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IN REPLY REFER TO:

AIR-EP  
99.0150

March 23, 1999

'99 MAR 29 A7:52

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

TO: GARY GILL, INTERIM DIRECTOR  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: KAZU HAYASHIDA  
DIRECTOR OF TRANSPORTATION

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI)  
UPOLU AIRPORT MASTER PLAN  
TMK 5-5-06:7,31, PORTIONS OF 3 AND 9;  
TMK 5-5-07:PORTION OF 2  
NORTH KOHALA, HAWAII  
STATE PROJECT NO. AH4011-02

The State of Hawaii, Department of Transportation, Airports Division has reviewed the comments received during the 30-day public comment period which began on October 8, 1998. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the April 8, 1999, Office of Environmental Quality Control (OEQC) Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the final Environmental Assessment (EA).

Please have your staff contact Lynette Kawaoka, Planner, at 838-8812 to clarify any questions you may have. Thank you for your assistance in this matter.

Enclosures: Final EA (4 copies)  
OEQC Publication Form

c: Belt Collins Hawaii, Ltd. (L. Sichter)

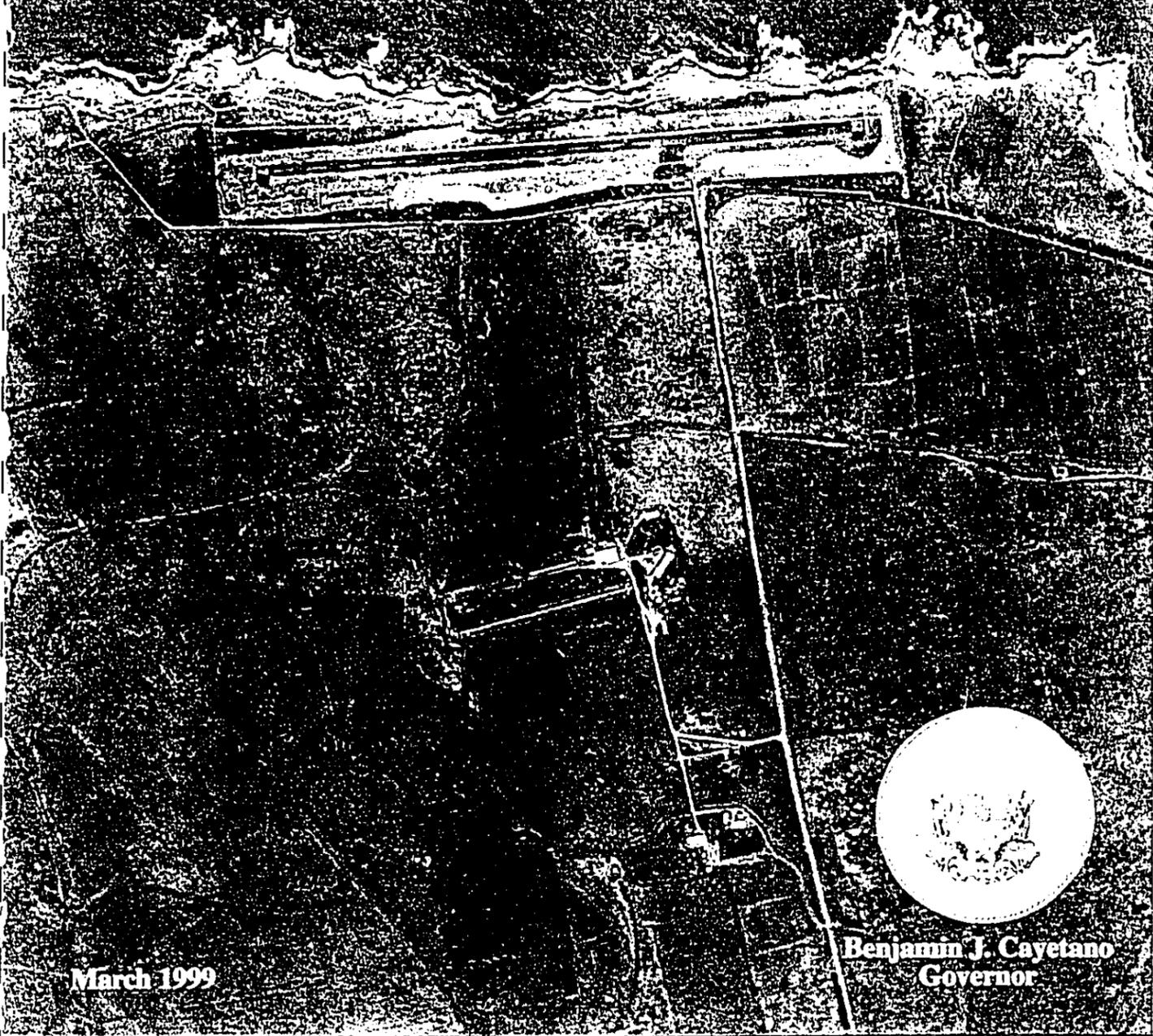
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FILE COPY

\* Upolu Airport \*

Final Environmental Assessment

Prepared for  
State of Hawaii  
Department of Transportation  
Airports Division



March 1999

Benjamin J. Cayetano  
Governor

UPOLU AIRPORT

Island of Hawaii  
Tax Map Keys 5-5-06: 07, 31

FINAL ENVIRONMENTAL ASSESSMENT  
AND  
FINDING OF NO SIGNIFICANT IMPACT

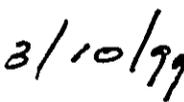
Proposing Agency:

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819

Responsible Official:



Kazu Hayashida, Director  
Department of Transportation  
State of Hawaii



Date

March 1999

**UPOLU AIRPORT FINAL ENVIRONMENTAL ASSESSMENT**

**Prepared for**

**STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION**

*This report, prepared in cooperation with the State of Hawaii Department of Transportation, was financed in part through an Airport Improvement Program Grant from the Federal Aviation Administration under the provisions of Section 505 of the Airport and Airway Improvement Act of 1982 as amended. The contents of this report reflect the views of the preparers and State of Hawaii Department of Transportation who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Aviation Administration. This report does not constitute a standard, specification, or regulation.*

**Prepared by:**

**BELT COLLINS HAWAII  
ARIES CONSULTANTS LTD.**

**MARCH 1999**

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## ENVIRONMENTAL ASSESSMENT OF THE UPOLU AIRPORT MASTER PLAN

### 1.0 OVERVIEW

#### 1.1 Introduction

This Environmental Assessment is prepared pursuant to Chapter 343, Hawaii Revised Statutes, as amended, the rules and regulations established by the Office of Environmental Quality Control (Hawaii Administrative Rules, Title 11, Chapter 200), the requirements in FAA Order 5050.4A, and Section 102(2)(c) of the National Environmental Policy Act of 1969. The requirement for this Environmental Assessment is based on the proposed use of State land, the use of State funds, and improvements within the Conservation District. It is anticipated that this Environmental Assessment will be used in support of a Special Management Area Use Permit and a Conservation District Use Permit.

The format of this document is intended to inform the reader of the identified environmental impacts associated with the proposed project, while at the same time, familiarizing the reader with some of the technical terms associated with airport operations. Thus, a rather detailed description of Upolu Airport's existing facilities and operations is presented prior to describing the actual project.

#### 1.2 Purpose of this Environmental Assessment

This Environmental Assessment has been prepared to assess the potential impacts of airport improvements recommended in the 1999 Upolu Airport Master Plan (hereinafter, "the Master Plan").

The primary objective of the Master Plan was to prepare guidelines for future airport development which will satisfy forecast aviation demand in a sound manner, while addressing the community's environmental and socioeconomic issues and concerns. The Master Plan was based on a 20-year planning horizon.

The methodology for preparing the Master Plan involved an inventory of existing facilities and conditions at the Airport and its environs. Forecasts of future aviation activity were then prepared through the 2020 planning period. The capabilities of the existing airport facilities to accommodate the forecast demand were then analyzed and future airport facility requirements needed to meet the demand were determined. Alternative development concepts for addressing needed future improvements were formulated and evaluated.

The planning process included the selection of a preferred development concept, which has been used as the basis for the Master Plan. The Master Plan identifies a list of proposed improvements to be implemented through the 2020 planning period as demand warrants and as financing becomes available. However, for the purposes of this Environmental Assessment, it is assumed they will be implemented within the next five years.

### 1.3 Summary of Proposed Improvements

The proposed project consists of the following improvements to the existing Upolu Airport (hereinafter, "the Airport") pursuant to the Master Plan. See Section 7 below for a more detailed description of the proposed improvements.

#### 1.3.1 Proposed Land Acquisition

- acquisition of approximately one (1) acre of land at the east end of the Airport to extend the Airport property to include the eastern portions of the existing Runway Safety Area (RSA) and Runway Object Free Area (ROFA) which presently lie outside of the Airport property boundary;
- acquisition of the remaining privately-owned portion of the Runway Protection Zone at the east end of the Airport (approximately 12.23 acres) to provide the Airport with full control over the (RPZ);
- acquisition of approximately three (3) acres of privately-owned land abutting the south side of the Airport for possible future relocation of the passenger terminal; and
- possible acquisition of new right-of-way for widening of the Airport access road (State Highway 271) if needed.

#### 1.3.2 Proposed New Construction

- a new 25-foot-wide paved taxiway parallel to the existing runway with appurtenant facilities including paved entry/exit taxiways and lighting;
- a new 1,000-square-foot maintenance building;
- two T-hangars;
- widening of the 1.8 mile paved access road (State Highway 271);
- a new 750-gallon wastewater collection system for each of the new buildings;
- extension of potable water lines to service the new buildings;
- a 30,000-gallon water tank for fire fighting;
- possible grading of a small area of ground within the Runway Protection Zone (RPZ) beyond the east end of the Airport because its elevation presently penetrates the runway approach surface under FAA regulations;

### 1.3.3 Proposed Relocation of Existing Facilities

- relocation of the existing segmented circle and wind cone;
- relocation of portions of the perimeter fence;
- closure and/or relocation of existing jeep trails crossing the east and west ends of the Airport property;
- reorientation of two aircraft tiedowns.

### 1.3.4 Proposed New Equipment Requiring Little or No New Construction

- a new emergency electrical generator (to be located in the existing electrical vault) and upgrading of electrical panels to accommodate increased loads resulting from the new facilities and taxiway lights;
- new runway, taxiway and parking apron markings including a designated helicopter parking position.

It should be noted that the proposed land acquisition for a new terminal facility does not include construction of the terminal or its appurtenant facilities. Rather, the land acquisition is proposed to ensure that space is reserved for a new passenger terminal, if warranted by a substantial increase in future activity at the Airport beyond what has been forecast during the planning period.

## 1.4 Agency Proposing the Improvements

The agency proposing the improvements is the Airports Division of the State of Hawaii's Department of Transportation (hereinafter, "DOTA").

## 1.5 Agency Approving the Environmental Assessment

The agency approving the Environmental Assessment is the Director of Transportation, State of Hawaii.

## 1.6 Consulted Parties

The Upolu Airport Master Plan was prepared by Belt Collins Hawaii and Aries Consultants Ltd. through extensive consultation with DOTA, the Federal Aviation Administration (FAA), a Technical Advisory Committee (TAC), and the general public. The TAC was organized for the purpose of reviewing and commenting on detailed aspects of the Master Plan as related to member's areas of interest or concern. Its membership represented various airport users and governmental agencies, as well as others interested in, or potentially affected by, future improvements at the Airport. Representatives of the following agencies and organizations were invited to serve on the TAC:

Federal Government

Federal Aviation Administration  
Pohakuloa Training Area

State Government

Department of Transportation  
Department of Land and Natural Resources  
Department of Business, Economic Development, and Tourism  
Hawaii Army National Guard

County Government

Hawaii County Planning Department  
Hawaii County Civil Defense Agency  
Hawaii County Police Department  
Hawaii County Police Department

Aviation Industry

Big Island Air  
Civil Air Patrol  
Benchmark Flight Center  
Puakea Bay Ranch  
General Aviation Council of Hawaii  
Airline Pilots Association  
Airlines Committee of Hawaii

Community Organizations

Hawaii Leeward Planning Conference  
Kohala Businessmen's Association  
Kona-Kohala Chamber of Commerce

Surrounding Landowners

Chalon International of Hawaii, Inc.  
Parker Ranch  
Mr. John R. Worth

In addition to meetings of the TAC, three public informational meetings were held during the course of the Upolu Airport Master Plan study to inform and obtain input from interested parties in the community. The meetings occurred on July 30, 1997, November 19, 1997 and April 16, 1998. All meetings were conducted at Kohala High School in Kapaa.

## 2.0 DESCRIPTION OF THE AFFECTED PROPERTY

### 2.1 Description of Existing Airport Property

Upolu Airport is located in North Kohala on the Island of Hawaii. It is owned by the State of Hawaii and is classified as a General Utility Airport which accommodates single-engine and small twin-engine aircraft (small general aviation propeller aircraft of less than 12,500 pounds gross takeoff weight and having less than 10 passenger seats). Facilities at the Airport accommodate operations for air taxi, general aviation and military use, and include helicopter operations. There are no control tower, aircraft rescue and fire fighting, helipad or cargo facilities at the Airport.

The Airport property consists of 88.699 acres of land owned by the State of Hawaii and administered by the State DOTA. It is identified as Tax Map Keys (TMK) 5-5-06:7 and 31 (see Figure 1).

Land use at the Airport property falls into two categories: the portion of the property situated within a perimeter chain link fence and actively used as an airport, and the remaining portion outside of the chain link fence. The active portion of the Airport property consists of 50.259 acres. The remaining 38.44 acres outside the fence to the west and north are vacant and crisscrossed with dirt roads and trails which are utilized principally by fishermen who frequent the coastal cliffs along the seaward edge of the Airport property. Access to the active portion of the Airport area is controlled. Access to the state-owned land outside the perimeter fence is uncontrolled.

### 2.2 Description of Surrounding Properties

The Airport is abutted by six land parcels. Table 1 summarizes the ownership and size of those parcels. Parcels abutting the Airport property to the east, west and south were formerly cultivated in sugarcane by Kohala Sugar Company.

Table 1: Land Ownership Surrounding Upolu Airport

Tax Map Key	Size (acres)	Owner/Lessee	Existing Land Use
5-5-06:04	146.000	State of Hawaii/ Boteilho Hawaii Enterprises	Portion of Boteilho Dairy: cattle grazing
5-5-06:06	3.009	John R. Worth & Karolyn C. Worth	Residential
5-5-06:09	51.292	Chalon International of Hawaii, Inc	Vacant: cattle grazing
5-5-06:10	221.101	Chalon International of Hawaii, Inc.	Vacant: cattle grazing
5-5-06:15	16.060	State of Hawaii/ Boteilho Hawaii Enterprises	Portion of Boteilho Dairy: cattle grazing
5-5-07:02	285.586	Chalon International of Hawaii, Inc.	Vacant: cattle grazing and a small area of abandoned cars

Source: Real Property Division, Department of Taxation

Parcels 4 and 15 of TMK 5-5-06, which abut the west and south sides of the Airport respectively, are owned by the State of Hawaii and leased to Boteilho Hawaii Enterprises (General Lease #S-4950). The lease expires in the year 2020. An unimproved roadway crosses these parcels, just outside the Airport boundary fence (see Photo Plate 1, photo 5). This roadway is the Mookini Heiau access road.

TMK 5-5-07:02 and 5-5-06:09 & 10, which abut the east and south sides of the Airport, are owned by Chalon International of Hawaii and are used as grazing land. According to a representative of Chalon, the company has no plans for a change in the current use of these parcels. Although the company at one time considered the development of a park on parcel 5-5-07:02 abutting the east end of the Airport, it has abandoned those plans. (Michael Gomes, personal communication, June 5, 1998)

TMK 5-5-06:06 also abuts the west end of the Airport property. Improvements on this privately owned parcel include a single-family dwelling (presently a trailer) and a small pump house. The owners have not expressed any plans to change the use of the property. The single-family dwelling is the closest private residence to the Airport.

Private residences are also located at Boteilho Dairy approximately 3,000 feet southwest of the Airport (TMK 5-5-06:03) and along Akoni Pule Highway (State Highway 270), approximately 9,500 feet (1.8 miles) south of the Airport, near the highway's intersection with the Airport access road (Highway 271).

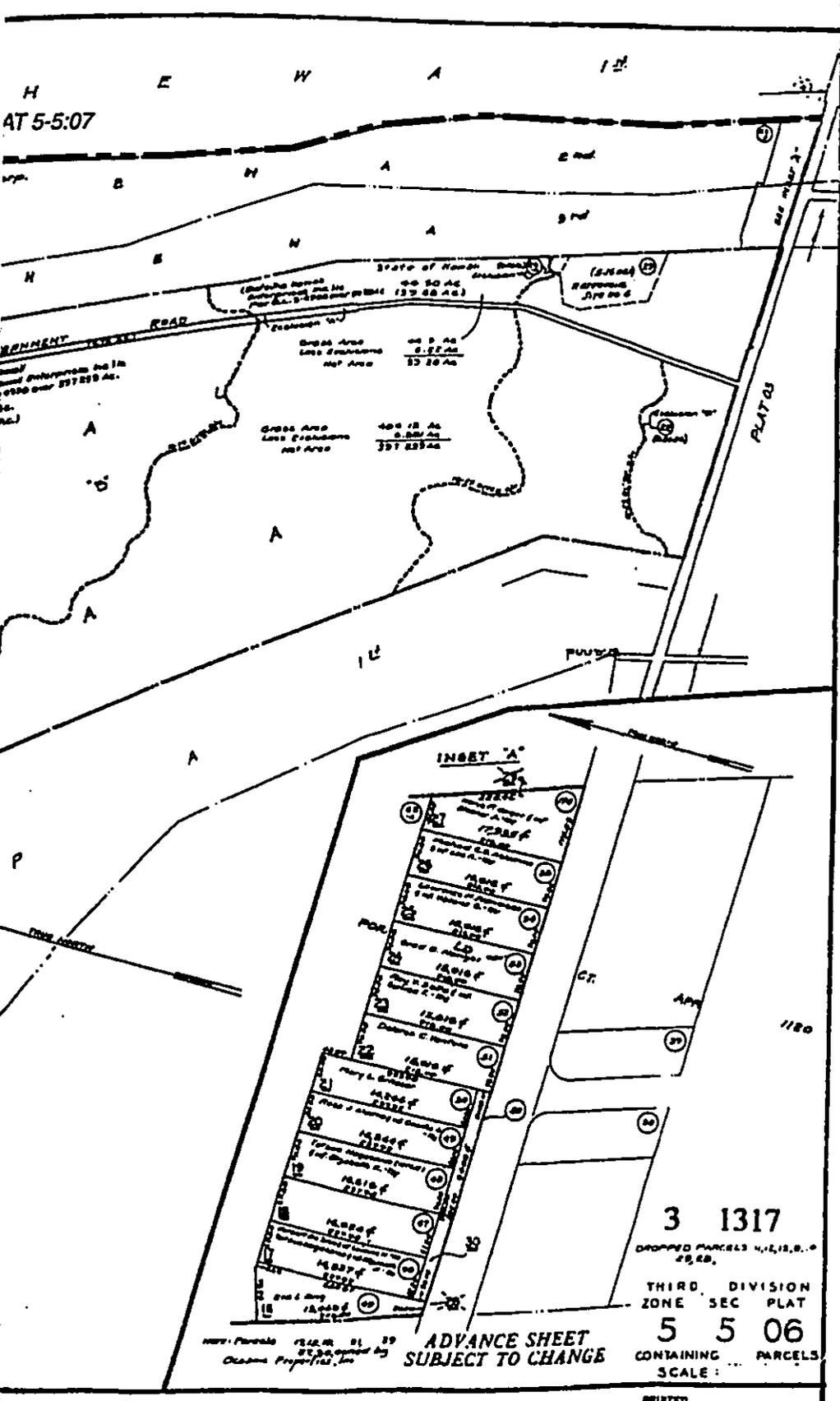
The Airport property abuts the coastline along its northern boundary (see Photo Plate 1, photo 9). Coastal property seaward of the Airport property boundary is owned by the State of Hawaii. All state-owned land in the vicinity of the Airport, including the coastal area, is administered by the Land Management Division of the Department of Land and Natural Resources (DLNR).

The State of Hawaii holds an aviation easement to the east of the Airport across a portion of TMK 5-5-07:02 for a Runway Protection Zone (1,000 feet long, 250 feet inner width and 450 feet outer width). A similar easement extends west of the Airport across a portion of TMK 5-5-06:04.

### 2.3 Existing Land Use Designations and Controls

The entire Airport property, as well as the aviation easement to the east, is contained within the State's Conservation District and is identified as a Resource Subzone. The aviation easement to the west of the Airport is situated within the State Agricultural District, as is the property abutting the Airport to the south. A Boundary Interpretation conducted by State Land Use Commission staff on September 16, 1985 identifies the southern property boundary of the Airport as the boundary for the Conservation District.

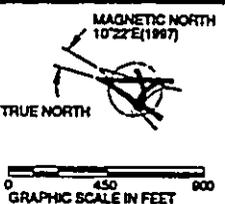
The General Plan of Hawaii County identifies the area around Upolu Airport for "Intensive Agriculture" uses. Lands located immediately makai of the Airport runway are designated for "Open" uses. General Plan Policy 7b for North Kohala states that the course of action for Upolu Airport is, "Retain Upolu airfield for general aviation uses."



Airports Division  
DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII

UPOLU AIRPORT  
ENVIRONMENTAL  
ASSESSMENT  
CHAND OF HAWAII

TAX MAP  
KEY



BELT COLLINS HAWAII  
ARIES CONSULTANTS LTD.

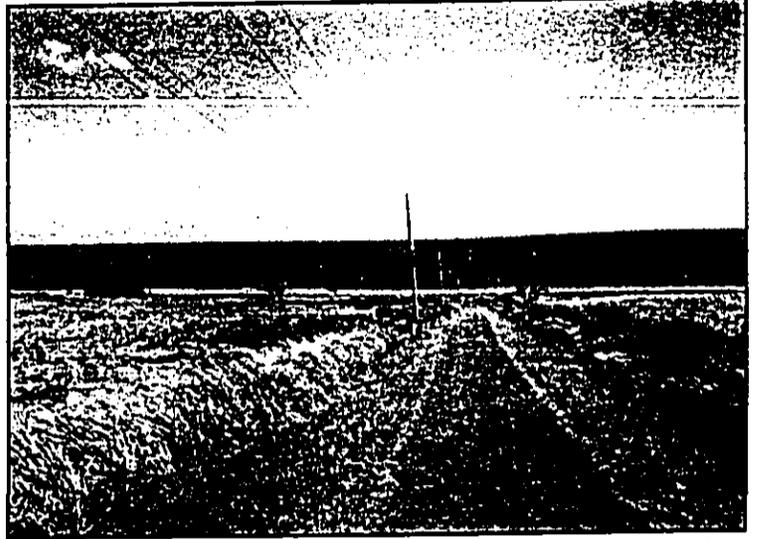
DATE: 03/8/99  
DWG. NO.: 641.0800/002-2 r3/99

FIGURE NO.  
1





1. View of upper portion of airport access road, looking north (makai).



2. View of lower portion of airport access road, looking north (makai).



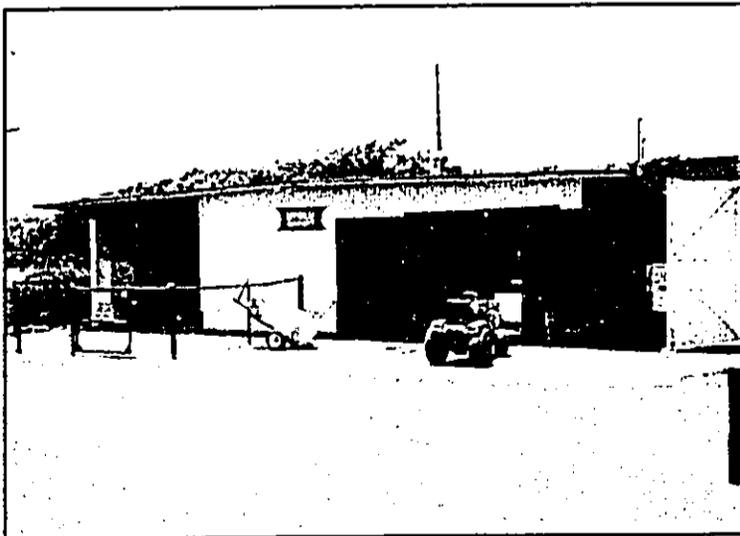
3. View of...



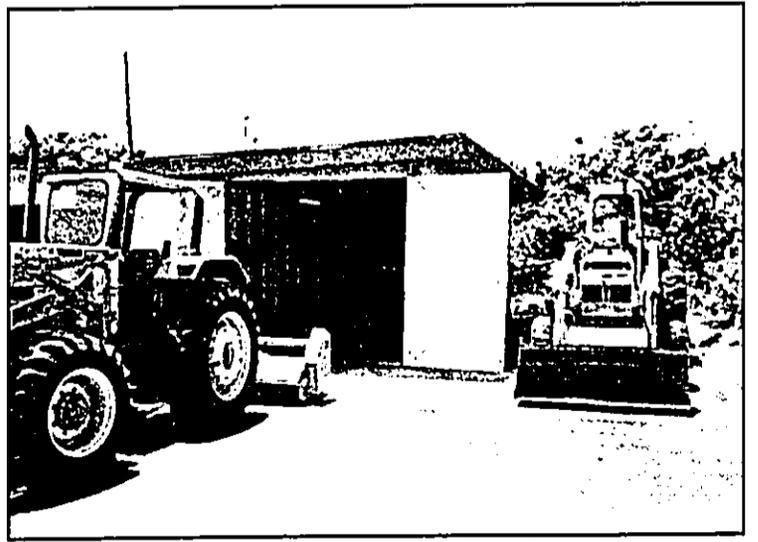
4. View of entrance to Upolu Airport. A portion of the public parking lot is visible in the center of the photo.



5. View of Mookini Heiau access road looking entrance.



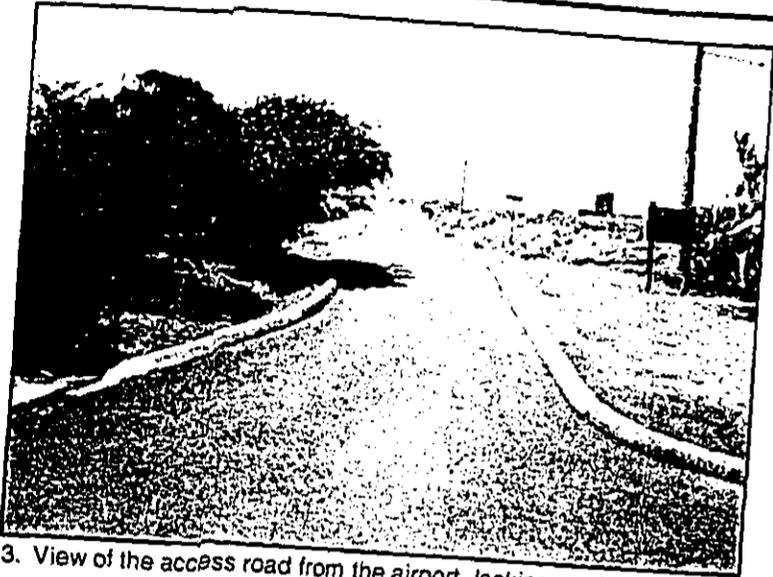
7. View of terminal building. Waiting area is at left, maintenance shop is at right.



8. View of maintenance shed at west end of terminal building.



9. View of...



3. View of the access road from the airport, looking south (mauka).



Access road looking west from airport



6. View of existing terminal building.



9. View of coastline abutting airport property.

**Photo Plate 1**  
**UPOLU AIRPORT**  
**ENVIRONMENTAL ASSESSMENT**

Upolu Airport Environmental Assessment  
Photos: Belt Collins Hawaii  
March 1999

The North Kohala Community Development Plan recommends the resurfacing of Upolu Airport Road (State Highway 271).

The Airport, as well as the surrounding lands, are zoned Agricultural-20 acres (AG-20a) by the County of Hawaii. As set forth in the County Code, the minimum size of a "building site" must be 20 acres. "Airfields" are specified as a permitted use in the County agricultural zone, subject to an approved Special Permit, provided that the land is situated within the State's Agriculture District (Section 25-5-72[c][2], Hawaii County Code). However, because Upolu Airport is in the State Conservation District, the requirement for a Special Permit does not apply. According to County Planning Department staff, the County defers zoning jurisdiction over Upolu Airport to the DLNR because the Airport is in the Conservation District.

The entire Airport property, including the aviation easements, is situated within the Special Management Area (SMA).

Portions of the Airport property are also situated within the County's 40-foot shoreline setback area. However, no portion of the active Airport area within the security fence is situated in the 40-foot shoreline setback area.

#### 2.4 Land Ownership and History

The Airport property is within two traditional Hawaiian ahupua'a (land divisions). The eastern half of the property is located within the ahupua'a of Kealahewa and the western half is located within the ahupua'a of Opihipau.

According to Paul H. Rosendahl, Ph.D., Inc. (PHRI), the consulting archaeologist for the master planning effort, the record of land tenure for the project area starts in 1811 when Kamehameha I gave the ahupua'a of Kealahewa 2 to George Beckley. This land was later included in the Land Court Award (LCA) to Beckley's heirs in 1948. The ahupua'a of Kealahewa 3 was granted to Kaneihala in 1861. At some point in the early twentieth century, the Hawi Mill & Plantation Company, Ltd. apparently acquired these parcels. The portion of the project area in Opihipau remained government land and was eventually leased to Hawi Mill & Plantation Company, Ltd. in the 1920s. The Hawi Mill and Plantation Company, Ltd. lands south of the Airport in Kealahewa 2 and 3 transferred to the Kohala Sugar Company during a merger in 1931 and were eventually purchased by Chalon International of Hawaii, the current owners. (PHRI, 1998)

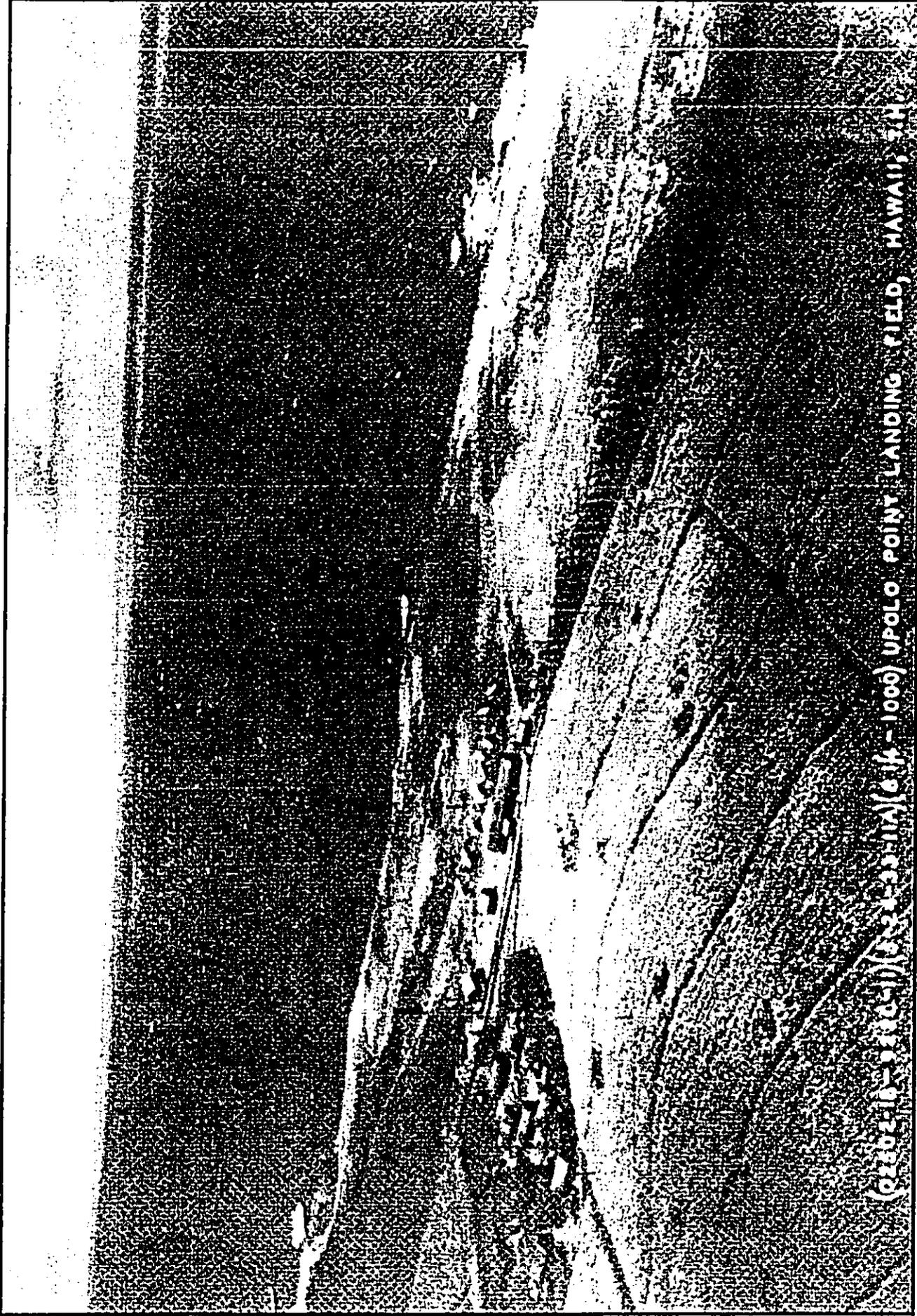
Upolu Airport began as a landing field established in June 1927 by the United States Air Service and was placed under the control and management of the United States War Department. According to PHRI, Upolu Point Military Reservation, also referred to as Upolu Landing Field or Upolu Airplane Landing Field, was named Suiter Field in 1933 in honor of First Lieutenant Wilbur C. Suiter of the 135th Aero Squadron. Photo Plates 2 and 3 present views of Upolu Airport on May 24, 1933.

The land at Upolu Airport was appropriated from the Territory of Hawaii by several Executive Orders. In January 1930, the U.S. War Department granted the Territory of Hawaii concurrent use of the Army landing field for official and commercial aviation use for a term of five years (for Hawaiian Airlines Ltd., according to Bureau of

Conveyance records). Seven months later, about 97 percent of the land set aside for military reservation was restored to the Territory of Hawaii. A couple of months later, about 95 acres were dedicated to establish the Upolu Airport under the control of the Territory of Hawaii. The Territory granted the United States of America occupancy and use of the Airport from July 1944 to May 1947, for the exclusive use of naval and other military purposes. The U.S. government occupied the reservation itself until November 1952 at which time all remaining lands were restored to the Territory. Photo Plate 4 presents a view of Upolu Airport sometime during the period between 1953 and 1959, according to photograph notes from the State Archives.

The Upolu Point Military Reservation included facilities for naval purposes and for the operation and maintenance of military airplanes and airships. These facilities included a 150-foot-wide by 4,000-foot long surfaced runway, an aircraft parking area, a catapult deck, administration buildings, personnel quarters, latrines, supply building, mess hall, commissary, galley, garbage house, maintenance building, public works building, a rocket assembly shop, rocket storage magazine, a gate house, a dispensary, an unloading platform, and four water tanks. (*Defense Environmental Restoration Program for Formerly-Used Sites Inventory Project Report: Upolu Point Military Reservation (CEPOD-ED 1992)*).

641 0H00 200H-4 4.3/9/99



(2202-16-0000-111)(0-2-00-00-111)(014-1000) UPOLO POINT LANDING FIELD, HAWAII, 3H

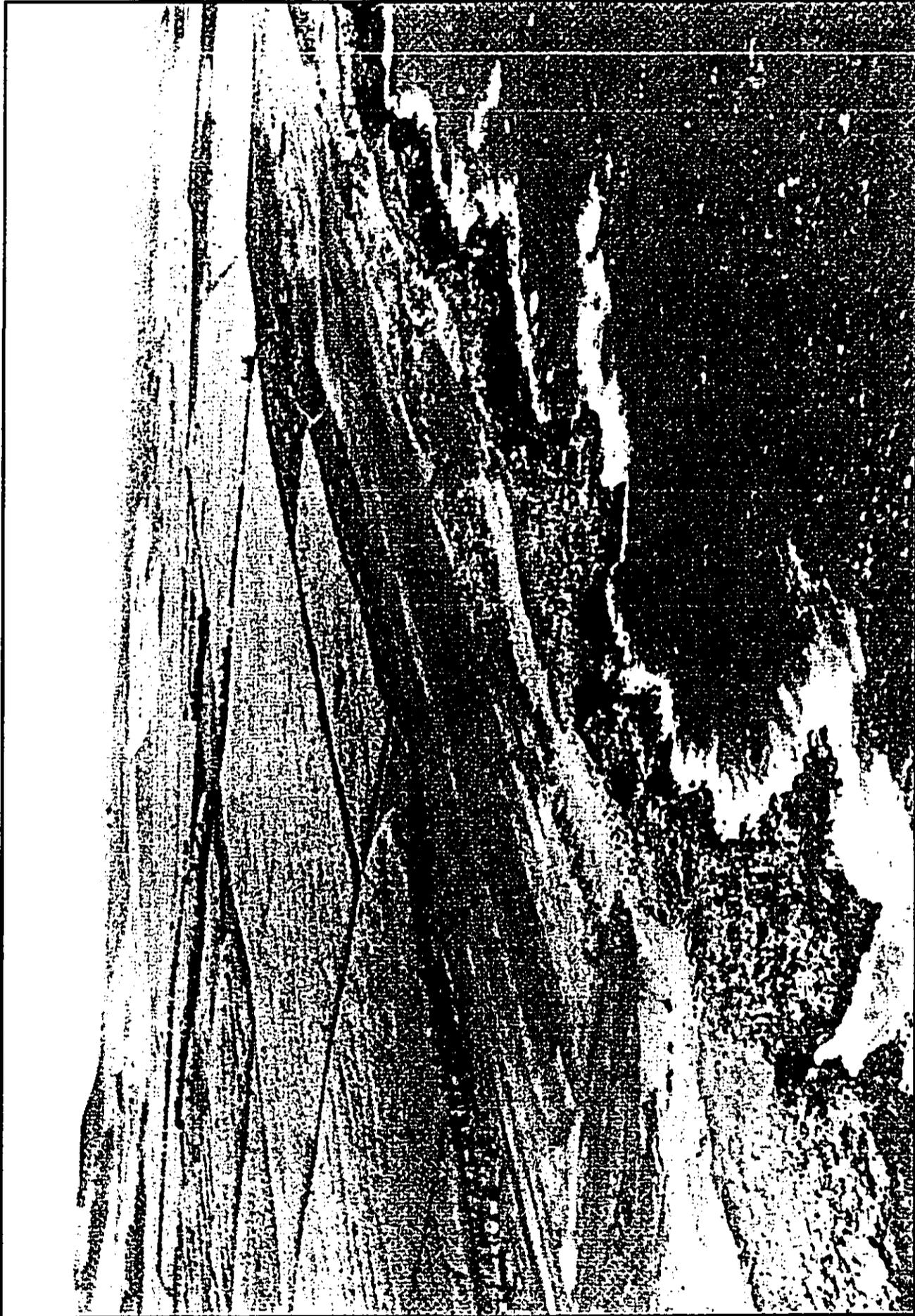
Northern view of a portion of Suiter Field, photographed on May 24, 1933. The buildings in the photo constitute the original Upolu Point Military Reservation. Note that the lands surrounding the military reservation appear to be planted in sugar cane.

Photo Plate 2  
Upolu Airport Environmental Assessment  
Photos: Hawaii State Archives  
March 1999



Eastern view of Suiter Field, photographed on May 24, 1933. Note that the Upolu Point Military Reservation (close-up view presented in Photo Plate 2) is located just to the right of center in the photo. The Upolu Point access road can be identified by the line of trees east of the military reservation extending from the center to the right edge of the photo.

**Photo Plate 3**  
 Upolu Airport Environmental Assessment  
 Photos: Hawaii State Archives  
 March 1999

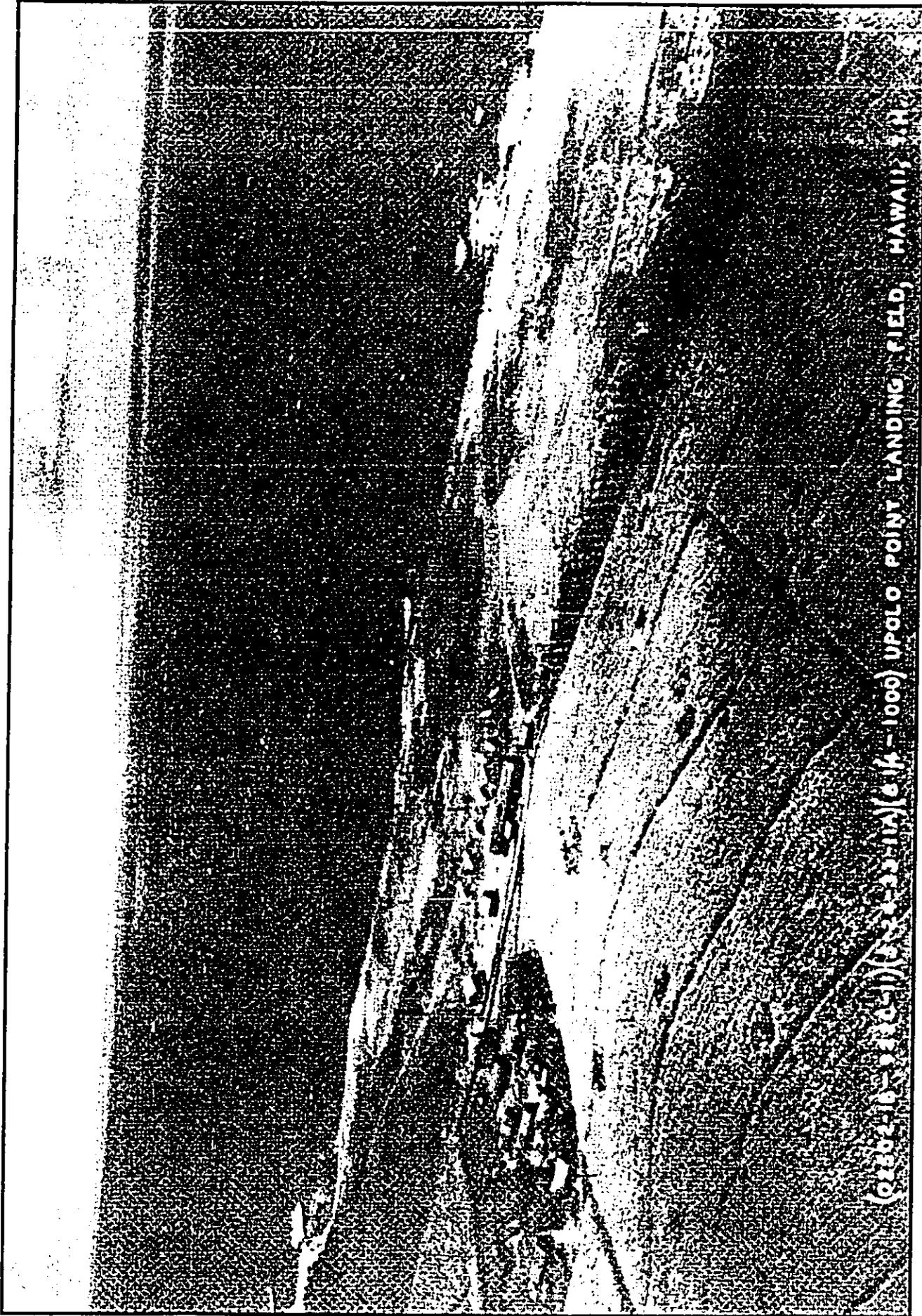


Southwestern view of Upolu Airport, taken sometime between 1953 and 1959. By 1953, the entire Airport Facility had been returned to the Territory of Hawaii by the United States government. The remnants of the military reservation can be seen in the upper right quadrant of the photo. The Upolu Airport access road extends from the center to the left edge of the photo. All the lands abutting the Airport appear to be planted in sugar cane.

**Photo Plate 4**  
Upolu Airport Environmental Assessment  
Photos: Hawaii State Archives  
March 1999

# CORRECTION

THE PRECEDING DOCUMENT(S) HAS  
BEEN REPHOTOGRAPHED TO ASSURE  
LEGIBILITY  
SEE FRAME(S)  
IMMEDIATELY FOLLOWING

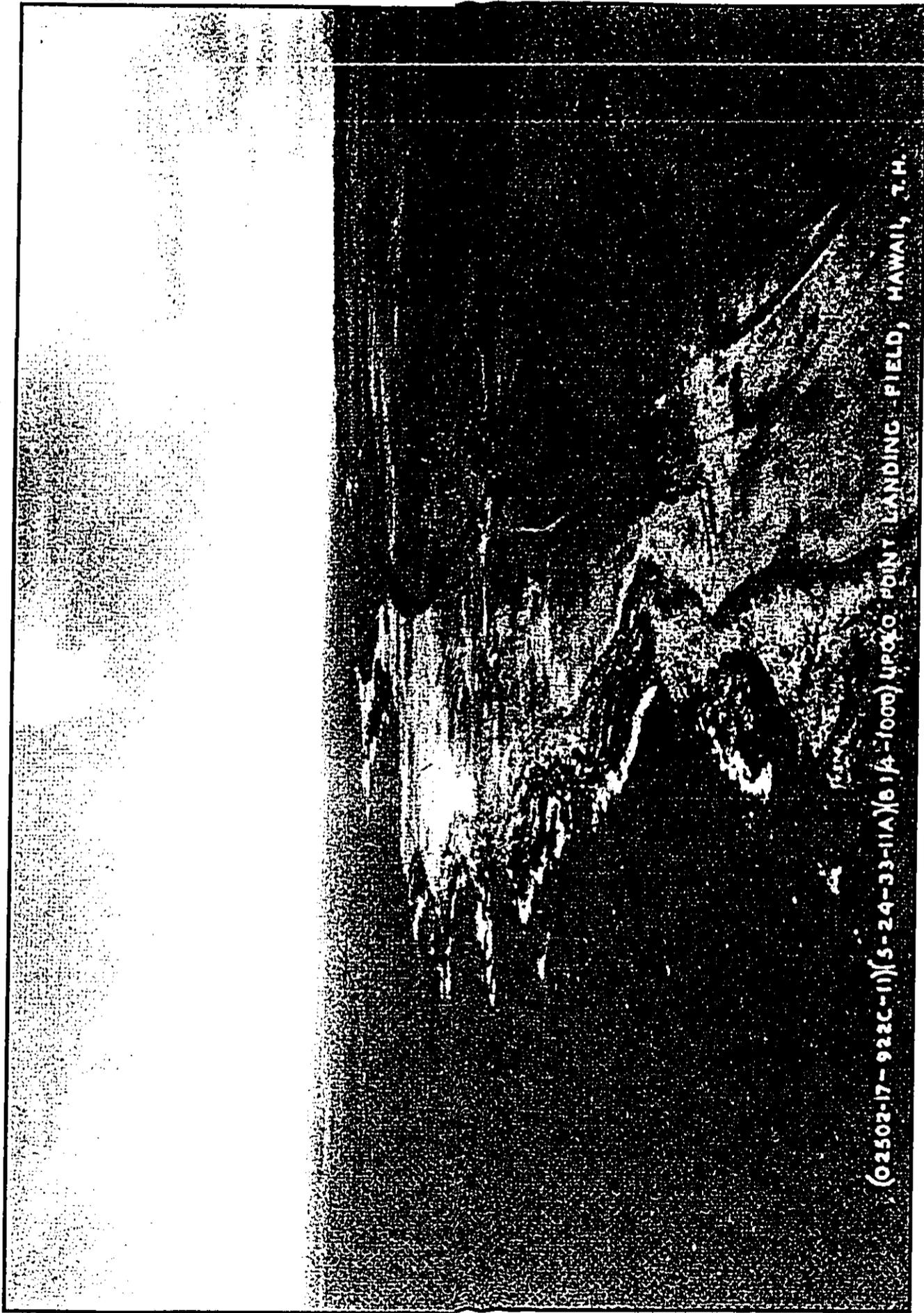


(641-0800-008-4) (641-1000) UPOLO POINT LANDING FIELD, HAWAII, 1933

Northern view of a portion of Suiter Field, photographed on May 24, 1933. The buildings in the photo constitute the original Upolu Point Military Reservation. Note that the lands surrounding the military reservation appear to be planted in sugar cane.

Photo Plate 2  
Upolu Airport Environmental Assessment  
Photos: Hawaii State Archives  
March 1999





Eastern view of Suiter Field, photographed on May 24, 1933. Note that the Upolu Point Military Reservation (close-up view presented in Photo Plate 2) is located just to the right of center in the photo. The Upolu Point access road can be identified by the line of trees east of the military reservation extending from the center to the right edge of the photo.

**Photo Plate 3**  
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 Photos: Hawaii State Archives  
 March 1999





Southwestern view of Upolu Airport, taken sometime between 1953 and 1959. By 1953, the entire Airport Facility had been returned to the Territory of Hawaii by the United States government. The remnants of the military reservation can be seen in the upper right quadrant of the photo. The Upolu Airport access road extends from the center to the left edge of the photo. All the lands abutting the Airport appear to be planted in sugar cane.

**Photo Plate 4**  
Upolu Airport Environmental Assessment  
Photos: Hawaii State Archives  
March 1999



### 3.0 DESCRIPTION OF THE EXISTING AIRPORT FACILITIES

To better understand the improvements proposed in the Upolu Airport Master Plan, a general description of the Airport's existing facilities is provided below (see Figure 2).

#### 3.1 Runway

The Airport contains a single runway, identified as Runway 7-25. It is 3,800 feet long and 75 feet wide and is aligned in an east-northeast to west-southwest direction. Runway 7-25 is painted with visual runway markings and equipped with medium intensity runway lights (MIRL). Please refer to the cover of this environmental assessment for a photograph of the runway.

#### 3.2 Taxiway

A single entry/exit taxiway, generally identified as that portion of pavement abutting the south side of the runway, is approximately 150 feet wide. It connects the runway to the aircraft parking apron. There are taxiway lights at the turnarounds at each end of the runway and along the taxiway connection to the apron.

#### 3.3 Aircraft Parking Apron

The aircraft parking apron is a paved area linking the terminal area to the taxiway and runway. It encompasses an area of approximately 25,000 square feet and includes two aircraft tiedowns at its west end. A floodlight is located on each side of the aircraft parking apron.

#### 3.4 Air Traffic Control

The Airport is an uncontrolled airport in that it has no control tower. It is also a Visual Flight Rules (VFR) airport because it has no published instrument approach procedure. Air Traffic Control (ATC) for en route air traffic over the Airport is provided by the Honolulu Combined Center/Radar Approach Control (CERAP). Although the Airport does not have a published instrument approach procedure, a pilot flying on an Instrument Flight Rules (IFR) flight plan may be cleared by CERAP to fly over Upolu at the minimum en route altitude and if, when in the vicinity of the Airport and VFR conditions exist, the pilot may cancel the IFR flight plan and land VFR at the Airport.

#### 3.5 Runway Protection Zones

Almost the entire runway protection zone (RPZ) for Runway 25 (at the east end of Runway 7-25) and part of the runway protection zone for Runway 7 (at the west end of Runway 7-25) are outside the present Airport boundary on privately owned property or state owned property, respectively. However, the State has aviation easements over these two areas. The RPZ dimensions at each end of the runway are an inner width of 250 feet, a length of 1,000 feet and an outer width of 450 feet. The RPZ widths are centered on the extended runway centerline.

### **3.6 Navigational Aids**

There is a segmented circle with a lighted wind indicator at mid-field and approximately 250 feet south of the runway centerline. There is also a wind indicator north of the runway but no wind indicators at the ends of the runway. An airport rotating beacon is located on the roof of the existing terminal building. Runways 7 and 25 are equipped with precision approach path indicators (PAPI-2). The runway lights and PAPI lighting are pilot controlled (meaning that they can be remote-controlled from the air or ground).

### **3.7 Meteorological Instruments**

There is a National Oceanic and Atmospheric Administration (NOAA) solar powered lighted anemometer and a rain gauge west of the aircraft parking apron.

### **3.8 Terminal Building**

The existing terminal building encompasses 960 square feet and includes a waiting area for commuter/air taxi services, restroom, and DOT maintenance space (see Photo Plate 1, photos 6 and 7 for views of the terminal building). Scheduled commuter service has not been provided at the Airport since 1986 .

### **3.9 Cargo Facilities**

There are no cargo facilities at the Airport.

### **3.10 General Aviation Facilities**

There are no general aviation facilities except for the two (2) tiedowns on the west side of the aircraft parking apron.

### **3.11 Vehicular Access and Parking**

Access to the Airport is via a one-lane 12-foot-wide paved road extending from Akoni Pule Highway (State Highway 270) to the Airport, a distance of approximately 9,500 feet. Beginning at the intersection with Akoni Pule Highway, the first 3,000 feet of the access road are situated within a 28-foot right-of-way (see Photo Plate 1, photo 1). The remaining 6,500 feet of road are situated within a 40-foot-wide right-of-way (see Photo Plate 1, photo 2). The access road is designated as State Highway 271. The access road is owned by the State of Hawaii and administered by the Department of Land and Natural Resources (DLNR). However, the DLNR has no road maintenance division, and therefore, maintenance responsibility for the roadway is unclear.

The airport vehicular parking area is to the east and adjacent to the terminal building at the end of the access road (see Photo Plate 1, photo 4 for a view of a portion of the parking area to the right of the chain link fence) and is surrounded by a chain link fence equipped with a gate for service vehicle access. The parking area is unstriped and covers an area of approximately 10,000 square feet.



DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII

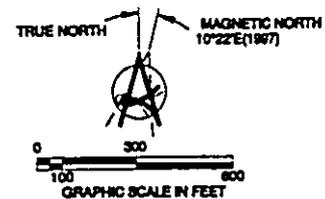
## UPOLU AIRPORT MASTER PLAN

ISLAND OF HAWAII

### EXISTING AIRPORT FACILITIES

LEGEND	
	STRUCTURE
	AIRFIELD/APRON PAYMENT
	AIRPORT PROPERTY LINE
	BUILDING RESTRICTION LINE
	FENCING
	AIRPORT REFERENCE POINT
	DRAINAGE DITCH
	THRESHOLD LIGHTS
	WIND SOCK
	AVIGATION EASEMENT
	ROTATING BEACON
	FLOODLIGHT
	POWER LINE
	WATER LINE

EXISTING FACILITY SCHEDULE	
1	AIRPORT REFERENCE POINT
2	RUNWAY 7-28 3,800' X 75' (N 77° 04' 30" E)
3	RUNWAY PROTECTION ZONE (1,000' X 250' X 400')
4	APPROACH SURFACE 20:1
5	TIEDOWNS
6	SEGMENTED CIRCLE AND LIGHTED WIND INDICATOR
7	VEHICLE PARKING
8	TERMINAL BUILDING
9	APRON
10	MAINTENANCE BUILDING
11	ROTATING BEACON
12	ELECTRICAL VAULT BUILDING
13	DRAINAGE DITCH
14	PAPI-2
15	NOAA WEATHER STATION
16	RUNWAY HOLDING POSITION SIGN
17	GATES



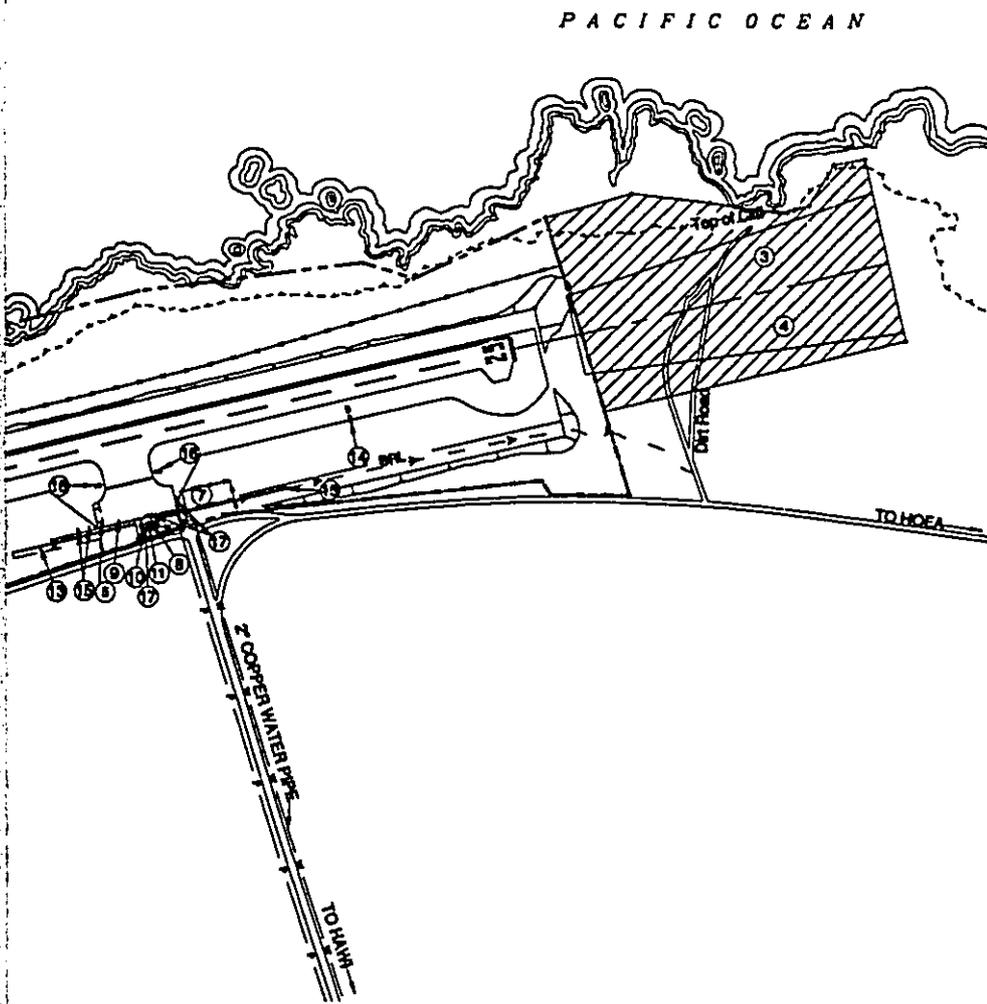
BELT COLLINS HAWAII  
ARIES CONSULTANTS LTD.

DATE: 07-07-98

FIGURE NO.

DWG. NO.: UPO-03-Existing Facilities-3

2





### **3.12 Airport Maintenance Facilities**

Maintenance facilities at the Airport include half of the terminal building and a separate 720-square-foot equipment storage building adjacent to the terminal building (see Photo Plate 1, photo 8). Airport support is provided by staff based at the Waimea-Kohala Airport. Regular maintenance at the Airport is scheduled on Tuesday, Wednesday and Thursday mornings and early afternoons. Only brief airfield inspections are conducted on other days by DOT maintenance staff.

### **3.13 Aircraft Rescue and Fire Fighting Facilities**

There are no aircraft rescue and fire fighting facilities at the Airport. The nearest fire station is 3 miles away at the County Fire Station in Hawi. There is no written response agreement between DOT and the County of Hawaii.

### **3.14 Fuel Storage**

There is no fuel storage facility on the Airport.

### **3.15 Security**

Security at the Airport is limited to a chain link fence constructed around the active airfield (see Photo Plate 1, photo 6). As discussed above, portions of the Airport property to the west and north lie outside the perimeter fence. The fencing is corroded in places and a small section along the northeastern perimeter is separated from the fence post. There is one gate providing vehicular access from State Highway 271 onto the Airport and this gate is locked when the Airport is unattended.

### **3.16 Water Supply**

The water source for the Airport is an 8-inch municipal line running along Akoni Pule Highway. A 2-inch copper line alongside the Airport access road conveys the water from the municipal transmission line to the terminal for distribution. During the period from July 1996 to May 1997, the Airport used an average of 3,180 gallons of water per month. However, according to County Water Department records, usage rates varied widely: from 11,000 gallons in July 1996 to 0 gallons in both January and March 1997.

### **3.17 Wastewater Collection and Disposal**

Wastewater from the Airport terminal building is collected in a 4-inch line and discharged to an on-site cesspool.

### **3.18 Storm Drainage**

There is no piped drainage system at the Airport. Sheet flow from the land south of the Airport (upslope) and runoff from the runway is directed to an onsite system consisting of a concrete-lined drainage channel situated parallel to the south edge of the runway apron and under the front edge of the terminal building (see Photo Plate 1, photo 6 for a view of the drainage channel just outside the chain link fence on the left). The lined

channel begins at a point 400 feet west of the terminal building and ends about 300 feet east of the building where it empties into a drainage swale that continues on to a gully about 200 feet east of the property boundary. From this point, runoff flows are channelized down a moderately steep slope to the seacliff, where they empty over the cliff and into the Pacific Ocean.

### 3.19 Electrical System

Electrical service is provided by Hawaii Electric Light Company (HELCO). The Airport is serviced by an overhead 4,160 volt, 3-phase pole line extending from Akoni Pule Highway along the Airport access road. At the intersection of the access road and a dirt road running parallel to the southern boundary of the Airport, the line splits, and a single-phase 2.4 kilovolt circuit is routed to the 10 KVA transformer at the Airport.

### 3.20 Telecommunications System

Telephone service is provided by GTE Hawaiian Telephone with a pay phone in the terminal building. The telephone system consists of a 25-pair cable routed from Akoni Pule Highway on the same pole line as the HELCO electrical line. A cable provides a 2-pair drop to the terminal building.

## 4.0 OVERVIEW OF AIRCRAFT OPERATIONS

The following discussion summarizes the existing and historical use of Upolu Airport since 1970.

### 4.1 Existing Air Traffic Patterns

Existing air traffic patterns are to the north, over the Pacific Ocean, for both runway ends. This minimizes noise impacts over residential areas south of the Airport. The traffic pattern altitude is 800 feet above mean sea level (MSL) for small aircraft and 1,500 feet above MSL for large aircraft.

### 4.2 Existing Aircraft Operations

During preparation of the Master Plan, interviews were conducted with general aviation, commuter/air taxi, and military operators to determine the extent of existing aircraft operations at Upolu Airport (note: an aircraft operation is a single takeoff or landing). Following are the results of the interviews:

#### 4.2.1 General Aviation

- Regular flight training by flight schools on Hawaii and Maui and occasionally by flight schools on Oahu.
- Cross country training and solo cross country flights which take advantage of the fact the Airport is more than 50 nautical miles from Hilo International and Kahului Airports as well as Honolulu International Airport.
- Rental and charter flights for recreational use (e.g., sightseeing, picnics and camping) and pilot proficiency.
- Emergency alternate landing site for flights between Hawaii and Maui and circle island tours of Hawaii.
- Flight training by the Civil Air Patrol.

#### 4.2.2 Commuter/Air Taxi

- Medical emergencies to evacuate patients.
- Flight training and check flights for fixed wing aircraft and helicopter operators on Hawaii and Maui.
- Helicopter charters for scenic flights, aerial filming, etc.
- Fixed wing aircraft rental and charter flights.

#### 4.2.3 Military/Government

- Training by Hawaii Army National Guard CECAT (Medical Unit) using UH-60 Blackhawk helicopters who also use the Airport occasionally at other times of the year for proficiency flights and stop-and-go flights.
- Night vision device (NVD) training by U.S. Marine Corps Aviation Support Element.
- Occasional use with C-130s by Hawaii Air National Guard.
- Occasional helicopter flight training by United States Coast Guard. They would only use C-130s in an emergency.

There is no FAA Air Traffic Control Tower at Upolu Airport, and the Airport is unattended most of the time. Therefore, accurate data on aircraft operations are not readily available. Based on discussions with Airport users, there are an estimated 800 air taxi and 2,600 general aviation operations annually.

According to information provided by U.S. CINCPAC, and other military sources, there are an estimated 600 military aircraft operations annually. These include mostly helicopters and a few C-130 aircraft operations. Therefore, total aircraft operations are estimated to be about 4,000 operations annually. However, it should be emphasized that because operators do not record each actual operation, the actual number of operations at the Airport could be either higher or lower than this estimate. In addition, without contacting each aircraft owner in the State, as well as individuals renting aircraft on visits to Hawaii, this is only an estimate of aircraft operations at the Airport.

#### 4.3 Passenger Activity

Upolu Airport is used occasionally by the sightseeing air taxi services using both fixed-wing aircraft and helicopters. These flights originate from other airports and heliports on Hawaii and Maui. However, their stopovers are usually limited to sightseeing and passengers desiring to use the Airport's restroom facilities in the existing terminal building. There were no reported passengers in 1996 on scheduled commuter/air taxi flights. There were nine (9) reported passengers in 1997.

Scheduled interisland air carrier service was provided until 1962. After that, the Airport was served by commuter/air taxis. Scheduled air service was most recently provided by Royal Hawaiian Airways using Cessna 402 aircraft until they stopped service in 1986. The historic record of total enplaned and deplaned interisland passengers at Upolu Airport is presented in Table 2. The interisland passenger totals include passengers on both scheduled air carrier and commuter/air taxi flights.

The total number of passengers (enplaned and deplaned) at the Airport ranged between 900 and 2,800 from 1970 until 1986 when Royal Hawaiian Airways stopped scheduled service. In the late 1940s and early 1950s there were about 12,000 passengers annually at the Airport.

Table 2: Summary of Historical Aviation Activity at Upolu Airport - 1970-1997

Year	Passengers (enplaned & deplaned)	Air Cargo (U.S. tons)	Air Mail (U.S. tons)
1970	991	0	0
1971	1,090	83	0
1972	1,350	0	0
1973	1,327	0	0
1974	1,896	0	0
1975	2,211	0	0
1976	2,241	4	0
1977	2,809	3	0
1978	2,393	0	0
1979	2,110	0	0
1980	1,906	0	0
1981	2,127	0	0
1982	1,632	0	0
1983	1,601	0	0
1984	2,416	0	0
1985	2,144	0	0
1986	874	0	0
1987	0	0	0
1988	0	0	0
1989	4	6	0
1990	13	7	0
1991	3	7	0
1992	0	4	0
1993	0	0	0
1994	0	0	0
1995	0	0	0
1996	0	0	0
1997	9	0	0

Source: State of Hawaii, Department of Transportation

#### 4.4 Air Cargo and Mail

No cargo was reported as being shipped in and out of the Airport in 1997. There is no air mail going through the Upolu Airport. The reported historic total volume of annual air cargo (enplaned and deplaned) at Upolu Airport are presented in Table 2 and include data for cargo carried by scheduled commuters as well as by all-cargo air taxis. The air taxi cargo operators did not report their cargo volumes to the State prior to 1988.

#### 4.5 Based Aircraft

According to the State DOTA, no aircraft are currently based at the Airport. There are general aviation aircraft, based on other Islands as well as the Island of Hawaii, that use the Airport for both recreational and training flights that may be parked at the Airport for short periods. On occasion there are also several military aircraft or helicopters at the Airport for short periods for training exercises.

#### 4.6 Forecast Aircraft Operations at Upolu Airport

The DOTA's *Update of Hawaii Aviation Demand Forecasts*, completed in October 1994, contains forecasts for passengers, air cargo and mail, aircraft operations and based aircraft for all the airports in the State. These were based on the then available historical FAA and State DOT data. The aircraft operations forecasts have been updated as a result of the more detailed analysis that was possible for this Airport Master Plan study, which included interviews with airport users. Table 3 presents these forecasts. Total aircraft operations are forecast to increase from an estimated 4,000 in 1996 to 6,600 operations by 2020.

Table 3: Aviation Demand Forecasts, Upolu Airport, 1996 to 2020

ANNUAL FORECASTS	1996*	2000	2005	2010	2015	2020
<b>Aircraft Operations:</b>						
Commuter/Air Taxi	800	950	1,200	1,400	1,650	1,950
General Aviation	2,600	2,800	3,000	3,250	3,500	3,850
Military	600	600	650	700	750	800
<b>TOTAL</b>	<b>4,000</b>	<b>4,350</b>	<b>4,850</b>	<b>5,350</b>	<b>5,900</b>	<b>6,600</b>
<b>Based Aircraft</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PEAK HOUR ACTIVITY</b>						
Aircraft Operations	12	12	12	12	12	12

\* Based on discussions with airport users  
Source: Aries Consultants Ltd.

Peak period aviation demand forecasts indicate peak levels of aviation related activities during the average day of the busiest month. The peak number of aircraft activities generated by the forecasts affect airfield, terminal area, access, automobile parking, and infrastructure and utility requirements at Upolu Airport. The aircraft operations in the peak month are estimated to be approximately 10 percent of the annual operations based on analyses at other airports in the State.

Estimates of peak hour operations were prepared using available data obtained from discussions with users of the Airport. Because of the limited use of the Airport at present, the peak hour activity is associated with touch and go training activity in which a pilot may perform 5 or 6 touch and go flights (i.e., 10 to 12 aircraft operations). Therefore at present approximately 85 to 100 percent of the daily aircraft operations are estimated to occur during the peak hour when the Airport is being used for touch and go training. In the future, it is assumed that these percentages will decline to 55 to 67 percent through the year 2020 planning period as aviation activity increases at the Upolu Airport.

The forecasts assume no reported air cargo and mail at the Airport during the forecast period. No based aircraft are forecast at the Airport by 2020.

Commuter/air taxi operations are forecast to increase from an estimated 800 operations in 1996 to 1,950 operations by 2020. It is expected that these will continue to be a mix of nonscheduled sightseeing and training flights by fixed wing aircraft and helicopter operators.

General aviation operations are forecast to show a modest growth from an estimated 2,600 operations in 1996 to 3,850 operations by 2020. This reflects an increase in general aviation originating on the Big Island as well as pilots from other Islands using the Airport for training, business and recreational general aviation activity.

Military operations have been forecast to increase from an estimated level of 600 operations in 1996 to 800 operations by 2020 based on the comments received on potential increased military activity.

No passenger activity has been reported at Upolu Airport since 1986, and it is assumed that no scheduled commuter airline passenger service will be provided during the forecast period.

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## 5.0 SUMMARY DESCRIPTION OF THE AFFECTED NATURAL ENVIRONMENT

The following is a discussion of the environmental conditions that characterize the Upolu Airport area.

### 5.1 Topography and Drainage

Upolu Airport is located at the northern tip of the Kohala peninsula. From a regional perspective, the peninsula's topography is characterized by a moderate slope from the Akoni Pule Highway (elevation 600 feet above mean sea level [MSL]) down to the Airport (elevation 96 feet above MSL), a distance of approximately 10,000 feet. The average slope of the region is about 5 percent. The peninsula constitutes the north facing slope of Kohala Mountain and is characterized by large open expanses of pasture land intersected by water worn gullies which serve as intermittent drainage ways. The Airport is located generally on a flat area of land between two such gullies, and is oriented in an east-west direction, parallel to a 100-foot-high seacliff.

### 5.2 Flood Hazard

According to Flood Insurance Rate Map Panel 155166 0050 C, the Upolu Airport property is located in Zone X (areas of 500-year flood, or areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile). State Highway 271, the Airport access road, is also located in Zone X.

### 5.3 Soils

The entire Airport property, as well as the abutting lands, are identified as Hawi silty clay (HaC). According to the Soil Survey of the State of Hawaii, "This soil is similar to Hawi silty clay, 0 to 3 percent slopes, except that it is moderately sloping. Runoff is medium, and the erosion hazard is moderate. This soil is used for sugarcane and for pasture."

### 5.4 Agricultural Lands

The lands surrounding the airport property are identified as Prime agricultural lands under the State Department of Agriculture's classification system known as Agricultural Lands of Importance to the State of Hawaii (ALISH). Most of the land surrounding the Airport is used for cattle grazing, with the exception of the residential parcel at the west end of the Airport property.

### 5.5 Climate

The climate of North Kohala is characterized as mild, semitropical, with daytime temperatures ranging from the low 60s (°Fahrenheit) during the winter months to the low 80s (°F) during the summer months, with peak temperatures occurring generally in August/September. Rainfall in the vicinity of the Airport averages about 40 inches per year. Winds are predominately prevailing trades (over 98 percent of the time), averaging 10.5 knots (approximately 12.4 mph). Runway 7-25 provides 98.1 percent wind coverage for

10.5 knots or less crosswinds based on data collected at the former U.S. Coast Guard Station located 1-1/2 miles southwest of the Airport. The normal maximum temperature of the hottest month is 82° F. There are no localized sources of air pollution in the region that deteriorate air quality.

## 5.6 Fauna and Avifauna

Three separate field surveys (April, July and October 1997) were conducted at the Airport by Philip Bruner, a consulting biologist, to allow an examination of species composition during different seasons. The consultant's report summarizing the surveys is presented as an appendix to this document.

### 5.6.1 Summer Data (July)

The only native avifaunal species recorded during the summer survey was a White-tailed Tropicbird (Phaethon lepturus), a common seabird in Hawaii which nests on cliffs, often in the interior of the island. No seabirds were seen nesting on or near the Airport property, although the sea cliffs in the region are known to support populations of the introduced Rock Dove (Columba livia). Seabirds such as Brown Noddy (Anous stolidus) and Black Noddy (Anous minutus) could also nest along the sea cliffs. However, the Airport area is considered to be too accessible to ground predators for seabirds to nest successfully.

The only native land birds that could potentially occur in the Airport area are the I'o or Hawaiian Hawk (Buteo solitarius) and the Short-eared Owl or Pueo (Asio flammeus). The I'o is endangered and confined to the Big Island while Pueo are only listed as endangered on O'ahu and occur on all the main Hawaiian Islands. These birds forage in forest habitat, grasslands, and agricultural fields but are usually seen more inland than along the coast. None were observed at the Airport during the survey periods.

An average of 40 Pacific Golden-Plover (Pluvialis fulva) were tallied on each of the two survey days in July. Plovers are the most abundant migratory shorebirds in Hawaii. Most migratory birds are breeding in the Arctic during July, but some individuals, usually young birds, may oversummer their first year. All of the plovers observed were in non-breeding plumage and were likely oversummering juveniles. The Airport appears to be used as a roosting site for these birds which came in from surrounding pasture lands at dusk. Ruddy Turnstone (Arenaria interpres) is the second most common migrant in Hawaii. Like the plover, they breed in the Arctic and juveniles sometimes oversummer in Hawaii. An average of 14 turnstones were observed resting or foraging along the margins of the Airport. None of the turnstones had breeding plumage.

A total of 13 species of non-native (introduced) birds were noted on the summer survey. Small Indian Mongoose, cats, roof rats and house mice were all seen on and around the Airport site. No native Hawaiian Hoary Bats were observed.

### 5.6.2 Spring/Fall Data (April, October)

Two native birds were recorded in the spring and fall surveys. A White-Tailed Tropicbird was seen foraging offshore in April and a Short-eared Owl was observed

foraging at the east end of the Airport property near dusk in October. Both are birds that would be expected in the area.

Plovers and turnstones were both present during the April and October surveys. Daytime counts for plovers averaged 23 birds within the airport fence line. However, at dusk large numbers of plover flew in from grass lands to roost on the runway. In one of the two nights in April, over 400 plover were tallied between 1700 and 2000 hours. On one evening in October, approximately 250 plover were recorded at the Airport. Because the Airport is infrequently used by aircraft, it appears to be an important plover roost in North Kohala. Turnstones were much less abundant. The fall and spring counts averaged 27 birds, but this is not considered to be unusual since they are not nearly as abundant as plovers.

No Bristle-thighed Curlew (*Numenius tahitiensis*) were observed at the Airport. The Curlew is a migratory shorebird that breeds in a small area of Western Alaska and winters entirely on Pacific Islands. Recently, this species was listed as a species of concern by the United States Fish and Wildlife Service. Although none were seen, sites like Upolu are considered to be potential habitats.

A total of 14 species of introduced birds were tallied during the Spring and Fall surveys. No particularly unusual species were noted.

Mice, cats and mongoose were present in both the Spring and Fall surveys. Two evenings were devoted to looking for the Hawaiian Hoary Bat. None were seen.

### 5.6.3 Conclusion

The Airport lands are located along a wave swept coast and bounded by pasture lands. Native birds recorded on the surveys were confined to seabirds seen flying offshore and a single sighting of a Short-eared Owl. Migrants included the two most abundant species. Large numbers of roosting plovers were noted during the Spring and Fall surveys.

The Airport is apparently an important roosting site for plover wintering in North Kohala. Their numbers may pose potential air strike problems for aircraft landing after dusk. During the day, most of the birds disperse to their foraging territories in adjoining pasture lands. The introduced birds were typical of the region. No unusual or unexpected species were recorded. Feral mammals were also the usual, common introduced species. The native and endangered Hawaiian Hoary Bat was not found on any of the surveys.

### 5.7 Botanical Resources

A botanical resource assessment was conducted in January 1998 by Char & Associates to inventory existing resources in the area surrounding the Airport and to determine if any endangered or threatened plants are present. Since the 50-acre portion of the Airport property within the fence line consists entirely of paved surfaces and mowed grass areas, the survey focused on the lands surrounding and abutting the Airport. The consultant's report is included as an appendix to this document.

The assessment concluded that the surrounding area is dominated by introduced species such as *koa haole*, Guinea grass and California grass. Only five native species were observed during the field studies: these were *ilima* (*Sida fallax*), *kipukai* (*Heliotropium curassavicum*), *'uhaloa* (*Waltheria indica*), *'akulikuli* (*Sesuvium portulacastrum*), and *pa'uohi'iaka* (*Jacquemontisa ovalifolia* subsp. *sandwicensis*).

Of the five, only the *pa'uohi'iaka* is endemic, that is, it is native only to the Hawaiian Islands. The other four species are all indigenous, that is, they are native to the Hawaiian Islands and also elsewhere. None of the plants found during the survey is a listed, proposed, or candidate threatened and endangered species, nor is any plant a species of concern (U.S. Fish and Wildlife Service, 1997).

A separate survey of the nearby lands around the Mo'okini Heiau and the Kamehameha I Birthsite State Monument by the same botanist in 1994 also recorded similar findings. These findings are not surprising, given the fact that the surrounding lands have been disturbed for a long period of time. The lands south of the Airport were formerly in sugar cane cultivation.

## 5.8 Archaeological and Cultural Resources

The Airport property has been extensively altered over the past 70 years. As a result, no archaeological resources are known to exist within the Airport property boundaries.

An Archaeological Inventory Survey was conducted by Paul H. Rosendahl, Ph.D., Inc. (PHRI), a consulting archaeologist, in February 1998 as part of the master planning effort to determine the presence of any historic or prehistoric sites on lands abutting the Airport to the east, west and south that might be considered for acquisition by the Airport at some point in the future. No prehistoric sites were found. The archaeologist's report is presented as an appendix to this document.

The survey identified three historic features, consisting of a historic period irrigation ditch, a series of irrigation flumes, and the structural remains of a small building that was formerly part of the Upolu Military Reservation. None of the sites were identified as being significant, as defined by significance criteria established and promoted by the State Department of Land and Natural Resources, State Historic Preservation Division.

The survey also included historical documentary research and a series of oral interviews to document the potential presence of cultural sites in the vicinity of the Airport and ascertain information about possible traditional cultural uses of the study area. No cultural sites have been identified. None of the four persons interviewed was aware of any traditional cultural use of the project area.

In January 1998, a Final Environmental Impact Statement for the Ala Kahakai Trail was published by the National Park Service. The Final EIS depicts a conceptual alignment for the Ala Kahakai trail along the coastal portion of the Airport property. It should be noted that the archaeological inventory survey conducted for the Upolu Airport Environmental Assessment did not include the coastal portion of the Airport property because no improvements are proposed there. However, subsequent discussions between

PHRI and the Department of Land and Natural Resources have confirmed that no historic coastal trails are known to exist along the Airport coastline<sup>1</sup>.

### 5.9 Air Quality

Ambient air quality in the region of the Upolu Airport is considered to be good, primarily due to the rural character of the area. Sources of air pollution generally include motor vehicles, off-highway construction, agricultural fuel combustion, and aircraft exhaust, but are quite limited in the Airport area.

### 5.10 Scenic and Visual Resources

Views from areas of the Airport accessible to the public are generally limited to mauka views of the north facing slope of Kohala Mountain, and views of the Alenuihaha channel, as well as of Haleakala on Maui. Upolu Airport is situated along a series of 100+foot-high coastal cliffs. However, due to the topography of the area, the coastline and sea cliffs are not visible from the existing terminal building at the Airport.

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<sup>1</sup> As described in the Ala Kahakai National Trail Study and Final Environmental Impact Statement, National Park Service (January 1998), "The Ala Kahakai follows an approximately 175-mile portion of the prehistoric *ala loa* (long trail) roughly parallel to the seacoast extending from 'Upolu Point on the north tip of Hawai'i Island down the west coast of the island around Ka Lai (South Point, literally, "The Point") to the east boundary of Hawai'i Volcanoes Park at the ancient shoreline temple (*heiau*) known as Waha'ula Heiau." (page 3, Final EIS). Because 'Upolu Point is located at the eastern end of the Upolu Airport property, this statement seems to suggest that the prehistoric trail crosses the Upolu Airport property. However, the Final EIS goes on to explain that the Ala Kahakai "is comprised of remnants of prehistoric and historic trails and more recent roads which illustrate the effects of changing modes of transportation from foot travel, to horse and mules, to carts, and finally jeeps and cars." (page 7). This statement is consistent with the trail description presented in Appendix F of the Final EIS: the Ala Kahakai begins at Upolu Airport with a paved road to 'Umiwai Bay and includes a dirt road past Mo'okini Heiau. But this description is not entirely accurate. Based upon field observations by the author of the Upolu Airport Environmental Assessment, the road extending west from Upolu Airport to Mo'okini Heiau along the shoreline is a dirt road and is not paved. It is deeply rutted and riddled with numerous potholes that make it impassable to non-four-wheel drive vehicles during rainy periods.

According to Mr. Pat Teeley of the DLNR Forestry Division, the alignment of Ala Kahakai in the vicinity of Upolu Airport is conceptual and is not based upon either an existing or historical trail alignment.

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## 6.0 SUMMARY DESCRIPTION OF THE SOCIOECONOMIC ENVIRONMENT

### 6.1 Socioeconomic Setting

For the purposes of this discussion, the service area for Upolu Airport is identified as the entire North Kohala district. North Kohala's principal population center is the town of Hawi, located at the intersection of the two state-owned highways serving the district: Akoni Pule Highway (State Highway 270) and Kohala Mountain Road (State Highway 250). Other smaller residential areas in North Kohala include Kapaau, Halaula, Halawa, Makapala, Honomakau, Hoesa, and Mahukona.

The United States Census Bureau's Census Tract 218 corresponds to the boundaries of the North Kohala District. Due to several factors, however, including the rural character of North Kohala, its relatively sparse population, and limited economic activity in the district, very little statistical data are actually available for the district of North Kohala or Census Tract 218. (In cases where the number of persons or businesses surveyed is considered to be so low that disclosure of the information gathered could be viewed as proprietary and a breach of privacy, the State and County elect to withhold the information from their published census reports.)

### 6.2 Population

The State's Department of Business, Economic Development and Tourism (DBEDT) has published long-range projections for three categories: population, daily visitor census, and total civilian jobs, but these data are only available on an island-by-island basis and not on the district level. Thus, while broad trends can be identified, they reveal very little about the socioeconomic character of the district. Therefore, the following discussion of population and economic activity tends to focus on the Island of Hawaii and provides data specific to North Kohala wherever possible.

According to the State of Hawaii, the population of the North Kohala District was approximately 4,800 in 1994. This represents an 11.9 percent increase over the district's population in 1990. Between 1960 and 1980, the district's population declined but remained relatively stable, while the islandwide population increased significantly. Since 1980, the district population has mirrored the population boom experienced by the island as a whole, as summarized in Table 4.

The shifting populations of the two largest communities in the district provide some insight into the changing face of North Kohala, as documented in Table 5 below. Between 1960 and 1980, Hawi's population decreased by almost 20 percent and then, nearly recovered in the following ten years the population it had lost in the previous twenty years. Between 1960 and 1970, three out of every four people left Kapaau. Yet, within a decade, the town had regained nearly half of the population it had lost, and within another decade had grown 16 percent over its 1960 population.

Table 6 further depicts the changing character of the population. As the number of Japanese and Filipino residents declined, the number of Caucasian and Hawaiian residents increased. The discussion in the following section on Economic Activity will provide some explanation for this change.

The forecast of future growth in the State is referred to as the 1997 DBEDT 2020 Projection Series, which represent the fourth long-range projection report prepared by the State since 1984. Unfortunately, the projections are limited to statewide and island growth and are not available for individual island districts. Therefore, no forecast data are available for North Kohala. Nevertheless, the forecasts provide a useful tool in projecting future population and visitor growth for planning purposes. Table 7 summarizes pertinent 2020 projections for Hawaii County.

### 6.3 Economic Activity

The changing character of North Kohala's population is attributed largely to the closure of the Kohala Sugar Company, which had operated for more than 100 years and was the largest employer in the district. In 1970, the 13,000 acres of sugarcane land cultivated by Kohala Sugar represented about 12 percent of all the sugarcane cultivated on the Big Island. In 1975, the year of the plantation closure, 60 percent of the North Kohala labor force was employed in agriculture or manufacturing, according to the County of Hawaii's 1980 Data Book.

Beginning with the announcement by Castle & Cooke on March 2, 1971 of its intent to close the sugar company, until the actual closure in December 1975, the Kohala district experienced a crisis of monumental proportions. More than 500 employees (29 percent of the district's civilian labor force) lost their jobs when the sugar company closed, and the impact rippled throughout the district's (and island's) economy.

According to County statistics, the district's unemployment rate rose 2.1 percent, from 6.8 percent in 1975 to 8.9 percent in 1994, while unemployment on the island as a whole increased 0.6 percent, from 9.9 percent to 10.5 percent during the same period (Hawaii County Data Books, 1976 and 1995). Although the State of Hawaii created the Kohala Task Force in 1972 as a means of funding new investment opportunities in the district and to create new jobs, none of the four business ventures it funded ultimately succeeded.

Table 8 summarizes the transformation of agricultural production on the Big Island over two decades. As can be seen, the amount of sugar harvested and the number of acres cultivated dropped by half during the 21-year period. However, while the volume of vegetables, melons, and especially fruits increased sharply, the actual acreage devoted to these products increased very little (1,400 acres islandwide) when compared to the number of acres followed by the decline of sugar (49,000 acres islandwide). To date very few of Kohala Sugar's lands appear to have been recultivated. Rather, much of it was sold to land developing interests, but remains fallow and/or is used for pasture.

**Table 4: Hawaii County and North Kohala Population Data**

	1960	1970	1980	1990	1994
Hawaii County Resident Population	61,332	63,468	92,053	120,317	135,244
% Increase/Decrease		3%	45%	31%	12%
North Kohala Resident Population	3,386	3,326	3,249	4,291	4,800
% Increase/Decrease		-2%	-2%	32%	12%

Source: Hawaii County Data Books, 1976 and 1995.

**Table 5: Population of Hawi vs. Kapaau, 1960 - 1990**

Resident Population	1960	1970	1980	1990
Hawi	985	797	795	924
% Change		-19%	-0.2%	16%
Kapaau	937	237	612	1,083
% Change		-75%	158%	77%

Source: Hawaii County Data Books, 1976 and 1995.

**Table 6: Ethnic Groups in North Kohala, 1970 vs. 1990**

Year	Japanese	Caucasian	Filipino	Chinese	Hawaiian	Other	Total
1970	793	851	972	142	510	58	3,326
% of total	24%	26%	29%	4%	15%	2%	100%
1990	581	1457	801	92	1,028	332	4,291
% of total	13%	34%	19%	2%	24%	8%	100%

Source: Hawaii County Data Books, 1976 and 1995.

**Table 7: Selected 2020 Projections for Hawaii County**

	1995	2000	2005	2010	2015	2020
Hawaii County Resident Population	137,200	149,600	160,600	173,900	189,100	205,400
% Increase		9.0%	7.4%	8.3%	8.7%	8.6%
Average Daily Visitor Census	18,200	22,500	27,900	33,700	39,600	46,400
% Increase		23.6%	24.0%	20.8%	17.5%	17.2%
Visitor Rooms	9,600	10,100	11,900	13,500	16,000	18,200
% Increase		5.2%	17.8%	13.4%	18.5%	13.8%

Source: Department of Business, Economic Development & Tourism, 1996

Table 8: Agricultural Production in Hawaii County, 1969 to 1990

Agricultural Products	1969	1976	1990
Sugar (unprocessed cane; tons)	4,623	3,917	1,945
Vegetables & Melons (1000 lbs)	17,515	22,520	28,690
Fruits (excluding pineapple; 1000 lbs)	20,295	46,170	84,960
Macadamia Nuts (in shell; 1000 lbs)	10,373	18,940	*
Coffee (parchment; 1000 lbs)	5,000	2,120	2,460
Taro (1000 lbs)	2,035	1,845	1,300
<b>Acreage in Crop (1000 acres)</b>			
Sugarcane	106.9	94.4	57.9
Vegetables & Melons	1.0	1.1	1.5
Fruits (excluding pineapple)	2.2	3.5	5.4
Macadamia Nuts	8.6	10.2	*
Coffee	4.3	2.4	2.1
Taro	.125	.150	N/A

Source: Hawaii County Data Books, 1976 and 1995

\*data not disclosed by County to avoid disclosure of individual operations.

Closure of the Kohala plantation and mill coincided with the opening of the Queen Kaahumanu Highway (State Highway 19) in South Kohala and the development of two new major resort areas in the 1970s: the Mauna Lani Resort and the Waikoloa Resort. Although there are no data available to document the transition, it is commonly held that employment opportunities offered by the new resorts attracted North Kohala residents, and the resorts have subsequently become a significant source of employment for the district. This helps to explain why the unemployment rate in North Kohala rose only 2.1 percent in the 19 years after the closure of the plantation, despite the fact that nearly 30 percent of the district's labor force lost their jobs.

By 1994, 31 percent of non-agricultural workers on the Big Island were employed in the service economy, as opposed to about 19 percent in 1970. During a similar period, the total number of hotel units on the island increased over 200 percent, from 3,166 in 1970 to 9,595 in 1994. The average daily visitor census on the Big Island increased from 7,195 in 1980 to 19,310 in 1994. The estimated expenditures by visitors to Hawaii County increased from \$277 million in 1983 to almost \$1.2 billion in 1994.

The phenomenal growth of the visitor industry on the Big Island has been led by the expansion of Kona and South Kohala as visitor destination areas. Development of luxury resorts along Hawaii's so-called gold coast in South Kohala occurred during the closure of Kohala Sugar in North Kohala, resulting in a reorientation of the district's job

force. While male plantation workers retrained for hotel jobs, an increasing number of women entered the work force for the first time.

Expansion of the visitor industry on the Big Island, coupled with the decline of the sugar industry in North Kohala, also had a permanent impact upon the social character of the district. During the period from 1970 to 1990, the number of Japanese and Filipinos in the district dropped by 11 percent and 10 percent respectively, while the number of Hawaiians rose 9 percent and the number of Caucasians rose 8 percent (see Table 6).

As a result of the district's economic shift from agriculture to the visitor industry, North Kohala is rapidly becoming the rural equivalent of a suburban bedroom community. The commercial center of Hawi has been transformed from a bustling mill town to a cluster of visitor-oriented specialty boutique shops, a recognizable symbol of changing times. North Kohala's real estate market provides an affordable alternative to the more upscale character of Waimea in South Kohala with its associated higher real estate prices, and North Kohala now attracts resort employees as well as people relocating from Oahu in search of a more rural lifestyle. But because employment opportunities in the district are severely limited, workers must commute 60 or more miles a day to hotel jobs in South Kohala and North Kona.

#### 6.4 Vehicular Traffic

The Airport is served by an access road (State Highway 271) which connects to Akoni Pule Highway (State Highway 270). For the purposes of description, Akoni Pule Highway can be divided into two sections, one extending south about 16.6 miles from the intersection with the Upolu Airport access road to Kawaihae, and the other extending east about 1.2 miles from the Upolu Airport access road intersection to the intersection with Kohala Mountain Road (State Highway 250) in Hawi.

In 1996, the Kawaihae portion of Akoni Pule Highway had an average daily traffic volume of 4,378, a 14 percent increase since 1988, when the volume was 3,841. The Hawi portion of the highway had an average daily traffic volume in 1996 of 4,593 vehicles, an increase of 25 percent over 1988. For both sections of the highway, the A.M. peak hour represented 6 percent of the average daily traffic, and the P.M. peak hour represented between 9 percent and 9.5 percent of the average daily traffic. Truck traffic to and from Kawaihae represented 7.5 percent of the average daily traffic in the A.M. peak hour and 14.5 percent in the P.M. peak hour. For the Hawi section, truck traffic in the A.M. peak hour represented 4 percent of the average daily traffic, and in the P.M. peak hour represented 1.5 percent.

Local vehicular traffic around the Airport is limited to Airport users (general aviation, air taxi, and military), airport maintenance personnel, visitors looking for Mookini Heiau and the Kamehameha I Birthsite State Monument, the residents of Parcel 5-5-06:06, and local fishermen. With regard to the latter group, several jeep trails are located along the eastern and western ends of the Airport, as well as on Airport property makai of the fence line along the sea cliffs, providing access to the coastal area. Due to the remoteness of the Airport, little if any pedestrian traffic occurs in the area.

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## 7.0 DESCRIPTION OF PROPOSED IMPROVEMENTS

The recommended year 2020 Airport Master Plan (the Plan) for the Upolu Airport is illustrated on Figure 3, which also depicts the Terminal Area and Access Plan in greater detail. The Plan integrates long term airfield and terminal area requirements with forecast aviation demand and airport access and parking needs. It represents a guide for airport development through the year 2020 planning period.

### 7.1 Runway

The existing runway provides adequate length to accommodate the forecast demand, and therefore, no runway extension is proposed. The existing runway width of 75 feet is retained. Runway safety areas (RSA) 120 feet wide and runway object free (ROFA) areas 250 feet wide, both extending 240 feet beyond each end of the runway, are proposed. The existing perimeter fence around the Airport presently passes through the RSA and ROFA at both ends of the runway. Therefore, it is recommended that these portions of the fence be relocated. Additionally, a dirt road passes through the RSA and ROFA at the west end of the runway and is planned to be closed.

The existing airfield pavement is in good condition and of adequate strength. The maximum authorized landing weights, according to State DOT, are as follows: 55,000 pounds for single-wheel aircraft; 82,000 pounds for dual-wheel aircraft; and 100,000 pounds for dual-tandem aircraft.

### 7.2 Taxiway

The recommended year 2020 airfield configuration provides space for the future construction of a 25-foot-wide parallel taxiway to the south at a centerline-to-centerline separation of 150 feet from the existing runway. The new taxiway would eliminate the current practice of taxiing on the runway. The new taxiway is intended to accommodate small aircraft primarily Cessna 402, Piper Navajo, Beech C-99 airliner with occasional use by aircraft with slightly larger wingspans (DHC-6, Shorts 360, BAe Jetstream 31, Beech Airliner 1900, Cessna Citation II, Swearingen Metro).

The proposed taxiway alignment will provide adequate space for a taxiway safety area width of 49 feet and taxiway object free area width of 89 feet. Future entry/exit connections to the taxiway are planned for at each end of the runway, with one additional connection between the runway and taxiway located approximately 1,200 feet from the end of Runway 7. The existing entry/exit connection from the runway to the existing passenger terminal at approximately 1,200 feet from the end of Runway 25 is to be retained. Space for future holding aprons is proposed at each end of the runway.

### 7.3 Land Acquisition

An area of approximately 3 acres is recommended for acquisition to preserve the potential capability of new terminal area facilities should a demand develop within, or beyond, the year 2020 planning period. To provide adequate land to include all of the runway safety areas (RSA) and runway object free areas (ROFA), a small area of land abutting the eastern Airport property boundary is proposed for acquisition. This land area

consists of approximately one acre. In addition, to provide greater control to DOTA over the runway protection zone at the eastern end of the Airport, it is recommended that DOTA acquire the remaining approximately 12.23 acres of land presently encumbered by the runway protection zone to the east of Runway 25.

The approximately one-acre area proposed for acquisition at the east end of the Airport property is a portion of TMK 5-5-07:2, presently owned by Chalon International of Hawaii and utilized as pasture land. The acquisition area is situated within the State Conservation District, as well as the County's Special Management Area. Acquisition of the property by the State DOT would not require a Conservation District Use Permit.

A major portion of this area is situated within the State's existing aviation easement. As discussed above, Chalon has no plans for this property. The remaining 12.23 acres of the runway protection zone which are recommended for acquisition are also contained with TMK 5-5-07:2 and are owned by Chalon International of Hawaii.

The approximately 3 acre area required for a potential terminal area is a portion of TMK 5-5-06:9, which is a 51 acre parcel owned by Chalon International of Hawaii and utilized as pasture land. The area identified for acquisition is located in the State Agriculture District, thus, no Conservation District Use Permit is required for acquisition. The eventual construction of new terminal facilities will require a Special Management Area Use Permit, as would relocation of the Mookini Heiau access road to accommodate the terminal facilities.

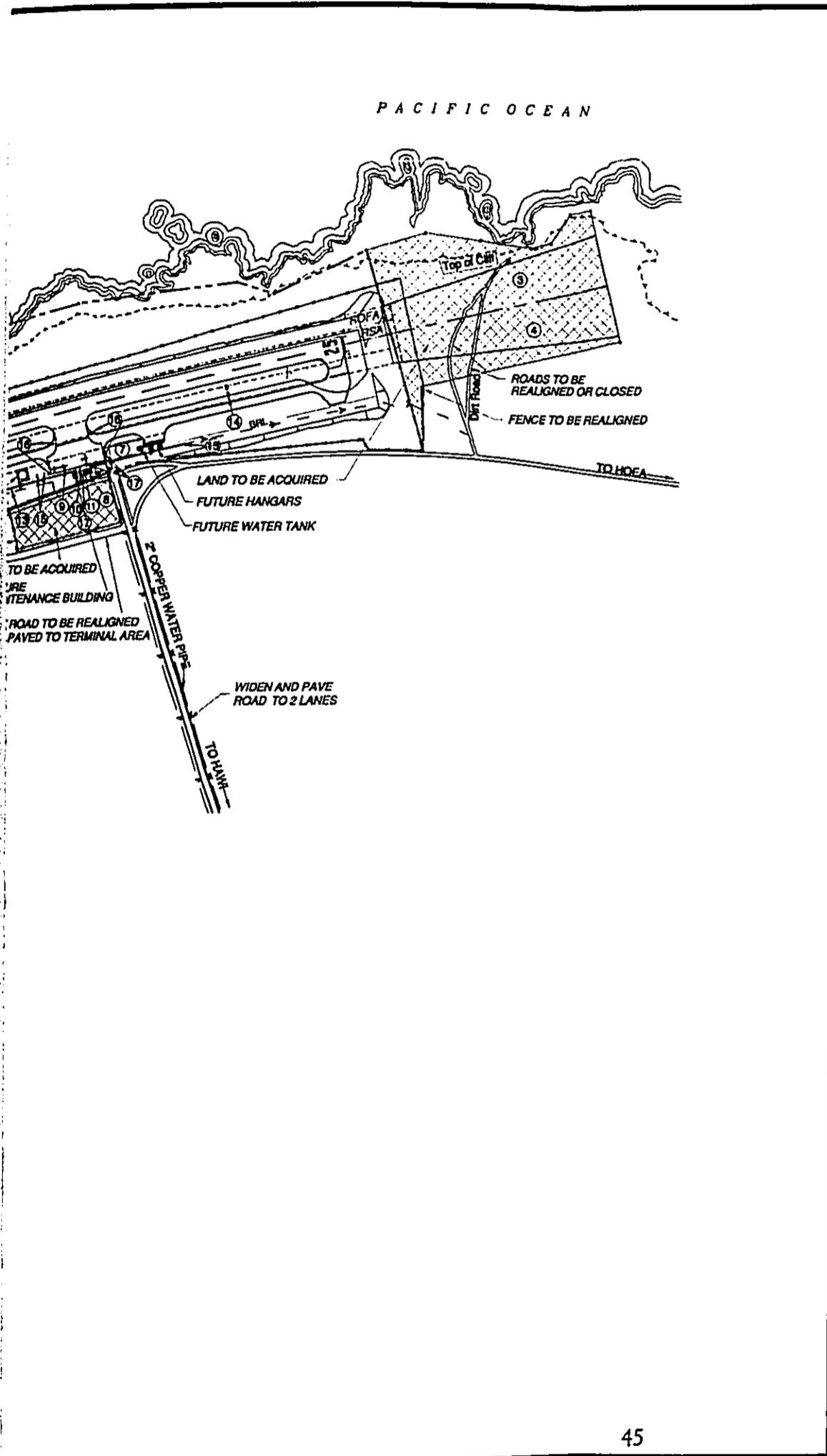
There is no recent detailed topographic data available for the Airport and surrounding land. The most detailed available data dates back to the 1950s and it is not clear how this actually relates to the existing airfield. It is therefore recommended that before, or as part of, any future improvement project at the Airport, the Airport be surveyed and up-to-date topographic information be obtained. This will be required to determine the amount of earthwork needed for any improvements both beyond the ends of the existing runway and in the terminal area.

#### **7.4 Airspace and Air Traffic Control**

Based on available data, the air traffic forecasts and discussions with Airport users, the provision of Global Positioning System (GPS) approaches to both runway ends would enhance the utility of the Airport. A GPS approach would allow the Airport to remain open longer during inclement weather by reducing the percent of time that the Airport is below Visual Flight Rules (VFR) minimums.

#### **7.5 Approach Areas and Obstructions**

Runway protection zones (RPZ) for small aircraft (1,000 feet long, 250 feet inner width and 450 feet outer width) are retained for Runways 7 and 25. Dirt roads at both ends of the runway which cross through the RPZs are considered to be obstructions. The two dirt roads to the east are planned to be relocated or closed. Regarding the two dirt roads to the west, the one closest to the runway is planned to be closed; the one furthest from the runway is planned to be relocated. The existing fence at the west end is to be moved to the Airport side of the relocated dirt road.



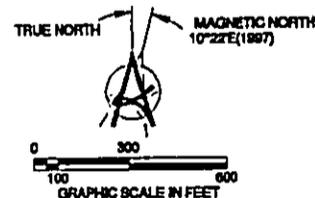
Airports Division  
DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII

**UPOLU AIRPORT  
MASTER PLAN**  
ISLAND OF HAWAII

**AIRPORT  
MASTER PLAN**

LEGEND	
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[Symbol]	POWER LINE
[Symbol]	WATER LINE
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[Symbol]	FUTURE LAND TO BE ACQUIRED

EXISTING FACILITY SCHEDULE	
1	AIRPORT REFERENCE POINT
2	RUNWAY 7-25 3,800' X 75' (N 77° 04' 30" E)
3	RUNWAY PROTECTION ZONE (1,000' X 250' X 1450')
4	APPROACH SURFACE 80:1
5	TIEDOWNS
6	SEGMENTED CIRCLE AND LIGHTED WIND INDICATOR
7	VEHICLE PARKING
8	TERMINAL BUILDING
9	APRON
10	MAINTENANCE BUILDING
11	ROTATING BEACON
12	ELECTRICAL VAULT BUILDING
13	DRAINAGE DITCH
14	PAPI-S
15	NOAA WEATHER STATION
16	RUNWAY HOLDING POSITION SIGN
17	GATES



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

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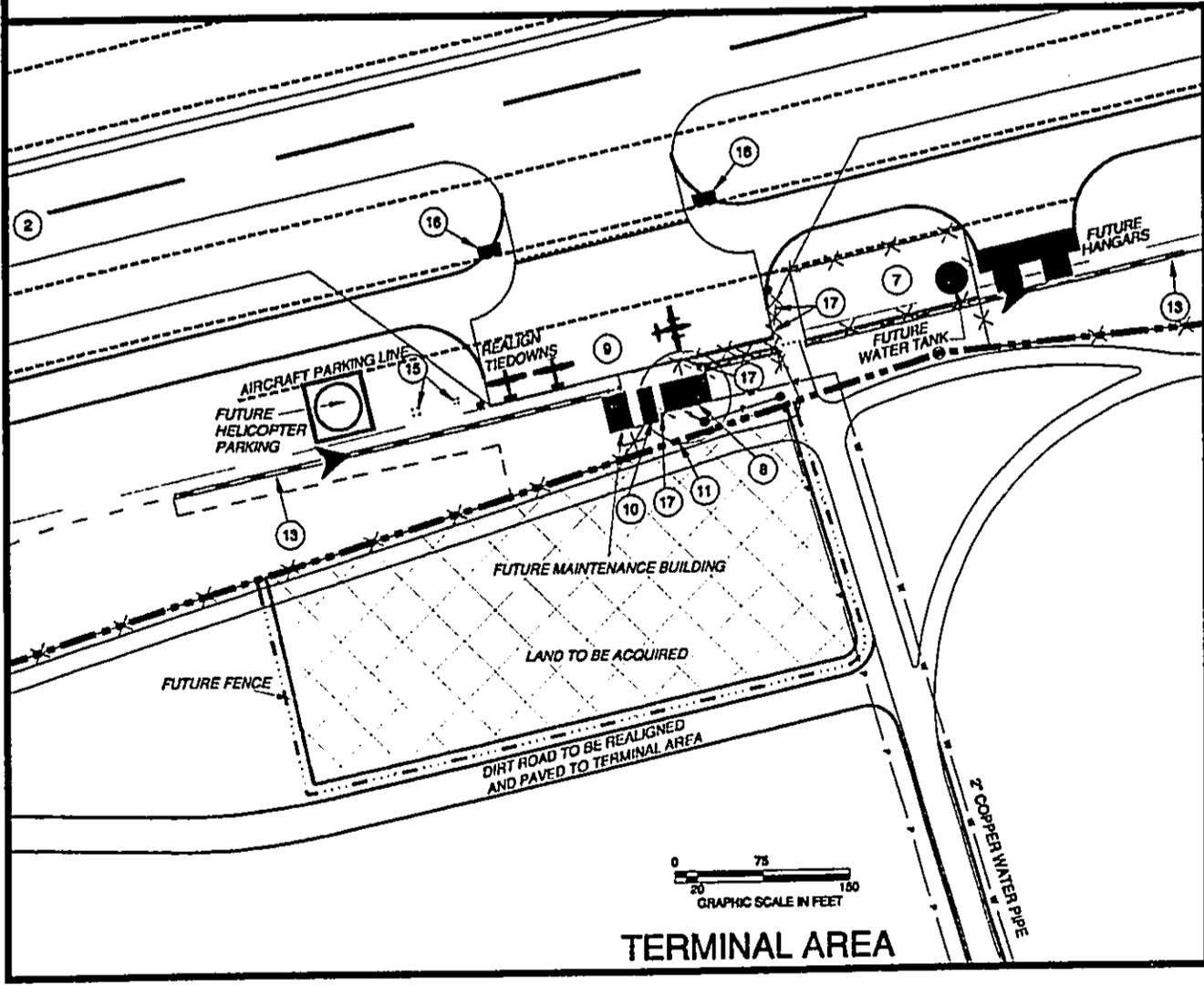
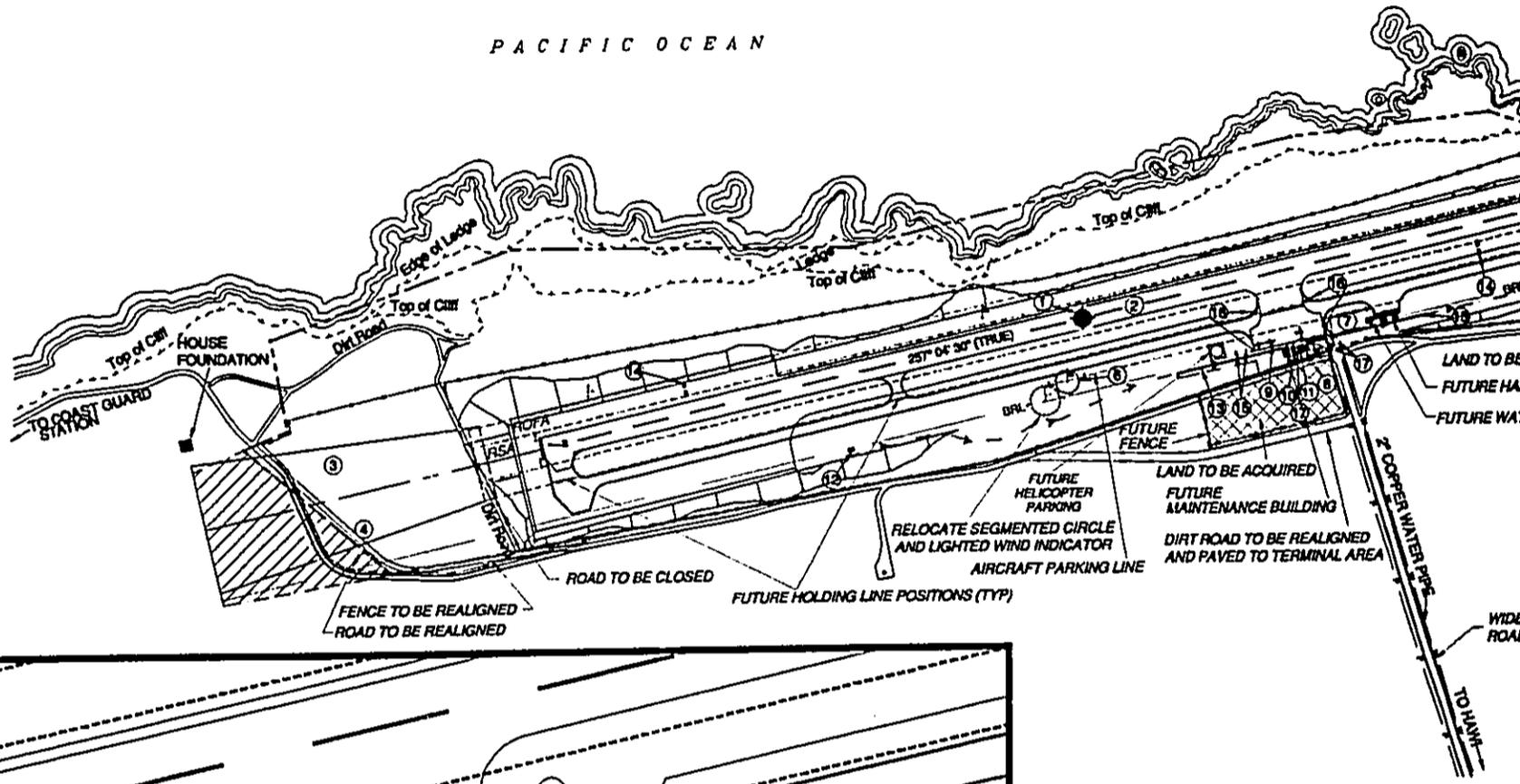
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FIGURE NO.

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**3**

PACIFIC OCEAN



Based upon more accurate topographic information being available, and application of FAA criteria, it may be necessary to also remove a small portion of ground in the eastern RPZ which appears to penetrate the approach surface to Runway 25 by up to ten (10) feet (see the runway profile on Figure 4). This would be accomplished by limited grading. Without detailed topographic information, the volume of dirt to be removed is unknown.

Acquisition of the entire property encumbered by the runway protection zone, within which the approach surface penetration occurs, would provide DOTA with full control over the protection zone.

#### 7.6 Navigational and Landing Aids

It is recommended that the DOTA request the FAA to evaluate the feasibility of establishing global positioning system (GPS) non-precision instrument approach procedures for both Runways 7 and 25.

Medium intensity taxiway lights (MITL) are recommended to be installed on the proposed new parallel taxiway and new entry/exit taxiways at both ends of the runway and at approximately 1,200 feet from the end of Runway 7 when the taxiway is constructed.

The existing segmented circle and lighted wind cone are recommended for relocation to the south to provide room for the new parallel taxiway. Supplemental wind cones are proposed to be erected at each end of the runway.

#### 7.7 Commuter/Air Taxi Service

The restoration of commuter/air taxi service at the Airport is a function of the private marketplace, rather than of governmental decision making. The Master Plan includes the acquisition of approximately 3 acres of land within the planning period to preserve the potential capability of new terminal area facilities, if the restoration of commuter service warrants. New terminal area facilities would only be required within the year 2020 planning period, or beyond, if there are potentially dynamic development activities in the North Kohala District that justify scheduled commuter service. If commuter air taxi service resumes at Upolu Airport, the aircraft parking apron would have to be expanded to accommodate commuter aircraft such as the DHC-6 or BN-2A.

The existing terminal area facilities, including the terminal building, maintenance storage building and automobile parking lot, will be retained in their present location unless and until demand requires development of new and expanded terminal area facilities.

#### 7.8 Cargo

Small package cargo aircraft can load and unload on the existing aircraft parking apron. There is no plan for a separate air cargo facility within the 2020 planning period based on the forecasts. If there is a significant increase in development in the North Kohala District that justifies scheduled commuter service then some of the cargo would be handled through the passenger terminal building on passenger aircraft.

## 7.9 General Aviation

The Master Plan includes space for reorientation of the two tiedowns along the south edge of the existing aircraft parking apron approximately 100 feet to the west of the existing terminal building. Space is also recommended for construction of two T-hangars<sup>2</sup> (less than 15 feet in height) approximately 300 feet to the east of the existing terminal building.

A designated helicopter parking apron position is proposed at approximately 100 feet to the west of the existing aircraft parking apron. This would be limited to painting part of the existing paved area to designate it as a helicopter parking position. The designation of a helipad is recommended to accommodate the Airport's existing helicopter activity and to minimize fugitive dust presently generated from operations from an unpaved area.

## 7.10 Airport Vehicular Access and Parking

The Master Plan includes the widening of the existing 1.8 mile access road, State Highway 271, to a full two-lane paved road south to Akoni Pule Highway. The existing parking lot is adequate for public use through the planning period. Widening the access road may require additional land acquisition to increase the size of the right-of-way. However, the amount of land that may need to be acquired has not been determined.

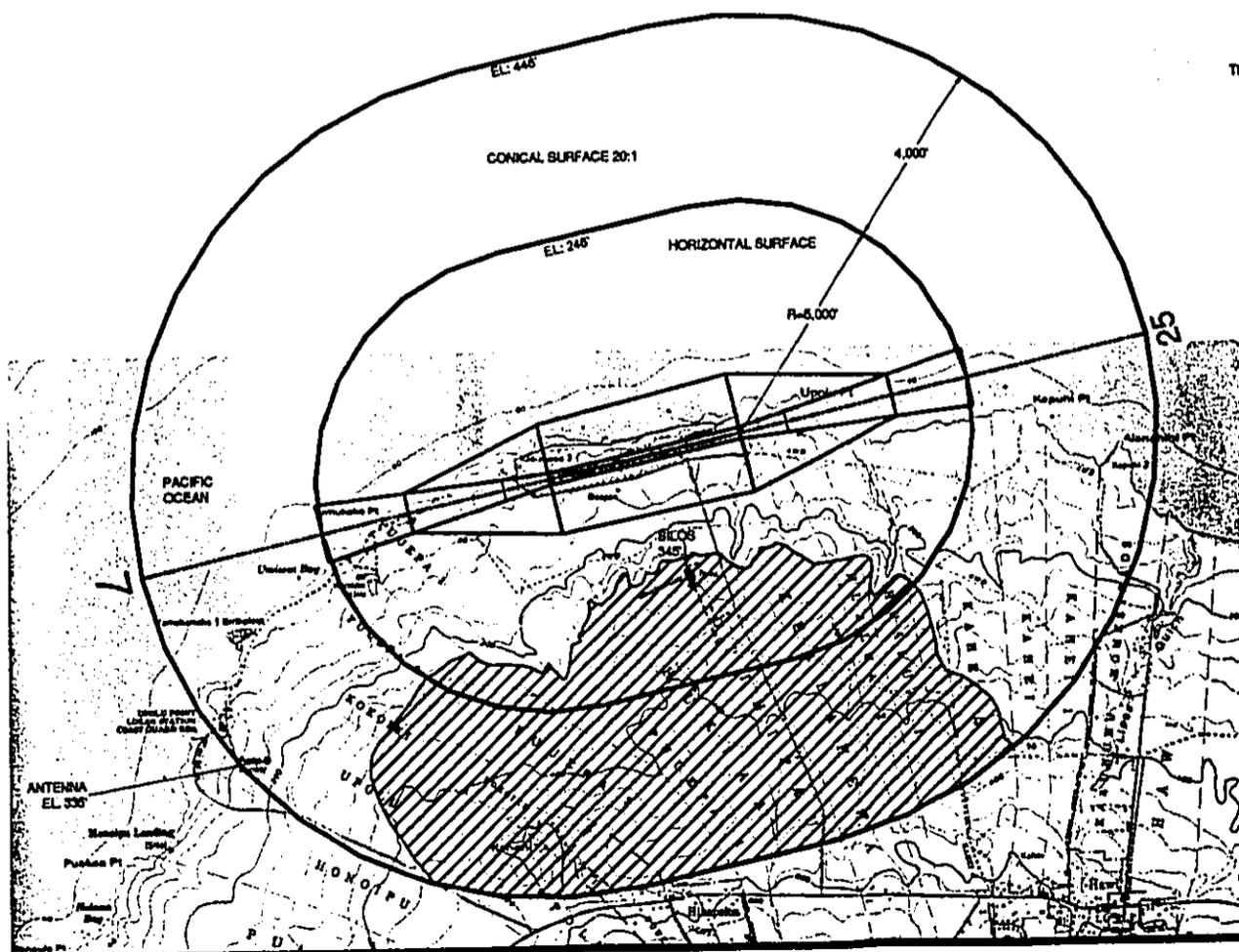
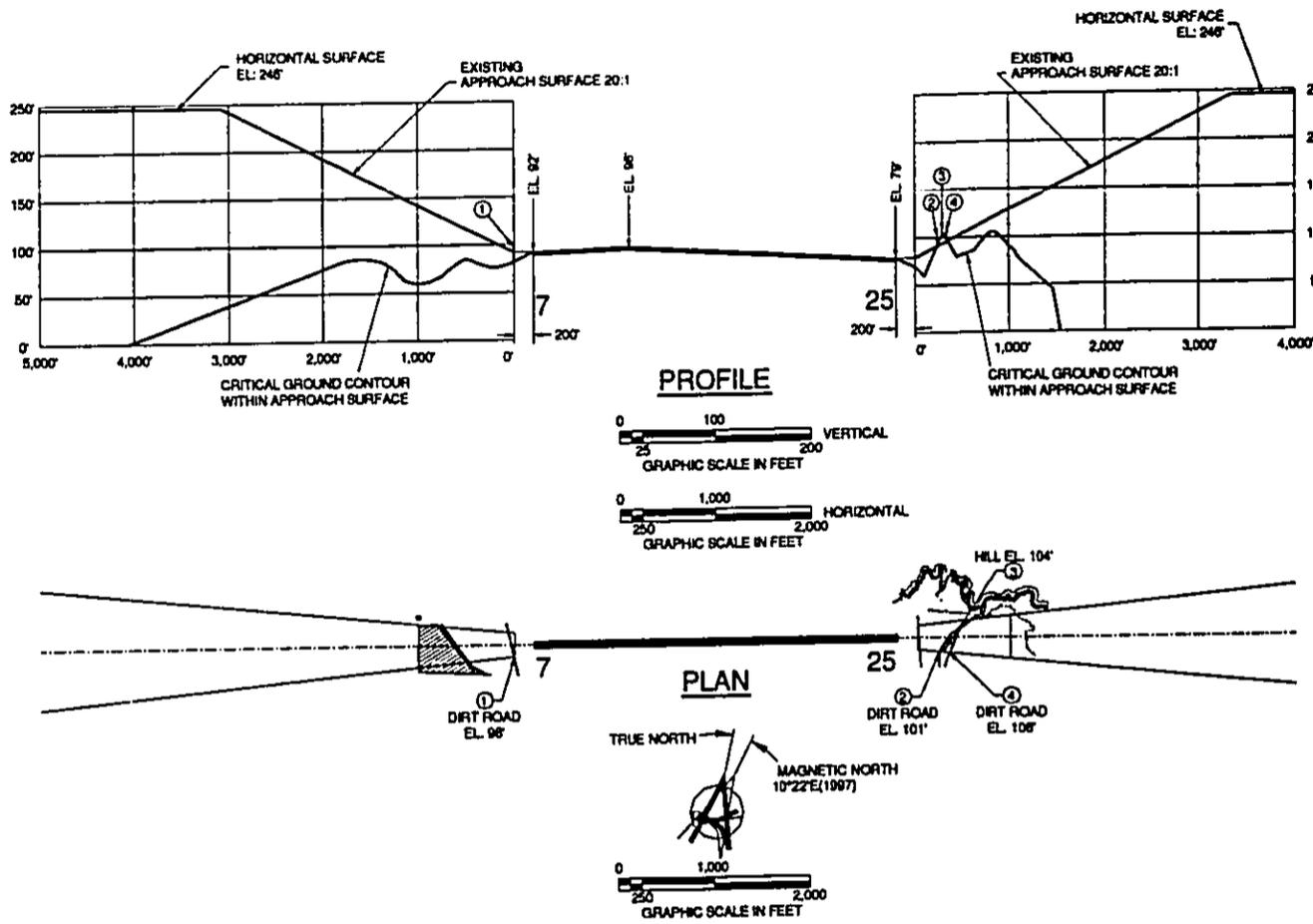
The existing dirt road along the south side of the Airport is proposed to be realigned approximately 250 feet to the south and to serve as a future access to a future long-range terminal area parking lot, if one is needed. A portion of this realigned road will be paved for approximately 400 feet from State Highway 271 to the furthest entry/exit to the future parking lot, if a new passenger terminal is eventually constructed. From there the dirt road will continue for approximately 800 feet to the west and reconnect with the existing roadway alignment around the west end of the Airport. The current owner of the residential property at the west end of the Airport has requested that the existing Mookini Access Road alignment be relocated so that it no longer crosses his property. It is therefore recommended that the State Department of Transportation coordinate with the State Department of Land and Natural Resources regarding the alignment of this road, its future upkeep and maintenance, and the possibility of improving it all the way to the Kamehameha I Birthsite State Monument and Mookini Heiau to better serve visitors to these historic sites arriving at the Airport and travelling by road. However, improvements to this portion of the Mookini Heiau access road are not considered to be part of the Master Plan.

All new facilities at the Airport will be constructed in compliance with the requirements of the Americans with Disabilities Act (ADA) of 1990.

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<sup>2</sup> A T-hangar is typically designed for a single airplane and gets its name from the shape of the building which is designed to accommodate the airplane's wingspan.





#### **7.11 Airport Support and Maintenance**

The Master Plan proposes a new 1,000-square-foot airport maintenance building to be constructed to the west of the existing maintenance building to enhance storage capability and to house equipment that will not fit into the existing building. The new building would be less than 15 feet in height.

#### **7.12 Aircraft Rescue and Fire Fighting Facilities**

Although there is no current requirement for an Aircraft Rescue and Fire Fighting (ARFF) facility on the Airport, the Master Plan recommends that the State establish written response procedures with the County of Hawaii Fire Department at Hawi to spell out responsibilities, procedures and other pertinent considerations to the mutual satisfaction of all parties. If an ARFF facility is eventually constructed at the Airport, space has been provided for it in the area to be acquired for potential future terminal area facilities.

#### **7.13 Fuel Storage**

No provision is made for fuel storage at the Airport.

#### **7.14 Security**

The Airport fencing is proposed to be realigned at both ends of the Airport and extended around the west end. At the west end the fence is extended and relocated approximately 600 feet to the west. At the east end the fence is to be relocated approximately 100 feet to the east. The existing perimeter road is recommended for realignment inside the future fence line at the east and west ends of the Airport. No security personnel are proposed at the Airport in the foreseeable future.

#### **7.15 Potable Water Supply**

The approximate peak water supply demand for the recommended improvements is about 34 gpm. This demand includes serving the existing restroom at the terminal building, as well as single restrooms within each of the proposed new buildings (two hangars and one DOT maintenance building).

The existing water meter and service line are adequate to support the proposed development. Due to the approximate 500-foot elevation difference between the County main at State Highway 270 and facilities at the Airport, the residual pressure will be adequate to serve the proposed development through the existing water supply system.

Other than pipeline extensions to serve the new buildings, and possibly sub-meters (if leasing of airport facilities require separate payment for utilities), no new potable water infrastructure improvements are recommended.

#### **7.16 Fire Protection Water Supply**

Fire protection for the proposed new facilities would be provided through an onsite water storage tank, distribution piping system, and standpipes. A water tank with a 30,000-gallon capacity is recommended adjacent to the proposed hangars, as depicted on Figure 3.

A distribution line from the tank would be located behind the new buildings, with branch lines tapped off to serve standpipes located along the apron side of the buildings. Two standpipes would be provided, one at the eastern end of the hangars, the other at the western side of the new maintenance building.

#### **7.17 Electrical Power**

The existing HELCO primary pole line servicing the Airport will need to be upgraded (by HELCO) to provide power for proposed new electrical loads.

The existing 10 KVA transformer which services the existing runway lights, terminal building, and other onsite facilities will need to be replaced with a larger transformer to accommodate approximately 4,100 linear feet of new medium intensity taxiway lighting, power and lighting for two new 1,000-square-foot hangars, power and lighting for a new maintenance building, and other existing loads. Electrical service equipment and the distribution panel will also need to be upgraded to service the Airport.

A new emergency generator system is needed to provide emergency power for runway lights, taxiway lights, critical signs, nav aids, and critical loads for the Airport. The generator will be located in the existing electrical vault.

A related electrical matter pertains to the installation of new civil defense equipment. An "EAS" receiver and siren simulator will be installed at the Airport when the presence of permanent staff warrants this specific improvement.

#### **7.18 Telephone Service**

Additional telephone lines will be required and will be provided by the Hawaiian Telephone Company via the existing overhead pole line servicing the Airport.

#### **7.19 Wastewater Disposal**

A 750-gallon disposal system is recommended at each new facility to accommodate the projected fixture units for the maintenance shop and the two hangars. The advantage to having each building on an individual wastewater disposal system is that in the event of a problem due to blockages or diminishing percolation, only one of the facilities is affected. Existing cesspools at the Airport will be replaced with septic tank systems and leaching fields.

## 7.20 Storm Drainage

Storm drainage improvements to support development as proposed in the Airport Master Plan would be limited to grading around the new facilities to assure storm runoff flows away from the pavements and structures. The existing drainage swale which runs along the dirt road within the runway protection zone at the east end must be retained or realigned in the event the road is closed. The ultimate swale alignment would need to be determined during design based on a new site topographic survey, new construction and maintenance access. Vegetated filter strips and/or retention basins will be incorporated into the storm drainage system to control surface runoff from new development. They will be added in conjunction with the provision of the proposed T-hangars or the proposed terminal facility, whichever is developed first.



## 8.0 ALTERNATIVES CONSIDERED

Several airport development concepts were formulated and evaluated for review prior to the State DOTA's selection of the recommended long range Airport Master Plan. The alternative development concepts were presented and discussed with the Technical Advisory Committee and at a Public Informational meeting on November 19, 1997. As a result of these meetings, and the comments received, the State DOT recommended that Alternative Airport Development Concept 1A be used as the basis for formulating the 2020 Airport Master Plan. A Public Information meeting and Technical Advisory Committee meeting on the recommended Airport Master Plan was held on April 16, 1998.

Essentially, the alternatives represented levels of development intensity, from Alternative 1 (least) to Alternative 3 (most). Formulation of the alternatives was based on the design requirements associated with different sizes of aircraft (see Table 9). From a planning perspective, the larger the aircraft (in terms of wingspan and passenger capacity), the greater the runway length and wider the separation between runway, taxiway and passenger terminal/maintenance facilities. For planning purposes, Alternative 1 was divided into two alternatives (1A and 1B) to distinguish between minimal improvements with and without occasional operations of DHC-6 aircraft.

A No Action Alternative was rejected by the DOTA early in the planning process. This was due to the recognition that although infrequently utilized, Upolu Airport represents a significant asset to the North Kohala community and that its facilities should not be allowed to deteriorate or fall into disrepair. It is also recognized that the Airport serves as an emergency landing facility in addition to serving a variety of general aviation, commuter/air taxi, and military activities. For these same reasons, Airport closure was not considered to be a viable alternative.

As shown in Table 9 below, if future airport improvements were designed to accommodate a DHC-8 (up to 37 passengers) as detailed under Alternative 3, the runway length would need to be extended about 900 feet to accommodate 75 percent of the aircraft fleet between 12,500 pounds and 60,000 pounds maximum gross weight. The runway-to-taxiway separation would need to be increased by 95 feet from 150 feet to 245 feet. The requirements of accommodating additional passengers would also mean an expanded aircraft parking apron, terminal building, and public parking lot.

According to the FAA, the recommended runway length to accommodate 100 percent of small airplanes (12,500 pounds maximum gross weight or less) with less than 10 passenger seats (e.g. Cessna 402, Piper Navajo) at the Upolu Airport is 3,600 feet. To accommodate small airplanes with 10 or more passenger seats (e.g. Beechcraft Super King Air 200, Swearingen Metro) would require 4,100 feet.

However, the projected aircraft operations in the planning period do not appear to warrant planning for regular operations by large aircraft over 12,500 pounds maximum gross weight. To the contrary, the forecast aircraft operations suggest that aircraft operations may increase by only 50 percent over a twenty year period, or approximately 2.5 percent a year. It is unlikely that commuter air taxi service will be restored at the Airport to the extent that DHC-8 aircraft operations could be justified. Thus, the cost of improvements to accommodate larger aircraft and the environmental impacts associated with the

construction required cannot be justified by the projected aircraft operations. Projected costs associated with the alternatives are presented in Table 10.

This same conclusion was supported by public input received during the planning process. Community members indicated that although it would be desirable to have commuter air taxi service restored at the Airport, any proposed improvements should be consistent with the size and character of the existing community. Public input suggested that major expansion of the Airport would be inappropriate.

Thus, Alternatives 2 and 3 were rejected in favor of Alternative 1A, which anticipates no significant change to the size of aircraft utilizing Upolu Airport during the planning period. However, the Master Plan proposes Alternative 1A with additional planning elements from the other alternatives. These include land acquisition for a new terminal facility and paving the access road to the Airport. It was felt that acquiring the land for a future terminal area would allow the DOTA to better respond to future demand, if it arises.

The decision to reintroduce commuter/air taxi service to the Upolu Airport rests with the private sector, not the DOT. However, the DOT can take action to ensure that all safety considerations are addressed. If commuter service were reestablished, the DOT wants to ensure that Airport facilities can accommodate small commuter aircraft safely. Construction of the proposed taxiway would improve the separation between aircraft operations on the runway and aircraft moving between the parking apron and the runway. However, if the new taxiway is constructed, and occasionally larger aircraft (DHC-6) use the Airport, the existing terminal building would need to be relocated to satisfy FAA airport design standards. Thus, it makes good planning sense to reserve an area for the new facility, should the need arise.

The inclusion of access road improvements in the Master Plan is based on similar rationale, as well as current security needs. During the meetings of the Technical Advisory Committee and at public information meetings, the subject of Airport security was discussed repeatedly. Representatives of the County Police Department indicated that security at the Airport is presently a problem and the existing facilities are frequently vandalized. This is due, in part, to the remoteness of the Airport and the poor condition of the access road, which limits more frequent police surveillance of the area. Consequently, the DOT feels that improvements to the access road will promote increased surveillance of the Airport, which will in turn, help to reduce vandalism.

Table 9: Comparison of Alternative Airport Development Concepts for Upolu Airport

Planning Elements	ALTERNATIVE			
	1A	1B	2	3
<b>Airfield</b>				
Land To Be Acquired (acres)	0.5	0.5	1.5	12.2
Additional Aviation Easements (acres)	0	0	3.4	14.2
Runway Length (feet)	3,800	3,800	4,100	4,700
New Taxiway	3,800	3,800	4,100	4,700
Typical Aircraft	C402	DHC-6	DHC-6	DHC-8
Runway-to-Taxiway Separation (feet)	150	160	240	245
Earthwork - Fill for Airfield (cu. yds.)	0	0	n.a.	n.a.
<b>Terminal Area</b>				
Land To Be Acquired (acres)	0	0	3.0	3.0
New Terminal Building (sq. ft.)	0	0	1,000	2,000
New Aircraft Parking Apron (sq. ft.)	0	16,000	60,000	78,000
Commuter/Air Taxi Aircraft Spaces	1	1	1	2
Earthwork - Excavation for Terminal Area (cu. yds.)	0	0	122,000	122,000
Tiedowns	2	2	2	3
Hangars	2	2	2	3
Widen Access Road	No	No	Yes	Yes
New Paved Roads (lineal feet)	0	0	700	2,100
New Parking Lot (sq. ft.)	0	0	10,000	10,000
ARFF Required	No	Maybe	Maybe	Yes
New Fencing (lineal feet)	1,400	1,400	7,800	9,000

n.a. = not available

Source: Belt Collins Hawaii and Aries Consultants Ltd.

It is also felt that roadway improvements would be needed if commuter service were restored to the Airport. Therefore, from a planning perspective, roadway improvements are consistent with the general intent of the Master Plan.

Table 10: Cost Comparison of Alternative Development Concepts for Upolu Airport

FACTOR	ALTERNATIVES		
	1A/1B	2	3
Potable Water	\$6,000	\$10,000	\$23,000
Fire Protection			
1) glass fused to steel tank	95,000	89,000	116,000
2) corrugated steel w/ plastic liner	60,000	53,000	83,000
3) #1 w/ 50-foot separation of hangars			87,000
4) #2 w/ 50-foot separation of hangars			52,000
Electrical	676,000	942,000	1,239,000
Wastewater			
1) cesspools	16,000	34,000	40,000
2) cesspool/septic tanks	18,000	41,000	50,000
<b>SUBTOTAL (millions)</b>	<b>\$0.87</b>	<b>\$1.04-1.08</b>	<b>\$1.35-1.48</b>
New Runway Pavement	0	100,000	300,000
New Taxiway Pavement	568,000 <sup>3</sup>	812,000	1,000,000
New Apron Pavement	108,000	120,000	148,000
Airport Earthwork <sup>4</sup>	300,000	861,000	1,080,000
New Terminal Earthwork <sup>5</sup>	0	826,800	826,800
Access Road Pavement (2 lanes)	0	730,800	730,800
New On-Site Roadway Pavement	0	19,600	58,800
New Parking Lot	0	15,120	15,120
New Chain Link Fencing	29,400	163,800	189,000
Terminal Building	0	120,000	240,000
Hangars	60,000	60,000	90,000
Maintenance Building	80,000	80,000	80,000
ARFF Station	0	100,000	100,000
<b>SUBTOTAL (millions)</b>	<b>\$1.14-1.16<sup>6</sup></b>	<b>\$4.00</b>	<b>\$4.85</b>
<b>TOTAL (millions)</b>	<b>\$2.01-2.03</b>	<b>\$5.04-5.08</b>	<b>\$6.20-6.33</b>

Source: Belt Collins Hawaii and Aries Consultants Ltd.

<sup>3</sup> Order of magnitude pavement costs are \$568,000 for Alternative 1A and \$588,000 for Alternative 1B.

<sup>4</sup> Estimates are limited to on-site grading for new paved areas.

<sup>5</sup> Earthwork for a new terminal facility is essentially the same for either alternative: although the location is different, the size of the facility and the character of the topography is generally the same. Order-of-magnitude estimate includes cut, fill, realignment of the existing drainage ditch, and installation of a drainage pipe. Due to the lack of topographic information for the property at the east and west ends of the runway, no estimates are provided for cut/fill earthwork that may be required for runway and/or taxiway extensions.

<sup>6</sup> The range represents the costs of Alternative 1A versus Alternative 1B. Under 1B, the cost of new taxiway pavement is \$20,000 more.

## 9.0 SUMMARY OF IMPACTS

This section identifies the environmental impact characteristics associated with the alternative airport development concepts described above including the proposed Airport Master Plan (the preferred alternative: Alternative 1A). Anticipated environmental impacts will result from short-term activities (construction of new facilities), as well as long-term activities (operation of the new facilities). Based upon the rural character of the area and the lack of other development activities, no secondary or cumulative environmental impacts are anticipated.

For the purposes of discussion and evaluation, the impacts of alternative airport development concepts are presented in terms of the anticipated improvements in each alternative. These are summarized in Table 9 above which compares the improvements under each of the alternatives. Generally speaking, the physical character of specific construction improvements is the same regardless of the alternative under which they may be implemented. The difference among the various alternatives is characterized by the total number of improvements rather than their specific character. Thus, more improvements are proposed under Alternative 3 than under Alternative 1A.

In general terms, the recommended Plan is similar to Alternative 1A, except that it also recommends the acquisition of abutting land to provide for the possible relocation of the passenger terminal in response to currently unforeseen increased demand, and the widening of the existing access road. Although the Plan does not recommend the construction of a new terminal within the 20-year planning period, for the purposes of this analysis it is assumed that a new passenger terminal eventually will be built.

### 9.1 Short-Term Construction Impacts

The construction of new facilities within the existing Airport property will have no significant environmental impacts. Construction will be generally limited to ground disturbing activities and will not result in the disruption or loss of significant environmental resources. The topography of the Airport property will not be altered, except for portions of the runway safety area extending beyond both ends of the runway. The addition of two new hangars and a water tank at the eastern end of the existing parking lot will result in construction in an already disturbed area. Addition of a new maintenance building at the western side of the existing maintenance building will result in new construction. The designation of a helicopter parking area will require painted markings on an existing paved area.

Grading and construction of the new parallel taxiway and entry/exit taxiways at the Airport and widening of the existing access road will occur in previously disturbed areas. Aside from the physical disturbance of the earth, construction impacts are generally limited to construction noise, fugitive dust, and traffic impacts resulting from the delivery of asphalt to the construction sites. Construction of the proposed facilities at the Airport will not impact scenic and visual resources.

### 9.1.1 Noise and Dust

The existing residence on the small parcel abutting the west end of the Airport may be impacted by construction noise and fugitive dust associated with construction of the portion of the proposed taxiway closest to the residential property. The existing house is approximately 1,200 feet west north west from the west end of the proposed taxiway. No other human settlements in the region will be potentially affected by construction noise or fugitive dust due to their distance from the Airport: prevailing tradewinds will carry the dust away from the dairy (3,000 feet south of the Airport) and the existing homes along Akoni Pule Highway (1.8 miles south of the Airport).

### 9.1.2 Grading

Potential grading within the aviation easement area east of Runway 25 to remove ground which is considered to be an obstruction to the runway approach is not anticipated to result in a significant negative impact to the environment. Grading will result in a loss of vegetation, but as discussed above, the property in this area has been extensively modified by agricultural activities and no significant natural or historic resources have been identified in the area.

Fugitive dust generated during grading activities can be controlled to a certain degree by frequent over watering of the construction area.

### 9.1.3 Access Road Widening

Widening of the access road will necessitate the relocation of the existing electrical poles that presently abut the pavement. However, this is not anticipated to be a significant impact and will not disrupt electrical service in the area.

### 9.1.4 Traffic Impacts

Concerning traffic impacts, it is estimated that the total volume of asphalt required for widening the access road and constructing the parallel taxiway will result in about 10 dump trucks each generating 3 round trips a day from the asphalt batching plant at Kawaihae to Upolu, for a period of 10 working days. Thirty round trips over the course of an eight-hour day results in one vehicle departing either Upolu or Kawaihae approximately every 15 minutes. The frequency of delivery truck trips is not considered to constitute a significant impact.

Construction related traffic would be limited to the arrival and departure of construction crews in addition to the delivery of construction materials. Because there is no existing commuter service at the Airport, existing vehicular traffic on the access road generally consists of traffic generated by the dairy and visitors looking for Mookini Heiau and the Kamehameha I Birthsite State Monument. Since peak hour traffic along State Highway 270 is presently limited to about 4 vehicles per minute in the peak A.M. hour and about 7 vehicles per minute in the peak P.M. hour (see discussion in Section 12 above), additional traffic generated during construction activities is considered to be negligible.

#### 9.1.5 Taxiway Lights

The addition of new taxiway lights is not anticipated to constitute a significant environmental impact because they would represent an addition to the existing runway lighting system. Furthermore, since the runway and taxiway lights are activated by remote-control from an arriving or departing aircraft, the lights are only on during active use of the runway. Given projected future aircraft operations at the Airport until the year 2020, night landings are anticipated to be relatively infrequent and, therefore, will not result in excessive use of the lighting system.

#### 9.1.6 Electrical System

The impacts of expanding the existing electrical system at the Airport to accommodate the new lighting requirements and new facilities will be generally limited to the replacement of an existing transformer, upgrading the existing pole line along the access road, and installing a new emergency generator in an existing electrical vault at the Airport. No significant impacts resulting from these activities are anticipated.

#### 9.1.7 Telephone Service

Expanding telephone service at the Airport will be limited to providing additional telephones at the new hangars and the new maintenance building. The impacts of these activities are negligible.

#### 9.1.8 Wastewater Collection/Treatment

The provision of new wastewater collection systems to serve the new facilities at the Airport will not result in significant environmental impacts. The replacement of existing cesspools with septic tank systems will have a beneficial impact upon the environment by reducing the potential contamination of subsurface soil associated with cesspools. Given the geology and topography of the area, the proposed wastewater collection system improvements will not result in a significant negative impact upon coastal water or groundwater resources.

#### 9.1.9 Storm Runoff

Localized grading will assure that storm runoff flows away from new structures. Vegetated filter strips and/or retention basins will be incorporated into the storm drainage system to control surface runoff from new development. They will be added in conjunction with the provision of the proposed T-hangars or the proposed terminal facility, whichever is developed first. If the new terminal is constructed, the drainage channel in the vicinity of the terminal area will also be replaced with an underground drainage pipe.

#### 9.1.10 Security Fencing

Relocation of portions of the existing security fence to enclose newly acquired abutting property will not result in a significant environmental impact.

operational impacts are considered to be negligible, in that they are not anticipated to result in a substantial increase in aircraft operations at the Airport.

#### 9.2.2 Land Acquisition

Land acquisition for the purpose of expanding the runway safety area will have no significant impact. With the exception of extending the existing security fence to include the acquired area within the Airport property and the possible grading of a small hilltop in the eastern RSA, no other physical alteration of the RSAs is required. No development is allowed in RSAs. Therefore, they will be retained as open space.

Land acquisition of the remaining property within the RPZ at the east end of the Airport will have no significant impact. The property is already encumbered by an existing easement. Physical improvements within the RPZ are limited to the possible grading discussed above (needed to remove a small ground obstruction from the runway approach surface).

#### 9.2.3 New Passenger Terminal

The proposed new passenger terminal facility will not be built unless commuter air service is reintroduced at the Airport, a factor which is the direct result of economic forces in the North Kohala district rather than government initiative. However, if commuter air service is eventually reintroduced, given the marginal increase in operations forecast during the planning period, it is anticipated that activity at the new terminal would have a negligible impact upon the environment. Impacts would be generally limited to vehicular traffic associated with arriving and departing passengers. The proposed access road widening, therefore, serves two purposes. First, it improves access to the Airport for airport users, airport staff, and public safety officials. Second, in the event that passenger activity increases during the planning period, the recommended roadway improvements will help to make the road safer, thereby mitigating any potential negative impacts resulting from increased usage of the access road.

#### 9.2.4 Public Shoreline Access

Proposed improvements to the Airport will not impact existing or future public access to the coastal area. Closure of existing jeep trails through the runway protection zones will not limit shoreline access because alternative routes for four-wheel drive vehicles are readily available. Because vehicular access to the coastal area is uncontrolled, the routes that four-wheel drive vehicles take change in response to conditions of the terrain. Therefore, four-wheel drive vehicles will not be constrained by closing off single jeep trails or realigning them.

The Airports Division is committed to preserving public access to the shoreline in the vicinity of the Airport. Existing access roads which compromise Airport safety and/or security will be realigned to ensure shoreline access is maintained. In the event that closure of an existing access road is proposed, the Airports Division will work with surrounding landowners in an effort to ensure that alternate access routes can be provided within a reasonable distance of the proposed road closure.

#### 9.1.11 Roadway Relocation

Relocation of the dirt access roads in the vicinity of the proposed terminal area and at the east and west end of the Airport property will not result in significant impacts to the environment. The areas surrounding the existing secondary roadways have been extensively modified by agricultural activities as well as uncontrolled off-road vehicle use over the past several decades. No significant environmental or archaeological resources have been identified in the vicinity of the areas proposed for roadway relocation.

#### 9.1.12 New Passenger Terminal

For the purposes of discussion, construction of the new terminal facility will result in the loss of some vegetation and will require cut and fill activities. However, as discussed earlier, because no significant environmental resources are present in the area, the impact of these construction activities is considered to be negligible.

#### 9.1.13 Runway Extension

Runway extension is not proposed in the recommended Master Plan. However, an extension was included under Alternatives 2 and 3, and therefore, its potential impacts must be considered in a comprehensive master planning effort. For the purpose of discussion only, extension of the runway would generally require a substantial amount of fill at the ends of the existing pavement. This would result in a physical change to the existing topography of the area at each end of the runway, as well as the loss of vegetation. Although some fill material could be obtained from the proposed terminal site, additional fill material would be required from a source off site. The exact amount of fill material required is unknown because accurate topographic maps depicting the areas at the end of the runway are unavailable. A more detailed analysis of the physical impacts of runway extension could not be completed in the absence of reliable topographic information. Nevertheless, since forecast future aircraft operations do not warrant runway extension, no extension of the runway is contemplated.

### 9.2 Long-Term Operational Impacts

Long-term operational impacts include those related to physical improvements and those associated with aircraft noise generated from take-offs and landings.

#### 9.2.1 Physical Improvements

As discussed above, aircraft operations at the Airport are forecast to increase from approximately 4,000 to 6,600 by the year 2020. Construction of the new passenger facility is not generally warranted by the forecast increase in volume of Airport activity. However, in order to preserve the Airport's ability to expand if unforeseen circumstances warrant it, land acquisition to accommodate the possible relocation of the terminal has been proposed as part of the Plan.

With the exception of the new passenger terminal, the remaining improvements recommended in the Plan are targeted toward improving the existing operation and function of the Airport, rather than accommodating new growth. Thus, their long-term

Access to the coastal area by standard drive vehicles is generally limited to periods when the jeep trails are dry and passable. Jurisdiction over the access road to the Airport, as well as the Mookini Heiau access road, is presently unclear and needs to be resolved among State agencies. Improvements to the Mookini Heiau access road, other than realignment, are not proposed as part of the improvement project. However, it is recommended that jurisdiction over all roads in the area be clarified and that the appropriate governmental agencies consider the appropriateness of improving access to the heiau and to the Kamehameha I Birthsite State Monument as well as realigning the access road which presently crosses private property.

Due to the remoteness of the Airport, there is little, if any, pedestrian traffic in the area. No historic coastal trails or mauka-makai trails were identified during the cultural interviews conducted as part of the archaeological inventory survey.

As discussed earlier, it is noted that the National Park Service has proposed a conceptual alignment of the Ala Kahakai coastal trail across the coastal portion of the Airport property. However, because any trail alignment would occur outside the Airport perimeter fence, no significant impacts associated with Airport operations on potential trail users are anticipated.

It has been observed, however, that portions of the chain link fence on the north side of the Airport have been bent away from the fence frame, suggesting that the occupants of standard drive vehicles who cannot negotiate the jeep trails around the Airport may park on the south side of the Airport and cross the runway on foot to access the coastal cliffs through the break in the fence. This activity cannot be condoned at an Airport since it is hazardous to both pedestrian and aircraft operations.

#### 9.2.5 Noise Impacts of Aircraft Operations

The principal impact associated with aircraft operations is noise. As part of the master planning effort, noise modeling was conducted for existing and projected aircraft operations at Upolu Airport. Noise contours from 55 to 75 DNL (Average Day-Night Sound Level) were developed for the base year 1997 and the forecast year 2020. Figure 5 depicts the noise contours for the base year 1997 overlaid on a tax map of the region. As evidenced in Figure 5, the 55 to 75 DNL noise contours are contained within the Airport property and the eastern aviation easement and, therefore, do not impact existing residents in the general vicinity of the Airport or in neighboring communities.

Due to the character of projected future aircraft operations in terms of the type of aircraft and the frequency of operations, no significant changes in aircraft flight tracks or operating procedures are anticipated by the year 2020.

Figure 6 depicts the noise contours for the year 2020. As is the case with the base year, the year 2020 noise contours are contained within the existing Airport property and its eastern aviation easement area and do not impact area residents. Consequently, the potential noise impacts of projected future aircraft operations is considered to be insignificant.



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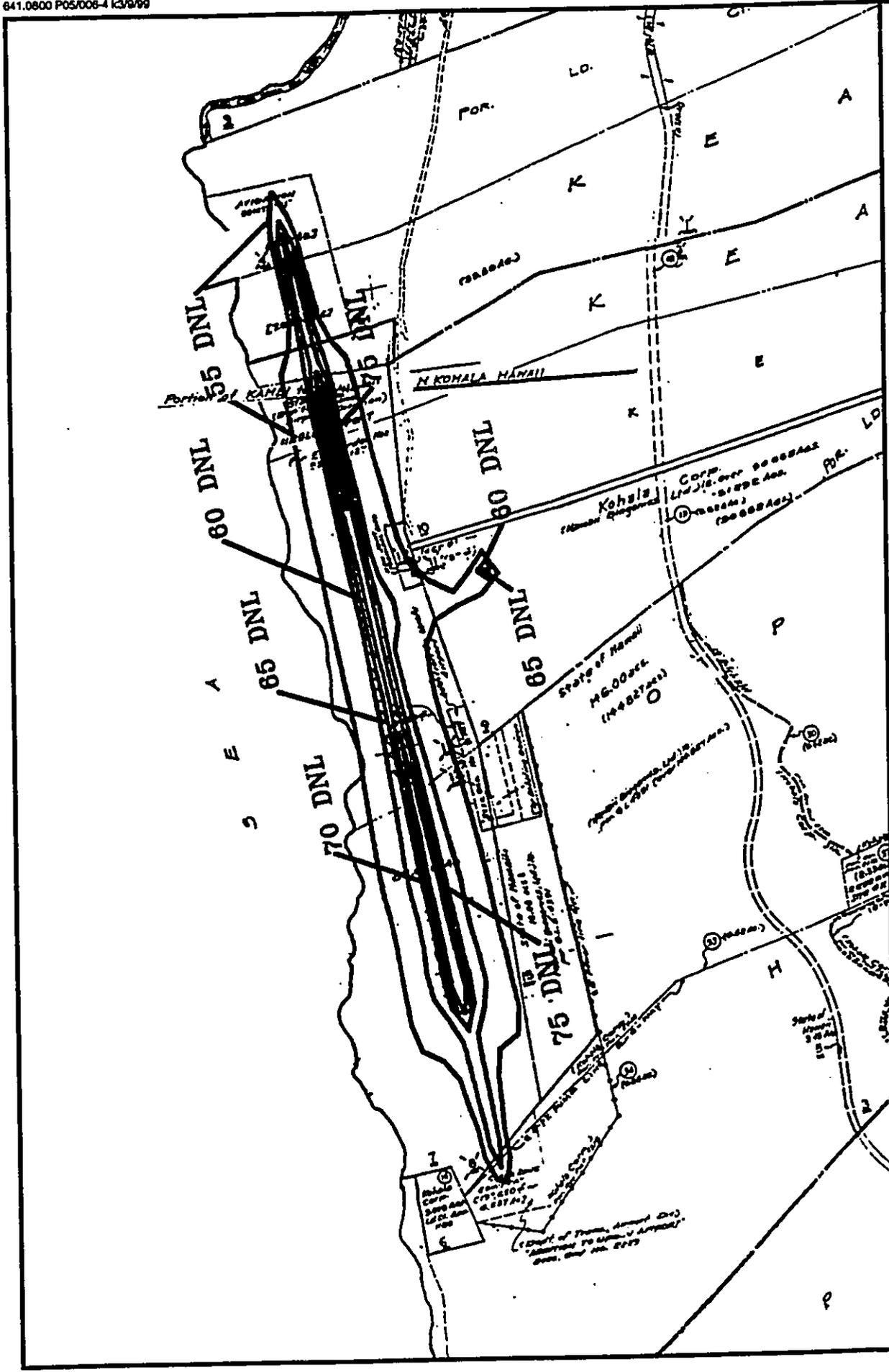
There are no incompatible land uses within the 55 to 75 DNL noise contours based on both FAA and State of Hawaii Department of Transportation guidelines for 1997 and 2020 aircraft operations.

#### 9.2.6 Socioeconomic Impacts

Given the limited number of future aircraft operations forecast for Upolu Airport during the planning period, it is unlikely that any significant socioeconomic impacts will occur as a result of the improvements identified in the Upolu Airport Master Plan. No direct or indirect population growth is anticipated as a result of the proposed improvements.

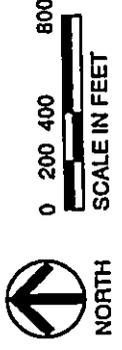
Whether commuter/air taxi service is restored at the Airport in the future will be dictated in part by the perceived demand for service. In view of the fact that this decision rests with private commuter/air taxi services rather than the State, significant population growth or a significant change in the character of economic activity in the District must occur before Airport operations will likely be affected. Thus, significant changes in aircraft operations at the Airport will be the result of population growth in the District, not the cause of it.





**Figure 6**  
**CY 2020 NOISE CONTOURS LOCATED ON**  
**TAX MAP 5-5-06 & 5-5-07, ISLAND OF HAWAII**  
 Upolu Airport Environmental Assessment  
 Prepared by Belt Collins Hawaii  
 March 1999

Source: Y. Ebisu and Associates, Inc.



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## 10.0 PROPOSED MITIGATION MEASURES

Proposed mitigation measures are generally limited to actions which would reduce the short-term impacts associated with construction activities. These would include grading to control storm generated runoff, especially during construction periods, fugitive dust control during grading for the new taxiway, and limiting construction-related vehicular activity to non-peak hour daytime traffic periods.

Long-term mitigation measures include the relocation of secondary dirt roads so that they no longer cross the RSA, the widening of the Airport access road, and the replacement of existing cesspools with septic systems. Vegetated filter strips and/or retention basins will be incorporated into the storm drainage system to control surface runoff from new development. They will be added in conjunction with the provision of the proposed T-hangars or the proposed terminal facility, whichever is developed first.

No mitigation measures are recommended to address the air-strike potential for plovers roosting on the runway at night because the Airport is rarely used for night landings and there appear to be no feasible mitigation measures. At airports with similar conditions (such as Marine Corps Base Hawaii, Kaneohe Bay), air strikes with plovers seldom occur. Based on observational experience, plovers are intelligent enough to get out of the way of a landing aircraft by simply running off the pavement. While the potential for an air strike exists, actual occurrences are considered to be rare. Attempting to disburse the birds prior to a landing as a mitigation is not advisable because their presence in the air constitutes a much more severe hazard to an airplane than their presence on the ground. Discouraging the birds from roosting on the runway is not a feasible mitigation. Plovers are known to be territorial, returning annually to the same area. Therefore, it is unlikely that the flock at Upolu can be easily displaced. Finally, the consulting biologist also notes that plovers are not disturbed by night lighting; they will not disburse when the Airport's remote controlled lighting is activated. Thus, for all intents and purposes there are no practical mitigation measures available. Given the forecast use of the Airport over the next twenty years, however, air strikes with plovers are not considered to be a significant problem.

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## 11.0 DETERMINATION

Based on this environmental assessment, no significant adverse impacts on the environment are anticipated as a result of implementing the improvements recommended in the Upolu Airport Master Plan. Therefore, after a careful review of the significance criteria contained in Title 11, Chapter 200-12 of the Hawaii Administrative Rules, it has been determined that the proposed project will have no significant adverse environmental impact.

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## 12.0 FINDINGS AND REASONS SUPPORTING THIS DETERMINATION

A Finding of No Significant Impact is based upon an analysis of the Title 11, Chapter 200-12 criteria for determining if an action may result in a significant impact. Following is a discussion summarizing the findings that pertain to the criteria.

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

Discussion. No significant archaeological sites will be impacted by the proposed improvements. No significant cultural sites will be impacted by the proposed improvements. No endangered or threatened species' habitats will be impacted by the proposed improvements.

- (2) *Curtails the range of beneficial uses of the environment.*

Discussion. Beneficial uses of the environment in the vicinity of the Airport are limited to agricultural activity, outdoor recreation associated with the coastal area, and the public benefits associated with the presence of the Airport. The proposed improvements will not curtail the uses because they generally occur within the Airport property or on land encumbered by an aviation easement granted to the DOT for the runway protection zones.

If the proposed new terminal facility is eventually constructed, it will be located between the Airport boundary fence and a realigned Mookini Heiau access road. This area is considered to be marginal land in that it is not used for agricultural activity and has no recreational value. The use of this area for a new terminal facility will benefit the general public by ensuring compliance with Airport design criteria.

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

Discussion. The proposed project is consistent with the state's environmental policies and goals, as demonstrated in this environmental assessment. The project will result in no significant adverse impacts.

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

Discussion. The proposed improvements have no significant socioeconomic impacts. The improvements will not generate population growth or require the provision of new or expanded government services.

- (5) *Substantially affects public health.*

Discussion. The proposed improvements have no adverse impact upon public health. Continued availability of the Airport for the purpose of medical emergency evacuations is a positive benefit for the residents of North Kohala. To that end, the

proposed improvements to the access road will improve access to the Airport by emergency medical vehicles.

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

Discussion. Because the proposed improvements are not intended to increase aircraft operations at Upolu Airport, no secondary impacts are anticipated.

- (7) *Involves a substantial degradation of environmental quality.*

Discussion. Environmental impacts are generally limited to the loss of some exotic vegetation where new paving will occur or where existing jeep trails will be realigned. This loss is not considered to be significant.

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

Discussion. The proposed project includes all potential improvements envisioned for the Airport in the next 20 years. Thus, the full scope of the project has been evaluated for purposes of this environmental assessment. Potential impacts of the project are generally limited to short-term construction impacts and are not anticipated to be significant.

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

Discussion. No rare, threatened or endangered species or their habitat has been identified within the area to be impacted by the proposed improvements.

- (10) *Detrimentially affects air or water quality or ambient noise levels.*

Discussion. No significant long-term impacts on ambient air quality will occur as the result of implementing the proposed improvements. While short-term impacts may occur as a result of construction activity, especially grading, these impacts can be mitigated by a fugitive dust control program and do not constitute a significant adverse impact. The quality of coastal waters is not impacted by the project. No significant noise impacts will occur as a result of implementing the proposed improvements. The forecast noise contours for aircraft operations at the Airport in 2020 are generally contained within the Airport property boundaries and do not result in a significant negative impact upon surrounding properties.

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

Discussion. The proposed project consists of improvements at an existing Airport. None of the proposed improvements will occur in an environmentally sensitive area.

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

Discussion. The proposed project has no significant impact upon viewplanes or vistas. Views of the coastline, the horizon, and of neighboring Maui island from State Highway 271 will not be impacted by the proposed improvements.

- (13) *Requires substantial energy consumption.*

Discussion. Energy consumption associated with construction of the proposed improvements will be generally limited to the use of fuel for motorized construction equipment. Long-term energy consumption resulting from operation of the facilities proposed by the Upolu Airport Master Plan is limited to a relatively minor increase in electrical power needed to operate new lights along the proposed taxiways and to provide electricity to the new terminal building if it is constructed.

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### 13.0 REQUIRED PERMITS AND APPROVALS

Development of new facilities at the Airport may require a Conservation District Use Permit and a Special Management Area Use Permit, as well as building permits from the County of Hawaii.

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## 15.0 COMMENTS RECEIVED DURING THE REVIEW PERIOD

The following governmental agencies, private groups, and interested individuals were consulted during the preparation of this Environmental Assessment and were provided with a copy of the Draft EA. A total of fifteen response letters were received. Those who provided responses in writing are identified in boldface print. (Please note: if the Draft EA was mailed to specific person in an agency or organization but another person responded on behalf of that organization, only the name of the organization is identified in boldface print.

### STATE AGENCIES

**Mr. Gary Gill, Director**  
Office of Environmental Quality Control

**Mr. James J. Nakatani, Chair**  
Department of Agriculture

**Mr. Brad Mossman, Director**  
Office of Planning  
Dept. of Business, Economic Development  
& Tourism

**Maj. Gen. Edward V. Richardson**  
Adjutant General and Director of  
Civil Defense  
Department of Defense

**Mr. Kali K. Watson, Chairman**  
Department of Hawaiian Home Lands

**Lawrence H. Miike, M.D., Director**  
Department of Health

**Don Hibbard, Ph.D., Administrator**  
State Historic Preservation Division  
Dept. of Land and Natural Resources

**Statewide Transportation Planning  
Office**  
Department of Transportation

**John T. Harrison, Ph.D., Director**  
Environmental Center  
University of Hawaii

**Mr. Randall K. Ogata, Administrator**  
Office of Hawaiian Affairs

**Mr. Ralston Nagata, Administrator**  
State Parks Division  
Department of Land & Natural  
Resources

**Mr. Dean Aoki**  
Commission on Persons with  
Disabilities  
Department of Health

### COUNTY OF HAWAII

**Mr. Nelson M. Tsuji, Fire Chief**  
Fire Department

**Mr. George Yoshida, Director**  
Department of Parks and Recreation

**Ms. Virginia Goldstein, Director**  
Planning Department

**Mr. Wayne Carvalho, Chief of Police**  
Hawaii County Police Department

**Mr. Jiro Sumada, Deputy Chief Engineer**  
Department of Public Works

**Ms. Diane S. Quitiquit, Director**  
Dept. of Research and Development

**Mr. Milton Pavao, Manager**  
Department of Water Supply

**Mr. Ed Bumatay, Deputy Chief**  
Hawaii County Fire Department

### LIBRARIES AND DEPOSITORIES

Hawaii State Library  
Hawaii Documents Center

Thelma Parker Memorial Library

Hilo Public Library

Hamilton Library  
University of Hawaii

DBED&T Library

Bond Memorial Public Library

Kailua-Kona Public Library

Hilo Campus Library

Office of the Legislative Reference  
Bureau

### ELECTED OFFICIALS

Honorable Daniel K. Akaka  
U.S. Senate

Honorable Patsy T. Mink  
U.S. House of Representatives

The Honorable Norman Mizuguchi  
Senator, 15th District

The Honorable Joseph M. Souki  
Representative, 8th District

The Honorable John B. Ray  
Councilmember, 9th District  
Hawaii County Council

Honorable Daniel K. Inouye  
U.S. Senate

The Honorable Benjamin J. Cayetano,  
Governor

The Honorable Malama Solomon  
Senator, 1st District

The Honorable Dwight Takamine  
Representative, 1st District

The Honorable Stephen K. Yamashiro  
Mayor  
County of Hawaii

### LOCAL UTILITIES

Hawaiian Electric Light Company

GTE Hawaiian Tel

### PUBLIC ORGANIZATIONS AND PRIVATE INDIVIDUALS

Ms. Diane Lei  
Big Island Farm Bureau

Mr. Henry Dulan, President  
Kohala Senior Citizens Club

Mr. Richard Boyd (Hui Lihikai)

Ms. Rayleen Landcaster, President  
North Kohala Civic Club

Mr. Larry Nakamoto, President  
Kohala County Farm Bureau

Mookini Luakini Foundation  
Attention: Ms. Momi Lum

Ms. Leslie Patton (Hui Lihikai)

Mr. Edward Boteilho, Jr.  
Boteilho Hawaii Enterprises

Mr. Ken Boche

Mr. Robert Karpovich

Mr. Bill Graham

Ms. Emma Glory  
(Kohala Senior Citizens Club)

Ms. Valerie Bright

Master Abraham Chester

Mr. Anthony Anjo (ACA Photography)

Ms. Jojo Tanimoto  
Kawaihae Hawaiian Homes Community Assn.

Ms. Virginia Graham

TECHNICAL ADVISORY COMMITTEE

*Federal Government*

Mr. David Welhouse, Airport Planner  
Federal Aviation Administration  
Honolulu Airports District Office

Commander, Pohakuloa Training Area

*State Government*

Mr. Frank Kamahale, Airport District Manager  
Airport District Office  
Keahole-Kona International Airport

CW2 Nelson Kunitake, Facility Administrator  
Hawaii Army National Guard

Ms. Charlene Unoki, Hawaii Land  
Management Agent  
State Department of Land and Natural Resources

*County Government*

Mr. Norman Hayashi, Program Planning Manager  
Hawaii County Planning Department

Ms. Stephanie Cabaniss

Mr. Mannix Miller

Mr. & Mrs. David Kamalani

Mr. Joe Jackson  
Hawaii Airline Liaison Office

Ms. Margaret Chester

Ms. Valerie Luhiau Anjo

Mr. Tommy Tinker

Mr. Alex Cadang  
Governor's Liaison

Mr. Dave Shute  
Federal Aviations Administration  
HI-SSC

Col. Orlan L. Peterson, Jr.  
State Army Aviation Office  
Hawaii Army National Guard

CW4 Harold Rodrigues, RAID Commander  
Hawaii Army National Guard

Mr. Richard Poirier  
State Planning Office

Mr. Marshall Ney  
Hawaii County Police Department

Sgt. Delphine W. Soares, Jr.  
Kapaau Station, North Kohala District  
Hawaii County Police Department

*Aviation Industry*

Mr. Tom Beard  
Big Island Air

Cmdr. Charlie Kaminski  
Civil Air Patrol

Mr. George Issacs  
Puakea Bay Ranch

Mr. Henry Bruckner  
General Aviation Council of Hawaii

Mr. John Thatcher  
Airlines Committee of Hawaii

*Local Organizations*

Mr. H. Peter L'Orange  
Hawaii Leeward Planning Conference

Ms. Marni Herkes  
Kona-Kohala Chamber of Commerce

*Surrounding Landowners*

Mr. Riley Smith  
Parker Ranch

Mr. John R. Worth

Mr. Harry Kim, Director  
Hawaii County Civil Defense Agency

Mr. Phil Auldridge  
Benchmark Flight Center

Dep. Cmdr. David Hoke  
Civil Air Patrol

Mr. Tony Castleforte  
Puakea Bay Ranch

Mr. Tim Flournoy  
Airline Pilot Association

Mr. R.B. Martin  
Kohala Businessman's Association

Mr. Michael S. Gomes  
Chalon International of Hawaii, Inc.

Stephen K. Yamashiro  
Mayor



*As Directed*

Virginia Goldstein  
Director

Russell Kokubun  
Deputy Director



1998 OCT -7 A 11:02

## County of Hawaii

PLANNING DEPARTMENT  
25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252  
(808) 961-8288 • Fax (808) 961-8742

October 5, 1998

Mr. Jerry Matsuda, P.E.  
Airports Administrator  
State of Hawaii, Department of Transportation  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, HI 96819-1880

Dear Mr. Matsuda:

Draft Environmental Assessment of Upolu Airport Master Plan  
TMK: 5-5-06: 7, 31, 3 (por), 9 (por) & 5-5-07: 2 (por): North Kohala, Hawaii

Thank you for your letter dated September 23, 1998, which was accompanied by the draft Environmental Assessment for the Upolu Airport Master Plan. We have completed our review of the draft Environmental Assessment and have the following comments to offer for your consideration.

1. Section 2.3-Existing Land Use Designations and Controls

While the information within this section is generally accurate, we wish to clarify and/or re-emphasize certain points.

- a. The County of Hawaii General Plan designates the airport and surrounding area for "Intensive Agricultural" uses. Lands located immediately makai of the airport runway is designated for "Open" uses. "Intensive Agriculture" is defined as lands suitable for sugar, orchard, diversified agriculture, and floriculture. "Open" lands are defined as parks and historic sites.
- b. The airport and surrounding lands are designated as Agricultural-20 acres (A-20a) by the Hawaii County Zoning Code.

Mr. Jerry Matsuda, P.E.  
Airports Administrator  
State of Hawaii, Department of Transportation  
Airports Division  
Page 2  
October 5, 1998

- c. The entire airport property and its avigation easements are situated within the County's Special Management Area (SMA). Portions of the airport property are also situated within the County's 40-foot Shoreline Setback Area (area situated between certified shoreline and 40-foot shoreline setback line). Therefore, all improvements or uses within the airport property or its avigation easements must be in conformance with the applicable requirements of the County's SMA and Shoreline Setback regulations.
2. We have no objections to the draft environmental assessment's anticipated Finding of No Significant Impact (FONSI).

Again, thank you for allowing our office to comment on the draft Environmental Assessment. We would appreciate receiving two (2) copies of the Final Environmental Assessment upon its publication in the OEQC Bulletin. Please contact Daryn Arai of this office should you have any questions.

Sincerely,

  
VIRGINIA GOLDSTEIN  
Planning Director

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c: Mr. Gary Gill, Director  
Office of Environmental Quality Control  
235 South Beretania Street, Room 702  
Honolulu, HI 96813-2437

Mr. Lee Sichter  
Belt Collins Hawaii  
680 Ala Moana Blvd., Suite 100  
Honolulu, HI 96813

BENJAMIN J. CAYETANO  
GOVERNOR



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

December 15, 1998

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0951

Ms. Virginia Goldstein  
Director  
County of Hawaii  
Planning Development  
25 Aupuni Street, Room 109  
Hilo, Hawaii 96720-4252

Dear Ms. Goldstein:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 5, 1998, commenting on the subject document. We have corrected Section 2.3 of the document to accurately reflect the general plan and zoning designations for the property. As stated on page 22, Section 2.3.3.4, the airport property, including the avigation easements, is situated in the Special Management Area. No improvements are proposed within the 40 foot shoreline setback area.

Please have your staff contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Very truly yours,

Handwritten signature of Kazu Hayashida in cursive.

KAZU HAYASHIDA  
Director of Transportation

c: /Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nt

Stephen K. Yamashiro  
*Mayor*



Diane S. Quitquit  
*Director*

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## County of Hawaii

**DEPARTMENT OF RESEARCH AND DEVELOPMENT**  
25 Aupuni Street, Room 219 • Hilo, Hawaii 96720-4252 • (808) 961-8366 • Fax (808) 935-1205  
KONA: (808) 329-5226 • Fax (808) 326-5663  
E-mail: chresdev@interpac.net

October 8, 1998

Mr. Jerry M. Matsuda, P.E., Airports Administrator  
State of Hawaii, Department of Transportation  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

Dear Mr. Matsuda:

Re: Draft EA - Upolu Airport Master Plan, North Kohala, Hawaii

Thank you for the providing us with an opportunity to review the referenced Environmental Assessment. We have no comments to make at this time.

Yours truly,

A handwritten signature in cursive script, appearing to read "Ray Carr", written over a horizontal line.

Raymond Carr  
Economic Development Specialist

xc: Gary Gill, OEQC  
L Sichter, Belt Collins Hawaii  
Diane Quitquit, Director

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0950

December 15, 1998

Mr. Raymond Carr  
Economic Development Specialist  
County of Hawaii  
Department of Research and Development  
25 Aupuni Street, Room 219  
Hilo, Hawaii 96720-4252

Dear Mr. Carr:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 8, 1998, commenting on the subject document. We appreciate you taking the time to review the draft document.

Please contact Lynette Kawaoka, Planner, at (808) 838-8812, to clarify any questions you may have.

Sincerely,

  
JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓ Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf



## COMMISSION ON PERSONS WITH DISABILITIES

919 Ala Moana Boulevard, Room 101 • Honolulu, Hawaii 96814  
Ph. (808) 586-8121(V/TDD) • Fax (808) 586-8129

1998 OCT 22 A 11:33

October 19, 1998

Mr. Jerry M. Matsuda, P.E. Airports Administrator  
State of Hawaii, Department of Transportation  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

Dear: Mr. Matsuda:

Subject: DRAFT ENVIRONMENTAL ASSESSMENT (EA)  
UPOLU AIRPORT MASTER PLAN  
NORTH KOHALA, HAWAII

In reviewing the Master Plan for Upolu Airport Project Site, there appears to be some concern addressing the actual scope of future work to be done pending on the projected demands for this facility.

However, when designing and planning for projected capital improvements at this site ensure that the accessibility design requirements are incorporated into the over all scoping requirements for the facility. This includes but is not limited to all accessible spaces such as employee work areas, common use areas, and general public areas. It includes but is not limited to accessible parking and passenger drop-off areas when provided, accessible routes leading to and through accessible entrances to employee lounges, employee and public use restrooms. It also includes customer service counters, public telephone access, accessible signage, and other applicable features that will meet the accessibility requirements.

Should you have any questions you may contact me at 808-586-8121.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gary L. Batcheller".

Gary L. Batcheller  
Facility Access Technician

CC. File

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0947

December 15, 1998

Mr. Gary L. Batcheller  
Facility Access Technician  
Commission on Persons with Disabilities  
919 Ala Moana Boulevard, Room 101  
Honolulu, Hawaii 96814

Dear Mr. Batcheller:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 19, 1998, commenting on the subject document. We agree that all facilities at the airport serving employees and the public should meet accessibility requirements. All proposed improvements at the airport will comply with ADA requirements.

Please contact Lynette Kawaoka, Planner at 838-8812, to clarify any questions you may have.

Sincerely,

A handwritten signature in cursive script, reading "Jerry M. Matsuda".

JERRY M. MATSUDA, P.E.  
Airports Administrator

c: Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

3476



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

25 AUPUNI STREET • HILO, HAWAII 96720  
TELEPHONE (808) 961-8660 • FAX (808) 961-8657

October 20, 1998

Mr. Jerry M. Matsuda, P.E., Airports Administrator  
State of Hawaii  
Department of Transportation  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, HI 96819-1880

DRAFT ENVIRONMENTAL ASSESSMENT (EA)  
UPOLU AIRPORT MASTER PLAN  
NORTH KOHALA, HAWAII  
TAX MAP KEY 5-5-006:007, 031, PORTION OF 003 AND 009; 5-5-007:PORTION OF 002

We have reviewed the subject draft Environmental Assessment (EA) and have the following comments.

Submit the anticipated maximum daily water usage for the proposed improvements as recommended by a registered engineer for our review and approval.

Further, the Hawaii County Fire Department should be consulted for fire protection concerns.

Should there be any questions, please contact our Water Resources and Planning Branch at 961-8660.

Milton D. Pavao, P.E.  
Manager

WA:gms

*... Water brings progress...*

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0953

December 15, 1998

Mr. Milton D. Pavao, P.E.  
Manager  
County of Hawaii  
Department of Water Supply  
25 Aupuni Street  
Hilo, Hawaii 96720

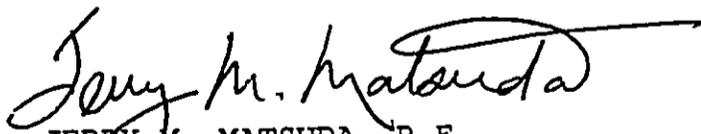
Dear Mr. Pavao:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 20, 1998, commenting on the subject document. We appreciate you taking the time to review the document. The anticipated maximum daily water usage for the proposed improvements will be submitted to your department for review and approval once the improvements have been funded and implementation is authorized. We will also be coordinating the implementation of fire protection improvements with the County Fire Department.

Please have your staff contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,

  
JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓ Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

*Hana Like No Ke Ala Aloha*  
Working Together to Provide Gateways of Aloha

# HUI LIHIKAI

CITIZENS FOR THE PROTECTION OF THE  
NORTH KOHALA COAST LINE

P.O. BOX 76, HAWI HAWAI'I 96719

PH/FAX 808-889-5553

October 20, 1998

Mr. Jerry M. Matsuda, P.E. Airports Administrator  
State of Hawaii, Dept. of Transportation,  
Airports Division  
Honolulu International Airport  
400 Rodgers Blvd, Suite 700  
Honolulu, HI. 96819-1880

Dear Mr. Matsuda,

I am in possession of both the Upolu Airport Draft Master Plan and the Upolu Airport Draft Environmental Assessment (DEA). I am writing to express several concerns.

First I would like to point out what I believe to be an erroneous statement in the DEA on page 26 in the last paragraph and in footnote #1. The footnote quotes (p 27) Mr. Teeley of DLNR as saying, "the alignment of the Ala Kahakai in the vicinity of Upolu Airport is conceptual and is not based upon either an existing or historical trail alignment." It goes on to say that the trail "departed the coastline in the vicinity of Mo'okini Heiau and turned inland instead of following northeast along the coastline to Upolu." While not denying that a trail did go inland from Mo'okini Heiau, I believe that there was also a coastal trail.

I called Mr. Teeley to confirm if he had in fact made that statement and to check on his sources of information if he had. Mr. Teeley has denied that he made that statement. At the Kohala Hawaiian Civic Club Meeting 10-18-98 three kupuna's said that there had always been a trail on the coast and in fact knew nothing of the "mauka trail". We are presently contacting others to factually confirm this belief.

My concern over not designating this coastal strip as part of the Ala Kahakai Trail System, is because it leaves this section of land in limbo. It would be a tragedy both from a cultural and historical perspective, as well as to the many hikers and fishermen who presently use it, if this section of coastline should somehow slip away because it is not protected

by trail designation in your DEA. Although it states in the last paragraph (p.26) that "the Upolu Airport EA did not include the coastal portion of the Airport property because no improvements are proposed there.", this section of land is not protected from future development by the DOT Airport Division or others. It needs to be identified specifically as part of the Ala Kahakai Trail system. I hope this change is possible.

Another problem I foresee is located on p. 26, paragraph five, the last sentence. It states four persons were interviewed in relation to any traditional cultural uses of the property. The names of these four so far anonymous people should be mentioned. They need to be identified so that local residents can judge for themselves if they believe they are 'worthy experts'. This ties in to my next concern relating to statements in the Draft Master Plan (2.3.1 Land Ownership & History, paragraph 2 ).

Much of North Kohala's land was acquired through "quiet title", probably through "adverse possession". The acquisition of most of the land by Hawi Mill & Plantation Co. LTD., the Kohala Sugar Company and subsequently by Chalon International, the present landowner, are questionable and the actual title is considered clouded by many local residents. Specifically, as mentioned in the Master Plan on p.16, the ahupua'a's of Kealahewa 1, 2, &3, Opihipau and Hukiaa. This clouded title problem persists as far south as the Coast Guard Station which was recently returned to Hawaiian Home Lands. Some of the local families that are claiming title are the Cazimero, Hook, Yamamoto, Perez and Kapiliala. There are others who prefer to remain anonymous for now. This could be a litigation problem down the road and perhaps the questions relating to title should be resolved before any state money is spent on this project. I'm sure there are other more pressing and worthy projects for state money.

I look forward to hearing from you regarding these concerns at your earliest opportunity.

E malama pono,

*Richard Boyd*

Richard Boyd, Co-Chair

cc Meredith Kaplan, National Park Service

Gary Gill, Chair O.E.Q.C.

Belt Collins

Fred Calchola

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

1978 DEC 21 A 11:01

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0949

December 16, 1998

Mr. Richard Boyd  
Co-Chair  
Hui Lihikai  
P. O. Box 76  
Hawi, Hawaii 96719

Dear Mr. Boyd:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 20, 1998, commenting on the subject document.

In response to your comment concerning the remarks of Mr. Pat Thiele of the Department of Land and Natural Resources, we immediately contacted Mr. Thiele. In response, he submitted the following statement in writing:

"Yes, I recall our conversation. The objectionable material is the statement attributed to me that "the historic alignment of the trail departed the coastline in the vicinity of Mo'okini Heiau and turned inland instead of continuing northeast along the coastline to Upolu." If you interpreted this from my conversation then I apologize for my lack of communication skills. In fact we do not know the physical location of any coastal trail section that could be incorporated into the Ala Kahakai in this area. Further, I have no reason to believe the Ala Kahakai or any other trail "departed the coastline in the vicinity of Mo'okini Heiau" except for the tradition that the stones for Mo'okini were passed hand to hand from Polulu."

*Hana Like No Ke Ala Aloha*  
Working Together to Provide Gateways of Aloha

Mr. Richard Boyd  
Page 2  
December 16, 1998

AIR-EP  
98.0949

In view of Mr. Thiele's statement above, we regret any misunderstanding our miscommunication may have caused. We have corrected the text of the Draft Environmental Assessment to eliminate any reference to an inland trail.

In response to your concerns about the coastal area abutting the airport facility; we assure you that existing and future operations at the airport will not threaten the coastal area. The area extending makai of the northern boundary fence is simply not appropriate for airport-related improvements. It is too steep. Although, the land extending from the security fence down slope to the top of the coastal cliff is technically part of the airport property, it has no value in terms of a potential expansion area because of its slope and its proximity to the sea cliffs. This is why the proposed improvements are all concentrated on the mauka side of the runway. Furthermore, it is in the best interest of the Airports Division that the property makai of the northern fence remain undeveloped. Maintaining this area under our jurisdiction will accomplish this.

Concerning your comment about the anonymity of the persons interviewed during our consultant's cultural resource assessment, the names were withheld out of respect for their privacy. We have found that people are more willing to participate in a formal oral history interview process if they are given the option of remaining anonymous. Because this response letter will be published together with your comment letter in the Final Environmental Assessment, we would rather not disclose the interviewees' names in writing. However, you may obtain them by contacting Mr. Lee Sichter of Belt Collins Hawaii, Ltd. at 521-5361.

With regard to your concern about ownership of the airport property, please note that page 19 of the Draft Master Plan recommends that a title search be conducted for the property.

Mr. Richard Boyd  
Page 3  
December 16, 1998

AIR-EP  
98.0949

Please contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,



JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

BENJAMIN J. CAYETANO  
GOVERNOR

MAJOR GENERAL EDWARD V. RICHARDSON  
DIRECTOR OF CIVIL DEFENSE

ROY C. PRICE, SR.  
VICE DIRECTOR OF CIVIL DEFENSE



PHONE 808) 733-4300

FAX 808) 733-4287

STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE  
3949 DIAMOND HEAD ROAD  
HONOLULU, HAWAII 96816-4495  
October 26, 1998

1998 OCT 28 A 11:13

TO: Mr. Jerry M. Matsuda, P.E.  
Airports Administrator  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

THROUGH: Mr. Joseph A. Ah New, Jr.  
Contracting and Engineering Officer  
Department of Defense, State of Hawaii

FROM: Roy C. Price, Sr.   
Vice Director of Civil Defense

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) UPOLU AIRPORT  
MASTER PLAN, NORTH KOHALA, HAWAII

We appreciate this opportunity to comment on the State of Hawaii, Department of Transportation, Airports Division, EA for the Upolu Airport Master Plan, Upolu, island of Hawaii, Hawaii, TMK: 5-5-06: 7, 31, por. 3, por. 9; 5-5-07: por. 2.

State Civil Defense (SCD) requests that an "EAS" receiver and optional civil defense siren simulator be included and purchased as part of the Maintenance Facility. These two devices give the Airport Facility a warning, just as an outdoor warning siren would.

Just as parks, schools, fire hydrants, underground/overhead utilities and sidewalks are planned as integral parts of planned developments, so must an emergency warning system and support infrastructure be purchased and installed by the developer for the safety and well-being of the residents.

We appreciate your consideration and such expressions of interest you may have on this matter.

Our SCD planners and technicians are available to discuss any concerns your staff may have. Please contact Mr. Norman Ogasawara of my staff at 733-4300.

c: Mr. Gary Gill, Director  
Office of Environmental Quality Control

Mr. Lee Sichter  
Belt Collins Hawaii

BENJAMIN J. CAYETANO  
GOVERNOR



KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

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

DEC 15 20 10 35

IN REPLY REFER TO:

AIR-EP  
98.0944

December 15, 1998

TO: ROY C. PRICE, SR.  
VICE DIRECTOR OF CIVIL DEFENSE  
DEPARTMENT OF DEFENSE

FROM: KAZU HAYASHIDA  
DIRECTOR OF TRANSPORTATION *K.H.*

SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your memorandum of October 26, 1998, commenting on the subject document. We acknowledge your recommendation that an "EAS" receiver and siren simulator should be installed at the airport; however, we do not believe this equipment is needed until demand for airport services warrants a permanent staff at the airport. Our consultant, Belt Collins Hawaii, Ltd., confirmed this with Mr. Ogasawara, of your staff, on November 9, 1998. Therefore, the equipment will be installed at some point in the future when the presence of permanent staff warrants this specific improvement.

Please have your staff contact Lynette Kawaoka, Planner of the Airports Division at (808) 838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

DIRECTOR'S OFFICE  
DEPT. OF  
TRANSPORTATION  
DEC 16 7 48 AM '98

BENJAMIN J. CAYETANO  
GOVERNOR  
STATE OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879  
HONOLULU, HAWAII 96805

KALI WATSON  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI  
DEPUTY TO THE CHAIRMAN

October 29, 1998

To: Jerry M. Matsuda, P.E., Airports Administrator  
Department of Transportation, Airports Division

From: Kali Watson, Chairman *KW*  
Hawaiian Homes Commission

Subject: Draft Environmental Assessment (EA)  
Upolu Airport Master Plan, North Kohala, Hawaii

Thank you for allowing our review of the subject report which discusses potential impacts of airport improvements recommended in the 1998 Upolu Airport Master Plan.

The Department of Hawaiian Home Lands (DHHL) will be acquiring 38 acres of the Coast Guard Upolu Point LORAN Reservation, approximately 3 miles southwest from the Airport. (TMK 5-6-01:portion of 56) Please advise us of any land use constraints upon this property that may result from operations at the Airport.

If you have any questions, call Joe Chu of our Planning Office at 587-6421.

BENJAMIN J. CAYETANO  
GOVERNOR



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

NOV 27 A 11:10

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0948

December 23, 1998

TO: KALI WATSON, DIRECTOR  
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: KAZU HAYASHIDA  
DIRECTOR OF TRANSPORTATION

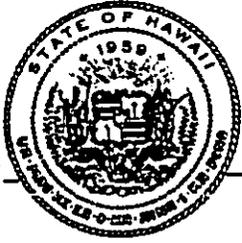
SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your memo of October 29, 1998, commenting on the subject document. We do not anticipate any land use constraints upon the property identified as TMK 5-6-01: portion of 56 resulting from the implementation of the Master Plan.

Please have your staff contact Lynette Kawaoka, Planner of the Airports Division at 838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf



**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

BENJAMIN J. CAYETANO  
GOVERNOR  
SEJI F. NAYA  
DIRECTOR  
BRADLEY J. MOSSMAN  
DEPUTY DIRECTOR  
RICK EGGED  
DIRECTOR, OFFICE OF PLANNING

**OFFICE OF PLANNING**

235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-2846  
Fax: (808) 587-2824

Ref. No. P-7775

October 29, 1998

**MEMORANDUM**

**To:** Kazu Hayashida, Director  
Department of Transportation

**ATTN:** Jerry M. Matsuda, P.E.  
Airports Administrator

**FROM:** *Bradley J. Mossman*  
Bradley J. Mossman  
Director, Office of Planning

**SUBJECT:** Draft Environmental Assessment, Upolu Airport Master Plan, North Kohala,  
Hawaii

We support the master plan and its improvements. In addition to responding to community transportation needs, the project should also help broaden economic activities opportunities for the area.

Our specific interest in this project is the assurance that the improvements to implement the master plan are designed and implemented in compliance with the Coastal Zone Management (CZM) objectives and policies of Chapter 205A, HRS. In this regard, we agree with community concerns about the need to preserve access to local fishing areas. This is a coastal activity that the CZM recreational policies protect. We support the Airport Division's commitment to work with the surrounding landowners to develop acceptable alternatives in the event that the existing access road is officially proposed.

We are aware that there are archaeological resources that may be impacted such as the Mookini Heiau and Kamehameha I Birthplace. The protection of these resources should be coordinated with the State Historic Preservation Office.

Finally, polluted runoff is an extremely important CZM concern. Effective management measures must be practiced to prevent or minimize polluted runoff into the coastal waters. Vegetated filter strips and retention basins are examples you may wish to consider in the design of the projects. You may also wish to consult our Coastal Nonpoint Pollution Control Program document which contains a number of management measures to combat polluted runoff.

If there are any questions, please contact Christina Meller of our CZM Program at 587-2845.

cc: Belt Collins Hawaii (Attn: Lee Sichter)  
Gary Gill

BENJAMIN J. CAYETANO  
GOVERNOR



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

KAZU HAYASHIDA  
DIRECTOR

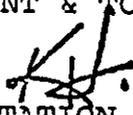
DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0943

December 15, 1998

TO: BRADLEY J. MOSSMAN, DIRECTOR  
OFFICE OF PLANNING  
DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM

FROM: KAZU HAYASHIDA   
DIRECTOR OF TRANSPORTATION

SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your memorandum of October 29, 1998, commenting on the subject document. As we have stated in the Draft Environmental Assessment (EA), the improvements proposed at Upolu Airport will not constrain or limit access to the coastal area.

With regard to your comment concerning the region's archaeological resources, including Mo'okini Heiau and the Kamehameha I birthplace, as discussed in the archaeological inventory survey for the project, the existing airport is approximately 1.6 miles east of the former and nearly two (2) miles east of the latter. Given the nature of the proposed improvements, neither site will be impacted. In addition, as depicted in Figures 5 and 6 of the Draft EA, noise from aircraft operations will not impact the historic sites because noise impacts are limited to areas within the airport property and/or runway safety area easements.

Mr. Bradley J. Mossman  
Page 2  
December 15, 1998

AIR-EP  
98.0943

Concerning the matter of surface runoff, we agree that vegetated filter strips and/or retention basins should be incorporated into the storm drainage system and we believe that they should be added in conjunction with the provision of the T-hangars or the proposed terminal facility, whichever comes first. We have revised the Master Plan to include this recommendation.

Please have your staff contact Lynette Kawaoka, Planner of the Airports Division at 838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

1998 NOV -6 A 11: 24

U.S. AIR MAIL

October 30, 1998

Mr. Jerry M. Matsuda, P.E. Airports Administrator  
State of Hawaii, Department of Transportation,  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Ste 700  
Honolulu HI 96819-1880

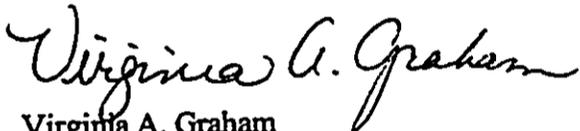
Dear Mr. Matsuda,

After reviewing the Upolu Airport Draft Environmental Assessment (DEA) I'm compelled to express my concern as a private citizen about the coastline area makai of the proposed airport.

The Kohala area, as you know, is the most culturally and historically significant area in the Kingdom of Hawaii, and especially the vicinity of the birthplace of King Kamehameha I. If this were to be "locked up" so that future use is not available to the public there could be a long and costly lawsuit brought forth against the State.

Every long-term resident I have spoken with since reading this report, confirms the use of a trail along the coastline. Why not designate this land as part of the Ala Kahakai Trail System now while possible? A small airport and coastal trail should be able to co-exist. This is a very important issue to this historic community.

Sincerely,



Virginia A. Graham  
PO Box 1580  
Kapaa HI 96755

cc Gary Gill, Chair OEQC  
✓ Belt Collins

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0942

December 15, 1998

Ms. Virginia A. Graham  
P. O. Box 1580  
Kapaau, Hawaii 96755

Dear Ms. Graham:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 30, 1998, commenting on the subject document. As we have stated in the Draft Environmental Assessment, the improvements proposed at Upolu Airport will not constrain or limit access to the coastal area.

We agree that the designation of a coastal trail on the coastal property seaward of the airport's security fence would be compatible with airport operations as long as it remains outside of the airport's runway object free areas at each end of the runway and complies with Federal Aviation Administration (FAA) regulations. Jurisdiction over the state-owned property outside of the airport property rests with the Land Management Division of the Department of Land and Natural Resources (DLNR), and it is that agency which has the authority to designate an appropriate trail easement. Therefore, we urge you to direct your request to the DLNR.

Please contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,

A handwritten signature in cursive script that reads "Jerry M. Matsuda".

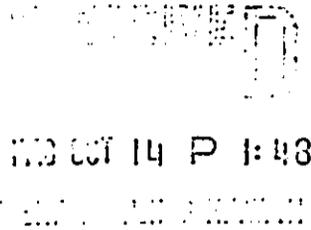
JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓ Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

*Hana Like No Ke Ala Aloha*  
Working Together to Provide Gateways of Aloha

Stephen K. Yamashiro  
Mayor



Wayne G. Carvalho  
Police Chief

James S. Correa  
Deputy Police Chief

## County of Hawaii

### POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998  
(808) 935-3311 • Fax (808) 961-2702

October 12, 1998

Mr. Jerry M. Matsuda  
P.E., Airports Administrator  
Department of Transportation  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

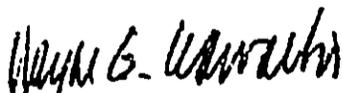
Dear Mr. Matsuda:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)  
UPOLU AIRPORT MASTER PLAN  
NORTH KOHALA, HAWAII

We have reviewed the draft Environmental Assessment for the subject project and do not foresee any significant adverse impacts on the environment should the recommended improvements be implemented.

Thank you for the opportunity to comment.

Sincerely,

  
WAYNE G. CARVALHO  
POLICE CHIEF

DS:lk

cc: Mr. Gary Gill, Office of Environmental Quality Control  
Mr. Lee Sichtler, Belt Collins Hawaii

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0952

December 16, 1998

Chief Wayne G. Carvalho  
Police Chief  
County of Hawaii  
349 Kapiolani Street  
Hilo, Hawaii 96720-3998

Dear Chief Carvalho:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of October 30, 1998, commenting on the subject document. We appreciate you taking the time to review the document.

Please contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,

  
JERRY M. MATSUDA, P.E.  
Airports Administrator

c: /Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf



November 9, 1998

State of Hawaii, Department of Transportation,  
Airports Division  
Honolulu International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

Attention: Mr. Jerry M. Matsuda

Subject: Draft Environmental Assessment  
Upolu Airport Master Plan

Dear Mr. Matsuda:

Thank you for the opportunity to review the subject draft environmental assessment dated September 3, 1998. We are in agreement to the draft EA and have additional comments as follows:

Section 3.19 - The existing distribution overhead electrical system is consistent with our records. Furthermore, the existing electrical system is served from a twenty (20) mile radial 34,500 volt transmission line from our Waimea Switching Station to our Hawi substation. The Hawi substation steps down the voltage from 34,500 volts to 4,160 volts and have the transformation capacity of 2,500 kilowatts (KW) and is currently loaded at 2,100 KW during the peak load periods. The main three phase overhead 4,160 volt distribution overhead system extends along the Akoni Pule Highway and tapped to a single phase 2,400 volt overhead line to the existing Upolu Airport pole mount distribution transformer. The transformation voltage for the pole mount distribution transformer is 2,400 volts to 120/240 volts.

Section 7.17 - The existing single phase distribution overhead lines along the access road and pole mount distribution transformer at Upolu Airport need to be upgraded to accommodate the new loads. Assuming the new load for the proposed

SENT BY: AIRPORTS DIVISION : 11-10-98 : 2:20PM :  
NOV-10-98 08:15 FROM: HELCO ENGINEERING

ENGINEERING-  
ID: 888988258

808 538 7819: # 3  
PAGE 3/3

State of Hawaii, Department of Transportation, Airport Division  
Honolulu International Airport  
November 9, 1998  
Page 2

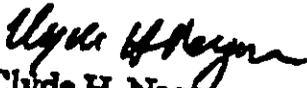
two hangers, taxiway lighting, and maintenance building is 50KW or less, these new loads may be served from the existing 34,500 voltage transmission line, Hawi substation transformer, and existing main three phase 4,160 volt overhead line. The customer's electrical consultant is urged to contact the Engineering department of Hawaii Electric Light Company at (808) 935-1171 as soon as practical with the proposed KW demand for the project.

Section 9.1.5 - The new emergency generator must be equipped with an open transition transfer switch to prevent feedback of power to the utility grid. The emergency generator starting sequence should be coordinated with HELCO's Hawi substation feeder reclosing settings.

We recommend that energy efficient and conservation features suitable to reduce the peak electrical demand be a part of the development's plans and requirements. We urge that this project use energy saving devices such as fluorescent lighting and sodium lighting.

Should you require any additional information, please feel free to call me or H. Kamigaki at (808) 935-1171.

Sincerely,

  
Clyde H. Nagata  
Manager, Engineering Department

cc: L. Kawaoka  
H. Kamigaki  
M. Terazono

RECEIVED TIME NOV. 10. 2:11PM

PRINT TIME NOV. 10. 2:13PM

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAAI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0946

December 15, 1998

Mr. Clyde H. Nagata  
Manager  
Engineering Department  
Hawaii Electric Light Company, Inc.  
P. O. Box 1027  
Hilo, Hawaii 96721-1027

Dear Mr. Nagata:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of November 9, 1998, commenting on the subject document. The additional information you provided has been incorporated into the Final Environmental Assessment. We acknowledge the need to coordinate our efforts with your office before facility improvements are implemented. Finally, we agree that energy saving devices such as fluorescent lighting and/or sodium lighting would help to improve electrical efficiency and promote conservation and will consider your recommendation in the course of implementing the Master Plan.

Please contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,

A handwritten signature in cursive script that reads "Jerry M. Matsuda".

JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓Belt Collins Hawaii. Ltd. (L. Sichter)

LK:nf

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4185  
FACSIMILE (808) 586-4186

November 9, 1998

GARY GILL  
DIRECTOR

Mr. Jerry M. Matsuda, Airports Administrator  
State of Hawai'i Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawai'i 96813

Dear Mr. Matsuda:

Having reviewed the September 1998 draft environmental assessment (DEA) for the "Upolu Airport Master Plan", North Kohala, Hawai'i, TMK 5-5-06:7, 31, portion of 3 and portion of 9; 5-5-07: portion of 2, we submit the following comments for your response.

**1. DISCUSSION OF INDIRECT AND CUMULATIVE EFFECTS OF THE PROPOSED PROJECT'S INCREASED AIR TRAFFIC ON THE ENVIRONMENT**

Section 11-200-10, Hawai'i Administrative Rules (HAR) requires that the environmental assessment identify and summarize direct, indirect and cumulative impacts as defined in section 11-200-2, HAR. Please discuss the relationship between increased airport traffic in the year 2020 and the widening of the access road. Describe any indirect impacts (i.e. growth-inducing effects such as larger capacity roads, increased residential and commercial development, etc.) the project may have in the North Kohala region.

Also, please consult with the County Planning Department and discuss cumulative effects which may potentially arise from implementation of the master plan such as: solid waste generation; wastewater generation; water use; and traffic in the North Kohala region through 2020 and beyond.

**2. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**

We are unclear as to the extent of involvement of the Federal Aviation Administration (FAA) in the proposed action. Has the FAA issued a categorical exemption? Will they issue a separate FONSI? Please consult with the Federal Aviation Administration and include in the final EA and explanation of their criteria for preparing joint NEPA/Chapter 343 documents for joint state/federal actions.

If there are any questions, please call Leslie Segundo, Environmental Health Specialist at 586-4185.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Gill".

GARY GILL  
Director

c: Mr. Lee Sichter, Belt Collins Hawaii

BENJAMIN J. CAYETANO  
GOVERNOR



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

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAAI  
GLENN M. OKIMOTO

IN REPLY REFER TO:  
AIR-EP  
98.0945

December 15, 1998

TO: GARY GILL, DIRECTOR  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: KAZU HAYASHIDA *Brian Minai*  
DIRECTOR OF TRANSPORTATION

SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your letter of November 9, 1998, commenting on the subject document. The following are responses to your comments.

1. Discussion of Indirect and Cumulative Effects

You requested that we address the relationship between increased airport traffic in the year 2020 and the widening of the access road.

Page 22 of the Draft Environmental Assessment (EA) discusses existing and future aircraft operations at the airport. (Please note that an aircraft operation consists of a single landing or a takeoff. Thus, the arrival and departure of a single aircraft is counted as two operations). Table 3 on page 21 of the Draft EA presents the aviation demand forecast for Upolu Airport through the year 2020. The forecast indicates that commuter/air taxi operations will increase about 144 percent; from 800 a year in 1996 to 1,950 a year in 2020. However, it is noted that since there are no scheduled commuter services at the airport and none are forecast through the year 2020, these operations are limited to small passenger planes and helicopters landing for short periods of time to allow passengers to enjoy the views and use the restroom facilities. Since no passengers

Mr. Gary Gill  
Page 2  
December 15, 1998

AIR-EP  
98.0945

are enplaning or deplaning, there are no vehicular traffic generated by these operations (in the form of rental car traffic or passenger pick-ups and drop-offs).

General aviation will increase about 48 percent; from 2,600 operations in 1996 to 3,850 operations in the year 2020. However, because there are no based aircraft at the airport and none are forecast during the planning period, the projected operations are limited primarily to touch-and-go training and a limited number of "scenic and rest stops" as described above. No significant vehicular traffic is anticipated as a result of the increased general aviation operations.

Military operations will increase about 33 percent; from 600 in 1996 to 800 in the year 2020. These operations are directly related to seasonal maneuvers which are conducted on and in the immediate vicinity of the airport. Very little vehicular traffic is generated by the maneuvers.

Finally, there are no air cargo or mail at the airport, and none is forecast through the year 2020. Thus, no delivery vehicles or mail trucks will be utilizing the airport access road.

Although aircraft operations are forecast to increase over the next twenty years, it is not anticipated that they will result in a significant increase in vehicular traffic on the access road, or for that matter, in the Kohala region.

As discussed on page 44 of the Draft EA, the principal reason for paving the access road is to improve security at the airport, which will result in a reduction of repair costs and equipment replacement at the airport resulting from vandalism. The Draft EA also discusses the fact that the Hawaii Department of Transportation (DOT) wants to

Mr. Gary Gill  
Page 3  
December 15, 1998

AIR-EP  
98.0945

ensure that the airport can accommodate scheduled commuter service, if it is eventually reinstated at the airport by the private sector. Paving the access road, in and of itself, does not constitute a significant enough benefit to attract commuter service. However, the State feels obligated to do what it can to avoid discouraging commuter and small package cargo business. We also note that because the airport represents the only potential triage facility in the region for medical related emergencies, it is appropriate to ensure that the condition of the airport access road does not constrain access by ambulances.

Therefore, in view of these considerations, it is not anticipated that increased aircraft operations at Upolu Airport will have any indirect impacts in the form of growth inducing effects or increased development. In addition, we have coordinated with the Hawaii County Planning Department in preparing the Master Plan.

With regard to your question about the cumulative effects on solid waste generation, wastewater generation, water use, and traffic in North Kohala, resulting from implementation of the Master Plan, we have concluded that there will be no cumulative effects for the same reasons discussed above. The forecast increase in aircraft operations are localized to the confines of the airport itself, with no direct, indirect or cumulative effect on the greater region. For example, solid waste presently generated at the airport is limited to the refuse deposited there by airport maintenance personnel and aircraft passengers utilizing the rest room facilities. Although the latter category will increase over the next 20 years, the increase is negligible in terms of the solid waste generated. Likewise, increases in water use, wastewater generation, and vehicular traffic are all anticipated to be negligible.

Mr. Gary Gill  
Page 4  
December 15, 1998

AIR-EP  
98.0945

2. National Environmental Policy Act

Concerning your question about the extent of involvement of the Federal Aviation Administration (FAA) in the proposed action, Mr. David Welhouse of the FAA has been a participant on the project's Technical Advisory Committee and has been involved on a regular basis with the project. We are informed that none of the proposed improvements trigger the National Environmental Policy Act (NEPA). Once the Chapter 343 process has been completed, the Master Plan will be finalized. At that point, it is our understanding that the FAA will review the Final Master Plan and probably issue a categorical exemption.

Please have your staff contact Lynette Kawaoka, Planner of the Airports Division at 838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

P.O. Box 943 417+  
Kapa'au, HI 96755

November 9, 1988 -

Jerry Matsuda  
c/o Dept. of Transportation  
Airports Division  
400 Rogers Boulevard, #700  
Honolulu, HI 96809

AIRPORTS DIV.  
Acty AIR 1A  
AIR-A 2B  
AIR-E 2B  
AIR-L       
AIR-R       
AIR-EP 3C  
AIR-S     

Jerry:

This is just a short letter to let you know that I did review the "Napali" booklet with the various alternatives as to what could be done at the site. After meeting with you and staff several months ago, the conclusions are still the same: leave the airport in the original condition and do as little as possible to maintain it. This is probably along the lines of Proposal #2 to extend the "Taxi area to the benefit of providing safer measures for inbound and out bound air traffic".

2/ There are also several other issues to address although DOT seems to think that it is of FOWSI. The old trails of the surrounding area are protected by the Supreme Court decision rendered by Chief Justice Richards allowing native-Hawaiians access to many areas due to laws that were in effect before U.S. government brought its laws upon Hawaiian people of the Kingdom. And, there needs to be a DEIS of the surrounding area of the present Upolu Airport site due to the belief that there are burials leftover from old Hawaiian families that used to reside in the area of Mookini to Upolu. This is a statement that has been made by some of the old timers that are well into their 80's-90's in age and remember what it was like to live in N. Kohala. To not have a DEIS is an insult to the families that may have burials in the Upolu area.

last, the area around Upolu has been used by the local people to provide fishing,

3/

Camping and other outdoor activities. The work that will be done to renovate Upolu Airport shall in no way constitute a threat to these activities of the local population that resided in N. Kolaha long before this airport site was ever constructed prior to World War II. It is therefore recommended that a new DEIS and independent archaeological work be done [prior to any activity of renovation to Upolu Airport]. And, that the access that the local population enjoyed in the past (to the area) be protected for future generations. This should also include that the airport be secured to protect it from vandalism or theft due to a segment of the population seeming to not respect these types of public sites.

If I can be of further assistance, please call or write me. I will share all of this information with other members of Kolaha's Civic Club.

Mabalo,

Anthony Ako Anjo

Anthony Ako Anjo

#889-5309

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0954

December 15, 1998

Mr. Anthony Ako Anjo  
P. O. Box 943  
Kapaau, Hawaii 96755

Dear Mr. Anjo:

Subject: Upolu Airport Draft Environmental Assessment  
North Kohala, Hawaii

Thank you for your letter of November 9, 1998, commenting on the subject document. We appreciate you taking the time to review the document.

We do not believe there is a need for a full Environmental Impact Statement (EIS) for the area surrounding the airport. As discussed in the Draft Environmental Assessment (EA), the proposed improvements are limited to the existing airport property, which has been previously disturbed by airport development. No burials have been identified on the airport property or in adjacent areas immediately mauka of the airport (between the mauka security fence and the access road to Mo'okini Heiau). Thus, due to the absence of significant archaeological or cultural sites within the specific areas of the airport property which would be improved, we have concluded that no significant impacts will result from the proposed improvements.

No "old trails" were discovered during the archaeological survey, nor are there any recorded on historical maps of the project area. As discussed in the Draft EA, the proposed project will not impact access to the coastal area. Continued use of existing jeep trails outside of the proposed improvement area will not be impacted by the airport project.

*Hana Like No Ke Ala Aloha*  
Working Together to Provide Gateways of Aloha

Mr. Anthony Ako Anjo  
Page 2  
December 15, 1998

AIR-EP  
98.0954

We respectfully disagree that not preparing a Draft EIS for the area surrounding the airport would be an insult to families that may have burials in the Upolu area. According to the project's archaeologist, burial sites are traditionally known to exist nearer to Mo'okini Heiau and further south of the heiau. No new development is proposed on lands mauka or makai of the fenced airport property.

We are aware of the ongoing recreational activities in the general region, especially along the coastline. Since the proposed improvements are generally limited to the confines of the airport property, recreational activities that occur outside of the fenced property will not be impacted.

Finally, the proposal to pave the access road to the airport is in direct response to the identified need to improve security at the airport and discourage vandalism and theft.

Please contact Lynette Kawaoka, Planner at (808) 838-8812, to clarify any questions you may have.

Sincerely,



JERRY M. MATSUDA, P.E.  
Airports Administrator

c: ✓ Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

SENT BY: AIRPORTS DIVISION

11-18-98 : 8:55AM :

ENGINEERING→

808 538 7819: # 4

4180

PHONE (808) 594-1888



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
711 KAPI'OLANI BOULEVARD, SUITE 600  
HONOLULU, HAWAII 96813

FAX (808) 594-1885

AIRPORTS DIV  
City AIR 10  
AIR-A  
AIR-E 20  
AIR-L  
AIR-R  
AIR-EP 3  
AIR-S

November 10, 1998

Mr. Jerry Matsuda, P.E, Airport Administrator  
State of Hawai'i Department of Transportation  
Airports Division  
Honolulu, International Airport  
400 Rodgers Boulevard, Suite 700  
Honolulu, Hawai'i 96819-1880

HIS-232

Re: Department of Transportation, Airports Division, Draft Environmental Assessment (DEA) Upolu Airport Master Plan; North Kohala, Hawai'i; TMK 5-5-06:7,31, por.3, por.9; and 5-5-04:por.2.

Dear Mr. Matsuda:

Thank you, for opportunity to review the Department of Transportation, Airport Division's , Draft Environmental Assessment for the Upolu Airport Master Plan. The DEA is being prepared to assess the potential impacts of airport improvements recommended in the 1998 Upolu Airport Master Plan. As stated in the DEA, the objective of the Master plan is to prepare 20-year guidelines for future airport development. There are two areas of the DEA which are of concern to the Office of Hawaiian Affairs.

First Section 5.6.3 of the DEA concludes that "[t]he Airport is apparently an important roosting site for plover wintering in North Kohala". And that "[t]heir numbers may pose potential air strike problems for aircraft landing after dusk". Although the plover is neither endemic nor endangered the DEA points out that the potential for air strike exists. This should be addressed in the mitigation section of the report.

Second, section 4.8 concludes that "[n]o cultural sites have been identified" because "[n]one of the four persons interviewed was aware of any traditional cultural use of the project area". A conclusion of this importance based on discussions with four persons is inadequate.

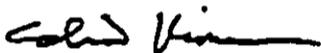
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Mr. Jerry Matsuda, P.E, Airport Administrator  
State of Hawai'i Department of Transportation  
Airports Division  
November 10, 1998  
Page two

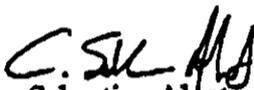
We suggest that you contact a Hawaiian cultural expert to help prepare a cultural impact assessment for the projects. We strongly suggest that the Hawaiian cultural expert you choose should be a person who is recognized within the Hawaiian community for his/her cultural expertise. The concerns of the community will not be addressed if the final EA contains information provided solely by a person whose knowledge of Hawaiian culture is limited to a study of archaeology or anthropology.

If you have any questions, or need to forward any additional information, please contact Lynn Lee, EIS Planner at 594-1936.

Sincerely



Colin Kippen  
Deputy Administrator



Sebastian Albot  
Land and Natural Resources Division Officer

cc: Board of Trustees  
West Hawaii Community Affairs Office  
OEQC

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR  
DEPUTY DIRECTORS  
BRIAN K. MINAAI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0955

December 16, 1998

TO: COLIN KIPPEN, DEPUTY ADMINISTRATOR  
SEBASTIAN ALOOT, LAND AND NATURAL RESOURCES  
DIVISION OFFICER  
OFFICE OF HAWAIIAN AFFAIRS

FROM: JERRY M. MATSUDA, P.E. *Jerry M. Matsuda*  
AIRPORTS ADMINISTRATOR

SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your letter of November 10, 1998, commenting on the subject document.

With regard to your comment about the air-strike potential for plovers roosting on the runway at night, we did not recommend a mitigation measure because the airport is rarely used for night landings and we are unaware of any feasible mitigation measures. At airports with similar conditions (such as Marine Corps Base Hawaii, Kaneohe Bay), air strikes with plovers seldom occur. Based on observational experience, plovers are intelligent enough to get out of the way of a landing aircraft by simply running off the pavement. While the potential for an air strike exists, actual occurrences are considered to be rare. Attempting to disburse the birds prior to a landing as a mitigation is not advisable because their presence in the air constitutes a much more severe hazard to an airplane than their presence on the ground. Discouraging the birds from roosting on the runway is not a feasible mitigation. Plovers are known to be territorial, returning annually to the same area. Therefore, it is unlikely

Mr. Colin Kippen  
Mr. Sebastian Aloit  
Page 2  
December 16, 1998

AIR-EP  
98.0955

that the flock at Upolu can be easily displaced. Our consulting biologist also notes that plovers are not disturbed by night lighting; they will not disperse when the airport's remote pilot controlled runway lighting is activated. Thus, for all intents and purposes, there are no practical mitigation measures available. Given the forecast use of the airport over the next 20 years, however, air strikes with plovers are not considered to be a significant problem.

With regard to your comment concerning the need for a cultural impact assessment for the project, please be advised that a cultural assessment was conducted for the project, and it was done in compliance with the Environmental Council's Guidelines for Assessing Cultural Impacts, dated November 19, 1997. The methodology for the assessment, as well as a detailed description of its findings, is presented in the Archaeological Inventory Survey for the project which was included in the Draft Environmental Assessment (EA) as Appendix C. The persons interviewed were chosen from a list compiled in consultation with Ms. Marie Solomon and Mr. Nathan Napoka. Ms. Solomon is by all accounts considered a Hawaiian cultural expert familiar with the north Kohala area and its residents. Two (2) of the four (4) interviewees were specifically recommended by her. Mr. Napoka is the Branch Chief of the History and Culture Section of the Hawaii State Historic Preservation Division, Department of Land and Natural Resources. Mr. Napoka not only provided the names of potential interviewees, but also suggested literature sources (including documents he drafted) that provided a cultural historical background for the area.

Finally, the information relative to traditional cultural use of the area was gathered from community members (the interviewees) and written documents (see the "references" section of the PHRI report 1764-033198 which was included as an appendix to the Draft EA). In view of the sources of the information described above, we cannot concur with your conclusion that the cultural information was "...provided sole by a person whose knowledge of Hawaiian culture is limited to a study of archaeology or anthropology."

Mr. Colin Kippen  
Mr. Sebastian Aloat  
Page 3  
December 16, 1998

AIR-EP  
98.0955

Please have your staff contact Lynette Kawaoka, Planner at  
838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf .

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



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

RECEIVED

1998 NOV 18 P 1:43

lee 2.

LAWRENCE MIKE  
DIRECTOR OF HEALTH

In reply, please refer to:

November 16, 1998

98-215/epo

Mr. Jerry M. Matsuda, P.E.  
Airports Administrator  
Airports Division  
Department of Transportation  
400 Rogers Boulevard, Suite 700  
Honolulu, Hawaii 96819-1880

Dear Mr. Matsuda:

Subject: Draft Environmental Assessment  
Upolu Airports Master Plan  
North Kohala, Hawaii  
TMK: 5-5-6: 7, 31, por. 3, por. 9  
5-5-7: por. 2

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Underground Storage Tanks (USTs)

The draft EA (page 40) mentions the construction of a new emergency generator system for the facility. If an underground storage tank (UST) is used to store fuel for this generator, Airports Division should note that USTs are subject to federal and state requirements. Owners of newly installed USTs must notify our Underground Storage Tank Section of the existence of such USTs within 30 days of installation. In addition, our Underground Storage Tank Section is developing new state administrative rules on USTs which, when finalized, will require permits for all new USTs. Finally, permits must be obtained from the applicable building and fire safety authorities before installation of any USTs.

Should you have any questions regarding these comments, please contact Mr. Eric Sadoyama of the Solid and Hazardous Waste Branch, Underground Storage Tank Section at 586-4226.

Mr. Jerry M. Matsuda, P.E.  
November 16, 1998  
Page 2

98-215/epo

Water Pollution

1. The applicant should contact the Army Corps of Engineers to identify whether a federal permit (including a Department of Army permit) is required for this project. If a federal permit is required, then a Section 401 Water Quality Certification is required from the State Department of Health, Clean Water Branch.
2. A National Pollutant Discharge Elimination System (NPDES) general permit is required for the following discharges to waters of the State:
  - a. Storm water discharges relating to construction activities, such as clearing, grading, and excavation, for projects equal to or greater than five acres;
  - b. Storm water discharges from industrial activities;
  - c. Construction dewatering activities;
  - d. Noncontact cooling water discharges less than one million gallons per day;
  - e. Treated groundwater from underground storage tank remedial activities;
  - f. Hydrotesting water;
  - g. Treated effluent from petroleum bulk stations and terminals; and
  - h. Treated effluent from well drilling activities.

Any person requesting to be covered by a NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch at least 30 days prior to commencement of any discharge to waters of the State.

3. After construction of the proposed facility is completed, a NPDES individual permit will be required if the operation of the facility involves any wastewater discharge into State waters.

Any questions regarding these comments should be directed to Mr. Denis Lau, Branch Chief, Clean Water Branch at 586-4309.

Mr. Jerry M. Matsuda, P.E.  
November 16, 1998  
Page 3

98-215/epo

Wastewater

The subject project is located in a noncritical wastewater disposal area as determined by the Hawaii County Wastewater Advisory Committee.

As there is no existing municipal sewer service system in the area and none will be constructed in the near future, the Department of Health (DOH) concurs with the proposed construction of treatment individual wastewater systems for each new facility and the upgrading of existing cesspools to septic tanks in order to prevent any contamination of surrounding areas or underground water sources. However, please be informed that individual wastewater systems are limited to design flows of 1,000 gallons per day or less and to receive domestic or domestic-like wastewater only. Separate wastewater treatment and disposal systems should be made available for equipment maintenance functions and oily wastewater.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems," and we reserve the right to review the detailed wastewater plans.

Should you have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at 586-4294.

Sincerely,



BRUCE S. ANDERSON, Ph.D.  
Deputy Director for  
Environmental Health

c: SHWB  
CWB  
WWB  
OEQC  
Belt Collins Hawaii (L. Sichter)

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
400 RODGERS BOULEVARD, SUITE 700  
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

AIR-EP  
98.0956

December 15, 1998

TO: BRUCE S. ANDERSON, Ph.D.  
DEPUTY DIRECTOR FOR ENVIRONMENTAL HEALTH  
DEPARTMENT OF HEALTH

FROM: JERRY M. MATSUDA, P.E. *Jerry M. Matsuda*  
AIRPORTS ADMINISTRATOR

SUBJECT: UPOLU AIRPORT DRAFT ENVIRONMENTAL ASSESSMENT  
NORTH KOHALA, HAWAII

Thank you for your letter of November 16, 1998, commenting on the subject document.

It is not anticipated that an underground storage tank will be constructed as a means of storing fuel for the emergency generator.

With regard to potential water pollution, because the proposed improvements do not impact navigable waters, surface waters, or wetlands, no Army Corps of Engineers permits are required. Further, we do not anticipate the need for a National Pollutant Discharge Elimination System (NPDES) permit because none of the proposed improvements trigger the requirement. In 1994, it was determined that this airport is such a small industrial facility that it does not require a NPDES general permit. The proposed parallel taxiway represents the largest single improvement, but is less than three acres in area. Therefore, it does not meet the five (5) acre grading requirement. The improvements do not include industrial activities, cooling water discharge,

Dr. Bruce S. Anderson  
Page 2  
December 15, 1998

AIR-EP  
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underground storage tank remedial activities, hydro testing, or the disposal of treated effluent. No construction dewatering will be required for the project. Lastly, operation of the proposed improvements will not involve any wastewater discharge into State waters.

We acknowledge the 1,000 gallon limitation on design flow for individual wastewater systems and do not anticipate that it will be exceeded. As discussed in the Draft Environmental Assessment (EA), a 750 gallon system is proposed for each new facility. Since no aircraft maintenance is proposed at the airport, we do not anticipate the need for a separate wastewater treatment and disposal system to service a maintenance facility. The proposed maintenance building is generally limited to the storage of airport groundskeeping equipment.

Finally, we acknowledge that all wastewater plans must conform to applicable provisions of the Department of Health's administrative rules.

Please contact Lynette Kawaoaka, Planner at 838-8812, to clarify any questions you may have.

c: ✓Belt Collins Hawaii, Ltd. (L. Sichter)

LK:nf

Appendix A

Avifaunal and Feral Mammal Survey

AVIFAUNAL AND FERAL MAMMAL SURVEY OF UPOLU  
AIRPORT, NORTH KOHALA, HAWAII

Prepared for

Belt Collins and Associates, Honolulu

by

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29 October 1997

## INTRODUCTION

The purpose of this report is to summarize the findings of a bird and mammal field survey of Upolu Airport for the Master Plan and Environmental Assessment. Figure One shows the location of the property. Also included in the report are references to pertinent literature as well as unpublished faunal reports from earlier studies on nearby lands.

The objectives of the field survey were to:

- 1- Document what bird and mammal species occur on the property or may likely occur given the available habitats and limitations imposed by predators and disturbance.
- 2- Provide current baseline information on the relative abundance of each species.
- 3- Note the presence or likely occurrence of any native fauna particularly any that are considered "Endangered" or "Threatened".

## GENERAL SITE DESCRIPTION

Upolu Airport property contains approximately 88.610 acres. Grass, weeds and some native beach strand plants comprise the majority of the vegetation. The area within the fence line is periodically mowed. Low trees and brush separate the mauka boundary from upslope pasture lands. The coastline fronting the property is a rugged cliff with wave swept rocks. The prevailing NE tradewinds have sculptured the landscape. The airstrip receives little use by aircraft but on

each occasion during my visits people were walking dogs or jogging along the edge of the runway.

Weather during the surveys was mixed with clear and rainy periods. Winds were 10-25 mph from the east.

#### STUDY METHODS

Three separate surveys were conducted (5,6 April; 25,26 July; 11 October 1997). These surveys were during different seasons to allow an examination of species composition and use of the area when migrants were present and when they were in the arctic. These surveys also permitted a view of the area under dry and wet conditions. On each occasion the entire site was traversed on foot. The nearby lands were briefly examined. Field observations were made with binoculars and by listening for vocalizations. These observations were concentrated during the peak bird and mammal activity periods of early morning and late afternoon/dusk. Attention was also paid to the presence of tracks and scats as indicators of bird and mammal activity. The early evening hours were devoted to looking for bats (Lasiurus cinereus semotus), and roosting shorebirds.

All birds and mammals seen or heard were tallied. These data provide the basis for the relative abundance estimates given in this report. Published and unpublished reports from earlier studies in similar habitat nearby were also consulted (Hawaii Audubon Society 1993;

Pratt et al. 1987; Bruner 1994a, 1994b, 1997). Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution. An effort of this magnitude was unnecessary for the purpose of this survey.

Scientific names used in this report generally follow those given in Pyle (1997) and Honacki et al. (1982). The data are separate in the Results and Discussion into Summer (25,26 July 1997) and Spring/Fall (5,6 April; 11 Oct. 1997).

## RESULTS AND DISCUSSION

### SUMMER DATA (25, 26 July 1997)

#### Native Birds:

The only native species recorded on this visit was a White-tailed Tropicbird (Phaethon lepturus). The bird was observed flying toward the east about 300m offshore on 25 July 1997. This species is a common seabird in Hawaii. It nests on cliffs, often in the interior of the island. They are not threatened or endangered. No seabirds were seen nesting on or near this property. The sea cliffs in this region support populations of the introduced Rock Dove (Columba livia). Seabirds such as Brown Noddy (Anous stolidus) and Black Noddy (Anous minutus) could also nest along the sea cliffs. Most areas, particularly

those on the airport lands, are too accessible to ground predators for seabirds to nest successfully.

The only native land birds that could potentially occur in this area are the I'o or Hawaiian Hawk (Buteo solitarius) and the Short-eared Owl or Pueo (Asio flammeus). The I'o is endangered and confined to the Big Island while Pueo are only listed as endangered on Oahu and occur on all the main Hawaiian Islands. These birds forage in forest habitat, grasslands and agricultural fields but are usually seen more inland than along the coast.

Migratory Birds:

Most migrants are breeding in the arctic during July. Some individuals, usually young birds, may oversummer their first year and do not return to the breeding grounds until their second year. Pacific Golden-Plover (Pluvialis fulva) is the most abundant migratory shorebird in Hawaii. They forage on lawns, pastures, and natural grasslands as well as along shorelines. Extensive research on this species, both in Hawaii and Alaska, has yielded much information on their life history (Johnson et al. 1981, 1989, 1993). An average of 40 plover were tallied on the two survey days in July. All of the birds were in non-breeding plumage and were likely oversummering juveniles. The airstrip is used as a roosting site for these birds which came in from surrounding pasture lands at dusk. Ruddy Turnstone (Arenaria interpres) is the second most common migrant in Hawaii. They also breed

in the arctic. A few will oversummer in Hawaii. These are presumably juveniles. An average of 14 turnstone were observed resting or foraging along the margins of the airstrip. None of these turnstone had breeding plumage.

Introduced Birds:

A total of 13 species of non-native (introduced) birds were noted on the summer survey. Table One gives the names of these species and indicates their relative abundance. Other surveys on nearby lands have obtained a similar array of introduced birds (Bruner 1994a, 1994b, 1996, 1997). Pratt et al. 1997 and Hawaii Audubon Society 1993 provide a good overview of introduced birds in Hawaii.

Feral Mammals:

Small Indian Mongoose (Herpestes auro-punctatus), Cats (Felis catus), Roof Rats (Rattus rattus) and House Mouse (Mus musculus) were all seen on and around the site. These species are abundant in Hawaii (Tomich 1986). The native Hawaiian Hoary Bat is fairly common on the Big Island, despite its endangered status (Kepler and Scott 1990). They forage in a wide variety of habitats from forest to urban and even at high elevation (10,000 feet). None were recorded on the summer survey.

SPRING/FALL DATA (5, 6 April, 11 October 1997)

Native Birds:

Two native birds were recorded on the spring and fall surveys.

A White-tailed Tropicbird was seen foraging offshore on 5 April and a Short-eared Owl (Pueo) was observed foraging at the east end of the property at 1700 hours on 11 October. Both of these species are birds that would be expected in this area. No other native birds were noted.

Migratory Birds:

Pacific Golden-Plover and Ruddy Turnstone, two common migratory shorebirds, were present in both April and October. Daytime counts for Pacific Golden-Plover averaged 23 birds within the airport fence line. However, at dusk large numbers of plover flew in from makua grass lands to roost on the Upolu airstrip. On 5 April over 400 plover were tallied between 1700 and 2000 hours. On the evening of 11 October approximately 250 plover were recorded at Upolu Airport. Plover typically roost in flocks in areas where they are relatively safe from disturbance. Roof tops, parking lots, airfields and lava flows are often the preferred sites. Upolu Airport is infrequently used by aircraft and thus appears to be an important plover roost in North-Kohala.

Ruddy Turnstones were much less abundant. The fall and spring counts for this species averaged 27 birds. This is not unusual since turnstones are not nearly as abundant as Pacific Golden-Plover.

The Bristle-thighed Curlew (Numenius tahitiensis) is a migratory shorebird that breeds in a small area of Western Alaska and winters

entirely on Pacific islands, primarily in the central and southeastern Pacific. Recently this bird was listed as a species of concern by the United States Fish and Wildlife Service. A few curlew winter on the main Hawaiian Islands in habitats like that found at Upolu. None were observed on these surveys but they potentially could utilize this site.

Introduced Birds:

Table Two gives the species of introduced birds and their relative abundance recorded on the fall and spring surveys. A total of 14 species were tallied. No particularly unusual species were noted.

Feral Mammals:

House Mouse, cat and mongoose were present in both the fall and spring surveys. Two evenings were devoted to looking for the Hawaiian Hoary Bat. None were seen.

CONCLUSIONS

The Upolu Airport lands are located along a wave swept coast and bounded by pasture lands. Native birds recorded on the surveys were confined to seabirds seen flying offshore or a single sighting of a Short-eared Owl. Migrants included the two most common species. Large numbers of roosting Pacific Golden-Plover were noted on the spring and fall surveys. The airfield is apparently an important

roosting site for plover wintering in North Kohala. Their numbers may pose potential airstrike problems for aircraft landing after dusk. During the day most of the birds disperse to their foraging territories in adjoining pasture lands. The introduced species of birds were those typical of this region. No unusual or unexpected species were recorded. Feral mammals were also the usual, common introduced species. The native and endangered Hawaiian Bat was not found on any of the surveys, however, they potentially could forage in this area.

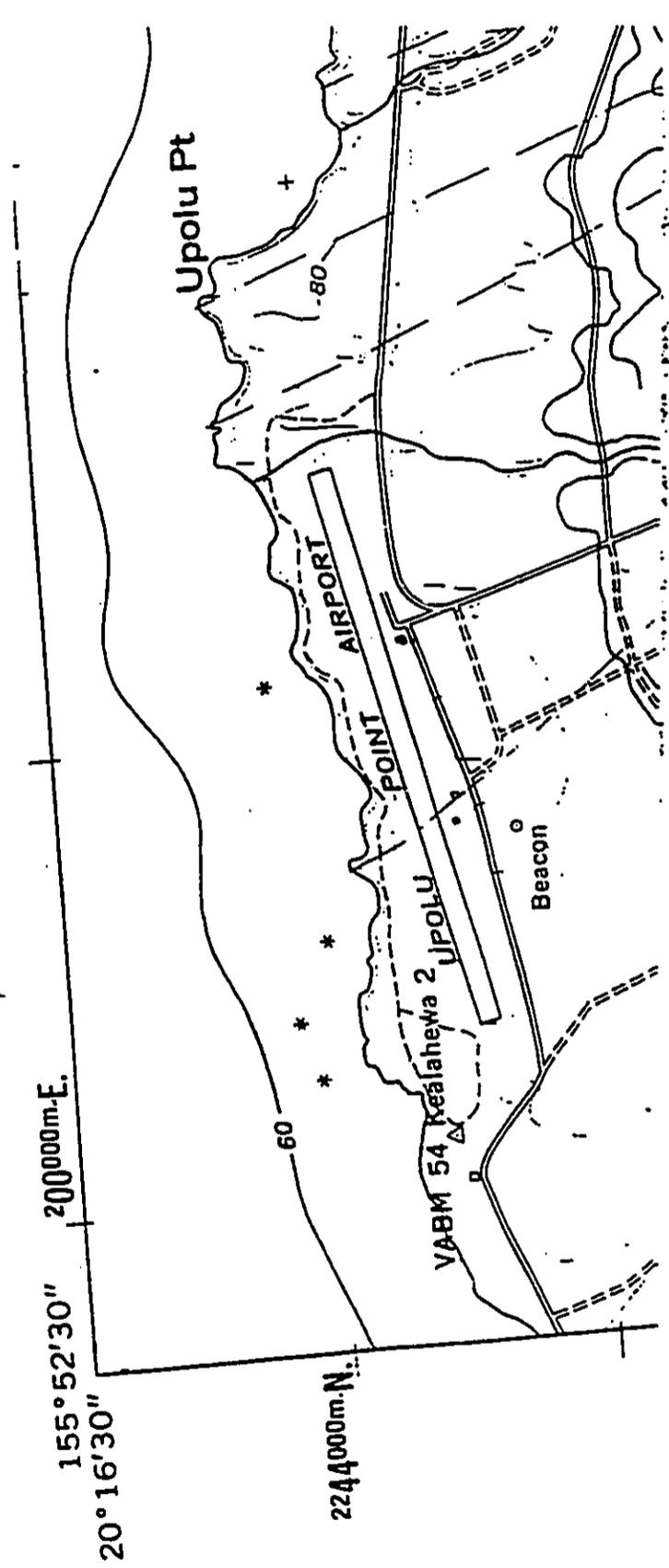


Fig. 1. Location of faunal survey.

TABLE 1

Introduced birds recorded at Upolu Airport, North Kohala, Hawaii during 25, 26, July 1997. Relative Abundance = number of birds observed on each survey day. A = abundant 20+, C = common 10-19, U = uncommon 5-9, R = rare (less than 5 recorded over the entire survey period).

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE
Black Francolin	<u>Francolinus francolinus</u>	C
Ring-necked Pheasant	<u>Phasianus colchicus</u>	R
Rock Dove	<u>Columba livia</u>	R
Spotted Dove	<u>Streptopelia chinensis</u>	A
Zebra Dove	<u>Geopelia striata</u>	A
Sky Lark	<u>Alauda arvensis</u>	A
Common Myna	<u>Acridotheres tristis</u>	A
Japanese White-eye	<u>Zosterops japonicus</u>	R
Northern Cardinal	<u>Cardinalis cardinalis</u>	U
Yellow-billed Cardinal	<u>Paroaria capitata</u>	U
House Finch	<u>Carpodacus mexicanus</u>	C
Red Avadavat	<u>Amandava amandava</u>	U
Nutmeg Mannikin	<u>Lonchura punctulata</u>	A

TABLE 2

Introduced birds recorded at Upolu Airport, North Kohala, Hawaii during 5, 6 April and 11 October 1997. Relative Abundance = number of birds observed on each survey day. A = abundant 20+, C = common 10-19, U = uncommon 5-9, R = rare (less than 5 recorded over the entire survey period).

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE
Black Francolin	<u>Francolinus francolinus</u>	R
Gray Francolin	<u>Francolinus pondicerianus</u>	R
Rock Dove	<u>Columba livia</u>	R
Spotted Dove	<u>Streptopelia chinensis</u>	A
Zebra Dove	<u>Geopelia striata</u>	A
Sky Lark	<u>Alauda arvensis</u>	A
Common Myna	<u>Acridotheres tristis</u>	A
Japanese White-eye	<u>Zosterops japonicus</u>	U
Northern Cardinal	<u>Cardinalis cardinalis</u>	U
Yellow-billed Cardinal	<u>Paroaria capitata</u>	U
House Finch	<u>Carpodacus mexicanus</u>	C
Common Waxbill	<u>Estrilda astrild</u>	U
Red Avadavat	<u>Amandava amandava</u>	R
Nutmeg Mannikin	<u>Lonchura punctulata</u>	A

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Appendix B

Botanical Resources Assessment

BOTANICAL RESOURCES ASSESSMENT  
'UPOLU AIRPORT MASTER PLAN  
NORTH KOHALA DISTRICT, HAWAI'I

by

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Prepared for: BELT COLLINS HAWAII

February 1998

BOTANICAL RESOURCES ASSESSMENT  
'UPOLU AIRPORT MASTER PLAN  
NORTH KOHALA DISTRICT, HAWAI'I

INTRODUCTION

The present 'Upolu Airport consists of 88.610 acres situated on TMK 5-5-06:07 at 'Upolu Point, North Kohala, island of Hawai'i. Approximately 27 acres outside of the airport boundary are proposed for future land acquisition by the State Department of Transportation. The areas to be acquired consist of almost 14 acres on the mauka (south) side of the airport, 7 acres on the east end of the airport, and 7 acres on the west end of the airport.

Soils on the ±27-acre study site consist of Hawi silty clay soils (Sato *et al.* 1973); these are well-drained, very dark grayish-brown colored soils. Along the coastline, the top soil and subsoil have been eroded away exposing the reddish-brown colored parent material and scattered boulders. Most of the site is used for grazing cattle.

Field studies to assess the botanical resources found on the ±27-acre site were conducted on 21 January 1998. The primary objectives of the field studies were to:

- 1) provide a description of the vegetation on the site;
- 2) search for threatened and endangered species as well as species of concern; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

## DESCRIPTION OF THE VEGETATION

The plant names used in the following discussion follow the most recent treatment of the Hawaiian flora by Wagner et al. (1990).

### East section

The 7 acres to be acquired on the east end of the airport are covered primarily by koa haole (Leucaena leucocephala) and Guinea grass (Panicum maximum) scrub, 3 to 6 ft. tall. In places, California grass (Brachiaria mutica) and sourgrass (Digitaria insularis) are locally common and form good-sized patches. Low, windswept thickets of Christmas berry (Schinus terebinthifolius), 2 to 3 ft. tall, are occasionally encountered. Along the dirt roads which cross this portion of the study site, there is a weedy assemblage of various species which include partridge pea (Chamaecrista nictitans), false mallow (Malvastrum coromandelianum), flora's paintbrush (Emilia fosbergii), Brachiaria subquadripara, graceful spurge (Chamaesyce hypericifolia), wiregrass (Eleusine indica), sowthistle (Sonchus oleraceus), etc. The shallow, broad gully which lies adjacent to the airport fence line is filled with dense mats of California grass on its bottom and sides, and koa haole shrubs along its upper slopes.

Where this section follows along the coastline on soils of the Hawi series, the vegetation consists of a low carpet of Bermuda grass or manienie (Cynodon dactylon) with smaller mats of three-flowered beggarweed (Desmodium triflorum) and Henry's crabgrass (Digitaria adscendens). A small patch of Madeira vine (Androdera cordifolia) and wedelia (Wedelia trilobata), and a clump of wind-pruned ironwood trees (Casuarina equisetifolia) are also found along the coastline. Along the cliff and small ledge where the substrate has been eroded and is largely barren, there are a few scattered mats of Australian saltbush (Atriplex semibaccata),

Henry's crabgrass, kipukai or nena (Heliotropium curassavicum), 'akulikuli (Sesuvium portulacastrum), and pa'uohi'iaka (Jacquemontia ovaliafolia subsp. sandwicensis).

#### South (mauka) section

The almost 14 acres to be acquired on the mauka side of the airport are used for grazing cattle and most of this pasture land is fairly well maintained. Guinea grass form dense clumps up to 3 ft. tall with scattered low thickets of koa haole shrubs. Glycine wightii, a pasture legume, forms a low, tangled cover here and there. Weedy species tend to be found where the soil is stony and poorer; plants found here include sourgrass, Cuba jute (Sida rhombifolia), lantana (Lantana camara), hairy abutilon (Abutilon grandifolium), spiny amaranth (Amaranthus spinosus), apple of Sodom (Solanum linneanum), and castor bean (Ricinus communis). Closer to the airport road, the pasture land consists of low mats of Kikuyu grass (Pennisetum clandestinum), a widely used pasture grass introduced from tropical Africa.

#### West section

The 7 acres on the west end of the airport are covered largely by pasture land composed of Guinea grass and scattered koa haole shrubs. Along the dirt road which borders the east side of this parcel is a line of Formosan koa (Acacia confusa) and tamarix (Tamarix aphylla) trees, 15 to 20 ft. tall. Koa haole shrubs and clumps of Guinea grass fill in the open areas between the taller trees.

### DISCUSSION AND RECOMMENDATIONS

The vegetation on the 27 acres proposed for future land acquisition is dominated by introduced species such as koa haole, Guinea grass,

and California grass. Only five native species were observed during the field studies; these were the 'ilima (Sida fallax), kipukai (Heliotropium curassavicum), 'uhaloa (Waltheria indica), 'akulikuli (Sesuvium portulacastrum), and pa'uohi'iaka (Jacquemontia ovalifolia subsp. sandwicensis). Only the pa'uohi'iaka is endemic, that is, it is native only to the Hawaiian Islands. The other four species are all indigenous, that is, they are native to the Hawaiian Islands and also elsewhere. None of the plants found during the survey is a listed, proposed, or candidate threatened and endangered species; nor is any plant a species of concern (U.S. Fish and Wildlife Service 1997). A survey of the nearby lands around the Mo'okini Heiau and the Kamehameha Birthsite also recorded similar findings (Char 1994).

These findings are not surprising as the 27-acre site and the surrounding lands have been disturbed for a long period of time. The mauka section was formerly in sugar cane cultivation. Soil maps of the area (Sato et al. 1973) which are overlaid on aerial photographs taken during the 1960's show this section used for irrigated sugar cane cultivation. Today, the mauka section and the west section are used for grazing cattle.

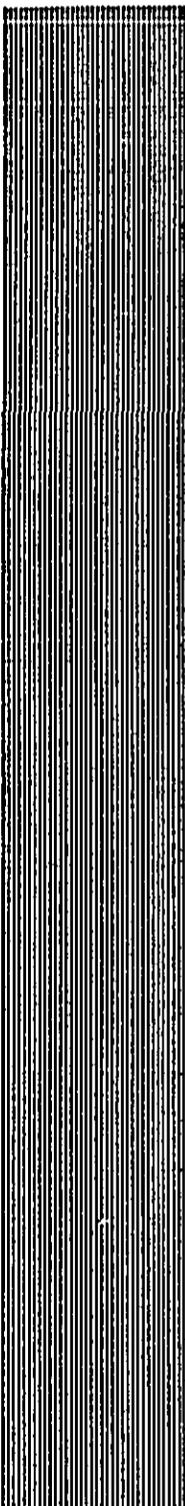
Given the findings above, the proposed land acquisition is not expected to have a significant negative impact on the botanical resources found on the site or the surrounding region. No recommendations are made.

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Report 1764-033198



## **Archaeological Inventory Survey for the Upolu Airport Master Plan and Environmental Study**

Lands of Kealahewa 1, 2, and 3, and Opihipau  
District of North Kohala  
Island of Hawaii

**PHRI**

Paul H. Rosendahl, Ph.D., Inc.  
*Archaeological • Historical • Cultural Resource Management Studies & Services*

Report 1764-033198

## Archaeological Inventory Survey for the Upolu Airport Master Plan and Environmental Study

Lands of Kealahewa 1, 2, and 3, and Opihipau  
District of North Kohala  
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## EXECUTIVE SUMMARY

An archaeological inventory survey was conducted on roughly 28 acres adjacent to Upolu Airport. This study was undertaken as part of a larger project for the development of an Upolu Airport Master Plan. The archaeological investigation consisted of surface reconnaissance and subsurface trenching with a backhoe. No Native Hawaiian cultural remains were observed during the fieldwork; however, two sets of Historic Period features were recorded. In the area west of the airport, rows of concrete irrigation flumes and an irrigation ditch were observed. These appear to have been associated with early twentieth century sugar cane production and are not considered significant. In the area inland from the existing airport property, the demolished remains of foundations and a standing concrete structure were recorded. Next to the structure is a subsurface concrete construction with electrical power connection, which seems to have housed a generator. This set of resources is also not considered significant. In order to gather information on possible traditional cultural use of the area oral interviews were conducted as part of this study. Four individuals were interviewed. All are long-time residents in North Kohala and knowledgeable about former sugar industry and military use, as well as the utilization of marine resources in and around the project area. No traditional cultural properties were identified within the project area. All people interviewed were supportive of a renewed active use of the airport, especially for commercial aviation purposes, as long as the use did not limit access to, or otherwise impact, local fishing.

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## INTRODUCTION

At the request of Mr. Lee Sichter of Belt Collins Hawaii, Paul H. Rosendahl, Ph.D., Inc. (PHRI) conducted an archaeological inventory survey of roughly 28 acres adjacent to Upolu Airport, in the *ahupua'a* of Kealahewa 1, 2, and 3, and Opihipau, District of North Kohala, Island of Hawaii. In addition to a field reconnaissance, historic archival data and oral-historical information were collected. The current project was performed as part of a larger environmental study for the development of an Upolu Airport Master Plan being prepared for the Hawaii Department of Transportation and Airports (DOT-AD 1996). Belt Collins Hawaii Ltd. is the overall environmental planner for the project.

Upolu Airport is currently controlled and managed by the State of Hawaii Department of Transportation, Airports Division. The airport serves general aviation, air taxi, and some military operations; scheduled commercial aviation ceased in 1986 (Belt Collins Hawaii 1997). The last recorded commercial activity at the airport was in 1992, involving cargo, and the last recorded passenger activity was in 1991 (DOT-AD 1996). Airport facilities include a building with a small terminal, a 75 feet wide by 3,800 feet long paved runway, a maintenance equipment storeroom, a vehicle parking lot, and an asphalt paved aircraft parking area (CEPOD-ED 1992). The airport is classified as a General Utility Airport that accommodates single-engine and small twin-engine aircraft (Belt Collins Hawaii 1997).

### PURPOSE

The purpose of this project is to locate, describe, and evaluate any cultural resources, including ones of a traditional cultural nature, that might be present within the study area. Such knowledge will aid in the future planning of Upolu Airport.

### PROJECT LOCATION

Upolu Airport is located at Upolu Point on the northernmost coast of the Island of Hawaii in the *ahupua'a* of Kealahewa 2 and 3 and Opihipau, District of North Kohala (*Figure 1*). The geomorphology of North Kohala is dominated by the Kohala volcano, which is the oldest of the five volcanoes that form the island of Hawaii (Feigenson 1982). Because of the age of the volcano, the northern slopes to the coast have seen substantial soil deposition (over a meter and a half in the project area). The airport is situated at about 80 feet above mean sea level in what the State of Hawaii has classified as a Conservation District. Access to the airport is by way of a two-mile long paved road (HWY 271) extending seaward from Akoni Pule Highway (HWY 270) just west of mile marker 20. The project area consists of seven acres to the east, seven acres to the west, and roughly fourteen acres inland of the existing airfield (*Figure 2*). The west and south project areas are within Agricultural District land.

## BACKGROUND

Previous investigations in the region provide the cultural and historical contexts for identifying, interpreting and assessing the significance of cultural resources that might be present in the project area. To this end, archival research was conducted at the State of Hawaii Department of Lands and Natural Resources Historic Preservation and State Parks Divisions, State of Hawaii Archives, Bureau of Conveyance, University of Hawaii Hamilton Library Pacific Collection and Government Document Collection, State of Hawaii Tax Map Key Department and Public Library, U.S. Army Corps of Engineers-Pacific Ocean Division, and the State of Hawaii Department of Transportation-Airports Division. Maria Orr, M.A., under subcontract to PHRI, conducted this archival research as well as the oral interview aspect of the current project.

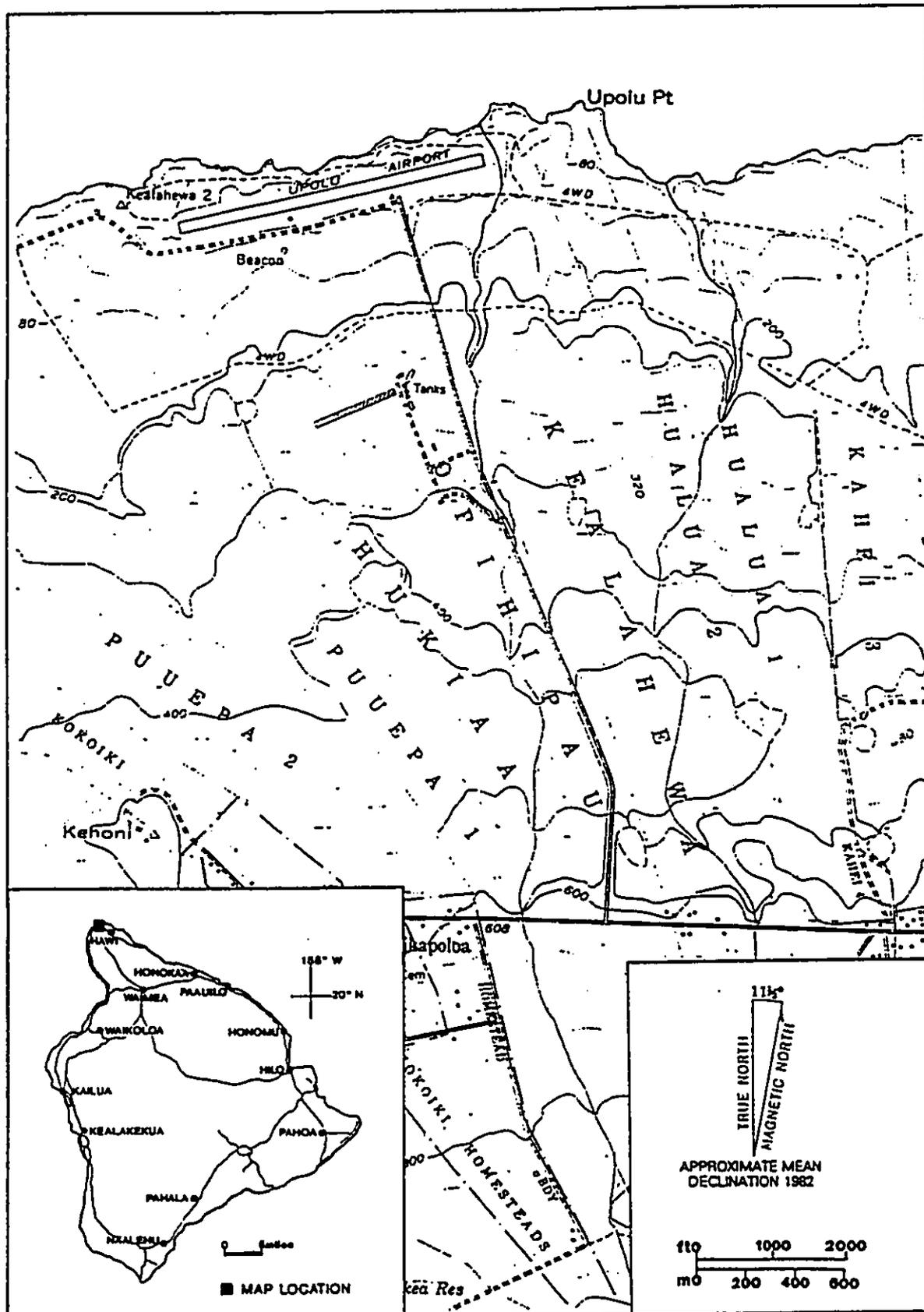


Figure 1. Portion of USGS 1:24,000 Hawi Topo Showing Location of Upolu Airport



## PRIOR ARCHAEOLOGICAL STUDIES

Previous archaeological investigation in the immediate vicinity of the project area has been limited. In 1991 the U.S. Army Corps of Engineers Pacific Ocean Division (CEPOD-ED 1992) performed a reconnaissance survey of the Upolu Airport as part of the Environmental Restoration Program for Formerly Used Sites. The Corps archaeologists found only minimal evidence of the former military camp and no other archaeological resources.

In contrast, several projects have been conducted in the greater North Kohala area. As shown on *Table 1* the vast majority of the projects were in leeward North Kohala, from Puuepa to Lapakahi ahupua'a. Tomonari-Tuggle (1981) conducted a 16-month comprehensive cultural resources survey of North Kohala in 1980-81. Her study revealed that the majority of the traditional Hawaiian sites were in the leeward area, and the majority of the Historic Period sites were in the windward area (*Figure 3*).

Two significant cultural sites exist in the general vicinity of the project area, Mo'okini Heiau and Kamehameha I Birthplace. Neller (1986) wrote an archival review and assessment for the vicinity of these sites. He noted that in the Hawaii State Inventory of Historic Places [1972] the sites were the only ones recorded in the general area. In 1978-79 both became "isolated additions to Lapakahi State Park" and were considered "part of the Kohala Field System" (Neller 1986:1,2). Neller reported that remnants of this field system are visible in aerial photographs of Honoipu Ahupua'a, which borders Upolu Ahupua'a, and in the cane fields surrounding the heiau (1986). Neller makes the following observation:

It should be remembered that a heiau of the importance, size, and antiquity of Mo'okini Heiau should be associated with the accumulated remains of human use of the area as a place of worship, including remains going back, perhaps, to the beginnings of Polynesian settlement in these islands. Such remains may be sparse. They may be ephemeral and difficult to recognize or interpret. They may be totally homogenized with the dirt from centuries of Hawaiian plantings and decades of sugar cane production. And yet beneath the plow zone, there may still be undisturbed pockets of earlier layers. In addition, there is also the possibility of isolated human skeletal remains and buried stone images in the vicinity of the heiau. Since archaeological research within the confines of the heiau has been forbidden, any artifacts, bones, or layers accidentally discovered in the vicinity of Mo'okini Heiau have greater significance and need to be carefully recovered, studied, and reported.

Napoka (n.d.a) summarized archival data on Mo'okini Heiau in which he addressed some issues regarding the site. The earliest reference to the name Mo'okini is in the story of Mo'ikeha who came from Tahiti in AD 1090 with his kahuna, Mo'okini, who upon arriving in the islands decided to stay in Kohala. Napoka states that no reference is made to a heiau, although it could be inferred that Mo'okini had been instrumental in the establishment of the present structure. The first reference to Mo'okini Heiau is with the arrival of Pa'ao sometime in the thirteenth century when he established a new ruling dynasty with Pili Kaaiea, an ali'i from Tahiti. The priesthood started by Pa'ao ends with Hewahewanui who supported Kamehameha II and Ka'ahumanu in revoking the old kapu system. The descendants of Hewahewanui were traced through archival documents to his granddaughter Pa'alua who gave up the rights to the lands at Pu'uepa 2 for claims at Waimea, Oahu, dividing her land interests with Kamehameha III. The land which included Mo'okini Heiau was sold by the Government (Grant #725) to Pahina in 1852. In 1864 Pahina conveyed to James Wight all lands mauka of, and including Mo'okini Heiau, except for a small parcel for his own use. Wight owned and managed a store, was involved with Kohala Sugar Company as one of its owners, and founded the Halawa Plantation. Kohala Corporation gave Mo'okini Heiau to the State of Hawaii on October 4, 1978 as recorded in the Bureau of Conveyance (1933-1959) Lb. 13385, pg. 499. The small parcel was deeded to the State from Bishop Estate in 1978.

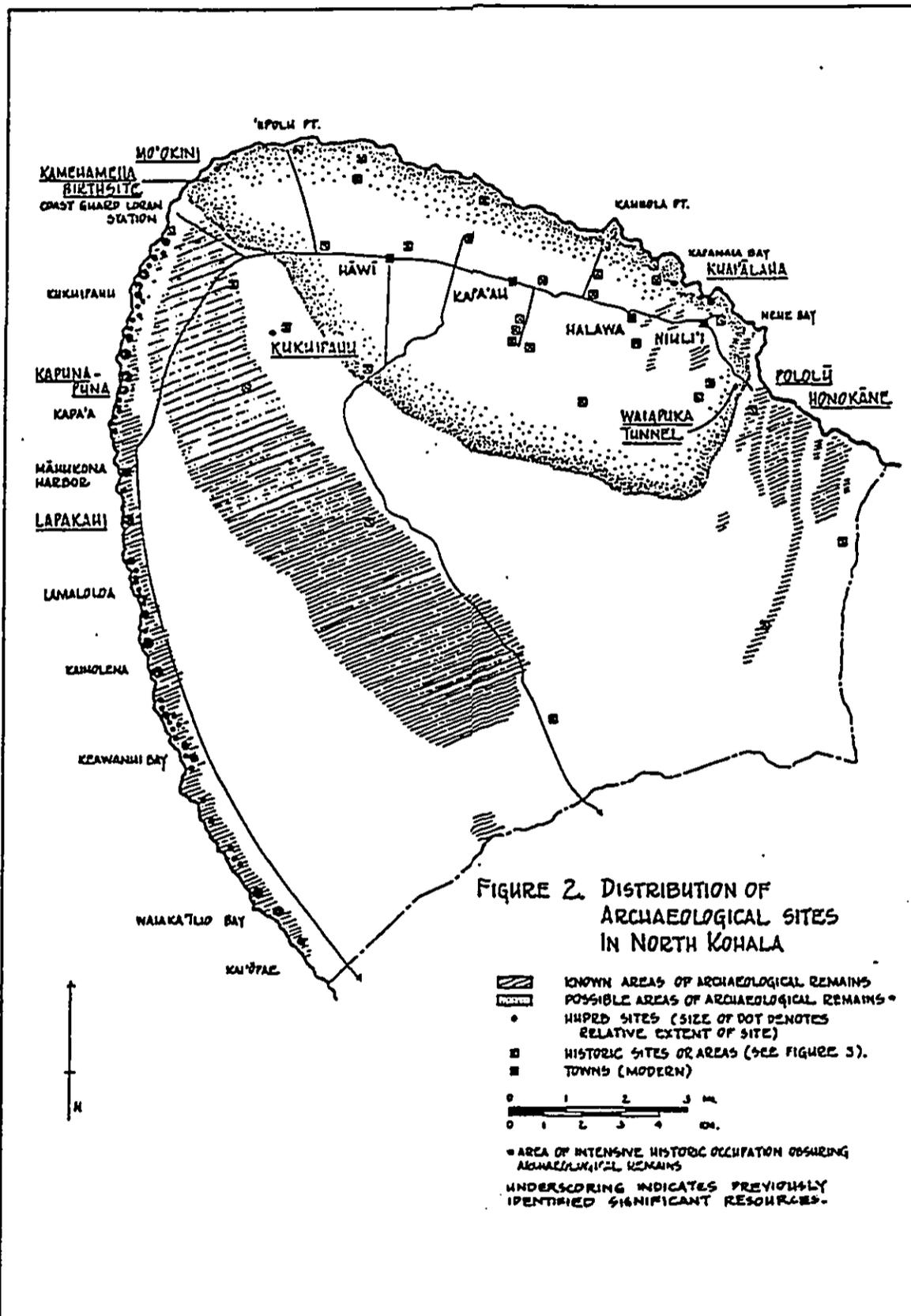


Figure 3. Archaeological Sites in North Kohala (after Tomonari-Tuggle 1988)

**Table 1. Previous Archaeological Studies**

Reference	Type of Study*	Ahupua'a or District
Ueki, T. n.d.	SD, EX	Lapakahi
Emory 1924	EX, RS	Kohala & Hamakua
Gregory 1925	RS	Kohala
Reincke 1930	RS	North & South Kohala
Hansen 1956	SD, RS	Mihukona
Soehren 1964	RS	Mihukona-Kawaihae
Bonk 1968	RS	North & South Kohala
Cluff 1968	A	Lapakahi
Connor 1968	RS	Lapakahi
Newman 1968a	EX, IS	Lapakahi
Newman 1968b	A	Lapakahi
Newman 1968c	S	Lapakahi
Pearson, R 1968	EX, IS	Kaihoou-Awakua
Peterson, J 1968	RS	Awakua-Kaihoou
Small 1968	EX, A	Lapakahi
Winter 1968	EX	Lapakahi
Withrow 1968	A	Lapakahi
Newman 1969a	RD	Lapakahi
Newman 1969b	A	Lapakahi
Newman 1969c	S	Lapakahi
Pearson 1969	RS, A, EX, HR	Hawaii
Soehren 1969	RS	North Kohala
Cordy 1970	A	Lapakahi
Kelso 1970	A	Lapakahi
Loo and Bonk 1970	HR, SD	Hawaii
Murabayashi 1970	A	Lapakahi
Newman 1970a,b	S	Leeward Hawaii
Ching 1971	RS	Lalaimo - Hamanama
Griffin et al. 1971	IS, EX	Lapakahi
Kikuchi and Belshe 1971	SD	Leeward Kohala
Rosendahl 1971	IS, EX	Lapakahi
Rosendahl and Yen 1971	A	Lapakahi
Cordy 1972	A	Lapakahi
DLNR 1972	CRM	North Kohala
Newman 1972	A	Lapakahi
Rosendahl 1972	S	Lapakahi
Tuggle 1972	RD	Windward Kohala
Artas 1973	EX	Lapakahi
Barwick 1973	EX	Lapakahi
Bevacqua 1973	EX	Lapakahi
Callan 1973	A	Lapakahi
Choy 1973	EX	Lapakahi
Cordy 1973a	EX	Lapakahi
Cordy 1973b,c	A	Lapakahi
Kaschko 1973	A	Lapakahi - Ka'oma
Kennedy 1973	A	Lapakahi
Rosendahl 1973	CRM	Lapakahi
Rouse 1973	EX, A	Lapakahi
Sharani 1973	A	Lapakahi
Smith et al. 1973	EX	Lapakahi
Smith and Schilt 1973	A	Lapakahi
Sugiyama 1973	EX, A	Lapakahi
Tuggle 1973	IS, EX	Pololu, Honolua, Awini
Tuggle and Griffin 1973a	EX, IS, A	Lapakahi
Tuggle and Griffin 1973b	EX, S	Lapakahi
Umabayashi 1973	A	Lapakahi
Watts 1973	EX, A	Lapakahi
Yen 1973	R	Lapakahi
Beggarty 1974	IS	Pololu

\*A-Analysis, CRM-Cultural Resource Management, EY-Ethnoarchaeology, EX-Excavation  
 HR-Historical Research, IS-Intensive Survey, RD-Research Design, RS-Reconnaissance  
 Survey, S-Synthesis, SD-Site Description

Table 1. (cont.)

Reference	Type of Study	Ahupua'a or District
Cordy 1974	A	Lapakahi
Cordy et al. 1974	RD	Kohala
Luscomb 1974	RS	Kukuipahu
Rosendahl 1974a	S	Lapakahi
Rosendahl 1974b	CRM	Lapakahi
Rosendahl 1974c	RS	Kukuipahu
Tuggle 1974a,b	IS, EX	Pololu, Honokane, Awini
Mann 1975	CRM	Lapakahi
Nielsen 1975	A	Pololu, Honokane
Cordy 1976a,b	A	Lapakahi
Env. Comm. 1976	CRM	Kohala
Kaschko 1976	RS	North Kohala
Tuggle 1976	IS, EX	Pololu, Honokane, Awini
Tuggle and Kaschko 1976	IS	Lapakahi
Beggerly 1978	CRM	Kapa'a, Kapunapuna, Pu'u'epa
Cordy 1978	S	General
Sinoto 1979a	RS	Kahua - Kapaanui
Sinoto 1979b	RS	Kahua
Yent 1979	RS	North Kohala-Hamakua
Cordy and Kaschko 1980	A	Lapakahi
Rosendahl 1980	RS	Waia
Schitt and Sinoto 1980	ISIS, EX	Pololu, Honokane, Awini
Tuggle and Tomonari-Tuggle 1980	A	General
Cordy 1981	S	General
Tomonari-Tuggle 1981	RS, HR, CRM	Upolu- Mshukona
Cordy 1982	A	General
Juvik and Lawrence 1982	A	Kahua
Kaschko 1982	IS	Honoipu, Puakea
Yent 1982	CRM	Lapakahi
Rosendahl 1982a,b	RS	Puakea, Honoipu
Rosendahl 1983	CRM	Puakea, Honoipu
Horton 1984	S	Mo'okini
Rosendahl 1984a,b	RS	Puakea, Honoipu
Barrera 1984	IS	Honoipu, Puakea
Kaschko 1984	RS	Kapaanui, Kou
Allen 1985a,b	RS	Kahua, Waia
Hammatt and Borthwick 1986	RS	Kahua, Waia
Nellar 1986	A	Honoipu - Pu'u'epa
Hammatt and Borthwick 1987a,b	RS	Kahua, Waia
Dunn and Rosendahl 1989a,b	IS	Kapaanui-Kou
Rosendahl 1989a	IS	Kapa 1, 2
Rosendahl 1989b	RS	Paa
Walker and Rosendahl 1989	IS	Kou- Ka'oma
Burgett and Rosendahl 1990a,b	IS	Kou- Ka'oma
Carlson and Rosendahl 1990	IS	Kapaanui - Kou
Hammatt and Borthwick 1990	RS	Kahua, Waia
Na Maka'ala 'O Kohala (NMOK) 1990	CRM, RS	Kou- Ka'oma
Rosendahl and Walker 1990	RS	Kapaanui, Kou
Burgett and Rosendahl 1991	IS	Kapaanui - Ka'oma
Thompson and Rosendahl 1991	IS	Kahua, Waia
Adams 1992	IS	Kukuipahu
CEPOD-ED 1992	RS	Opihipau - Kealahewa
Erkelens and Athens 1992	IS	Waipuka, Makanihio 1 & 2
Burgett and Rosendahl 1993	LS	Kou - Ka'oma
Graves et al. 1993	IS	Kahua, Waia
Adams and Athens 1994	IS	Kukuipahu, Awakua
Erkelens and Athens 1994	IS	Honopuao - Napapa
Head and Rosendahl 1994a	RS	Kapa
Head and Rosendahl 1994b	RS	Kamano - Ka'oma
Rosendahl 1994	A	Lapakahi
Wuizen et al. 1995	IS, EX	Kamano - Ka'oma
O'Hara and Goodfellow 1995	EX	Kahua, Waia
O'Hara and Rosendahl 1995	EX	Kamano - Ka'oma - Kou
Wolforth and Rosendahl 1997	IS	Makapala - Niuli

Napoka (n.d.a) also reviewed Stokes notes at the Bishop Museum, in which the fish god stones of Pa'ao are discussed. Stokes had persuaded Koa, a native who lived near the *heiau*, to get the stones and give them to him, which Koa did. Stokes then assumed that he would have done this only if he was the true *kahu* of the *heiau*. Koa also gave Stokes his own fish god to be curated at the Bishop Museum. Napoka states that Malo made references to the fish taboo of Pa'ao, against the eating of *aku* and *opelu*, which alternated every six months and was marked each time with a human sacrifice. According to Napoka, Ellis visited the site in 1823 and described it as a temple built by Pa'ao who officiated there (n.d.a). The *heiau* and Pa'ao are also discussed in other archival sources reviewed by Napoka, (Baldwin 1832; de Varigny 1855; Remy 1868; Kalākaua 1882; and Bond 1885). Kalākaua (1882) stated that some people claim the *heiau* belonged to Pa'ao, but others say it was built by Hikapoloa after the great burning of the land of Kalaikini. Bond (1885) writes that he passes the *heiau* frequently and talks to the people there, "the population in the vicinity was then somewhat numerous." (Napoka n.d.a:10) In 1843 Bond and a visiting missionary measured the *heiau* which had been trampled by goats penned within it (Napoka n.d.a).

In 1919 Stokes (n.d.) described the *heiau* in an unpublished manuscript on file at the Bishop Museum:

The local account is that the stones were brought from Pololu Valley...15 miles by the road on account of the numerous gulches between. The stones are said to have been passed from hand to hand by men standing in line for the entire distance; if a stone dropped to earth there it remained. The interior of the *heiau* has been disturbed by cultivation, and any stone pavement on the floor originally, has been removed. It is possible that the odd-shaped low walls and structures in and around the *heiau* may be the result of the piling up of the paving stones...

Part of Napoka's archival summary included an interview of Mary Kuahilani Sing by Larry Kimura, on February 9, 1982 at KCCN, on the Ka Leo Hawai'i Radio Program (Kimura n.d.). Mary, 82 at the time, recalled vividly the time she lived with her grandparents at Kokoiki, and what her grandmother told her about Kamehameha's birthplace and Mo'okini Heiau. Both Mary and Larry spoke in Hawaiian, which was later translated:

I heard from my grandmother, I knew of the rock that the mother of Kamehameha rested on at the time when the birth pains got strong for the delivery of this baby, she rested on that rock and that child was born there...and they took this child placing him on the stone surface that was in front of the stone...and while there the naval of this child was cut. Those were the words of my grandmother and that stone resembled a wooden bowl...from there he was taken into the *heiau* and when he was carried within there the temple drums sounded from within the *heiau*...these are the words of my grandmother. Before the birth of Kamehameha, the thunder rolled and lightning struck during the time of the childbirth pains and the actual delivery of the baby. From there they took this baby into this cave. It was located there below at Kukuipahu...that's the reason that cave was called Keanaapala, because of the dabbing of this baby...from there they took him to a nearby cave...and thus they called this cave Hahaialii (to care for the hill). And I entered, and I slept in that cave during my young days with my grandparents...He was not raised there it was just for the time being, and then he was moved, taken to Niuli'i and after that Waimapunalau maybe...he was raised on lu'au leaves, because they couldn't give him all types of fish because they feared that someone could do something bad this servant...they didn't show this child because people wanted to hurt him...because the prophets had foretold the high rank of this child, the works that he would do in the future. That's the reason they wanted to hurt this child (Napoka n.d.a:18-26).

According to Napoka (n.d.a:31-32), the *heiau* was used initially to practice formal Hawaiian religion but was deserted in 1832, thirteen years after the overthrow of the *kapu* system. Later, *wauke* was cultivated in the interior and *kukui* trees were grown in the enclosure, which was heavily overgrown with grass. Major changes occurred in the vicinity when Kohala Corporation used bulldozers to clear the land for sugar production. It is surmised that it was the mass of the *heiau* that spared it from being destroyed.

Brigham (1868) translated the following account by Jules Remy of Pa'ao, which adds a new dimension to the *heiau*:

The *Kahuna*, especially those of the race of Paao, were the natural depositaries of history, and took the revered title of *Moolelo*, [sic] or historians. Some individuals of this stock still exist, and they are all esteemed by the natives, and regarded as the chiefs of the historical and priestly caste. The sacerdotal order had its origin in Paao, whose descendants have always been regarded as the *Kahuna maoli*. Pa'ao came from a distant land called Kahiki. According to several chiefs, his genealogy must be more correct than that of the kings. Common tradition declares that Paao came from foreign countries, landing on the northwest shore of Hawaii (Kohala), at Puuepa...to build the temple of Mokini (sic), which also served as a city of refuge, Paao had stones brought from all sides, even from Pololu (Brigham 1868:10-11).

In the 1907 *Hawaiian Almanac and Annual*, Thrum list's, Mo'okini and describes it as "a large pookanaka class...second temple erected by Pa'ao...its internal divisions were doubtless changed in the fifties [1850's] when the area was devoted to tobacco culture" (Thrum 1907:43).

Mo'okini Heiau was registered as a National Historic Landmark by the United States Department of Interior National Park Service in 1963 because of its "exceptional value in commemorating and illustrating the history of the United States." The descendants of Mo'okini are presently guardians of the *heiau*. According to Napua Stevens Poiré, Uncle Heloke Mo'okini served as high priest and *kahu* until his death, and his successor is Leimomi Mo'okini Lum (Mo'okini Luakini 1982:10, 18).

In the January 15, 1955 *Hilo Tribune Herald*, Heloke Mo'okini was interviewed by reporter Gene Wilhelm who said that Pa'ao came from Kauai and was a powerful man who commanded the *menehune* to build the *heiau* in a single night, though they did not finish. Heloke said that Pa'ao came to his grandmother and told her she would have a boy and to name him Mo'okini after the man who ran the *heiau*. He said that although he had never seen a *menehune*, some of the women in his family did and they never lied. The article states "while the reason for the construction of the *heiau* which is in a cane field on the Maui side of Upolu Airport has been lost in the past, there are two features of it that have not...a large flat stone...and...little room" (Wilhelm 1955a:1). In a January 29, 1955 article in the *Hilo Tribune Herald*, Wilhelm reported about a four-sided pyramid stone called Kau Ai located on the Kona side of Upolu Airport. This story was related to him by Heloke Mo'okini who said that if moss was on the stone it meant there was enough to eat, if not it meant there was little or no food.

## HISTORICAL DOCUMENTARY RESEARCH

Very little is found in the ethnographic literature specifically about the area of Upolu Point or the *ahupua'a* of Kealahewa and Opihipau. However, their extremely close proximity to a significant *heiau* in Puuepa Ahupua'a (Mo'okini Heiau is 1.6 miles southwest) and the birthplace of Kamehameha I in Kokoiki Ahupua'a about two miles southwest from the airport, would lead one to presume that ancient activity took place there, even if just a matter of people traversing the area.

In March, 1989 Nathan Napoka (n.d.b) of DLNR-SHPD interviewed Papa Henry Allen Auwae, who at one time lived in Kokoiki with his grandparents. Papa Auwae revealed several things of note: (1) that his mother, and great grandparents and others are all buried in the plowed fields around the *heiau*; (2) Papa Auwae's father Jonah Kamalani and Heloke Mo'okini are brothers (there were many children and

the Kamalani's raised some of them and some were raised by the Kamahoahoa's); (3) the Auwae family (five brothers) came from Tahiti circa AD 560; the name Mo'okini was taken from the *heiau* and added as a middle name for many in his family; however, some of them dropped the name Auwae and kept Mo'okini; (4) that it was the Kamahoahoa side of the family who lived in Kokoiki, and were at one time the caretakers of the *heiau* (however, the *heiau* does not belong to the Auwae family which includes the Mo'okini, Kamalani and Kamahoahoa lines); and (5) in the old days there were a lot of people living in Kokoiki, down towards the ocean in sugarcane and *lauhala* thatched *hale*—they used to weave the *lauhala*, and *pili* grass; from Umiwai to Honoipu and Kaname'e there was lots of *pili* grass growing.

The place name "Upolu" is somewhat of a mystery in that Upolu is a prominent place in Western Samoa. It is also a place name in Tahiti and an ancient name in Taha'a, an island in the same reef as Raiatea (Stokes 1928:45; Beckwith 1976:370). There may be some relationship between the name and Pa'ao who arrived in the area in the thirteenth century from Tahiti. The place name of Opihipau could refer to the termination or destruction of a favorite Hawaiian delicacy, the limpet ('*opihi*). It is well known in modern times for certain areas to be picked clean of '*opihi*. The '*opihi* is also a Hawaiian '*aumakua* (Pukui and Elbert 1986:292). However, a lot would depend on the placement of the macron and glottal stop, as *pau* could also be *pa'u* (soot, smudge) or *pa'ū* which also means moist. Kealahewa literally translates to the wrong paths, but could also refer to Hewahewa, a *kahuna* (priest) of Kamehameha I associated with nearby Mo'okini Heiau, and grandson of Holo'ae, *kahuna* of Kalaniopu'u. Stokes (1928) pointed out that Pa'ao replaced the *ali'i* because the existing dynasty in Hawaii had become *hewa* or "ceremonially unclean" with all the intermarriages with commoners (1928:40).

The Hawaiians of old did not have a written language therefore information about traditional history is usually gathered from various ethnohistorical material such as western educated native writers, captains' logs, the journals of seamen and missionaries, and archival documents. Sometimes this information can be corroborated through archaeological investigation. For the past couple decades, there has been an increasing effort to collect and synthesize ethnohistorical, archival, and report information about North Kohala (DLNR 1972; KTF 1976; Tomonari-Tuggle 1981). This is reflected in recent archaeological studies of North Kohala (Wulzen and Goodfellow 1995; Adams and Athens 1994; Erkelens and Athens 1994) where historical research sections of reports have become quite extensive. The following is a brief overview of a selected history of North Kohala within the context of a general Hawaiian settlement model.

## TRADITIONAL HISTORY

The generalized cultural sequence that follows is based on Kirch's (1985) model. The settlement or colonization period is believed to have occurred in Hawaii between AD 300-600 from the southern Marquesas Islands. This is a period of great exploitation and environmental modification, when early Hawaiian farmers developed new subsistence patterns by adapting their familiar patterns and traditional tools to their new environment (Kirch 1985, Pogue 1978). Their ancient and ingrained philosophy of life tied them to their environment and kept order. Order was further assured by the conical clan principle of genealogical seniority (Kirch 1984). According to Fornander (1969) the Hawaiians brought from their homeland certain universal Polynesian customs; the major gods *Kane*, *Ku* and *Lono*; the *kapu* system of law and order; cities of refuge; the '*aumakua* concept; various superstitions; and the concept of *mana*.

The Development Period (AD 600-1100) brought about a uniquely Hawaiian culture. The portable artifacts found in archaeological sites of this period not only reflect an evolution of the traditional tools, but some distinctly Hawaiian inventions. The adze (*ko'i*) evolved from the typical Polynesian variations of plano-convex, trapezoidal and reverse-triangular cross section to a very standard Hawaiian rectangular quadrangular tanged adze. A few areas in Hawaii produced quality basalt for adze production. Mauna Kea on the island of Hawaii was a well-known adze quarry. The two-piece fishhook and the octopus lure breadloaf sinker are Hawaiian inventions of this period, as are '*ulu maika* stones and '*lei niho palaoa*.

The later was a status item worn by those of high rank, indicating a trend toward greater social stratification (Kirch 1985).

The Expansion Period (AD 1100-1650) is characterized by the greatest social stratification, major socioeconomic changes, and intensive land modification. Most of the ecologically favorable zones of the windward and coastal regions of all major islands were settled and the more marginal leeward areas were being developed. Earlier dates (AD 520-1170, AD 610-1210) from leeward Kapa'anui were reported by Dunn and Rosendahl (1989b); however, these sites are believed to be temporary camp sites (Wulzen and Goodfellow 1995). The greatest population growth and Hawaiian inventions occurred during the Expansion Period. Subsistence patterns intensified as crop farming evolved into large irrigated field systems, expanded into the marginal dryland areas, and the *loko* or fishpond aquaculture flourished (Bellwood 1978; Kirch 1985).

It was during this period that a second major migration settled in Hawaii, this time from Tahiti in the Society Islands. It was also during this leeward expansion movement that Mo'ikeha (Oahu), La'maikahiki (Kauai), Piliika'aiea or Pili (Hawaii) and *kahuna* Pa'ao settled in the islands during the 13th century (Kamakau 1976). Pa'ao was the keeper of the god Ku'ka'ilimoku who had fought bitterly with his older brother, the high priest Lonopele. After much tragedy on both sides, Pa'ao escaped Lonopele's wrath by fleeing in a canoe. Kamakau (1991:100-102) told the following story in 1866:

Puna on Hawai'i Island was the first land reached by Pa'ao, and here in Puna he built his first *heiau* for his god Aha'ula and named it Aha'ula [Waha'ula]. It was a *luakini*. From Puna, Pa'ao went on to land in Kohala, at Pu'u'epea. He built a *heiau* there called Mo'okini, a *luakini*. It is thought that Pa'ao came to Hawai'i in the time of the *ali'i* La'au because Pili ruled as *mo'i* after La'au. You will see Pili there in the line of succession, the *mo'o kii'auhau*, of Hanala'anui. It was said that Hawai'i Island was without a chief, and so a chief was brought from Kahiki; this is according to chiefly genealogies. Hawai'i Island had been without a chief for a long time, and the chiefs of Hawai'i were *ali'i maka'ainana* or just commoners. There were seventeen generations during which Hawai'i Island was without chiefs—some eight hundred years.

There are several versions of this story which are discussed by Beckwith (1976), including the version where Mo'okini and Kaluawilinau, two *kahuna* of Moikeha decide to stay on at Kohala. The bones of the *kahuna* Pa'ao are said to be deposited in a burial cave in Kohala in Pu'u'epea [possibly Puuepea?] (Kamakau 1987:41).

The concept of the *ahupua'a* was established during the AD 1400's (Kirch 1985) adding another component to a then, well stratified society. This land unit became the equivalent of a local community, with its own social, economic and political significance. *Ahupua'a* were ruled by *ali'i 'ai ahupua'a* or lesser chiefs, who for the most part, had complete autonomy over this generally economically self-supporting piece of land, which was managed by a *konohiki*. *Ahupua'a* were usually wedge or pie-shaped, incorporating all of the eco-zones from mountain to the sea and for several hundred yards beyond the shore, assuring a diverse subsistence resource base (Hommon 1986).

The *ali'i* and the *maka'ainana* (commoners) were not confined to the boundaries of the *ahupua'a*. Not only did the *makai* (ocean) and *mauka* (mountain) people share seafood and produce by lighting a fire when there was a need, they also shared with their neighbor *ahupua'a ohana* (Hono-ko-hou 1974). The *ahupua'a* was further divided into smaller sections such as the *'ili*, *mo'o'aina*, *pauku'aina*, *kihapai*, *koale*, *hakuone* and *kuakua* (Hommon 1986, Pogue 1978). The chiefs of these land units gave their allegiance to a territorial chief or *mo'i* (king). *Heiau* building flourished during this period as religion became more complex and embedded in a sociopolitical climate of territorial competition. Monumental architecture such as *heiau*, "played a key role as visual markers of chiefly dominance" (Kirch 1990:206).

The Proto-Historic Period (AD 1650-1795) is marked by both intensification and stress. Wars occurred between intra-island and inter-island polities. Sometime between AD 1736 and 1758 in the reign of Kalani'opu'u, Kamehameha I was born in the *ahupua'a* of Kokoiki, North Kohala near the Mo'okini Heiau [there is some controversy about his birth year, see Kamakau 1992:66-68]. The birth event is said to have occurred on a stormy night of rain, thunder and lightening, signified the night before by a very bright ominous star, thought by some to be Halley's comet [this is also controversial] (Kamakau 1992). Kamehameha's ancestral homeland was in Halawa, North Kohala (Williams 1919).

Ke'eaumoku, son of Keawepoepoe, set up a fort at Pololu and Honokane, but was attacked by Kalani'opu'u so he moved to Maui. About AD 1759 Kalani'opu'u conquered East Maui, defeating his wife's brother the Maui king Kamehamehanui by using Hana's prominent Pu'u Kau'iki as his fortress. He appointed one of his Hawaii chiefs, Puna, as governor of Hana and Kipahulu. Kahekili became king of Maui in AD 1766 when Kamehamehanui died following an illness. Ke'eaumoku took his widow, Namahana, a cousin of Kamehameha I, as his wife. Their daughter, Ka'ahumanu, the future favorite wife of Kamehameha I, was born in a cave at the base of Pu'u Kau'iki, Hana, Maui in AD 1768 (Kamakau 1992). In AD 1775 Kalani'opu'u and his Hana forces raided and destroyed the neighboring Kaupo district, before continuing several more raids on Molokai, Lanai, Kaho'olawe and parts of West Maui. It was at the battle of Kalaeoka'ilio that Kamehameha, favorite warrior of Kalani'opu'u, was first recognized as a great warrior and given the name of Pai'ea (hard shelled crab) by the Maui chiefs and warriors (Kamakau 1992). During the wars between Kalani'opu'u and Kahekili (AD 1777-1779) Ka'ahumanu and her parents left Maui to live on the island of Hawai'i (Kamakau 1992).

## HISTORY AFTER CONTACT

Captain James Cook landed in the Hawaiian Islands on January 18, 1778. Ten months later, on a return trip to Hawaiian waters, off the East coast of Maui, Kalani'opu'u, who was at war with Kahekili, visited Cook on board the *Resolution*. Kamehameha observed this meeting, but chose not to participate. The following January [1779] Cook and Kalani'opu'u met again in Kealahou Bay and exchanged gifts. In February, Cook set sail; however, a severe storm off the Kohala coast damaged a mast and they had to return to Kealahou. Cook's return occurred at an inopportune time and this misfortune cost him his life (Kuykendall and Day 1976).

In 1779 King explored the North Kohala country and reported:

As far as the eye could reach, seemed fruitful and well inhabited...[three and four miles inland, plantations of taro and potatoes and *wauke*] neatly set out in rows. The walls that separate them are made of the loose burnt stone, which are got in clearing the ground; and being entirely concealed by sugar-canes planted close on each side, make the most beautiful fences that can be conceived...[The exploring party stopped six or seven miles from the sea] To the left a continuous range of villages, interspersed with groves of coconut trees spreading along the sea-shore; a thick wood behind this; and to the right, an extent of ground laid out in regular and well-cultivated plantations...as they passed, they did not observe a single foot of ground, that was capable of improvement, left unplanted (Handy and Handy 1972:528).

Around AD 1780 Kalani'opu'u proclaimed that his son Kiwalao would be his successor, and he gave the guardianship of the war god Ku'ka'ilimoku to Kamehameha. Kamehameha and a few other chiefs were concerned about their land claims, which Kiwalao did not seem to honor, so after usurping Kiwalao's authority with a sacrificial ritual, Kamehameha retreated to his district of Kohala. While in Kohala, Kamehameha farmed the land growing taro and sweet potatoes (Handy and Handy 1972). After Kalani'opu'u died in AD 1782 civil war broke out, Kiwalao was killed. The wars between Maui and Hawaii continued until AD 1795 (Kuykendall and Day 1976, Handy and Handy 1972, King 1990).

In AD 1790 two American vessels, the *Eleanora* and *Fair American* were in Hawaiian waters. Following an altercation between his crew and natives, the Captain of the *Eleanora* massacred more than 100 natives at Olowalu [Maui], then sailed away leaving one of its crew, John Young on land. The other vessel, the *Fair American*, was captured and its crew killed except for one member, Issac Davis. Kamehameha also observed this but did not participate, although he did prevent Young and Davis from leaving. He also kept the vessel as part of his fleet. Young eventually became governor of the island of Hawaii. By 1796 Kamehameha had conquered all the island kingdoms except Kauai. It wasn't until 1810, when Kaumuali'i of Kauai gave his allegiance to Kamehameha, that the Hawaiian Islands were unified under one rule (Kuykendall and Day 1976).

Demographic trends during this period indicate population reduction in some areas, due to war and disease, yet increases in others, with relatively little change in material culture. However, there was a continued trend toward craft and status specialization, intensification of agriculture, *ali'i* controlled aquaculture, upland residential sites, and the enhancement of traditional oral history. The Ku cult, *luakini heiau*, and the *kapu* system were at their peaks, although western influence was already altering the cultural fabric of the Islands (Kirch 1985, Kent 1983). Foreigners had introduced the concept of trade for profit, and the women of Hawaii by the time Kamehameha I had conquered Oahu, Maui and Molokai in 1795 had learned the profitable concept of prostitution (Kent 1983). This marked the end of the Proto-Historic Period and the end of an era of uniquely Hawaiian culture.

Hawaii's culture and economy continued to change drastically as capitalism and industry established a firm foothold. The sandalwood (*Santalum ellipticum*) trade, established by Euro-Americans in 1790 and turned into a viable commercial enterprise by 1805 (Oliver 1961), was flourishing by 1810. This added to the breakdown of the traditional subsistence system, as farmers and fishermen were ordered to spend most of their time logging, resulting in food shortages and famine that led to a population decline. Kamehameha did managed to maintain some control over the trade (Kuykendall and Day 1976, Kent 1983).

Kamehameha I died on May 8, 1819 in Kailua-Kona and once again the culture of Hawaii was to change radically. Six months after his death, his son and successor, Liholiho (Kamehameha II), met with *kahuna nui*, Ka'ahumanu, and a council of chiefs and chiefesses at Kawaihae. His advisors, which included the *kahuna* Hewahewa, convinced him to abolish the *kapu* system. He signified his agreement by sitting down and eating with his mother Keopulani, breaking the '*ai kapu*' (Oliver 1961, Kuykendall and Day 1976, Kamakau 1992).

Liholiho's cousin, Kekuaokalani, caretaker of the war god *Ku-Kailimoku*, disagreed and revolted. By December of 1819 the revolution was quelled. Kamehameha II sent edicts throughout the kingdom renouncing the ancient state religion, ordering the destruction of the *heiau* images, and ordering that the *heiau* structures be destroyed or abandoned and left to deteriorate. He did, however, allow the personal family religion, the '*aumakua*' worship, to continue (Oliver 1961, King 1990, Kamakau 1992).

In October of 1819, seventeen Protestant missionaries set sail from Boston to Hawaii. They arrived in Kailua-Kona on March 30, 1820 to a society with a religious void to fill. Many of the *ali'i*, who were already exposed to western material culture, welcomed the opportunity to become educated in a western style and adopt their dress and religion. Soon they were rewarding their teachers with land and positions in the Hawaiian government (King 1990). During this period, the sandalwood trade was wreaking havoc on the commoners, who were weakening with the heavy production, exposure, and famine just to fill the coffers of the *ali'i* who were no longer under any traditional constraints (Oliver 1961, Kuykendall and Day 1976). On a stopover in the Kohala district Ellis wrote:

About eleven at night we reached Towaihae [Kawaihae], where we were kindly received by Mr. Young...Before daylight on the 22nd, we were roused by vast multitudes of people passing through the district from Waimea with sandal-wood, which had been cut in the adjacent mountains for Karaimoku, by the people of

Waimea, and which the people of Kohala, as far as the north point, had been ordered to bring down to his storehouse on the beach, for the purpose of its being shipped to Oahu. There were between two and three thousand men, carrying each from one to six pieces of sandal-wood, according to their size and weight. It was generally tied on their backs by bands of ti leaves, passed over the shoulders and under the arms, and fastened across their breasts... (Kuykendall and Day 1976:42, 43, Ellis 1984:397).

The lack of control of the sandalwood trade was to soon lead to the first Hawaiian national debt as promissory notes and levies were initiated by American traders and enforced by American warships (Oliver 1961). The Hawaiian culture was well on its way towards Western assimilation as industry in Hawaii went from the sandalwood trade, to a short-lived whaling industry, to the more lucrative, but environmentally destructive sugar industry.

### SUGAR HISTORY IN NORTH KOHALA

In Pukui (1983) there are two proverbs that reference both Kohala and sugarcane. He provides an explanation and notes that Hawaiian proverbs have layers of meaning and are best when left to the imagination of the reader:

He pa'a kō kea no Kohala, e kole ai ka waha ke 'ai  
A resistant white sugar cane of Kohala that injures the mouth when eaten.

Pukui explains this proverb as follows:

A person that one does not tamper with. This was the retort of Pupukea, a Hawai'i chief, when the Maui chief Makakuikalani made fun of his small stature. It was later used in praise of the warriors of Kohala, who were known for valor (1983:95).

I 'ike 'ia no o Kohala i ka pae kō, a o ka pae kō ia kole ai ka waha.  
One can recognize Kohala by her rows of sugar cane which can make the mouth raw when chewed (Pukui 1983:127).

Pukui interprets this proverb as follows:

When one wanted to fight a Kohala warrior, he would have to be a very good warrior to succeed. Kohala men were vigorous, brave, and strong (1983:127).

Sugarcane (*Saccharum officinarum* L.) was a Polynesian introduction and served a variety of uses. The *ko kea* or white cane was the most common, usually planted near Hawaiian homes for medicinal purposes, and to counteract bad tastes (Handy and Handy 1972:185). Sugarcane was a snack, a condiment, a famine food, fed to nursing babies, and helped to strengthen children's teeth by chewing on it (Handy and Handy 1972:187). It was used to thatch houses when *pili* grass (*Heteropogon contortus*) or *lau hala* (*Pandanus odoratissimus*) were not abundant (Malo 1987:). Sugarcane was also used in relation to taro and sweet potato. Handy and Handy (1972:186) explain:

In wet-taro farming, cane was planted along the embankments separating the flooded terraces and flats. In dry-taro and sweet-potato fields on the sloping *kula* or in the lower forest zone, cane was planted as hedges along the lines of stone and rubbish thrown up between the fields. Thus it helped the planter to utilize to the maximum his soil and water, and acted as a windbreak against the gusty breezes which blow in most valley bottoms, along the coasts, and on the uplands where taro is grown.

Sugarcane was grown on all islands and when Cook arrived he wrote of seeing sugarcane plantations. The Chinese on Lanai are credited with first producing sugar as early as 1802. However, it was not until 1835 that sugar became established commercially, primarily to replace a waning sandalwood industry (Oliver 1961, Kuykendall and Day 1976).

Kohala became a land in transition and eventually a major force in the sugar industry with the arrival of American missionary Elias Bond (KTF 1975). In a comprehensive study of North Kohala, Tomonari-Tuggle relates this transition:

The arrival in 1841 of Elias Bond, of the Protestant American Board of Commissioners for Foreign Missions, to Kohala marked the beginning of a 22 year period of transition in the district's history. In those years a new religion, a new land tenure system, and a changing economy altered the lifestyles and world view of the indigenous population of the district. The Kohala community was in flux, attempting to find a firm footing in a changing world, in a much larger network of social, political, and economic interactions than had previously existed (1981:I-23).

When Elias Bond directed his efforts to initiating sugar as a major agricultural industry in Kohala, he could not have foreseen the incredible success of his modest venture. His primary concern was to develop a means for the Hawaiian people of the district to compete successfully in the market economy that had evolved in Hawaii. What resulted was a vigorous, stable, and competitive industry which survived over a century of changing economic situations. For the Hawaiian people, however, the impact was not what Bond anticipated existed (1981:I-39).

In 1860 Rev. Bond engaged Samuel N. Castle in founding the Kohala Sugar Company on lands owned by Bond and his neighbor Dr. James Wight. The first crop was harvested in January 1865 (KTF 1975). Kohala's transition was a reflection of what was happening elsewhere in Hawaii as the sugar industry grew. The industry brought in tens of thousands of laborers from Asia, Europe, the Americas, Oceania, and Africa to work on the many plantations and mills that were being established on all major islands (Oliver 1961). This influx not only radically changed the culture, but also drastically altered agricultural lands, destroying traditional architectural features in the process.

In Kohala sugarcane was transported by ox-cart to various landings. By 1879, North Kohala had seven mills and five landings (Figure 4). During 1881 to 1883, due to demands, a 20-mile railroad was built from windward Niuli'i to leeward Mahukona Landing. Then, in 1904 a monumental task and major engineering feat was initiated, the construction of the Kohala Ditch (Figure 5). The ditch was completed in 1906 and provided a minimum of 20 million gallons of water per day to irrigate sugarcane fields in the northern locales of the district (Tomonari-Tuggle 1981:I-42). However, it was not without adverse consequences:

Construction of the Kohala Ditch and the railroad greatly impacted subsistence activities, not in an actual loss of land but in the ability to effectively utilize it. The Ditch tapped the headwaters of the Kohala valleys and gulches and essentially cut the water supply to makai areas, thus ending irrigated kalo cultivation on a wide scale...construction of the Ditch coincided with the abandonment of Honokane Nui Valley (Tomonari-Tuggle 1981:I-49, 50).

Displaced dirt and dust ruined subsistence crops; natives were asked to grow sugarcane on their lands in exchange for money, only to find themselves indebted and forced to surrender homelands. Land-use disputes between natives and other cultures ensued, and restrictions on government lands prevented subsistence hunting and gathering. Subsistence-based culture was eventually lost with the escalating dependence on purchased goods and the growing development related to sugar production (Tomonari-Tuggle 1981).

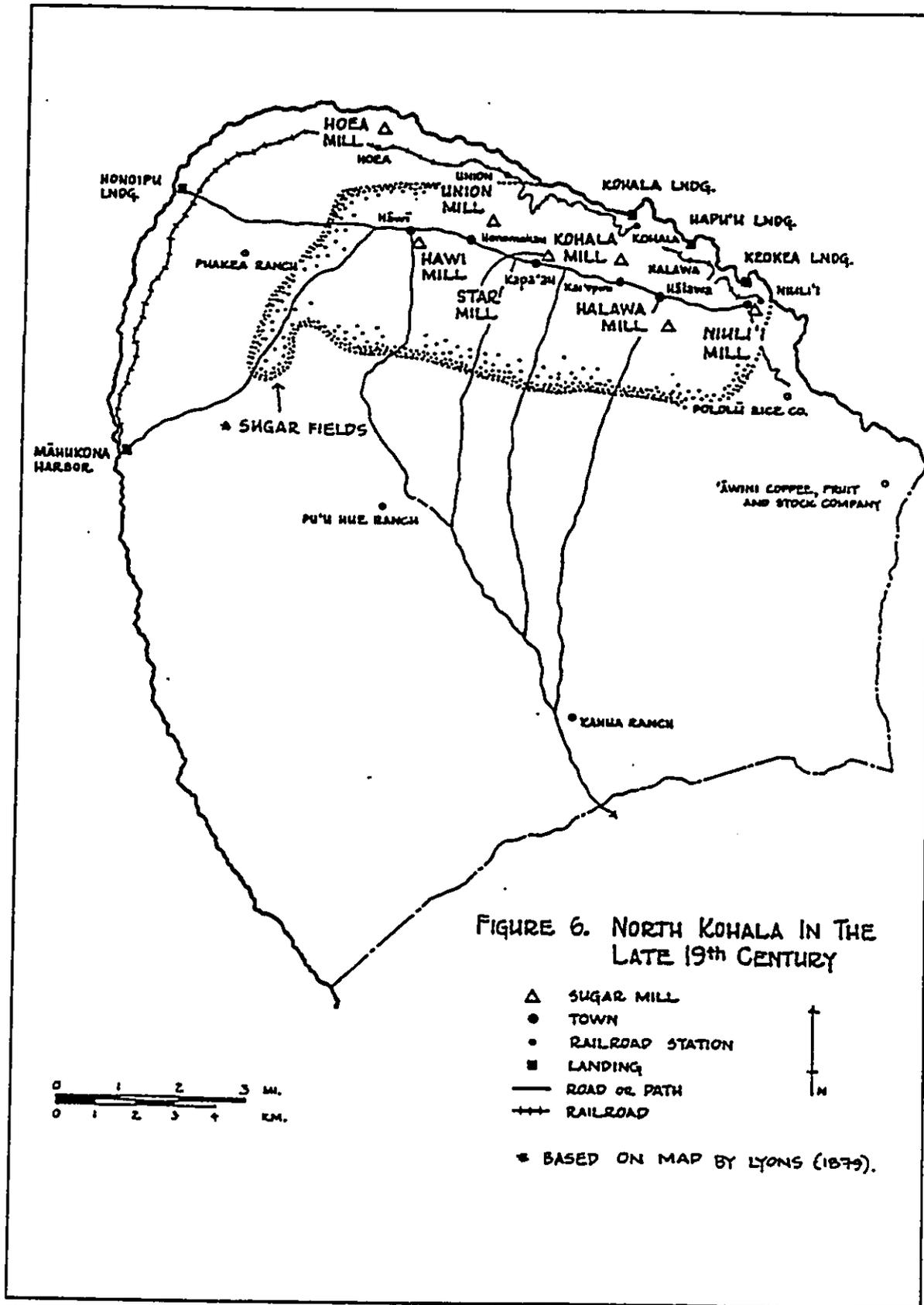


Figure 4. Sugar Mill and Landings in North Kohala (after Tomonari-Tuggle 1988)

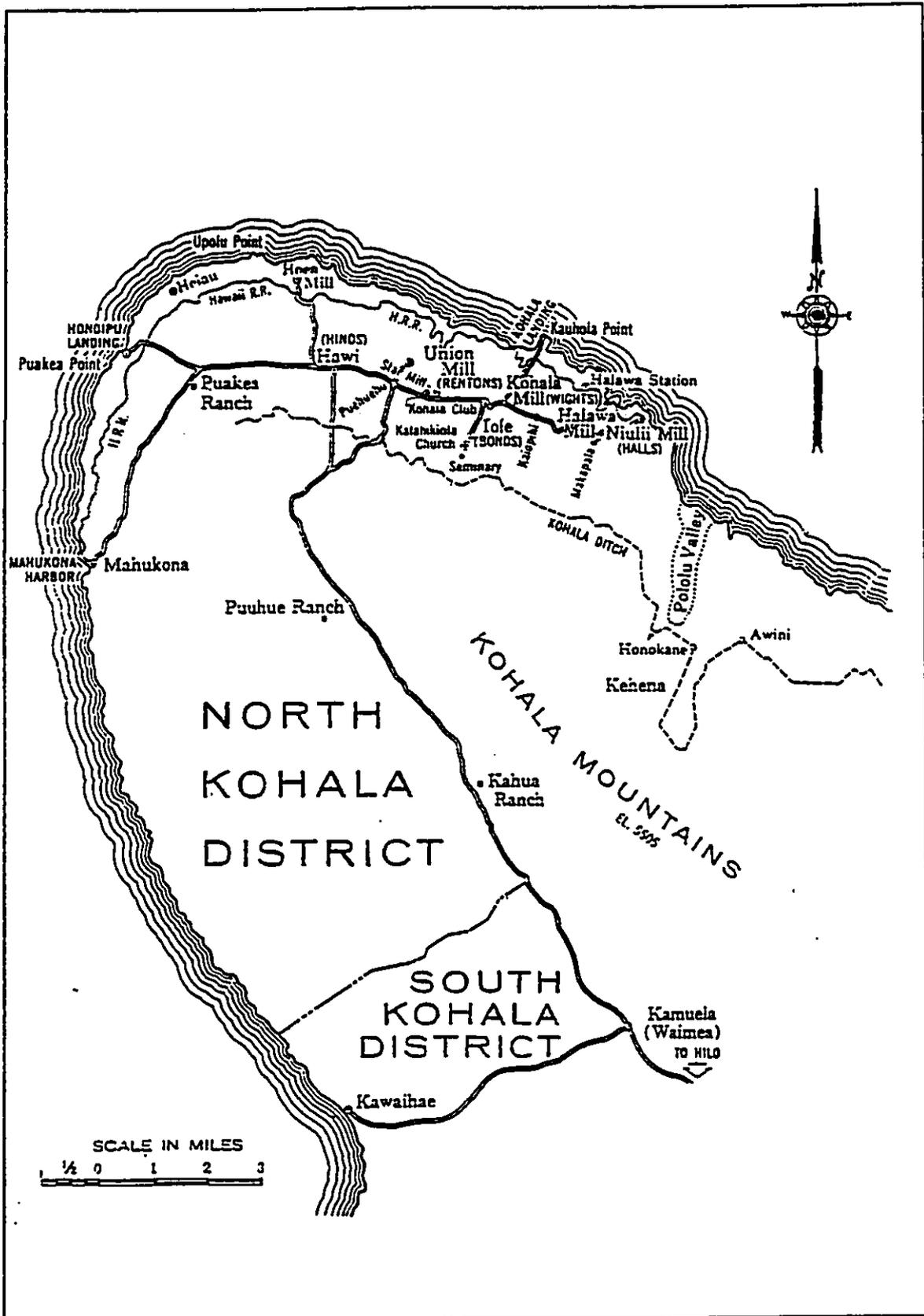


Figure 5. The Kohala Ditch (after Condé 1971)

Several events in the early 1900's eventually led to the downward spiral of the sugar industry. Mainland labor union leaders went into the fields organizing membership drives, the military began a major drive to install airfields and encampments, and the Federal government imposed quota restrictions on sugar exports (Oliver 1961).

By 1920 only five companies were operating in the area: Kohala Sugar Company, Halawa Plantation, Hawi Mill and Plantation, Union Mill Company, and Niulii Mill and Plantation. In 1929 the Halawa lands were leased by Kohala and Niulii; Hawi merged with Kohala in 1931; Niulii and Union Mill merged in 1932; and Union was purchased by Kohala in 1937. By 1941 Kohala was the only mill and plantation in operation with 14,385 acres of sugarcane (KTF 1975).

Hawaii's involvement in WW II had a terminal effect on the Kohala Sugar Company. Mahukona Harbor was closed by the military for security reasons, halting use of the railroad. Many of Kohala's men joined the services. Labor unions had a growing voice; and the lack of jobs in Kohala caused an exodus to Oahu during the construction boom of the 1960s. As an economic remedy, Kohala Sugar Company offered its employees an option to purchase lots in newly created subdivisions. On the heels of this offer, new jobs were being created in the tourist industry as Mauna Kea Hotel, followed a few years later by other hotels in Waikoloa, were built and occupied in the late 1960's and early 1970's (Tomonari-Tuggle 1981).

On March 1, 1971, Castle and Cooke, Inc. announced that they would be closing Kohala Sugar Company on December 31, 1973. This news hit the community very hard. A Legislative appointed task force was created to search for alternative measures. Through the efforts of the Kohala Task Force (KTF), the Legislature, and Castle and Cooke, termination was postponed for two years while KTF, Castle and Cooke, and the North Kohala community explored other economic endeavors. Some of the following ventures were considered: sorghum; feed grain; quail farm; tropical plant nursery; prawn farm; window factory; plastic drip manufacturer; turtle, oyster, clam and lobster farm; and a hog farm (KTF 1972).

In 1975 Kohala Sugar Company owned 20,647 acres of land the northeastern part of the peninsula, but only 13,600 acres were in sugarcane and 300 acres in macadamia nuts. The plantations ran 15 miles along the coast from Pololu Valley to a few miles past Upolu Point. The sugar cane lands stretched across the northern and northeastern slopes of Kohala Mountain, at an elevation of 5,500 feet (KTF 1975).

Hundreds of thousands of dollars were invested into both the search process and ventures. The following ventures were found acceptable and viable: Kohala Plastic Industries; Kohala Nursery, Inc.; Grain Research Center; Orchids Pacifica, Ltd. and Hawaii Biogenics, Ltd (KTF 1975). The Hawaii Biogenics, Ltd. was located in the vicinity of the Upolu Airport project site (Figure 6). In KTF's 1980 report only Hawaii Biogenics, Orchids Pacifica, Kuluwai Plastics, Pacific Hay and Feed and Forage Research Project were operating (KTF 1980). Due in part to internal problems the Kohala Task Force was dissolved in the 1980's. Of the original ventures only one nursery is still in operation.

## MILITARY HISTORY OF UPOLU AIRPORT

Upolu Point Military Reservation, referred to as Upolu Landing Field or Upolu Airplane Landing Field, was also named Suiter Field in honor of First Lieutenant Wilbur C. Suiter of the 135th Aero Squadron in 1933 (CEPOD-ED 1992:I-4). The dominant use of the Upolu Point Military Reservation was the Upolu Airport. The following information was extracted primarily from the *Defense Environmental Restoration Program for Formerly-Used Sites Inventory Project Report: Upolu Point Military Reservation* (CEPOD-ED 1992), with supplementary material from the Upolu Airport Master Plan (Belt Collins Hawaii 1997), and records from the Bureau of Conveyance.

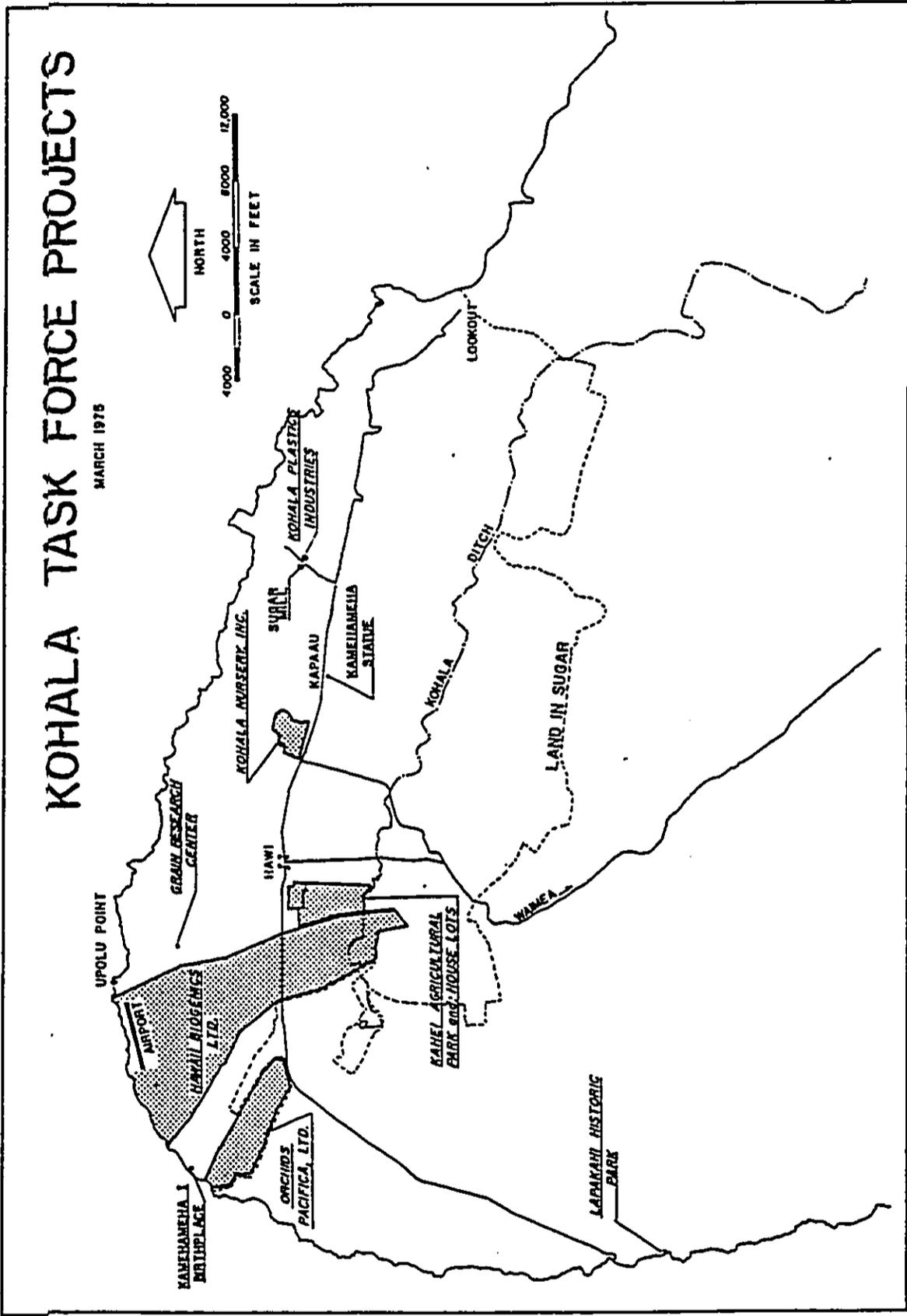


Figure 6. Map Showing KTF Operations (after KTF 1975)

The Upolu Point Military Reservation was used as a landing field from June 1927 by the United States Air Service under the control and management of the War Department. The land was appropriated from the Territory of Hawaii by several Executive Orders. In January 1930 the War Department granted the Territory of Hawaii concurrent use of the Army landing field for official and commercial (for Hawaiian Airlines, Ltd. according to Bureau of Conveyance records) aviation use for a term of five years. Seven months later, about 97% of the land set aside for the military reservation was restored to the Territory of Hawaii. A couple of months later, about 95 acres were dedicated to establish the Upolu Airport under the control of the Territory of Hawaii. The Territory of Hawaii granted the United States of America occupancy and use of the airport from July 1944 to May 1947, for the exclusive use of naval and other military purposes. The U.S. government occupied the reservation itself until November 1952 at which time all remaining lands were restored to the Territory of Hawaii.

The Upolu Point Military Reservation included facilities for naval purposes, and for the operation and maintenance of military airplanes and airships. These facilities included a 150 feet wide by 4,000 feet long surfaced runway, an aircraft parking area, a catapult deck, administration building, personnel quarters, latrines, supply building, mess hall, commissary, galley, garbage house, maintenance building, public works building, a rocket assembly shop, rocket storage magazine, a gate house, a dispensary, an unloading platform, and four water tanks (Figure 7).

Today the Upolu Airport is secured by a four-foot high chain link fence and although it is no longer used for commercial scheduled flights it is still occasionally utilized by the United States Hawaii Air National Guard during training exercises.

### LAND TENURE CHRONOLOGY

The record of land tenure for the project area starts in 1811 when Kamehameha I gave Kealahewa 2 to George Beckley. This land was later included in the LCA to Beckley's heirs in 1848. Kealahewa 3 was granted to Kancihalau in 1861. At some point in the early twentieth century the Hawi Mill & Plantation Company, Ltd. apparently acquired these parcels. The portion of the project area in Opihipau remained government land and was eventually leased to Hawi Mill & Plantation Company, Ltd. in the 1920s. Executive Order (EO) 287 established the Upolu Landing Field with land deeded to the territory by Hawi Mill & Plantation Company, Ltd. in 1927. That land consisted of 37.9 acres of the *makai* portions of Kealahewa 2 and 3, the former Beckley and Kancihalau parcels. Three months later the U.S. Government withdrew the 37.9 acres by EO 4718 for military purposes. Over the next 45 years several land transactions occurred between the Territory and the U.S. Government, with all the land ultimately being returned to the Territory and eventually the State (Table 2).

The Hawi Mill and Plantation Company, Ltd. lands *mauka* of the airport in Kealahewa 2 and 3 transferred to the Kohala Sugar Company during the 1931 merger, and were eventually purchased by Chalon International of Hawaii, the current owners.

## FIELDWORK

Archaeological fieldwork for this project was conducted on February 5 and 6, 1998; and consisted of a 100% pedestrian survey of the project area and the excavation of six backhoe trenches. Robert Rechtman, Ph.D. directly supervised field activities with the assistance of Dave Henry, B.A. and Mike Fager, B.A. James Luke provided the backhoe services.

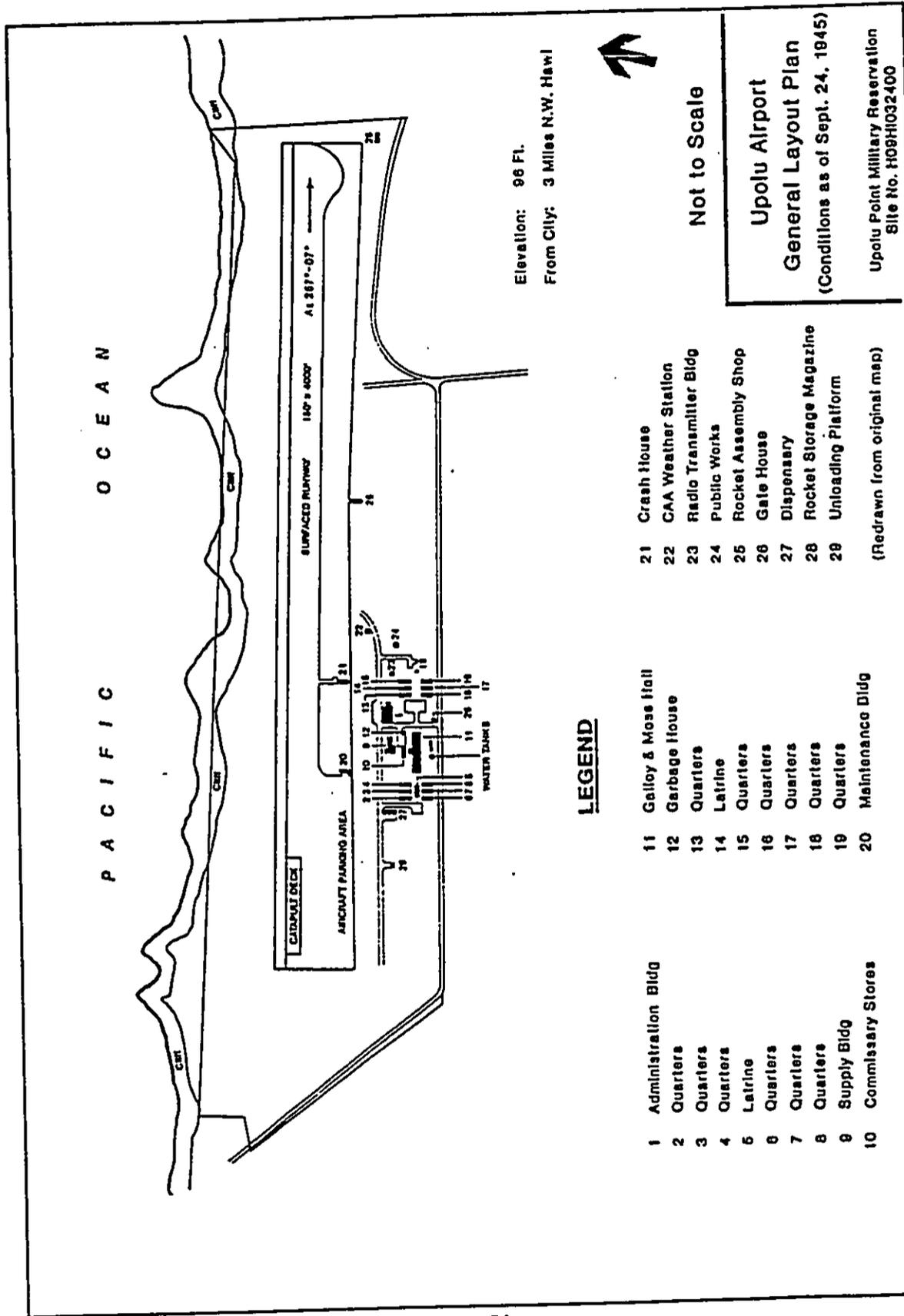


Figure 7. Map of Upolu Point Military Reservation (after CEPOD-ED 1992)

**Table 2. Land Tenure Chronology for the Upolu Airport Property\***

Primary Owner or User	Date
King Kamehameha	Pre-1811
George Beckley (Kealahewa 2)	1811
LCA to Beckley's Heirs	1848
Government of Hawaii (Opihipau)	1848
Grant to Kaneihaleu (Kealahewa 3)	1861
Hawi Mill & Plantation Company, Ltd.	1920s
To Territory of Hawaii (37.9 acres)	1927
To U.S. War Department (37.9 acres)	1927
To U.S. War Department (57.2 acres)	1929
To Territory of Hawaii (36.921 acres)	1930
Joint Military and Commercial Aviation Use	1930
Land South and East of Airport to Kohala Sugar Company	1931
To Territory of Hawaii (57.2 acres)	1931
To U.S. War Department (2.672 acres)	1937
Exchange: U.S. War Department to Territory of Hawaii (2.672 acres for .979 acres)	1938
To U.S. War Department (.868 acres)	1941
Territory of Hawaii establishes Upolu Airport	1941
To U.S. War Department (1.67 acres)	1945
To Territory of Hawaii (1.67 acres)	1945
To Territory of Hawaii (3.54 acres)	1952
State of Hawaii: general and commercial aviation	1959
Land South and East of Airport to Cholon International of Hawaii	1975
State of Hawaii: general non-commercial aviation and some military use	1986

\*Shaded areas appear to have never been part of the airfield.

## SURFACE SURVEY

The three-person field crew traversed the project area maintaining a ten-meter spacing interval. In the area to the east of the airport, survey transects were in a north/south direction; and to the west and inland of the airport, in an east/west direction. All surface features of a cultural origin were described and photographed, and were recorded on a project area map provided by Belt Collins Hawaii. Ground visibility ranged from poor to excellent over the project area, with the ground surface covered in dense grasses and *koa-haole* (*Leucaena glauca*). The area of densest vegetation (to the east of the airport) coincides with the area of most disturbance. Having been repeatedly used for trash disposal, there is evidence of past mechanical earth-moving activities in this area. The other portions of the project area have been used for agricultural purposes in the past and are currently being used for cattle grazing.

## SUBSURFACE TESTING

Six backhoe trenches were excavated inland of the existing passenger terminal. This location was selected for subsurface testing because any future improvements to the airport would involve the relocation of the passenger terminal to this general area. Each trench was 1 meter wide by 2 meters long and excavated to roughly 160 centimeters below the surface. The trenches were spaced thirty meters apart and ten meters inland of, and parallel to, an existing dirt road that runs astride the south side of the airport (Figure 8). Stratigraphic profiles were drawn, soils descriptions were recorded, and photographs were taken for each test trench.

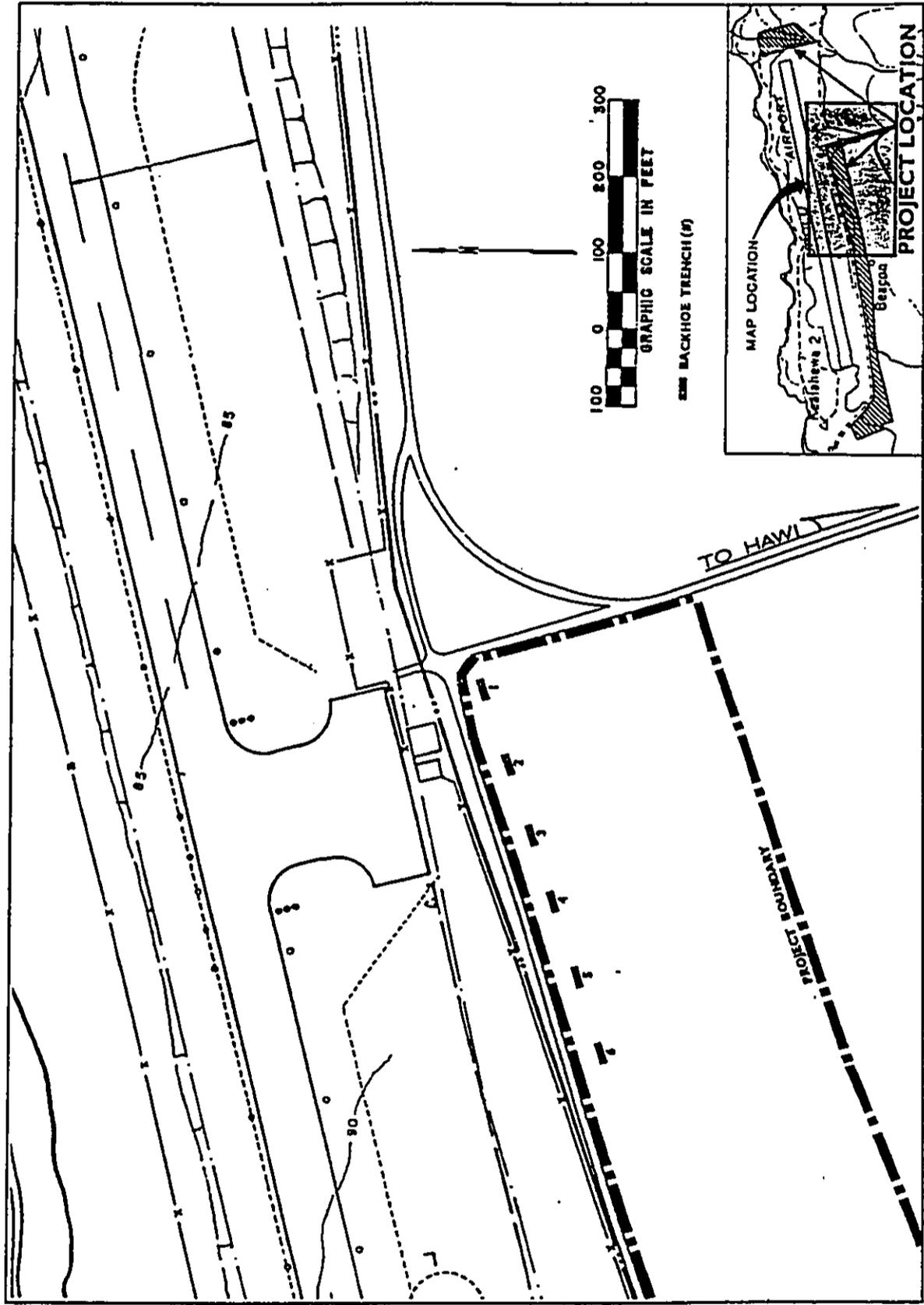


Figure 8. Map Showing Backhoe Test Excavations

## ORAL INTERVIEWS

The oral history aspect of the current project was undertaken by Maria Orr, M.A., who conducted interviews on March 3, 1998 in the North Kohala communities of Hawi, Kapa'au, and Niuli'i. The criteria for selecting persons to interview included long-time residence in the North Kohala area, familiarity with the specific project area, active community involvement, and knowledge about traditional types of resource utilization. A pool of potential interviewees was developed based on referrals. Ten people were identified and four were selected because they met most or all the criteria and were willing to be interviewed. The names of the four interviewees are being withheld as per their wishes. In this report the interviewees will be referred to by letter designations, A, B, C, and D. A resides in Kapa'au, B and D in Hawi, and C in Niuli'i.

The interviews were semi-structured and open-ended using simple and straightforward questions designed to elicit information that would confirm knowledge about Kohala, specifically about or related to the project area. Primary questions addressed individual's backgrounds, length of residence in Kohala, what was known about the project area and North Kohala, and feelings about Upolu Airport and its future use. Secondary questions were for further clarification or to follow up on issues brought up while answering primary questions. Each person was interviewed on tape for 30-50 minutes, two at their workplace in Hawi, one at her workplace in Kapa'au, and one at a home office in Niuli'i. The interviews were transcribed (a copy sent to each individual) and analyzed for theme and data content specific to the research objectives. The small size of the interview population (4) precludes a lengthy discussion and analysis of demographic factors; relevant data concerning the four interviewees are presented in *Table 3*.

**Table 3. Demographics of Interviewee Group**

Category	A	B	C	D	Total
Female	x		x		2
Male		x		x	2
Fishermen	x			x	2
50-69 years old	x		x	x	3
70+ years old		x			1
Born in Kohala					0
Raised in Kohala		x			1
Spouse Raised in Kohala	x	x			2
Born on Big Island		x	x		2
Lived in Kohala 25+ years	x	x	x	x	4
Active in the Community	x	x	x	x	4
Work in Kohala	x	x	x	x	4
Retired Teacher	x		x		2
Retired Sugar Worker		x			1
Retired Commercial Diver				x	1
Part Hawaiian		x		x	2
Part Caucasian		x			1
Part Chinese	x				1
Part Japanese				x	1
Part Filipino			x		1

## FINDINGS

A presentation and discussion of the findings from the archaeological investigation as well as the oral interviews is presented below.

### SURFACE

No Native Hawaiian cultural material or features were encountered during the surface reconnaissance. In the area to the west of the airport, a series of roughly parallel concrete irrigation lines and an irrigation ditch were recorded (*Figure 9*). The ditch is an un-reinforced earthen construction roughly 1.5 meters wide and 1 meter deep. It traverses the study area in a north/south direction. This ditch may represent an early attempt by the Hawi Mill and Plantation Company to irrigate dry fields. Records indicate that the company leased this land during the late 1920s.

Running more or less parallel to the ditch are six irrigation lines, these also traverse the western project area. A seventh, shorter line running nearly perpendicular to the others was identified near the southwestern corner of the current airport property (*see Figure 9*). Large sections of all of these features are broken or missing, having been impacted by farm equipment and cattle grazing. The flumes were constructed from 30-inch long, 18-inch wide segments mortared together (*Figure 10*). The segments are of two alternating forms, identical in size, but every other one has a pair of 4- by 6-inch rectangular openings covered by a tin gates (*Figure 11*). The opening and closing of the tin gates controlled the flow of water to the field. These portable irrigation lines are known as Waialua Flumes, and this system of field irrigation was made popular by the Waialua Sugar Company (Wilcox 1996).

The Hawi Mill and Plantation Company merged with Kohala Sugar Company in 1931. Both the Waialua Sugar Company and the Kohala Sugar Company were owned by the same parent company, Castle & Cooke. It is reasonable to assume that the concrete field irrigation system was established sometime after the merger, perhaps during the 1940s or 50s. In the oral interviews, Dale Sproat (a retired sugar company employee) relates that there was no sugar cane growing near the airport until after the consolidation of the Kohala Sugar Company and its subsequent expansion into dry fields requiring irrigation.

On state land to the south of the airport, a concentration of Historic Period features was recorded (*Figure 12*). The most intact of these features is a six-foot square, seven-foot tall concrete building (Feature A). The building is a single room with a door opening to the west (*Figure 13*) and a paved entryway (Feature B) extending 16 feet (4.9 meters) in a westerly direction to a dirt road. To the north of the terminus of the entryway is a five-foot square, four-foot deep concrete-lined pit (Feature C). This subsurface structure exhibits evidence of an electrical connection entering/exiting in two places. Eighteen feet (5.5 meters) south of this feature is a broken and decaying wooden power pole (Feature D). Directly behind Feature A is a pile of concrete slabs extending from the back of the structure 30 meters eastward and mounded to a height of 2 meters. This complex may have been associated with the Upolu Point Military Reservation compound, which was occupied from 1944 to 1952, and may have functioned as the power station for the facility. Its location relative to the compound supports this interpretation.

### SUBSURFACE

No Native Hawaiian cultural material or features were observed during the subsurface testing. The only non-natural feature was encountered in Trench 2. As depicted in *Figure 14*, a darkly stained pit containing tar fragments was visible in the south wall profile of this excavation. The pit is interpreted as the previous location of a wooden power pole. This area is depicted on a 1927 map (*Figure 15*) as the location of the Hawi Mill & Plantation Company's Camp 9. No other surface or subsurface remains were

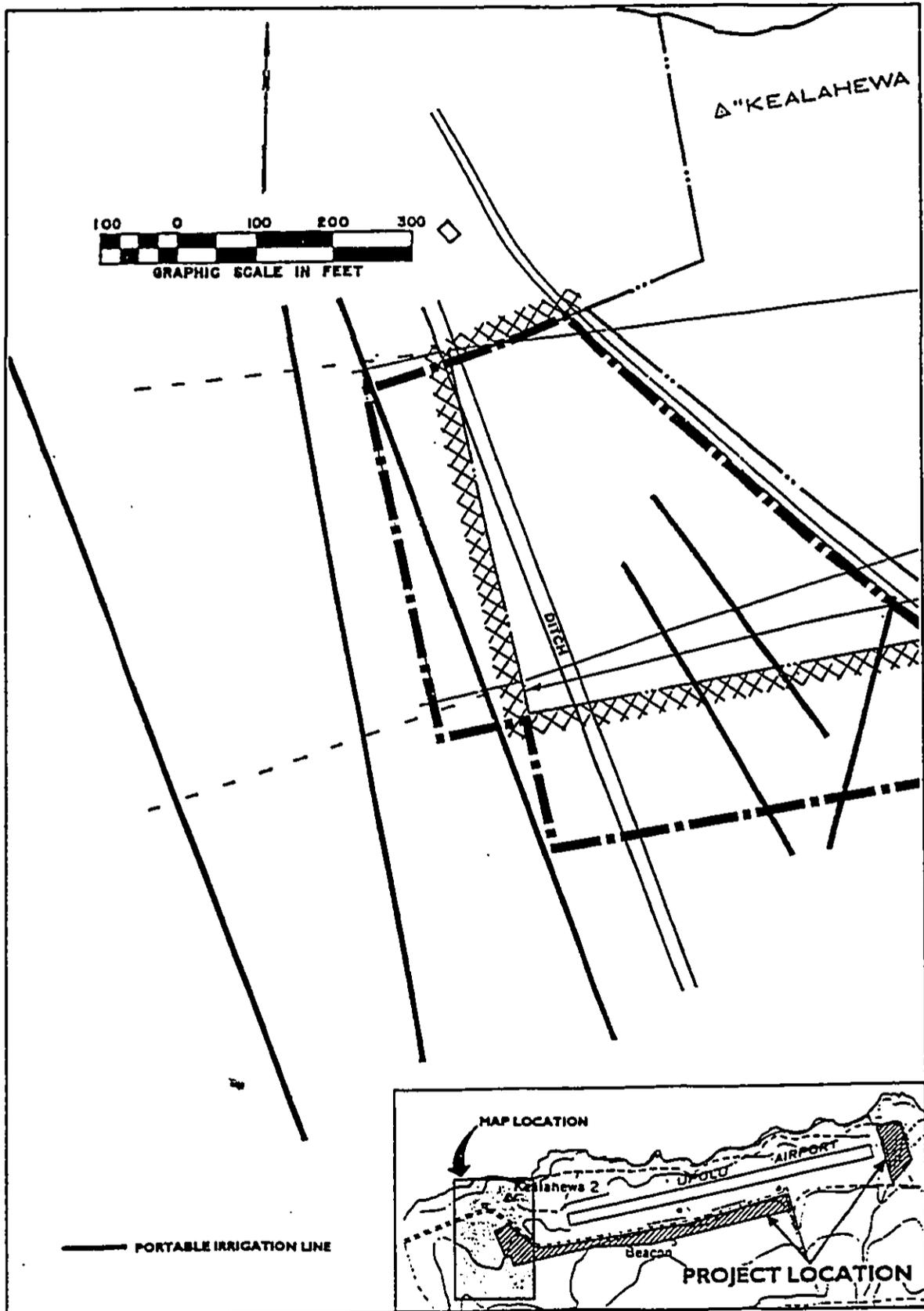


Figure 9. Map Showing Irrigation Features in Western Project Area

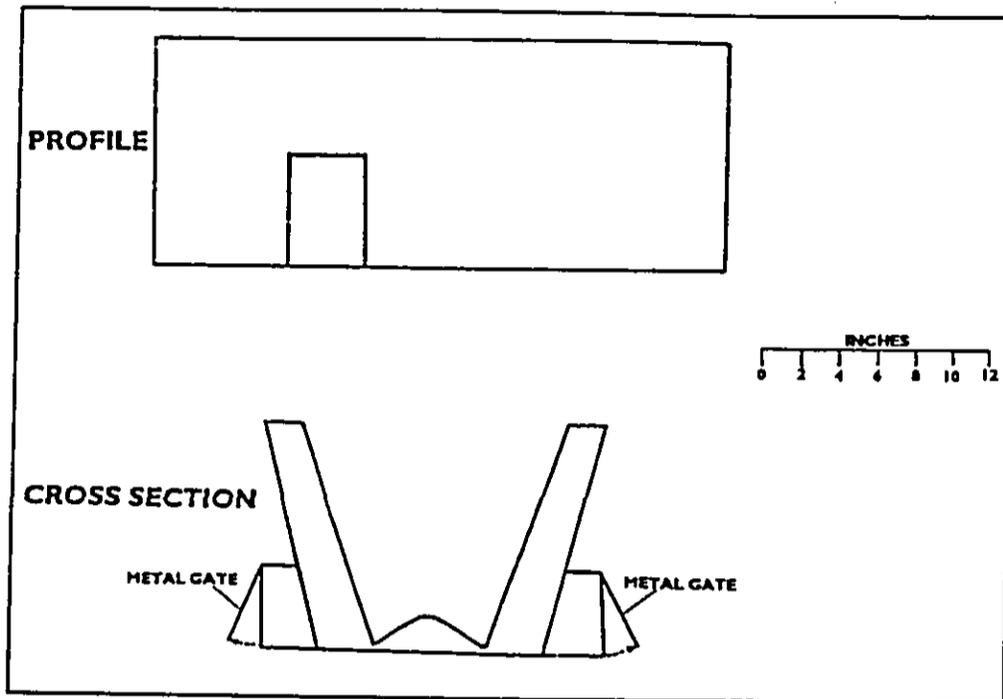


Figure 10. Diagram of Walalua Flume Segment



Figure 11. Photograph of Irrigation Line In Situ





Figure 13. Photograph of Feature A

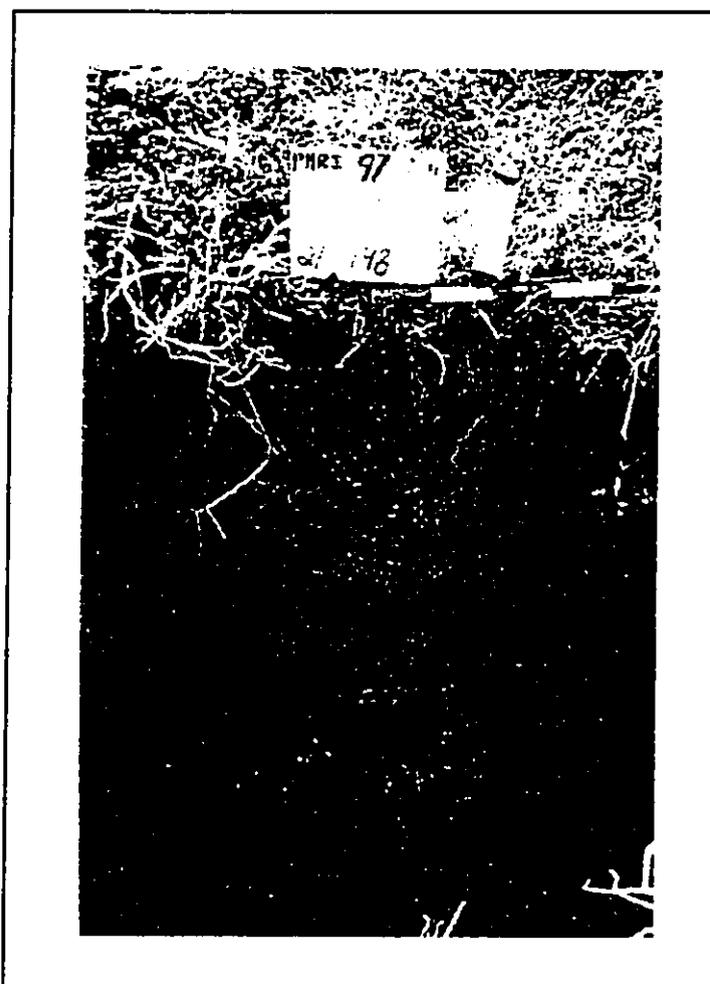


Figure 14. Photograph of Trench 2 South Wall Profile



observed here indicating the Camp was removed. During that event it is likely that other infrastructure was also removed including any power poles that might have serviced the Camp.

Figure 16 illustrates a typical stratigraphic profile for the test trenches. Deposition tends to be greater toward the eastern portion of the area tested, as revealed by Trench 1, in which bedrock was not reached, and by Trench 6, in which bedrock was encountered at 158 centimeters below the surface. The stratigraphy is relatively consistent across the area tested and is described in Table 4.

Table 4. Description of Stratigraphic Profiles

Trench	Layer	Depth (cm below surface)	Description
1	I	0-16	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	2-68	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	56-166	Very dusky red (7.5YR 2.5/2) loamy clay, very fine to coarse crumb to granular structure
2	I	0-14	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	10-32	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	30-98	Very dusky red (7.5YR 2.5/2) loamy clay, very fine to coarse crumb to granular structure
	IIIa	45-150	Mixed layer containing elements of the other four layers, clear boundary
	IV	140-160	Reddish yellow (7.5YR 6/6) decomposing bedrock to bedrock
3	I	0-20	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	17-60	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	50-160	Very dusky red (7.5YR 2.5/2) loamy clay, very fine to coarse crumb to granular structure
4	I	0-20	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	18-60	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	50-210	Very dusky red (7.5YR 2.5/2) loamy clay, very fine to coarse crumb to granular structure
5	I	0-20	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	10-70	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	45-120	Very dusky red (7.5YR 3/3) loamy clay, very fine to coarse crumb to granular structure, abrupt wavy boundary
	IV	110-170	Dark yellowish brown (10YR 3/4) gravelly clay to decomposing bedrock
6	I	0-20	Dark brown (10YR 3/3) silty loam, fine to very coarse crumb structure, abrupt wavy boundary
	II	10-80	Dusky red (7.5YR 3/2) clay loam, fine to very coarse crumb structure, abrupt wavy boundary
	III	78-180	Very dusky red (7.5YR 2.5/2) loamy clay, very fine to coarse crumb to granular structure
	IV	158-210	Dark brown (10YR 3/3) gravelly clay to decomposing bedrock

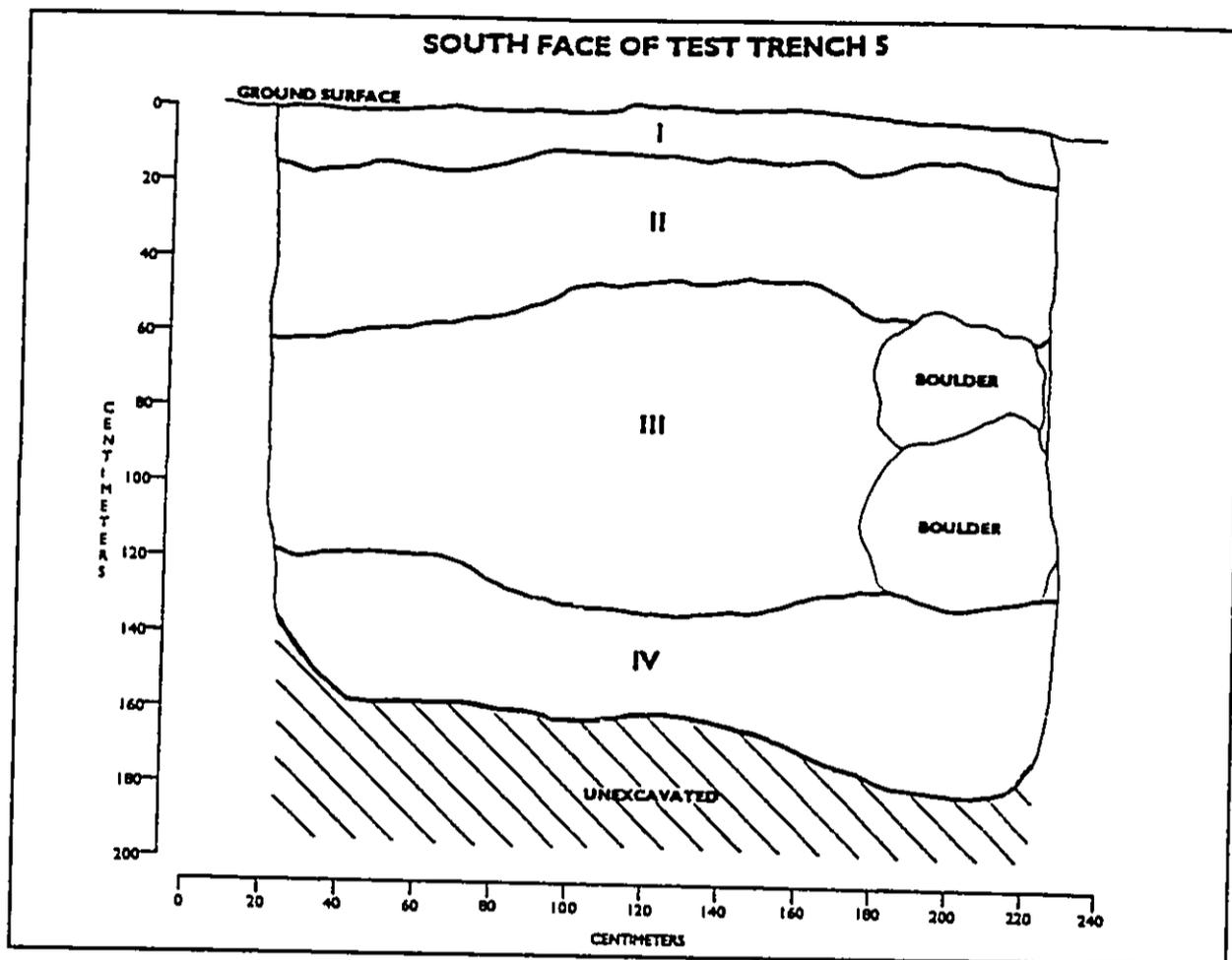


Figure 16. Typical Stratigraphic Profile for the Test Trenches

## ORAL INTERVIEWS

North Kohala is a special place to all of the people interviewed. This is quite evident as they talk about their lifestyle and their community and its people. All of them have lived in North Kohala for over 25 years and one of them has lived there for almost seventy years. They shared a little of what it was like living in this community, what they liked about it, and what they missed when they were away:

I thought nobody lived in Kohala, there was nothing there...then I went to visit some people and found it was green and beautiful and people were so nice, I'd never seen a community like this...my good friend was from here and she would always tell me how beautiful this place was, what nice people they have and how she loved this community, she loved Kohala...I never heard of anybody loving their community, so when I came here all the people talked about Kohala like that, there was this love that I've never heard from other people before, I mean you don't talk about loving Honolulu or Kalihi (C).

The air is so good, every time we go someplace we say, oh we've got to back to Kohala 'cause it's you know, we got to breathe some good air (A). I'd never seen

people who were so mixed because in Pauila in my generation you never married outside of your own ethnic group...in Kohala they inter-married, that's why I was so surprised, in my class we had thirty kids and only about five were multi-cultural and all of us were Hawaiian-Filipino. They [Filipinos] never married Japanese, the Chinese had left...the Japanese kept to themselves and it was unusual for an inter-marriage, especially with a Japanese. Here [in Kohala] it was so common (C).

Although they shared different memories about life in North Kohala, there was a theme common to their interviews. That theme was change, how North Kohala has changed, how attitudes have changed, and how lifestyles have changed. For over a century life in North Kohala evolved around the sugarcane industry. One interviewee grew up under its influence and witnessed first hand its effect and how it changed life in North Kohala:

I worked for the plantation for 31 years—Kohala Sugar Company—until they went out of business...I seen plenty changes all these years here in Kohala, from the days when they used to cut cane by hand till they had machinery, then the unions came in, different things took place as the machinery came into operation. The demands for higher wages got higher and higher, till finally that was the undoing of these sugar companies...the government were ceiling prices, coming in and telling you...the state put a price on how many dollars a ton you can sell your sugar for, so that undermined all the sugar companies too...but what they (government) were taking in from other places, no limit event till today, no limit what you can buy form other countries. But here, that's how we suffered too. So anyway all that is gone (B).

Two spoke about the effect on the people of North Kohala when the last sugar company ceased operation, one was philosophical about it:

When the plantation closed in '75 a lot of people left, sold their homes and moved out to other plantations, and others worked for the hotel...shocking news, plantation closed, seen grown men cry—what they going do now? 50 years old, who's going to hire them. All they know is poison. Who's going to hire somebody to go poison, who was out on the poison gang. What they going do now? Family, mortgage, all that kind stuff (D).

Once the thing closed down, things came different, the changes that took place. There was nothing anybody could do about it...you learned to accept it I guess, I mean what could we do? Nothing much...Plenty moved away, we had young men still working for the company when we closed down. A lot of them moved to Honolulu, moved to the mainland and so when the company closed down they took their parents with them too and most of those parents that had gone, lot of them *make* [died] already. So I don't think nothing you could do about all the changes that take place. Well throughout the world everywhere you went changes did take place, nothing stays the same (B).

The transition from a sugar-based economy to a tourist-based economy is seen as a blessing to the community of North Kohala for some, but not for others:

I guess they manage—work for the hotel. Lot of them went to work for the hotel, in fact maybe it was one of the best things that came into operation was the hotel because that took care of a lot of employment for lot of young people that are still here...some of us we couldn't [move] we had our own homes and we didn't want to go away, sell our house. But the children, let em...See we had five children, four of them live on the mainland because there's no employment for them over here. They go college, they don't want to come back and work for hotel, so they stay away (B).

People in this town most of them either have their own business or they work for the hotel. Most of them if they don't own a store or teach school or whatever, they work at the hotel (A).

Hotel—South Kohala, which is Kawaihae. You got quite a few hotels down there. Majority of them [people in Kohala] that [hotel]. Some service related jobs, a little bit agencies, Kohala Nursery, stores in town, the greatest part is the hotels. Thank goodness. At first when the hotels were built they were sitting around they didn't want that, but I tell you if it wasn't for that...When they started to build hotels I said heck with that—protest, public hearings and all that stuff. But you know now that I have a family, how fortunate we are cause these people, they can have a job. I know people that work hotel, are able to buy a lot, build a home, have a family and provide for their family. If it wasn't for that, oh geez, I don't know were I'd be (D).

There have also been several changes in the social milieu of North Kohala in the last twenty-five years:

More mainland people, there's been some old families whose maybe grandmother, grandfathers have lived here and they've been coming back, but very slow, not as much as the *haoles* have been really coming, but it's so pretty that's why...if they come and they're productive, that's fine, but when they come and want to change our lifestyle then that's a whole different story (A).

They call this "H" Town. I didn't know that until I talked to a friend of mine who's in his late 30's...he says I'm going to H-town. I said what's that? He said *haole* town. I said what's that? He said Hawi...so they call this *haole* town because all the owner's now which were once Japanese are all *haoles* (D).

One of the biggest changes was in attitudes, there's greed where there used to be conservation, there's intolerance where there used to be kindness, or politeness, or acceptance:

The whole attitude, like bridges—before people used to stop at the top of the hill and wait for you to come up and pass. Sometimes it would take a long time because the other person would wave for you to come on and you waving them to come on—it was so polite. Then because of tourist, they would rush through, so they put a line where to stop...and everybody just goes up to the line and so there wasn't that politeness...it's the law to stop here whereas before it was just the way it was—this kindness (C)

I was pounding *opihi* with this older guy and he was in front of me and he walked over this stone that was just loaded...with *opihi* but they small and he continued on. Then I looked down and I thought they're too small and I continued on. He turned and said how come you didn't pick that? I said too small. He said that's right and he went on. So he was observing me and teaching me something. But then there's another attitude I went with some people to catch crab and they were catching small ones. I guess they saw the look on my face...they said if you don't take em somebody else will...The old timers, I look at the old Hawaiian guys, everything was based on take what you needed, shame if you greedy. And I think immigration, labor, plantation days, the attitude was just take...the result is today—no more (D).

When asked about land use in the project area, only one had any knowledge about the old days:

I've been there and seen planes land when I was a kid in 1930's...saw them land, it was just regular grass, no pavement, then later on they began to pave that...there was no fields there...because I remember when the plantation began to increase their acreage with cane here in Kohala. There was no cane out there because it was

considered the dry area...all the cane out there had to be irrigated and so little by little when they increased their company, Kohala Sugar, see one time there was five, six companies in Kohala—mills, then they went out of business. Castle and Cooke began to buy them all out...when they began to go that way and plant cane the airport was there already. I saw them bulldoze grounds around the heiau, bulldoze the whole place and make rock piles, bury them...The Hawaiians lived along these whole coasts for centuries, you know what I mean. And they lived off the ocean, they lived off trading with the people who lived in the wet area, with taro and other things, [sweet] potatoes. So like I said when they bulldozed things there were a lot of things that they done—after all before you didn't have to have an environmental kind of statement—they just bulldozed what they want (B).

When asked about the ocean use in the project area, two of them were fishermen and had a lot to say about resources and access to fishing grounds:

Oh yeah ever since we came in '71, a lot of fish. First time I went pound *opihi* with my friend...in half an hour we maybe moved no more than fifty feet area, we had maybe about a gallon...enough, went home. Didn't take us long...The airport was never a problem for the guys I went diving with...there's a road that goes along the coast there behind the airfield, where the planes were coming above it and it never bothered any of us...different [with] ranchers, we don't have the access they have so that's curtailed, but there's ways to get in, the locals they get in, hop the fence, walk, we kayak...if you really want to go you walk, but it makes the walk worth while... Get back to the whales, sometimes I get really concerned, you know at one time they want to stop fishing when the whales are there. I think gee people are more important—my fellow fishermen, their families. They never bothered the whales they just fishing...It's [the airport] never ever interfered with the fishing and maybe it's a concern as part of this master plan if it stays that way and wouldn't interfere with the access, fine and well. But I don't know sometimes the State they get kind of funny, liability all that, start closing up roads, cannot go here, restricted, so many feet, but as far as I know this airport road was in service...we always went diving and fishing cause the coastline is away from the airfield (D).

All the time I went, all the time. We used to go diving out there all the time for fish and squid and everything else—rich ground over there for fish...in fact when I was working, every time the plantation had no work for us, sometimes it rains out we would go down and go fish over there cause it was always—sometimes it rains up here but it doesn't rain in that area, so we go down there and go fishing (B).

All four people felt re-opening the airport to commercial activity would be an asset to the community as it would be much more convenient, time efficient, and less expensive:

Upolu Airport was very good for us, we go over there and then we fly anywhere out to Honolulu or someplace then later on they built Waimea Airport, before the close this airport down. And Hawaiian all those would fly out form Waimea. Then as progress went on then they made Keahole, then they close that [Waimea] down, now we have to go all the way to Kona to catch the airplane, you know what I mean?...all the way out there and that's extra expenses, the more they do that kind is more we have to pay...maybe it's progress for somebody, but not for us I'll say that...Well for one thing is the government going to keep that airport open I mean for emergencies like that, just wondering if planes coming over and they had trouble they could always land over there but if you close...med-i-vac they can go over there. Sometimes it would be so simple to just get over here and get on that (B).

Well I think that's great because Kona is so far away, it's such a drag, you know but then you leave your car over there [Upolu] and no security at night and now that things like I say reality has changed, before you could leave things unlocked and they were safe and now you leave things unlocked or leave things somewhere and you don't know what's going to happen to it...like there's so much theft at Pololu...They should just develop down there...Housing, yeah I would feel safer to me if they had houses down there [airport access road] because it's a long road down there and they have nothing (C)

Oh yeah, I think it would...I think it would be nice to have something there because right now we just have Kona and that's so far if there's an emergency we have to go all the way to Kona and that would take a whole hour to get over there. If they could just ah...I think they still land in Waimea, but not ah...maybe ah med-i-vac or something I'm not quite sure, but ah I think that airport is still operating but over here it's kind of...gone...they've let it go...Yeah well, I would like to see you know, because it's paved, maybe tennis courts or someplace for the kids to skateboard. I like to see some kind of recreation facility to be built there because we really need it. We only have Kam Park which is a beautiful edifice, but it's just not enough room for everybody. You know the tennis courts are always full and there's always some baseball game or something going on there because the senior citizens are quite active which is really good thing then in the back the veterans did a soccer field which is you know really nice, but it's just not enough room—we just need more room for other things. I worry about the teenagers those are the ones I worry about the most because they just need to have someplace where they can go do something (A).

Well for me it was when Royal Hawaiian Airlines was flying ah was convenient. Waimea was good, but then it gets fogged in. Nothing like driving 15-20 minutes down to Upolu and catching a plane, to me it was like very convenient. Costs was a little bit higher, but you know to drive, like my son goes to Kamehameha and we always drive him down and pick him up. That's a long drive, it's a very long drive to Kona airport yeah and then you gotta pay parking, and you know it's like Honolulu. Upolu is no...oh you leave your car all day no problem, it was very convenient (D).

## SIGNIFICANCE EVALUATIONS

The resources encountered during the field phase of the current project are assessed for their significance based on criteria established and promoted by the DLNR-SHPD and contained in draft Hawaii Administrative Rules 13§13-276, dated 1996. These significance evaluations should be considered as preliminary until DLNR-SHPD provides concurrence. For resources to be considered significant they must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

- (1) Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;
- (2) Criterion "b". Be associated with the lives of persons important in our past;
- (3) Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- (4) Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history;
- (5) Criterion "e". Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional 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.

### **HISTORIC IRRIGATION SYSTEM**

The earthen ditch that bisects the western portion of the study area is a minor construction most likely associated with a unsuccessful agricultural endeavor of the Hawi Mill & Plantation Company, and is not considered to meet the significance criteria. Following collapse of the Hawi Mill & Plantation Company into the Kohala Sugar Company in the 1930s, and the subsequent expansion of the irrigated cane fields in the 1940s, a portable irrigation system was used on a portion of the current study area. In the presumed forty to fifty years since these portable irrigation lines were placed and abandoned, they have been subject to a variety of destructive forces such that their integrity has been severely altered. Further, there are no inherent characteristics of these resources that meet any of the significance criteria listed above. Therefore, these portable irrigation lines are also considered to be of no significance.

### **HISTORIC STRUCTURAL REMAINS**

The complex of features surrounding and including the small concrete structure no longer retains its integrity, having been substantially demolished and dismantled in the forty to fifty years subsequent to construction. If in fact this complex was part of the Upolu Point Military Reservation compound, as suspected, then that association has also been destroyed, as the compound no longer exists. Thus, this complex of features is not considered to be significant.

## **SUMMARY**

An archaeological inventory survey was conducted on land adjacent to the Upolu Airport in North Kohala on the island of Hawaii. The project included archival research, surface reconnaissance of the entire study area, and limited subsurface testing. Oral interviews were also conducted to ascertain information about possible traditional cultural uses of the study area. The archival research provided the contexts for interpreting and assessing any identified cultural resources. The surface survey revealed the presence of two sets of Historic Period features. Both were most likely the results of activities in the area in the mid-twentieth century, and neither is considered to be a significant resource (Table 5). No subsurface material was encountered during the backhoe testing.

**Table 5. Summary and Significance of Recorded Resources**

Resource	Possible Association/Date	Condition	Significance
Historic Period Irrigation System (Earthen Ditch)	Hawi Mill & Plantation Company/1920s	Partially Disturbed	None
Historic Period Irrigation System (Waialua Flumes)	Kohala Sugar Company/1940s and 50s	Substantially Disturbed	None
Historic Period Structural Remains	Upolu Military Reservation/1940s and 50s	Substantially Disturbed	None

Four oral interviews were conducted with informants from North Kohala; none of the interviewees was aware of any traditional cultural use of the project area. Although the sampling strategy for the oral interviews was non-random and by nature did not make for a representative cross-section of the local population, one cannot help but feel that any upgrade and resumed commercial use of Upolu Airport would be welcomed by the North Kohala community.

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