A single-width alignment is located on the level area below the bedrock outcrop and above the retaining wall. Between the bedrock outcrop and alignment, the ground surface slopes, while between the alignment and retaining wall, the ground surface is fairly level. The other terrace retaining wall is located south, and below the primary terrace. This is in poorer condition than the primary terrace. The wall extends from a bedrock outcrop southeast. The primary terrace is constructed with subangular pahoehoe cobbles and boulders ranging in size from c. 0.10 m (diameter/

length) and 0.60 m by 0.55 m by 0.20 m slabs piled two to three courses high. The second terrace was constructed with 10-45 cobbles and boulders piled two to three courses high. The wall extends SE from a bedrock outcrop to almost reaching Feature B. It was constructed with cobbles and boulders ranging in size from 0.10-0.40 m diameter/length and also incorporates bedrock. The southern half is nicely stacked to four courses high while the northern half is piled. A possible upright (almost conical) stone is located near the junction of the primary terrace and this wall. Midden scatter and paper shotgun shells are located to the north on top of the ridge spur. Portable remains were noted as waterworn cobbles and cobble fragments, shell and coral fragments. A small test revealed no subsurface deposit.

FEATURE B: Terraces w/adjoining wall
ADJACENT TERRAIN: Undulating hills, ravines, and ridges.
VEGETATION:
FUNCTION: Temporary habitation
DIMENSIONS: 16.75 m (W-E) by 5.00 m (N/S) by 0.79 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: At least two terrace retaining walls were constructed with subangular cobbles and boulders ranging in size from c. 0.10-0.40 m. The stones were piled to form the retaining walls. The area between the retaining walls is fairly level. A wall extends south from the eastern end of the highest terrace retaining wall. The lower retaining wall may have also joined this wall but *kiawe* trees are currently growing at this point. This feature is similar to Feature A (with the wall connecting to the terrace retaining walls). The feature is located between Features A and B, between two ridge spurs on the side of the ridge slope. Portable remains were noted as waterworn cobbles. A small test revealed no subsurface deposit.

FEATURE C: Enclosure w/adjoining C-shape
ADJACENT TERRAIN: 15-18 degree slope to south.
VEGETATION: *Kiawe* thicket, unknown grass and vines.
FUNCTION: Temporary habitation
DIMENSIONS: 5.50 m by 4.00 m by 0.84 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: A rectangular structure (lengthwise downslope) with two entrances on the long sides. The western wall (*makai*) acts as a terrace/retaining wall for the interior of the structure, as does the eastern wall (*mauka*) for the exterior, although there is a 5-8 degree slope to the west on the interior. The northern entrance opens onto an area partially enclosed by the west wall and a curved wall extending north and west from the NE corner of the structure. Both parts of the structure are made of haphazardly piled cobbles, and small and large boulders (up to c. 0.20 m by 0.60 m by 0.80 m) which are quite heavy and piled one to five layers high. Many rocks show trauma from unknown sources. This looks like a military battery station with the ammo storage in the enclosure. The two doorways have been terraced to form a level area to walk through. Rocks on the interior of the enclosure may form a room in the SE corner. The feature is located c. 150.00 m south of Road 10 (new Puako Rd.) c. 200.00-250.00 m west of the highway. Portable remains were noted as waterworn basalt pebbles, and plastic plant pot fragments. Deposit unknown; c. 0.10 m of soil in enclosure and C-shape.

FEATURE D: Circular enclosure
ADJACENT TERRAIN: Undulating hills, ravines, and ridges.
VEGETATION: *Kiawe*, unknown grass.
FUNCTION: Temporary habitation

DIMENSIONS: 4.75 m (N/S) by 3.50 m (E/W) by 0.66 m
CONDITION: Good
INTEGRITY: Altered
DESCRIPTION: Feature D is a circular enclosure constructed with piled subangular pahoehoe cobbles and boulders. The stones range in size from c. 0.10-0.50 m diameter/length. The stones are piled two to three courses high. The western half of the feature is more of a terrace than a wall (the stones are fairly level with the interior space, while the surrounding ground surface slopes down to the west). The eastern half of the feature is more of a wall. Even so, it is not much of a wall, because of the surrounding downslope. There is no stacking or careful construction. The possible entrance into the interior space is at the southern end and is c. 0.50-0.70 m wide. A waterworn cobble is located within this possible entryway. The shell fragments are located on the stones within the SE quad, outside the structure, also to the SE. Feature D is located south of water tanks, west of the dump, east of the highway. Feature D is c. 11.50 m due north (TN) from Site 69. Portable remains were noted as ecofacts; shell fragments include *Conidae sp.*, and cowrie. A small test indicates no subsurface deposit.

STATE NO.: 19295 **PHRI TEMP. NO.:**855-073
SITE TYPE: Complex (5 Features)
TOPOGRAPHY: Undulating hills, basalt outcroppings and basalt rock scatterings.
VEGETATION: *Kiawe*, dry desert-like grassland.
CONDITION: Fair-good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of five features: enclosure (Feature A), mound (Feature B), adjoining C-shapes (3) (Feature C), C-shape (below main feature, Feature D), and modified outcrop (Feature E). The site dimensions are c. 25.00 m at 310 degrees by 11.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 8.00 m (310 degrees) by 6.50 m by 0.20 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Basalt rocks forming enclosure on top of hill. The interior of the enclosure is flat; the exterior slopes downward in all directions. The rocks are not stacked, but roughly aligned. There are some disturbed sections. Feature C forms the east side of the enclosure. The feature is located in the central portion of the west parcel, a quarter mile west of the highway. Portable remains were noted as marine shell. A thin layer of silt deposit is present.

FEATURE B: Mound
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe*, grass.
FUNCTION: Military clearing piles
DIMENSIONS: 2.00 m by 2.00 m by 0.50 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Stacked basalt rocks, three courses high. A bedrock outcrop is in the center of the mound. This mound forms the west SW part of the enclosure (Feature A). The mound

is square shaped. It is located in the central portion of the west parcel, a quarter mile west of the highway. No portable remains were noted.

FEATURE C: Adjoining C-shapes
ADJACENT TERRAIN:
VEGETATION: *Klawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 6.50 m (310 degrees) by 5.00 m by 0.85 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Three interconnected C-shapes form the east side of the enclosure (Feature A). One large C-shape is c. 5.00 m at 320 degrees. A smaller C-shape is located at the north end of the large C-shape. Half of it forms part of the enclosure; the other half extends to the interior of the enclosure. This C-shape is c. 3.00 m long. Both of these C-shapes are low and wide. There is another C-shape c. 3.00 m long at 350 degrees which is connected to the east side of the larger C-shape. It has a thin wall (one course thick) and is higher (two to four courses) than the other C-shapes. The feature is located in the central portion of the west parcel, a quarter mile west of the highway. Portable remains were noted as marine shell. A thin layer of silt deposit was present.

FEATURE D: C-shape
ADJACENT TERRAIN: Undulating hills, basalt outcrops, scattered basalt rock.
VEGETATION: *Klawe*, dry grass.
FUNCTION: Military
DIMENSIONS: 2.90 m 2.64 m by 0.45 m
CONDITION: Fair
INTEGRITY: Indeterminate
DESCRIPTION: Subangular basalt rock stacked on basalt outcropping forming a half moon or "C" shape. Large basalt rocks are scattered within the enclosed area and below the feature extension. A bulldozer push wall is c. 6.00 m west. The highest stacking is two to three courses on the east end. A semi-arranged (circular) configuration of beer bottles has been placed within the upper center confines of the structure. There is a small marine shell scattering in the area surrounding the feature. A trowel test of +0.10 m of very soft silt would suggest Test Unit for further determination. The feature is located on the edge of a hill (west side) in the central project area c. 18.00 m downslope from the main feature 73 complex, c. two-thirds of a mile west of the main highway. No visible prehistoric remains were within the confines of the structure. Beer bottles, bullet, and plastic fragments were noted as portable remains. Deposit is absent per limited testing.

FEATURE E: Modified outcrop
ADJACENT TERRAIN: Undulating hills, basalt outcrops, scattered basalt rock.
VEGETATION: Dry desert grass.
FUNCTION: Possible agriculture
DIMENSIONS: 0.85 m by 0.80 m by 0.20 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Irregular stacked and piled subangular basalt rocks on small basalt outcrop. No visible terrain alterations could positively be associated with clearing. The feature is located c. 11.00 m at 298 degrees from the survey marker within Feature A of Site 855-73 on a downhill slope and c. 8.00 m at 39 degrees uphill from Feature D. This feature is located in the central project area a quarter mile from the main highway. No portable remains were noted.

STATE NO.: 19296 PHRI TEMP. NO.:855-074
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Gentle undulating hills.
VEGETATION: *Klawe*, scrub grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site complex consists of two features: a C-shape (Feature A), and a wall segment (Feature B). The overall site dimensions are c. 12.00 m by 3.50 m.

FEATURE A: C-shape
ADJACENT TERRAIN: Gentle sloping hills.
VEGETATION: Scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: No construction technique is visible. The C-shape itself is not visible. There is a large (c. 7.00 m diameter) but sparse scatter of shell midden. It would appear that this feature is virtually obliterated. A small depression in the feature is probably the result of a bulldozer or an uprooted burned tree. The feature is located in the central part of the project area c. a quarter mile west of the highway. It is adjacent to Feature B, 180 degrees south of Site 855-73, Feature B at true north and c. 30.00 distant. Shell midden and waterworn cobbles were noted as portable remains.

FEATURE B: Wall segment
ADJACENT TERRAIN: Gently sloping hills.
VEGETATION: Scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.80 m by 0.75 m by 0.53 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Piled boulders in a roughly rectangular wall appear to have been knocked over. There are boulders scattered on the NW hill slope. Only in a few places do two courses of the wall remain. The feature is located in the central part of the project area c. a quarter mile west of the highway, adjacent to Feature C, 180 degrees south of Site 855-73, Feature B at true north and c. 30.00 m distant. Shell midden and waterworn cobbles were noted as portable remains.

STATE NO.: 19297 PHRI TEMP. NO.:855-075
SITE TYPE: Cairn
TOPOGRAPHY: Undulating hills, ravines, and ridges.
VEGETATION: Unknown grass, (dead) *klawe* at c. 5.00 m to SW.
CONDITION: Poor-fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 1.00 m (E/W) by 0.60 m (N/S) 0.32 m

DESCRIPTION: This cairn is really a circular concentration of subangular cobbles and boulders piled one to three courses high with an empty area in the center (c. 0.15-0.20 m diameter). The eastern side appears collapsed. The cairn is located in the center, eastern half of the western parcel. Portable remains were noted as a gourd (ID #4) recovered at c. 14.40 m at 122 degrees from the center of F.855-75 (off TN); no other artifacts. A small test reveals no subsurface deposit.

STATE NO.: 19298 PHRI TEMP. NO.:855-077
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Fairly flat, slight slope to the NW. Very rocky with low bedrock exposures.
VEGETATION:
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two features: an enclosure (Feature A), and an L-shape wall (Feature B). The overall site dimensions are c. 25.00 m (N/S) by 8.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Hilly, gentle sloping in all directions.
VEGETATION: *Kiawe*, grass.
FUNCTION: Military
DIMENSIONS: 3.00 m (E/W) by 3.00 m (N/S) by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: The enclosure has four sides but is rounded and built of subangular basalt cobbles and natural bedrock outcrop. A tree is in the SW corner, in the NW corner is bedrock, and the N and W portions are very collapsed. The enclosure is one to two courses high, two to four wide. It is located c. 22.00 m S of Feature A, atop a small hill. Portable remains are noted as shotgun shells, and empty cartridges.

FEATURE B: L-shape wall
ADJACENT TERRAIN: Hilly area; built atop flat portion with gentle slope north.
VEGETATION:
FUNCTION: Military
DIMENSIONS: 1.90 m by 1.60 m by 0.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: The wall is constructed of subangular basalt cobbles and boulders. The L-shape has a short axis coming off the north end of the long axis. The long axis is north to south, 190 degrees; the shorter one is east to west, 100 degrees, and three courses high with larger boulders around the corner area. Basalt shows bulldozer scars. The wall is crudely stacked two cobbles wide. The feature is located c. 22.00 north of Feature A. No portable remains were noted.

STATE NO.: 19299 PHRI TEMP. NO.:855-078
SITE TYPE: C-shape
TOPOGRAPHY: Atop hill sloping W/S/N.
VEGETATION: Grass, *ilima*.

CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.00 m (310/130 degrees) by 0.96 m
DESCRIPTION: C-shape one to two courses high constructed of subangular basalt cobbles. Boulders show bulldozer scars. Very pushed looking, but back side clearly shows c-shape alignment. The site is located in the NE portion of the *makai* parcel. A few pieces of marine shell (probably brought in by bulldozers) are noted as portable remains.

STATE NO.: 19300 PHRI TEMP. NO.:855-080
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: On top of hill sloping W/NW.
VEGETATION: *Ilima*, grass, *kiawe*.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Indeterminate
DESCRIPTION: This site consists of two mounds (Features A and B). The overall length of the site is c. 42.00 m.

FEATURE A: Mound
ADJACENT TERRAIN: Steep slope down to N/E upslope to S.
VEGETATION: *Ilima*, grass.
FUNCTION: Indeterminate
DIMENSIONS: 2.30 m (320 degrees) by 1.70 m by 0.70 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: The mound is oblong shaped, c. 2.30 m by 1.70 m. It is rather sloppily built of subangular basalt cobbles and boulders stacked two to four courses high. Cobbles show evidence of bulldozer scar. The mound is located c. 42.00 m N/NE of Feature B, downslope of Feature B, but still on top of the hill. Cable wire is noted as portable remains.

FEATURE B: Mound
ADJACENT TERRAIN: Decomposing bedrock cobbles, cement.
VEGETATION: *Ilima*, grass.
FUNCTION: Indeterminate
DIMENSIONS: 0.70 m by 0.60 m by 0.40 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: The mound is round in shape, two to three courses high and two to three wide also. It is built of subangular basalt cobbles, c. 0.10-0.30 m in diameter. Cobbles show evidence of bulldozing scars. It is located on top of hill c. 42.00 m S/SW of Feature A. No portable remains were noted.

STATE NO.: 19301 PHRI TEMP. NO.:855-081
SITE TYPE: Circular enclosure
TOPOGRAPHY: Hilly, built on west slope (down) of hill.
VEGETATION: *Kiawe*, grass.

CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.90 m by 1.90 m
DESCRIPTION: Subangular basalt cobbles and boulders built in circular shape. A natural bedrock outcrop is incorporated into the eastern portion. The enclosure is built on the downslope of a hill (west) so the west side is built up higher to be even all around the top. Cobbles are stacked two to four courses high and range from c. 0.10-0.40 m in diameter. Cobbles also show bulldozing scars on them. The enclosure is located in the northeast portion of the *makai* parcel (by campgrounds). No portable remains were noted.

STATE NO.: 19302 PHRI TEMP. NO.:855-082
SITE TYPE: Mound
TOPOGRAPHY: Located at the bottom of a large hill (on west side) fairly flat bulldozed ground.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.90 m by 0.90 m
DESCRIPTION: The mound is rectangular, built of subangular basalt cobbles and boulders one course high with large (c. 0.40 m in diameter) boulders as the perimeter, and smaller (c. 0.05-0.20 m in diameter) rocks filling the center. The mound is built on bulldozed land and out of scarred rocks. Located in the NE portion of the *makai* parcel (by campground). No portable remains were noted.

STATE NO.: 19303 PHRI TEMP. NO.:855-088
SITE TYPE: Rubble concentration
TOPOGRAPHY: Rolling pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 4.20 m by 2.20 m
DESCRIPTION: Pahoehoe cobbles and gravels are aligned in a curved formation that may once have been a C-shape. Rocks are c. 0.30 m in length/diameter. The site is located c. 1.00 m SW quadrant, W of Queen Kaahumanu highway. No portable remains were noted. Unexcavated; a trowel poked in the soil at numerous points hits rock c. 0.10 mbs. The site has been considerably flattened by bulldozing.

STATE NO.: 19304 PHRI TEMP. NO.:855-089
SITE TYPE: C-shape
TOPOGRAPHY: Undulating hills, basalt outcrops.
VEGETATION: *Kiawe*, grass.
CONDITION: Good

INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 2.50 m by 2.50 m
DESCRIPTION: Stacked subangular basalt rock up to two courses high forms a semi-circular "C" shape. Rocks are moderately large. There is a soil deposit c. +0.10 m. The inside surface of the structure is flat; the soil deposit is softer and less gravely. A marine shell fragment concentration is c. 2.00 m uphill from the feature. The feature was trowel tested with no evidence of cultural remains encountered. The site is oriented at 268 degrees. The site is located in the southern central project area c. half mile east of Puako Road, at the west end of a ridge.

STATE NO.: 19305 PHRI TEMP. NO.:855-092
SITE TYPE: Modified outcrop
TOPOGRAPHY: Undulating hills, basalt outcrops, basalt rock scattering, semi-coastal, steep slope immediately NW of feature.
VEGETATION: *Kiawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible ceremonial
DIMENSIONS: 3.50 m (E/W)
DESCRIPTION: Irregular stacked waterworn basalt rock and cobble on a basalt outcrop. Several large pieces of coral are incorporated in the stacking. There are also some smaller coral pieces in the area to the back of the outcrop (SE). The area SE of the outcrop appears to have been cleared. Several waterworn cobbles are also included in the modification. The feature is located on a ridgetop/edge overlooking the undulating plain below. The feature is located a quarter mile east of Puako Road, in the south central project area, on the ridge point (westward facing). Portable remains were noted as waterworn coral (six pieces), waterworn basalt cobbles (three), and marine shell.

STATE NO.: 19306 PHRI TEMP. NO.:855-093
SITE TYPE: Complex (7 Features)
TOPOGRAPHY: Undulating pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Kiawe*, grass.
CONDITION: Poor-fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of seven features: enclosure (Feature A), wall (Feature B), cairn (Feature C), C-shape (Feature D), and terraces (Features E-G). The overall site dimensions are c. 50.00 m by are 30.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Located on a point of land with sloping sides to the west and south east.
VEGETATION: *Kiawe*, fountain grass.
FUNCTION: Temporary habitation
DIMENSIONS: 5.00 m by 6.50 m by 0.48 m

CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: This feature is a generally rectangular enclosure. The south wall and corners are medium to large, built of basalt boulders (c. 0.50 m by 0.25 m). The north, east, and west walls are slightly raised and consist of dirt and smaller cobbles (c. 0.25 m by 0.12 m). The interior is flat with soil and midden deposits. It is located c. 39.00 m at 74 degrees to Feature D (datum) from Feature A (datum). Midden is present inside and around the feature; coral is also present. One fragment of a grinding stone was mapped and collected. Soil is present.

FEATURE B: Wall
ADJACENT TERRAIN: Rolling pahoehoe bedrock outcrops, on a W-facing slope (Approx. 10 degree slope)
VEGETATION: Fountain grass
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Weathered basalt boulders, c. 0.05 m by 0.05 m to 0.25 m by 0.15 m piled one and two courses in a loose alignment downslope. The wall is in poor shape and appears to have a weak S-shape as opposed to a linear one. The wall is located at about the mid-point of the slope. The feature is located west of Queen Kaahumanu highway, in the SW portion of the project area. No portable remains were noted.

FEATURE C: Cairn
ADJACENT TERRAIN: Rolling pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION:
FUNCTION: Military
DIMENSIONS: 0.80 m by 0.50 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled one to three courses high. Stones are c. 0.11-0.30 m length/diameter. The feature is located in the SW part of the project area, west of Queen Kaahumanu highway. Numerous marine shell fragments (mostly cowrie) were noted as portable remains. The feature is unexcavated; it sits on bedrock.

FEATURE D: C-shape
ADJACENT TERRAIN: Undulating pahoehoe outcrops on a W-facing slope. A drop off to a gully lies 8.00-16.00 m W, between Features A and D.
VEGETATION:
FUNCTION: Temporary habitation
DIMENSIONS: 6.00 m by 2.90 m by 0.43 m
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. The opening is to the west. Immediately south is gravel/cobble rubble, some of which forms a roughly circular shape one course high. Cobbles are up to c. 0.46 m length/diameter; most are c. 0.30 m. The feature is located west of Queen Kaahumanu highway, in the SW portion of the project area. Marine shell fragments were noted as portable remains. The feature is unexcavated; a trowel probed into the ground at numerous points hits rock at c. 0.10 mbs.

FEATURE E: Terrace
ADJACENT TERRAIN: On W side of a hill overlooking undulating pahoehoe outcrops.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible agriculture
DIMENSIONS: 10.50 m (326-146 degrees) by 1.20 m by 0.68 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Two terraces running roughly N-S, c. 2.30 m apart. The south terrace is an outcrop with small boulders and cobbles one to two courses high filling in gaps, to make it more level. The north terrace has cobbles stacked one to three courses high. Dabs and drippings of mortar are among the rocks, as well as between the two terraces. The feature is located on the west side of a hill overlooking undulating pahoehoe outcrops. One cowrie shell fragment (c. 6.50 m long), and a waterworn basalt fragment (both on the south terrace) were noted as portable remains. Unexcavated; a trowel probed into soil at numerous points was stopped by rock at c. 0.10 mbs.

FEATURE F: Terrace
ADJACENT TERRAIN: Rolling pahoehoe.
VEGETATION: *Kiawe*, fountain grass.
FUNCTION: Agriculture
DIMENSIONS: 3.50 m by 2.50 m by 0.32 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature F is a circular formation of weathered basalt boulders (c. 0.10 by 0.15 m, 0.25 by 0.15 m), arranged in a loose configuration. It is built on a slope to the east, and the east and south sides are built up, piled two courses high. The west side and north side are one course and appear to be rubble. Feature F is just east of and adjacent to Feature G. No portable remains were noted. A thin soil deposit is present.

FEATURE G: Terrace
ADJACENT TERRAIN: Rolling pahoehoe field.
VEGETATION: *Kiawe*, fountain grass.
FUNCTION: Agriculture
DIMENSIONS: 3.75 m by 3.25 m by 0.14 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A circular formation of weathered basalt boulders. The feature slopes east to Feature F. All other sides are even with the ground surface. The terrace is one course high. The boulders are in a loose configuration and the feature closely resembles Feature F. Feature G is just west of and adjacent to Feature F. No portable remains were noted.

STATE NO.: 19307 PHRI TEMP. NO.:855-096
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, ravines, and ridges. Constructed on northern edge of level area before downslope.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Possible military

DIMENSIONS: 2.50 m (E/W) by 0.65 m (N/S) by 0.32 m
DESCRIPTION: This wall was constructed with subangular pahoehoe cobbles (c. 0.15-0.30 m) and boulders piled one to three courses high. It was not well constructed, but the stones do appear placed, as compared to bulldozer push. The wall is located in the center (N-S) of the western parcel, between Road 10 and the highway. No portable remains were noted. A small test indicates no subsurface deposit.

STATE NO.: 19308 PHRI TEMP. NO.:855-098
SITE TYPE: Mound
TOPOGRAPHY: Undulating hills, ravines, and ridges. Site on N-facing slope.
VEGETATION: Grass, (dead) *kiawe* at c. 5.00 m west.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Possible military
DIMENSIONS: 1.50 m (E/W) by 1.10 m (N/S)
DESCRIPTION: This modified outcrop was constructed with weathered, subangular pahoehoe boulders (primarily) with a few cobbles. The stones were piled up to two courses high on a bedrock outcrop. The modified outcrop was originally called a mound, and was almost designated as bulldozer push, but some of the rocks appear placed. Even so the construction appears haphazard. Large boulders to the north (downhill) appear to be collapsed. The mound is located between Road 10 and the highway, in the center of the western parcel. No portable remains were noted.

STATE NO.: 19309 PHRI TEMP. NO.:855-100
SITE TYPE: Cairn
TOPOGRAPHY: Hilly, decomposing bedrock cobbles and gravel; bulldozer push and scarp.
VEGETATION: *Ilima*, *kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.32 m by 0.60 m
DESCRIPTION: Subangular basalt cobbles five to six courses high. The cairn has a wide base c. 0.40 m and a narrow, one cobble top. The cairn is c. 0.59 m tall. Coming off the north portion is an arrow-shaped inverted V arranged on the ground surface out of small cobbles. Due north. No portable remains were noted.

STATE NO.: 19310 PHRI TEMP. NO.:855-101
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Gently sloping to the north and northwest; area has been bulldozed.
VEGETATION: Thick grass, large tree in center of feature.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Contemporary
DESCRIPTION: This site complex consists of two terraces (Features A and B). The overall site dimensions are c. 10.00 m by 6.00 m.

FEATURE A: Terrace
ADJACENT TERRAIN: Large unknown tree in center of feature.
VEGETATION: California grass.
FUNCTION: Park maintenance
DIMENSIONS: 3.40 m by 1.50 m by 0.50 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: C-shaped terrace around tree (to keep soil in) constructed of subangular basalt cobbles and boulders c. 0.10-0.40 m in diameter. It is one to three courses and fairly level all around. The SW/W portion is flush with the ground surface; the east portion is c. 0.50 m above ground surface, two courses thick (wide). The center portion is filled in with reddish/brown silty soil. The feature is located c. 6.00 m west (60 degrees) of Feature B on park grounds. No portable remains were noted.

FEATURE B: Terrace
ADJACENT TERRAIN: Gently sloping N.
VEGETATION: Grass.
FUNCTION: Park maintenance
DIMENSIONS: 3.00 m (90 degrees) by 0.70 m by 0.80 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Terrace retaining wall to keep soil in. The south portion is flush with the ground surface. It is built of small subangular basalt cobbles mostly c. 0.05-0.15 m in diameter. Natural bedrock is incorporated along the west portion. Cobbles are all scraped from bulldozed area. The feature is located c. 6.00 m east of Feature A (in park grounds), c. 12.00 m south of the road. No portable remains were noted.

STATE NO.: 19311 PHRI TEMP. NO.:855-102
SITE TYPE: Cairn
TOPOGRAPHY: Undulating with gentle slope from the E, steep slope to gulch bottom to the N and W.
VEGETATION: Sparse-moderate density of grass, 2 *kiawe* to the west and south of feature
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.00 m by 1.00 m by 0.50 m
DESCRIPTION: Roughly circular in overall shape. Subangular basalt cobbles, crudely stacked three courses high. Bedrock is incorporated into the feature construction. The cairn is located on the south side of a gully on the ridge top, across from (south) A-frames at Hapuna State Park. Cement pieces and spent cartridges were noted as portable remains. When this site was identified in 1990, there were two features; only Feature B (cairn) was relocated during the present field work.

STATE NO.: 19312 PHRI TEMP. NO.:855-103
SITE TYPE: C-shape
TOPOGRAPHY: Undulating surface of decomposing basalt and reddish brown soil.
VEGETATION: Grass, (dead) *kiawe* within 10.00 m of site.
CONDITION: Poor

INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 2.23 m (80/260 degrees) by 1.50 m by 0.30 m
DESCRIPTION: Seven basalt boulders (c. 0.20-0.30 m) form a base alignment with portable basalt cobbles (c. 0.15-0.20 m) used to form walls (only rubble piles now). Only remnants of the north wall, running 80/260 degrees, remain. It is likely the structure had a west wall, demolished by a bulldozer - only a pile of rubble remains. The north wall is speculated to be four to five courses and c. 0.60 m, based on amount of cobbles in rubble pile. It is likely that the opening of the structure faced south. The area within the C-shape is mostly level at this point. As there is ample evidence of bulldozing, i.e. busted cobbles, it cannot be ascertained if this area was level and clear for original use. The feature is located c. 150.00 m from Road 10; at 220 degrees is a large white residence. There were scattered marine shell fragments (mostly cowrie), and one waterworn basalt with an unusually smooth side (possible basalt abrader; flagged, but not collected at recording). TU-26 was placed c. 2.15 m at 170 degrees from this feature's datum. There was c. 0.05-0.07 m (0-0.05 mbs) of reddish brown silt-colluvial deposit with marine-derived ecofacts as well as decomposing bedrock.

STATE NO.: 19313 PHRI TEMP. NO.:855-106
SITE TYPE: Complex (5 Features)
TOPOGRAPHY: Undulating hills.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of five features: two C-shapes (Features A and D), adjoining C-shapes (Feature B), enclosure (Feature C), terrace (Feature E, not found), and a wall (Feature F). The overall site dimensions are c. 28.00 m at 260 degrees by 18.00 m.

FEATURE A: C-shape
ADJACENT TERRAIN: Basalt outcrops.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.65 m by 1.90 m by 0.55 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Stacked subangular basalt rock forming a "C" shape with a squarish shape c. 0.60 m sq. adjoining at the northeastern section of the wall. The interiors of both these structures slope slightly downhill and are relatively flat. Slumping along the upper north wall (off of basalt outcrop) has occurred. Both Feature A and C have their northern section walls stacked on basalt outcrop while the rest of the features appear to be surface stacked. Trowel testing within and around the feature area showed no cultural remains. Soil is relatively soft within the feature and more compact without (c. +0.10 m). The feature is oriented at 242 degrees. It is located in the central project area adjacent to the east wall of Feature "C". No portable remains were noted. Deposit is absent per trowel testing.

FEATURE B: Adjoining C-shapes
ADJACENT TERRAIN: Undulating hills.
VEGETATION:

FUNCTION: Temporary habitation
DIMENSIONS: 6.00 m (8 degrees TN) by 3.30 m by 0.20 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Basalt rocks forming two connected c-shapes. The larger C-shape opens to the north. This C-shape is on a flat area. The south side is on the edge of a steep slope. A small C-shape which opens to the west is connected to the larger C-shape at the latter's NE end. The larger C-shape is built on an outcrop and also forms terrace. The feature is located in the central portion of the western parcel, a half mile west of the highway. No portable remains were noted.

FEATURE C: Enclosure
ADJACENT TERRAIN: Undulating hills, basalt outcrops.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.25 m by 1.85 m by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Stacked subangular basalt rock in circular configuration. The largest amount of stacking is on the north side, two to three courses high. There was some slumping downhill from the north wall area. The south wall area is a scattered one course alignment. Some smaller rocks are scattered in the center. The center area is flat with slight downhill sloping, and it appears cleared. Trowel testing c. +0.10 m showed no cultural remains (tested several places within and without feature). The feature is oriented at 204 degrees. A small coral fragment is noted as portable remains (not collected).

FEATURE D: C-shape
ADJACENT TERRAIN: Undulating hills, basalt outcrops.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.25 m by 2.50 m by 0.45 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Stacked subangular basalt rock in semi-circular formation on a basalt outcrop. The feature is oriented at 190 degrees. The inner surface is basically flat, with a slight downhill slope. Some slumping from the north wall is present. Trowel testing within and without feature did not indicate any cultural evidence. Soil is semi-compact, c. +0.10 m of silt. The feature is oriented at 242 degrees. It is located in the central project area, c. 8.40 m, north at 46 degrees from Feature B of this site and c. 8.20 m at 68 degrees from Feature C. No portable remains were noted.

FEATURE F: Wall
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe*, grass.
FUNCTION: Agriculture
DIMENSIONS: 12.00 m (330 degrees) by 1.00 m by 0.40 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Wall alignment constructed of basalt rocks (one to two courses). Due to disturbance, the wall is not continuous. The wall is on a hillside with a very slight slope; it is possible that it also serves as a terrace. It is located in the central portion of the west parcel, a half mile west of the highway. No portable remains were noted.

STATE NO.: 19314 PHRI TEMP. NO.:855-107
SITE TYPE: Complex (6 Features)
TOPOGRAPHY: Small gently rolling hills; more or less a valley.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of: enclosure (Feature A, no feature form), L-shaped alignment (Features B and G), U-shape (Feature C, no feature form), and C-shapes (Features D-F, H), Feat. H has a feature form, but is not listed on the site form.

FEATURE B: L-shaped alignment
ADJACENT TERRAIN: Small, gently rolling hills.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 8.50 m by 7.00 m by 0.31 m
CONDITION: Fair-good
INTEGRITY: Altered
DESCRIPTION: An L-shaped alignment of single stones. Two uprights are c. 1.00 m apart on the east side. The uprights appear as a doorway. The structure begins c. 2.50 m south of Feature A and continues east c. 7.00 m where it turns north, continuing to the gully on the north. Boulders and cobbles are somewhat set into the ground. The feature is located in the central part of the project area, c. a half mile west of the highway. It is 182 degrees south of Site 855-106 at true north, c. 80.00 m distant, and c. 7.00 m 80 degrees of true north from Feature E (from east edge of Feature E to the two uprights). Shell midden, and waterworn cobbles were noted as portable remains. A surface scatter mound was out of the feature perimeter.

FEATURE D: C-shape
ADJACENT TERRAIN: Fairly level area with ridges 30-50 m N, W, S.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.50 m (N/S) by 2.75 m (E/W) by 0.24 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A C-shaped pile, two to three courses of angular basalt boulders (c. 0.25-0.35 m) and cobbles (c. 0.07-0.25 m) with a c. 1.25 m opening facing 300 degrees. Construction is random, i.e., not all of the large (c. 0.25+ m) boulders are used for base alignment; the southern half is piled two to three courses while the northern half is one to two courses, with intermittent one course areas in both halves. The interior is mostly level, with 50% covered with scattered cobbles. The southeast corner is stacked on a cement-covered basalt cobble; assuming disturbance, the feature was likely only two to three courses high. It is located north and upslope of a drainage (drainage runs between, and separates Site 855-107A-C from 107D-H). It is c. 150.00 m from Road 10; at a bearing of 230 degrees to the large white residence. A coral abrader (ID #6), and one waterworn basalt cobble were noted as portable remains. Reddish brown silty loam resulting from decomposing bedrock and colluvial deposit. Pencil probed revealed 0.05+ m.

FEATURE E: C-shape
ADJACENT TERRAIN: Mostly level, decomposing basalt terrain with ridges. N, W, S, 30.00-50.00 m. Drainage is c. 3.00 m south.

VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.15 m (N/S) by 2.65 m (E/W)
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A C-shaped, crudely stacked wall of basalt boulders (c. 0.25-0.50 m) and cobbles (c. 0.10-0.25 m) with a c. 1.40 m opening 310 degrees. The wall is stacked two to three courses high with intermittent one course areas. Construction is random, i.e. along east wall, smaller bulldozer-cracked cobbles are supporting larger boulders (c. 0.25 m). The interior is level, with a few basalt cobbles scattered. One slightly burnt *Kiawe* tree is located inside the structure, north end (see map). A large boulder in SW corner is big slab of concrete. The feature is located c. 4.00 m west of Feature D; c. 3.00 m from drainage. No portable remains were noted. There was c. 0.05+ m of reddish brown gravely silty loam.

FEATURE F: C-shape
ADJACENT TERRAIN: Level decomposing basalt/soil.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: A C-shaped structure of crudely stacked angular basalt cobbles and boulders, with a c. 1.25 m opening facing 260 degrees. About eight large (c. 0.30-0.40 m) angular basalt boulders are well grounded, and these form the base circular alignment. Portable angular cobbles c. 0.10-0.25 m are stacked two to three courses in the south portion, and the more deteriorated (disturbed) north and east sections are one to two courses. About 10 large cobbles are scattered in the interior of the structure - likely a collapsed wall (southwestern portion). It is located c. 1.00 m north of Feature E, c. 4.00 m west of Feature D, c. 150.00 m east of Road 10. A volcanic glass flake was noted as portable remains. A gravely reddish brown silty loam, resulting from decomposing bedrock and colluvial deposit is present. About 0.05+ m of deposit is inside the structure (determined by small finger probe).

FEATURE G: L-shape alignment
ADJACENT TERRAIN: Mostly level decomposing bedrock/soil.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.70 m (N/S) by 1.80 m (E/W) by 0.39 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Constructed on bedrock, a rounded L-shaped alignment with an opening c. 2.00 m 50 degrees. There are c. ten (c. 0.30-0.40 m) boulders, well grounded, that form a base alignment. There is crude stacking two to three courses along the west wall (a few appear to be scarred and popped by a bulldozer). The south wall is one to two courses high, i.e. one large cobble supported by well grounded base boulders. The feature is located c. 5.00 m NW of Feature D and c. 1.00 m north of Feature F. No portable remains were noted. About 0.05+ m of reddish brown gravely silt loam, colluvial, is present.

FEATURE H: C-shape
ADJACENT TERRAIN: Undulating pahoehoe outcrops on a W-facing slope.
VEGETATION:
FUNCTION: Temporary habitation

DIMENSIONS: 3.60 m by 1.70 m by 0.36 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. The feature sits partly on a natural outcrop, to take advantage of its shape. Rocks are c. 0.15-0.30 m length/diameter. The feature is located in SW quadrant of project area, west of Queen Kaahumanu highway. No portable remains were noted. Unexcavated; a trowel poked into soil near the feature is stopped by rock c. 0.10 mbs.

STATE NO.: 19315 PHRI TEMP. NO.:855-109
SITE TYPE: Complex (8 Features)
TOPOGRAPHY:
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of: cairns (Features A-H), and U-shape (Feature I, no feature form). The overall site dimensions are c. 16.00 m (E/W) by 13.00 m (N/S).

FEATURE A: Cairn
ADJACENT TERRAIN: Feat. A is on a flat rise with a gully to the N and S. A slope is immediately to the W. The land is flat to the east.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support
DIMENSIONS: 1.20 m (E-W) by 1.10 m (N-S) by 0.34 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Feature A is a low, one course, circular shaped cairn. It is built with boulders (c. 0.30 by 0.40 m to 0.20 by 0.15 m) placed in a circle with smaller cobbles (c. 0.10 by 0.15 m) piled two course high in the center. Rocks are tightly placed and the top of the feature is flat. The feature is located on the west edge of a finger knoll that runs west to east. There is some midden visible on the surface to the east.

FEATURE B: Cairn
ADJACENT TERRAIN: Feat. B is on the W edge of a finger knoll that runs W, E. There is a slope immediately to the west.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support
DIMENSIONS: 1.00 m (E-W) by 0.85 m (N-S) by 0.35 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: About nine basalt boulders are arranged in a circle. The boulders are c. 0.20 by 0.20 m. Smaller basalt cobbles are piled inside. The boulders outside form a raised ring. The cobbles inside form a flat surface. The feature is located on the west edge of a finger knoll running west to east. Midden is present on the surface to the east. Minimum midden present; mostly cowrie shell.

FEATURE C: Cairn
ADJACENT TERRAIN: Feat. C is on the SW corner of a knoll running W, E. A gully is adjacent to feat. to the S.

VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support/agriculture
DIMENSIONS: 1.70 m (E-W) by 1.10 m (N-S)
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Feature C is fairly rectangular in shape. It is constructed of c. 100+ small basalt cobbles (range: 0.05 by 0.05 m to 0.12 by 0.10 m) piled on top of each other. Minimum midden is present; mostly cowrie shell.

FEATURE D: Cairn
ADJACENT TERRAIN: Feat. D is located on the W-end of a knoll running W-E.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support/agriculture
DIMENSIONS: 0.90 m (N-S) by 0.80 m (W-E) by 0.38 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Feature D is a small, circular cairn with basalt boulders (c. 0.30 by 0.25 m) piled two to three courses high. It is in the middle of a finger knoll running west to east. There are gullies to the north and south sides. It is on a high spot midway between the gullies. It is also equidistant to the slope to the west. There is sparse midden scatter in all directions.

FEATURE E: Cairn
ADJACENT TERRAIN: Feat. E is on the N edge of a finger knoll that runs W-E.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support/agriculture
DIMENSIONS: 1.10 m (N-S) by 0.90 m (W-E) by 0.57 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Feature E is a small, circular cairn. It is built on the edge of a gully, (to the north). It is constructed of c. 15 basalt boulders (c. 0.30 by 0.20 m) piled two courses high. There is sparse midden scatter to the south, west, and east.

FEATURE F: Cairn
ADJACENT TERRAIN: Feat. F is on the edge of a gully which is located immediately to the north.
VEGETATION: *Kiawe*, grass.
FUNCTION: Possible post support/agriculture
DIMENSIONS: 0.53 m (N-S) by 0.50 m (W-E) by 0.27 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature F is a small, low cairn. It is constructed of c. 10 boulders and cobbles, the largest being c. 0.28 by 0.12 m. They are piled two courses high. Sparse midden scatter is present, as are several shotgun shells.

FEATURE G: Cairn
ADJACENT TERRAIN: Feat. G is on the edge of a gully, just north and adjacent to it.
VEGETATION: *Kiawe*, grass.
FUNCTION: Indeterminate
DIMENSIONS: 0.70 m (W-E) by 0.75 m (N-S) by 0.37 m
CONDITION: Fair-good
INTEGRITY: Unaltered

DESCRIPTION: Feature G is a small, low, circular pile of basalt cobbles (c. 0.10 by 0.10 m). They are tightly piled. Several shotgun shells are on the surface just south of the feature (Remington 16 GA).

FEATURE H: Cairn
ADJACENT TERRAIN: Feat. H is located just south of a gully running west to east.
VEGETATION: *Klawe*, grass.
FUNCTION: Possible post support/agriculture
DIMENSIONS: 0.90 m (W-E) by 0.60 m (N-S) by 0.51 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature H is a low, one course circular shaped arrangement of c. nine basalt boulders. The boulders are c. 0.30 by 0.20 m. On the northwest side is one larger boulder (0.37 by 0.45 m) standing upright. (Note, this is in the direction of the sea). No portable remains were noted to be in the immediate area.

STATE NO.: 19316 PHRI TEMP. NO.:855-113
SITE TYPE: Circular enclosure
TOPOGRAPHY: Gently undulating hills.
VEGETATION: *Klawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Temporary habitation/hunting blind
DESCRIPTION: A circular enclosure of randomly piled pahoehoe boulders and cobbles partially incorporating a bedrock outcrop. Some very small pieces of coral are to the NE. A small scatter of shotgun shells lies to the east. The enclosure is located east of the dump. Coral, shotgun shells, and tin cans were noted as portable remains.

STATE NO.: 19317 PHRI TEMP. NO.:855-115
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: A steep slope and rolling hills.
VEGETATION: *Klawe*, grass, vines.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of four features: adjoining C-shapes (Feature A), mound (Feature B), C-shape with adjoining wall (Feature C), and C-shape (Feature D).

FEATURE A: Adjoining C-shapes
ADJACENT TERRAIN: Rolling hills, but roughly leveled all around feature.
VEGETATION: *Klawe*, grass, vines.
FUNCTION: Temporary habitation
DIMENSIONS: 7.25 m (30 degrees TN) by 2.50 m (120 degrees TN)
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Randomly piled cobbles and boulders (c. 0.20 by 0.30 by 0.50 m) in the shape of two C-shaped structures connected by a few cobbles. The eastern of the two appears to have

a cupboard (or gun placement) leading into the space between the two (see map). This feature was previously called an E-shape. It is located c. 42.80 m at 26 degrees TN to Feature B datum; c. 8.00 m at 340 degrees TN to Feature D. Two pieces of coral, and several shotgun shells were noted as portable remains. No important cultural remains were discovered.

FEATURE B: Mound
ADJACENT TERRAIN: Rolling hills, steep slope down to road embankment.
VEGETATION: *Klawe*, grass, vines.
FUNCTION: Military clearing piles
DIMENSIONS: 3.00 m (54 degrees TN) by 2.50 m (324 degrees TN)
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled cobbles and boulders (c. 0.20 by 0.20 by 0.50 m) on top of bedrock in the shape of a tear drop. The feature is located c. 20.00-25.00 m south of Road 10 (new Puako road at bend above dump). Marine shell (cowrie, and cocus), and a c-ration can were noted as portable remains. A surface scattering was noted as a deposit.

FEATURE C: C-shape w/adjoining wall
ADJACENT TERRAIN: Rolling hills, steep slope down to road embankment.
VEGETATION: *Klawe*, grass, vines.
FUNCTION: Temporary habitation/military
DIMENSIONS: 7.50 m (324 degrees TN) by 5.00 m (54 degrees TN)
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled cobbles and small boulders (c. 0.10 by 0.20 by 0.40 m) piled on soil and bedrock in a C-shape with a destroyed wall extending to the NW. The end of the wall is c. 15.00 m south of Road 10 (new Puako road) at the bend above the dump. A C-ration can, and a scattering of marine shell (cocus, and cowrie fragments) were noted as portable remains. Surface scattering was noted as deposit.

FEATURE D: C-shape
ADJACENT TERRAIN: Rolling hills, very gentle slope to the NW.
VEGETATION: *Klawe*, grass, vines.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Small c-shaped structure of randomly piled cobbles and two small boulders (c. 0.20 by 0.20 by 0.30 m) piled on soil and bedrock outcrop open toward the water. The feature is located c. 8.00 m at 160 degrees TN to Feature A datum. No portable remains or cultural deposits were noted.

STATE NO.: 19318 PHRI TEMP. NO.:855-117
SITE TYPE: Midden scatter
TOPOGRAPHY: Very hilly-located on top of ridge and down southern slope including bulldozed land.
VEGETATION: *Klawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric

FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: Several large basalt subangular boulder piles along top of ridge. The rest of the area seems to be rubble, and the southern portion has a distinct bulldozer roadway. The site was destroyed by bulldozing. Cement (military) is scattered throughout the site, concentrated in the SE portion. The site is located in the central portion of the *makai* parcel between the highway and Road 10. A medium amount of seashell scatter is mostly in the southern half; sparse in the north portion. There is coral too, mostly along the south portion of the site (on the south slope). These portable remains were noted as being collected as ID #8. A deposit was noted as being present, appearing to be c. 0.06 m of shell mixture with associated ash (but may be of fire). The scatter seems to fade at c. 1.00 m from the bulldozer road (S) and then picks up again in the push, but that part is on the surface and does not continue subsurface. Most likely disturbed and carried there from bulldozer activity.

STATE NO.: 19319 PHRI TEMP. NO.:855-119
SITE TYPE: Modified outcrop
TOPOGRAPHY: Steep hill-ridge, built along top at north side.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: Subangular basalt cobbles stacked linearly (N) off a natural basalt bedrock outcrop (E/W). It is amorphous in shape, and is built partially on top of the hill and working downward N/NW. The feature is c. 3.00 m by 2.20 m. It is mostly one to two courses high. A bedrock slab along the south portion is c. 1.00+ m long and c. 0.50+ m wide. The feature is located in the north portion of the *makai* parcel c. 100.00 m east of Road 10. Three cowrie shells were noted as portable remains.

STATE NO.: 19320 PHRI TEMP. NO.:855-121
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Sloping W/NW. Steep hill to N of site. Hilly all over exposed decomposing bedrock (gravel and cobbles).
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two features: a C-shape (Feature A) and modified outcrop (Feature B).

FEATURE A: C-shape
ADJACENT TERRAIN: Decomposing bedrock cobbles and gravel
VEGETATION: Grass
FUNCTION: Military
DIMENSIONS: 4.50 m (E-W) by 1.80 m (N-S) by 0.50 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: C-shape constructed of subangular basalt cobbles and boulders ranging from c. 0.10-0.40 m in diameter, also incorporating natural bedrock. It is one to three courses, with

the middle course the highest. In the center of the enclosed side is a flat piece of bedrock abutting the back wall on the ground surface. The feature is located in the northwest corner of the *makai* parcel. No portable remains were noted.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Steep slope to the north, gentle slope from the SE. Much exposed bedrock.
VEGETATION: Moderate density of low dry grass, *Ilima*.
FUNCTION: Military
DIMENSIONS: 2.80 m (E/W) by 1.30 m by 0.32
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: The feature appears, overall, as a small, informal retaining wall, running parallel along the slope, oriented east/west. Most of the feature is a bedrock outcrop with a few small to medium subangular basalt cobbles placed off the east and west ends. The placed stones are one to two courses high and a single course wide. The feature is located c. 0.70 m west of Feature A. No portable remains were noted.

STATE NO.: 19321 PHRI TEMP. NO.:855-122
SITE TYPE: C-shape
TOPOGRAPHY: Slight slope to SW. All bulldozer push around decomposing bedrock; hilly.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.30 m (E-W) by 1.00 m (N-S)
DESCRIPTION: Small C-shape one to two courses high, constructed of subangular basalt cobbles and boulders incorporating a natural basalt bedrock. It is located in the *makai* portion-north central portion of the project area c. 100 feet north off Hapuna Beach road. No portable remains were noted.

STATE NO.: 19322 PHRI TEMP. NO.:855-123
SITE TYPE: Modified outcrop
TOPOGRAPHY: Sloping south and steeply down west to road.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Indeterminate
DIMENSIONS: 1.80 m (320 degrees) by 1.60 m
DESCRIPTION: Circular bedrock outcrop that is cracked along the SW portion and filled in with subangular basalt cobbles. The center is slightly depressed and naturally paved with decomposing bedrock gravel. It is located in the *makai* parcel, SW central, c. 20 feet east of Hapuna Beach road, c. 100.00+ m north of road to campground. No portable remains were noted.

STATE NO.: 19323 PHRI TEMP. NO.:855-125
SITE TYPE: Alignment

TOPOGRAPHY: Hill, located on hill sloping west (down) and gently south.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 1.54 m (E/W, 320 degrees) by 0.57 m
DESCRIPTION: Subangular basalt cobbles and boulders aligned linearly (E/W) off natural bedrock. It is only one boulder wide (c. 0.57 m) and one to two courses high. It is built on a slope slanting west. It is located in the central north portion of the *makai* parcel, c. 20.00 m west of Road 10. No portable remains were noted.

STATE NO.: 19324 PHRI TEMP. NO.:855-126
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Sloping to the west, rock with exposed decomposing bedrock.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site complex consists of two walls (Features B and C). The previously identified Feature A is bulldozer track push.

FEATURE B: Wall
ADJACENT TERRAIN: Built on slope westward (down).
VEGETATION: *Klawe*, grass.
FUNCTION: Military
DIMENSIONS: 1.10 m by 0.30 m by 0.29 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Wall segment N/S, constructed of subangular basalt cobbles one to two courses high with slight curve east toward the center of the wall. Maximum height is c. 0.29 m and maximum width is c. 0.30 m. It is c. 1.10 m long and located c. 5.00 m SE of Feature C, c. 35.00 m east of Road 10. Military bullet casings were noted as portable remains.

FEATURE C: Wall
ADJACENT TERRAIN: On downslope west.
VEGETATION: *Klawe*, grass.
FUNCTION: Military
DIMENSIONS: 2.00 m by 0.35 m by 0.40 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Linear wall N/S, c. 2.00 m long, constructed of subangular basalt cobbles c. 0.20-0.40 m in diameter. It is c. 0.35 m wide (one course) and c. 0.40 m high (one to two courses). It is located c. 5.00 m NW of Feature B and c. 30.00 east of Road 10. Shrapnel, and 41 caliber bullet casings were noted as portable military remains.

STATE NO.: 19325 PHRI TEMP. NO.:855-127
SITE TYPE: Wall segment

TOPOGRAPHY: Gentle slope to the west, undulating surface with a lot of bulldozed disturbance.
VEGETATION: *Klawe*, grass.
CONDITION: Poor
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind/military
DIMENSIONS: 1.24 m (NW/SE) by 0.53 m by 0.37 m
DESCRIPTION: Very small wall segment. Bedrock is incorporated into the feature. Subangular basalt cobbles are stacked two courses high and one to two courses wide. The area under and around the feature looks like it has been bulldozed, and cement fragments are throughout the area. The site is located in the north central portion of the *makai* parcel, c. 50.00 m east of Puako road (Road 10). No portable remains were noted.

STATE NO.: 19326 PHRI TEMP. NO.:855-136
SITE TYPE: C-shape
TOPOGRAPHY: Rolling hills.
VEGETATION: *Klawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site consists of a C-shaped structure (Feature B). All other previously identified features are either military or bulldozer push. The overall site dimensions are c. 3.50 m by 3.50 m.

FEATURE B: C-shape
ADJACENT TERRAIN: Rolling hills and weathered outcrops.
VEGETATION: *Klawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: The C-shape is randomly piled about two layers high in spots. The "C" is nearly closed on the west/*makai* side. The *makai* half has been overridden by bulldozer. Some portions of the back wall (east/*mauka*) only consist of bedrock. The feature is located in the south half of the *makai* section west of Route 10. Marine shell (cowrie) was noted as portable remains. Ecofacts were noted as being present on the surface.

STATE NO.: 19327 PHRI TEMP. NO.:855-140
SITE TYPE: Terrace
TOPOGRAPHY: Undulating low hills, ridges, and ravines.
VEGETATION: *Klawe*, grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Temporary habitation/military/hunting blind
DIMENSIONS: 6.75 m (N/S) by 3.00 m (E/W)

DESCRIPTION: Site construction is problematic. The surrounding area (NE, east, south, and west) has obviously been bulldozed. The waste pile from this activity was pushed upslope, which is consistent with the rest of the project area. The only possible remains of prehistoric occupation (other than the eco facts) are present at the northern edge of the waste pile. This area appears to be piled to form a low terrace, as opposed to mechanically piled. A large stone within this area has tentatively been identified as an upright. The terrace is located south of the dump, just west of the western boundary on top of a rise. Paper shotgun shells "Peters 12 H.V. made in U.S.A.", "Peters 12 Victor made in U.S.A.", unknown smaller shotgun shells, steel can lids "LW 08 1242", a can lid key (as used today for sardines), branch, other coral, cowrie, and other shell fragments were present. All of these were noted as being portable remains. Small tests reveal no subsurface deposit.

STATE NO.: 19328 PHRI TEMP. NO.:855-144
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Pahoehoe bedrock outcrops.
VEGETATION: *Klawe*, grass.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DESCRIPTION: This site complex consists of two features: a terrace (Feature A), and a modified outcrop (Feature C). Features B, D, E, F are outside of the project area. The overall site dimensions are c. 25.00 m at 264 degrees by 12.00 m.

FEATURE A: Terrace
ADJACENT TERRAIN: Pahoehoe bedrock outcrops on a W-facing slope.
VEGETATION: *Klawe*, grass.
FUNCTION: Agriculture
DIMENSIONS: 16.50 m (10-190 degrees) by 12.00 m by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A series of four terraces extending down a west-facing slope. Pahoehoe cobbles and small boulders are stacked one to five courses high. No portable remains were noted.

FEATURE C: Modified outcrop
ADJACENT TERRAIN: Undulating bedrock outcrops on a W-facing slope.
VEGETATION: *Klawe*, grass.
FUNCTION: Agriculture
DIMENSIONS: 6.50 m (07-187 degrees) by 1.60 m by 1.80 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: A natural pahoehoe outcrop with cobbles and small boulders placed along it to make it more level at several places along its surface. Rocks are c. 0.25-0.66 m length/diameter. Most are c. 0.40 m, and stacked one course high. The feature is located at Hapuna, c. a quarter mile from the beach. Marine shell fragments were noted as surface remains. The feature is unexcavated; a trowel poked into soil around the feature is stopped by rock c. 0.05 mbs.

STATE NO.: 19329 PHRI TEMP. NO.:855-149
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Gently undulating hills, shallow ravine, eroded and bulldozed flat lands.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site consists of two C-shapes (Features A and B). The overall site dimensions are c. 6.25 m by 2.50 m.

FEATURE A: C-shape
ADJACENT TERRAIN: Gently undulating hills, shallow ravine, eroded, bulldozed flat lands.
VEGETATION: *Klawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.70 m by 2.30 m by 0.48 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled boulders incorporating a bedrock outcrop. The shelter is set at the base of a small ridge on the southwest end. A shallow ravine lies on the northwest. Feature A lies next to Feature B to the NW. No portable remains were noted.

FEATURE B: C-shape
ADJACENT TERRAIN: Gently undulating hills, shallow ravine, eroded, bulldozed flat-lands.
VEGETATION: *Klawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS: 1.75 m by 2.45 m by 0.55 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled boulders incorporating a bedrock outcrop. The shelter is set at the base of a small ridge on the southwest end. A shallow ravine lies on the NW. Feature B lies next to Feature A to the SW. No portable remains were noted.

STATE NO.: 19330 PHRI TEMP. NO.:855-154
SITE TYPE: Circular enclosure
TOPOGRAPHY: On small knoll. Hill to NE, sloping down S/SW/SE.
VEGETATION: *Klawe*, grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture/military
DIMENSIONS: 3.30 m (336 degrees) by 4.50 m (246 degrees)
DESCRIPTION: U-shaped enclosure constructed out of subangular basalt cobbles and boulders c. 0.10-0.35 m in diameter. It is one to five courses wide and one to two courses high. The opening is SW, with a few remnant cobbles scattered to make an almost remnant enclosure shape (although it is only one or two rocks that are all separated). There are no portable remains or signs of habitation. The center is mostly clear with a few rubbled or collapsed cobbles scattered inside. The enclosure is located c. 50.00 m west of Road 10, c. 40.00 m east of Site 175, in the central portion of the *makai* parcel.

STATE NO.: 19331 PHRI TEMP. NO.:855-155
SITE TYPE: Mound
TOPOGRAPHY: Hilly, east and west sloping.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Indeterminate
DIMENSIONS: 1.20 m by 1.26 m
DESCRIPTION: A small circular mound, rough in shape. It is constructed of subangular basalt cobbles ranging in size from c. 0.11 m to 0.35 m piled one to two courses high. It is located c. 35.00 m west of the gravel road, c. 5.00 m north of the dirt road that connects to gravel roads, c. 20.00 m 208 degrees from Feature 154. No portable remains were noted. A minimal soil deposit is present.

STATE NO.: 19332 PHRI TEMP. NO.:855-158
SITE TYPE: C-shape
TOPOGRAPHY: On the south side of a hill sloping S/SW.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Possible military
DIMENSIONS: 2.60 m (307 degrees) by 1.30 m
DESCRIPTION: Loosely piled/stacked weathered basalt cobbles one to three rocks high. Rocks are c. 0.15-0.50 m in size. The feature is C-shaped and runs along the slope of the hill, with the interior facing uphill. No portable remains were noted.

STATE NO.: 19333 PHRI TEMP. NO.:855-160
SITE TYPE: Modified outcrop
TOPOGRAPHY: Rolling hills sloping to the west.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 2.30 m by 1.10 m by 0.60 m
DESCRIPTION: Basalt outcrop with a few weathered, basalt rocks piled on top. Rocks are c. 0.20-0.45 m in size. The outcrop is right on the west edge of a small SE-NW running ridge. Located on top of a small ridge, west of Road 10. No portable remains were noted.

STATE NO.: 19334 PHRI TEMP. NO.:855-161
SITE TYPE: Modified outcrop
TOPOGRAPHY: NE sloping hilly terrain.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric

FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 4.40 m by 3.00 m
DESCRIPTION: Piled subangular basalt cobbles one to two courses high ranging in size from c. 0.14 m to 0.34 m. Piling is at the SW, NW, and NE corners. The feature is roughly square in shape and is mostly bedrock. Two marine shell fragments are next to the piling at the NE corner. A larger concentration also runs along the eastern portion of the feature. Located c. 75.00 m 220 degrees from Site 160, c. 15.00 m west of the gravel road. A c. 0.05 m soil deposit is on top of the feature.

STATE NO.: 19335 PHRI TEMP. NO.:855-165
SITE TYPE: U-shape
TOPOGRAPHY: Leveled (possibly mechanically) top of small knoll; decomposing bedrock.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair-good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 14.50 m (E/W) by 9.00 m
DESCRIPTION: Three low piled walls of c. 0.15-0.60 m basalt cobbles/boulders. The U-shape is oriented 270 degrees. The north wall (running 90/270 degrees) is one course high and two to three courses wide and mostly composed of larger boulders (c. 0.40+ m) and bedrock. The easternmost c. 2.00 m of wall has smaller portable cobbles (c. 0.30 m) crudely stacked one to two courses. The east wall, running 35/215 degrees, is the most intact. It is crudely piled two to four courses high, and four to five wide. Most cobbles used in construction are portable, i.e. c. 0.10-0.30 m. A c. 1.00 wide basalt slab rests on top of cobbles mid-wall. The south wall runs 100/208 degrees. The east half of the wall is mostly low, two to four courses of crudely piled portable cobbles. The west half of the wall is composed of a large boulder alignment with some scattered cobbles between a little piling. East of the east wall is a c. 4.00 m area of cobbles and boulders. It possibly could have been an associated feature or sources of construction material. A few segments appear placed (i.e., two courses high), but have no definable shape. Scattered marine shell was found in the interior of the U-shape as well on the south edge of the associated rubble. There is a c. 0.40 m gap at the SW corner; the gap is bordered by cobbles c. 1.00 m. It does not appear to be a collapsed corner; it is likely an interior opening.

The site is 100 degrees at 180 degrees from Hapuna State Park restrooms (nearest parking lot). Metal pipe, recent debris due to proximity to beach park and parking lot (i.e., 15.00 m) were noted as portable remains. Gravely (due to decomposing bedrock), yellowish brown silty loam was noted. Three trowel probes indicate a c. 0.07-0.10 m deposit in areas of concentrated marine shell, (i.e. SW, NE, and center).

STATE NO.: 19336 PHRI TEMP. NO.:855-168
SITE TYPE: C-shape
TOPOGRAPHY: Large gully with steep, sloping sides, running E-W.
VEGETATION: *Kiawe*, grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 3.40 m (220 degrees) by 2.25 m

DESCRIPTION: C-shape feature is constructed of weathered basalt cobbles c. 0.15-0.45 m in size. The rocks are piled one to three courses high. The feature is built along the natural contour of the gully and opens towards the gully (downslope). The feature is located west of Road 10, on the southern edge of a large E-W gully. No portable remains were noted.

STATE NO.: 19337 PHRI TEMP. NO.:855-174
SITE TYPE: Complex (8 Features)
TOPOGRAPHY: Along long narrow ridge running E-W. Sloping N and S; hilly area.
VEGETATION: *Kiawe*, grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of eight features: enclosure (Features A-C), C-shape (Features D-F, and H), and U-shape (Feature G). The overall site dimensions are c. 47.00 m by 15.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Built along ridge top running E-W.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 3.75 m (N/S) by 3.90 m (E/W) by 0.28 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Circular enclosure constructed of subangular basalt cobbles intermingled with natural basalt bedrock outcrop. The entire north portion is bedrock. The rest is one course high, with scattered spacing in between rocks. Rubble is around the entire feature, but the center is cleared. The feature was obviously a bulldozed, historic military structure. Three waterworns were on the feature surface. Width of the walls ranges from one to three courses. All rocks are above ground surface. The feature is located in the central portion of the *makai* parcel. The westernmost feature of the site is c. 20.00 m east of Feature Q, Site 213. Military debris is noted as portable remains.

FEATURE B: Enclosure
ADJACENT TERRAIN: Built along ridge top running E-W with gentle sloping S and N.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 2.80 m by 2.51 m by 0.32 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Circular enclosure constructed of subangular basalt cobbles and natural bedrock. It is one course high and one to three courses wide. Rubble is around the feature, but the center is mostly cleared. The south portion has cobbles stacked over a natural outcrop. Rocks have been busted up and there are random gaps in construction. The inside of the west portion has large holes where rocks have been removed, probably from bulldozing. The feature is located c. 13.00 m east of Feature A, c. 1.00 m west of Feature C, in the central portion of the *makai* parcel. Military debris is noted as portable remains.

FEATURE C: Enclosure
ADJACENT TERRAIN: Built along upslope (E) of long ridge (E to W), with steeper slopes N and S.

VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 3.00 m by 2.50 m by 0.48 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Oval; very disturbed and sketchy. It is constructed of subangular basalt cobbles and natural bedrock outcrop. Bedrock makes up most of north and east portion, with a few cobbles piled around and over it. The SW portion is very scattered, with not much of a perimeter distinguishable. The feature is one to two courses high and one to three wide (mostly from collapsing). It is located c. 1.00 m east of Feature C, c. 2.00 m west of Feature D, in the central portion of the *makai* parcel. Military debitage is noted as portable remains.

FEATURE D: C-shape
ADJACENT TERRAIN: Built along ridge top E to W with slopes N and S.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 2.70 m by 2.00 m by 0.60 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles and boulders c. 0.15-0.35 m in diameter, piled one to two courses high, and one to two wide. They are mostly piled on top of a natural bedrock outcrop. The south and east portions are mostly bedrock, with an opening out toward the west. The center is cleared, with crushed gravel. Rubble scatter is around the entire feature. The feature is located c. 2.00 m east of Feature C and touching the west portion of Feature E in the central portion of the *makai* parcel. Military debitage is noted as portable remains.

FEATURE E: C-shape
ADJACENT TERRAIN: Heavy concentration of subangular basalt cobbles in all directions.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Feature E is composed of subangular, small (c. 0.10 m) to medium (c. 0.20 m) rocks piled one to three courses high upon an existing bedrock outcrop. The center section is the highest; the sides being only one to two courses high. There is a great deal of decomposed basalt cobbles and pebbles in all directions and probable machine impact on the entire site. There is slumpage and rubble piles to the north and to the south. The feature is located in the central *mauka* portion. Feature E is c. 5.80 m from Feature D at 276 degrees. Feature E as well as Features A through D, and Features F and H are all atop a ridge of fairly flat basalt outcropping, running east to west and sloping to north and south. No trees are upon it. No portable remains were noted.

FEATURE F: C-shape
ADJACENT TERRAIN:
VEGETATION: Grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor-fair
INTEGRITY: Altered

DESCRIPTION: Loosely arranged (not piled or stacked) subangular basalt cobbles c. 7.25 m in diameter, possibly arranged in a C-shape. The feature appears to be more of a slight circular clearing causing a C-shape effect. The feature is located in the central *makai* portion. Feature F is c. 5.80 m from Feature E at 276 degrees. Feature F is c. 11.80 m from Feature H at 96 degrees. Feature F is located on a ridge of basalt outcropping that runs east to west and slopes on the north and south side. The ridge is quite level, and there are no trees on it. A small quantity of marine shell midden is noted as portable remains; c. 0.05+ m of silt and subangular pebbles are subsurface.

FEATURE G: U-shape
ADJACENT TERRAIN:
VEGETATION: *Kiawe*, grass.
FUNCTION: Indeterminate
DIMENSIONS:
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Loosely piled subangular small to large cobbles one to two courses high placed on the ground surface. The feature is shaped like a backward question mark. The body of the feature runs north to south c. 4.00 m, with an additional E/W curvature of c. 1.50 m, then to the west running N/W to S/E another c. 1.50 m. This creates a U-shape with a rather straight extension at the northern end. Located in the central *makai* portion. Feature G is south of the ridge at its base and on an almost level surface c. 2.00 m from probable cleared access. Metal fragments were noted as portable remains. Small metal fragments not identifiable on the surface.

FEATURE H: C-shape
ADJACENT TERRAIN: Heavy concentration of rubble that is subangular basalt cobbles displaced by decomposition and possible machine disturbance.
VEGETATION: *Kiawe*, grass.
FUNCTION: Temporary habitation/military
DIMENSIONS:
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles c. 0.10-0.25 m in diameter, piled, not stacked upon a natural basalt outcrop. The highest portion of this feature is at its southeastern side; this is a single cobble stone c. 0.30 m in diameter. Located in the central *makai* portion, Feature H is atop a ridge of basalt outcrop that runs east to west. The ridge is slanting on the north and south sides. There are no trees upon it. Metal spring mechanisms (probable military association), a plastic ruler (burnt, and fragmented), and a slight quantity of marine midden are all noted as portable remains. About 0.05+ m (trowel test) of subsurface silt ended on bedrock.

STATE NO.: 19338 PHRI TEMP. NO.:855-175
SITE TYPE: Complex (24 Features)
TOPOGRAPHY: Site is on top of a knoll with slight sloping on all sides.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple

DESCRIPTION: This site complex consists of a remnant enclosure with a modified outcrop (Feature A1), eighteen mounds (Features A2-A19), two modified outcrops (Features B and F), one C-shape (Feature D), one L-shape (Feature C), and one circular alignment (Feature E). The overall site dimensions are c. 44.00 m by 28.00 m.

FEATURE A1: Enclosure w/modified outcrop
ADJACENT TERRAIN: Sloping downward to the south and west. Hills and valleys.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 1.90 m (32 degrees) by 1.85 m by 0.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: The modified outcrop consists of protruding bedrock (c. 0.40 m above ground surface) with small, angular pahoehoe stones placed on and around the bedrock. These stones range in size from c. 0.10-0.30 m in diameter. The feature is one course high. The remnant is a rectangular enclosed alignment consisting of small angular, pahoehoe stones which are one course high. These stones range in size from 0.05-0.14 m in diameter. A stone is placed upright at the southwest corner. This sits c. 0.20 m tall.

FEATURE A2-A19: Mounds (18)
ADJACENT TERRAIN: Site is on top of knoll and area is sloping downward.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military clearing piles
DIMENSIONS: 28.00 m by 24.00 m by 0.34 m
CONDITION: Good-Excellent
INTEGRITY: Unaltered
DESCRIPTION: Fourteen mounds that form a C-shape with the opening facing east. Mounds #2, #3, #18, and #19 are to the west of the "C-shape". The mounds are piled subangular basalt cobbles two to three courses high ranging in size from c. 0.09-0.34 m. In #12 and part of #11 the centers are not completely filled in. There is a concentration of marine shell near #13 and #14. The center is flat and contains only a few large (c. 0.15 m) cobbles. Mounds could possibly be clearing piles, especially #2, #3, #18, and #19. Mounds #4 and #17 appear to be deliberately placed in a C-shape. They are not just random piles. A jeep road is c. 13.00 m due east. An ecofact (marine shell) scatter is near mounds #13 and #14. Trowel tested - no cultural deposit.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Terrain is sloping down to the south and west. Hills and valleys.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 4.00 m (360 degrees) by 2.60 m by 0.38 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Bedrock protruding from the ground surface anywhere from c. 0.38-0.46 m above. Small angular pahoehoe stones are placed around and on top of the bedrock. These stones range in size from c. 0.09-0.30 m in diameter. Ecofact scatter is found all around the feature. This feature is one to three courses high. Site 176 (Feature D) is c. 80.40 m at 241 degrees (TN). Site 209 (Feature A) is c. 80.10 m at 262 degrees (TN). The ocean is c. 200.00 m due west. Feature C of this site is c. 2.80 m at 88 degrees (TN). Telephone poles parallel to the secondary road are due east at c. 110.00 m.

FEATURE C: L-shape
ADJACENT TERRAIN: Terrain is sloping down to the south and west. Hills and valleys.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.50 m (270 degrees) by 3.00 m by 0.45 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Small to medium sized angular, pahoehoe stones arranged in an L-shape one to three courses high. The stones range from c. 0.05-0.25 m in diameter. These stones are not faced or stacked, but there is a definite order to how the stones are placed. Site 176 (Feature D) is c. 83.20 m at 235 degrees (TN). Site 209 (Feature A) is c. 82.90 m at 262 degrees (TN). The ocean is c. 200.00 m due west. Feature B of this site is c. 2.80 m at 268 degrees (TN). Telephone poles parallel to the secondary road are due east at c. 110.00 m.

FEATURE D: C-shape
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 1.20 m (340 degrees TN) by 0.80 m by 0.22 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A small C-shape constructed of subangular basalt rocks, one to two courses high; average size is c. 0.10-0.15 m. The opening is to the west. Feature E is c. 1.50 m at 74 degrees and Feature A is c. 5.00 m at 10 degrees (TN). No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE E: Circular alignment
ADJACENT TERRAIN: Undulating coastal hills.
VEGETATION: *Kiawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 0.75 m by 0.50 m by 0.15 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Small basalt (c. 0.15 m) rock shaped in a circular alignment on the surface soil. There is broken cowrie shell scatter (probably all fragments from same shell) southeast of the feature. The feature is oriented east at 74 degrees. This feature is located in the central inland project area c. 1/4 mile west of Highway #10 (Puako and Hapuna old road), and c. 1.50 m northeast of Feature D at 254 degrees.

FEATURE F: Modified outcrop
ADJACENT TERRAIN: Feature is on top of a knoll with slight sloping on all sides.
VEGETATION: *Kiawe* and grass.
FUNCTION: Indeterminate
DIMENSIONS: 1.30 m (83 degrees-273 degrees) by 0.60 m by 0.34 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Piled subangular basalt cobbles one to two courses high ranging in size from c. 0.10-0.33 m. Piling occurs on top of bedrock. Bedrock outcropping occurs to the east. This feature is located c. 30.00 m at 212 degrees from Feature A1 (mound) and c. 5.00 m west of a small dirt road that connects to a larger one.

STATE NO.: 19339 **PHRI TEMP. NO.:**855-176
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: Steep sloping in all directions. Hills of pahoehoe bedrock on a west facing slope.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of two modified outcrops (Features B and D) and one enclosure (Feature E). The overall site dimensions are c. 50.00 m by 30.00 m (45 degrees).

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Steep sloping in all directions.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 6.75 m (26 degrees) by 6.00 m (296 degrees) by 0.70 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Ridge top has bedrock outcrops running east-west. Subangular basalt cobbles have been piled on and in between the outcrops, almost connecting them perpendicularly. At the northwest corner of one bedrock outcrop is an off shoot alignment one to two courses high and two to three courses wide. It angles northeast and slightly downhill, almost terrace-like. Except for the alignment, most of the feature looks like a cleared area for the survey spot. The rock jumble also has dirt and historic material all mixed up with it. The survey area is cleared flat. The rocks in that area are historic junk with one piece of coral. This feature is located on top of a steep ridge directly across the gravel road (north) c. 0.30 m from Feature E, c. 50.00 m east of Feature D, and in the central portion of the *mokai* parcel. A few marine shells, metal debris, one piece of coral, and other historic junk were on the surface of this feature.

FEATURE D: Modified outcrop
ADJACENT TERRAIN: Hills of pahoehoe bedrock on a west-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Indeterminate
DIMENSIONS: 4.50 m by 4.00 m by 0.50 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Pahoehoe cobbles and small boulders placed one course high in a roughly square shape. A line of boulders is immediately east of the feature in a recent bulldozer push. Rocks forming the feature are c. 0.12-0.50 m length/diameter. The feature has been flattened and strewn about. The long axis runs at 280 degrees to 100 degrees. This feature is located in the west central portion of the project area, c. 1/8 mile from the coast. One piece of round coral, a modern beer bottle, and rusty metal cans were observed on the surface of this feature. A trowel was driven into soil and stopped by rock c. 0.10 mbs.

FEATURE E: Enclosure
ADJACENT TERRAIN: Bulldozer push from road, gently sloping south.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.80 m by 4.00 m

CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: A roughly circular, amorphously shaped mound-like feature. It is constructed out of subangular basalt cobbles and boulders mixed in with red brown silty soil. The east and south portions are one to three courses high and four to six courses wide. It is built up along a natural mound, incorporating bedrock. The east portion is only one course high and wide. The center is filled with rubble and soil also. There is no discernible clearing in the center as well as no clear feature boundaries in terms of clear feature dimensions and remanent shape. There is much rubble around the feature. The north portion has been impacted by bulldozer push. An old metal tag is on the feature from project 89-651 (Site T-5). This feature is located c. 4.00 m south of the gravel road off Road #10 (toward Beach 69), and in the central portion of the *makai* parcel. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19340 PHRI TEMP. NO.:855-178
SITE TYPE: Complex (5 Features)
TOPOGRAPHY: Undulating hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of a rectangular alignment (Feature A), two C-shapes (Features B and D), and two terraces (Features C and E). The overall site dimensions are c. 23.00 m (10 degrees) by 15.00 m.

FEATURE A: Rectangular alignment
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 6.00 m by 6.00 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A square shaped rock alignment. The south corners are squared off, and the northern corners are more rounded. There is no stacking. Most of the alignment is one rock thick (c. 0.15-0.25 m). This feature is located c. 3.00 m north of the bulldozer road and Feature B is c. 12.00 m at 10 degrees. Marine shells were observed on the surface of this feature. More than c. 0.10 m of fine silt and gravel were also noted.

FEATURE B: C-shape
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 6.00 m (348 degrees) by 2.50 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: C-shape with short alignment at center which divides the feature into two halves. It is constructed of subangular basalt rocks which average c. 0.30-0.40 m in size. The feature has little height, and there little in the way of stacking. The opening of the C-shape is to the west. Feature C is c. 4.00 m at 360 degrees. No portable remains were noted on the surface of this feature. A trowel test indicated a thin layer of silt and gravel.

FEATURE C: Terrace
ADJACENT TERRAIN: SW facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 5.50 m by 5.50 m by 0.86 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles and small boulders stacked one to three courses high and piled to form a series of terraces extending down a southwest facing slope. Rocks are c. 0.15-0.40 m length/diameter. The feature was originally called a C-shape. This feature is located in the west central portion of the project area. One small coral fragment (c. 2.50 m by 0.03) was observed on the surface of this feature area. A trowel poked into soil inside the terrace was stopped by rock at c. 0.10 mbs.

FEATURE D: C-shape
ADJACENT TERRAIN: Hills of pahoehoe bedrock outcrops on a west-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.65 m by 2.75 m by 0.35 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled/stacked one to three courses high. The long axis runs at 30 degrees-210 degrees. Rocks are c. 0.15-0.40 m long. Feature D is located in the west central portion of the project area, c. 1/8 mile east of the coast. No portable remains or cultural deposits were observed on the surface of this feature. A trowel was poked into the ground inside the feature and stopped by rock at c. 0.10 mbs.

FEATURE E: Terrace
ADJACENT TERRAIN: Pahoehoe outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 7.00 m by 4.50 m by 1.28 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles and small boulders piled/stacked one to three courses high. The long axis runs at 75 degrees-255 degrees. The longest rocks are c. 0.50 m in length/diameter; most are c. 0.30 m. Two to four terraces are formed; it is difficult to determine because of the feature's poor condition. This feature may be associated with Feature B. Feature E is located on the west central portion of the project area, c. 1/8 mile east of the slope. No portable remains or cultural deposits were observed on the surface of this feature. A trowel was poked into soil and stopped by rock at c. 0.10 mbs.

STATE NO.: 19341 PHRI TEMP. NO.:855-179
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Hilly with many valleys and ridges.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Multiple

DESCRIPTION: This site complex consists of one enclosure (Feature A), one U-shape (Feature B), one mound (Feature C), and one remnant terrace (Feature E).

FEATURE A: Enclosure
ADJACENT TERRAIN: On south part of hill sloping down southward and gently up north.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 6.50 m by 4.50 m by 0.30 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Oval shaped enclosure constructed with long axis east-west. It is built of subangular basalt cobbles and boulders, sloppily and loosely piled one to two courses high and one to three courses wide. The north-northeast portion is used; the collapsing center is mostly cleared, with a few rubbles and cobbles. Construction style on top of ground surface and historic looking, hence photo and form only remapped. Feature A is located c. 19.00 m of Feature B, c. 12.00 m uphill, north of the dirt road off Road #10, in the central portion of the *makai* parcel.

FEATURE B: U-shape
ADJACENT TERRAIN: Flat area sloping slightly west.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 7.50 m by 7.50 m by 1.00 m
CONDITION: Fair-good
INTEGRITY: Altered
DESCRIPTION: Large U-shape feature constructed out of subangular basalt cobbles and boulders. The opening is west. The north and south walls are both very collapsed, two to six rocks wide, and one to three courses high, and very rubbled out. The highest wall (east) is piled three to six courses high. Very military style construction, on fire-affected rocks (maybe they came later). The center is cleared, and marine shell is present. Most rocks have bulldozer scars on them also. Not much prehistoric structure is left except maybe one shell if anything. This feature is located c. 19.00 m north of Feature A, c. 13.00 m east of Feature E, and in the central portion of the *mauka* parcel. A medium amount of marine shell is around the feature area. A small amount of cultural deposit is present.

FEATURE C: Mound
ADJACENT TERRAIN: Low undulating coastal hills.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 1.00 m by 1.00 m by 0.12 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: One course of stacked basalt rock scattered except for semi-circular alignment on south and west sides. Stacking is on the surface, with some outcrop as foundation. The feature was photographed but not mapped due to apparent construction association with historic military activity in this area. The feature is oriented at 130 degrees. This feature is in the central inland project area c. 1.4 mile west of highway #10 (old Puako-Hapuna road) and c. 0.20 m south of Feature B at 190 degrees.

FEATURE E: Terrace
ADJACENT TERRAIN: Fairly flat with hills around it, gently sloping SW.
VEGETATION: *Kiawe* and grass.

FUNCTION: Agriculture
DIMENSIONS: 4.00 m (250 degrees) by 4.00 m (160 degrees) by 0.15 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Very remnant terracing. The far alignments are in a square shape. They are one course high and two wide. There is much scattered rubble in and around the feature, but alignments are discernible. A few pieces of marine shell are around the feature area. This feature is c. 12.00 m west of Feature B and in the central portion of the *makai* parcel.

STATE NO.: 19342 PHRI TEMP. NO.:855-185
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Gently undulating hills. Sites are on top of a hill surrounded by a steep ravine.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site complex consists of one wall (Feature A) and one C-shape (Feature G). The overall site dimensions are c. 120.00 m by 50.00 m.

FEATURE A: Wall
ADJACENT TERRAIN: Gently undulating hills. Feature overlooks a steep ravine.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 9.30 m by 1.00 m by 1.22 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled cobbles and boulders incorporating a bedrock outcrop at the top of a ravine. The feature curves slightly back from the ravine to the southeast forming a low, one to two course high wall of piled cobbles and boulders. Bedrock outcrops appear on all sides of this feature. There is a small shell scatter mostly on the west and south of the feature.

About 1.00 m west of the terrace are two large uprights next to a bedrock outcrop. A *kiawe* tree is directly behind the upright. Another large boulder lies just to the southeast of the uprights and may have been part of it. The shape of this resembles an open ended square. From Feature A datum at c. 16.20 m west at 292 degrees a drilled piece of coral was found (ID #9) artifact was picked up. This feature is located in the southwest corner west of Road #10 c. 125 m. This feature is unexcavated.

FEATURE G: C-shape
ADJACENT TERRAIN: Gently undulating hills surrounded by a steep ravine.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.00 m by 1.80 m by 0.26 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled cobbles and boulders incorporating a bedrock outcrop on the west end. There is a shell (cowrie) scatter on the south side. The feature is badly disturbed with rock scattered c. 5.00-8.00 m on the northwest and south. The feature lies on a relatively

flat spot on top of a hill. Bulldozer cuts surround it and it may have been disturbed in that manner. This feature is c. 7.50 m northwest at 180 degrees true north from Site 855-186. It is also located in the southwest corner of the project area and west of Road #10 at c. 125.00 m. This feature is unexcavated.

STATE NO.: 19343 PHRI TEMP. NO.:855-193
SITE TYPE: Wall
TOPOGRAPHY: Undulating lower coastal hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Fence line
DIMENSIONS: 45.00 m by 0.30 m
DESCRIPTION: Small subangular stacked basalt rock wall one to two courses high with intermittently spaced (c. 5.00 m apart) fence posts. Fence staples, fence post (weathered) and fence were found in association with the feature. The feature is oriented at 320 degrees. About 1.00 m breaks in the wall occur irregularly. Only historic cultural remains are associated with the feature. Surrounding soil is gravel and silt c. 0.05-0.07 m. Feature A that was associated with this wall was examined and redetermined to be a military field enclosure (also recent historic). This site is located c. 20.00 m west of the old Puako-Hapuna road in the southwest portion of the project area, in a downhill slope between two gullies c. 100.00 m from the north of the new Puako Beach road.

STATE NO.: 19344 Other: YG-44 PHRI TEMP. NO.:855-209
SITE TYPE: Enclosure w/adjoining C-shape
TOPOGRAPHY: Undulating.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation/military
DIMENSIONS: 4.00 m by 3.25 m
DESCRIPTION: Subangular small boulders placed on existing basalt bedrock outcrop c. 0.10-0.20 m. Subangular cobbles are used as fill. The evidence of military use is shell casings and machinery-scarred rocks. This feature is mainly a modified outcrop. The outcrop is alop a ridge at its highest elevation and runs east-west. It has a natural opening of c. 0.70 m in length and c. 0.30 m in width. Several large subangular boulders (c. 0.55 m diameter) were placed three courses high on the north side. Large subangular basalt rocks were placed on the west end and cobbles were placed in between as filling, creating an oval enclosure with a cupboard space.

The southeastern end of this oval-shaped opening curves and continues c. 2.00 m to the south and then curves c. 3.00 m to the west, creating a C-shape. This continuation is composed of subangular cobbles and small boulders being piled one to two courses. There is no facing. There is a substantial rubble of small boulders to the north and east, suggesting there was more construction than now exists. There are scarred rocks (possible machinery impact). Overall view suggests an enclosure and adjoining C-shape.

This site is located in the central *makai* portion of the project area. Cowrie shell fragments, several waterworn small cobbles and two bullet shell casings were observed on the surface of

this feature area. Also there was a moderate midden concentration within the C-shape area. A trowel test within the oval-shaped area revealed c. 0.10 m of loamy silt and subangular basalt pebbles and a trowel test within the C-shape area (south end) revealed loamy silt and subangular basalt pebbles.

STATE NO.: 19345 PHRI TEMP. NO.:855-212
SITE TYPE: Complex (14 Features)
TOPOGRAPHY: Hills of pahoehoe bedrock on a W-facing slope.
VEGETATION: Dry knee-high brown grass and *kiawe* shrubs.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of two circular walls (Features B, D), two enclosures (Features C, E), three terraces (Features F, M, N), one modified outcrop (Feature G), three mounds (Features H, J, K), one alignment (Feature L), one C-shape (Feature O), and one remnant terrace (Feature P). The overall site dimensions are c. 52.0 by 37.0 m with the long axis 80 to 260 degrees.

FEATURE B: Circular wall
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and knee high brown grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.60 m by 2.90 m by 0.36 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled in a C-shape. The wall opens to S, toward Feature D c. 1.00 m away. The long axis runs 250 to 70 degrees. Cobbles are 0.12 to 0.30 m length/diameter. The feature is located in the W central part of the project area, c. 1/8 mile from the coast. No portable remains were detected. The deposit was unexcavated. A trowel poked into the soil inside the feature is stopped by rock less than 0.10 mbs.

FEATURE C: Enclosure
ADJACENT TERRAIN: Terrain is sloping down to the north and west. Hills and valleys.
VEGETATION: Grass and sparse *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 3.60 m (46 degrees) by 3.20 m by 0.44 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium-sized angular pahoehoe stones are placed in a circle to form an enclosure. The stones range in size from c. 0.10 to 0.62 m in diameter. The stones are not faced, aligned, or stacked. They just appear to be piled and placed. There are four stones placed in a pile in the center of the enclosure c. 0.50 by 0.40 m. The enclosure itself is one to two courses high. Also, one upright stone is found in the NW corner, standing c. 0.39 m high and c. 0.25 m wide. Feature E is c. 3.40 m at 238 degrees (TN). Feature D is c. 2.70 m at 300 degrees (TN). Feature K is c. 17.00 m at 90 degrees (TN). A fire occurred three weeks ago and burned an area c. 20.00 m at 312 degrees. The ocean is c. 200.00 m due west. After a trowel test, no cultural material was found. No portable remains were observed.

FEATURE D: Circular wall
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: Knee high dry grass and *klawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 3.20 m by 2.50 m by 0.44 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Rough pahoehoe cobbles and small boulders piled and stacked one to two courses high. Rocks are c. 0.12 to 0.50 m length/diameter. The long axis is oriented 20 to 200 degrees. The feature is located in the central part of the project area, 1/8 mile from shore. One marine shell fragment was noted. The deposit was unexcavated. A trowel was poked into soil and stopped by rock less than 0.10 mbs.

FEATURE E: Enclosure
ADJACENT TERRAIN: Terrain is sloping down to the north and west. Hills and valleys.
VEGETATION: Small grass and sparse *klawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 3.80 m (298 degrees) by 3.60 m by 0.56 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Small to medium sized angular, pahoehoe stones arranged in an oval to form an enclosure. One stone is (L by W by H) c. 0.76 by 0.31 by 0.56 m and the other stones range from c. 0.10 to 0.30 m in diameter. Outside of the northern wall is a 0.09 by 0.06 by 0.03 m waterworn coral fragment. This was not collected. This feature is on the north side of a large knoll. The enclosure itself is two to three courses high. The stones are not stacked, aligned, or faced and appear to have been piled and placed. Feature C is c. 40.00 m at 58 degrees (TN). Feature D is c. 2.00 m at 340 degrees (TN). Feature K is c. 20.00 m at 104 degrees (TN). A fire occurred three weeks ago and burned an area c. 50.00 m at 324 degrees. The ocean is c. 200.00 m due west. A waterworn coral fragment is noted in surface remains. Trowel tested - no cultural material found.

FEATURE F: Terrace
ADJACENT TERRAIN: North sloping terrain down into a small hilly valley.
VEGETATION: Small sage-like brown grasses.
FUNCTION: Agriculture
DIMENSIONS: 4.00 m by 2.20 m by 0.37 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Piled subangular basalt cobbles one course high ranging in size from c. 0.07 to 0.30 m. The center is fairly flat and contains small (less than 0.05 m) rocks with few larger than 0.15 m. It is oval in shape, with the south wall flatter than the north. The south wall is mostly bedrock outcropping with a few cobbles against it. This feature's north wall is shared by Feature M. This feature is oriented at 101 degrees. There appears to be a few (cm) of soil and decomposing bedrock with no surface remains noted.

FEATURE G: Modified outcrop
ADJACENT TERRAIN: Sloping south and west.
VEGETATION: *Klawe* and desert grass.
FUNCTION: Possible agriculture
DIMENSIONS: 4.70 m by 1.00 m by 0.60 m

CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: (2) modified outcrops constructed of subangular basalt cobbles and boulders from c. 0.10 to 0.35 m in diameter. They are piled two to three courses high on a bedrock outcrop in linear alignments (2), forming wall-like features. They are fairly collapsed, with rubble all around them. Stacking is on a bedrock surface. The feature is located on the west end of the ridge on the south side, c. 6.00 m of Feature G in the central portion of the *makai* parcel. Historic remains consist of glass, one piece of marine shell, and grenade fragments.

FEATURE H: Mound
ADJACENT TERRAIN: Located at E end of ridge sloping S, N, E.
VEGETATION: Desert-like grass and *klawe*.
FUNCTION: Possible military
DIMENSIONS: 1.20 m by 1.80 m by 0.46 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Amorphous shape, very loosely and sloppily piled subangular basalt cobbles and boulders (ranging from c. 0.10 to 0.35 m in diameter), one to two curses high in the center. The mound is built against bedrock on the side of a small hill. Rocks are scarred and there is rubble around the feature. Bullet casings, historic debris (glass, metal stove), and a few marine shells were noted in the surface remains. No surface deposit was noted.

FEATURE J: Mound
ADJACENT TERRAIN: On N slope of E to W ridge.
VEGETATION: Desert grass.
FUNCTION: Indeterminate
DIMENSIONS: 0.60 m by 0.80 m by 0.38 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Small mound of subangular basalt cobbles (c. 0.20 to 0.30 m in diameter), one to three courses high (all surface rocks). It is loosely piled with no apparent shape built on the side of a hill. It is located c. 6.00 m N/NW of Feature H, c. 8.00 m N/NE of Feature K in the central portion of the *makai* parcel. No surface remains or surface deposit was noted.

FEATURE K: Mound
ADJACENT TERRAIN: On top of ridge running E to W, sloping N to S.
VEGETATION: Desert grass.
FUNCTION: Indeterminate
DIMENSIONS: 1.50 m by 1.40 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Amorphous shape; built of subangular basalt cobbles and boulders (c. 0.10 to 0.30 m in diameter) loosely piled on the ground surface. It is mostly one course, with some two coursed in the center. There is much scattered rubble around feature as well as bulldozer tracks and gravel on the ground surface. A few rocks are split also. There is a possible alignment from the center of the feature out to the east, one course by one course ending by bedrock. The mound is located c. 10.00 m W of Feature H, c. 6.00 m E of Feature G in the central portion of the *makai* parcel. No surface remains or surface deposits were noted.

FEATURE L: Alignment
ADJACENT TERRAIN: Lots of calcified rock partially water affected from stream bed (?)

VEGETATION: Desert grass and *kiawe*.
FUNCTION: Military
DIMENSIONS: 10.70 m by 0.75 m by 0.41 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Linear wall alignment constructed of subangular basalt cobbles and boulders (c. 0.05 to 0.50 m in diameter). Many large boulders are placed in spaces where bedrock is not. Much bedrock was used in construction. There is scattered rubble on either side. The feature is one to two courses high as well as one to two courses wide. It is constructed on a berm of pushed up dirt and rubble concentration. The bedrock that the feature is constructed on is naturally waterworn (but the feature over it is not; it was built later). The feature is located in the saddle between two ridges, c. 3.00 m E of Feature N, 8.00 m NW of Feature P in the central portion of the *makai* parcel. Metal fragments and military debris and one waterworn cobble were noted in surface remains, with no surface deposit noted.

FEATURE M: Terrace
ADJACENT TERRAIN: North-sloping terrain down into a small hilly valley.
VEGETATION: Small, sage-like brown grasses and sparse *kiawe*.
FUNCTION: Agriculture
DIMENSIONS: 4.30 m by 2.30 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Piled subangular basalt cobbles one course high ranging in size from c. 0.08 to 0.31 m. The center is fairly flat and contains small (less than 0.05 m) rocks. It is virtually void of any sizable rocks. It is circular in shape with the south wall flatter than the north. The south wall is shared by Feature F. This feature is located c. 4.40 m west of Feature N (terrace). Feature F's terrace is just south and upslope. No surface remains were noted but there appears to be a few centimeters of soil and decomposing bedrock.

FEATURE N: Terrace
ADJACENT TERRAIN: North-sloping terrain down into a small hilly valley.
VEGETATION: Brown short sage-like grasses.
FUNCTION: Agriculture
DIMENSIONS: 4.50 m by 4.40 m by 0.38 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Piled subangular basalt cobbles one course high ranging in size from c. 0.07 to 0.35 m. The feature is circular in shape, with the center relatively flat and void of large rocks. It does contain a high number of small (less than 0.05 m) rocks. The south wall is mostly bedrock outcropping with a few cobbles against it. The N, W portion is also mostly bedrock with some cobbles also pushed up against it. The feature is located c. 6.70 m west of Feature L's alignment. No surface remains were noted but there appears to be a few centimeters of soil and decomposing bedrock.

FEATURE O: C-shape
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: No vegetation.
FUNCTION: Agriculture
DIMENSIONS: 3.30 m by 2.70 m by 0.53 m
CONDITION: Fair
INTEGRITY: Unaltered

DESCRIPTION: Subangular pahoehoe cobbles and small boulders piled one to two courses high to form a C-shape. A natural outcrop forms part of the structure. The long axis is at 100 to 280 degrees. The feature is located in the west central part of the project area, one-eighth mile east of the shore. Surface remains consist of one broken waterworn cobble measuring c. 0.10 by 0.12 by 0.04 m, and several rough coral fragments, the largest measuring c. 0.11 by 0.09 by 0.05 m.

FEATURE P: Terrace
ADJACENT TERRAIN: Built on NW slope.
VEGETATION: *Kiawe* and desert grass.
FUNCTION: Possible agriculture/military
DIMENSIONS: 14.00 m by 2.50 m by 0.56 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Remnant terracing constructed of subangular basalt cobbles and boulders built against and with natural bedrock outcropping. It is stacked and piled on a slope up to a bedrock lip with the upper surface flat ground. There is scatter throughout all terraces. They range from one to five courses, all along the same bedrock outcrop. Many rocks have fallen down to the bedrock lip as well as off it to the bottom of the hill. Historic and military debris is all around the feature. It is located on the NW slope of ridge c. 5.00 m west of Feature J in the central portion of the *makai* parcel. Surface remains consist of military debitage - grenade fragments, glass and metal fragments. No subsurface cultural deposits were noted.

STATE NO.: 19346 PHRI TEMP. NO.:855-213
SITE TYPE: Complex (12 Features)
TOPOGRAPHY: Hilly; on top of long E-W narrow ridge, partially burned.
VEGETATION: Burned *kiawe* and desert grass (unburned).
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of a remnant U-shape (Feature A), five C-shapes (Features B, D, E, O, Q), one cairn (Feature C), one enclosure (Feature G), one remnant C-shape (Feature L), one mound (Feature M), one remnant enclosure (Feature N), and a wall (Feature P).

FEATURE A: U-shape
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled boulders and cobbles one to two courses high. The NE side is built on a fourteen degree slope which gradually levels off in the interior towards the SE. The east part of the feature may have been the entryway. The west side is also open. The alteration of this feature is probably due to military exercises since there are hand grenade fragments in and around it. There are a few pieces of marine shell scattered within and without the feature. Bedrock is incorporated into the NE side construction. A small (c. 0.50 by 0.50 m) cupboard is located in the SW of the feature. Feature U is c. 20.00 m S at 177 degrees of TN from Feature

B. It is located on the extreme west central part of the project area at *makai*. No subsurface cultural deposit noted.

FEATURE B: C-shape
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and knee-high grass.
FUNCTION: Military
DIMENSIONS: 5.20 m by 3.50 m by 0.45 m
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles are stacked one to three courses high. The feature lies partly on a bedrock outcrop. Rocks are c. 0.15 to 0.45 m length/diameter. The long axis is 280 to 100 degrees. It is located in the central part of the project area, one-fourth mile east of Wailea Bay. Queen Kaahumanu highway is a half mile SE. Subsurface deposit was unexcavated. A trowel driven into the ground at numerous points was stopped by rock at less than 0.10 m. No surface remains were noted.

FEATURE C: Cairn
ADJACENT TERRAIN: Slanting down to the north and slanting up to the south.
VEGETATION: No vegetation.
FUNCTION: Military
DIMENSIONS: 1.40 m by 1.20 m by 0.87 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Feature C is located on the downslope of a ridge immediately below a white sand concentration associated with military and/or firefighting activities. There are many subangular basalt cobbles that are rubbled, either from natural bedrock erosion or military activities. There is evidence of burnt grass and fire-affected rocks. Rusted metal packaging strips are below the cairn. It is built using an existing bedrock outcrop as part of the cairn (south end). The cairn is constructed of subangular basalt cobbles well stacked six to eight courses high. The cairn is more oval than circular at its base. The cobbles are c. 0.10 to 0.30 m in diameter. The cairn is located in the central *makai* portion of the project area. It is at c. 15.60 m from Feature L at 47 degrees, c. 11.80 m from Feature G at 286 degrees, and c. 12.40 m from Feature E at 236 degrees. All are datum to datum. Subsurface trowel test c. 3.4 m of sand and c. 3.40 m of silt below burned surface at c. 0.08 m. No surface remains or cultural evidence was noted.

FEATURE D: C-shape
ADJACENT TERRAIN:
VEGETATION: Burned and unburned desert-like grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 3.50 m by 2.75 m by 0.30 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Remnant C-shape constructed of subangular basalt cobbles (c. 0.10 to 0.40 m in diameter). It incorporates natural bedrock, one to two courses high as well as wide, with many gaps in construction. Rubble is in the center and around the feature. It is located c. 3.0 m south of Feature E, c. 18.00 m east of Feature M in the central portion of the *makai* parcel on top of a narrow ridge. Surface remains consist of one waterworn basalt cobble, shrapnel, one piece of marine shell. No surface deposit was noted.

FEATURE E: C-shape
ADJACENT TERRAIN:
VEGETATION: Burnt and unburned desert-like grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 5.25 m by 3.25 m by 0.47 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Very roughly constructed C-shape of subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter. Natural bedrock incorporated into the feature makes up most of the north portion. It is very collapsed and one to two courses high as well as one to two in width. The opening is toward the south portion of the feature, and the center is scattered with rubble. The feature is located on top of a ridge c. 3.00 m N of Feature D, and c. 18.00 m E of Feature M in the central portion of the *makai* parcel. Small amounts of marine shell, shrapnel and a large sand pile are c. 6.00 m east. No surface deposit was noted.

FEATURE G: Enclosure
ADJACENT TERRAIN: Undulating subangular basalt gravel pebbles and cobbles.
VEGETATION: Burnt/unburned grass and *kiawe*.
FUNCTION: Military
DIMENSIONS: 4.10 m by 2.90 m by 0.37 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Feature G is constructed with subangular basalt cobbles c. 0.15 to 0.40 m in diameter. The cobbles are roughly stacked from one to three courses high. There is no visible facing. The overall structure is more oval than circular (tear drop), exhibiting slumpage on the eastern end, which is the narrower end. The white sand pile appears to be from sandbags placed by the military, as there are remnants of bags still present within the sand area deposit. The feature is located in the central *makai* portion of the project area. Feature G is c. 13.75 m to Feature L at 358 degrees. To the west c. 1.00 m are two burnt uprooted *kiawe* trees. Further west c. 2.00 m is the beginning of a sand deposit concentration. There is also a concentration of basalt cobbles that may have been a construction pile. No cultural deposit was within the feature (surface). Subsurface trowel test +0.10 m. Loamy silt, grass roots and subangular pebbles. No surface remains were noted.

FEATURE L: C-shape
ADJACENT TERRAIN: Undulating subangular basalt gravel, pebbles and small to large subangular basalt cobbles.
VEGETATION: *Kiawe*, grass.
FUNCTION: Military
DIMENSIONS: 3.30 m by 1.60 m by 0.40 m
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Small (c. 0.10 to 0.30 m) subangular basalt cobbles are piled irregularly one to two courses high, beginning at the northern end and aligning with natural bedrock loosely piled SE. The remaining portions south and southwest are slumped. The feature is located in the central *makai* portion of the project area. Feature L is c. 13.75 m from Feature G at 178 degrees. Feature C is c. 15.60 m at 227 degrees from Feature L. Surface remains consist of hand grenade container metal covers, an unexploded bullet shell, and hand grenade pull clips, which are located between Feature L and Feature G. A (-10) trowel test shows subangular gravel and pebbles ending on bedrock. Fire-affected rocks, grass and *kiawe* trees are c. 20.00 m to the dirt road.

FEATURE M: Mound
ADJACENT TERRAIN:
VEGETATION: *Kiawe* bush and desert-like grass.
FUNCTION: Military
DIMENSIONS: 1.00 m by 1.25 m by 0.36 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles (c. 0.30 m in diameter) piled three-two-one style in a triangular cone shape. The mound is very rough, sloppy, and very recently built on the surface. It is built over bulldozed ground. It is located on top of a ridge in the central portion of the *makai* parcel c. 18.00 m west of Features D and E. No surface remains or deposit was noted.

FEATURE N: Enclosure
ADJACENT TERRAIN: Shoreline rolling hills; recent brush fire.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Military
DIMENSIONS:
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A randomly piled one to two course high remnant circular enclosure of boulders and cobbles. The feature sits on top of a 24 degree slope right at the edge. There are rocks scattered throughout feature and on the slope, which is SW of the enclosure. There is no midden in or outside of the enclosure. Alteration of the feature is probably by the military because of grenade fragments within and without the feature. The feature is 214 degrees SW at c. 14.00 m of TN from Feature A. It is located in the extreme west central portion of the project area at *makai*. Grenade fragments and an M-16 bullet shell were noted as surface remains. No surface deposit was noted.

FEATURE O: C-shape
ADJACENT TERRAIN: Gentle slope north
VEGETATION: Burnt desert grass
FUNCTION: Temporary habitation/military
DIMENSIONS: 2.80 m by 3.00 m by 0.45 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: C-shape constructed of subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter. It is stacked and piled one to three courses high as well as wide. Scatter is throughout the entire feature. The east wall is touching the west portion of Feature P. The opening is in the S portion. The feature is located in the area c. 8.00 m E of Feature G; attached to Feature P in between (2) ridges E/W. Surface remains consists of military debris, while no surface deposit was noted.

FEATURE P: Wall
ADJACENT TERRAIN: Gently sloping north. Possible trail in south area.
VEGETATION: Burned *Kiawe* and desert grass.
FUNCTION: Indeterminate
DIMENSIONS: 5.75 m by 2.00 m by 0.37 m
CONDITION: Fair
INTEGRITY: Unaltered

DESCRIPTION: Linear alignment of subangular basalt cobbles mostly one course high, possibly two at times. It is one to three courses wide and also incorporates natural bedrock. It is directly in between and connects Features Q and O. Scattering of rubble is on both sides of the wall. The wall runs east to west. It is located directly in between Features O and Q in between two ridges on top. No surface remains or surface deposits were noted.

FEATURE Q: C-shape
ADJACENT TERRAIN: Flat ground with gentle slope north.
VEGETATION: Burnt *Kiawe* and desert-like grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.25 m by 2.50 m by 0.31 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A C-shape constructed of subangular basalt cobbles. It is one to three courses high as well as wide. The opening is to the south. Construction includes natural bedrock. The feature is very remnant, with scattered rubble all around and in the center also. The feature is located directly next to (E of) Feature P; in the central portion of the *makai* parcel in between two ridges. No surface remains or surface deposit was noted.

STATE NO.: 19347 PHRI TEMP. NO.:855-214
SITE TYPE: Complex (15 Features)
TOPOGRAPHY: Undulating low hills, ridges, and ravines.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair-good
INTEGRITY: Altered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of a C-shape w/adjoining wall (Feature A), U-shape (Feature B), terrace (Feature C), seven C-shapes (Features D, I, J, K, L, M, Q), wall (Feature E), cairn (Feature G), two enclosures (Features N, O), and an L-shape (Feature P).

FEATURE A: C-shape w/adjoining wall
ADJACENT TERRAIN: Terrain is sloping downward to the west. Hills and valleys.
VEGETATION: Small grasses and sparse *kiawe*. Two mid-sized trees are c. 0.10 m east of feature.
FUNCTION: Temporary habitation
DIMENSIONS: 10.80 m (305 degrees) by 4.70 m by 0.27 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium to large sized angular pahoehoe stones arranged into a C-shape wall, and a clearing pile. The wall is c. 5.00 m long (305 degrees TN) and c. 1.20 m wide. It is one course high and consists of stones ranging in size from c. 0.09 to 0.78 m in diameter. This wall is linear, running NW-SE. Then it joins the C-shape at the SE corner of the C-shape. The C-shape is one to two courses high and the opening faces south. The stones range from c. 0.13 to 0.49 m in diameter. The walls are c. 1.18 m wide. It appears that the smaller stones are in the NW wall and as it bends to the south, the stones are larger. This is c. 4.20 m (305 degrees) long and c. 2.80 m wide. Then, c. 0.50 m west of the C-shape, is a small clearing pile. This is c. 1.60 m (214 degrees TN) long and c. 1.30 m wide. The stones range from c. 0.09 to 0.38 m in diameter. The shape is oval. There is no facing or any real alignment of features. The wall is nicely made and appears to turn into a small paving before it runs into the C-shape. Features

J, L, and M are c. 43.00 m at 305 degrees (TN). This feature is in the area of a fire that occurred here three weeks ago. A gulch is c. 20.00 m at 234 degrees (TN). The feature was trowel tested and no cultural deposit or surface remains were noted.

FEATURE B: U-shape
ADJACENT TERRAIN: Terrain is sloping down to gulch and west. Hills and valleys.
VEGETATION: Small grass and sparse *kiawe*. A small *kiawe* tree is c. 2.50 m west of feature.
FUNCTION: Temporary habitation
DIMENSIONS: 4.20 m by 2.20 m by 0.24 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium sized angular, pahoehoe stones arranged in a boxed C-shape, one to two courses high. The stones range from c. 0.10 to 0.50 m in diameter. The opening faces SSW. The walls are c. 0.80 m wide. The north wall contains smaller basalt stones that increase in size going south. There is no facing, but there is an alignment of all sides of the wall which makes up the boxed C-shape. It appears as if effort was made constructing this feature. Feature A is c. 12.00 m at 125 degrees (TN). Features J, L, M are c. 21.00 m at 305 degrees (TN). The gulch and the burnt area from the fire that occurred three weeks ago are c. 15.00 m at 224 degrees (TN). The feature was trowel tested and no cultural deposit or surface remains noted.

FEATURE C: Terrace
ADJACENT TERRAIN:
VEGETATION: Unknown grass.
FUNCTION: Possible agriculture
DIMENSIONS: 2.00 m by 0.75 m (N/S wall width) by 0.34 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Originally (1990) this feature was identified as a C-shape. After clearing, it was assigned a terrace designation. The feature was constructed with subangular pahoehoe cobbles and boulders (0.10 to 0.35 m diameter/length) piled two to three courses high in a semicircular pattern (hence the original C-shape designation) following the natural contour. Cobbles and boulders are located within the interior of the terrace, filling it and making it level with the upslope ground surface. The closed end of the terrace faces north, overlooking a low ravine. A small test indicates no subsurface deposit or surface remains present.

FEATURE D: C-shape
ADJACENT TERRAIN: Terrain is sloping downward to the north and west. Hills and valleys.
VEGETATION: Small grass and dense *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 4.50 m by 4.30 m by 0.26 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Small to medium sized angular, pahoehoe stones are arranged in a C-shape, one to three courses high. Smaller stones make up the southern wall and are larger as the wall extends north. The wall is c. 0.70 m in width. The stones range in size from c. 0.05 to 0.30 m in diameter. The opening faces due west. The north wall is aligned and stacked into place. There is some piling of stones on top. As this curves to the south, both the aligning and the stacking turns into a piling of stones. There is no more neatness or careful building. Also, outcropping is shown through the C-shape. Feature C is c. 9.00 m at 330 degrees (TN). Feature E is c. 6.80 m at 304 degrees. Feature A is 120 degrees at c. 9.00 m. Feature M is c.

10.00 m at 146 degrees. A jeep road is c. 20.00 m directly west. Ecofacts (marine shell) are is found on the surface around this feature. One cowry shell has a hole poked through the side of it. Trowel tested-no cultural deposit.

FEATURE E: Wall
ADJACENT TERRAIN: Undulating low hills, ridges, and ravines.
VEGETATION: Unknown scrub grass, *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 4.00 m by 1.00 m by 0.53 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Small to medium angular pahoehoe boulders, piled one to three courses high, forming a low wall running east to west. It is located between the coast and the old Puako road within the north half of the project area. It is oriented at 308 degrees. No surface remains or subsurface deposit noted.

FEATURE G: Cairn
ADJACENT TERRAIN:
VEGETATION: Grass.
FUNCTION: Marker
DIMENSIONS: 0.85 m (NE/SW) by 0.55 m (SE/NW) by 0.45 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This small cairn was constructed with subangular pahoehoe cobbles-boulders (0.15 to 0.40 m diameter/length) piled up to three courses high on bedrock. The stones were piled to form a small mound. Surface remains consist of one marine shell fragment adjacent, one cowrie shell at 3.00 m to NW. Small test indicates no subsurface deposit.

FEATURE I: C-shape
ADJACENT TERRAIN: Terrain is sloping north and west downward. Hills and valleys.
VEGETATION: Small grasses and sparse *kiawe*. Several *kiawe* trees running west-east just north of feature.
FUNCTION: Temporary habitation
DIMENSIONS: 8.60 m by 6.00 m by 0.54 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This feature is built on the north side of a small knoll ,to the top of it. This feature could also be described as a terrace, as the stones are built into the ground and piled up. Medium-large angular, pahoehoe stones are arranged in a C-shape, one to two courses high. The opening faces SSW. The larger stones are pushed into the ground, at the north side of knoll, making it appear as a terrace. Then medium-sized rocks are placed on top of the larger rocks. There is no facing or stacking. A large *kiawe* tree is touching the NE wall; most of the tree is covering the south half (1/2) of feature. Feature K is c. 13.45 m at 143 degrees (TN). Feature M is c. 6.35 m at 207 degrees (TN). A fire occurred three weeks ago and burnt an area c. 60.00 m at 234 degrees. No surface remains noted. Trowel tested but no cultural deposit noted.

FEATURE J: C-shape
ADJACENT TERRAIN: Terrain is sloping downward to the west. Small hills and valleys.
VEGETATION: Small grass and sparse *kiawe*.
FUNCTION: Temporary habitation

DIMENSIONS: 1.90 m (80 degrees) by 1.40 m by 0.30 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium sized pahoehoe angular stones arranged in a C-shape and two to three courses high. The stones range from c. 0.07 to 0.34 m in diameter. The opening of C-shape faces NW. There is a small waterworn basalt nugget just to the west of feature. Did not collect. The wall itself ranges from c. 0.50 to 1.05 m wide. No facing or alignment. It appears as if the stones were piled into a C-shape, hurriedly. Feature L is c. 1.20 m at 80 degrees (TN). Feature A is c. 43.00 m at 125 degrees (TN). A medium sized *kiawe* tree is c. 7.00 m at 80 degrees (TN). A fire occurred three weeks ago and burnt an area c. 50.00 m at 180 degrees (TN). Surface remains consist of waterworn basalt stone (c. 0.07 by 0.07 by 0.04 m). Trowel tested and no cultural material.

FEATURE K: C-shape
ADJACENT TERRAIN: Terrain is sloping down to the S, W, and N. On a small knoll. Hills and valleys.
VEGETATION: Small grass and sparse *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 2.50 m (305 degrees) by 2.00 m by 0.21 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium-sized angular pahoehoe stones arranged in a C-shape, one to two courses high. The opening faces west and the walls are c. 0.80 m wide. The stones range in size from 0.08 to 0.27 m in diameter. There is no facing or alignment. The rocks appear to have just been piled in a C-shape, hurriedly. Feature I is c. 3.90 m at 326 degrees (TN). Feature B is c. 5.00 m at 153 degrees (TN). The gulch/burnt area is c. 30.00 m at 228 degrees. Features J, L, M are c. 10.00 m at 286 degrees. A large *kiawe* tree is c. 5.00 m north of feature. No surface remains noted. Trowel tested and no cultural deposit noted.

FEATURE L: C-shape
ADJACENT TERRAIN: Terrain is sloping downward to the west. Hills and valleys.
VEGETATION: Sparse *kiawe* and small grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.00 m (125 degrees) by 2.10 m by 0.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium-sized pahoehoe angular stones arranged in a C-shape and two to three courses high. The stones range from c. 0.12 to 0.33 m in diameter. The opening of C-shape faces SSW. The north wall of feature is the same wall used for Feature M. The wall itself is c. 0.90 m wide. No alignment or facing to the feature. It appears that the stones were piled into a C-shape, hurriedly. Feature J is c. 1.20 m at 260 degrees (TN). Feature A is c. 43.00 m at 125 degrees (TN). A medium-sized *kiawe* tree is c. 5.00 m at 80 degrees (TN). A fire occurred three weeks ago and burnt an area c. 50.00 m at 180 degrees (TN). Feature M is constructed with this feature on the north wall. No surface remains noted. Trowel tested and no cultural deposit noted.

FEATURE M: C-shape
ADJACENT TERRAIN: Terrain is sloping downward to the west. Hills and valleys.
VEGETATION: Small grass and sparse *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 3.00 m (20 degrees) by 1.90 m by 0.31 m

CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Medium-sized angular pahoehoe stones arranged in a C-shape, one to two courses high. The stones range from c. 0.10 to 0.31 m in diameter. The opening of the C-shape faces west. The south wall also is the same wall used for Feature L's northern wall. The wall itself is c. 0.80 m wide. No facing or alignment to this feature. It appears that the stones were piled into a C-shape, hurriedly. Feature J is c. 1.30 m at 200 degrees (TN). Feature A is c. 44.00 m at 125 degrees (TN). A medium sized *kiawe* tree is c. 5.00 m at 80 degrees (TN). A fire occurred three weeks ago and burnt an area c. 53.00 m at 180 degrees (TN). Feature L is constructed with this feature on the south wall. No surface remains noted. Trowel tested and no cultural deposit noted.

FEATURE N: Enclosure
ADJACENT TERRAIN:
VEGETATION: Surface grass, and *kiawe*.
FUNCTION: Temporary habitation
DIMENSIONS: 3.00 m (340 degrees) by 2.00 m by 0.24 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Rounded rectangular, crudely piled angular basalt cobbles and boulders. East wall (c. 3.00 [340 degrees] by 1.20 by 0.24 m) consists of portable basalt cobbles (c. 0.15 to 0.25 m), piled one to two courses. South "wall" is an alignment (c. 2.00 by 0.20 by 0.18 m) of mostly loose cobbles, with two to three well grounded cobbles making up the west. The SW corner is "rounded" 90 degrees and stacked two courses with well grounded base stones. West wall roughly parallels east wall and measures (c. 3.00 by 0.50 by 0.27 m). It consists of seven to eight well grounded basalt boulders (c. 0.25 to 0.30 m) with approximately twenty portable (c. 0.15 to 0.20 m) cobbles scattered; no stacking or piling except in SW corner. North wall is (2.00 by 0.40 by 0.30 m) and has one well grounded basalt boulder and a single course of portable cobbles, approximately twenty in number. There are gaps in structure: at the NE corner (east wall northernmost c. 0.50 m) and c. 0.20 m mid west wall. The NE corner gap is a possible entrance. This feature is located on the westernmost "knoll" of site complex 1245 on south downslope c. 1.00 m NW of Feature O; c. 2.00 m SW of Feature P; c. 30.00 m at 250 degrees from feature. Surface remains consist of historic debris (rusted can lids); marine shell fragments (cowry, *opihi*). Given the number of portable cobbles in association, it is possible that: east wall was once three to five courses; west wall two to three courses. Likely that larger cobbles of south wall could have been utilized to construct enclosure Feature O. Cultural deposits noted as greater than 0.08 m of yellowish brown gravely silt (small probe in SW corner). Nothing indicates modifications due to historic-recent use. (i.e. weathering is same on most cobbles). No historic construction; materials present though presence of debris suggests historic/recent use of original structure.

FEATURE O: Enclosure
ADJACENT TERRAIN: Undulating terrain, subangular gravel, pebbles, and cobbles.
VEGETATION: Several *kiawe*, moderate scrub grass; not a burnt area.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Feature is constructed of subangular basalt cobbles c. 15.25 m in diameter; lesser cobbles c. 0.30 to 0.40 m in diameter. These are piled not stacked one to two courses high. Some rocks show scarring. The northern portion retains the shaping best; however it has been

disturbed and exhibits slumpage. There is a small *klawe* that may have contributed to the disturbance shown on the south end. The entire enclosure has rubble within and without. Due to military and recreational activities and close proximity to a dirt road, there is a possibility the feature has been impacted by machinery. This feature is located central *makal* portion. Surface remains consist of rusted metal cover "container M 87". No visible midden noted. Surface metal cover artifact. Subsurface +10 silt and subangular pebbles noted.

FEATURE P: L-shape
ADJACENT TERRAIN:
VEGETATION: Surface grasses, *klawe* scattered.
FUNCTION: Temporary habitation
DIMENSIONS: 3.40 m (10/190 degrees) by 4.00 m (100/280 degrees) by 0.38 m
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Two low, one to two course cobble piled walls meet at a rounded right angle. East wall runs 10/190 degrees, is c. 3.40 by 0.60 by 0.24 m. Two large boulders (c. 0.30 m +) are at N and S points with c. 0.15 to 0.25 m cobbles in between. North wall running 100/280 degrees measures c. 4.00 by 0.70 by 0.38 m. North wall is crudely piled three to four cobbles high with cobbles c. 0.15 to 0.25 m from the west end of north wall. A rubble pile (c. 2.00 by 0.50 by 0.20 m) one course high and two wide, appears to parallel east wall. At 2.00 m this pile/loose alignment makes a right 90 degree turn east c. 1.20 m ending in middle of level interior associated with feature. Rubble pile is possibly bulldozer push or possibly could be post-original structural modifications. Interior is slightly sloping one to two degrees with decomposing bedrock gravel and a few scattered cobbles. This feature is located on westernmost knoll of Site 214, on top of knoll c. 30.00 m at 90 degrees to Features L, M. Surface remains consist of marine shell fragments. Subsurface deposits consist of c. 0.05 to 0.10 m of a yellowish-brown silty loam. A rubble L-shaped addition on west end of feature shows a different construction. Cobbles are not as grounded; suggests post-original disturbance/construction-type of disturbance is possibly mechanical (bulldozer). A function cannot be determined due to a lack of material remains.

FEATURE Q: C-shape
ADJACENT TERRAIN:
VEGETATION: Surface grasses common, *klawe* scattered.
FUNCTION: Temporary habitation
DIMENSIONS: 2.00 m (135/315 degrees) by 2.50 m (45/225 degrees) by 0.26 m
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Low, two to three courses, piled semicircular wall opening 310 degrees. Constructed on exposed bedrock-NE corner and SW corner segments. There is crude stacking on west half (1/2) as opposed to crude piling on the east half (1/2). Loose alignment of cobbles appears to connect to ends of the C-shape. These are scarred and are likely displaced from original position by bulldozer. Interior has many loose cobbles and slopes gently (one to two degrees) to NW. Likely that east section has collapsed into feature. This feature is located on the westernmost knoll of Site 214; down the NE slope, slightly to west c. 30.00 m at 93 degrees to Features L, M. No surface remains noted. Subsurface deposit, c. 0.05 to 0.10 m of a yellow-brown silty loam. No material culture to suggest modifications. Condition is very deteriorated; integrity is indeterminate.

STATE NO.: 19348 **PHRI TEMP. NO.:**855-215
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: *Klawe* and scrub grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of two terraces (Features A, B), and a wall (Feature C). The overall site dimensions are c. 20.00 m by 10.00 m.

FEATURE A: Terrace
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Klawe* and scrub grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 3.00 m (64 degrees) by 3.50 (334 degrees) m by 0.43 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A loose rubble of pahoehoe boulders in a rough C-shape. Only the east side retains one to two courses. Most of the boulders are strewn about on the west side. Feature is located at the top of a small hill. It is c. 5.00 m at 289 degrees E at (TN) from Feature C. It appears to be more like a blown-up military C-shape. This feature is located in the extreme west central project area at *makai*. Surface remains consists of grenade fragments, bullet shells. No surface deposit is noted.

FEATURE B: Terrace
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Klawe* and scrub grass.
FUNCTION: Temporary habitation/military
DIMENSIONS: 3.00 m (64 degrees) by 3.00 m (334 degrees) by 0.28 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A loose rubble of pahoehoe boulders and cobbles. It appears to be two courses high, c. 0.25 m long on the south side. There also appears to be a single course high, right angle of stones turning to the NW. Feature lies near the top of a small hill. Feature B is c. 10.00 m south at 335 degrees (TN) from Feature C. This feature is located in the extreme west central project area at *makai*. Surface remains consist of grenade fragments, bullet shells. No surface deposit noted.

FEATURE C: Wall
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Klawe* and scrub grass.
FUNCTION: Hunting blind
DIMENSIONS: 2.50 m (64 degrees) by 1.25 m (334 degrees) by 0.42 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled one to two courses slightly curved wall of pahoehoe boulders. Wall runs east/west with the inner curve on the north. Feature sits on top of a hill next to a large *klawe* tree. Site 217 Feature A is c. 100.00 m NE at 40 degrees TN from this feature. There is no marine shell midden around the feature. There are, however, hand grenade fragments. The tag says wall but it is obviously a hunters blind. This feature is located in the extreme west central project area at *makai*. No surface deposit noted.

STATE NO.: 19349 Other: YG-15 PHRI TEMP. NO.:855-217
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
CONDITION: Good
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of an enclosure (Feature A), two cairns (Features B, C), and a modified outcrop (Feature D). The overall site dimensions are c. 20.00 m by 8.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.50 m (76 degrees) by 3.30 m (346 degrees) by 0.73 m
CONDITION: Good
INTEGRITY: Altered
DESCRIPTION: A square, three to five course high, enclosure of stacked pahoehoe boulders. Larger boulders are on the bottom all the way around. Facing is evident on all sides with only a portion of the south wall being bedrock. There are historic metal fragments in and around the feature. One *opihi* shell is inside. Recent use of structure is seen by two water bottles, and *pakalolo* plant-sand pots in a cage. A small *kiawe* tree is growing in the center of the enclosure. The feature sits on the NW of a 22 degree slope. Feature A is c. 7.00 m at 73 degrees TN from Feature B. NE corner is collapsed. This feature is located in the extreme west central project area at *makai*. No surface deposit noted.

FEATURE B: Cairn
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Post support
DIMENSIONS: 1.10 m (346 degrees) by 1.40 m (76 degrees) by 0.94 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled pahoehoe boulders on a bedrock outcrop forming a cairn, roughly square in shape. Cairn was used to hold up a fence post. Feature B is 253 degrees TN at c. 7.00 m from Feature A. This feature sits directly atop a 22 degree slope. Historic trash is scattered around feature. Feature C, c. 3.00 m to the N, is the same type of structure. This feature is located in the extreme west central project area at *makai*. Surface remains consist of 1950 to 68 "7up" can, sardine tin, cigarette pack. Feature would have to be torn apart to test surface deposit.

FEATURE C: Cairn
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Post support
DIMENSIONS: 2.00 m (76 degrees) by 2.00 m (346 degrees) by 0.81 m
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Randomly piled pahoehoe boulders on a bedrock outcrop forming a cairn which was used to hold a fence post. Post is still visible. The cairn appears to have been partially

pulled apart. Feature C is c. 3.00 m at 314 degrees TN from Feature B. Feature C sits directly atop a 22 degree slope. This feature is located in the extreme west central project area at *makai*. Surface remains consist of fence post, cigarette pack, sardine tin, radio wire antenna. Would have to tear it apart to test.

FEATURE D: Modified outcrop
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Agriculture
DIMENSIONS: 2.00 m (346 degrees) by 0.70 m (76 degrees) by 0.46 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Randomly piled pahoehoe boulders utilizing a bedrock outcrop. On and around the feature a grenade fragment, a spent and splattered bullet, and a bottle cap. Feature C is c. 4.00 m at 219 degrees TN from Feature D. This feature is located in the extreme west central project area at *makai*. No surface deposit noted.

STATE NO.: 19350 PHRI TEMP. NO.:855-221
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: Kiawe and scrub grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of two U-shapes (Features A, B). The overall site dimensions are c. 150.00 m by 2.50 m. Features themselves are c. 3.50 by 2.00 m.

FEATURE A: U-shape
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Hunting blind/military
DIMENSIONS: 3.75 m (78 degrees) by 3.50 m (168 degrees) by 0.68 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Stacked pahoehoe boulders three to four courses high set in a U-shape. Feature lies at the bottom of a ravine c. 20.00 m NE of Site 855-222. The open end of the feature faces NW. Within the feature, the soil has been excavated to form a low relatively leveled area. Stacking of the boulders is singular in width. The majority of boulders are quite large. The end of the NW wall at the opening has collapsed. The feature was covered by high thick grass, branches and is surrounded by *kiawe* trees. This feature is located in the extreme west central project area at *makai*. The surface remains consist of one small butchered pig bone, historic trash - paper and plastic. No surface deposit noted.

FEATURE B: U-shape
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Military-agriculture
DIMENSIONS: 3.50 m (104 degrees) by 2.75 m (140 degrees) by 0.70 m

CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This feature is nearly the same as Feature A which is c. 150.00 m SE of Feature B. The S wall is singular width, with stacking two to three courses high, of pahoehoe boulders. The wall is randomly piled against the embankment three to four courses high. The NNW wall is one to two courses stacked and is slightly disturbed. The open end faces NW and is clear of stone. There is a great deal of historic trash in and around the feature. It was once probably military but now has the paraphernalia of pot growing. A pumpkin ball was found outside of and at the SE corner. Feature lies at the bottom of a ravine. The inside of feature has been dug out and leveled. Tall thick grass and branches cover it and it is surrounded by *kiawe* trees. This feature is located in the extreme west central project area at *makai*. Surface remains consist of cut gas can, Styrofoam cooler, paper, plastic, tarpaulin remains. No surface deposit noted.

STATE NO.: 19351 **Other:** YG-12 **PHRI TEMP. NO.:**855-222
SITE TYPE: Midden scatter
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 40.00 m by 50.00 m
DESCRIPTION: Site has been destroyed by bulldozing. A midden scatter is evident on the east side of the site. Feature D may be the remains of a structure that was here, accounting for the midden. Some of this midden was collected. The bulldozer was probably military, since the push pile is old. There are also C-ration cans and shrapnel scattered about. Features A, B, and C have been destroyed by more recent bulldozing. A new dirt road goes through where they were. Features D and E were probably the same or connected somehow. These two features are on the east side of the site on a bedrock outcrop. There is a large scatter of midden around this area. A trail, Site 1245-314, runs along the NE of this site down to the beach area where it is obliterated by a road. Bulldozers have wiped out all features. This feature is located in the extreme west central project area at *makai*. The soil is noted as thin sandy silt.

STATE NO.: 19352 **PHRI TEMP. NO.:**855-223
SITE TYPE: C-shapes (5 Features)
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass (recent brush fire).
CONDITION: Fair-good
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 38.00 m by 12.00 m
DESCRIPTION: Site 223 is distinctly military. Feature D is a bulldozed C-shape with grenade fragments in and around it. Features A, B, C, E are also C-shapes with grenade fragments and land mines in and around them. To the NE of Feature B (c. 0.20 m) is an L-shaped wall that looks five years old or less. The interior has been cleared of rock. The wall is two courses high. These C-shapes should be considered as part of Site 224 since they are all on the same ridge and for the same purpose. This feature is located in the extreme west central portion at *makai*. Surface

remains consist of grenade fragments, land mines, beer bottles, bicycle pump, one marine shell, pop cans. No surface deposit noted.

STATE NO.: 19353 **Other:** YG-18 A-C **PHRI TEMP. NO.:**855-224
SITE TYPE: C-shapes (5 Features)
TOPOGRAPHY: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass (recent brush fire).
CONDITION: Fair-good
INTEGRITY: Altered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS:
DESCRIPTION: Randomly stacked pa'hoehoe boulders in a rough C-shape. All features (A-E) are uniform in design with the NE wall higher than the rest. Some dirt is thrown up around the bases. Grenade and other explosive fragments are visible within and without features. Features are set atop a ridge overlooking a dirt road. These features are located in the extreme west central project area at *makai*. Surface remains consist of marine shell, grenade fragments, beer bottles, pot bags, one Bic lighter, beach mat remains. No surface deposit noted.

STATE NO.: 19354 **PHRI TEMP. NO.:**855-226
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: Rolling pahoehoe outcrops. Site is atop an outcrop overlooking a cove to south.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of a U-shape (Feature A), a terrace (Feature B), and a modified outcrop (Feature C). The overall site dimensions are c. 9.50 m by 7.30 m.

FEATURE A: U-shape
ADJACENT TERRAIN: A pahoehoe bedrock hill overlooking a small cove to immediate south.
VEGETATION: *Kiawe* and knee-high dry grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.90 m by 3.70 m by 0.60 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled one to three courses high to form a U-shape. Cobbles are c. 0.10 to 0.25 m length/diameter. Entrance faces W and is c. 1.60 m wide. The ends are hooked inward, so the entrance is narrower than it would otherwise be. Interior is c. 2.60 by 2.60 m. Long axis 290 to 110 degrees. This feature is located NW quad of project area, c. 50.00 m E of shore. Surface remains consist of many marine shell fragments (cowry, *Nerita* sp.). Unexcavated; rocky soil. A trowel probed into center of feature hits rock at less than 0.10 mbs.

FEATURE B: Terrace
ADJACENT TERRAIN: Sits on a pahoehoe bedrock hill overlooking a small cove to the south.

VEGETATION: *Kiawe* and knee-high brown grass.
FUNCTION: Agriculture
DIMENSIONS: 3.80 m by 3.00 m by 0.50 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A terraced outcrop with pahoehoe cobbles stacked one to two courses high along NE and E sides. Steepest part of it faces NE. Lies immediately E of Feature A's U-shape. A foot path c. 0.50 m wide running roughly E-W is immediately N of Features A and B and separates them from Feature C. Rocks are c. 0.15 to 0.30 m length/diameter with rock c. 0.50 m on NE side. Long axis is 260 to 80 degrees. This feature is located on NW quad of project area, c. 50.00 m from beach. Surface remains consist of one green New Zealand beer bottle (label intact), numerous marine shell fragments. Surface deposits unexcavated. A trowel poked into soil is stopped by rock at less than 0.05 mbs.

FEATURE C: Modified outcrop
ADJACENT TERRAIN: Sits on a pahoehoe hill overlooking a cove to the south.
VEGETATION: *Kiawe* and dry brown grass.
FUNCTION: Agriculture
DIMENSIONS: 6.80 m by 2.00 m by 0.35 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to two courses high, on the edge of a NE-facing hill. Cobbles are c. 0.15 to 0.30 m length/diameter. It is separated from Features A and B by a foot path c. 0.50 m wide, which runs roughly E-W. Long axis is 260 to 80 degrees. This feature is located on NW quad of project area, c. 50.00 m from shore. Surface remains consist of numerous small marine shell fragments. Surface deposit unexcavated. Sits on bedrock.

STATE NO.: 19355 PHRI TEMP. NO.:855-234
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Rolling pahoehoe with a series of finger knolls pointing toward the sea. Heavy erosion and bulldozer piles.
VEGETATION: *Kiawe*.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: This site consists of a cairn (Feature A), and a C-shape (Feature B). The overall site dimensions measure c. 10.70 m E to W by 3.00 m N to S.

FEATURE A: Cairn
ADJACENT TERRAIN: In a burned area
VEGETATION: Burnt *kiawe* and some recent grass growth.
FUNCTION: Military
DIMENSIONS: 1.00 m by 1.00 m by 0.52 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Approximately seven cobbles measuring c. 0.15 by 0.20 placed on an outcrop with one boulder measuring c. 0.20 by 0.20 m on top. Piled one to two courses high. This feature is located c. 7.00 m due west of Feature B, downslope and on a west sloping hillside west of Road #10. Surface remains consist of wood stake among rocks (burned by brush fire).

FEATURE B: C-shape
ADJACENT TERRAIN: In a burned area.
VEGETATION: Burned *kiawe* and some recent grass growth.
FUNCTION: Military
DIMENSIONS: 3.90 m by 3.00 m by 0.33 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: C-shape constructed on a flat area on the end of a knoll on the *makai* side. It is built upon a natural outcrop with boulders measuring c. 0.30 to 0.15 m. Stacked one to two courses high and one to three rocks wide. The boulders are stacked two courses high on the *makai* side (west). The loose rocks measure c. 0.10 to 0.40 m in size. Concrete is present on rocks on the south side. This feature is located c. 7.00 m due east of Feature A (rock cairn), upslope and on a west sloping hillside, west of Road #10. Surface remains consist of rolled-up barbed wire just E/NE of the feature c. 2.00 m away. No surface deposit noted.

STATE NO.: 19356 PHRI TEMP. NO.:855-236
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Rolling hills, shoreline.
VEGETATION: *Kiawe* and scrub grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site consists of a modified outcrop (Feature B), and a terrace (Feature F). The overall site dimensions are c. 6.00 m (230 degrees) by 3.75 m.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.75 m (350 degrees) by 0.50 m (80 degrees) by 0.43 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled pahoehoe boulders incorporating a bedrock outcrop on the NW. Feature is set on a hilltop with a slope of 2 degrees next to a very shallow ravine on the SE. A small scatter of marine shell is within and without feature. Two pieces of waterworn coral are also present. Feature is 230 degrees at 1.50 m (1 1/2 m) TN from Feature F. This feature is located in the extreme west central project area at *makai*. Surface remains consist of marine shell, waterworn coral, grenade fragments. No surface deposit noted.

FEATURE F: Terrace
ADJACENT TERRAIN: Shoreline, rolling hills.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.00 m (0 degrees) by 1.50 m (90 degrees) by 0.29 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Randomly piled boulders and cobbles two to three courses high in some places, feature is set on a hilltop with a slope of 2 degrees next to a very shallow ravine on the

SE. A bedrock outcrop is visible c. 1.00 m to the west. Some marine shell are scattered within and without feature. Feature F lies 50 degrees at 1.50 m (1 1/2 m) of TN from Feature B. This feature is located in the extreme west central project area at *makai*. Surface remains consist of grenade fragments. No surface deposit noted.

STATE NO.: 19357 PHRI TEMP. NO.:855-237
SITE TYPE: Terrace
TOPOGRAPHY: Undulating hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 5.50 m (345 degrees) by 0.50 m
DESCRIPTION: Straight wall alignment constructed of basalt rocks, c. 0.35 m at its highest and one to two courses. On slope which declines to west. This feature is located c. 10.00 m from sea cliff. No surface remains or surface deposits noted. Gravel and fine silt present, in a thin layer.

STATE NO.: 19358 PHRI TEMP. NO.:855-241
SITE TYPE: Terrace
TOPOGRAPHY: Leveled areas with small knolls, hills, and valleys. Abuts dirt access road; leveled areas to the north and west of feature.
VEGETATION: Burnt *kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 6.50 m (N-S) by 2.50 m (E-W)
DESCRIPTION: Feature is constructed of small, medium, and large subangular basalt cobbles. Longer portion of "L" runs south to north with an extension of c. 2.00 m at the northern end running east to west. The cobbles are loosely stacked one to two courses in height upon loose sandy silty soil. The eastern side of the terrace has a more compact soil that appears graded. South of the terrace beyond the dirt road are more scattered similar semi-aligned rocks. This is a cleared area; undetermined function due to recreational, military and firefighting activities; the feature has been impacted. This feature is located in the central west *makai* portion of the project area. Feature A is c. 20.00 m to Feature B at 180 degrees. Features B through D were destroyed by recent activities (i.e. firefighting, recreation, bulldozing, military, etc.). Surface remains consist of two metal tools without handles; one is a hoe and the other a plaster trowel. No marine ecofact on surface; trowel tested subsurface +10 cm; sandy silt. The soil is of a red/brown silt with gravel.

STATE NO.: 19359 PHRI TEMP. NO.:855-242
SITE TYPE: C-shape
TOPOGRAPHY: A level area surrounded by rolling pahoehoe outcrops on a west facing slope.
VEGETATION: Burnt *kiawe* and short brown grass.
CONDITION: Fair
INTEGRITY: Unaltered

PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 3.70 m by 2.10 m (270 degrees)
DESCRIPTION: Pahoehoe cobbles stacked, piled one to three courses high. Rocks are c. 0.15 to 0.40 m length/diameter. Long axis 340/160 degrees; maximum height measures c. 0.55 m. This site is located in the west central part of project area. No surface remains noted; a trowel tested into several points around feature was stopped by rock less than 0.10 mbs. Soil consists of red/brown silt with gravel.

STATE NO.: 19360 PHRI TEMP. NO.:855-248
SITE TYPE: Complex (5 Features)
TOPOGRAPHY: Shoreline, rolling pahoehoe outcrops.
VEGETATION: *Kiawe* and scrub grass.
CONDITION: Poor-good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of two modified outcrops (Features A, D), (2) alignments (Feature B), a mound (Feature C), and remnant terrace (Feature E).

FEATURE A: Modified outcrop
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 7.00 m (96 degrees) by 2.70 m (6 degrees) by 0.36 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A rectangular clear area with eight rocks stacked nicely on bedrock in the NE corner. The feature runs east/west. Bedrock forms the entire north side. There is no midden in the feature and only one *opihi* shell outside of it. The feature sits on the west end of a long cow hill. Feature B is c. 26.00 m at 96 degrees of TN from Feature A. This feature is located on the extreme west central project area at *makai*. Small test on west end of feature revealed nothing.

FEATURE B: Alignment
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Temporary habitation
DIMENSIONS: 3.00 m (96 degrees) by 3.00 m (6 degrees) by 0.60 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled pahoehoe boulders set in a linear fashion and parallel to each other with bedrock incorporated into the structure. The alignment runs east/west and is open in those directions. One *opihi* shell is the only portable remain. The structure has been altered by bulldozing mostly on the south and west sides. For this reason it is unknown as to what this feature was originally. This feature is located in the extreme west central portion at *makai*. A small test in the middle of the feature showed nothing.

FEATURE C: Mound
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a west facing slope.

VEGETATION: *Kiawe* and brown grass.
FUNCTION: Agriculture
DIMENSIONS: 5.50 m by 4.50 m by 0.65 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A low mound of pahoehoe cobbles and small boulders one to three courses high. Two terraces of pahoehoe cobbles one to two courses high. One abuts the mound and projects west, the other is north and downslope of the first, on an outcrop. Stacking on the terraces is very rough. East terrace is c. 2.00 to 2.50 m long. Long axis 250 to 70 degrees and 215 to 35 degrees. Mound is oriented 347 to 167 degrees. This feature is located on NW quad of project area, c. 100.00 m E of coast. No surface remains or surface deposits noted.

FEATURE D: Modified outcrop
ADJACENT TERRAIN: Rolling hills on top of small rise.
VEGETATION: Burnt grass.
FUNCTION: Temporary habitation
DIMENSIONS: 5.50 m (100 degrees TN) by 3.00 m (190 degrees TN) by 0.30 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Several large cobbles of weathered pahoehoe placed sparsely on a pahoehoe outcrop in the form of a terrace, but with nothing to hold back. To the south, a small area has been cleared. A small concentration of a calcium deposit (formerly called mortar by other crew members) is in the eastern section of the cleared area. This feature is located on western central part of the *makai* section. No surface remains or surface deposits noted.

FEATURE E: Terrace
ADJACENT TERRAIN: Rolling hills on top of a small rise.
VEGETATION: No vegetation.
FUNCTION: Agriculture
DIMENSIONS: 3.00 m (190 degrees TN) by 2.50 m (100 degrees TN) by 0.08 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Two alignments of large and small cobbles. One alignment has a corner at the SW, the other alignment has only seven to eight rocks remaining. Most rocks have been submerged in the soil slightly. This feature is located on central western part of the *makai* section. Surface remains noted consist of one cowry shell; no surface deposit noted.

STATE NO.: 19361 PHRI TEMP. NO.:855-250
SITE TYPE: Complex (5 Features)
TOPOGRAPHY: Slightly hilly on downslope (E) of small ridge (Site 248).
VEGETATION: Burnt *kiawe* and desert grass.
CONDITION:
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site consists of an enclosure (Feature A) and alignments (4) (Feature B). The overall site dimensions measure c. 10.00 m by 3.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Slight downward slant on N, E, and S sides of Feature A to the west. A short downward slant then a strong rise to the west to Feature 248-C, which is located on a ridge.
VEGETATION: No vegetation.
FUNCTION: Temporary habitation
DIMENSIONS:
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Small subangular basalt boulders and small and large cobbles, all between c. 0.10 to 0.50 m in diameter, piled one to two courses high with no visible facing. There is evidence of disturbance and slumpage on the western side where there are some scarred rocks. Firefighting activity (7-4-92) has affected this feature; the base seems to be mostly intact. Due to its location, it is possible military activity has also disturbed this feature. This feature is located on the coastal plain; Feature A is c. 24.10 at 307 degrees to Feature 248-C. No surface remains noted and no cultural evidence. Subsurface, small pebbles and heavy grass roots to +0.10 m (trowel tested).

FEATURE B: Alignment (4)
ADJACENT TERRAIN:
VEGETATION: Burnt *kiawe*, desert grass, and mushrooms.
FUNCTION: Temporary habitation
DIMENSIONS: 1.80 m by 0.90 m by 0.35 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Four linear alignments constructed of subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter piled and stacked one to three courses high and one to four courses wide. The southern two are parallel to each other NW/SE while the northern two are staggered and running E/W. They all have bulldozer scars on the rocks and have probably been altered historically also. There is much surrounding remnant rubble and no signs of marine shell or coral present. This feature is located on the west central portion of *makai* parcel (closer to the water than highway) c. 20.00 m SE of Feature 248-C, c. 2.00 m N of Feature A. No surface remains or surface deposits noted.

STATE NO.: 19362 PHRI TEMP. NO.:855-251
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Undulating hills and small knolls. Bulldozed road c. 20.00 m NW of site.
VEGETATION: Burnt *kiawe* and dry grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consist of an enclosure (Feature A), two terraces (Features B, C), and a wall remnant (Feature D). The overall site dimensions measure c. 14.00 m by 7.00 m.

FEATURE A: Enclosure
ADJACENT TERRAIN:
VEGETATION: Burnt *kiawe* and grass.
FUNCTION: Temporary habitation

DIMENSIONS: 4.50 m by 3.74 m by 0.40 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Small subangular basalt boulders c. 0.25 to 0.40 m in diameter and small to large subangular basalt cobbles c. 0.10 to 0.20 m in diameter. The feature has been impacted upon and shows slumpage on all sides, most square on the northern end. The surrounding area of this feature and site has a heavy concentration of scattered subangular basalt cobbles and subangular basalt boulders c. 10.40 m in diameter. Military, recreational and firefighting activities have impacted this site and make it difficult to accurately assess. This feature is located on central west of the *makai* portion, slightly elevated on three sides (N, W, S). Feature A is c. 2.98 m to Site 251 Feature B at 128 degrees. This site is c. 30.00 m to a well traveled dirt road, west and north of site. No surface remains noted and a subsurface trowel test found silt; no cultural evidence.

FEATURE B: Terrace
ADJACENT TERRAIN: South slope of ridge.
VEGETATION: Burnt *klawe* and desert grass.
FUNCTION: Agriculture
DIMENSIONS: 2.50 m by 1.75 m by 0.41 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles and boulders arranged linearly on ground surface. One to two courses high and two to three courses wide. Crudely piled and bulldozer affected. Sparse marine shell around. This feature is located c. 1.00 m SE of Feature A, c. 1.00 m S of Feature C, in central west portion of *makai* parcel. No surface remains or surface deposits noted.

FEATURE C: Terrace
ADJACENT TERRAIN:
VEGETATION: Burnt *klawe*, desert grass.
FUNCTION: Agriculture
DIMENSIONS: 2.60 m by 0.50 m
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Linear alignment of subangular basalt cobbles and boulders built onto and on top of ground surface. Very remnant, one course high and one to three wide with some varying scatter. Constructed using natural bedrock also. Most base cobbles are partially below ground surface. This feature is located c. 1.00 m E of Feature A, c. 1.00 m N of Feature B, on SW portion of small ridge in central west portion of *makai* parcel. One waterworn basalt cobble noted. No surface deposit noted.

FEATURE D: Wall
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: Burnt *klawe* and knee-high brown grass.
FUNCTION: Agriculture
DIMENSIONS: 2.30 m by 0.70 m by 0.50 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. Rock rubble extending west from it suggests it was once much longer. Sits halfway along a low, short ridge running roughly E to W. This feature is located on the central west part of project area c. 200.00 m east

of shore. No surface remains noted. Surface deposit not excavated; a trowel stuck into the ground at several points around feature hits rock c. 0.05 to 0.12 mbs.

STATE NO.: 19363 PHRI TEMP. NO.:855-253
SITE TYPE: Terrace
TOPOGRAPHY: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Klawe* and knee-high brown grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 7.50+ m by 0.70 m
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high to form a low terrace. Runs into a natural outcrop at west end. West end is difficult to evaluate due to heavy brush and logs. Long axis runs 50 to 230 degrees, maximum height c. 0.35 m. On terrace, soil is greater than 0.13 m (trowel blade length) deep. Below terrace, a trowel probe hits rock at less than 0.05 mbs. This feature is located immediately next to Wailea Bay, in central project area. Two aluminum soft drink cans noted as surface remains; surface deposit has not been excavated.

STATE NO.: 19364 PHRI TEMP. NO.:855-254
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Fairly level area above waterworn basalt beach.
VEGETATION: *Klawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE:
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of a lined trail (Feature A) and a mound (Feature B) which have been completely destroyed by recent activity, a paved terrace remnant (Feature C), and a modern hearth (Feature D). The overall site dimensions measure c. 2.40 m by 1.60 m.

FEATURE C: Paved terrace
ADJACENT TERRAIN: Relatively level N and W. Sharp drop off to water c. 10.00 m to south c. 12.00 m to west.
VEGETATION:
FUNCTION: Temporary habitation
DIMENSIONS: 2.40 m (170 degrees TN) by 1.60 m (80 degrees) by 0.20 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Roughly piled waterworn and non-waterworn basalt cobbles and small boulders in a rough "L" shape one to three layers high on the east and south side of an area of *'ili'ili* (waterworn basalt pebbles) and coral paving. The paved area is roughly leveled. This feature is located on land above and north of Wailea Bay. Surface remains noted consist of oyster, cowrie, cowry shell fragments, urchin spine, waterworn and non-waterworn coral, and hundreds of waterworn basalt pebbles. Surface deposit is present mostly on surface, but paving continues for c. 0.05 to 0.10 m depth.

FEATURE D: Hearth
ADJACENT TERRAIN: Undulating low hills and ravines to E. Ocean is to the west.

VEGETATION: *Kiawe* and grass.
FUNCTION: Recreation
DIMENSIONS: 0.80 m (90 to 180 degrees) by 0.75 m (TN) by 0.08 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Approximately twelve waterworn basalt cobbles were piled to form a modern hearth. The cobbles range in size from c. 0.15 by 0.15 m to 0.11 by 0.38 m. There are arranged in a circular pattern up to two courses high. This feature was constructed 8/1-2/92. The reason it has been documented, is to illustrate current land use patterns, as requested by D. Graves. This feature is located on calcium deposit and bedrock outcrop overlooking small cove. Surface remains noted consist of a cast iron hibachi box located c. 1.70 m to the south of hearth, two wooden pallets are located immediately to the east. Surface deposit noted as present; toilet paper within hearth, ergo, not tested.

STATE NO.: 19365 PHRI TEMP. NO.:855-255
SITE TYPE: Complex (13 Features)
TOPOGRAPHY: Located on edge of cliff-flat area gently sloping eastward outside of site.
VEGETATION: *Kiawe* and desert grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Habitation
DESCRIPTION: This site consists of an enclosure (Feature A), two wall segments (Features B, C), three mounds (Features D, E, G), two terraces (Features F, J), three alignments (Features H, I, L), a paved area (Feature O), and a wall (Feature M). The overall site dimensions measure c. 32.00 m by 29.75 m.

FEATURE A: Enclosure
ADJACENT TERRAIN: Fairly flat ground.
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 10.50 m by 8.00 m by 0.75 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Almost circular (horseshoe shaped) alignment of subangular basalt cobbles and boulders stacked and piled one to four courses high. North portion is the open part, with small breaks in the SW and SE corners. Feature E (mound) is located in the center of the feature. Much of east wall is push from bulldozer, and cut and burned trees disturb/collapse E and W walls. Feature M (man-bulldozer pile) is located at north opening of feature. Waterworn coral cobbles located all over feature and inside and around too. Marine shell scattered throughout feature also.

FEATURE B: Wall segment
ADJACENT TERRAIN: Flat ground.
VEGETATION: Burnt *kiawe* and grass.
FUNCTION: Indeterminate
DIMENSIONS: 2.70 m by 0.90 m by 0.52 m
CONDITION: Fair
INTEGRITY: Altered

DESCRIPTION: N/S linear alignment with slight western hook at bottom (S) end. Subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter. Coral pieces on and throughout feature. Feature is one to three courses high and c. 2.70 m long with the hook sticking out c. 0.90 m W. Small amounts of marine shell around feature. Features oriented at 230 degrees. Trowel test c. 0.10+ m; silt with cobbles and some coral rock. This feature is located c. 3.00 m S/SE of southern portion of Feature A and c. 0.70 m NW of Feature C. Surface remains consist of marine shell/coral with surface deposits noted as present.

FEATURE C: Wall segment
ADJACENT TERRAIN: Flat ground; coastal cliff plateau.
VEGETATION: *Kiawe* and desert grass.
FUNCTION: Indeterminate
DIMENSIONS: 4.00 m by 1.50 m by 0.45 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Linear alignment running NE to SW. Oriented at 242 degrees. Large basalt rocks stacked on surface. Coral rock and marine shell incorporated in feature. SW end terminates in circular basalt ring. Some waterworn cobbles also on feature. Trowel test yielded c. 0.10+ m soft silt but with cobble intrusion; coral rock also within test confines. This feature is located c. 0.75 m SE of Feature B, c. 1.50 m NE of Feature D and c. 8.00 m W of bulldozer road. Surface deposit noted as present per trowel test.

FEATURE D: Mound
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 1.50 m by 1.00 m by 0.35 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Oval shaped mound of stacked basalt rock, (two to three courses high) with coral rock included in construction. Oriented at 198 degrees. Trowel test +0.10 m; loose silt but fire intruded; ending on bedrock. Waterworn basalt cobbles also present in construction. This feature is located c. 1.50 (1 1/2) m south (170 degrees) from end of Feature C. Surface deposit noted as absent per trowel test.

FEATURE E: Terrace
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe*.
FUNCTION: Possible burial
DIMENSIONS: 3.00 m by 3.00 m by 0.59 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Large semi-squarish shaped mound of stacked basalt rock with coral rock and waterworn cobble included in construction. Feature is oriented at 198 degrees to Feature A. There is a circular area at east end (c. 0.60 m round) where rocks appear to have been removed. Trowel test c. 0.04 to 0.10 m; loose silt on top of cobble bedding, coral rock present. This feature extends west into center of Feature A. Surface remains noted as marine shell. Surface deposit noted as present per trowel test.

FEATURE F: Terrace
ADJACENT TERRAIN: Coastal cliff plateau.

VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 6.50 m (360 degrees) by 3.50 m by 1.00 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Stacked basalt rock, c. 0.20 to 0.40 m in size. Rocks are faced on east side of bedrock and earthen berm. Berm slopes to west c. 3.00 m until it comes to aa which forms shoreline. Rocks are stacked on top of berm on north end. There is also a rock wall on north and at right angle extending to east which has little or no stacking. This feature located c. 20.00 m east of shoreline; c. 9.00 m west of Feature L. Trowel test indicated loose silt with cultural remains included. Surface remains consist of marine shell with no surface deposit present.

FEATURE G: Modified outcrop
ADJACENT TERRAIN: Coastal cliff plateau; heavily fire-affected area.
VEGETATION: *Kiawe*
FUNCTION: Habitation
DIMENSIONS: 2.50 m by 0.50 m by 0.68 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Stacked basalt rock (one course) on basalt outcropping. Waterworn basalt and coral rock included in construction. Oriented at 308 degrees. Area east of mound heavily fire-affected; soil deposit appears to be pushed ash from fire on bedrock. This feature located c. 5.00 m north of Feature F on downhill slope toward lava flow beach. Surface remains: marine shell, with surface deposit noted as absent.

FEATURE H: Alignment
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe* and grass.
FUNCTION: Transportation
DIMENSIONS: 7.50 m (270 degrees TN) by 0.20 m by 0.10 m
CONDITION: Good
INTEGRITY: Altered
DESCRIPTION: Snake-like alignment of rocks, no stacking, only one course thick. Lines south side of path. Trowel test indicated semi-compact silt loam with cultural remains present (marine shell and coral). This feature is located c. 0.50 m south of Feature I, c. 3.00 m north of Feature L. Surface deposit noted as present.

FEATURE I: Alignment
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe* and grass.
FUNCTION: Transportation
DIMENSIONS: 7.00 m (295 degrees) by 0.30 m by 0.20 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Lined basalt rocks on north side of path. No stacking. Path widens on west end. Alignment is not straight. This feature is located c. 0.50 m north of Feature H. Surface remains consist of marine shell. No surface deposit present.

FEATURE J: Terrace
ADJACENT TERRAIN: Adjacent to the beach. Exposed bedrock. There is a gentle slope to the northwest.

VEGETATION: *Kiawe*.
FUNCTION: Habitation
DIMENSIONS: 7.00 m (NW/SE) by 5.50 m by 0.70 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This feature is roughly rectangular in overall shape and appears to have a paved surface. It is oriented NW and SE. The northeast boundary consists of a bedrock outcrop standing c. 0.70 m above surrounding surface. Feature consists of subround, subangular, waterworn coral and waterworn basalt cobbles. Size of these are small to medium from c. 0.10 to 0.40 m in diameter, stacked and placed one to three courses high. The NW boundary is very similar to the NE boundary with the exception of a large *kiawe* tree that has recently fallen across the center NW boundary and caused a collapse. The south and southwest boundary has been delineated by a rubble concentration. The paved flat area extends to this rubble. The southeast cannot be defined. The surface of the terrace is relatively flat and consists of small *'ili'ili* and angular gravel; both coral and basalt. On the terraces' surface, there are displaced cobbles, burnt wood, and branches. Feature is located circa c. 10.00 m east of the coastal vegetation line. Features H and I are located circa c. 3.00 to 5.00 m south of the terrace. Feature K is located circa c. 10.00 m to the north. Ecofacts consist of fishbone and a wide variety of marine shell. There is a great deal of charcoal which appears to be from the recent. There is a high probability of a habitational deposit of at least 0.10 m+ in thickness over the entire surface of the terrace.

FEATURE K: Trail segment
ADJACENT TERRAIN: Small surrounding knolls, coastal cliff plateau.
VEGETATION: Burnt *kiawe*.
FUNCTION: Transportation
DIMENSIONS: 12.00 m by 0.20 m by 0.23 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Linear stacked basalt rock (one to two courses) lining obvious path down to coast. Line loses integrity at NW end and ends abruptly on east end with large basalt boulder. Overall construction sizes deviate from cobble to larger basalt rock +0.40 m. Coral rock fragments are scattered about path at NW end. Feature oriented at 334 degrees. Trowel test indicated rather compact silty loam under surface ash deposit (c. 0.01 to 0.05 m). No cultural remains noted. This feature is located c. 10.00 m east of Feature J on slight NW downhill slope toward coast.

FEATURE M: Mound
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe*.
FUNCTION: Possible burial
DIMENSIONS: 2.50 m by 2.50 m by 0.70 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Irregular, loosely stacked basalt rock with burnt *Kiawe* tree stump uprooted and pushed into center of mound. Coral rock and waterworn basalt incorporated in construction. Feature oriented at 198 degrees. "L" shaped in overall appearance. Remnant facing along interior portion of feature. Storm wash build up along the exterior of feature. This feature is located c. 1.00 m north of Feature E. Surface remains consist of marine shell, broken bottles, soda cans. Surface deposit noted as disturbed.

FEATURE O: Terrace
ADJACENT TERRAIN: Coastal cliff plateau.
VEGETATION: *Kiawe.*
FUNCTION: Habitation
DIMENSIONS: 14.00 m by 9.50 m by surface
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Large area paved with small basalt waterworn cobbles. Relatively flat except for disturbed areas. A few larger basalt cobbles (waterworn) are present in outer parameters. A terrace wall (Feature N) is located on west end of feature. Feature abuts the west end of Feature A. Paving appears to be fairly uniform in distribution (except in disturbed areas). Lengthwise orientation from east to west at 290 degrees. Major disturbance occurs in close center area where a pit half-filled with burnt *kiawe* trees and slumped basalt rock (from Feature A) has been dug out. Trowel test indicated a cultural midden c. 0.07 to 0.10 m below surface; however, damage from fire and historic disturbance is very evident. Located immediately south of Feature A to coast cliff wall. Surface remains consist of marine shell, coral, waterworn cobble.

STATE NO.: 19366 Other: YG-59 PHRI TEMP. NO.:855-256
SITE TYPE: Complex (28 Features)
TOPOGRAPHY: Coastal cliff plateau small rolling hills.
VEGETATION: *Kiawe* and dry grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of four enclosures (Features A, D, I, U), two walls (Feature B), one wall remnant (Feature C), one mound (Feature F), two C-shapes (Features E, V), one circular alignment (Feature G), two trails (Features H, X), one D-shaped alignment (Feature J), one semi circular alignment (Feature K), four terraces (Features L, M, R, W), one cairn (Feature N), remnant enclosure (Feature O), two circular enclosure (Features P, Q), one midden concentration (Feature T), four cleared areas (Features Y, Z, AA, BB), and a hearth (Feature CC).

FEATURE A: Enclosure
ADJACENT TERRAIN: Slight slope west toward water
VEGETATION: Burnt *kiawe* and desert grass
FUNCTION: Habitation
DIMENSIONS: 3.80 m (N/S) by 5.30 m (E/W) by 0.50 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Roughly square shape enclosure, constructed of subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter. Coral, marine shell, and waterworn basalt throughout feature also. Natural bedrock incorporated in construction also. Eastern wall is the most defined alignment one to three courses wide and one to two high. The south wall is still distinguishable with more rubble in SE portion. The west wall seems to meld or have collapsed into the east wall of Feature O and the north wall is very sketchy and almost totally wiped out except for a few base line rocks. The center is partially clean with some rubble scatter throughout. This feature is located on east (poss. touching) Feature O, c. 1.00 m north of Feature P. No surface deposit noted.

FEATURE B: Wall
ADJACENT TERRAIN: Gently sloping west toward water; fairly level ground
VEGETATION: *Kiawe* and desert grass
FUNCTION: Habitation
DIMENSIONS: 5.50 m by 2.00 m by 0.54 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles and waterworn basalt cobbles and coral stacked and aligned in a line. One to three courses high and three to seven wide (from collapsing) north portion curves east and seems to join with terrace (Feature M). Disturbed from cobbles washing up on shore and collapsing from tree falling on it. South portion much wider than north portion from wash and collapsing. (five courses to two). This feature located c. 3.00 m west of Feature N, M; c. 10.00+ m west of water-abutting the waterworn beach. Surface remains consist of coral and marine shell. Surface deposit noted as present.

FEATURE C: Wall remnant
ADJACENT TERRAIN: Undulating surface slightly sloping to the west. Exposed bedrock immediately adjacent to the feature. There is a large partially uprooted *kiawe* between Features C and B.
VEGETATION: Large *kiawe* and sparse grass
FUNCTION: Habitation
DIMENSIONS: 2.80 m (E/W) by 1.40 m (N/S) by 0.46 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature C is a linear wall remnant consisting mainly of waterworn basalt and coral cobbles c. 0.05 to 0.15 m in size. Most of these cobbles are from midpoint to eastern end of remnant. There are approx. twelve 0.30 to 0.50 m cobbles on the northern side, which are aligned and faced giving the feature not a mound designation. The cobbles have been placed upon existing bedrock and sand. On the north side the large cobbles were well stacked two courses high. The south and southeast side has totally collapsed and consequently lacks signs of formal construction as compared to the north and northwest side. The eastern end has been very recently collapsed due to a burnt tree impacting it. All of the basalt and coral cobbles are fire effected. The feature averages c. 0.70 m wide in actual construction. Feature is located c. 2.00 m Feature M coastal storm line. Feature is located c. 1.00 m. Seaward of Feature R and c. 5.00 m south of Feature B. Surface remains consist of whole cowry shells, branch coral. Surface deposit noted as absent.

FEATURE D: Enclosure
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 3.00 (12 degrees) m by 2.00 (130 degrees) m by 0.58 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A small randomly piled pahoehoe boulders in a U-shape which incorporates bedrock into the construction. Structure is open on the east side. Waterworn coral, cobbles and marine shell are evident within and without the structure. Feature D is located c. 30.00 m east of the ocean and c. 9.00 m NE at 226 degrees of TN from Feature E. This feature is located extreme west central at *makai*. Surface deposit noted as absent with surface scatter.

FEATURE E: C-shape
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Habitation
DIMENSIONS: 4.00 (318 degrees) m by 2.50 m (48 degrees) by 0.80 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: Randomly piled pahoehoe boulders on a bedrock tongue along the shoreline. Structure is an altered C-shape piled three to four boulders high on the NW side while the south side is only partially visible. Within the structure is waterworn coral and cobbles due to close proximity of the ocean. Alteration is high and boulders are strewn about. This structure lies c. 25.00 m east of the ocean. There are two recent historic bottles within the structure. This feature is located extreme west central at *makai*. Historic bottles and marine shell were also located within the feature. The nature of deposit notes c. 0.15 m of coral and shell.

FEATURE F: Mound
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Possible ceremonial
DIMENSIONS: 2.00 m (318 degrees) by 1.50 m (48 degrees) by 0.56 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: A randomly stacked somewhat square shaped mound of large pahoehoe boulders. The mound may have been faced but that is conjecture since it has been altered. Waterworn coral, branch coral, marine shell, and waterworn cobbles are interspersed throughout structure. Feature appears to be at least three courses high. boulders have fallen on the east and west sides. Feature G is c. 0.60 m NW of this feature. A coral lined path leads into the feature from the NE. This feature is located on extreme west central at *makai*. Would have to tear mound apart to test it.

FEATURE G: Circular alignment
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Habitation
DIMENSIONS: 2.50 m (71 degrees) by 2.00 m (336 degrees) by 0.22 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: A circular alignment of pahoehoe boulders and cobbles. The north side is randomly piled and the rest is single course. An alignment of coral follows along the north and northeast sides leading to Feature F. A trail goes along the north. The north side is c. 0.18 m high. This feature is located on extreme west central at *makai*. Surface remains consist of one waterworn coral, one Volkswagen mirror, one tuna fish can (ID #11). Surface deposit noted as absent.

FEATURE H: Trail
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Transportation
DIMENSIONS: 7.00 m (122 degrees) by 0.75 m (20 degrees) by 0.07 m
CONDITION: Excellent
INTEGRITY: Unaltered

DESCRIPTION: A coral lined dirt trail running east to west. Width is c. 0.65 m. Trail connects into a complex of Features J, L, I, F, G, K. This feature is located on extreme west central at *makai*.

FEATURE I: Enclosure
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Habitation
DIMENSIONS: 2.50 m (24 degrees) by 1.50 m (114 degrees) by 0.35 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A rectangular enclosure of pahoehoe boulders one to two courses in some places. Coral is interspersed throughout the structure. Some of the coral on top is probably recent. Bedrock is incorporated into the structure on the west and SW sides. The NE side is open. This feature lies next to a N/S trail on its' west side. Feature D is SE at c. 2.00 m and Feature L is SW at c. 2.00 m. This enclosure looks recent and could be a wind shield for fire or sleeping. This feature is located on extreme west central at *makai*. Surface remains consist of waterworn coral, cobbles, marine shell, and bottle glass. Surface deposit notes beer bottle glass and Rolaids pack.

FEATURE J: D-shape alignment
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and grass
FUNCTION: Possible ceremonial
DIMENSIONS: 5.00 m (125 degrees) by 2.00 m (26 degrees) by 0.26 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A single course of pahoehoe boulders, cobbles, and coral roughly forming a D-shape. The north side is slightly curved whereas the curvature of the south side is more pronounced. At the inside apex of the curve is a small (c. 0.10 by 0.20 m) group of waterworn cobbles. This feature lies at a cross road of trails: N to S, E to W and NE trails. A semi-circular alignment within the trails lies c. 1.00 m S of this feature. Feature is c. 35.00 m east of the ocean and to the extreme west central at *makai*. Surface remains consist of waterworn coral, cobbles, marine shell. Surface deposit not excavated; if this is a shrine; there is no testing.

FEATURE K: Semi-circular alignment
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Trail marker
DIMENSIONS: 2.00 m (117 degrees) by 0.50 m (27 degrees) by 0.08 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A semi circular alignment of waterworn coral spaced c. 0.10 to 0.20 m apart. This feature causes the E/W trail to arc around Feature J. This feature is between Features G and J. Feature could be part of Feature F-H trail. This feature is located on extreme west central at *makai*. Surface remains consist of waterworn coral (ID #11). Surface deposit noted as absent.

FEATURE L: Terrace
ADJACENT TERRAIN: Shoreline
VEGETATION: *Kiawe* and scrub grass
FUNCTION: Habitation

DIMENSIONS: 3.00 m (8 degrees) by 1.50 m (98 degrees) by 0.18 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A loosely piled linear arrangement of small pahoehoe boulders and cobbles. *'Ili'ili* stones are scattered on the east side of stones and across a N/S path to the north. The boulders and cobbles are c. 0.50 m wide and one to two courses high. Feature L lies c. 2.50 m (2 1/2 m) W of F-D and c. 15.00 m E of the ocean. There is a trail on the north and SE edge. This feature is located on extreme west central at *makai*. Surface remains consist of waterworn coral, cobbles, marine shell, and *'ili'ili* stones. Surface deposit notes that paving extends for c. 0.05 m. This feature looks more like an old trail edge than a terrace.

FEATURE M: Terrace
ADJACENT TERRAIN: Down hill slope of small knoll
VEGETATION: *Kiawe* and dry grass
FUNCTION: Habitation
DIMENSIONS: 5.00 m by 3.00 m by 0.50 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Basalt rock, cobble, waterworn and coral wall stacked two courses high in semi-circular arrangement. Surface is flat behind wall and has basalt cobble and beach sand paving. Terrace abuts basalt outcropping along eastern portion. A cairn (Feature N) is positioned at the SE corner of wall, historic disturbance is particularly noticeable in this section (trash). Trowel test indicated that gravely beach sand deposit was consistent for c. +0.10 m. Feature was highly fire affected. This feature is located c. 10.00 m east of coast. Approx. 4.00 m north of feature and adjacent to Feature N. Surface remains consist of historic tin cans, shoes, bottles, brick fragments, no prehistoric cultural remains were noted. Per trowel testing, surface deposit noted as absent.

FEATURE N: Cairn
ADJACENT TERRAIN: Gentle slope W toward water.
VEGETATION: *Kiawe* and burned and unburned desert grass
FUNCTION: Marker
DIMENSIONS: 1.00 m (NE/SW) by 1.30 m (NW/SE) by 0.92 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Cone shape cairn constructed on old collapsed terrace (post-dates terrace). Sub-angular and waterworn basalt cobbles and boulders c. 0.15 to 0.35 m in diameter. Coral and natural bedrock. Incorporated in construction of feature. NE side is fairly straight while SW side slopes at a great angle. Large waterworn coral boulders all around feature and marine shells too. This feature is located c. 8.00 m N/NW of Feature Q, c. 30.00 m E of water, c. 3.00 m E of Feature B. Surface deposit noted as present.

FEATURE O: Enclosure
ADJACENT TERRAIN: Slight western slope to water
VEGETATION: Burned *kiawe* and desert grass
FUNCTION: Habitation
DIMENSIONS: 5.00 m (344 degrees) by 4.35 m by 0.70 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Roughly circular enclosure constructed of subangular basalt boulders and cobbles ranging from c. 0.10 to 0.40 m in diameter. Also incorporating natural bedrock along

western portion. East and S walls still approximately three to four courses high while the rest of the feature is rubbled out to about one course high. The center is clear of rocks. Waterworn coral is located throughout all feature walls. Small amount of marine shell around feature also. South wall, two to four wide and E wall four to six wide with a lot of rubble incorporated. Feature located c. 30.00 m N of Feature K site 855-255. SE portion of site, c. 50.00 m E of water. Surface deposit notes present.

FEATURE P: Circular enclosure
ADJACENT TERRAIN: Slight western slope to water
VEGETATION: *Kiawe* and grass
FUNCTION: Habitation
DIMENSIONS: 2.30 m (N/S) by 2.80 m (E/W) by 0.55 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Circular shape enclosure constructed of subangular basalt cobbles and boulders ranging from c. 0.10 to 0.40 m in diameter. One to three courses high and one to three courses wide except for W portion which is very rubbled out and approx. five to seven wide. Center of feature has a few rocks throughout. Coral is incorporated throughout entire feature. Alignment in N portion seems most intact. Small amount of marine shell around feature also. This feature is located c. 0.75 m SE of Feature O. Surface deposit noted as present.

FEATURE Q: Circular enclosure
ADJACENT TERRAIN:
VEGETATION: *Kiawe* and desert grass
FUNCTION: Hearth
DIMENSIONS: 1.35 m by 1.35 m by 0.44 m
CONDITION: Good
INTEGRITY: Altered
DESCRIPTION: Subangular basalt cobbles and boulders ranging from c. 0.10 to 0.50 m in diameter. Small circular enclosure stacked one to three courses high. Rubble scatter outside of feature but not interfering with construction. Natural bedrock incorporated in construction of feature. Center of pit is cleared and depressed. Inside surface is approximately c. 0.10 m lower than outside ground surface. This feature is located c. 40.00 m E of coastline, c. 12.00 m SW of Feature O. Surface remains consist of coral and a small amount of marine shell. The nature of deposit noted as absent (unless found during further testing).

FEATURE R: Terrace
ADJACENT TERRAIN: Flat area above and below feature; Gentle slope toward the sea
VEGETATION: *Kiawe* and grass
FUNCTION: Habitation
DIMENSIONS: 5.00 m by 3.50 m by 0.40 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This feature is oriented south to north with an alignment of five small boulders c. 1.00 m in length that connects to northern end of feature. The feature consists of basalt and coral cobbles placed above, below and upon existing bedrock. The majority of these cobbles are on SW corner. The feature is roughly rectangular. All of the cobbles are fire effected (7-4-92). Overall length S/N is c. 5.00 m. There is one large coral head c. 0.45 m in diameter at the SW corner where the five aligned small boulders connect to the north end of feature, and there are one to two course stacking running from the boulders to the NE corner. The

southwestern corner is a paved area c. 2.00 m S/N c. 1.20 m E/W (subfeature). The eastern boundary is not discernible, surrounded by rubble and fallen trees. One large *kiawe* tree uprooted seaward and inland of feature located c. 3.00 m to either tree. Feature R may at one time have been connected to Feature C it is not possible to confirm this now. Feature R is located c. 6.00 m from coastal storm line. It is located c. 1.00 m from Feature C and c. 3.00 m from Feature B, and c. 2.00 m from Feature N. Surface remains consist of branch coral, coral heads, marine shell, two pennies, tin can. A likely chance of cultural deposit below flat surface of terrace as well as the SW corner.

FEATURE T: Midden concentration
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and brown grass.
FUNCTION: Habitation
DIMENSIONS: 5.50 m by 2.50 m by 0.30 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: A scatter of numerous marine shells (mostly cowry) on reddish-brown, ashy silt. Sits atop a hill just E of Feature C, and extends down to N of C, in direction of apparent rainwash. A group of pahoehoe cobbles one course high with several pieces of coral is immediately S. Rocks are c. 0.10 to 0.30 m length/diameter. Long axis runs 80 to 260 degrees. Feature is located on NW quad of project area, atop a W-facing hill less than 20.00 m from shore. A trowel probed into soil is stopped by rock at less than 0.05 mbs. Unexcavated.

FEATURE U: Enclosure
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Habitation
DIMENSIONS: 1.50 m (38 degrees) by 3.25 m (128 degrees) by 0.11 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: A single course rectangular enclosure of pahoehoe boulders and cobbles. This structure is incorporated into Feature H (trail) on the north. There is no midden or waterworns inside. Part of the path that leads to Feature F is located along the west side of Feature U but is not part of it. Rubble is spread throughout the interior but it doesn't appear as paving. The feature is in poor shape and many of the rocks may have been removed for other structures. This feature is located on extreme west central portion at *makai*. (ID #11)

FEATURE V: C-shape
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and scrub grass.
FUNCTION: Military
DIMENSIONS: 4.00 m (7 degrees) by 1.40 m (105 degrees) by 0.35 m
CONDITION: Poor-fair
INTEGRITY:
DESCRIPTION: A C-shaped structure of randomly piled pahoehoe boulders and cobbles one to two courses high. There is a lot of dirt thrown in with the rocks. Tin can fragments and bullet shells are located in and around the feature. Marine shell and waterworn coral is scattered on the outside of it. The structure faces east with the open side on the west. Feature H (trail) runs close by on the north. It sits on the edge of a beach and a small shallow ravine is located on its south edge. Located on extreme west central portion at *makai* section. Surface deposit noted as absent.

FEATURE W: Terrace
ADJACENT TERRAIN: This feature is situated on fairly flat ground.
VEGETATION: Fountain grass.
FUNCTION: Agriculture
DIMENSIONS: 13.50 m (N/S) by 10.50 m (E/W) by 0.32 m
CONDITION: Poor
INTEGRITY: Altered
DESCRIPTION: This feature is an amorphous (very slightly rectangular) three-tiered terrace with three cleared areas (bare soil areas devoid of stones). This feature comprises weathered aa and pahoehoe (c. 0.03 to 0.35 m in length/diameter). Feature X, a trail, forms the N to SWS boundary of this feature. The cleared areas are located in the eastern corner, the southern corner, as well as a cleared area (approximately centrally located in the feature). The rough average size of the construction material is c. 0.15 m in length/diameter. The feature is piled (maximum) three courses high with the majority being one to two courses high. These "tiers" are constructed roughly cross-slope (NW/SE). This feature is located c. 28.10 m, 263 degrees to Feature H datum from datum at Feature W. Surface remains consist of waterworn coral, fragmented non-waterworn coral, waterworn basalt, 242 caliber bullet casings, and one small battery (AA). The nature of the deposit is unknown at this time.

FEATURE X: Trail
ADJACENT TERRAIN: This feature is situated on fairly level terrain.
VEGETATION: Grass, *kiawe* nearby.
FUNCTION: Transportation
DIMENSIONS: 23.50 m (NE/SW) by 0.60 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This is a serpentine trail feature connecting to and coming off the main prehistoric trail which undulates through the coastal portion of the project area. This branch trail heads roughly SW toward the ocean (c. 45.00 m away). This trail forms the N to WSW boundary of the three tiered terrace feature (W). This feature is intermittently lined with weathered aa and pahoehoe c. 0.05 to 0.30 in length/diameter. This lining is piled one to two courses high. The "floor" surface of the trail is a silty brown soil, with smaller basalt gravel components littering the ground. This feature is immediately to the N to WSW of Feature W. Surface remains coexist of waterworn and fragmented coral scatter, and one waterworn basalt cobble. The surface deposit is unknown at this time.

FEATURE Y: Cleared area
ADJACENT TERRAIN: This feature is set on fairly level ground (slight slope to the north).
VEGETATION: No vegetation.
FUNCTION: Agriculture
DIMENSIONS: 4.50 m (NE/SW) by 3.50 m (NW/SE) by 0.41 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This feature is roughly spherical in shape, with a small raised build-up of stone to the NE. The feature is itself raised and lined with weathered aa and pahoehoe cobbles and small boulders c. 0.05 to 0.35 m length/diameter. A flat rocky soil lies within the lining of this feature, and is raised above the surrounding soil deposit. The lining is piled one to three courses high. This feature is roughly 8.00 m to the N from Feature W. No surface remains encountered on this feature. Surface deposit is unknown at this time.

FEATURE Z: Cleared area
ADJACENT TERRAIN: This feature is set in rolling flat terrain (c. 45 m from littoral zone).
VEGETATION: Lantana and grass.
FUNCTION: Agriculture
DIMENSIONS: 3.50 m (NNE/SSW) by 3.00 m (ESE/WNW) by 0.33 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This feature is a roughly circular in plan view, and is constructed of piled, weathered aa and pahoehoe cobbles and small boulders c. 0.05 to 0.70 m length/diameter. The WNW portion of this feature is a narrow linear projecting (low) basalt outcrop and is modified by one course of stone. This comprises one to three courses. This has been constructed by removing the basalt material and piling it around this rougher circular area. A narrow opening in this enclosure-like cleared area exists in the ENE portion of this feature. This feature is located c. 18.00 m, NW from Feature W. Surface remains consist of modern trash (sardine can) WSW of this feature. Very shallow natural soil (silty loam) in the interior of this feature. Surface deposit noted as absent.

FEATURE AA: Cleared area
ADJACENT TERRAIN: This feature is situated on fairly level ground, with a slope (15-20 degrees) to the NW.
VEGETATION: Lantana and grass.
FUNCTION: Agriculture
DIMENSIONS: 6.80 m (E/W) by 6.40 m (N/S) by 0.30 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This feature is roughly circular in plan view and is constructed of piled, weathered, aa and pahoehoe cobbles to small boulders. It comprises one to three courses and lines a slightly raised soil surface in the interior of this structure. The interior soil is a very rocky matrix of small *'ili'ili*-like basalt gravel. This feature is c. 1.00 m NW of Feature Z, and is c. 21.00 m WNW of Feature W. Surface remains consisting of modern trash (cans, etc.) lie on the southern corner-like portion of this structure. Three coral scatters are within the interior of this structure, as well as a single waterworn coral cobble. In addition, a waterworn cobble is in the interior of this feature. A natural gravel and loam soil deposit lies in the interior of this feature. A poss. cultural deposit is unknown at this time due to lack of subsurface testing.

FEATURE BB: Cleared area
ADJACENT TERRAIN: This feature is situated on fairly level terrain, with a very slight slope to the W.
VEGETATION:
FUNCTION: Agriculture
DIMENSIONS: 3.70 m (E/W) by 3.50 m (N/S) by 0.24 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: This is a semi-circular, slightly raised cleared area composed of weathered aa and pahoehoe (lg.) cobbles c. 0.05 to 0.30 m in length/diameter. This basalt material is placed generally one course high. It is possible this is two courses subsurface, but due to lack of subsurface testing, this is undetermined. The opening of this semi-circle is in the SE portion of this low structure. Trail site runs N/S to the immediate NE from this feature. This feature is roughly 145.00 m to the north from Feature W (datum to datum). No portable remains were noted at this feature. A thin soil deposit is in the interior of this feature.

FEATURE CC: Hearth
ADJACENT TERRAIN: Low undulating hills and ravines.
VEGETATION: *Kiawe* and grass.
FUNCTION: Recreation
DIMENSIONS: 1.40 m (220 degrees) by 1.10 m (310 degrees) by 0.27 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Subangular and waterworn basalt cobbles piled to two courses high in a squarish pattern to form a hearth. The hearth is located at edge of waterworn coral and waterworn basalt cobble portion of beach (to west of feature) and the black sand beach portion to east. This modern hearth was documented to illustrate modern land use patterns, as instructed by D. Graves. The lumber was apparently a seat. Located underneath uprooted *kiawe* tree on eastern edge of waterworn coral, waterworn cobbles and black sand beach. (1.68 degrees/7.60 m to datum 256 Feature C) Surface remains consist of lumber on eastern edge; waterworn coral fragments litter area and feature, coconut husk on western feature edge. Paper towel, aluminum foil within feature interior. Surface deposit: ash c. 0.05 m deep.

STATE NO.: 19367 PHRI TEMP. NO.:855-257
SITE TYPE: Complex (12 Features)
TOPOGRAPHY: Low undulating hills and ravines on the coast. Site located on top and sides of ridges.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE:
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of two mounds (Features A, B), three U-shapes (Features D, E, F), two walls (Features G, L), two terrace remnants (Features H, M), one paved area (Feature J), one modified outcrop (Feature K), and a terrace (Feature O).

FEATURE A: Mound
ADJACENT TERRAIN: Burn area, extensively disturbed, fire affected.
VEGETATION: *Kiawe* and burnt grass.
FUNCTION: Indeterminate
DIMENSIONS: 1.00 m (N/S) by 0.80 m (E/W) by 0.35 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Subangular fire-affected large cobbles and small boulders stacked one to three courses, c. 0.20 to 0.50 m in diameter, stacked on surface. Located c. 13.20 m to Feature G at 300 degrees. No surface remains or deposit visible. Trowel test indicated +10 depth is silt. No cultural evidence.

FEATURE B: Mound
ADJACENT TERRAIN: Burn area, vegetation burned, trees uprooted by firefighting equipment and pushed to within c. 30 m of the water's edge.
VEGETATION:
FUNCTION: Indeterminate
DIMENSIONS: 1.50 m (N/S) by 1.15 m (E/W) by 0.50 m
CONDITION: Good
INTEGRITY: Altered

DESCRIPTION: Subangular basalt piled one to three courses (c. 20.00 m to 0.60 m in diameter) stacked on surface. Feature B is c. 7.70 m from Feature F at 300 degrees on a coastal plateau. Surface remains consist of metal fragments and glass. Surface deposit noted as present with portable historical surface artifacts. Subsurface trowel test shows +10 to be silt. No cultural evidence.

FEATURE D: U-shape
ADJACENT TERRAIN: Feature D is elevated and south of coastal lava flow. It is north of slightly higher terrain.
VEGETATION: *Kiawe* and crop grass.
FUNCTION: Habitation
DIMENSIONS: 6.10 m (W/E) by 5.50 m (N/S) by 0.80 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature D is constructed of waterworn small basalt boulders, small subangular basalt boulders and small waterworn basalt cobbles. Stacked four to five courses. The rocks are c. 0.20 to 0.40 m in diameter with smaller sized rocks under and within the larger stacking. There are waterworn pebbles and coral atop the feature; these are probably deposited environmentally. There is slumpage almost completely around the feature with the exception of a small area on the eastern wall c. 1.00 m wide by 70.00 m in height. In the center of the feature is a small paved area of waterworn gravel and pebbles (0.05 m depth) surrounded by waterworn boulders c. 50.00 m in diameter. Above the northern midsection are three medium *kiawe* tree trunks, that possibly dislocated some rocks, now evident to the north of these trees as rubble. There is one *kiawe* tree coming up through the eastern side; however, the outside of this portion shows least slumpage. Feature D has been fire-affected (7-4-92), as well as by recreational activities. Feature D is c. 2.20 m seaward of Feature O at 76 degrees and is within c. 1.00 m of the vegetation line. A metal pot cover has been noted in surface remains. Surface deposit is noted as absent; storm deposit. Trowel test +0.10 m in center area; small pebbles and marine midden.

FEATURE E: U-shape
ADJACENT TERRAIN: Low undulating hills and ravines; entire area burned.
VEGETATION: *Kiawe* and fountain grass.
FUNCTION: Habitation
DIMENSIONS: 2.75 m (N/S) by 2.00 m (E/W) by 0.65 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Feature E, a U-shape, was constructed with a mixture of pahoehoe subangular cobbles and boulders, and waterworn cobbles and boulders. The stones range in size from c. 0.10 to 0.60 m diameter/length, and are stacked two to three courses high. The U opens to the east with the closed end facing the ocean. The interior appears to be eroded. The interior contains midden/"eco-facts", a mixture of coral and marine shells. Located at coast/shore at central part of project area. Surface remains consist of modern bottle glass, burned green plastic, midden (shell and coral mix), coral, including branch, on feature structure. Surface deposit noted as absent. Within interior, the midden appears to be surface, but a small test indicated a matrix high in organic content. Ergo, a test should be placed to test this feature.

FEATURE F: U-shape
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation

DIMENSIONS: 7.90 m by 6.50 m by 0.65 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Boulder to gravel-size pahoehoe, piled with soil to form a U-shape, opening faces south. Long axis oriented 187 to 367 degrees. Rocks range from c. 0.60 m to small pebble-size. This feature located on NW quad of project area, c. 10.00 m east of shore. Surface remains consist of a base of a white ceramic Anchor Hocking fireproof coffee mug, large faunal bone (cow?), one rusty bottle cap, c. 0.5 gal. glass bottle with paper label still attached. Nature of deposit is unexcavated. A trowel probed into soil hits rock at less than 0.10 mbs. No cultural deposit detected.

FEATURE G: Wall
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 5.40 m by 1.10 m by 0.26 m (10 to 190 degrees)
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles and small boulders and coral cobbles piled one to two courses high. The wall starts parallel to the shore and area west toward the shore. A footpath running roughly north to south cuts through the wall. The wall section west of the path is indistinct, though it appears to follow the edge of a round rise of ground. Rocks are c. 0.12 to 0.60 m length/diameter; most are less than or equal to 0.30 m. A large amount of rounded coral lies mostly between the footpath and east wall section. Section east of footpath is all included in length, under feature dimensions. Located on NW quad of project area, c. 15.00 m east of shore. Surface remains consist of one rusty metal can, one rusty umbrella frame. Surface deposit is unexcavated.

FEATURE H: Terrace
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 2.50 m by 1.40 m by 0.46 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe boulders and cobbles stacked one to two courses high in a rough alignment. Long axis is 60 to 240 degrees. Rocks vary from c. 0.20 to 0.74 m in length/diameter; most are less than or equal to 0.25 m. Ground surface to the east is slightly higher than west. A low C-shape (no feature designation) lies c. 0.50 m to NE. Located on NW quad of project area, c. 10.00 m east of shore. Surface remains consist of metal spatula, glass tube c. 7.70 by 0.09 m in diameter, brown broken beer bottle (no deposit, no return, 12 oz.), aluminum Lipton iced tea can. Surface deposit is unexcavated. A trowel probed into the red silty soil is stopped by rock at 0.12 mbs. No cultural deposit detected.

FEATURE J: Paved area
ADJACENT TERRAIN: Basalt pebbles, cobbles, small boulders; exposed basalt bedrock.
VEGETATION: Grass
FUNCTION: Habitation
DIMENSIONS: 6.65 m by 3.20 m by 0.24 m
CONDITION: Poor-fair
INTEGRITY: Altered

DESCRIPTION: Feature J is approximately centered on ridge spur/plateau. The paved area consists mainly of basalt gravel, basalt pebbles, and small fingers of coral. The feature has been heavily disturbed and appears to have been a larger area at one time. Feature J is located 220 degrees south and c. 20.00 m to Site 855-256 Feature I. Approx. 1.00 m west of feature is depression of uprooted tree (no tree) and a displaced pile of soil. Approx. 1.00 m east is a pile of construction type large boulders; all of the rocks are fire-affected. Surface remains consist of historic rusted tin lid, marine shell and small fragments of coral, shark tooth (Art #12), and metal belt buckle "1984" (Art #13). Subsurface trowel test +0.10 m; silt and pebbles (not waterworn).

FEATURE K: Modified outcrop
ADJACENT TERRAIN:
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 3.90 m (NE/SW) by 3.30 m (W/E) by 1.02 m
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Feature K is situated below a basalt outcropping c. 0.60 to 0.70 m in height. Below this outcropping, is an area of gentle slope c. 1.00 m to 1.50 m; below this slope is another outcropping upon which begins Feature K. Approximately 15 large subangular basalt cobbles were placed and stacked on this outcrop. The extant portion of this terrace probably adjoined the NW section of Feature L. The firefighting tree push most likely separated the two. The decline of this feature is nearly vertical for a drop of c. 1.65 m to a final outcrop ending in the ocean. Feature K is c. 5.50 m north of Feature L at 180 degrees. Marine shell and coral noted in surface remains. Subsurface trowel test +10 in depth; silty soil and small pebbles and marine shell.

FEATURE L: Wall
ADJACENT TERRAIN:
VEGETATION: *Kiawe* and crop grass.
FUNCTION: Habitation
DIMENSIONS: 2.35 m (E/W) by 1.75 m (N/S) by 0.41 m
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: Feature L is composed of subangular and subrounded basalt small boulders c. 0.30 to 0.50 m and cobbles c. 0.10 to 0.30 m. Stacked three to four courses high on a basalt outcropping cliff. The wall has been altered by a large *Kiawe* tree growing behind it, and the tree trunk has displaced rocks, causing a heavy slumpage to the west. This is due to recent firefighting activity (7-4-92). Above the wall is a great deal of marine midden and a gentle sloping to the east, suggesting a possible terrace area. Behind the *Kiawe* tree to the east is a large mound of large basalt cobbles (c. 0.20 to 0.30 m) that appear to have been pushed historically. Feature L is located c. 4.70 m west of Feature M at 110 degrees. Marine shell and coral noted in surface remains. Subsurface trowel test +0.10 m in depth. Silty loam terminating on a small rocky deposit.

FEATURE M: Terrace
ADJACENT TERRAIN:
VEGETATION: Burnt *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 4.70 m (N/S) by 2.55 m (E/W) by 0.30 m
CONDITION: Poor-fair

INTEGRITY: Altered
DESCRIPTION: Subangular basalt large cobbles intermittent with existing bedrock; one course high alignment c. 2.00 m north to south, with a J-shaped extension of c. 0.70 m top portion E/W, c. 1.00 m stem portion NE/SW, and 1.00 m bottom portion SE/NW. This extension ends on gentle slope to the south. Feature M has been historically disturbed. Apparently pushed, fire-affected rocks have caused severe displacement. Feature M is c. 4.70 m at 290 degrees east of Feature L. Feature is 1.00 m south of substantial rubble pile. Trowel test indicated +0.10 m silty soil with underlying ash and marine midden. Coral and marine shell noted in surface remains.

FEATURE O: Terrace
ADJACENT TERRAIN:
VEGETATION: *Kiawe* and grass.
FUNCTION: Indeterminate
DIMENSIONS: 3.10 m (NE/SW) by 0.90 m (N/S) by 0.44 m
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Subangular basalt cobbles (c. 0.10 to 0.40 m in diameter) possibly stacked one to three courses high. Below the feature there are areas to the east and to the west that are piles of slumpage and rubble stones, suggesting that this feature may be "natural breakage of bedrock". The shape of this feature is somewhat curved and irregular due to recreational and firefighting activities. It is not possible to determine definite function. The natural shape of this bedrock outcrop when breaking away would give an appearance of terracing. Feature O is c. 3.20 m at 2.56 degrees to Feature D at c. 9.00 m above coastal vegetation line. Feature O is located on a natural rounded and elevated bedrock outcropping. No surface remains and surface deposit observed. Subsurface trowel test, +0.10 m of silty soil, no cultural evidence.

STATE NO.: 19368 PHRI TEMP. NO.:855-258
SITE TYPE: Complex (9 Features)
TOPOGRAPHY:
VEGETATION:
CONDITION: Poor-excellent
INTEGRITY:
PROBABLE AGE:
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site consists of four terraces (Features C (3), E), three hearths (Features D, M, N), and two paved areas (Features G, L)

FEATURE C: Terrace (3)
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 8.50 m by 6.50 m by 0.45 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles and small boulders stacked one to two courses high. Rocks are c. 0.15 to 0.50 m length/diameter, average is c. 0.30 m. The highest terrace is c. 3.00 by 2.50 m, long axis is 214 to 34 degrees. It forms a corner which abuts the second terrace, which has same long axis orientation. This terrace is c. 2.50 by 1.00 m, and in poor shape. Third and lowest terrace is roughly parallel to first two, and c. 2.00 m north of them. It is in good

condition. Long axis 260 to 80 degrees. Surface soil is red silt. A trowel driven into it goes easily to its full blade length (c. 0.13 m) BS at several points behind each terrace. Feature located on NW quad of project area, c. 20.00 m east of a small cove. No surface remains or surface deposit noted.

FEATURE D: Hearth
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and grass.
FUNCTION: Recreation
DIMENSIONS: 1.50 m (358 degrees) by 1.20 m (94 degrees) by 0.47 m (90 degrees to ground surface)
CONDITION: Excellent
INTEGRITY: Unaltered
DESCRIPTION: A squarish, randomly stacked, four course-high historic fire pit. This was originally marked as a cairn. The top is covered with waterworn boulders (probably taken from Feature G) and the rest of the structure is of pahoehoe boulders. An old metal chair, tin can, glass and concrete are adjacent to this feature. Located on extreme west central portion at *makai*. Ash and metal noted in surface deposit.

FEATURE E: Terrace
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 3.00 m (60 degrees) by 2.00 m (210 degrees) by 0.23 m (90 degrees perpendicular to earth surface)
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A low, stacked, one to two course terrace of pahoehoe boulders. Waterworn coral and cobbles and boulders are scattered on and around it. The ground behind (west) the terrace is at a slightly higher elevation than the east. This feature is c. 11.00 m at 92 degrees of TN from Feature G. Located on the extreme west central portion at *makai*. Surface deposit noted as absent, with surface scatter.

FEATURE G: Paved area
ADJACENT TERRAIN: Shoreline.
VEGETATION: *Kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 6.30 m (94 degrees) by 4.70 m (4 degrees)
CONDITION: Poor-fair
INTEGRITY: Altered
DESCRIPTION: A flat, paved area of waterworn coral and pebbles. Surrounding the circular area are waterworn boulders at irregularly spaced intervals. There are also some partially buried pahoehoe boulders. It appears as though there may have been a structure here, albeit a low one, but most of the stones have been removed to make campfire windbreaks. Other damage was sustained in the brush fire. Two *puka* beads (ID # 16 and 17) were found within the feature. Located on the extreme west central portion at *makai*. Waterworn coral, cobbles, boulders, marine shell, tire iron, and lead sinker (ID #17) noted in surface remains. Paving extends to 0.07 m.

FEATURE L: Paved area
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a W-facing slope.

VEGETATION: Burned *kiawe* and grass.
FUNCTION: Habitation
DIMENSIONS: 3.00 m by 1.80 m (Long axis = 307 to 127 degrees)
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A roughly oval-shaped area of ground with a covering of small pieces of coral and round gray pahoehoe. The largest pebbles are c. 0.05 m long; most are much smaller. Surrounding ground surface is reddish-brown silt with pebbles and cobbles. A trowel poked into the ground in and around feature is stopped by rock less than 0.05 mbs. Located on NW quad of project area, c. 30.00 m east of a small cove. One fragment of a slab of concrete c. 0.40 by 0.35 by 0.08 m thick with several nails in it. Located c. 1.50 m east of Feature L. Surface deposit noted as unexcavated.

FEATURE M: Hearth
ADJACENT TERRAIN: Low undulating hills and ravines.
VEGETATION: *Kiawe* and grass.
FUNCTION: Recreation
DIMENSIONS: 1.60 m (E-W) by 1.25 m (N-S) by 0.47 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Subangular pahoehoe cobbles and boulders and waterworn cobbles piled two courses high in a circular modern hearth adjacent to semi-circular bulldozer waste pile. The stones range in size from c. 0.10 by 0.20 m to 0.35 by 0.40 m. The highest section of hearth is the eastern section. Interior space is c. 0.55 to 0.80 m diameter/length. This hearth was documented to illustrate modern land use patterns, as instructed by D. Graves. Located on level bluff overlooking ocean (to west). Surface remains consist of tin cans, aluminum cans, brown, green, and colorless glass bottle and fragments, aluminum foil, unknown substance (possible washcloth or dishrag), waterworn coral and cobbles litter the surrounding area. Grill located immediately to north, foam to south. Surface deposit noted as ash within interior of hearth.

FEATURE N: Hearth
ADJACENT TERRAIN: Low undulating hills and ravines.
VEGETATION: *Kiawe* and grass.
FUNCTION: Recreation
DIMENSIONS: 1.10 m (N-S) by 1.10 m (E-W) by 0.37 m
CONDITION: Fair-good
INTEGRITY: Unaltered
DESCRIPTION: Subangular and waterworn pahoehoe boulders and cobbles stacked to three courses high to form circular modern hearth. The highest edge is the western edge facing the ocean. The interior space is c. 0.40 to 0.45 m diameter. A circular grill and large mesh grill are located within the interior. The component stones range between c. 0.10 to 0.40 m diameter/length. Feature recorded to document modern land use patterns, as instructed by D. Graves. Located on level buff overlooking ocean to west. Feature G to north, D to SE. Ashy soil present to at least 0.05 m.

STATE NO.: 19369 PHRI TEMP. NO.:855-259
SITE TYPE: Foundation
TOPOGRAPHY: Coastal plateau with some undulation caused by lava flow.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair-good

INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Possible military
DIMENSIONS: 10.30 m by 9.50 m
DESCRIPTION: Square shaped enclosure. Walls are constructed of cement mixed with large rocks. Floor is cement with a square shaped depression in the center. Large iron bolts are positioned (cemented in) within the confines of the depression. The floor is cracking and buckling. The corner of the SE wall has been badly damaged, and a rubble pile now occupies the corner area. The north wall has some damage also. The outer fringes of the top of the wall (at surface level) are deteriorating. This feature is located on central coastal portion c. 20.00 m east of coast, c. 40.00 m north of Site 855-258. Some historic trash (cans and beer bottles) in and around site. Surface deposit absent.

STATE NO.: 19370 PHRI TEMP. NO.:855-260
SITE TYPE: C-shape
TOPOGRAPHY: Roughly level to south; 10-15 degree slope everywhere else. Rolling hills above Puako Bay.
VEGETATION: *Kiawe* to the NE and grass.
CONDITION: Poor-fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 4.50 m by 4.00 m
DESCRIPTION: Randomly piled small boulders and cobbles in a C-shape, about two layers of stone on top of raised soil. The C-shape is open to the west/*makai* and nicely formed. Located next to western edge, near white house with gray roof and large stone wall. A Feature A (cairn) was mentioned but noted as "missing, believed dead". Feature B was formerly called an enclosure. Bulldozer tracks all around the site; that is probably what happened to Feature A, looks fairly recent. No surface remains or deposit noted.

STATE NO.: 19371 PHRI TEMP. NO.:1245-261
SITE TYPE: C-shape
TOPOGRAPHY: Undulating bedrock outcrops (pahoehoe). A ravine running roughly N-S is c. 5.00 m north of feature.
VEGETATION: Grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 2.00 m by 1.40 m by 0.40 m (long axis runs 32 to 212 degrees)
DESCRIPTION: Pahoehoe cobbles loosely stacked one to three courses high. Most rocks are less than or equal to 0.30 m in length/diameter; largest is c. 0.60 m. Sits atop a small ridge which runs alongside a ravine immediately to the north. Located in SE corner of project area inland above highway, above/upslope of water tank. No surface remains or deposit noted.

STATE NO.: 19372 PHRI TEMP. NO.:1245-262
SITE TYPE: Cairn
TOPOGRAPHY: Atop a slope facing NE, over undulating bedrock outcrops.

VEGETATION: Grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.40 m by 0.40 m by 0.45 m (0.40 m diameter)
DESCRIPTION: Pahoehoe cobbles stacked two to three courses high. Rocks are less than or equal to 0.30 m in length/diameter. Sits on bedrock. No surface remains or deposit noted.

STATE NO.: 19373 PHRI TEMP. NO.:1245-263
SITE TYPE: Cairn
TOPOGRAPHY: North-sloping hilly terrain.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 1.20 m by 0.90 m
DESCRIPTION: Piled and stacked pahoehoe cobbles and boulders ranging in size from c. 0.10 to 0.35 m. Square in shape with four sides; east side shows signs of collapse. Smaller cobbles in the middle of site appear to be a possible cairn, but from its size and shape, could also be a small mound. Three to four courses high. No surface remains or deposit noted.

STATE NO.: 19374 PHRI TEMP. NO.:1245-264
SITE TYPE: Terrace
TOPOGRAPHY: Westerly sloping hilly terrain.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Possible agriculture
DIMENSIONS: 2.27 m by 0.90 m
DESCRIPTION: Piled and stacked subangular basalt cobbles and boulders ranging in size from c. 0.10 to 0.40 m. One to two courses high. The back of the wall (north side) is almost level with the ground, while the south side is roughly 0.40 m above ground surface. This appears to be some sort of a retaining wall; it might extend further on either end. The wall is running east/west. Some bedrock is observed on the south side of the wall. Wall is at the bottom of a small, westerly sloping hill. Location in project area is near southern central end of parcel, inland of highway. No surface remains or deposit noted.

STATE NO.: 19375 PHRI TEMP. NO.:1245-265
SITE TYPE: Rubble concentration
TOPOGRAPHY: Flat open area, outcrop drop off to the west.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation

DIMENSIONS: 8.40 m by 1.80 m
DESCRIPTION: Piled and stacked subangular basalt cobbles and boulders ranging in size from c. 0.05-0.30 m and four to five courses high. Wall running north, south. Could be clearing for field that lies east of it. The field is virtually void of any sizable rocks. Could also be bulldozer push. It is right next to an electrical station. But there is a good amount of marine shell present around it. There is possible recent stacking on top of the wall at the south end. Stacking is two to three courses high. North end has possible mule trail going through it. Right next to trail opening in the wall is a small upright. Wall tapers down to one to two courses at the far northern end. This wall is just above and to the east of Site 265. Concentration of marine shell at far northern end; scattered marine shell also around the rest of the wall.

STATE NO.: 19376 PHRI TEMP. NO.:1245-266
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Located on west bank of hill, slope 12 degrees downhill to head of ravine.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: This site complex consists of one overhang (Feature A), one U-shape (Feature B), one terrace (Feature C), and one modified outcrop (Feature D).

FEATURE A: Overhang
ADJACENT TERRAIN: Low coastal, undulating hills, basalt outcroppings, small basin-like gully below site area.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.60 m (340 degrees) 2.60 m by 1.40 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: East face of feature consists of a basalt outcropping with a small "pocket area" extending into the outcropping c. 0.60 m, creating an overhang appearance. A semi-circular wall encloses the overhang area. Its radius is c. 1.50 m. Wall is constructed of basalt rock stacked on outcropping base. Major stacking occurs, two to three courses high on north. Rim of wall flattens to one course in the remainder of the wall. Some downhill slumpage is noticeable. Feature A abuts Feature B wall. Wall width varies but is roughly c. 0.70 m at widest point and c. 0.30 m at narrowest point. Site 265 is c. 5.00 m east of this feature, from top of overhang. Feature determination is vague; possibly storage area or used for temporary habitation. Feature A is located on the southwest corner of project area and immediately east of power station.

No portable remains were noted on the surface of this feature. Soil is very loose silt; appears to have been blown in. Only c. 0.03-0.05 m on bedrock in upper portion; some loose rocks in lower portion, but also mostly bedrock. Test Unit #1 placed within "enclosure" on July 23, 1992. No subsurface deposit encountered.

FEATURE B: U-shape
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops. Areas east and southwest of site have been bulldozed level for the power station.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation

DIMENSIONS: 2.00 m by 1.40 m (10 degrees-190 degrees) by 0.63 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe boulders and cobbles stacked one to two courses high to form a U-shape. The "U" opens toward Feature C to the west. The ground inside is fairly level, and it is slightly higher than and immediately adjacent to the terrace formed by Feature C. The two arms of the "U" point directly to the ends of Feature C, terrace. Most rocks are c. 0.50-0.80 m length/diameter. Many are flat and have been set upright. The relationship of B and C suggests an enclosed space. It measures c. 2.90 m from inner edge of B to east side of C. This feature is located northeast of power station. No portable remains were detected. A trowel poked into the soil in the area between B and C hit rock at c. 0.10 mbs. Test Unit #2 placed within southern interior, revealing volcanic glass, waterworn pebbles (possibly slingstones), and ecofactual materials.

FEATURE C: Terrace
ADJACENT TERRAIN: Undulating pahoehoe outcrops, some of which have been bulldozed level for construction of power station to SW.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 4.20 m (10 degrees-190 degrees) by 1.10 m by 0.80 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles and small boulders stacked one to three courses high. Largest rocks, c. 0.65 m length/diameter. Most are c. 0.45 m. The level area formed by the terrace extends c. 1.40 m east, where it meets Feature B. The ends of the terrace are in line with the arms of Feature B, suggesting an enclosed area. From east side of Feature C to inner edge of Feature B measures c. 2.90 m. Small scatter of marine shell below (west) of retaining wall. A trowel poked into soil in the area between B and C hits rock at c. 0.10 mbs. Immediately west of Feature C, there are couple of spots c. 0.10 m, though most of this area is also very shallow. Test Unit #7 was placed on side of retaining wall, which revealed ecofactual materials on both sides of the wall.

FEATURE D: Modified outcrop
ADJACENT TERRAIN: Undulating pahoehoe bedrock outcrops. Areas E & SW of site have been leveled for the power station.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 0.90 m (350 degrees-170 degrees) by 0.75 m by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled three courses high. All rocks c. 0.55 m length/diameter. Feature lies on a bedrock outcrop along a west facing slope. This feature is located northeast of power station. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19377 PHRI TEMP. NO.:1245-267
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills, ridges, and ravines. Site 1245-267 located at top of small hill.

VEGETATION: Grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible agriculture
DESCRIPTION: This site complex consists of one alignment (Feature A) and one modified outcrop (Feature B). The overall site dimensions are c. 4.50 m (north-south) by 1.60 m (east-west).

FEATURE A: Alignment
ADJACENT TERRAIN: Undulating hills, ridges, and ravines.
VEGETATION: Grass.
FUNCTION: Possible agriculture
DIMENSIONS: 5.10 m (236 degrees-146 degrees) by 1.00 m (236 degrees-56 degrees)
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: This alignment was constructed with one course of pahoehoe boulders and cobbles (c. 0.15-0.50 m length/diameter) which forms an edge separating an area (to the east) that appears cleared of stones and an area (to the west) that has loose stone on surface. Feature A is located on top of hill within southwest corner of eastern (upland of highway) parcel. Feature B is immediately to the west. No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Undulating hills, ridges, and ravines.
VEGETATION: Grass.
FUNCTION: Possible agriculture
DIMENSIONS: 0.60 m (north-south) by 0.50 m (east-west) by 0.46 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: One large boulder was placed on top of what appears to have been a boulder that split. Cobbles and small boulders are concentrated between Features A and B. This modified outcrop is west of the alignment and a concentration of cobbles and small boulders is located between the two. This appears to have been constructed by clearing the hilltop of stone to the north and east. It may have been done by bulldozing, but it is really too small to be bulldozer push. It was more likely constructed manually. Feature B is located on top of a hill within southwest corners of the eastern (upland of highway) parcel. Feature A is immediately to the east.

STATE NO.: 19378 PHRI TEMP. NO.:1245-268
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Undulating hills, surface covered with basalt rock, cobbles, and outcrops.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: This site complex consists of two C-shapes (Features A and B). The overall site dimensions are c. 20.00 m in length.

FEATURE A: C-shape
ADJACENT TERRAIN: Undulating hills, mechanical clearing just E of site. Associated with power plant. Small basalt outcropping due west of site.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 6.50 m (335 degrees) by 0.50 m by 0.38 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Subangular basalt rock arranged in "C" shape with corners extending west toward coast. Rock is stacked two to three courses high with some slumping in northern half (probably due to cow disturbance). No midden areas are visible within or without feature confines. Feature A is associated with Feature B, which is c. 12.00 m at 190 degrees south (across property fence). Area in front and behind of feature is relatively flat; feature is built up on small basalt outcropping. The opening of the "C" shape is facing at 260 degrees west.

This feature is located southwest portion of project c. 0.25 miles inland from highway, c. 200.00 m west of power plant on south side of paved utility road, and along a fence line. No portable remains were observed on the surface of this feature. Soil within the C-shape very silty; at least c. 0.10-0.15 m thick before hitting any rock. Behind the C-shape gravely silt, c. 0.03-0.04 m before rock.

FEATURE B: C-shape
ADJACENT TERRAIN: Undulating hills. Surface has basalt rocks, cobbles, and outcrops.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 5.00 m (278 degrees) by 5.00 m by 0.60 m
CONDITION: Fair
INTEGRITY: Altered
DESCRIPTION: Stacked angular/subangular basalt rock (two to three courses high). C-shaped enclosure with wall extending c. 2.00 m on north side. At the end of the wall is a c. 1.00 m open space, then c. 2.50 m wall/alignment at right angle to wall connected to C-shape. C-shape opening faces west. About 2.00 m in front of opening is a concentration basalt rocks. Area in front of C-shape opening highly disturbed by mechanical means. Feature is just c. 5.00 m from highway cut, in the southwest parcel of project area, inland side of highway, c. 100.00 m east of highway, power transformer c. 150.00 m north-northwest of site. Portable remains were limited to marine shells.

STATE NO.: 19379 PHRI TEMP. NO.:1245-269
SITE TYPE: Cairn
TOPOGRAPHY: On top of hill among undulating hills. Basalt rocks, cobbles, and outcrops on surface
VEGETATION: *Kiawe* and grass
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 0.80 m by 0.80 m by 0.50 m
DESCRIPTION: Stacked subangular basalt rocks on top of outcrop. Cairn is about four courses high. Rocks are c. 0.20 m in size. Its width is almost twice its height. This site is located on the southwest parcel of project area, inland side of highway, c. 100.00 m east of highway, c. 120.00 m north of power transformer.

STATE NO.: 19380 PHRI TEMP. NO.:1245-270
SITE TYPE: Modified outcrop
TOPOGRAPHY: Undulating hills, basalt outcroppings, scattered basalt rock and cobble.
VEGETATION: *Klawe* and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 1.20 m by 0.60 m
DESCRIPTION: Relatively large basalt rocks (range 0.15 to 0.40 m) loosely placed on small basalt outcrop; some slumpage may have occurred on north side. One large stone is in semi-upright position. Oriented at 330 degrees. Surface area behind is fairly flat. Rocks project upward from surface c. 0.30-0.40 m. This site is located on the southwestern corner c. 2/3 mile east of main highway, c. 100.00 m north of power station on knoll overlooking project area. No portable remains were noted on the surface of this feature. Minimal soil deposit (c. 0.02-0.03 m thick) on basalt rock and bedrock.

STATE NO.: 19381 PHRI TEMP. NO.:1245-271
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills and ravines.
VEGETATION: *Klawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.50 m (east-west) by 0.65 m by 0.65 m
DESCRIPTION: Site 271, a hunter's blind, was constructed with three to four courses of subangular pahoehoe cobbles and boulders (ranging from c. 0.10-0.40 m in length/diameter) piled on pahoehoe bedrock to form a single stone width wall. The wall is arch shaped, i.e., the highest part is center and the sides taper down to bedrock outcrops. The wall is slightly curved, with edges curving north, which is interesting because for a hunter to use this as a blind, the blind then faces south directly to a hill slope. No portable remains or cultural deposits were noted at this site.

STATE NO.: 19382 PHRI TEMP. NO.:1245-274
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: A large hill is to the south blocking the electric plant. To the north is a valley of hills.
VEGETATION: *Klawe* and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehisteric
FUNCTIONAL INTERPRETATION: Agriculture
DESCRIPTION: This site complex consists of two modified outcrops (Features A and B) and one terrace (Feature C). The overall site dimensions are c. 18.00 m by 9.00 m (90 degrees).

FEATURE A: Modified outcrop
ADJACENT TERRAIN: Located on level ridge tongue w/drop off to N, W, and S. Surrounding area consists of hills and ravines.

VEGETATION: *Klawe* and grass.
FUNCTION: Possible military
DIMENSIONS: 2.20 m (east-west) by 1.80 m by 0.75 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Feature A, a modified outcrop, was constructed with subangular pahoehoe cobbles and boulders piled on and around a bedrock outcrop to form a circular feature. The native bedrock is dominant part of feature construction; the piled stones primarily used as fill between bedrock cracks. The feature's overall appearance is that of a rock cairn. No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: A large hill is south of the feature blocking the electrical building. To the N is a valley of hills.
VEGETATION: *Klawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 1.20 m (360 degrees) by 1.25 m by 0.60 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: An outcrop with c. 0.20-0.25 m basalt stones placed on it and around it. Appears that the area around the outcrop was cleared and the stones placed on the outcrop. It is circular. This feature is located in the southwest corner of the project area. The highway is c. 500 feet to the west. Feature C is c. 7.50 m at 150 degrees. No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE C: Terrace
ADJACENT TERRAIN: Feature is on the northern edge of a knoll. A large hill is to the S and blocks the electrical building. To the north is a valley of hills.
VEGETATION: *Klawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 5.61 m (90 degrees) by 3.20 m by 0.50 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Two terraces, one facing east and one facing north. Both terraces contain fist-sized cobbles and large boulders. The size of angular, pahoehoe stones ranges from c. 0.15 to 0.50 m. The boulders are natural bedrock, with the smaller stones placed between them to form alignments. The east terrace is built from the east ground up into the west soil, and the north terrace is built from the north ground up into the south soil. Also, on top of the knoll and in between the two terraces may be a possible trail, but it is not exactly clear. This feature is located on the southwest corner of the project area. The highway is c. 500 feet to the west. Feature A is c. 8.00 m south at 27 degrees and Site 885-36 (Feature A and B) is at 66 degrees from this feature. The windmill farm is at 56 degrees. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19383 PHRI TEMP. NO.:1245-275
SITE TYPE: Modified outcrop
TOPOGRAPHY: On west end of ridge running E/W.
VEGETATION: *Klawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered

PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 0.80 m by 0.80 m 0.35 m
DESCRIPTION: Three subangular basalt boulders laid upon bedrock outcrop. Two angular basalt rocks placed atop boulders. This site is located on the southwest parcel of project area, east of highway, Site 855-36 c. 30.00 m at 100.00 degrees, Site 1245-276 c. 27.00 m at 280 degrees. No portable remains or cultural deposits were observed on the surface of this site.

STATE NO.: 19384 PHRI TEMP. NO.:1245-276
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, gullies, scattered basalt rock and basalt rock outcroppings.
VEGETATION: *Klawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 1.12 m by 0.25 m
DESCRIPTION: Two courses high, stacked basalt rock on basalt outcropping. Overlooks most of project area to the north. Situated on ridge crest and is flush with hillside on south. North face is exposed vertical basalt outcrop. Located c. 1/4 mile east of main highway on ridge lined with intermittent basalt outcroppings. Located in southwestern section of project, c. 27.00 m at 100.00 degrees from Site 1245-275. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19385 PHRI TEMP. NO.:1245-277
SITE TYPE: Modified outcrop
TOPOGRAPHY: At the base of a NNE sloping hill.
VEGETATION: *Klawe* and grass.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible agriculture
DIMENSIONS: 3.20 m by 2.57 m
DESCRIPTION: Piled basalt cobbles one-two courses high ranging in size from c. 0.06-0.30 m. Piling is on top of bedrock. Could be just cracked pieces of bedrock that have, over time, moved around. The whole outcrop is circular, with the possible modification on the north-northeast side of the site. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19386 PHRI TEMP. NO.:1245-278
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, basalt rock scatters and basalt outcroppings.
VEGETATION: *Klawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.00 m by 0.30 m by 0.75 m

DESCRIPTION: Stacked basalt rock six courses high at center, tapering to two courses on ends. Stacking from ground surface up. Some loose rock in front of feature base, but does not appear to be caused from slumping. Oriented at 290 degrees. Feature is very loosely constructed. Approximately 1/8 mile from main highway in southwest project area, c. 60.00 m south from main gully in rear. Spent paper shotgun shells (not collected).

STATE NO.: 19387 PHRI TEMP. NO.:1245-279
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills, small basalt outcroppings, scattered basalt rock.
VEGETATION: *Klawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.30 m by 0.80 m by 0.85 m
DESCRIPTION: Subangular basalt rock stacked loosely on basalt outcropping. Wall oriented at 360 degrees and located on upper edge of downhill slope of undulating hill overlooking coast. No visible cleared area in front; on back mostly basalt cobble and gravel. This site is located on the edge of a hill c. 25.00 m inland, above the main highway, c. 200.00 m north of power plant access road entrance from main highway. One small cowry shell c. 3.00 m east of wall (not collected). No other visible remains. One spend shotgun shell (Winchester 20 g) within feature (not collected). Gravely silt c. 0.05-0.06 m thick before appearance of larger rock. No cultural remains noted.

STATE NO.: 19388 PHRI TEMP. NO.:1245-280
SITE TYPE: Complex (3 Features)
TOPOGRAPHY: Rolling pahoehoe bedrock outcrops with small gulch/gully.
VEGETATION: *Klawe* and grass.
CONDITION: Poor
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible agriculture
DESCRIPTION: This site complex consists of two modified outcrops (Features A and C) and one terrace (Feature B).

FEATURE A: Modified outcrop
ADJACENT TERRAIN: At the south side of a small gulch/gully near the first gully at the southernmost end of project.
VEGETATION: *Klawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 1.10 m (288 degrees) by 0.40 m by 1.18 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Natural bedrock is protruding from the south side of the gully, and small basalt angular stones are placed on top of the bedrock. There are c. fifteen stones placed and they are c. 0.10-0.25 m in diameter. This runs east-west. This feature is c. 33.00 m at 360 degrees-0 degrees. This feature is in a small gully. No portable remains were observed on the surface of this feature. Trowel tested and no cultural deposit found; not much soil either.

FEATURE B: Terrace
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 2.20 m (104 degrees-284 degrees) by 0.65 m by 0.40 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles loosely stacked one to two courses high. This feature is located 1/4 mile east (*mauka*) of highway. Feature C is c. 5.00 m at 350 degrees upslope.

FEATURE C: Modified outcrop
ADJACENT TERRAIN: Rolling pahoehoe outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 0.70 m (282 degrees-102 degrees) by 0.40 m by 0.56 m
CONDITION: Poor
INTEGRITY: Unaltered
DESCRIPTION: Seven to eight loosely piled cobbles atop a bedrock outcrop. Rocks are c. 0.30 m in length/diameter. This feature is located c. 1.4 mile east (*mauka*) of highway. Feature B is c. 5.00 m at 170 degrees downhill. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19389 PHRI TEMP. NO.:1245-281
SITE TYPE: Terrace
TOPOGRAPHY: Undulating pahoehoe bedrock outcrop.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 12.00 (302 degrees) by 10.50 m
DESCRIPTION: There are three rough basalt stone alignments to form a possible enclosure. These one course high alignments consist of basalt, angular stones (c. 0.05-0.15 m in diameter). A lithic scatter is found in the center of the north wall and a waterworn basalt stone is found near the center of the west wall. Bits of concrete are found throughout the feature. Perhaps the concrete pieces came from the surveyor's marker near the site. The walls are no more than c. 0.15 m wide; one runs north-south and the other two run east-west. The central surface portion of the feature is fairly level. The highway is west c. 200.00 m, observatories are at 94 degrees, Site 855-47 is c. 500.00 m at 360 degrees, Site 855-37 is c. 700.00 m at 188 degrees, and a survey marker is c. 20.00 m at 320 degrees. Basalt flake scatter, small dropping of concrete present. Trowel tested from c. 0.04-0.11 m deep and no cultural deposit found.

STATE NO.: 19390 PHRI TEMP. NO.:1245-282
SITE TYPE: Modified outcrop
TOPOGRAPHY: Undulating exposed and decomposing bedrock; steep gulch bank located c. 8.00 m to south.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered

PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible agriculture
DIMENSIONS: 1.65 m by 0.56 m by 0.30 m
DESCRIPTION: Approximately fifteen (15) sub-rounded basalt cobbles placed along a low bedrock outcrop, oriented northwest-southeast. This site is located in the central south boundary of the project area one the north side of the first large gulch. No portable remains or cultural deposits were noted at this site.

STATE NO.: 19391 PHRI TEMP. NO.:1245-283
SITE TYPE: Complex (2 Features)
TOPOGRAPHY: Situated on top of a small hill with a large hill to the northwest. A small, flat area to the west.
VEGETATION: Moderate *Kiawe* to the west and grass.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DESCRIPTION: The site complex consists of one wall (Feature A) and one circular alignment (Feature B). The overall site dimensions are c. 10.30 m (128 degrees) by 4.50 m).

FEATURE A: Wall
ADJACENT TERRAIN: This feature is on top of a hill. Undulating pahoehoe area.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 4.50 m (360 degrees) by 3.25 m by 0.30 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: This is a one to two course high L-shaped wall. It consists of flat-sized stones to small boulders ranging in size from c. 0.10 to 0.90 m in diameter. These stones are angular basalt. The walls join at the southeast corner. They are c. 1.50 m wide, and the north-south wall is built on top of open bedrock.

FEATURE B: Circular alignment
ADJACENT TERRAIN: Undulating pahoehoe.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 2.00 m (360 degrees) by 1.75 m by 0.37 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This is one to two courses high, consisting of basalt, angular stones (ranging in size from c. 0.10-1.40 m in diameter) and may be a possible hearth. This feature is located on top of a hill. No portable remains were observed on the surface of the feature. Trowel tested and no cultural deposit was found.

STATE NO.: 19392 PHRI TEMP. NO.:1245-284
SITE TYPE: C-shape
TOPOGRAPHY: Undulating hills, two small basalt outcroppings S of feature. Localized area very rocky (rubangular basalt).
VEGETATION: *Kiawe* and grass.

CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
DIMENSIONS: 1.60 M BY 0.60 M
FUNCTIONAL INTERPRETATION: Hunting blind
DESCRIPTION: Stacked basalt rock (some fairly large at bottom) on basalt outcropping. Small rocks crowning wall with several larger rocks on ground in front (north of feature). Oriented at 212 degrees. Ground surface within confines of feature relatively clear (overgrown with grass). This area is raised somewhat higher than outside ground surface. This site is located c. 5.00 m west of fence line, c. 70.00 m east of main highway. The southwest project area is c. 100.00 m south of large gully, and on north side of small knoll. No portable remains were noted on the surface of this site. A small amount of gravely silt (c. 0.05-0.10 m thick) in spots on bedrock (both inside and outside).

STATE NO.: 19393 PHRI TEMP. NO.:1245-285
SITE TYPE: Wall
TOPOGRAPHY: Undulating slope to the west with many small bedrock outcrops.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 1.10 M (330 degrees) by 0.62 m
DESCRIPTION: Subangular basalt cobbles loosely stacked on bedrock outcrop. Cobbles average c. 0.30 m in diameter, with smaller cobbles stacked on larger cobbles. This site is located c. 50.00 m east of highway, c. 100.00 m uphill, south of large gulch in southwest portion of *mauka* parcel, and c. 40.00 m southwest of Site 1245-286. No portable remains or cultural deposits were noted on the surface of this site.

STATE NO.: 19394 PHRI TEMP. NO.:1245-286
SITE TYPE: Wall
TOPOGRAPHY: Undulating hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Hunting blind
DIMENSIONS: 2.00 m (360 degrees) by 0.60 m
DESCRIPTION: Stacked angular/subangular basalt rocks. Three to five courses high, one to two courses thick. Placed on basalt outcrop. Outcrop is on edge of cliff overlooking gully. It is located on south side of gully, c. 50.00 m east of highway. Portable remains include shotgun shell (once had paper cartridge), "Peters/Victor" sixteen (16) gage.

STATE NO.: 19395 PHRI TEMP. NO.:1245-287
SITE TYPE: Complex (14 Features)
TOPOGRAPHY: Undulating pahoehoe bedrock outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair

INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Indeterminate
DESCRIPTION: The site complex consists of two walls (Features A and B), one modified outcrop (Feature C), one midden scatter (Feature D), two cairns (Features E and F), 8 mounds (Feature G). The overall site dimensions are c. 23.00 m (east-west) by 11.00 m (north-south).

FEATURE A: Wall
ADJACENT TERRAIN: This feature is on a hilltop. The south edge is c. 12 m and the north edge is c. 14 m. Sloping down to the west. Very large hill is just beyond the southernmost gully.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 3.60 m (245 degrees) by 1.10 m by 0.49 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: A wall consisting of fist-sized angular basalt stones to small boulders. Stones range in size from c. 0.19-0.55 m in diameter. There are flat pahoehoe slabs on top of the wall. The wall runs north-south and consists of approximately fifty (50) stones. This feature is located in the southwest corner of project. Cannot see the windmill farm. Observatories on Mauna Kea are at 92 degrees, crane at Mauna Kea Bluffs is at 326 degrees, Site 35 is at 116 degrees and c. 11.90 m, and Site 1245-287 Feature C is c. 6.70 m at 352 degrees. This feature was trowel tested and no portable remains or cultural deposits were noted.

FEATURE B: Wall
ADJACENT TERRAIN: On top of a hill. A gully is c. 17.00 m south and large hill south of that. Slopes down to the west.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 7.20 m (240 degrees) by 1.10 m by 0.47 m
CONDITION: Excellent
INTEGRITY: Unaltered
DESCRIPTION: This feature has organization to it. There are three upright pahoehoe basalt slabs at the southwest corner of feature and large boulders running along the west edge. Small cobbles fill the center and are piled even to the ground on the east edge. The stones are angular basalt ranging in size from c. 0.10 to 0.70 m in diameter, including first-sized cobbles and small boulders. This wall runs north-south, but the north edge curves westward. This feature is located in the same area as Feature A, but c. 6.00 m west of Feature A at 308 degrees. Feature C is c. 8.60 m at 73 degrees. This feature is trowel tested but no portable remains or cultural deposits are observed.

FEATURE C: Modified outcrop
ADJACENT TERRAIN: Undulating pahoehoe outcrops on a W facing slope. Ground is level to immediate S, slopes down to N.
VEGETATION: *Kiawe* and grass.
FUNCTION: Possible agriculture
DIMENSIONS: 12.90 m (110 degrees-290 degrees) by 1.40 m by 0.35 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: A bedrock outcrop with pahoehoe cobbles intermittently piled one to three courses high along its length. Cobbles are c. 0.40 m length/diameter, most are c. 0.20 m. This

feature is located c. 0.25 m east of the highway. No portable remains or cultural deposits were detected on the surface of the feature.

FEATURE D: Midden scatter
ADJACENT TERRAIN: Gully is c. 17.00 m S of feature and a large hill is S of that. Slopes down to the W. On top of a hill.
VEGETATION: *Kiawe* and grass.
FUNCTION: Temporary habitation
DIMENSIONS: 4.00 m (360 degrees-0 degrees) by 3.00 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Much marine shell scattered in a c. 4.00 m by 3.00 m area. One waterworn basalt stone also found. This feature is located in the same area as Feature A and c. 2.30 m west of Feature B. Ecofact scatter and waterworn basalt stone were found but not collected. Trowel tested and nothing found in the subsurface.

FEATURE E: Cairn
ADJACENT TERRAIN: Rolling outcrops of pahoehoe bedrock.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 0.65 m by 0.60 m by 0.51 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked one to three courses high. Cobbles are c. 0.30 m length/diameter. Approximately eight small stone mounds lie nearby, in addition to Feature E. This feature is c. 0.25 m east (*mauka*) of the highway. Feature A is c. 4.00 m at 330 degrees. No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE F: Cairn
ADJACENT TERRAIN: Rolling pahoehoe bedrock outcrops.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 0.67 m by 0.54 m by 0.38 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles stacked two to three courses high. Cobbles are c. 0.50 m length/diameter. This feature is c. 0.25 m east of the highway. Feature B is c. 4.00 m at 150 degrees. Eight other small mounds are nearby. No portable remains were detected on the surface of this feature.

FEATURE G: Mound (8)
ADJACENT TERRAIN: Undulating pahoehoe outcrops on a west joining slope.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 15.50 m (east-west) by 8.50 m (north-south)
CONDITION: Poor-fair
INTEGRITY: Unaltered
DESCRIPTION: Pahoehoe cobbles piled one to three courses high. Cobbles are up to c. 0.40 m length/diameter. This feature is located c. 0.25 m east of the highway. No portable remains were detected on the surface of this feature. Trowel poked into areas of soil hits rock at c. 0.10 mbs.

STATE NO.: 19396 PHRI TEMP. NO.:1245-301
SITE TYPE: Depression
TOPOGRAPHY: Undulating pahoehoe outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DIMENSIONS: 2.20 m BY 2.20 m
DESCRIPTION: A shallow depression near the top of the southwest side of a hill. A ring of bare dirt and rock surrounds the depressed part at the center, which has some grass growing in it. The center of the depression is c. 0.40 m below the nearest undisturbed soil uphill. The downhill rim of the crater is c. 0.10 m above the center. This site is located c. 0.75 mile east of the highway. There were two jagged scraps of metal; the largest is c. 4.50 m by 4.50 m has threading on one side, at its thicker end. The smaller scrap is c. 2.00 m by 1.00 m and is also threaded on one side.

STATE NO.: 19397 PHRI TEMP. NO.:1245-303
SITE TYPE: Complex (7 Features)
TOPOGRAPHY: Located on southern edge of gulch (which extends E-W) with adjacent undulating hills and ravines.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Military
DESCRIPTION: The site complex consists of one rubble concentration w/associated military debris (Feature A), three modified outcrops (Features B-D), one enclosure (Feature E), one wall (Feature F), and one roadbed (Feature G). The overall site dimensions are c. 150.00 m (east-west) by 40.00 m (north-south).

FEATURE A: Rubble concentration
ADJACENT TERRAIN: Undulating hills, ridges, and ravines.
VEGETATION: Grass.
FUNCTION: Military
DIMENSIONS: 2.70 m (north-south) by 2.50 m (east-west) by 0.41 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Feature A was a circular, low uneven-surfaced (i.e. not level or consistently sloping) concentration of subangular pahoehoe cobbles and boulders piled one to two courses high. Similar in construction to Features B, C, and D although bedrock outcrop was not apparent and therefore not part of construction. Located on end of ridge spur (ridge spur oriented northwest-southeast) with gulch to north and east. On the northern edge of southern half of eastern upslope parcel. Feature B is c. 71.00 m at 140 degrees (center to center).

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Undulating hills, ridges, and ravines.
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 2.70 m (north-south) by 2.50 m (east-west) by 0.41 m

CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Feature B is amorphous. It is a low, fairly level concentration of subangular pahoehoe cobbles and boulders piled one to two courses high around small bedrock outcrops on ridge overlooking surrounding terrain. This feature is similar to Feature C in construction and type. This feature is located at northern edge of the south half of east (upland) parcel on ridge; gulch to north, highway and ocean to west. Located c. 37.00 m at 120 degrees from Feature C; Feature A is c. 71.70 m at 320 degrees (center to center).

FEATURE C: Modified outcrop
ADJACENT TERRAIN: Undulating hills and basalt outcroppings.
VEGETATION: *Klawe* and grass.
FUNCTION: Military
DIMENSIONS: 3.20 m by 3.00 m by 0.52 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Loosely stacked basalt rocks on basalt outcropping. Positioned on edge of top of hill facing coast. Some sloping on downhill (northwest) side. This feature is located on the southern part of the project area, close to easternmost extent between Feature B and Feature D on hill. No portable remains were noted on the surface of this feature.

FEATURE D: Modified outcrop
ADJACENT TERRAIN: Undulating hills.
VEGETATION: *Klawe* and grass.
FUNCTION: Military
DIMENSIONS: 3.50 m (310 degrees) by 2.50 m by 0.30 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Modified outcrop situated on northeast edge of hill top. Overlooks gully downslope to north. Loosely piled basalt rocks on outcrop are one course high. This feature is located on the south half of eastern parcel. Feature E is c. 30.00 m at 9 degrees. Feature C is c. 19.00 m at 230 degrees.

FEATURE E: Enclosure
ADJACENT TERRAIN: Located on low ridge extending parallel to gulch.
(gulch to N) w/hill to S.
VEGETATION: *Klawe* and grass
FUNCTION: Military
DIMENSIONS: 3.50 m (24 degrees-204 degrees) by 3.10 m (294 degrees - 114 degrees) by 0.48 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: This small, low circular enclosure was constructed with subangular cobbles and boulders (ranging in size from c. 0.10-0.50 m in diameter/length) piled and stacked one to four courses high. Because of the slope to the west, the northwest corner and most of the north side is a retaining wall, not a standing wall. There appears to be an entrance (c. 1.00 m wide) on the western edge, and the walls are not as high on the eastern edge, possibly forming another entrance (c. 0.40 m wide). The retaining wall is stacked but not faced. This feature is located at the northern edge of the southern half of parcel east (upland) of the highway. Feature F is 270 degrees at c. 12.00 m from SW opening. Feature G is c. 17.08 m at 86 degrees from eastern

edge. Portable remains include rifle clips (possibly M-1). Small test revealed no cultural deposit.

FEATURE F: Wall
ADJACENT TERRAIN: Edge of gully (south side). Hills rise to N and S. Gully declines to W as does general slope.
VEGETATION: No vegetation.
FUNCTION: Military
DIMENSIONS: 10.00 m by 8.00 m by 0.50 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Stacked basalt rocks on outcrop, which forms south side of gully. Stacking is one to two courses high and one course wide. Average size of rocks is c. 0.30 m. Feature F is actually two walls, forming an obtuse angle. The stacked rock portions of the wall are intermittent and the rest is made up of bedrock outcrop. This wall can also be called a modified outcrop, as the rocks fill in a natural wall of bedrock. This feature is located on the south half of the eastern parcel, at south side of gully which divides south half and north half of eastern parcel. No portable remains or cultural deposits were observed on the surface of this feature.

FEATURE G: Road bed
ADJACENT TERRAIN:
VEGETATION: *Klawe* and grass.
FUNCTION: Military
DIMENSIONS: 6.75 m by 5.75 m by 1.20 m
CONDITION: Fair
INTEGRITY: Unaltered
DESCRIPTION: Cement and basalt cobble road fill c. 1.20 m deep (judging from fill wall to gully bottom). Surface is buckling and cracking. Some natural slumping from gully edges. Paved area for vehicle crossing. This feature is located on the southern project area in small gully toward easternmost end of the project and c. 17.80 m from Feature E at 266 degrees. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19398 PHRI TEMP. NO.:1245-304
SITE TYPE: Complex (4 Features)
TOPOGRAPHY: Located on top of hill overlooking undulating hills and ravines.
VEGETATION: Grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Multiple
DESCRIPTION: The site complex consists of one wall (Feature A), one modified outcrop (Feature B), one terrace (Feature C), and a parallel wall (Feature D). The overall site dimensions are c. 20.00 m (25 degrees) by 20.00 m.

FEATURE A: Wall
ADJACENT TERRAIN: Undulating hills; general slope declines to the sea (west).
VEGETATION: Fountain grass.
FUNCTION: Military
DIMENSIONS: 3.50 m (30 degrees) by 1.00 m by 0.90 m
CONDITION: Good

INTEGRITY: Unaltered
DESCRIPTION: Outcrop extended with stacked basalt rocks forming wall. East half of wall is outcrop, west half wall constructed of stacked basalt rocks (three courses high) about c. 0.40 m in size. Wall is on south side of hilltop and overlooks lower terrain below. About 1.00 m to the south of is a concentration of military debris. North of wall are two military electronic components of unknown type or function. This feature is located on the south half of the eastern parcel. Portable remains include military debris (food containers, bottles, cans, grenade fuse cans, ordnance containers, grenade, hand/container, M.42A2.

FEATURE B: Modified outcrop
ADJACENT TERRAIN: Undulating hills; general slope declines to the sea (W).
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS: 1.80 m (290 degrees) by 1.10 m by 1.10 m
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Prominent outcrop on top of hill. Rocks stacked on north side. Sections of outcrops have broken off and lie about its face, possibly used as target. Small areas on outcrop chipped, not weathered. This feature is located on the south half of eastern parcel. Military debris (glass jar, grenade fuse containers, and can) were noted on the surface of this feature.

FEATURE C: Terrace
ADJACENT TERRAIN: Undulating hills; basalt outcrops; basalt rock (fairly dense) scatter.
VEGETATION: *Kiawe* and grass.
FUNCTION: Agriculture
DIMENSIONS: 3.75 m (north-south) by 2.00 m by 0.36 m
CONDITION: Poor
INTEGRITY: Indeterminate
DESCRIPTION: Semi-intact basalt rock wall alignment two courses high, abutting gentle downhill slopes. Most of wall disturbed and scattered; impossible to ascertain whether disturbance is result of mechanical (military) or natural causes. Area behind contains wide scattering of basalt rock. Front of feature area is relatively clear. Trowel test of soil (gravely silt) is c. 0.05-0.07 m on bedrock. This feature is located on the southern half of the easternmost project boundary.

FEATURE D: Parallel walls
ADJACENT TERRAIN:
VEGETATION: *Kiawe* and grass.
FUNCTION: Military
DIMENSIONS:
CONDITION: Good
INTEGRITY: Unaltered
DESCRIPTION: Subangular basalt rock and cobble-stacked parallel walls. Uphill wall has southern end extending east c. 0.75 m. Walls are c. 1.60-1.80 m apart and run basically at 349 degrees. The slightly smaller downhill wall shows some evidence of slumping. Trowel soil test recovered a c. 0.05-0.07 m thick gravely silt on bedrock. This feature is located on the southern portion of project's most eastern part on one of the highest hills. Noticeable basalt outcropping visible in skyline. Steel cans (food containers) and ammo clips were observed on the surface. No cultural deposits noted.

STATE NO.: 19399 PHRI TEMP. NO.:1245-305
SITE TYPE: Terrace
TOPOGRAPHY: Slight hills, fairly flat from dozing. Sloping gently south.
VEGETATION: *Koa-haole*, *kiawe*, and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 13.30 m (160 degrees) by 1.30 m (30 degrees)
DESCRIPTION: Roughly square shaped terrace, mostly visible along the south-southeast region. Possibly bulldozed over the top. South-southeast portion two to three courses of stacked subangular basalt cobbles and boulders (up to c. 0.40 m). Rough paving along surface. North-northwest and central portions flush with ground surface. Another possible terrace is two small courses high (possible bulldozer push). This site is located on the north portion of *makai* parcel c. 7.00 m east of Site 885-127.

STATE NO.: 19400 PHRI TEMP. NO.:1245-306
SITE TYPE: Terrace
TOPOGRAPHY: Undulating bedrock outcrops. Site sits on the slope of a dry creek bed.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Unaltered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Agriculture
DIMENSIONS: 11.00 m by 2.50 m
DESCRIPTION: Pahoehoe cobbles stacked one to four courses high with long axis oriented 114 degrees-294 degrees. Slope is oriented at 336 degrees-156 degrees, at an angle of 30 degrees. Terrace is divided into three segments which are c. 2.50 m, c. 1.30 m, and c. 2.40 m in length, from lowest to highest. The lowest is in best condition. It is c. 0.75 m high. This feature is located on the southwest quad of the project area, c. 150.00 m east of shore. No portable remains were detected on the surface of this terrace. A trowel test revealed a c. 0.12 m thick soil. Soil is very rocky.

STATE NO.: 19401 PHRI TEMP. NO.:1245-307
SITE TYPE: Enclosure
TOPOGRAPHY: Rolling pahoehoe outcrops. Sits about 2/3 the way up the south side of a gully.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor-fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 8.10 m by 6.30 m
DESCRIPTION: Pahoehoe cobbles/small boulders stacked one to eight courses high. Long axis is at 297 degrees-117 degrees. Rectangular shaped. South wall is almost entirely rubble; east wall is slightly better shape. North and west walls have also been affected by tree falls. Walls are c. 0.60-0.90 m thick. They consist of cobble/boulder stacking on either side, with a thin layer of cobbles and gravel sandwiched between. Outer rocks are c. 0.25-0.60 m in length/diameter, average c. 0.40 m. Greatest height is inside southeast corner (c. 1.15 m). This site is

located on the southwest quad, c. 200.00 m east of the ocean. Metal bucket hoop, and a metal strip with rivets were noted associated with this site. Soil is deeper than a trowel blade length (more than c. 0.13 m).

STATE NO.: 19402 PHRI TEMP. NO.:1245-308
SITE TYPE: Wall
TOPOGRAPHY: Coastal slope (moderate), slight undulation, relatively flat area south of wall.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 17.25 m by 4.60 m by 0.96 m
DESCRIPTION: Stacked basalt rock forming split wall (two sections) alignment. Rocks are very large overall, with smaller cobble stacking intermittently. Large amounts of coral are incorporated in construction (some coral rocks are quite large). Some waterworn basalt cobbles are also incorporated in construction. Wall oriented east-west at 274 degrees, and c. 3.00 m gap separates the two sections of the wall. Soil deposit ranges from c. 0.03 to 0.10+ m. No midden visible in trowel test around and adjacent to feature. This site is located on the southwestern project area c. 60.00 m north of boat ramp inland from coast c. 10.00 m.

STATE NO.: 19403 PHRI TEMP. NO.:1245-309
SITE TYPE: Enclosure
TOPOGRAPHY: Undulating pahoehoe outcrops. Sits in a gully with a dry creek bed.
VEGETATION: *Kiawe*, dense dry vine ground cover with very small leaves.
CONDITION: Fair-good
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 13.00 m by 9.50 m
DESCRIPTION: Flat pahoehoe boulders stacked one to two courses high with gravel, coral and cobble fill in north half of feature. The boulders are roughly rectangular. North side is bowed out slightly. Long axis is at 200 degrees-20 degrees. Facing rocks are c. 0.50-1.55 m in length/diameter. Highest point is on interior of the north wall (c. 1.14 m). North wall is level with outer ground surface. South end is open. Interior is level, with cobbles over most of area. A couple of concentrations of coral fragments are near center of interior. This site is located on the southwest quad, c. 20.00 m from shore, and c. 100.00 m north of small concrete dock. Several modern beer bottles were observed on the surface of the site. Trowel poked into silt at north end is unobstructed (soil more than c. 0.13 m deep).

STATE NO.: 19404 PHRI TEMP. NO.:1245-310
SITE TYPE: Circular enclosure
TOPOGRAPHY: Gently undulating hills.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Indeterminate

FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 6.30 m by 4.50 m
DESCRIPTION: A circular enclosure of randomly piled pahoehoe cobbles and boulders. Some stones have been knocked off. Shape is roughly circular and average height is c. 0.35 m above ground surface. The *kiawe* tree does not appear to have damaged the walls. Site sits on a somewhat flat hilltop next to a gentle slope going down to the next lower elevation of hills. Bedrock outcrops appear to the northeast and east. Clusters of *kiawe* trees are c. 0.40 m northeast and c. 10.00 m southeast. This site is located directly east of the dump. There is no shell or waterworn cobbles or coral visible near or in the structure.

STATE NO.: 19405 PHRI TEMP. NO.:1245-311
SITE TYPE: Alignment
TOPOGRAPHY: Undulating hills, ridges, and ravines. Located on level ridge above shallow ravine.
VEGETATION: Grass.
CONDITION: Fair
INTEGRITY: Indeterminate
PROBABLE AGE: Indeterminate
FUNCTIONAL INTERPRETATION: Indeterminate
DIMENSIONS: 30.00 m (northwest-southeast) by 1.50 m
DESCRIPTION: This site might be the remnant of a prehistoric alignment or indications of military fire fighting activity in area. There is evidence of activity within the surrounding area. The alignment is constructed of subangular pahoehoe boulders and cobbles one course high in a intermittent, undulating pattern. Within several areas there are "parallel" alignments but spaced close together (c. 1.00 m). The main reason a possible prehistoric temporal assignation has been made is because some of the aligning stones are "set" deep within the soil. This site is located east of the dump within the southern section below highway. No portable remains or cultural deposits were noted on the surface of this feature.

STATE NO.: 19406 PHRI TEMP. NO.:1245-312
SITE TYPE: Trail
TOPOGRAPHY: Rolling hills near coast.
VEGETATION: *Kiawe*.
CONDITION: Poor-good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Transportation
DIMENSIONS: 1.00 to 0.75 m (width).
DESCRIPTION: Heavily traveled and rutted along most of the length. Sometimes cobble-lined and for a short distance coral-lined. This site is located on the western portion of *makai* section. Midden, rifle shells, other military and surface scatters.

STATE NO.: 19407 PHRI TEMP. NO.:1245-313
SITE TYPE: Cairn w/adjoining wall
TOPOGRAPHY: Small valley parallel to water. Small hill between site and water.
VEGETATION: *Kiawe* and grass.
CONDITION: Good
INTEGRITY: Altered

PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Marker
DIMENSIONS: 3.90 m (31 degrees) by 1.20 m (120 degrees)
DESCRIPTION: Large section is stacked five to seven courses high, with three nicely faced sides of basalt boulders (c. 0.15 m by 0.25 m by 0.35 m) and cobbles forming a rectangular cairn with a low (two courses high) stacked wall extending from the southwest side and curving to the south. This site is located near the northeast corner (east of North Point) of Wailea Bay. Concrete chunk and three waterworn basalt (two cobbles and one pebble) were observed on the surface of this site. No cultural deposits were noted.

STATE NO.: 19408 PHRI TEMP. NO.:1245-315
SITE TYPE: Enclosure
TOPOGRAPHY: NNW sloping down to Hapuna Beach Park.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Temporary habitation
DIMENSIONS: 5.20 m by 4.50 m
DESCRIPTION: Piled subangular basalt cobbles one course high ranging in size from c. 0.09 to 0.22 m. Two walls running east-west c. 5.00 m apart. The south wall has corners at the east and west ends. From these corners, small remnant walls stick out toward the north c. 1.00 m. The north wall has no corners and is very straight. Towards the west end of the wall there is a modern glass bottle. The two walls were probably connected at one time. There is bulldozer activity throughout this area, which probably altered this feature. This site is located c. 70.00 m at 167 degrees from Site 161, c. 35.00 m from gravel road, c. 150.00 m south of Hapuna Beach Park. One recent whole clear glass bottle was noted on the site.

STATE NO.: 19409 PHRI TEMP. NO.:1245-316
SITE TYPE: Terrace
TOPOGRAPHY: Fairly flat, burned and bulldozed.
VEGETATION: *Kiawe* and grass.
CONDITION: Poor
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Possible agriculture
DIMENSIONS: 2.80 m (50 degrees) by 2.10 m (310 degrees)
DESCRIPTION: Consists of two remnant rock alignments on the edges of a raised area. The basalt rocks are only one course high and measure c. 0.20-0.50 m in size. The two alignments are almost perpendicular, and do not connect. A few pieces of concrete are in the wall alignments, and may have been a later modification. This site is located in a low flat area (burned) west of Road 10. No portable remains or cultural deposits were observed on the surface of this feature.

STATE NO.: 19410 PHRI TEMP. NO.:1245-318
SITE TYPE: Trail
TOPOGRAPHY: Shorelina, rolling hills.
VEGETATION: *Kiawe* and grass.

CONDITION: Good
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Transportation
DIMENSIONS:
DESCRIPTION: Trail with larger rocks removed. Trail is extremely worn down in some places. It is located in the extreme west central portion at *makai*. Marine shell, coral, and historic trash were observed on the surface of this site.

STATE NO.: 19411 PHRI TEMP. NO.:1245-325
SITE TYPE: Hearth
TOPOGRAPHY: Rolling pahoehoe outcrops on west facing slope.
VEGETATION: *Kiawe* and grass.
CONDITION: Excellent
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Recreation
DIMENSIONS: 0.85 m by 0.85 m
DESCRIPTION: Angular pahoehoe cobbles and gravel stacked one to three courses high, surrounding a gravel interior. Roughly square in shape, with the axis at 330 degrees-150 degrees. This site is located on the coast near the northwest corner. Aluminum can, Foremost carton, cellophane snack wrapper, ball of aluminum foil, charcoal, and metal grill were observed at the site.

STATE NO.: 19412 PHRI TEMP. NO.:1245-326
SITE TYPE: Paved area
TOPOGRAPHY: Flat sandy area along coastal zone.
VEGETATION: *Kiawe*, *naupaka*, and small palms.
CONDITION: Fair
INTEGRITY: Unaltered
PROBABLE AGE: Historic
FUNCTIONAL INTERPRETATION: Indeterminate
DIMENSIONS: 2.99 m (294 degrees) by 0.65 m
DESCRIPTION: Approximately thirty-eight (38) waterworn basalt cobbles arranged in a small area. The feature appears to be a remnant of what may have been a large structure at one time. A large *kiawe* tree root has disturbed the north side of the paving. This site is located in the central portion of Beach Sixty-nine (Beach 69), *makai* of houses, and c. 3.00 m from fence line. Two pieces of waterworn coral were observed on the surface of this feature.

STATE NO.: 19413 PHRI TEMP. NO.:1245-327
SITE TYPE: Trail
TOPOGRAPHY: Rolling pahoehoe outcrops on a west facing slope.
VEGETATION: *Kiawe* and grass.
CONDITION: Fair
INTEGRITY: Altered
PROBABLE AGE: Prehistoric
FUNCTIONAL INTERPRETATION: Transportation
DIMENSIONS: 200.00 m by 0.50 m

DESCRIPTION: A footpath running roughly southwest-northeast toward the coast. Fades out c. 50.00 m from shore. Trail identified by local informant (lived in house by Sweep 8). The ends of the trail are indistinct. Only c. 200.00 m section is extant within the center of the peninsula within the *makai* addition parcel.

The trail is a cleared path through the grass. There are a few areas where the trail has worn down, but the majority of the trail is defined by the absence of grass and stones. There is no paving or lining evident. Similar trails tested (312, 318) indicate no construction, i.e. paving episodes.

No portable remains or cultural deposits were detected on the surface of this feature.

APPENDIX B: Summary of Identified Sites and Features

*SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	#CRM Value Mode Assess. R	I	C
19250	Complex (2)	Hunting blind	L	L	L
A	C-shape	Hunting blind			
B	C-shape	Hunting blind			
19251	C-shape	Hunting blind	L	L	L
19252	C-shape	Hunting blind	L	L	L
19253	Complex (2)	Hunting blind/military	L	L	L
A	C-shape	Hunting blind/military			
B	C-shape	Hunting blind/military			
19254	C-shape	Hunting blind	L	L	L
19255	Mound	Military	L	L	L
19256	Cairn	Military	L	L	L
19257	Cairn	Military	L	L	L

* *State Inventory of Historic Places (SIHP) numbers. SIHP numbers are five- digit numbers prefixed by 50-10-11 (50=State of Hawaii; 10=Island of Hawaii; 11=USGS 7.5' series quad map ["Puu kinei, Hawaii"]).*

\# *Cultural Resource Management Value Mode Assessment*
- *—Nature:*
  - *R = scientific research,*
  - *I = interpretive*
  - *C = cultural*
- *—Degree:*
  - *H = high*
  - *M = moderate*
  - *L = low*

\+ *Field Work Tasks:*
- *DR = detailed recording (scaled drawings, photographs, and written descriptions)*
- *SC = surface collections*
- *EX = test excavations*

** *Number of component features within complex.*

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19258	Complex (2)	Military	L	L	L
A	Mound	Military			
B	Mound	Military			
19259	Complex (2)	Military	L	L	L
A	Cairn	Military			
B	Cairn	Military			
19260	Complex (3)	Military	L	L	L
A	Cairn	Military			
B	Mound	Military			
C	Cairn	Military			
19261	Cairn	Marker	L	L	L
19262	Depression	Military	L	L	L
19263	Cairn	Marker	L	L	L
19264	Complex (2)	Military	L	L	L
A	Cairn	Military			
B	Cairn	Military			
19265	Modified outcrop	Temporary habitation	L	L	L
19266	Terrace	Temporary habitation	L	L	L
19267	Mound	Military	L	L	L
19268	Wall	Hunting blind/military	L	L	L
19269	Wall	Hunting blind	L	L	L
19270	Rubble concentration	Military	L	L	L
19271	Complex (2)	Marker	L	L	L
A	Cairn	Marker			
B	Cairn	Marker			
19272	Complex (2)	Hunting blind	L	L	L
A	Wall	Hunting blind			
B	Wall	Hunting blind			
19273	Complex (7)	Multiple	L	L	L
A	Modified outcrop	Temporary habitation			
B	Upright stones	Possible military			
C	Cairn	Military			
D	Terrace(4)	Possible agriculture			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19274	Cairn	Marker	L	L	L
19275	Cairn	Marker	L	L	L
19276	Alignment	Military	L	L	L
19277	Modified outcrop	Hunting blind/military	L	L	L
19278	Modified outcrop	Military	L	L	L
19279	Mound	Marker	L	L	L
19280	Cairn	Marker	L	L	L
19281	Complex (4)	Multiple	L	L	L
A	Cairn	Marker			
B	Modified outcrop	Possible post support			
C	Wall	Temporary habitation			
D	Terrace	Possible agriculture			
19282	Cairn	Marker	L	L	L
19283	Cairn	Military	L	L	L
19284	C-shape wall	Military	L	L	L
19285	Wall	Hunting blind/military	L	L	L
19286	Terrace	Military	L	L	L
19287	C-shape	Military	L	L	L
19288	Mound	Indeterminate	L	L	L
19289	Ramp	Military	L	L	L
19290	Cairn	Military	L	L	L
19291	Pylons (4)	Water transport	L	L	L
A	Pylon(3)	Water transport			
B	Pylon(3)	Water transport			
19292	C-shape	Hunting blind/military	L	L	L
19293	Terrace	Agriculture	L	L	L
19294	Complex (4)	Temporary habitation	L	L	L
A	Terraces w/adjoining wall	Temporary habitation			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19294 (cont.)					
B	Terraces w/adjoining wall	Temporary habitation			
C	Enclosure w/adjoining C-shape	Temporary habitation			
D	Circular enclosure	Temporary habitation			
19295	Complex (5)	Multiple	L	L	L
A	Enclosure	Temporary habitation			
B	Mound	Military clearing piles			
C	Adjoining C-shapes	Temporary habitation			
D	C-shape	Military			
E	Modified outcrop	Possible agriculture			
19296	Complex (2)	Temporary habitation	L	L	L
A	C-shape	Temporary habitation			
B	Wall segment	Temporary habitation			
19297	Cairn	Marker	L	L	L
19298	Complex (2)	Military	L	L	L
A	Enclosure	Military			
B	L-shape wall	Military			
19299	C-shape	Military	L	L	L
19300	Complex (2)	Indeterminate	L	L	L
A	Mound	Indeterminate			
B	Mound	Indeterminate			
19301	Circular enclosure	Military	L	L	L
19302	Mound	Military	L	L	L
19303	Rubble concentration	Temporary habitation	L	L	L
19304	C-shape	Temporary habitation	M	L	L
19305	Modified outcrop	Possible ceremonial	M	M	M
19306	Complex (7)	Multiple	L	L	L
A	Enclosure	Temporary habitation			
B	Wall	Temporary habitation			
C	Cairn	Military			
D	C-shape	Temporary habitation			
E	Terrace	Possible agriculture			
F	Terrace	Agriculture			
G	Terrace	Agriculture			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19318	Hidden scatter	Temporary habitation	M	L	L
19319	Modified outcrop	Temporary habitation	M	L	L
19320	Complex (3)	Military	L	L	L
A	C-shape	Military			
B	Modified outcrop	Military			
19321	C-shape	Military	L	L	L
19322	Modified outcrop	Indeterminate	L	L	L
19323	Alignment	Military	L	L	L
19324	Complex (3)	Military	L	L	L
B	Wall	Military			
C	Wall	Military			
19325	Wall segment	Hunting blind/military	L	L	L
19326	C-shape	Temporary habitation	L	L	L
B	C-shape	Temporary habitation			
19327	Terrace	Temporary habitation/ military/hunting	L	L	L
19328	Complex (2)	Agriculture	L	L	L
A	Terrace	Agriculture			
C	Modified outcrop	Agriculture			
19329	Complex (2)	Temporary habitation	L	L	L
A	C-shape	Temporary habitation			
B	C-shape	Temporary habitation			
19330	Circular enclosure	Agriculture/military	L	L	L
19331	Mound	Indeterminate	L	L	L
19332	C-shape	Possible military	L	L	L
19333	Modified outcrop	Temporary habitation	L	L	L
19334	Modified outcrop	Temporary habitation	L	L	L
19335	U-shape	Temporary habitation	M	L	L
19336	C-shape	Temporary habitation	L	L	L

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19307	Wall	Possible military	L	L	L
19308	Mound	Possible military	L	L	L
19309	Cairn	Military	L	L	L
19310	Complex (2)	Contemporary	L	L	L
A	Terrace	Park maintenance			
B	Terrace	Park maintenance			
19311	Cairn	Military	L	L	L
19312	C-shape	Temporary habitation	M	L	L
19313	Complex (5)	Multiple	M	L	L
A	C-shape	Temporary habitation			
B	Adj. C-shapes	Temporary habitation			
C	Enclosure	Temporary habitation			
D	C-shape	Temporary habitation			
F	Wall	Agriculture			
19314	Complex (6)	Multiple	M	L	L
B	L-shape alignment	Temporary habitation			
D	C-shape	Temporary habitation			
E	C-shape	Temporary habitation			
F	C-shape	Temporary habitation			
G	L-shape alignment	Temporary habitation			
H	C-shape	Temporary habitation			
19315	Complex (8)	Multiple	L	L	L
A	Cairn	Possible post support			
B	Cairn	Possible post support			
C	Cairn	Possible post support/agriculture			
D	Cairn	Possible post support/agriculture			
E	Cairn	Possible post support/agriculture			
F	Cairn	Possible post support/agriculture			
G	Cairn	Indeterminate			
H	Cairn	Possible post support/agriculture			
19316	Circular enclosure	Temporary habitation/ hunting blind	L	L	L
19317	Complex (4)	Multiple	L	L	L
A	Adjoining C-shapes	Temporary habitation			
B	Mound	Military clearing piles			
C	C-shape w/adjoining wall	Temporary habitation/military			
D	C-shape	Temporary habitation			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Made Assess. R	I	C
19337	Complex (8)	Multiple	L	L	L
A	Enclosure	Temporary habitation/military			
B	Enclosure	Temporary habitation/military			
C	Enclosure	Temporary habitation/military			
D	C-shape	Temporary habitation/military			
E	C-shape	Temporary habitation			
F	C-shape	Temporary habitation			
G	U-shape	Indeterminate			
H	C-shape	Temporary habitation/military			
19338	Complex (25)	Multiple	M	L	L
A1	Enclosure w/ modified outcrop	Temporary habitation			
A2	Mound	Military clearing piles			
A3	Mound	Military clearing piles			
A4	Mound	Military clearing piles			
A5	Mound	Military clearing piles			
A6	Mound	Military clearing piles			
A7	Mound	Military clearing piles			
A8	Mound	Military clearing piles			
A9	Mound	Military clearing piles			
A10	Mound	Military clearing piles			
A11	Mound	Military clearing piles			
A12	Mound	Military clearing piles			
A13	Mound	Military clearing piles			
A14	Mound	Military clearing piles			
A15	Mound	Military clearing piles			
A16	Mound	Military clearing piles			
A17	Mound	Military clearing piles			
A18	Mound	Military clearing piles			
A19	Mound	Military clearing piles			
B	Modified outcrop	Temporary habitation			
C	L-shape	Temporary habitation			
D	C-shape	Possible agriculture			
E	Circular alignment	Possible agriculture			
F	Modified outcrop	Indeterminate			
19339	Complex (3)	Multiple	L	L	L
B	Modified outcrop	Temporary habitation/military			
D	Modified outcrop	Indeterminate			
E	Enclosure	Temporary habitation			
19340	Complex (5)	Multiple	L	L	L
A	Rectangular alignment	Temporary habitation			
B	C-shape	Temporary habitation			
C	Terrace	Agriculture			
D	C-shape	Temporary habitation			
E	Terrace	Agriculture			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Made Assess. R	I	C
19341	Complex (4)	Multiple	L	L	L
A	Enclosure	Temporary habitation/military			
B	U-shape	Temporary habitation/military			
C	Mound	Military			
E	Terrace	Agriculture			
19342	Complex (2)	Temporary habitation	L	L	L
A	Wall	Temporary habitation			
G	C-shape	Temporary habitation			
19343	Wall	Fenceline	L	L	L
19344	Enclosure w/ adjoining C-shape	Temporary habitation/ military	M	L	L
19345	Complex (14)	Multiple	L	L	L
B	Circular wall	Temporary habitation			
C	Enclosure	Temporary habitation			
D	Circular wall	Temporary habitation			
E	Enclosure	Temporary habitation			
F	Terrace	Agriculture			
G	Modified outcrop	Possible agriculture			
H	Mound	Possible military			
J	Mound	Indeterminate			
K	Mound	Indeterminate			
L	Alignment	Military			
M	Terrace	Agriculture			
N	Terrace	Agriculture			
O	C-shape	Agriculture			
P	Terrace	Possible agriculture/military			
19346	Complex (12)	Multiple	L	L	L
A	U-shape	Temporary habitation			
B	C-shape	Military			
C	Cairn	Military			
D	C-shape	Temporary habitation/military			
E	C-shape	Temporary habitation/military			
G	Enclosure	Military			
L	C-shape	Military			
M	Mound	Military			
N	Enclosure	Military			
O	C-shape	Temporary habitation/military			
P	Wall	Indeterminate			
Q	C-shape	Temporary habitation			
19347	Complex (15)	Multiple	L	L	L
A	C-shape w/ adjoining wall	Temporary habitation			
B	U-shape	Temporary habitation			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19347 (cont.)					
C	Terrace	Possible agriculture			
D	C-shape	Temporary habitation			
E	Wall	Temporary habitation			
G	Cairn	Marker			
I	C-shape	Temporary habitation			
J	C-shape	Temporary habitation			
K	C-shape	Temporary habitation			
L	C-shape	Temporary habitation			
M	C-shape	Temporary habitation			
N	Enclosure	Temporary habitation			
O	Enclosure	Temporary habitation			
P	L-shape	Temporary habitation			
Q	C-shape	Temporary habitation			
19348	Complex (3)	Multiple	L	L	L
A	Terrace	Temporary habitation/military			
B	Terrace	Temporary habitation/military			
C	Wall	Hunting blind			
19349	Complex (4)	Multiple	M	L	L
A	Enclosure	Temporary habitation			
B	Cairn	Post support			
C	Cairn	Post support			
D	Modified outcrop	Agriculture			
19350	Complex (2)	Multiple	L	L	L
A	U-shape	Hunting blind/military			
B	U-shape	Military-agriculture			
19351	Hidden scatter	Habitation	L	L	L
19352	C-shapes (5)	Military	L	L	L
A	C-shape	Military			
B	C-shape	Military			
C	C-shape	Military			
D	C-shape	Military			
E	C-shape	Military			
19353	C-shapes (5)	Military	L	L	L
A	C-shape	Military			
B	C-shape	Military			
C	C-shape	Military			
D	C-shape	Military			
E	C-shape	Military			
19354	Complex (3)	Multiple	M	L	L
A	U-shape	Temporary habitation			
B	Terrace	Agriculture			
C	Modified outcrop	Agriculture			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C	Field Work Tasks DR	SC	EX
19355	Complex (2)	Military	L	L	L			
A	Cairn	Military						
B	C-shape	Military						
19356	Complex (2)	Temporary habitation	L	L	L			
B	Modified outcrop	Temporary habitation						
F	Terrace	Temporary habitation						
19357	Terrace	Temporary habitation	L	L	L			
19358	Terrace	Temporary habitation	L	L	L			
19359	C-shape	Agriculture	L	L	L			
19360	Complex (5)	Multiple	L	L	L			
A	Modified outcrop	Temporary habitation						
B	Alignment	Temporary habitation						
C	Mound	Agriculture						
D	Modified outcrop	Temporary habitation						
E	Terrace	Possible agriculture						
19361	Complex (5)	Temporary habitation	L	L	L			
A	Enclosure	Temporary habitation						
B	Alignment(4)	Temporary habitation						
19362	Complex (4)	Multiple	L	L	L			
A	Enclosure	Temporary habitation						
B	Terrace	Agriculture						
C	Terrace	Agriculture						
D	Wall	Agriculture						
19363	Terrace	Agriculture	L	L	L			
19364	Complex (2)	Multiple	M	L	L			
C	Paved terrace	Temporary habitation						
D	Hearth	Recreation						
19365	Complex (13)	Habitation	M	M	M			
A	Enclosure	Habitation						
B	Wall segment	Indeterminate						
C	Wall segment	Indeterminate						
D	Mound	Agriculture						
E	Terrace	Possible burial						
F	Terrace	Habitation						
G	Modified outcrop	Habitation						
H	Alignment	Transportation						
I	Alignment	Transportation						
J	Terrace	Habitation						
K	Trail segment	Transportation						

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19365 (cont.)					
M	Mound	Possible burial			
O	Terrace	Habitation			
19366	Complex (28)	Multiple	M	M	M
A	Enclosure	Habitation			
B	Wall	Habitation			
C	Wall remnant	Habitation			
D	Enclosure	Habitation			
E	C-shape	Habitation			
F	Mound	Possible ceremonial			
G	Circular alignment	Habitation			
H	Trail	Transportation			
I	Enclosure	Habitation			
J	D-shape alignment	Possible ceremonial			
K	Semi circular alignment	Trail marker			
L	Terrace	Habitation			
M	Terrace	Habitation			
N	Cairn	Marker			
O	Enclosure	Habitation			
P	Circular enclosure	Habitation			
Q	Circular enclosure	Hearth			
R	Terrace	Habitation			
T	Midden concentration	Habitation			
U	Enclosure	Habitation			
V	C-shape	Military			
W	Terrace	Agriculture			
X	Trail	Transportation			
Y	Cleared area	Agriculture			
Z	Cleared area	Agriculture			
AA	Cleared area	Agriculture			
BB	Cleared area	Agriculture			
CC	Hearth	Recreation			
19367	Complex (12)	Multiple	M	M	L
A	Mound	Indeterminate			
B	Mound	Indeterminate			
D	U-shape	Habitation			
E	U-shape	Habitation			
F	U-shape	Habitation			
G	Wall	Agriculture			
H	Terrace	Agriculture			
J	Paved area	Habitation			
K	Modified outcrop	Habitation			
L	Wall	Habitation			
M	Terrace	Habitation			
O	Terrace	Indeterminate			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19368	Complex (9)	Multiple	M	M	L
C	Terrace(3)	Agriculture			
D	Hearth	Recreation			
E	Terrace	Habitation			
G	Paved area	Habitation			
L	Paved area	Habitation			
M	Hearth	Recreation			
N	Hearth	Recreation			
19369	Foundation	Possible military	L	L	L
19370	C-shape	Temporary habitation	L	L	L
19371	C-shape	Temporary habitation	L	L	L
19372	Cairn	Marker	L	L	L
19373	Cairn	Marker	L	L	L
19374	Terrace	Possible agriculture	L	L	L
19375	Rubble concentration	Temporary habitation	L	L	L
19376	Complex (4)	Multiple	L	L	L
A	Overhang	Temporary habitation			
B	U-shape	Temporary habitation			
C	Terrace	Temporary habitation			
D	Modified outcrop	Agriculture			
19377	Complex (2)	Possible agriculture	L	L	L
A	Alignment	Possible agriculture			
B	Modified outcrop	Possible agriculture			
19378	Complex (2)	Temporary habitation	L	L	L
A	C-shape	Temporary habitation			
B	C-shape	Temporary habitation			
19379	Cairn	Marker	L	L	L
19380	Modified outcrop	Agriculture	L	L	L
19381	Wall	Hunting blind	L	L	L
19382	Complex (3)	Agriculture	L	L	L
A	Modified outcrop	Possible military			
B	Modified outcrop	Agriculture			
C	Terrace	Possible agriculture			
19383	Modified outcrop	Agriculture	L	L	L

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19384	Wall	Hunting blind	L	L	L
19385	Modified outcrop	Possible agriculture	L	L	L
19386	Wall	Hunting blind	L	L	L
19387	Wall	Hunting blind	L	L	L
19388	Complex (3)	Possible agriculture			
A	Modified outcrop	Possible agriculture			
B	Terrace	Possible agriculture			
C	Modified outcrop	Possible agriculture			
19389	Terrace	Temporary habitation	L	L	L
19390	Modified outcrop	Possible agriculture	L	L	L
19391	Complex (2)	Temporary habitation	M	L	L
A	Wall	Temporary habitation			
B	Circular alignment	Temporary habitation			
19392	C-shape	Hunting blind	L *	L	L
19393	Wall	Hunting blind	L	L	L
19394	Wall	Hunting blind	L	L	L
19395	Complex (14)	Indeterminate	L	L	L
A	Wall	Military			
B	Wall	Military			
C	Modified outcrop	Possible agriculture			
D	Midden scatter	Temporary habitation			
E	Cairn	Military			
F	Cairn	Military			
G	Mound(8)	Military			
19396	Depression	Military	L	L	L
19397	Complex (7)	Military	L	L	L
A	Rubble concentration	Military			
B	Modified outcrop	Military			
C	Modified outcrop	Military			
D	Modified outcrop	Military			
E	Enclosure	Military			
F	Wall	Military			
G	Road bed	Military			
19398	Complex (4)	Multiple	L	L	L
A	Wall	Military			
B	Modified outcrop	Military			

Appendix B (cont.)

SIHP Site No.	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess. R	I	C
19398 (cont.)					
C	Terrace	Agriculture			
D	Parallel walls	Military			
19399	Terrace	Temporary habitation	M	L	L
19400	Terrace	Agriculture	L	L	L
19401	Enclosure	Temporary habitation	M	L	L
19402	Wall	Temporary habitation	L	L	L
19403	Enclosure	Temporary habitation	M	L	L
19404	Circular enclosure	Temporary habitation	L	L	L
19405	Alignment	Indeterminate	L	L	L
19406	Trail	Transportation	M	L	M
19407	Cairn w/ adjoining wall	Marker	M	L	L
19408	Enclosure	Temporary habitation	L	L	L
19409	Terrace	Possible agriculture	L	L	L
19410	Trail	Transportation	L	L	M
19411	Hearth	Recreation	L	L	L
19412	Paved area	Indeterminate	M	L	L
19413	Trail	Transportation	M	L	M

APPENDIX C: Stratigraphic Descriptions for Excavated Test Units

SITE 19265,
TU-4, North Face

Layer	*Description*
I	0-26 cmbd, 10 to 26 cm in thickness; very dark grayish brown (10YR 3/2 dry); fine sandy loam; structureless; loose dry consistence; many roots; cultural.

TU-10, North Face

Layer	*Description*
I	0-20 cmbd, 8 to 20 cm in thickness; very dark grayish brown (10YR 3/2 dry); fine sandy loam; structureless; loose dry consistence; many roots; cultural.

SITE 19266,
TU-3, West Face

Layer	*Description*
I	10-55 cmbd, 33 to 43 cm in thickness; dark yellowish brown (10YR 3/6 dry and moist); silt loam; structureless; loose, very friable consistence; many roots; abrupt, smooth boundary; non-cultural;
II	25-66 cmbd, 9-12 cm in thickness; dark yellowish brown (10YR 3/6 dry), dark yellowish brown (10YR 4/6 moist); structureless; loose, very friable consistence; many roots; non-cultural.

SITE 19273, FEATURE A
TU-5, South Face

Layer	*Description*
I	0-10 cmbs; 7 to 8 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 4/2 dry); gravelly silt; structureless; loose, non-sticky, non-plastic consistence; common, fine, tubular roots; many fine vesicular pores; abrupt, wavy boundary; cultural;
II	8-14 cmbs; 2 to 6 cm in thickness; very dark brown (10YR 2/2 moist), dark yellowish brown (10YR 4/2 dry); gravelly silt; loose, very friable, non-sticky, non-plastic consistence; few, fine, tubular roots; many, fine, vesicular pores; non-cultural.

SITE 19294, FEATURE A
TU-8, South Face

Layer	*Description*
I	0-48 cmbs; 35 to 48 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 4/2 dry); gravelly silt; structureless; loose, very friable, slightly sticky, slightly plastic consistence; common, fine, tubular roots; many, fine to medium, vesicular pores; cultural.

FEATURE B
TU-9, North Face

Layer	*Description*
I	0-50 cmbs, 40 to 50 cm in thickness; dark yellowish brown (10YR 3/4 moist), dark yellowish brown (10YR 3/6 dry); structureless; loose, very friable, slightly sticky, slightly plastic consistence; many, micro to medium vesicular roots; many, fine to medium, vesicular pores; cultural.

FEATURE C
TU-13, South Face

Layer	*Description*
I	0-52 cmbs; 37 to 49 cm in thickness; very dark brown (10YR 2/2 moist), dark yellowish brown (10YR 3/4 dry); moderate, very fine, crumb structure; soft, very friable, slightly sticky, non-plastic consistence; many, fine to micro roots; very abrupt, wavy boundary; cultural.

SITE 19295
TU-12, East Face

Layer	*Description*
I	0-4 cmbs, 1 to 4 cm in thickness; very dark brown (10YR 2/2 moist), dark yellowish brown (10YR 4/4 dry); silt, gravel; structureless; loose very friable, slightly sticky, slightly plastic consistence; many, very fine roots; many, fine to medium pores; abrupt, wavy boundary; cultural;
II	1-8 cmbs, 1 to 7 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 4/6 dry); silt, gravel; structureless; loose, very friable, slightly sticky, slightly plastic consistence; many, very fine roots; many, fine to medium pores; non-cultural.

FEATURE C
TU-11, West Face

Layer	*Description*
I	0-11 cmbd, 4 to 5 cm in thickness; brown/dark brown (10YR 4/3 moist and dry); gravelly clay loam; strong, medium, single grain structure; slightly hard, loose, slightly sticky, non-plastic consistence; common, very fine vesicular roots, cultural;
II	11-23 cmbd, 8 to 17 cm in thickness; very dark brown (10YR 2/2 moist), very dark grayish brown (10YR 3/2 dry); strong, fine, single grain structure; slightly hard, very friable, slightly sticky, slightly plastic consistence; few, very fine, vesicular roots; abrupt boundary; cultural;
HF-1	19-23 cmbd, 2 to 3 cm in thickness; very dark gray (10YR 3/1 moist), dark gray (10YR 4/1 dry); silt; weak, very fine, crumb structure; soft, very friable, non-sticky, non-plastic consistence; very few, vesicular roots; cultural.

SITE 19312, FEATURE E
TU-26, South Face

Layer	Description
I	2-12 cmbd, 8-10 cm in thickness; very dark grayish brown (10 YR 3/2 moist), dark yellowish brown (10YR 4/4 dry); silt, gravel; structureless; loose, non-sticky, non-plastic consistence; few, fine, vesicular roots; very few, very fine, interstitial pores; clear; cultural.

SITE 19313, FEATURE C
TU-23, North FAce

Layer	Description
I	0-17 cmbs, 15 to 20 cm in thickness; very dark brown (10YR 2/2 moist), dark yellowish brown (10YR 4/4 dry); gravelly silt; weak, very fine, crumb and single grain structure; soft, very friable, slightly sticky, slightly plastic consistence; common, fine, tubular roots; many, very fine to fine, vesicular pores; non-cultural.

SITE 19314, FEATURE B
TU-28, North Face

Layer	Description
I	0-27 cmbs, 23 to 27 cm in thickness; dark yellowish brown (10YR 3/4 moist), yellowish brown (10YR 5/4 dry); silt loam; weak, very fine, granular structure; soft, very friable, slightly sticky, plastic consistence; many, micro to very fine, vesicular roots; many, very fine, interstitial pores; non-cultural

FEATURE C
TU-27, North Face

Layer	Description
I	13-43 cmbd; 26 to 28 cm in thickness; very dark brown (10YR 2/2 moist), brown/dark brown (10YR 4/3 dry); silt loam; strong, fine, granular structure; soft, very friable, slightly sticky, slightly plastic consistence; many, micro to fine, tubular roots; common, very fine to fine, interstitial pores; non-cultural.

FEATURE E
TU-24, West Face

Layer	Description
I	0-42 cmbd, 10 to 13 cm in thickness; very dark brown (10YR 2/2), dark yellowish brown (10YR 4/4 dry); silt loam; weak, fine, crumb structure; soft, very friable, non-sticky, non-plastic consistence; few, very fine, vesicular roots; few, fine, interstitial pores; non-cultural.

SITE 19315, FEATURE I
TU-14, South Face

Layer	Description
I	0-34 cmbs, 15 to 26 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 3/4 dry); gravelly silt loam; weak, very fine, crumb structure; soft, very friable, slightly sticky, slightly plastic consistence; many, micro to fine, vesicular roots; common, fine, interstitial pores: cultural.

SITE 19318
TU-25, South Face

Layer	Description
I	0-27 cmbs, 18 to 27 cm in thickness; dark yellowish brown (10YR 4/4 moist), dark brown (10YR 3/3 dry); gravel, clayey silt; soft, friable, slightly sticky, plastic consistence; few, fine, vesicular roots; cultural.

SITE 19354, FEATURE C
TU-7A, South Face

Layer	Description
I	0-40 cmbd; 35 to 38 cm in thickness; dark yellowish brown (10YR 4/4 dry); very fine sandy loam; structureless; loose dry consistency; very few roots; cultural.

SITE 19365, FEATURE A
TU-15, North Face

Layer	Description
I	16-26 cmbd, 5 to 10 cm in thickness; basalt cobble layer.
II	26-72 cmbd, 42 to 62 cm in thickness; dark brown (7.5YR 3/4 moist), brown/dark brown (7.5YR 4/4 dry); weak, very fine, granular structure; loose, slightly sticky, slightly plastic consistence; few, very fine roots; cultural.

TU-16, North Face

Layer	Description
I	0-40 cmbs, 35 to 40 cm in thickness; very dark brown (10YR 2/2 moist), dark brown (10YR 3/3 dry); cobbly silt; moderate, very fine, granular structure; soft, very friable, non-sticky, non-plastic consistence; many, very fine to medium, vesicular roots; common, fine, interstitial pores; abrupt, wavy boundary; cultural;
II	40-52 cmbs, 10 to 13 cm in thickness; very dark brown (10YR 2/2 moist), brown/dark brown (10YR 4/3 dry); silt, gravel; weak, very fine, granular structure; loose, slightly sticky, slightly plastic consistence; few, very fine to fine, vesicular roots; common, fine, interstitial pores; cultural.

SITE 19267, FEATURE G
TU-17, West Face

Layer	Description
I	0-14 cmbs, 8 to 18 cm in thickness; dark yellowish brown (10YR 3/4 moist), dark yellowish brown (10YR 4/4 dry); silt; weak, very fine, granular structure; soft, very friable, slightly sticky, non-plastic consistence; common, micro to fine, vesicular roots; common, very fine to fine, interstitial pores; cultural.

SITE 19368, FEATURE G
TU-19, North Face

Layer	Description
I	5-10 cmbd, 3 to 4 cm in thickness; coral pebble paving; cultural
II	9-33 cmbd, 22 to 23 cm in thickness; dark brown (7.5YR 3/3 moist), brown/dark brown (7.5YR 4/3 dry); silty clay; weak, very fine, crumb structure; slightly hard, friable, slightly sticky, slightly plastic consistence; common, fine, vesicular roots; common, very fine to fine, interstitial pores; non-cultural.

SITE 19376, FEATURE A
TU-1, West Face

Layer	Description
I	56-76 cmbd, 12 to 17 cm in thickness; dark brown (10YR 3/3 moist), brown/dark brown (10YR 4/3 dry); very fine silty loam; structureless; loose, very friable, slightly sticky, non-plastic consistence; non-cultural.

FEATURE B
TU-2, South Face

Layer	Description
I	0-42 cmbs, 20 to 28 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 4/4 dry); silty clay; weak, fine, crumb structure; soft, very friable, slightly sticky, slightly plastic consistence; common, micro to fine, vesicular roots; many, fine, interstitial pores; cultural.

FEATURE C
TU-7B, South Face

Layer	Description
I	0-32 cmbd, 13-32 cmbd; dark yellowish brown (10YR 4/4 dry); silt loam, gravel; structureless; loose, very friable, slightly sticky, slightly plastic consistence; many fine roots; cultural.

SITE 19389
TU-6A, West Face

Layer	Description
I	0-43 cmbs; 7 to 24 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark yellowish brown (10YR 4/4 dry); gravelly silt; structureless; loose, friable, slightly sticky, slightly plastic consistence; few, very fine roots; many, fine, vesicular pores; non-cultural.

TU-6B, East Face

Layer	Description
I	0-8 cmbs, 4 to 8 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark grayish brown (10YR 4/2 dry); gravelly silt; structureless; loose, very friable, slightly sticky, slightly plastic; few, fine, tubular roots; common, fine to medium, vesicular pores; non-cultural.

SITE 19391, FEATURE B
TU-20, East Face

Layer	Description
I	0-19 cmbs, 14 to 19 cm in thickness; very dark grayish brown (10YR 3/2 moist), dark grayish brown (10YR 4/2 dry); gravelly silt; structureless; loose, very friable, slightly sticky, slightly plastic consistence; common, fine, tubular roots; many, very fine to fine, vesicular pores; abrupt, wavy boundary; non-cultural;
II	19-34 cmbs, 4 to 12 cm in thickness; very dark brown (10YR 2/2 moist), dark brown (10YR 3/3 dry); silt; structureless; soft, very friable, slightly sticky, slightly plastic consistence; few, very fine, tubular roots; many, very fine, vesicular pores; non-cultural.

SITE 19406
TU-15F, South Face

Layer	Description
I	0-5 cmbs, 3 to 5 cm in thickness; dark yellowish brown (10YR 4/4 moist), brown/dark brown (10YR 4/3 dry); gravel, clay, silt; strong, medium, single grain structure; very hard, very firm, non-sticky, slightly plastic consistence; very few, medium, vesicular roots; very abrupt, smooth boundary; non-cultural;
II	3-10 cmbs, 2 to 5 cm in thickness; dark yellowish brown (10YR 4/4 moist), yellowish brown (10YR 5/4 dry); weak, fine, crumb structure; soft, friable, slightly sticky, plastic consistence; very few, micro, vesicular roots; non-cultural.

SITE 19409
Trench, West Face

Layer	*Description*
I	0-6 cmbs, 4 to 6 cm in thickness; dark yellowish brown (10YR 4/4 moist and dry); gravelly clay and silt; stroog, fine, single grain structure; loose, very friable, slightly sticky; non-plastic consistence; common, very fine, vesicular roots; abrupt, smooth boundary; non-cultural;
II	6-19 cmbs, 6 to 14 cm in thickness; dark yellowish brown (10YR 4/4 moist and dry); silt; weak, very fine, crumb structure; loose, very friable, sticky, slightly plastic consistence; very few, micro, vesicular roots; non-cultural.

SITE 19410
TU-21, South Face

Layer	*Description*
I	0-23 cmbd, 7 to 23 cm in thickness; dark yellowish brown (10YR 4/4 moist); cobbly clay, silt; weak, medium, granular structure; loose, slightly sticky, slightly plastic consistence; many, medium roots; very few vesicular pores; non-cultural.

APPENDIX D:
Historical Documentary Research

by Kepā Maly, Cultural Resources Specialist

BACKGROUND

This report is meant to provide readers with an overview of settlement patterns and cultural practices in the Hāpuna-Waiale'a area of Lālāmilo (Puakō), in the district of South Kohala. The report is a compilation of information from recently translated Hawaiian legends, from Land Commission Award (LCA) records, and from previous archaeological or ethnographic studies. Provided in this report is information on (a) the prehistoric environment and settlement in the region, (b) use of land and ocean resources, and (c) changes in land use and the environment following western contact.

The project area is situated along the leeward (*kona*) shore of the district of Kohala, in the coastal zone of the land unit now identified as Lālā-milo (*Milo [Thespesia populnea]* branch). This site includes portions of Hāpuna and Waiale'a, two prominent bays of South Kohala, and their immediate coastal flat lands (*ko kula kai*). Though identified as Lālāmilo today, there is some confusion over the actual name of the land unit in which the project area is located; early traditional accounts and mid-1800s land records generally identify the land as *Pua-kō* (cane tassels or blossoms), rather than Lālāmilo. It appears that the name changed by c. 1928, as territorial survey maps in that year began identifying the land as Lālāmilo. Why the change took place is unknown.

The project area, arid land with limited vegetation, receives approximately 10 inches of rain annually (Carlquist 1980:77). Most of the rain falls during the six-month winter season (October-November through March-April), which was traditionally called *ho'oilo* (literally, to sprout or germinate; the time of sprouting). It was during this time that *Lono*, Hawaiian god of agriculture, was honored for his powers. Lono's attributes included the billowing horizon clouds and rain-laden clouds, which were manifestations of the seasonal *Kona - Nāulu*, or southerly storms.

Note: Although diacritical (macron and glottal) marks were not generally used at the time that most of the native narratives were originally written, they have been added here when the original meaning and/or pronunciation was discernable. For people and/or place names which have several possible interpretations and in which the intended meaning is not clear, diacritical marks have not been added, although in some cases hyphens have been inserted to identify separate words within a particular name. Quoted references from books and/or articles have been written as they were originally printed (usually without diacritical marks). Brackets [ ] are used to identify author's annotations and parentheses ( ) generally enclose translations.

People who were living at the time of recording the legendary sources and Land Commission Awards (LCA) documentation knew the proper pronunciations of each word; accordingly, diacritical marks were not necessary. Today, this understanding has been greatly diminished, thus the inclusion of diacritical marks adds significantly to the preservation Hawai'i's legacy. Proper pronunciation of Hawaiian words can greatly enhance interpretation of site events and activities.

Hawaiian Settlement

Current theory places Polynesian settlement voyages between Hawai'i and *Kahiki* (the ancestral homelands of the Hawaiian gods and people) in two major periods, A.D. 300 to 600 and A.D. 1100 to 1250 (Emory IN Tatar 1982:16-18). The ethnographer and author of texts on Hawaiian practices, E.S.C. Handy, speculates that when the first settlers reached the Hawaiian islands, they found a flora which was much like that of their ancestral homeland (Handy 1972:12), but the topography of the islands was notably different.

The broad, watered flatlands of Kaua'i, O'ahu and Maui, and the expansive cultivable mountain slopes of Kona and Ka'ū on Hawai'i permitted the development of a systematic and elaborate planting culture. Such topographic features had not been present on the ancestral islands; the features allowed agricultural practices to evolve to a higher level in Hawai'i, as compared to other Polynesian islands (ibid.:16).

It is believed that for generations following initial settlement, the population clustered along the well watered windward shores of the Hawaiian Islands where fresh water was available, agriculture could become established, and where access to marine resources was good. Small bays generally had a cluster of houses where fishermen and their families lived (Handy 1972:287). Only after the best areas became populated and perhaps crowded (c. A.D. 800 to 1000) did the Hawaiians begin settling more remote, and less desirable areas.

In this region of South Kohala, potable water was primarily provided by coastal springs, water caves, dew fall, and catchment, and was used for some crop cultivation and to sustain human life. The ocean provided most of the meat of the Hawaiian diet. Because of the importance of fishing, and its high level of development, bays like Hāpuna and Waiale'a were prime locations for further settlement during this expansion period. Recent archaeological studies for surrounding areas—'Anaeho'omalu-Kalāhuipua'a (Kirch 1979), Puakō-Paniau (Boudreau and Graves 1993), and Hāpuna (Dunn and Rosendahl 1992) —indicate that initial settlement in this section of South Kohala occurred as early as c. AD 1200.

Hawaiian Land Management Practices

The *moku-o-loko* (district; literally: interior island) of Kohala, is one of the six major traditional districts of Hawai'i Island. A description of the boundaries of Kohala, and its various inner divisions, generally called *'okana* or *'okina* (land divisions smaller than the *moku*, but comprising several *ahupua'a*) , is documented in "The Legend of *Ka-Miki*" (Maly in prep), translated from articles published in the Hawaiian language newspaper *Ka Hōkū o Hawai'i* between 1914-1917:

> *O Kohala nui, o Kohala iki, o Kohala loko, o Kohala waho, o Kohala makani 'Āpa'apa'a, o Pili o Kalāhikiola o Nā-pu'u-hazele-lua. 'Oia ho'i! 'Oia la! O nā 'ōkina iho la 'ia o ka 'āina ha'aheo i ke kāhili a ka makani 'Āpa'apa'a e ho'olā'au mai ana me he ipo ala ka nē hone i ka poli o ke aloha.*
>
> Large Kohala, little Kohala, inner Kohala, outer Kohala, Kohala of the *'Āpa'apa'a* wind, [Kohala] of *Pili* and *Kalāhikiola*–the two traveling hills. Indeed! These are the combined districts of this proud land brushed by the *'Āpa'apa'a* wind, maturing like a love nestled fondly in the bosom of love. [An epitaph for the land divisions of Kohala which extend from Honoke'āon the Hāmākua boundary to *Ke-ahu-a-Lono* on the Kona boundary 3/22/1917.]

The project area is situated in Puakō-Lālāmilo Ahupua'a, in the okana (region) generally known as *Kohala makani* '*Āpa'apa'a* (Kohala in the '*Āpa'apa'a* wind); this region is famed for its strong land-drying ('*Āpa'apa'a*) winds. Just as the land is today, the legendary accounts depict the area as a rugged land buffeted by various winds including *Kuehulepo* (scattering dust), *Ho'ohaehae* (to drive, stir up the waves), and *Nāulu* (the shower bearing squalls of the winter season). The *ahupua'a*, a traditional unit of land, is generally pie-shaped and stretches from the ocean to the islands' interior. The *ahupua'a* boundaries were usually marked by an altar with an image of a pig placed upon it.

The *ahupua'a* were divided into smaller parcels. These units, such as the *'ili, 'ili lele, kihāpai, māla, kō'ele*, and *mo'o* (respectively: small land unit, detached parcels with resources in various environmental zones, gardens, dry-land agricultural parcels, and agricultural parcels worked by commoners for the chiefs) were inhabited and managed by the *maka'āinana* (people of the land) and their extended families. The common people who lived within individual *ahupua'a* generally had access to all of the resources from mountain slopes to the ocean.

Entire *ahupua'a*, or portions, were generally under the jurisdiction of appointed *konohiki* or lesser chief-landlords, who answered to an *ali'i-'ai-ahupua'a* (chief who controlled the *ahupua'a* resources). The *ali'i-'ai-ahupua'a* in turn answered to an *ali'i 'ai moku* (chief who claimed the abundance of the entire district) thus *ahupua'a* resources also supported the royal community of regional or island kingdoms. This form of district subdividing was integral to Hawaiian life and was the product of a strictly adhered to policy of managing resources.

In the traditional system of land management, the settlements in the *'ili* of Hāpuna and Waiale'a probably owed allegiance to the larger *ahupua'a* of Puakō-Lālāmilo. Legendary and early historic period accounts tell us that fishing was an important occupation for residents of this region, as it was in the surrounding traditional communities of Kawaihae, 'Ōuli, Lālāmilo, Puakō, and 'Anaeho'omalu. In particular, this coastal zone was known for its' *lawai'a 'ōkilo he'e* (fishermen who fished with lures for octopus from canoes). In an account concerning Kanakanaka (written as Kanekanaka on current maps), and Piliamo'o (in the land of 'Ōuli), readers are told that this form of octopus lure fishing originated in or near the project area and then later spread throughout the Hawaiian Islands. While people living on the coast were primarily fishermen, this same account attributes extensive agriculture in the uplands to other relatives of Pili-a-mo'o and Lālāmilo. These relatives' names—Pu'uhina'i, Po'opo'o, Pu'u'iwa'iwa, and Waikōloa—are also the names of upland sites or land divisions. Travelling via various trails, trade occurred between lowland and upland families (*Ka'ao Ho'oniua Pu'uwai no Ka-Miki* IN the Hawaiian Newspaper *Ka Hōkū o Hawai'i*, 1914-1917).

About the Legend of Ka-Miki

Hawaiian legends communicate the sense of relationship which ancient Hawaiians felt with their environment, and document land use, cultural practices, and site features (architectural and topographic). Legends also provide information about travel and the relationships between *kūlanakauhale* (villages), *ahupua'a* and *moku* (districts). "*Ka'ao Ho'oniua Pu'uwai no Ka-Miki*" (The Heart Stirring Story of Ka-Miki; referred to here as "The Legend of Ka-Miki") is an account of two supernatural brothers, Ka-Miki (The quick, or adepts one) and Maka-'iole (Rat [squining] eyes), who traveled around the island of Hawai'i along the ancient *ala loa* and *ala hele* (trails and paths) that encircled the islands.

Their story provides a wealth of information pertaining to more than 790 place name origins and documents site and community histories, local and regional practices, and

ceremonial and *mele* (chant) texts. The legend appears to have been primarily recorded for the paper by Hawaiian historians John Wise and J.W.H.I. Kihe. A PHRI Hawaiian language newspaper translation project has recently made the narratives available in English (Maly, in prep). During the process of working on the translations, numerous other Hawaiian legendary accounts were reviewed as well. Some of the pertinent narratives are included here because of their importance to understanding the region.

Ka-Miki and Maka-'iole were empowered by their ancestress Ka-uluhe-nui-hihi-kolo-i-uka (The great entangled growth of uluhe fern which spreads across the uplands), a reincarnate form of the goddess *Haumea* (the creative force of nature; also called *Papa* and/or *Hina*; who was also a goddess of priests and competitors), who lived at Kalama 'ula in the uplands of Kohana-Iki, Kona. During their journey, Ka-Miki and Maka-'iole competed alongside the trails they traveled, and in royal courts, against *'ōlohe* (experts skilled in fighting or in other competitions, such as running, fishing, debating, or solving riddles). They also challenged priests whose dishonorable conduct offended the gods of ancient Hawai'i. While in the district of Kohala, the major events of the legend occurred at Pololū, Hala'ula, Keawewai, 'Ōuli, and Lālāmilo-Puakō.

The legend is set in the time when Hikāpōloa and Kapa'au-iki-a-Kalana were the two primary chiefs of Kohala, and Pili-a-Ka'aiea was the sovereign chief of all Kona (c. A.D. 13th century). The project area lands are referenced in the legend when Ka-Miki is competing at the *kahua le'ale'a* (contest field) of Hinakahua in Puapua'a, North Kona. The following place name narratives present a picture of life in the traditional communities of South Kohala, as seen through the eyes of native storytellers. To a contemporary visitor, the project area lands appear barren and desolate. It is difficult to believe that many people could have lived in the area without modern conveniences, but traditional accounts of this area describe native settlements in both the coastal and upland zones. Agricultural fields were developed and maintained, fishing was excellent, and well-defined trails were in-place, thus allowing access to various resources. The English translations are a synopsis of the Hawaiian texts, with emphasis upon the main events of the narratives. The following excerpts are organized according to place name, not chronologically.

> ***HĀPUNA*** (a spring, or spring fed pool) - The land of Hāpuna (Kohala) was named for Leina-Hāpuna (leap [of] Hāpuna) an *'ōlohe* chief, and the son of Hanawī (an ahupua'a chief in Hilo). Hāpuna was married to Kalaoa (also called Pu'umoi), and they were master contest riddlers and fighters. Hāpuna and Kalaoa became the guardians of Kalapana, who was the son of Kapalaoa (Kalaoa's sister), and her husband Kāne-pō-iki. Hāpuna and Kalaoa instructed Kalapana in riddling competitions and he became one of the famous riddlers of his time (5/4/1916).
>
> COMMENT: The legend of Ka-Miki implies that the lands in which this family dwelt all carry their names to this day; Hāpuna (in Kohala), Kapalaoa and Kalaoa (in North Kona), and Kalapana (in Puna). Kāne-pō-iki is also identified as a god of riddling competitors. Additionally, the occurrence of the word *Leina* in the full name of Hāpuna could describe a leaping site. *Leina* are associated with the spot of ocean and cliff leaping, and the departure places of spirits as they leapt to reach the spirit realm.
>
> ***KANAKANAKA*** (Interpretive translation: Man with dry or cracked skin; written as Kanekanaka on maps)

While Ka-Miki was competing in a riddling contest with *Pīna'au*, the foster son and riddler champion of the chief *Palikū-a-Kiko'oko'o* (*Hilo Palikū*), riddles which described the various districts of the island and extolled famous land features, and/or site practices were exchanged. One riddle spoke of Kanakanaka — *'ōlelo no'eau*:

> *Ho'okahua ka 'āina, hānau ke kanaka, o Kanaka-naka he 'āina...*
>
> The land was established, the man was born, it was the land of *Kanakanaka*... (9/21/1916).

Kanakanaka was the husband of Pili-a-mo'o (at 'Ōuli), they were the parents of Nē'ula (a fishing goddess), and Nē'ula she was the mother of Lālāmilo. Kanakanaka's sister was the wind goddess *Waikōloa*.

Kanakanaka was an expert *lawai'a hī-'ahi* (deep sea tuna lure fisherman), and he provided Lālāmilo with olonā cordage and gourd container in which his prized supernatural octopus lure *Kalokunu* was kept. Whenever Lālāmilo left his octopus lure at home, he secured it in the *hōkeo aho hī 'ahi* (tuna lure and fishing line gourd container) of Kanakanaka, and then hid the container in the ridge pole of his house. The land where Kanakanaka lived [the point between Hāpuna and Waiale'a Days] now bears his name (7/5/1917).

LĀLĀMILO (*Milo* [*Thespesia populnea*] branch), ***PUAKŌ*** (Sugar cane tassel, or blossoms) and regional place names

The land of Lālāmilo was named for the chief Lālāmilo, who was also an expert *'ōlohe* and fisherman. Through his wife Puakō, Lālāmilo came to possess the supernatural *leho* (cowrie octopus lure) which had been an *'ōnohi* (cherished) possession of Ha'aluea, a goddess with an octopus form. Ha'aluea and her family came from *Kāne-hūnā-moku* (The hidden land of *Kāne*) and settled at Kapa'a, Kaua'i. Ha'aluea was the wife of the wind and ocean god Halulu-ko'ako'a, and grandmother of 'Iwa-nui-kilou-moku (Great 'Iwa the island catcher). How this octopus lure came to be found by Puakō mā* on the reefs fronting their land remains a mystery.

The *leho* was so powerful that if it was only shown to the *he'e* (octopus), they would climb upon the canoe and be caught. Lālāmilo carefully guarded this lure and even slept with it. When Lālāmilo did leave the lure, he stored it in the *hōkeo aho hī-'ahi* (tuna lure and line storage gourd) of his grandfather Kanakanaka, and this was hidden, tied to the ridge pole of his house.

Lālāmilo's grandmother *Pili-a-mo'o* was an *'ōlohe* seer, and she discerned the nature of the lure, and instructed *Lālāmilo* to kill all people who inquired about the lure, or sought to see it. Because the fame of this lure spread around Hawai'i and people were curious about it, many people went to Lālāmilo and were killed.

mā - a Hawaiian word which means "and companion" or "and friends"

Pili-a-Ka'aiea the chief of Kona greatly loved octopus fishing, and had sent several messengers to inquire of Lālāmilo how he might acquire the lure. All of the messengers were killed by Lālāmilo and Pili-a-mo'o. While at Hinakahua (in Puapua'a), Ka-Miki agreed to fetch the lure for Pili as one of the conditions he needed to fulfill in order to become the foremost favorite and champion of Pili. Now as these events at the court of Pili were unfolding, Lālāmilo decided to visit his father Pu'u-hina'i (Basket hill); his sister Pu'u'iwa'iwa (Fern hill); and his grand aunt Waikōloa (Water carried far), who was Pu'u'iwa'iwa's guardian. To this day, places are named for all of these people as well.

Lālāmilo arose and told his wife Puakō, and his mother Nē'ula that he was going to the uplands to visit his father, sister, and the people who worked the upland plantations. Lālāmilo desired to eat the sugar cane and bananas, and drink the *'awa* which grew on the hill of Po'opo'o. Po'opo'o was also a seer (*makāula*) and saw to the continued peaceful dwelling of the people. Lālāmilo placed the lure in the fishing line gourd container which Kanakanaka had given him, and secured it near the ridge pole of his house. Lālāmilo then asked Puakō and Nē'ula to go and look after the gourd in which the *'ōnohi* (eyeball or cherished possession) of Ha'aluea was kept [i.e., the octopus lure].

Lālāmilo then departed and traveled up towards the residence and agricultural lands of Pu'uhina'i *mā*. As he drew near his destination, his thoughts returned to his cherished lure. Lālāmilo looked towards the ocean, and his desire to see the lure was very great (7/5/1917). At the same time, Lālāmilo also had a premonition, so he returned to the shore without visiting his father and sister. While Lālāmilo was gone, Ka-Miki had traveled to Lālāmilo's region and met with a man of the area named Nīheu. Ka-Miki inquired, "Where is the chief Lālāmilo's house?" Nīheu said, "It is there above the canoe landing." Ka-Miki then asked, "And where is the chief?" Nīheu responded , "I don't know, perhaps he is in his house." Ka-Miki then went to Lālāmilo's house. Peering in he saw the gourd container and he lowered it, removing the cordage. Ka-Miki then took out the lure and departed from Lālāmilo without incident.

[The narrator then proceeds to tell the account of how Puakō and her family left Puna, settled in the regions of Kohala and Kona; and how Puakō came to marry Lālāmilo and found the magical *leho* (cowrie octopus lure)].

Pua-kō was the daughter of Wa'awa'a (k=male) and Anahulu (w=female), and the sister of: 'Anaeho'omalu (w); Pū'āla'a (k); and Maui-loa (k), and the family dwelt in the district of Puna. Puakō's great desire was to eat *he'e* (octopus), and Pū'āla'a was kept continually busy acquiring *he'e* for Puakō, and getting *pa'ou'ou* fish for *'Anaeho'omalu*. When he could no longer provide adequate fish for his sisters they left Puna (Pū'āla'a, at 'Āpua) and set out in search of a suitable husbands who could provide for their needs.

Arriving at Kapalaoa in the Kekaha lands of Kona, 'Anaeho'omalu married Nāipuakalaulani, son of the chiefess Kualwa of Kapalaoa. Puakō went on to

Waimā (Discolored water) where she met with natives of that area, and was introduced to the chiefess Nē'ula, mother of the fisherman-chief Lālāmilo. When Nē'ula learned that Puakō greatly coveted *he'e*, she told Puakō that her son was the foremost *lawai'a 'ōkilo he'e* (octopus fisherman) of the region. And because Puakō was so beautiful, Nē'ula introduced her to Lālāmilo. Lālāmilo saw Puakō, and compared her to the foremost "*he'e*" he could catch.

One day, after Lālāmilo and Puakō were married, Puakō went to the shore to gather coastal fish and seaweeds. It was low tide at Waimā, and she was able to go far out upon the flats where she saw an *he'e* (octopus) spread out upon the reef. Puakō speared the *he'e* and took it towards the shore. This *he'e* was so heavy she could barely carry it, and Nē'ula saw Puakō and inquired who had given it to her. Puakō told Nē'ula how she found the octopus on the coral out cropping. Nē'ula responded that she was native of the place and had never before seen an octopus of that nature in the area (7/19/1917).

While Puakō and Nē'ula were talking, Lālāmilo returned from octopus fishing and saw Puakō's octopus. Lālāmilo asked Puakō where she had gotten that octopus from and she related the events to him. Lālāmilo accused her of lying, and asked how an ocean octopus could be found on the reef. Lālāmilo then struck Puakō, thinking that she had gotten her octopus from some other man. He struck her so hard that her skin darkened, and Nē'ula interceded saying that they should go to the place where the octopus came from. Nē'ula told Lālāmilo that perhaps what Puakō said was true, and that they should go look upon the reef. Indeed, when they arrived at the spot, there was an octopus upon the reef, and Lālāmilo caught it. Coming before Puakō, Lālāmilo apologized for thinking that someone else had taken the restricted fish of the chief (i.e., Puakō). Lālāmilo then went to investigate why the *he'e* were attracted to that spot on the reef. He looked and found a small hole with something red like an *'ōhi'a* blossom inside it. He realized that it was a beautiful *leho* (cowrie shell) which had attracted the *he'e*, and indeed it was the foremost lure of all Hawai'i.

Lālāmilo broke the reef and took the cowrie, and from that time, no more *he'e* appeared on the reef. Lālāmilo took the *leho* to his house and cleaned the meat from it. He then fastened it with rope, making the lure, and he kept it close to him. Lālāmilo placed the lure in a container and went octopus fishing. When he got to the *lūhe'e* (octopus fishing) site, Lālāmilo removed the lure from the container and secured it to his hand. At the same time, a *he'e* came up and climbed upon the canoe, but when the lure was covered the *he'e* stopped coming into the canoe. Lālāmilo caught some 120 *he'e* in a short time, and he returned to show his wife and mother the results. Nē'ula suggested that Lālāmilo take the lure and an offering of *he'e* to his grandmother, the seer Pili-a-mo'o.

Lālāmilo went to Pili-a-mo'o and showed the lure to her. Pili-a-mo'o discerned the nature of the lure and told Lālāmilo that this was not an ordinary cowrie lure, but a god, the *'ōnohi* (favorite or cherished one) of Ha'aluea the mysterious supernatural octopus being of the ocean depths. The being who

was the grandmother of 'Iwa the rascal of Makalwa at Kapa'a, Kaua'i. Pili-a-mo'o went onto to say that it was indeed mysterious that the center of Ha'aluea's attention came to dwell along the shore of Nē'ula the Kū'ula (fishing deity); the shore where salt is hardened as the wind *Kuehu kepo* wind picks up the sea mist, and where the three canoe sailing winds of *Hachae, Nāulu,* and *Ho'olua* blow. *Pili-a-mo'o* consecrated the *leho* and the *he'e* which it attracted. She also told Lālāmilo that the first *he'e* caught must always be brought to her as an offering. Pili-a-mo'o then told Lālāmilo that no one should be allowed to see the *leho*, and that anyone who sought to see it had to be killed. As the fame of the lure spread through the land, people were curious about it, and many people were killed by Lālāmilo (7/19/1917).

[It is at this point, that the narrative returns to *Ka-Miki* and his successful acquiring of the lure.]

Because of his premonition that something was amiss with the lure (see narrative from 7/5/1917 above); Lālāmilo returned to his home from the uplands and found that the *leho* had indeed been stolen. Lālāmilo went empty handed to Pili-a-mo'o, and she ignored him, thinking he had forgotten to bring her the offering of the first caught *he'e*. Lālāmilo called to Pili-a-mo'o lamenting the loss of the prized possession of Ha'aluea — *mele kahea*:

E ala e ka Ho'olua,
E ke Kiu ho'ohae a ka Nāulu,
Ulu a ka moana ke lele 'ino nei ke ao,
Ua kaiko'o ka 'āina
Ku ka puna kea i ka pōhuehue,
Ua he'e, Ua hu'e 'ia ka 'ōnohi maka o Ha'aluea la,
Ua hilo minamina wale au e,
O wau nei o Lālāmilo
O ke kama a Kanakanaka,
Iāua o Piliamo'o
Ku'u kupuna wahine alwaiwa e,
moe nei la
E ala mai!

Arise o *Ho'olua* [Piliamo'o, like the strong wind]
O lashing *Kiu* gusts of the *Nāulu* storms
The sea is agitated and the clouds fly by
The waves rise to the land
Throwing the coral pieces upon the *pōhuehue* growth
[The lure] has fled [vanished], the prize of Ha'aluea's
eye has been removed
I am overcome with grief
It is I, Lālāmilo
The offspring of Kanakanaka and my mysterious ancestress
Piliamo'o who sleeps here, arise!

Learning of the theft, Pili-a-mo'o commanded that Lālāmilo seek out a black pig, a white rooster, *'awa* from Fo'opo'o, an *'ahuluhulu* (red fish), and a red *malo* before the setting of the sun. Lālāmilo acquired all of the items and

returned to the house of Pili-a-mo'o overlooking the shore of Kauna'oa (in the ahupua'a of 'Ōuli). Pili-a-mo'o told Lālāmilo to release the pig and chicken, and both of them entered the canoe, which Pili-a-mo'o had prepared as the method by which Lālāmilo would travel to *Kaua'i-o-Kamāwaehualani* (the island of Kaua'i), where he would find 'Iwa at Makalwa, Kapa'a.

Pili-a-mo'o called to Lālāmilo saying, "The gods have approved your offerings, and here is your path (canoe) to present the offerings to 'Iwa, the mysterious rascal of the land which snares the sun, 'Iwa the sacred ward of Halulu-ko'ak'oa." With the offerings set in the canoe, and the sail raised, Pili-a-mo'o then prepared, an 'awa ceremony.

The pig was at the mast, the 'awa and fish were set on the platform, the rooster sat on the outrigger end, and the *malo* was placed at the stern of the canoe. After Pili-a-mo'o and Lālāmilo drank 'awa they slept, and when half the night passed the rooster crowed. Pili-a-mo'o arose and went out of the house where she saw the navigators' star high above. Pili-a-mo'o then called to Lālāmilo, "Arise great shark of the sea, o offspring of Hulihia-ka-lani, o flippers of the turtle Kamilo-holu-o-Waiākea. Awaken for the light of the star *Hiki'i-maka-o-Unulau*, the *Kualau* (shower bearing wind) blows and the traveler will touch Kaua'i." Lālāmilo arose, entered the canoe and prepared to journey to Kaua'i (8/2/1917).

As the narratives continue, readers are told about the canoe journey to Kaua'i, and the return of Lālāmilo and 'Iwa to Kohala. The two friends then go octopus fishing with the fishermen of the chief Pili in Kona (the texts contain extensive references to octopus fishing), and they craftily retrieved the lure (9/6/1917). At the time when Lālāmilo returned to his lands, Puakō's brother, Pū'ālā'a, arrived from Puna and Lālāmilo divided the *leho* with him. Because the divided shells looked like portions of baked taro, the lure came to be called *Kalo-kunu*, or broiled taro (9/13/1917).

Additional information about Puakō and her family has been documented by Hawaiian historian and author *J.W.H.I. Kihe*. Kihe was a regular contributor to the Hawaiian newspaper *Ka Hōkū o Hawai'i*. On September 2, 1914 Kihe authored an article entitled "*Pu'uanahulu i ka uka 'Io'iu, Kona mau Luhiehu Hihiu*" (Pu'uanahulu of the Distant Uplands, with its Uncommon Beauty). In this article Kihe tells the following story about Puakō, her family, and lands named for them. *Ka-holoi-wai-a-ka-Nāulu* was an elder brother of the *Pele* priestess, *Anahulu*. When Anahulu and *Wa'awa'a mā* moved from Puna, to be closer to *Anaeho'omalu* and *Puakō*, Kaholoiwai followed as well. From his dwelling place at *Kaho'opulu*, above Kawaihae, Kaholoiwai cared for his sister, watching for her needs. When a period of dryness came upon the land, Kaholoiwai would send the *Nāulu* showers across the lands, reaching up to *Pu'uwa'awa'a*; thus food plants were able to grow upon the land.

NĒ'ULA (Interpretive translation: Red *nē* seaweed [certain seaweeds were used as offering to *Kū'ula* upon *ko'a* (fishing shrines) and red was sacred to *Kū'ula*; a site identified as being along the coast of Puakō-Lālāmilo)

Nē'ula was named for the mother of Lālāmilo (7/5/1917). When Puakō arrived at Waimā, and expressed her desire for *he'e*, the natives of that area took her to meet with Nē'ula the mother of their chief, Lālāmilo, who

excelled in *he'e* fishing. Puakō's beauty entranced Lālāmilo, and she soon became his wife..

One day, while Puakō was catching shore fish and gathering seaweeds, she came across a large octopus on the reef, and caught it. Both Nē'ula, and Lālāmilo were surprised and did not believe Puakō had caught the squid until they went to this place along the reef at Waimā. They found that a deep red cowrie, like an *'ōhi'a* blossom was what had attracted the *he'e* to the reef (7/19/1917; see Lālāmilo above). The shore line of Nē'ula where the octopus lure was found was described – *'ōlelo no'eau: ...Ke kaha ho'ohāhā pa'akai a Nē'ula ke Kū'ula kau luna pa'akai o ka makani Kuehulepo i nā makani kelewa'a...* – The shore where salt is gathered at Nē'ula who is the *Kū'ula* on which salt grains are placed by the wind *Kuehulepo* which scatters dust, the gusts by which canoes are sailed... (7/26/1917).

WAIMĀ (Discolored water; Water [which] fades as when salt is formed; a site identified as being along the coast of Puakō-Lālāmilo)

Puakō departed from *'Anaeho'omalu* and arrived at the community of Waimā where she was greeted by the residents of the area. Puakō was introduced to the chiefess Nē'ula, who in turn introduced Puakō to her son Lālāmilo. Lālāmilo was an octopus fisherman, and because of his skill, he gained the beautiful Puna chiefess, Puakō as his wife (7/19/1917). The compound of Lālāmilo was above the canoe landing (7/5) of this area. One day at low tide, Puakō went to the shore of Waimā where she gathered *limu līpe'epe'e, limu manauea, pai'ea* crabs, salt, and various *'ōhua* (young fish) along the exposed reef flats. On this particular day, Puakō was surprised to see a large octopus on the reef. It was this *he'e* which led to the discovery of "*leho*" (cowrie shell octopus lure) which came to be called *Kalo-kunu*.

Nē'ula was also a *Kū'ula* fishing deity of this coastal area where salt is hardened in the wind *Kuehulepo*, and where the sailing canoe winds *Haehae, Nāulu*, and *Ho'olua* blow (7/26/1917).

One additional excerpt is included here as it mentions agricultural practices in the region, and provides the reader with documentation of the relationship between coastal communities and those in the uplands:

PO'OPO'O (Hollow; descriptive of a protected area used for agriculture) Po'opo'o was a *makāula* (priest and seer) who served under the chief Pu'uhlna'i. He watched over the lands of Pu'uhlna'i, Pu'u'iwa'iwa, Lālāmilo, Pili-a-mo'o, Kanakanaka, and Nē'ula. This upland region was well populated and in extensive agricultural use. Sugarcane and bananas were important crops of the region (7/5/1917), and at Po'opo'o an *'awa* plantation was maintained. This fine *'awa* growth is remembered by the saying...

'Awa kīpulu a Po'opo'o – [The] Mulched *'awa* growth of Po'opo'o (8/2/1917).

Aside from the recently translated texts cited above, there are several other legendary or historic period accounts that briefly reference Puako. As mentioned earlier, there has been confusion regarding the name of the ahupua'a (Lālāmilo or Puakō). If Puakō is only identified as one coastal village area, as it has been for much of this century, legendary and historic texts which reference Puakō would only relate to a small area. But if the accounts, particularly legends that refer to Puakō are *ahupua'a* descriptions, researchers are then provided with a larger picture of regional activities.

The following legendary accounts, from the Fornander Collection of Hawaiian Antiquities and Folk-lore (1917-1919) and An Account of the Polynesian Race (1969), briefly mention Puakō:

(a) The story of Pupualenalena describes the nature and skills of a *kupua* (a shape changer - supernatural) dog named Pupualenalena (also written Puapualenalena), who dwelt with his master somewhere in the coastal area of the *ahupua'a* of Puakō. The narratives place the events in the time of Hakau, brother of 'Umi-a-Līloa (c. A.D. 1450). Most of the narratives are centered in Waipi'o, and relate to how Hakau enlisted the aid of Puapualenalena to reclaim the sacred conch shell Kiha-pū, which had been stolen by the spirits who dwelt in the uplands (1917 [IV]:558-560);

(b) The legend of Kulanakapūki'i describes Puakō as a handsome man who was a salt maker. The narratives tell of Puakō's short relationship with a beautiful chiefess named Mailelauli'i, who was the daughter of Kaumalumalu (k) and Lanihau (w). Puakō was a salt maker, and in the early mornings, he would go gather sea water and fill pools in which to make his fine salt. While in the land which bears Puakō's name, Mailelauli'i thought to marry Puakō, but her sisters would not have it, because they did not want to be enlisted to assist with his hard labor of salt making (1917 [IV]:560-561);

(c) While narrating accounts around the life of Lonoikamakahiki (a grandson of 'Umi-a-Līloa) and his wife, the sacred chiefess Kaikilani, Fornander (1969) tells readers of a rebellion on the island of Hawai'i. Returning to Hawai'i, Lonoikamakahiki, Kaikilani, and Pupuakea joined with their forces at 'Anaeho'omalu where the rebel chiefs had encamped. The next day, Lonoikamakahiki and forces marched down to Wai[a]le'a, not far from the pond of Waināhāli'i. The victory was claimed by the forces of Lonoikamakahiki, and the rebels were pursued to Kauna'oa between Puakō and Kawaihae, where the victory again went to the forces of Lonoikamakahiki...(Fornander 1969:120-121).

While describing battles between the forces of Lonoikamakahiki, chief of Hawai'i and Kamalālāwalu of Maui, Hawaiian historian Samuel Kamakau (1961) mentioned events around Puakō (c. 1575-1600). While at Kawaihae, two old men falsely counseled Kamalālāwalu that Pu'oa'oaka along the Waimea plain would be a good battle site. They instructed the chief to have all their canoes dismantled and destroyed upon landing at Puakō, so that none of his warriors could retreat. Their instructions were followed, and the troops of Kamalālāwalu began their march to the battle grounds on the arid upland plain of Waimea. The warriors of Lonoikamakahiki then surrounded the Maui troops and a great battle took place and few of the Maui warriors could escape because their canoes had been destroyed. The Maui chief Kamalālāwalu "was killed on the grassy plain of Puako" (Kamakau 1961:58-60).

Proto Historic References

One account which may have involved the people and resources of Puakō is associated with the reconstruction and dedication of the great *heiau* of Pu'ukoholā at Kawaihae, approximately 3 miles from the boundary of Puakō-Lālāmilo. In late 1790 Kamehameha I called many of his people to this region of Kohala, to build Pu'ukoholā. During this time, thousands of people were "encamped on the neighboring hillsides" (Fornander 1969:2,238). In 1791 Kamehameha dedicated this *heiau* to his war god Kū-kā'*ili*-moku, and went on to gain control of the entire Hawaiian Island group.

In a series of articles authored by Kamakau and printed in the Hawaiian newspaper *Ku'ōko'a*, July 6, 1867 (as translated and published IN Ruling Chiefs of Hawai'i 1961), readers were told about additional events at Puakō (between c. 1796-1802) in the time of Kamehameha I:

> While Kamehameha was living with the chiefs at Waimea [he was] engaged in restoring the old heiaus. When the fence of images (*paehumu*), the oracle tower (*anu'unu'u*), and the pavement (*kipapa*) of the heiau of Uli had been restored, all the people had to go down to Puako after coconuts. When each had taken up his load to return there remained still 480 nuts unhusked. All had gone except Kamehameha and one other to whom the chief was unknown. Kamehameha turned to him and said, "It looks as if there would not be enough coconuts for the dedication in the morning." It is possible that the man recognized the chief for he replied, "They will all be there. The two put the nuts into nets and fastened them together into a huge load that stood taller than either of them. The road from Puako to Waimea is close to twenty miles in length. Occasionally when the man seemed tired Kamehameha took a turn at the load. At dusk as they neared their destination, and it came time for evening prayer, Kamehameha left the man saying, 'When you get to the heiau spend the night with people of the place, but do not tell them that Kamehameha helped carry the load on his back.' Because of this feat of strength and another later, when he took up two hogs each more than a fathom long and carried them without help, this Kuihelani, as his name was, became a great favorite with the chief and held an important office under him. He was allowed to have ten wives, an honor allowed to no other chief besides, and there was no home happier than his, no governor of a district to be compared with Kuihelani (Kamakau 1961:183).

Between 1866 to 1870, John Papa I'i, another early Hawaiian historian, and influential member of the court of Kamehameha III, wrote a series of articles in the Hawaiian newspaper, *Ku'ōko'a*, pertaining to traditional practices and events around the court of the Kamehamehas (translated IN Fragments of Hawaiian History 1959). In 1812 Kamehameha I and his court departed from O'ahu, returning to Hawai'i. At the time, I'i was a young boy, but he recalled passing the Kawaihae and Kekaha (an arid coastal region which stretches between South Kohala and North Kona) shoreline. In his narrative, he comments on the fishing fleets of the region:

> Soon the fishing canoes from Kawaihae, the Kaha lands, and Ooma, drew close to the ship to trade for the *pa'i'ai* (hardpoi) carried on board, and shortly a great quantity of *aku* lay silvery-hued on the deck. The fishes were cut into pieces and mashed; and all those on board fell to and ate, the women by themselves (I'i 1959:109-110).

Historic Period References and Land Tenure

Within a year following the death of Kamehameha I (1819), American missionaries arrived in the Hawaiian Islands. By 1824, parish districts were being established throughout the islands. English missionary William Ellis visited Hawai'i between 1822-1823, during which time he and several others traveled around the island of Hawai'i. In his journal (1963) Ellis provided a brief description of the village at Puakō. Having traveled from the uplands at Pu'ukapu:

> ...in twilight of the evening reached Puako, a considerable village, four or five miles to the southward of Towaihae [Kawaihae], where he [Thurston] took up his lodging for the night... (Ellis 1963:289).

On July 16 1832, Lorenzo Lyons (*Makua Laiana*), one of the most famed and beloved missionaries of all those who came to Hawai'i, replaced Reverend Dwight Baldwin as minister at Waimea, Hawai'i. Lyons' "Church Field" was centered in Waimea, at what is now the historic church 'Imiola, and included both Kohala and Hāmākua (Doyle 1953:40 & 57).

One of Lyons' churches was Hōkū Loa (Evening star) at the village of Puakō, the present structure was completed March 21, 1859 (Doyle 1945:167). Lyons kept a journal describing his journeys and activities throughout the "field," and in 1835 he briefly mentioned his journey from Kawaihae to Puakō:

> Rose at four o'clock and walked to Puako, five or six miles distant. When it was light I gathered a few shells. I walked along the shore--alone. On one hand was the ocean; on the other a dreary, desolate waste--rocks, lava, coral... I reached Puako at an early hour. As I was alone carrying my own calabash, the natives mistook me for some wandering foreigner, and when I spoke to them in their own language how startled they were!... I excited a great deal of curiosity, I then had breakfast--that is I sat on a stone and ate a biscuit. No water could be found but salt water. As soon as the people could be collected together I talked to them; examined their school, after which I took a look at their salt works...

About Puakō Village Lyons said:

> ...Puako is a village on the shore, very like Kawaihae, but larger. It has a small harbor in which native vessels anchor. Coconut groves give it a verdant aspect. No food grows in the place. The people make salt and catch fish. These they exchange for vegetables grown elsewhere (Doyle 1945:84-85).

Another entry from Lyons journal, an entry made between the years of 1839-1846, offers the following narrative:

> Not infrequently at Kawaihae and Puako there is no food to be had. The people live without food for days, except a little fish which prevents starvation. Nor is this to be had everyday, the ocean being so rough they cannot fish, or a government working day interferes, when the sailing of a canoe is tabu-unless the owner chooses to pay a fine. The water too at these places is such that I cannot drink it. I would as soon drink a dose of Epsom salts... On the way to Puako, all is barren and still more desolate. After an hour's walk from my house, not a human dwelling is to be seen till you reach the shore, which requires a walk of about five hours (Doyle 1945:108-109).

Lyons estimated the population of Kawaihae-Puakō around this time period to be approximately 734 persons (Doyle 1945:122).

Citing other early foreign visitor's accounts and the recollections of local informants (c. 1930), Handy (1940) and Handy and Handy (1972) provide readers with a description of agriculture, fishing, and life in the South Kohala region. Among the references are the following narratives:

> ...From Puako to Anaehoomalu at the southern end of Kohala and from Kapalaoa, at the northern extreme of Kona, to Kailua there are no streams whatever, and certainly there were no terraces.
>
> South Kohala produced much dry taro in the lower forest zone which formerly extended far down over what is now open pasture... (Handy 1940:119).
>
> The coastal section of Waimea, now called South Kohala, has a number of small bays with sandy shores where fishermen used to live, and where they probably cultivated potatoes in small patches. Anaehoomalu, Waialua Honokaope, Kalahuipuaa and Pauoa all have sandy strips along the sea; and there is an area of black cinder in this section where sweet potatoes might be grown in rainy seasons. Puako was a sizable fishing village at one time where were undoubtedly many sweet potato patches... Between Kawaihae and the upland taro plantations in the vicinity of Waikoloa Stream (below the present town of Waimea) there were many plantations on the *kula* lands from the coast to 2,500 feet as is indicated by the stone walls and dry terraces on the hillsides... (ibid:163).

The authors note that dry taro was planted along the lower slopes of the Waimea side of the Kohala Mountains (1972:532). It is likely that the taro-producing areas supplied coastal communities with vegetables, and the coastal communities provided the upland residents with fish and other marine resources.

Menzies (IN Handy and Handy 1972), a surgeon with Captain Vancouver in 1793 described his journey to the upland plantations of Waimea, and commented on his encounters along the trail with people taking produce to the coast. He wrote:

> ...From the number of people I met loaded with the produce of their plantations and bringing it down to the water side to market, for the consumption was now great, not only by ship, but by the concourse of people which curiosity had brought into the vicinity of the bay (IN Handy and Handy 1972:532).

Land Tenure - Transitions In Land Use

Between 1790 and the 1840s, western ways continued to gain influence over the *ali'i* (rulers) , and land management and use was changing radically. Following the death of Kamehameha I, American missionaries arrived and Hawaiian ways continued to erode away.

Western influences reshaped the Hawaiian sense of community. Hawaiian settlements of the period reflect missionary concepts regarding acceptable communities; i.e. the "benefits" of living under the watchful eyes of church leaders, close to churches, and in "civilized" villages and towns. After the arrival of the missionaries, churches were built in populated areas easily accessible to natives. The churches became gathering places—the village centers. In 1848, a Western-style land ownership system was set in place. Preceding this event, called the *Māhele* (a division of land between the crown, government, lesser chief's [*konohiki*], and native tenants of the land), all land and natural resources had been held in trust by the high chiefs, and their use was controlled by the high chiefs (*ali'i 'ai ahupua'a* or *ali'i 'ai moku*) and their representatives or land agents (*konohiki*), who were generally lesser chiefs as well.

This radical restructuring of the Hawaiian land management system was called The Great *Māhele* (Division [of land]). The *Māhele* defined the land interests of the King (Kamehameha III), the high-ranking chiefs, and the *konohiki*, who were originally those in charge of tracts of land on behalf of the king or a chief (Chinen 1958:vii and Chinen 1961:13). More than 250 of the highest-ranking chiefs and *konohiki* in the kingdom joined Kamehameha III in this division. The first *Māhele* was signed on Jan. 27, 1848 by Kamehameha III and Princess Victoria Kamāmalu, and by her guardians Mataio Kekūanaō'a and Ione [John Papa] I'i. The last *Māhele* was signed by the King and E. Enoka on March 7, 1848 (Chinen 1958:16).

The *Māhele* did not convey title to any land. The chiefs and *konohiki* were required to present their claims to The Land Commission to receive awards for lands quit claimed to them by Kamehameha III. They were also required to pay commutations to the government in order to receive royal patents on their awards. Until an award was issued, title remained with the government. The lands awarded to the lesser chiefs and *konohiki* became known as *konohiki* lands. Because there were few surveyors in Hawai'i at the time of the *Māhele*, the lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This expedited the work of the Land Commission and speeded the transfers (Chinen 1961:13).

During this process all land was placed in one of three categories: Crown Lands (for the occupant of the throne), Government Lands, and *Konohiki* Lands. These were all "subject to the rights of the native tenants," (Laws of Hawaii 1848:22). The *hoa'āina* or native tenants were the common Hawaiian people who lived on the land and worked it for their subsistence and the welfare of the chiefs. Questions concerning the nature of these native tenants rights began to arise as the King, the government, and *konohiki* began selling parcels of land to foreigners. On December 21, 1849 the Privy Council attempted to clarify the situation by adopting four resolutions intended to protect the rights of native tenants referred to in the 1848 law (Chinen 1958:29).

These resolutions (IN *Kanawai Ho'opa'i Karaima no ko Hawai'i Pae 'Āina*, 1850:123-124) authorized the Land Commission to award fee simple title to all native tenants who occupied and improved any portion of Crown, Government, or Konohiki lands. These awards were to be free of commutation except for house lots located in the districts of Honolulu, Lāhainā, and Hilo (Chinen 1958:29). Before receiving their awards from the Land Commission, the native tenants were required to prove that they cultivated the land for a living. They were not permitted to acquire wastelands underline between or lands which they cultivated "with the seeming intension of enlarging their lots." Once a claim was confirmed, a survey was required before the Land Commission was authorized to issue any award. The lands of the native tenants became known as "*Kuleana* Lands."

By the time of its dissolution on March 31, 1855, the Land Commission had issued only 8,421 *kuleana* claims to the native tenants, with claims equaling only 28,658 acres of land (Kame'eleihiwa 1992:295). Though the commoners were required to provide proof of land use and habitation, royal claims rarely included any documentation. For the commoners, this "requirement of proof" produced a series of volumes of registry and testimony. Today, these volumes often help researchers understand land use practices, crop production, resource harvesting, and architectural sites of the time. Because the narratives help provide a view into 1800s communities, claim registers and testimonies for lands within the project area are included below.

Māhele Awards

The *Buke Māhele* (Records of the Land Division) and subsequent Indices of Awards (1929) indicate that only a few land parcels were claimed by native tenants in the *ahupua'a* of Puakō and/or the *'ili* (land parcel) of Lālāmilo. Almost all of the claims appear to be associated with the *'ili* of Lālāmilo (the project area). Most of the *'ili* of Lālāmilo was awarded to William Charles Lunalilo, who later became King of the Hawaiian Nation, as a part of LCA 8559-B *'Apana* (portion) 6. As an *ali'i*, Lunalilo was not required to provide documentation of land use.

The register and testimony of native tenants offer the following descriptions of life and residence in Puakō.

Native Register Volume 8:

> LCA 3758 (page 52) - 'Akāhi claimed one house lot on the shore enclosed by a stone wall from ancient times.
>
> LCA 3736 (page 52) - Wahakāne claimed house lots at Puakō and Waimea, and 17 lo'i kalo (taro pond fields) at Waipi'o.
>
> LCA 4099 (page 384) - Keawekuloa, Kaholoa'a, and Kahumoku claimed a lot containing three houses. Additionally, the claim also included 7 coconut trees, 2 pandanus trees, and 5 salt making pools.
>
> LCA 4102 (page 65) - Kamahi'ai claimed a house lot at Puakō which included three houses and a couple of [coconut] trees.

Native Testimony Volume 4:

> LCA 3758 (page 20) - 'Akāhi; witnesses confirmed 'Akāhi's house lot claim at Puakō with four houses upon it. Two houses were for 'Akāhi, and one house each were for Kahenehene and Nāpu'upu'u.
>
> LCA 3736 (page 19-20) - Wahakāne; witnesses confirmed Wahakāne's claim of a house lot in the *'ili* of Lālāmilo at Puakō. It contained one house for Wahakāne and one house for Kau'i who dwelt under Wahakāne. The lot was not enclosed by a wall.
>
> LCA 4099 (page 147-148) - Keawekuloa, Kaholoa'a, and Kahumoku; witnesses confirmed that there in the *'ili* of Puakō, *ahupua'a* of Waimea were

3 houses , one for each of them. This was an ancient land from the time of their parents and ancestors before the time of Kamehameha I. The *'āina pa'akai* (salt making land) produced fine salt. Their lot also included several *kula mahi 'uwala* (dryland sweet potato patches).

LCA 4102 (page 21) - Kamahi'ai; witnesses confirmed 'Akāhi's claim for a house lot with three houses in the 'ili of Lālāmilo next to Puakō. One house was for Kamahi'ai, and one house each was for Nāoho and Kaha'anapilo

Because 'Akāhi, Wahakāne, and Kamahi'ai share some similar boundaries with Uilama Pakele (William Beckley, konohiki of the Waikōloa-Waimea lands), it appears that all their claims were within the *'ili* of Lālāmilo. Additionally it is interesting to note that Wahakāne's award provided him with access to coastal-marine resources and fishing grounds at Puakō, while in the district of Hāmākua at Waipi'o, he had access to taro pond fields (i.e., cross regional access to resources).

Land Use Following the Māhele

After native Hawaiian commoners were granted the opportunity to acquire their own parcels of land through the *Māhele* (1848), foreigners were also awarded the right to own land in 1850, provided they had sworn an oath of loyalty to the Hawaiian Monarch (Kame'eleihiwa 1992:300). This opened the door to foreign business interests, primarily American, and the stage was set for the full scale development of a variety of businesses, including Hawai'i's sugar industry.

As recorded in land documentation research reported by Kalima and Wong Smith (1992), the Land Index Files of the Hawai'i State Archives contain the following information about the *'ili* of Lālāmilo and *ahupua'a* of Puakō:

Interior Dept., Dec. 28, 1854
Testimony given by Palea and Kuuku re: above Ili [of Lālāmilo], that said Ili rightfully belongs to Wm. C. Lunalilo.

Aug. 31,1864 Letter from S.C. Wiltse to J.O. Dominis
...G.D. Davis claims that all the ilis in the ahupuaa as named [Puako] are all his and being a part of his private property known as Waikoloa...

July 19,1858 Letter from Isaac Y. Davis to Wm. Webster
...Requesting that Lalamilo and Waimea in Puako not be given to Kauhiola until they have talked the matter over together.

Kalima and Wong Smith also state:

> Land Patents were granted to people who wanted to insure their claims to lands. Although the L.C.A.'s were generally regarded as a sign of outright ownership, patents further insured that no claims could be put against your land. Richard Smart of the Parker Ranch was the first to apply for a patent in the Puako area (patent for a parcel in L.C.A. 8559-B applied for in 1952; Patent S-8547). The patent verified that the land was originally the property of Lunalilo and had not been given up for commutation to the government, (further verified in the Indices of Awards, page 22), and that Richard Smart, having purchased a parcel of this land was the absolute owner (Kalima and Wong Smith 1992:C-5).

Puakō Sugar Plantation

Two Chinese immigrants began planting and processing sugar in c. 1827 in the upland portion of the Lālāmilo-Puakō region, at Lihu'e, below Waimea Village. Though their efforts failed, the efforts were not forgotten (Barrera and Kelly 1974:47). In 1863 Kohala Sugar Company was incorporated in Hala'ula, North Kohala. Through the 1870s, other plantation and milling operations were started, and around 1880, Robert Hind started up the Hāwī mill. In c. 1895-1899 Hind and his son John acquired land in the Puakō area and began planting sugar cane there as well. In a typed manuscript, John Hind (ms. nd.) has provided readers with a brief history of the Puakō Plantation and other family business interests, with insightful comments on the changing Kohala environment brought on by the diminishing upland forests. Unfortunately, there are few dates accompanying the narratives, and approximate dates can only be assumed:

> Mr. W.I. Vreedenburg one Sunday came to Hawai in a state of considerable excitment, with four or five sticks of fine looking cane strapped to his saddle, which, as he put it, he discovered at Puako the day before while on a shooting trip. This cane was grown without irrigation, and he enthusiastically announced there were large areas of as good land as that on which these particular sticks were grown... To make a long story short, conditions appeared extremely favorable for cane growing. Soil was analyzed, and found of unusual fertility, in fact received special mention by Dr. Maxwell the Director of the H.S.P.A. Experimental Station. A well was sunk (about ten feet) water analyzed and found to contain no more salt than water on other plantations, using well water. An experimental plot was planted, which for growth exceeded anything I had ever seen. Negotiations were entered into with Parker Ranch, for the property and as their appeared to be no bidders for our Waipunalei [Hilo] land, an exchange was finally arranged whereby Sam Parker, secured our rights in Waipunalei, for his rights in Puako.
>
> A fine up to date little mill with all the appurtenances which go with a modern plantation was installed, on an ideal site, a hundred or so yards from the landing... (Hind nd.:46-48)

Hind goes on to tell how the first crop was growing exceedingly well when "freshets and semityphoons" caused substantial loss of the crop. Additionally, the high winds "proved disasterous (Hind nd.:48). Of the winds, Hind says:

> During the first year or two we only had a few severe visitations, but later, while we might be exempt for several months, and everything flourishing, we would have a continuation of storms, which at times would threaten to put us off the map (ibid.).

The winds so dried out the soils that the salt level was too high to be washed out in time by irrigation. Hind continues his description, saying:

> We found a good rain was of very great benefit, and finally as a forlorn hope, after keeping tab, on the Waimea stream for over eighteen months, put in an

> eight mile flume, but strange as it may seem, the water failed just before the flume was finished. Mr. Carter the Manager of the Parker Ranch [c. 1903*] attributed the failure to the unprecedented dry weather in the mountains, but as the stream, never after that, continued to flow with any degree of regularity, it would appear the shrinkage of forest area in the mountains was having its effect... Puako, as a sugar proposition, I was satisfied, was hopeless, so finally was closed down, and parts gradually sold off at what they would bring... (Hind nd.:49-50).

The Puakō sugar venture failed in 1914 (Conde and Best 1973:115), and the plantation remains were described by Albert Baker when he visited the Puakō petroglyph fields in 1919:

> Just before reaching Puako one is surprised by overlooking vivid green irrigated alfalfa fields, the alfalfa being raised for feeding the pigs and a few cattle of this one-time sugar plantation, of which scarcely a suggestion now remains (A. Baker 1920:48).

Portions of the land acquired by the Hinds from Parker Ranch were a part of Lunalilo's Lālāmilo *'ili* award (LCA 8559-B). In 1952, Robert Hind, Ltd., a Hawaiian Corporation sold 7.42 acres of their Lālāmilo back to Parker Ranch-Richard Smart (Bureau of Conveyances in Liber. 2598:383-389) (Kalima and Wong Smith 1992:C-5).

In 1974 Barrera and Kelly prepared a report describing regional land use and history, covering both the legendary and historic periods. Their report should be referred to for additional documentation particularly as related to upland "*kula*" areas of Lālāmilo.

During this century, the coastal region of Lālāmilo-Puakō has become a favorite retreat; the beaches of Hāpuna and Waiale'a are among the finest on Hawai'i. In *Beaches of the Big Island*, Clark (1985) refers to the modern Puakō community and also mentions some of the sites and events that occurred within the Puakō-Lālāmilo area:

> The residential community of Puakō, which dates from the early 1950s, begins at Puakō Bay and extends for 3 1/2 miles of shoreline along the paved extent of Puakō Road.
>
> A large wave-washed bench of rock fronts almost the entire length of this long stretch of low-lying coast, but the irregular beach contains many small points, inlets, coves, and tidal pools, all of which are suitable for pole fishing, net fishing, spear fishing, snorkeling and in some areas, swimming...
>
> Fresh water intrusion from shoreline springs in this area often forms a layer of cool, brackish water on the surface of the ocean. The only true fringing reef of consolidate limestone on the Big Island fronts this section of the shoreline, an excellent site for near-shore scuba diving (Clark 1985:130).
>
> Waialea, commonly misspelled and mispronounced as Wailea, is one of the Big Island's most beautiful white sand beaches. The beach slopes gently into deeper waters offshore and offers excellent opportunities for swimming, snorkeling, and near-shore scuba diving. Many families, especially those with small children, prefer the more sheltered conditions at Waialea to those at neighboring Hāpuna, where the longer, straighter beach is more exposed to the open ocean....The pole closest to the dirt road leading to Waialea is number 69, so Waialea Beach is commonly known to many Big Islanders as Beach 69 (ibid:132).
>
> The beautiful white sand beach at Hāpuna stretches for over half a mile between the points of lava that form its boundaries. During the summer months, the beach is more than 200 feet wide - the widest white sand beach on the Big Island. High winter surf often erodes the beach considerably, but still leaves beachgoers more than enough sand for various activities. About midway along the beach, a lava promontory that was known to Hawaiian fishermen as Ihumoku (the "bow [of the] ship") crosses the sand and effectively divides the beach in half... At the southern end of the beach, enthusiastic swimmers have great fun jumping and diving into the ocean from several places in the sea cliffs. Plunging feet first into the water with the least possible splash was a popular ancient Hawaiian sport known as *lelekawa*.
>
> When the Territory of Hawai'i first opened Hāpuna Beach as a public park, it did not have title to a large triangular portion of the park property immediately south of Ihumoku, the rock promontory that divides the beach. This section of land, part of the land division of 'Ouli owned by the Parker Ranch, was subsequently acquired through the cooperation of Alfred Wellington Carter, the manager of the Parker Ranch from 1899 to 1937. In recognition of his assistance the park was named A.W. Carter Beach Park, but this name was eventually changed in favor of Hāpuna Beach State Recreation Area when the property was developed and improved with public facilities (ibid:132-134).

* *By 1903 "a severe reduction in rainfall" brought about discussions which led to the development of the Kohala Ditch. In 1904, John Hind "launched his ditch campaign" (Stephenson 1977:14)*

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Soil Map—Island of Hawaii Area, Hawaii
(Waimea Deep Monitor Well Project Site)

Map Scale: 1:591 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 5N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Hawaii Area, Hawaii
Survey Area Data: Version 16, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 3, 2019—Jun 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
373	Hapuna-Waikui-Lalamilo complex, 0 to 20 percent slopes	0.8	100.0%
Totals for Area of Interest		**0.8**	**100.0%**

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Island of Hawaii Area, Hawaii

373—Hapuna-Waikui-Lalamilo complex, 0 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2km20
Elevation: 0 to 2,000 feet
Mean annual precipitation: 7 to 10 inches
Mean annual air temperature: 70 to 75 degrees F

Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Hapuna and similar soils: 40 percent
Waikui and similar soils: 35 percent
Lalamilo and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hapuna

Setting

Landform: Ash fields on aa lava flows
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Mountainflank, lower third of mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Basic volcanic ash over aa lava

Typical profile

2C1/A - 0 to 2 inches: extremely cobbly medial silt loam
Bw1/2C2 - 2 to 7 inches: very cobbly medial silt loam
Bw2/2C3 - 7 to 12 inches: very cobbly medial silt loam
2C4/Bkqm - 12 to 17 inches: extremely gravelly cemented material
2C5/Bk1 - 17 to 26 inches: extremely cobbly medial sand
2C6/Bk2 - 26 to 47 inches: extremely cobbly sand

Properties and qualities

Slope: 0 to 20 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 76.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R157XY003HI - Rocky Volcanic Ash Savanna

Hydric soil rating: No

Description of Waikui

Setting

Landform: Ash fields on aa lava flows
Landform position (two-dimensional): Shoulder, summit, footslope, backslope
Landform position (three-dimensional): Mountainflank, lower third of mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Basic volcanic ash over aa lava

Typical profile

2C1/A - 0 to 2 inches: extremely cobbly medial silt loam
Bw1/2C2 - 2 to 7 inches: very gravelly medial silt loam
Bw2/2C3 - 7 to 15 inches: very cobbly medial silt loam
2C4/Bk1 - 15 to 24 inches: extremely cobbly medial silt loam
2C5/Bk2 - 24 to 37 inches: extremely cobbly medial silt loam
2C6/Bk2 - 37 to 47 inches: extremely cobbly medial silt loam

Properties and qualities

Slope: 0 to 20 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.09 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 65.0
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R157XY003HI - Rocky Volcanic Ash Savanna
Hydric soil rating: No

Description of Lalamilo

Setting

Landform: Ash fields on aa lava flows
Landform position (two-dimensional): Footslope, backslope, shoulder, summit

Landform position (three-dimensional): Mountainflank, lower third of mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Alluvium over basic volcanic ash

Typical profile

A - 0 to 2 inches: medial fine sandy loam
Bw1 - 2 to 9 inches: medial very fine sandy loam
Bw2 - 9 to 37 inches: medial very fine sandy loam
Bkn - 37 to 45 inches: medial silt loam
Bknq - 45 to 63 inches: medial silt loam
Bkqm - 63 to 65 inches: cemented material

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: More than 80 inches; More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

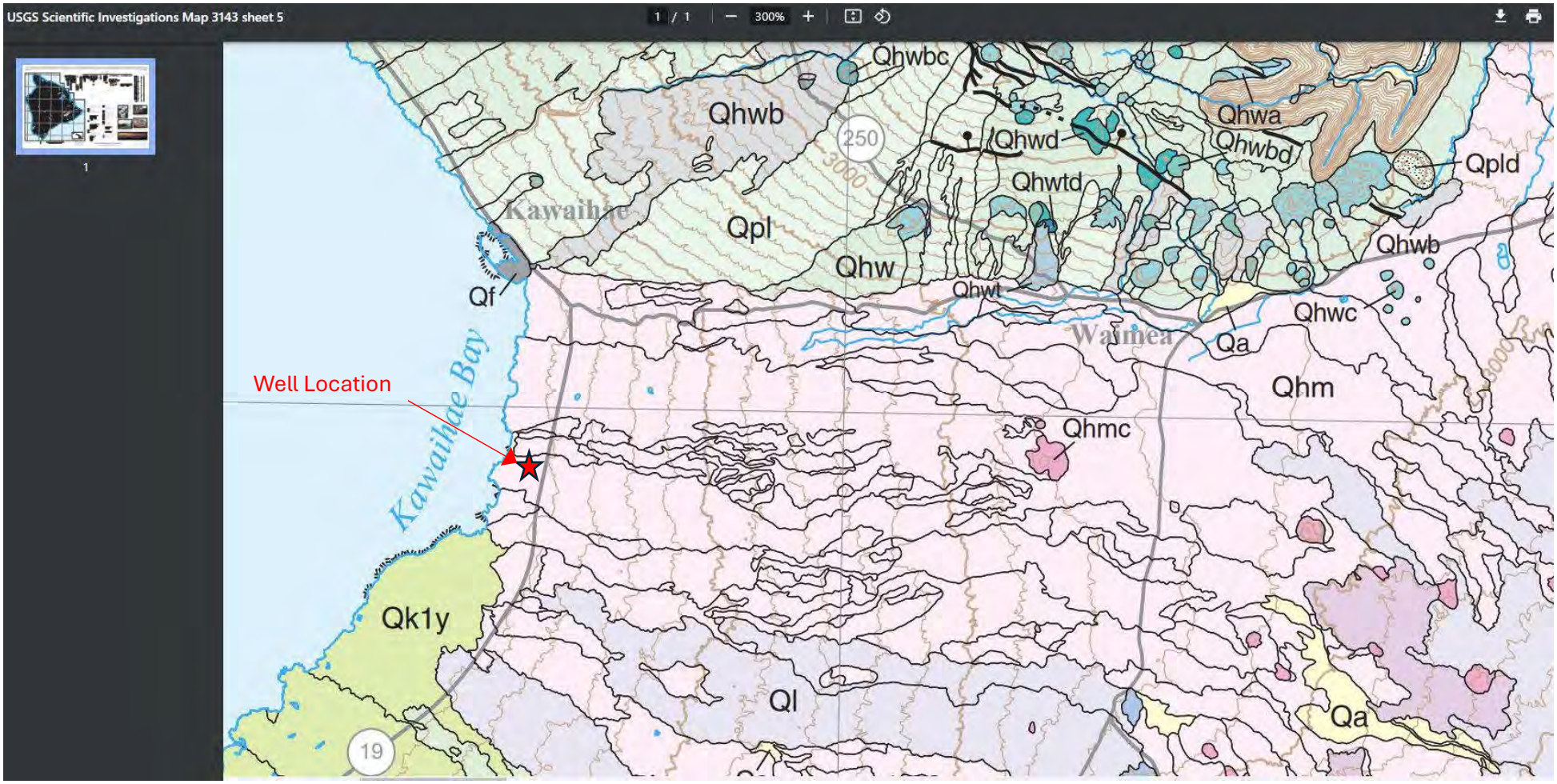
Minor Components

Lava flows, `a`a

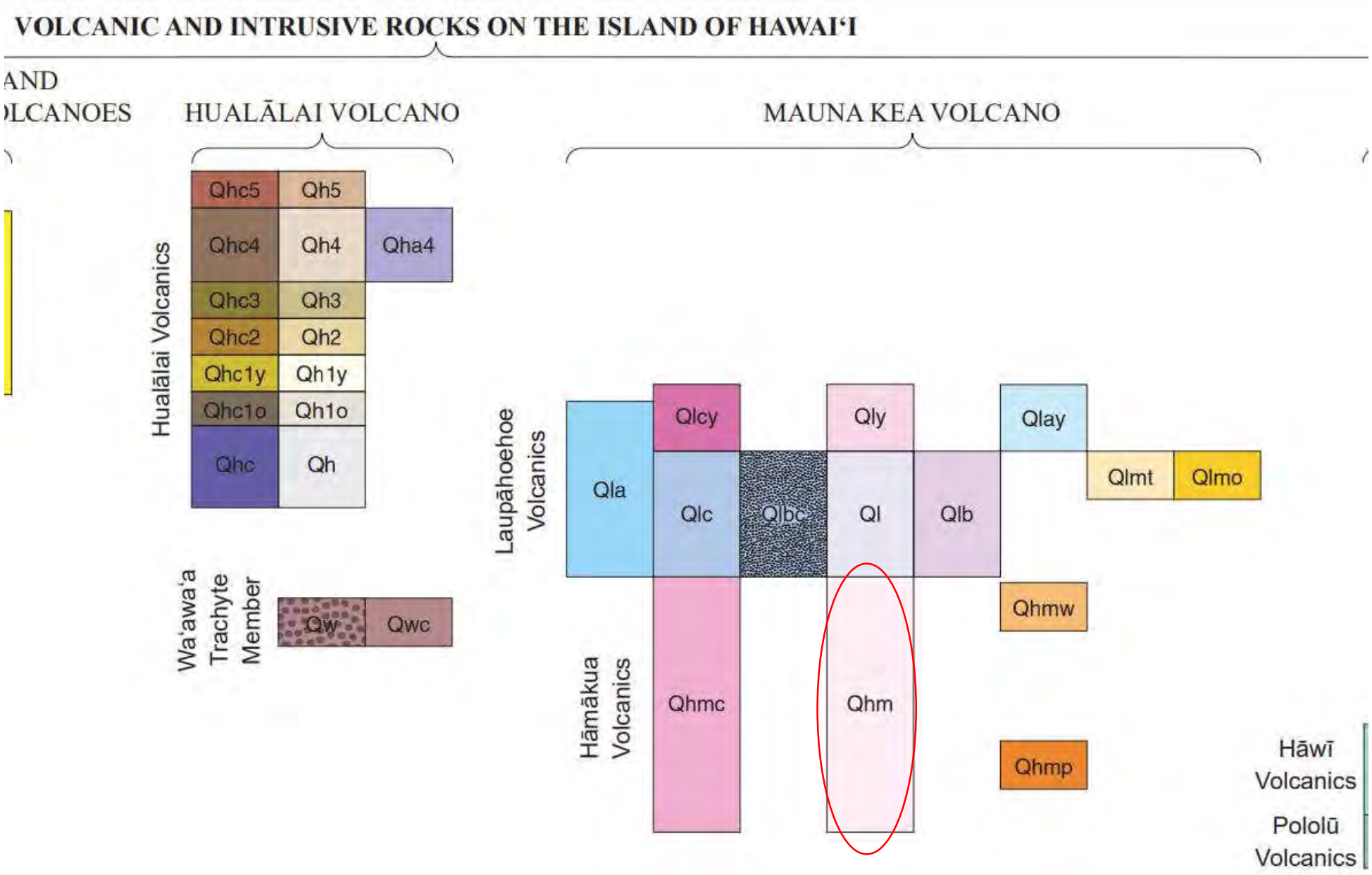
Percent of map unit: 5 percent
Landform: Aa lava flows
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Island of Hawaii Area, Hawaii
Survey Area Data: Version 16, Sep 8, 2023



From USGS SIM 3143 Sheet 5, Project Site Location on Mauna Kea Volcano



From USGS SIM 3143 Sheet 5, Project Site Location on Mauna Kea Volcano

Rainfall Atlas of Hawai'i

Geography Department - University of Hawai'i at Mānoa

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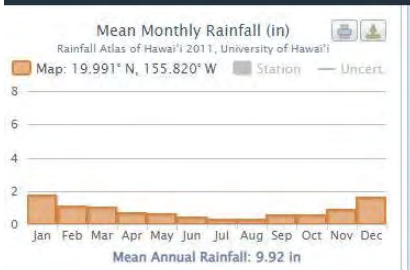

Month	Map	Uncert.	Station	Uncert.
January	1.72	0.73		
February	1.09	0.54		
March	1.04	0.98		
April	0.68	0.96		
May	0.62	0.74		
June	0.46	0.52		
July	0.33	0.97		
August	0.33	0.58		
September	0.58	0.48		
October	0.57	0.52		
November	0.90	0.64		
December	1.60	0.72		
Annual	9.92	2.49		

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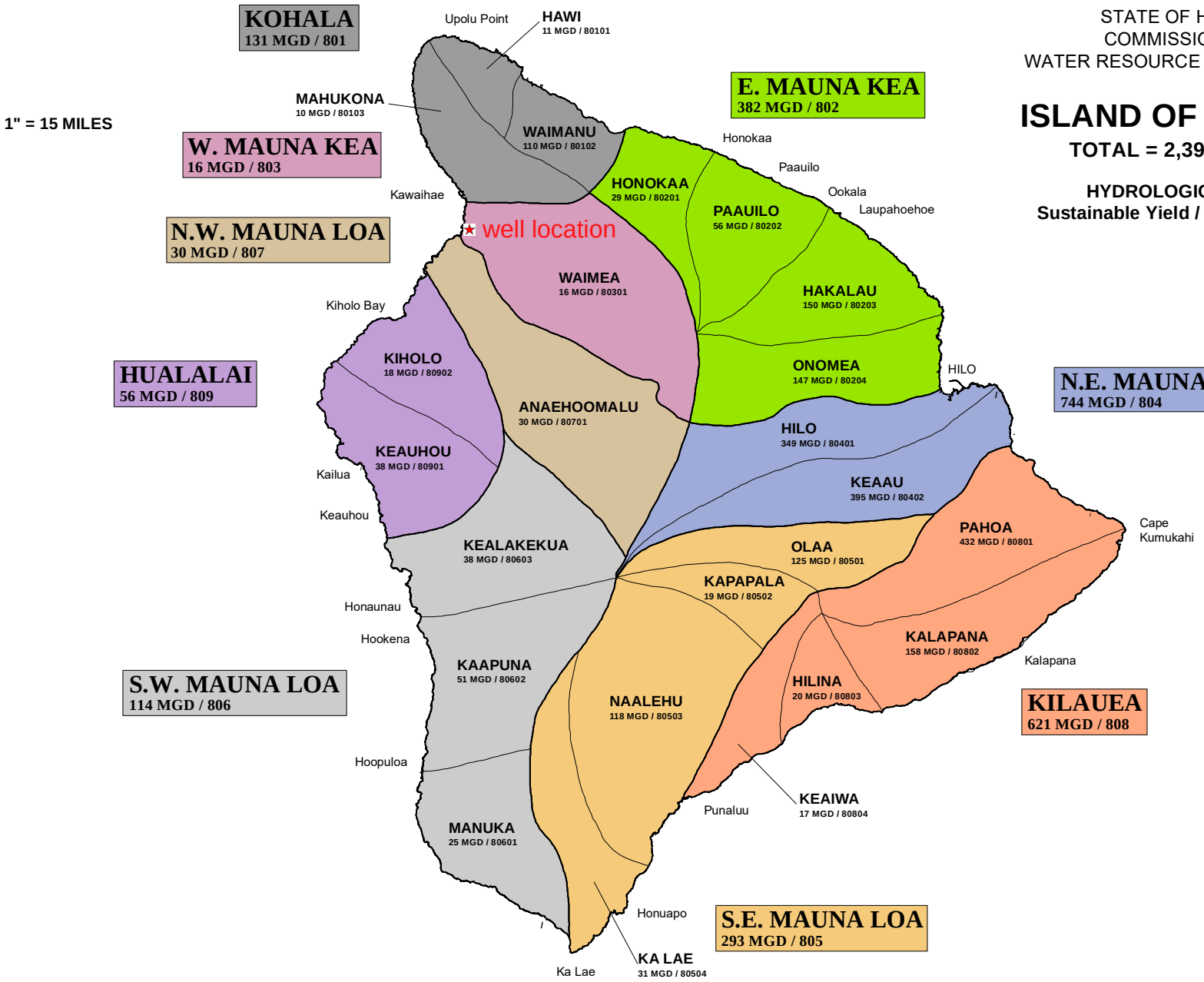
STATE OF HAWAII
COMMISSION ON
WATER RESOURCE MANAGEMENT

ISLAND OF HAWAII

TOTAL = 2,393 MGD

HYDROLOGIC UNITS
Sustainable Yield / Aquifer Code

1" = 15 MILES



06/20/2018

Map Projection: Universal Transverse Mercator

APPENDIX F

Botanical Survey
Hapuna Beach State Recreation Area Expansion

BOTANICAL SURVEY
HAPUNA BEACH STATE RECREATION AREA EXPANSION
SOUTH KOHALA DISTRICT, ISLAND OF HAWAI'

by

Winona P. Char

CHAR & ASSOCIATES
Botanical Consultants
Honolulu, Hawai'i

Prepared for: HARRISON ASSOCIATES

February 1994

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BOTANICAL SURVEY
HAPUNA BEACH STATE RECREATION AREA EXPANSION
SOUTH KOHALA DISTRICT, ISLAND OF HAWAI'I

INTRODUCTION

The project site consists of approximately 800 acres of State-owned land located within the ahupua'a of Lalamilo, South Kohala, Hawai'i island. Elevation ranges from sea-level to about 270 ft. above mean sea-level along its mauka boundary, with a small portion along the northeast corner somewhat higher at about 380 ft. elevation. The project site is divided into two parcels by the Queen Ka'ahumanu Highway. The mauka parcel consists of about 200 acres; an 18-hole golf course and ancillary facilities (driving range, golf clubhouse, maintenance area) are planned for this parcel. It is bounded by the Queen Ka'ahumanu Highway to the west, the Hapuna Golf Course to the north, undeveloped lands to the east, and the Lalamilo Windfarm Road to the south. The makai parcel covers about 600 acres. It already supports the popular and well-used Hapuna Beach Park and an existing lodging (A-frames). In the Master Plan, more public facilities are planned for the makai parcel; these include an organized group camp area, car/family campground, group picnic rentals, restrooms, parking, hiking trails, and picnic areas. The makai parcel is bounded by the ocean to the west, the recently completed Hapuna Resort area to the north, the Queen Ka'ahumanu Highway to the east, and Puako to the south.

The vegetation throughout most of the 800-acre project site is dominated by two introduced species, buffel grass and kiawe trees. The topography is generally moderately sloping, but somewhat steeper and rolling on the upper, mauka parcel. The dark reddish-brown, extremely stony soils form a thin layer over very weathered and decomposed pahoehoe bedrock; stones cover 50% or more of the surface. Annual rainfall is less than 20 inches.

Field studies to assess the botanical resources found on the Hapuna Beach State Recreation Area Expansion project site were conducted on 27 to 30 December 1993. A team of four botanists was used to gather the technical data contained in this report. The primary objectives of the survey were to: 1) describe the major vegetation types; 2) inventory the flora; 3) search for threatened and endangered species as well as rare and vulnerable plants; and 4) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

SURVEY METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. Topographic maps, the preliminary Master Plan map, and a black and white aerial photograph were examined to determine vegetation cover patterns, terrain characteristics, access, boundaries, and reference points. The mauka parcel was accessed from Lalamilo Windfarm Road to the south, and to the north from the "water-tank road" located directly across from the Hapuna Beach Road entrance along Queen Ka'ahumanu Highway. On the makai parcel, a paved but rutted and well-traveled road, the Puako Road, crosses the length of the parcel. A large number of dirt roads are also found on the makai parcel.

The less disturbed mauka parcel, which was more likely to harbor native plant communities and, perhaps, rare plants, was more

intensively surveyed. No detailed survey was made of the improved and landscaped areas on the beach park, lodging area, and around the homes by Waialea Bay.

A walk-through survey method was used. Notes were made on plant associations and distribution, substrate types, topography, exposure, drainage, etc. Plants which could not be positively identified in the field were collected for later determination by comparison with known specimens in the herbarium, and reference with the most recent taxonomic literature. The species recorded are indicative of the season ("rainy" vs. "dry") and the environmental conditions at the time of the field survey. A survey taken at a different time of the year and under varying environmental conditions would no doubt yield slight variations in the species checklist, especially of the weedy, annual plants.

DESCRIPTION OF THE VEGETATION

Except for the sandy beach areas at Hapuna and Waialea Bay, the substrate throughout the project site has been mapped as "KNC", Kawaihae extremely stony very fine sandy loam, 6 to 12% slopes, on the soil maps (Sato et al. 1973). The thin dark reddish-brown colored soil has numerous stones and rocky outcroppings which cover anywhere from 50 to 60% of the soil surface. This soil type overlays pahoehoe bedrock, although in places there are areas with fragmental 'a'a lava. This substrate supports open, rolling grasslands, primarily of buffel grass with scattered trees of kiawe. Along the coastal section of the property, especially in low lying areas, the soils become deeper and less stony. The fine sandy loam is more yellow-brown in color, resembling Pahala ash somewhat. These coastal areas support a dense kiawe forest. There are several small gulches which cross the property. These support grassland vegetation, except for the somewhat larger gulch

located on the southern boundary of the mauka parcel, near the Lalamilo Windfarm Road. There are several seeps within this gulch and this moister environment provides a microhabitat for a number of species not found elsewhere on the project site.

The coastal kiawe forest, grassland, and gulch vegetation are described in more detail below. A list of all the plants inventoried on the project site during the field survey is presented at the end of the report.

Coastal Kiawe Forest

Coastal kiawe forest is found behind the sandy beaches at Hapuna and Waialea Bay, on rocky headlands, and behind a few cobble beaches - these beaches are composed of sun-bleached, white coral fragments and water-worn basalt stones, about 1 to 3 inches in diameter. The kiawe trees (Prosopis pallida) form a closed-canopy forest, that is, the branches of the trees interlock and the canopy cover is greater than 60%. The trees are about 18 to 20 ft. tall.

Under the kiawe trees, the ground cover is primarily buffel grass, although in some places hairy merremia vines (Merremia aegyptia), bristly foxtail grass (Setaria verticillata), and West Indian beggar's tick (Bidens cynapifolia) are locally common during the wetter months. 'Aheahea or 'aweoweo shrubs (Chenopodium oahuense), an endemic member of the goosefoot family, is locally common in the kiawe forest just north of the Puako boat ramp.

Along the seaward facing portions of the forest, a number of more salt-tolerant species are found. These include alena (Boerhavia repens), Australian saltbush (Atriplex semibaccata), 'ilima (Sida fallax), 'ihi (Portulaca pilosa), kipukai or nena (Heliotropium curassavicum), and the silvery-leaved pa'u o Hi'iaka (Jacquemontia

ovalifolia). A few tree species occur in this vegetation type; these are ironwood (Casuarina equisetifolia), tree heliotrope (Tourneforthia argentea), kou (Cordia subcordata), and milo (Thespesia populnea).

Grassland

This vegetation type covers the majority of the project site. Its general physiognomy is of wide, open, low clumps of grass with very scattered, small trees. Buffel grass (Cenchrus ciliaris) is the dominant grass species on the makai parcel and on the lower half of the mauka parcel. Buffel grass, native to Africa and tropical Asia, is a perennial, mat to tussock-forming species. In Hawai'i, it is naturalized and common in dry areas, from sea-level to about 360 ft. elevation, in a wide variety of disturbed habitats on all of the main islands except Ni'ihau (Wagner et al. 1990).

On the project site, buffel grass cover is about 50 to 60%, with the rest of the ground barren, stony soil. Buffel grass forms wiry clumps 1 to 2 ft. tall. Widely scattered throughout the grassland are small trees of kiawe, 6 to 10 ft. tall; tree cover is about 3 to 5%. The trees form somewhat taller stands in low lying, swale areas. Common associates of the grassland are 'uhaloa (Waltheria indica), 'ilima, hairy spurge (Chamaesyce hirta), pa'u o Hi'iaka, and hairy merremia. Disturbed areas bordering roads support a few clumps of fountain grass (Pennisetum setaceum), and a number of weedy, mostly annual species such as swollen fingergrass (Chloris barbata), threadstem carpetweed (Holluga cerviana), graceful spurge (Chamaesyce hypericifolia), Cuba jute (Sida rhombifolia), and Chamaesyce hyssopifolia.

On the upper half of the mauka parcel, two native grasses, pili grass (Heteropogon contortus) and Eragrostis atropioides, are

codominant with buffel grass, that is, they occur in equal numbers. Eragrostis forms stiff, erect tussocks, 2 to 3 ft. tall, while pili grass forms loose, bluish-green colored tufts, up to 2 ft. tall. The native species -- Eragrostis, pili grass, 'ilima, 'uhaloa, and pa'u o Hi'iaka, tend to dominate the stonier knolls, while the swale areas with somewhat deeper soil are covered primarily by buffel grass. Eragrostis is locally common on relatively flat areas with a pebbly soil texture.

Gulch Vegetation

On the upper half of the mauka parcel, just north of the Lalamilo Windfarm Road, is a gulch which contains several seeps and small pools of water, which amazingly contain a few guppies in them. The gulch continues downslope where it quickly dries out and, like other gulches on the project site, is covered by buffel grass grassland.

In the area of the seeps and small pools, the gulch bottom is damp with moss-covered boulders. Woodfern (Christella parasitica), pteris (Pteris vittata), hairy sword fern (Nephrolepis multiflora), maiden-hair fern (Adiantum raddianum), and the native kumu-niu or 'iwa'iwa (Doryopteris decipiens) are found among the boulders and moist soil along the gulch walls. A number of species were only recorded from this area; they include kili'o'opu (Kyllinga brevifolia), Galinsoga parviflora, guava (Psidium guajava), pualele (Emilia fosbergii), cocklebur (Xanthium strumarium), peppergrass (Lepidium virginicum), and all the ferns.

This small section of the gulch is quite a contrast when compared to the other parts of the project site. The lush plant growth and cooler, moister conditions attract cattle to the area and much of the vegetation is browsed.

DISCUSSION AND RECOMMENDATIONS

The vegetation on the majority of the project site consists of grassland with scattered kiawe trees: buffel grass-dominated grassland on the makai parcel and the lower half of the mauka prcel, and a buffel grass-Eragrostis-pili grass association on the upper half of the mauka parcel. Coastal kiawe forest occurs as a somewhat narrow band just behind the shoreline. Gulch vegetation is a minor vegetation type found only in the upper section of the gulch located north of the Lalamilo Windfarm Road; seeps and small pools of water provide a wetter microhabitat.

A Federal and State listed endangered species, the ko'oloa'ula (Abutilon menziesii), is known from the nearby Nansay Hawai'i Puako property which is being developed for residential use (U.S. Fish and Wildlife Service 1993). The ko'oloa'ula is a highly ornamental, diffusely branched shrub with heart-shaped, silvery-green leaves, and dark red to maroon flowers which resemble miniature hibiscus blossoms. Several populations of the pololei fern (formerly Ophioglossum concinnum, now O. polyphyllum), a Category 1 candidate endangered species, are known to occur on nearby lands at Pu'u o Kohola and the Hauna Lani Resort (Char 1989, 1991). The fern has small, paddle-shaped leaves, 1 to 3 inches long, and becomes dormant during the dry season. Recent studies, however, indicate that the species is no longer an endemic Hawaiian species, but part of the more widely distributed and common Ophioglossum polyphyllum complex. The U.S. Fish and Wildlife Service has therefore removed the fern from its listing proposal.

An intensive search was made for the ko'oloa'ula, but no plants were found on the ±800-acre project site. The ko'oloa'ula on Hawai'i island is usually associated with 'a'a lava flows.

Of a total of 73 species inventoried on the project site, 61 (84%) are introduced or alien species, 1 (1%) is originally of Polynesian introduction, and 11 (15%) are native. Of the natives, 7 are indigenous, that is, they are native to the Hawaiian Islands and elsewhere, and 4 are endemic, that is, they are native only to the Hawaiian Islands. The endemic species are: the kumuniu or 'iwa'iwa fern (Doryopteris decipiens), the 'ahealhea or 'aweoweo shrub (Chenopodium oahuense), Eragrostis atropioides, and the silver-leaved pa'u o Hi'iaka (Jacquemontia ovalifolia ssp. sandwicensis). None of the plants found on the property are listed threatened or endangered species, nor are any proposed or candidate for such status (U.S. Fish and Wildlife Service 1989, 1990, 1992). None of the plants are considered rare or vulnerable (Wagner et al. 1990).

Given the findings above, the development of the site as proposed in the Master Plan should not have a significant negative impact on the botanical resources of the site, or the general South Kohala region.

As for recommendations, it is recommended that native plants be used for landscaping. The Hawai'i legislature recently passed "Act 73" which mandates that any new or renovated landscapes for any building, housing, or other facility developed with State funds incorporate native Hawaiian plants wherever and whenever possible.

Native plants found in the area are already adapted to the local environmental conditions and require less water and maintenance, as well as very little soil. The Hapuna Beach Park already uses several native species, as well as Polynesian introduced or Polynesian heritage plants in its landscaping. These include pa'u o Hi'iaka, milo, kou, 'ulei (Osteomeles anthyllidifolia), coconut or niu (Cocos nucifera), hau (Hibiscus tiliaceus), beach

Scientific name	Common name	Status	Vegetation type C	BY	B
FERNS					
ADIANTACEAE (Maiden-hair Fern Family)					
Adiantum raddianum Presl	maiden-hair fern	X	-	-	+
NEPHROLEPIDACEAE (Sword Fern Family)					
Nephrolepis multiflora (Roxb.) Jarrett ex Morton	hairy sword fern	X	-	-	+
POLYPODIACEAE (Common Fern Family)					
Phymatosorus scolopendria (Burm.) Pic.-Ser.	laua'e, lauwa'e	X	-	-	+
PTERIDACEAE (Pteris Family)					
Pteris vittata L.	pteris	X	-	-	+
SINOPTERIDACEAE (Cliffbrake Fern Family)					
Doryopteris decipiens (Hook.) J. Sm.	kumu-niu, manawahua, 'iwa'iwa	E	-	-	+
THELYPTERIDACEAE (Woodfern Family)					
Christella parasitica (L.) Levl.	woodfern, oakfern	X	-	-	+
Macrothelypteris torresiana (Gaud.) Ching		X	-	-	+
FLOWERING PLANTS					
MONOCOTS					
AGAVACEAE (Sisal Family)					
Furcraea foetida (L.) Haw.	Mauritius hemp	X	+	-	-
CYPERACEAE (Sedge Family)					
Kyllinga brevifolia Kottb.	kili'o'opu, kaluha	X	-	-	+

Scientific name	Common name	Status	Vegetation type C	BY	B
LILIACEAE (Lily Family)					
Aloe vera L.	aloe	X	+	-	-
POACEAE (Grass Family)					
Aristida adscensionis L.	six weeks threeawn	X	-	+	-
Cenchrus ciliaris L.	buffel grass	X	+	+	+
Cenchrus echinatus L.	common sandbur, 'ume'alu	X	+	-	-
Chloris barbata (L.) Sw.	swollen fingergrass, mau-'ulei	X	+	+	+
Digitaria adscendens (Kunth) Henr.	crabgrass	X	-	-	+
Eleusine indica (L.) Gaertn.	wiregrass, goosegrass	X	+	-	+
Eragrostis atropioides Hillebr.	hard-stemmed lovegrass	E	-	+	-
Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.	pili, pili grass	I	-	+	-
Pennisetum setaceum (Forssk.) Stapf	fountain grass	X	+	+	+
Setaria verticillata (L.) P. Beauv.	bristly foxtail	X	+	-	+
Sporobolus virginicus (L.) Kunth	seashore rushgrass, 'aki-'aki	I	+	-	-
Sporobolus sp.		X	+	-	-
DICOTS					
AMARANTHACEAE (Amaranth Family)					
Alternanthera pungens Kunth	khaki weed	X	+	-	-
Amaranthus spinosus L.	spiny amaranth, pakai kuku	X	+	-	-
ASCLEPIADACEAE (Milkweed Family)					
Calotropis procera (Ait.) Ait. f.	small crown flower	X	+	-	-
ASTERACEAE (Sunflower Family)					
Ageratina riparia (Regel) R. King & H. Robinson	pamakani	X	-	-	+
Ageratum conyzoides L.	maile hohono	X	-	-	+
Bidens cynapifolia Kunth	West Indian beggar's tick	X	+	-	+
Conyza bonariensis (L.) CRonq.	hairy horseweed, 'ilioha	X	-	-	+

Scientific name	Common name	Status	Vegetation type C	Vegetation type Gr	Vegetation type S
Conyza canadensis var. pusilla (Nutt.) Cronq.	horseweed, lani wela	X	-	-	+
Emilia fosbergii Nicolson	pualele	X	-	-	+
Erechtites valerianifolia (Wolf.) DC.	fireweed	X	-	-	+
Galinsoga parviflora Cav.	galinsoga	X	-	-	+
Pluchea symphytifolia (Mill.) Gillis	pluchea, sourbush	X	+	+	+
Sonchus oleraceus L.	sow thistle	X	+	-	-
Tridax procumbens L.	coat buttons	X	-	-	+
Xanthium strumarium var. canadense (Mill.) Torr. & A. Gray	cocklebur, kikania	X	-	-	+
BORAGINACEAE (Borage Family)					
Cordia subcordata Lam.	kou	P	+	-	-
Heliotropium curassavicum L.	kipukai, nena	I	+	-	-
Tournefortia argentea L.f.	tree heliotrope	X	+	-	-
BRASSICACEAE (Mustard Family)					
Lepidium virginicum L.	peppergrass	X	-	-	+
CAPPARACEAE (Caper Family)					
Cleome gynandra L.	wild spider flower, honohina	X	-	+	-
CASUARINACEAE (Ironwood Family)					
Casuarina equisetifolia L.	common ironwood, paina	X	+	-	-
CHENOPODIACEAE (Goosefoot Family)					
Atriplex semibaccata R. BR.	Australian saltbush	X	+	-	-
Atriplex suberecta Verd.	saltbush	X	+	-	-
Chenopodium murale L.	nettle-leaved goosefoot, 'aheahea	X	+	-	+
Chenopodium oahuense (Meyen) Aellen	'aheahea, 'aweoweo	E	+	+	-

Scientific name	Common name	Status	Vegetation type C	Vegetation type Gr	Vegetation type S
CONVOLVULACEAE (Morning-glory Family)					
Jacquemontia ovalifolia ssp. sandwicensis (A. Gray) K. Robertson	pa'u o Hi'iaka, kakua o Hi'iaka	E	+	+	-
Merremia aegyptia (L.) Urb.	hairy merremia, kozli kua hulu	X?	+	+	+
EUPHORBIACEAE (Spurge Family)					
Chamaesyce hirta (L.) Millsp.	hairy spurge	X	+	+	+
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	X	-	+	-
Chamaesyce hyssopifolia (L.) Small		X	-	+	-
Chamaesyce prostrata (Aiton) Small	prostrate spurge	X	-	+	-
FABACEAE (Pea Family)					
Chamaecrista nictitans (L.) Moench	partridge pea, lauki	X	-	-	+
Desmodium incanum DC.	Spanish clover, ka'imi	X	-	+	-
Leucaena leucocephala (Lam.) de Wit	koa-haole, ekoa	X	+	+	+
Mimosa pudica var. unijuga (Duchass. & Walp.) Griseb.	sensitive plant, puahila-hila, sleeping grass	X	-	-	+
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	kiawe	X	+	+	+
MALVACEAE (Mallow Family)					
Malvastrum coromandelianum (L.) Garcke	false mallow, hauuoi	X	-	-	+
Sida fallax Walp.	'ilima	I	+	+	+
Sida rhombifolia L.	Cuba jute	X	-	+	-
Thespesia populnea (L.) Sol. ex Correa	milo	I?	+	-	-
MOLLUGINACEAE (Carpetweed Family)					
Mollugo cerviana (L.) Ser.	threadstem carpetweed	X	+	+	+

Scientific name	Common name	Status	Vegetation type: C	GF	S
Conyza canadensis var. pusilla (Nutt.) Cronq.	horseweed, lani wela	X	-	-	+
Emilia fosbergii Nicolson	pualele	X	-	-	+
Erechtites valerianifolia (Wolf.) DC.	fireweed	X	-	-	+
Galinsoga parviflora Cav.	galinsoga	X	-	-	+
Pluchea symphytifolia (Mill.) Gillis	pluchea, sourbush	X	+	+	+
Sonchus oleraceus L.	sow thistle	X	+	-	-
Tridax procumbens L.	coat buttons	X	-	-	+
Xanthium strumarium var. canadense (Mill.) Torr. & A. Gray	cocklebur, kikania	X	-	-	+
BORAGINACEAE (Borage Family)					
Cordia subcordata Lam.	kou	P	+	-	-
Heliotropium curassavicum L.	kipukai, nena	I	+	-	-
Tournefortia argentea L.f.	tree heliotrope	X	+	-	-
BRASSICACEAE (Mustard Family)					
Lepidium virginicum L.	peppergrass	X	-	-	+
CAPPARACEAE (Caper Family)					
Cleome gynandra L.	wild spider flower, honohina	X	-	+	-
CASUARINACEAE (Ironwood Family)					
Casuarina equisetifolia L.	common ironwood, paina	X	+	-	-
CHENOPODIACEAE (Goosefoot Family)					
Atriplex semibaccata R. BR.	Australian saltbush	X	+	-	-
Atriplex suberecta Verd.	saltbush	X	+	-	-
Chenopodium murale L.	nettle-leaved goosefoot, 'aheahea	X	+	-	+
Chenopodium oahuense (Meyen) Aellen	'aheahea, 'aweoweo	E	+	+	-

Scientific name	Common name	Status	Vegetation type: C	GF	S
CONVOLVULACEAE (Morning-glory Family)					
Jacquemontia ovalifolia ssp. sandwicensis (A. Gray) K. Robertson	pa'u o Hi'iaka, kakua o Hi'iaka	E	+	+	-
Merremia aegyptia (L.) Urb.	hairy merremia, koali kua hulu	X?	+	+	+
EUPHORBIACEAE (Spurge Family)					
Chamaesyce hirta (L.) Millsp.	hairy spurge	X	+	+	+
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	X	-	+	-
Chamaesyce hyssopifolia (L.) Small		X	-	+	-
Chamaesyce prostrata (Aiton) Small	prostrate spurge	X	-	+	-
FABACEAE (Pea Family)					
Chamaecrista nictitans (L.) Moench	partridge pea, lauki	X	-	-	+
Desmodium incanum DC.	Spanish clover, ka'imi	X	-	+	-
Leucaena leucocephala (Lam.) de Wit	koa-haole, ekoa	X	+	+	+
Mimosa pudica var. unijuga (Duchass. & Walp.) Griseb.	sensitive plant, puahila-hila, sleeping grass	X	-	-	+
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	kiawe	X	+	+	+
MALVACEAE (Mallow Family)					
Malvastrum coromandelianum (L.) Garcke	false mallow, hauuoi	X	-	-	+
Sida fallax Walp.	'ilima	I	+	+	+
Sida rhombifolia L.	Cuba jute	X	-	+	-
Thespesia populnea (L.) Sol. ex Correa	milo	I?	+	-	-
MOLLUGINACEAE (Carpetweed Family)					
Mollugo cerviana (L.) Ser.	threadstem carpetweed	X	+	+	+

Scientific name	Common name	Status	Vegetation type c	gr	s
MYRTACEAE (Myrtle Family)					
Psidium guajava L.	guava, kuawa	X	-	-	+
NYCTAGINACEAE (Four-o'clock Family)					
Boerhavia coccinea Mill.	red-flowered boerhavia	X	+	+	-
Boerhavia repens L.	alena	I	+	+	+
PORTULACACEAE (Purslane Family)					
Portulaca oleracea L.	pigweed, common purslane	X	+	+	+
Portulaca pilosa L.	'ihi	X	+	+	-
RUBIACEAE (Coffee Family)					
Spermacoce assurgens Ruiz & Pav.	buttonweed	X	-	-	+
SOLANACEAE (Nightshade Family)					
Nicotiana glauca R.C. Graham	tree tobacco	X	+	-	-
Solanum linnaeanum Hepper & P. Jaeger	apple-of-Sodom, kikania	X	-	-	+
STERCULIACEAE (Cacao Family)					
Waltheria indica L.	'uhaloa, hi'aloa, kanakaloa	I?	+	+	-
ZYGOPHYLLACEAE (Caltrop Family)					
Tribulus terrestris L.	puncture vine	X	+	-	-

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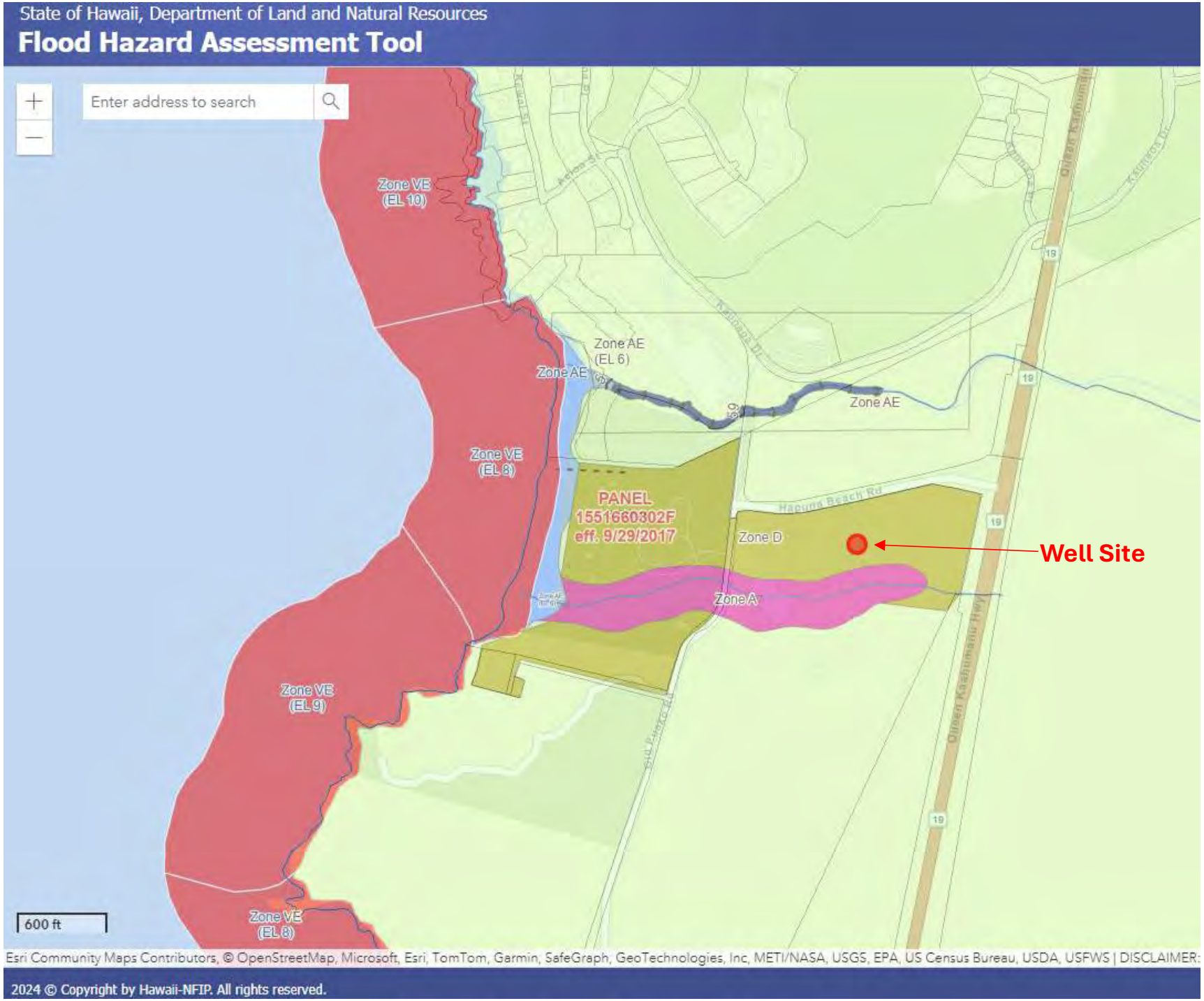
State of Hawaii, Department of Land and Natural Resources
Flood Hazard Assessment Tool
Enter address to search
Zone VE
(EL 10)
Zone AE
(EL 6)
Zone AE
Zone AE
Zone VE
(EL 8)
PANEL
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eff. 9/29/2017
Zone D
Well Site
Zone A
Zone VE
(EL 9)
Zone VE
(EL 8)
600 ft
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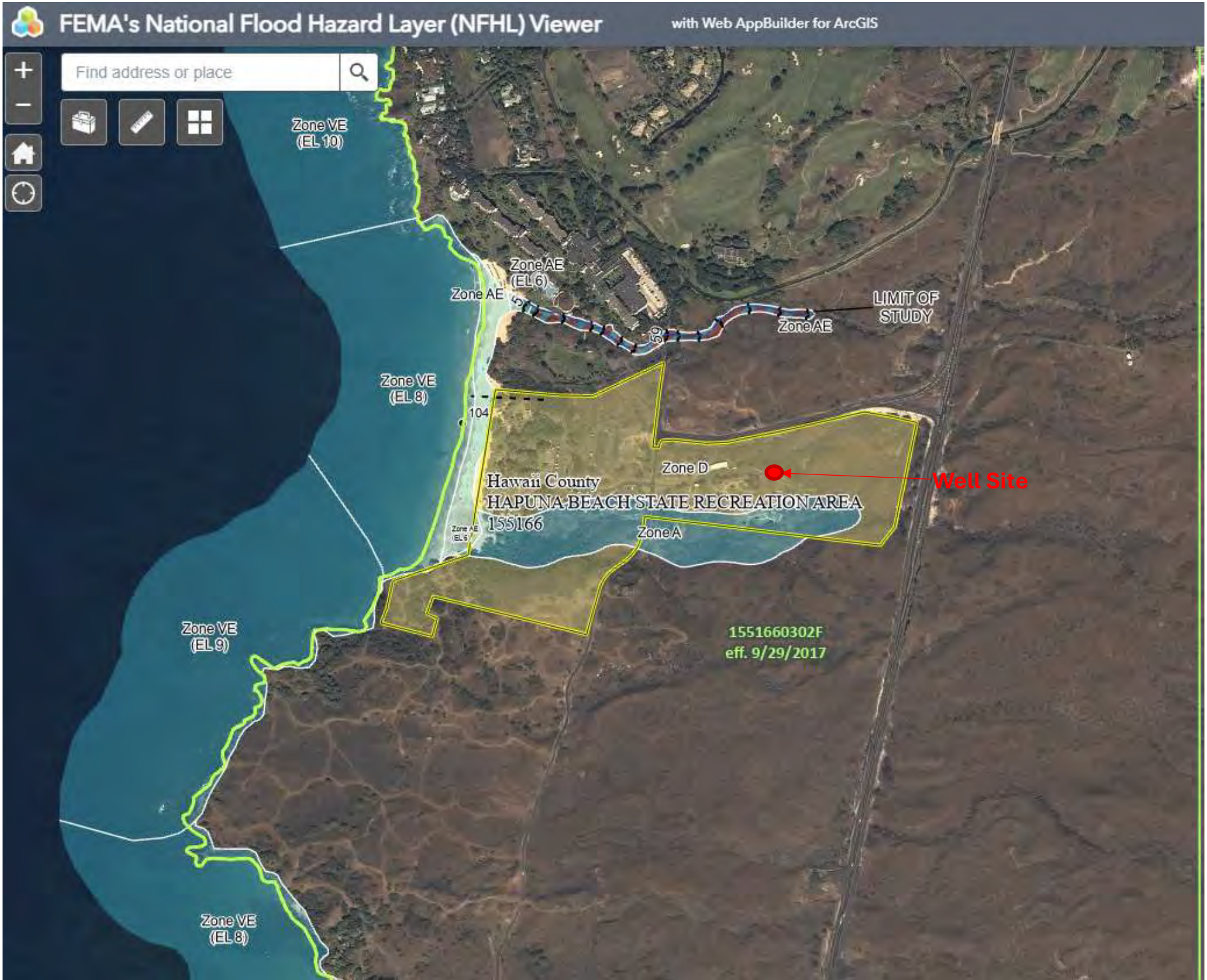
FEMA's National Flood Hazard Layer (NFHL) Viewer
with Web AppBuilder for ArcGIS
Find address or place
Zone VE
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Zone AE
(EL 6)
Zone AE
LIMIT OF
STUDY
Zone AE
Zone VE
(EL 8)
104
Zone D
Well Site
Hawaii County
HAPUNA BEACH STATE RECREATION AREA
155166
Zone A
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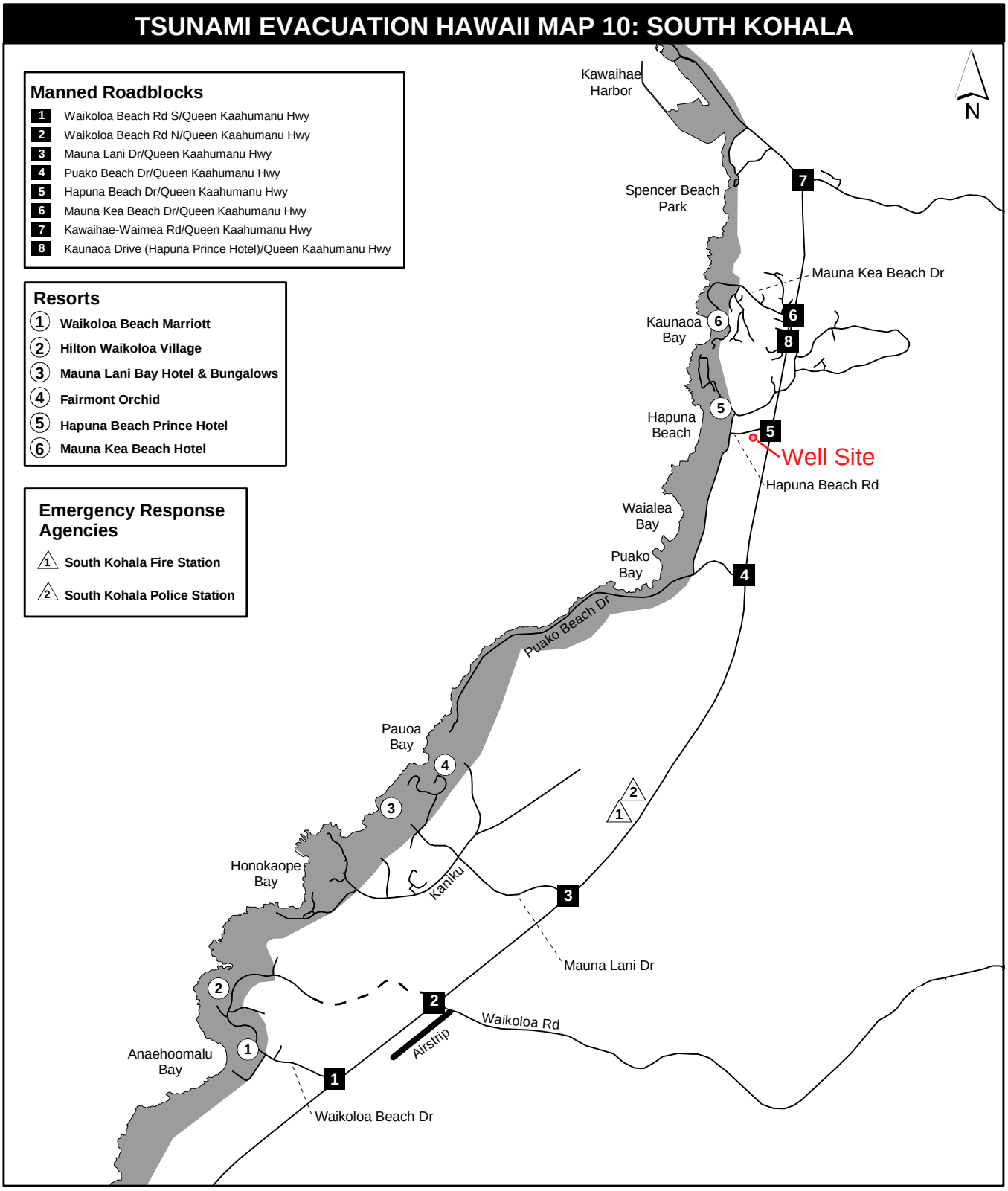
eff. 9/29/2017
Zone VE
(EL 8)

TSUNAMI EVACUATION HAWAII MAP 10: SOUTH KOHALA



EVACUATE ALL SHADED AREAS

source: https://static.pdc.org/tsunami/hawaii/10_Hawaii.pdf

Roy Hardy

From: Roy, Alex <Alex.Roy@hawaiicounty.gov>
Sent: Wednesday, May 1, 2024 2:57 PM
To: Roy Hardy
Cc: Darrow, Jeff
Subject: PL-INT-2024-007551 - Hapuna Beach Well

Mr. Hardy,

According to our records there are a number of approved SMA Use Permits for the subject parcel (TMK 366002041). SMA Use Permit No. 50 was approved for "Parking areas, Warehouse Building, and Related Improvements". We would consider the project to construct a monitoring well to be covered under SMA No. 50 and therefore no further SMA permit would be required. A link to that permit is below.

SMA 50

As for Ch. 343 - The County does not have its own exemption list, however, we do follow the list found in HRS 11-200.1-15; for this project we would accept No. (5) *Basic data collection, research, management, and resource testing* as an acceptable exemption from the preparation of an EA. Since this is Conservation District, and State Lands, it would be more appropriate for OCCL to make that determination.

If you need something more official I can put something together, otherwise this email serves as our response to your submitted inquiry.

Thank you,

Alex Roy
COH-Planning (SMA)

PLANNING COMMISSION

Planning Department
County of Hawaii
Hilo, Hawaii

Application for SPECIAL MANAGEMENT AREA USE PERMIT by DEPARTMENT OF LAND & NATURAL RESOURCES, DIVISION OF STATE PARKS for PARKING AREAS, WAREHOUSE BUILDING AND RELATED IMPROVEMENTS at Hapuna State Park, Lalamilo, South Kohala, Hawaii	SMA USE PERMIT NO. 50

SPECIAL MANAGEMENT AREA USE PERMIT

The County Planning Commission at its duly held public hearings on December 19, 1977 and January 31, 1978, considered the application of the DEPARTMENT OF LAND & NATURAL RESOURCES, DIVISION OF STATE PARKS for a Special Management Area Use Permit in accordance with Rule No. 9, Rules and Regulations Relating to Environmental Shoreline Protection, to allow the construction of two parking areas, vehicular exits, walkways, a new warehouse building and related improvements at Hapuna State Park, Lalamilo, South Kohala, Hawaii, Tax Map Key 6-6-02:35 and 41.

The Commission has found:

That the approval of the proposed use is in keeping with the spirit and intent of Act 176, SLH 1975, and Rule 9 of the Planning Commission which, in part, states that adequate public access be provided to publicly-owned or used beaches, recreation areas, and natural resources.

Hapuna State Park is the major white sand beach park for the island of Hawaii. It provides beach-oriented recreational activities to most of the residences of this island. The purpose of the proposed improvements are to expand and improve parking facilities to accommodate increased use and to construct a warehouse for the park's equipment and supply storage. These improvements are in keeping with one of the main purposes of Act 176 which is the provision of public recreational areas within the coastal area.

The proposed improvements will not have any substantial, adverse environmental or ecological effects upon the Special Management Area. Although the land will be altered and exotic plant life disturbed, the improved parking facility will provide the public with convenience and safety in keeping with the purpose of Act 176 and Rule 9 of the Planning Commission. The proposed improvements

will not remove or destroy endangered plant or animal species; nor will any historic sites be affected.

The short-term adverse impacts which may occur during the construction stage will be minimized by existing controls or through conditions of approval.

Therefore, the Commission hereby grants to the petitioner a Special Management Area Use Permit to allow the construction of two parking areas, vehicular exits, walkways, a new warehouse building and related improvements at Hapuna State Park pursuant to the authority vested in it by Rule No. 9, Rules and Regulations Relating to Environmental Shoreline Protection, subject to the following conditions:

1. That construction shall commence within two (2) years of the effective date of approval of the Special Management Area Use Permit and be completed within two (2) years thereafter.

2. That a building permit be obtained prior to construction of the warehouse from the Department of Public Works.

3. That the petitioner shall obtain approval from the Chief Engineer and Planning Director prior to construction of the parking area.

4. That all other applicable rules and regulations including a Conservation District Use Application (CDUA) and Department of Health requirements shall be complied with.

Should any of the foregoing conditions not be met, the Special Management Area (SMA) Use Permit may be deemed null and void by the Planning Commission.

The effective date of this permit shall be January 31, 1978.

Dated at Hilo, Hawaii, this 9th day of March, 1978.

William F. Mielcke
Chairman, Planning Commission

APPROVED as to FORM and LEGALITY
Roxanna Garcia
ASSISTANT CORPORATION COUNSEL
COUNTY OF HAWAII
Date FEB 28 1978