

JAMES "KIMO" APANA  
Mayor

CHARLES JENCKS  
Director

DAVID C. GOODE  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT  
LAND USE AND CODES ADMINISTRATION  
250 SOUTH HIGH STREET  
WAILUKU, MAUI, HAWAII 96793

RALPH M. NAGAMINE, L.S., P.E.  
Land Use and Codes Administration

RONALD R. RISKA, P.E.  
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.  
Engineering Division

ANDREW M. HIROSE  
Solid Waste Division

BRIAN HASHIRO, P.E.  
Highways Division

December 8, 2000

DEC 13 11:11  
OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

Genevieve Salmonson, Director  
Office of Environmental Quality Control  
Department of Health  
STATE OF HAWAII  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

SUBJECT: MF-21 SUBDIVISION  
LAND COURT APPLICATION 1804  
TMK:(2) 2-1-023:001  
LUCA FILE NO. 2.2586

Dear Ms. Salmonson:

In accordance with the provisions of Chapter 343, Hawaii Revised Statutes and Title 11, Chapter 200 of the Administrative Rules of the State Department of Health, a Final Environmental Assessment (EA) has been prepared for the proposed project.

As the approving agency, the County of Maui, Department of Public Works and Waste Management, has determined that there will be no significant impacts as a result of the proposed action and is filing a Finding of No Significant Impact (FONSI). ✓

Enclosed are one (1) copy of the OEQC Publication form and four (4) copies of the Final EA. In addition, please be advised that the Project Summary will be separately transmitted to the OEQC via e-mail. We respectfully request that notice of the availability of the Final EA be published in the next edition of the Environmental Notice.

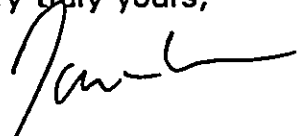
146

Genevieve Salmonson, Director  
SUBJECT: MF-21 SUBDIVISION  
LAND COURT APPLICATION 1804  
LUCA FILE NO. 2.2586

December 8, 2000  
Page 2 of 2

If you have any questions regarding this letter, please call Mr. Glen Ueno of our  
Land Use and Codes Administration at (808) 270-7379.

Very truly yours,



DAVID C. GOODE  
Director of Public Works  
And Waste Management

Enclosures

GAU S:\LUCA\ALL\SUBD\LUCASUBD\REG\2\2586.1.ee

147

installation of water meters and system utilities, sewer system, and grading of an existing depression to be used as a retention basin. Grading of the lots will not be incorporated into the proposed subdivision. Erosion control measures and best management practices will be implemented during the construction period to minimize soil loss and erosion hazards. A detailed grading and erosion control plan will be prepared and submitted to the County of Maui, Department of Public Works for approval. An application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health for review and approval.

#### **B. Drainage System**

Onsite runoff will be allowed to flow toward the west per the existing condition. Existing depressions along Keoneio Makena Road will be incorporated into the overall drainage plan to prevent any change to the existing runoff scheme. Existing on-site runoff has been estimated at 35.4 cfs based on a 50 Yr-1 Hr storm recurrence interval. Post-development runoff for the 50 Yr-1 Hr storm recurrence interval is calculated at 40.1 cfs respectively. This increase of 4.7 cfs will be routed into and controlled by the retention basin (existing depressions) described above.

Offsite runoff will be allowed to flow through existing drainageways within and through the property, per the existing condition. Refer to Appendix A, Exhibit 3: Proposed Drainage System Improvements and Appendix B: Hydrology Calculations for figures.

Hydrology figures for on-site and off-site drainage basins with areas of less than 100 acres are determined by the Rational Method as described in the "Rules for the Design of storm Drainage Facilities in the County of Maui", dated November 1995. Hydrology calculations for drainage basins with areas of 100 acres or greater, are calculated using the Natural Resources Conservations Service (NRCS) Hydrograph Method based on a storm recurrence interval of 100 Yr-24 Hr.

### C. Water System

Currently, there are no water utilities existing on the site. Water service to lots 325-G through 325-D will be provided by water meters connected to an existing 12" waterline within the Keoneoio Makena Road right of way. The remaining three lots (325-A through 325-C) along the eastern boundary of the project site will be serviced via installation of a waterline within Makena Alanui to run parallel with an existing 30" water transmission main. The line will join waterlines at the Keoneoio Makena Road and Makena Alanui intersection to the waterline running in Kaukahi Street. The proposed water line will consist of an 8" ductile iron waterline along the east of the subdivision and reduced to a 4" ductile iron line between the proposed subdivision and Kaukahi Street. A gap in the water line between Kaukahi Street and Keoneoio Makena Road will also be closed as part of the improvements for this subdivision. Average daily demand for the proposed subdivision is estimated at approximately 30,920 gallons per day (gpd). Refer to Appendix A, Exhibit 4: Proposed Water System Improvements and Appendix C: Preliminary Water Demand Calculations.

### D. Sewer System

A new sewer system will be installed within the project site to provide sewer service to the seven lots. This proposed sewer system will be connected to a sewer system in the neighboring Palauea Subdivision, TMK: (2) 2-1-23:002 situated to the north. Wastewater flow for the subdivision amounts to approximately 4,900 gallons per day (gpd). Refer to Appendix A, Exhibit 5: Proposed Sewer System Improvements and Appendix D: Preliminary Wastewater Flow Calculations. Refer to Appendix A, Exhibit 3: Proposed Sewer System Improvements and Appendix D: Preliminary Wastewater Flow Calculations.



**E. Roadway Improvements**

Access to the 7 lots of the proposed subdivision will be provided by the existing roadways bounding the property. Lots 325-A through 325-C will be accessed via Makena Alanui running along the east of the property. Lots 325-D through 325-G will be accessed via Keoneoio Makena Road on the western border. There will be no roadways within the subdivision.

**F. Electrical Improvements**

Existing electrical facilities are suspended on utility poles along the project site's western boundary. Electrical improvements proposed for this subdivision include relocating the existing electrical facilities below ground and providing service to each of the 7 subdivision lots. These relocated facilities will remain within the county right of way in Keoneoio-Makena.

**V. CONCLUSION**

The proposed improvements for this subdivision will be designed to produce no adverse effects to existing facilities and to the downstream as well as surrounding environment. All improvements will be designed in accordance with the applicable regulatory agencies.

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## APPENDICES

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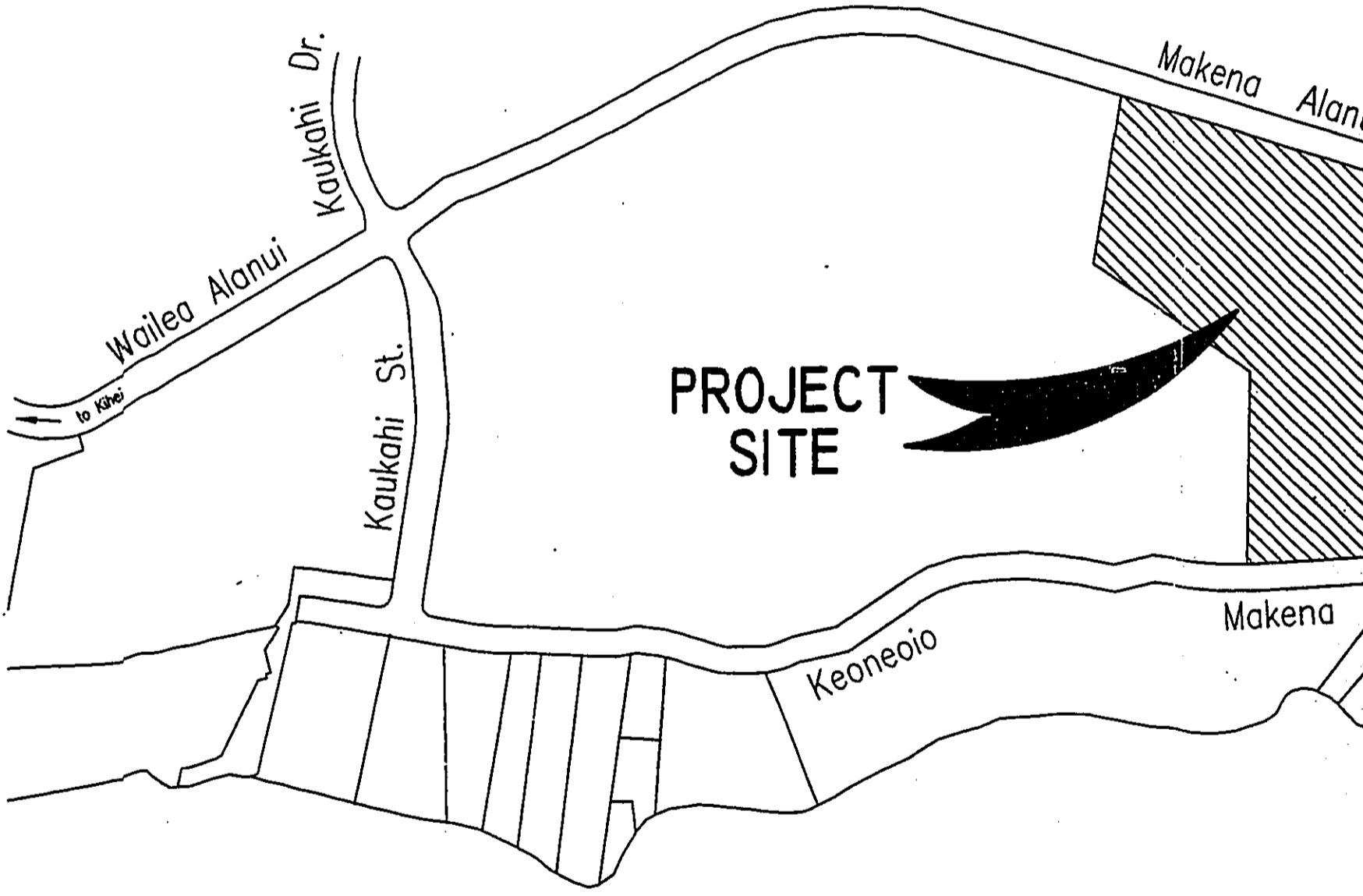
AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS

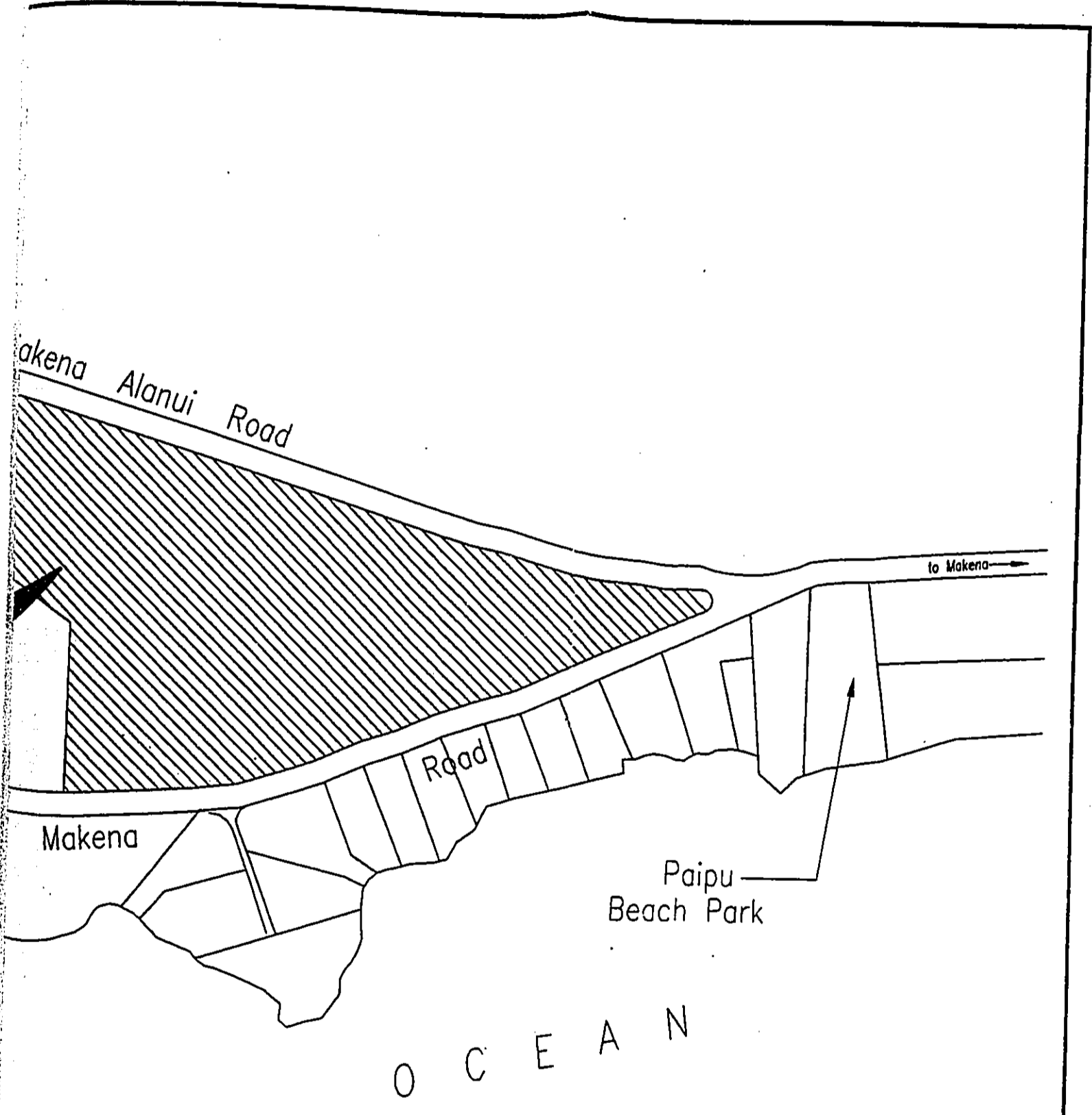
## **APPENDIX A**

### **EXHIBITS**



TRUE NORTH  
NOT TO SCALE





**PRELIMINARY ENGINEERING REPORT  
FOR  
MF-21 SUBDIVISION  
PALAUEA, MAKAWAO, MAUI, HAWAII**

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII

**EXHIBIT**  
**2**

**VICINITY MAP**

NEW 4" DUCTILE  
IRON WATERLINE

CONNECTION TO EXISTING  
12" WATER LINE

WATERLINE  
REDUCER

SINGLE SERVICE  
WATER LATERAL  
(TYPICAL)

NEW 8" D  
IRON WAT

LOT 318

PALAUUA INVESTORS, LLC  
TMK: (2) 2-1-23: 002

LOT 325-A  
1.233 AC

PALAUUA SUBDIVISION  
(BY OTHERS)

LOT 325-  
1.12 AC

STREET

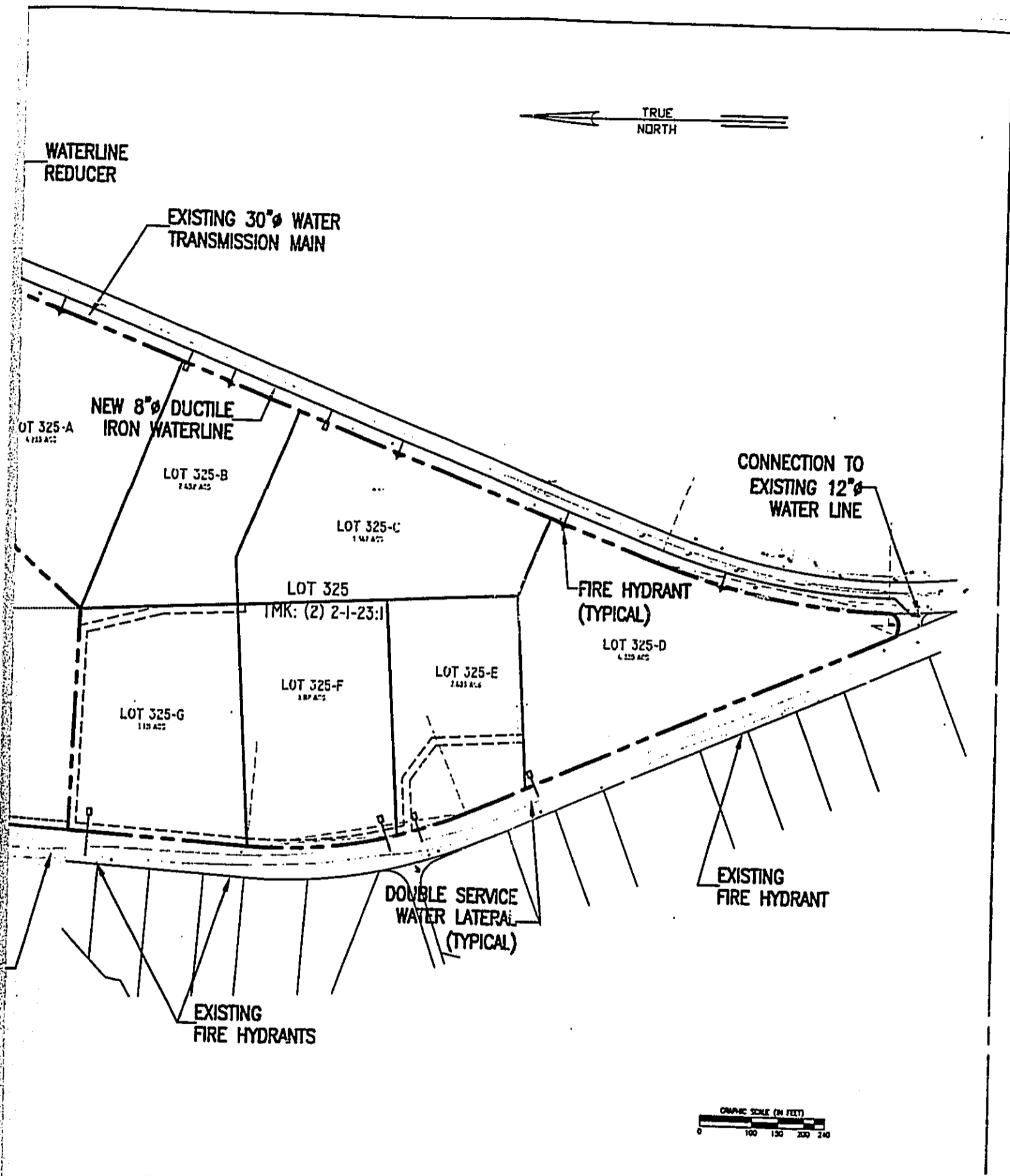
KAUKAHI

MAKENA

KEONEOIO

EXISTING 12"  
WATERLINE

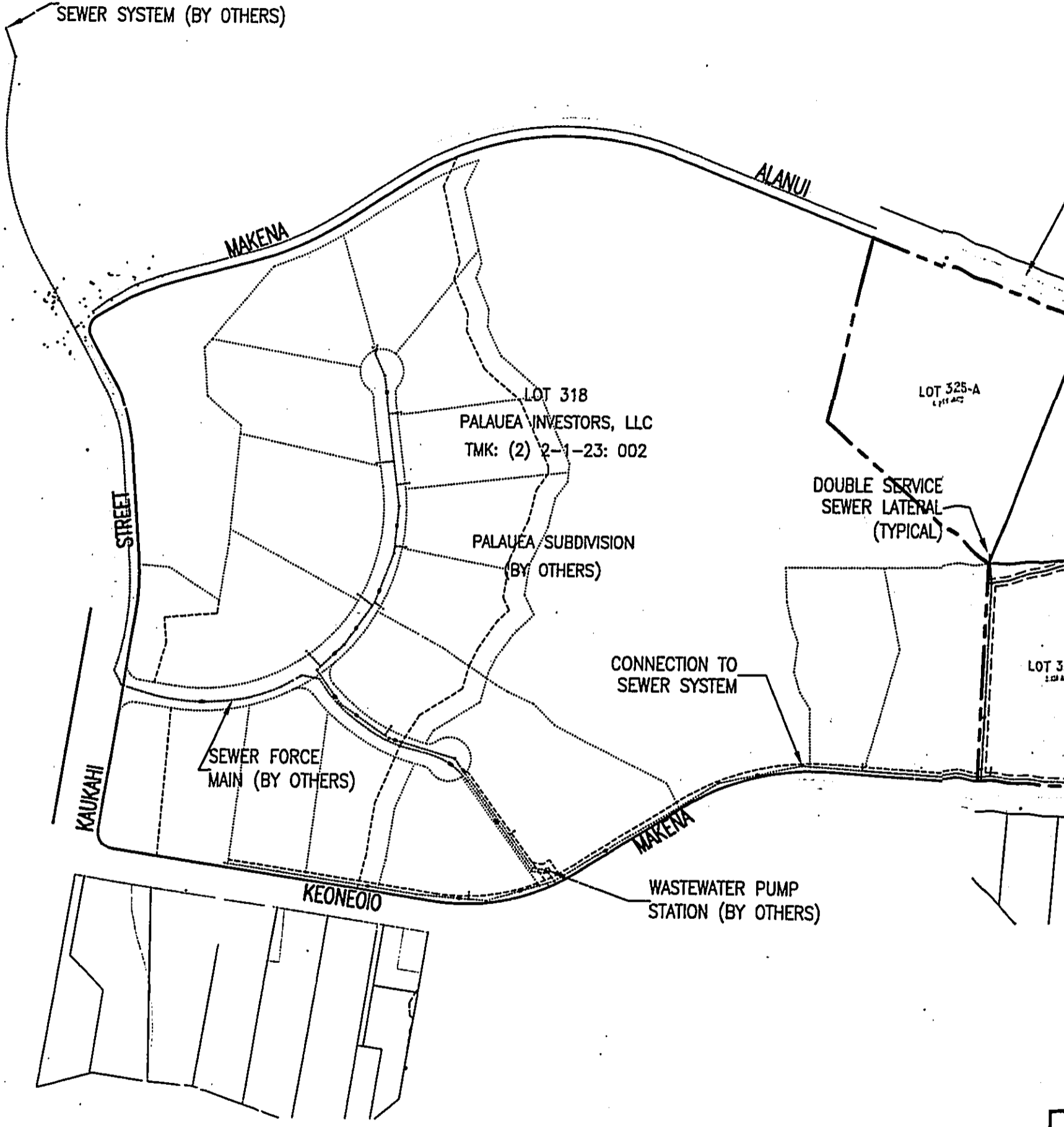
INSTALLATION OF 12" D  
DUCTILE IRON WATERLINE

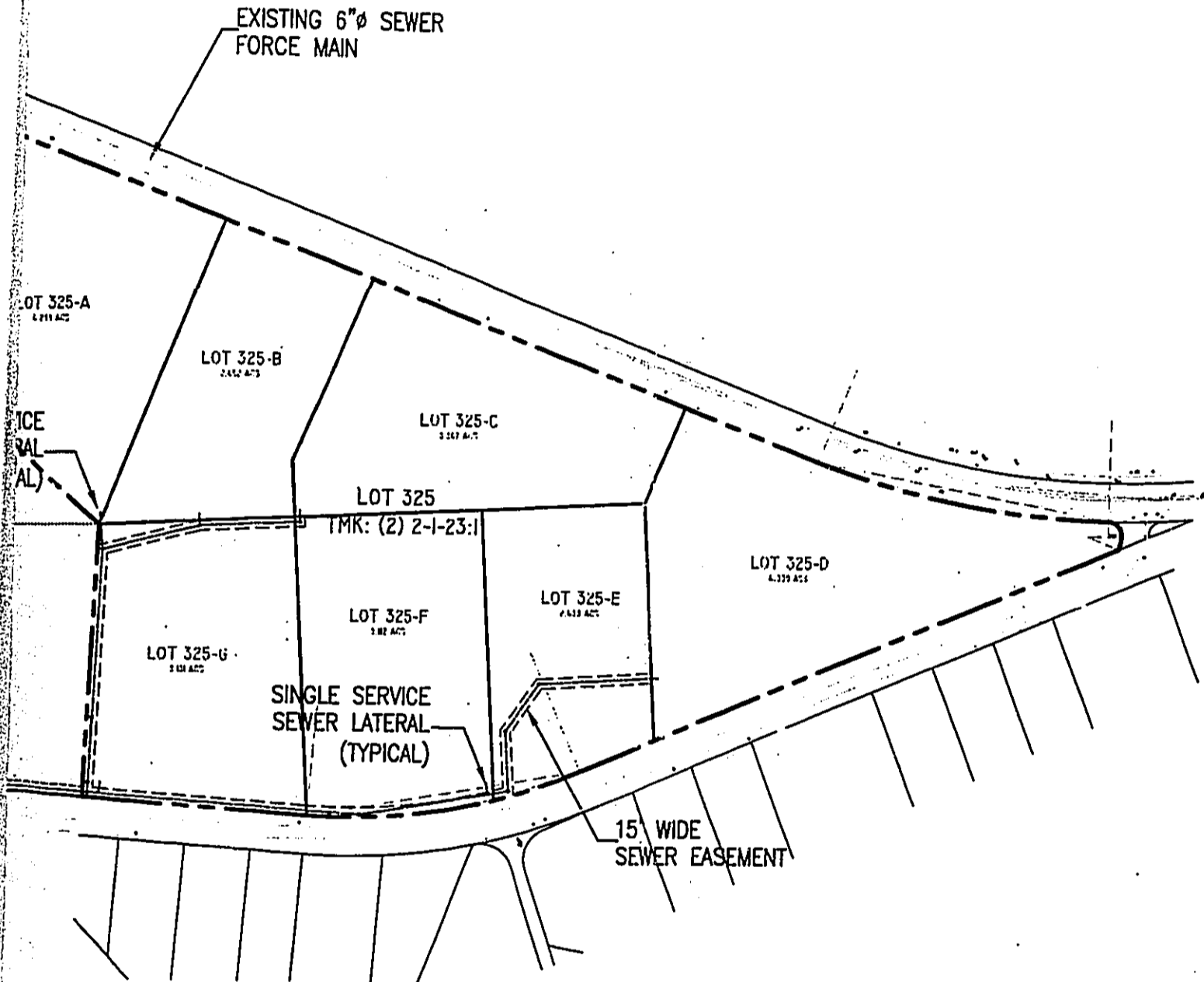


<p><b>PRELIMINARY ENGINEERING REPORT FOR MF-21 SUBDIVISION PALAUEA, MAKAWAO, MAUI, HAWAII</b></p>	<p><b>ATA AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC.</b> ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII</p> <p><b>PROPOSED WATER SYSTEM IMPROVEMENTS</b></p>	<p><b>EXHIBIT</b></p> <p><b>3</b></p>
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CONNECTION TO EXISTING  
SEWER SYSTEM (BY OTHERS)



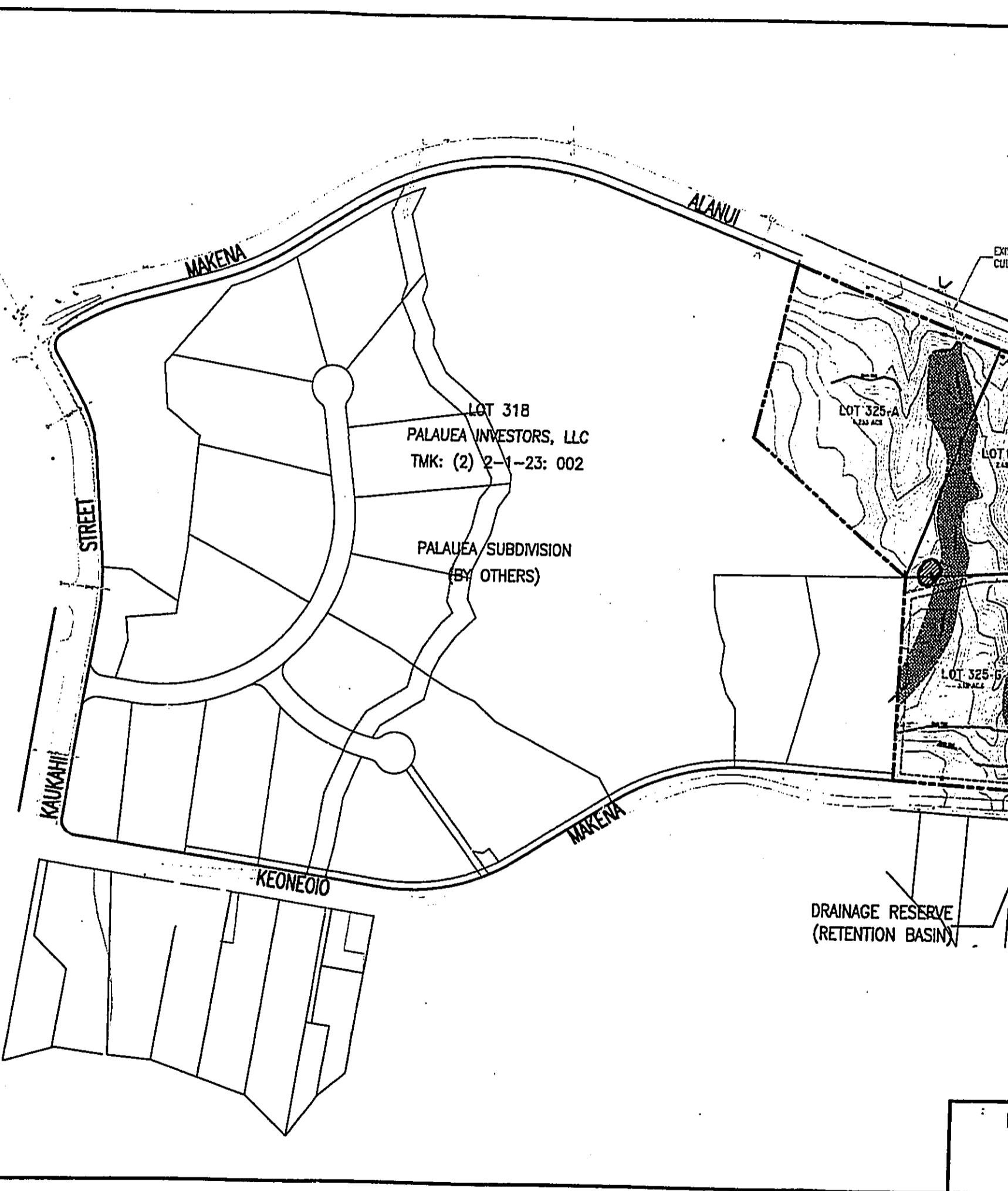


PRELIMINARY ENGINEERING REPORT  
FOR  
MF-21 SUBDIVISION  
PALAUEA, MAKAWAO, MAUI, HAWAII

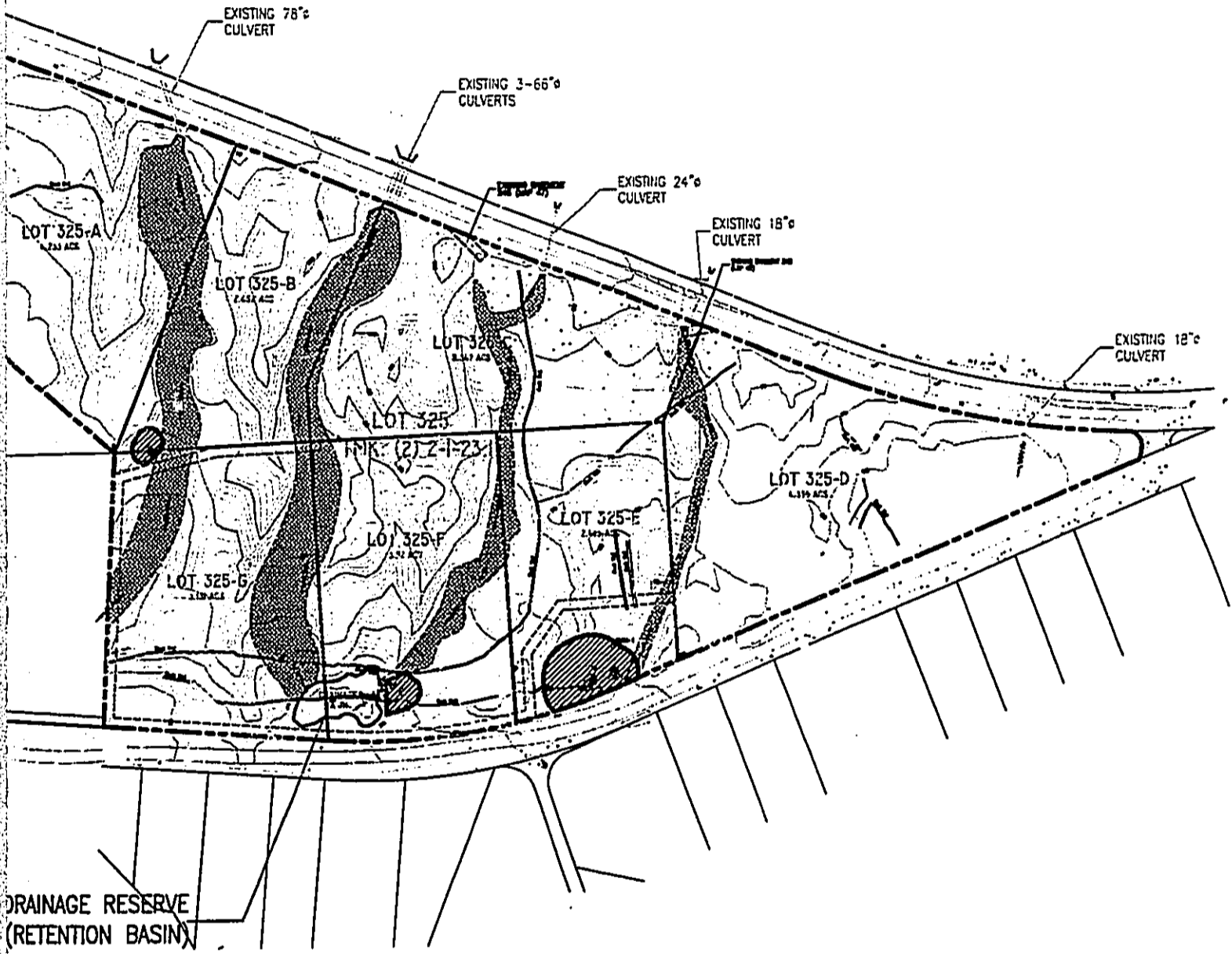
ATA AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAHUKU, HAWAII

PROPOSED SEWER SYSTEM IMPROVEMENTS

EXHIBIT  
4



TRUE NORTH  
SCALE: 1" = 240'



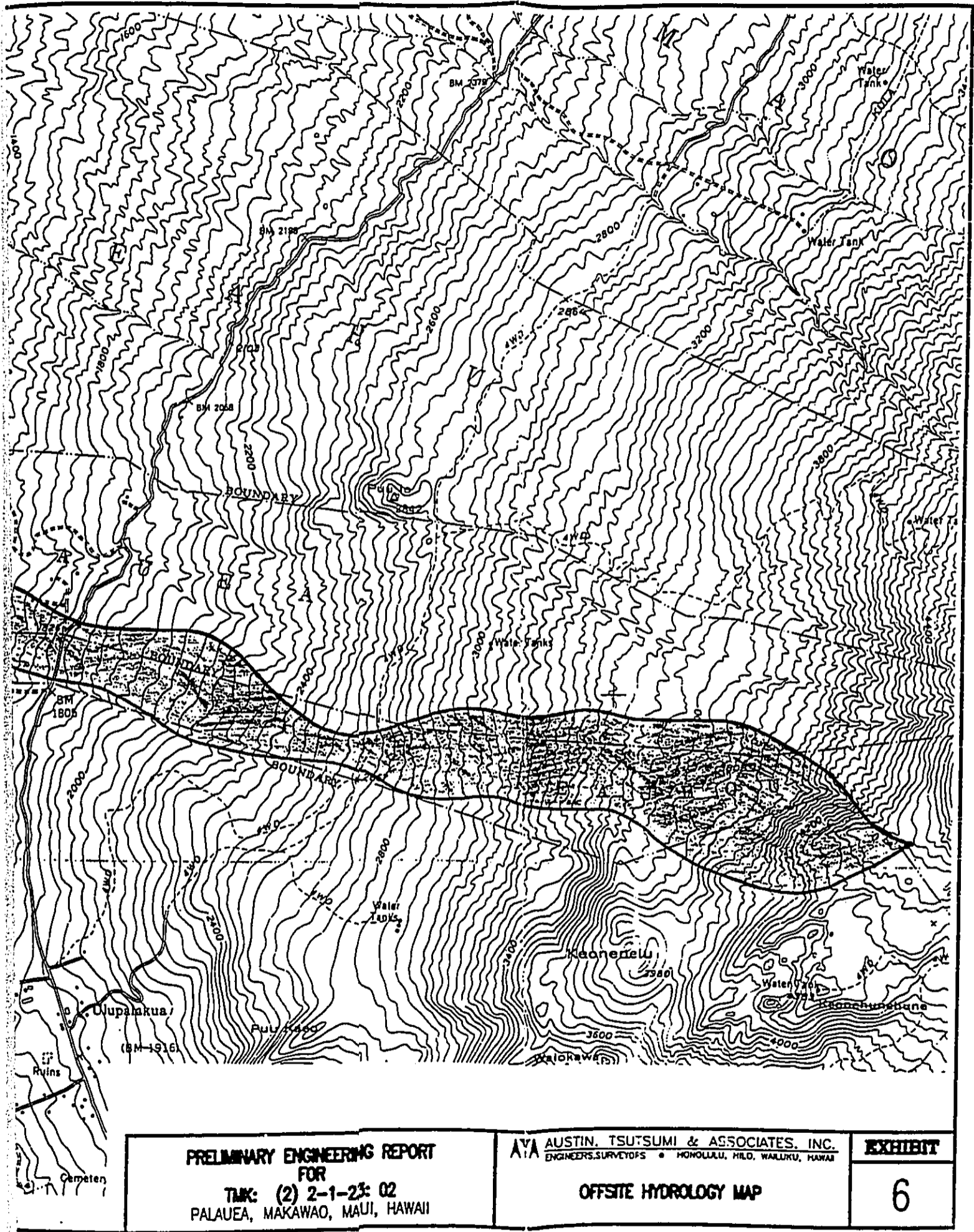
PRELIMINARY ENGINEERING REPORT  
FOR  
MF-21 SUBDIVISION  
PALAUEA, MAKAWAO, MAUI, HAWAII

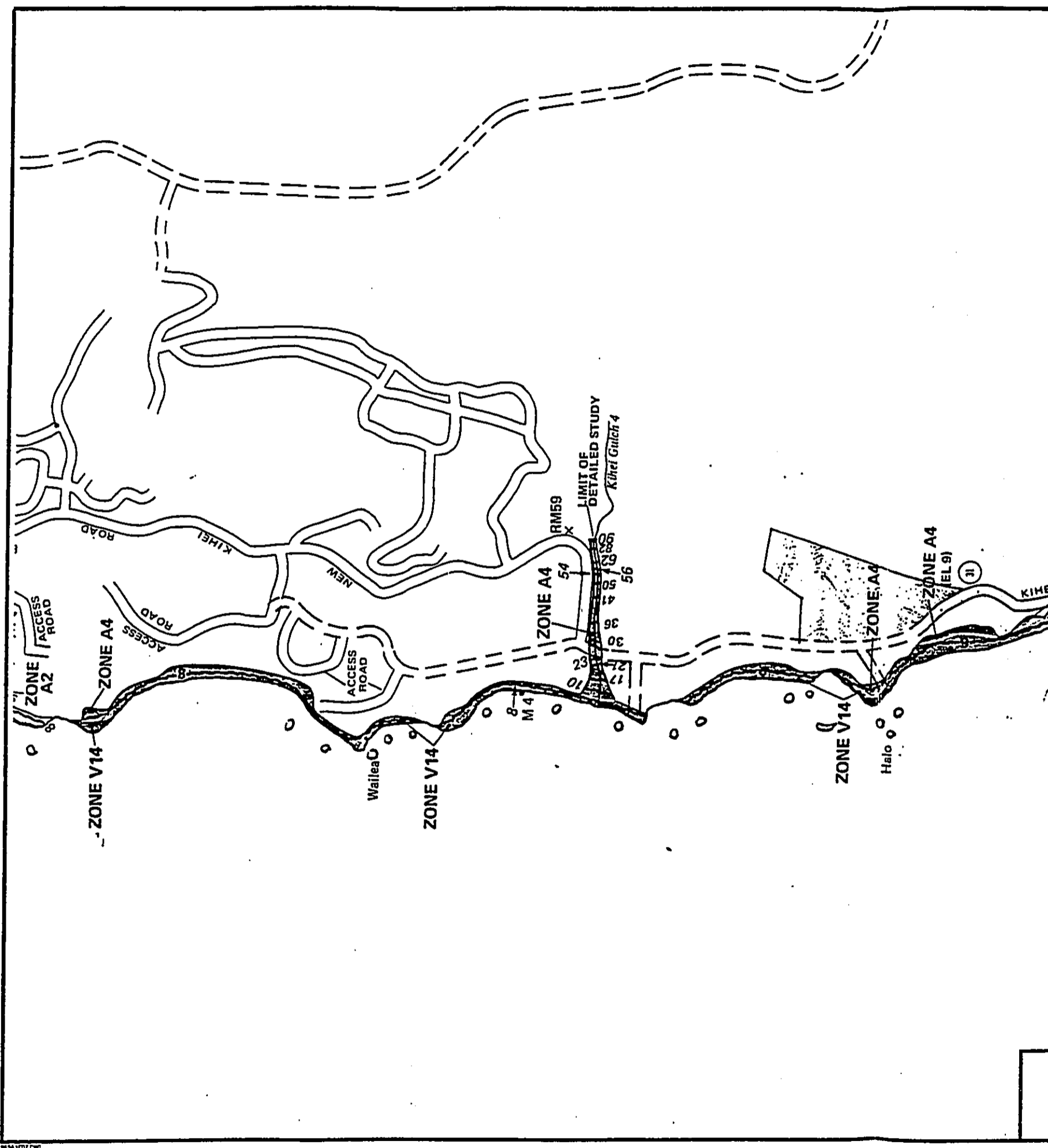
ATA AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII

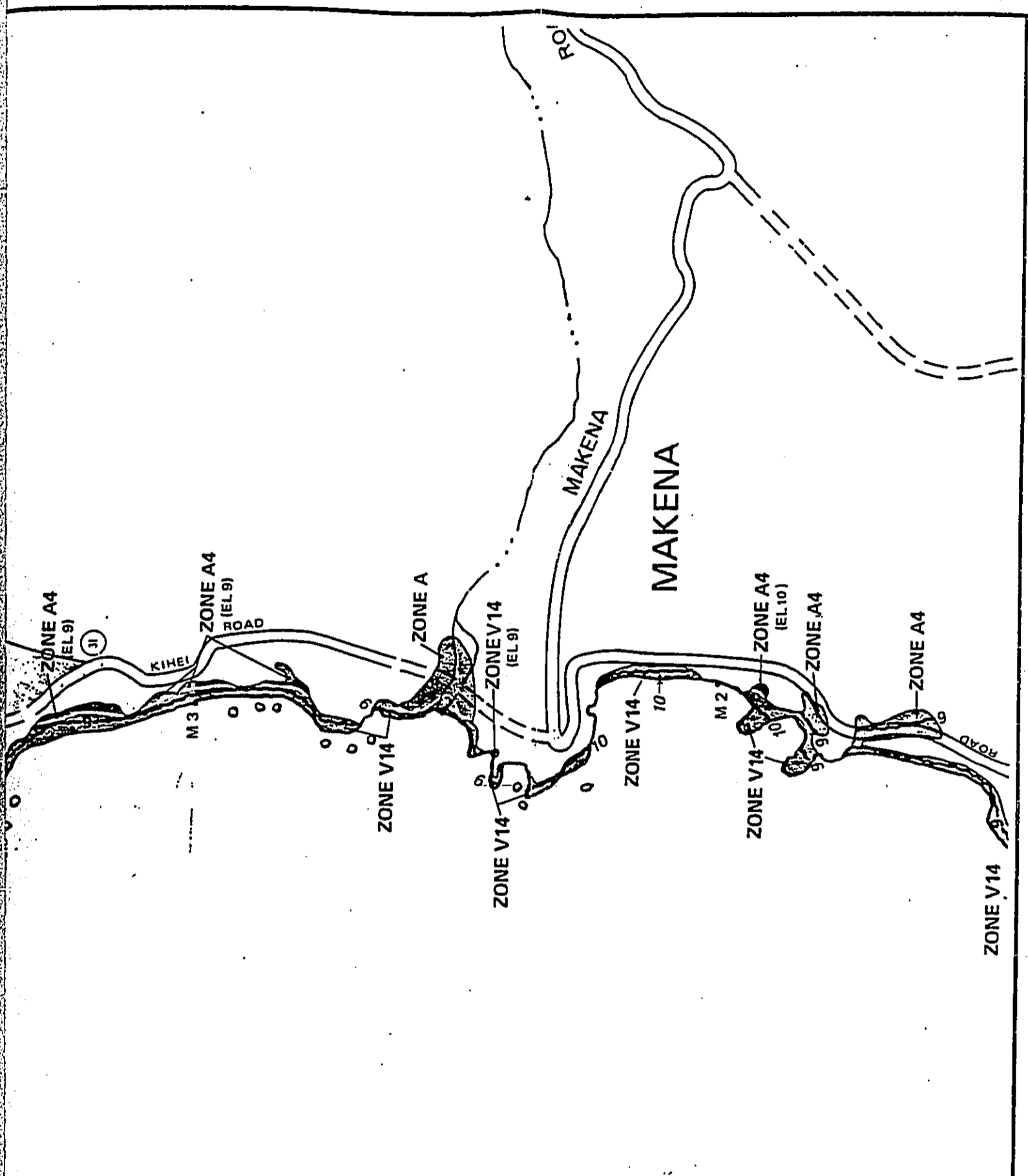
PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

EXHIBIT  
5







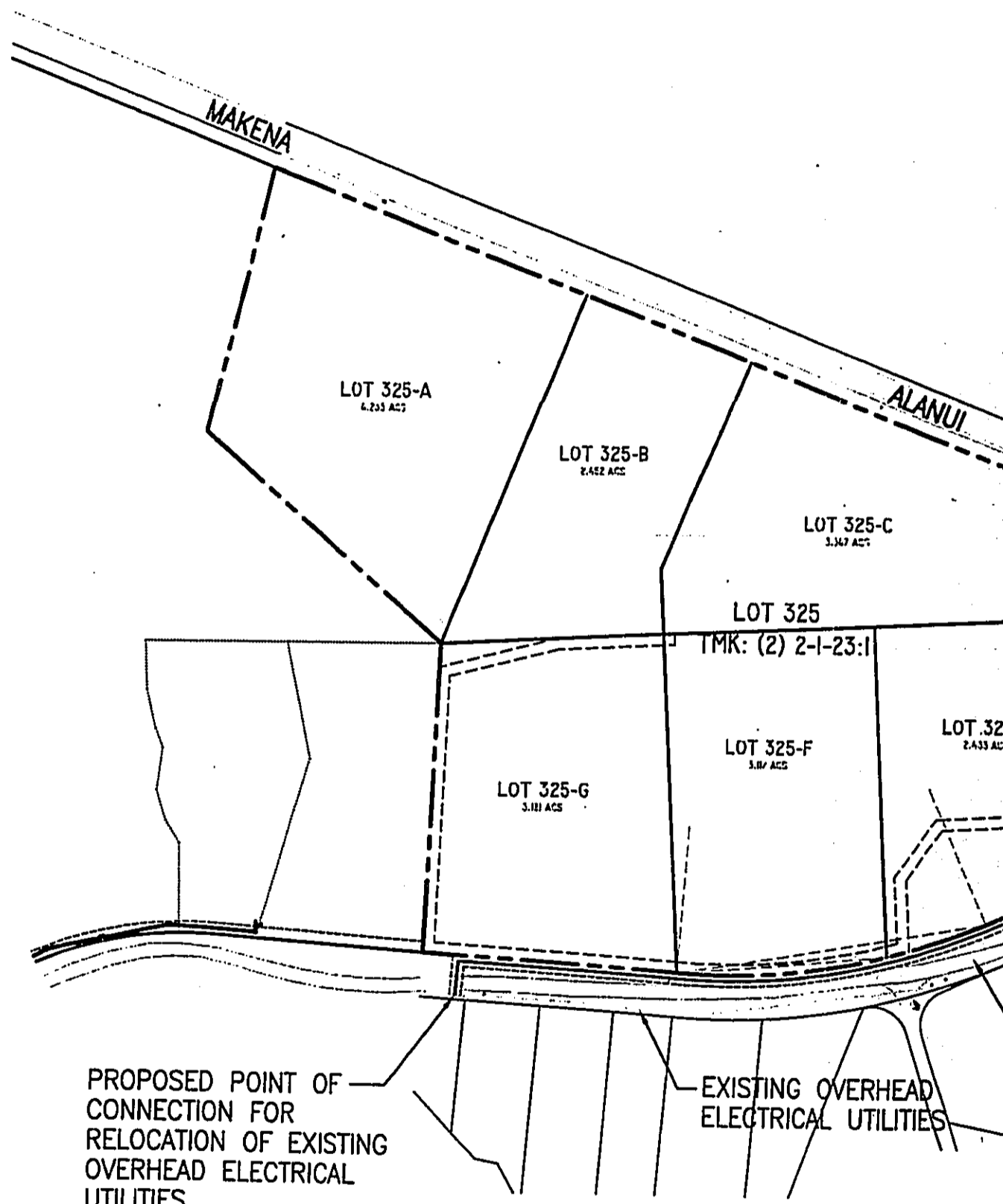


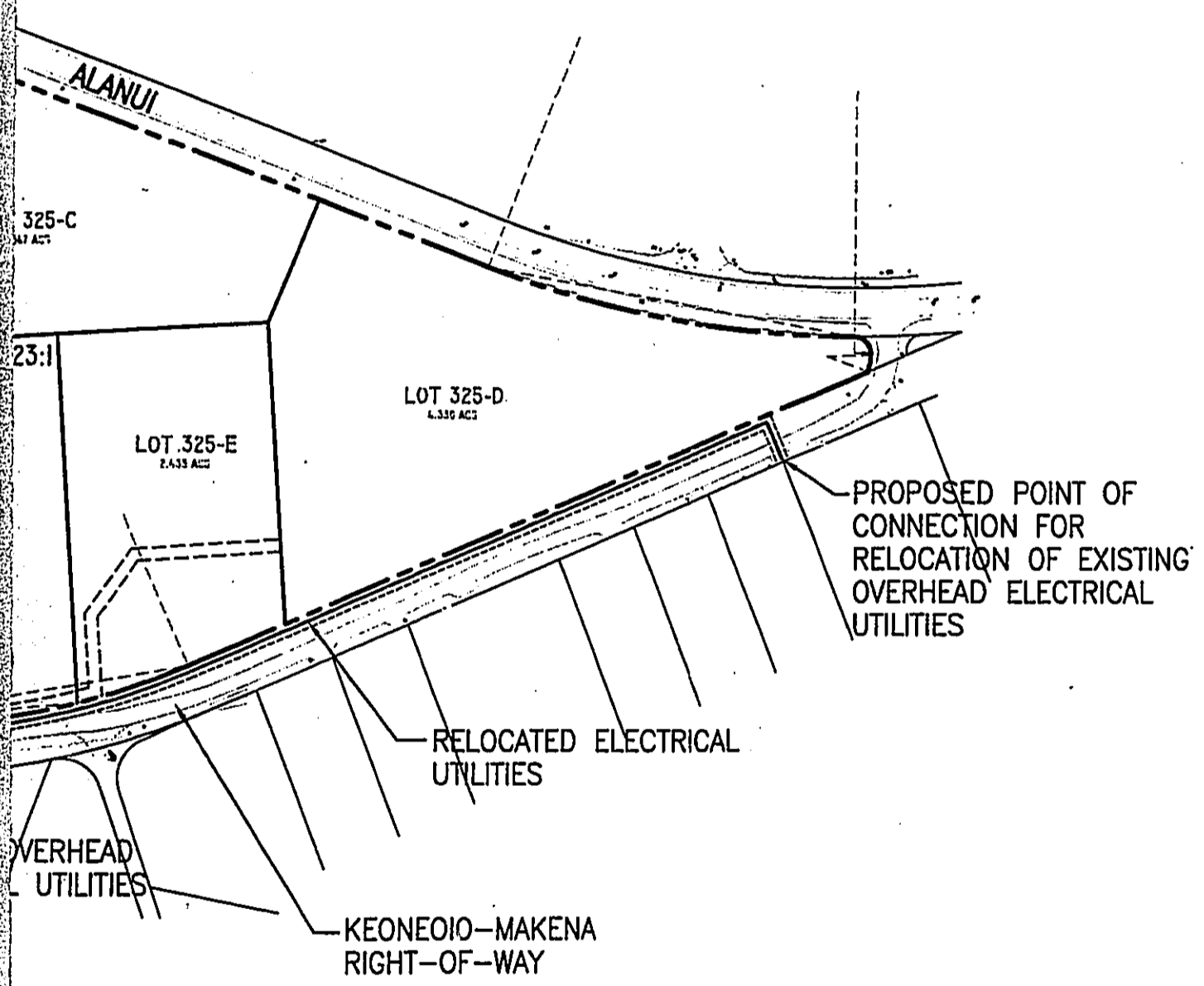
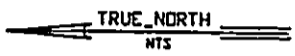
**PRELIMINARY ENGINEERING REPORT**  
**FOR**  
**PALAUUA SUBDIVISION**  
 PALAUUA, MAKAWAO, MAUI, HAWAII

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
 ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII  
**FLOOD ZONE**

**EXHIBIT**  
**7**







**PRELIMINARY ENGINEERING REPORT**  
**FOR**  
**TMK: (2) 2-1-23: 02**  
**PALAUUA, MAKAWAO, MAUI, HAWAII**

**AYA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAHUKU, HAWAII  
**PROPOSED ELECTRICAL IMPROVEMENTS**

**EXHIBIT**  
**8**



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CIVIL ENGINEERS • SURVEYORS

## APPENDIX B

# PRELIMINARY HYDROLOGY CALCULATIONS

**EXISTING ON-SITE HYDROLOGY CALCULATIONS**  
(Storm Recurrence Interval:  $T_m = 50 \text{ Yr} - 1 \text{ Hr}$ )

**Project Site Description:**

**Runoff Coefficient (c)**

Site description: A'a type rock groundcover  
Scattering of overgrown dry brush, and kiawe trees  
Project site is void of any improvements

$$c = 0.30$$

**Area (a)**

$$a = 23.103 \text{ acres}$$

**Rainfall Intensity (i)**

Recurrence Interval: 50 Yr - 1 Hr = 2.5 inches

Average site slope: 9.5%

Longest reach length: approximately 950 feet

Time of concentration: 9 minutes

$$i = 5.1 \text{ inches / hour}$$

**Runoff (Q)**

$$Q = c \times i \times a$$

Q = discharge, in cubic feet per second (cfs)

c = runoff coefficient

i = rainfall intensity, inches per hour

a = watershed area, in acres

$$Q_{50} = (0.30)(23.103 \text{ acres})(5.1 \text{ inches / hour})$$

$$= 35.35 \text{ cfs}$$

Reference: Rules for the Design of Storm Drainage Facilities in the County of Maui  
Department of Public Works and Waste Management, County of Maui, 1995

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00



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**POST-DEVELOPMENT ON-SITE HYDROLOGY CALCULATIONS**  
(Storm Recurrence Interval:  $T_m = 50\text{Yr} - 1\text{Hr}$ )

**Project Site Description:**

**Runoff Coefficient (c)**

**Assumptions:**

- 2 House per Lot (Main: 7,500 sf and Cottage: 1,000 sf)
- 300' long driveway (12' wide)
- Major drainageways to remain unimproved
- Remainder of area to be landscaped (2%-9% slopes)

<u>Area (acs)</u>	<u>c</u>	<u>Description</u>
1.366	0.95	Roofs, . . . .
0.579	0.95	Driveways, . . .
1.194	0.30	Unimproved areas
19.961	0.285	Landscaping

$$c = \frac{1.366(0.95) + 0.579(0.95) + 1.194(0.30) + 19.961(0.285)}{23.103} = 0.34$$

$c = 0.34$

**Area (a)**

$a = 23.103$  acres

**Rainfall Intensity (i)**

Recurrence Interval: 50 Yr - 1 Hr = 2.5 inches

Average site slope: 9.5%

Longest reach length: approximately 950 feet

Time of concentration: 9 minutes

$i = 5.1$  inches / hour

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00 [1 of 2]



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**POST-DEVELOPMENT ON-SITE HYDROLOGY CALCULATIONS (Continued)**

**Runoff (Q)**

$$Q = c \times i \times a$$

Q = discharge, in cubic feet per second (cfs)

c = runoff coefficient

i = rainfall intensity, inches per hour

a = watershed area, in acres

$$Q = (0.34)(23.103 \text{ acres})(5.1 \text{ inches / hour})$$

$$= 40.1 \text{ cfs}$$

Reference: Rules for the Design of Storm Drainage Facilities in the County of Maui  
Department of Public Works and Waste Management, County of Maui, 1995

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00 [2 of 2]



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INFLOW OUTFLOW SUMMARY  
FOR  
MF-21 PALAUEA SUBDIVISION  
LOT 325

Pre-Development Information

Runoff (cfs): 35.35  
Tc (min): 9

Results: PASSED

Min Storage Requirement (cfs): 2,143.3  
Min Storage Req'd w/ FS (cf) : 4,286.6  
Additional Available Storage (cf): 2511.4  
Adjusted Factor of Safety: 3.2

Post-Development Information

Runoff (cfs): 40.10  
Tc (min): 9

Basin Information

Use Basin Sizing Info. (Y/N): N  
Storage Available (cfs): 6,798.0  
Required Factor of Safety: 2

Available Storage Used  
In Calculations:

**6,798.0**





Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)  
 Copyright 1989, Streamline Technologies, Inc.

100 YEAR FLOOD ANALYSIS  
 9/17/1999

BASIN NAME	DL-SET-A	DL-SET-B	
NODE NAME	DL-SET-A	DL-SET-B	
UNIT HYDROGRAPH	UH484	UH484	
PEAKING FACTOR	484.	484.	
RAINFALL FILE	SCSI-24	SCSI-24	
RAIN AMOUNT (in)	10.00	10.00	
STORM DURATION (hrs)	24.00	24.00	
AREA (ac)	164.00	783.00	
CURVE NUMBER	69.00	69.00	
DCIA (%)	.00	.00	
TC (mins)	92.00	201.00	
LAG TIME (hrs)	.00	.00	
BASIN STATUS	OFFSITE	OFFSITE	
BASIN QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
DL-SET-A	227.44	10.84	6.07 INTO EXISTING 78" DRAINLINE
DL-SET-B	686.84	12.25	6.09 INTO EXISTING 3-66" DRAINLINES



AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS

**APPENDIX C**  
**PRELIMINARY WATER DEMAND**  
**CALCULATIONS**



## PRELIMINARY WATER DEMAND CALCULATIONS

### Project Site Description

Single Family Residential  
7 Residential lots (2 units per lot)  
23.103 acre project site

### Average Daily Demand

Single Family Residential: 600 gallons / unit<sup>1</sup>

### (1) Domestic Water Demand Calculation

$$14 \text{ units} \left( \frac{600 \text{ gallons}}{\text{unit} \cdot \text{day}} \right) = 8400 \text{ gpd}$$

### (2) Irrigation Water Demand (Perimeter Landscaping)

78,000 sf for perimeter landscaping requiring approximately 6,000 gpd.<sup>2</sup>

### (3) Irrigation Water Demand (Interior Landscaping)

#### Assumptions

1. 1 acre of each lot will be developed, the remainder of each lot to remain undeveloped. Each developed area will include dwellings, driveways, and landscaping.
2. 3 gallons / 800 sf / min (20 minutes per cycle, 1 cycle / day).<sup>3</sup>

#### Calculations

7.000 acres of all lots to be developed  
-1.366 acres (dwellings)  
-0.579 acres (driveways)  
5.055 acres = 220,196 sf (to be landscaped)

$$\frac{300 \text{ gallons}}{800 \text{ sf} \cdot \text{min}} = \frac{.075 \text{ gpd}}{\text{sf}}$$

$$\frac{.075 \text{ gpd}}{\text{sf}} (220,196 \text{ sf}) = 16,514.7 \text{ gpd}$$

Approximately, 16,520 gpd required for interior landscaping

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 8/7/00 [1 of 2]

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**Average Daily Demand**

8,400 gpd	Domestic use
6,000 gpd	Irrigation purposes (Perimeter)
<u>16,520 gpd</u>	Irrigation purposes (Interior)
<b>30,920 gpd</b>	<b>Total Site</b>

**Reference:**

- <sup>1</sup>Table 15, Water System Standards, Department of Water Supply, County of Maui, 1985 and as amended  
<sup>2</sup>Estimate for Perimeter Landscaping Water Demands provided by Chris Hart and Partners  
<sup>3</sup>Estimate of average water demand for established landscaping provided by Chris Hart and Partners

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 8/7/00 [2 of 2]



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## **APPENDIX D**

# **PRELIMINARY WASTEWATER FLOW CALCULATIONS**

## PRELIMINARY WASTEWATER CONTRIBUTION CALCULATIONS

### Project Site Description:

Number of Residence Lots: 7  
Wastewater Contribution: 350 gallons / day / home

### Assumptions:

2 Homes per Residence Lot (1 Main House & 1 Cottage)

### Wastewater Contribution Calculation:

$$14 \text{ homes} \left( \frac{350 \text{ gallons}}{\text{day} \cdot \text{home}} \right) = 4,900 \text{ gpd}$$

**Average Daily Wastewater Contribution = 4,900 gpd**

Reference: Wastewater Flow Standards  
Wastewater Reclamation Division, County of Maui, 1993

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Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00



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# ***Appendix D***

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***Traffic Study for  
MF-21 Site***



TED I. YAMAGUCHI PE, FASCE  
 KENNETH A. KURCKAWA PE  
 DONOHUE M. FUJII PE  
 STANLEY T. NATANIABE  
 TERUAKI S. ANASHIRO, PE  
 VERNA S. YIPE

#99-063

November 2, 1999

Mr. Eric S. Taniguchi, AIA  
 Project Coordinator  
 Pacific Rim Land Incorporated  
 P.O. Box 220  
 Kihei, Maui, Hawaii 96753

Dear Mr. Taniguchi:

Subject: Traffic Study for MF-21 Site,  
 Wailea, Maui, Hawaii

This letter documents the findings of the traffic study for the development of a seven (7) lot agricultural subdivision on 23.14 acres known as MF-21 in Wailea, Maui. The site is more specifically identified as TMK: 2-1-23:1. Figure 1 shows the location of MF-21.

A Traffic Impact Analysis Report (TIAR) dated October 1997, prepared by Austin, Tsutsumi & Associates, Inc., documented the impacts for the revised Wailea Master Plan, which included traffic generated by the MF-21 site. The October 1997 TIAR assumed that the MF-21 site would be developed as a 130 unit residential condo development.

Current plans call for the MF-21 site to be developed as a seven (7) lot agricultural subdivision. Vehicular trips generated were calculated by applying trip generation rates contained in "Trip Generation, 6th Edition" from the Institute of Transportation Engineers, (ITE), 1991. Table 1 shows the trip rates and Table 2 shows the vehicular trips generated by the proposed seven (7) lot agricultural subdivision. Tables 1 and Table 2 also show the trip rates and vehicular trips generated by the MF-21 site contained in the October 1997 TIAR for the Revised Wailea Master Plan.

Table 1 Trip Rates	Average Weekday	AM Peak Hour		PM Peak Hour	
	Daily Trip Rate	Trip Rate	% Enter	Trip Rate	% Enter
Single Family Detached Housing ITE Code 210 (per dwelling unit)	9.57	0.86	25	1.14	64
Residential Condo/ Townhouse (per dwelling unit)	5.86	0.44	17	0.55	66





Mr. Eric S. Taniguchi, AIA  
Project Coordinator  
Pacific Rim Land Incorporated

November 2, 1999

Table 2 Peak Hour Trips	Average Weekday	AM Peak Hour		PM Peak Hour	
	(veh)	ENTER	EXIT	ENTER	EXIT
7 Lot Agricultural Subdivision	67	1	5	5	3
130 Unit Residential Condo	814	11	52	51	25

The estimated total peak hour traffic volume generated by the proposed seven (7) lot subdivision is six (6) trips during the AM peak hour of traffic and eight (8) trips during the PM peak hour of traffic. These volumes, which are less than the 100-trip threshold for which the ITE recommends the preparation of a traffic impact report, are not measurable in determining the impacts on the adjacent roadways. These volumes fall within the day-to-day variations in traffic flow during the peak hours of traffic.

Therefore, we conclude that the adjacent roadways will not be significantly impacted by traffic generated by the seven (7) lot agricultural subdivision.

Should you have any questions, please feel free to contact us.

Very truly yours,

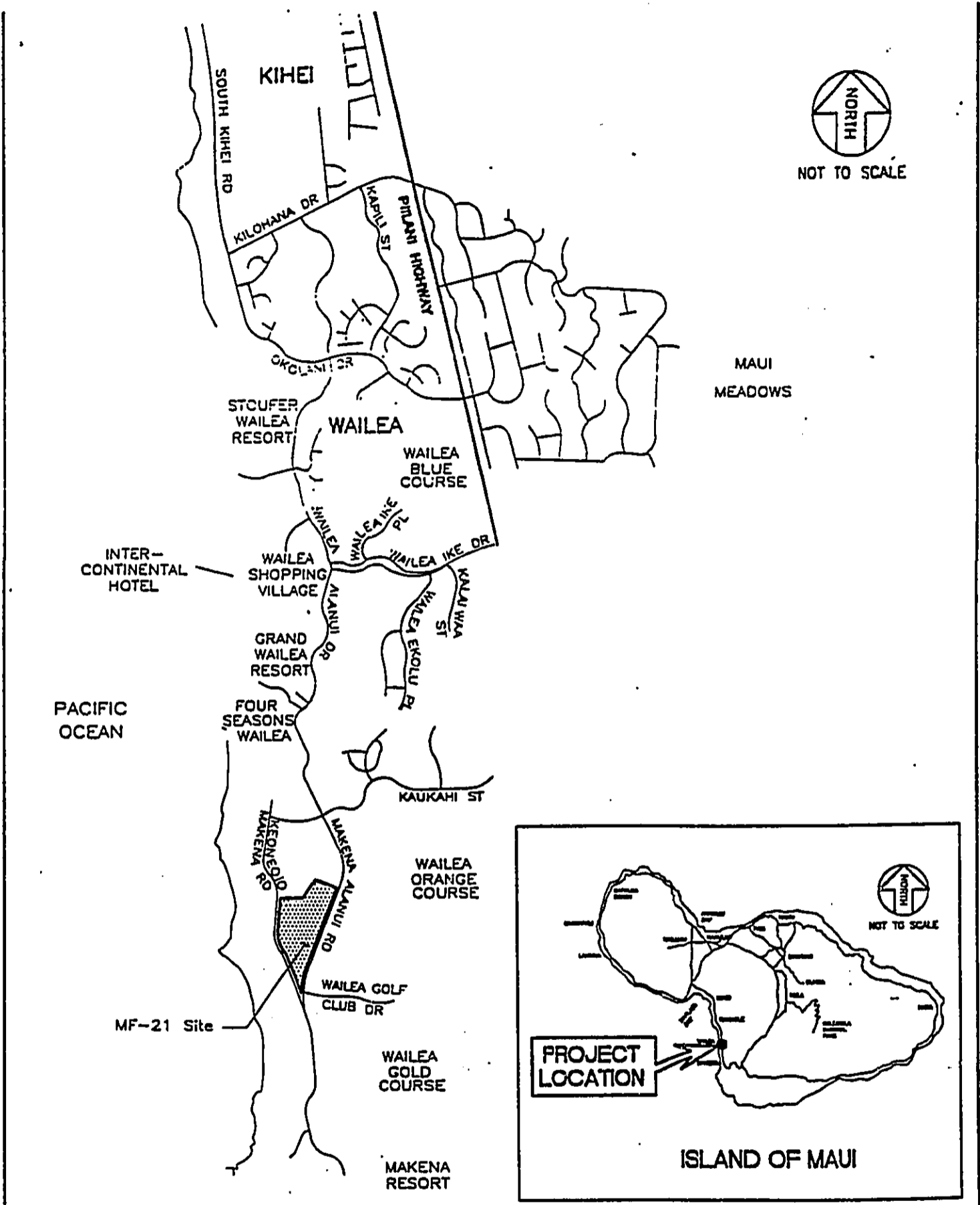
AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By *Ted S. Kawahigashi*  
TED S. KAWAHIGASHI, P.E., FACEC  
President

TSK:KKN:svd

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WAILEA RESORT

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS HONOLULU, HAWAII

FIGURE

VICINITY MAP

1

**END**

**CERTIFICATION**

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Sammy Yeshimura

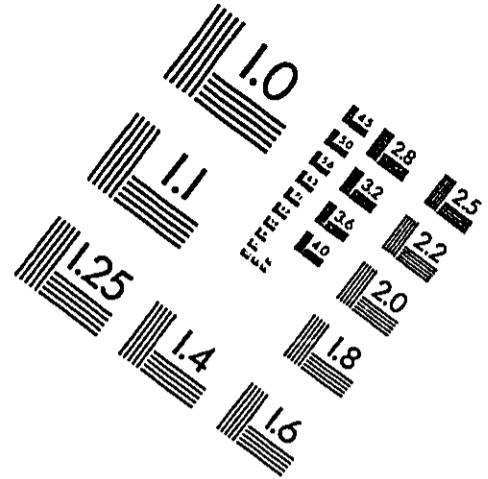
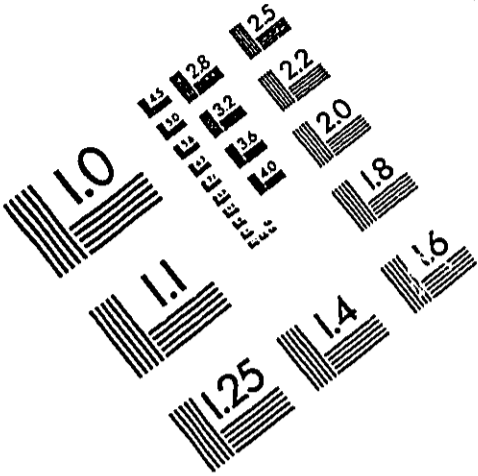
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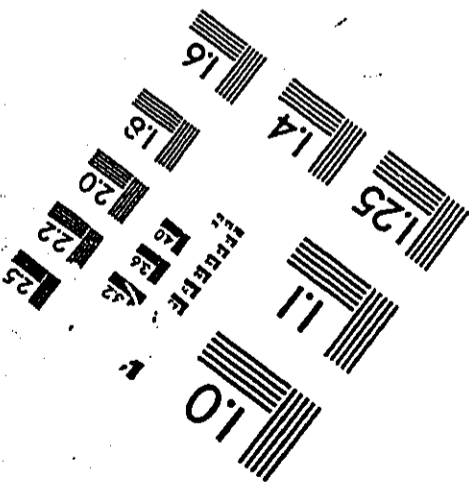
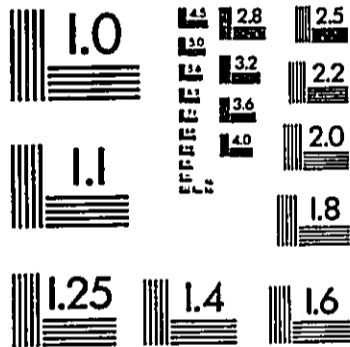
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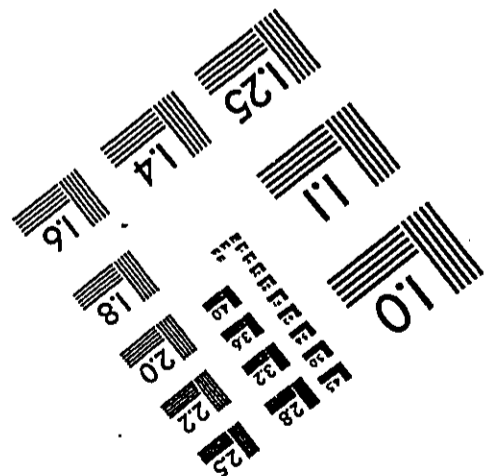
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Subdivision

***Final***  
***Environmental Assessment***

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**SUBDIVISION OF  
PARCEL MF-21**

Prepared for:

December 2000

Lucky Seven Development, LLC

MUNEKIYO, ARAKAWA & HIRAGA, INC.

*Final*  
*Environmental Assessment*

---

**SUBDIVISION OF  
PARCEL MF-21**

Prepared for:

December 2000

Lucky Seven Development, LLC

  
MUNEKIYO ARAKAWA & KIRABA, INC.

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B	Archaeological Inventory Survey of Parcel MF-21
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B-3	Archaeological Preservation Plan
C	Preliminary Engineering Report
D	Traffic Study for MF-21 Site

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**Preface**

The applicant, Lucky Seven Development, LLC, proposes the development of a seven (7) lot subdivision and related improvements at Palauea, Maui. Identified by TMK 2-1-23: 01, the proposed subdivision will encompass an area of approximately 23.1 acres and involve the creation of seven (7) agricultural lots ranging in size from 2.4 to 4.3 acres.

Since the proposed action involves the use of County lands (roadway rights-of-way) for the installation of new utility lines, an Environmental Assessment (EA) has been prepared as required by Chapter 343, Hawaii Revised Statutes, to document the proposed action's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the project.

# ***Chapter 1***

---

## ***Project Overview***

## **I. PROJECT OVERVIEW**

### **A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP**

The applicant, Lucky Seven Development, LLC, proposes to subdivide a 23.1-acre parcel identified by TMK 2-1-23:01 to create seven (7) agricultural lots at Palauea, Maui, Hawaii. See Figure 1. TMK 2-3-23:01 is also identified as parcel MF-21 on Wailea Resort Company, Ltd.'s master plan.

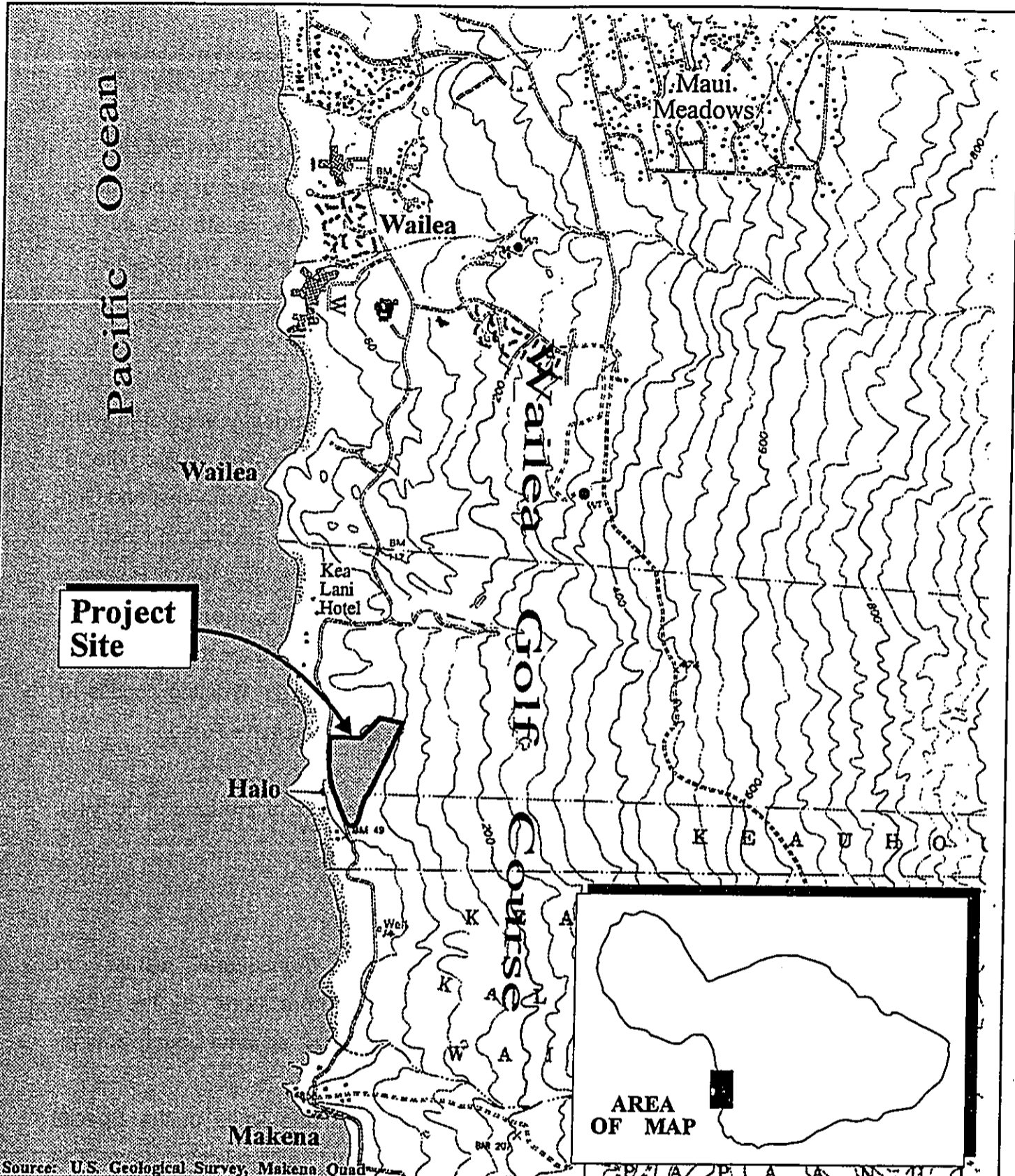
The MF-21 site is currently undeveloped and is primarily vegetated with kiawe, koa haole, buffel grass and annual weeds. The project site is bordered by two (2) County roadways, Makena Alanui to the east and Old Makena Road (aka, Keoneoio Makena Road) to the south and west, as well as a vacant, undeveloped parcel to the north (the future Palauea Subdivision) which is designated Project District 8 by the Kihei-Makena Community Plan. The Wailea Emerald Golf Course is located to the east of the parcel, across Makena Alanui. See Figure 2. Existing access to the site is provided by Makena Alanui and Old Makena Road.

JHR 23 Investment, LLC is the fee-simple owner of the land underlying the subject property.

### **B. REGULATORY CONTEXT**

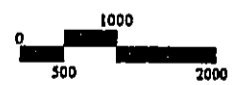
The subject property falls within the State "Agricultural" district. In addition, the subject parcel is designated "Agriculture" by the Kihei-Makena Community Plan, as well as "Agricultural" by Maui County zoning.

Since the subject property is entirely within the limits of the Special Management Area (SMA) for the island of Maui, an application for a SMA Use Permit has been prepared for review and approval by the Maui Planning Commission.



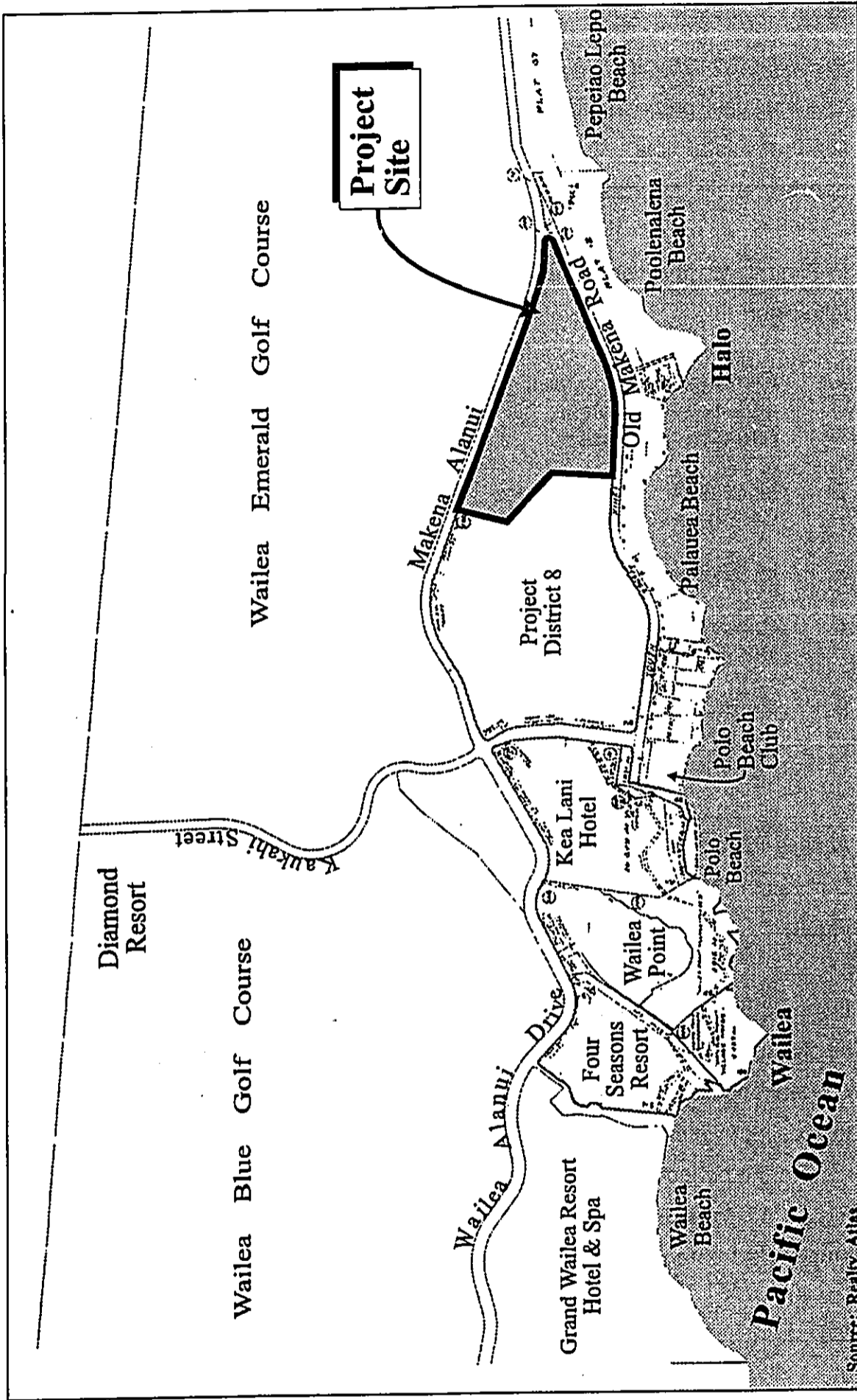
Source: U.S. Geological Survey, Makena Quad

**Figure 1**      **Subdivision of Parcel MF-21**  
**Regional Location Map**



MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: Lucky Seven Development, LLC



NOT TO SCALE

## Subdivision of Parcel MF-21

### Site Location Map



Prepared for: Lucky Seven Development, LLC



MUNEKIYO ARAKAWA & HIRAGA, INC.



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**C. PROPOSED DEVELOPMENT**

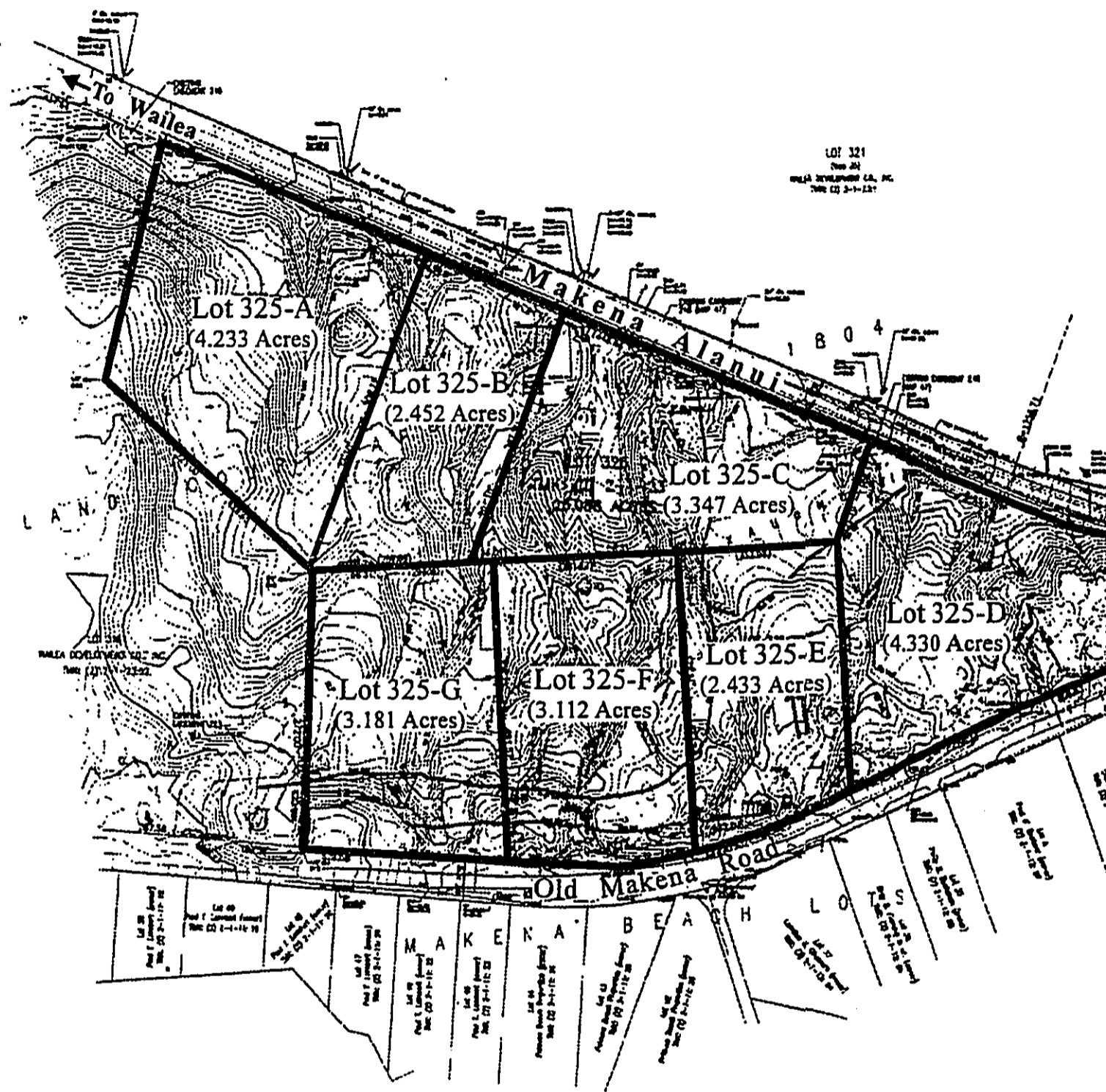
The applicant proposes to subdivide the subject property to create seven (7) agricultural lots. See Figure 3. Lot sizes will range between approximately 2.4 acres to 4.3 acres.

Preliminarily, the proposed subdivision improvements include the following:

1. Clearing, grubbing, and grading work in accordance with drainage and setback criteria, as well as work needed for stormwater retention purposes;
2. Installation of utility lines (water, sewer, electrical, telephone, CATV) to serve each of the lots;
3. Installation of street tree plantings;
4. Construction of driveway aprons to provide the lots with access to Makena Alanui or Old Makena Road; and
5. Improvements to Makena Alanui and Old Makena Road as may be required by the County Department of Public Works and Waste Management.

Access to Lots 325-A through 325-C will be via Makena Alanui. Lots 325-D through 325-G will be accessed via Old Makena Road. Refer to Figure 3.

It should be noted that the water system for the proposed subdivision will involve the installation of new waterlines within the Makena Alanui and Old Makena Road rights-of-way. The proposed water system will connect to existing waterlines serving the project area and will form a "loop" around the project site and the adjoining Palauaea Subdivision parcel. See Figure 4. In addition, existing overhead power lines along the subject property's frontage on Old Makena Road will be relocated underground



Source: Austin, Tsutsumi & Associates, Inc.

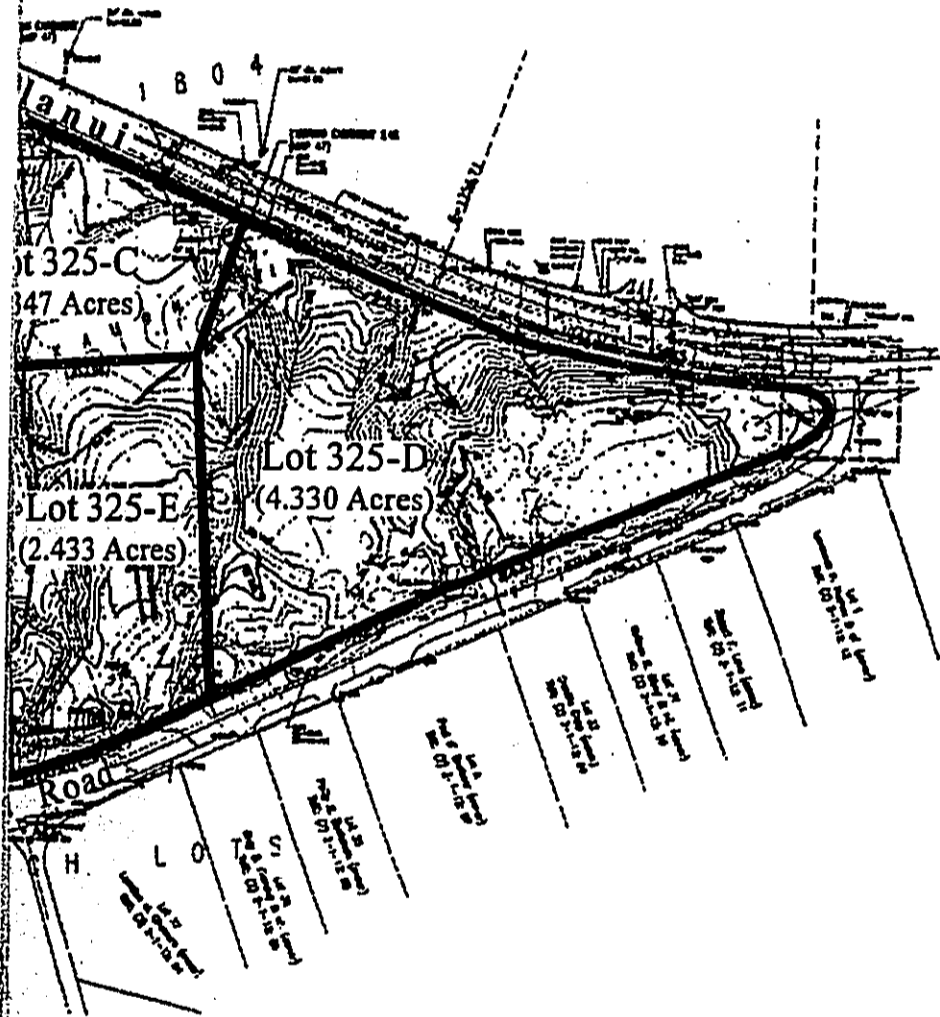
Figure 3



Subdivision of Parcel MF-21  
 Preliminary Subdivision Plan

Prepared for: Lucky Seven Development, LLC

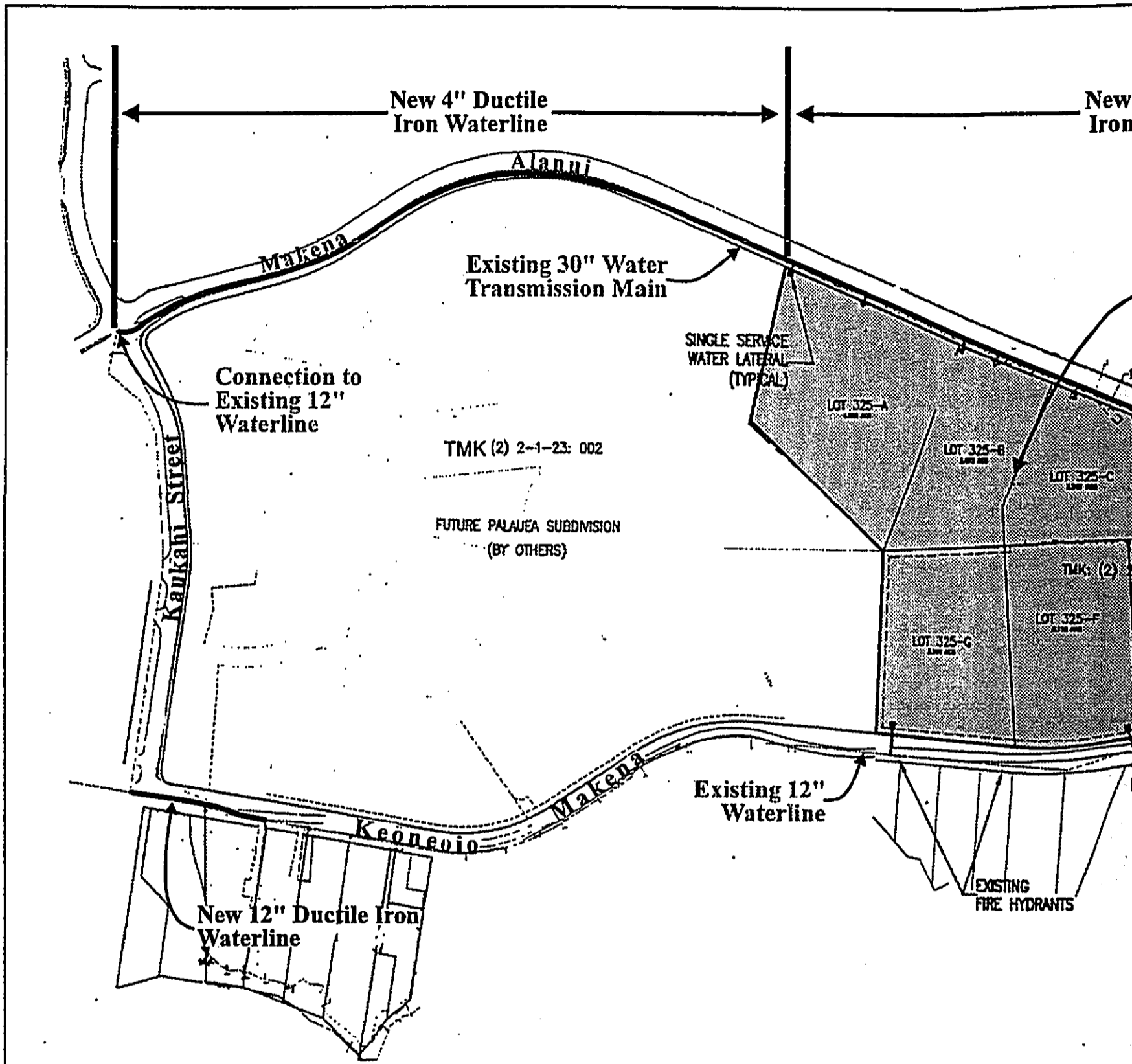
LOT 321  
Plan 201  
M&A DEVELOPMENT CO., INC.  
1988 02 2-1-227



Parcel MF-21  
Subdivision Plan

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRADA, INC.



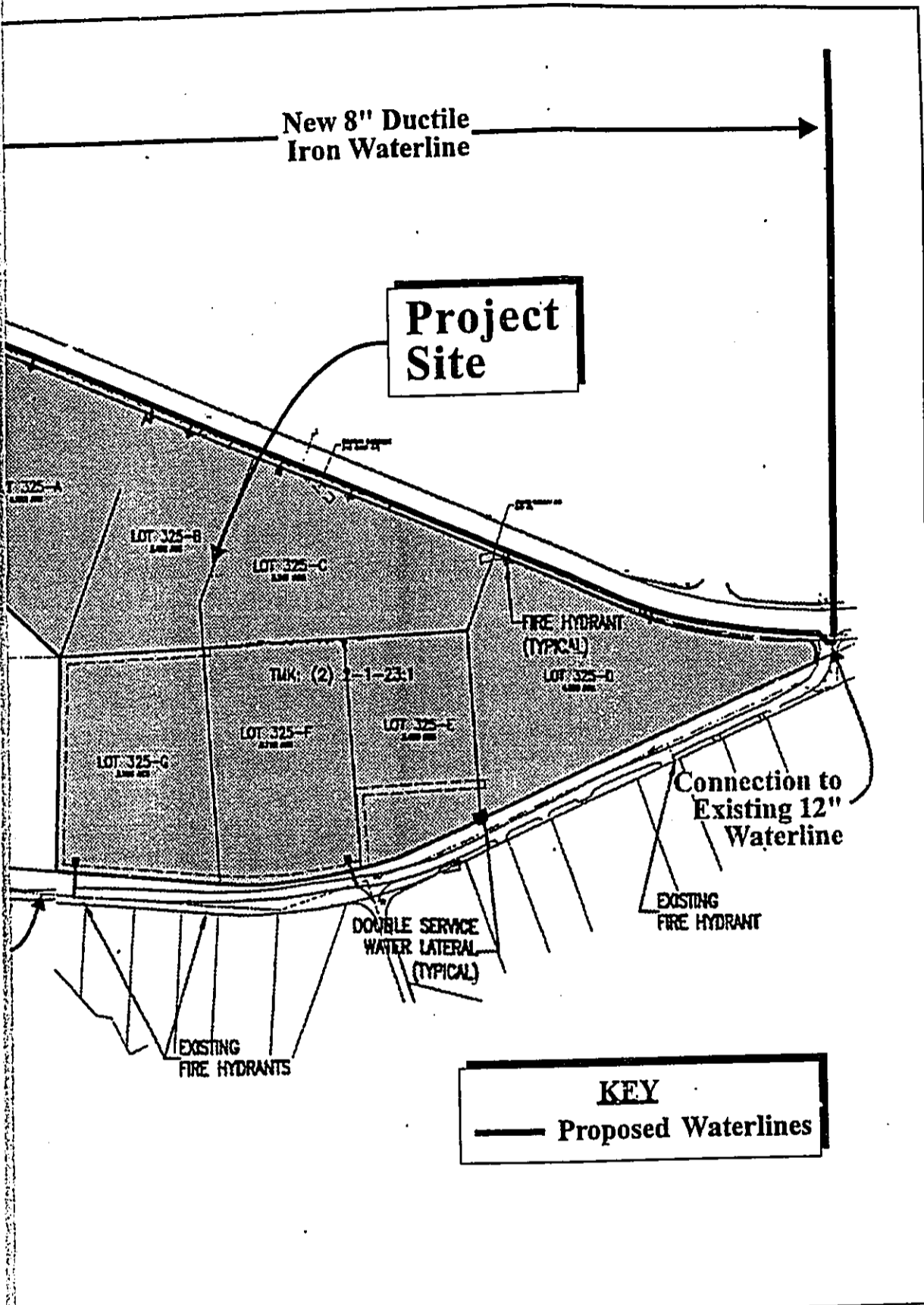
Source: Austin, Trutsumi & Associates, Inc.

Figure 4



Subdivision of Parcel MF-21  
Proposed Water System Improvements

Prepared for: Lucky Seven Development, LLC



New 8" Ductile Iron Waterline

**Project Site**

LOT 325-B  
1,400 SQ. FT.

LOT 325-C  
1,400 SQ. FT.

FIRE HYDRANT (TYPICAL)  
LOT 325-D  
1,400 SQ. FT.

TWK: (2) 1-1-23-1

LOT 325-F  
1,400 SQ. FT.

LOT 325-E  
1,400 SQ. FT.

Connection to Existing 12" Waterline

EXISTING FIRE HYDRANT

DOUBLE SERVICE WATER LATERAL (TYPICAL)

EXISTING FIRE HYDRANTS

**KEY**  
 — Proposed Waterlines

Parcel MF-21  
 System Improvements

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRAGA, INC.

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within the roadway right-of-way to provide electrical service to the proposed subdivision.

The proposed improvements are estimated to cost approximately \$1.0 million; construction of the improvements is anticipated to take about five (5) months. The proposed subdivision will be developed in a single phase, with construction expected to commence upon the receipt of all applicable regulatory permits and approvals.

Since the proposed action involves the use of County lands (roadway rights-of-way) for the installation of new utility lines, an Environmental Assessment (EA) has been prepared as required by Chapter 343, Hawaii Revised Statutes.

# ***Chapter II***

---

***Description of the  
Existing Environment***

## **II. DESCRIPTION OF THE EXISTING ENVIRONMENT**

### **A. PHYSICAL ENVIRONMENT**

#### **1. Surrounding Land Use**

The MF-21 site is located in Wailea, a resort-residential master-planned community. Generally, land uses in Wailea provide for hotel, multi-family, single-family, business/commercial and recreational activities. These land uses are exemplified by those uses in proximity of the subject property.

Existing surrounding land uses to the east of the project site are typified by the Diamond Resort and the Wailea Resort's Emerald Golf Course. Palauea Beach and several single-family dwellings along Old Makena Road define land uses to the west of the site, while the Kea Lani Hotel and Polo Beach Club condominium reflect uses to the north. Vacant lands designated as Project District 8, lie to the immediate north of the subject property.

Along the coastline and beyond the Kea Lani Hotel to the north lie other hotel properties such as the Four Seasons Resort-Maui, Grand Wailea Resort Hotel & Spa, Wailea Outrigger Resort, and the Renaissance Wailea Beach Resort. Multi-family land uses in the area include the Palms at Wailea, the Grand Champion Villas, and the Wailea Elua, Ekahi, and Ekolu condominiums. The Wailea Golf Villas, Wailea Golf Estates, Wailea Fairways, Wailea Pualani Estates, Wailea Kialoa, Wailea Highlands and Wailea Kai Subdivisions exemplify single-family development in the Resort, while the Shops at Wailea (currently under construction) as well as several restaurants and pro shops characterize business/commercial activities in the vicinity. A tennis center and the Resort's Blue Course and Gold Course comprise other recreational facilities in the area.



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2. Climate

Hawaii's tropical location accounts for uniform weather conditions throughout the year. Climatic conditions on Maui are characterized by mild and consistent year-round temperatures, moderate humidity, and steady northeasterly tradewinds. Variations in the island's weather are attributable to regional topographical and climatic conditions.

During the summer months, average high temperatures approach 90 degrees Fahrenheit, while low temperatures range from the mid- to upper 60's. The winter months are more temperate, with average highs and lows in the low 80's, and low 60's, respectively.

Annual rainfall distribution in the vicinity of the project site ranges between five (5) to fifteen (15) inches, with most of the precipitation occurring during the winter months between November and March. The months between April and October are generally drier, with measurements reflecting less than one-half inch of rainfall per month.

The northeast tradewinds prevail throughout most of the year. Wind speeds in the Kihei-Makena region range from ten (10) to fifteen (15) miles per hour during the afternoon. The winds typically diminish during the morning and evening, and are usually more persistent during summer than in winter. Between the months of October and April, storm-generated "Kona" winds from the south occasionally develop, bringing high winds and heavy rainfall.

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3. **Topography and Soil Characteristics**

The subject property is situated at the base of the southwestern flank of Haleakala and is characterized by topography that slopes at an average of 9 percent in a westerly direction. Onsite elevations range from about 10 feet above mean sea level (amsl) by Old Makena Road to approximately 116 feet amsl by Makena Alanui.

The existing topography of the site is characterized as uneven, with undulating topographic features creating ridges, depressions and mounds. Elevations generally decrease from north to south and east to west.

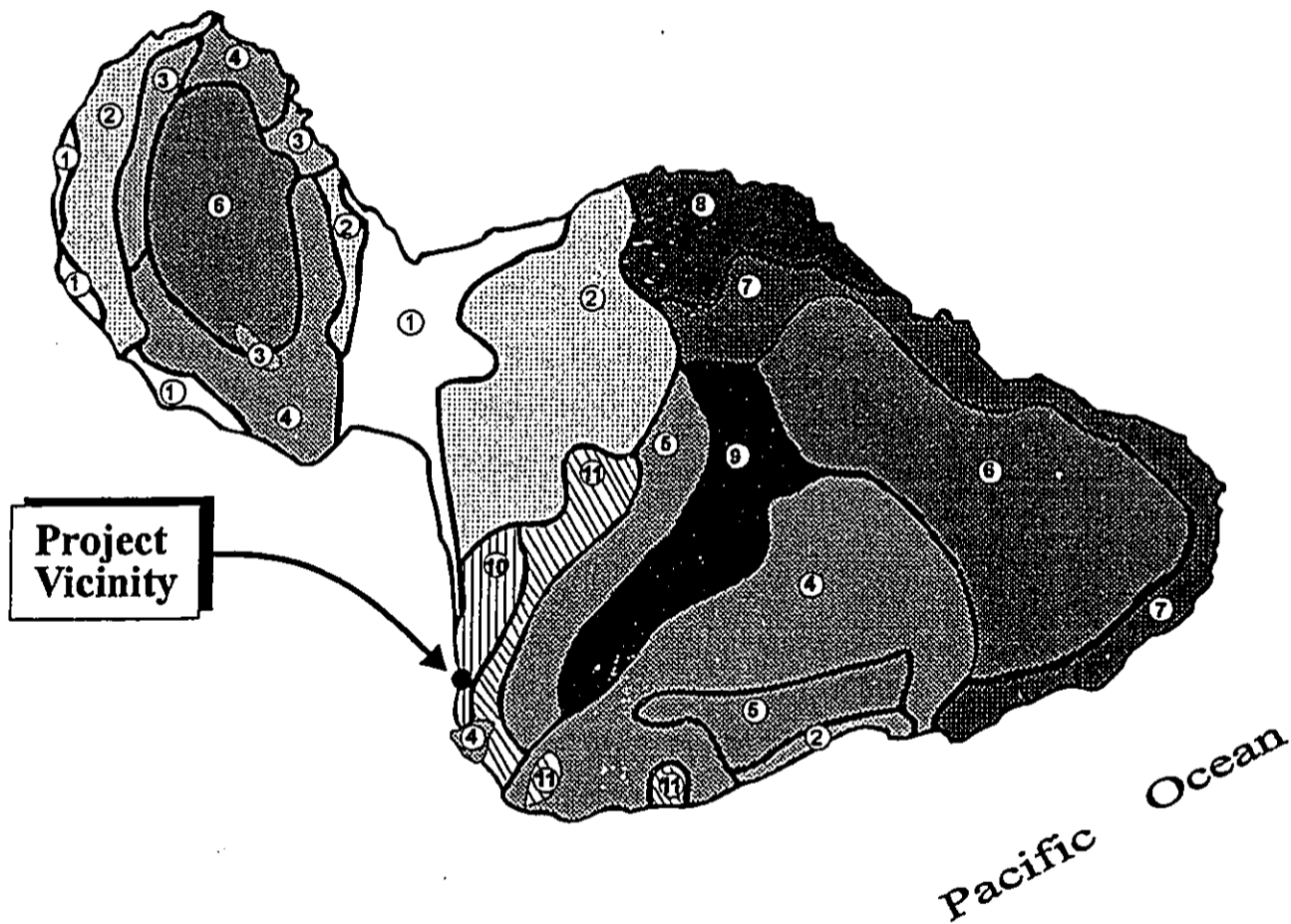
Underlying the subject property is the Keawekapu-Makena soil association. See Figure 5. This series is typically found on the low uplands, and consists of gently sloping to moderately steep, well-drained, medium-textured soils. The substratum ranges in depth from shallow to deep and is comprised of fragmental Aa lava.

The soil types underlying the subject property consist of Makena loam, stony complex, 3 to 15 percent slopes (MXC), and very stony land (rVS). See Figure 6. The Makena loam, stony complex (MXC) soil series is typically found on the lower leeward slopes of Haleakala, between Makena and Kamaole. This series consists of Makena loam and Stony land.

Stony land occurs on low ridges and comprises 30 to 60 percent of the complex. Makena loam occurs as gently sloping areas between the low ridges of Stony land. On the Makena part of the complex, permeability is moderately rapid, runoff is slow to

# LEGEND

- |  |                                     |
|--|-------------------------------------|
| ① Pulehu-Ewa-Jaucas association                | ⑦ Hana-Makaalae-Kailua association  |
| ② Waiakoa-Keahua-Molokai association           | ⑧ Pauwela-Haiku association         |
| ③ Honolua-Olelo association                    | ⑨ Laumaia-Kaipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keawakapu-Makena association      |
| ⑤ Puu Pa-Kula-Pane association                 | ⑪ Kamaole-Oanapuka association      |
| ⑥ Hydrandepts-Tropaquods association           |                                     |



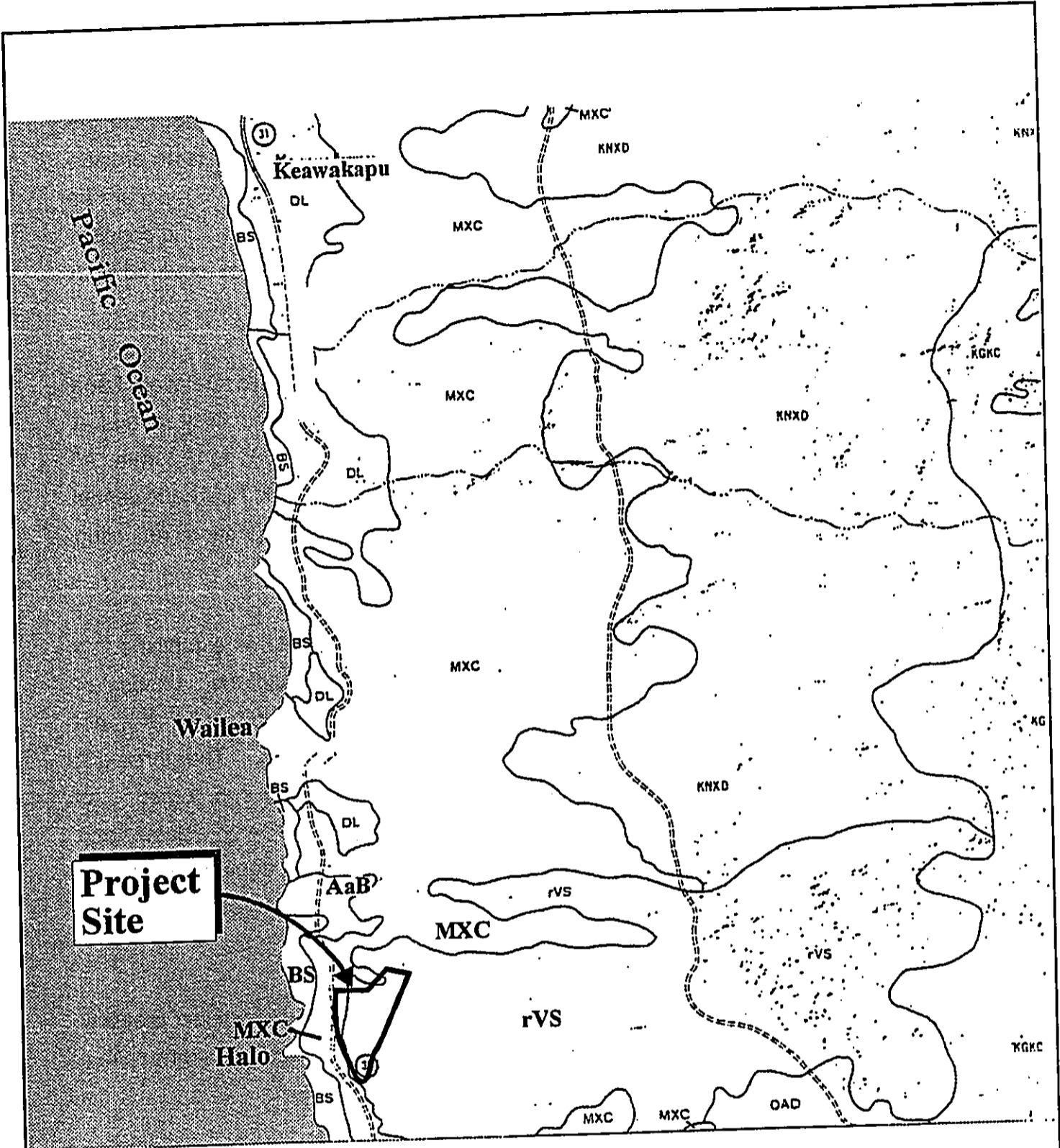
Source: USDA, Soil Conservation Service

Figure 5 Subdivision of Parcel MF-21 NOT TO SCALE  
Soil Association Map



Prepared for: Lucky Seven Development, LLC

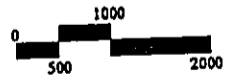
MUNEKIYO, ARAKAWA & HIRADA, INC.



Source: USDA, Soil Conservation Service

Figure 6

Subdivision of Parcel MF-21  
Soil Classifications



MUNEKIYO, ARAKAWA & HIRADA, INC.

Prepared for: Lucky Seven Development, LLC

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medium, and the erosion hazard is slight to moderate. On the Stony land part, permeability is very rapid and there is no erosion hazard. Very stony land, 7 to 30 percent slopes (rVS), occurs as large areas, mainly on the upper slopes of Haleakala, and consists of areas where 50 to 90 percent of the surface is covered with stones and boulders.

The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui establishes total land productivity ratings. A value system based on a declining scale from "A" to "E," with "A" representing the highest level of productivity and "E" the lowest is utilized. The MF-21 site is assigned an "E" designation, reflecting its low agricultural suitability characteristic.

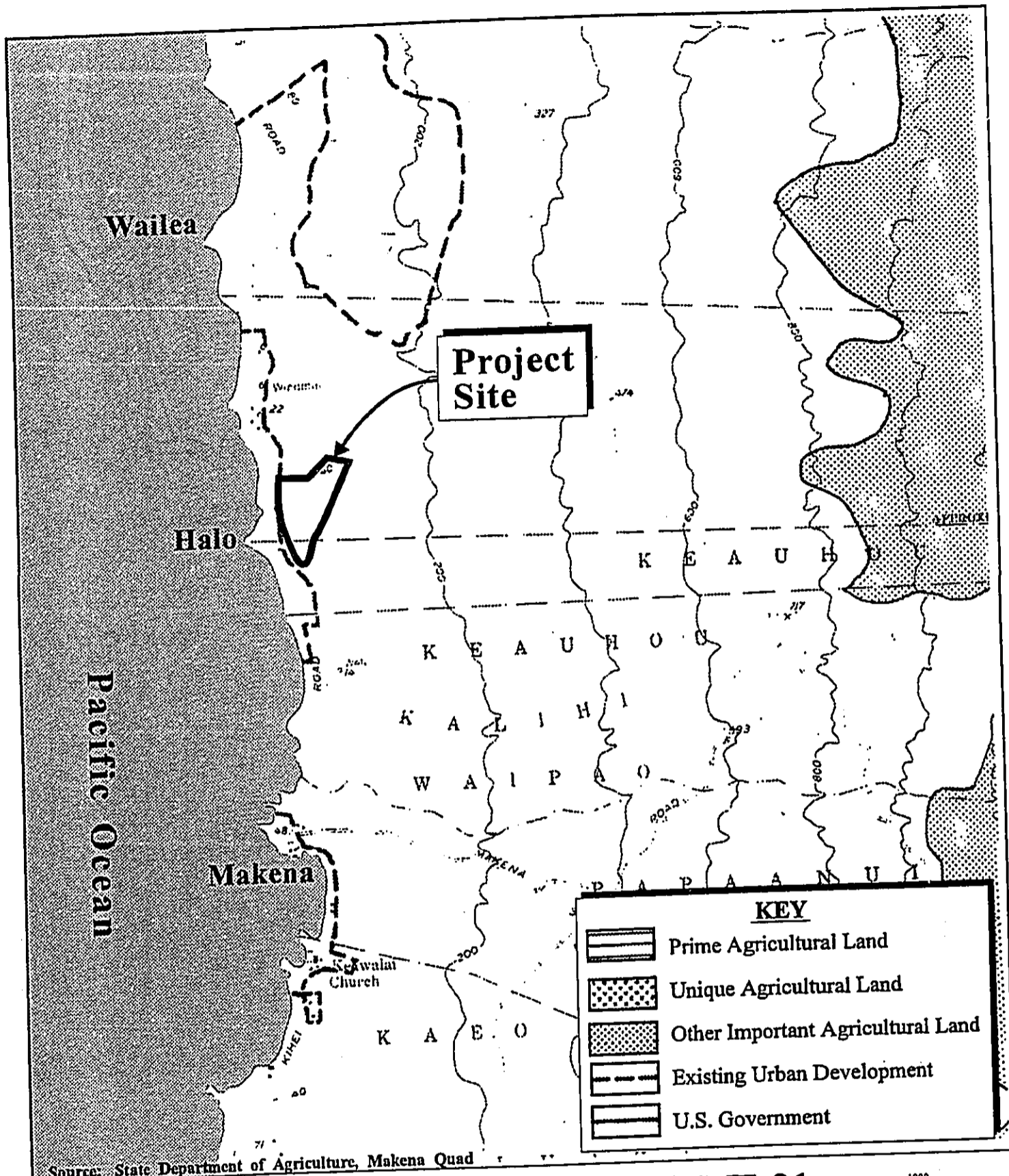
In 1977, the State Department of Agriculture established a classification system for identifying Agricultural Lands of Importance to the State of Hawaii (ALISH), primarily, but not exclusively on the basis of soil characteristics. The three (3) classes of ALISH lands are: "prime", "unique", and "other". As indicated by the ALISH map, the subject property adjoins land which has been developed for urban uses and does not fall within any of the agricultural land categories. See Figure 7.

4. **Flood and Tsunami Hazard**

As reflected by the Flood Insurance Rate Map, the subject property is situated within Zone C, which is defined as areas of minimal flooding. See Figure 8.

5. **Flora and Fauna**

A biological resources survey for the property was undertaken by Xamanek Researches in November, 1999. See Appendix A. The survey notes that the project area is known as a Coastal Dry



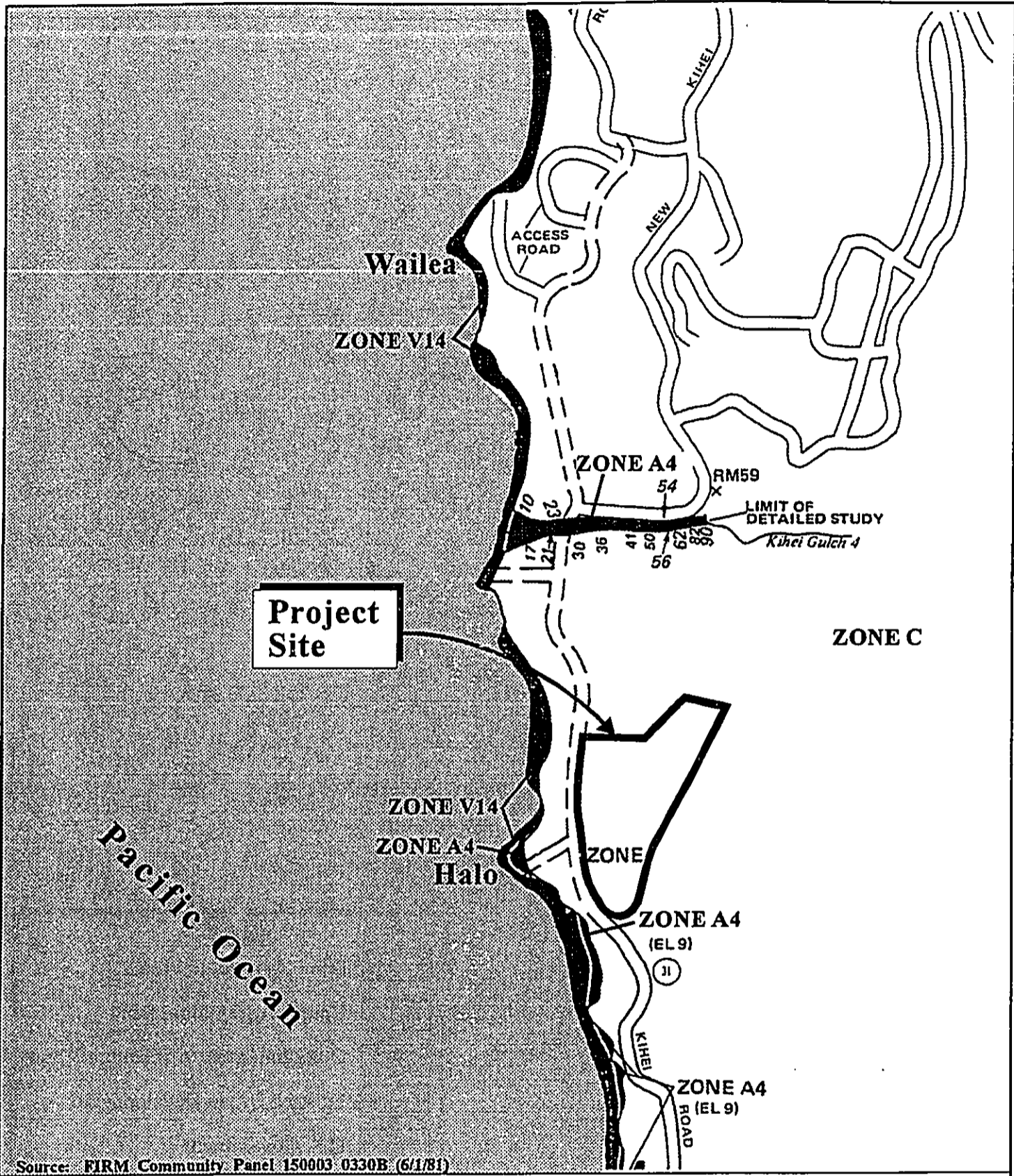
Source: State Department of Agriculture, Makena Quad

**Figure 7** Subdivision of Parcel MF-21  
ALISH Map



MUNEKIYO, ARAKAWA & HIRAGA, INC.

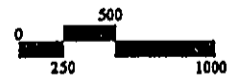
Prepared for: Lucky Seven Development, LLC



Source: FIRM Community Panel 150003 0330B (6/1/81)

Figure 8

Subdivision of Parcel MF-21  
Flood Insurance Rate Map



Prepared for: Lucky Seven Development, LLC

MUNEKIYO, ARAKAWA & HIRABA, INC.

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Forest. A canopy of kiawe and understory of buffelgrass, which are introduced species, dominate the area. Other alien species include haole koa, ki nehe, sweet basil, lantana tree tobacco, pua pihi, klu, prickly lettuce and currant tomato.

The only animal observed in the project area that has legal protection is the pacific golden plover, which was seen in flight. This species was not found on the site, however. It is possible that the endangered Hawaiian hoary bat flies and feeds in the area, although none were flushed from trees or observed onsite.

There were no plants found in the project area that has protection under Federal or State law. No species of avian or mammal was found residing in the project area that has protection under Federal or State law.

**6. Air Quality**

There are no point sources of airborne emissions in the immediate vicinity of the subject property. The air quality in the Wailea region is considered good, with existing airborne pollutants attributed to vehicle-generated exhaust from the region's roadways. Other sources of airborne pollutants typically include dust resulting from construction activities, and residual smoke from sugarcane harvesting operations occurring in the Central Maui plain. These sources are considered intermittent, and the generated particulates are quickly dispersed by the prevailing tradewinds.

**7. Noise Characteristics**

There are no permanent sources of noise which are considered to have an adverse impact on the project site. With the exception of



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temporary construction activities, vehicles traveling along Wailea Alanui, Makena Alanui, and Old Makena Road are the primary source of background noise in the area.

8. **Scenic and Open Space Resources**

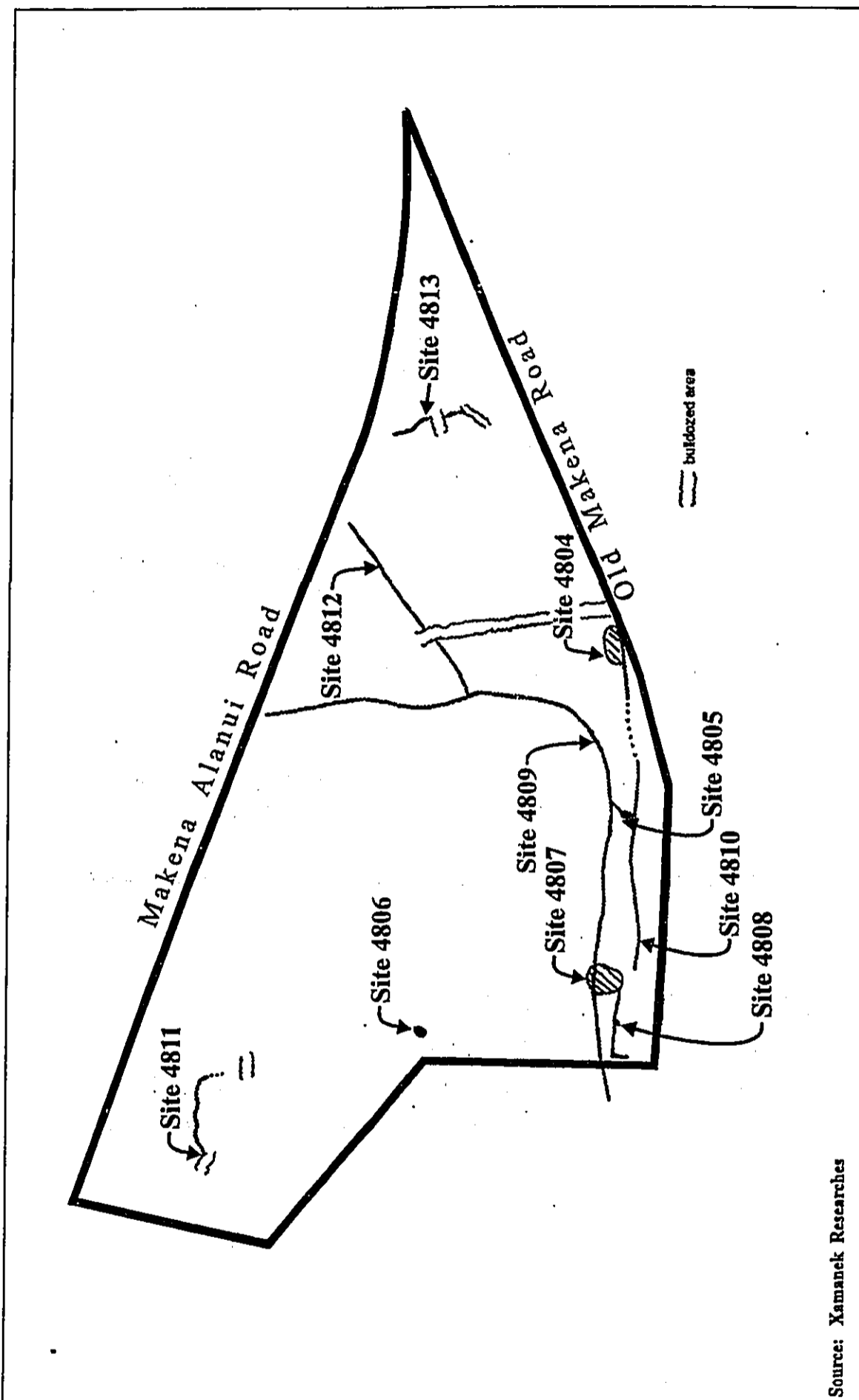
Scenic resources to the east of the project site include Haleakala and the Wailea Resort's Emerald Golf Course, while to the south lies the cinder cone of Puu Olai. The ocean and the offshore islands of Lanai, Molokini, and Kahoolawe comprise scenic resources which are visible to the west of the site. In addition, Polo Beach and Palauea Beach are white sand beaches which are situated in the vicinity of the subject parcel.

The subject property is not located within a scenic view corridor.

9. **Archaeological Resources**

An archaeological inventory survey of the property was conducted by Xamanek Researches in 1999. See Appendix "B". A total of ten (10) historic properties were located during the survey. The approximate locations of these sites, shown on Figure 9, are described below.

1. **Site 50-50-14-4804.** This site is a complex covering approximately 180 square meters and includes three (3) features. One (1) of these features is likely to have been a ceremonial structure, while the other two (2) features are deemed to be temporary habitation areas.
2. **Site 50-50-14-4805.** This site has been interpreted as an overhang structure that was likely used for temporary habitation purposes.
3. **Site 50-50-14-4806.** Also interpreted as an overhang structure, this site was probably used as a temporary



Source: Xamanek Researches

Figure 9



Subdivision of Parcel MF-21  
Locations of Archaeological Sites

NOT TO SCALE

Prepared for: Lucky Seven Development, LLC



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shelter.

4. Site 50-50-14-4807. This site includes a low concentration of surface scatter of coral. While the function of this site is unclear, the presence of beach coral suggests its possible use as a ceremonial area.
5. Site 50-50-4808. Consisting of a small overhang, this site was probably used as a temporary shelter.
6. Site 50-50-14-4809. This well constructed wall is located along the *ahupua'a* boundary between Palauea and Keauhou.
7. Site 50-50-14-4810. This wall site is interpreted as an animal containment wall which is associated with cattle ranching.
8. Site 50-50-14-4811. This wall segment has been impacted by previous bulldozing activities. The site is interpreted as an animal containment wall.
9. Site 50-50-14-4812. A wall located in the southeastern portion of the property, this site is interpreted as a cattle containment wall.
10. Site 50-50-14-4813. Identified as a cattle containment wall, this site has been truncated by previous bulldozing activities.

Portions or all of the sites have been impacted by post-contact activities.

**B. SOCIO-ECONOMIC ENVIRONMENT**

**1. Land Use and Community Character**

From a regional standpoint, the subject property is part of the Kihei-Makena Community Plan region which stretches from Maalaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline

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resources, the visitor-based economy has grown steadily over the past few years. The project site is adjacent to the master-planned resort of Wailea. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

2. **Population**

The population of Maui has exhibited relatively strong growth over the past decade, with the 1990 population reflecting a count of 91,361, a 45.4 percent increase over the 1980 population of 62,823 (DBEDT, March 1993). Growth on the island is expected to continue, with resident population projections for the year 2000 and 2010 estimated to be 112,349 and 133,459, respectively (Community Resources, Inc., January, 1994).

Just as the island's population has grown, the resident population of the Kihei-Makena region has increased in the last two decades. Population gains were especially pronounced in the 1970's as the rapidly developing visitor industry attracted many new residents. The 1990 resident population of the Kihei-Makena region was approximately 15,365. Regional projections for the years 2000 and 2010 reflect an estimated population of 20,092 and 24,846, respectively. Compared to 1990, these estimates reflect increases of 30.7 percent and 61.7 percent for the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994).

3. **Economy**

The economy of Maui is heavily dependent upon the visitor industry. In 1996, Maui was frequented by 2.3 million visitors (Maui

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County Data Book 1998). The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major Resort destination areas. The Four Seasons Resort-Maui, the Grand Wailea Resort Hotel & Spa, and the Kea Lani Hotel have continued to reinforce the region's status as a premier resort destination.

In 1990, employment in the hotel industry accounted for 16 percent, or 8,500 of Maui's 51,756 total jobs. The island's hotel industry employment is projected to increase to 9,299 and 10,468 in the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994). Within the Kihei-Makena region, employment in the hotel industry accounted for 39 percent, or 2,979 of the region's 7,574 total jobs. Projected hotel industry employment for this region is estimated to increase to 3,981 and 4,456 in the years 2000 and 2010, respectively. These estimates reflect gains of 44 and 43 percent for the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994).

As of April 2000, the unemployment rate for Maui County and the island of Maui was 4.2 percent and 3.8 percent, respectively (State Department of Labor and Industrial Relations, June 2000).

**C. PUBLIC SERVICES**

**1. Police and Fire Protection**

The Maui Police Department (MPD) headquarters is located at its Wailuku Station. The Wailuku Station, which services the Kihei-Makena subdistrict, is approximately fifteen (15) miles northeast of Wailea, while the Department's Kihei substation is located in the Kihei Town Center, about three (3) miles north of the subject

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parcel. The Department's Kihei patrol covers the Kihei-Makena region.

Fire prevention, protection, and suppression services are provided by the Maui Fire Department's (MFD) Kihei Station situated approximately three (3) miles north of the project site.

2. **Medical Facilities**

Maui Memorial Medical Center, the only major medical facility on the island, is approximately fifteen (15) miles northeast of the project site. This State-operated hospital provides acute, emergency, and general care services. Several Kihei clinics, and dental and medical offices provide local health care services for Kihei-Makena residents and visitors.

3. **Recreational Facilities**

Many diverse recreational opportunities are available within the vicinity of the project site. Recreational facilities include the Wailea Resort's three (3) championship golf courses and its eleven (11) court tennis center. A number of excellent, white sand beaches in the vicinity provide opportunities for diving, fishing, kayaking, surfing, swimming, and windsurfing. Beaches within proximity of the subject parcel include Palauea Beach, which is situated makai of the project site, and Polo Beach, which fronts the Kea Lani Hotel and the Polo Beach Club Condominium.

Over 90 percent of the Kihei-Makena region's parks are either directly on a beach, or across the street from a beach. To the north, the Kihei area contains eight (8) regional and three (3) sub-regional public parks. Beyond Wailea, to the south, are three (3)

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public parks, including Makena State Park's Big Beach and Little Beach.

In addition, the County's new Kihei Community Center complex was recently completed and provides a community center, swimming pool, and athletic playfields.

**4. Schools**

The State Department of Education (DOE) operates three (3) public schools in the Kihei-Makena region. Kihei Elementary School, Kamali'i Elementary School and Lokelani Intermediate School are comprised of approximately 700, 700 and 800 students, respectively. Kihei Elementary School and Kamali'i Elementary School provide educational services for students from Kindergarten to Grade 5, while Lokelani Intermediate School provides instruction for students from Grades 6 to 8. The schools are located within the central Kihei area, north of the project site.

Students enrolled in Grades 9 to 12 attend Maui High School in Kahului, approximately fifteen (15) miles north of the project site.

**5. Solid Waste**

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews are disposed at the County's 55-acre Central Maui Landfill located four (4) miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

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**D. INFRASTRUCTURE**

**1. Roadways**

Access to the subject parcel is presently provided by Makena Alanui and Old Makena Road.

Makena Alanui is a two-lane, undivided, north/south County collector roadway serving the Makena Resort and beyond and has a posted speed limit of 30 mph in the vicinity of the project site.

Old Makena Road has a posted speed limit of 10 mph and is classified as a minor agricultural collector roadway by the County.

**2. Water**

There are no water system improvements located on the project site. See Appendix C. The water system in the area consists of 12-inch waterline located within Old Makena Road. This 12-inch line serves properties along the makai (west) side of Old Makena Road. A 30-inch transmission line is also found within Makena Alanui, along the eastern boundary of the property.

**3. Wastewater**

The Wailea region is served by a collection system of gravity lines which conveys wastewater flows in a makai (westerly) direction towards four (4) wastewater pump stations serving Wailea.

From a regional standpoint, wastewater conveyed to these pump stations are pumped via force mains in a northerly direction to other pump stations along South Kihei Road until reaching Pump Station No. 6, located just east of Kalama Park in Kihei. From Pump Station No. 6, all wastewater collected are pumped via force



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mains in an easterly direction towards the Kihei Wastewater Reclamation Facility, located just south of and adjacent to the Silversword Golf Course, for treatment and disposal. The design capacity of the Kihei Wastewater Reclamation Facility is 8.0 million gallons per day (MGD).

The project site is undeveloped and does not generate any wastewater flow. Refer to Appendix C. There are no wastewater system improvements situated on the site. The existing sewer system in the vicinity of the site includes a 6-inch force main which runs within Makena Alanui, east of the property. There is no sewer system within Old Makena Road fronting the property.

**4. Drainage**

Currently, surface runoff within the project site generally flows in a westerly direction via several drainageways traversing the parcel. Refer to Appendix C. The runoff continues in a westerly direction over Old Makena Road and several properties and then outlets into the ocean.

There are several drainage structures located within the project site that all serve to drain adjacent properties to the north and east. Culverts along Makena Alanui provide drainage for the Wailea Emerald Course and Wailea Blue Golf Course Clubhouse as well as properties upstream from these facilities.

Drainage structures along Makena Alanui consist of a 60-inch culvert which release runoff onto the northeast corner of the project site. There are also three (3) 66-inch, one (1) 24-inch, and one (1) 18-inch culverts which discharge flows into the east central portion

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of the project site. A separate 18-inch culvert provides a discharge point at the southeast corner of the site.

Two (2) major drainageways traverse the project site in a westerly direction. First, flows from the 60-inch culvert (at the northeast corner of the site) follows a westerly path through the property before turning north towards the neighboring property (TMK 2-1-23:02). The second drainageway runs through the east central portion of the project site and routes stormwater discharged onto the site by the three (3) 66-inch culverts along Makena Alanui. The discharge from this set of culverts follow a defined drainage path, into a natural depression adjacent to Old Makena Road. Overflow from this depression sheetflows over Old Makena Road to the ocean.

**5. Electrical, Telephone and CATV Systems**

Electrical, telephone, and cable television (CATV) services to the Wailea region are provided by Maui Electric Company, GTE Hawaiian Tel and Chronicle Cablevision, respectively.

# ***Chapter III***

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## ***Potential Impacts and Mitigation Measures***

### **III. POTENTIAL IMPACTS AND MITIGATION MEASURES**

#### **A. IMPACTS TO THE PHYSICAL ENVIRONMENTAL**

##### **1. Surrounding Uses**

The proposed subdivision is not anticipated to have an adverse impact on surrounding land uses. The low density nature of the project (7 lots on 23.1 acres) is considered compatible and complementary with existing surrounding uses.

##### **2. Flora and Fauna**

As previously indicated, a biological resources survey for the property was undertaken by Xamanek Researches in 1999. Refer to Appendix A. There are no known sensitive habitats or rare, endangered or threatened species of flora and fauna on the project site. Accordingly, the proposed action is not considered to have an adverse impact upon these environmental features.

##### **3. Archaeological Features**

As previously indicated, an archaeological inventory survey of the property was prepared by Xamanek Researches in 1999. Refer to Appendix B.

The survey recommended in-place preservation for four (4) of the ten (10) sites found on the property. These are Sites 4804, 4805, 4806 and 4809. Site 4804 is considered significant for its information content, contains a probable ceremonial structure, and retains cultural importance. Sites 4805 and 4806 are good examples of near-coastal rock overhang shelters in this part of Maui, and should be preserved. Site 4809 is a very good example of a faced, core-filled wall which appears to mark the ahupua'a

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boundary. In-place preservation is recommended for as much of this wall as possible. Limited data recovery is recommended for any section of this long wall that may need to be removed.

The six (6) remaining sites are no longer considered to be significant for their information content. Consequently, no further archaeological work is recommended for Sites 4807, 4808, and 4810 through 4813.

In correspondence dated May 4, 2000, the State Historic Preservation Division (SHPD) accepted the findings of the archaeological inventory survey for the subject property. See Appendix B-1. The SHPD concurred with the recommendations of the survey regarding the in-place preservation of Sites 4804, 4805, 4806, and 4809 and also recommended that an archaeological preservation plan for these sites be submitted for its review and approval. Accordingly, a preservation plan for these sites was prepared and submitted to the SHPD for review and approval.

In correspondence dated October 24, 2000, the SHPD indicated that a few minor changes to the plan are needed, including the results of consultation with the native Hawaiian community. See Appendix B-2. As a result of the SHPD's comments, the archaeological preservation plan was updated in accordance with the comments of the SHPD and as a result of consultation with members of Hui Alanui O Makena and long-time Hawaiian residents of the Makena Community Association. See Appendix B-3. It should be noted that the input provided by these groups has been incorporated into the revised preservation plan. In a letter dated November 20, 2000, the SHPD indicated that an acceptable

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preservation plan is in place and that the implementation of the plan will ensure that there will be "no adverse effect" to the significant historic sites on the property. See SHPD letter in Chapter XI.

Should any inadvertent significant archaeological features, cultural deposits or human burials be encountered during construction activities, work will cease in the immediate area of the find and the find shall be protected from further damage. The SHPD will be immediately notified to determine appropriate mitigation measures.

4. **Air Quality and Noise**

The proposed action will involve construction activity which may be a source of airborne emissions and noise. Construction noise is attributable to material hauling trucks and operation of onsite equipment during the building period. Dust generated from the construction activities are generally attributed to clearing and grubbing activities. Construction equipment may also be a source of airborne emissions which would otherwise not be present at the site. To mitigate the impacts of dust during construction, Best Management Practices (BMPs) shall be incorporated in site construction activities in accordance with Chapter 20.08 of the Maui County Code. In addition, the contractor shall be responsible for properly maintaining vehicle and equipment engines to ensure their efficient operations. Finally, the contractor shall be required to comply with Hawaii Administrative Rules, Chapter 11-46 relating to "Community Noise Control". Construction activity will occur during daylight work hours. In the long term, the proposed action will not result in any adverse air quality or noise impacts.

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5. **Scenic and Open Space Resources**

The proposed development is anticipated to complement the existing character of the surrounding environs. Design guidelines for the project will assure consistency in architectural forms that are in concert with the high quality standards of the Wailea Resort.

The proposed project is not anticipated to have an adverse impact upon views or scenic areas.

**B. IMPACTS TO THE SOCIO-ECONOMIC ENVIRONMENT**

1. **Land Use and Community Character**

The proposed development is anticipated to complement existing residential, resort, business/commercial and recreational uses in the Wailea resort. From a land planning standpoint, the subject property provides an appropriate location for a low density residential development. The proposed project is in keeping with the general low density theme found in the resort and along Old Makena Road. In this regard, the proposed action is not anticipated to have an adverse impact upon surrounding uses and is considered compatible with existing land uses in the vicinity.

2. **Population and Local Economy**

The proposed action is anticipated to have a positive economic effect during the construction phase of development as expenditures for construction and related support services are made. In the longer term, the proposed project will contribute to the local economy through the payment of property taxes and through the purchases of goods and services by the subdivision's residents.

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The proposed project is not anticipated to have a significant impact on population.

**C. IMPACTS TO PUBLIC SERVICES**

**1. Police, Fire and Medical Services**

The proposed project is not anticipated to affect the service capabilities of police, fire and emergency medical operations. The project will not extend the existing service area limits for emergency services.

**2. Recreational Services and Educational Services**

The proposed project is not considered significant in terms of population generation. As such, the proposed improvements will not place any new demand on recreational activities. School enrollments or locations will not be affected by the proposed action. As a result, no impacts to educational services are anticipated.

**3. Solid Waste Management**

A solid waste management plan for the disposal of cleared and grubbed materials resulting from construction activities will be developed in coordination with the Department of Public Works and Waste Management's Solid Waste Division. The seven (7) lot subdivision, once completed, is not anticipated to have an adverse impact upon collection systems or landfill capacity.

**D. IMPACTS TO INFRASTRUCTURE**

**1. Roadways**

Access to Lots 325-A through 325-C in the proposed subdivision will be provided from Makena Alanui, while access to Lots 325-D through 325-G will be provided from Old Makena Road. There will be no internal roadways within the subdivision.



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A traffic study for the proposed seven (7) lot subdivision was prepared in November 1999 by Austin, Tsutsumi & Associates, Inc. See Appendix D. The study notes that an October 1997 Traffic Impact Analysis Report (TIAR) documented the impacts for the revised Wailea Master Plan, including traffic generated by the project site. It should be noted that the 1997 TIAR assumed that the project site would be developed as a 130-unit residential condominium complex.

The November 1999 traffic study indicates that the estimated total peak hour traffic volume generated by the proposed subdivision is six (6) trips during the AM peak hour of traffic and eight (8) trips during the PM peak hour of traffic. The traffic study notes that these volumes are not measurable in determining the impacts on the adjacent roadways and fall within the day-to-day variations in traffic flow during the peak hours of traffic.

The traffic study concludes that the adjacent roadways will not be significantly impacted by traffic from the proposed subdivision.

2. **Water**

Domestic water and fire flow for the proposed project will be provided by the County's potable water system which serves the region. Water service to the proposed subdivision will be provided by the existing 12-inch waterline within Old Makena Road and by a proposed waterline within Makena Alanui. Refer to Appendix C. The new waterlines which will be installed in connection with the project will "loop" the water system surrounding the subject property and the neighboring Palauea Subdivision parcel to the north. Water service to Lots 325-G through 325-D will be provided

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by water meters connected to the existing 12-inch waterline within Old Makena Road. The remaining three (3) lots (325-A through 325-C) along the eastern boundary of the project site will be serviced via the installation of the proposed waterline within Makena Alanui that will run parallel to the existing 30-inch water transmission main. This proposed waterline will connect to the existing 12-inch waterline at the intersection of Makena Alanui and Old Makena Road. The proposed water system improvements within the Makena Alanui right-of-way will involve the installation of an 8-inch waterline which will transition to a 4-inch waterline. Approximately 2,000 linear feet of 8-inch waterline will be installed along the frontage of the proposed seven (7) lot subdivision. At the northeast corner of the subdivision, the waterline will transition from 8- to 4-inches and extend northward for about 1,700 linear feet where it will connect to an existing 12-inch waterline at the Makena Alanui and Kaukahi Street intersection. To complete the "loop", a gap in the water system south of the Kaukahi Street and Old Makena Road intersection will be closed via the installation of approximately 350 linear feet of 12-inch waterline within the Old Makena Road right-of-way.

Estimated water demand for the proposed development is approximately 30,920 gallons per day (gpd). Refer to Appendix C. In this context, the project is not anticipated to adversely impact regional water service requirements. Water system requirements will be coordinated with the Department of Water Supply to ensure that adequate supply is available at the time of development.

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3. **Wastewater**

A new sewer system will be installed within the project site to provide sewer service to the subdivision's seven (7) lots. Refer to Appendix C. The subdivision's sewer system will be connected to the future sewer system for the adjoining Palauea Subdivision parcel to the north. This future sewer system will enable wastewater from the proposed seven (7) lot subdivision to gravity flow to a future sewer pump station situated in the southwestern quadrant of the Palauea Subdivision parcel. From the pump station, wastewater will be pumped through a future sewer force main in Kaukahi Street which will be connected to an existing sewer system in the vicinity of the Wailea Blue Golf Clubhouse.

The estimated wastewater flow generated from the project is approximately 4,900 gpd. While adequate treatment capacity for the proposed development is available, coordination will be undertaken with the Department of Public Works and Waste Management, Wastewater Reclamation Division, during the County's subdivision review and approval phase of the project.

4. **Drainage**

Grading for the project will be minimal and involve excavation and embankment for the construction of subdivision improvements. Refer to Appendix C. The archaeological features which are located throughout the site will not be affected by the proposed improvements. Erosion control measures and Best Management Practices (BMPs) will be implemented during the construction period to minimize soil loss and erosion. A detailed grading and erosion control plan will be prepared in accordance with County standards and will be submitted to the County Department of Public

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Works and Waste Management for review and approval. In addition, an application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health for review and approval, as required.

Onsite runoff will be allowed to flow toward the west per the existing condition. Existing depressions along Old Makena Road will be incorporated into the overall drainage plan to prevent any change to the existing runoff scheme. Existing onsite runoff has been estimated at 35.4 cfs based on a 50 year, 1 hour storm recurrence interval. Post-development runoff for the 50 year, 1 hour storm recurrence interval is calculated at 40.1 cfs. This increase of 4.7 cfs will be routed into and controlled by the retention basin (existing depressions) described above.

Offsite runoff will be allowed to flow through existing drainageways within and through the property.

The proposed subdivision improvements will be designed to produce no adverse effects to existing facilities and to the surrounding environment. All improvements will conform to and be designed in accordance with applicable regulatory requirements.

**5. Electrical, Telephone, and CATV Systems**

Existing electrical lines are suspended from utility poles along the subject property's frontage on Old Makena Road. To provide electrical service to the proposed subdivision, the existing overhead power lines will be placed underground within the Old Makena Road right-of-way. Refer to Appendix C.

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The installation of electrical, telephone, and cable television systems for the seven (7) lot subdivision will be coordinated with Maui Electric Company, GTE Hawaiian Tel, and Chronicle Cablevision, respectively.

# ***Chapter IV***

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***Relationship to Governmental  
Plans, Policies and Controls***

#### **IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS**

##### **A. STATE LAND USE DISTRICTS**

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation".

The project site is within the "Agricultural" District. See Figure 10. The proposed action involves uses of the property which are compatible with its "Agricultural" designation.

##### **B. GENERAL PLAN OF THE COUNTY OF MAUI**

The General Plan of the County of Maui (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development".

The proposed action is in keeping with the following General Plan objectives and policies:

##### **Objectives:**

- To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

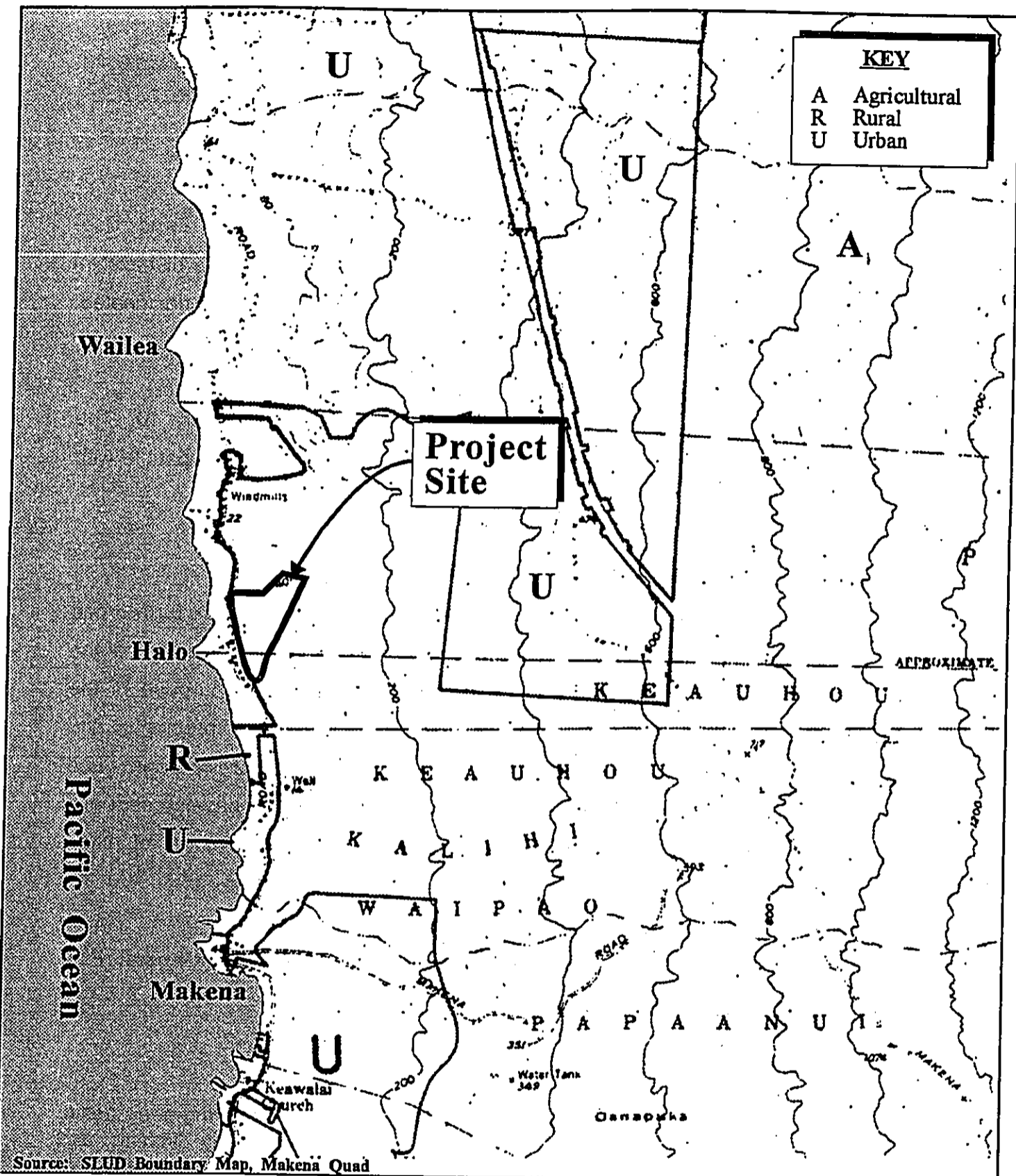
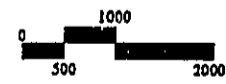


Figure 10

Subdivision of Parcel MF-21  
State Land Use District Designations



Prepared for: Lucky Seven Development, LLC

MUNEKIYO, ARAKAWA & HIRAGA, INC.



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- To preserve for present and future generations the opportunity to know and experience the arts, culture and history of Maui County.
  - To see that all developments are well designed and in harmony with their surroundings.

**Policies:**

- Provide and maintain a range of land use districts sufficient to meet the social, physical, environmental and economic needs of the community.
- Identify and preserve significant historic and cultural sites.
- Encourage the construction of housing in a variety of price ranges and geographic locations.
- Encourage the identification, restoration, and preservation of important archaeological, historical, and cultural sites.

**C. KIHEI-MAKENA COMMUNITY PLAN**

The subject parcel is located in the Kihei-Makena Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the General Plan of the County of Maui. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region. Land use guidelines for the region are established by the Kihei-Makena Community Plan. The project site is designated "Agriculture" in the Kihei-Makena Community Plan. See Figure 11. The proposed development of the subject property is consistent with its Community Plan land use designation.

**D. ZONING**

The subject property is identified by TMK 2-1-23:01 and is zoned "Agricultural" by the County of Maui.

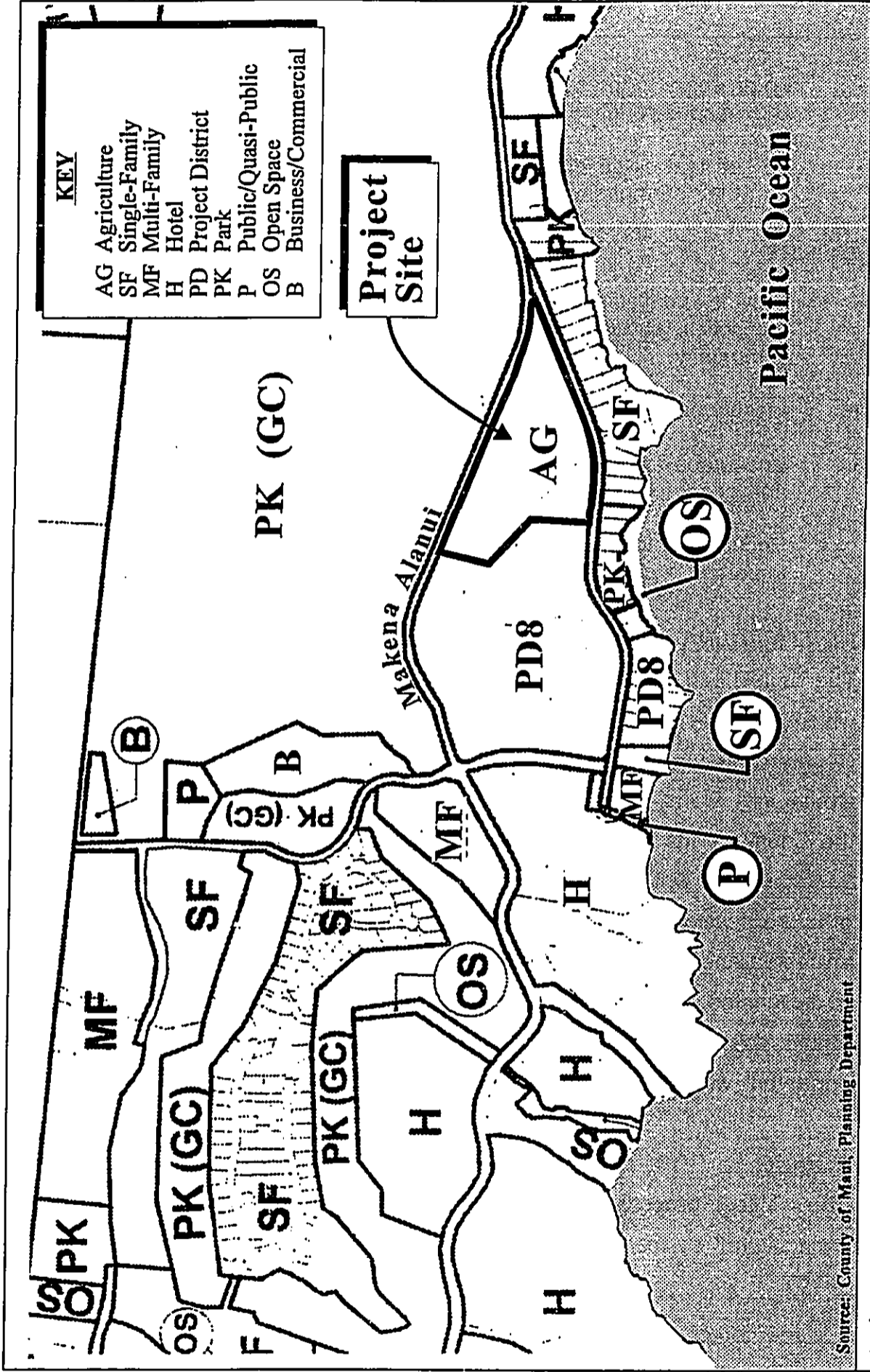


Figure 11

Subdivision of Parcel MF-21  
 Kihei-Makena Community Plan Land Use Designations



Prepared for: Lucky Seven Development, LLC

MUNEKIYOSHI ARAKAWA & MIBAGA, INC.

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**E. SPECIAL MANAGEMENT AREA**

The subject property is located within the County of Maui's Special Management Area. Pursuant to Chapter 205A, Hawaii Revised Statutes, and the Rules and Regulations of the Maui Planning Commission of the County of Maui, projects located within the SMA are evaluated with respect to SMA objectives, policies and guidelines.

This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

**(1) Recreational Resources**

**Objective:**

Provide coastal recreational opportunities accessible to the public.

**Policies:**

- (A) Improve coordination and funding of coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
  - (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
  - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

- 
- (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
  - (v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
  - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
  - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
  - (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

**Response:** The proposed project is not anticipated to affect existing coastal recreational resources. Access to the shoreline areas will remain unaffected by the proposed action.

(2) **Historic Resources**

**Objective:**

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

**Policies:**

- (A) Identify and analyze significant archeological resources;
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

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- (C) Support state goals for protection, restoration, interpretation, and display of historic resources.

**Response:** The subject property contains ten (10) archaeological sites. Of these sites, four (4) sites have been recommended for preservation in place. An archaeological preservation plan for these four (4) sites has been prepared and was recently submitted to the State Historic Preservation Division (SHPD) for review and approval. Should archaeological remains be encountered during construction, work will cease in the area of the find and SHPD will be contacted to establish an appropriate mitigation strategy.

(3) **Scenic and Open Space Resources**

**Objectives:**

Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

**Policies:**

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
- (D) Encourage those developments which are not coastal dependent to locate in inland areas.

**Response:** The proposed project will be developed to ensure visual compatibility with the surrounding environs. The project is not anticipated to impact coastal and scenic open space resources.

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(4) **Coastal Ecosystems**

**Objective:**

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

**Policies:**

- (A) Improve the technical basis for natural resource management;
- (B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

**Response:** Improvements to the subject property are not expected to adversely impact coastal ecosystems. Drainage improvements shall be engineered to ensure that coastal water impacts are mitigated. Mitigative measures for soil erosion control will be implemented during and after construction.

(5) **Economic Uses**

**Objectives:**

Provide public or private facilities and improvements important to the State's economy in suitable locations.

**Policies:**

- (A) Concentrate coastal dependent development in appropriate areas;

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- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
  - (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
    - (i) Use of presently designated locations is not feasible;
    - (ii) Adverse environmental effects are minimized; and
    - (iii) The development is important to the State's economy.

**Response:** The project will support short-term construction and construction-related jobs. The project area does not abut the shoreline and does not affect coastal development necessary to the State's economy. The project is in keeping with the land use patterns established by the Kihei-Makena Community Plan.

(6) **Coastal Hazards**

**Objectives:**

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

**Policies:**

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

- 
- (D) Prevent coastal flooding from inland projects; and
  - (E) Develop a coastal point and nonpoint source pollution control program.

**Response:** The property lies within Zone "C", which is defined as areas of minimal flooding. It is noted that changes in drainage patterns are not anticipated with the construction of the proposed improvements and no adverse drainage impacts to surrounding properties are anticipated. A drainage and soil erosion control plan shall be prepared and submitted in connection with the project's subdivision review and approval process. The proposed drainage measures which will be implemented with the proposed project will ensure that downstream and adjacent properties will not be adversely impacted.

(7) **Managing Development**

**Objectives:**

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

**Policies:**

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

**Response:** In compliance with Title 19 of the Maui County Code, the Rules of Practice and Procedures for the Maui Planning



---

Commission and the Special Management Area Rules for the Maui Planning Commission, required documentation for the project will be filed with the County Department of Planning and will undergo public review, public hearing, and decision by the Maui Planning Commission.

(8) **Public Participation**

**Objectives:**

Stimulate public awareness, education, and participation in coastal management.

**Policies:**

- (A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
- (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

**Response:** Opportunity for public awareness, education and participation pertaining to significant resource attributes of the coastal zone is provided through the Special Management Area procedures. A public hearing is required as part of the process.

(9) **Beach Protection**

**Objectives:**

Protect beaches for public use and recreation.

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**Policies:**

- (A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
- (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

**Response:** The proposed project will not impact shoreline activities. No adverse impact to beach processes is anticipated.

**(10) Marine Resources**

**Objectives:**

Implement the State's ocean resources management plan.

**Policies:**

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- (D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

- 
- (F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

**Response:** Improvements to the subject property will not adversely impact ocean resources. The proposed project is not anticipated to affect marine and coastal resources.

# **Chapter V**

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***Summary of Environmental  
Effects Which Cannot  
Be Avoided***

**V. SUMMARY OF ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED**

The proposed project will result in unavoidable construction-related impacts which include noise-generated impacts occurring from the proposed improvements. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions discharged by construction equipment.

The proposed project is not anticipated to create any significant, long-term adverse environmental effects.

# **Chapter VI**

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## ***Alternatives Analysis***

## **VI. ALTERNATIVES ANALYSIS**

### **A. ALTERNATIVE A**

Alternative A represents the proposed action. This alternative provides for the development of a 7-lot agricultural subdivision on a 23.1-acre parcel. The proposed development is consistent with the project site's land use designation in the Kihei-Makena Community Plan. The proposed development is in keeping with existing surrounding development in the area.

### **B. ALTERNATIVE B**

Alternative B is the no action or no build alternative. The project site is undeveloped and primarily vegetated with kiawe and buffel grass. The site also contains some known archaeological sites. The no action or no build alternative would involve a continuation of the underutilized and unmaintained nature of the property. The no action alternative is not considered a viable scenario in the context of the property's established land use allocation set forth by the Kihei-Makena Community Plan.

### **C. ALTERNATIVE C**

A number of site design alternatives were evaluated to ensure that site development constraints were adequately addressed. In particular, the siting and configuration of the proposed lots were evaluated with respect to site topographic and drainage conditions. The proposed site plan is considered optimum in terms of the foregoing criteria.

# ***Chapter VII***

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## ***Irreversible and Irretrievable Commitments of Resources***



**VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

The development of the subdivision would involve the commitment of land for the proposed action. However, this commitment is consistent with the land use established for the property by the Kihei-Makena Community Plan. There are no other significant irreversible and irretrievable commitment of resources associated with the proposed action.

# ***Chapter VIII***

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## ***Findings and Conclusions***

## **VIII. FINDINGS AND CONCLUSIONS**

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following analysis is provided:

1. **No Irrevocable Commitment to Loss or Destruction of any Natural or Cultural Resource Would Occur as a Result of the Proposed Project**

The proposed project will not result in any adverse environmental impacts. There are no known, endangered or threatened species of flora, fauna or avifauna located within the project site.

An archaeological preservation plan for the four (4) sites recommended for preservation in-place was recently submitted to the State Historic Preservation Division (SHPD) for review and approval. Should any artifacts or human remains be encountered during construction, work will stop in the immediate vicinity of the find and the SHPD will be immediately notified to establish an appropriate mitigation strategy.

2. **The Proposed Action Would Not Curtail the Range of Beneficial Uses of the Environment**

The proposed project and the commitment of land resources would not curtail the range of beneficial uses of the environment.

3. **The Proposed Action Does Not Conflict with the State's Long-term Environmental Policies or Goals or Guidelines as Expressed in Chapter 334, Hawaii Revised Statutes**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS). The proposed action is not contrary to the policies and guidelines set forth in Chapter 344, HRS.

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4. **The Economic or Social Welfare of the Community or State Would Not be Substantially Affected**

The proposed project would have a direct beneficial effect on the local economy during construction. In the long term, the proposed project will support the local economy through the contribution of salaries, wages, and benefits, as well as through the purchases of goods and services from local merchants and service providers.

5. **The Proposed Action Does Not Affect Public Health**

No impacts to the public's health and welfare are anticipated as a result of the proposed project.

6. **No Substantial Secondary Impacts, Such as Population Changes or Effects on Public Facilities are Anticipated**

No significant population changes are anticipated as a result of the proposed project.

From a land use standpoint, the proposed project is an enhancement of existing uses. The proposed project is intended to be compatible with surrounding properties, as well as properties in the Wailea Resort.

The proposed water and sewer improvements will be coordinated with the County and the developer of the adjoining Palaua Subdivision. No adverse impacts to water and wastewater capacities and facilities are anticipated. Onsite and offsite surface runoff are expected to be accommodated by the proposed drainage system improvements. The project is not expected to significantly impact public services such as police, fire, and medical services. Impacts upon educational, recreational, and solid waste collection and disposal facilities and resources are considered minimal.

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7. **No Substantial Degradation of Environmental Quality is Anticipated**

During the construction phase of the project, there will be short-term air quality and noise impacts as a result of the project. In the long term, effects upon air quality and ambient noise levels should be minimal. The project is not anticipated to significantly affect the open space and scenic character of the area.

No substantial degradation of environmental quality resulting from the project is anticipated.

8. **The Proposed Action Does Not Involve a Commitment to Larger Actions, Nor Would Cumulative Impacts Result in Considerable Effects on the Environment**

The proposed project will be developed in a single phase and does not involve a commitment to larger actions.

9. **No Rare, Threatened or Endangered Species or Their Habitats Would be Adversely Affected by the Proposed Action**

There are no rare, threatened or endangered species of flora, fauna, avifauna or their habitats on the subject property.

10. **Air Quality, Water Quality or Ambient Noise Levels Would Not be Detrimentially Affected by the Proposed Project**

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction-related activities. It is anticipated that construction will be limited to daylight working hours. Water quality is not expected to be affected.

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In the long term, the project is not anticipated to have a significant impact on air and water quality or ambient noise levels.

11. **The Proposed Project Would Not Affect Environmentally Sensitive Areas, Such as Flood Plains, Tsunami Zones, Erosion-prone Areas, Geologically Hazardous Lands, Estuaries, Fresh Waters or Coastal Waters**

The project is not located within and would not affect environmentally sensitive areas. The project site is not subject to flooding or tsunami inundation. Soils of the project site are not erosion-prone. There are no geologically hazardous lands, estuaries, or coastal waters within or adjacent to the project site.

12. **The Proposed Action Would Not Substantially Affect Scenic Vistas and Viewplanes Identified in County or State Plans or Studies**

The project site is not identified as a scenic vista or viewplane. The proposed project will not affect scenic corridors and coastal scenic and open space resources.

13. **The Proposed Action Would Not Require Substantial Energy Consumption**

The proposed project will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources. In the long term, the project will create an additional demand for electricity. However, this demand is not deemed substantive or excessive within the context of the region's overall energy consumption.

Based on the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

# ***Chapter IX***

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***List of Permits and Approvals***

## **IX. LIST OF PERMITS AND APPROVALS**

The following permits and approvals will be required prior to the implementation of the project.

### **State of Hawaii**

1. NPDES Permit (for stormwater discharge associated with construction activities)

### **County of Maui**

1. SMA Use Permit
2. Subdivision Approval
3. Construction Permits (Grubbing, Grading, Work to Perform on County Highway)



# **Chapter X**

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***Agencies Consulted During  
the Preparation of the Draft  
Environmental Assessment;  
Letters Received and Responses  
to Substantive Comments***

**X. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS**

The following agencies were consulted during the preparation of the Draft Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

1. Neal Fujiwara, Soil Conservationist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
210 Imi Kala Street, Suite 209  
Wailuku, Hawaii 96793-2100
2. George Young, Chief Regulatory Branch  
Department of the Army  
U.S. Army Engineer District, Hnl.  
Attn: Operations Division  
Bldg. T-1, Room 105  
Fort Shafter, Hawaii 96858-5440
3. Robert P. Smith  
Pacific Islands Manager  
U. S. Fish and Wildlife Service  
P.O. Box 50167  
Honolulu, Hawaii 96850
4. Gary Gill, Deputy Director  
Department of Health  
P.O. Box 3378  
Honolulu, Hawaii 96801
5. Herbert Matsubayashi  
District Environmental Health  
Program Chief  
State of Hawaii  
Department of Health  
54 High Street  
Wailuku, Hawaii 96793
6. Timothy Johns, Director  
State of Hawaii  
Department of Land and Natural  
Resources  
P. O. Box 621  
Honolulu, Hawaii 96809
7. Don Hibbard  
State of Hawaii  
Department of Land and Natural  
Resources  
State Historic Preservation  
Division  
601 Kamokila Blvd., Room 555  
Kapolei, Hawaii 96707
8. Robert Siarot, Maui District  
Engineer  
State of Hawaii  
Department of Transportation  
Highways Division  
650 Palapala Drive  
Kahului, Hawaii 96732
9. Colin Klppen, Deputy Administrator  
Office of Hawaiian Affairs  
711 Kapiolani Boulevard, Suite 500  
Honolulu, Hawaii 96813
10. Clayton Ishikawa, Chief  
County of Maui  
Department of Fire Control  
200 Dairy Road  
Kahului, Hawaii 96732
11. John Min, Director  
County of Maui  
Department of Planning  
250 South High Street  
Wailuku, Hawaii 96793
12. Charles Jencks, Director  
County of Maui  
Department of Public Works and  
Waste Management  
200 South High Street  
Wailuku, Hawaii 96793

- 
13. **Tom Phillips, Chief**  
**County of Maui**  
**Police Department**  
55 Mahalani Street  
Wailuku, Hawaii 96793
  14. **David Craddick, Director**  
**County of Maui**  
**Department of Water Supply**  
200 South High Street  
Wailuku, Hawaii 96793
  15. **Bill Overton**  
**Wailea Community Association**  
3750 Wailea Alanui, Suite F-21  
Kihei, Hawaii 96753
  16. **Rudy Luuwai**  
**Makena Homeowners Assoc.**  
5100 Makena Road  
Kihei, Hawaii 96753

# ***Comments***

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JUL 28 2000



United States  
Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

210 Iml Kala St.  
Suite 209  
Wailuku, HI 96793

*Our People...Our Islands...In Harmony*

DATE: July 27, 2000

Mr. Glenn Tadaki, Planner  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki,

SUBJECT: Subdivision of Parcel MF-21; TMK: 2-1-23: 1

I would recommend that significant natural drainage ways leading into the subdivision be left intact and be part of the project. Maintenance of the drainage ways throughout is needed.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Neal S. Fujiwara".

Neal S. Fujiwara  
District Conservationist

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhikewe Building, Room 555  
501 Kamehale Boulevard  
Kapolee, Hawaii 96707

TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES  
JANET E. KAWELO

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

August 1, 2000

Mr. Glen Tadaki  
Munekiyo, Arakawa, & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

LOG NO: 25935  
DCO NO: 0007CD30

Dear Mr. Tadaki:

**SUBJECT: Chapter 6E-42 Historic Preservation Review of the Proposed  
Subdivision of Parcel MF-21  
Pala'uea Ahupua'a, Makawao District, Island of Maui  
TMK:2-1-23:001**


Thank you for your recent inquiry as to the status of the proposed subdivision of parcel MF-21.

We have recently reviewed and accepted the report documenting the archaeological inventory survey (Fredericksen 2000) which was conducted of the subject property (SHPD DOC NO: 005RC08/LOG NO: 25381). As you know, we requested a preservation plan for all four significant sites. We have recently received a copy of this preservation plan (Fredericksen 2000) and it is currently undergoing review. As soon as this review is finalized we will be able to comment on the proposed subdivision.

Enclosed please find a copy of our comments reviewing the inventory survey report (SHPD DOC NO: 005RC08/LOG NO: 25381), as per your 24 July 2000 request.

Please call Cathleen Dagher at 692-8023 if you have any questions.

Aloha,

  
DON HIBBARD, Administrator  
State Historic Preservation Division

CD:an

BENJAMIN J. CAYITANO  
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES  
JANET T. KAWILO

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhāhā Building, Room 555  
801 Kamehāmeha Boulevard  
Honolulu, Hawaii 96807

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

May 4, 2000

Mr. Erik Fredericksen  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

LOG NO: 25381  
DOC NO: 0005RC08

Dear Mr. Fredericksen:

**SUBJECT: Review of Revised Archaeological Inventory Survey – Parcel MF-21  
Palauca, Makawao District (Honua'ula), Maui  
TMK: 2-1-23:1**

*This letter reviews the revisions to this report which our staff received on April 3, 2000 as revised pages (E. Fredericksen & D. Fredericksen 2000. An Archaeological Inventory Survey of Parcel MF-21 ...Xamanek ms.). The revisions were made in response to our letter of March 7, 2000 (Log: 25,046; Doc: 0003RC11).*

The revisions are fine, and the report is now acceptable.

We now agree with all your significance evaluations for the 10 sites in the project area. Four significant historic sites are present – 4804 (a small religious structure), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch era boundary wall).

We also agree with the mitigation commitment to preserve all 4 significant sites.

The next step in the review process is the submittal of a preservation plan to be approved by our office. Typically, this would be a condition of any approved Maui County permit or subdivision.

Aloha,

  
Don Hibbard, Administrator  
State Historic Preservation Division

RC:dnm

c: Land Use & Codes Administration (File 2,2586), Public Works Department,  
County of Maui  
Planning Department, County of Maui

BENJAMIN J. CAYETANO  
GOVERNOR



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

AUG 08 2000

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

HWY-M 2.236-00

July 27, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

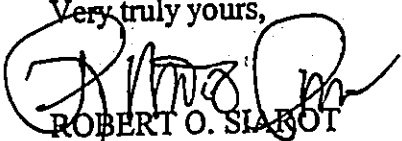
Dear Mr. Tadaki:

Subject: Subdivision of Parcel MF-21  
TMK: 2-1-23: 01

Thank you for the opportunity to review and comment on your project. Based upon our review, it appears that the proposed project will have negligible impacts to our facilities, therefore, we have no comments or objections to your project.

If there are any questions or concerns, please call me at 873-3535.

Very truly yours,

  
ROBERT O. SLABOT  
District Engineer, Maui

/pmc



AUG 09 2000



DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
FT. SHAFTER, HAWAII 96858-5440

REPLY TO  
ATTENTION OF

August 7, 2000

Regulatory Branch

Mr. Glen Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

This responds to your request for comments on proposed subdivision of Parcel MF-21 (TMK 2-1-23:01) into seven agricultural lots at Palauea, Maui, Hawaii. The information summary is not sufficiently detailed to determine if a Department of the Army (DA) permit will be required for this project. Please include us on the mailing list for the Environmental Assessment and include in the document information concerning the presence or absence of streams or wetlands on the project site.

Should you have any questions regarding this response, please contact Peter Galloway of my staff (telephone 438-8416; FAX 438-4060). File number 200000270 has been assigned to this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "George P. Young".

George P. Young, P.E.  
Chief, Regulatory Branch

Copies Furnished:

Clean Water Branch, State of Hawaii Department of Health,  
P.O. Box 3378, Honolulu, HI 96801-3386  
State of Hawaii, Department of Land and Natural Resources,  
Commission on Water Resource Management, P.O. Box 621,  
Honolulu, HI 96809

AUG 14 2000

JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING**

August 7, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

RE: AGENCY PRE-CONSULTATION RELATIVE TO AN  
ENVIRONMENTAL ASSESSMENT FOR PARCEL MF-21, MAKENA,  
MAUI, HAWAII; TMK: 2-1-023:001

The Planning Department (Department) has reviewed the project summary of the MF-21 Subdivision in Makena. The property is within the State Urban District and is zoned and community planned Agriculture.

The project is also located within the Special Management Area (SMA) of the County of Maui and as such, the proposed subdivision improvements are subject to the SMA Rules for the Maui Planning Commission.

Issues which will most likely surface with regard to development of the proposed subdivision include:

1. Archaeological resources as the project is immediately adjacent to a historical site which is being preserved as a 20-acre cultural preserve park;
2. The project's compliance with the County Agricultural District ordinance;
3. The project's compliance with the objectives and policies identified in the Kihei-Makena Community Plan;
4. The adequacy of the infrastructure to accommodate the proposed project;

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793  
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

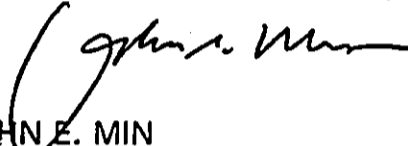
Mr. Glenn Tadaki  
August 7, 2000  
Page 2

5. The subdivision's compliance with the Maui County Planting Plan;
6. Input from the Community Associations which may have an interest in the area.

The above issues should be discussed in the Draft Environmental Assessment.

Thank you for your cooperation in this matter. If further clarification is required, please contact Ms. Ann Cua, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN  
Planning Director

JEM:ATC:cmp

c: Clayton Yoshida, AICP, Deputy Planning Director  
Charles Jencks, Director, Department of Public Works  
and Waste Management  
Aaron Shinmoto, Planning Program Administrator  
Ann Cua, Staff Planner  
Project File  
General File S:\ALL\ANN\MF21PREE.WPD



JAMES "KIMO" APANA  
MAYOR

OUR REFERENCE

YOUR REFERENCE

**POLICE DEPARTMENT**  
COUNTY OF MAUI

55 MAHALANI STREET  
WAILUKU, HAWAII 96793  
(808) 244-6400  
Fax (808) 244-6411

August 14, 2000



THOMAS M. PHILLIPS  
CHIEF OF POLICE

KEKUHAPIO R. AKANA  
DEPUTY CHIEF OF POLICE

MEMORANDUM

TO : MR. GLENN TADAKI, PLANNER  
MUNEKIYO, ARAKAWA & HIRAGA, INC.

FROM : THOMAS M. PHILLIPS  
CHIEF OF POLICE

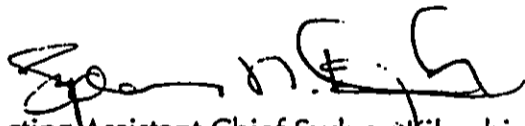
SUBJECT : TMK : 2-1-23:01  
Project Name: SUBDIVISION OF PARCEL MF-21  
Applicant : LUCKY SEVEN DEVELOPMENT, LLC

\_\_\_\_\_

No recommendation or special condition is  
necessary or desired.

  X  

Refer to attachment.

  
Acting Assistant Chief Sydney Kikuchi  
For: THOMAS M. PHILLIPS  
Chief of Police

Attachment

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TO : THOMAS M. PHILLIPS, CHIEF OF POLICE  
VIA : CHANNELS  
FROM : O. NONEZA, JR., COMMUNITY POLICE OFFICER  
SUBJECT : SUBDIVISION OF PARCEL MF-21, TMK 2-1-23:01

*AC* *OK*  
*8/11/00*


This officer has reviewed the letter from Mr. Glenn Tadaki of Munekiyo, Arakawa & Hiraga, Incorporated; on behalf of applicant LUCKY SEVEN DEVELOPMENT, LLC, regarding a proposal to subdivide the above referenced parcel.

Mr. Tadaki has provided a "general overview" of the applicant's intentions in order to solicit comments as provided by the Administrative Rules of the State Department of Health. The applicant recognizes that the proposed action falls within Special Management Area (SMA) limits and therefore will require an SMA permit application.

Based upon the limited information provided in this letter with attachments, this officer has only one comment/question at this time reserving detailed concerns and recommendations for the forthcoming Environmental Assessment to accompany the SMA permit application process.

Since the referenced parcel - irrespective of its classification as agricultural land - is unsuitable for agriculture being comprised mostly of stony eroded lava, is this request to subdivide a prelude to the development of what is characterized as "gentlemen estates"?

Respectfully submitted,

  
O. NONEZA, Jr.  
August 7, 2000

E-0865  
2255-Hours

*Noted: 8/8/00*  
*Sgt. [Signature]*

*mf 8/8/00*

AUG 24 2000

JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PLANNING

August 21, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

RE: Agency Pre-Consultation Relative to an Environmental Assessment  
for Parcel MF-21, Makena, Maui, Hawaii; TMK: 2-1-023:001

The Maui Planning Department (Department) is hereby amending its August 7, 2000 comment letter relative to the above project.

Please be advised that the subject property is within the State Agricultural District and not the Urban District. All other comments contained in the August 7, 2000 letter are still applicable.

Thank you for your cooperation in this matter. If further clarification is required, please contact Ms. Ann Cua, Staff Planner, of this office at 270-7735.

Very truly yours,

A handwritten signature in black ink, appearing to read "John E. Min".

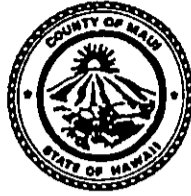
JOHN E. MIN  
Planning Director

JEM:ATC:cmb

c: Clayton Yoshida, AICP, Deputy Planning Director  
Charles Jencks, Director, Department of Public Works and Waste Management  
Aaron Shinmoto, Planning Program Administrator  
Ann Cua, Staff Planner  
Project File  
General File

S:\VALLIANN\mf21pre2.ltr.wpd

AUG 30 2000



**DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-7109  
Telephone (808) 270-7816 • Fax (808) 270-7199**

August 23, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

**SUBJECT:** Subdivision of Parcel MF-21  
TMK 2-1-23:01

Dear Mr. Tadaki,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (EA).

The EA should include the sources and expected potable and non-potable water usage. This project area is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of August 1, 2000 were 17.762 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resource Management will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. Another well producing about 1 MGD was brought on-line during the first quarter of 2000. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. Nevertheless, the applicants should be made aware that the timing of this project may be affected with possible delays until new sources can be brought on-line. No guarantee of water is granted or implied as a result of these comments. Water availability will be reviewed at the time of application for meter or meter reservation.

We have included a portion of our water system map pertaining to the project area. The applicant will be required to provide water service and fire protection to standards, close gap in 12" water line and construct waterline and fire protection improvements along Makena Alanui Road and Makena Keoneoio Road, as stated in DWS Preliminary Plat Review comments. Domestic, fire, and irrigation calculations will be reviewed in detail during the subdivision process.

As much of the water demand as possible should be delivered from non-potable sources (reclaimed or brackish). Where appropriate, the applicants should consider these measures:  
**Eliminate Single-Pass Cooling:** Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

**Utilize Low-Flow Fixtures and Devices:** Maui County Code Subsection 16.20A-680 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

**Maintain Fixtures to Prevent Leaks:** A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

**Use Climate-adapted Plants:** Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 3 and 5. Please refer to the attached document, "Saving Water in the Yard: What & How to Plant in Your Area"

**Prevent Over-Watering By Automated Systems:** Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

The project overlies the Kamaole aquifer. The Department of Water Supply strives to protect the integrity of surface water and groundwater resources by encouraging applicants to adopt best management practices (BMPs) relevant to potentially polluting activities. We list a few BMP references here. Additional information can be obtained from the State Department of Health.

"The Megamanual - Nonpoint Source Management Manual - A Guidance Document for Municipal Officials." Massachusetts Department of Environmental Protection.

"Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters." United States Environmental Protection Agency, Office of Water.

If you need additional information, please call our Water Resources and Planning Division at 270-7199.

Sincerely,



David Craddick  
Director  
emb

cc: engineering division

attachments:

- 1) "The Costly Drip"
- 2) "Saving Water in the Yard: What & How to Plant in Your Area"
- 3) Ordinance 2108 - "An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
- 4) A Checklist of Water Conservation Ideas for the Home
- 5) Portion of fire water system map

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*By Water All Things Find Life*



AUG 23 2000



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P.O. BOX 621  
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND DIVISION  
STATE PARKS  
WATER RESOURCE MANAGEMENT

August 22, 2000

LD-NAV

Ref.: LUCKYSEVEN.RCM

Munekiyo, Arakawa & Hiraga, Inc.  
Gleen Tadaki, Planner  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

SUBJECT: Pre-Consultation for proposed action to create seven (7)  
agricultural lots ranging in size of 2.4 to 4.3 acres at  
Palauea, Island of Maui, Hawaii TMK: 2<sup>nd</sup>/ 2-1-23: 001

Thank you for the opportunity to review and comment on the  
subject matter.

We had transmitted the subject informational material to our  
appropriate divisions and their branches for their review and  
comment on the proposed project.

Attached herewith is a copy of our Commission on Water  
Resource Management comments related to water resources.

The Department has no other comment to offer at this time.

Should you have any questions, please contact Nicholas A.  
Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Dean Y. Uchida".

DEAN Y. UCHIDA  
Administrator

C: Maui District Land Office

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Land Division  
Honolulu, Hawaii

09 JUL 26 P2:24

OFFICE OF THE ATTORNEY GENERAL  
RECEIVED

July 25, 2000

LD/NAV

Ref.: LUCKYSEVEN.COM

Suspense Date: 8/15/00

MEMORANDUM:

TO: XXX Division of Aquatic Resources  
XXX Division of Forestry & Wildlife  
XXX Division of State Parks  
Division of Boating and Ocean Recreation  
XXX Historic Preservation Division  
XXX Commission on Water Resource Management  
Land Division Branches of:  
XXX Planning and Technical Services  
XXX Engineering Branch  
XXX Maui District Land Office  
Shoreline Processing Services

FROM: Dean Y. Uchida, Administrator  
Land Division *Dean Y. Uchida*

SUBJECT: Pre-consultation for proposal action to create 7  
agricultural lots ranging in size of 2.4 to 4.3 acres at  
Palaea, Island of Maui, Hawaii TMK: 2<sup>nd</sup>/ 2-1-23: 001

Please review the following:

Proposed action

and submit your comments (if any) on Division letterhead within the  
time requested above. Should you need more time to review the  
subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the  
suspense date, we will assume there are no comments.

( ) We have no comments.

( ) Comments attached.

Signed:

Date:

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



ALO IS 10 04 1' 00

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
P.O. BOX 621  
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS  
CHAIRPERSON  
BRUCE S. ANDERSON  
ROBERT G. GIRALD  
BRIAN C. NISHIDA  
DAVID A. NOBRIGA  
HERBERT M. RICHARDS, JR.  
LINNEL T. NISHIOKA  
DEPUTY DIRECTOR

August 11, 2000

TO: Mr. Dean Uchida, Administrator  
Land Division

FROM: Linnel T. Nishioka, Deputy Director *L. Nishioka*  
Commission on Water Resource Management (CWRM)

SUBJECT: Palauea Lucky Seven Agriculture Subdivision Pre-consultation

FILE NO.: LUCKYSEVEN.COM

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:

(1) This appears to be an urban area; (2) Irrigation water available for agriculture may be at a premium, and groundwater is quite brackish; (3) The aquifer that provides the potable water supply for this area has been overpumped beyond its sustainable yield in the recent past, and the aquifer continues to show signs it has not fully recovered. If the Commission has to designate the aquifer as a water management area, all groundwater withdrawals to the purveyor would be subject to water use permits. The service area would be subject to a declaration of a water shortage or a water emergency. If withdrawals are constrained, uses may be subject to allocation to users by the purveyor.

If there are any questions, please contact Charley Ice at 587-0251.

# Responses

August 2, 2000

Neal Fujiwara, District Conservationist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
210 Imi Kala Street, Suite 209  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

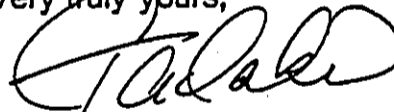
Dear Mr. Fujiwara:

Thank you for your July 27, 2000 letter commenting on the subject project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

The natural drainageways mauka of the project site and Makena Alanui are within the limits of the Wailea Resort's Emerald Course and are maintained by Wailea Golf Resort, Inc. In addition, provisions for the maintenance of the major natural drainageways are included in the deed restrictions for the subject property and shall also be included in the Covenants, Conditions and Restrictions (CC&Rs) for the subdivision.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC

lucky7/mf21/nrcaltr.001

August 16, 2000

John Min, Director  
Planning Department  
County of Maui  
250 South High Street  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Min:

Thank you for your August 7, 2000 letter providing comments on the above-referenced project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

1. An archaeological inventory survey was prepared for the subject property and will be included in the subject's Draft Environmental Assessment (EA). In addition, an archaeological preservation plan for the four (4) significant sites located during the survey was recently submitted to the State Historic Preservation Division for review and approval.
2. The proposed project will comply with the provisions of Chapter 19.30A pertaining to the County Agricultural District.
3. The subject property is designated "Agricultural" by the Kihei-Makena Community Plan. The proposed use of the property is consistent with the following objectives and policies of the Community Plan.

Cultural Resources: Identify, preserve, protect, and restore significant historical and cultural sites.

Housing and Urban Design: Provide for integration of natural physical features with future development of the region.

Transportation: Protect and preserve the traditional rural scale and character of existing portions of old Makena Road in a manner similar to that existing at Keawalai Church.

John Min, Director  
August 16, 2000  
Page 2

Water Distribution: Provide for appropriate water source and transmission improvements concurrent with planned growth of the Kihei-Makena region.

Land Use Standards: All zoning applications and/or proposed land uses and developments shall be consistent with the Land Use Map and Objectives and Policies of the Kihei-Makena Community Plan.

4. A discussion of existing infrastructure systems and proposed infrastructure improvements relating to the project will be included in the subject's Draft EA.
5. With regard to the Maui County Planting Plan, a street tree planting plan will be submitted to the Planning Department for review and approval in connection with the review and approval process for the proposed subdivision.
6. The Wailea Community Association and the Makena Community Association were consulted during the preparation of the Draft EA and had no comments to offer.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Sincerely,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC  
Ralph Nagamine, Dept. of Public Works and Waste Management

lucky7/mf21/pdtr.002

August 18, 2000

Thomas M. Phillips, Chief  
Maui Police Department  
County of Maui  
55 Mahalani Street  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Phillips:

Thank you for your August 14, 2000 letter commenting on the above-referenced project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note that the proposed project involves the subdivision of the subject parcel to create seven (7) agricultural/residential lots.

As such, the proposed project will comply with the provisions of Chapter 205A, Hawaii Revised Statutes, pertaining to the State Agricultural District, as well as with the provisions of Chapter 19.30A of the Maui County Code pertaining to the County Agricultural District.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Sincerely,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC  
Glen Ueno, Dept. of Public Works and Waste Management

lucky7/mf21/mpdltr.001



August 29, 2000

Dean Uchida, Administrator  
Department of Land  
and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr Uchida:

Thank you for your August 22, 2000 letter providing the Commission on Water Resource Management's comments on the subject project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

The subject property is located within the State Agricultural District and is designated Agricultural by both the Kihei-Makena Community Plan and Maui County zoning.

As of August 1, 2000, the rolling annual average groundwater withdrawals from the Iao Aquifer was 17.762 million gallons per day (MGD). These withdrawals are within the limits of the regulatory 20 MGD sustainable yield of this aquifer.

Recent discussions with the County's Department of Water Supply (DWS), Water Resource and Planning Division have indicated that new sources will be brought on-line to supplement the water provided by the Iao Aquifer. One (1) new well, with a pumpage of about 0.8 MGD, was brought on-line during the first quarter of this year, and will be followed by one (1) more new well with a capacity of 1.0 MGD during the latter part of the year. In addition, two (2) new wells, with a capacity of 1.0 MGD per well, are projected for on-line production by late 2001. The source of water for these four (4) new wells is the Waihee aquifer. It should also be noted that two (2) wells in North Waihee, pumping at a combined rate of 1.5 MGD, were brought on-line by the DWS in July 1997.

The foregoing measures notwithstanding, the applicant acknowledges the potential regulatory implications of water management area designation by the Commission on Water Resource Management.



# **Chapter XI**

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***Letters Received During  
the Draft Environmental  
Assessment Public Comment  
Period and Responses to  
Substantive Comments***

**XI. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT PUBLIC COMMENT PERIOD AND RESPONSES TO SUBSTANTIVE COMMENTS**

Pursuant to the requirements of the environmental review process, comments received, as well as responses to substantive comments, are included in this section.

**DRAFT ENVIRONMENTAL  
ASSESSMENT COMMENT LETTERS**

BENJAMIN J. CAYETANO  
GOVERNOR



ESTHER UEDA  
EXECUTIVE OFFICER

STATE OF HAWAII  
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM  
LAND USE COMMISSION

P.O. Box 2359  
Honolulu, HI 96804-2359  
Telephone: 808-587-3822  
Fax: 808-587-3827

'00 SEP 29 P12:27

DEPT OF BUSINESS  
COUNTY OF MAUI  
RECEIVED

September 27, 2000

Mr. John E. Min  
Planning Director  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Application for Special Management Area Use Permit  
(SM1 2000/0025), Subdivision of Parcel MF-21,  
Palauea, Maui, TMK 2-1-23: 1

We have reviewed the subject application forwarded by your transmittal dated September 15, 2000, and confirm that the subject property, as represented on the Site Location Map, is designated within the State Land Use Agricultural District.

Inasmuch as the application involves the proposed subdivision of the subject parcel into seven agricultural/residential lots, clarification should be provided as to the specific agricultural uses that are planned for each lot. We would like to point out that §205-2(d), Hawaii Revised Statutes (HRS), requires that all dwellings in the Agricultural District must be farm dwellings, as defined in §205-4.5(a)(4), HRS.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject application.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

A handwritten signature in cursive script, appearing to read "Esther Ueda".

ESTHER UEDA  
Executive Officer

EU:aa

SEP 29 2000

BENJAMIN J. CAYETANO  
GOVERNOR



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 588-4185  
FACSIMILE (808) 588-4186

September 28, 2000

Mr. Glen Ueno  
County of Maui  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Hawai'i 96793

Dear Mr. Ueno:

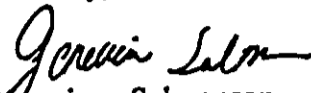
Subject: Lucky Seven Development (Subdivision of Parcel MF-21), Palauea, Maui

Thank you for the opportunity to review the subject document. We have the following comments.

1. A small complex that contains a possible ceremonial structure is located within this project site. Please conduct a cultural impact assessment to determine whether cultural practices of the community will be affected by this project.
2. The project description states that the parcel will be subdivided to create seven agricultural lots. Please describe in further detail the types of development that may occur on this parcel of land. Is full scale agricultural activity anticipated or will homes be built?
3. The subject project is near the coastal area. Storm water from this site eventually flows into the ocean. Please describe the Best Management Practices that will be used to avoid or minimize storm runoff during construction from entering and polluting the ocean.
4. Once the final archaeological preservation plan is approved by the State Historic Preservation Division, it should be incorporated as a condition of the SMA permit.
5. We recommend that the wastewater from this project be eventually treated to a level where it can be reused for irrigation or other useful purposes.

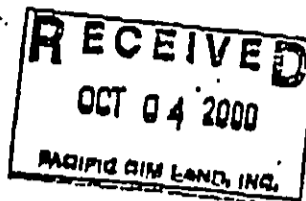
Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

  
Genevieve Salmonson  
Director

c: Lucky Seven Development, LLC  
Munekiyo, Arakawa & Hiraga, Inc.





**DEPARTMENT OF WATER SUPPLY**  
**COUNTY OF MAUI**  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-8109  
Telephone (808) 270-7818 • Fax (808) 270-7833

October 2, 2000

Mr. John Min, Director  
County of Maui  
Planning Department  
250 South High Street  
Wailuku, Maui, Hawaii 96793

I.D.: SM1 2000/0025  
TMK: 2-1-23:001  
Project Name: Subdivision of Parcel MF-21

Dear Mr. Min,

Thank you for the opportunity to comment on this application.

The applicant estimates water use for single family development of the project site to 30,920 gallons per day (gpd). This estimate assumes that only 1 acre of each lot will be developed. Should remaining land actually be utilized for agriculture, that would add approximately 71,500 gpd to the applicant's estimate for a total of 102,420 gpd, or result in a total consumption of 115,500 gpd for the entire project site, based on system standards. Empirically, consumption in the Wailea area tends to be high. Assuming that undeveloped portions of lots will be irrigated, water consumption for this project would be about 69,300 gpd, based on system per-acre standards for single family development. The applicant will be required to provide fire and domestic service according to Department standards. All domestic, fire, and irrigation calculations will be reviewed in detail during the development process.

The Wailea area is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of September 1, 2000 were 17,549 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resource Management will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. Another well producing about 1 MGD was brought on-line during the first quarter of 2000. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. Nevertheless, the applicants should be made aware that the timing of this project may be affected with possible delays until new sources can be brought on-line. No guarantee of water is granted or implied as a result of these comments. Water availability will be reviewed at the time of application for meter or meter reservation.

Brackish and/or reclaimed water sources should be used for all non-potable uses, including dust control during construction and irrigation, if such alternative sources are available. To further conserve water resources, the applicant should refer to the attached documents and consider these measures:

**Use Climate-adapted Plants:** We are very pleased to see the extensive use of native plants proposed for perimeter landscaping in the preliminary landscape plan. Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 3 and 5.

**Utilize Low-Flow Fixtures and Devices:** Maui County Code Subsection 16.20.675 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs.

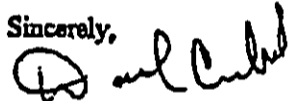
**Maintain Fixtures to Prevent Leaks:** A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

**Limit Irrigated Turf:** Limit irrigated turf to 25% or less of total landscaped area. Concentrate any irrigated turf in a comfortable, active play and picnicking area. Turf species with low water use requirements include Buffalograss, Common and "No-Mow" Bermuds and Zoysia. However, low-water use shrubs and groundcovers can be equally attractive and require substantially less water than turf. Substitute these for turf in side yards, boundaries, median areas and wherever active use of the lawn is not intended.

**Prevent Over-Watering By Automated Systems:** For all median strips and common areas, provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

Should you have any questions, please call the Water Resources and Planning Division at: 270-7199.

Sincerely,



David Craddick  
Director

emb

C:\WP60\Projects\2000\Luauky Seven MF 21.rpd

cc: engineering division  
applicant, with attachments:

- 1) "The Costly Drip"
- 2) Maui County Department of Water Supply, "Saving Water in The Yard - What and How to Plant In Your Area."
- 3) Ordinance 2108 - "An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
- 4) A Checklist of Water Conservation Ideas For Cooling
- 5) A Checklist of Conservation Ideas for the Home
- 6) Selected BMPs from "Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters."
- 7) References for Further Reading from "The Megamanual - Nonpoint Source Management Manual." Commonwealth of Massachusetts

*By Water All Things Find Life*



# LIFE OF THE LAND

*Ua Mau Ke Ea O Ka Aina I Ka Pono*  
Hawai'i's own local Community Action Group  
Protecting our Fragile Natural & Cultural Resources  
through Research, Education, Advocacy & Litigation

October 5, 2000

Glen Ueno  
County of Maui, Dept of Public Works & Waste Mgmt  
200 South High Street  
Wailuku, Hawai'i 96793

Michael Munekiyo  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawai'i 96793

re: Lucky Seven MF Draft EA

Aloha,

The project appears to be dividing a large agricultural project into smaller agricultural parcels.

"The subject property falls within the State 'Agricultural' district." (page 1) "The applicant proposes to subdivide the subject property to create seven (7) agricultural lots." (page 4) "The proposed development is anticipated to complement existing residential, resort, business/commercial and recreational uses in the Wailea Resort. From a land planning standpoint, the subject property provides an appropriate location for a low density residential development. The proposed project is in keeping with the general low density theme found in the resort and along Old Makena Road. In this regard, the proposed action is not anticipated to have an adverse impact upon surrounding uses and is compatible with existing land uses in the vicinity." (page 30)

However, no where in the document does it explicitly state that the land is intended to remain in agriculture. Furthermore, what happens if the new owners want to change the use? Is there something in the future sale and/or lease documents to guarantee future agricultural use?

Is there a hidden urbanization agenda? Will there be controls to guarantee an agricultural future for this land? How will these controls be enforced? If the intent is "gentleman farms" then what are the positive and negative impacts of "gentleman farms"? How will this affect the future of diversified agriculture on state agricultural lands? Will this development contribute to sprawl?

Will you use IPM? Please give examples. How will pesticides, herbicides, rodenticides, sedimentation and other non-point source polluted runoff be controlled? What impacts might occur to offshore coral colonies? How can these impacts be mitigated?

What are the potential electrical infrastructures that may be built? Will you use overhead lines, underground lines, renewable-energy, fossil-fuel, biomass, and/or polluting energy sources? Will energy conservation methods be employed?

How will traditional and customary rights be protected? How will archeological sites be protected?

*Henry Curtis*  
Henry Curtis  
Executive Director

\* 76 North King Street \* Suite 203 \* Honolulu, Hawai'i 96817 \* phone: 533-3454 \* fax: 533-0993 \*  
\* email: <lifeoftheland@hotmail.com> \*

JAMES "KIMO" APANA  
Mayor

CHARLES JENCKS  
Director

DAVID C. GOODE  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT  
200 SOUTH HIGH STREET  
WAILUKU, HAWAII 96793

001 27 2000  
RALPH NAGAMINE, L.S., P.E.  
Land Use and Codes Administration

RON R. RISKA, P.E.  
Wastewater Reclamation Division

01 01 02  
LLOYD P.C.W. LEE, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

ANDREW M. HIROSE  
Solid Waste Division

October 19, 2000

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: DAVID GOODE, DIRECTOR OF PUBLIC WORKS  
AND WASTE MANAGEMENT *David Goode*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT APPLICATION  
SUBDIVISION OF PARCEL MF-21  
LUCKY SEVEN DEVELOPMENT LLC  
TMK: (2) 2-1-023:001  
SM1 2000/0025

We reviewed the subject application and have the following comments.

1. The Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
2. The developer is required to fund any necessary off-site improvements to the collection system and wastewater pump stations and pay assessment fees for treatment plant expansion.
3. Makena Alanui shall be improved with curb, gutter, and sidewalk along the subject property's boundary. Old Makena Road (Makena-Keoneoio Road) shall be resurfaced only. Existing topographic features and the Kihei-Makena Community Plan discourages urban level improvements such as curb, gutter, and sidewalk on Old Makena Road.
4. A road widening lot shall be provided at the intersection of Makena Alanui and Old Makena Road to accommodate a 30-foot turning radius.
5. Makena Alanui is designated as a limited vehicular access roadway. Therefore, driveway access to the three lots along Makena Alanui shall have a minimum spacing of 300 feet.

Mr. John E. Min  
October 19, 2000  
Page 2

6. A site plan and a sight distance report to determine required sight distance and available sight distance at existing and proposed driveways shall be provided for our review and approval.
7. A detailed final drainage report and a site specific erosion control plan shall be submitted with the construction plans for review and approval prior to the issuance of a grading permit. The drainage report shall be prepared by a professional civil engineer licensed in the State of Hawaii and shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The site specific erosion control plan shall show the location and details of structural and non-structural Best Management measures.

If you have any questions, please call David Goode at 270-7845.

DG:msc/mt  
S:\LUCA\CZM\lucky7.wpd

JAMES "KIMO" APANA  
Mayor

CHARLES JENCKS  
Director

DAVID C. GOODE  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT**  
200 SOUTH HIGH STREET  
WAILUKU, HAWAII 96793

NOV 9 7 2000  
RALPH NAGAMINE, L.S., P.E.  
Land Use and Codes Administration

RON R. RISKA, P.E.  
Wastewater Reclamation Division

UUC  
LLOYD P.C.W. LEE, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

ANDREW M. HIROSE  
Solid Waste Division

October 19, 2000

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: DAVID GOODE, DIRECTOR OF PUBLIC WORKS  
AND WASTE MANAGEMENT *David Goode*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT APPLICATION  
SUBDIVISION OF PARCEL MF-21  
LUCKY SEVEN DEVELOPMENT LLC  
TMK: (2) 2-1-023:001  
SM1 2000/0025

We reviewed the subject application and have the following comments.

1. The Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
2. The developer is required to fund any necessary off-site improvements to the collection system and wastewater pump stations and pay assessment fees for treatment plant expansion.
3. Makena Alanui shall be improved with curb, gutter, and sidewalk along the subject property's boundary. Old Makena Road (Makena-Keoneoio Road) shall be resurfaced only. Existing topographic features and the Kihei-Makena Community Plan discourages urban level improvements such as curb, gutter, and sidewalk on Old Makena Road.
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Mr. John E. Min  
October 19, 2000  
Page 2

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If you have any questions, please call David Goode at 270-7845.

DG:msc/mt  
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BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D., M.P.H.  
DIRECTOR OF HEALTH

OCT 30 11:53 PM '00

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

In reply, please refer to:  
File:

October 30, 2000

00-193/epo

Mr. John E. Min, Director  
Planning Department  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Application for Special Management Area Use Permit  
(SM1-2000/0025)  
Subdivision of Parcel MF-21  
Makai of Makena Alanui Road near  
Wailea Emerald Golf Course  
Makena, Maui  
TMK: 2-1-23:1

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

Wastewater

The subject subdivision is located within the county sewer system. As the area is sewerred, the subdivision must be connected to a public sewer.

The developer should work closely with the County to assure the availability of additional treatment capacity and adequacy for the project. Non-availability of treatment capacity will not be an acceptable justification for use of any private treatment works or individual wastewater system.

If you should have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at 586-4290.



Mr. John E. Min, Director  
October 30, 2000  
Page 2

Noise Concerns

1. Activities associated with the construction phase of the project must comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."
  - a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the rules as stated in Section 11-46-6(a).
  - b. Construction equipment and on-site vehicles requiring an exhaust of gas or air must be equipped with mufflers as stated in Section 11-46-6(b)(1)(A).
  - c. The contractor must comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7(d)(4).
2. Heavy vehicles traveling to and from the project site must comply with the provisions of the Administrative Rules, Chapter 11-42, "Vehicular Noise Control for Oahu."
3. Through facility design, sound levels emanating from stationary equipment such as air conditioning systems, exhaust fans, refrigeration compressors or generators must be attenuated to comply with the provisions of the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."
4. Noise from religious and recreational activities associated with such facilities, as well as vehicular traffic entering and leaving the premises, may have adverse impacts on adjacent residences.

Should there be any questions on this matter, please call Mr. Russell Takata, Environmental Health Program Manager of the Noise, Radiation and Indoor Air Quality Branch at 586-4701.

Mr. John E. Min, Director  
October 30, 2000  
Page 3

Vector Control

The property may be harboring rodents which will be dispersed to the surrounding areas when any buildings are demolished or the site is cleared. The applicant is required by Hawaii Administrative Rules, Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the local Vector Control Branch when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at least a week or until the rodent activity ceases.

The Vector Control Branch phone numbers are as follows:

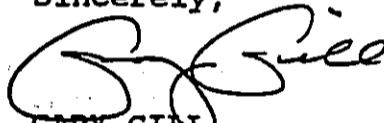
Oahu: 831-6767--

Kauai: 241-3306

Hawaii--Hilo: 974-4238, Kona: 322-7011

Maui (includes Molokai and Lanai): 873-3560

Sincerely,



GARY GILL  
Deputy Director  
Environmental Health Administration

c: MDHO  
NR&IAQB  
WWB  
VCB

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



DEC 05 2000

TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES  
JANET E. KAWELO  
LINNELL NISHIOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhikawa Building, Room 565  
601 Kamokila Boulevard  
Kapolei, Hawaii 96707

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

November 20, 2000

Mr. John E. Min, Director  
Department of Planning-Maui County  
250 South High Street  
Wailuku, Hawaii 96793

LOG NO: 26534 ✓  
DOC NO: 0011CD24

Dear Mr. Min,

**SUBJECT: Chapter 6E-42 Historic Preservation Review of the Application for a Special Area Use Permit for the Proposed Subdivision of Parcel MF-21 (Subject I.D. No. : SM1 2000/0025) Palauea Ahupua`a, Makawao District, Island of Maui TMK: 2-1-23:001**

Thank you for the opportunity to review the Special Area Use Permit Application (SMA) for the proposed subdivision of Parcel MF-21.

Based on the submitted SMA, we understand the proposed undertaking consists of the subdivision of the subject property (23.1 acres) to create seven agricultural lots, 2.4 acres to 4.3 acres. The improvements to the currently vacant property include, clearing, grubbing, grading work in accordance with drainage and setback criteria; installation of utility lines (water, sewer, electrical, etc.), street vegetation planting, construction of driveways and aprons, improvements to Makena Alanui and Old Makena Road. The waterlines will be installed with the Makena Alanui and Old Makena Road rights-of-way.

An archaeological inventory survey has been conducted of the subject property and the report documenting the findings has been reviewed and accepted by this office (SHPD DOC NO: 0005RC08/LOG NO: 25381) and an acceptable preservation plan is in place (SHPD DOC NO: 0008MK09/LOG NO: 26156), as well. The following of the preservation plan will ensure that there will be "no adverse effect" on significant historic sites during the proposed undertaking.

Please notify Dr. Melissa Kirkendall at 243-5169 when preservation measures are in place, she will conduct a site inspection to verify the orange construction fencing is in place. Written verification of the placement of the construction fencing will be provided by this office to the appropriate agency prior to the commencement of any ground-altering activities.

Please call Cathleen Dagher at 692-8023 if you have any questions.

Aloha

  
Don Hibbard, Administrator  
State Historic Preservation Division

CD:jen

c: Mr. Glen Tadaki (fax: 244-8729)  
Mr. Dean Uchida, Land Division

**DRAFT ENVIRONMENTAL  
ASSESSMENT RESPONSE LETTERS**

October 19, 2000

Esther Ueda, Executive Director  
Land Use Commission  
Department of Business, Economic  
Development & Tourism  
State of Hawaii  
P.O. Box 2359  
Honolulu, Hawaii 96804

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Ms. Ueda:

Thank you for your September 27, 2000 letter providing comments on the subject project. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.

The soil type underlying the majority of the project site is very stony land (rVS). This soil type is characterized by areas where 50 to 90 percent of the surface is covered with stones and boulders making it poorly suited for productive agricultural activity. The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui also indicates that the land underlying the subject property has an overall agricultural suitability rating of "E", a designation which reflects lands of the lowest productive capacity.

Agricultural activities on the proposed lots shall be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County Zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses for each lot are not known at this time, agricultural land conservation is considered to be a viable and appropriate use especially when considering the very stony soil and low agricultural productivity rating of the subject property. Other possible agricultural uses include but are not limited to small-scale fruit, plant, flower, and vegetable growing activities.

Esther Ueda, Executive Director  
October 19, 2000  
Page 2

Thank you again for providing us with your comments.

Sincerely,



Glen Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Planning Department

lucky7/mf21/uctr.001

10/19/00 10:00 AM

October 19, 2000

David Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Craddick:

Thank you for your October 2, 2000 letter providing comments on the subject project. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.

The project's estimated water demand of 30,920 gallons per day (gpd) reflects the development of the subdivision at full build-out. Of this total, 8,400 gpd is projected for domestic use, while 6,000 gpd and 16,520 gpd are estimated for the subdivision's perimeter landscaping and interior landscaping, respectively. The estimated irrigation water demand for the interior landscaping assumes that a 1-acre portion of each of the lots will be developed to include dwellings, driveways, and landscaping, while the remaining areas will be left undeveloped. It should be noted that the actual water use for each lot will be subject to the agricultural activity that is implemented. While these uses are not presently known, the following factors will need to be considered.

The soil underlying the majority of the project site is very stony land (rVS). This soil type is characterized by areas where 50 to 90 percent of the surface is covered with stones and boulders making it poorly suited for productive agricultural activity. In addition, the Land Study Bureau's Detailed Land Classification for Maui indicates that the land underlying the site has an overall agricultural suitability rating of "E". This rating reflects lands of the lowest productive capacity.

In light of the foregoing, the area utilized for agricultural development is likely to be limited in size and the irrigation water demand is expected to commensurate with the nature and extent of the agricultural use that is employed. Toward this end, agricultural uses that are both viable and compatible with existing field conditions are more likely to be considered for implementation. For example, a use such as agricultural land

David Craddick, Director  
October 19, 2000  
Page 2

conservation would require less water for irrigation than a traditional large-scale crop growing operation.

Insofar as fire protection and domestic water service for the project is concerned, please be advised that these distribution systems will be designed in accordance with Department of Water Supply standards.

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Planning Department

lucky7/mf21/dwaltr.001



November 30, 2000

Genevieve Salmonson, Director  
Office of Environmental  
Quality Control  
State of Hawaii  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Ms. Salmonson:

Thank you for your September 28, 2000 letter providing comments on the subject project to the County of Maui, Department of Public Works and Waste Management. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.

1. Discussions with Hui Alanui O Makena and other members of Makena's Hawaiian community have indicated that the proposed project will not have an adverse effect on traditional Hawaiian cultural practices provided that Sites 4804 (small religious shrine), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch-era boundary wall) are preserved and that access is provided to Site 4804. It should be noted that a preservation plan for these sites (including provisions for access) was prepared and submitted to the State Historic Preservation Division for review and approval. It should also be noted that the preservation plan will be provided to the Maui County Cultural Resources Commission for their review and recommendations.
2. Homes will be constructed on the proposed lots. Agricultural activities on the lots will be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses may not be known at this time, they are expected to include uses provided under the County Ordinance including but not limited to agricultural land conservation, small-scale fruit, plant, flower and vegetable growing activities.
3. Site work for the project will be minimal and will involve excavation and embankment for the installation of water meters, and utility lines (for water, sewer,

electrical, telephone and cable television service), as well as the grading of an existing depression that will be utilized as a retention basin. Site work will not involve the grading of the lots. Best Management Practices (BMPs) will be implemented to minimize soil erosion and stormwater runoff during construction activities. Examples of some of these measures include but are not limited to the following:

- a. Minimize the time of construction.
  - b. Retain existing ground cover until the latest possible date to complete construction.
  - c. Early construction of drainage features.
  - d. Use temporary area sprinklers in non-active construction areas when ground cover is removed.
  - e. Station water truck(s) on site during the construction period to provide for immediate sprinkling, as needed, in active construction zones (weekends and holidays included).
  - f. Use temporary berms, filter berms, and cut-off ditches, where needed, for erosion control.
  - g. Graded areas shall be thoroughly watered after construction activity has ceased for the day and on weekends as well.
  - h. All cut and fill slopes shall be sodded or planted immediately after grading has been completed.
4. The applicant will coordinate the implementation of the approved archaeological preservation plan with the State Historic Preservation Division.
  5. The sewer system for the project will connect to the future sewer system for the adjoining Palauea Subdivision to the north. The flows from these subdivisions will be pumped through a future sewer force main in Kaukahi Street which will connect to the existing Wailea Resort sewer system near the Wailea Blue Golf Clubhouse. It should also be noted that the service area of the County's existing wastewater effluent re-use system currently extends to Kalama Park in Kihei, approximately 5.0 miles to the north of the project site. Recent discussions with the County Wastewater Reclamation Division indicate that there are no current plans to extend the existing effluent re-use system southward to the project area.

Genevieve Salmonson, Director  
November 3, 2000  
Page 3

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Department of Planning

lucky7/mf21/oeqctr.002

November 30, 2000

Henry Curtis, Executive Director  
Life of the Land  
76 North King Street Suite 203  
Honolulu, HI 96817

Dear Mr. Curtis:

Thank you for taking the time to comment on the Draft EA for Lucky Seven's MF-21 Parcel. On behalf of the applicant, we would like to take this opportunity to clarify and address the concerns raised in your letter.

The subject parcel is zoned Agricultural, and carries a State Land Use Classification of Agriculture. Although the parcel is located within these classifications, it is not currently being utilized for those types of uses, nor has it been historically used for agriculture. The project site is considered uneven, topographically, and consists of a soil type of Makena Loam, stony complex, 3 to 15 percent slopes (MXC) and very stony land (rVS). The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui establishes total land productivity ratings. A value system based on a declining scale from "A" to "E," with "A" representing the highest level of productivity and "E" the lowest is utilized. The MF-21 site is assigned an "E" designation, reflecting its low suitability for agricultural use.

There is no hidden urbanization agenda. There are restrictive covenants preventing the potential new owners from changing the zoning or further subdividing. Homes will be constructed on the proposed lots. Agricultural activities on the lots will be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses are not known at this time they will include uses provided under the County Ordinance including but not limited to agricultural land conservation, small-scale fruit, plant, flower and vegetable growing activities.

An NPDES permit will be obtained from the State of Hawaii Clean Water Branch, which will address non-point source pollution runoff during construction. Future landowners will have to comply with applicable State, Federal and County requirements as it relates to the use of pesticides, rodenticides, etc.

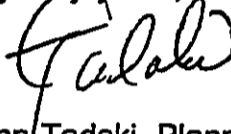
Henry Curtis, Executive Director  
November 30, 2000  
Page 2

All infrastructure requirements will be reviewed and approved by the County of Maui, Department of Public Works and Waste Management's Land Use and Codes Administration for compliance with the Maui County Code.

The applicant is working with Hui Alanui O Makena and other members of Makena's Hawaiian community, as it relates to archaeological sites, and will also seek input from the Cultural Resources Commission.

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Department of Planning

lucky7/mf21/leland.lh

# ***References***

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### References

Austin, Tsutsumi & Associates, Inc., Wailea Resort Revised Master Plan Traffic Impact Analysis Report, October 1997.

Community Resources, Inc., Maui County Community Plan Update Program Sock-Economic Forecast Report, January 1994.

County of Maui, Maui County Data Book 1998, June 1998.

First Hawaiian Bank, Supplement to Economic Indicators, Maui County Profiles, July/August, 1993.

Munekiyo & Arakawa, Inc., Draft Environmental Assessment, Wailea Resort Land Use Amendments, October 1996.

Munekiyo, Arakawa & Hiraga, Inc., Applications for Change in Zoning, Project District Phase I and Phase II Approvals, and Special Management Area Use Permit - Palaua Subdivision, October 1999.

Munekiyo, Arakawa & Hiraga, Inc., Wailea Business Center and Wailea Tennis Center Parking Improvements - Applications for Change in Zoning, Special Management Area Use Permit, Conditional Permit, Off-Site Parking and Project District Approval, March 1999.

State Department of Labor and Industrial Relations, personal communication from Ray Domingo, June 6, 2000.

State of Hawaii, Department of Business, Economic Development, and Tourism, Data Book, March 1993.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

University of Hawaii, Land Study Bureau, Detailed Land Classification - Island of Maui, 1967.

U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, 1972.

# ***Appendices***

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# ***Appendix A***

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***Biological Resources  
Survey of Parcel MF-21***

**BIOLOGICAL RESOURCES SURVEY  
OF PARCEL MF - 21 (TMK: 2-1-23:1)  
MAKENA, EAST MAUI, HAWAI'I**

**Prepared for  
Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by  
Xamanek Researches  
Pukalani, Maui  
David Paul**

**8 November 1999**

## BIOLOGICAL RESOURCES SURVEY

### SUMMARY:

No vascular plant species was found in the project area that has protection under Federal or State Law; although two stands of the rare Hawaiian caper or *mai'a pilo* (*Capparis sandwichiana*) were observed in the central part of the property. *Mai'a pilo* (is given a non-protected status of Species Of Concern by USFWS, and presently does not require consideration for planning in development projects.

With the exception of the pacific golden plover or *kolea* (*Pluvialis fulva*), which is a migratory bird, no avian or mammalian animal species were found in the project area that have protection under Federal or State Law.

Therefore, there are no biological resources found in the project area that require consideration for planning.

### INTRODUCTION:

On October 10 & 11, 1999, a Biological Resources Survey of the proposed project area in Makena, East Maui, Hawai'i was conducted by David Paul and Erik Fredericksen of Xamanek Researches. The property consists of a 23.088 acre parcel of land covered with coastal forest on 'a'a lava that is located between Keoneo'io-Makena Rd. and Makena-Alanui Rd. It sits at approximately 10 to 80 feet in elevation, just mauka of Haloa Point and Po'olenalena Beach (See Map 1.).

The survey provided information necessary to describe the vegetation and macrofauna in the area, and determine if any species of vascular plant or animal found there is protected under Federal or State Law, and would require consideration for planning in the project.

The survey also worked to identify any stream or wetland habitats in the project area.

### METHODS:

The survey was conducted by walking the perimeter, following transects, and meandering through the property. Every species of vascular plant, avian, and mammal that was encountered during the survey was recorded and identified, using scientific keys and descriptions.

The species of plants occurring there were placed into a Unique Biological Community. Identifying unique communities helps to locate areas that support rare (legally protected) species.

Significant literature was referenced to learn of known locations of rare species, and to determine which ones might occur in the project area.

## RESULTS:

The species of vascular plants which were encountered during the Biological Resources Survey (Oct. 11, 1999.) are members of a Unique Biological Community. This community may contain rare species that have protection under Federal or State Law. Therefore, each species of vascular plant, avian, and mammal encountered was placed into a *List of Vascular Plants* (Table 1), *List of Avians* (Table 2), or *List of Mammals* (Table 3) to represent each distinct form of life and show if any legally protected species occurs in the project area, and would require consideration for planning.

The following sections describe the vegetation and macrofauna of the project area in detail:

### **Unique Biological Community:**

The community in the project area is known as Coastal Dry Forest. (Gagne & Cuddihy, 1990.)

A canopy of kiawe (*Prosopis pallida*) and an understory of buffelgrass (*Cenchrus ciliaris*) which are alien invaders in this community dominate this Coastal Dry Forest.

The original vegetation of this community consisted of a canopy of *wiliwili* (*Erythrina sandwicensis*) and an understory of mixed native herbs such as 'ilie'e (*Plumbago zeylanica*), 'ilima (*Sida fallax*), *koali* (*Ipomoea indica*), *kolomona* (*Senna gaudichaudii*), *mai'a pilo* (*Capparis sandwichiana*), *naio* (*Myoporum sandwicensis*), and *nehe* (*Lipochaeta rockii*). Because of alien plant invasion, this once native dominated community exists only as a relict.

Other alien species which are widespread in this community are *haole koa* (*Leucaena leucocephala*), *ki nehe* (*Bidens pilosa*), sweet basil (*Ocimum basilicum*), lantana (*Lantana camara*), tree tobacco (*Nicotiana glauca*), *pua pihi* (*Zinnia peruviana*), *klu* (*Acacia farnesiana*), prickly lettuce (*Lactuca serriola*), and the currant tomato (*Lycopersicon pimpinellifolium*). At least three species of cactus (CACTACEAE spp.) are naturalizing on the property from discarded landscaping materials, and a few plants of the *panini* cactus (*Opuntia ficus-indica*) were found as well.

Evidence (feces) of cats (*Felis catus*), axis deer (*Axis axis*), and goats (*Capra hircus*) was observed lying around the ground in the area, and many plants showed grazing

marks, especially *huole kou* (*Leucaena leucocephala*). An entire cat skeleton was also found.

Several macadamia nuts (*Macadamia integrifolia* Maid. & Betc.) were found that had been chewed open, apparently by rats (*Rattus sp.*) or mice (*Mus musculus*).

Several gray francolins (*Francolinus pondicerianus*) were flushed from the vegetation during the survey. Northern cardinals (*Cardinalis cardinalis*), Japanese white eyes (*Zosterops japonicus*), *kolea* (*Pluvialis fulva*), mynahs (*Acridotheres tristis*), house sparrows (*Passer domesticus*), house finches (*Carpodacus mexicanus*), and zebra doves (*Geopelia striata*) were seen in flight and/or perching in the trees.

A pair of house finches was found dead in an animal trap. Gray francolin eggs were found, as was a Japanese white eye nest.

Three honey bee (*Apis mellifera*) nests were located across the property; two of them in *wiliwili* trees (*Erythrina sandwicensis*), and the other in a crack in the lava rock.

The total amount of species found in this community at the time of the survey does not reflect the amount of species that would occur there during moister times of the year. The survey was conducted during extreme drought conditions. Many of the species were identified from necrotic materials.

#### Rare Plants:

No vascular plant was found in the project area that is listed as Endangered, Threatened, Proposed, or Candidate by USFWS; and no plant species is located on the property that is given protection under Federal or State Law. Therefore, there are no Botanical Resources found in the proposed project area which require consideration for planning.

Two stands of the Hawaiian caper or *mai'a pilo* (*Capparis sandwichiana*) were found in the central part of the property. This is a rare plant that is given a non-protected status of Species of Concern by USFWS, and presently does not require consideration for planning.

Historical locations of Endangered, and other protected plant species are unknown in the project area, although the community there is potential habitat for the listed Endangered '*ohai* (*Sesbania tomentosa*), a rare shrub which was once widespread in arid coastal and lowland habitats. (Wagner, et al, 1990 & USFWS, 1999.)

Presently the Endangered '*ohai* is known from cultivated plants on privately owned land in Kama'ole, and from an extant population on the Hawai'i National Guard Training Area in Kanaio on East Maui. '*Ohai* (*Sesbania tomentosa*) was not found in the project area.

#### **Rare Animals:**

The only animal observed in the project area that has legal protection was the Pacific golden plover or *kolea* (*Pluvialis fulva*) which was seen in flight. The *kolea* is a migratory bird species that inhabits grasslands, roadsides, sandy beaches, mudflats and other open areas. They quickly reposition themselves when confronted by humans. No *kolea* were positioned in the project area.

It is possible that the Endangered Hawaiian hoary bat (*Lasiurus cinerius semotus*) flies and feeds in the area of the proposed project as there is more insects available to feed on in coastal habitats than in the arid lands above.

The Hawaiian hoary bat feeds in the early evening in a variety of habitats including along coastlines. It spends the daytime hours resting, perched in trees, and the bat is not particular as to where it rests. (Riper & Riper, 1982.)

The Hawaiian hoary bat (*Lasiurus cinerius semotus*) was not flushed from the trees during the survey, and it was not observed in the trees.

#### **Stream and Wetland Habitats:**

There are no stream or wetland habitats located in the project area. The proposed project area is in a Coastal Dry Forest community that has arid conditions year round.

There are four culverts located along the mauka side of the property under Makena-Alanui Rd. They are used for run-off from rainstorms but they rarely contain water and no stream or wetland habitat is associated with them.

#### **Lists of Plants and Animals:**

The List of Vascular Plants found during the Biological Resources Survey (Oct. 11, 1999.) is displayed in Table 1, at the end of this report. The List of Avians is displayed in Table 2, and the List of Mammals in Table 3.

The distribution of species found in the project area is Endemic, Indigenous, or Alien.

#### **RECOMMENDATIONS:**

No species of vascular plant was found in the project area that has protection under Federal or State Law. No species of avian or mammal was found residing in the project area that has protection under Federal or State Law. Therefore, there are no Biological Resources found in the project area, which require consideration for planning.

Although no legally protected plant species occur in the project area, they have the potential of establishing there, such as 'ohai (Sesbania tomentosa).

Many endemic and indigenous plant species thrive under cultivation in arid climates such as the proposed project area and make attractive, easy to care for, landscape plants. Several species found in the project area work well in landscaping, including wiliwili (Erythrina sandwicensis), nehe (Lipochaeta rockii), natio (Mvoporum sandwicensis), mai'a pilo (Capparis sandwichiana), and 'ilima (Sida fallax).

It is recommended that native plants are worked into the projects' landscape, as they will help the area to maintain an attractive Hawaiian appearance, and are easy to maintain under stressful environmental conditions.

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**Table 1. List of Vascular Plants**

## DICOTYLEDONS

FAMILY	<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
AMARANTHACEAE		Amaranth Family	
	<u>Alternanthera pungens</u> Kunth	khaki weed	A
	<u>Amaranthus spinosus</u> L.	spiny amaranth	A
ARALIACEAE		Ginseng Family	
	<u>Shefflera actinophylla</u> (Endl.) Harms	octopus tree	A
ASTERACEAE		Sunflower Family	
	<u>Ageratum conyzoides</u> L.	<i>maile hohono</i>	A
	<u>Bidens pilosa</u> L.	<i>ki nehe</i>	A
	<u>Emilia fosbergii</u> Nicols.	<i>pua lele</i>	A
	<u>Lactuca serriola</u> L.	prickly lettuce	A
	<u>Lipochaeta rockii</u> Sherff	<i>nehe</i>	E
	<u>Pluchea symphytifolia</u> (Mill.) Gillis	sourbush	A
	<u>Synedrella nodiflora</u> (L.) Gaertn.	nodeweed	A
	<u>Tridax procumbens</u> L.	coat buttons	A
	<u>Verbesina encelioides</u> (Cav.) Benth. & Hook.	golden crown-beard	A
	<u>Xanthium strumarium</u> L.	cocklebur	A
	<u>Zinnia peruviana</u> (L.) L.	<i>pua pihi</i>	A
CACTACEAE		Cactus Family	
	<u>Opuntia ficus-indica</u> (L.) Mill.	<i>panini</i>	A
CAPPARACEAE		Caper Family	
	<u>Capparis sandwichiana</u> DC	<i>mai 'a pilo</i>	E
CARICACEAE		Papaya Family	
	<u>Carica papaya</u> L.	papaya	A
CHENOPODIACEAE		Goosefoot Family	
	<u>Atriplex semibaccata</u> R.Br.	saltbush	A
	<u>Chenopodium murale</u> L.	goosefoot	A
CONVOLVULACEAE		Morning Glory Family	
	<u>Ipomoea indica</u> (Burm.) Merr.	<i>koali</i>	I
	<u>Ipomoea triloba</u> L.	little bell	A
	<u>Merremia aegyptia</u> (L.) Urb.	<i>koali kua hulu</i>	I
CUCURBITACEAE		Cucumber Family	
	<u>Momordica charantia</u> L.	bitter melon	A



EUPHORBIACEAE	Poinsettia Family	
<u>Chamaesyce hirta</u> (L.) Millsp.	hairy spurge	A
<u>Chamaesyce hypericifolia</u> (L.) Millsp.	graceful spurge	A
<u>Ricinus communis</u> L.	castor bean	A
FABACEAE	Bean Family	
<u>Acacia farnesiana</u> (L.) Willd.	<i>klu</i>	A
<u>Crotalaria incana</u> L.	fuzzy rattlepod	A
<u>Desmanthus virgatus</u> (L.) Willd.	slender mimosa	A
<u>Desmodium tortuosum</u> (Sw.) DC	Florida beggarweed	A
<u>Erythrina sandwicensis</u> Degener	<i>wiliwili</i>	E
<u>Leucaena leucocephala</u> (Lam.) de Wit	<i>haole koa</i>	A
<u>Prosopis pallida</u> (Hum.&Bon.ex Willd.)Knth.	<i>kiawe</i>	A
<u>Samanea saman</u> (Jacq.) Merr.	monkeypod	A
<u>Senna gaudichaudii</u> (Hk.& Arn.)Irw.& Barn.	<i>kolomona</i>	I
LAMIACEAE	Mint Family	
<u>Ocimum basilicum</u> L.	sweet basil	A
MALVACEAE	Hibiscus Family	
<u>Abutilon grandifolium</u> (Willd.) Sw.	hairy abutilon	A
<u>Abutilon incanum</u> (Link) Sw.	<i>mu'o</i>	I
<u>Malvastrum coromandelianum</u> (L.) Garcke	false mallow	A
<u>Sida fallax</u> Walp.	<i>'ilima</i>	I
<u>Sida rhombifolia</u> L.	false <i>'ilima</i>	A
MYOPORACEAE	Myoporum Family	
<u>Myoporum sandwicense</u> A.Gray	<i>naio</i>	I
MYRTACEAE	Myrtle Family	
<u>Psidium guajava</u> L.	guava	A
NYCTAGINACEAE	Four-O'clock Family	
<u>Boehavia coccinea</u> Mill.	<i>alena haole</i>	A
<u>Boehavia repens</u> L.	<i>alena</i>	I
PLUMBAGINACEAE	Leadwort Family	
<u>Plumbago zeylanica</u> L.	<i>'ilie'e</i>	I
PORTULACACEAE	Portulaca Family	
<u>Portulaca oleracea</u> L.	pigweed	A
<u>Portulaca pilosa</u> L.	hairy portulaca	A
SOLANACEAE	Nightshade Family	
<u>Lycopersicon pimpinellifolium</u> (Jusl.)Mill.	currant tomato	A
<u>Nicandra physalodes</u> (L.) Gaertn.	apple of Peru	A

<u>Nicotiana glauca</u> Graham	tree tobacco	A
<u>Solanum americanum</u> Mill.	<i>popolo</i>	I
STERCULIACEAE		
<u>Waltheria indica</u> L.	Chocolate Family <i>'uhaloa</i>	I
VERBENACEAE		
<u>Lantana camara</u> L.	Vervain Family lantana	A
<b>MONOCOTYLEDONS</b>		
LILIACEAE		
<u>Aloe barbadensis</u> Mill.	Lily Family aloe	A
POACEAE		
<u>Cenchrus ciliaris</u> L.	Grass Family buffelgrass	A
<u>Chloris virgata</u> Sw.	fingergrass	A
<u>Panicum coloratum</u> L.	blue panic grass	A
<u>Rhynchelytrum repens</u> (Willd.) Hubb.	Natal redtop	A

Table 2.

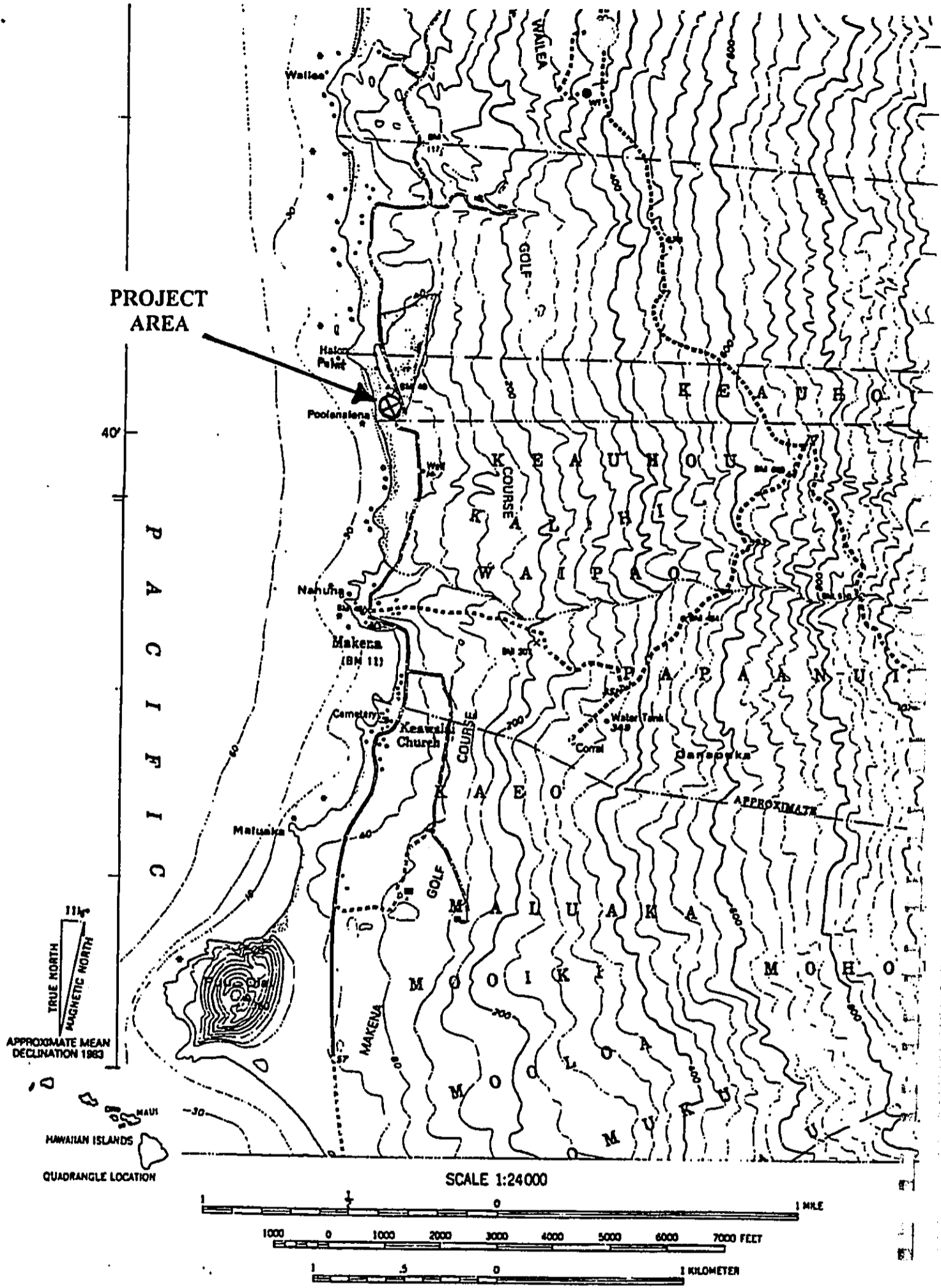
## List of Avians

<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
<u>Acridotheres tristis</u>	mynah	A
<u>Cardinalis cardinalis</u>	Northern cardinal	A
<u>Carpodacus mexicanus</u>	house finch	A
<u>Francolinus pondicerianus</u>	gray francolin	A
<u>Geopelia striata</u>	zebra dove	A
<u>Passer domesticus</u>	house sparrow	A
<u>Pluvialis fulva</u>	<i>kolea</i> / Pacific golden plover	I
<u>Zosterops japonicus</u>	Japanese white-eye	A

Table 3.

List of Mammals

<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
<u>Axis axis</u>	axis deer	A
<u>Capra hircus</u>	feral goat	A
<u>Felis catus</u>	feral cat	A
<u>Mus musculus</u>	house mouse	A
<u>Rattus sp.</u>	rat	A



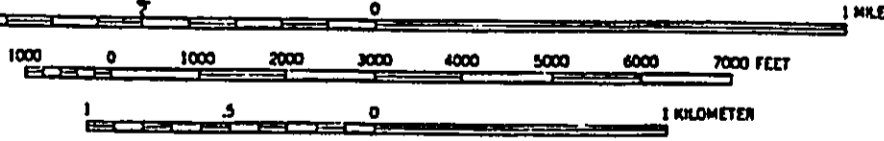
PROJECT  
AREA

P  
A  
C  
I  
F  
I  
C

TRUE NORTH  
MAGNETIC NORTH  
111°  
APPROXIMATE MEAN  
DECLINATION 1983

HAWAIIAN ISLANDS  
MAUI  
QUADRANGLE LOCATION

SCALE 1:24000



CONTOUR INTERVAL 40 FEET

Map 1 - U.S.G.S. Topographic Map, Makena Quadrangle, 1983.

# ***Appendix B***

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***Archaeological Inventory  
Survey of Parcel MF-21***

**AN ARCHAEOLOGICAL INVENTORY  
SURVEY OF PARCEL MF-21, PALAUEA  
AND KEAUHOU AHUPUA`A, HONUA`ULA  
MOKU, MAKAWAO DISTRICT, MAUI  
ISLAND (TMK: 2-1-23: 01)**

**Prepared for:  
Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by:  
Erik M. Fredericksen  
Demaris L. Fredericksen**

***Xamanek Researches  
Pukalani, Hawaii***

**January 4, 2000  
(Revised March 13, 2000)**





## ABSTRACT

Xamanek Researches conducted an archaeological inventory survey of a c. 23-acre parcel of land in Wailea in late 1999. The project area is located in Palauea and Keauhou *Ahupua`a*, Honua`ula *Moku*, Makawao District, Maui Island (TMK: 2-1-23: 01). A total of 10 archaeological sites were found during our survey, and have been assigned SIHP numbers 50-50-14-4804 through 4813. These sites consist of a small complex that includes a possible ceremonial structure (Site 4804), 3 rock overhang shelters (Sites 4805, 4806, and 4808), a low-density surface scatter of coral (Site 4807), and 5 walls (Sites 4809 through 4813).

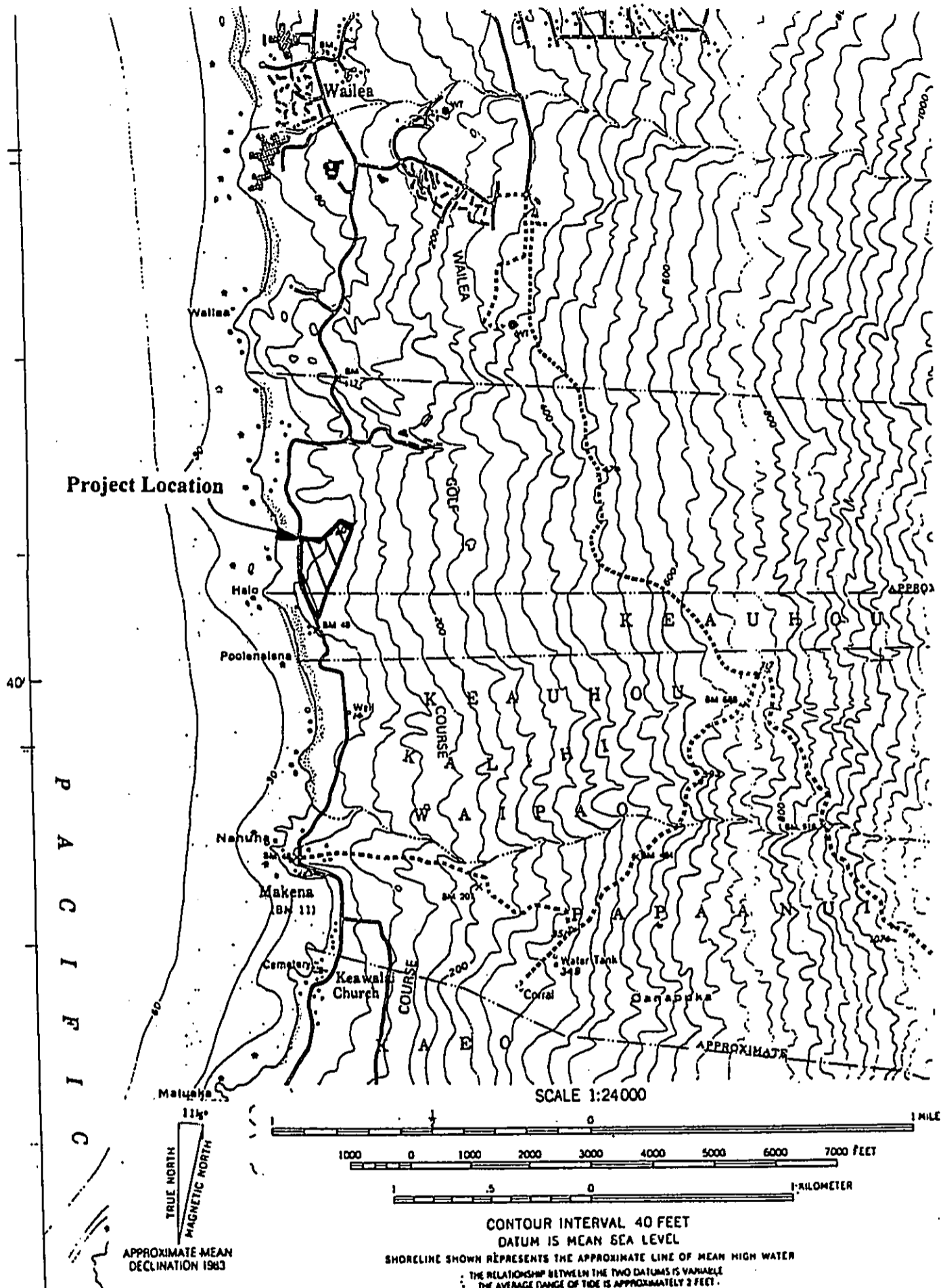
All 10 sites qualify for significance under Criterion "D" of State and Federal historic preservation guidelines. In addition, Site 4804 appears to qualify under Criterion "E" for its cultural significance. Sites 4807, 4808 and 4810 through 4813 are no longer considered significant for their information content. Consequently, no further archaeological work is recommended for these sites.

In-place preservation is the recommendation mitigation treatment of the 4 remaining historic properties in the subject parcel (Sites 4804, 4805, 4806 and 4809). The latter, Site 4809, is an excellent example of a faced, core-filled post-contact wall. It is very long, and portions of it will likely be impacted for access. Limited data recovery is recommended for the portions of this wall that will be destroyed.

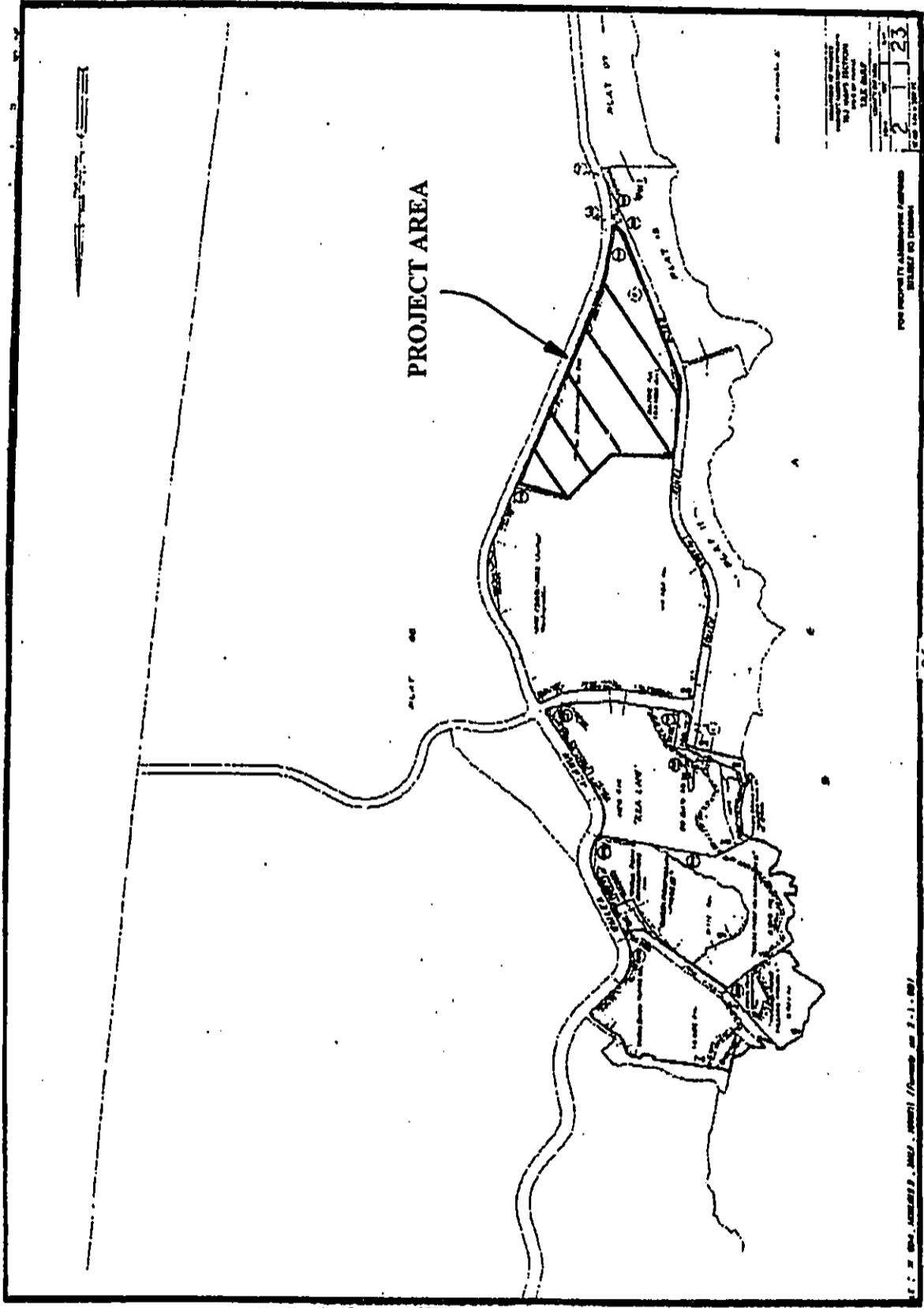
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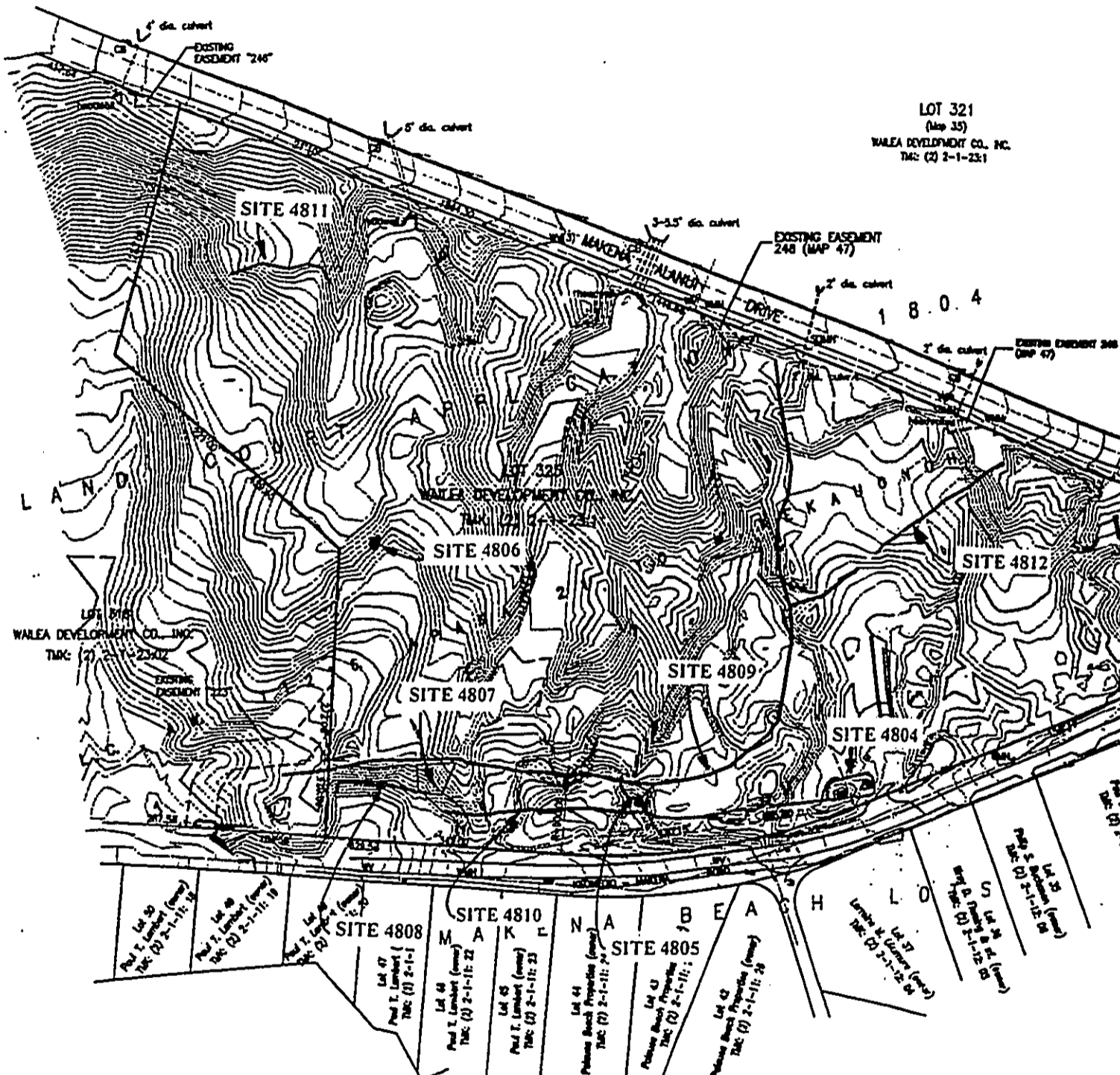


Map 1 - Topographic Map, U.S.G.S. Makena Quadrangle, 1983.



Map 2 -- Tax Map, Zone 2, Section 1, Plat 23. Hawaii State Department of Taxation.

TRUE NORTH  
Scale: 1"=200'

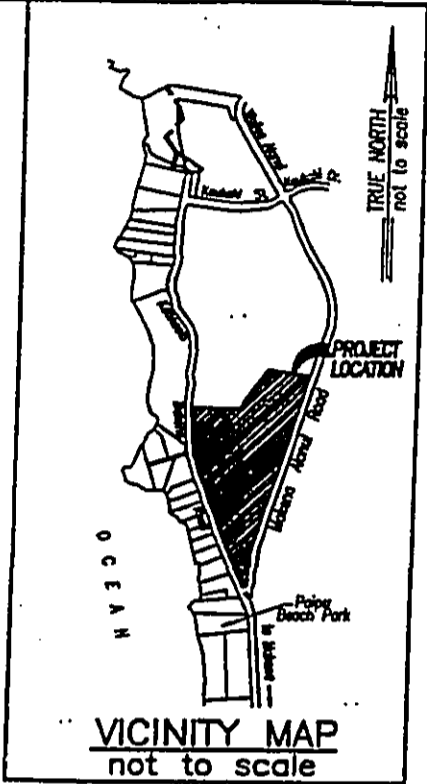
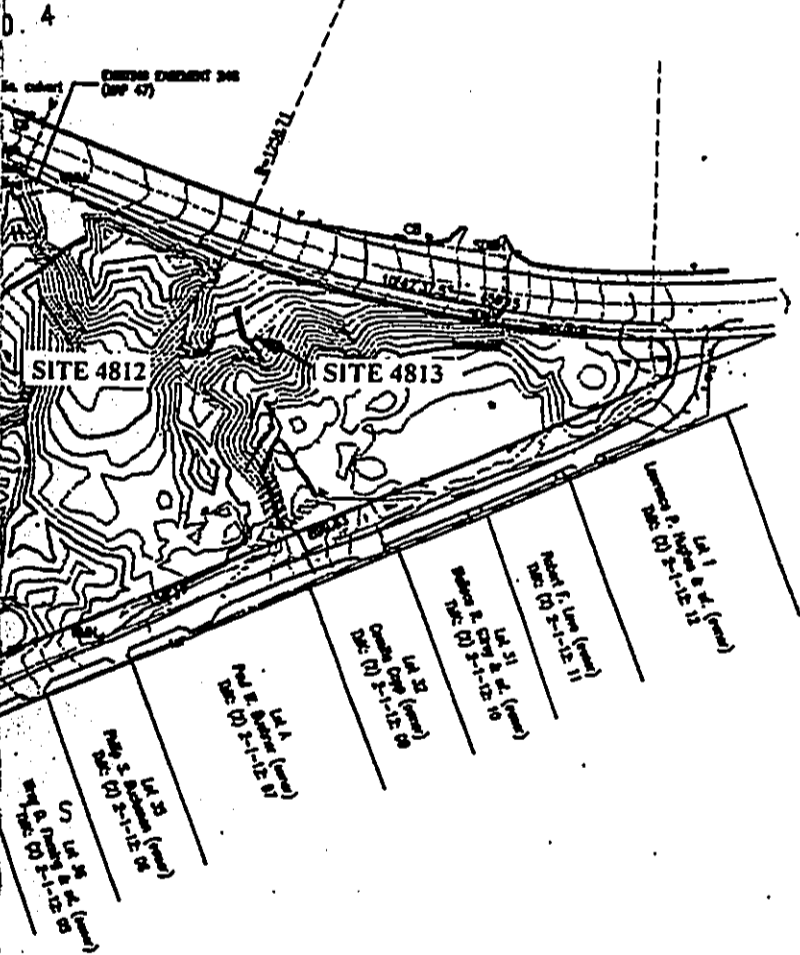


ARCHEOLOGICAL EXHIBIT  
OF LOT 325  
LAND COURT APPLICATION 1804 MAP 4:  
BEING A PORTION OF L. C. AW. 11216, APANA 21 TO  
SITUATED AT HONUAAULA (WALEA, KIHEI), MAUI, HAWAII  
TMK: 2nd Div.-2-1-23:01

Map 3 - Topographic Map of Study Parcel, showing location of sites.

NORTH  
1" = 200'

321  
35)  
MONT CO. INC.  
2-1-23:1



CAL EXHIBIT  
T 325

NON 1804 MAP 43  
16, APANA 21 TO M. KEKAUONOHI  
MALEA, KIHEI, MAUI, HAWAII  
2-1-23:01

MONT CO. INC. ENGINEERS & ARCHITECTS  
1000 MAUI AVENUE  
MAUI, HAWAII 96753

November 30, 1979

## INTRODUCTION

Xamanek Researches was contacted by Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc., about the possible archaeological work needed on a c. 23-acre parcel of Wailea land in August 1999. Project plans called for the subdivision of the property into 7 lots. Erik Fredericksen met with Eric Taniguchi and Bill Frampton of Pacific Rim Land, Inc. at the subject parcel on 20 August 1999. Erik Fredericksen subsequently conducted an inspection of the project area later that day, and on 23 August 1999. Based on this inspection, it was determined that several sites were located on the property and that an archaeological inventory survey would likely be needed. Ms. Cathleen Dagher, State Historic Preservation Division (SHPD), Oahu Office, confirmed the need for an archaeological inventory survey on the parcel. Pacific Rim Land, Inc. gave us the notice to proceed with a biological resources survey and an archaeological inventory survey in September 1999. Fieldwork for our inventory survey was conducted intermittently from late September through November 1999.



## STUDY PARCEL

The triangular project area is located in the southwestern part of Palauea *ahupua`a*, and the northwestern portion of Keauhou *ahupua`a*. These lands are in the traditional *moku* of Honua`ula, and located in what is identified presently as Wailea, on the Island of Maui. This 23.088 acre parcel, known as MF-21, ranges from 19 to 118 feet AMSL. It comes within c. 50 meters (165 feet) of the Palauea shoreline to the west. The property is bounded on the north by land owned by Palauea Investors, LLC. Makena-Alanui Drive borders the eastern side of the property, and Keoneoio-Makena Road runs along the western border. Portions of the project area have been impacted by past earthmoving activities associated with road construction and grubbing.<sup>1</sup> In addition, the southern end of the parcel near the intersection of Makena Alanui Drive and Keoneoio-Makena Road appears to have been filled within the past 10 years of so.

### Natural Setting

Parcel MF-21 essentially consists of *a`a* flow materials. Project area terrain is extremely rugged and uneven. Soils present on this property are part of the Keawakapu-Makena Series and are composed of well-drained, rocky soils (Foote, et. al., 1972). However, it is important to note that deposits are very thin where they do exist on the survey area.

The subject parcel is located along the flank of Haleakala and lies in its rainshadow. Estimated precipitation for this portion of Maui is less than 15 inches (380 mm.) per year (Juvic and Juvic, 1998). There are 3 probable drainage areas that run east-west across the property. A lack of any waterworn materials in these 3 areas suggests that water flow patterns on the parcel are seasonal rather than permanent. The area east (*mauka*) of the property has been heavily modified by golf course development in modern times. Four drainage culverts now flow onto Parcel MF-21.

The project area is located in a coastal, dry forest community. Both alien and native plant species are present in this community. However, alien species dominate the vegetative cover. The most common of these include *kiawe* (*Prosopis pallida*) trees, buffelgrass (*Cenchrus ciliaris*), *koa haole* (*Leucaena leucocephala*) shrubs, tree tobacco (*Nicotiana glauca*), and annual weeds. In addition, scattered cacti (*Cactaceae* spp.) which probably originated from discarded landscaping material, appear to be naturalizing on the parcel.

While not as common, moderate amounts of native species are present on the c. 23-acre study area. The most noticeable of the native species include *wili wili* (*Erythrina*

<sup>1</sup> It is estimated that about 10% of the subject parcel has been affected by these activities.

sandwicensis) trees, and an understory of mixed native herbs including 'ilie'e (Pumbago zeylanica), 'ilima (Sida fallox), 'uhaloa (Waltheria indica), and pua piki (Zinnia peruviana). In addition, the uncommon mai'a pilo (Capparis sandwichiana) was noted in 2 locations on the parcel.

While several native plant species were noted on the project area, alien animal species were dominant. Noted animal species included feral cats (Felis catus), axis deer (Axis axis), and goats (Capra hircus). In addition, fecal evidence of rats (Rattus sp.) and/or mice (Mus musculus) was observed. Lastly, numbers of introduced birds and a single indigenous kolea (Pluvialis fulva) were noted flying across the parcel.

The Palauea shoreline lies within 50 to 75 meters of much of the western boundary of the study area. This coastal marine environment consists of coralline beach sands and basaltic shorelines. The rocky coastal and near shore areas contain locally dense concentrations of marine life. These marine resources present in the vicinity of the project area would have been important to precontact Hawaiians as food resources.

## BACKGROUND RESEARCH

### Traditional History

There are few references in traditional literature to the Makena or Honua'ula region of the island of Maui. However, one reference is to be found in the "Myths of Sacred Hills", which is related in Beckworth (1970, pg. 189). Here she tells of the formation of Pu'u Ola'i, a prominent cinder cone which lies about 1.3 km. south along the coast:

*"The two hills beyond Maalaea bay on Maui are named Pu'u-hele and Pu'u-o-kali. They are mo'o beings and their first child is a daughter born of Pu'u-o-kali and named Pu'u-o-inaina. She is placed on the sacred island of Kahoolawe, called at that time Kohe-malamalama. She becomes the wife of the two sons of the kahuna of Hua, Kaakakai and Kaanahua, who take the form of birds and retreat to Hana-ula when the great drought comes and there alone rain falls. Pu'u-o-inaina takes Lohiau for her husband while he is living at Maalaea. Pele is angry and cuts her in two in the middle. The tail becomes the hill Pu'u-o-lai at Makena, and the head becomes the rock islet of Molokini."*

Another reference is contained in Inez Ashdown's Ke Alaloe o Maui (1970):

*"Ancestors sailing over the broad ocean or fishing on sea or along shores feared nothing because they were guided as children beloved by the ancestral spirits residing in shark forms. The noted shark diety, Ka-la-hiki, was the one who led the first explorers."*

*He would swim ahead of the fleet of canoes, point his head toward land and guide his mortal descendants safely to shore. ...*

*"When becalmed people prayed to ...the guardian angles who could assume king lau (many forms). They could appear as a man, a bird, shark, or whatever form was most suitable for the work to be accomplished.*

*"The large cave beneath Pu`u O-lai between One-uli and Nau-paka beaches at Makena has ever been a sacred dwelling-place for these ancestral dieties (Ashdown 1970, p. 22).*

E. S. Craighill Handy interviewed older informants concerning the Makena-Keone`o`io region which is paraphrased below (Handy and Handy, 1972, p. 147, in Bordner, 1995, pp. 91-92).

*"At Keoneoio on the southern flank of Haleakala, which is a sweet-potato planting area on Maui, there is a story of a man who mistakenly prayed to Makali`i, a demigod whose name he had heard associated with bountiful provender, asking to give him fish. Makali`i (a name for the constellation Pleiades) finally appeared to him and told him that he could not give him fish. 'But,' said Makali`i, 'plant sweet potatoes'; and he advised that the planting be done in the months of Ikuwa, Welehu, and Makali`i (late October into January, the months of south winds and rains). If he did so, Makali`i promised him a crop of big potatoes. The man did as he was told and had a big crop. One potato was so big he could not dig it out. A hill at Keoneoio was formed by the earth he threw out in trying to dig it up."*

The project area is located in the large section of southwest Maui called Honua`ula, which was a traditional *moku*, or district. The term, Honua`ula roughly describes a flatland (*honua*) which is distinctive for its red (*'ula*) dust. The name Honua`ula can thus be translated as "Red Earth". Prior to the introduction of cattle, dry land forest had extended much closer to the sea, and there was considerably more rainfall, according to informants. Hawaiians lived along the coasts wherever potable water could be found—either from brackish springs or submarine springs offshore (Handy and Handy, 1972, p. 147, in Bordner, 1995, p. 93).

#### **Precontact Maui Chiefs**

A brief history of the significant Maui chiefs is contained in Dorothy Barrere's work on Wailea, prepared in 1975. She relies heavily on the collection of traditions and chants collected by Judge Abraham Fornander, who arrived in the Hawaiian Islands in 1842. He served as the circuit judge of Maui for more than 15 years.

Judge Fornander's genealogical reckoning begins with Kamaloohua, who ruled over the greater part of Maui, probably in the 15<sup>th</sup> century (Barrere, p. 5). Three generations after him, his descendants—2 brothers named Kaka`e and Kaka`alaneo—ruled jointly over Maui and Lana`i. The older Kaka`e's son was Kahekili I, who inherited the rule. Kahekili's son, Ka-wa-o-Kaohela succeeded his father as ruler. His

sister's daughter, La'ie-lohelohe, married his son, Pi'ilani, linking the two branches of the senior line and establishing the dynastic line for the descendants of Pi'ilani (Ibid.).

Lono-a-Pi'ilnai, the eldest son of Pi'ilani, succeeded his father, but his younger brother Kiha-a-Pi'ilani, with the help of their sister and her husband who was a paramount chief of Hawaii, wrested power from him. Kiha-a-Pi'ilani's eldest son, Kamalalawalu, became the paramount chief of the island of Maui sometime in the 16<sup>th</sup> century. The island is still referred to as Maui-a-Kama, or Kamalalawalu—and the people of Maui are his children—"the children of Kama" (Ibid., p. 1).

The fifth generation descendant of Kamalalawalu to become ruler was Kekaulike. While his reign began peacefully following the pattern established by his ancestors, this changed with his decision to try to seize power from chiefs of the island of Hawaii. Unsuccessful in this quest, he retreated to Kaupo, Maui, intending to undertake another raid at a future date. However, his health failed and he chose a younger son, Kamehameha-nui, to succeed him, thus breaking the long pattern of primogeniture. There is some question as to how long Kamehameha-nui reigned—but upon his death his brother, Kahekili became the ruler of Maui (Ibid., pp. 7-9).

Samuel Kamakau (1992, p. 166) comments on Kahekili's appearance and demeanor:

*"Ka-hekili was a famous chief, a tabu chief, one who ruled men, and was so sacred that whatever had touched his body was burned with fire [after he was through with it, so that no one else could use it]. He was a famous leaper from a cliff into water (lelekawa), sometimes from a height of 500 or 600 feet or even higher, and he could climb cliffs which no other person could ascend. He elected to have his skin black; one half of his body from head to foot was tattooed black, and his face was tattooed black, and this became an established law with him: Any person taken in crime who passed his dark side, escaped with his life."*

Kahekili's brother-in-law was Kalani'opu'u, a high chief from Hawaii. Almost continuous warfare occurred between these two leaders in the period from 1775 to 1782—until the time of the death of Kalani'opu'u (Barrere, p. 13). Kamakau tells of one battle in 1776, where Kalani'opu'u and his army landed at Keone'o'io:

*"...their double canoes extending to Makena at Honua'ula. There they ravaged the countryside, and many of the people of Honua'ula fled to the bush. When Ka-hekili heard of the fighting at Honua'ula he got his forces together—chiefs, fighting men, and left-handed warriors whose sling-shots missed not a hair of the head or a blade of grass." (Kamakau, 1992, p. 85).*

## Post-contact Period

We know that it was during Kahekili's time that Europeans first came to Maui. On November 27, 1778 the ship's surgeon, David Samwell, notes his presence aboard Captain James Cook's ship, Discovery:

*"In the afternoon Ka-he-kere [Kahekili] the King of this Island & of another which we saw to Leeward called Morotai came on board the Discovery in a large double Canoe attended by a large Train dressed in red feathered Cloaks and Caps. As the Canoe approached the Ship one man stood up and waved his Cloak about his Head while the rest sung in concert much after the manner of the Otaheiteans. The King & some of his Courtiers were taken into the cabin & some presents were made to them, he himself is a middle aged Man, is rather of a mean appearance, the Hair on each side of his head is cut short & a ridge left on the upper part from the forehead to the Occiput; this is a common Custom among all of these people, but each side of his head where the Hair was off was tattowed in lines forming half Circles which I never saw any other person have" (Samwell, in Beaglehole, 1967, 2:1151) [in Barrere, p. 11].*

From this time hence, the ruling chiefs of Maui were to be part of the irrevocable change that was brought about by the meeting of two cultures.

Following the visit of Captain James Cook in 1778,<sup>2</sup> other European explorers showed up on the shores of Maui. The French captain Jean-Francois Galaup de la Perouse<sup>3</sup> visited Maui on May 29, 1786 and noted in his journal:

*"At nine in the morning the point of Mowee bore west 15° north, and a small island also appeared...The aspect of the island of Mowee was delightful. I coasted along it's shore at the distance of a league. It projects into the channel in the direction of south-west by west. We beheld water falling in cascades from the mountains, and running in streams to the sea. After having watered the habitations of the natives, which are so numerous that a space of three or four leagues may be taken for a single village: but all the huts are on the sea-coast, and the mountains are so near, that the habitable part of the island appeared to be less than half a league in depth. ...*

*The breeze had freshened, and we were running at the rate of two leagues an hour, which encouraged me in an endeavour before night to explore this part of the island as far as Morokinne, near which I hoped to find an anchoring place sheltered from the trade winds. ...After having steered south-west by west, as far as the south-west point of the island of Mowee, I hauled to the west, and afterwards to the northwest, in order to gain the anchorage [Keoneoio] where the Astrolabe had already brought up in twenty-three fathoms, hard grey sand, about a mile from the shore. ...*

<sup>2</sup> Cook did not actually set foot upon the island of Maui.

<sup>3</sup> La Perouse was the name of a farm, which was one of his family's country properties. He added this to his own name in later years, and when he attended court he was known as Comte de la Perouse (Dunmore, 1991, p. 151).

*The Indians of the villages of this part of the island hastened alongside in their canoes, bringing us articles of commerce, hogs, potatoes, bananas, roots of arum, which they call tarro, with cloth and some other curiosities making part of their dress. I told them that I was taboo, a word which I had learned from the English accounts, and which was attended with all the success I expected. Mr. De Langle, who had not taken the same precaution, had his decks in a instant crowded with a multitude of Indians. But they were so docile and so apprehensive of giving offense, that it was extremely easy to prevail on them to return to their boats. I had no idea of a people so mild and so attentive. ...*

*It was so late before our sails were handed, that I was obliged to postpone going on shore at this place till the next day, where nothing could detain me but a convenient watering-place: but we had already observed, that this part of the coast as altogether destitute of running water, the slope of the mountains having directed the fall of all the rains towards the weather side. It is probably that the labour of a few days might be sufficient to supply the whole island with so valuable a necessary [sic] of life: but these Indians are not yet arrived at the requisite degree of industry, though in many other respects so greatly advanced. ...*

*At eight in the morning four boats belonging to the two frigates were ready to set off. ... About a hundred and twenty persons, men and women, waited for us on the shore. The soldiers, with their officers, landed first. We marked the space we wished to reserve to ourselves. ... These formalities made no impression on the natives. The women showed by the most expressive gestures, that there was no mark of kindness which they were not disposed to confer upon us; and the men, in the most respectful attitude, endeavoured to discover the motive of our visit, in order to anticipate our desires. Two Indians, who appeared to have some authority over the others, advanced, and with great gravity made a speech of considerable length, of which I did not understand a single word; and each offered me a present of a hog, which I accepted. In return, I gave them medals, hatchets and other pieces of iron, which were of inestimable value to them. ...*

*The soil of this island is entirely formed of decomposed lava, and other volcanic substances. The inhabitants have no other drink but a brackish water, obtained from shallow wells, which afford scarcely more than half a barrel a day. During our excursion we observed four small villages of about ten or twenty houses each, built and covered with straw in the same manner as those of our poorest peasants." [La Perouse, 1798: 341-351, in Barrere, pp. 15-18].*

Meanwhile, the warfare between Kahekili and the Hawaiian chiefs continued. By 1786, Kamehameha of Hawaii was powerful enough to begin sending expeditions of warriors to the Maui districts of Hana and Kipahulu. These raids were repelled by the Maui forces. But by 1790, Kamehameha had further consolidated his power on Hawaii, and invaded Maui himself, leading a large army. Also with him were two Europeans, whom he had "detained" from foreign ships. One, Isaac Davis, was the sole survivor of the tender, Fair American, which had been captured by the son of Captain Simon Metcalf, the man responsible for the "massacre of Olowalu" in February of 1790. On the

same day as the sacking of the Fair American, the boatswain of the elder Metcalf's ship, Eleanor, John Young, went ashore at Kealakekua Bay, where he was held lest he relay the news of the death of the younger Metcalf and his crew. After a couple of days, the Eleanor sailed away without him (Barrere, p. 21).

The two young men, Davis and Young, became Kamehameha's advisors, particularly in the tactics of foreign warfare. When they accompanied Kamehameha's army to Maui in 1790, they brought along a cannon called *Lopaka*, which played a decisive part in the defeat of the Maui forces at the battle of Kepaniwai in Iao Valley. This proved to be the turning point for Kamehameha in his quest for the defeat of Kahekili. Though still seen as the leader of Maui, Kahekili's power was on the wane following this horrendous battle.

Another historic reference to the Maui leader comes from the journal of Captain George Vancouver, commander of the British surveying ships Discovery and Chatam, in which he reports on his March 1793 meeting with Kahekili in Lahaina:

*"...his arrival [was not] attended by any accumulation in the number of natives on the shores or in the canoes about the vessels. He came boldly alongside, but entered the ship with a sort of partial confidence, accompanied by several chiefs who constantly attended him. His age, I suppose, must have exceeded sixty. He was greatly debilitated and emaciated, and from the colour of his skin I judged his feebleness to have been brought on by an excessive use of the ava [`awa]. His faltering voice bespoke the decline of life, and his countenance, though furrowed by his years and irregularities, still preserved marks of his having been in his juvenile days a man of cheerful and pleasing manners, with a considerable degree of sensibility, which the iron hand of time had not entirely obliterated [1801, 3:305]."* (in Barrere, p. 22).

The increasing presence of foreigners brought about extensive changes to the traditional culture. Kamehameha saw the *haole* as an element which could be manipulated to increase his power—but the relentless impact of foreign desires—particularly for land, slowly took these powers from the Hawaiian rulers.

In the historic period between 1831 and 1836, the Honua`ula District saw a severe population decline—believed to have been the result of both economics and disease. Those who remained in the district were primarily fishermen (Carpenter and Yent, 1995, p. 9). The population of the *moku* of Honua`ula was 3,340 in 1831, and 1,911 in 1836. One visitor to Honua`ula in 1846 estimated that the population was only 80—and reported that long-time residents remembered it as having numbered as many as 2000 laboring men (Barrere, p. 22). Another estimate has the entire population of the Honua`ula District in 1853 as about 750, with the bulk concentrated along the coast north of Pu`u Ola`i in the Makena area (Carpenter and Yent, p. 9). Depopulation appears to have been greater in marginal, rural areas, due to both increased mortality and outmigration to developing port towns such as Lahaina (Bordner, 1995, p. 98).

## Post-1850s

The Mahele of 1848, or division of lands, saw the transference of land titles from the king to his subjects.<sup>4</sup> The *ahupua`a* of Palaua was awarded to chiefess Miriam Kekauonohi<sup>5</sup> (LCA 11216: 21). The *ahupua`a* of Keauhou, was awarded to Hoomanawanui by LCA 6715 in 1851. It consisted of 853 acres, and was a Konohiki Award made to her in her Mahele with the king, in which she gave up the *ahupua`a* of Waianae 1 in Lahaina (Barrere, 1975, p. 38). In 1856, she sold the land to James Makee for \$1000.00 (Ibid.). There are no commoner LCAs located on the study parcel. However, there are a few LCAs that are found on the inland portions of the 2 *ahupua`a*, which were awarded for houselots, sweet potato lands, and Irish potato lands<sup>6</sup> (Barrere, p. 40).

Keawala'i Church, which lies about 3 km. south of the subject property was founded by the Wailuku Mission in 1854.<sup>7</sup> While preparing for the construction of the permanent stone structure, they built a meeting place of poles and *pili* thatching. The church, which was built in 1855 by the congregation, is 36 feet wide by 80 feet in length. There are no exterior buttresses, so to assure stability of the stone structure, the interior walls are thickened to a height of c. 3 feet. Wood posts set on lava blocks support the wood floor of the church. The time period between the 1850s and 1860s was a prosperous one for the congregation. In 1856 the Sunday School raised \$70 for the purchase of a church bell, to be placed in the belfry. The bell arrived in 1860, and was installed in 1862.<sup>8</sup> (Gowans, 1993, p. 125). In 1864 the church purchased the property on which it stood, for \$80.00. The man from whom it was purchased was named Mahoe, had gotten the land as part of Grant 835 (Donham, 1998, p. 7).

John Kukahiko (1834-1900) was the pastor of the Church in the 1870s, and is buried in the family cemetery know locally as "Five Graves". This landmark lies to the south of the project area.

## Ulupalakua Ranch

The name Ulupalakua apparently comes from a legend that tells of 3 men who traveled to Hana from Wailuku. At Hana they were given breadfruit, which they carried

<sup>4</sup> The district of Honua'ula was one of 12 traditional districts, or *moku*, of Maui. However, in 1859 it became part of Wailuku District for tax and judicial purposes, and in 1909 it was incorporated into the Makawao District (Barrere, p. 56).

<sup>5</sup> Miriam Kekauonohi was the granddaughter of Kamehameha I through his son Kina'u by Peleuli. Her mother was Wahinepio, sister of Kalanimoku and Boki. Kekauonohi died in 1851, and by 1862, her husband Levi Haalelea was forced to sell the *ahupua`a* at public auction. James Makee acquired the 2000-acre property—Haalelea receiving only \$800.25 for the purchase price (Barrere, 1975, p. 38).

<sup>6</sup> During the Mahele period, a "potato boom" occurred in the Makena region. The 1848 gold rush in California created a great need for Irish Potatoes, and it was cheaper to import them from Hawaii than from other parts of the mainland. Native Hawaiians, as well as the *haole* plantations engaged in this lucrative production. Much of the cultivation took place at higher elevations, where more abundant rainfall was present.

<sup>7</sup> Theresa Donham's research quotes oral testimony contained in a 1908 article by R. B. Dodge, as saying the church was founded in 1825 in a grass house near the present site of the stone structure (Donham, 1998, p. 21)

<sup>8</sup> The belfry of the church collapsed, and was subsequently restored in 1968. Also at that time, the exterior walls were coated with concrete to protect it from the elements (Gowans, 1993, p. 125).



on their backs as they journeyed home along a foot trail. While on their long trip, the breadfruit ripened, and henceforth the area of Honua`ula in which this occurred was known as Ulupalakua—"the breadfruit that ripened on the back." (Sterling, 1998, p. 231).

Sugarcane was the earliest commercially cultivated crop in Honua`ula, and the earliest recorded planters were M. J. Nowlein and S. D. Burrows. They had leased lands from Kamehameha III at Ulupalakua (Kaeo *ahupua`a*) in 1841, to "engage in the manufacture of sugar for the King at Honua`ula on Maui" (Sterling, p. 9 in Barrere, 1975). After only a few years, the king's agent informed Nowlein that the lease and other interests had been sold to Linton L. Torbert on October 2, 1845. Torbert was directed to "keep in order for the King" 50 acres of sugarcane. Nowlein was told to teach Torbert about cane and potato growing, and the manufacture of sugar and molasses (Ibid.). The overall holdings encompassed 2087 acres of land with growing cane, a mill and animal stock.

Torbert's tenure on the property was marked with limited success.<sup>9</sup> He obtained Land Grants 233 and 234, which connected the ranch with Makena Landing, thus enabling the transportation to market of products produced on the ranch lands. Financial entanglements and a smallpox epidemic were two of the conditions that plagued him. To avoid bankruptcy in 1851, he assigned his accumulated holdings by trust deed to Captain James Makee, but continued to manage the operations on the property. He was one of those who grew Irish potatoes for the California Gold Rush trade during the "potato boom" era mentioned earlier. However, on January 19, 1856, the Torbert Plantation was placed on the auction block, by order of James Makee. The land was listed in The Polynesian as over 5,400 acres; 1 dwelling house 36 x 38 feet, wood, with grass roof, numerous other buildings with grass roofs, a primitive sugar mill, livestock and "all articles and appurtenances belonging to or appertaining to the plantation." [Sterling, p. 10, in Barrere, 1975] Captain Makee purchased the property at auction on January 23, 1856.

Captain Makee moved his family to the plantation in the fall of 1856. By 1864, he had built the place into "the most complete sugar plantation in the islands", grossing and estimated annual income of one hundred thousand dollars (Ibid.). He built a large New England style mansion, complete with a widow's walk, and renamed his holdings—Rose Ranch. A frequent guest at Rose Ranch was King Kalakaua. The roses which flourished in the gardens and along the walkways were so famous, that a deep pink variety named *Lokelani*, was chosen as the official flower of Maui, and its pink color the official color (Bartholomew, p. 118). Hundreds of peacocks roamed the premises adding to the unique qualities of the ranch.

Captain Makee also changed the upcountry landscape. Not only was native vegetation cleared for planting of sugar cane and cattle pasturage but in the 1860s, he began a coordinated program of creating shelter belts, accomplished by the planting of nearly 15,000 eucalyptus and pine trees to prevent soil erosion (The Pacific Commercial

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<sup>9</sup> The entire *ahupua`a* of Papa`anui, Waipao, and Kelihi were sold as part of Royal Patent Grant 234 to Linton Torbet and William Slocum Wilcox. Grant 234 covers 1,986 acres.

Advertiser, June 25, 1864; in Dobyns, 1988, p. 18). He also was responsible for making Makena one of Maui's busiest harbors, second only to Lahaina. Makena was a regular stop on the Honolulu to Hilo run.

While Makee planned to raise cattle as the primary activity of the ranch, he had 375 acres of sugarcane planted in 1861. The advent of the Civil War and the disruption of sugar sources in the West Indies created a strong market for Hawaiian sugar. He took advantage of the situation, and expanded his sugarcane acreage to about 1,000 acres. By 1864 he had in operation a steam-operated sugar mill with the most modern of engines, and an ingenious sugar recovery mechanism of his own invention. During the period between 1876-1878, Makee formed Makee Sugar Company on Kaua'i (with his friend, King Kalakaua) and assumed control of the Waihe'e Sugar company on Maui.

Sugar continued to be the most profitable crop for the Rose Ranch until the severe drought of 1878. The Makee Plantation cut back on sugar cultivation, and the last crop was milled at Ulupalakua mill in March of 1883. Cattle were turned onto the remaining cane fields and ranching became the dominant activity of this region<sup>10</sup> (Barrere, p. 50-59).

The Rose Ranch continued to prosper, and much has been written about the idyllic life lead by Captain and Mrs. Makee, their 2 sons, and 6 daughters. The beautiful setting, pleasant coolness as compared to other more tropical locations, and the Makee's generous hospitality, made the ranch famous. They entertained the Royal Family on numerous occasions, as well as many other guests.

On September 16, 1879, Captain Makee died. Prior to his death, however, he had divided his property interests in Rose Ranch into eight shares—one for each of his 2 sons and 6 daughters. In March of 1886, the Makee family sold its holdings to James Isaac Dowsett of Honolulu, for the sum of \$84,500 (Thrum, 1925, in Barrere, p 87). Mr. Dowsett had been in the plantation and cattle business on Oahu since 1850, and had been the first to import Angus cattle to the Hawaiian Islands. Dowsett's daughter, Phoebe, was married to the youngest Makee son, Charles. After Charles' death, she was to wed Dr. J. H. Raymond.

In 1900, Dr. and Mrs. J. H. (Phoebe) Raymond became the owners of the former Rose Ranch—and renamed it the Raymond Ranch. In 1901, they also acquired leasehold rights of Kahikinui Ranch, adding considerable acreage to their holdings. Dr. Raymond

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<sup>10</sup> A note about cattle—they were first introduced to the Big Island by Captain George Vancouver in 1793. Later the same year he presented Kahekili with some goats, which were considered to be a valuable present. Vancouver requested that Kamehameha place a *kapu* on the cattle for a period of ten years, at the end of which time, wild cattle roamed the mountain slopes of northern Hawaii. There is no record of when cattle were brought to Maui, but by 1845 they were so many running loose on the isthmus, that numerous complaints were lodged from people whose lands were being destroyed. Many Hawaiians were driven from their homes and fields. The legislature finally passed a joint resolution in 1846 providing penalties for those who allowed their animals to trespass on others' lands. Soon "cattle walls" became a prominent feature of the landscape (Barrere, pp. 52-53).

built a slaughterhouse<sup>11</sup>, cold storage plant, and boat landing at Keoneoio for the purpose of shipping beef to markets in Lahaina and Honolulu. The cargo ship, Makena, was used in this trade. Dr. Raymond worked to improve the breeding stock, by adding Hereford bulls to his herd, and cutting down on the large numbers of wild cattle (Barrere, p. 70). He "went into grain culture on a large scale, and was active in urging the installation of the Kula pipeline as a further source of water." (Sterling, p. 11, in Barrere, 1975)

On January 1, 1923, Frank F. Baldwin bought the Raymond Ranch, and named it Ulupalakua Ranch—after the Hawaiian name for that area of Maui. At that time, the manager was Angus McPhee. In 1925, Frank's son, Edward H. K. Baldwin, took over the operation. Work on improvement of the breeding herd, and the culling of wild cattle was continued. Extensive fencing was undertaken. A slaughterhouse was built at Ulupalakua in 1929, and from that time on, Ulupalakua beef was processed at their cold storage plant in Kahului—thus abandoning the older facility located at Keoneoio (Ibid.).

The Baldwins took great interest in raising fine horses and polo ponies, and continued to raise horses and cattle after the war. Edward Baldwin died in 1956, and his son, Gregory, took over management of the Ranch. The last turnover took place in 1963, when it was sold to Mr. Pardee C. Erdman, Jr. The Erdmans continue operation of Ulupalakua Ranch to the present. In 1977, a fire destroyed the Makee mansion, along with the cottage that had been used by King Kalakaua on his numerous visits. The remains of the foundation and chimney of the main house can be seen from the road passing through Ulupalakua. A winery is now present on ranch lands, and visitors daily stop to taste this latest product of upcountry Maui.

### **Makena Landing**

Makena Landing, which is located on the coast ca. 4 km. south of the study area, served as the loading port for the Rose Ranch. In 1877, Makee began building a breakwater to develop the landing into a harbor, from which he could ship sugarcane. Makena was a regular stop in the Hilo to Honolulu run. However, the schedule of the inter-island ship was not regular.<sup>12</sup> Cargo from the ranch was brought down to the landing by oxcart, about the time that the ship would be due. Animal enclosures at the landing were most likely used to hold cattle until the ship arrived (Dobyns, 1988, p. 18).

The population decline that began in the mid-1800s reversed after the construction of Makena Harbor in 1878. A map from 1885 (Jackson Map, No. 1337) shows all of the structures along the bay. These include a "church and school; corral; the 'old sugar house'; a 'stone wall'; and nine houses, including a 'grass house,' 'large house near church' 'small house,' 'white house,' 'small brown house,' 'small white house,'

<sup>11</sup> The site of the old slaughterhouse at Keone'o'io, associated with the Raymond Ranch, is thought to be on the present Carter Estate property. Mr. Edward Chang, a long time Makena resident, recalls the slaughterhouse, but stated that it was in ruins around the advent of World War II. Mr. Chang's uncle, Mr. David Chang, vaguely remembers the ruins prior to WWII. He thinks that much of the wooden structure may have been dismantled during the war.

<sup>12</sup> A cannon, located at the ranch headquarters in Ulupalakua, would fire as the ship was sighted. The report could be heard down at Makena Landing, alerting parties there to prepare for the ship's arrival.

'large house, 'white cottage,' and 'Kukahiko's house'.<sup>13</sup> (Dobyns, p. 19) The church referred to is Keawala'i Church, which was founded in 1832, and built in 1855. It is one of the few remaining missionary churches on Maui. A cemetery occupies a portion of the churchyard.<sup>14</sup>

During the Raymond Ranch period, over a hundred families lived in the area around Makena. The development of Kahului Harbor in the 1920s, and the Baldwin's shift to Kahului cold storage facilities, closed down Makena Landing to commercial traffic, and caused families to move away from Makena. As well, the landing at Keone'o'io ceased to be used for commercial shipping.

A discussion of the traditional coastal trail is presented by Yoklavich (1989, pp. A-4 to A-9). The precontact trail system included *mauka-makai* trails, which linked ecological zones within a single *ahupua`a*. The adjacent *ahupua`a* were connected by an encircling trail, used for communication and transportation, and also for the important ritual of annual tax collection—the *makahiki*—a clockwise procession around the island. Known as the *Alaloa*, or "Long Road", it was also used as a communication link between *ahupua`a* during times of warfare. According to Martha Fleming (Handy and Handy, 1972, p. 488), "From Olowalu travelers were ferried by canoe to Ma'alaea, thence to Makena where the *Alaloa* followed the long sandy beach", suggesting that the trail, passed through Palauea and Keauhou. Although the exact alignment cannot be determined, Apple's research (1965, p. 23) reaffirms that it probably stayed relatively close to the shoreline. Later historic roads created for horses and wheeled vehicles were generally located further inland and tended to be straighter. The old Torbert Map of Makena (c. 1845-50) shows the road in Palauea *ahupua`a* running along the shore, and labels it "Aupuni Road"—meaning government road (Yoklavich, p. A-6). The economic center of Palauea and neighboring *ahupua`a* was located inland around the Ulupalakua Ranch area, from the middle of the 19<sup>th</sup> century until World War II. Makena Landing was established in the 1850s, and supplies that had been previously transported over the road were now landed at Makena, and carried inland to Ulupalakua. The coastal trail/road deteriorated due to lack of use, and Palauea, Keauhou and other *ahupua`a* saw a decline in population as well, until the 19<sup>th</sup> century "government road" was labeled a "horse trail" in the early 20<sup>th</sup> century (Ibid., p. A-4).

The advent of World War II resulted in a moderate amount of military activity in this part of Maui. A concrete gun emplacement is present on the beach, just south of the Polo Beach Club (Site 4128), and about 750 meters north of the study parcel. Another concrete pad, which held an artillery weapon (Site 4673) was located in Makena to the

<sup>13</sup> John Kukahiko (1834-1900) was the pastor of the Makena Church (Keawala'i Congregational Church), and the first harbormaster of Makena Harbor (Dobyns, p. 18).

<sup>14</sup> The land grant, on which this settlement is located, was awarded to Mahoe (Grant 835) in 1852 by Kamehameha III. It consisted of 514 acres, and included all of the coastal portion of Kao *ahupua`a*, "as it had been redefined by Torbert's plantation" (Donham, 1998, p. 16). It also included the fishpond at Apuakchau Point, the Honua'ula school and church, the government landing and a store house (Ibid., p. 17). Mahoe was considered to be the *konohiki* of Keao. The Torbert Plantation map (1848-1856) and the Alexander map (1866), show the Torbert road, coming down the mountain from the ranch, ending roughly in the vicinity of the study parcel (Maps 4 and 5) [Ibid., pp. 18-19].

south on Nahuna Point, overlooking the sea (Fredericksen and Fredericksen, October 1998). In addition, the top of a concrete pill-box is seasonally exposed on Palauea Beach c. 200 meters northwest of the subject parcel.<sup>15</sup> Finally, a local informant, Mr. Edward Chang, told Kelly (1987, pp. 59-60) that before World War II, the access across Palauea *ahupua`a* ran along the top of the beach berm and was used as a horse trail. During World War II, the army turned the horse trail "into a jeep road, following the path of the old walking trail, or Government Road". The present old Makena Road follows the road bulldozed by the army, and was paved in the 1950s (Yoklavich, p. A-4).

In the 1970s and 1980s, commercial development began to take place in this region of Maui. The Wailea Resort was planned and built, along with several golf courses and additional major hotels. In the mid-1990s, major tourist development slowed, and the focus shifted to smaller projects at prime locations along the coast. The current project would fall into this latter category.

## PREVIOUS ARCHAEOLOGICAL WORK

The island-wide survey work of Winslow Walker in 1931 identified only 6 *heiau* along the southwestern coast of Maui in Honua`ula District. The nearest ones lie to the south at Makena—Kalani *heiau* (Site 196), and Pohakunahaha *heiau* (Site 197). To the north are 2 more *heiau* associated with Kalepolepo fishpond. None were recorded in Palauea or the adjacent *ahupua`a* of Paeahe to the north, or Keahu to the south.

Walker reported another religious site in this area of Maui—"The *heiau* of Nanahu on a point north of Makena Bay is really a *ko`a*. It is a low platform 21 by 23 feet on which pebbles and coral are found mixed with the sand. Present day natives declare it was a place to pray to the Fish God, so the earlier report that it was a '*heiau* for dead people' seems to be an error." (Walker 1931, p. 103) Elspeth Sterling interprets this site as being at Nahuna Point (Sterling, 1998, p. 231).<sup>16</sup>

In the late 1960s and 1970s, a number of archaeological studies were conducted in Palauea by the Bishop Museum and other organizations (Kirch, 1969, 1970; Davis and Bordner, 1977a and 1977b; Walton, 1972). Numerous sites were identified, mostly in the coastal area. On the adjacent property to the north, locally identified as the "McCormack

<sup>15</sup> Site 50-50-14-4817.

<sup>16</sup> This site was identified in an inventory survey conducted by Xamanek Researches, and assigned SIHP Site number 50-50-14-4524 (Fredericksen and Fredericksen, June 1998).

Property"<sup>17</sup>, a large cattle pen—circa 1885—was located (Site 1027). Precontact sites included Palauea *Heiau* Complex (Site 1028) and Palauea Landing (Site 1029). On Halo Point, to the west of the present study parcel, Site 1030 has been described as a house site, a *ko`a*, an *ahupua`a* boundary shrine, and finally a possible burial by 4 different archaeological teams. Eventually this site was preserved as a *ko`a*, or fishing shrine (Kirch, 1970; Sterling, 1961; Davis and Bordner, 1977a; and Shapiro and Haun, 1989).

In the 1980s and early 1990s, as the Waiela Resort began to be developed as a tourist destination area, additional studies were undertaken in the coastal and intermediate zones of Palauea (Bordner, 1980; Haun, 1987; Dicks and Haun, 1987; Jensen and Haun, 1989; Shapiro and Haun, 1989; Donham, 1990a, 1990b; Henry, Walker and Rosendahl, 1992; Toenjes, Nees, Cleghorn and Anderson, 1992; Fredericksen, 1995; Fredericksen and Fredericksen, 1995). No studies of inland habitation sites in Palauea and Keauhou *ahupua`a* have been conducted. The studies that have been done in that ecological zone have centered around a Hawaiian Home Lands development in Keokea and Waiohuli to the north (Brown and Haun, 1989).

All of the research suggests that in the *ahupua`a* of Palauea and Keauhou permanent settlements were found along the coastal areas, followed by an inland intermediate zone that was sparsely utilized. Another habitation area was located inland at a higher elevation, where there was sufficient moisture to produce agricultural crops that would sustain more permanent habitation. These ecological zones were connected by a *makai-mauka* trail system, which probably followed the major gulches in the region, although no studies have been undertaken to verify this.

Donham (1990a, p. 7) concludes:

*"In general, the findings of the above studies indicate extensive, but not necessarily intensive agricultural use of the coastal zone and the dry, immediate inland zone between Kihei and Makena. Temporary habitation features have been identified in both the inland and coastal zones, and permanent habitation sites have been identified primarily along the coast. Most of the analysts have concurred with the presumption that most, if not all, of the sites in the area date to the late prehistoric period. A few radiocarbon dates from coastal habitation sites have predated AD 1400; however, these are considered as tentative in some cases."*

The work that Donham conducted at Site 2496, a 2 meter-deep coastal site located about 750 meters northwest of the present study area, pushed the time of habitation back considerably. Of 6 radiocarbon samples recovered from subsurface excavation, 1 returned an early date of AD 680 to AD 1020. Two other dates fell between AD 1260 and 1480. The remaining 3 samples that were analyzed, yielded dates between AD 1400 and AD 1739 (Donham, 1990a, p. 26). One historic burial—that of a child—was located on the study property. Further work by PHRI was undertaken to see if additional burials were present, but no additional ones were located (Henry, Walker and Rosendahl, 1992).

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<sup>17</sup> This 57-acre parcel lies on the *mauka* side of the old Makena Road, and extends inland to Makena Alanui Road.

Xamanek Researches returned to Site 2496 in 1995 to undertake data recovery (Fredericksen, 1995; Fredericksen and Fredericksen, 1995). Over 20 radiocarbon samples were submitted to Beta Analytic, Inc. for analysis, and the intercept dates fell into the following date brackets: 2 samples returned dates of between BC 100 and AD 130; 5 samples fell between AD 1275 and AD 1300 (13<sup>th</sup> century); 8 samples clustered between AD 1395 and 1485 (15<sup>th</sup> century); and 6 samples were between AD 1535 to AD 1650 (16<sup>th</sup>/17<sup>th</sup> century) [Fredericksen and Fredericksen, 1995]. This research established the potential for very early habitation in this coastal strip of Palaua. Additionally, one precontact burial was found during subsurface testing in sand deposits—thereby reaffirming the belief that additional human burials are likely present in such coastal sand deposits.

A total of 12 test units and 7 test trenches were excavated during this data recovery project. Over 64 cubic meters of soil were excavated in the test excavations that ranged from 0.2 to 2.4 meters in depth. The portable remains found during data recovery indicated a strong marine focus. Large quantities of food midden such as shellfish, sea urchin, and smaller amounts of fish, bird and mammal bone were recovered. The artifact assemblage includes coral tools such as abraders and files, a shell adz and worked shell, fishhook tabs and fishhooks, sea urchin spine files and tools, basalt tools, volcanic glass cores, numerous volcanic glass flakes, and several items of personal adornment.<sup>18</sup> Over 140 separate features were identified, and consisted primarily of postholes and pits, indicative of habitation activity. Portions of 5 habitation floors of compacted clay, some of which were paved with *ili`ili* stones, were also found. A subsurface wall (1.6 meters below surface) yielded a date of AD 1205 to 1440. Another subsurface rock structure is possibly a portion of a house *or hale*, that is c. 250 to 300 years old.

The top of a large, well-built U-shaped wall, was first noted during the earlier inventory survey by Donham (1990a). Subsequent data recovery work by Xamanek Researches revealed that this feature was c. 1.5-1.8 meters thick and c. 1 meter high by c. 21 meters long and 6 to 8 meters wide. It appears to have been associated with the 17<sup>th</sup> century occupation phase. Based on the total size and the nature of construction, this habitation enclosure may have been built for and utilized by a person of high status, such a local chief, or *ali`i*.

One additional site on this property is a World War II gun emplacement bunker (Site 4128), which was connected to Makena Road by a bulldozed access roadway that had impacted portions of the 17<sup>th</sup> century wall feature on the property.

Two archaeological surveys have been conducted on 2 Palaua Beach beach properties located on the coastal strip directly *makai* (west) of the present project area. These are identified as Lots 48 and 49. While no significant subsurface deposits were located during the survey on Lot 48 (Fredericksen and Fredericksen, September 1999),

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<sup>18</sup> These include a finished *lei niho palaoa* fashioned from a sea urchin spine, and several similar ornaments in various stages of manufacture. The presence of such artifacts, which symbolize high social rank, tends to further mark the site as one associated with the chiefly class.

fairly deep dune and marine sand deposits on the Lot 49 to the north were found to contain human remains. Human skeletal remains were recovered which represented at least 2 individuals. The site was designated Site 50-50-14-4757 (Fredericksen, August 1999). Only precontact material cultural remains were found in association with the wave-impacted human skeletal materials. The project has since been put on hold by the property owner, and the inventory survey remains incomplete as of this writing.

### **Previous Archaeology on Parcel MF-21**

There has been some archaeological work undertaken of Parcel MF-21 in the past. This previous work was conducted by the B.P. Bishop Museum in 1989, and apparently in 1990. The earlier investigation consisted of a reconnaissance survey, while the latter involved some subsurface investigation. The reconnaissance survey was conducted in May 1989, and covered several other parcels as well as MF-21. This walk-through surface survey located 10 archaeological sites (T 10-19), including several long walls, 2 rectangular enclosures, and a lava tube (Sinoto, 1989). No other descriptive text was included in this post-field summary letter report. However, additional archaeological work was recommended.

There was some investigation that was subsequently undertaken on an enclosure<sup>19</sup> and the lava tube in 1990<sup>20</sup> (Lisa Rotunno-Hazuka, personal communication, 17 November 1999). This work consisted of subsurface sampling at both of these sites. Unfortunately, no results on the findings were ever written up for either of these sites. Erik Fredericksen spoke with Ms. Helen Leidemann of the Bishop Museum about both of these sites in mid-December 1999, and she provided the following information. A radiocarbon sample was recovered from each site and submitted to Beta Analytic, Inc. for radiometric dating purposes. The sample obtained from a test unit inside the enclosure (Site 4804) returned a radiocarbon age of 410 +/- 50 BP (Beta No. 36195). This sample was recovered from Layer IIa (no below-surface depth available). The second sample was recovered at 25-39 cmbs. (no layer/level available) in the lava tube (Site 4805), and returned a radiocarbon age of 120 +/- 50 BP. She could find no further information for either of these sites in the Museum's files. Previous checks with Ms. Cathleen Dagher at the Oahu Office of the State Historic Preservation Division, also turned up no information of the Bishop Museum findings for the present study parcel. It was on Ms. Dagher's suggestion that we contacted Ms. Leidemann.

### **Settlement Patterns and Expectations of findings**

Archaeological studies indicate that the inland areas of the Honua'ula district were settled in later precontact times. Natural resources in such a marginal area were not particularly abundant. It was not until population pressure increased that they would have been sought. In the inland areas, where sufficient rainfall and soil existed, sweet potatoes and dryland taro could be cultivated. The coastal area served as the location for

<sup>19</sup> This enclosure was labeled B11-27 by the Bishop Museum. It has now been assigned SIHP number 50-50-14-4804.

<sup>20</sup> The lava tube shelter was identified as B11-28 by the Bishop Museum, and is now Site 50-50-14-4805.



permanent or semi-permanent habitation areas for marine resource exploitation. In some coastal areas, it appears that habitation could extend back to early to mid-precontact times.

There was a fairly large population along the Makena coastline in late precontact times. Archaeological studies have documented that the coastal area to both the north and south of the study parcel is dotted with permanent or semi-permanent habitation sites, *ko`a* and *heiau*. The majority of sites tend to date from late precontact times, suggesting that the Makena area of Maui was not heavily occupied prior to this period.

The "McCormack" property<sup>21</sup>, which borders the study parcel on the north, contains a cluster of sites, contains C-shape enclosures and several rock cairns that were identified as part of a *heiau* complex (Kirch, 1969). Additionally, such features as platforms, midden scatters, and walls were also reported (Toenjes, Nees, Cleghorn and Anderson, 1992). Those features and sites that have been dated appear to be late-precontact, as are most of the sites in the Kihei to Makena sector. Additionally, some portions of MF-21 were surveyed and tested by the B.P. Bishop Museum in 1990. One of our tasks was to relocate the sites tested, in addition to recording the other sites that are present on the study parcel. We expected to find a continuation of the site types identified on the bordering property.

## ARCHEOLOGICAL FIELD METHODS

We carried out the archaeological inventory survey of the c. 23-acre project area during the months of September, October, and November 1999. Fieldwork was conducted by Hugh Coflin, Erik Fredericksen, and Daniel Vicars. Erik Fredericksen was also the overall project coordinator.

The archaeological survey was conducted in 2 phases. We first covered the study area with a 100% walkover survey. Pedestrian sweeps were generally oriented *mauka-makai* (east-west) with a c. 5 to 10 meter spacing between team members. Sites were flagged and located on the topographic map during this phase. The second phase of our inventory survey consisted of site evaluation. Sites were mapped, evaluated, and photographed. In addition, we conducted limited subsurface testing at 3 of the sites. All excavated material was screened through nested ¼ inch and 1/8 inch mesh hardware cloth. Test units were excavated by stratigraphic layers, and artificial 10 cm. levels were utilized in strata more than 10 cm. thick. All units were backfilled when recordation was completed. Field notes were kept and all mapping was done with metric survey tapes and hand-held compasses. Photographs were taken with color film. Standard methods were utilized for laboratory analysis. All material culture remains were processed by Xamanek Researches on Maui.

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<sup>21</sup> This property was purchased by Palauea Investors, LLC in 1999.

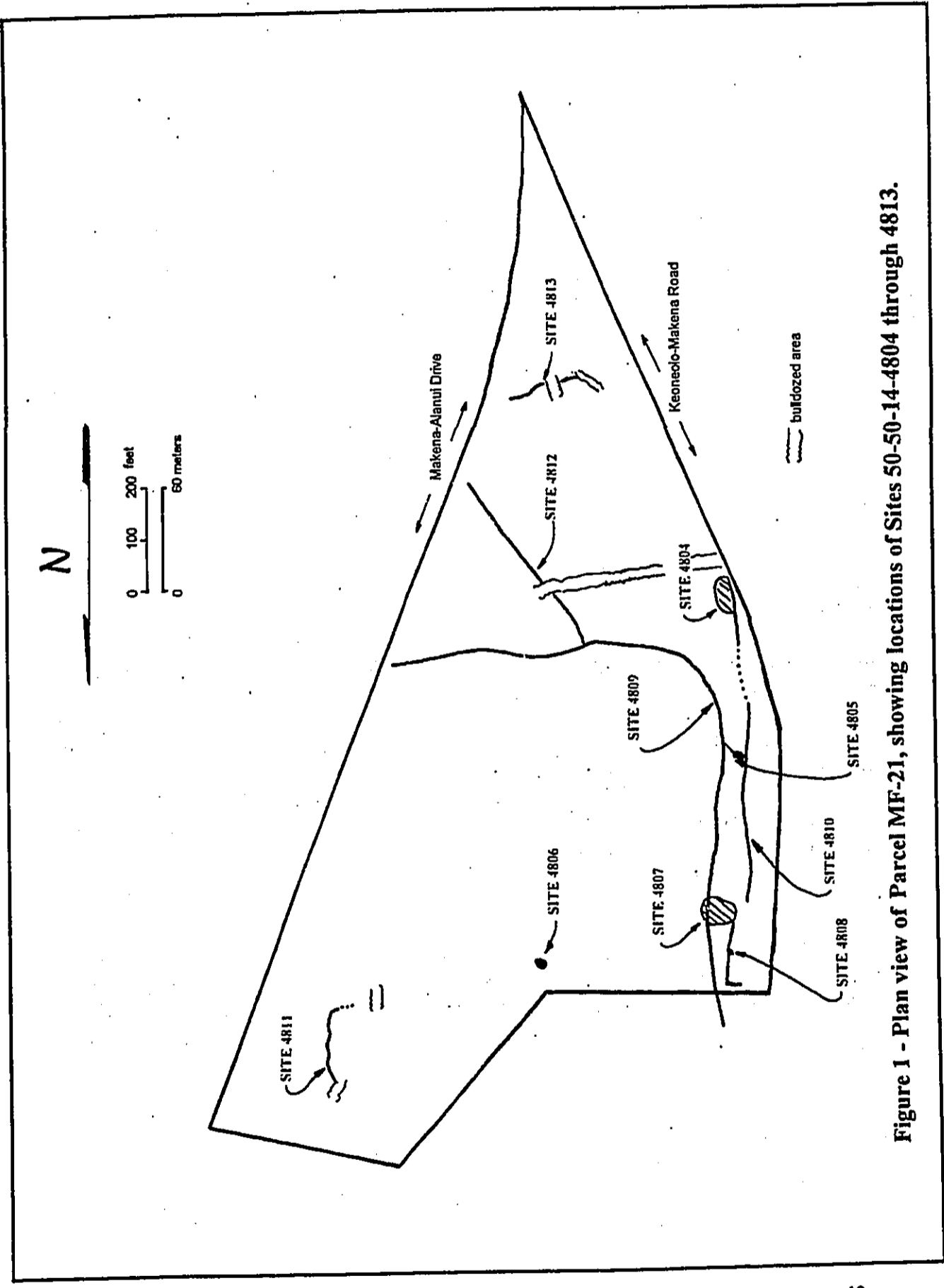


Figure 1 - Plan view of Parcel MF-21, showing locations of Sites 50-50-14-4804 through 4813.

## ARCHAEOLOGICAL FINDINGS

A total of 10 historic properties were located during the inventory survey of the subject parcel. These sites were subsequently assigned SIHP numbers 50-50-14-4804 through 4813. These archaeological sites include a complex with a possible ceremonial structure (Site 4804), 3 rock overhangs (Sites 4805, 4806, 4808), a surface scatter and a possible cupboard (Site 4807) and 5 walls (Sites 4809 through 4813). A discussion of each of these sites is presented below. Refer to Figure 1 for site locations.

### Site 50-50-14-4804

According to Ms. Lisa Rotunno-Hazuka, this site was investigated by the Bishop Museum about 10 years ago (personal communication, November 1999). However, it appears that the results were never written up and submitted to SHPD for review and comment.<sup>22</sup> It is therefore included in the present inventory survey as it is located on the property to be developed by Pacific Rim Lands, Inc.

The site is located on and around a small *a'a* knoll near the middle of the western boundary of the project area (Figure 2; Photos 1 through 4). The shoreline lies c. 100 meter (330 feet) to the west. The site consists of 3 features—an enclosure (Feature A), and 2 level areas (Features B and C). Elevations for this portion of the project area range from 56 to 62 feet AMSL. Vegetation in the general vicinity of the site consists of *kiawe* trees, buffelgrass, alien weeds and scattered, indigenous *'ilima* shrubs.

This complex covers an area of approximately 180 square meters. It is important, however, to point out that much of this area consists of unmodified *a'a* flow. Several pieces of coral were noted in and around the Feature A enclosure, and a few pieces of coral were observed on the level portion of Feature B. No other surface remains were found during our inspection of the site area.

### Feature A

This 3-sided enclosure sits on top of a small *a'a* knoll. The semi-rectangular structure is up to 8 meters long N-S by 6.6 meters wide. The walls of this enclosure are up to 1 meter thick and are a maximum of 0.9 meters high. The structure is in generally fair condition and it is well constructed. Intact portions of its walls are faced and core-filled on the north, east and south sides. The feature walls are constructed with angular basalt boulders, cobbles and pebbles. In addition, several pieces of coral were observed within the walls. The western portion of Feature A incorporates several upright pieces

<sup>22</sup> Ms. Cathleen Dagher, SHPD Oahu Office, indicated that nothing was ever formally submitted to her office for review on the sites (personal communication, November 1999). Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc. also noted that Wailea Development Company had never authorized any work beyond a reconnaissance level survey on Parcel MF-21.

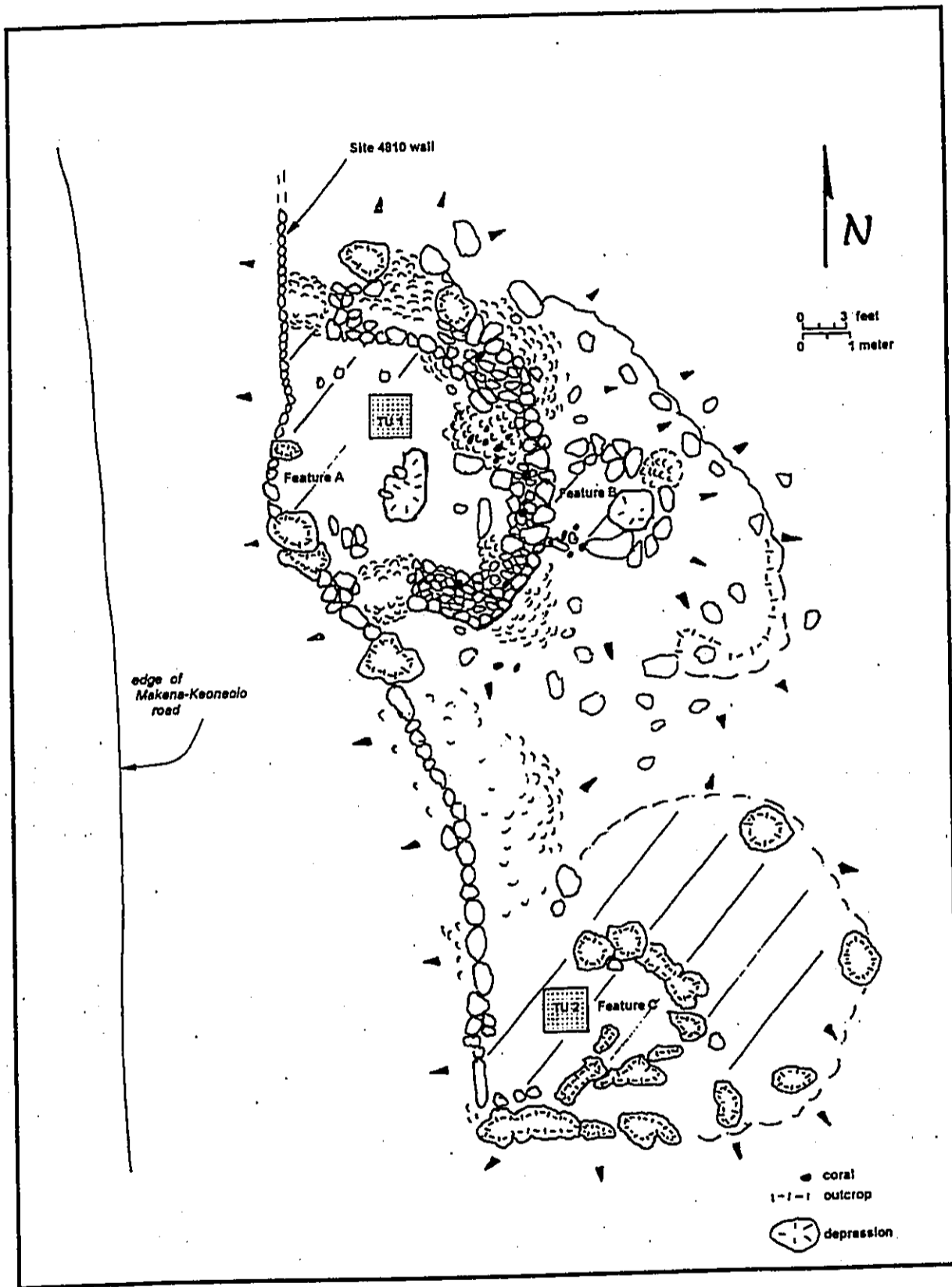


Figure 2 – Plan view of Site 50-50-14-4804, Features A, B, C, and Site 4810 wall.

of basalt outcrop. The southwestern and northwestern sections of the wall appear to have been partially dismantled to construct the Site 4810 wall that extends beyond Feature A to the north, and south to Feature C.

It appears possible that Feature A was partially open along its *makai*, or western, side prior to construction of the Site 4810 wall. Inspection of this section of the feature did not reveal any remaining evidence of a base similar (i.e., faced and core-filled) to the north, south and east walls. The ground slopes relatively steeply from this portion of Feature A down to the existing Keoneoio-Makena Road. There would undoubtedly be a commanding view of the ocean and shoreline from Feature A, if the existing *kiawe* trees to the west were removed.

An eroded, open excavation unit was noted near the center of Feature A. This irregularly shaped hole is interpreted as the B.P. Bishop Museum excavation from the 1990 investigation, which was not backfilled. In addition, apparent backdirt from this hole was observed on the eastern wall. Several pieces of coral were present in this material. Xamanek Researches excavated a 1-meter square test unit near this excavation to assess subsurface conditions.

#### Test Unit 1

This unit was dug to a maximum depth of 62 cmbs. Unit orientation was N-S. A total of 3 very rocky strata were located before excavation was halted at weathered bedrock (Figure 3; Photo 4; Table 1).

Layer I (0-9 cmbs.) was comprised of loose, brown silty loam (7.5 YR 5/3), with moderate amounts of organic materials present. buffelgrass roots were very common in this rocky stratum (c. 80% by volume). Scattered material culture remains were present in this layer and consisted of 15.4 g. of common marine gastropods, 8.8 g. of sea urchin, 2 unworked basalt flakes (36 g.), 2 pieces of unworked coral (68.6 g.), 2 waterworn pebbles, and a 1986 U.S. penny. This latter item was found near the existing surface of the test unit.

Layer II (9 to 28 cmbs.) consisted of brown silty clay (7.5 YR 5/4). This loose, dry soil yielded generally low amounts of material culture remains, including 14.6 g. of marine gastropods, 34.3 g. of sea urchin body parts, 5 unworked flakes of basalt, 9 pieces of coral, and a waterworn pebble. It is interesting to note that the bulk of the sea urchin remains (24.7 g.) were concentrated in one area. Moderate amounts of charcoal were also present in this layer, and 13.7 g. were collected. However there were no subsurface features present in this layer.

Layer III extended to a maximum depth of 62 cmbs. This stratum was made up of strong brown (7.5 YR 5/6), slightly compact, silty clay. This layer was very rocky (over 80% by volume) and did not yield any material culture remains. Rockiness increased with depth, and weathered bedrock was encountered at 54 to 62 cmbs.

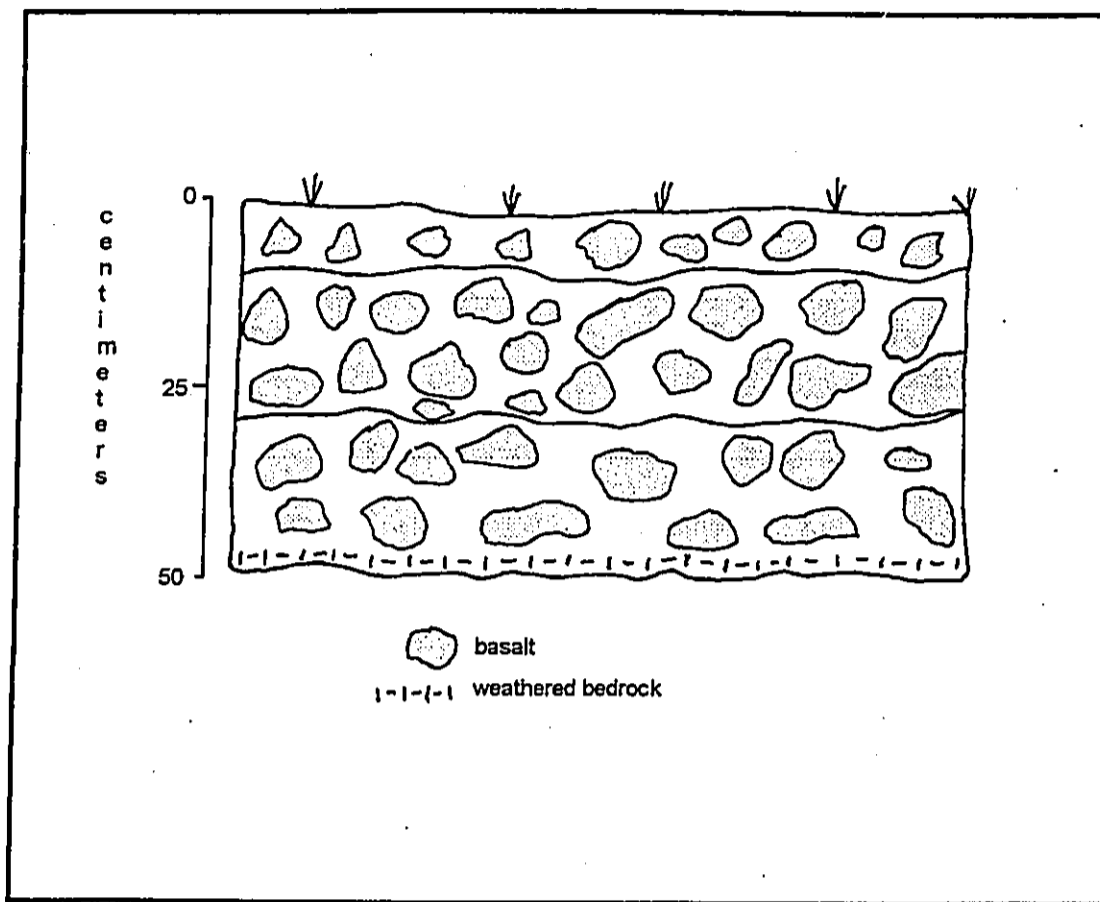


Figure 3 -- South face profile of Test Unit 1, Feature A.

#### Feature B

This feature consists of a level area that essentially lies adjacent to and below Feature A to the west. There are several large cobbles and small boulders (up to 90 cm. in diameter) that appear to partially enclose this c. 5-meter square level area. An apparent unbackfilled test unit was located in the eastern portion of the level area. No material culture remains were observed in the pile of angular pebbles and cobbles that probably came from this semi-circular hole. Four pieces of coral were, however, noted on the surface of Feature B. We did not attempt any excavation in this rocky area.

#### Feature C

This feature lies c. 7 meters to the southeast of Feature A. It consists of a level area, approximately 11-meters square that is partially enclosed by protruding basalt outcrop. In addition, the Site 4810 wall runs along the western side of this level area. A portion of land to the south of Feature C and the wall appears to have been bulldozed in the past. It appears likely that these previous earthmoving activities impacted the Site 4810 wall.

The surrounding area consists of a'a clinker with very shallow soil deposits. In contrast, Feature C contains moderate soil deposits. Three pieces of coral were also noted in the vicinity of this feature. We excavated a 1-meter square test unit in order to evaluate subsurface conditions.

### Test Unit 2

This unit was oriented N-S and was a maximum of 48 cm. deep. A total of 3 very rocky strata were encountered in the unit before excavation was abandoned at weathered bedrock (Figure 4).

Layer I (0-7 cmbs.) consisted of loose, brown (7.5 YR 5/3) silty loam with moderate amounts of organic matter. Buffelgrass roots and small *kiawe* rootlets were common in this stony stratum (c. 80% by volume). There were no cultural materials present in this layer.

The underlying stratum extended up to 28 cm. below the existing surface. Layer II (c. 7 to 28 cmbs.) yielded moderate amounts of material culture remains. Materials interpreted as food remains include 52.7 g. of marine gastropods and 0.4 g. of sea urchin body parts. In addition, an unworked basalt flake (17.6 g.) was recovered from the upper 5 cm. of Level 2 (17 to 27 cmbs.) The lower portion of this brown (7.5 YR 4/4) silty clay loam was sterile. Stoniness increased with depth and the soil boundary with the underlying stratum was somewhat indistinct.

Layer III was made up of strong brown (7.5 YR 5/6) silty clay. This semi-compact layer contained angular cobbles and pebbles (c. 80% by volume). Excavation was terminated in weathered bedrock and no material remains were present in the stratum.

### Discussion

Site 4804 contains 3 features. One test unit was placed in the Feature A enclosure—TU 1, and a second one in Feature C—TU 2. Subsurface results yielded very modest amounts of material culture remains in Feature A and moderate quantities of midden in Feature C.

Feature A is interpreted as a precontact structure, based on the radiocarbon date obtained by the B.P. Bishop Museum in 1990. The radiocarbon age of 410 +/- 50 (Beta No. 36195) indicated that Feature A was utilized in the mid- to late precontact period. While it is possible that Feature A represents a habitation area, the general paucity of material culture remains recovered during our excavation suggests a different function. It appears that Feature A, which was likely open to the *makai* (west) is a ceremonial structure. This conclusion is based upon the enclosure's location atop an a'a knoll, the overall labor expenditure necessary for its construction, and the general paucity of food midden remains found within the enclosure. In addition, several pieces of branch and

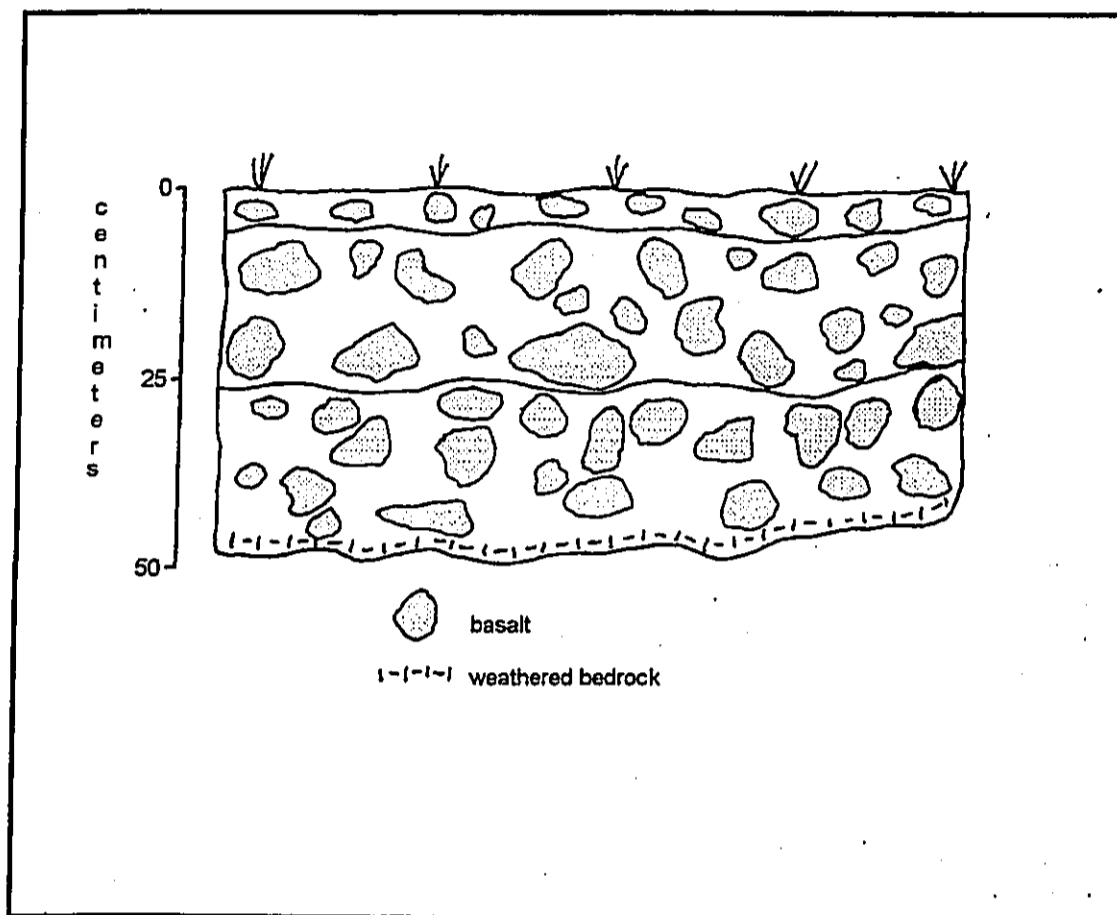


Figure 4 – South face profile, Test Unit 2, Feature C.

waterworn coral were noted in the 3 wall sections of this feature, as well as in the actual excavated base of the enclosure itself.

Both Features B and C appear to represent low-use activity areas. The modest amounts of food midden recovered from Feature C suggest that this portion of Site 4804 may have been used for intermittent, or temporary habitation, perhaps connected with ceremonial activities.

#### Site 50-50-14-4805

This second site, a rock overhang, lies c. 85 meters to the north of Site 4804. This site was apparently also located in the earlier B.P. Bishop Museum reconnaissance survey done in 1989. It is interpreted as an overhang shelter and is situated between a well-made rock wall to the north (Site 4809) and a less well constructed wall to the south (Site 4810). The latter wall is essentially adjacent to this lava tube overhang. In addition, a poorly constructed wall segment runs between the Site 4810 and 4809 walls. This wall segment appears to be associated with animal containment and is not considered part of



Site 4805. The construction style of this segment (i.e. single stacked) matches that of the Site 4810 wall.

This lava tube lies at c. 34 feet AMSL in a section of exposed to partly vegetated *a'a*. Vegetation present in this portion of the study area includes alien plants such as scattered buffelgrass, *kiawe* trees, and various annual weeds. In addition, several endemic *wili wili* trees, 2 indigenous *naio* trees, and several indigenous *'ilima* and *'uhaloa* shrubs were noted in the general vicinity of Site 4805.

The mouth of the lava tube faces north, and has a level area in front of it (Figures 5 and 6; Photos 5 through 8). The covered portion of the tube is a maximum of 5.6 meters wide (E-W) by 4.4 meters deep (N-S). The ceiling is up to 1.2 meters high. The level area in front of the overhang is c. 7 meters square. At the time of our inspection, the interior floor contained 3 or 4 holes with associated unscreened backfill piles apparently dug by persons seeking artifacts, and an open excavation unit left from the B.P. Bishop Museum reconnaissance survey of 1990. While there has been not write up of the findings, a charcoal sample was obtained and submitted for radiometric analysis to Beta Analytic, Inc. This sample returned a radiocarbon age of 120 +/- 50 BP (Helen Leidemann, B.P. Bishop Museum, personal communication, December 1999).

Our inspection of the lava tube shelter revealed several pieces of shell and coral under the drip line, as well as 3 waterworn cobbles on the level area in front of the overhang. Finally, a basalt chopper was collected from the terrace area. This artifact measures 176 mm. long by 115 mm. wide by 68-mm. thick and weighs 2.16 kg. It is fashioned from relatively dense waterworn basalt. A test unit was placed under the drip line in one of the few undisturbed locations with intact subsurface deposits (Refer to Table 2 for results).

#### Test Unit 1

This 50 by 50 cm. unit was excavated in a portion of the overhang shelter that had relatively few surface rocks. It was dug to a maximum depth of 50 cm. and contained 3 very rocky strata (Figure 7; Photo 8). The surface contained displaced cultural materials from a nearby backdirt pile associated with a looter's hole. These previously disturbed materials included cowrie shell, *pipipi*, unidentifiable bivalves and sea urchin body parts, along with some charcoal flecks.

Layer I (0 to 6 cmbs.) consisted of loose, dry to moist silt. This brown (7.5 YR 4/4) soil contained approximately 40% by volume angular basalt pebbles. Moderate amounts of cultural materials were recovered from this layer and included 25.7 g. of marine gastropods, 2.0 g. of bivalves, 2.6 g. of sea urchin body parts, a trace (0.1 g.) of fish bone, 3.6 g. of pig bone, and 1 piece of coral. No other remains were present in this thin stratum.

The soil boundary with Layer II was indistinct due to increasing rockiness. Layer II was composed of loose, dry, grayish brown (10 YR 5/2) silt. This rocky stratum.

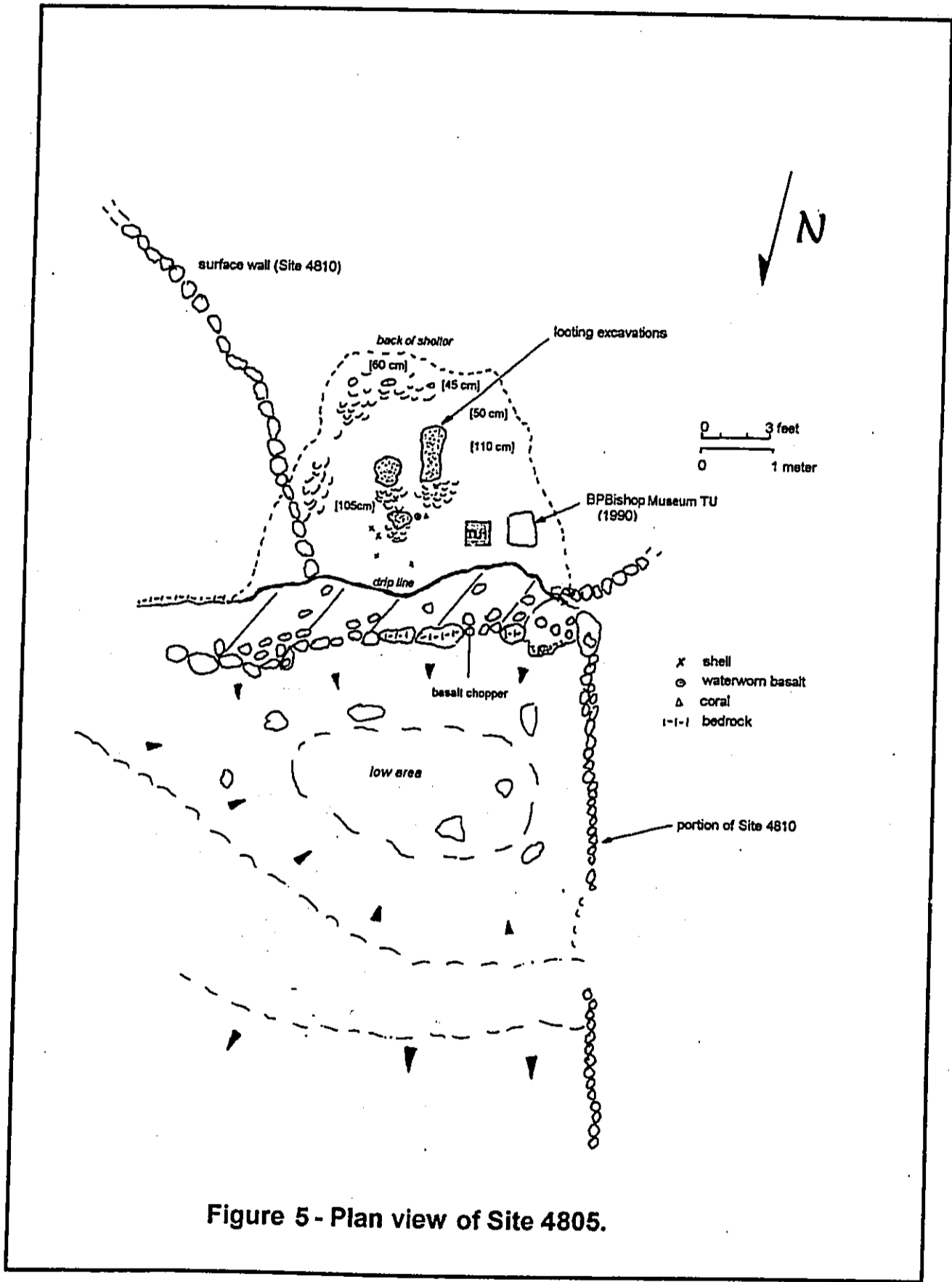


Figure 5 - Plan view of Site 4805.

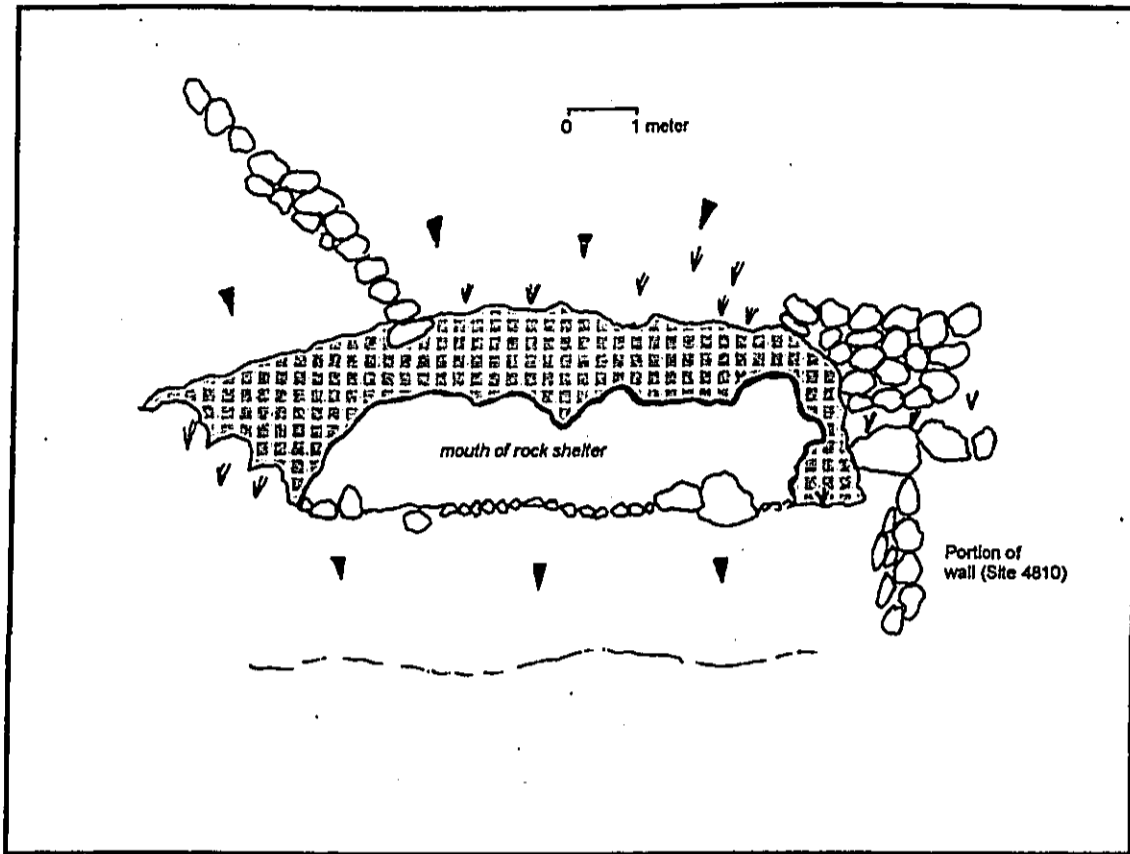


Figure 6 – Profile of Site 4805 rock shelter—view to south.

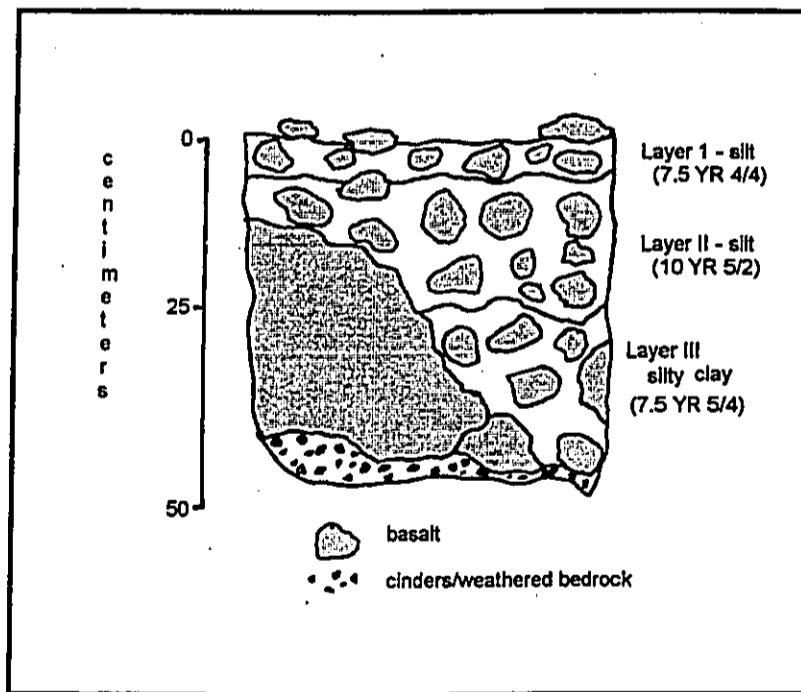


Figure 7 – West face profile—Test Unit 1.

extended up to 25 cm. below the existing surface of the overhang. Modest amounts of material culture remains were recovered from this deposit. Collected cultural materials consisted of 27.0 g. of common marine gastropods, 1.6 f. of bivalves, 10.3 g. of echinoderm body parts, 2.9 g. of pig bone, and 1.1 g. of fish bone. In addition, a small, unworked flake of volcanic glass (0.1 g.) was recovered from Level 2 (16-25 cmbs.). Rockiness increased with depth (i.e. 60 to 80% by volume) and the lower portion of Level 2 was essentially sterile.

Layer III consisted of loose, brown (7.5 YR 5/4) silty clay. This dry soil was very rocky (over 80% by volume) and did not yield any cultural materials. Excavation was halted at a maximum depth of 50 cmbs. in cinder and weathered bedrock.

### Discussion

Subsurface results yielded food midden remains and an unworked volcanic glass flake. In addition a large basalt chopper was found on a level area in front of the overhang. Portions of the interior have been previously disturbed by looters, and B.P. Bishop Museum archaeologists. Site 4805 is interpreted as an overhang shelter that was likely used for temporary habitation in precontact times.. This conclusion is based upon the types of cultural materials that were recovered, and the lack of any post-contact items. It seems that Site 4805 also was utilized in post-contact times, although no post-contact material culture remains were found during our investigation. The radiocarbon sample obtained by the Bishop Museum in 1990 did yield a post-contact age range, however.

### Site 50-50-14-4806

This second rock overhang shelter was identified during our pedestrian survey of the parcel. It lies at c. 66 feet AMSL, near the central portion of the northern project border. The shoreline is c. 200 meters (650 feet) to the west. This overhang is located along an exposed face of an *a'a* finger ridge (Photo 9). Vegetation in the general area includes alien species such as buffelgrass, annual weeds, and scattered *kiawe* trees. Native vegetation includes scattered *'ilima* and *'uhaloa* shrubs, and isolated *wili wili* trees. This lava tube faces the south and is c. 2 meters above a natural drainage area.

The dimensions of the covered portion of the overhang are c. 7.8 meters E-W by 2.4 meters N-S by a maximum of 0.8 meters high (Figure 8). Some possible crude stacking was noted on the eastern portion of the lava tube opening. A relatively level, sloping area (c. 10 meters square) extends from the entrance of this shelter. At the time of the investigation, the interior of the shelter was littered with 8-foot lengths of 1 x 2 lumber, weathered plastic sheeting and several plastic planters. In addition, cat, young deer and bird bones were noted scattered around the floor of the shelter. These relatively recently deposited bones exhibited gnawed, tooth marks. A decomposing mongoose carcass was also located near a low pebble and cobble pile. Finally, a weathered piece of cowrie shell was noted near the back of the overhang.



A test unit, measuring 50 by 50 cm., and a test trench measuring 50 by 100 cm. were excavated in the shelter. The test unit was utilized to sample subsurface soil conditions, and the test trench was placed in a rubble pile in the northeastern part of the overhang.

#### Test Unit 1

This unit (50 by 50 cm.) was oriented N-S and was a maximum of 37 cm. deep. Three stony strata were encountered before excavation was terminated at weathered bedrock (Figure 9).

Layer I (0-6 cmbs.) was made up of brown (7.5 YR 5/4) silty clay. This dry, compact soil yielded a few pieces of marine shell (2.3 g. of *Cypraea*), 1.2 g. of sea urchin body parts, 1.1 g. of mammal (rat) bone, and a trace of charcoal (0.3 g.). In addition, several small pieces of clear plastic sheeting were found just under the surface.

Layer II (6-21 cmbs.) consisted of grayish brown (7.5 YR 5/2) silty clay. This semi-compact stratum contained modest amounts of material culture remains, including 7.1 g. of common marine gastropods (*Cypraea*, *Nerita picea* and *Cellana*), 3.5 g. of sea urchin parts and an small amount of charcoal (2.1 g.).

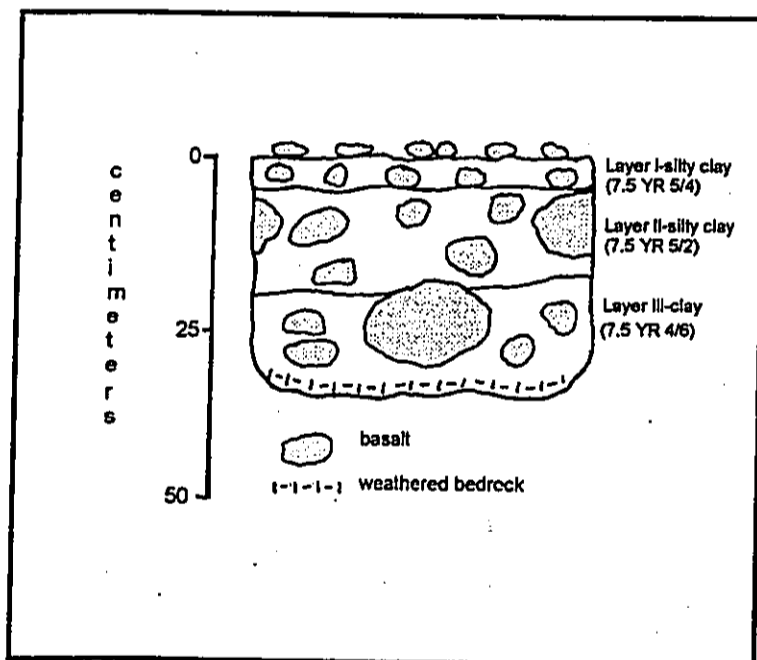


Figure 9— North face profile of Test Unit 1.

Rockiness increased with depth, and the soil boundary with the underlying stratum was indistinct.

Layer III was composed of strong brown (7.5 YR 4/6) clay. This compact layer contained quantities of angular pebbles and cobbles (c. 70% by volume). The stratum did not yield any cultural materials and excavation was halted in weathered bedrock.

### Test Trench 1

This trench was placed in the highest portion of the rubble pile in the northeastern portion of the overhang shelter, in order to investigate this pile and determine what was located under it. A 50 by 100 cm. area was cleared of rubble, and it became evident that the pile was made up of roof-fall. This rubble pile was found to be up to 35 cm. deep and to rest on exposed bedrock and very thin (less than 5 cm.) silt. No material culture remains other than bits of plastic sheeting were found.

### Discussion

Subsurface investigation yielded modest amounts of materials interpreted as food midden in TU 1. While post-contact cultural materials were found near the surface, only indigenous food remains were located below the surface zone. Although there were no indigenous artifacts recovered, it appears probable that this overhang shelter site was utilized in precontact times as a temporary shelter. Its most recent use has been as a storage area for materials likely used in the cultivation of illegal marijuana plants.

### Site 50-50-14-4807

This site is located on and along the flank of an a'a finger ridge near the northwestern corner of the project area (Figure 10; Photo 10). Site 4807 consists of a surface scatter of waterworn branch coral and a possible lava tube cupboard. The site extends from c. 41 to 53 feet AMSL. Alien vegetation observed in the general vicinity includes *kiawe* trees, buffelgrass, annual weeds, and scattered *koa haole*. In addition, *'ilima* shrubs were relatively common in areas of exposed a'a, and a few *wili wili* trees were present. The area in and around the site is actively being used as an informal *lua* by nearby beach visitors, and has been impacted by other activities in the recent past.

The site is truncated by a well-made, core-filled rock wall (Site 4809), placed near its eastern (*mauka*) boundary. The construction of this well-built wall would have required quantities of rock collected from the general area. In addition more recent rock gathering activities are evident along the western (*makai*) side of the site. These modern collection activities appear to have completely dismantled a section of another wall—Site 4810.

Site 4807 covers an area of about 150 square meters. It consists of a low concentration (less than 1 piece per square meter) of branch and waterworn coral pieces. In addition, a piece of weathered cowrie (*Cypraea* sp.) was also noted on the surface of the site. A small lava tube is located 4.5 meters to the east (*mauka*) of the Site 4809 rock wall. A single piece of coral was found in this possible cupboard (Photo 11). However, no other material culture remains were present in the 50 by 45 cm. high opening. Two other small lava tubes located nearby did not contain any cultural materials.

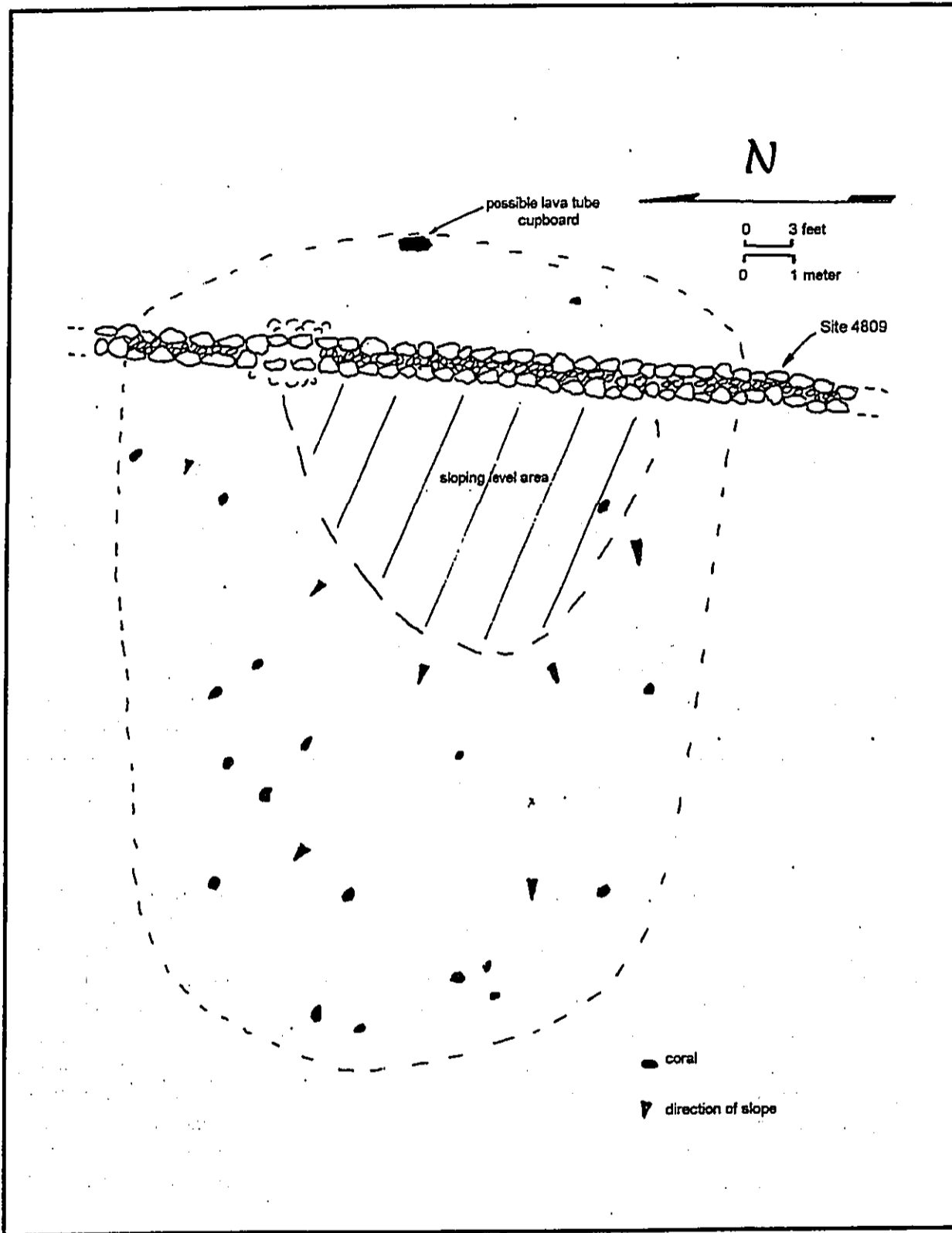


Figure 10 – Plan view of Site 4807 surface scatter, and portion of Site 4809 wall.



## Discussion

Site 4807 is a low concentration surface scatter of coral. The small lava tube that contains a piece of coral is tentatively considered to be part of this site. However, the single piece of coral may have been placed within the small lava tube in more recent times. The function of Site 4807 remains somewhat unclear. The upper portion of this site would have had an unobstructed view of the nearby ocean if the existing *kiawe* trees were not present. However, there is no soil deposit present, making it essentially impossible to undertake subsurface sampling at this site. The site has also been impacted by recent rock harvesting activities and is actively being used as a toilet by beachgoers. The presence of waterworn and beach coral suggests it possibly was an area where ceremonial activity took place in precontact times.

### Site 50-50-14-4808

This site consists of a small overhang. It lies at c. 22 feet AMSL and is located near the base of a sloping *a`a* flow (Photo 12). Vegetation in the area is dominated by dense *kiawe* and *koa haole* trees, and alien weeds. Site 4808 is located c. 30 meters north of the Site 4807 surface scatter. The Site 4810 wall is partly intact in the general vicinity of the overhang, and appears to have been built around the shelter as a livestock barrier.

The mouth of the overhang shelter is up to 1.2 by 0.8 meters wide by 1.3 meters deep. It appears to be unmodified. It may have been used as a temporary shelter. However, it is important to note that there is very little soil deposited on the floor of the shelter. There were no portable remains noted other than recently deposited human feces. This overhang is tentatively interpreted as a temporary habitation area that may have been used in precontact times, and continues to be used today.

### Site 50-50-14-4809

This site consists of a long, well-built wall. It is the most dominant historic property present on the subject parcel (Photos 13 & 14). It begins just to the north of the subject parcel's northern boundary, and traverses a large portion of the project area. The wall lies between 23 and 90 feet AMSL. It is c. 400 meters long (1320 feet) and is in generally good condition. The bulk of this wall is intact, and ranges in height from 0.9 to 1.4 meters by up to 0.9 meters in width. It is faced on both sides and is core-filled. Typical rocks used in its construction include angular boulders (50 to 80 cm. in diameter) along portions of its base and angular cobbles (20 to 40 cm. in diameter) elsewhere. Exposed sections of the wall contained smaller fill stones, typically less than 15 cm. in diameter. We did not find any coral or shell associated with the wall over its entire length. In addition, we did not note any waterworn rocks incorporated in the construction of the wall.

It should be noted that this wall appears to have formerly extended east (*mauka*) of the project area. While the construction of Makena-Alanui Drive destroyed a portion of this site, a probable remnant of the wall was found on the golf course side of the road.

## Discussion

The labor expenditure required to build this site was significantly greater than that used in the construction of any of the other walls on the study property. It is well constructed and the selection of stones appears to have been planned, rather than just the casual collection of readily available materials. It is faced and core-filled, a technique which also varies from the rest of the walls. It appears to fall roughly along the *ahupua'a* boundary between Palauea and Kcauhou (Maps 3). As noted in the background section, during the Mahele one *ahupua'a* was granted to Kamehameha I's granddaughter (Palauea), and the other was a Konohiki Award (Kcauhou) made by Kamehameha III. The latter *ahupua'a* was purchased by James Makee in 1856, and the former sold at public auction in 1862—also to Makee. This suggests that the boundary wall may have been constructed before the lands were acquired by the ranch. The site was probably used as a cattle wall, and probably built by someone who controlled a relatively large labor force. Many other cattle walls of lesser quality were constructed in Makena during the early part of the 19<sup>th</sup> century, to keep wild cattle from roaming through homesteads.

### Site 50-50-14-4810

This site is the second longest wall present on the project area. It begins near the northern boundary and extends to the south. Most of this wall is intact and it is c. 230 meters (750 feet) long. It crosses rocky terrain that ranges from c. 20 to 60 feet AMSL. In general, the condition of the feature ranges from poor to fair. It is essentially a single rock thickness in width (30 to 60 cm.), and typically is 3 to 5 courses in height (70 to 110 cm.). The construction is fairly casual, and the overall labor expenditure on this site was generally low.

Portions of the wall have been impacted by the rock collection activities of modern wall builders, and bulldozing. This latter activity may have occurred during World War II. Areas of partial or total destruction include a c. 25 meter section adjacent to and west of Site 4807, in portions to the south of the Site 4805 rock shelter, and in the area adjacent to and south of Site 4804.

## Discussion

Site 4810 is interpreted as an animal containment wall associated with the ranching era. Its construction likely impacted portions of the Site 4804 enclosure (Feature A).

### Site 50-50-14-4811

This wall segment is located near the northeastern corner of the property. Soil deposits are very thin in much of this portion of the subject parcel. Extensive bulldozing activities in the area have impacted portions of Site 4811. It appears likely that these earthmoving activities have taken place within the last 10 years or so. The vegetation in this part of the parcel is dominated by alien species including *kiawe* trees, buffelgrass and annual weeds.

Site 4811 is in generally poor condition and is about 50 meters (170 feet) long. It is poorly constructed of stacked, angular cobbles and boulders that range from 20 to 70 cm. in diameter. The wall ranges from 30 to 70 cm. in height and is made up of 1 to 3 courses of rocks. This site is interpreted as an animal containment wall.

#### Site 50-50-14-4812

This site is another wall that is located in the southeastern portion of the project area (Photo 15). It abuts the Site 4809 wall and extends southeast to Makena-Alanui Drive. Activities related to the construction of this road have truncated the wall. It appears to continue on the golf course side of the road (*mauka*). It crosses very rocky terrain that ranges from 62 to 88 feet AMSL. Vegetation is dominated by alien species such as *kiawe* and *koa haole* trees, buffelgrass, and various annual weeds. Several cacti were also noted on this section of the parcel. While not dominant, *wili wili* trees are common as are indigenous *'ilima* and *'uhaloa* shrubs.

The Site 4812 wall ranges from 0.9 to 1.9 meters in height. It is constructed from angular cobbles and small boulders, and is 3 to 6 rock courses high. The bulk of the wall is single stacked (only 1 rock in width). However, a c. 15-meter section near Makena-Alanui Drive is from 2 to 3 rocks in width.<sup>23</sup> Site 4812 is c. 115 meters (375 feet) long and has been truncated by a rough bulldozed access track that crosses this part of the project area.<sup>24</sup> Like the nearby Site 4809 wall, this site also appears to have been truncated by the construction of Makena-Alanui Drive. Site 4812 is interpreted as a cattle containment wall, possibly associated with the ranching era in Makena.

#### Site 50-50-14-4813

This is the southernmost site present on the parcel. Like Sites 4809 and 4812, it also has been truncated by the placement of Makena-Alanui Drive. It also crosses very rocky terrain that ranges from 61 to 72 feet AMSL (Photo 16). While alien vegetation is also prevalent in this portion of the parcel, native species, such as *wili wili* trees, and *'ilima* shrubs are common.

The Site 4813 wall ranges from 0.7 to 1.1 meters in height by 0.6 to 0.9 meters in width. It is faced in some sections, but is not core filled. It typically ranges from 3 to 5 courses in height by 1 or 2 rocks in width. The wall is in generally fair condition and its construction quality ranges from fair to good. The relative labor output for the placement of this barrier was moderate. The wall is c. 42 meters (140 feet) in overall length. It has been truncated by past bulldozing activities on this part of the property. Site 4813 is interpreted as an animal containment wall.

<sup>23</sup> The wall in this section is not core-filled, however.

<sup>24</sup> This same bulldozed track also impacted Site 4810, another wall located near Keoneoi'o Makena Road.

## SUMMARY AND CONCLUSIONS

A total of 10 archaeological sites were located during our archaeological inventory survey of this very rocky parcel. These historic properties include Site 4804, a small complex that contains a possible ceremonial structure, 3 rock overhang shelters (Sites 4805, 4806 and 4808), a low density coral surface scatter (Site 4807), and 5 walls (Sites 4809 through 4813). Portions of all of these sites have been impacted by one or more of the following post-contact activities—additional wall construction; rock harvesting; bulldozing; artifact looting and marijuana cultivation.

Of the above activities, bulldozing was found to have damaged the most sites. In particular, the walls—especially sites 4810 and 4811—were found to have suffered the most damage. Looters searching for artifacts compromised a sizable portion of the subsurface cultural deposit at Site 4805, an overhang shelter. It appears that rock harvesting has destroyed a c. 25-meter long section of the Site 4810 wall. This modern activity also removed numbers of rocks within the Site 4807 coral surface scatter. Finally, the marijuana cultivators left considerable amounts of modern materials and trash in the Site 4806 rock shelter.

The site density on this parcel is lower than it is on the larger, adjacent parcel to the north. However, this difference is not surprising, given the extremely rugged nature of the *a'a* flow on the subject property.

### Site Significance Assessments

All 10 of the historic properties located on parcel MF-21 are deemed significant under Criterion "D" of State and Federal historic preservation guidelines. Two of the sites are also significant under additional criteria.

The Site 4804 complex is associated with the mid- to late-precontact period. The Feature A enclosure is interpreted as a possible ceremonial structure, primarily because of its location which has a commanding view of the ocean to the west, and the inclusion of natural outcrop features within the enclosure. Features B and C are probably low intensity activity areas. The modest amounts of food remains recovered from TU 2 in Feature C suggest that it was utilized for temporary habitation, perhaps in connection with possible ceremonial activities. Site 4804 is still considered to be significant under Criterion "D" for its information content. In addition, it also qualifies for significance under Criterion "E" for its traditional cultural value.

The Site 4805 overhang shelter appears to have been utilized during precontact times. Subsurface testing recovered food midden and a volcanic glass flake. Coral and shell were also found under the drip line, and a large, dense basalt chopper was recovered

just outside the mouth of the overhang. While radiocarbon dating of this shelter yielded a post-contact age, the lack of any clearly post-contact material remains tends to support the notion that this feature was used as temporary shelter in precontact times. It is a relatively rare example of a traditional coastal rockshelter in this part of Maui. It remains significant under Criterion "D".

The second overhang shelter—Site 4806—is interpreted as a probable precontact temporary habitation area. The modest material culture remains recovered from this overhang indicate that usage was not frequent. This shelter is more distant from the Palauca shoreline than is Site 4805. Site 4806 is still considered to be significant for its information content.

Site 4807 is a low-density surface scatter of coral. Its function and possible age remain unclear. Modern disturbances and the lack of any soil deposits in this area make it unlikely that further information can be obtained from this site. It is therefore considered "no longer significant".

The Site 4808 overhang does not have any soil deposits in it or near it. It is possible that it was opportunistically used in both pre- and post-contact times, simply because it could provide available cover in episodes of inclement weather. It appears very unlikely that additional information can be obtained from this site, and it is considered "no longer significant".

Site 4809 is a very good example of a faced, core-filled wall. This is a post-contact wall, which appears to fall along the boundary between the *ahupua'a* of Palauca and Keauhou, and probably served as a cattle wall. It is still considered to be significant under Criterion "D". It is also considered to be significant under Criterion "C", being an excellent example of its type.<sup>25</sup>

Sites 4810, 4811, 4812 and 4813 are all interpreted as post-contact structures. They are all walls, which were used for animal containment during the mid- to late 19<sup>th</sup> and early 20<sup>th</sup> centuries. These walls are no longer considered to be significant for their information content. In conclusion, 6 of the sites are "no longer significant" and need no further work or protection. Four significant historic sites survive in the project area.

## Mitigation Recommendations

In-place preservation is recommended for 4 of the sites on parcel MF-21. Site 4804 is still considered significant for its information content. In addition, this complex contains a probable ceremonial structure (Feature A) and retains cultural importance. Sites 4805 and 4806 are good examples of near-coastal rock overhang shelters in this part of Maui, and should be preserved. Data recovery is recommended in the event that one or both sites cannot be preserved. Site 4809 is a very good example of a faced, core-filled wall which appears to mark the *ahupua'a* boundary. In-place preservation is recommended for as much of this wall as possible. Limited data recovery is recommended for any section of this long wall that may need to be removed.

<sup>25</sup> It also may qualify for significance under Criterion "F"—for its traditional cultural importance, i. e., marking the boundary between 2 important Mahele land awards.

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**TABLE 1**

Summary of Subsurface Results - Site 4804

	Feature A: enclosure			Feature C	
	TU1 LI1/L1	TU1 LI1/L1	TU1 LI1/L2	TU2 LI1/L1	TU2 LI1/L2
<b>GASTROPOD:</b>					
Cellana sp.	0.1		0.1	6.4	1.6
Conus sp.	0.5			2.1	1.4
Cypraea sp.	14.6	8.1	4.1	30.9	7.4
Granula sandwicensis					
Littorina pintado	0.1	0.1	0.4		
Nerita picea			0.2		
Nerita sandwicensis					
Operculum					
Planaxis sp.					
Strombus sp.				1.6	
Tellinidae sp.					
Terebridae sp.					

Thaididae sp.					
Turbo sandwicensis					
Unidentified	0.1	1.5	0.8		1.3
<b>BIVALVIA</b>					
Isognomon sp.					
Brachidontes sp.					
unidentified					
<b>ECHINOIDEA</b>					
Sea urchin	8.3	24.5	4.5	0.4	
Pencil urchin	0.5	0.4	4.9		
<b>CRAB</b>					
<b>BONE</b>					
Teeth, mammal					
Pig bone					
Mammal					
Fish					
Unidentified					
<b>CORAL</b>					
Kukui nut shell					
Charcoal					13.7
UNWORKED BASALT FLAKES (pieces)	3.6 (2)	138.6 (4)	0.3 (1)		17.6 (1)
UNWORKED VOLCANIC GLASS FLAKES (pieces)					
UNWORKED CORAL (pieces)	68.6 (2)	3.0 (7)	3.0 (2)		
WATERWORN PEBBLES (pieces)	80.6 (2)		16.6 (1)		
<b>FIRE-CRACKED ROCKS</b>					
<b>CHALCEDONY (Jasper)</b>					
<b>ARTIFACTS</b>					
	U.S. Penny 1986	1 piece plastic			

Weight in grams

**TABLE 2**

**Summary of Subsurface Results - Site 4805**

	Test Unit		
	Layer III (Level 1)	Layer II (Level 1)	Layer III (Level 2)
<b>GASTROPODA</b>			
Cellana sp.	2.0		0.7
Conus sp.	3.0	3.1	1.0
Cypraea sp.	10.1	9.1	2.0
Granula sandwicensis			
Littorina pintado		0.2	
Nerita picea	2.5	5.4	2.8
Nerita sandwicensis			
Opercilum			
Planaxis sp.			
Gyrineum pusillum	4.4		
Strombus sp.			
Tellinidae sp.			
Terebridae sp.			
Thaididae sp.			
Turbo sandwicensis	2.1		
Unidentified		1.6	1.1
<b>BIVALVIA</b>			
Isognomon sp.	2.0	1.0	0.6
Brachidontes sp.			
unidentified	1.6		
<b>ECHINOIDEA</b>			
Sea urchin	2.6	5.5	4.6
Pencil urchin			0.2
<b>CRAB</b>		0.7	
<b>BONE</b>			
Teeth, mammal			
Pig bone	3.6		
Mammal		0.6	2.3
Fish	0.1	0.4	0.7
Unidentified			
<b>FLORAL</b>			
Kukui nut shell			
Charcoal			
<b>UNWORKED BASALT FLAKES (pieces)</b>			
<b>UNWORKED VOLCANIC GLASS FLAKES (pieces)</b>			0.1 (1)

UNWORKED CORAL (pieces)	0.5 (1)		
Hammerstone	(surface find) 2157.0		

Weight in grams

TABLE 3

Significance Assessments

Site Number	Significance Criterion	Component/Feature	Interpreted function	Age	Integrity	Proposed Mitigation
4804	D, E	3	Temporary habitation; Feature A possible ceremonial structure.	P	F-G	Preservation
4805	D	2	Temporary habitation (rock shelter)	P/H	P-F	Preservation
4806	D	1	Temporary habitation (rock shelter)	P	F	Preservation
4807	NLS <sup>26</sup>	1-2	Surface scatter—function unknown	U	P-F	No further work.
4808	NLS	1	Rock overhang—possible temporary habitation	P/H	G	No further work.
4809	D, C	1	Possible boundary wall—animal containment	H	F-G	Preservation; data recovery if removed.
4810	NLS	1	Wall—animal containment	H	P-F	No further work.
4811	NLS	1	Wall—animal containment	H	P	No further work.
4812	NLS	1	Wall—animal containment	H	P-F	No further work.
4813	NLS	1	Wall—animal containment	H	P-F	No further work.

<sup>26</sup> Criterion "D"—has yielded or is likely to yield information important for research on prehistory or history.

Criterion "C"—an excellent example of its type.

<sup>27</sup> P=precontact; H=historic/post-contact; U=unknown.

<sup>28</sup> E=excellent; G=good; F=fair; P=poor.

<sup>29</sup> NLS=no longer significant.



Photo 1 - View to southeast from top of Site 4804, Feature A. Note coral pieces on wall in lower left of photo.



Photo 2 - View of Feature A enclosure—looking north.



Photo 3 – View to the northwest—Feature C, Site 4804, with Feature A in background. Keoneoiō-Makena road is on the left.

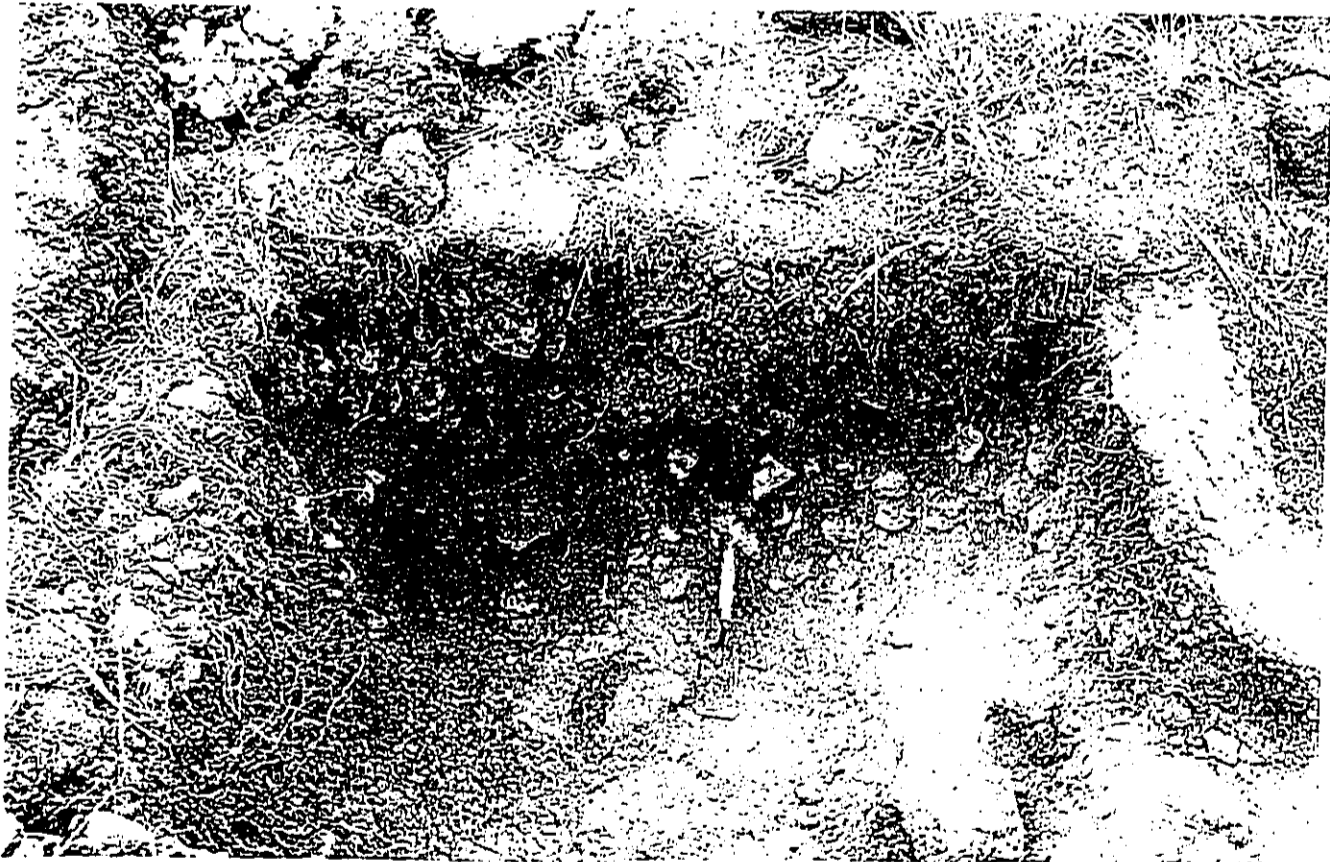


Photo 4 – South face profile of Test Unit 1, Site 4804. Note coral in upper left corner.



Photo 5 - General view to the east of Site 4805 rock shelter. Site 4810 wall in foreground, and Site 4809 in background.



Photo 6 - Site 4805 rock shelter—view to the south. Note looter's disturbance in shelter opening.



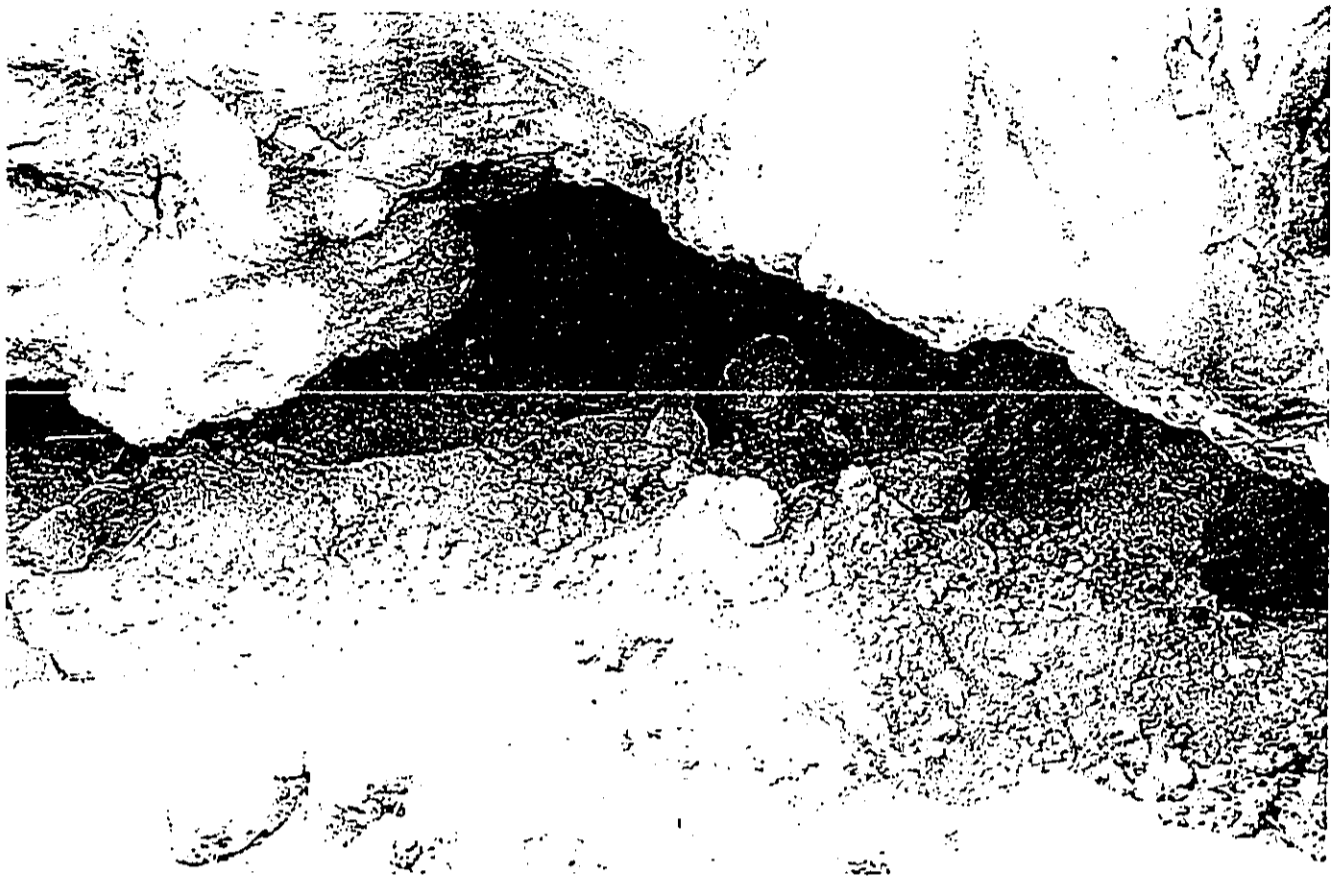


Photo 7 – Closer view of looter's disturbance at Site 4805.

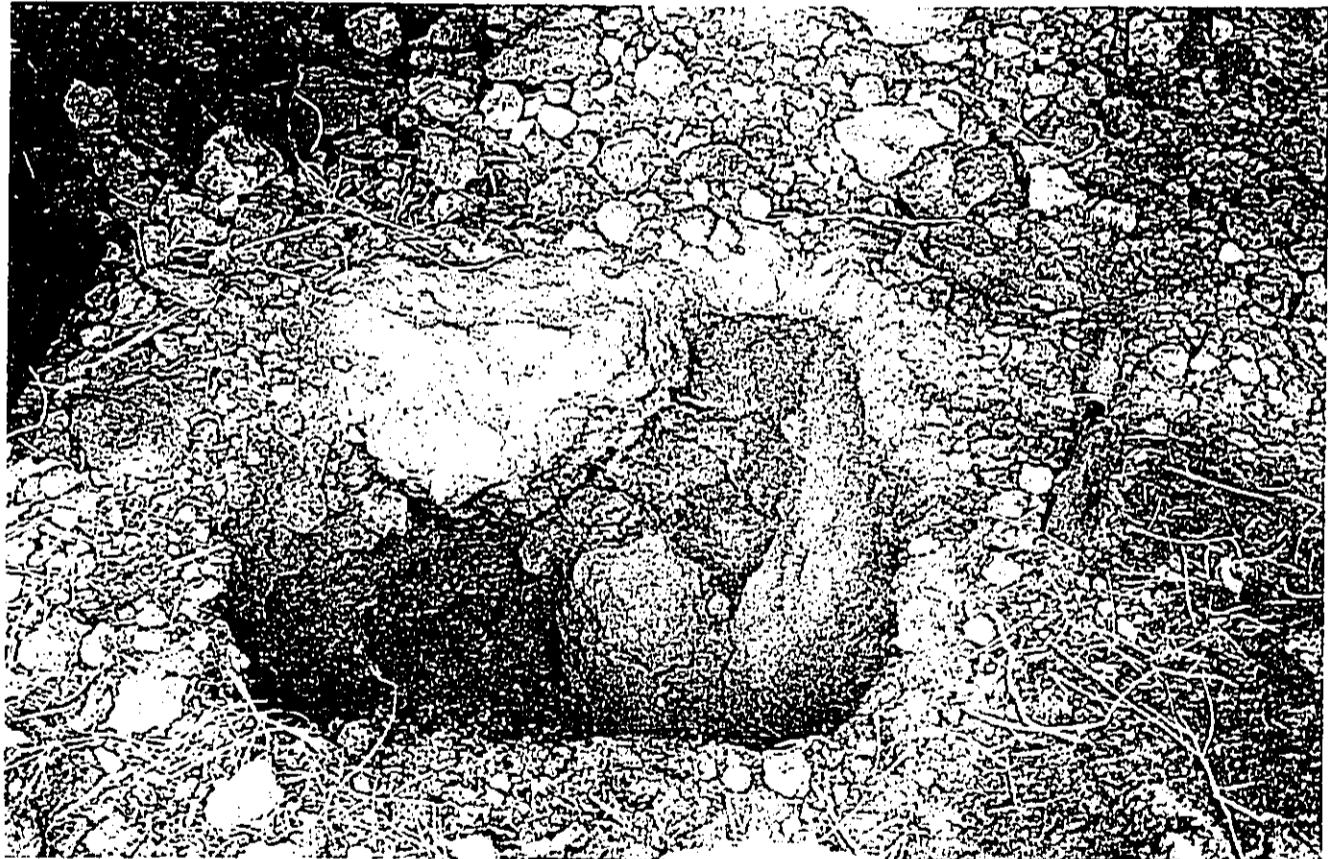


Photo 8 – South face profile of Test Unit 1, Site 4805.





**Photo 9 – Site 4806 rock shelter—view to the north.**



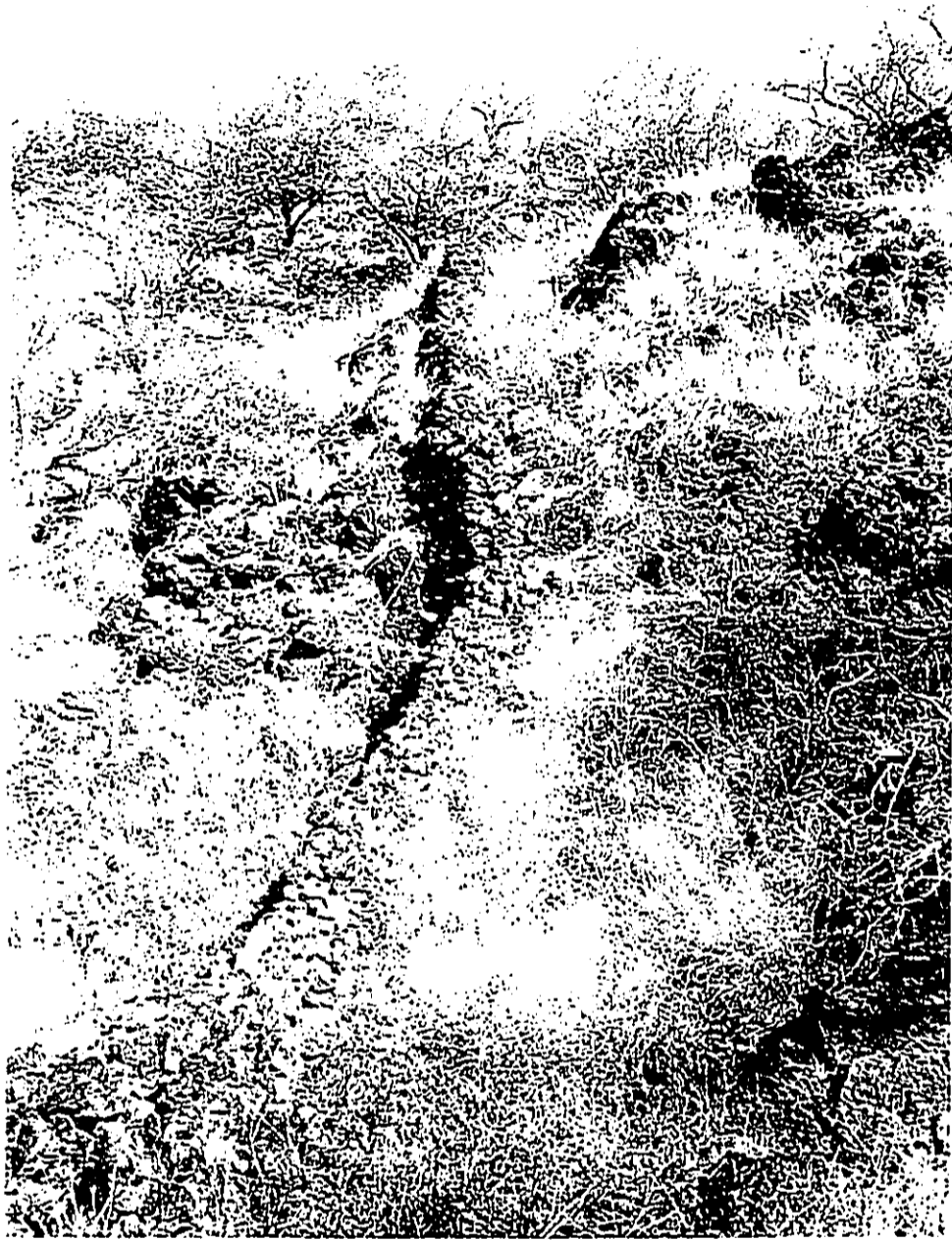
**Photo 10 – General view to the east across portion of Site 4807 surface scatter. Note recent rock removal area at lower left, and Site 4809 wall in background.**



Photo 11 – Possible lava tube cupboard, Site 4807. View to the north—Site 4809 wall at left.



Photo 12 – Site 4808 overhang—view to the east.



**Photo 13 – General view to the south of the Site 4809 wall in the vicinity of Site 4805.**

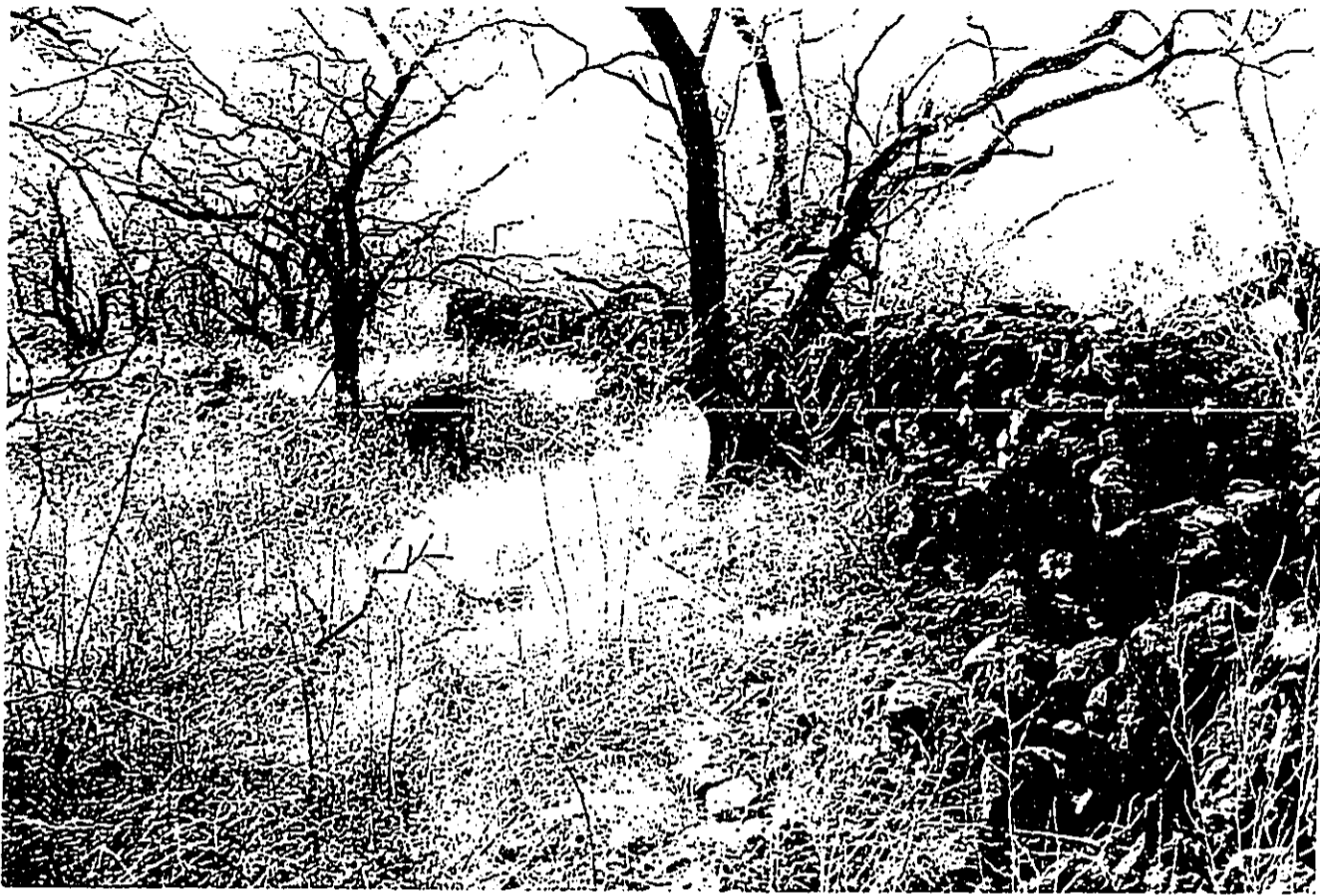


Photo 14 – General view of the Site 4809 wall—view to the southeast.



Photo 15 – Portion of the Site 4812 wall near Makena-Alanui Drive—view to the north.



Photo 16 - Section of the Site 4813 wall—view to the southwest.



# ***Appendix B-1***

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***Letter from State Historic  
Preservation Division  
Dated May 4, 2000***

BENJAMIN J. CAYITANO  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhewa Building, Room 555  
801 Kamehale Boulevard  
Kapolei, Hawaii 96707

TIMOTHY S. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY  
JANET S. KAWALO

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

May 4, 2000

Mr. Erik Fredericksen  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

LOG NO: 25381  
DOC NO: 0005RC08

Dear Mr. Fredericksen:

**SUBJECT: Review of Revised Archaeological Inventory Survey – Parcel MF-21  
Palauca, Makawao District (Honua'ula), Maui  
TMK: 2-1-23:1**

This letter reviews the revisions to this report which our staff received on April 3, 2000 as revised pages (E. Fredericksen & D. Fredericksen 2000. An Archaeological Inventory Survey of Parcel MF-21 ...Xamanek ms.). The revisions were made in response to our letter of March 7, 2000 (Log: 25,046; Doc: 0003RC11).

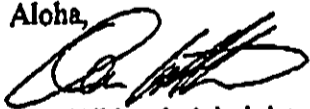
The revisions are fine, and the report is now acceptable.

We now agree with all your significance evaluations for the 10 sites in the project area. Four significant historic sites are present – 4804 (a small religious structure), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch era boundary wall).

We also agree with the mitigation commitment to preserve all 4 significant sites.

The next step in the review process is the submittal of a preservation plan to be approved by our office. Typically, this would be a condition of any approved Maui County permit or subdivision.

Aloha,

  
Don Hibbard, Administrator  
State Historic Preservation Division

RC:dnm

c: Land Use & Codes Administration (File 2.2586), Public Works Department,  
County of Maui  
Planning Department, County of Maui

# ***Appendix B-2***

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***Letter from State Historic  
Preservation Division  
Dated October 24, 2000***



FROM : ERIK FREDERICKSEN

FAX NO. : 8085726118

Nov. 27 2000 04:24PM P2

BENJAMIN J. CAYETANG  
GOVERNOR OF HAWAII



TIMOTHY E. JONES, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
LUNAHAKA WAI WATER RESOURCE MANAGEMENT

DEPUTIES  
JANET I. KAWILO  
LIVANEL NISHOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhine Building, Room 656  
601 Kamohala Boulevard  
Kapolei, Hawaii 96707

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT  
LOG NO: 28158 ✓  
DOC NO: 0008MK09

October 24, 2000

Mr. Erik Fredericksen  
Xamenek Researches  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

Dear Mr. Fredericksen:

**Subject: Review of An Archaeological Preservation Plan for a Portion of  
Land Known as Parcel MF-21,  
Palauca Ahupua'a and Keauhou Ahupua'a, Honua'ula Moku, Makawao District,  
Island of Maui (TMK: 2-1-23:1)**

Thank you for the opportunity to review the preservation plan which our staff received on 24 July 2000. (Fredericksen 2000, *An Archaeological Preservation Plan for a Portion of Land Known as Parcel MF-21, Palauca Ahupua'a and Keauhou Ahupua'a, Honua'ula Moku, Makawao District, Island of Maui TMK: 2-1-23:1...Xamenek ms*).

The preservation plan includes one site for interpretive preservation (4804, a small shrine) and three sites for "as is" preservation (two temporary habitations of precontact age and one ranching era wall).

A few minor changes are needed to the plan. Also, consultation with the local Hawaiian community was not indicated in the preservation plan, and as policy when site interpretation is involved, we cannot formally accept the plan until we see evidence of consultation (any comments on the plan, and how these comments were taken into account). This can be an appendix to the plan.

For the interpretive preservation of Site 4804, a small shrine, we are requesting some minor changes to your sign text, so it will be easier for the public to understand (see attachment). We have a minor request for a change to the signs for 4805 and 4806.

Should you have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169).

Aloha,

DON HIBBARD, Administrator  
State Historic Preservation Division

MK:an

Attachment

cc: John Min, Director, Department of Planning, County of Maui, FAX 270-7634  
Bert Ratte, County of Maui, Land Use and Codes, FAX 270-7972

## ATTACHMENT

## NEEDED REVISIONS TO PRESERVATION PLAN MF-21 PROJECT

## XAMANEK

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**Site 4804 – Small Shrine**

1. Calling this site a ceremonial structure has too broad a meaning, which can lead to confusion among the general public. Given its size, we assume that this is likely to be a small shrine. In the future, when you start to describe the site (e.g., on page 5), please provide a little more summary information on the site. In this case, that would have been the type of religious structure that this was, and the archaeological evidence for this conclusion. For this plan, you need to revise the wording on a few pages to indicate that this is a small shrine.
  - a. p. 1, para. 3, line 3. Replace "ceremonial structure" with "small shrine".
  - b. p. 4, para 2, line 2. Replace "ceremonial structure" with "small shrine".
  - c. P. 5, item 1, line 1. Replace "ceremonial site" with "small shrine".
  - d. P. 7, under Signage, line 1. Replace "ceremonial site" with "small shrine".
2. Sign Text, p. 8. The following changes are needed or recommended:
  - a. Heading. Replace line 2 with "A Pre-European Contact Hawaiian Shrine" Shrine is required. Pre-European Contact is a needed clarification.
  - b. Heading. Line 3. Which ahupua'a is it in – Palauca or Keauhou? Indicate the correct one.
  - c. Text, line 1. Replace "ceremonial site" with "small shrine".
  - d. Text, line 3-4. Replace "A large heiau ... north of this site." with "In late pre-European times, a number of houses and a medium-sized heiau (temple) were located 400 meters (1,250 ft.) north along the coast in Palauca." This clarifies that the sites to the north were more than just a heiau, but a settlement, and clarifies their chronology and ahupua'a location.
  - e. Text, lines 4-6. Replace "Subsurface ... 1500s-1600s" with "Archaeological excavations at this site have dated its use back to the A.D. 1500s-1600s." Archaeological excavations is more general and understandable to the public. You don't need mid- to late precontact period, as this will mean little to the public. Also, place this sentence after "This site ... marine resource exploitation." They provide the specifics on this site.
  - f. Text, last sentence. Place this sentence just before "In late pre-European times, a number of houses .... in Palauca." These two sentences then provide the general setting for the sites.

**Sites 4805 and 4806**

1. Sign text, pp. 8. Heading. The sites are probably not in both ahupua'a. Specify which ahupua'a they are in, either Palauca or Keauhou.
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# ***Appendix B-3***

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***Archaeological  
Preservation Plan***

**An Archaeological Preservation Plan for a Portion of Land  
Known as Parcel MF-21,  
Palauea *Ahupua'a* and Keauhou *Ahupua'a*,  
Honua'ula *Moku*, Makawao District, Island of Maui  
(TMK: 2-1-23:1)**

**Prepared for:**

**Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by:**

**Erik M. Fredericksen  
Xamanek Researches  
Pukalani, Maui**

**(Revised 3 December 2000)**

## INTRODUCTION

The subject parcel (TMK: 2-1-23: 1) is located in the southwestern portion of Palauea *ahupua'a* and the northwestern part of Keauhou *ahupua'a*, Honua'ula *moku*, Makawao District, Island of Maui (Map 1). This c. 23-acre triangular property is known as Parcel MF-21 (Map 2). It lies near the shoreline of Makena in an area, which is rich in both pre- and post-contact cultural resources. The project area is bounded on the north by land owned by Palauea Investors, LLC. Makena-Alanui Drive borders the eastern side of MF-21, and Keoneo'io-Makena Road runs along its western boundary. The Palauea beach area lies directly across (i.e. west) the latter road.

Xamanek Researches was first contacted about this property in late 1998. Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc. subsequently contracted us to undertake an archaeological inventory survey of MF-21 in the early fall of 1999. We conducted our fieldwork on an intermittent basis from late September through November 1999.

We located a total of 10 archaeological sites during the course of our inventory survey [Figure 1] (Fredericksen and Fredericksen, March 2000). These sites consisted of a small complex that includes a small shrine (Site 50-50-14-4804), three rock overhang shelters (Sites 4805, 4806, and 4808), a low-density surface scatter of coral (Site 4807), and 5 walls (Sites 4809 through 4813). All sites qualified for significance under Criterion "D" of Federal and State historic preservation guidelines. Site 4804 also qualified for significance under Criterion "E" for its cultural significance. Site 4809 is also considered to be significant under Criterion "C" because it is an excellent example of its type.<sup>1</sup> Six of the sites were no longer considered significant for their information content at the conclusion of the inventory survey (i.e. Sites 4807, 4808 and 4810 through 4813). The remaining 4 historic properties—Sites 4804, 4805, 4806, and 4809—were recommended for in-place preservation.

The following preservation plan has been prepared for Mr. Eric Taniguchi, AIA, in order to fulfill requirements set forth by the State Historic Preservation Division (SHPD) in a 4 May 2000 acceptance letter of the archaeological inventory survey (Doc. No.: 0005RC08). This plan, when accepted, will be incorporated in the planning process

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<sup>1</sup> Site 4809 may also qualify for significance under Criterion "E" for its traditional cultural value because it marks the boundary between 2 important Mahele land awards.

for the development of the property. As currently proposed, the subject parcel will be subdivided into 7 agricultural lots with underground water, sewer, electric, and telephone services installed (Map 2). This preservation plan is based, in part, upon several discussions with Eric Taniguchi of Pacific Rim Land, Inc., SHPD requirements, and a visit to the project area with Dr. Melissa Kirkendal, SHPD Maui archaeologist on 8 July 2000.

## BACKGROUND RESEARCH

As previously noted, the subject parcel is located in Palauea and Keauhou *ahupua'a*, Honua'ula *moku*, Makawao District, Maui. Evidence from earlier archaeological research projects indicates that this general area was primarily exploited for marine resources, with agriculture playing a more marginal, secondary role (Gosser et al., 1993, p. xv.). Land use conditions in this region did not change dramatically until post-contact times.

Information from various studies in this coastal area indicate that sweet potato, banana and dry land taro were cultivated in post-contact times. Seasonally arid conditions and typically thin, rocky soil likely kept production at low levels (Ibid. pp. 21-27).

In 1905, the twelve traditional *moku* of Maui were combined into five larger administrative districts and it was at this time that Honua'ula became part of Makawao District (Barrere, 1975, p. 31). Marine exploitation and marginal agriculture continued in the general area, with cattle ranching and sugar plantation agriculture contributing to changes in land use from the mid-19<sup>th</sup> century onward to the present (Gosser et al., 1993, pp. 29-34).

Following World War II, the major economic force affecting land use in the general Makena/Wailea area has been the visitor industry. Major projects have subsequently developed large tracts of land and produced world-class resorts and golf courses. A large increase in the number of tourists to this area and Maui in general has resulted from resort development. In addition to large-scale projects, there has been an increase in the development of smaller parcels of land such as the present property.

## PREVIOUS ARCHAEOLOGICAL WORK

Winslow Walker conducted his island-wide archaeological survey in 1931. Since then, increasing numbers of archaeological research projects have been concerned with the Wailea/Makena area of Maui. In discussing previous archaeological work in this area, Gosser referred to a few of the regional investigations undertaken in the recent past, with Soehren, (1963), Chapman and Kirch (1979), and Kirch (1985) serving as examples (Gosser, et al., p. 10, 1993).

Continuing with a discussion of archaeological work in the area since 1969, Gosser notes that this work has mostly consisted of discontinuous surveys, data recovery studies and archaeological monitoring of construction/development projects for hotels and resort destination centers. Examples he refers to include projects conducted by Kirch (1969, 1970), Barrera (1974), Cleghorn (1974, 1975a, 1975b), Davis and Bordner (1977), Dicks and Haun (1987), Cordy and Athens (1988), Gosser (1993), [Ibid. pp. 10 - 11].

In addition, an increasing number of archaeological projects have been conducted for smaller developments in this area in more recent times. Xamanek Researches has carried out several of these smaller studies including 6 inventory surveys, 2 data recovery projects, and a monitoring program within 2 km. of the subject parcel. Most recently, we have conducted 2 archaeological inventory surveys at Palauea Beach—across from Parcel MF-21.

**PRESERVATION PLAN FOR SITES LOCATED ON  
PARCEL MF-21, PALAUEA AND KEAUAHOU  
AHUPUA'A, HONUA'ULA MOKU,  
MAKAWAO DISTRICT, MAUI ISLAND  
(TMK: 2-1-23: 01)**

The plan outlined here follows suggestions in the SHPD rules (HAR Title 13, Subtitle 6, Chapter 148, pp. 2-5).

**Identification of Site(s) to be preserved**

Four sites are recommended for preservation on Parcel MF-21—Site 4804 (a small, precontact shrine), Site 4805 and Site 4806 (rock shelters which served as temporary habitation areas), and Site 4809 (a well-constructed ranch era boundary wall). Site 4804 is considered to be the most significant of the four due to its traditional cultural value.

**Preservation Tasks**

Recommended mitigation measures for the above sites include interpretive preservation for Site 4804, and passive, "as is" preservation for the remaining historic properties—Sites 4805, 4806, and 4809. Signage will be designed and worded to describe Site 4804, and note its traditional cultural value. While the latter 3 sites have limited interpretive value and are recommended for "as is" preservation, small identification signs are nevertheless recommended for Sites 4805 and 4806. It is felt that this step is necessary, in order to help ensure their long-term integrity.

**Short-term preservation**

To help ensure protection of the cultural features during future project site construction, it is recommended that the 4 sites first be marked with orange-plastic construction fencing or other means of delineating the site perimeters in order to reduce the possibility of inadvertent damage. It is also recommended that all *kiawe* trees be flush



cut within the recommended site preservation areas and the tree roots left in place to rot. This methodology will minimize potential disturbance to the sites slated for preservation.

### Long-term preservation

As noted earlier, Site 4804 is recommended for interpretive preservation. The rationale for this recommendation is based upon the site's traditional cultural significance (see Appendix A for information on consultation with local Hawaiian community members). The 3 remaining sites (Sites 4805, 4806 and 4809) are recommended for passive, "as is" preservation because of their more limited interpretive value and their comparative isolation on Parcel MF-21. Recommended long-term actions for each of these sites are listed below:

#### Site 4804 (refer to Figure 2)

1. Interpretive preservation is recommended for this small shrine. Site 4804 lies within c. 10 m of the old Keoneo'io-Makena Road. Access to the preservation area will be from the shoulder of the road on the southern side of the site. The shoulder on this part of the road currently provides enough space for several vehicles to park. The developers are aware of the need for parking and do not plan to change the configuration of the shoulder adjacent to the paved surface of the road.
2. Interpretive signage will be placed on the eastern (*mauka*) side of the Site 4804 preservation area. The placement of this sign will help to inform the public of the site's significance. However, given the site's cultural significance, it has been requested that access to the shrine itself be for traditional cultural purposes (see Appendix A). Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. Provisions for access to the general site area will be made for native Hawaiian members of the community who wish to visit it for traditional cultural purposes. Access to the shrine itself by the general public will not be encouraged (see Appendix A).
4. It is recommended that a black cinder path lead from the shoulder to the site. The planned location of this path has been reviewed by Xamanek Researches and members of Hui Alanui o Makena to help ensure that the site is not inadvertently harmed by the placement of the pathway.
5. At this time, minimal landscaping actions are recommended for Site 4804, including flush cutting *kiawe* trees that are nearby. The site lies on an 'a 'a flow and very little soil is present. It may be possible—over time—to

encourage drought tolerant native plants such as 'ilima (*Sida fallax*) in the site preservation area. A request—accepted by the developer's representative—has been made to mark the western boundary of the preservation area with a native hedge and boulders to help lessen potential impact by road improvement activities in the future.

6. A preservation area buffer of at least 10 meters is recommended for this site.

**Site 4805 (refer to Figure 3)**

1. This probable, precontact temporary habitation site consists of a lava tube overhang and a small platform. It is located c. 30 m east (*mauka*) of Keoneo'io-Makena Road. No formal access is proposed for this site due to its limited interpretive value and its somewhat hazardous location. Passive, "as is" preservation is recommended.
2. Signage is proposed for this site to help identify it and ensure its long-term integrity. The sign should be placed on the northern side of Site 4805. Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.
4. A preservation area buffer of 5 meters is recommended for this site.

**Site 4806 (refer to Figure 4)**

1. This site also is interpreted as a probable, precontact temporary habitation site. It consists of a lava tube overhang, a small, rough platform, and a possible access path/ramp. It is located c. 30-m south of the northern boundary of the project area. No formal access is proposed for this site due to its limited interpretive value and its isolated and hazardous location. Passive, "as is" preservation is recommended.
2. Signage is proposed for this site to help identify it and ensure its long-term integrity. The sign should be placed on the southern side of Site 4806. Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.

4. A preservation area buffer of 5 meters is recommended for this site.

#### Site 4809 (refer to Map 2)

1. This site is interpreted as a ranch era boundary wall. No formal access is proposed for this well constructed wall due to its limited interpretive value and its generally isolated and hazardous location. Passive, "as is" preservation is recommended for this site.
2. No signage is recommended for this c. 400-m long wall.
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.
4. A preservation buffer of 1 meter is recommended for this long boundary wall.<sup>2</sup>

#### Perpetual Maintenance and Access

The preservation areas will be maintained by the property owner(s). Precautions against unnecessary intrusions at each of the above site preservation areas will be the responsibility of the property owner(s). The preservation areas shall be generally cleared by hand. However, hand-held weed eaters may be used when necessary. Access to the Site 4804 preservation area for traditional cultural practices will also be the responsibility of the property owner(s). Suggested times for traditional access to Site 4804 are from 8:00 a.m. to sunset (see Appendix A). Permission for visitation at any other time would be by agreement with the landowner.

#### Signage

For Site 4804 (small precontact shrine), interpretive signage will be placed in the *mauka* or eastern portion of the preservation area (Figure 2). The text and graphics will relay information revealed from archaeological testing of the feature (i.e., age and function). It is important to note that signs will deteriorate over time and, consequently, should be periodically replaced.

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<sup>2</sup> Portions of this wall will need to be breached, in order to develop some of the proposed lots. Limited data recovery work is recommended for these sections, in order to obtain additional information about the Site 4809 wall.

While Site 4804 is in generally fair condition, restoration is not proposed at this time. Rather, it is recommended that the site be preserved, "as is," with some interpretive signage. As noted earlier, access should be allowed for traditional purposes (see Appendix A). The proposed heading and text of this sign are as follows:

**a. Heading of sign:**

Site 4804  
A Pre-European Contact Hawaiian Shrine  
Keauhou *ahupua'a*, Honua'ula *moku*,  
Island of Maui

**b. Text of sign (A brown background with black lettering is recommended):**

"This small shrine lies at the top of a small *pu'u* that once had commanding view of the Palauea coastline. This site was likely associated with the acquisition of marine resources in Palauea. Archaeological excavations at Site 4804 have dated its use back to the A.D. 1500s-1600s. This site is part of a complex of Hawaiian sites in the Palauea area. In late pre-European contact times, a coastal *ko'a* (fishing shrine), a number of *hale* (houses) and a medium-sized heiau (temple) were located within c. 400 m (1250 ft) north along the coast in Palauea."

"Site 4804 has traditional cultural value. Please respect it. Damage to this site is punishable under Chapter 6E-11, Hawaii Revised Statutes"

"Please do not go beyond this point except for traditional cultural practices."

**c. Size of sign:**

The recommended size for the Site 4804 sign is 2-ft. (0.61 m.) by 1-ft. (0.3 m.).

Signage is proposed for Sites 4805 and 4806 to help ensure their long-term integrity. The text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function). The Site 4805 and 4806 rock overhang shelters have limited interpretive value. Consequently, it is recommended that both sites be protected as is, rather than interpreted. However, these sites should be

clearly marked, in order to help ensure long-term integrity. The proposed heading and text of each sign is the same and follows:

**a. Heading of sign:**

Site 4805 (or 4806)  
Rock Shelter used for Temporary Habitation  
Palau<sup>ea</sup> *ahupua'a*, Honua'ula *moku*,  
Island of Maui

**b. Text of sign** (A brown background with black lettering is recommended):

"This rock overhang shelter is a native Hawaiian archaeological site. Please respect it. Damage to this site is punishable under Chapter 6E-11, Hawaii Revised Statutes"

**c. Size of sign:**

The recommended sizes for the Site 4805 and Site 4806 signs are 1.5-ft. (0.45 m.) by 1-ft. (0.3 m.).

At the writing of this plan, no signage is proposed for the Site 4809 boundary wall.

**References**

- Barrere, Dorothy  
June 1975 Wailea—Waters of Pleasure for the Children of Kama. Bishop Museum, Honolulu, Hawaii.
- Fredericksen, Erik M. and Demaris L. Fredericksen  
March 2000 An Archaeological Inventory Survey of Parcel MF-21, Palauea and Keauhou *Ahupua'a*, Honua'ula *Moku*, Makawao District, Maui Island (TMK: 2-1-23: 01) Prepared for Eric Taniguchi, AIA, Pacific Rim Land, Inc. by Xamanek Researches, Pukalani, Maui.
- Gosser, Dennis C., Clark, Stephan D. and Dixon, Boyd  
August 1993 Na Lawai'a o 'AO'AO Kona O Ka Moku: Excavations at the Southern Acreage and Lot 15, Wailea, Maui, by Bishop Museum, Honolulu, for Wailea Resort Company Ltd., Wailea, Maui, Hawaii
- State of Hawaii, Department of Land and Natural Resources  
December 1996 TITLE 113 (Hawaii Administrative Rules, State Historic Preservation Division Rules) SUBTITLE 13 (State Historic Preservation Rules) CHAPTER 275 (Rules Governing Procedures for Historic Preservation Review. Draft, Honolulu, Hawaii.

## APPENDIX A

### Consultation with local Hawaiian community members

A field visit to the Site 4804 shrine was conducted on 21 November 2000 in order to obtain additional comments on the Preservation Plan. Erik Fredericksen met with Ms. Dana Naone Hall and Mr. Les Kuloloio of Hui Alanui o Makena in order to address questions and to obtain any comments on the draft Preservation Plan. In addition, Ms. Becky Broudy Collins, Project Manager for Pacific Rim Land, Inc., and Ms. Gwen Hiraga of Munekiyo, Arakawa & Hiraga, Inc. were present to answer questions about the proposed development and provide other pertinent information. Both Ms. Hall and Mr. Kuloloio were in agreement that Site 4804 has significant traditional cultural value. They did have four requests regarding 1) access, 2) the placement of an access trail to the shrine, 3) the placement and wording of the sign, and 4) the attachment of the Preservation Plan at the time of subdivision. These four requests are discussed below.

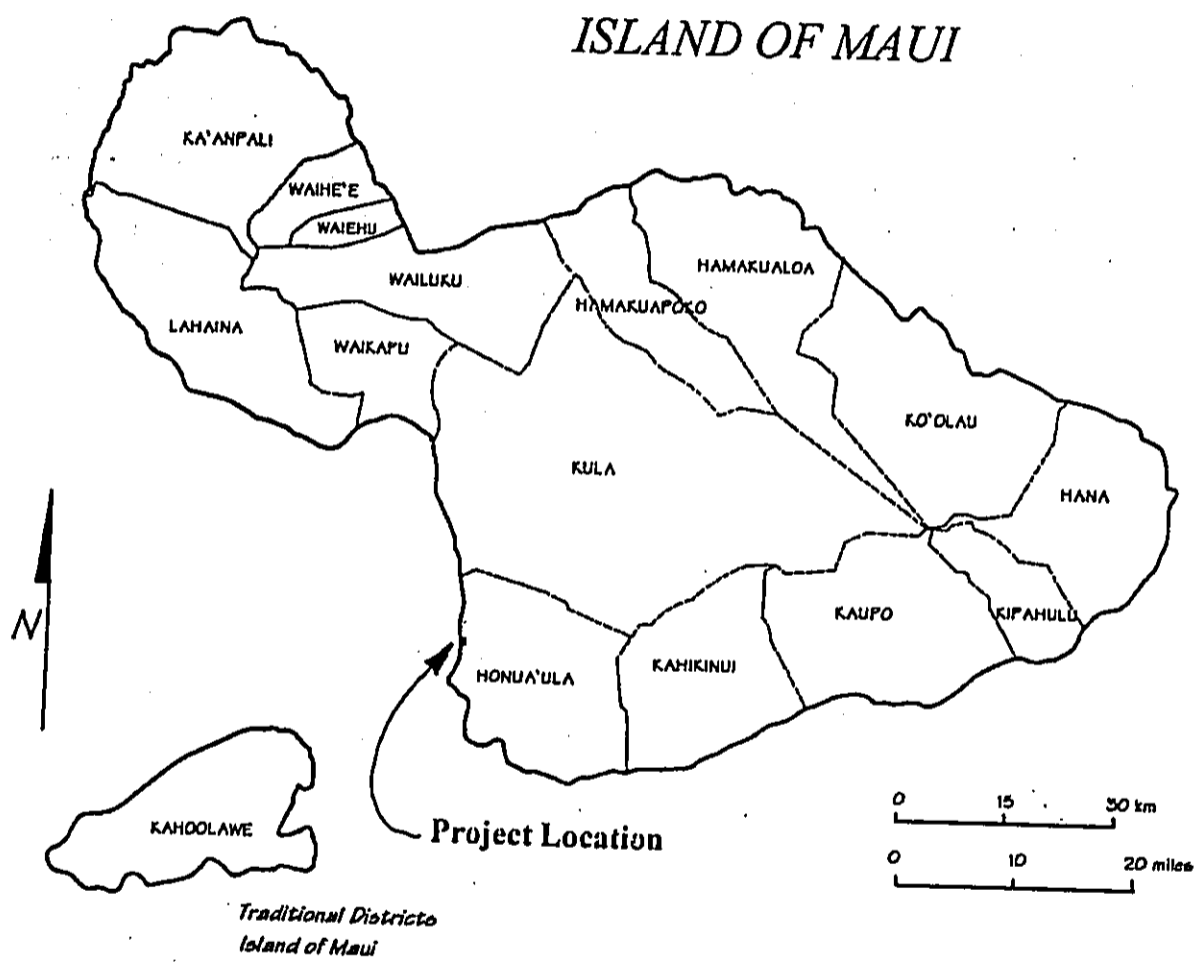
1. **Access to Site 4804.** Both Ms. Hall and Mr. Kuloloio requested that access for Native Hawaiian traditional cultural practices only occur at the shrine itself. Given the proximity of Site 4804 to the existing road, both were concerned about the long-term integrity of the site. Daylight access for traditional cultural practices between 8:00 a.m. and sunset was agreed upon. In addition, flexibility for evening visitation was requested. Permission for visitation during non-daylight hours would be by agreement with the landowner:
2. **Placement of the access trail.** Both Ms. Hall and Mr. Kuloloio requested that an access trail to the site not lead all the way up to the shrine (Feature A). They felt that the placement of the cinder trail would negatively impact the integrity of this portion of the site. It was also felt that the termination of the trail near the base of the *pu'u* in the preservation area could help to reduce casual foot traffic to the shrine itself (see Figure 2).
3. **Placement and wording of the sign.** Both Ms. Hall and Mr. Kuloloio requested that interpretive signage not be placed along the roadside. They felt that this placement would encourage nontraditional (especially high volume tourism) use of this site. They requested that the sign be placed at the end of the access trail to the site preservation

area, and the sign state that access beyond the end of the trail be for Native Hawaiian traditional cultural practices only (see Figure 2). It was also requested that a coastal *ko'a* in the general vicinity of Site 4804 be included in the signage wording.

4. **Attachment of the Preservation Plan at the time of subdivision.** A request was made that the Preservation Plan be attached by declaration on the parcel that will contain the Site 4804 preservation area at the time of subdivision.

The Project Manager for the MF-21 development, Ms. Becky Broudy Collins, was willing to have the above requests incorporated into the site preservation plan. She also agreed to carry out 4) at the time of subdivision. The above requests were subsequently shared with two members of the Makena Community Association (MCA). Ms. Gwen Hiraga contacted Mr. Edward Chang and Mr. Rudy Luurwai, both long-time Makena residents and MCA members. Both men indicated that they *did not* have any additional concerns about access issues at Site 4804. They also indicated that they felt comfortable with the access and signage proposals for this site.





**Map 1: General location of the project area.**



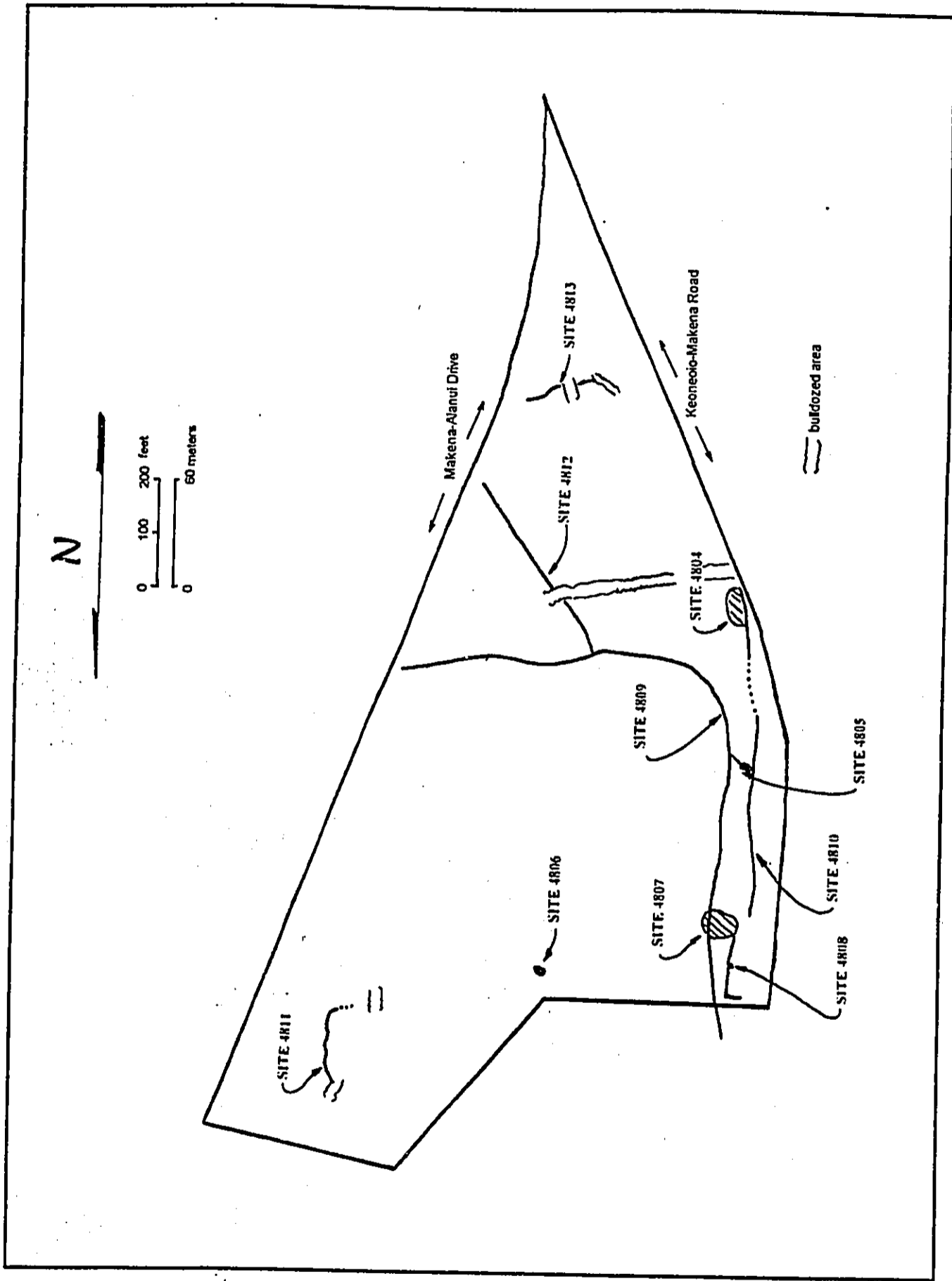


Figure 1: Plan of Parcel MF-21, including locations of Sites 50-50-14-4804 through 4813.

100 200 feet  
0 50 meters

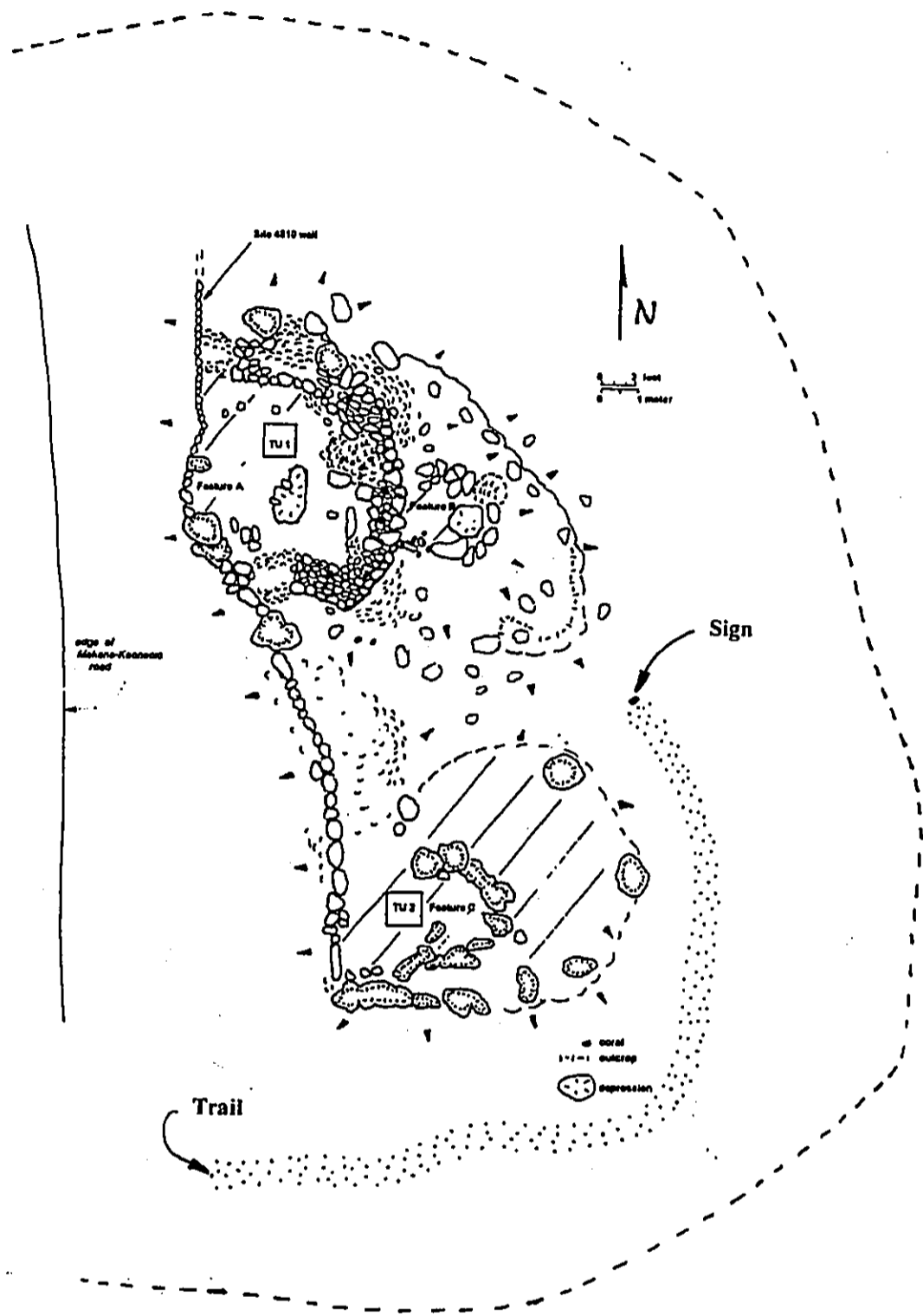


Figure 2: Plan of Site 4804 preservation area.

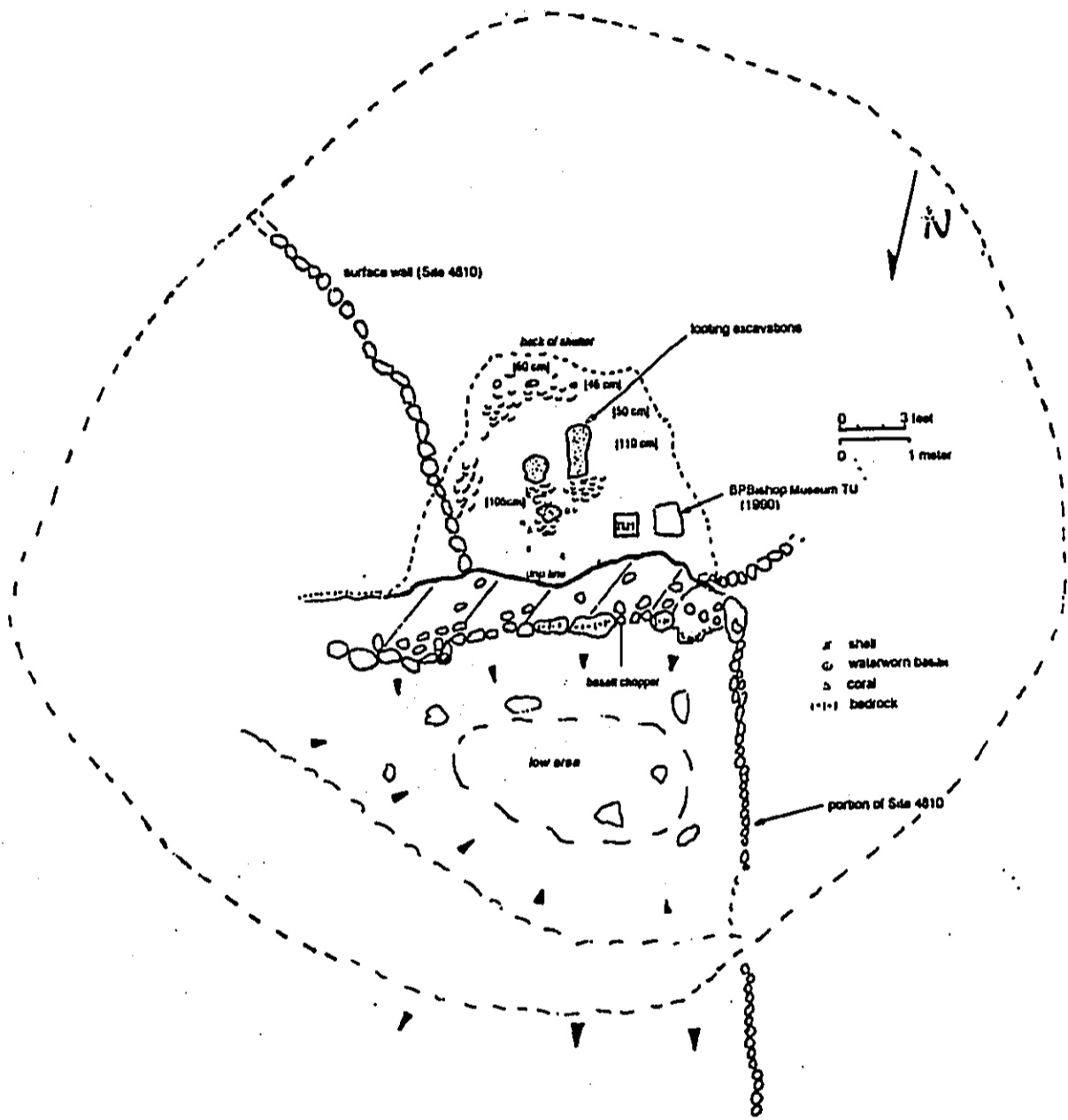


Figure 3: Plan of Site 4805 preservation area.

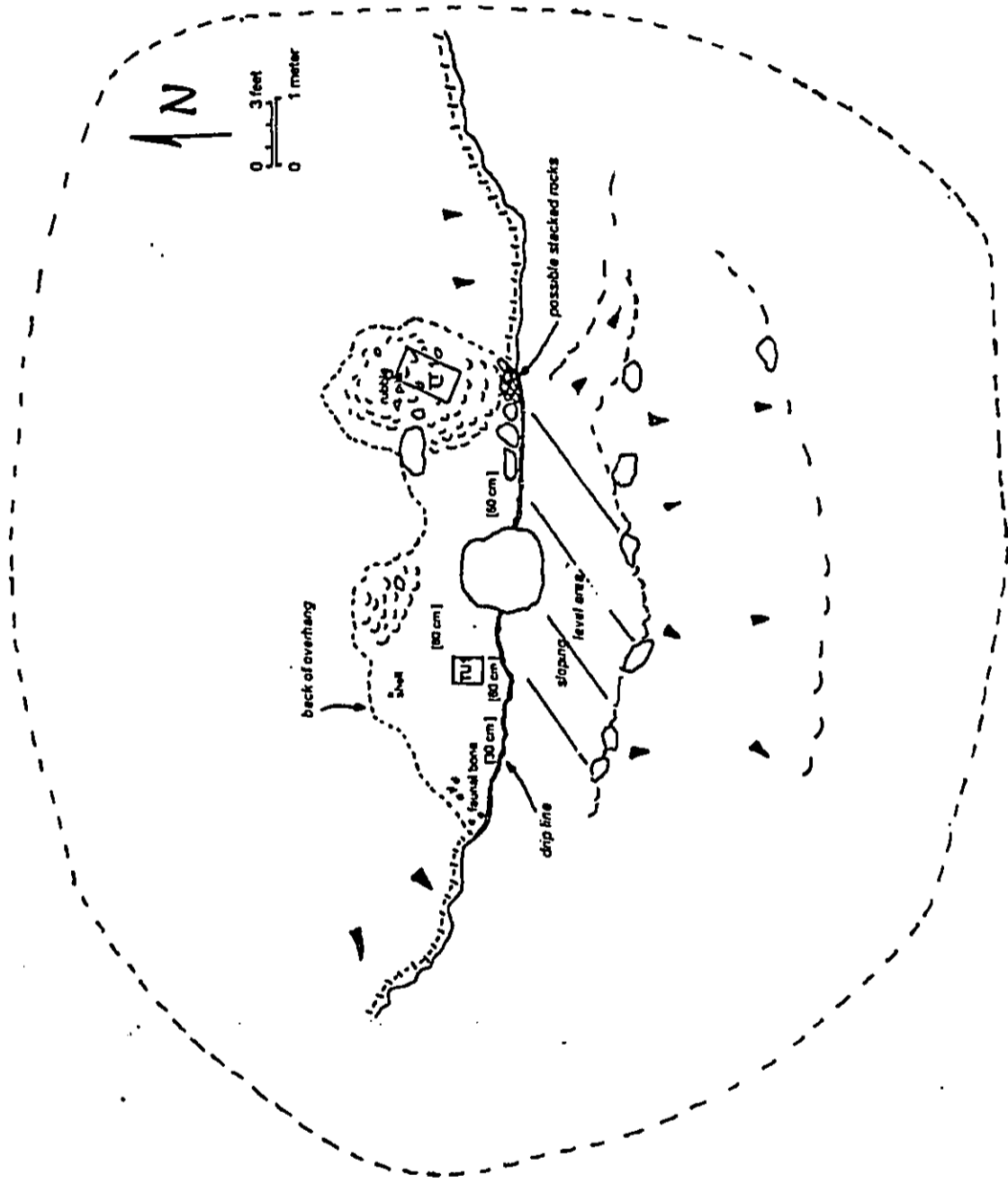


Figure 4: Plan of Site 4806 preservation area.

# ***Appendix C***

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***Preliminary Engineering  
Report***

**PRELIMINARY ENGINEERING REPORT  
FOR  
PALAUEA 7-LOT SUBDIVISION  
MF-21 LOT 325**

**AT  
PALAUEA, MAKAWAO, MAUI, HAWAII**

**TMK: (2) 2-1-23: 001**

**PREPARED FOR  
PACIFIC RIM LAND, INC.**

**BY  
AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS**

**October 1999  
July 2000  
December 2000**



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### APPENDICES

#### APPENDIX A: EXHIBITS

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#### APPENDIX D: PRELIMINARY WASTEWATER FLOW CALCULATIONS

**Preliminary Engineering Report  
For  
MF-21 Subdivision - Pacific Rim Land**

**At**

**Palauea, Makawao, Maui, Hawaii  
Tax Map Key: (2) 2-1-23: 01**

**I. INTRODUCTION**

The purpose of this report is to summarize the preliminary civil engineering design criteria for Palauea Subdivision. It evaluates the existing site conditions and defines requirements for grading, drainage, sewer, and water utilities, along with other miscellaneous site improvements.

**II. PROPOSED PROJECT**

The project site is a 23.103 acre parcel of land located in Palauea, Maui, Hawaii. The parcel is designated by Tax Map Key (2) 2-1-23: 01. The area is currently zoned Agricultural by the Land Use Commission and the Kihei-Makena Community Plan. Refer to Appendix A, Exhibits 1: Project Location Map and 2. Vicinity Map.

**III. EXISTING CONDITIONS**

**A. Adjacent Land Uses**

The site is triangular in shape and is surrounded by a variety of land uses. The northern boundary is an undeveloped parcel of land, Tax Map Key (2) 2-1-23: 02, scattered with numerous archeological sites. Situated along the eastern boundary is Makena Alanui and the Wailea Emerald Golf Course. Marking the

western boundary is Keoneoio Makena Road, commonly referred to as "Old Makena Road". Downstream on the west are Palauea and Poolenalena Beaches and several private residences. Keoneoio Makena Road and Makena Alanui continue towards the south and connect at a junction forming the Southern tip of the parcel.

#### **B. Topography and Soil Conditions**

The site is currently undeveloped and overgrown with dry brush, weeds, and kiawe trees. Elevations on site range between 10 feet mean sea level (msl) and 116 feet ms. The land slopes at an average of 9.4 percent towards the western boundary.

There are two different soil classifications on the project site; very stony land (rVS) and Makena loam, Stony complex (MXC). The rVS type soil make up the majority of the project site. The MXC type soil covers a strip running along the western boundary of the lot.

Very stony land (rVS) describe areas where 50 to 90 percent of the surface is covered by stones and boulders. Very stony land occurs mainly on slope ranges between 7 and 30 percent. On Maui, this soil classification consists of Aa type lava with a thin covering of volcanic ash.

Makena loam, stony complex (MXC) covers the remaining majority of the site. This soil complex is actually a combination of two soils, Makena Loam and Stony Land. These well-drained soils are found on the lower leeward slopes of Haleakala, typically between the Kamaole and Makena areas on Maui's southern coast. Characteristics of this soil are moderately rapid to rapid permeability and slow to medium runoff. Erosion hazard varies from zero in the Stony land areas of the complex, to moderate in the Makena loam areas.

Soil classifications and descriptions are taken from the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) publication, Soil Survey of the Islands of Kauai, Oahu, Molokai, Maui, and Lanai.

**C. Roadways**

There are no existing roadways within the project site's boundaries. Access to the project site is provided by the bordering roadways, Makena Alanui and Keoneoio Makena Road (Old Makena Road) on the eastern, western, and southern boundaries. Wailea Alanui joins Makena Alanui to provide the major connection of the area to the rest of Maui.

**D. Drainage**

Runoff within the project boundaries generally flow in a westerly direction via several drainageways running through the property. A portion of the runoff continues in a westerly direction over Keoneoio Makena Road, through several private properties, and eventually into the ocean.

There are several drainage structures within the property all serving to drain adjacent properties on the east. Culverts along Makena Alanui provide drainage for the Wailea Emerald Course, a portion of the runoff from the entrance road to the Wailea Gold Course Clubhouse, as well as properties upstream of those. Drainage structures along Makena Alanui consists of 1-60" culvert discharging into the northeast corner of the site, 3-66" and 2 single barrel 24" culverts which discharge into the east central portion of the project site, and an 18" culvert emptying into the southeast corner of the site

Two major drainage ways traverse the property in a westerly direction. The first path routes the discharge from the 1-60" culvert on the northeast portion of the site. The runoff follows the general westerly slope then turns toward the north into the neighboring property (Tax Map Key: (2) 2-1-23: 02). The second drainage way conveys runoff from the 3-66" culverts on the east central portion of the site. The discharge from this set of culverts follow a defined drainage path and into a natural depression adjacent to Keoneoio Makena Road. Overflow from

this depression sheet flows over Keoneoio Makena Road, through an unimproved parcel of land used as a beach access, and eventually into the ocean.

**E. Wastewater**

The site is currently unoccupied and generates no wastewater flow. An existing 6" sewer force main runs within Makena Alanui on the east. There are no existing sewer system utilities within Keoneoio Makena Road on the west.

**F. Water**

Currently there are no existing water system utilities on-site. Water systems in the vicinity include a 12" waterline running within Keoneoio Makena Road along the western boundary and a 30" water transmission main along the eastern boundary. The existing 12" waterline serves properties on the ocean front along Keoneoio Makena Road.

**G. Flood Zone**

The project site resides in Flood Zone "C". Flood Zone "C" is described as an area of minimal flooding. All flood zone designations and descriptions are according to a Flood Insurance Rate Map (FIRM), Panel Number 150003-0330B (June 1, 1981), as provided by the Federal Emergency Management Agency (FEMA). Refer to Appendix A, Exhibit 6: Flood Zone.

**IV. PROPOSED IMPROVEMENTS**

**A. Grading Plan**

Grading for the proposed project includes minimal excavation and embankment for the subdivision improvements. Improvements include

installation of water meters and system utilities, sewer system, and grading of an existing depression to be used as a retention basin. Grading of the lots will not be incorporated into the proposed subdivision. Erosion control measures and best management practices will be implemented during the construction period to minimize soil loss and erosion hazards. A detailed grading and erosion control plan will be prepared and submitted to the County of Maui, Department of Public Works for approval. An application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health for review and approval.

#### **B. Drainage System**

Onsite runoff will be allowed to flow toward the west per the existing condition. Existing depressions along Keoneio Makena Road will be incorporated into the overall drainage plan to prevent any change to the existing runoff scheme. Existing on-site runoff has been estimated at 35.4 cfs based on a 50 Yr-1 Hr storm recurrence interval. Post-development runoff for the 50 Yr-1 Hr storm recurrence interval is calculated at 40.1 cfs respectively. This increase of 4.7 cfs will be routed into and controlled by the retention basin (existing depressions) described above.

Offsite runoff will be allowed to flow through existing drainageways within and through the property, per the existing condition. Refer to Appendix A, Exhibit 3: Proposed Drainage System Improvements and Appendix B: Hydrology Calculations for figures.

Hydrology figures for on-site and off-site drainage basins with areas of less than 100 acres are determined by the Rational Method as described in the "Rules for the Design of storm Drainage Facilities in the County of Maui", dated November 1995. Hydrology calculations for drainage basins with areas of 100 acres or greater, are calculated using the Natural Resources Conservations Service (NRCS) Hydrograph Method based on a storm recurrence interval of 100 Yr-24 Hr.

### **C. Water System**

Currently, there are no water utilities existing on the site. Water service to lots 325-G through 325-D will be provided by water meters connected to an existing 12" waterline within the Keoneoio Makena Road right of way. The remaining three lots (325-A through 325-C) along the eastern boundary of the project site will be serviced via installation of a waterline within Makena Alanui to run parallel with an existing 30" water transmission main. The line will join waterlines at the Keoneoio Makena Road and Makena Alanui intersection to the waterline running in Kaukahi Street. The proposed water line will consist of an 8" ductile iron waterline along the east of the subdivision and reduced to a 4" ductile iron line between the proposed subdivision and Kaukahi Street. A gap in the water line between Kaukahi Street and Keoneoio Makena Road will also be closed as part of the improvements for this subdivision. Average daily demand for the proposed subdivision is estimated at approximately 30,920 gallons per day (gpd). Refer to Appendix A, Exhibit 4: Proposed Water System Improvements and Appendix C: Preliminary Water Demand Calculations.

### **D. Sewer System**

A new sewer system will be installed within the project site to provide sewer service to the seven lots. This proposed sewer system will be connected to a sewer system in the neighboring Palauea Subdivision, TMK: (2) 2-1-23:002 situated to the north. Wastewater flow for the subdivision amounts to approximately 4,900 gallons per day (gpd). Refer to Appendix A, Exhibit 5: Proposed Sewer System Improvements and Appendix D: Preliminary Wastewater Flow Calculations. Refer to Appendix A, Exhibit 3: Proposed Sewer System Improvements and Appendix D: Preliminary Wastewater Flow Calculations.

**E. Roadway Improvements**

Access to the 7 lots of the proposed subdivision will be provided by the existing roadways bounding the property. Lots 325-A through 325-C will be accessed via Makena Alanui running along the east of the property. Lots 325-D through 325-G will be accessed via Keoneoio Makena Road on the western border. There will be no roadways within the subdivision.

**F. Electrical Improvements**

Existing electrical facilities are suspended on utility poles along the project site's western boundary. Electrical improvements proposed for this subdivision include relocating the existing electrical facilities below ground and providing service to each of the 7 subdivision lots. These relocated facilities will remain within the county right of way in Keoneoio-Makena.

**V. CONCLUSION**

The proposed improvements for this subdivision will be designed to produce no adverse effects to existing facilities and to the downstream as well as surrounding environment. All improvements will be designed in accordance with the applicable regulatory agencies.



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**APPENDICES**

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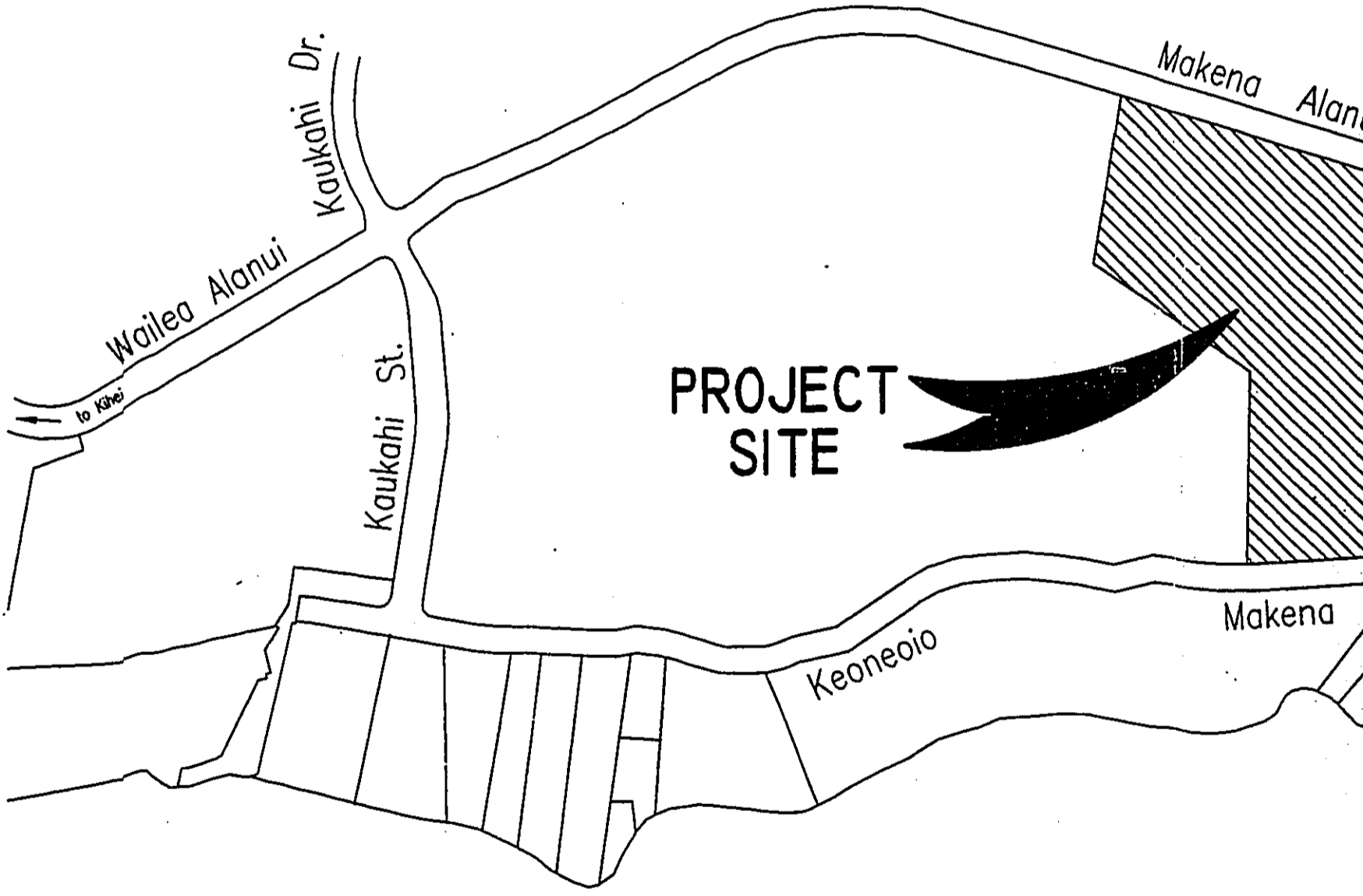
AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS

## **APPENDIX A**

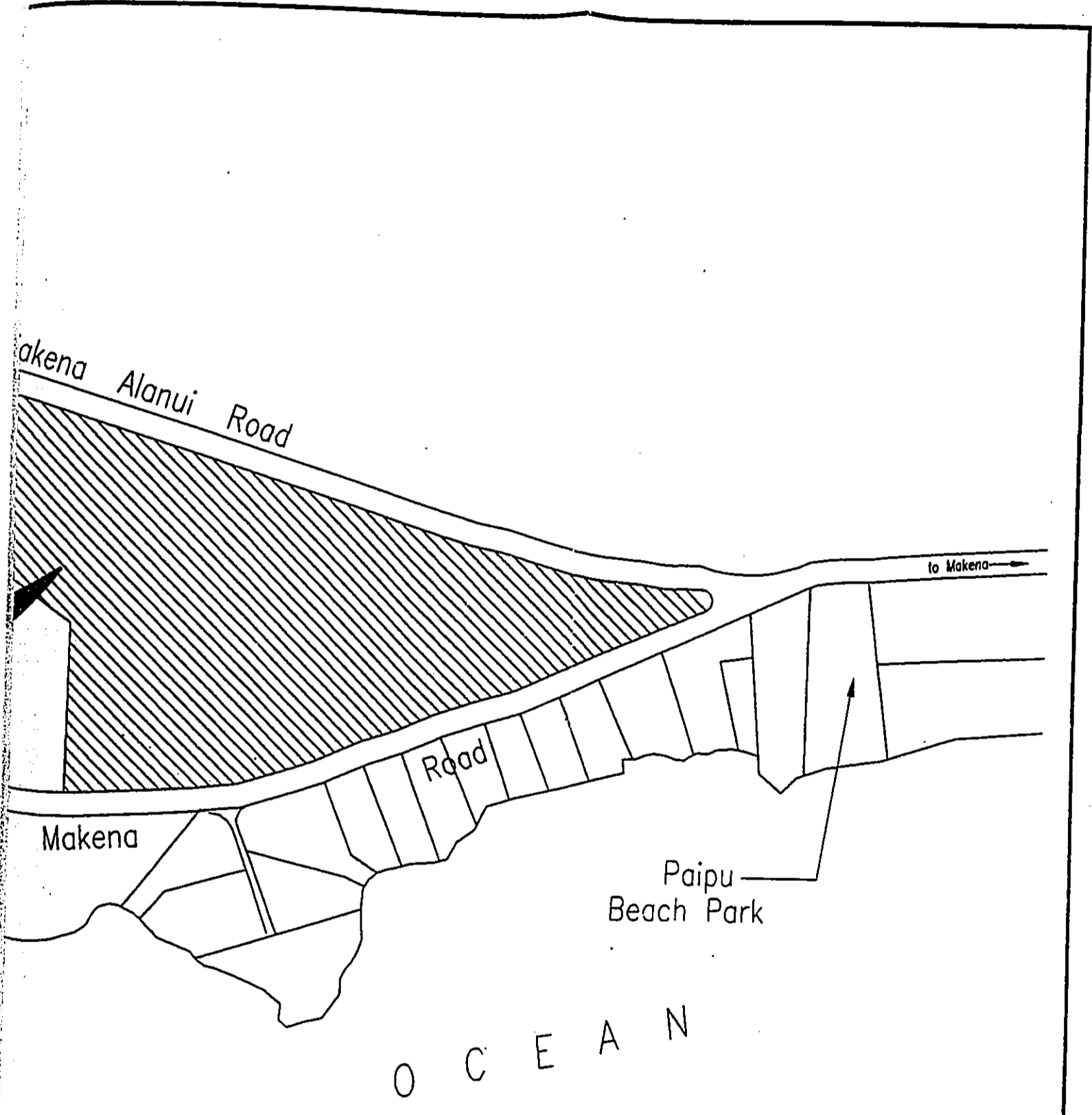
### **EXHIBITS**



TRUE NORTH  
NOT TO SCALE



PACIFIC



**PRELIMINARY ENGINEERING REPORT**  
**FOR**  
**MF-21 SUBDIVISION**  
PALAUEA, MAKAWAO, MAUI, HAWAII

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII

**EXHIBIT**  
**2**

**VICINITY MAP**

NEW 4" DUCTILE  
IRON WATERLINE

CONNECTION TO EXISTING  
12" WATER LINE

WATERLINE  
REDUCER

SINGLE SERVICE  
WATER LATERAL  
(TYPICAL)

NEW 8" D  
IRON WAT

LOT 318

PALAUUA INVESTORS, LLC  
TMK: (2) 2-1-23: 002

LOT 325-A  
1.233 AC

PALAUUA SUBDIVISION  
(BY OTHERS)

LOT 325-  
1.123 AC

STREET

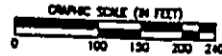
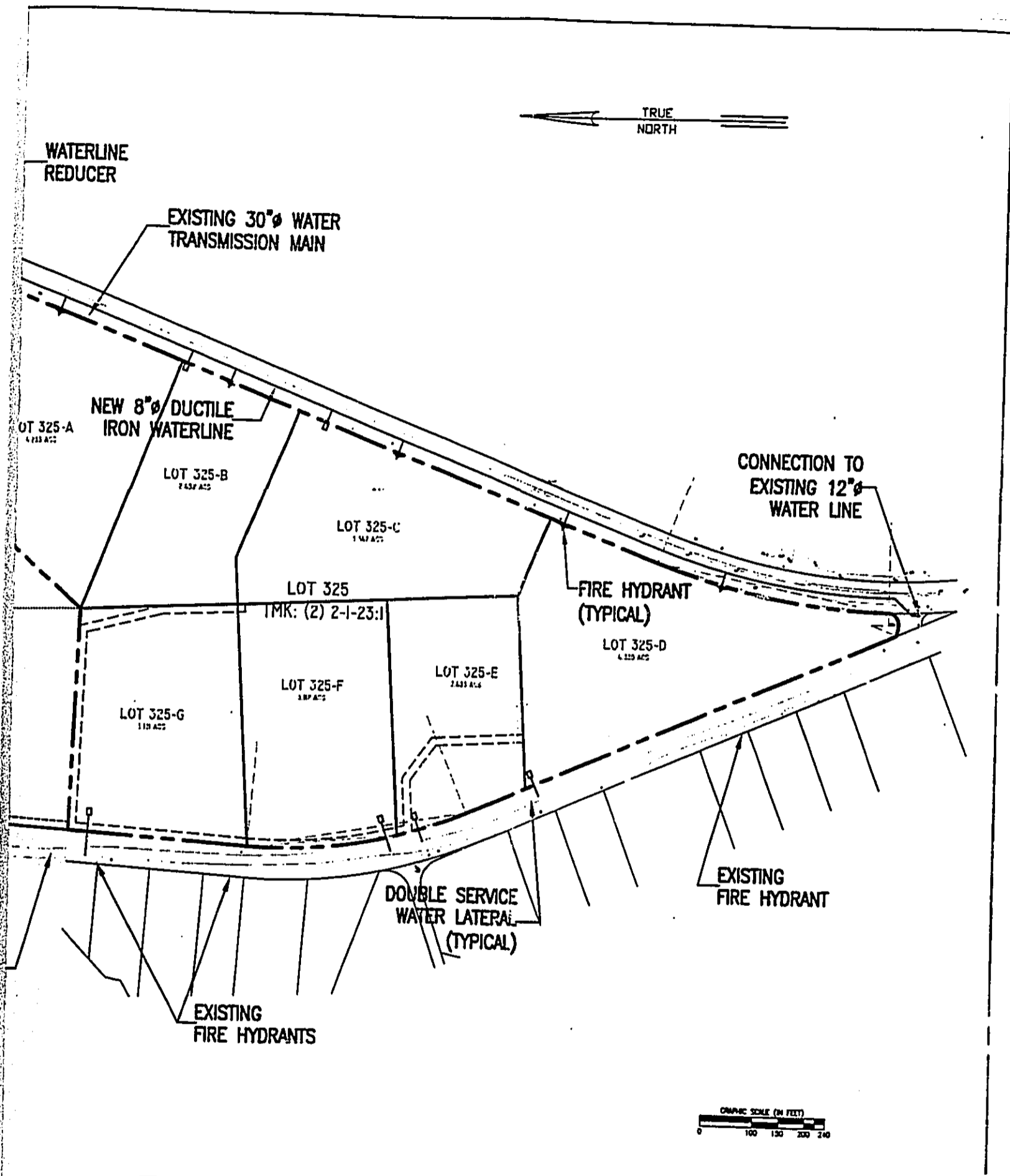
KAUKAHI

MAKENA

KEONEOIO

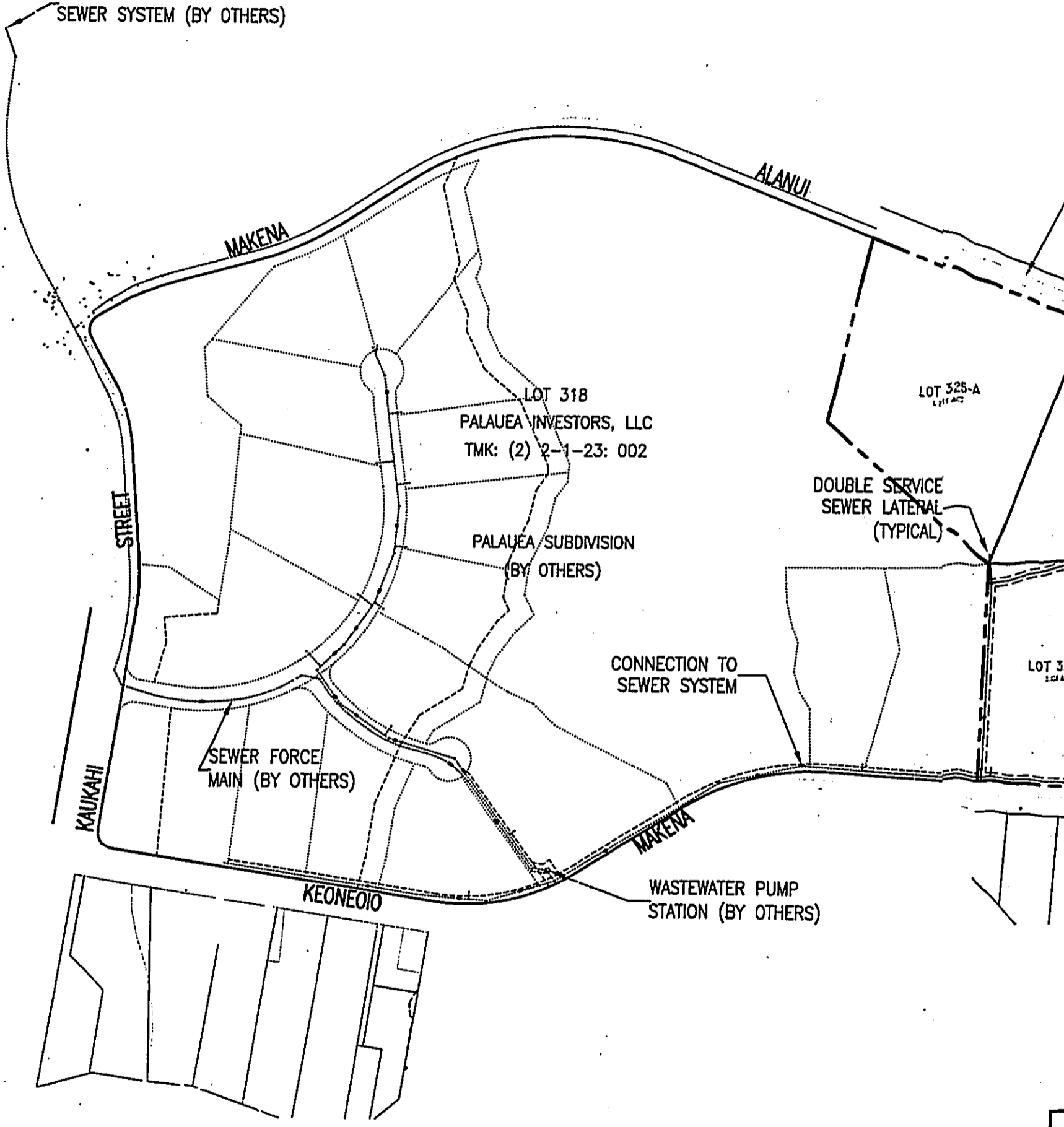
EXISTING 12"  
WATERLINE

INSTALLATION OF 12" D  
DUCTILE IRON WATERLINE

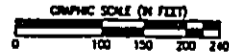
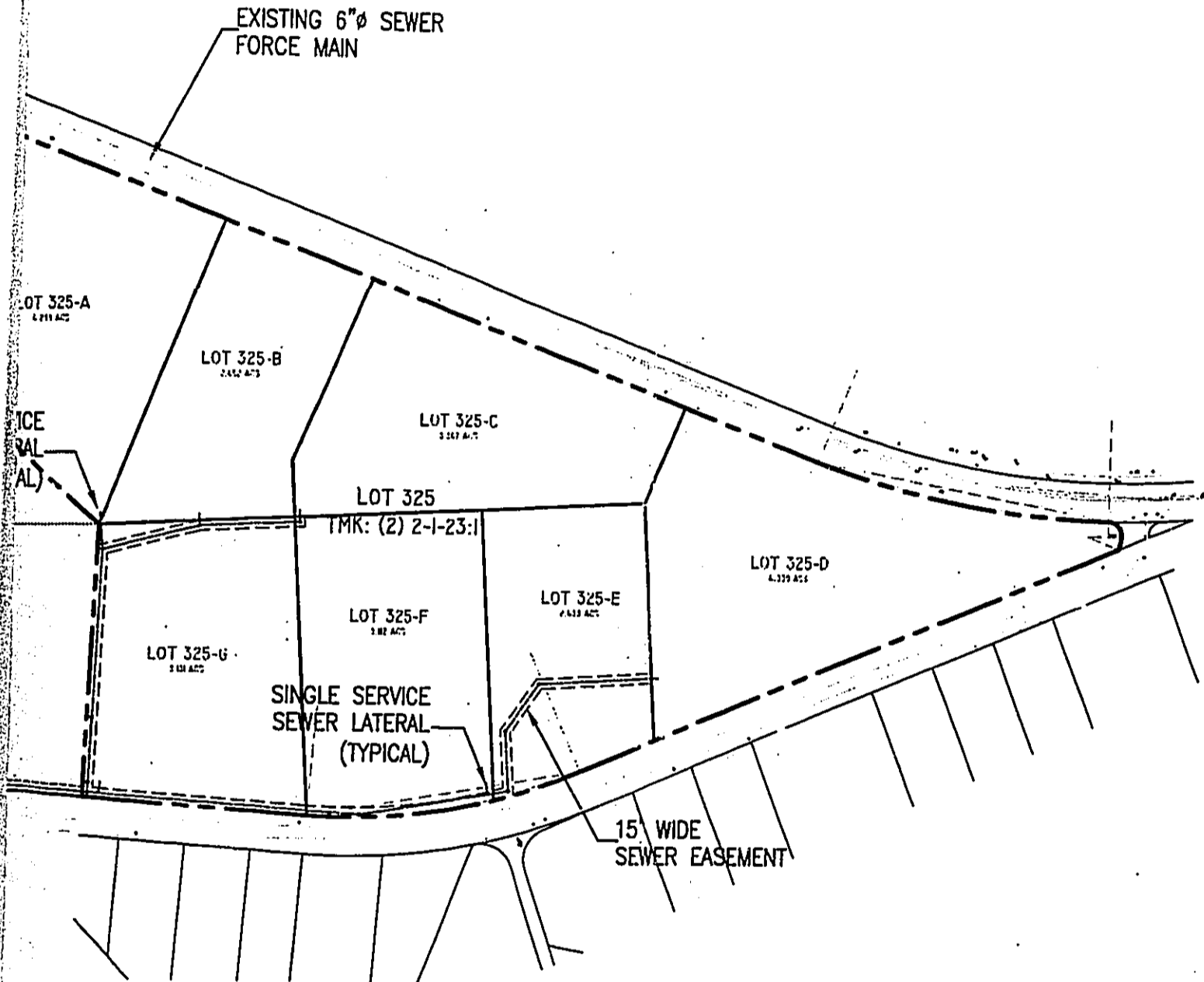


<p>PRELIMINARY ENGINEERING REPORT FOR MF-21 SUBDIVISION PALAUEA, MAKAWAO, MAUI, HAWAII</p>	<p>ATA AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII</p> <p>PROPOSED WATER SYSTEM IMPROVEMENTS</p>	<p>EXHIBIT 3</p>
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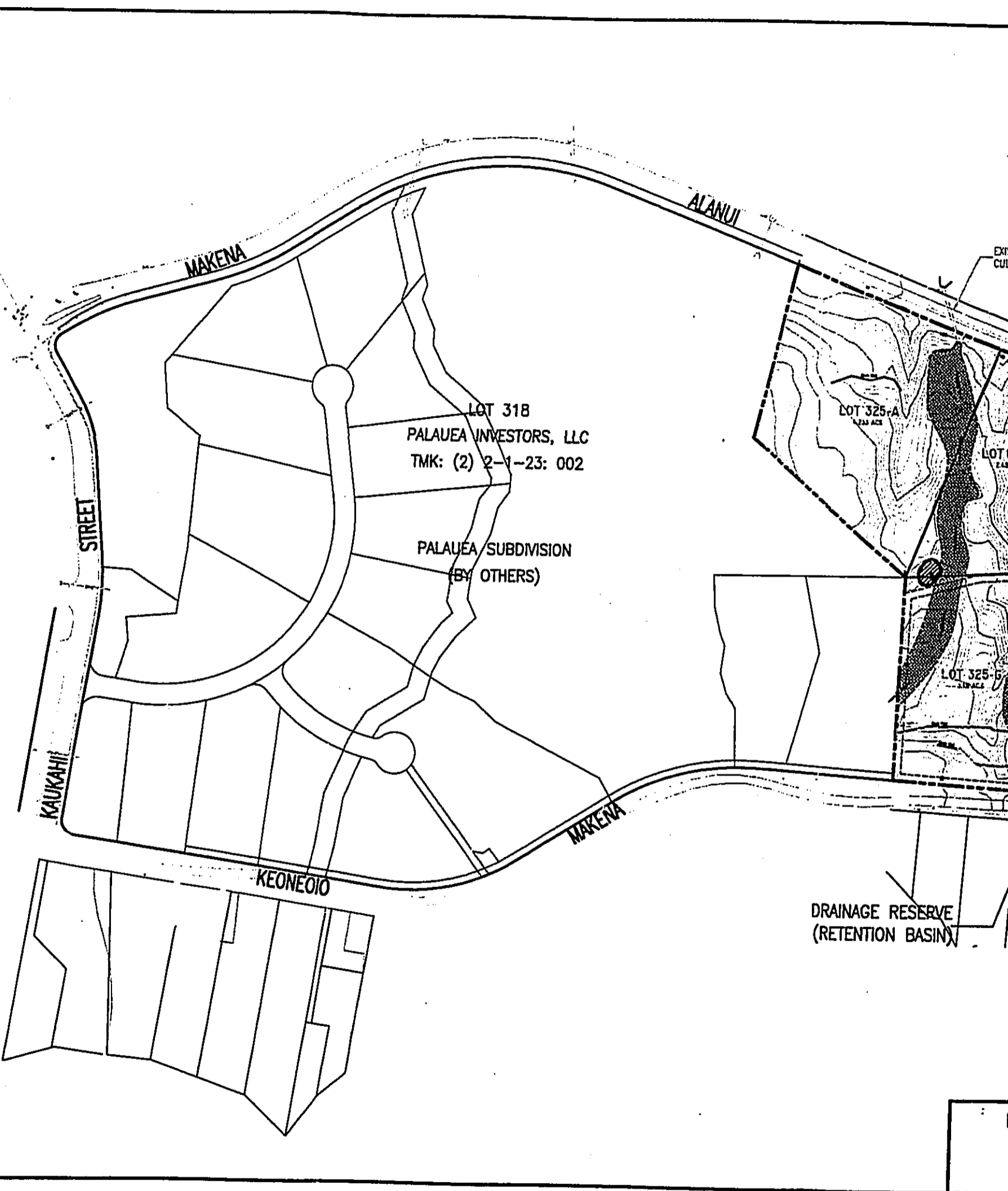
CONNECTION TO EXISTING  
SEWER SYSTEM (BY OTHERS)



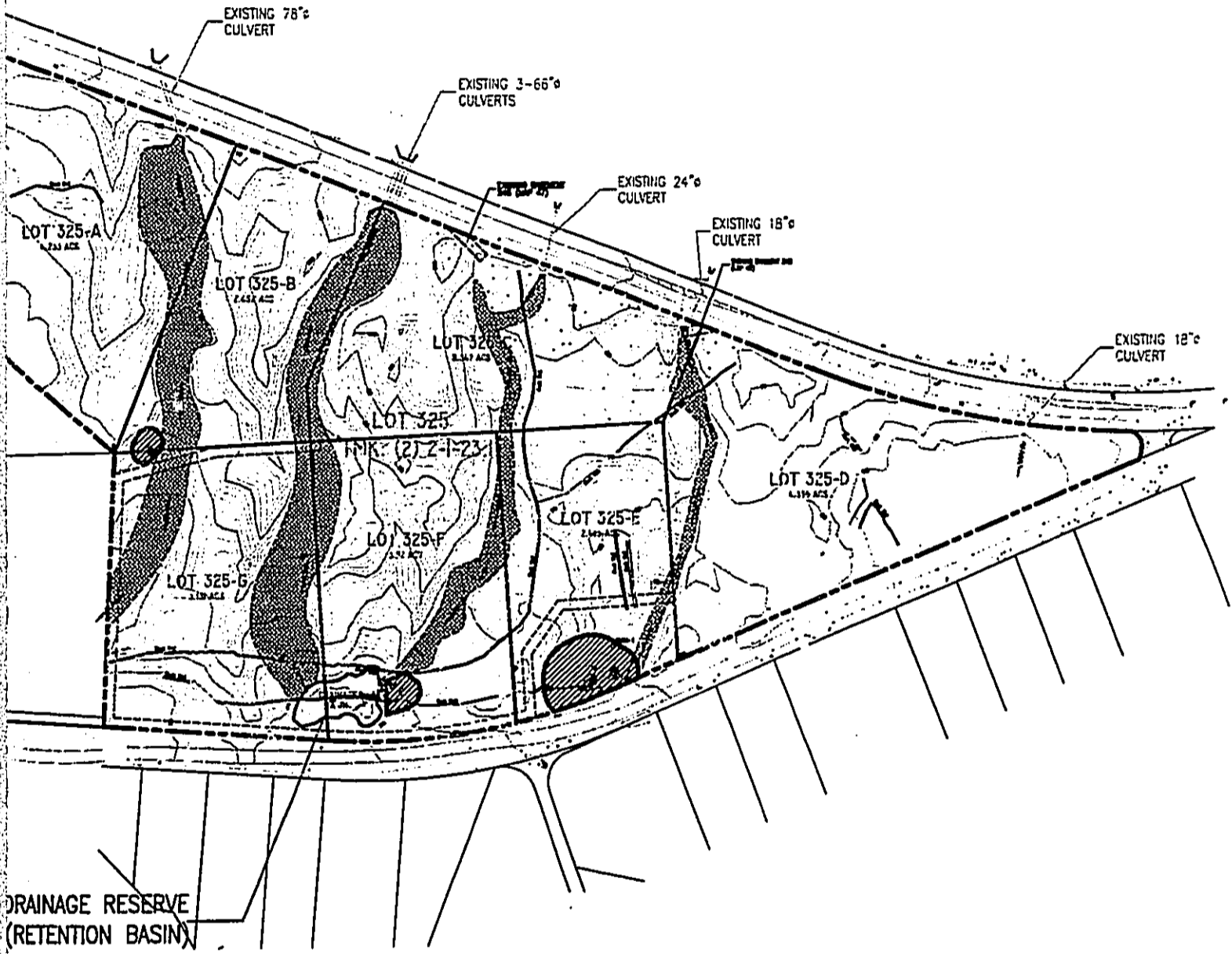




<p>PRELIMINARY ENGINEERING REPORT FOR MF-21 SUBDIVISION PALAUEA, MAKAWAO, MAUI, HAWAII</p>	<p>ATA AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HILO, WAHUKU, HAWAII</p> <p>PROPOSED SEWER SYSTEM IMPROVEMENTS</p>	<p>EXHIBIT 4</p>
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TRUE NORTH  
SCALE: 1" = 240'

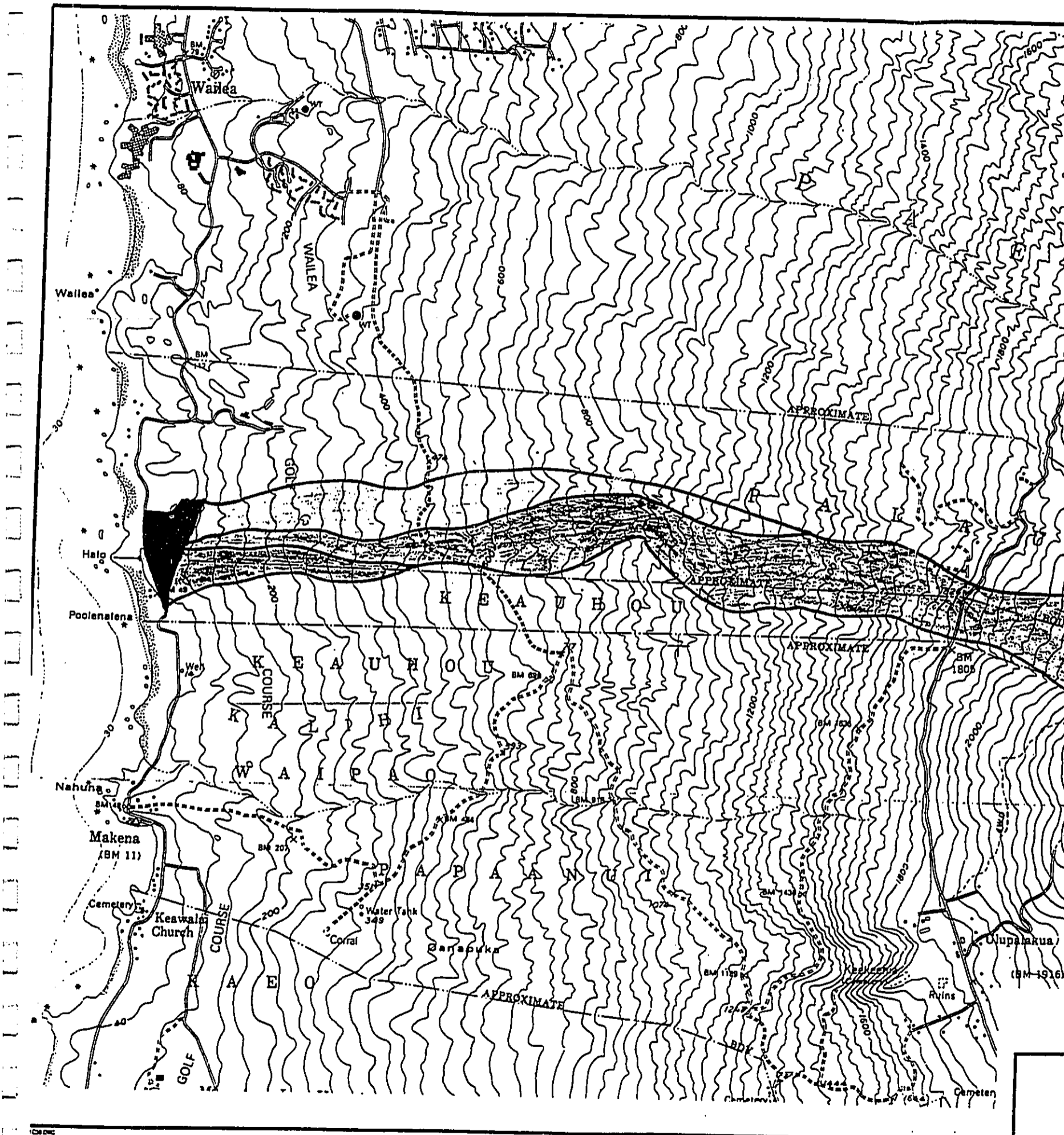


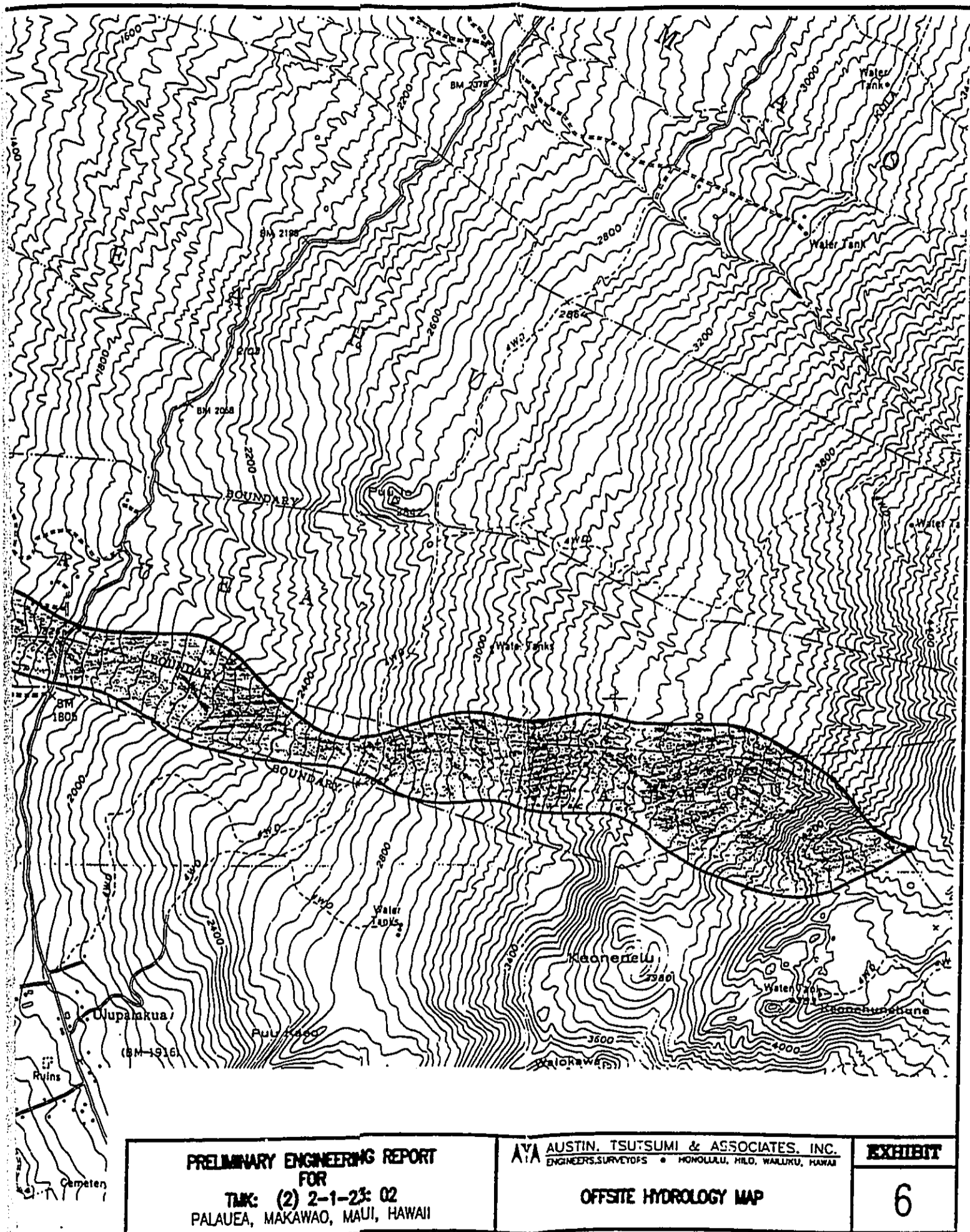
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FOR  
MF-21 SUBDIVISION  
PALAUEA, MAKAWAO, MAUI, HAWAII

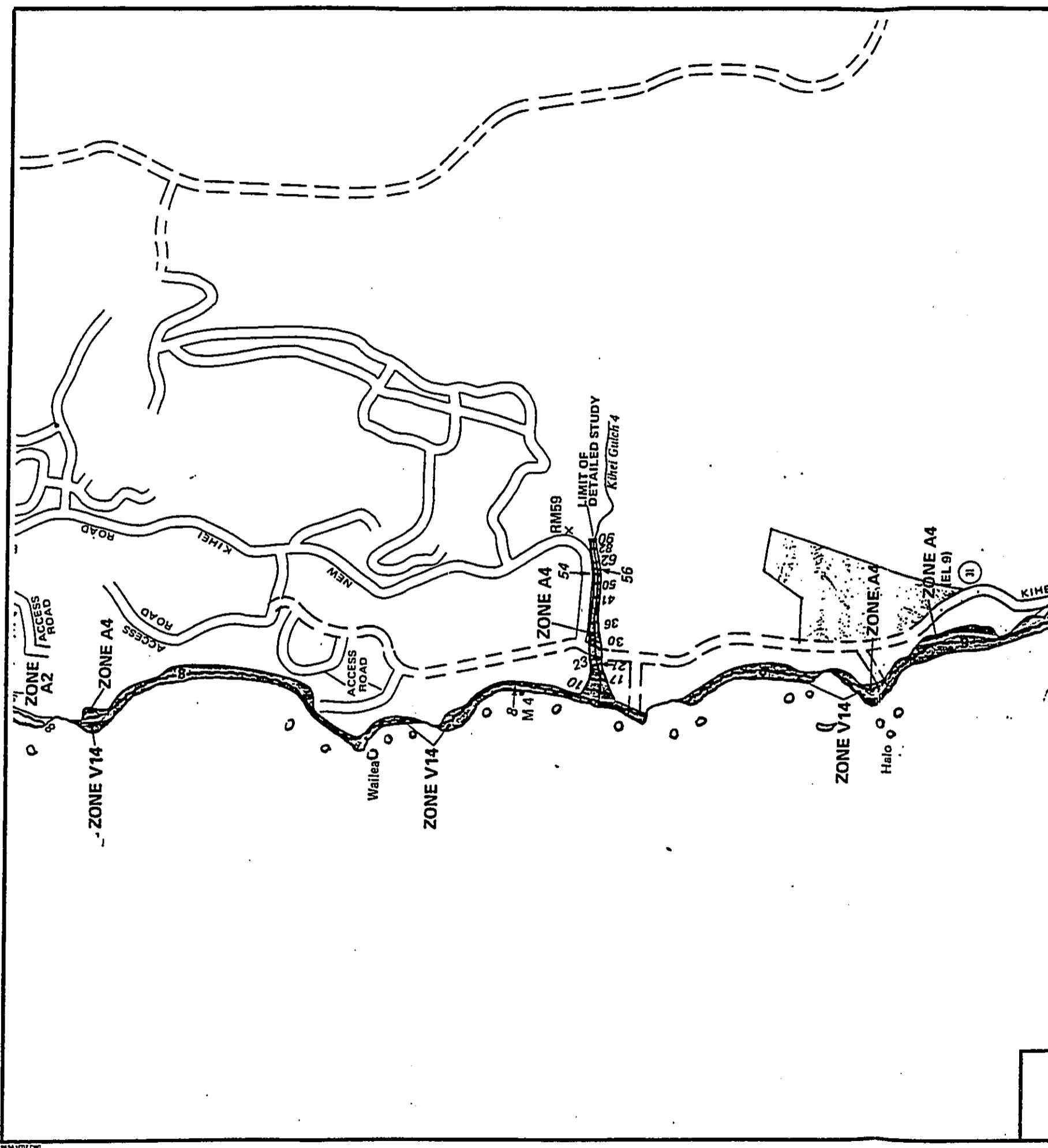
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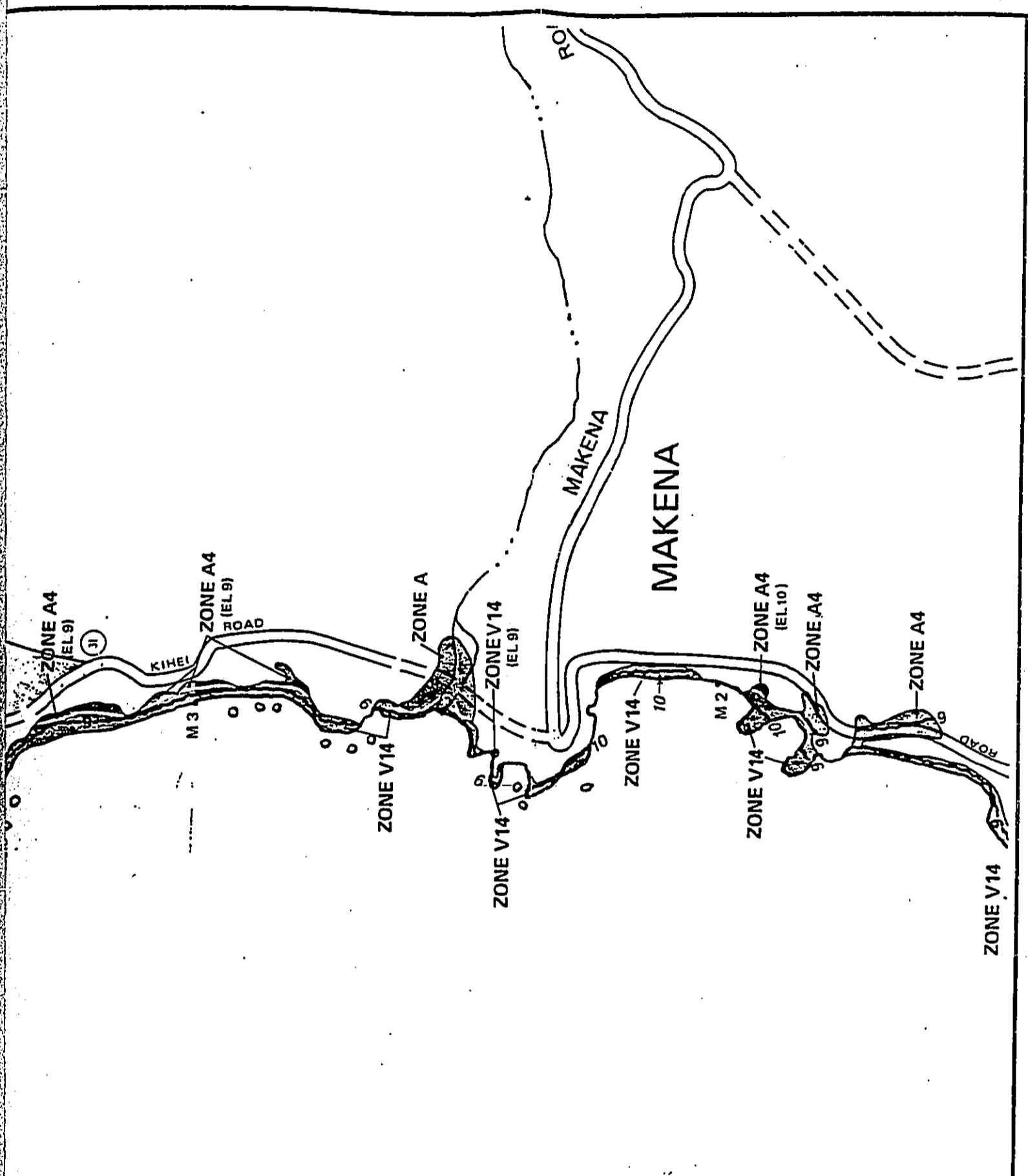
PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

EXHIBIT  
5





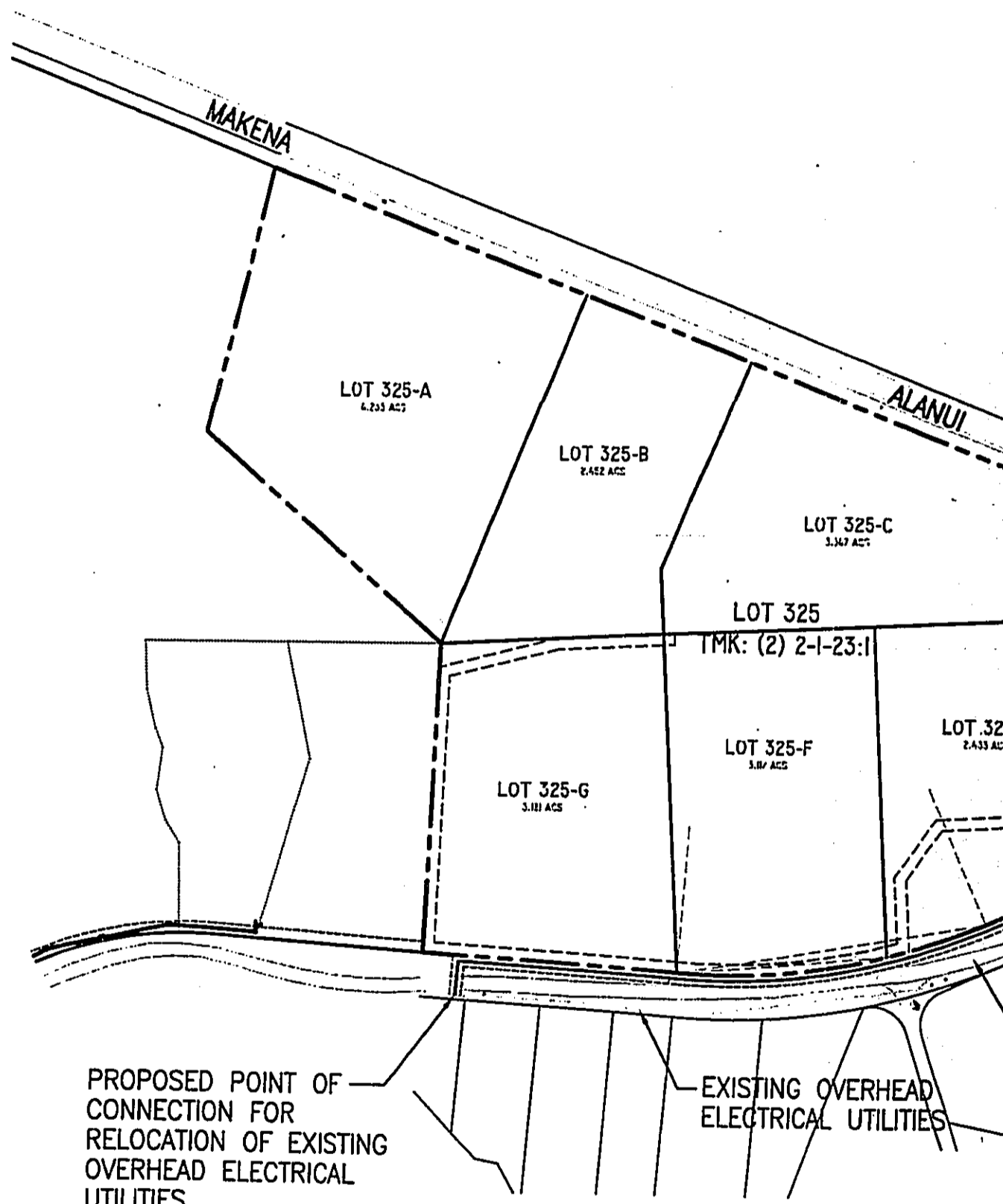




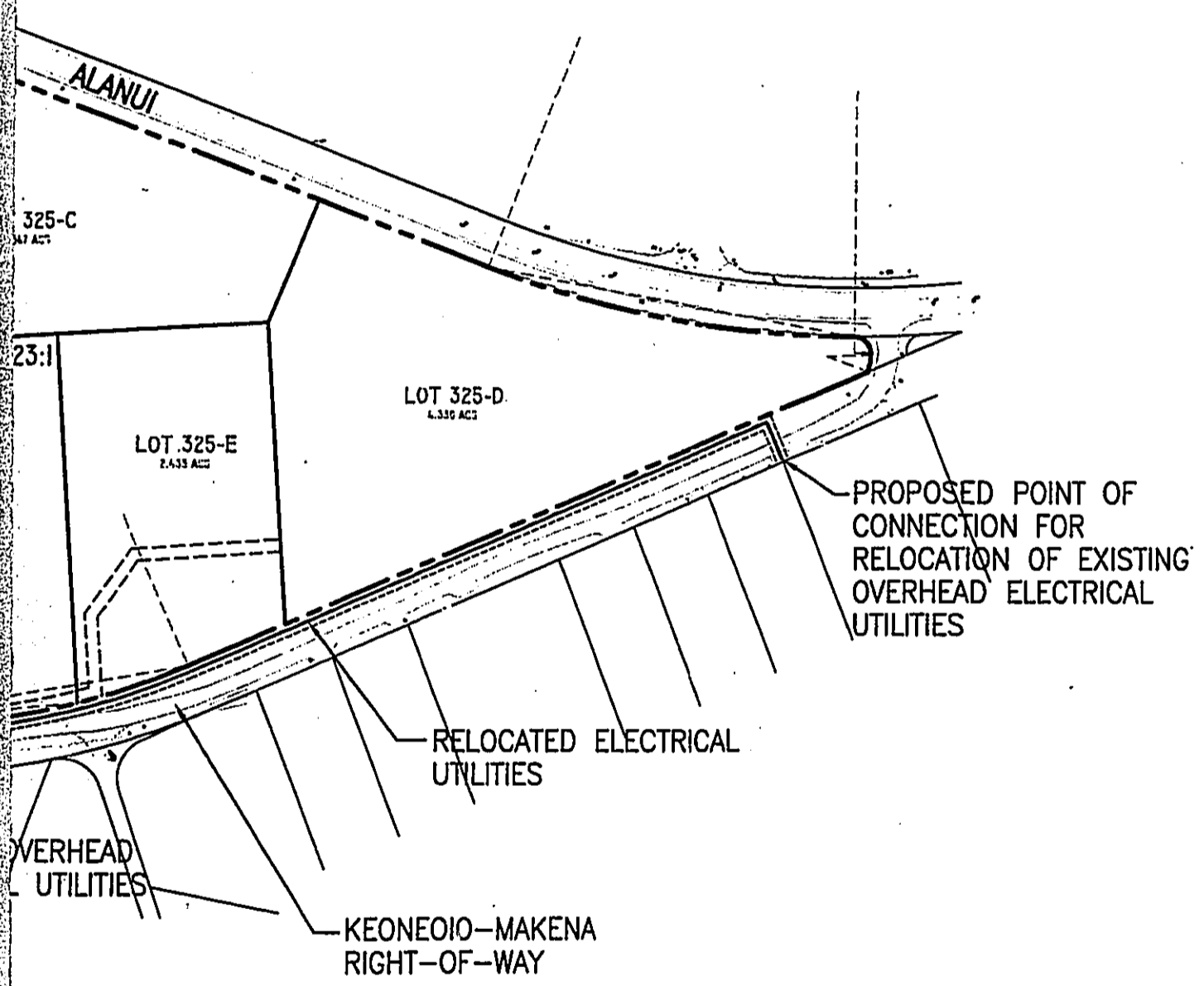
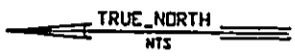
**PRELIMINARY ENGINEERING REPORT**  
**FOR**  
**PALAUUA SUBDIVISION**  
 PALAUUA, MAKAWAO, MAUI, HAWAII

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
 ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII  
**FLOOD ZONE**

**EXHIBIT**  
**7**







**PRELIMINARY ENGINEERING REPORT  
FOR  
TMK: (2) 2-1-23: 02  
PALAUEA, MAKAWAO, MAUI, HAWAII**

**AYA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS • HONOLULU, HILO, WAILUKU, HAWAII  
**PROPOSED ELECTRICAL IMPROVEMENTS**

**EXHIBIT**  
**8**



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## APPENDIX B

# PRELIMINARY HYDROLOGY CALCULATIONS

**EXISTING ON-SITE HYDROLOGY CALCULATIONS**  
(Storm Recurrence Interval:  $T_m = 50 \text{ Yr} - 1 \text{ Hr}$ )

**Project Site Description:**

**Runoff Coefficient (c)**

Site description: A'a type rock groundcover  
Scattering of overgrown dry brush, and kiawe trees  
Project site is void of any improvements

$$c = 0.30$$

**Area (a)**

$$a = 23.103 \text{ acres}$$

**Rainfall Intensity (i)**

Recurrence Interval: 50 Yr - 1 Hr = 2.5 inches

Average site slope: 9.5%

Longest reach length: approximately 950 feet

Time of concentration: 9 minutes

$$i = 5.1 \text{ inches / hour}$$

**Runoff (Q)**

$$Q = c \times i \times a$$

Q = discharge, in cubic feet per second (cfs)

c = runoff coefficient

i = rainfall intensity, inches per hour

a = watershed area, in acres

$$Q_{50} = (0.30)(23.103 \text{ acres})(5.1 \text{ inches / hour})$$

$$= 35.35 \text{ cfs}$$

Reference: Rules for the Design of Storm Drainage Facilities in the County of Maui  
Department of Public Works and Waste Management, County of Maui, 1995

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00



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**POST-DEVELOPMENT ON-SITE HYDROLOGY CALCULATIONS**  
(Storm Recurrence Interval:  $T_m = 50\text{Yr} - 1\text{Hr}$ )

**Project Site Description:**

**Runoff Coefficient (c)**

**Assumptions:**

- 2 House per Lot (Main: 7,500 sf and Cottage: 1,000 sf)
- 300' long driveway (12' wide)
- Major drainageways to remain unimproved
- Remainder of area to be landscaped (2%-9% slopes)

<u>Area (acs)</u>	<u>c</u>	<u>Description</u>
1.366	0.95	Roofs, . . . .
0.579	0.95	Driveways, . . .
1.194	0.30	Unimproved areas
19.961	0.285	Landscaping

$$c = \frac{1.366(0.95) + 0.579(0.95) + 1.194(0.30) + 19.961(0.285)}{23.103} = 0.34$$

**c = 0.34**

**Area (a)**

**a = 23.103 acres**

**Rainfall Intensity (i)**

Recurrence Interval: 50 Yr - 1 Hr = 2.5 inches

Average site slope: 9.5%

Longest reach length: approximately 950 feet

Time of concentration: 9 minutes

**i = 5.1 inches / hour**

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00 [1 of 2]



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**POST-DEVELOPMENT ON-SITE HYDROLOGY CALCULATIONS (Continued)**

**Runoff (Q)**

$$Q = c \times i \times a$$

Q = discharge, in cubic feet per second (cfs)

c = runoff coefficient

i = rainfall intensity, inches per hour

a = watershed area, in acres

$$Q = (0.34)(23.103 \text{ acres})(5.1 \text{ inches / hour})$$

$$= 40.1 \text{ cfs}$$

Reference: Rules for the Design of Storm Drainage Facilities in the County of Maui  
Department of Public Works and Waste Management, County of Maui, 1995

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00 [2 of 2]



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INFLOW OUTFLOW SUMMARY  
FOR  
MF-21 PALAUEA SUBDIVISION  
LOT 325

Pre-Development Information

Runoff (cfs): 35.35  
Tc (min): 9

Results: PASSED

Min Storage Requirement (cfs): 2,143.3  
Min Storage Req'd w/ FS (cf) : 4,286.6  
Additional Available Storage (cf): 2511.4  
Adjusted Factor of Safety: 3.2

Post-Development Information

Runoff (cfs): 40.10  
Tc (min): 9

Basin Information

Use Basin Sizing Info. (Y/N): N  
Storage Available (cfs): 6,798.0  
Required Factor of Safety: 2

Available Storage Used  
In Calculations:

**6,798.0**



Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)  
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100 YEAR FLOOD ANALYSIS  
 9/17/1999

BASIN NAME	DL-SET-A	DL-SET-B	
NODE NAME	DL-SET-A	DL-SET-B	
UNIT HYDROGRAPH	UH484	UH484	
PEAKING FACTOR	484.	484.	
RAINFALL FILE	SCSI-24	SCSI-24	
RAIN AMOUNT (in)	10.00	10.00	
STORM DURATION (hrs)	24.00	24.00	
AREA (ac)	164.00	783.00	
CURVE NUMBER	69.00	69.00	
DCIA (%)	.00	.00	
TC (mins)	92.00	201.00	
LAG TIME (hrs)	.00	.00	
BASIN STATUS	OFFSITE	OFFSITE	
BASIN QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
DL-SET-A	227.44	10.84	6.07 INTO EXISTING 78" DRAINLINE
DL-SET-B	686.84	12.25	6.09 INTO EXISTING 3-66" DRAINLINES





AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS

**APPENDIX C**  
**PRELIMINARY WATER DEMAND**  
**CALCULATIONS**



## PRELIMINARY WATER DEMAND CALCULATIONS

### Project Site Description

Single Family Residential  
7 Residential lots (2 units per lot)  
23.103 acre project site

### Average Daily Demand

Single Family Residential: 600 gallons / unit<sup>1</sup>

### (1) Domestic Water Demand Calculation

$$14 \text{ units} \left( \frac{600 \text{ gallons}}{\text{unit} \cdot \text{day}} \right) = 8400 \text{ gpd}$$

### (2) Irrigation Water Demand (Perimeter Landscaping)

78,000 sf for perimeter landscaping requiring approximately 6,000 gpd.<sup>2</sup>

### (3) Irrigation Water Demand (Interior Landscaping)

#### Assumptions

1. 1 acre of each lot will be developed, the remainder of each lot to remain undeveloped. Each developed area will include dwellings, driveways, and landscaping.
2. 3 gallons / 800 sf / min (20 minutes per cycle, 1 cycle / day).<sup>3</sup>

#### Calculations

7.000 acres of all lots to be developed  
-1.366 acres (dwellings)  
-0.579 acres (driveways)  
5.055 acres = 220,196 sf (to be landscaped)

$$\frac{300 \text{ gallons}}{800 \text{ sf} \cdot \text{min}} = \frac{.075 \text{ gpd}}{\text{sf}}$$

$$\frac{.075 \text{ gpd}}{\text{sf}} (220,196 \text{ sf}) = 16,514.7 \text{ gpd}$$

Approximately, 16,520 gpd required for interior landscaping

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 8/7/00 [1 of 2]

---



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**Average Daily Demand**

8,400 gpd	Domestic use
6,000 gpd	Irrigation purposes (Perimeter)
<u>16,520 gpd</u>	Irrigation purposes (Interior)
<b>30,920 gpd</b>	<b>Total Site</b>

**Reference:**

- <sup>1</sup>Table 15, Water System Standards, Department of Water Supply, County of Maui, 1985 and as amended  
<sup>2</sup>Estimate for Perimeter Landscaping Water Demands provided by Chris Hart and Partners  
<sup>3</sup>Estimate of average water demand for established landscaping provided by Chris Hart and Partners

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 8/7/00 [2 of 2]



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## **APPENDIX D**

# **PRELIMINARY WASTEWATER FLOW CALCULATIONS**

## PRELIMINARY WASTEWATER CONTRIBUTION CALCULATIONS

### Project Site Description:

Number of Residence Lots: 7  
Wastewater Contribution: 350 gallons / day / home

### Assumptions:

2 Homes per Residence Lot (1 Main House & 1 Cottage)

### Wastewater Contribution Calculation:

$$14 \text{ homes} \left( \frac{350 \text{ gallons}}{\text{day} \cdot \text{home}} \right) = 4,900 \text{ gpd}$$

**Average Daily Wastewater Contribution = 4,900 gpd**

Reference: Wastewater Flow Standards  
Wastewater Reclamation Division, County of Maui, 1993

---

Project: MF-21 Subdivision  
Makena, Maui, Hawaii  
TMK: (2) 2-1-23: 01

Job No: M-99-552  
Computed by: NIY  
Date: 6/1/00



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# ***Appendix D***

---

***Traffic Study for  
MF-21 Site***



TED I. KAWAHIGASHI PE, FASCE  
 KENNETH A. KURCKAWA PE  
 DONOHUE M. FUJII PE  
 STANLEY T. NATANIABE  
 TERUAKI S. ANASHIRO, PE  
 VERNA S. YIBE

#99-063

November 2, 1999

Mr. Eric S. Taniguchi, AIA  
 Project Coordinator  
 Pacific Rim Land Incorporated  
 P.O. Box 220  
 Kihei, Maui, Hawaii 96753

Dear Mr. Taniguchi:

Subject: Traffic Study for MF-21 Site,  
 Wailea, Maui, Hawaii

This letter documents the findings of the traffic study for the development of a seven (7) lot agricultural subdivision on 23.14 acres known as MF-21 in Wailea, Maui. The site is more specifically identified as TMK: 2-1-23:1. Figure 1 shows the location of MF-21.

A Traffic Impact Analysis Report (TIAR) dated October 1997, prepared by Austin, Tsutsumi & Associates, Inc., documented the impacts for the revised Wailea Master Plan, which included traffic generated by the MF-21 site. The October 1997 TIAR assumed that the MF-21 site would be developed as a 130 unit residential condo development.

Current plans call for the MF-21 site to be developed as a seven (7) lot agricultural subdivision. Vehicular trips generated were calculated by applying trip generation rates contained in "Trip Generation, 6th Edition" from the Institute of Transportation Engineers, (ITE), 1991. Table 1 shows the trip rates and Table 2 shows the vehicular trips generated by the proposed seven (7) lot agricultural subdivision. Tables 1 and Table 2 also show the trip rates and vehicular trips generated by the MF-21 site contained in the October 1997 TIAR for the Revised Wailea Master Plan.

Table 1 Trip Rates	Average Weekday	AM Peak Hour		PM Peak Hour	
	Daily Trip Rate	Trip Rate	% Enter	Trip Rate	% Enter
Single Family Detached Housing ITE Code 210 (per dwelling unit)	9.57	0.86	25	1.14	64
Residential Condo/ Townhouse (per dwelling unit)	5.86	0.44	17	0.55	66



Mr. Eric S. Taniguchi, AIA  
Project Coordinator  
Pacific Rim Land Incorporated

November 2, 1999

Table 2 Peak Hour Trips	Average Weekday	AM Peak Hour		PM Peak Hour	
	(veh)	ENTER	EXIT	ENTER	EXIT
7 Lot Agricultural Subdivision	67	1	5	5	3
130 Unit Residential Condo	814	11	52	51	25

The estimated total peak hour traffic volume generated by the proposed seven (7) lot subdivision is six (6) trips during the AM peak hour of traffic and eight (8) trips during the PM peak hour of traffic. These volumes, which are less than the 100-trip threshold for which the ITE recommends the preparation of a traffic impact report, are not measurable in determining the impacts on the adjacent roadways. These volumes fall within the day-to-day variations in traffic flow during the peak hours of traffic.

Therefore, we conclude that the adjacent roadways will not be significantly impacted by traffic generated by the seven (7) lot agricultural subdivision.

Should you have any questions, please feel free to contact us.

Very truly yours,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

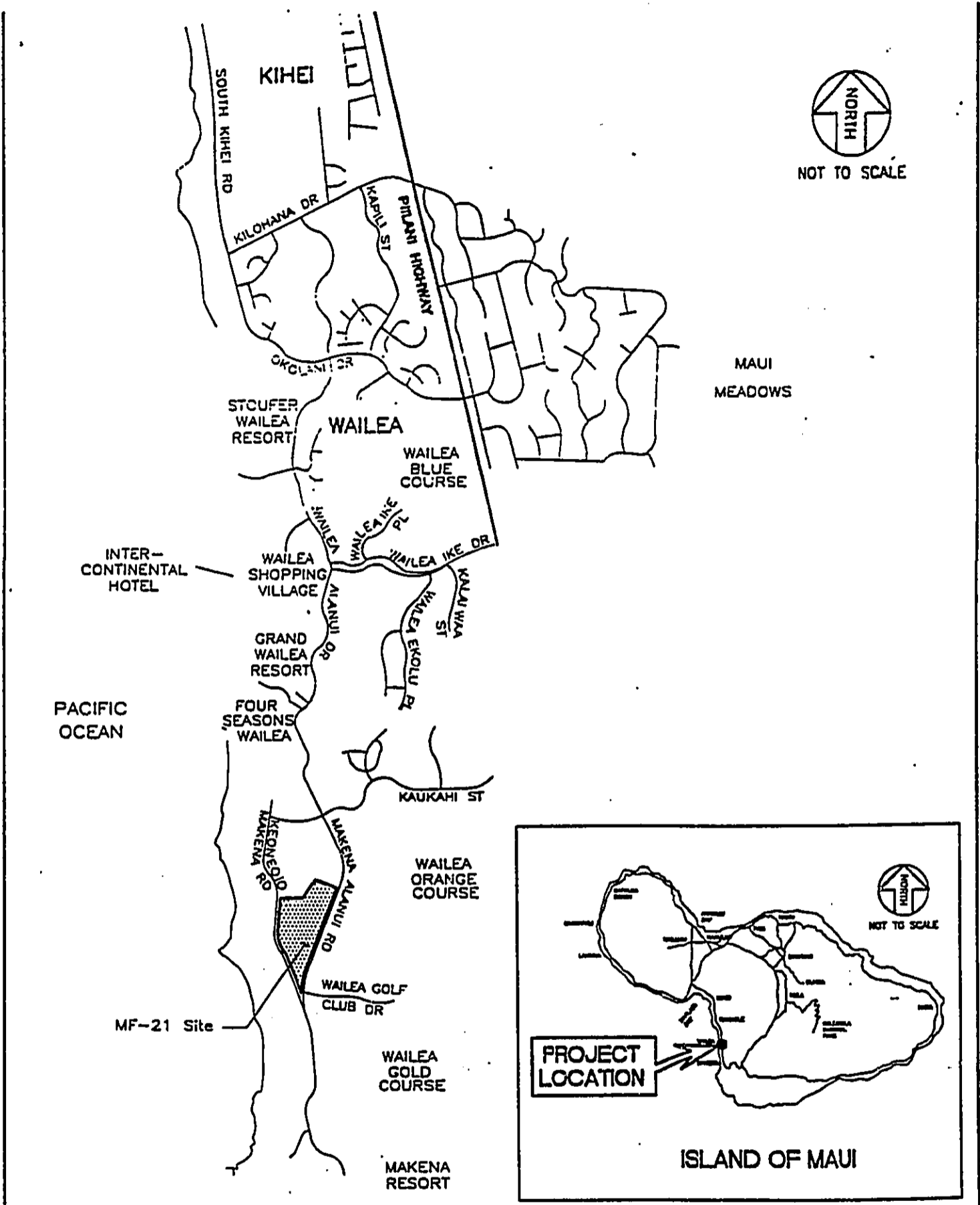
By *Ted S. Kawahigashi*  
TED S. KAWAHIGASHI, P.E., FACEC  
President

TSK:KKN:svd

Attachment

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WAILEA RESORT

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS HONOLULU, HAWAII

FIGURE

VICINITY MAP

1

**END**

**CERTIFICATION**

**I HEREBY CERTIFY THAT THE MICROPHOTOGRAPH APPEARING IN THIS REEL OF  
FILM ARE TRUE COPIES OF THE ORIGINAL DOCUMENTS.**

2004

DATE

Sammy Yoshimura

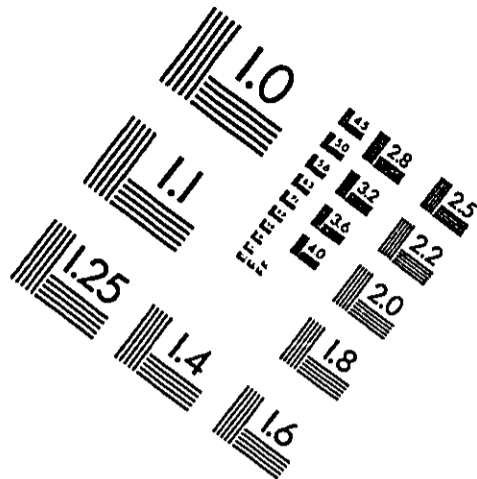
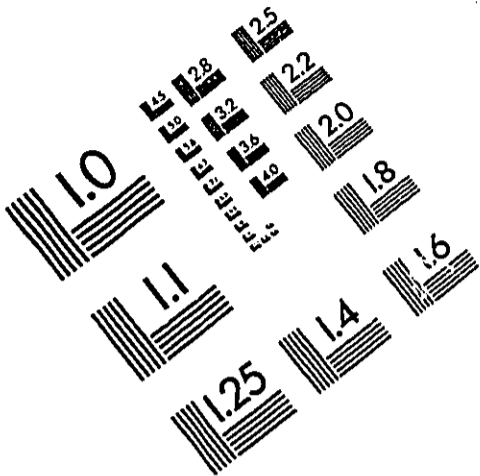
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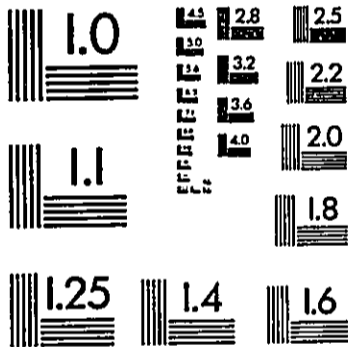
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Silver Spring, Maryland 20910  
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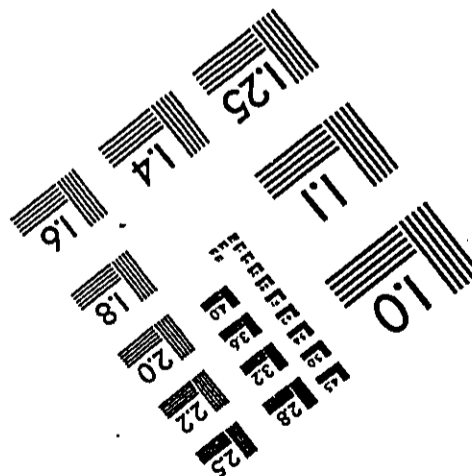
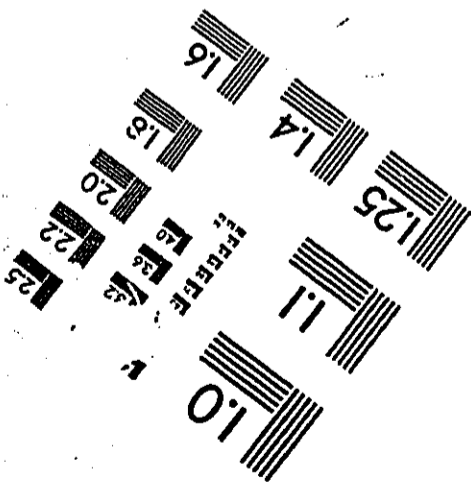
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ADVANCED MICRO-IMAGE SYSTEMS HAWAII

DEC 23 2000

**FILE COPY**

2000-12-23-MA-~~FEA~~ - Lucky Seven Development  
Subdivision

***Final  
Environmental Assessment***

---

**SUBDIVISION OF  
PARCEL MF-21**

Prepared for:

December 2000

Lucky Seven Development, LLC

MUNEKIYO, ARAKAWA & HIRAGA, INC.

*Final*  
*Environmental Assessment*

---

**SUBDIVISION OF  
PARCEL MF-21**

Prepared for:

December 2000

Lucky Seven Development, LLC

  
MUNEKIYO ARAKAWA & KIRABA, INC.

---

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B	Archaeological Inventory Survey of Parcel MF-21
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C	Preliminary Engineering Report
D	Traffic Study for MF-21 Site

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lucky/vnl21\lralea.rpt

**Preface**

The applicant, Lucky Seven Development, LLC, proposes the development of a seven (7) lot subdivision and related improvements at Palauea, Maui. Identified by TMK 2-1-23: 01, the proposed subdivision will encompass an area of approximately 23.1 acres and involve the creation of seven (7) agricultural lots ranging in size from 2.4 to 4.3 acres.

Since the proposed action involves the use of County lands (roadway rights-of-way) for the installation of new utility lines, an Environmental Assessment (EA) has been prepared as required by Chapter 343, Hawaii Revised Statutes, to document the proposed action's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the project.

# ***Chapter 1***

---

## ***Project Overview***

## **I. PROJECT OVERVIEW**

### **A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP**

The applicant, Lucky Seven Development, LLC, proposes to subdivide a 23.1-acre parcel identified by TMK 2-1-23:01 to create seven (7) agricultural lots at Palauea, Maui, Hawaii. See Figure 1. TMK 2-3-23:01 is also identified as parcel MF-21 on Wailea Resort Company, Ltd.'s master plan.

The MF-21 site is currently undeveloped and is primarily vegetated with kiawe, koa haole, buffel grass and annual weeds. The project site is bordered by two (2) County roadways, Makena Alanui to the east and Old Makena Road (aka, Keoneoio Makena Road) to the south and west, as well as a vacant, undeveloped parcel to the north (the future Palauea Subdivision) which is designated Project District 8 by the Kihei-Makena Community Plan. The Wailea Emerald Golf Course is located to the east of the parcel, across Makena Alanui. See Figure 2. Existing access to the site is provided by Makena Alanui and Old Makena Road.

JHR 23 Investment, LLC is the fee-simple owner of the land underlying the subject property.

### **B. REGULATORY CONTEXT**

The subject property falls within the State "Agricultural" district. In addition, the subject parcel is designated "Agriculture" by the Kihei-Makena Community Plan, as well as "Agricultural" by Maui County zoning.

Since the subject property is entirely within the limits of the Special Management Area (SMA) for the island of Maui, an application for a SMA Use Permit has been prepared for review and approval by the Maui Planning Commission.

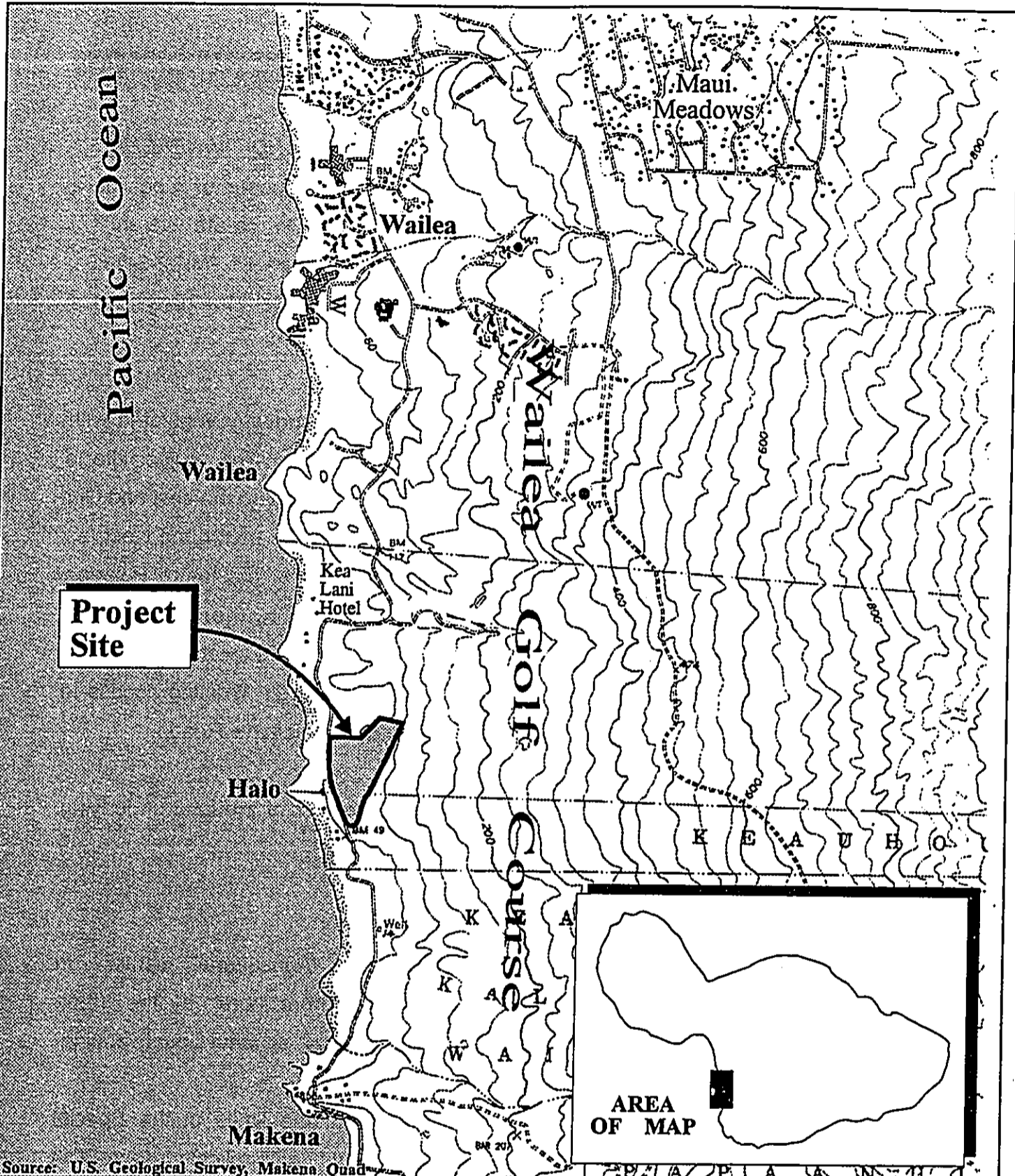
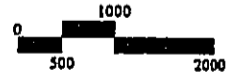


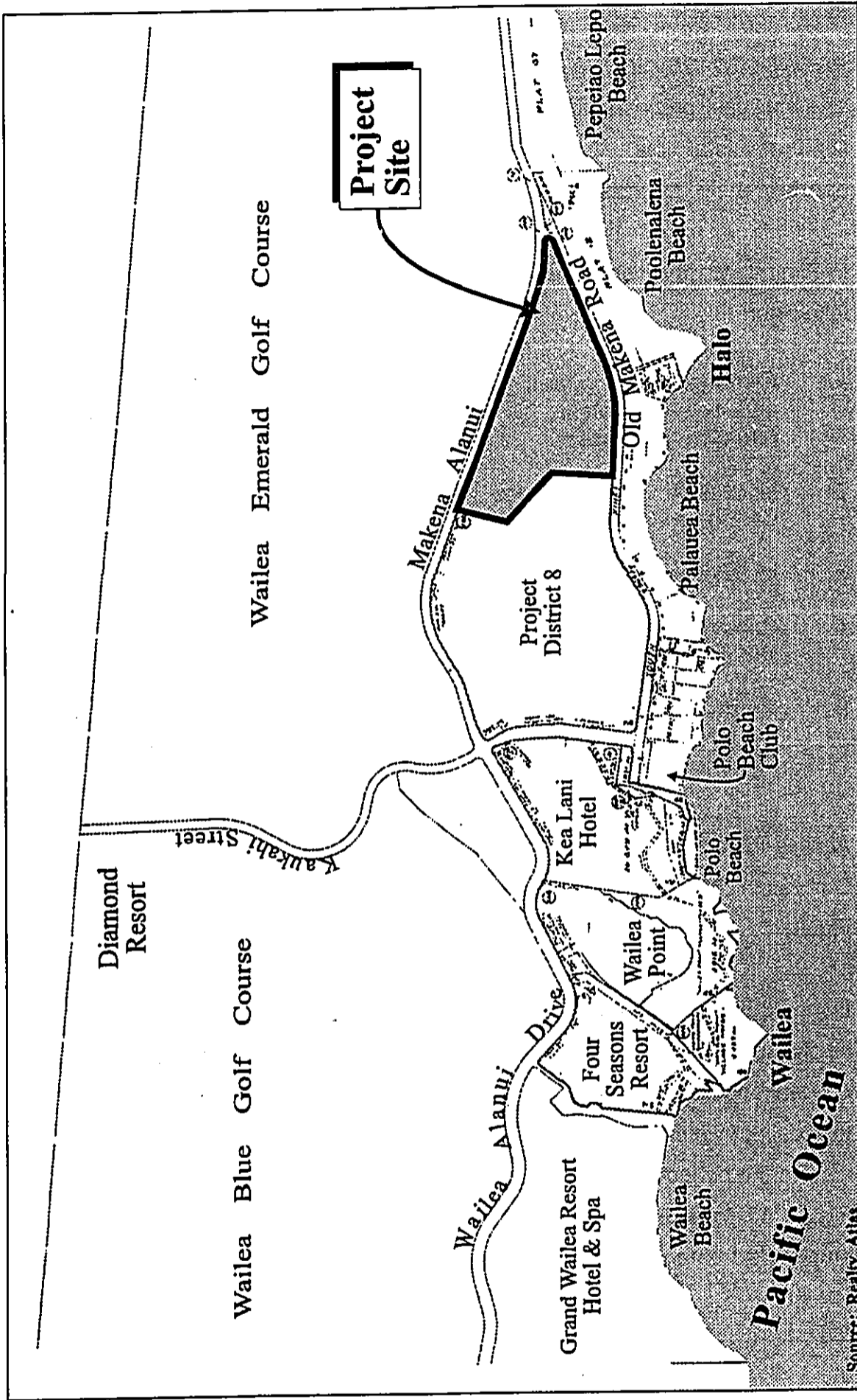
Figure 1

Subdivision of Parcel MF-21  
Regional Location Map



MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: Lucky Seven Development, LLC



Source: Realty Atlas

**Figure 2**

**Subdivision of Parcel MF-21**

**Site Location Map**

NOT TO SCALE



Prepared for: Lucky Seven Development, LLC



MUNEKIYU ARAKAWA & HIRAGA, INC.

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**C. PROPOSED DEVELOPMENT**

The applicant proposes to subdivide the subject property to create seven (7) agricultural lots. See Figure 3. Lot sizes will range between approximately 2.4 acres to 4.3 acres.

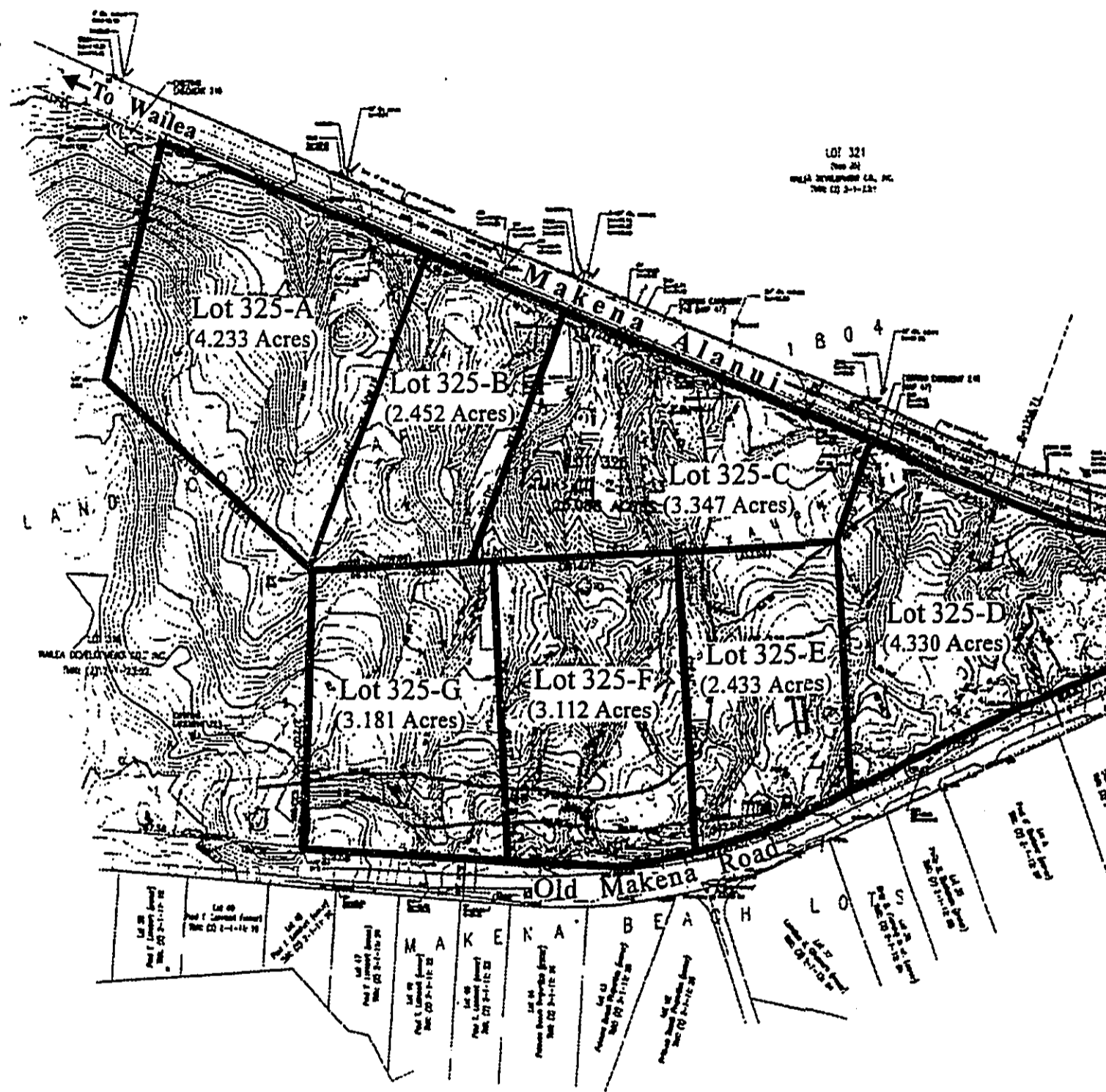
Preliminarily, the proposed subdivision improvements include the following:

1. Clearing, grubbing, and grading work in accordance with drainage and setback criteria, as well as work needed for stormwater retention purposes;
2. Installation of utility lines (water, sewer, electrical, telephone, CATV) to serve each of the lots;
3. Installation of street tree plantings;
4. Construction of driveway aprons to provide the lots with access to Makena Alanui or Old Makena Road; and
5. Improvements to Makena Alanui and Old Makena Road as may be required by the County Department of Public Works and Waste Management.

Access to Lots 325-A through 325-C will be via Makena Alanui. Lots 325-D through 325-G will be accessed via Old Makena Road. Refer to Figure 3.

It should be noted that the water system for the proposed subdivision will involve the installation of new waterlines within the Makena Alanui and Old Makena Road rights-of-way. The proposed water system will connect to existing waterlines serving the project area and will form a "loop" around the project site and the adjoining Palauaea Subdivision parcel. See Figure 4. In addition, existing overhead power lines along the subject property's frontage on Old Makena Road will be relocated underground





Source: Austin, Tsutsumi & Associates, Inc.

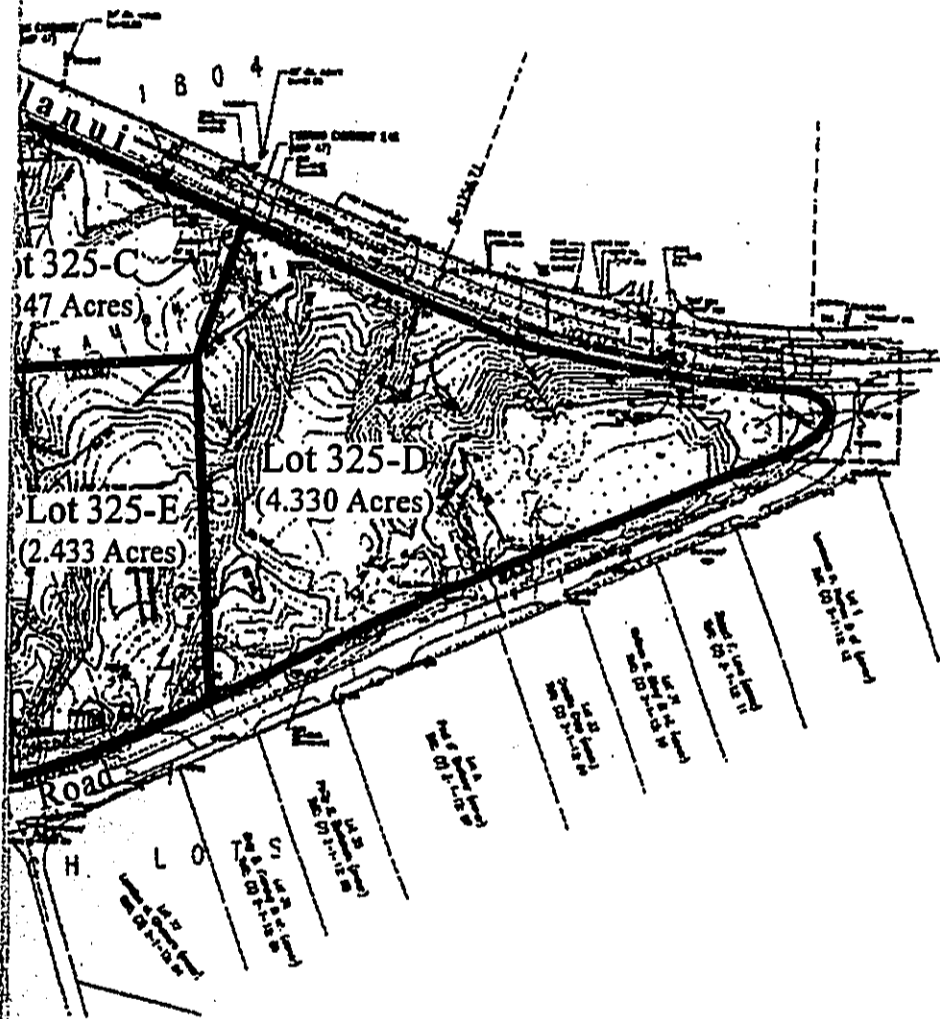
Figure 3



Subdivision of Parcel MF-21  
 Preliminary Subdivision Plan

Prepared for: Lucky Seven Development, LLC

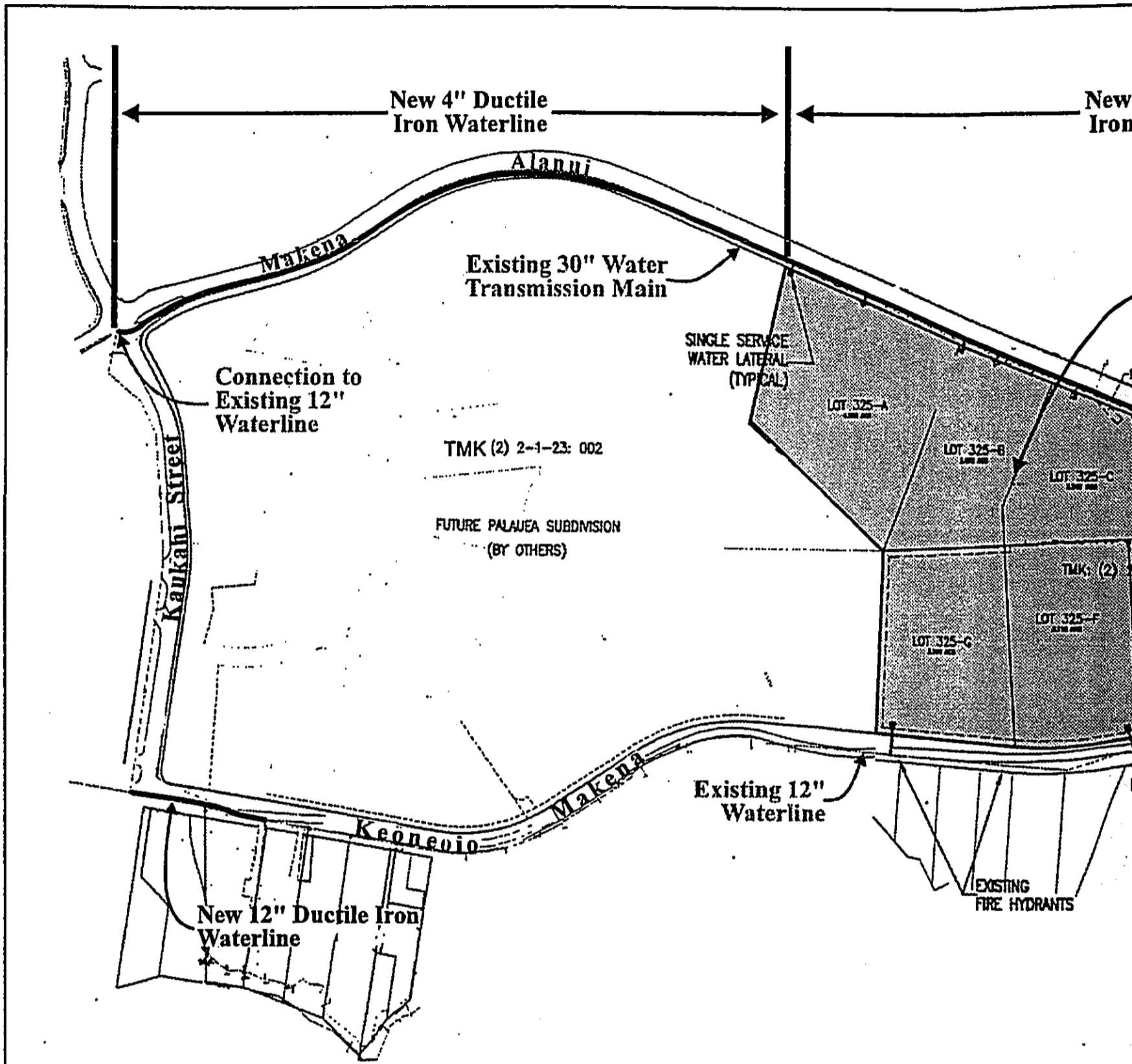
LOT 321  
PUD 201  
HALL DEVELOPMENT CO., INC.  
DRC 02 3-1-227



Parcel MF-21  
Subdivision Plan

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRADA, INC.



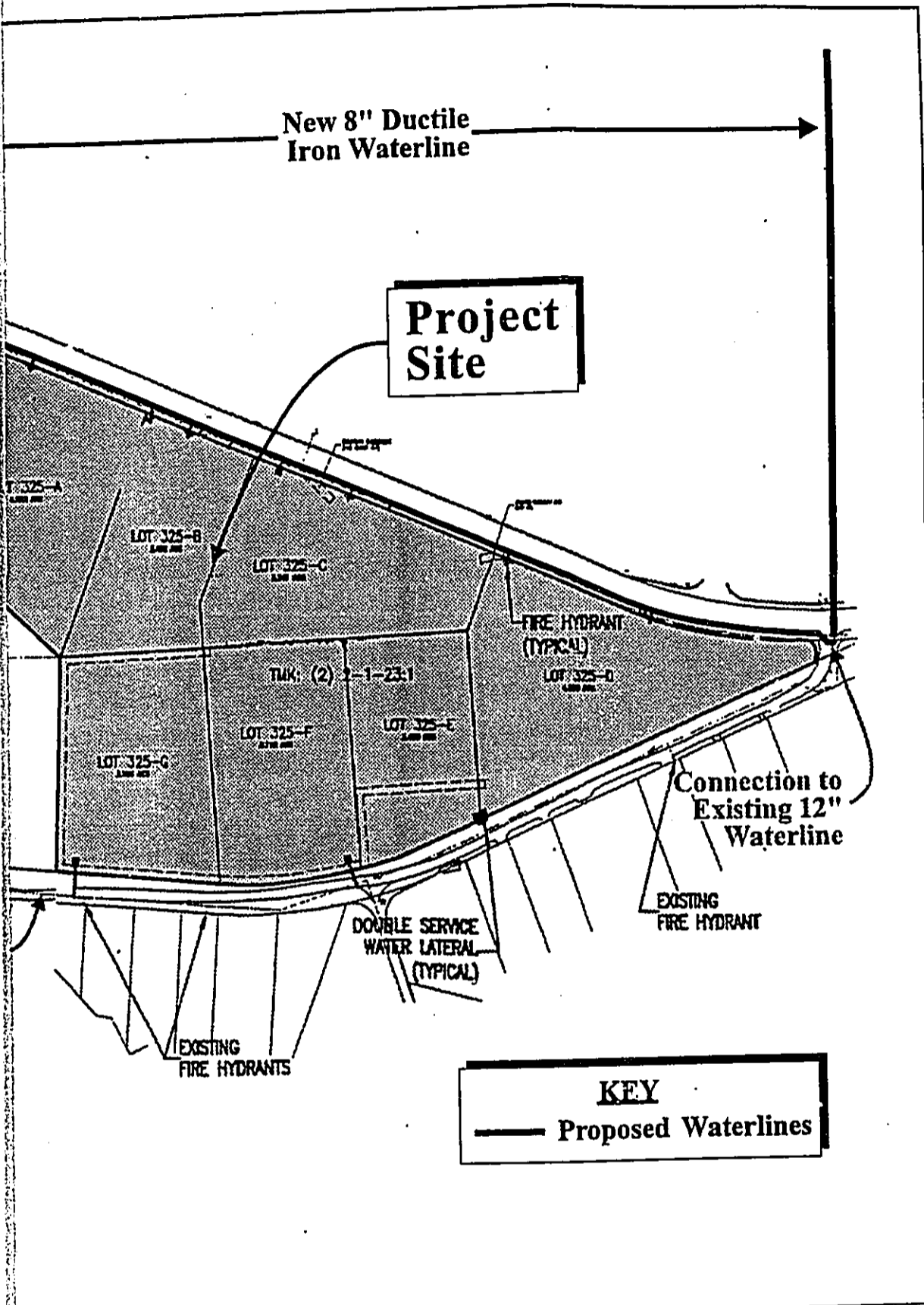
Source: Austin, Trutsumi & Associates, Inc.

Figure 4



Subdivision of Parcel MF-21  
Proposed Water System Improvements

Prepared for: Lucky Seven Development, LLC



New 8" Ductile Iron Waterline

Project Site

LOT 325-B

LOT 325-C

FIRE HYDRANT (TYPICAL)

TWK: (2) 1-1-23-1

LOT 325-D

LOT 325-G

LOT 325-F

LOT 325-E

Connection to Existing 12" Waterline

EXISTING FIRE HYDRANT

DOUBLE SERVICE WATER LATERAL (TYPICAL)

EXISTING FIRE HYDRANTS

**KEY**  
 — Proposed Waterlines

Parcel MF-21  
 System Improvements

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRAGA, INC.

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within the roadway right-of-way to provide electrical service to the proposed subdivision.

The proposed improvements are estimated to cost approximately \$1.0 million; construction of the improvements is anticipated to take about five (5) months. The proposed subdivision will be developed in a single phase, with construction expected to commence upon the receipt of all applicable regulatory permits and approvals.

Since the proposed action involves the use of County lands (roadway rights-of-way) for the installation of new utility lines, an Environmental Assessment (EA) has been prepared as required by Chapter 343, Hawaii Revised Statutes.

# ***Chapter II***

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***Description of the  
Existing Environment***

## **II. DESCRIPTION OF THE EXISTING ENVIRONMENT**

### **A. PHYSICAL ENVIRONMENT**

#### **1. Surrounding Land Use**

The MF-21 site is located in Wailea, a resort-residential master-planned community. Generally, land uses in Wailea provide for hotel, multi-family, single-family, business/commercial and recreational activities. These land uses are exemplified by those uses in proximity of the subject property.

Existing surrounding land uses to the east of the project site are typified by the Diamond Resort and the Wailea Resort's Emerald Golf Course. Palauea Beach and several single-family dwellings along Old Makena Road define land uses to the west of the site, while the Kea Lani Hotel and Polo Beach Club condominium reflect uses to the north. Vacant lands designated as Project District 8, lie to the immediate north of the subject property.

Along the coastline and beyond the Kea Lani Hotel to the north lie other hotel properties such as the Four Seasons Resort-Maui, Grand Wailea Resort Hotel & Spa, Wailea Outrigger Resort, and the Renaissance Wailea Beach Resort. Multi-family land uses in the area include the Palms at Wailea, the Grand Champion Villas, and the Wailea Elua, Ekahi, and Ekolu condominiums. The Wailea Golf Villas, Wailea Golf Estates, Wailea Fairways, Wailea Pualani Estates, Wailea Kialoa, Wailea Highlands and Wailea Kai Subdivisions exemplify single-family development in the Resort, while the Shops at Wailea (currently under construction) as well as several restaurants and pro shops characterize business/commercial activities in the vicinity. A tennis center and the Resort's Blue Course and Gold Course comprise other recreational facilities in the area.

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2. Climate

Hawaii's tropical location accounts for uniform weather conditions throughout the year. Climatic conditions on Maui are characterized by mild and consistent year-round temperatures, moderate humidity, and steady northeasterly tradewinds. Variations in the island's weather are attributable to regional topographical and climatic conditions.

During the summer months, average high temperatures approach 90 degrees Fahrenheit, while low temperatures range from the mid- to upper 60's. The winter months are more temperate, with average highs and lows in the low 80's, and low 60's, respectively.

Annual rainfall distribution in the vicinity of the project site ranges between five (5) to fifteen (15) inches, with most of the precipitation occurring during the winter months between November and March. The months between April and October are generally drier, with measurements reflecting less than one-half inch of rainfall per month.

The northeast tradewinds prevail throughout most of the year. Wind speeds in the Kihei-Makena region range from ten (10) to fifteen (15) miles per hour during the afternoon. The winds typically diminish during the morning and evening, and are usually more persistent during summer than in winter. Between the months of October and April, storm-generated "Kona" winds from the south occasionally develop, bringing high winds and heavy rainfall.



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3. **Topography and Soil Characteristics**

The subject property is situated at the base of the southwestern flank of Haleakala and is characterized by topography that slopes at an average of 9 percent in a westerly direction. Onsite elevations range from about 10 feet above mean sea level (amsl) by Old Makena Road to approximately 116 feet amsl by Makena Alanui.

The existing topography of the site is characterized as uneven, with undulating topographic features creating ridges, depressions and mounds. Elevations generally decrease from north to south and east to west.

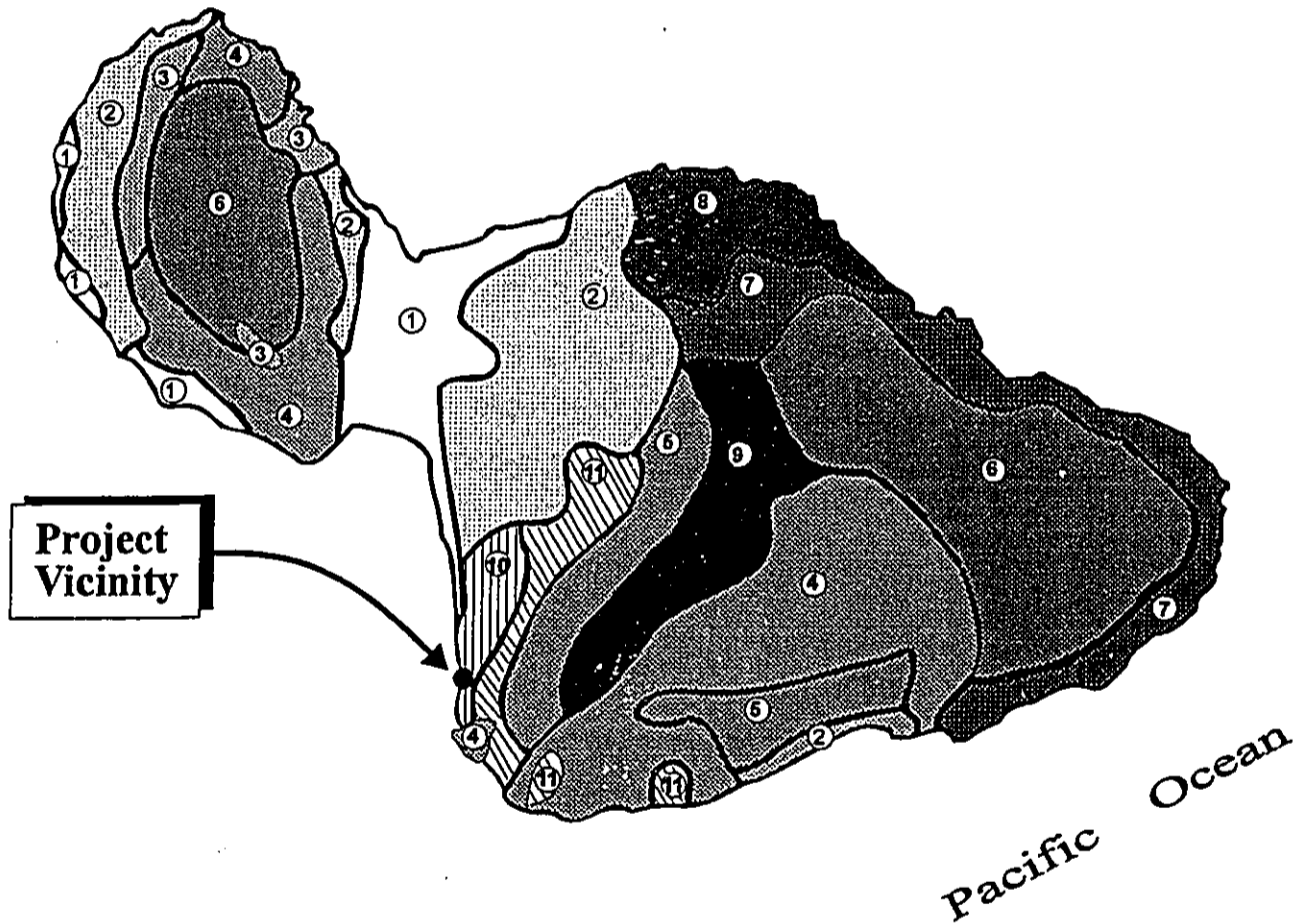
Underlying the subject property is the Keawekapu-Makena soil association. See Figure 5. This series is typically found on the low uplands, and consists of gently sloping to moderately steep, well-drained, medium-textured soils. The substratum ranges in depth from shallow to deep and is comprised of fragmental Aa lava.

The soil types underlying the subject property consist of Makena loam, stony complex, 3 to 15 percent slopes (MXC), and very stony land (rVS). See Figure 6. The Makena loam, stony complex (MXC) soil series is typically found on the lower leeward slopes of Haleakala, between Makena and Kamaole. This series consists of Makena loam and Stony land.

Stony land occurs on low ridges and comprises 30 to 60 percent of the complex. Makena loam occurs as gently sloping areas between the low ridges of Stony land. On the Makena part of the complex, permeability is moderately rapid, runoff is slow to

# LEGEND

- |  |                                     |
|--|-------------------------------------|
| ① Pulehu-Ewa-Jaucas association                | ⑦ Hana-Makaalae-Kailua association  |
| ② Waiakoa-Keahua-Molokai association           | ⑧ Pauwela-Haiku association         |
| ③ Honolua-Olelo association                    | ⑨ Laumaia-Kaipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keawakapu-Makena association      |
| ⑤ Puu Pa-Kula-Pane association                 | ⑪ Kamaole-Oanapuka association      |
| ⑥ Hydrandepts-Tropaquods association           |                                     |



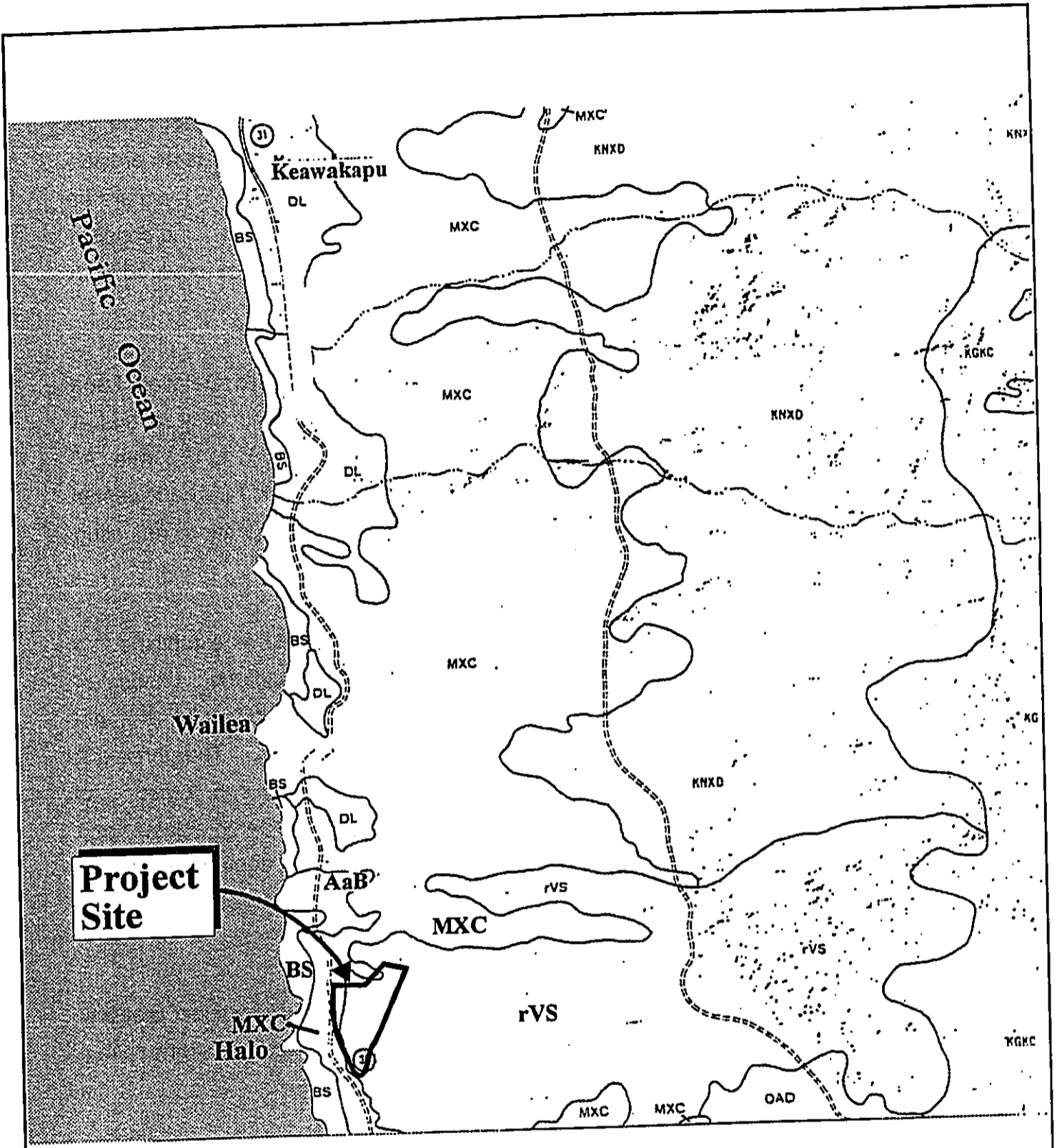
Source: USDA, Soil Conservation Service

**Figure 5**      **Subdivision of Parcel MF-21**      **NOT TO SCALE**  
**Soil Association Map**



Prepared for: Lucky Seven Development, LLC

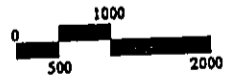
MUNEKIYO, ARAKAWA & HIRADA, INC.



Source: USDA, Soil Conservation Service

Figure 6

Subdivision of Parcel MF-21  
Soil Classifications



MUNEKIYO, ARAKAWA & HIRADA, INC.

Prepared for: Lucky Seven Development, LLC

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medium, and the erosion hazard is slight to moderate. On the Stony land part, permeability is very rapid and there is no erosion hazard. Very stony land, 7 to 30 percent slopes (rVS), occurs as large areas, mainly on the upper slopes of Haleakala, and consists of areas where 50 to 90 percent of the surface is covered with stones and boulders.

The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui establishes total land productivity ratings. A value system based on a declining scale from "A" to "E," with "A" representing the highest level of productivity and "E" the lowest is utilized. The MF-21 site is assigned an "E" designation, reflecting its low agricultural suitability characteristic.

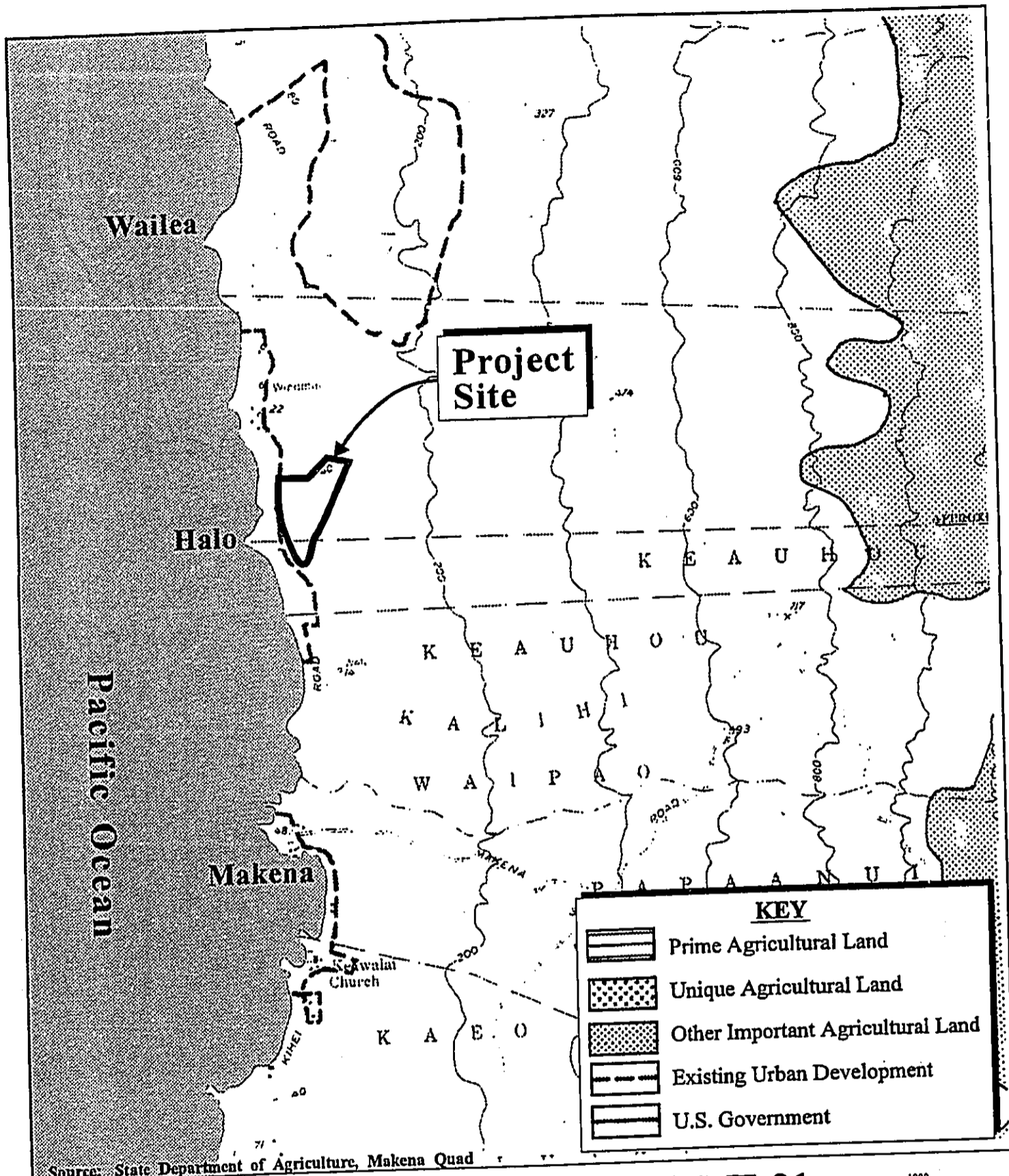
In 1977, the State Department of Agriculture established a classification system for identifying Agricultural Lands of Importance to the State of Hawaii (ALISH), primarily, but not exclusively on the basis of soil characteristics. The three (3) classes of ALISH lands are: "prime", "unique", and "other". As indicated by the ALISH map, the subject property adjoins land which has been developed for urban uses and does not fall within any of the agricultural land categories. See Figure 7.

4. **Flood and Tsunami Hazard**

As reflected by the Flood Insurance Rate Map, the subject property is situated within Zone C, which is defined as areas of minimal flooding. See Figure 8.

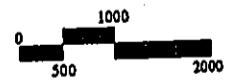
5. **Flora and Fauna**

A biological resources survey for the property was undertaken by Xamanek Researches in November, 1999. See Appendix A. The survey notes that the project area is known as a Coastal Dry



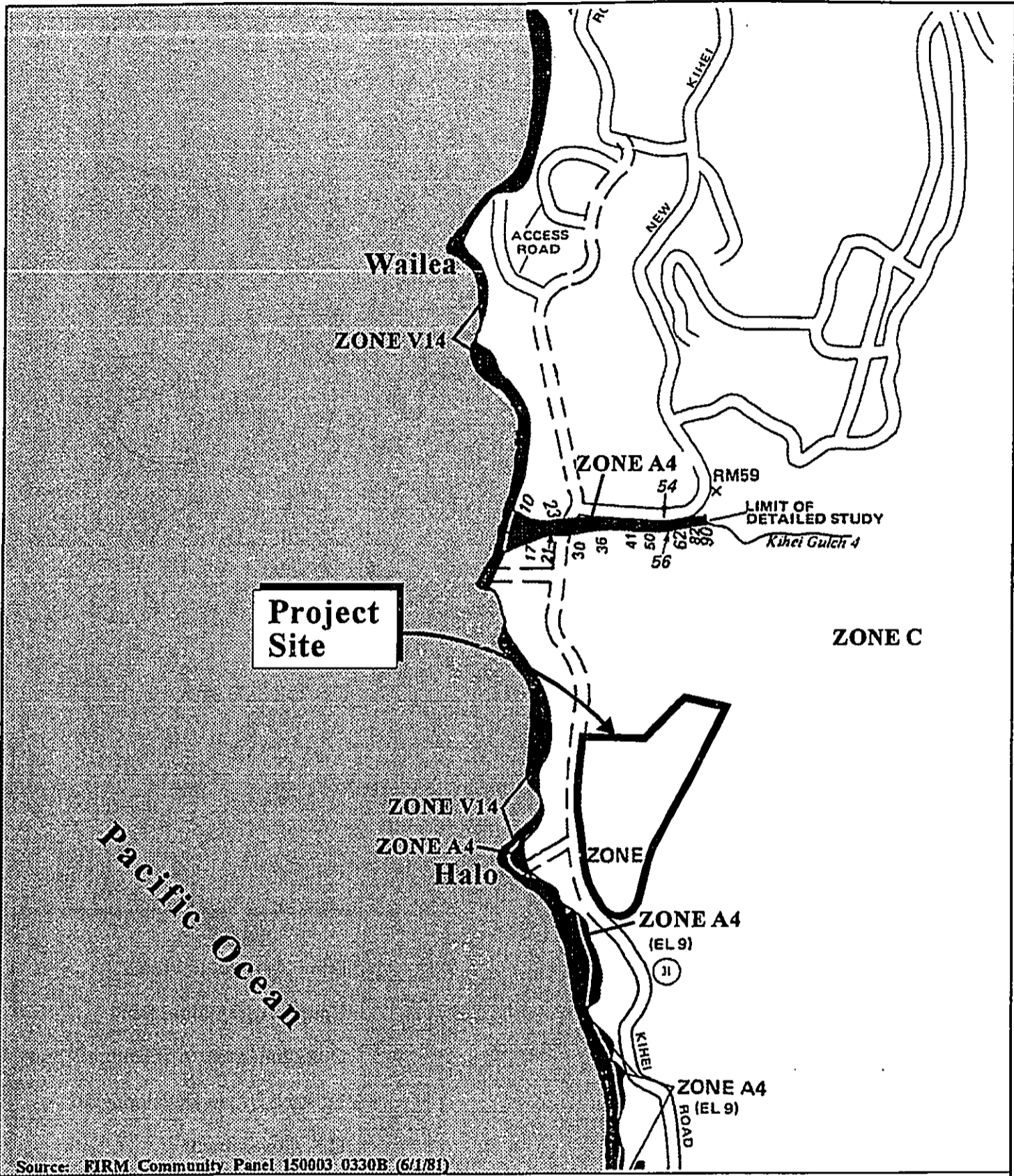
Source: State Department of Agriculture, Makena Quad

**Figure 7** Subdivision of Parcel MF-21  
ALISH Map



MUNEKIYO, ARAKAWA & HIRAGA, INC.

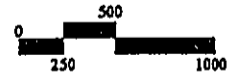
Prepared for: Lucky Seven Development, LLC



Source: FIRM Community Panel 150003 0330B (6/1/81)

Figure 8

Subdivision of Parcel MF-21  
Flood Insurance Rate Map



Prepared for: Lucky Seven Development, LLC

MUNEKIYO, ARAKAWA & HIRABA, INC.

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Forest. A canopy of kiawe and understory of buffelgrass, which are introduced species, dominate the area. Other alien species include haole koa, ki nehe, sweet basil, lantana tree tobacco, pua pihi, klu, prickly lettuce and currant tomato.

The only animal observed in the project area that has legal protection is the pacific golden plover, which was seen in flight. This species was not found on the site, however. It is possible that the endangered Hawaiian hoary bat flies and feeds in the area, although none were flushed from trees or observed onsite.

There were no plants found in the project area that has protection under Federal or State law. No species of avian or mammal was found residing in the project area that has protection under Federal or State law.

6. **Air Quality**

There are no point sources of airborne emissions in the immediate vicinity of the subject property. The air quality in the Wailea region is considered good, with existing airborne pollutants attributed to vehicle-generated exhaust from the region's roadways. Other sources of airborne pollutants typically include dust resulting from construction activities, and residual smoke from sugarcane harvesting operations occurring in the Central Maui plain. These sources are considered intermittent, and the generated particulates are quickly dispersed by the prevailing tradewinds.

7. **Noise Characteristics**

There are no permanent sources of noise which are considered to have an adverse impact on the project site. With the exception of

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temporary construction activities, vehicles traveling along Wailea Alanui, Makena Alanui, and Old Makena Road are the primary source of background noise in the area.

8. **Scenic and Open Space Resources**

Scenic resources to the east of the project site include Haleakala and the Wailea Resort's Emerald Golf Course, while to the south lies the cinder cone of Puu Olai. The ocean and the offshore islands of Lanai, Molokini, and Kahoolawe comprise scenic resources which are visible to the west of the site. In addition, Polo Beach and Palauea Beach are white sand beaches which are situated in the vicinity of the subject parcel.

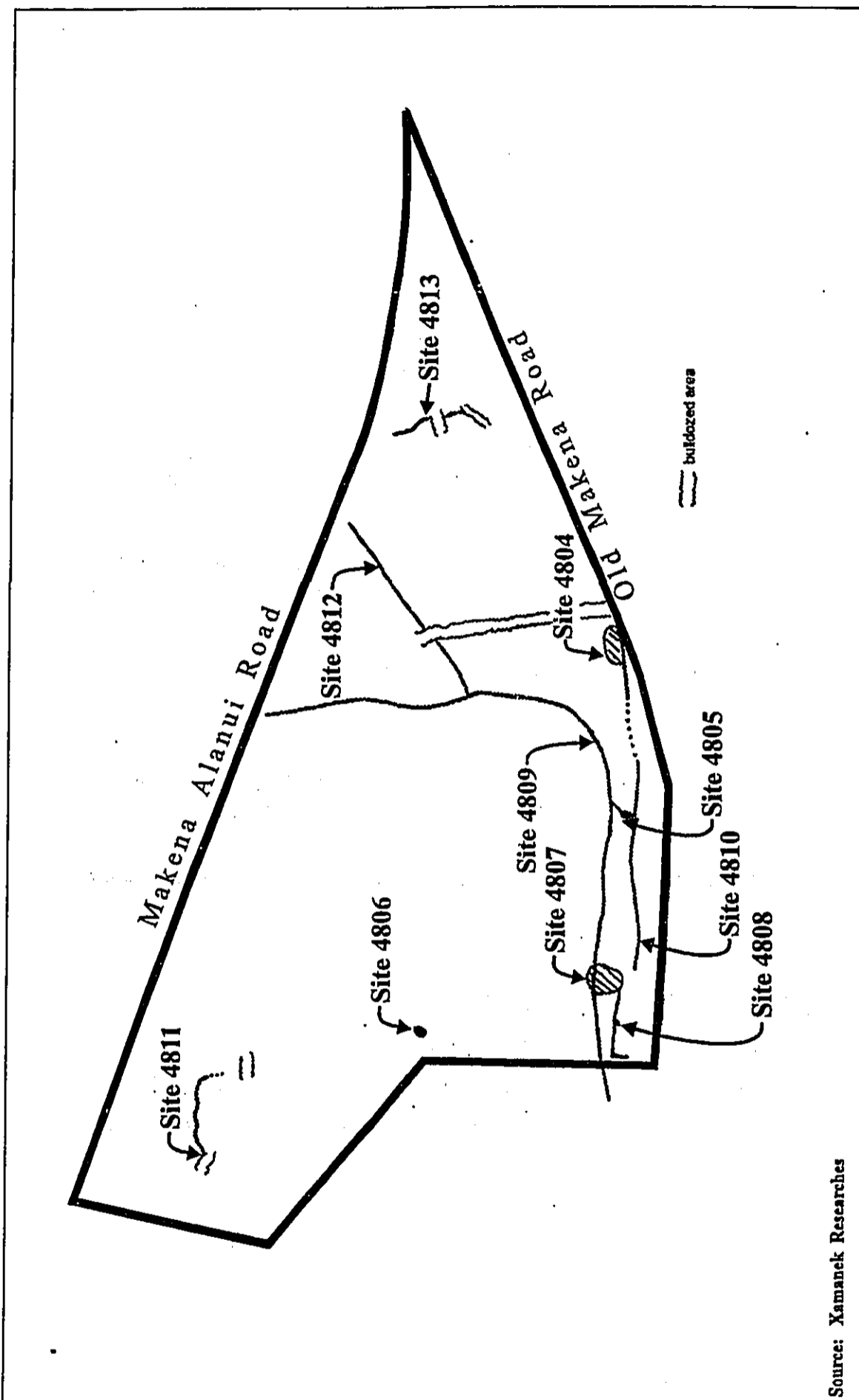
The subject property is not located within a scenic view corridor.

9. **Archaeological Resources**

An archaeological inventory survey of the property was conducted by Xamanek Researches in 1999. See Appendix "B". A total of ten (10) historic properties were located during the survey. The approximate locations of these sites, shown on Figure 9, are described below.

1. **Site 50-50-14-4804.** This site is a complex covering approximately 180 square meters and includes three (3) features. One (1) of these features is likely to have been a ceremonial structure, while the other two (2) features are deemed to be temporary habitation areas.
2. **Site 50-50-14-4805.** This site has been interpreted as an overhang structure that was likely used for temporary habitation purposes.
3. **Site 50-50-14-4806.** Also interpreted as an overhang structure, this site was probably used as a temporary





Source: Xamanek Researches

Figure 9



Subdivision of Parcel MF-21  
Locations of Archaeological Sites

NOT TO SCALE

Prepared for: Lucky Seven Development, LLC



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shelter.

4. Site 50-50-14-4807. This site includes a low concentration of surface scatter of coral. While the function of this site is unclear, the presence of beach coral suggests its possible use as a ceremonial area.
5. Site 50-50-4808. Consisting of a small overhang, this site was probably used as a temporary shelter.
6. Site 50-50-14-4809. This well constructed wall is located along the *ahupua'a* boundary between Palauea and Keauhou.
7. Site 50-50-14-4810. This wall site is interpreted as an animal containment wall which is associated with cattle ranching.
8. Site 50-50-14-4811. This wall segment has been impacted by previous bulldozing activities. The site is interpreted as an animal containment wall.
9. Site 50-50-14-4812. A wall located in the southeastern portion of the property, this site is interpreted as a cattle containment wall.
10. Site 50-50-14-4813. Identified as a cattle containment wall, this site has been truncated by previous bulldozing activities.

Portions or all of the sites have been impacted by post-contact activities.

**B. SOCIO-ECONOMIC ENVIRONMENT**

**1. Land Use and Community Character**

From a regional standpoint, the subject property is part of the Kihei-Makena Community Plan region which stretches from Maalaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline

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resources, the visitor-based economy has grown steadily over the past few years. The project site is adjacent to the master-planned resort of Wailea. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

2. **Population**

The population of Maui has exhibited relatively strong growth over the past decade, with the 1990 population reflecting a count of 91,361, a 45.4 percent increase over the 1980 population of 62,823 (DBEDT, March 1993). Growth on the island is expected to continue, with resident population projections for the year 2000 and 2010 estimated to be 112,349 and 133,459, respectively (Community Resources, Inc., January, 1994).

Just as the island's population has grown, the resident population of the Kihei-Makena region has increased in the last two decades. Population gains were especially pronounced in the 1970's as the rapidly developing visitor industry attracted many new residents. The 1990 resident population of the Kihei-Makena region was approximately 15,365. Regional projections for the years 2000 and 2010 reflect an estimated population of 20,092 and 24,846, respectively. Compared to 1990, these estimates reflect increases of 30.7 percent and 61.7 percent for the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994).

3. **Economy**

The economy of Maui is heavily dependent upon the visitor industry. In 1996, Maui was frequented by 2.3 million visitors (Maui

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County Data Book 1998). The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major Resort destination areas. The Four Seasons Resort-Maui, the Grand Wailea Resort Hotel & Spa, and the Kea Lani Hotel have continued to reinforce the region's status as a premier resort destination.

In 1990, employment in the hotel industry accounted for 16 percent, or 8,500 of Maui's 51,756 total jobs. The island's hotel industry employment is projected to increase to 9,299 and 10,468 in the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994). Within the Kihei-Makena region, employment in the hotel industry accounted for 39 percent, or 2,979 of the region's 7,574 total jobs. Projected hotel industry employment for this region is estimated to increase to 3,981 and 4,456 in the years 2000 and 2010, respectively. These estimates reflect gains of 44 and 43 percent for the years 2000 and 2010, respectively (Community Resources, Inc., January, 1994).

As of April 2000, the unemployment rate for Maui County and the island of Maui was 4.2 percent and 3.8 percent, respectively (State Department of Labor and Industrial Relations, June 2000).

**C. PUBLIC SERVICES**

**1. Police and Fire Protection**

The Maui Police Department (MPD) headquarters is located at its Wailuku Station. The Wailuku Station, which services the Kihei-Makena subdistrict, is approximately fifteen (15) miles northeast of Wailea, while the Department's Kihei substation is located in the Kihei Town Center, about three (3) miles north of the subject

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parcel. The Department's Kihei patrol covers the Kihei-Makena region.

Fire prevention, protection, and suppression services are provided by the Maui Fire Department's (MFD) Kihei Station situated approximately three (3) miles north of the project site.

2. **Medical Facilities**

Maui Memorial Medical Center, the only major medical facility on the island, is approximately fifteen (15) miles northeast of the project site. This State-operated hospital provides acute, emergency, and general care services. Several Kihei clinics, and dental and medical offices provide local health care services for Kihei-Makena residents and visitors.

3. **Recreational Facilities**

Many diverse recreational opportunities are available within the vicinity of the project site. Recreational facilities include the Wailea Resort's three (3) championship golf courses and its eleven (11) court tennis center. A number of excellent, white sand beaches in the vicinity provide opportunities for diving, fishing, kayaking, surfing, swimming, and windsurfing. Beaches within proximity of the subject parcel include Palauea Beach, which is situated makai of the project site, and Polo Beach, which fronts the Kea Lani Hotel and the Polo Beach Club Condominium.

Over 90 percent of the Kihei-Makena region's parks are either directly on a beach, or across the street from a beach. To the north, the Kihei area contains eight (8) regional and three (3) sub-regional public parks. Beyond Wailea, to the south, are three (3)

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public parks, including Makena State Park's Big Beach and Little Beach.

In addition, the County's new Kihei Community Center complex was recently completed and provides a community center, swimming pool, and athletic playfields.

**4. Schools**

The State Department of Education (DOE) operates three (3) public schools in the Kihei-Makena region. Kihei Elementary School, Kamali'i Elementary School and Lokelani Intermediate School are comprised of approximately 700, 700 and 800 students, respectively. Kihei Elementary School and Kamali'i Elementary School provide educational services for students from Kindergarten to Grade 5, while Lokelani Intermediate School provides instruction for students from Grades 6 to 8. The schools are located within the central Kihei area, north of the project site.

Students enrolled in Grades 9 to 12 attend Maui High School in Kahului, approximately fifteen (15) miles north of the project site.

**5. Solid Waste**

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews are disposed at the County's 55-acre Central Maui Landfill located four (4) miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

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**D. INFRASTRUCTURE**

**1. Roadways**

Access to the subject parcel is presently provided by Makena Alanui and Old Makena Road.

Makena Alanui is a two-lane, undivided, north/south County collector roadway serving the Makena Resort and beyond and has a posted speed limit of 30 mph in the vicinity of the project site.

Old Makena Road has a posted speed limit of 10 mph and is classified as a minor agricultural collector roadway by the County.

**2. Water**

There are no water system improvements located on the project site. See Appendix C. The water system in the area consists of 12-inch waterline located within Old Makena Road. This 12-inch line serves properties along the makai (west) side of Old Makena Road. A 30-inch transmission line is also found within Makena Alanui, along the eastern boundary of the property.

**3. Wastewater**

The Wailea region is served by a collection system of gravity lines which conveys wastewater flows in a makai (westerly) direction towards four (4) wastewater pump stations serving Wailea.

From a regional standpoint, wastewater conveyed to these pump stations are pumped via force mains in a northerly direction to other pump stations along South Kihei Road until reaching Pump Station No. 6, located just east of Kalama Park in Kihei. From Pump Station No. 6, all wastewater collected are pumped via force

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mains in an easterly direction towards the Kihei Wastewater Reclamation Facility, located just south of and adjacent to the Silversword Golf Course, for treatment and disposal. The design capacity of the Kihei Wastewater Reclamation Facility is 8.0 million gallons per day (MGD).

The project site is undeveloped and does not generate any wastewater flow. Refer to Appendix C. There are no wastewater system improvements situated on the site. The existing sewer system in the vicinity of the site includes a 6-inch force main which runs within Makena Alanui, east of the property. There is no sewer system within Old Makena Road fronting the property.

4. **Drainage**

Currently, surface runoff within the project site generally flows in a westerly direction via several drainageways traversing the parcel. Refer to Appendix C. The runoff continues in a westerly direction over Old Makena Road and several properties and then outlets into the ocean.

There are several drainage structures located within the project site that all serve to drain adjacent properties to the north and east. Culverts along Makena Alanui provide drainage for the Wailea Emerald Course and Wailea Blue Golf Course Clubhouse as well as properties upstream from these facilities.

Drainage structures along Makena Alanui consist of a 60-inch culvert which release runoff onto the northeast corner of the project site. There are also three (3) 66-inch, one (1) 24-inch, and one (1) 18-inch culverts which discharge flows into the east central portion



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of the project site. A separate 18-inch culvert provides a discharge point at the southeast corner of the site.

Two (2) major drainageways traverse the project site in a westerly direction. First, flows from the 60-inch culvert (at the northeast corner of the site) follows a westerly path through the property before turning north towards the neighboring property (TMK 2-1-23:02). The second drainageway runs through the east central portion of the project site and routes stormwater discharged onto the site by the three (3) 66-inch culverts along Makena Alanui. The discharge from this set of culverts follow a defined drainage path, into a natural depression adjacent to Old Makena Road. Overflow from this depression sheetflows over Old Makena Road to the ocean.

**5. Electrical, Telephone and CATV Systems**

Electrical, telephone, and cable television (CATV) services to the Wailea region are provided by Maui Electric Company, GTE Hawaiian Tel and Chronicle Cablevision, respectively.

# ***Chapter III***

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## ***Potential Impacts and Mitigation Measures***

### **III. POTENTIAL IMPACTS AND MITIGATION MEASURES**

#### **A. IMPACTS TO THE PHYSICAL ENVIRONMENTAL**

##### **1. Surrounding Uses**

The proposed subdivision is not anticipated to have an adverse impact on surrounding land uses. The low density nature of the project (7 lots on 23.1 acres) is considered compatible and complementary with existing surrounding uses.

##### **2. Flora and Fauna**

As previously indicated, a biological resources survey for the property was undertaken by Xamanek Researches in 1999. Refer to Appendix A. There are no known sensitive habitats or rare, endangered or threatened species of flora and fauna on the project site. Accordingly, the proposed action is not considered to have an adverse impact upon these environmental features.

##### **3. Archaeological Features**

As previously indicated, an archaeological inventory survey of the property was prepared by Xamanek Researches in 1999. Refer to Appendix B.

The survey recommended in-place preservation for four (4) of the ten (10) sites found on the property. These are Sites 4804, 4805, 4806 and 4809. Site 4804 is considered significant for its information content, contains a probable ceremonial structure, and retains cultural importance. Sites 4805 and 4806 are good examples of near-coastal rock overhang shelters in this part of Maui, and should be preserved. Site 4809 is a very good example of a faced, core-filled wall which appears to mark the ahupua'a

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boundary. In-place preservation is recommended for as much of this wall as possible. Limited data recovery is recommended for any section of this long wall that may need to be removed.

The six (6) remaining sites are no longer considered to be significant for their information content. Consequently, no further archaeological work is recommended for Sites 4807, 4808, and 4810 through 4813.

In correspondence dated May 4, 2000, the State Historic Preservation Division (SHPD) accepted the findings of the archaeological inventory survey for the subject property. See Appendix B-1. The SHPD concurred with the recommendations of the survey regarding the in-place preservation of Sites 4804, 4805, 4806, and 4809 and also recommended that an archaeological preservation plan for these sites be submitted for its review and approval. Accordingly, a preservation plan for these sites was prepared and submitted to the SHPD for review and approval.

In correspondence dated October 24, 2000, the SHPD indicated that a few minor changes to the plan are needed, including the results of consultation with the native Hawaiian community. See Appendix B-2. As a result of the SHPD's comments, the archaeological preservation plan was updated in accordance with the comments of the SHPD and as a result of consultation with members of Hui Alanui O Makena and long-time Hawaiian residents of the Makena Community Association. See Appendix B-3. It should be noted that the input provided by these groups has been incorporated into the revised preservation plan. In a letter dated November 20, 2000, the SHPD indicated that an acceptable

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preservation plan is in place and that the implementation of the plan will ensure that there will be "no adverse effect" to the significant historic sites on the property. See SHPD letter in Chapter XI.

Should any inadvertent significant archaeological features, cultural deposits or human burials be encountered during construction activities, work will cease in the immediate area of the find and the find shall be protected from further damage. The SHPD will be immediately notified to determine appropriate mitigation measures.

4. **Air Quality and Noise**

*The proposed action will involve construction activity which may be a source of airborne emissions and noise. Construction noise is attributable to material hauling trucks and operation of onsite equipment during the building period. Dust generated from the construction activities are generally attributed to clearing and grubbing activities. Construction equipment may also be a source of airborne emissions which would otherwise not be present at the site. To mitigate the impacts of dust during construction, Best Management Practices (BMPs) shall be incorporated in site construction activities in accordance with Chapter 20.08 of the Maui County Code. In addition, the contractor shall be responsible for properly maintaining vehicle and equipment engines to ensure their efficient operations. Finally, the contractor shall be required to comply with Hawaii Administrative Rules, Chapter 11-46 relating to "Community Noise Control". Construction activity will occur during daylight work hours. In the long term, the proposed action will not result in any adverse air quality or noise impacts.*

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5. **Scenic and Open Space Resources**

The proposed development is anticipated to complement the existing character of the surrounding environs. Design guidelines for the project will assure consistency in architectural forms that are in concert with the high quality standards of the Wailea Resort.

The proposed project is not anticipated to have an adverse impact upon views or scenic areas.

**B. IMPACTS TO THE SOCIO-ECONOMIC ENVIRONMENT**

1. **Land Use and Community Character**

The proposed development is anticipated to complement existing residential, resort, business/commercial and recreational uses in the Wailea resort. From a land planning standpoint, the subject property provides an appropriate location for a low density residential development. The proposed project is in keeping with the general low density theme found in the resort and along Old Makena Road. In this regard, the proposed action is not anticipated to have an adverse impact upon surrounding uses and is considered compatible with existing land uses in the vicinity.

2. **Population and Local Economy**

The proposed action is anticipated to have a positive economic effect during the construction phase of development as expenditures for construction and related support services are made. In the longer term, the proposed project will contribute to the local economy through the payment of property taxes and through the purchases of goods and services by the subdivision's residents.

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The proposed project is not anticipated to have a significant impact on population.

**C. IMPACTS TO PUBLIC SERVICES**

**1. Police, Fire and Medical Services**

The proposed project is not anticipated to affect the service capabilities of police, fire and emergency medical operations. The project will not extend the existing service area limits for emergency services.

**2. Recreational Services and Educational Services**

The proposed project is not considered significant in terms of population generation. As such, the proposed improvements will not place any new demand on recreational activities. School enrollments or locations will not be affected by the proposed action. As a result, no impacts to educational services are anticipated.

**3. Solid Waste Management**

A solid waste management plan for the disposal of cleared and grubbed materials resulting from construction activities will be developed in coordination with the Department of Public Works and Waste Management's Solid Waste Division. The seven (7) lot subdivision, once completed, is not anticipated to have an adverse impact upon collection systems or landfill capacity.

**D. IMPACTS TO INFRASTRUCTURE**

**1. Roadways**

Access to Lots 325-A through 325-C in the proposed subdivision will be provided from Makena Alanui, while access to Lots 325-D through 325-G will be provided from Old Makena Road. There will be no internal roadways within the subdivision.

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A traffic study for the proposed seven (7) lot subdivision was prepared in November 1999 by Austin, Tsutsumi & Associates, Inc. See Appendix D. The study notes that an October 1997 Traffic Impact Analysis Report (TIAR) documented the impacts for the revised Wailea Master Plan, including traffic generated by the project site. It should be noted that the 1997 TIAR assumed that the project site would be developed as a 130-unit residential condominium complex.

The November 1999 traffic study indicates that the estimated total peak hour traffic volume generated by the proposed subdivision is six (6) trips during the AM peak hour of traffic and eight (8) trips during the PM peak hour of traffic. The traffic study notes that these volumes are not measurable in determining the impacts on the adjacent roadways and fall within the day-to-day variations in traffic flow during the peak hours of traffic.

The traffic study concludes that the adjacent roadways will not be significantly impacted by traffic from the proposed subdivision.

2. **Water**

Domestic water and fire flow for the proposed project will be provided by the County's potable water system which serves the region. Water service to the proposed subdivision will be provided by the existing 12-inch waterline within Old Makena Road and by a proposed waterline within Makena Alanui. Refer to Appendix C. The new waterlines which will be installed in connection with the project will "loop" the water system surrounding the subject property and the neighboring Palauea Subdivision parcel to the north. Water service to Lots 325-G through 325-D will be provided



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by water meters connected to the existing 12-inch waterline within Old Makena Road. The remaining three (3) lots (325-A through 325-C) along the eastern boundary of the project site will be serviced via the installation of the proposed waterline within Makena Alanui that will run parallel to the existing 30-inch water transmission main. This proposed waterline will connect to the existing 12-inch waterline at the intersection of Makena Alanui and Old Makena Road. The proposed water system improvements within the Makena Alanui right-of-way will involve the installation of an 8-inch waterline which will transition to a 4-inch waterline. Approximately 2,000 linear feet of 8-inch waterline will be installed along the frontage of the proposed seven (7) lot subdivision. At the northeast corner of the subdivision, the waterline will transition from 8- to 4-inches and extend northward for about 1,700 linear feet where it will connect to an existing 12-inch waterline at the Makena Alanui and Kaukahi Street intersection. To complete the "loop", a gap in the water system south of the Kaukahi Street and Old Makena Road intersection will be closed via the installation of approximately 350 linear feet of 12-inch waterline within the Old Makena Road right-of-way.

Estimated water demand for the proposed development is approximately 30,920 gallons per day (gpd). Refer to Appendix C. In this context, the project is not anticipated to adversely impact regional water service requirements. Water system requirements will be coordinated with the Department of Water Supply to ensure that adequate supply is available at the time of development.

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3. **Wastewater**

A new sewer system will be installed within the project site to provide sewer service to the subdivision's seven (7) lots. Refer to Appendix C. The subdivision's sewer system will be connected to the future sewer system for the adjoining Palauea Subdivision parcel to the north. This future sewer system will enable wastewater from the proposed seven (7) lot subdivision to gravity flow to a future sewer pump station situated in the southwestern quadrant of the Palauea Subdivision parcel. From the pump station, wastewater will be pumped through a future sewer force main in Kaukahi Street which will be connected to an existing sewer system in the vicinity of the Wailea Blue Golf Clubhouse.

The estimated wastewater flow generated from the project is approximately 4,900 gpd. While adequate treatment capacity for the proposed development is available, coordination will be undertaken with the Department of Public Works and Waste Management, Wastewater Reclamation Division, during the County's subdivision review and approval phase of the project.

4. **Drainage**

Grading for the project will be minimal and involve excavation and embankment for the construction of subdivision improvements. Refer to Appendix C. The archaeological features which are located throughout the site will not be affected by the proposed improvements. Erosion control measures and Best Management Practices (BMPs) will be implemented during the construction period to minimize soil loss and erosion. A detailed grading and erosion control plan will be prepared in accordance with County standards and will be submitted to the County Department of Public

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Works and Waste Management for review and approval. In addition, an application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health for review and approval, as required.

Onsite runoff will be allowed to flow toward the west per the existing condition. Existing depressions along Old Makena Road will be incorporated into the overall drainage plan to prevent any change to the existing runoff scheme. Existing onsite runoff has been estimated at 35.4 cfs based on a 50 year, 1 hour storm recurrence interval. Post-development runoff for the 50 year, 1 hour storm recurrence interval is calculated at 40.1 cfs. This increase of 4.7 cfs will be routed into and controlled by the retention basin (existing depressions) described above.

Offsite runoff will be allowed to flow through existing drainageways within and through the property.

The proposed subdivision improvements will be designed to produce no adverse effects to existing facilities and to the surrounding environment. All improvements will conform to and be designed in accordance with applicable regulatory requirements.

**5. Electrical, Telephone, and CATV Systems**

Existing electrical lines are suspended from utility poles along the subject property's frontage on Old Makena Road. To provide electrical service to the proposed subdivision, the existing overhead power lines will be placed underground within the Old Makena Road right-of-way. Refer to Appendix C.

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The installation of electrical, telephone, and cable television systems for the seven (7) lot subdivision will be coordinated with Maui Electric Company, GTE Hawaiian Tel, and Chronicle Cablevision, respectively.

# ***Chapter IV***

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***Relationship to Governmental  
Plans, Policies and Controls***

#### **IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS**

##### **A. STATE LAND USE DISTRICTS**

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation".

The project site is within the "Agricultural" District. See Figure 10. The proposed action involves uses of the property which are compatible with its "Agricultural" designation.

##### **B. GENERAL PLAN OF THE COUNTY OF MAUI**

The General Plan of the County of Maui (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development".

The proposed action is in keeping with the following General Plan objectives and policies:

##### **Objectives:**

- To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.



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- To preserve for present and future generations the opportunity to know and experience the arts, culture and history of Maui County.
  - To see that all developments are well designed and in harmony with their surroundings.

**Policies:**

- Provide and maintain a range of land use districts sufficient to meet the social, physical, environmental and economic needs of the community.
- Identify and preserve significant historic and cultural sites.
- Encourage the construction of housing in a variety of price ranges and geographic locations.
- Encourage the identification, restoration, and preservation of important archaeological, historical, and cultural sites.

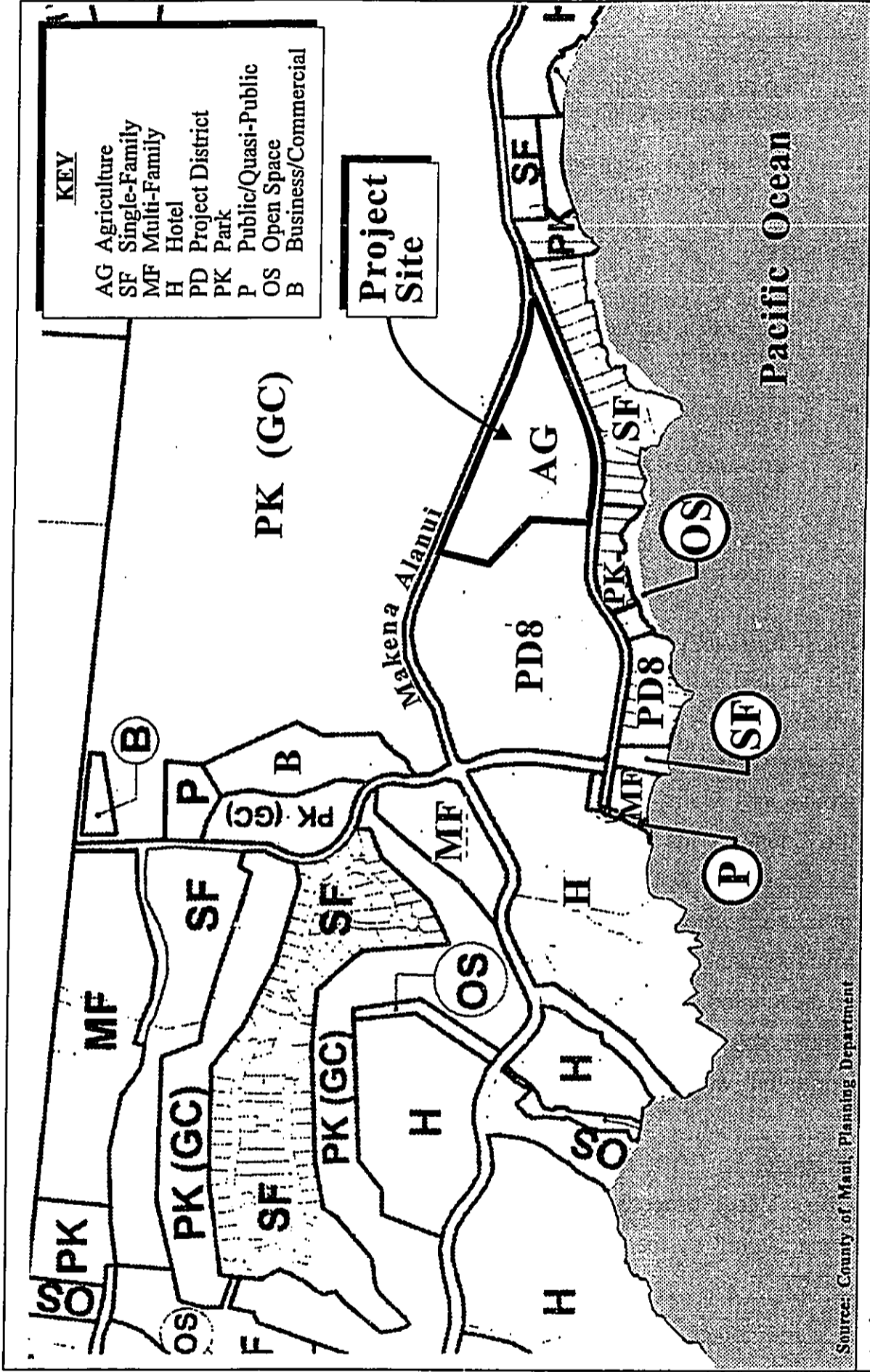
**C. KIHEI-MAKENA COMMUNITY PLAN**

The subject parcel is located in the Kihei-Makena Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the General Plan of the County of Maui. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region. Land use guidelines for the region are established by the Kihei-Makena Community Plan. The project site is designated "Agriculture" in the Kihei-Makena Community Plan. See Figure 11. The proposed development of the subject property is consistent with its Community Plan land use designation.

**D. ZONING**

The subject property is identified by TMK 2-1-23:01 and is zoned "Agricultural" by the County of Maui.





**Figure 11**  
 Subdivision of Parcel MF-21  
 Kihei-Makena Community Plan Land Use Designations



Prepared for: Lucky Seven Development, LLC

MUNEKIYOSHI ARAKAWA & MIBAGA, INC.

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**E. SPECIAL MANAGEMENT AREA**

The subject property is located within the County of Maui's Special Management Area. Pursuant to Chapter 205A, Hawaii Revised Statutes, and the Rules and Regulations of the Maui Planning Commission of the County of Maui, projects located within the SMA are evaluated with respect to SMA objectives, policies and guidelines.

This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

**(1) Recreational Resources**

**Objective:**

Provide coastal recreational opportunities accessible to the public.

**Policies:**

- (A) Improve coordination and funding of coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
  - (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
  - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

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- (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
  - (v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
  - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
  - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
  - (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

**Response:** The proposed project is not anticipated to affect existing coastal recreational resources. Access to the shoreline areas will remain unaffected by the proposed action.

(2) **Historic Resources**

**Objective:**

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

**Policies:**

- (A) Identify and analyze significant archeological resources;
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

- 
- (C) Support state goals for protection, restoration, interpretation, and display of historic resources.

**Response:** The subject property contains ten (10) archaeological sites. Of these sites, four (4) sites have been recommended for preservation in place. An archaeological preservation plan for these four (4) sites has been prepared and was recently submitted to the State Historic Preservation Division (SHPD) for review and approval. Should archaeological remains be encountered during construction, work will cease in the area of the find and SHPD will be contacted to establish an appropriate mitigation strategy.

(3) **Scenic and Open Space Resources**

**Objectives:**

Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

**Policies:**

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
- (D) Encourage those developments which are not coastal dependent to locate in inland areas.

**Response:** The proposed project will be developed to ensure visual compatibility with the surrounding environs. The project is not anticipated to impact coastal and scenic open space resources.

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(4) **Coastal Ecosystems**

**Objective:**

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

**Policies:**

- (A) Improve the technical basis for natural resource management;
- (B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

**Response:** Improvements to the subject property are not expected to adversely impact coastal ecosystems. Drainage improvements shall be engineered to ensure that coastal water impacts are mitigated. Mitigative measures for soil erosion control will be implemented during and after construction.

(5) **Economic Uses**

**Objectives:**

Provide public or private facilities and improvements important to the State's economy in suitable locations.

**Policies:**

- (A) Concentrate coastal dependent development in appropriate areas;

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- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
  - (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
    - (i) Use of presently designated locations is not feasible;
    - (ii) Adverse environmental effects are minimized; and
    - (iii) The development is important to the State's economy.

**Response:** The project will support short-term construction and construction-related jobs. The project area does not abut the shoreline and does not affect coastal development necessary to the State's economy. The project is in keeping with the land use patterns established by the Kihei-Makena Community Plan.

(6) **Coastal Hazards**

**Objectives:**

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

**Policies:**

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

- 
- (D) Prevent coastal flooding from inland projects; and
  - (E) Develop a coastal point and nonpoint source pollution control program.

**Response:** The property lies within Zone "C", which is defined as areas of minimal flooding. It is noted that changes in drainage patterns are not anticipated with the construction of the proposed improvements and no adverse drainage impacts to surrounding properties are anticipated. A drainage and soil erosion control plan shall be prepared and submitted in connection with the project's subdivision review and approval process. The proposed drainage measures which will be implemented with the proposed project will ensure that downstream and adjacent properties will not be adversely impacted.

(7) **Managing Development**

**Objectives:**

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

**Policies:**

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

**Response:** In compliance with Title 19 of the Maui County Code, the Rules of Practice and Procedures for the Maui Planning

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Commission and the Special Management Area Rules for the Maui Planning Commission, required documentation for the project will be filed with the County Department of Planning and will undergo public review, public hearing, and decision by the Maui Planning Commission.

(8) **Public Participation**

**Objectives:**

Stimulate public awareness, education, and participation in coastal management.

**Policies:**

- (A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
- (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

**Response:** Opportunity for public awareness, education and participation pertaining to significant resource attributes of the coastal zone is provided through the Special Management Area procedures. A public hearing is required as part of the process.

(9) **Beach Protection**

**Objectives:**

Protect beaches for public use and recreation.



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**Policies:**

- (A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
- (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

**Response:** The proposed project will not impact shoreline activities. No adverse impact to beach processes is anticipated.

**(10) Marine Resources**

**Objectives:**

Implement the State's ocean resources management plan.

**Policies:**

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- (D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

- 
- (F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

**Response:** Improvements to the subject property will not adversely impact ocean resources. The proposed project is not anticipated to affect marine and coastal resources.

# **Chapter V**

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***Summary of Environmental  
Effects Which Cannot  
Be Avoided***

**V. SUMMARY OF ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED**

The proposed project will result in unavoidable construction-related impacts which include noise-generated impacts occurring from the proposed improvements. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions discharged by construction equipment.

The proposed project is not anticipated to create any significant, long-term adverse environmental effects.

# **Chapter VI**

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## ***Alternatives Analysis***

## **VI. ALTERNATIVES ANALYSIS**

### **A. ALTERNATIVE A**

Alternative A represents the proposed action. This alternative provides for the development of a 7-lot agricultural subdivision on a 23.1-acre parcel. The proposed development is consistent with the project site's land use designation in the Kihei-Makena Community Plan. The proposed development is in keeping with existing surrounding development in the area.

### **B. ALTERNATIVE B**

Alternative B is the no action or no build alternative. The project site is undeveloped and primarily vegetated with kiawe and buffel grass. The site also contains some known archaeological sites. The no action or no build alternative would involve a continuation of the underutilized and unmaintained nature of the property. The no action alternative is not considered a viable scenario in the context of the property's established land use allocation set forth by the Kihei-Makena Community Plan.

### **C. ALTERNATIVE C**

A number of site design alternatives were evaluated to ensure that site development constraints were adequately addressed. In particular, the siting and configuration of the proposed lots were evaluated with respect to site topographic and drainage conditions. The proposed site plan is considered optimum in terms of the foregoing criteria.

# ***Chapter VII***

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## ***Irreversible and Irretrievable Commitments of Resources***

**VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

The development of the subdivision would involve the commitment of land for the proposed action. However, this commitment is consistent with the land use established for the property by the Kihei-Makena Community Plan. There are no other significant irreversible and irretreivable commitment of resources associated with the proposed action.



# ***Chapter VIII***

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## ***Findings and Conclusions***

## **VIII. FINDINGS AND CONCLUSIONS**

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following analysis is provided:

1. **No Irrevocable Commitment to Loss or Destruction of any Natural or Cultural Resource Would Occur as a Result of the Proposed Project**

The proposed project will not result in any adverse environmental impacts. There are no known, endangered or threatened species of flora, fauna or avifauna located within the project site.

An archaeological preservation plan for the four (4) sites recommended for preservation in-place was recently submitted to the State Historic Preservation Division (SHPD) for review and approval. Should any artifacts or human remains be encountered during construction, work will stop in the immediate vicinity of the find and the SHPD will be immediately notified to establish an appropriate mitigation strategy.

2. **The Proposed Action Would Not Curtail the Range of Beneficial Uses of the Environment**

The proposed project and the commitment of land resources would not curtail the range of beneficial uses of the environment.

3. **The Proposed Action Does Not Conflict with the State's Long-term Environmental Policies or Goals or Guidelines as Expressed in Chapter 334, Hawaii Revised Statutes**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS). The proposed action is not contrary to the policies and guidelines set forth in Chapter 344, HRS.

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4. **The Economic or Social Welfare of the Community or State Would Not be Substantially Affected**

The proposed project would have a direct beneficial effect on the local economy during construction. In the long term, the proposed project will support the local economy through the contribution of salaries, wages, and benefits, as well as through the purchases of goods and services from local merchants and service providers.

5. **The Proposed Action Does Not Affect Public Health**

No impacts to the public's health and welfare are anticipated as a result of the proposed project.

6. **No Substantial Secondary Impacts, Such as Population Changes or Effects on Public Facilities are Anticipated**

No significant population changes are anticipated as a result of the proposed project.

From a land use standpoint, the proposed project is an enhancement of existing uses. The proposed project is intended to be compatible with surrounding properties, as well as properties in the Wailea Resort.

The proposed water and sewer improvements will be coordinated with the County and the developer of the adjoining Palaua Subdivision. No adverse impacts to water and wastewater capacities and facilities are anticipated. Onsite and offsite surface runoff are expected to be accommodated by the proposed drainage system improvements. The project is not expected to significantly impact public services such as police, fire, and medical services. Impacts upon educational, recreational, and solid waste collection and disposal facilities and resources are considered minimal.

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7. **No Substantial Degradation of Environmental Quality is Anticipated**

During the construction phase of the project, there will be short-term air quality and noise impacts as a result of the project. In the long term, effects upon air quality and ambient noise levels should be minimal. The project is not anticipated to significantly affect the open space and scenic character of the area.

No substantial degradation of environmental quality resulting from the project is anticipated.

8. **The Proposed Action Does Not Involve a Commitment to Larger Actions, Nor Would Cumulative Impacts Result in Considerable Effects on the Environment**

The proposed project will be developed in a single phase and does not involve a commitment to larger actions.

9. **No Rare, Threatened or Endangered Species or Their Habitats Would be Adversely Affected by the Proposed Action**

There are no rare, threatened or endangered species of flora, fauna, avifauna or their habitats on the subject property.

10. **Air Quality, Water Quality or Ambient Noise Levels Would Not be Detrimentially Affected by the Proposed Project**

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction-related activities. It is anticipated that construction will be limited to daylight working hours. Water quality is not expected to be affected.

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In the long term, the project is not anticipated to have a significant impact on air and water quality or ambient noise levels.

11. **The Proposed Project Would Not Affect Environmentally Sensitive Areas, Such as Flood Plains, Tsunami Zones, Erosion-prone Areas, Geologically Hazardous Lands, Estuaries, Fresh Waters or Coastal Waters**

The project is not located within and would not affect environmentally sensitive areas. The project site is not subject to flooding or tsunami inundation. Soils of the project site are not erosion-prone. There are no geologically hazardous lands, estuaries, or coastal waters within or adjacent to the project site.

12. **The Proposed Action Would Not Substantially Affect Scenic Vistas and Viewplanes Identified in County or State Plans or Studies**

The project site is not identified as a scenic vista or viewplane. The proposed project will not affect scenic corridors and coastal scenic and open space resources.

13. **The Proposed Action Would Not Require Substantial Energy Consumption**

The proposed project will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources. In the long term, the project will create an additional demand for electricity. However, this demand is not deemed substantive or excessive within the context of the region's overall energy consumption.

Based on the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

# ***Chapter IX***

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***List of Permits and Approvals***

## **IX. LIST OF PERMITS AND APPROVALS**

The following permits and approvals will be required prior to the implementation of the project.

### **State of Hawaii**

1. NPDES Permit (for stormwater discharge associated with construction activities)

### **County of Maui**

1. SMA Use Permit
2. Subdivision Approval
3. Construction Permits (Grubbing, Grading, Work to Perform on County Highway)

# **Chapter X**

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***Agencies Consulted During  
the Preparation of the Draft  
Environmental Assessment;  
Letters Received and Responses  
to Substantive Comments***



**X. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS**

The following agencies were consulted during the preparation of the Draft Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

1. Neal Fujiwara, Soil Conservationist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
210 Imi Kala Street, Suite 209  
Wailuku, Hawaii 96793-2100
2. George Young, Chief Regulatory Branch  
Department of the Army  
U.S. Army Engineer District, Hnl.  
Attn: Operations Division  
Bldg. T-1, Room 105  
Fort Shafter, Hawaii 96858-5440
3. Robert P. Smith  
Pacific Islands Manager  
U. S. Fish and Wildlife Service  
P.O. Box 50167  
Honolulu, Hawaii 96850
4. Gary Gill, Deputy Director  
Department of Health  
P.O. Box 3378  
Honolulu, Hawaii 96801
5. Herbert Matsubayashi  
District Environmental Health  
Program Chief  
State of Hawaii  
Department of Health  
54 High Street  
Wailuku, Hawaii 96793
6. Timothy Johns, Director  
State of Hawaii  
Department of Land and Natural  
Resources  
P. O. Box 621  
Honolulu, Hawaii 96809
7. Don Hibbard  
State of Hawaii  
Department of Land and Natural  
Resources  
State Historic Preservation  
Division  
601 Kamokila Blvd., Room 555  
Kapolei, Hawaii 96707
8. Robert Siarot, Maui District  
Engineer  
State of Hawaii  
Department of Transportation  
Highways Division  
650 Palapala Drive  
Kahului, Hawaii 96732
9. Colin Klppen, Deputy Administrator  
Office of Hawaiian Affairs  
711 Kapiolani Boulevard, Suite 500  
Honolulu, Hawaii 96813
10. Clayton Ishikawa, Chief  
County of Maui  
Department of Fire Control  
200 Dairy Road  
Kahului, Hawaii 96732
11. John Min, Director  
County of Maui  
Department of Planning  
250 South High Street  
Wailuku, Hawaii 96793
12. Charles Jencks, Director  
County of Maui  
Department of Public Works and  
Waste Management  
200 South High Street  
Wailuku, Hawaii 96793

- 
13. **Tom Phillips, Chief**  
**County of Maui**  
**Police Department**  
55 Mahalani Street  
Wailuku, Hawaii 96793
  
  14. **David Craddick, Director**  
**County of Maui**  
**Department of Water Supply**  
200 South High Street  
Wailuku, Hawaii 96793
  
  15. **Bill Overton**  
**Wailea Community Association**  
3750 Wailea Alanui, Suite F-21  
Kihei, Hawaii 96753
  
  16. **Rudy Luuwai**  
**Makena Homeowners Assoc.**  
5100 Makena Road  
Kihei, Hawaii 96753

# ***Comments***

---

JUL 28 2000



United States  
Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

210 Iml Kala St.  
Suite 209  
Wailuku, HI 96793

*Our People...Our Islands...In Harmony*

DATE: July 27, 2000

Mr. Glenn Tadaki, Planner  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki,

SUBJECT: Subdivision of Parcel MF-21; TMK: 2-1-23: 1

I would recommend that significant natural drainage ways leading into the subdivision be left intact and be part of the project. Maintenance of the drainage ways throughout is needed.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Neal S. Fujiwara".

Neal S. Fujiwara  
District Conservationist

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhikewe Building, Room 555  
501 Kamehale Boulevard  
Kapolee, Hawaii 96707

TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES  
JANET E. KAWELO

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

August 1, 2000

Mr. Glen Tadaki  
Munekiyo, Arakawa, & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

LOG NO: 25935  
DCO NO: 0007CD30

Dear Mr. Tadaki:

**SUBJECT: Chapter 6E-42 Historic Preservation Review of the Proposed  
Subdivision of Parcel MF-21  
Pala'uea Ahupua'a, Makawao District, Island of Maui  
TMK:2-1-23:001**

Thank you for your recent inquiry as to the status of the proposed subdivision of parcel MF-21.

We have recently reviewed and accepted the report documenting the archaeological inventory survey (Fredericksen 2000) which was conducted of the subject property (SHPD DOC NO: 005RC08/LOG NO: 25381). As you know, we requested a preservation plan for all four significant sites. We have recently received a copy of this preservation plan (Fredericksen 2000) and it is currently undergoing review. As soon as this review is finalized we will be able to comment on the proposed subdivision.

Enclosed please find a copy of our comments reviewing the inventory survey report (SHPD DOC NO: 005RC08/LOG NO: 25381), as per your 24 July 2000 request.

Please call Cathleen Dagher at 692-8023 if you have any questions.

Aloha,

  
DON HIBBARD, Administrator  
State Historic Preservation Division

CD:an

BENJAMIN J. CAYITANO  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhāhā Building, Room 555  
801 Kamehāmeha Boulevard  
Honolulu, Hawaii 96807

TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES  
JANET T. KAWILO

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

May 4, 2000

Mr. Erik Fredericksen  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

LOG NO: 25381  
DOC NO: 0005RC08

Dear Mr. Fredericksen:

**SUBJECT: Review of Revised Archaeological Inventory Survey – Parcel MF-21  
Palauca, Makawao District (Honua'ula), Maui  
TMK: 2-1-23:1**

*This letter reviews the revisions to this report which our staff received on April 3, 2000 as revised pages (E. Fredericksen & D. Fredericksen 2000. An Archaeological Inventory Survey of Parcel MF-21 ...Xamanek ms.). The revisions were made in response to our letter of March 7, 2000 (Log: 25,046; Doc: 0003RC11).*

The revisions are fine, and the report is now acceptable.

We now agree with all your significance evaluations for the 10 sites in the project area. Four significant historic sites are present – 4804 (a small religious structure), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch era boundary wall).

We also agree with the mitigation commitment to preserve all 4 significant sites.

The next step in the review process is the submittal of a preservation plan to be approved by our office. Typically, this would be a condition of any approved Maui County permit or subdivision.

Aloha,

  
Don Hibbard, Administrator  
State Historic Preservation Division

RC:dnm

c: Land Use & Codes Administration (File 2,2586), Public Works Department,  
County of Maui  
Planning Department, County of Maui

BENJAMIN J. CAYETANO  
GOVERNOR



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

AUG 0 8 2000

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAII  
GLENN M. OKIMOTO

IN REPLY REFER TO:

HWY-M 2.236-00

July 27, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

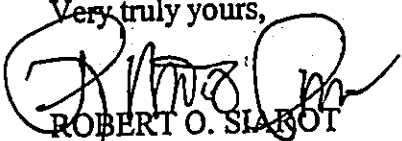
Dear Mr. Tadaki:

Subject: Subdivision of Parcel MF-21  
TMK: 2-1-23: 01

Thank you for the opportunity to review and comment on your project. Based upon our review, it appears that the proposed project will have negligible impacts to our facilities, therefore, we have no comments or objections to your project.

If there are any questions or concerns, please call me at 873-3535.

Very truly yours,

  
ROBERT O. SLABOT  
District Engineer, Maui

/pmc

AUG 09 2000



DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
FT. SHAFTER, HAWAII 96858-5440

REPLY TO  
ATTENTION OF

August 7, 2000

Regulatory Branch

Mr. Glen Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

This responds to your request for comments on proposed subdivision of Parcel MF-21 (TMK 2-1-23:01) into seven agricultural lots at Palauea, Maui, Hawaii. The information summary is not sufficiently detailed to determine if a Department of the Army (DA) permit will be required for this project. Please include us on the mailing list for the Environmental Assessment and include in the document information concerning the presence or absence of streams or wetlands on the project site.

Should you have any questions regarding this response, please contact Peter Galloway of my staff (telephone 438-8416; FAX 438-4060). File number 200000270 has been assigned to this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "George P. Young".

George P. Young, P.E.  
Chief, Regulatory Branch

Copies Furnished:

Clean Water Branch, State of Hawaii Department of Health,  
P.O. Box 3378, Honolulu, HI 96801-3386  
State of Hawaii, Department of Land and Natural Resources,  
Commission on Water Resource Management, P.O. Box 621,  
Honolulu, HI 96809



AUG 14 2000

JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING**

August 7, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

RE: AGENCY PRE-CONSULTATION RELATIVE TO AN  
ENVIRONMENTAL ASSESSMENT FOR PARCEL MF-21, MAKENA,  
MAUI, HAWAII; TMK: 2-1-023:001

The Planning Department (Department) has reviewed the project summary of the MF-21 Subdivision in Makena. The property is within the State Urban District and is zoned and community planned Agriculture.

The project is also located within the Special Management Area (SMA) of the County of Maui and as such, the proposed subdivision improvements are subject to the SMA Rules for the Maui Planning Commission.

Issues which will most likely surface with regard to development of the proposed subdivision include:

1. Archaeological resources as the project is immediately adjacent to a historical site which is being preserved as a 20-acre cultural preserve park;
2. The project's compliance with the County Agricultural District ordinance;
3. The project's compliance with the objectives and policies identified in the Kihei-Makena Community Plan;
4. The adequacy of the infrastructure to accommodate the proposed project;

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793  
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

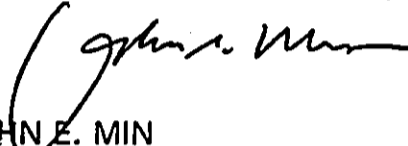
Mr. Glenn Tadaki  
August 7, 2000  
Page 2

5. The subdivision's compliance with the Maui County Planting Plan;
6. Input from the Community Associations which may have an interest in the area.

The above issues should be discussed in the Draft Environmental Assessment.

Thank you for your cooperation in this matter. If further clarification is required, please contact Ms. Ann Cua, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN  
Planning Director

JEM:ATC:cmp

c: Clayton Yoshida, AICP, Deputy Planning Director  
Charles Jencks, Director, Department of Public Works  
and Waste Management  
Aaron Shinmoto, Planning Program Administrator  
Ann Cua, Staff Planner  
Project File  
General File S:\ALL\ANN\MF21PREE.WPD



JAMES "KIMO" APANA  
MAYOR

OUR REFERENCE

YOUR REFERENCE

# POLICE DEPARTMENT COUNTY OF MAUI

55 MAHALANI STREET  
WAILUKU, HAWAII 96793  
(808) 244-6400  
Fax (808) 244-6411

August 14, 2000



THOMAS M. PHILLIPS  
CHIEF OF POLICE

KEKUHAUPIO R. AKANA  
DEPUTY CHIEF OF POLICE

## MEMORANDUM

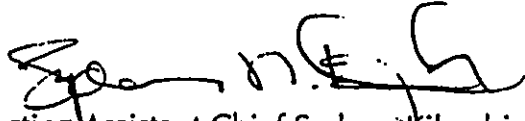
TO : MR. GLENN TADAKI, PLANNER  
MUNEKIYO, ARAKAWA & HIRAGA, INC.

FROM : THOMAS M. PHILLIPS  
CHIEF OF POLICE

SUBJECT : TMK : 2-1-23:01  
Project Name: SUBDIVISION OF PARCEL MF-21  
Applicant : LUCKY SEVEN DEVELOPMENT, LLC

\_\_\_\_\_ No recommendation or special condition is  
necessary or desired.

  X   Refer to attachment.

  
Acting Assistant Chief Sydney Kikuchi  
For: THOMAS M. PHILLIPS  
Chief of Police

Attachment

TO : THOMAS M. PHILLIPS, CHIEF OF POLICE  
VIA : CHANNELS  
FROM : O. NONEZA, JR., COMMUNITY POLICE OFFICER  
SUBJECT : SUBDIVISION OF PARCEL MF-21, TMK 2-1-23:01

*AC*  
*OK*  
*8/11/00*


This officer has reviewed the letter from Mr. Glenn Tadaki of Munekiyo, Arakawa & Hiraga, Incorporated; on behalf of applicant LUCKY SEVEN DEVELOPMENT, LLC, regarding a proposal to subdivide the above referenced parcel.

Mr. Tadaki has provided a "general overview" of the applicant's intentions in order to solicit comments as provided by the Administrative Rules of the State Department of Health. The applicant recognizes that the proposed action falls within Special Management Area (SMA) limits and therefore will require an SMA permit application.

Based upon the limited information provided in this letter with attachments, this officer has only one comment/question at this time reserving detailed concerns and recommendations for the forthcoming Environmental Assessment to accompany the SMA permit application process.

Since the referenced parcel - irrespective of its classification as agricultural land - is unsuitable for agriculture being comprised mostly of stony eroded lava, is this request to subdivide a prelude to the development of what is characterized as "gentlemen estates"?

Respectfully submitted,

  
O. NONEZA, Jr.  
August 7, 2000

E-0865  
2255-Hours

*Noted: 8/8/00*  
*Sgt. [Signature]*

*mf 8/8/00*

AUG 24 2000

JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PLANNING

August 21, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

RE: Agency Pre-Consultation Relative to an Environmental Assessment  
for Parcel MF-21, Makena, Maui, Hawaii; TMK: 2-1-023:001

The Maui Planning Department (Department) is hereby amending its August 7, 2000 comment letter relative to the above project.

Please be advised that the subject property is within the State Agricultural District and not the Urban District. All other comments contained in the August 7, 2000 letter are still applicable.

Thank you for your cooperation in this matter. If further clarification is required, please contact Ms. Ann Cua, Staff Planner, of this office at 270-7735.

Very truly yours,

A handwritten signature in black ink, appearing to read "John E. Min".

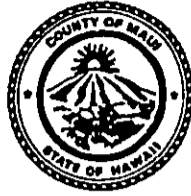
JOHN E. MIN  
Planning Director

JEM:ATC:cmb

c: Clayton Yoshida, AICP, Deputy Planning Director  
Charles Jencks, Director, Department of Public Works and Waste Management  
Aaron Shinmoto, Planning Program Administrator  
Ann Cua, Staff Planner  
Project File  
General File

S:\VALLIANN\mf21pre2.ltr.wpd

AUG 30 2000



**DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-7109  
Telephone (808) 270-7816 • Fax (808) 270-7199**

August 23, 2000

Mr. Glenn Tadaki  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

**SUBJECT:** Subdivision of Parcel MF-21  
TMK 2-1-23:01

Dear Mr. Tadaki,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (EA).

The EA should include the sources and expected potable and non-potable water usage. This project area is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of August 1, 2000 were 17.762 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resource Management will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. Another well producing about 1 MGD was brought on-line during the first quarter of 2000. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. Nevertheless, the applicants should be made aware that the timing of this project may be affected with possible delays until new sources can be brought on-line. No guarantee of water is granted or implied as a result of these comments. Water availability will be reviewed at the time of application for meter or meter reservation.

We have included a portion of our water system map pertaining to the project area. The applicant will be required to provide water service and fire protection to standards, close gap in 12" water line and construct waterline and fire protection improvements along Makena Alanui Road and Makena Keoneoio Road, as stated in DWS Preliminary Plat Review comments. Domestic, fire, and irrigation calculations will be reviewed in detail during the subdivision process.

As much of the water demand as possible should be delivered from non-potable sources (reclaimed or brackish). Where appropriate, the applicants should consider these measures:

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

**Utilize Low-Flow Fixtures and Devices:** Maui County Code Subsection 16.20A-680 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

**Maintain Fixtures to Prevent Leaks:** A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

**Use Climate-adapted Plants:** Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 3 and 5. Please refer to the attached document, "Saving Water in the Yard: What & How to Plant in Your Area"

**Prevent Over-Watering By Automated Systems:** Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

The project overlies the Kamaole aquifer. The Department of Water Supply strives to protect the integrity of surface water and groundwater resources by encouraging applicants to adopt best management practices (BMPs) relevant to potentially polluting activities. We list a few BMP references here. Additional information can be obtained from the State Department of Health.

"The Megamanual - Nonpoint Source Management Manual - A Guidance Document for Municipal Officials." Massachusetts Department of Environmental Protection.

"Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters." United States Environmental Protection Agency, Office of Water.

If you need additional information, please call our Water Resources and Planning Division at 270-7199.

Sincerely,



David Craddick  
Director  
emb

cc: engineering division

attachments:

- 1) "The Costly Drip"
- 2) "Saving Water in the Yard: What & How to Plant in Your Area"
- 3) Ordinance 2108 - "An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
- 4) A Checklist of Water Conservation Ideas for the Home
- 5) Portion of fire water system map

C:\WPdocs\EAs EISs\MF-21 SD.wpd

*By Water All Things Find Life*

AUG 23 2000



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P.O. BOX 621  
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND DIVISION  
STATE PARKS  
WATER RESOURCE MANAGEMENT

August 22, 2000

LD-NAV

Ref.: LUCKYSEVEN.RCM

Munekiyo, Arakawa & Hiraga, Inc.  
Gleen Tadaki, Planner  
305 High Street, Suite 104  
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

SUBJECT: Pre-Consultation for proposed action to create seven (7) agricultural lots ranging in size of 2.4 to 4.3 acres at Palauea, Island of Maui, Hawaii TMK: 2<sup>nd</sup>/ 2-1-23: 001

Thank you for the opportunity to review and comment on the subject matter.

We had transmitted the subject informational material to our appropriate divisions and their branches for their review and comment on the proposed project.

Attached herewith is a copy of our Commission on Water Resource Management comments related to water resources.

The Department has no other comment to offer at this time.

Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Dean Y. Uchida".

DEAN Y. UCHIDA  
Administrator

C: Maui District Land Office



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Land Division  
Honolulu, Hawaii

09 JUL 26 P2:24

July 25, 2000

OFFICE OF THE ATTORNEY GENERAL  
RECEIVED

LD/NAV

Ref.: LUCKYSEVEN.COM

Suspense Date: 8/15/00

MEMORANDUM:

TO: XXX Division of Aquatic Resources  
XXX Division of Forestry & Wildlife  
XXX Division of State Parks  
Division of Boating and Ocean Recreation  
XXX Historic Preservation Division  
XXX Commission on Water Resource Management  
Land Division Branches of:  
XXX Planning and Technical Services  
XXX Engineering Branch  
XXX Maui District Land Office  
Shoreline Processing Services

FROM: Dean Y. Uchida, Administrator  
Land Division *Dean Y. Uchida*

SUBJECT: Pre-consultation for proposal action to create 7  
agricultural lots ranging in size of 2.4 to 4.3 acres at  
Palaea, Island of Maui, Hawaii TMK: 2<sup>nd</sup>/ 2-1-23: 001

Please review the following:

Proposed action

and submit your comments (if any) on Division letterhead within the  
time requested above. Should you need more time to review the  
subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the  
suspense date, we will assume there are no comments.

( ) We have no comments.

( ) Comments attached.

Signed:

Date:

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



ALO IS 10 04 1' 00

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
P.O. BOX 621  
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS  
CHAIRPERSON  
BRUCE S. ANDERSON  
ROBERT G. GIRALD  
BRIAN C. NISHIDA  
DAVID A. NOBRIGA  
HERBERT M. RICHARDS, JR.  
LINNEL T. NISHIOKA  
DEPUTY DIRECTOR

August 11, 2000

TO: Mr. Dean Uchida, Administrator  
Land Division

FROM: Linnel T. Nishioka, Deputy Director *LN*  
Commission on Water Resource Management (CWRM)

SUBJECT: Palauea Lucky Seven Agriculture Subdivision Pre-consultation

FILE NO.: LUCKYSEVEN.COM

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:

(1) This appears to be an urban area; (2) Irrigation water available for agriculture may be at a premium, and groundwater is quite brackish; (3) The aquifer that provides the potable water supply for this area has been overpumped beyond its sustainable yield in the recent past, and the aquifer continues to show signs it has not fully recovered. If the Commission has to designate the aquifer as a water management area, all groundwater withdrawals to the purveyor would be subject to water use permits. The service area would be subject to a declaration of a water shortage or a water emergency. If withdrawals are constrained, uses may be subject to allocation to users by the purveyor.

If there are any questions, please contact Charley Ice at 587-0251.

# Responses

August 2, 2000

Neal Fujiwara, District Conservationist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
210 Imi Kala Street, Suite 209  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

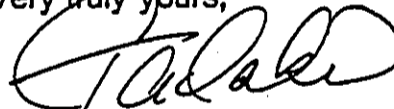
Dear Mr. Fujiwara:

Thank you for your July 27, 2000 letter commenting on the subject project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

The natural drainageways mauka of the project site and Makena Alanui are within the limits of the Wailea Resort's Emerald Course and are maintained by Wailea Golf Resort, Inc. In addition, provisions for the maintenance of the major natural drainageways are included in the deed restrictions for the subject property and shall also be included in the Covenants, Conditions and Restrictions (CC&Rs) for the subdivision.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC

lucky7/mf21/nrcaltr.001

August 16, 2000

John Min, Director  
Planning Department  
County of Maui  
250 South High Street  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Min:

Thank you for your August 7, 2000 letter providing comments on the above-referenced project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

1. An archaeological inventory survey was prepared for the subject property and will be included in the subject's Draft Environmental Assessment (EA). In addition, an archaeological preservation plan for the four (4) significant sites located during the survey was recently submitted to the State Historic Preservation Division for review and approval.
2. The proposed project will comply with the provisions of Chapter 19.30A pertaining to the County Agricultural District.
3. The subject property is designated "Agricultural" by the Kihei-Makena Community Plan. The proposed use of the property is consistent with the following objectives and policies of the Community Plan.

Cultural Resources: Identify, preserve, protect, and restore significant historical and cultural sites.

Housing and Urban Design: Provide for integration of natural physical features with future development of the region.

Transportation: Protect and preserve the traditional rural scale and character of existing portions of old Makena Road in a manner similar to that existing at Keawalai Church.

John Min, Director  
August 16, 2000  
Page 2

Water Distribution: Provide for appropriate water source and transmission improvements concurrent with planned growth of the Kihei-Makena region.

Land Use Standards: All zoning applications and/or proposed land uses and developments shall be consistent with the Land Use Map and Objectives and Policies of the Kihei-Makena Community Plan.

4. A discussion of existing infrastructure systems and proposed infrastructure improvements relating to the project will be included in the subject's Draft EA.
5. With regard to the Maui County Planting Plan, a street tree planting plan will be submitted to the Planning Department for review and approval in connection with the review and approval process for the proposed subdivision.
6. The Wailea Community Association and the Makena Community Association were consulted during the preparation of the Draft EA and had no comments to offer.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Sincerely,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC  
Ralph Nagamine, Dept. of Public Works and Waste Management

lucky7/mf21/pdtr.002

August 18, 2000

Thomas M. Phillips, Chief  
Maui Police Department  
County of Maui  
55 Mahalani Street  
Wailuku, Hawai'i 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Phillips:

Thank you for your August 14, 2000 letter commenting on the above-referenced project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note that the proposed project involves the subdivision of the subject parcel to create seven (7) agricultural/residential lots.

As such, the proposed project will comply with the provisions of Chapter 205A, Hawaii Revised Statutes, pertaining to the State Agricultural District, as well as with the provisions of Chapter 19.30A of the Maui County Code pertaining to the County Agricultural District.

Thank you again for providing us with your comments. A copy of the Draft Environmental Assessment will be provided to you.

Sincerely,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins, Lucky Seven Development, LLC  
Glen Ueno, Dept. of Public Works and Waste Management

lucky7/mf21/mpdltr.001

August 29, 2000

Dean Uchida, Administrator  
Department of Land  
and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr Uchida:

Thank you for your August 22, 2000 letter providing the Commission on Water Resource Management's comments on the subject project. On behalf of the applicant, Lucky Seven Development, LLC, we would like to note the following.

The subject property is located within the State Agricultural District and is designated Agricultural by both the Kihei-Makena Community Plan and Maui County zoning.

As of August 1, 2000, the rolling annual average groundwater withdrawals from the Iao Aquifer was 17.762 million gallons per day (MGD). These withdrawals are within the limits of the regulatory 20 MGD sustainable yield of this aquifer.

Recent discussions with the County's Department of Water Supply (DWS), Water Resource and Planning Division have indicated that new sources will be brought on-line to supplement the water provided by the Iao Aquifer. One (1) new well, with a pumpage of about 0.8 MGD, was brought on-line during the first quarter of this year, and will be followed by one (1) more new well with a capacity of 1.0 MGD during the latter part of the year. In addition, two (2) new wells, with a capacity of 1.0 MGD per well, are projected for on-line production by late 2001. The source of water for these four (4) new wells is the Waihee aquifer. It should also be noted that two (2) wells in North Waihee, pumping at a combined rate of 1.5 MGD, were brought on-line by the DWS in July 1997.

The foregoing measures notwithstanding, the applicant acknowledges the potential regulatory implications of water management area designation by the Commission on Water Resource Management.



Dean Uchida, Administrator  
August 29, 2000  
Page 2

Thank you for providing us with your comments. Please feel free to call me should you have any questions or require additional information.

Sincerely,



Glenn Tadaki, Planner

GT:to

cc: Glen Ueno, Dept. of Public Works and Waste Management  
Eva Blumenstein, Dept. of Water Supply  
Becky Broudy Collins, Lucky Seven Development, LLC

lucky7/m21/dlrtr.001

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

# **Chapter XI**

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***Letters Received During  
the Draft Environmental  
Assessment Public Comment  
Period and Responses to  
Substantive Comments***

**XI. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT PUBLIC COMMENT PERIOD AND RESPONSES TO SUBSTANTIVE COMMENTS**

Pursuant to the requirements of the environmental review process, comments received, as well as responses to substantive comments, are included in this section.

**DRAFT ENVIRONMENTAL  
ASSESSMENT COMMENT LETTERS**

BENJAMIN J. CAYETANO  
GOVERNOR



ESTHER UEDA  
EXECUTIVE OFFICER

STATE OF HAWAII  
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM  
LAND USE COMMISSION

P.O. Box 2359  
Honolulu, HI 96804-2359  
Telephone: 808-587-3822  
Fax: 808-587-3827

'00 SEP 29 P12:27

DEPT OF BUSINESS  
COUNTY OF MAUI  
RECEIVED

September 27, 2000

Mr. John E. Min  
Planning Director  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Application for Special Management Area Use Permit  
(SM1 2000/0025), Subdivision of Parcel MF-21,  
Palauea, Maui, TMK 2-1-23: 1

We have reviewed the subject application forwarded by your transmittal dated September 15, 2000, and confirm that the subject property, as represented on the Site Location Map, is designated within the State Land Use Agricultural District.

Inasmuch as the application involves the proposed subdivision of the subject parcel into seven agricultural/residential lots, clarification should be provided as to the specific agricultural uses that are planned for each lot. We would like to point out that §205-2(d), Hawaii Revised Statutes (HRS), requires that all dwellings in the Agricultural District must be farm dwellings, as defined in §205-4.5(a)(4), HRS.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject application.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

A handwritten signature in cursive script, appearing to read "Esther Ueda".

ESTHER UEDA  
Executive Officer

EU:aa

SEP 29 2000

BENJAMIN J. CAYETANO  
GOVERNOR



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 588-4185  
FACSIMILE (808) 588-4188

September 28, 2000

Mr. Glen Ueno  
County of Maui  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Hawai'i 96793

Dear Mr. Ueno:

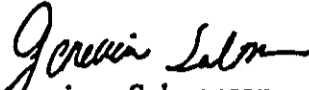
Subject: Lucky Seven Development (Subdivision of Parcel MF-21), Palauea, Maui

Thank you for the opportunity to review the subject document. We have the following comments.

1. A small complex that contains a possible ceremonial structure is located within this project site. Please conduct a cultural impact assessment to determine whether cultural practices of the community will be affected by this project.
2. The project description states that the parcel will be subdivided to create seven agricultural lots. Please describe in further detail the types of development that may occur on this parcel of land. Is full scale agricultural activity anticipated or will homes be built?
3. The subject project is near the coastal area. Storm water from this site eventually flows into the ocean. Please describe the Best Management Practices that will be used to avoid or minimize storm runoff during construction from entering and polluting the ocean.
4. Once the final archaeological preservation plan is approved by the State Historic Preservation Division, it should be incorporated as a condition of the SMA permit.
5. We recommend that the wastewater from this project be eventually treated to a level where it can be reused for irrigation or other useful purposes.

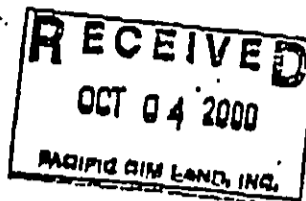
Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,



Genevieve Salmonson  
Director

c: Lucky Seven Development, LLC  
Munekiyo, Arakawa & Hiraga, Inc.



**DEPARTMENT OF WATER SUPPLY**  
**COUNTY OF MAUI**  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-8109  
Telephone (808) 270-7818 • Fax (808) 270-7833

October 2, 2000

Mr. John Min, Director  
County of Maui  
Planning Department  
250 South High Street  
Wailuku, Maui, Hawaii 96793

I.D.: SM1 2000/0025  
TMK: 2-1-23:001  
Project Name: Subdivision of Parcel MF-21

Dear Mr. Min,

Thank you for the opportunity to comment on this application.

The applicant estimates water use for single family development of the project site to 30,920 gallons per day (gpd). This estimate assumes that only 1 acre of each lot will be developed. Should remaining land actually be utilized for agriculture, that would add approximately 71,500 gpd to the applicant's estimate for a total of 102,420 gpd, or result in a total consumption of 115,500 gpd for the entire project site, based on system standards. Empirically, consumption in the Wailea area tends to be high. Assuming that undeveloped portions of lots will be irrigated, water consumption for this project would be about 69,300 gpd, based on system per-acre standards for single family development. The applicant will be required to provide fire and domestic service according to Department standards. All domestic, fire, and irrigation calculations will be reviewed in detail during the development process.

The Wailea area is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of September 1, 2000 were 17,549 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resource Management will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. Another well producing about 1 MGD was brought on-line during the first quarter of 2000. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. Nevertheless, the applicants should be made aware that the timing of this project may be affected with possible delays until new sources can be brought on-line. No guarantee of water is granted or implied as a result of these comments. Water availability will be reviewed at the time of application for meter or meter reservation.



Brackish and/or reclaimed water sources should be used for all non-potable uses, including dust control during construction and irrigation, if such alternative sources are available. To further conserve water resources, the applicant should refer to the attached documents and consider these measures:

Use Climate-adapted Plants: We are very pleased to see the extensive use of native plants proposed for perimeter landscaping in the preliminary landscape plan. Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 3 and 5.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20.675 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs.

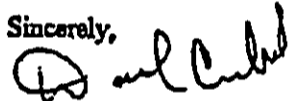
Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

Limit Irrigated Turf: Limit irrigated turf to 25% or less of total landscaped area. Concentrate any irrigated turf in a comfortable, active play and picnicking area. Turf species with low water use requirements include Buffalograss, Common and "No-Mow" Bermuds and Zoysia. However, low-water use shrubs and groundcovers can be equally attractive and require substantially less water than turf. Substitute these for turf in side yards, boundaries, median areas and wherever active use of the lawn is not intended.

Prevent Over-Watering By Automated Systems: For all median strips and common areas, provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

Should you have any questions, please call the Water Resources and Planning Division at: 270-7199.

Sincerely,



David Craddick  
Director

emb

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cc: engineering division  
applicant, with attachments:

- 1) "The Costly Drip"
- 2) Maui County Department of Water Supply, "Saving Water in The Yard - What and How to Plant In Your Area."
- 3) Ordinance 2108 - "An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
- 4) A Checklist of Water Conservation Ideas For Cooling
- 5) A Checklist of Conservation Ideas for the Home
- 6) Selected BMP's from "Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters."
- 7) References for Further Reading from "The Megamanual - Nonpoint Source Management Manual." Commonwealth of Massachusetts

*By Water All Things Find Life*



# LIFE OF THE LAND

*Ua Mau Ke Ea O Ka Aina I Ka Pono*  
Hawai'i's own local Community Action Group  
Protecting our Fragile Natural & Cultural Resources  
through Research, Education, Advocacy & Litigation

October 5, 2000

Glen Ueno  
County of Maui, Dept of Public Works & Waste Mgmt  
200 South High Street  
Wailuku, Hawai'i 96793

Michael Munekiyo  
Munekiyo, Arakawa & Hiraga, Inc.  
305 High Street, Suite 104  
Wailuku, Hawai'i 96793

re: Lucky Seven MF Draft EA

Aloha,

The project appears to be dividing a large agricultural project into smaller agricultural parcels.

"The subject property falls within the State 'Agricultural' district." (page 1) "The applicant proposes to subdivide the subject property to create seven (7) agricultural lots." (page 4) "The proposed development is anticipated to complement existing residential, resort, business/commercial and recreational uses in the Wailea Resort. From a land planning standpoint, the subject property provides an appropriate location for a low density residential development. The proposed project is in keeping with the general low density theme found in the resort and along Old Makena Road. In this regard, the proposed action is not anticipated to have an adverse impact upon surrounding uses and is compatible with existing land uses in the vicinity." (page 30)

However, no where in the document does it explicitly state that the land is intended to remain in agriculture. Furthermore, what happens if the new owners want to change the use? Is there something in the future sale and/or lease documents to guarantee future agricultural use?

Is there a hidden urbanization agenda? Will there be controls to guarantee an agricultural future for this land? How will these controls be enforced? If the intent is "gentleman farms" then what are the positive and negative impacts of "gentleman farms"? How will this affect the future of diversified agriculture on state agricultural lands? Will this development contribute to sprawl?

Will you use IPM? Please give examples. How will pesticides, herbicides, rodenticides, sedimentation and other non-point source polluted runoff be controlled? What impacts might occur to offshore coral colonies? How can these impacts be mitigated?

What are the potential electrical infrastructures that may be built? Will you use overhead lines, underground lines, renewable-energy, fossil-fuel, biomass, and/or polluting energy sources? Will energy conservation methods be employed?

How will traditional and customary rights be protected? How will archeological sites be protected?

*Henry Curtis*  
Henry Curtis  
Executive Director

\* 76 North King Street \* Suite 203 \* Honolulu, Hawai'i 96817 \* phone: 533-3454 \* fax: 533-0993 \*  
\* email: <lifeoftheland@hotmail.com> \*

JAMES "KIMO" APANA  
Mayor

CHARLES JENCKS  
Director

DAVID C. GOODE  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT  
200 SOUTH HIGH STREET  
WAILUKU, HAWAII 96793

001 27 2000  
RALPH NAGAMINE, L.S., P.E.  
Land Use and Codes Administration

RON R. RISKA, P.E.  
Wastewater Reclamation Division

06  
LLOYD P.C.W. LEE, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

ANDREW M. HIROSE  
Solid Waste Division

October 19, 2000

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: DAVID GOODE, DIRECTOR OF PUBLIC WORKS  
AND WASTE MANAGEMENT *David Goode*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT APPLICATION  
SUBDIVISION OF PARCEL MF-21  
LUCKY SEVEN DEVELOPMENT LLC  
TMK: (2) 2-1-023:001  
SM1 2000/0025

We reviewed the subject application and have the following comments.

1. The Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
2. The developer is required to fund any necessary off-site improvements to the collection system and wastewater pump stations and pay assessment fees for treatment plant expansion.
3. Makena Alanui shall be improved with curb, gutter, and sidewalk along the subject property's boundary. Old Makena Road (Makena-Keoneoio Road) shall be resurfaced only. Existing topographic features and the Kihei-Makena Community Plan discourages urban level improvements such as curb, gutter, and sidewalk on Old Makena Road.
4. A road widening lot shall be provided at the intersection of Makena Alanui and Old Makena Road to accommodate a 30-foot turning radius.
5. Makena Alanui is designated as a limited vehicular access roadway. Therefore, driveway access to the three lots along Makena Alanui shall have a minimum spacing of 300 feet.

Mr. John E. Min  
October 19, 2000  
Page 2

6. A site plan and a sight distance report to determine required sight distance and available sight distance at existing and proposed driveways shall be provided for our review and approval.
7. A detailed final drainage report and a site specific erosion control plan shall be submitted with the construction plans for review and approval prior to the issuance of a grading permit. The drainage report shall be prepared by a professional civil engineer licensed in the State of Hawaii and shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The site specific erosion control plan shall show the location and details of structural and non-structural Best Management measures.

If you have any questions, please call David Goode at 270-7845.

DG:msc/mt  
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JAMES "KIMO" APANA  
Mayor

CHARLES JENCKS  
Director

DAVID C. GOODE  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT**  
200 SOUTH HIGH STREET  
WAILUKU, HAWAII 96793

NOV 9 7 2000  
RALPH NAGAMINE, L.S., P.E.  
Land Use and Codes Administration

RON R. RISKA, P.E.  
Wastewater Reclamation Division

UUC  
LLOYD P.C.W. LEE, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

ANDREW M. HIROSE  
Solid Waste Division

October 19, 2000

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: DAVID GOODE, DIRECTOR OF PUBLIC WORKS  
AND WASTE MANAGEMENT *David Goode*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT APPLICATION  
SUBDIVISION OF PARCEL MF-21  
LUCKY SEVEN DEVELOPMENT LLC  
TMK: (2) 2-1-023:001  
SM1 2000/0025

We reviewed the subject application and have the following comments.

1. The Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
2. The developer is required to fund any necessary off-site improvements to the collection system and wastewater pump stations and pay assessment fees for treatment plant expansion.
3. Makena Alanui shall be improved with curb, gutter, and sidewalk along the subject property's boundary. Old Makena Road (Makena-Keoneoio Road) shall be resurfaced only. Existing topographic features and the Kihei-Makena Community Plan discourages urban level improvements such as curb, gutter, and sidewalk on Old Makena Road.
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Mr. John E. Min  
October 19, 2000  
Page 2

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If you have any questions, please call David Goode at 270-7845.

DG:msc/mt  
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BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D., M.P.H.  
DIRECTOR OF HEALTH

OCT 30 11:53 PM '00

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

In reply, please refer to:  
File:

October 30, 2000

00-193/epo

Mr. John E. Min, Director  
Planning Department  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Application for Special Management Area Use Permit  
(SM1-2000/0025)  
Subdivision of Parcel MF-21  
Makai of Makena Alanui Road near  
Wailea Emerald Golf Course  
Makena, Maui  
TMK: 2-1-23:1

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

Wastewater

The subject subdivision is located within the county sewer system. As the area is sewerred, the subdivision must be connected to a public sewer.

The developer should work closely with the County to assure the availability of additional treatment capacity and adequacy for the project. Non-availability of treatment capacity will not be an acceptable justification for use of any private treatment works or individual wastewater system.

If you should have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at 586-4290.

Mr. John E. Min, Director  
October 30, 2000  
Page 2

Noise Concerns

1. Activities associated with the construction phase of the project must comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."
  - a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the rules as stated in Section 11-46-6(a).
  - b. Construction equipment and on-site vehicles requiring an exhaust of gas or air must be equipped with mufflers as stated in Section 11-46-6(b)(1)(A).
  - c. The contractor must comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7(d)(4).
2. Heavy vehicles traveling to and from the project site must comply with the provisions of the Administrative Rules, Chapter 11-42, "Vehicular Noise Control for Oahu."
3. Through facility design, sound levels emanating from stationary equipment such as air conditioning systems, exhaust fans, refrigeration compressors or generators must be attenuated to comply with the provisions of the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."
4. Noise from religious and recreational activities associated with such facilities, as well as vehicular traffic entering and leaving the premises, may have adverse impacts on adjacent residences.

Should there be any questions on this matter, please call Mr. Russell Takata, Environmental Health Program Manager of the Noise, Radiation and Indoor Air Quality Branch at 586-4701.



Mr. John E. Min, Director  
October 30, 2000  
Page 3

Vector Control

The property may be harboring rodents which will be dispersed to the surrounding areas when any buildings are demolished or the site is cleared. The applicant is required by Hawaii Administrative Rules, Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the local Vector Control Branch when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at least a week or until the rodent activity ceases.

The Vector Control Branch phone numbers are as follows:

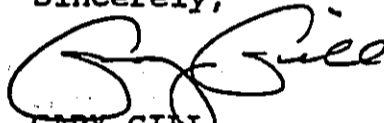
Oahu: 831-6767--

Kauai: 241-3306

Hawaii--Hilo: 974-4238, Kona: 322-7011

Maui (includes Molokai and Lanai): 873-3560

Sincerely,



GARY GILL  
Deputy Director  
Environmental Health Administration

c: MDHO  
NR&IAQB  
WWB  
VCB

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



DEC 05 2000

TIMOTHY E. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

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STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhikawa Building, Room 565  
601 Kamokila Boulevard  
Kapolei, Hawaii 96707

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
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FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

November 20, 2000

Mr. John E. Min, Director  
Department of Planning-Maui County  
250 South High Street  
Wailuku, Hawaii 96793

LOG NO: 26534 ✓  
DOC NO: 0011CD24

Dear Mr. Min,

**SUBJECT: Chapter 6E-42 Historic Preservation Review of the Application for a Special Area Use Permit for the Proposed Subdivision of Parcel MF-21 (Subject I.D. No. : SM1 2000/0025) Palauea Ahupua`a, Makawao District, Island of Maui TMK: 2-1-23:001**

Thank you for the opportunity to review the Special Area Use Permit Application (SMA) for the proposed subdivision of Parcel MF-21.

Based on the submitted SMA, we understand the proposed undertaking consists of the subdivision of the subject property (23.1 acres) to create seven agricultural lots, 2.4 acres to 4.3 acres. The improvements to the currently vacant property include, clearing, grubbing, grading work in accordance with drainage and setback criteria; installation of utility lines (water, sewer, electrical, etc.), street vegetation planting, construction of driveways and aprons, improvements to Makena Alanui and Old Makena Road. The waterlines will be installed with the Makena Alanui and Old Makena Road rights-of-way.

An archaeological inventory survey has been conducted of the subject property and the report documenting the findings has been reviewed and accepted by this office (SHPD DOC NO: 0005RC08/LOG NO: 25381) and an acceptable preservation plan is in place (SHPD DOC NO: 0008MK09/LOG NO: 26156), as well. The following of the preservation plan will ensure that there will be "no adverse effect" on significant historic sites during the proposed undertaking.

Please notify Dr. Melissa Kirkendall at 243-5169 when preservation measures are in place, she will conduct a site inspection to verify the orange construction fencing is in place. Written verification of the placement of the construction fencing will be provided by this office to the appropriate agency prior to the commencement of any ground-altering activities.

Please call Cathleen Dagher at 692-8023 if you have any questions.

Aloha

  
Don Hibbard, Administrator  
State Historic Preservation Division

CD:jen

c: Mr. Glen Tadaki (fax: 244-8729)  
Mr. Dean Uchida, Land Division

**DRAFT ENVIRONMENTAL  
ASSESSMENT RESPONSE LETTERS**

October 19, 2000

Esther Ueda, Executive Director  
Land Use Commission  
Department of Business, Economic  
Development & Tourism  
State of Hawaii  
P.O. Box 2359  
Honolulu, Hawaii 96804

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Ms. Ueda:

Thank you for your September 27, 2000 letter providing comments on the subject project. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.


The soil type underlying the majority of the project site is very stony land (rVS). This soil type is characterized by areas where 50 to 90 percent of the surface is covered with stones and boulders making it poorly suited for productive agricultural activity. The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui also indicates that the land underlying the subject property has an overall agricultural suitability rating of "E", a designation which reflects lands of the lowest productive capacity.

Agricultural activities on the proposed lots shall be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County Zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses for each lot are not known at this time, agricultural land conservation is considered to be a viable and appropriate use especially when considering the very stony soil and low agricultural productivity rating of the subject property. Other possible agricultural uses include but are not limited to small-scale fruit, plant, flower, and vegetable growing activities.

Esther Ueda, Executive Director  
October 19, 2000  
Page 2

Thank you again for providing us with your comments.

Sincerely,



Glen Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Planning Department

lucky7/mf21/uctr.001

10/19/00 10:00 AM

October 19, 2000

David Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Mr. Craddick:

Thank you for your October 2, 2000 letter providing comments on the subject project. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.

The project's estimated water demand of 30,920 gallons per day (gpd) reflects the development of the subdivision at full build-out. Of this total, 8,400 gpd is projected for domestic use, while 6,000 gpd and 16,520 gpd are estimated for the subdivision's perimeter landscaping and interior landscaping, respectively. The estimated irrigation water demand for the interior landscaping assumes that a 1-acre portion of each of the lots will be developed to include dwellings, driveways, and landscaping, while the remaining areas will be left undeveloped. It should be noted that the actual water use for each lot will be subject to the agricultural activity that is implemented. While these uses are not presently known, the following factors will need to be considered.

The soil underlying the majority of the project site is very stony land (rVS). This soil type is characterized by areas where 50 to 90 percent of the surface is covered with stones and boulders making it poorly suited for productive agricultural activity. In addition, the Land Study Bureau's Detailed Land Classification for Maui indicates that the land underlying the site has an overall agricultural suitability rating of "E". This rating reflects lands of the lowest productive capacity.

In light of the foregoing, the area utilized for agricultural development is likely to be limited in size and the irrigation water demand is expected to commensurate with the nature and extent of the agricultural use that is employed. Toward this end, agricultural uses that are both viable and compatible with existing field conditions are more likely to be considered for implementation. For example, a use such as agricultural land

David Craddick, Director  
October 19, 2000  
Page 2

conservation would require less water for irrigation than a traditional large-scale crop growing operation.

Insofar as fire protection and domestic water service for the project is concerned, please be advised that these distribution systems will be designed in accordance with Department of Water Supply standards.

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Planning Department

lucky7/mf21/dwaltr.001

November 30, 2000

Genevieve Salmonson, Director  
Office of Environmental  
Quality Control  
State of Hawaii  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

SUBJECT: Subdivision of Parcel MF-21  
TMK 2-1-23: 01

Dear Ms. Salmonson:

Thank you for your September 28, 2000 letter providing comments on the subject project to the County of Maui, Department of Public Works and Waste Management. On behalf of the applicant, Lucky Seven Development LLC, we would like to note the following.

1. Discussions with Hui Alanui O Makena and other members of Makena's Hawaiian community have indicated that the proposed project will not have an adverse effect on traditional Hawaiian cultural practices provided that Sites 4804 (small religious shrine), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch-era boundary wall) are preserved and that access is provided to Site 4804. It should be noted that a preservation plan for these sites (including provisions for access) was prepared and submitted to the State Historic Preservation Division for review and approval. It should also be noted that the preservation plan will be provided to the Maui County Cultural Resources Commission for their review and recommendations.
2. Homes will be constructed on the proposed lots. Agricultural activities on the lots will be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses may not be known at this time, they are expected to include uses provided under the County Ordinance including but not limited to agricultural land conservation, small-scale fruit, plant, flower and vegetable growing activities.
3. Site work for the project will be minimal and will involve excavation and embankment for the installation of water meters, and utility lines (for water, sewer,



electrical, telephone and cable television service), as well as the grading of an existing depression that will be utilized as a retention basin. Site work will not involve the grading of the lots. Best Management Practices (BMPs) will be implemented to minimize soil erosion and stormwater runoff during construction activities. Examples of some of these measures include but are not limited to the following:

- a. Minimize the time of construction.
  - b. Retain existing ground cover until the latest possible date to complete construction.
  - c. Early construction of drainage features.
  - d. Use temporary area sprinklers in non-active construction areas when ground cover is removed.
  - e. Station water truck(s) on site during the construction period to provide for immediate sprinkling, as needed, in active construction zones (weekends and holidays included).
  - f. Use temporary berms, filter berms, and cut-off ditches, where needed, for erosion control.
  - g. Graded areas shall be thoroughly watered after construction activity has ceased for the day and on weekends as well.
  - h. All cut and fill slopes shall be sodded or planted immediately after grading has been completed.
4. The applicant will coordinate the implementation of the approved archaeological preservation plan with the State Historic Preservation Division.
  5. The sewer system for the project will connect to the future sewer system for the adjoining Palauea Subdivision to the north. The flows from these subdivisions will be pumped through a future sewer force main in Kaukahi Street which will connect to the existing Wailea Resort sewer system near the Wailea Blue Golf Clubhouse. It should also be noted that the service area of the County's existing wastewater effluent re-use system currently extends to Kalama Park in Kihei, approximately 5.0 miles to the north of the project site. Recent discussions with the County Wastewater Reclamation Division indicate that there are no current plans to extend the existing effluent re-use system southward to the project area.

Genevieve Salmonson, Director  
November 3, 2000  
Page 3

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Department of Planning

lucky7/mf21/oeqctr.002

November 30, 2000

Henry Curtis, Executive Director  
Life of the Land  
76 North King Street Suite 203  
Honolulu, HI 96817

Dear Mr. Curtis:

Thank you for taking the time to comment on the Draft EA for Lucky Seven's MF-21 Parcel. On behalf of the applicant, we would like to take this opportunity to clarify and address the concerns raised in your letter.

The subject parcel is zoned Agricultural, and carries a State Land Use Classification of Agriculture. Although the parcel is located within these classifications, it is not currently being utilized for those types of uses, nor has it been historically used for agriculture. The project site is considered uneven, topographically, and consists of a soil type of Makena Loam, stony complex, 3 to 15 percent slopes (MXC) and very stony land (rVS). The University of Hawaii - Land Study Bureau's Detailed Land Classification for Maui establishes total land productivity ratings. A value system based on a declining scale from "A" to "E," with "A" representing the highest level of productivity and "E" the lowest is utilized. The MF-21 site is assigned an "E" designation, reflecting its low suitability for agricultural use.

There is no hidden urbanization agenda. There are restrictive covenants preventing the potential new owners from changing the zoning or further subdividing. Homes will be constructed on the proposed lots. Agricultural activities on the lots will be in accordance with the provisions of Chapter 19.30A of the Maui County Code pertaining to the Agricultural District, a County zoning Ordinance which implements Chapter 205, HRS. While specific agricultural uses are not known at this time they will include uses provided under the County Ordinance including but not limited to agricultural land conservation, small-scale fruit, plant, flower and vegetable growing activities.

An NPDES permit will be obtained from the State of Hawaii Clean Water Branch, which will address non-point source pollution runoff during construction. Future landowners will have to comply with applicable State, Federal and County requirements as it relates to the use of pesticides, rodenticides, etc.

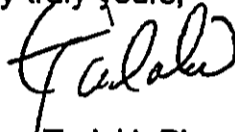
Henry Curtis, Executive Director  
November 30, 2000  
Page 2

All infrastructure requirements will be reviewed and approved by the County of Maui, Department of Public Works and Waste Management's Land Use and Codes Administration for compliance with the Maui County Code.

The applicant is working with Hui Alanui O Makena and other members of Makena's Hawaiian community, as it relates to archaeological sites, and will also seek input from the Cultural Resources Commission.

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:to

cc: Becky Broudy Collins and John Zapotocky, Lucky Seven Development, LLC  
Ann Cua, Department of Planning

lucky7/mf21/leland.lh

# ***References***

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### References

Austin, Tsutsumi & Associates, Inc., Wailea Resort Revised Master Plan Traffic Impact Analysis Report, October 1997.

Community Resources, Inc., Maui County Community Plan Update Program Sock-Economic Forecast Report, January 1994.

County of Maui, Maui County Data Book 1998, June 1998.

First Hawaiian Bank, Supplement to Economic Indicators, Maui County Profiles, July/August, 1993.

Munekiyo & Arakawa, Inc., Draft Environmental Assessment, Wailea Resort Land Use Amendments, October 1996.

Munekiyo, Arakawa & Hiraga, Inc., Applications for Change in Zoning, Project District Phase I and Phase II Approvals, and Special Management Area Use Permit - Palaua Subdivision, October 1999.

Munekiyo, Arakawa & Hiraga, Inc., Wailea Business Center and Wailea Tennis Center Parking Improvements - Applications for Change in Zoning, Special Management Area Use Permit, Conditional Permit, Off-Site Parking and Project District Approval, March 1999.

State Department of Labor and Industrial Relations, personal communication from Ray Domingo, June 6, 2000.

State of Hawaii, Department of Business, Economic Development, and Tourism, Data Book, March 1993.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

University of Hawaii, Land Study Bureau, Detailed Land Classification - Island of Maui, 1967.

U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, 1972.

# ***Appendices***

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# ***Appendix A***

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***Biological Resources  
Survey of Parcel MF-21***



**BIOLOGICAL RESOURCES SURVEY  
OF PARCEL MF - 21 (TMK: 2-1-23:1)  
MAKENA, EAST MAUI, HAWAI'I**

**Prepared for  
Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by  
Xamanek Researches  
Pukalani, Maui  
David Paul**

**8 November 1999**

## BIOLOGICAL RESOURCES SURVEY

### SUMMARY:

No vascular plant species was found in the project area that has protection under Federal or State Law; although two stands of the rare Hawaiian caper or *mai'a pilo* (*Capparis sandwichiana*) were observed in the central part of the property. *Mai'a pilo* (is given a non-protected status of Species Of Concern by USFWS, and presently does not require consideration for planning in development projects.

With the exception of the pacific golden plover or *kolea* (*Pluvialis fulva*), which is a migratory bird, no avian or mammalian animal species were found in the project area that have protection under Federal or State Law.

Therefore, there are no biological resources found in the project area that require consideration for planning.

### INTRODUCTION:

On October 10 & 11, 1999, a Biological Resources Survey of the proposed project area in Makena, East Maui, Hawai'i was conducted by David Paul and Erik Fredericksen of Xamanek Researches. The property consists of a 23.088 acre parcel of land covered with coastal forest on 'a'a lava that is located between Keoneo'io-Makena Rd. and Makena-Alanui Rd. It sits at approximately 10 to 80 feet in elevation, just mauka of Haloa Point and Po'olenalena Beach (See Map 1.).

The survey provided information necessary to describe the vegetation and macrofauna in the area, and determine if any species of vascular plant or animal found there is protected under Federal or State Law, and would require consideration for planning in the project.

The survey also worked to identify any stream or wetland habitats in the project area.

### METHODS:

The survey was conducted by walking the perimeter, following transects, and meandering through the property. Every species of vascular plant, avian, and mammal that was encountered during the survey was recorded and identified, using scientific keys and descriptions.

The species of plants occurring there were placed into a Unique Biological Community. Identifying unique communities helps to locate areas that support rare (legally protected) species.

Significant literature was referenced to learn of known locations of rare species, and to determine which ones might occur in the project area.

## RESULTS:

The species of vascular plants which were encountered during the Biological Resources Survey (Oct. 11, 1999.) are members of a Unique Biological Community. This community may contain rare species that have protection under Federal or State Law. Therefore, each species of vascular plant, avian, and mammal encountered was placed into a *List of Vascular Plants* (Table 1), *List of Avians* (Table 2), or *List of Mammals* (Table 3) to represent each distinct form of life and show if any legally protected species occurs in the project area, and would require consideration for planning.

The following sections describe the vegetation and macrofauna of the project area in detail:

### **Unique Biological Community:**

The community in the project area is known as Coastal Dry Forest. (Gagne & Cuddihy, 1990.)

A canopy of kiawe (*Prosopis pallida*) and an understory of buffelgrass (*Cenchrus ciliaris*) which are alien invaders in this community dominate this Coastal Dry Forest.

The original vegetation of this community consisted of a canopy of *wiliwili* (*Erythrina sandwicensis*) and an understory of mixed native herbs such as 'ilie'e (*Plumbago zeylanica*), 'ilima (*Sida fallax*), *koali* (*Ipomoea indica*), *kolomona* (*Senna gaudichaudii*), *mai'a pilo* (*Capparis sandwichiana*), *naio* (*Myoporum sandwicensis*), and *nehe* (*Lipochaeta rockii*). Because of alien plant invasion, this once native dominated community exists only as a relict.

Other alien species which are widespread in this community are *haole koa* (*Leucaena leucocephala*), *ki nehe* (*Bidens pilosa*), sweet basil (*Ocimum basilicum*), lantana (*Lantana camara*), tree tobacco (*Nicotiana glauca*), *pua pihi* (*Zinnia peruviana*), *klu* (*Acacia farnesiana*), prickly lettuce (*Lactuca serriola*), and the currant tomato (*Lycopersicon pimpinellifolium*). At least three species of cactus (CACTACEAE spp.) are naturalizing on the property from discarded landscaping materials, and a few plants of the *panini* cactus (*Opuntia ficus-indica*) were found as well.

Evidence (feces) of cats (*Felis catus*), axis deer (*Axis axis*), and goats (*Capra hircus*) was observed lying around the ground in the area, and many plants showed grazing

marks, especially *huole kou* (*Leucaena leucocephala*). An entire cat skeleton was also found.

Several macadamia nuts (*Macadamia integrifolia* Maid. & Betc.) were found that had been chewed open, apparently by rats (*Rattus sp.*) or mice (*Mus musculus*).

Several gray francolins (*Francolinus pondicerianus*) were flushed from the vegetation during the survey. Northern cardinals (*Cardinalis cardinalis*), Japanese white eyes (*Zosterops japonicus*), *kolea* (*Pluvialis fulva*), mynahs (*Acridotheres tristis*), house sparrows (*Passer domesticus*), house finches (*Carpodacus mexicanus*), and zebra doves (*Geopelia striata*) were seen in flight and/or perching in the trees.

A pair of house finches was found dead in an animal trap. Gray francolin eggs were found, as was a Japanese white eye nest.

Three honey bee (*Apis mellifera*) nests were located across the property; two of them in *wiliwili* trees (*Erythrina sandwicensis*), and the other in a crack in the lava rock.

The total amount of species found in this community at the time of the survey does not reflect the amount of species that would occur there during moister times of the year. The survey was conducted during extreme drought conditions. Many of the species were identified from necrotic materials.

#### Rare Plants:

No vascular plant was found in the project area that is listed as Endangered, Threatened, Proposed, or Candidate by USFWS; and no plant species is located on the property that is given protection under Federal or State Law. Therefore, there are no Botanical Resources found in the proposed project area which require consideration for planning.

Two stands of the Hawaiian caper or *mai'a pilo* (*Capparis sandwichiana*) were found in the central part of the property. This is a rare plant that is given a non-protected status of Species of Concern by USFWS, and presently does not require consideration for planning.

Historical locations of Endangered, and other protected plant species are unknown in the project area, although the community there is potential habitat for the listed Endangered '*ohai* (*Sesbania tomentosa*), a rare shrub which was once widespread in arid coastal and lowland habitats. (Wagner, et al, 1990 & USFWS, 1999.)

Presently the Endangered '*ohai* is known from cultivated plants on privately owned land in Kama'ole, and from an extant population on the Hawai'i National Guard Training Area in Kanaio on East Maui. '*Ohai* (*Sesbania tomentosa*) was not found in the project area.

#### **Rare Animals:**

The only animal observed in the project area that has legal protection was the Pacific golden plover or *kolea* (*Pluvialis fulva*) which was seen in flight. The *kolea* is a migratory bird species that inhabits grasslands, roadsides, sandy beaches, mudflats and other open areas. They quickly reposition themselves when confronted by humans. No *kolea* were positioned in the project area.

It is possible that the Endangered Hawaiian hoary bat (*Lasiurus cinerius semotus*) flies and feeds in the area of the proposed project as there is more insects available to feed on in coastal habitats than in the arid lands above.

The Hawaiian hoary bat feeds in the early evening in a variety of habitats including along coastlines. It spends the daytime hours resting, perched in trees, and the bat is not particular as to where it rests. (Riper & Riper, 1982.)

The Hawaiian hoary bat (*Lasiurus cinerius semotus*) was not flushed from the trees during the survey, and it was not observed in the trees.

#### **Stream and Wetland Habitats:**

There are no stream or wetland habitats located in the project area. The proposed project area is in a Coastal Dry Forest community that has arid conditions year round.

There are four culverts located along the mauka side of the property under Makena-Alanui Rd. They are used for run-off from rainstorms but they rarely contain water and no stream or wetland habitat is associated with them.

#### **Lists of Plants and Animals:**

The List of Vascular Plants found during the Biological Resources Survey (Oct. 11, 1999.) is displayed in Table 1, at the end of this report. The List of Avians is displayed in Table 2, and the List of Mammals in Table 3.

The distribution of species found in the project area is Endemic, Indigenous, or Alien.

#### **RECOMMENDATIONS:**

No species of vascular plant was found in the project area that has protection under Federal or State Law. No species of avian or mammal was found residing in the project area that has protection under Federal or State Law. Therefore, there are no Biological Resources found in the project area, which require consideration for planning.

Although no legally protected plant species occur in the project area, they have the potential of establishing there, such as 'ohai (Sesbania tomentosa).

Many endemic and indigenous plant species thrive under cultivation in arid climates such as the proposed project area and make attractive, easy to care for, landscape plants. Several species found in the project area work well in landscaping, including wiliwili (Erythrina sandwicensis), nehe (Lipochaeta rockii), naio (Mvoporum sandwicensis), mai'a pilo (Capparis sandwichiana), and 'ilima (Sida fallax).

It is recommended that native plants are worked into the projects' landscape, as they will help the area to maintain an attractive Hawaiian appearance, and are easy to maintain under stressful environmental conditions.

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- USFWS. 1999. "Recovery Plan for the Multi Island Plants." USFWS. Portland, OR. 206p. + appendices.
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**Table 1. List of Vascular Plants**

## DICOTYLEDONS

FAMILY	<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
AMARANTHACEAE		Amaranth Family	
	<u>Alternanthera pungens</u> Kunth	khaki weed	A
	<u>Amaranthus spinosus</u> L.	spiny amaranth	A
ARALIACEAE		Ginseng Family	
	<u>Shefflera actinophylla</u> (Endl.) Harms	octopus tree	A
ASTERACEAE		Sunflower Family	
	<u>Ageratum conyzoides</u> L.	<i>maile hohono</i>	A
	<u>Bidens pilosa</u> L.	<i>ki nehe</i>	A
	<u>Emilia fosbergii</u> Nicols.	<i>pua lele</i>	A
	<u>Lactuca serriola</u> L.	prickly lettuce	A
	<u>Lipochaeta rockii</u> Sherff	<i>nehe</i>	E
	<u>Pluchea symphytifolia</u> (Mill.) Gillis	sourbush	A
	<u>Synedrella nodiflora</u> (L.) Gaertn.	nodeweed	A
	<u>Tridax procumbens</u> L.	coat buttons	A
	<u>Verbesina encelioides</u> (Cav.) Benth. & Hook.	golden crown-beard	A
	<u>Xanthium strumarium</u> L.	cocklebur	A
	<u>Zinnia peruviana</u> (L.) L.	<i>pua pihi</i>	A
CACTACEAE		Cactus Family	
	<u>Opuntia ficus-indica</u> (L.) Mill.	<i>panini</i>	A
CAPPARACEAE		Caper Family	
	<u>Capparis sandwichiana</u> DC	<i>mai 'a pilo</i>	E
CARICACEAE		Papaya Family	
	<u>Carica papaya</u> L.	papaya	A
CHENOPODIACEAE		Goosefoot Family	
	<u>Atriplex semibaccata</u> R.Br.	saltbush	A
	<u>Chenopodium murale</u> L.	goosefoot	A
CONVOLVULACEAE		Morning Glory Family	
	<u>Ipomoea indica</u> (Burm.) Merr.	<i>koali</i>	I
	<u>Ipomoea triloba</u> L.	little bell	A
	<u>Merremia aegyptia</u> (L.) Urb.	<i>koali kua hulu</i>	I
CUCURBITACEAE		Cucumber Family	
	<u>Momordica charantia</u> L.	bitter melon	A

EUPHORBIACEAE	Poinsettia Family	
<u>Chamaesyce hirta</u> (L.) Millsp.	hairy spurge	A
<u>Chamaesyce hypericifolia</u> (L.) Millsp.	graceful spurge	A
<u>Ricinus communis</u> L.	castor bean	A
FABACEAE	Bean Family	
<u>Acacia farnesiana</u> (L.) Willd.	<i>klu</i>	A
<u>Crotalaria incana</u> L.	fuzzy rattlepod	A
<u>Desmanthus virgatus</u> (L.) Willd.	slender mimosa	A
<u>Desmodium tortuosum</u> (Sw.) DC	Florida beggarweed	A
<u>Erythrina sandwicensis</u> Degener	<i>wiliwili</i>	E
<u>Leucaena leucocephala</u> (Lam.) de Wit	<i>haole koa</i>	A
<u>Prosopis pallida</u> (Hum.&Bon.ex Willd.)Knth.	<i>kiawe</i>	A
<u>Samanea saman</u> (Jacq.) Merr.	monkeypod	A
<u>Senna gaudichaudii</u> (Hk.& Arn.)Irw.& Barn.	<i>kolomona</i>	I
LAMIACEAE	Mint Family	
<u>Ocimum basilicum</u> L.	sweet basil	A
MALVACEAE	Hibiscus Family	
<u>Abutilon grandifolium</u> (Willd.) Sw.	hairy abutilon	A
<u>Abutilon incanum</u> (Link) Sw.	<i>mu'o</i>	I
<u>Malvastrum coromandelianum</u> (L.) Garcke	false mallow	A
<u>Sida fallax</u> Walp.	<i>'ilima</i>	I
<u>Sida rhombifolia</u> L.	false <i>'ilima</i>	A
MYOPORACEAE	Myoporum Family	
<u>Myoporum sandwicense</u> A.Gray	<i>naio</i>	I
MYRTACEAE	Myrtle Family	
<u>Psidium guajava</u> L.	guava	A
NYCTAGINACEAE	Four-O'clock Family	
<u>Boehavia coccinea</u> Mill.	<i>alena haole</i>	A
<u>Boehavia repens</u> L.	<i>alena</i>	I
PLUMBAGINACEAE	Leadwort Family	
<u>Plumbago zeylanica</u> L.	<i>'ilie'e</i>	I
PORTULACACEAE	Portulaca Family	
<u>Portulaca oleracea</u> L.	pigweed	A
<u>Portulaca pilosa</u> L.	hairy portulaca	A
SOLANACEAE	Nightshade Family	
<u>Lycopersicon pimpinellifolium</u> (Jusl.)Mill.	currant tomato	A
<u>Nicandra physalodes</u> (L.) Gaertn.	apple of Peru	A



<u>Nicotiana glauca</u> Graham	tree tobacco	A
<u>Solanum americanum</u> Mill.	<i>popolo</i>	I
STERCULIACEAE	Chocolate Family	
<u>Waltheria indica</u> L.	<i>'uhaloa</i>	I
VERBENACEAE	Vervain Family	
<u>Lantana camara</u> L.	lantana	A
<b>MONOCOTYLEDONS</b>		
LILIACEAE	Lily Family	
<u>Aloe barbadensis</u> Mill.	aloe	A
POACEAE	Grass Family	
<u>Cenchrus ciliaris</u> L.	buffelgrass	A
<u>Chloris virgata</u> Sw.	fingergrass	A
<u>Panicum coloratum</u> L.	blue panic grass	A
<u>Rhynchelytrum repens</u> (Willd.) Hubb.	Natal redtop	A

Table 2.

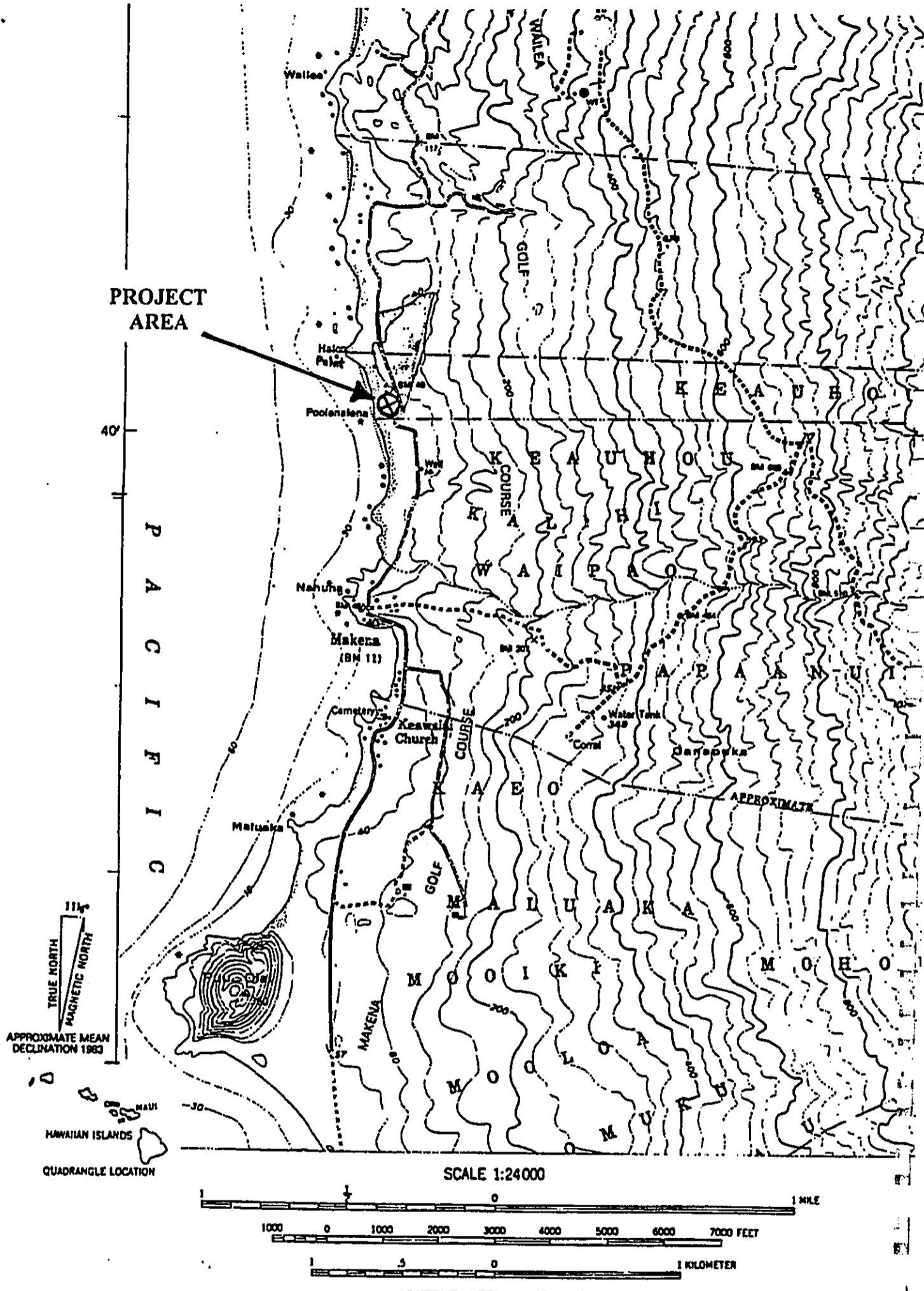
## List of Avians

<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
<u>Acridotheres tristis</u>	mynah	A
<u>Cardinalis cardinalis</u>	Northern cardinal	A
<u>Carpodacus mexicanus</u>	house finch	A
<u>Francolinus pondicerianus</u>	gray francolin	A
<u>Geopelia striata</u>	zebra dove	A
<u>Passer domesticus</u>	house sparrow	A
<u>Pluvialis fulva</u>	<i>kolea</i> / Pacific golden plover	I
<u>Zosterops japonicus</u>	Japanese white-eye	A

Table 3.

List of Mammals

<u>Genus/species</u>	<u>Common Name</u>	<u>Distribution</u>
<u>Axis axis</u>	axis deer	A
<u>Capra hircus</u>	feral goat	A
<u>Felis catus</u>	feral cat	A
<u>Mus musculus</u>	house mouse	A
<u>Rattus sp.</u>	rat	A



PROJECT  
AREA

P  
A  
C  
I  
F  
I  
C

TRUE NORTH  
MAGNETIC NORTH  
APPROXIMATE MEAN  
DECLINATION 1983

HAWAIIAN ISLANDS  
MAUI  
QUADRANGLE LOCATION

SCALE 1:24000



CONTOUR INTERVAL 40 FEET

Map 1 - U.S.G.S. Topographic Map, Makena Quadrangle, 1983.

# ***Appendix B***

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***Archaeological Inventory  
Survey of Parcel MF-21***

**AN ARCHAEOLOGICAL INVENTORY  
SURVEY OF PARCEL MF-21, PALAUEA  
AND KEAUAHOU AHUPUA`A, HONUA`ULA  
MOKU, MAKAWAO DISTRICT, MAUI  
ISLAND (TMK: 2-1-23: 01)**

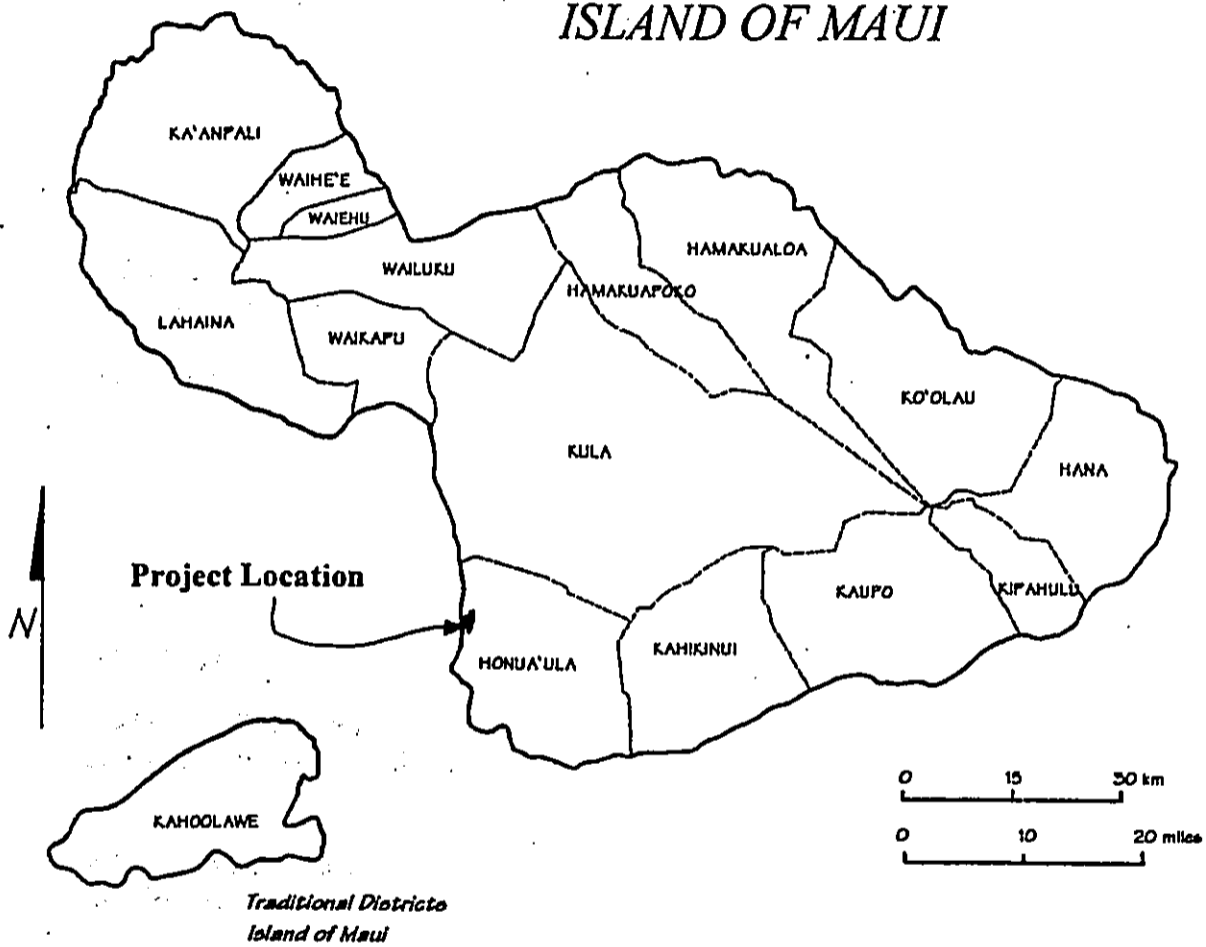
**Prepared for:  
Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by:  
Erik M. Fredericksen  
Demaris L. Fredericksen**

***Xamanek Researches  
Pukalani, Hawaii***

**January 4, 2000  
(Revised March 13, 2000)**

# ISLAND OF MAUI



*Traditional Districts  
Island of Maui*

## ABSTRACT

Xamanek Researches conducted an archaeological inventory survey of a c. 23-acre parcel of land in Wailea in late 1999. The project area is located in Palauea and Keauhou *Ahupua`a*, Honua`ula *Moku*, Makawao District, Maui Island (TMK: 2-1-23:01). A total of 10 archaeological sites were found during our survey, and have been assigned SIHP numbers 50-50-14-4804 through 4813. These sites consist of a small complex that includes a possible ceremonial structure (Site 4804), 3 rock overhang shelters (Sites 4805, 4806, and 4808), a low-density surface scatter of coral (Site 4807), and 5 walls (Sites 4809 through 4813).

All 10 sites qualify for significance under Criterion "D" of State and Federal historic preservation guidelines. In addition, Site 4804 appears to qualify under Criterion "E" for its cultural significance. Sites 4807, 4808 and 4810 through 4813 are no longer considered significant for their information content. Consequently, no further archaeological work is recommended for these sites.

In-place preservation is the recommendation mitigation treatment of the 4 remaining historic properties in the subject parcel (Sites 4804, 4805, 4806 and 4809). The latter, Site 4809, is an excellent example of a faced, core-filled post-contact wall. It is very long, and portions of it will likely be impacted for access. Limited data recovery is recommended for the portions of this wall that will be destroyed.

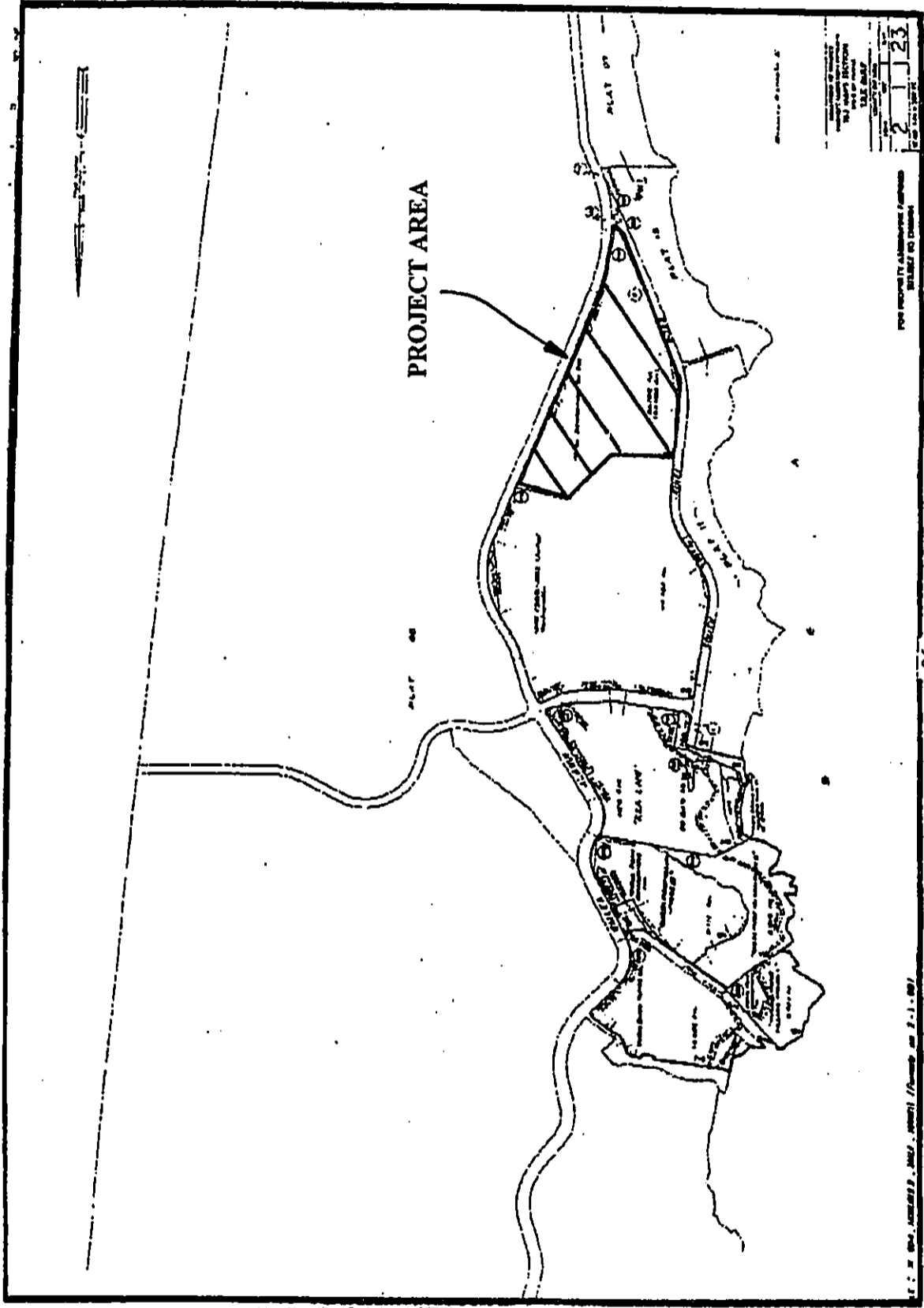


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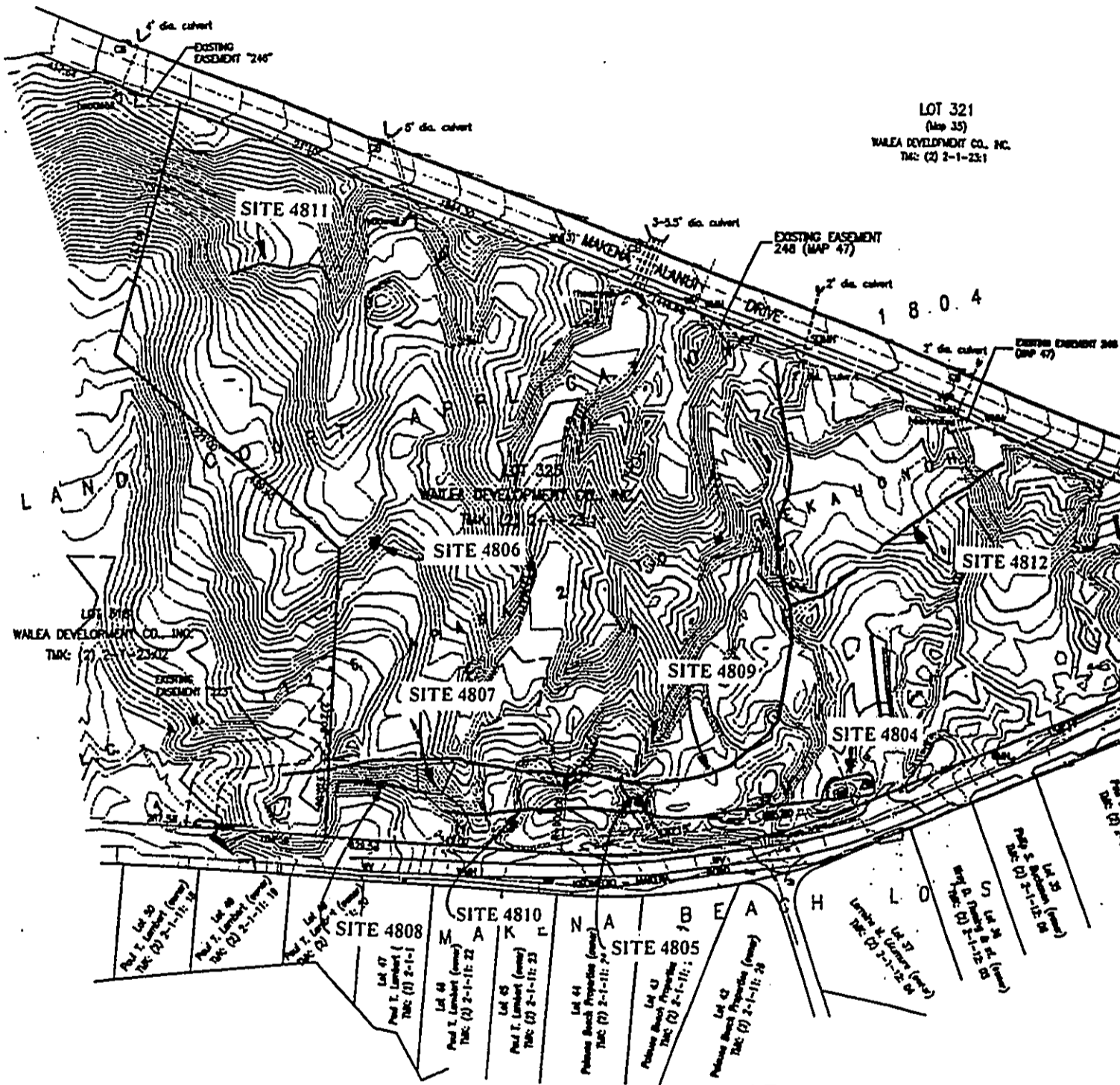




Map 2 -- Tax Map, Zone 2, Section 1, Plat 23. Hawaii State Department of Taxation.

TRUE NORTH  
Scale: 1"=200'

LOT 321  
(Map 35)  
WALEA DEVELOPMENT CO., INC.  
TMK: (2) 2-1-23:1



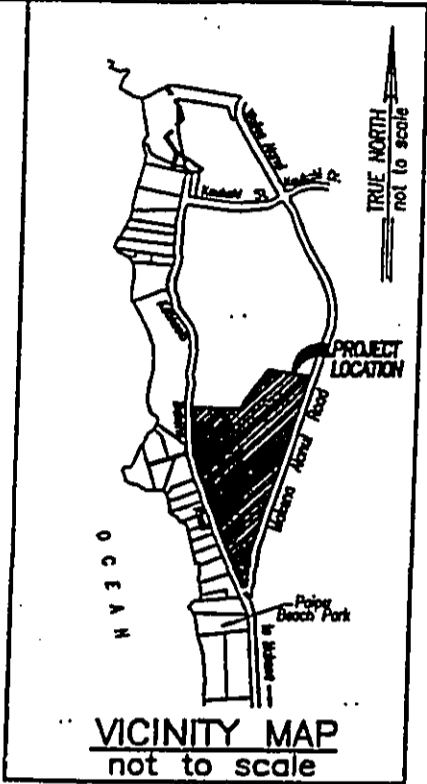
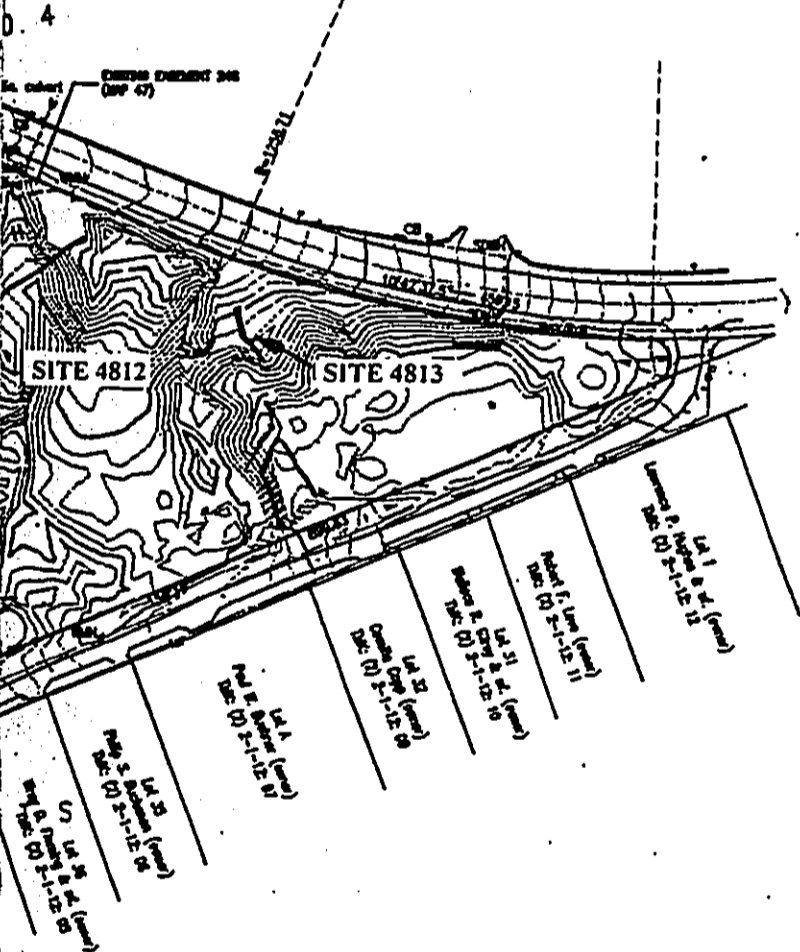
ARCHEOLOGICAL EXHIBIT  
OF LOT 325

LAND COURT APPLICATION 1804 MAP 4:  
BEING A PORTION OF L. C. AW. 11216, APANA 21 TO  
SITUATED AT HONUAULA (WALEA, KIHEI), MAUI, HAWAII  
TMK: 2nd Div.-2-1-23:01

Map 3 - Topographic Map of Study Parcel, showing location of sites.

NORTH  
1" = 200'

321  
35)  
MONT CO. INC.  
2-1-23:1



CAL EXHIBIT  
T 325

NON 1804 MAP 43  
16, APANA 21 TO M. KEKAUONOHI  
MALEA, KIHEI, MAUI, HAWAII  
2-1-23:01

MONT CO. INC. ENGINEERS & ARCHITECTS  
1000 MAUI AVENUE  
MAUI, HAWAII 96753

November 30, 1979

## INTRODUCTION

Xamanek Researches was contacted by Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc., about the possible archaeological work needed on a c. 23-acre parcel of Wailea land in August 1999. Project plans called for the subdivision of the property into 7 lots. Erik Fredericksen met with Eric Taniguchi and Bill Frampton of Pacific Rim Land, Inc. at the subject parcel on 20 August 1999. Erik Fredericksen subsequently conducted an inspection of the project area later that day, and on 23 August 1999. Based on this inspection, it was determined that several sites were located on the property and that an archaeological inventory survey would likely be needed. Ms. Cathleen Dagher, State Historic Preservation Division (SHPD), Oahu Office, confirmed the need for an archaeological inventory survey on the parcel. Pacific Rim Land, Inc. gave us the notice to proceed with a biological resources survey and an archaeological inventory survey in September 1999. Fieldwork for our inventory survey was conducted intermittently from late September through November 1999.

## STUDY PARCEL

The triangular project area is located in the southwestern part of Palauea *ahupua`a*, and the northwestern portion of Keauhou *ahupua`a*. These lands are in the traditional *moku* of Honua`ula, and located in what is identified presently as Wailea, on the Island of Maui. This 23.088 acre parcel, known as MF-21, ranges from 19 to 118 feet AMSL. It comes within c. 50 meters (165 feet) of the Palauea shoreline to the west. The property is bounded on the north by land owned by Palauea Investors, LLC. Makena-Alanui Drive borders the eastern side of the property, and Keoneoio-Makena Road runs along the western border. Portions of the project area have been impacted by past earthmoving activities associated with road construction and grubbing.<sup>1</sup> In addition, the southern end of the parcel near the intersection of Makena Alanui Drive and Keoneoio-Makena Road appears to have been filled within the past 10 years of so.

### Natural Setting

Parcel MF-21 essentially consists of *a`a* flow materials. Project area terrain is extremely rugged and uneven. Soils present on this property are part of the Keawakapu-Makena Series and are composed of well-drained, rocky soils (Foote, et. al., 1972). However, it is important to note that deposits are very thin where they do exist on the survey area.

The subject parcel is located along the flank of Haleakala and lies in its rainshadow. Estimated precipitation for this portion of Maui is less than 15 inches (380 mm.) per year (Juvic and Juvic, 1998). There are 3 probable drainage areas that run east-west across the property. A lack of any waterworn materials in these 3 areas suggests that water flow patterns on the parcel are seasonal rather than permanent. The area east (*mauka*) of the property has been heavily modified by golf course development in modern times. Four drainage culverts now flow onto Parcel MF-21.

The project area is located in a coastal, dry forest community. Both alien and native plant species are present in this community. However, alien species dominate the vegetative cover. The most common of these include *kiawe* (*Prosopis pallida*) trees, buffelgrass (*Cenchrus ciliaris*), *koa haole* (*Leucaena leucocephala*) shrubs, tree tobacco (*Nicotiana glauca*), and annual weeds. In addition, scattered cacti (*Cactaceae* spp.) which probably originated from discarded landscaping material, appear to be naturalizing on the parcel.

While not as common, moderate amounts of native species are present on the c. 23-acre study area. The most noticeable of the native species include *wili wili* (*Erythrina*

<sup>1</sup> It is estimated that about 10% of the subject parcel has been affected by these activities.



sandwicensis) trees, and an understory of mixed native herbs including 'ilie'e (Pumbago zeylanica), 'ilima (Sida fallox), 'uhaloa (Waltheria indica), and pua piki (Zinnia peruviana). In addition, the uncommon mai'a pilo (Capparis sandwichiana) was noted in 2 locations on the parcel.

While several native plant species were noted on the project area, alien animal species were dominant. Noted animal species included feral cats (Felis catus), axis deer (Axis axis), and goats (Capra hircus). In addition, fecal evidence of rats (Rattus sp.) and/or mice (Mus musculus) was observed. Lastly, numbers of introduced birds and a single indigenous kolea (Pluvialis fulva) were noted flying across the parcel.

The Palauea shoreline lies within 50 to 75 meters of much of the western boundary of the study area. This coastal marine environment consists of coralline beach sands and basaltic shorelines. The rocky coastal and near shore areas contain locally dense concentrations of marine life. These marine resources present in the vicinity of the project area would have been important to precontact Hawaiians as food resources.

## BACKGROUND RESEARCH

### Traditional History

There are few references in traditional literature to the Makena or Honua'ula region of the island of Maui. However, one reference is to be found in the "Myths of Sacred Hills", which is related in Beckworth (1970, pg. 189). Here she tells of the formation of Pu'u Ola'i, a prominent cinder cone which lies about 1.3 km. south along the coast:

*"The two hills beyond Maalaea bay on Maui are named Pu'u-hele and Pu'u-o-kali. They are mo'o beings and their first child is a daughter born of Pu'u-o-kali and named Pu'u-o-inaina. She is placed on the sacred island of Kahoolawe, called at that time Kohe-malamalama. She becomes the wife of the two sons of the kahuna of Hua, Kaakakai and Kaanahua, who take the form of birds and retreat to Hana-ula when the great drought comes and there alone rain falls. Pu'u-o-inaina takes Lohiau for her husband while he is living at Maalaea. Pele is angry and cuts her in two in the middle. The tail becomes the hill Pu'u-o-lai at Makena, and the head becomes the rock islet of Molokini."*

Another reference is contained in Inez Ashdown's Ke Alaloe o Maui (1970):

*"Ancestors sailing over the broad ocean or fishing on sea or along shores feared nothing because they were guided as children beloved by the ancestral spirits residing in shark forms. The noted shark diety, Ka-la-hiki, was the one who led the first explorers."*

*He would swim ahead of the fleet of canoes, point his head toward land and guide his mortal descendants safely to shore. ...*

*"When becalmed people prayed to ...the guardian angles who could assume king lau (many forms). They could appear as a man, a bird, shark, or whatever form was most suitable for the work to be accomplished.*

*"The large cave beneath Pu`u O-lai between One-uli and Nau-paka beaches at Makena has ever been a sacred dwelling-place for these ancestral dieties (Ashdown 1970, p. 22).*

E. S. Craighill Handy interviewed older informants concerning the Makena-Keone`o`io region which is paraphrased below (Handy and Handy, 1972, p. 147, in Bordner, 1995, pp. 91-92).

*"At Keoneoio on the southern flank of Haleakala, which is a sweet-potato planting area on Maui, there is a story of a man who mistakenly prayed to Makali`i, a demigod whose name he had heard associated with bountiful provender, asking to give him fish. Makali`i (a name for the constellation Pleiades) finally appeared to him and told him that he could not give him fish. 'But,' said Makali`i, 'plant sweet potatoes'; and he advised that the planting be done in the months of Ikuwa, Welehu, and Makali`i (late October into January, the months of south winds and rains). If he did so, Makali`i promised him a crop of big potatoes. The man did as he was told and had a big crop. One potato was so big he could not dig it out. A hill at Keoneoio was formed by the earth he threw out in trying to dig it up."*

The project area is located in the large section of southwest Maui called Honua`ula, which was a traditional *moku*, or district. The term, Honua`ula roughly describes a flatland (*honua*) which is distinctive for its red (*ula*) dust. The name Honua`ula can thus be translated as "Red Earth". Prior to the introduction of cattle, dry land forest had extended much closer to the sea, and there was considerably more rainfall, according to informants. Hawaiians lived along the coasts wherever potable water could be found—either from brackish springs or submarine springs offshore (Handy and Handy, 1972, p. 147, in Bordner, 1995, p. 93).

#### **Precontact Maui Chiefs**

A brief history of the significant Maui chiefs is contained in Dorothy Barrere's work on Wailea, prepared in 1975. She relies heavily on the collection of traditions and chants collected by Judge Abraham Fornander, who arrived in the Hawaiian Islands in 1842. He served as the circuit judge of Maui for more than 15 years.

Judge Fornander's genealogical reckoning begins with Kamaloohua, who ruled over the greater part of Maui, probably in the 15<sup>th</sup> century (Barrere, p. 5). Three generations after him, his descendants—2 brothers named Kaka`e and Kaka`alaneo—ruled jointly over Maui and Lana`i. The older Kaka`e's son was Kahekili I, who inherited the rule. Kahekili's son, Ka-wa-o-Kaohela succeeded his father as ruler. His

sister's daughter, La'ie-lohelohe, married his son, Pi'ilani, linking the two branches of the senior line and establishing the dynastic line for the descendants of Pi'ilani (Ibid.).

Lono-a-Pi'ilnai, the eldest son of Pi'ilani, succeeded his father, but his younger brother Kiha-a-Pi'ilani, with the help of their sister and her husband who was a paramount chief of Hawaii, wrested power from him. Kiha-a-Pi'ilani's eldest son, Kamalalawalu, became the paramount chief of the island of Maui sometime in the 16<sup>th</sup> century. The island is still referred to as Maui-a-Kama, or Kamalalawalu—and the people of Maui are his children—"the children of Kama" (Ibid., p. 1).

The fifth generation descendant of Kamalalawalu to become ruler was Kekaulike. While his reign began peacefully following the pattern established by his ancestors, this changed with his decision to try to seize power from chiefs of the island of Hawaii. Unsuccessful in this quest, he retreated to Kaupo, Maui, intending to undertake another raid at a future date. However, his health failed and he chose a younger son, Kamehameha-nui, to succeed him, thus breaking the long pattern of primogeniture. There is some question as to how long Kamehameha-nui reigned—but upon his death his brother, Kahekili became the ruler of Maui (Ibid., pp. 7-9).

Samuel Kamakau (1992, p. 166) comments on Kahekili's appearance and demeanor:

*"Ka-hekili was a famous chief, a tabu chief, one who ruled men, and was so sacred that whatever had touched his body was burned with fire [after he was through with it, so that no one else could use it]. He was a famous leaper from a cliff into water (lelekawa), sometimes from a height of 500 or 600 feet or even higher, and he could climb cliffs which no other person could ascend. He elected to have his skin black; one half of his body from head to foot was tattooed black, and his face was tattooed black, and this became an established law with him: Any person taken in crime who passed his dark side, escaped with his life."*

Kahekili's brother-in-law was Kalani'opu'u, a high chief from Hawaii. Almost continuous warfare occurred between these two leaders in the period from 1775 to 1782—until the time of the death of Kalani'opu'u (Barrere, p. 13). Kamakau tells of one battle in 1776, where Kalani'opu'u and his army landed at Keone'o'io:

*"...their double canoes extending to Makena at Honua'ula. There they ravaged the countryside, and many of the people of Honua'ula fled to the bush. When Ka-hekili heard of the fighting at Honua'ula he got his forces together—chiefs, fighting men, and left-handed warriors whose sling-shots missed not a hair of the head or a blade of grass." (Kamakau, 1992, p. 85).*

## Post-contact Period

We know that it was during Kahekili's time that Europeans first came to Maui. On November 27, 1778 the ship's surgeon, David Samwell, notes his presence aboard Captain James Cook's ship, Discovery:

*"In the afternoon Ka-he-kere [Kahekili] the King of this Island & of another which we saw to Leeward called Morotai came on board the Discovery in a large double Canoe attended by a large Train dressed in red feathered Cloaks and Caps. As the Canoe approached the Ship one man stood up and waved his Cloak about his Head while the rest sung in concert much after the manner of the Otaheiteans. The King & some of his Courtiers were taken into the cabin & some presents were made to them, he himself is a middle aged Man, is rather of a mean appearance, the Hair on each side of his head is cut short & a ridge left on the upper part from the forehead to the Occiput; this is a common Custom among all of these people, but each side of his head where the Hair was off was tattawed in lines forming half Circles which I never saw any other person have" (Samwell, in Beaglehole, 1967, 2:1151) [in Barrere, p. 11].*

From this time hence, the ruling chiefs of Maui were to be part of the irrevocable change that was brought about by the meeting of two cultures.

Following the visit of Captain James Cook in 1778,<sup>2</sup> other European explorers showed up on the shores of Maui. The French captain Jean-Francois Galaup de la Perouse<sup>3</sup> visited Maui on May 29, 1786 and noted in his journal:

*"At nine in the morning the point of Mowee bore west 15° north, and a small island also appeared...The aspect of the island of Mowee was delightful. I coasted along it's shore at the distance of a league. It projects into the channel in the direction of south-west by west. We beheld water falling in cascades from the mountains, and running in streams to the sea. After having watered the habitations of the natives, which are so numerous that a space of three or four leagues may be taken for a single village: but all the huts are on the sea-coast, and the mountains are so near, that the habitable part of the island appeared to be less than half a league in depth. ...*

*The breeze had freshened, and we were running at the rate of two leagues an hour, which encouraged me in an endeavour before night to explore this part of the island as far as Morokinne, near which I hoped to find an anchoring place sheltered from the trade winds. ...After having steered south-west by west, as far as the south-west point of the island of Mowee, I hauled to the west, and afterwards to the northwest, in order to gain the anchorage [Keoneoio] where the Astrolabe had already brought up in twenty-three fathoms, hard grey sand, about a mile from the shore. ...*

<sup>2</sup> Cook did not actually set foot upon the island of Maui.

<sup>3</sup> La Perouse was the name of a farm, which was one of his family's country properties. He added this to his own name in later years, and when he attended court he was known as Comte de la Perouse (Dunmore, 1991, p. 151).

*The Indians of the villages of this part of the island hastened alongside in their canoes, bringing us articles of commerce, hogs, potatoes, bananas, roots of arum, which they call tarro, with cloth and some other curiosities making part of their dress. I told them that I was taboo, a word which I had learned from the English accounts, and which was attended with all the success I expected. Mr. De Langle, who had not taken the same precaution, had his decks in a instant crowded with a multitude of Indians. But they were so docile and so apprehensive of giving offense, that it was extremely easy to prevail on them to return to their boats. I had no idea of a people so mild and so attentive. ...*

*It was so late before our sails were handed, that I was obliged to postpone going on shore at this place till the next day, where nothing could detain me but a convenient watering-place: but we had already observed, that this part of the coast as altogether destitute of running water, the slope of the mountains having directed the fall of all the rains towards the weather side. It is probably that the labour of a few days might be sufficient to supply the whole island with so valuable a necessary [sic] of life: but these Indians are not yet arrived at the requisite degree of industry, though in many other respects so greatly advanced. ...*

*At eight in the morning four boats belonging to the two frigates were ready to set off. ... About a hundred and twenty persons, men and women, waited for us on the shore. The soldiers, with their officers, landed first. We marked the space we wished to reserve to ourselves. ... These formalities made no impression on the natives. The women showed by the most expressive gestures, that there was no mark of kindness which they were not disposed to confer upon us; and the men, in the most respectful attitude, endeavoured to discover the motive of our visit, in order to anticipate our desires. Two Indians, who appeared to have some authority over the others, advanced, and with great gravity made a speech of considerable length, of which I did not understand a single word; and each offered me a present of a hog, which I accepted. In return, I gave them medals, hatchets and other pieces of iron, which were of inestimable value to them. ...*

*The soil of this island is entirely formed of decomposed lava, and other volcanic substances. The inhabitants have no other drink but a brackish water, obtained from shallow wells, which afford scarcely more than half a barrel a day. During our excursion we observed four small villages of about ten or twenty houses each, built and covered with straw in the same manner as those of our poorest peasants." [La Perouse, 1798: 341-351, in Barrere, pp. 15-18].*

Meanwhile, the warfare between Kahekili and the Hawaiian chiefs continued. By 1786, Kamehameha of Hawaii was powerful enough to begin sending expeditions of warriors to the Maui districts of Hana and Kipahulu. These raids were repelled by the Maui forces. But by 1790, Kamehameha had further consolidated his power on Hawaii, and invaded Maui himself, leading a large army. Also with him were two Europeans, whom he had "detained" from foreign ships. One, Isaac Davis, was the sole survivor of the tender, Fair American, which had been captured by the son of Captain Simon Metcalf, the man responsible for the "massacre of Olowalu" in February of 1790. On the

same day as the sacking of the Fair American, the boatswain of the elder Metcalf's ship, Eleanor, John Young, went ashore at Kealakekua Bay, where he was held lest he relay the news of the death of the younger Metcalf and his crew. After a couple of days, the Eleanor sailed away without him (Barrere, p. 21).

The two young men, Davis and Young, became Kamehameha's advisors, particularly in the tactics of foreign warfare. When they accompanied Kamehameha's army to Maui in 1790, they brought along a cannon called *Lopaka*, which played a decisive part in the defeat of the Maui forces at the battle of Kepaniwai in Iao Valley. This proved to be the turning point for Kamehameha in his quest for the defeat of Kahekili. Though still seen as the leader of Maui, Kahekili's power was on the wane following this horrendous battle.

Another historic reference to the Maui leader comes from the journal of Captain George Vancouver, commander of the British surveying ships Discovery and Chatam, in which he reports on his March 1793 meeting with Kahekili in Lahaina:

*"...his arrival [was not] attended by any accumulation in the number of natives on the shores or in the canoes about the vessels. He came boldly alongside, but entered the ship with a sort of partial confidence, accompanied by several chiefs who constantly attended him. His age, I suppose, must have exceeded sixty. He was greatly debilitated and emaciated, and from the colour of his skin I judged his feebleness to have been brought on by an excessive use of the ava [`awa]. His faltering voice bespoke the decline of life, and his countenance, though furrowed by his years and irregularities, still preserved marks of his having been in his juvenile days a man of cheerful and pleasing manners, with a considerable degree of sensibility, which the iron hand of time had not entirely obliterated [1801, 3:305]."* (in Barrere, p. 22).

The increasing presence of foreigners brought about extensive changes to the traditional culture. Kamehameha saw the *haole* as an element which could be manipulated to increase his power—but the relentless impact of foreign desires—particularly for land, slowly took these powers from the Hawaiian rulers.

In the historic period between 1831 and 1836, the Honua`ula District saw a severe population decline—believed to have been the result of both economics and disease. Those who remained in the district were primarily fishermen (Carpenter and Yent, 1995, p. 9). The population of the *moku* of Honua`ula was 3,340 in 1831, and 1,911 in 1836. One visitor to Honua`ula in 1846 estimated that the population was only 80—and reported that long-time residents remembered it as having numbered as many as 2000 laboring men (Barrere, p. 22). Another estimate has the entire population of the Honua`ula District in 1853 as about 750, with the bulk concentrated along the coast north of Pu`u Ola`i in the Makena area (Carpenter and Yent, p. 9). Depopulation appears to have been greater in marginal, rural areas, due to both increased mortality and outmigration to developing port towns such as Lahaina (Bordner, 1995, p. 98).

## Post-1850s

The Mahele of 1848, or division of lands, saw the transference of land titles from the king to his subjects.<sup>4</sup> The *ahupua`a* of Palaua was awarded to chiefess Miriam Kekauonohi<sup>5</sup> (LCA 11216: 21). The *ahupua`a* of Keauhou, was awarded to Hoomanawanui by LCA 6715 in 1851. It consisted of 853 acres, and was a Konohiki Award made to her in her Mahele with the king, in which she gave up the *ahupua`a* of Waianae 1 in Lahaina (Barrere, 1975, p. 38). In 1856, she sold the land to James Makee for \$1000.00 (Ibid.). There are no commoner LCAs located on the study parcel. However, there are a few LCAs that are found on the inland portions of the 2 *ahupua`a*, which were awarded for houselots, sweet potato lands, and Irish potato lands<sup>6</sup> (Barrere, p. 40).

Keawala'i Church, which lies about 3 km. south of the subject property was founded by the Wailuku Mission in 1854.<sup>7</sup> While preparing for the construction of the permanent stone structure, they built a meeting place of poles and *pili* thatching. The church, which was built in 1855 by the congregation, is 36 feet wide by 80 feet in length. There are no exterior buttresses, so to assure stability of the stone structure, the interior walls are thickened to a height of c. 3 feet. Wood posts set on lava blocks support the wood floor of the church. The time period between the 1850s and 1860s was a prosperous one for the congregation. In 1856 the Sunday School raised \$70 for the purchase of a church bell, to be placed in the belfry. The bell arrived in 1860, and was installed in 1862.<sup>8</sup> (Gowans, 1993, p. 125). In 1864 the church purchased the property on which it stood, for \$80.00. The man from whom it was purchased was named Mahoe, had gotten the land as part of Grant 835 (Donham, 1998, p. 7).

John Kukahiko (1834-1900) was the pastor of the Church in the 1870s, and is buried in the family cemetery know locally as "Five Graves". This landmark lies to the south of the project area.

## Ulupalakua Ranch

The name Ulupalakua apparently comes from a legend that tells of 3 men who traveled to Hana from Wailuku. At Hana they were given breadfruit, which they carried

<sup>4</sup> The district of Honua'ula was one of 12 traditional districts, or *moku*, of Maui. However, in 1859 it became part of Wailuku District for tax and judicial purposes, and in 1909 it was incorporated into the Makawao District (Barrere, p. 56).

<sup>5</sup> Miriam Kekauonohi was the granddaughter of Kamehameha I through his son Kina'u by Peleuli. Her mother was Wahinepio, sister of Kalanimoku and Boki. Kekauonohi died in 1851, and by 1862, her husband Levi Haalelea was forced to sell the *ahupua`a* at public auction. James Makee acquired the 2000-acre property—Haalelea receiving only \$800.25 for the purchase price (Barrere, 1975, p. 38).

<sup>6</sup> During the Mahele period, a "potato boom" occurred in the Makena region. The 1848 gold rush in California created a great need for Irish Potatoes, and it was cheaper to import them from Hawaii than from other parts of the mainland. Native Hawaiians, as well as the *haole* plantations engaged in this lucrative production. Much of the cultivation took place at higher elevations, where more abundant rainfall was present.

<sup>7</sup> Theresa Donham's research quotes oral testimony contained in a 1908 article by R. B. Dodge, as saying the church was founded in 1825 in a grass house near the present site of the stone structure (Donham, 1998, p. 21)

<sup>8</sup> The belfry of the church collapsed, and was subsequently restored in 1968. Also at that time, the exterior walls were coated with concrete to protect it from the elements (Gowans, 1993, p. 125).

on their backs as they journeyed home along a foot trail. While on their long trip, the breadfruit ripened, and henceforth the area of Honua`ula in which this occurred was known as Ulupalakua—"the breadfruit that ripened on the back." (Sterling, 1998, p. 231).

Sugarcane was the earliest commercially cultivated crop in Honua`ula, and the earliest recorded planters were M. J. Nowlein and S. D. Burrows. They had leased lands from Kamehameha III at Ulupalakua (Kaeo *ahupua`a*) in 1841, to "engage in the manufacture of sugar for the King at Honua`ula on Maui" (Sterling, p. 9 in Barrere, 1975). After only a few years, the king's agent informed Nowlein that the lease and other interests had been sold to Linton L. Torbert on October 2, 1845. Torbert was directed to "keep in order for the King" 50 acres of sugarcane. Nowlein was told to teach Torbert about cane and potato growing, and the manufacture of sugar and molasses (Ibid.). The overall holdings encompassed 2087 acres of land with growing cane, a mill and animal stock.

Torbert's tenure on the property was marked with limited success.<sup>9</sup> He obtained Land Grants 233 and 234, which connected the ranch with Makena Landing, thus enabling the transportation to market of products produced on the ranch lands. Financial entanglements and a smallpox epidemic were two of the conditions that plagued him. To avoid bankruptcy in 1851, he assigned his accumulated holdings by trust deed to Captain James Makee, but continued to manage the operations on the property. He was one of those who grew Irish potatoes for the California Gold Rush trade during the "potato boom" era mentioned earlier. However, on January 19, 1856, the Torbert Plantation was placed on the auction block, by order of James Makee. The land was listed in The Polynesian as over 5,400 acres; 1 dwelling house 36 x 38 feet, wood, with grass roof, numerous other buildings with grass roofs, a primitive sugar mill, livestock and "all articles and appurtenances belonging to or appertaining to the plantation." [Sterling, p. 10, in Barrere, 1975] Captain Makee purchased the property at auction on January 23, 1856.

Captain Makee moved his family to the plantation in the fall of 1856. By 1864, he had built the place into "the most complete sugar plantation in the islands", grossing and estimated annual income of one hundred thousand dollars (Ibid.). He built a large New England style mansion, complete with a widow's walk, and renamed his holdings—Rose Ranch. A frequent guest at Rose Ranch was King Kalakaua. The roses which flourished in the gardens and along the walkways were so famous, that a deep pink variety named *Lokelani*, was chosen as the official flower of Maui, and its pink color the official color (Bartholomew, p. 118). Hundreds of peacocks roamed the premises adding to the unique qualities of the ranch.

Captain Makee also changed the upcountry landscape. Not only was native vegetation cleared for planting of sugar cane and cattle pasturage but in the 1860s, he began a coordinated program of creating shelter belts, accomplished by the planting of nearly 15,000 eucalyptus and pine trees to prevent soil erosion (The Pacific Commercial

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<sup>9</sup> The entire *ahupua`a* of Papa`anui, Waipao, and Kelihi were sold as part of Royal Patent Grant 234 to Linton Torbet and William Slocum Wilcox. Grant 234 covers 1,986 acres.



Advertiser, June 25, 1864; in Dobyns, 1988, p. 18). He also was responsible for making Makena one of Maui's busiest harbors, second only to Lahaina. Makena was a regular stop on the Honolulu to Hilo run.

While Makee planned to raise cattle as the primary activity of the ranch, he had 375 acres of sugarcane planted in 1861. The advent of the Civil War and the disruption of sugar sources in the West Indies created a strong market for Hawaiian sugar. He took advantage of the situation, and expanded his sugarcane acreage to about 1,000 acres. By 1864 he had in operation a steam-operated sugar mill with the most modern of engines, and an ingenious sugar recovery mechanism of his own invention. During the period between 1876-1878, Makee formed Makee Sugar Company on Kaua'i (with his friend, King Kalakaua) and assumed control of the Waihe'e Sugar company on Maui.

Sugar continued to be the most profitable crop for the Rose Ranch until the severe drought of 1878. The Makee Plantation cut back on sugar cultivation, and the last crop was milled at Ulupalakua mill in March of 1883. Cattle were turned onto the remaining cane fields and ranching became the dominant activity of this region<sup>10</sup> (Barrere, p. 50-59).

The Rose Ranch continued to prosper, and much has been written about the idyllic life lead by Captain and Mrs. Makee, their 2 sons, and 6 daughters. The beautiful setting, pleasant coolness as compared to other more tropical locations, and the Makee's generous hospitality, made the ranch famous. They entertained the Royal Family on numerous occasions, as well as many other guests.

On September 16, 1879, Captain Makee died. Prior to his death, however, he had divided his property interests in Rose Ranch into eight shares—one for each of his 2 sons and 6 daughters. In March of 1886, the Makee family sold its holdings to James Isaac Dowsett of Honolulu, for the sum of \$84,500 (Thrum, 1925, in Barrere, p 87). Mr. Dowsett had been in the plantation and cattle business on Oahu since 1850, and had been the first to import Angus cattle to the Hawaiian Islands. Dowsett's daughter, Phoebe, was married to the youngest Makee son, Charles. After Charles' death, she was to wed Dr. J. H. Raymond.

In 1900, Dr. and Mrs. J. H. (Phoebe) Raymond became the owners of the former Rose Ranch—and renamed it the Raymond Ranch. In 1901, they also acquired leasehold rights of Kahikinui Ranch, adding considerable acreage to their holdings. Dr. Raymond

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<sup>10</sup> A note about cattle—they were first introduced to the Big Island by Captain George Vancouver in 1793. Later the same year he presented Kahekili with some goats, which were considered to be a valuable present. Vancouver requested that Kamehameha place a *kapu* on the cattle for a period of ten years, at the end of which time, wild cattle roamed the mountain slopes of northern Hawaii. There is no record of when cattle were brought to Maui, but by 1845 they were so many running loose on the isthmus, that numerous complaints were lodged from people whose lands were being destroyed. Many Hawaiians were driven from their homes and fields. The legislature finally passed a joint resolution in 1846 providing penalties for those who allowed their animals to trespass on others' lands. Soon "cattle walls" became a prominent feature of the landscape (Barrere, pp. 52-53).

built a slaughterhouse<sup>11</sup>, cold storage plant, and boat landing at Keoneoio for the purpose of shipping beef to markets in Lahaina and Honolulu. The cargo ship, Makena, was used in this trade. Dr. Raymond worked to improve the breeding stock, by adding Hereford bulls to his herd, and cutting down on the large numbers of wild cattle (Barrere, p. 70). He "went into grain culture on a large scale, and was active in urging the installation of the Kula pipeline as a further source of water." (Sterling, p. 11, in Barrere, 1975)

On January 1, 1923, Frank F. Baldwin bought the Raymond Ranch, and named it Ulupalakua Ranch—after the Hawaiian name for that area of Maui. At that time, the manager was Angus McPhee. In 1925, Frank's son, Edward H. K. Baldwin, took over the operation. Work on improvement of the breeding herd, and the culling of wild cattle was continued. Extensive fencing was undertaken. A slaughterhouse was built at Ulupalakua in 1929, and from that time on, Ulupalakua beef was processed at their cold storage plant in Kahului—thus abandoning the older facility located at Keoneoio (Ibid.).

The Baldwins took great interest in raising fine horses and polo ponies, and continued to raise horses and cattle after the war. Edward Baldwin died in 1956, and his son, Gregory, took over management of the Ranch. The last turnover took place in 1963, when it was sold to Mr. Pardee C. Erdman, Jr. The Erdmans continue operation of Ulupalakua Ranch to the present. In 1977, a fire destroyed the Makee mansion, along with the cottage that had been used by King Kalakaua on his numerous visits. The remains of the foundation and chimney of the main house can be seen from the road passing through Ulupalakua. A winery is now present on ranch lands, and visitors daily stop to taste this latest product of upcountry Maui.

### **Makena Landing**

Makena Landing, which is located on the coast ca. 4 km. south of the study area, served as the loading port for the Rose Ranch. In 1877, Makee began building a breakwater to develop the landing into a harbor, from which he could ship sugarcane. Makena was a regular stop in the Hilo to Honolulu run. However, the schedule of the inter-island ship was not regular.<sup>12</sup> Cargo from the ranch was brought down to the landing by oxcart, about the time that the ship would be due. Animal enclosures at the landing were most likely used to hold cattle until the ship arrived (Dobyns, 1988, p. 18).

The population decline that began in the mid-1800s reversed after the construction of Makena Harbor in 1878. A map from 1885 (Jackson Map, No. 1337) shows all of the structures along the bay. These include a "church and school; corral; the 'old sugar house'; a 'stone wall'; and nine houses, including a 'grass house,' 'large house near church' 'small house,' 'white house,' 'small brown house,' 'small white house,'

<sup>11</sup> The site of the old slaughterhouse at Keone'o'io, associated with the Raymond Ranch, is thought to be on the present Carter Estate property. Mr. Edward Chang, a long time Makena resident, recalls the slaughterhouse, but stated that it was in ruins around the advent of World War II. Mr. Chang's uncle, Mr. David Chang, vaguely remembers the ruins prior to WWII. He thinks that much of the wooden structure may have been dismantled during the war.

<sup>12</sup> A cannon, located at the ranch headquarters in Ulupalakua, would fire as the ship was sighted. The report could be heard down at Makena Landing, alerting parties there to prepare for the ship's arrival.

'large house, 'white cottage,' and 'Kukahiko's house'.<sup>13</sup> (Dobyns, p. 19) The church referred to is Keawala'i Church, which was founded in 1832, and built in 1855. It is one of the few remaining missionary churches on Maui. A cemetery occupies a portion of the churchyard.<sup>14</sup>

During the Raymond Ranch period, over a hundred families lived in the area around Makena. The development of Kahului Harbor in the 1920s, and the Baldwin's shift to Kahului cold storage facilities, closed down Makena Landing to commercial traffic, and caused families to move away from Makena. As well, the landing at Keone'o'io ceased to be used for commercial shipping.

A discussion of the traditional coastal trail is presented by Yoklavich (1989, pp. A-4 to A-9). The precontact trail system included *mauka-makai* trails, which linked ecological zones within a single *ahupua'a*. The adjacent *ahupua'a* were connected by an encircling trail, used for communication and transportation, and also for the important ritual of annual tax collection—the *makahiki*—a clockwise procession around the island. Known as the *Alaloa*, or "Long Road", it was also used as a communication link between *ahupua'a* during times of warfare. According to Martha Fleming (Handy and Handy, 1972, p. 488), "From Olowalu travelers were ferried by canoe to Ma'alaea, thence to Makena where the *Alaloa* followed the long sandy beach", suggesting that the trail, passed through Palauea and Keauhou. Although the exact alignment cannot be determined, Apple's research (1965, p. 23) reaffirms that it probably stayed relatively close to the shoreline. Later historic roads created for horses and wheeled vehicles were generally located further inland and tended to be straighter. The old Torbert Map of Makena (c. 1845-50) shows the road in Palauea *ahupua'a* running along the shore, and labels it "Aupuni Road"—meaning government road (Yoklavich, p. A-6). The economic center of Palauea and neighboring *ahupua'a* was located inland around the Ulupalakua Ranch area, from the middle of the 19<sup>th</sup> century until World War II. Makena Landing was established in the 1850s, and supplies that had been previously transported over the road were now landed at Makena, and carried inland to Ulupalakua. The coastal trail/road deteriorated due to lack of use, and Palauea, Keauhou and other *ahupua'a* saw a decline in population as well, until the 19<sup>th</sup> century "government road" was labeled a "horse trail" in the early 20<sup>th</sup> century (Ibid., p. A-4).

The advent of World War II resulted in a moderate amount of military activity in this part of Maui. A concrete gun emplacement is present on the beach, just south of the Polo Beach Club (Site 4128), and about 750 meters north of the study parcel. Another concrete pad, which held an artillery weapon (Site 4673) was located in Makena to the

<sup>13</sup> John Kukahiko (1834-1900) was the pastor of the Makena Church (Keawala'i Congregational Church), and the first harbormaster of Makena Harbor (Dobyns, p. 18).

<sup>14</sup> The land grant, on which this settlement is located, was awarded to Mahoe (Grant 835) in 1852 by Kamehameha III. It consisted of 514 acres, and included all of the coastal portion of Kao *ahupua'a*, "as it had been redefined by Torbert's plantation" (Donham, 1998, p. 16). It also included the fishpond at Apuakchau Point, the Honua'ula school and church, the government landing and a store house (Ibid., p. 17). Mahoe was considered to be the *konohiki* of Keao. The Torbert Plantation map (1848-1856) and the Alexander map (1866), show the Torbert road, coming down the mountain from the ranch, ending roughly in the vicinity of the study parcel (Maps 4 and 5) [Ibid., pp. 18-19].

south on Nahuna Point, overlooking the sea (Fredericksen and Fredericksen, October 1998). In addition, the top of a concrete pill-box is seasonally exposed on Palauea Beach c. 200 meters northwest of the subject parcel.<sup>15</sup> Finally, a local informant, Mr. Edward Chang, told Kelly (1987, pp. 59-60) that before World War II, the access across Palauea *ahupua`a* ran along the top of the beach berm and was used as a horse trail. During World War II, the army turned the horse trail "into a jeep road, following the path of the old walking trail, or Government Road". The present old Makena Road follows the road bulldozed by the army, and was paved in the 1950s (Yoklavich, p. A-4).

In the 1970s and 1980s, commercial development began to take place in this region of Maui. The Wailea Resort was planned and built, along with several golf courses and additional major hotels. In the mid-1990s, major tourist development slowed, and the focus shifted to smaller projects at prime locations along the coast. The current project would fall into this latter category.

## PREVIOUS ARCHAEOLOGICAL WORK

The island-wide survey work of Winslow Walker in 1931 identified only 6 *heiau* along the southwestern coast of Maui in Honua`ula District. The nearest ones lie to the south at Makena—Kalani *heiau* (Site 196), and Pohakunahaha *heiau* (Site 197). To the north are 2 more *heiau* associated with Kalepolepo fishpond. None were recorded in Palauea or the adjacent *ahupua`a* of Paeahe to the north, or Keahu to the south.

Walker reported another religious site in this area of Maui—"The *heiau* of Nanahu on a point north of Makena Bay is really a *ko`a*. It is a low platform 21 by 23 feet on which pebbles and coral are found mixed with the sand. Present day natives declare it was a place to pray to the Fish God, so the earlier report that it was a '*heiau* for dead people' seems to be an error." (Walker 1931, p. 103) Elspeth Sterling interprets this site as being at Nahuna Point (Sterling, 1998, p. 231).<sup>16</sup>

In the late 1960s and 1970s, a number of archaeological studies were conducted in Palauea by the Bishop Museum and other organizations (Kirch, 1969, 1970; Davis and Bordner, 1977a and 1977b; Walton, 1972). Numerous sites were identified, mostly in the coastal area. On the adjacent property to the north, locally identified as the "McCormack

<sup>15</sup> Site 50-50-14-4817.

<sup>16</sup> This site was identified in an inventory survey conducted by Xamanek Researches, and assigned SIHP Site number 50-50-14-4524 (Fredericksen and Fredericksen, June 1998).

Property"<sup>17</sup>, a large cattle pen—circa 1885—was located (Site 1027). Precontact sites included Palauea *Heiau* Complex (Site 1028) and Palauea Landing (Site 1029). On Halo Point, to the west of the present study parcel, Site 1030 has been described as a house site, a *ko`a*, an *ahupua`a* boundary shrine, and finally a possible burial by 4 different archaeological teams. Eventually this site was preserved as a *ko`a*, or fishing shrine (Kirch, 1970; Sterling, 1961; Davis and Bordner, 1977a; and Shapiro and Haun, 1989).

In the 1980s and early 1990s, as the Waiela Resort began to be developed as a tourist destination area, additional studies were undertaken in the coastal and intermediate zones of Palauea (Bordner, 1980; Haun, 1987; Dicks and Haun, 1987; Jensen and Haun, 1989; Shapiro and Haun, 1989; Donham, 1990a, 1990b; Henry, Walker and Rosendahl, 1992; Toenjes, Nees, Cleghorn and Anderson, 1992; Fredericksen, 1995; Fredericksen and Fredericksen, 1995). No studies of inland habitation sites in Palauea and Keauhou *ahupua`a* have been conducted. The studies that have been done in that ecological zone have centered around a Hawaiian Home Lands development in Keokea and Waiohuli to the north (Brown and Haun, 1989).

All of the research suggests that in the *ahupua`a* of Palauea and Keauhou permanent settlements were found along the coastal areas, followed by an inland intermediate zone that was sparsely utilized. Another habitation area was located inland at a higher elevation, where there was sufficient moisture to produce agricultural crops that would sustain more permanent habitation. These ecological zones were connected by a *makai-mauka* trail system, which probably followed the major gulches in the region, although no studies have been undertaken to verify this.

Donham (1990a, p. 7) concludes:

*"In general, the findings of the above studies indicate extensive, but not necessarily intensive agricultural use of the coastal zone and the dry, immediate inland zone between Kihei and Makena. Temporary habitation features have been identified in both the inland and coastal zones, and permanent habitation sites have been identified primarily along the coast. Most of the analysts have concurred with the presumption that most, if not all, of the sites in the area date to the late prehistoric period. A few radiocarbon dates from coastal habitation sites have predated AD 1400; however, these are considered as tentative in some cases."*

The work that Donham conducted at Site 2496, a 2 meter-deep coastal site located about 750 meters northwest of the present study area, pushed the time of habitation back considerably. Of 6 radiocarbon samples recovered from subsurface excavation, 1 returned an early date of AD 680 to AD 1020. Two other dates fell between AD 1260 and 1480. The remaining 3 samples that were analyzed, yielded dates between AD 1400 and AD 1739 (Donham, 1990a, p. 26). One historic burial—that of a child—was located on the study property. Further work by PHRI was undertaken to see if additional burials were present, but no additional ones were located (Henry, Walker and Rosendahl, 1992).

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<sup>17</sup> This 57-acre parcel lies on the *mauka* side of the old Makena Road, and extends inland to Makena Alanui Road.

Xamanek Researches returned to Site 2496 in 1995 to undertake data recovery (Fredericksen, 1995; Fredericksen and Fredericksen, 1995). Over 20 radiocarbon samples were submitted to Beta Analytic, Inc. for analysis, and the intercept dates fell into the following date brackets: 2 samples returned dates of between BC 100 and AD 130; 5 samples fell between AD 1275 and AD 1300 (13<sup>th</sup> century); 8 samples clustered between AD 1395 and 1485 (15<sup>th</sup> century); and 6 samples were between AD 1535 to AD 1650 (16<sup>th</sup>/17<sup>th</sup> century) [Fredericksen and Fredericksen, 1995]. This research established the potential for very early habitation in this coastal strip of Palauea. Additionally, one precontact burial was found during subsurface testing in sand deposits—thereby reaffirming the belief that additional human burials are likely present in such coastal sand deposits.

A total of 12 test units and 7 test trenches were excavated during this data recovery project. Over 64 cubic meters of soil were excavated in the test excavations that ranged from 0.2 to 2.4 meters in depth. The portable remains found during data recovery indicated a strong marine focus. Large quantities of food midden such as shellfish, sea urchin, and smaller amounts of fish, bird and mammal bone were recovered. The artifact assemblage includes coral tools such as abraders and files, a shell adz and worked shell, fishhook tabs and fishhooks, sea urchin spine files and tools, basalt tools, volcanic glass cores, numerous volcanic glass flakes, and several items of personal adornment.<sup>18</sup> Over 140 separate features were identified, and consisted primarily of postholes and pits, indicative of habitation activity. Portions of 5 habitation floors of compacted clay, some of which were paved with *ili`ili* stones, were also found. A subsurface wall (1.6 meters below surface) yielded a date of AD 1205 to 1440. Another subsurface rock structure is possibly a portion of a house *or hale*, that is c. 250 to 300 years old.

The top of a large, well-built U-shaped wall, was first noted during the earlier inventory survey by Donham (1990a). Subsequent data recovery work by Xamanek Researches revealed that this feature was c. 1.5-1.8 meters thick and c. 1 meter high by c. 21 meters long and 6 to 8 meters wide. It appears to have been associated with the 17<sup>th</sup> century occupation phase. Based on the total size and the nature of construction, this habitation enclosure may have been built for and utilized by a person of high status, such a local chief, or *ali`i*.

One additional site on this property is a World War II gun emplacement bunker (Site 4128), which was connected to Makena Road by a bulldozed access roadway that had impacted portions of the 17<sup>th</sup> century wall feature on the property.

Two archaeological surveys have been conducted on 2 Palauea Beach beach properties located on the coastal strip directly *makai* (west) of the present project area. These are identified as Lots 48 and 49. While no significant subsurface deposits were located during the survey on Lot 48 (Fredericksen and Fredericksen, September 1999),

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<sup>18</sup> These include a finished *lei niho palaoa* fashioned from a sea urchin spine, and several similar ornaments in various stages of manufacture. The presence of such artifacts, which symbolize high social rank, tends to further mark the site as one associated with the chiefly class.

fairly deep dune and marine sand deposits on the Lot 49 to the north were found to contain human remains. Human skeletal remains were recovered which represented at least 2 individuals. The site was designated Site 50-50-14-4757 (Fredericksen, August 1999). Only precontact material cultural remains were found in association with the wave-impacted human skeletal materials. The project has since been put on hold by the property owner, and the inventory survey remains incomplete as of this writing.

### **Previous Archaeology on Parcel MF-21**

There has been some archaeological work undertaken of Parcel MF-21 in the past. This previous work was conducted by the B.P. Bishop Museum in 1989, and apparently in 1990. The earlier investigation consisted of a reconnaissance survey, while the latter involved some subsurface investigation. The reconnaissance survey was conducted in May 1989, and covered several other parcels as well as MF-21. This walk-through surface survey located 10 archaeological sites (T 10-19), including several long walls, 2 rectangular enclosures, and a lava tube (Sinoto, 1989). No other descriptive text was included in this post-field summary letter report. However, additional archaeological work was recommended.

There was some investigation that was subsequently undertaken on an enclosure<sup>19</sup> and the lava tube in 1990<sup>20</sup> (Lisa Rotunno-Hazuka, personal communication, 17 November 1999). This work consisted of subsurface sampling at both of these sites. Unfortunately, no results on the findings were ever written up for either of these sites. Erik Fredericksen spoke with Ms. Helen Leidemann of the Bishop Museum about both of these sites in mid-December 1999, and she provided the following information. A radiocarbon sample was recovered from each site and submitted to Beta Analytic, Inc. for radiometric dating purposes. The sample obtained from a test unit inside the enclosure (Site 4804) returned a radiocarbon age of 410 +/- 50 BP (Beta No. 36195). This sample was recovered from Layer IIa (no below-surface depth available). The second sample was recovered at 25-39 cmbs. (no layer/level available) in the lava tube (Site 4805), and returned a radiocarbon age of 120 +/- 50 BP. She could find no further information for either of these sites in the Museum's files. Previous checks with Ms. Cathleen Dagher at the Oahu Office of the State Historic Preservation Division, also turned up no information of the Bishop Museum findings for the present study parcel. It was on Ms. Dagher's suggestion that we contacted Ms. Leidemann.

### **Settlement Patterns and Expectations of findings**

Archaeological studies indicate that the inland areas of the Honua'ula district were settled in later precontact times. Natural resources in such a marginal area were not particularly abundant. It was not until population pressure increased that they would have been sought. In the inland areas, where sufficient rainfall and soil existed, sweet potatoes and dryland taro could be cultivated. The coastal area served as the location for

<sup>19</sup> This enclosure was labeled B11-27 by the Bishop Museum. It has now been assigned SIHP number 50-50-14-4804.

<sup>20</sup> The lava tube shelter was identified as B11-28 by the Bishop Museum, and is now Site 50-50-14-4805.

permanent or semi-permanent habitation areas for marine resource exploitation. In some coastal areas, it appears that habitation could extend back to early to mid-precontact times.

There was a fairly large population along the Makena coastline in late precontact times. Archaeological studies have documented that the coastal area to both the north and south of the study parcel is dotted with permanent or semi-permanent habitation sites, *ko`a* and *heiau*. The majority of sites tend to date from late precontact times, suggesting that the Makena area of Maui was not heavily occupied prior to this period.

The "McCormack" property<sup>21</sup>, which borders the study parcel on the north, contains a cluster of sites, contains C-shape enclosures and several rock cairns that were identified as part of a *heiau* complex (Kirch, 1969). Additionally, such features as platforms, midden scatters, and walls were also reported (Toenjes, Nees, Cleghorn and Anderson, 1992). Those features and sites that have been dated appear to be late-precontact, as are most of the sites in the Kihei to Makena sector. Additionally, some portions of MF-21 were surveyed and tested by the B.P. Bishop Museum in 1990. One of our tasks was to relocate the sites tested, in addition to recording the other sites that are present on the study parcel. We expected to find a continuation of the site types identified on the bordering property.

## ARCHEOLOGICAL FIELD METHODS

We carried out the archaeological inventory survey of the c. 23-acre project area during the months of September, October, and November 1999. Fieldwork was conducted by Hugh Coflin, Erik Fredericksen, and Daniel Vicars. Erik Fredericksen was also the overall project coordinator.

The archaeological survey was conducted in 2 phases. We first covered the study area with a 100% walkover survey. Pedestrian sweeps were generally oriented *mauka-makai* (east-west) with a c. 5 to 10 meter spacing between team members. Sites were flagged and located on the topographic map during this phase. The second phase of our inventory survey consisted of site evaluation. Sites were mapped, evaluated, and photographed. In addition, we conducted limited subsurface testing at 3 of the sites. All excavated material was screened through nested ¼ inch and 1/8 inch mesh hardware cloth. Test units were excavated by stratigraphic layers, and artificial 10 cm. levels were utilized in strata more than 10 cm. thick. All units were backfilled when recordation was completed. Field notes were kept and all mapping was done with metric survey tapes and hand-held compasses. Photographs were taken with color film. Standard methods were utilized for laboratory analysis. All material culture remains were processed by Xamanek Researches on Maui.

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<sup>21</sup> This property was purchased by Palauea Investors, LLC in 1999.



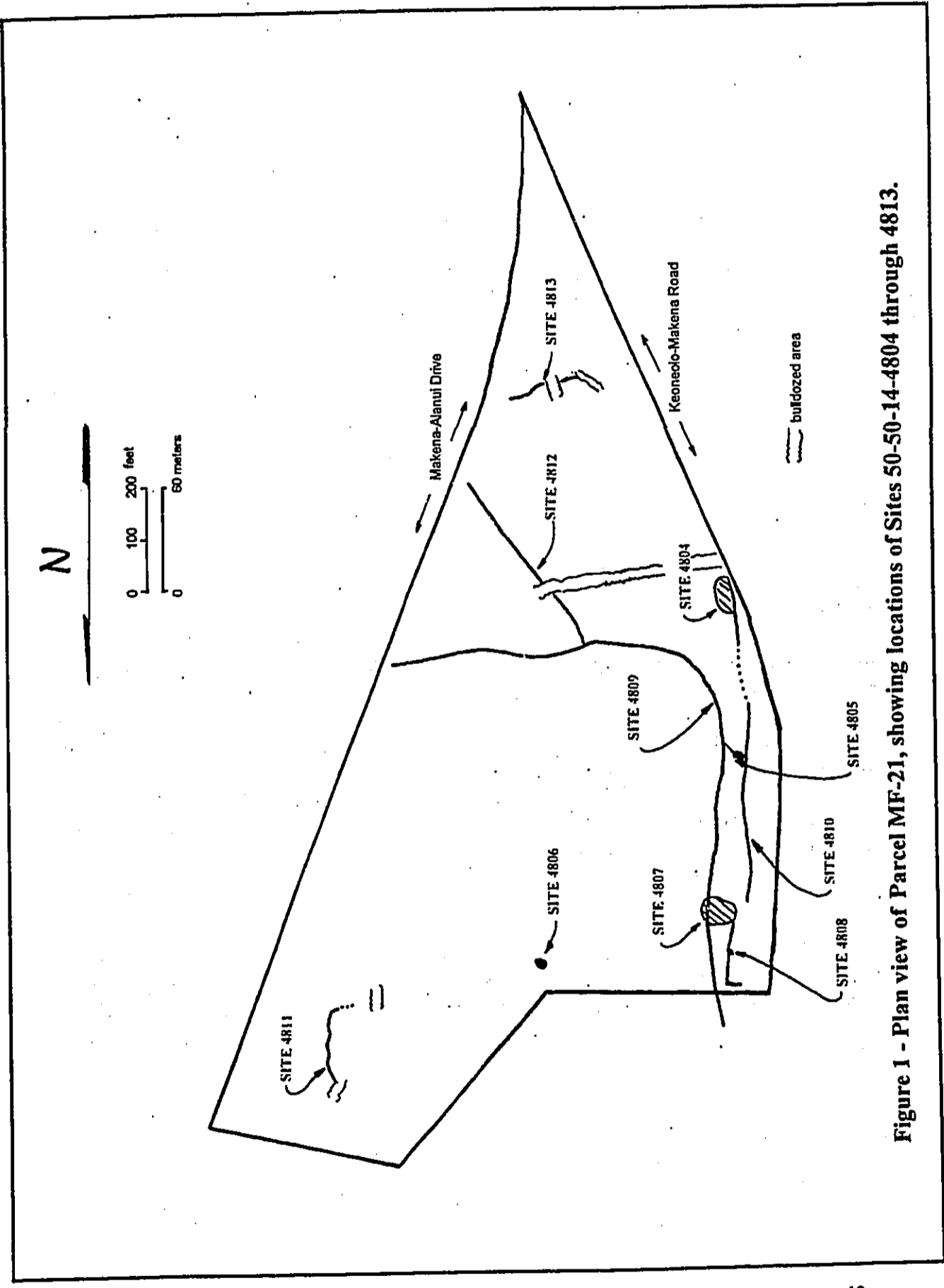


Figure 1 - Plan view of Parcel MF-21, showing locations of Sites 50-50-14-4804 through 4813.

## ARCHAEOLOGICAL FINDINGS

A total of 10 historic properties were located during the inventory survey of the subject parcel. These sites were subsequently assigned SIHP numbers 50-50-14-4804 through 4813. These archaeological sites include a complex with a possible ceremonial structure (Site 4804), 3 rock overhangs (Sites 4805, 4806, 4808), a surface scatter and a possible cupboard (Site 4807) and 5 walls (Sites 4809 through 4813). A discussion of each of these sites is presented below. Refer to Figure 1 for site locations.

### Site 50-50-14-4804

According to Ms. Lisa Rotunno-Hazuka, this site was investigated by the Bishop Museum about 10 years ago (personal communication, November 1999). However, it appears that the results were never written up and submitted to SHPD for review and comment.<sup>22</sup> It is therefore included in the present inventory survey as it is located on the property to be developed by Pacific Rim Lands, Inc.

The site is located on and around a small *a'a* knoll near the middle of the western boundary of the project area (Figure 2; Photos 1 through 4). The shoreline lies c. 100 meter (330 feet) to the west. The site consists of 3 features—an enclosure (Feature A), and 2 level areas (Features B and C). Elevations for this portion of the project area range from 56 to 62 feet AMSL. Vegetation in the general vicinity of the site consists of *kiawe* trees, buffelgrass, alien weeds and scattered, indigenous *'ilima* shrubs.

This complex covers an area of approximately 180 square meters. It is important, however, to point out that much of this area consists of unmodified *a'a* flow. Several pieces of coral were noted in and around the Feature A enclosure, and a few pieces of coral were observed on the level portion of Feature B. No other surface remains were found during our inspection of the site area.

### Feature A

This 3-sided enclosure sits on top of a small *a'a* knoll. The semi-rectangular structure is up to 8 meters long N-S by 6.6 meters wide. The walls of this enclosure are up to 1 meter thick and are a maximum of 0.9 meters high. The structure is in generally fair condition and it is well constructed. Intact portions of its walls are faced and core-filled on the north, east and south sides. The feature walls are constructed with angular basalt boulders, cobbles and pebbles. In addition, several pieces of coral were observed within the walls. The western portion of Feature A incorporates several upright pieces

<sup>22</sup> Ms. Cathleen Dagher, SHPD Oahu Office, indicated that nothing was ever formally submitted to her office for review on the sites (personal communication, November 1999). Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc. also noted that Wailea Development Company had never authorized any work beyond a reconnaissance level survey on Parcel MF-21.

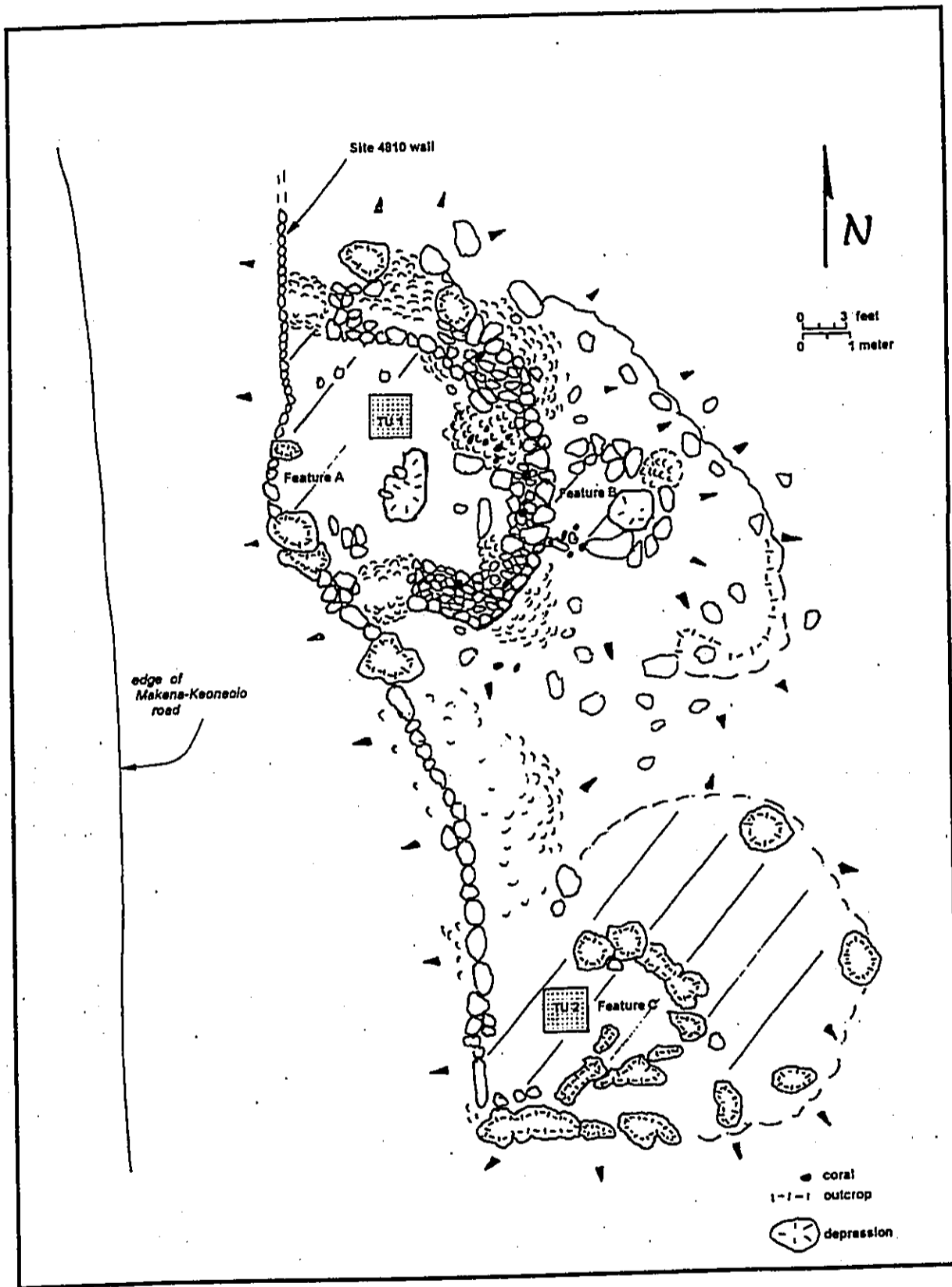


Figure 2 – Plan view of Site 50-50-14-4804, Features A, B, C, and Site 4810 wall.

of basalt outcrop. The southwestern and northwestern sections of the wall appear to have been partially dismantled to construct the Site 4810 wall that extends beyond Feature A to the north, and south to Feature C.

It appears possible that Feature A was partially open along its *makai*, or western, side prior to construction of the Site 4810 wall. Inspection of this section of the feature did not reveal any remaining evidence of a base similar (i.e., faced and core-filled) to the north, south and east walls. The ground slopes relatively steeply from this portion of Feature A down to the existing Keoneoio-Makena Road. There would undoubtedly be a commanding view of the ocean and shoreline from Feature A, if the existing *kiawe* trees to the west were removed.

An eroded, open excavation unit was noted near the center of Feature A. This irregularly shaped hole is interpreted as the B.P. Bishop Museum excavation from the 1990 investigation, which was not backfilled. In addition, apparent backdirt from this hole was observed on the eastern wall. Several pieces of coral were present in this material. Xamanek Researches excavated a 1-meter square test unit near this excavation to assess subsurface conditions.

#### Test Unit 1

This unit was dug to a maximum depth of 62 cmbs. Unit orientation was N-S. A total of 3 very rocky strata were located before excavation was halted at weathered bedrock (Figure 3; Photo 4; Table 1).

Layer I (0-9 cmbs.) was comprised of loose, brown silty loam (7.5 YR 5/3), with moderate amounts of organic materials present. buffelgrass roots were very common in this rocky stratum (c. 80% by volume). Scattered material culture remains were present in this layer and consisted of 15.4 g. of common marine gastropods, 8.8 g. of sea urchin, 2 unworked basalt flakes (36 g.), 2 pieces of unworked coral (68.6 g.), 2 waterworn pebbles, and a 1986 U.S. penny. This latter item was found near the existing surface of the test unit.

Layer II (9 to 28 cmbs.) consisted of brown silty clay (7.5 YR 5/4). This loose, dry soil yielded generally low amounts of material culture remains, including 14.6 g. of marine gastropods, 34.3 g. of sea urchin body parts, 5 unworked flakes of basalt, 9 pieces of coral, and a waterworn pebble. It is interesting to note that the bulk of the sea urchin remains (24.7 g.) were concentrated in one area. Moderate amounts of charcoal were also present in this layer, and 13.7 g. were collected. However there were no subsurface features present in this layer.

Layer III extended to a maximum depth of 62 cmbs. This stratum was made up of strong brown (7.5 YR 5/6), slightly compact, silty clay. This layer was very rocky (over 80% by volume) and did not yield any material culture remains. Rockiness increased with depth, and weathered bedrock was encountered at 54 to 62 cmbs.

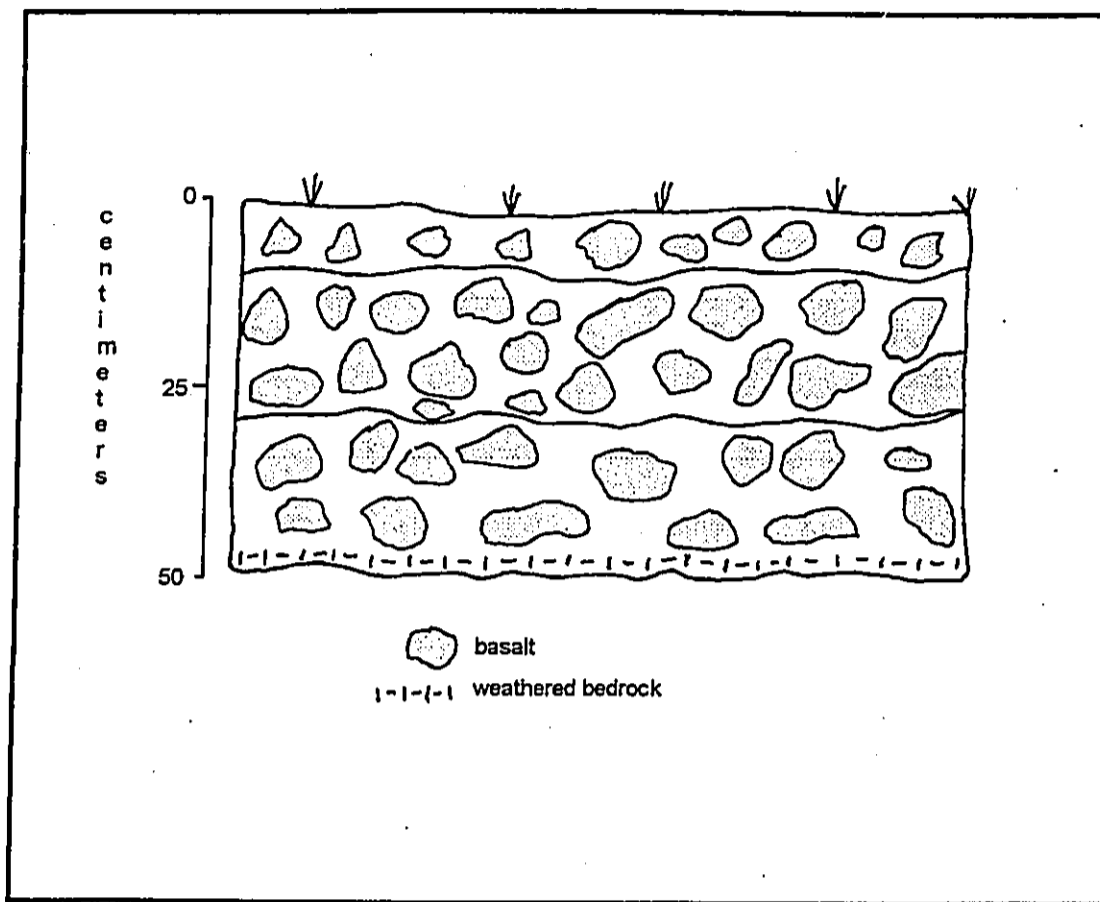


Figure 3 -- South face profile of Test Unit 1, Feature A.

#### Feature B

This feature consists of a level area that essentially lies adjacent to and below Feature A to the west. There are several large cobbles and small boulders (up to 90 cm. in diameter) that appear to partially enclose this c. 5-meter square level area. An apparent unbackfilled test unit was located in the eastern portion of the level area. No material culture remains were observed in the pile of angular pebbles and cobbles that probably came from this semi-circular hole. Four pieces of coral were, however, noted on the surface of Feature B. We did not attempt any excavation in this rocky area.

#### Feature C

This feature lies c. 7 meters to the southeast of Feature A. It consists of a level area, approximately 11-meters square that is partially enclosed by protruding basalt outcrop. In addition, the Site 4810 wall runs along the western side of this level area. A portion of land to the south of Feature C and the wall appears to have been bulldozed in the past. It appears likely that these previous earthmoving activities impacted the Site 4810 wall.

The surrounding area consists of a'a clinker with very shallow soil deposits. In contrast, Feature C contains moderate soil deposits. Three pieces of coral were also noted in the vicinity of this feature. We excavated a 1-meter square test unit in order to evaluate subsurface conditions.

### Test Unit 2

This unit was oriented N-S and was a maximum of 48 cm. deep. A total of 3 very rocky strata were encountered in the unit before excavation was abandoned at weathered bedrock (Figure 4).

Layer I (0-7 cmbs.) consisted of loose, brown (7.5 YR 5/3) silty loam with moderate amounts of organic matter. Buffelgrass roots and small *kiawe* rootlets were common in this stony stratum (c. 80% by volume). There were no cultural materials present in this layer.

The underlying stratum extended up to 28 cm. below the existing surface. Layer II (c. 7 to 28 cmbs.) yielded moderate amounts of material culture remains. Materials interpreted as food remains include 52.7 g. of marine gastropods and 0.4 g. of sea urchin body parts. In addition, an unworked basalt flake (17.6 g.) was recovered from the upper 5 cm. of Level 2 (17 to 27 cmbs.) The lower portion of this brown (7.5 YR 4/4) silty clay loam was sterile. Stoniness increased with depth and the soil boundary with the underlying stratum was somewhat indistinct.

Layer III was made up of strong brown (7.5 YR 5/6) silty clay. This semi-compact layer contained angular cobbles and pebbles (c. 80% by volume). Excavation was terminated in weathered bedrock and no material remains were present in the stratum.

### Discussion

Site 4804 contains 3 features. One test unit was placed in the Feature A enclosure—TU 1, and a second one in Feature C—TU 2. Subsurface results yielded very modest amounts of material culture remains in Feature A and moderate quantities of midden in Feature C.

Feature A is interpreted as a precontact structure, based on the radiocarbon date obtained by the B.P. Bishop Museum in 1990. The radiocarbon age of 410 +/- 50 (Beta No. 36195) indicated that Feature A was utilized in the mid- to late precontact period. While it is possible that Feature A represents a habitation area, the general paucity of material culture remains recovered during our excavation suggests a different function. It appears that Feature A, which was likely open to the *makai* (west) is a ceremonial structure. This conclusion is based upon the enclosure's location atop an a'a knoll, the overall labor expenditure necessary for its construction, and the general paucity of food midden remains found within the enclosure. In addition, several pieces of branch and

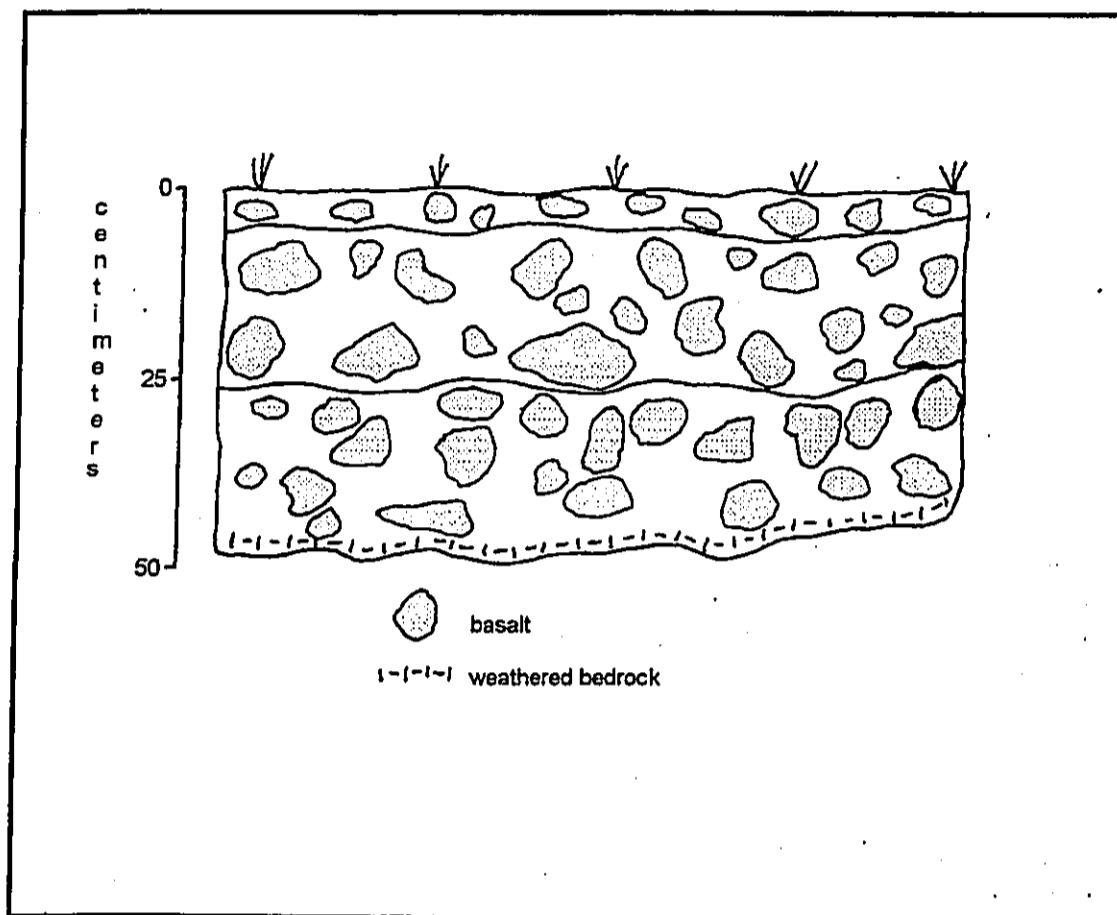


Figure 4 – South face profile, Test Unit 2, Feature C.

waterworn coral were noted in the 3 wall sections of this feature, as well as in the actual excavated base of the enclosure itself.

Both Features B and C appear to represent low-use activity areas. The modest amounts of food midden recovered from Feature C suggest that this portion of Site 4804 may have been used for intermittent, or temporary habitation, perhaps connected with ceremonial activities.

#### Site 50-50-14-4805

This second site, a rock overhang, lies c. 85 meters to the north of Site 4804. This site was apparently also located in the earlier B.P. Bishop Museum reconnaissance survey done in 1989. It is interpreted as an overhang shelter and is situated between a well-made rock wall to the north (Site 4809) and a less well constructed wall to the south (Site 4810). The latter wall is essentially adjacent to this lava tube overhang. In addition, a poorly constructed wall segment runs between the Site 4810 and 4809 walls. This wall segment appears to be associated with animal containment and is not considered part of

Site 4805. The construction style of this segment (i.e. single stacked) matches that of the Site 4810 wall.

This lava tube lies at c. 34 feet AMSL in a section of exposed to partly vegetated *a'a*. Vegetation present in this portion of the study area includes alien plants such as scattered buffelgrass, *kiawe* trees, and various annual weeds. In addition, several endemic *wili wili* trees, 2 indigenous *naio* trees, and several indigenous *'ilima* and *'uhaloa* shrubs were noted in the general vicinity of Site 4805.

The mouth of the lava tube faces north, and has a level area in front of it (Figures 5 and 6; Photos 5 through 8). The covered portion of the tube is a maximum of 5.6 meters wide (E-W) by 4.4 meters deep (N-S). The ceiling is up to 1.2 meters high. The level area in front of the overhang is c. 7 meters square. At the time of our inspection, the interior floor contained 3 or 4 holes with associated unscreened backfill piles apparently dug by persons seeking artifacts, and an open excavation unit left from the B.P. Bishop Museum reconnaissance survey of 1990. While there has been not write up of the findings, a charcoal sample was obtained and submitted for radiometric analysis to Beta Analytic, Inc. This sample returned a radiocarbon age of 120 +/- 50 BP (Helen Leidemann, B.P. Bishop Museum, personal communication, December 1999).

Our inspection of the lava tube shelter revealed several pieces of shell and coral under the drip line, as well as 3 waterworn cobbles on the level area in front of the overhang. Finally, a basalt chopper was collected from the terrace area. This artifact measures 176 mm. long by 115 mm. wide by 68-mm. thick and weighs 2.16 kg. It is fashioned from relatively dense waterworn basalt. A test unit was placed under the drip line in one of the few undisturbed locations with intact subsurface deposits (Refer to Table 2 for results).

#### Test Unit 1

This 50 by 50 cm. unit was excavated in a portion of the overhang shelter that had relatively few surface rocks. It was dug to a maximum depth of 50 cm. and contained 3 very rocky strata (Figure 7; Photo 8). The surface contained displaced cultural materials from a nearby backdirt pile associated with a looter's hole. These previously disturbed materials included cowrie shell, *pipipi*, unidentifiable bivalves and sea urchin body parts, along with some charcoal flecks.

Layer I (0 to 6 cmbs.) consisted of loose, dry to moist silt. This brown (7.5 YR 4/4) soil contained approximately 40% by volume angular basalt pebbles. Moderate amounts of cultural materials were recovered from this layer and included 25.7 g. of marine gastropods, 2.0 g. of bivalves, 2.6 g. of sea urchin body parts, a trace (0.1 g.) of fish bone, 3.6 g. of pig bone, and 1 piece of coral. No other remains were present in this thin stratum.

The soil boundary with Layer II was indistinct due to increasing rockiness. Layer II was composed of loose, dry, grayish brown (10 YR 5/2) silt. This rocky stratum.



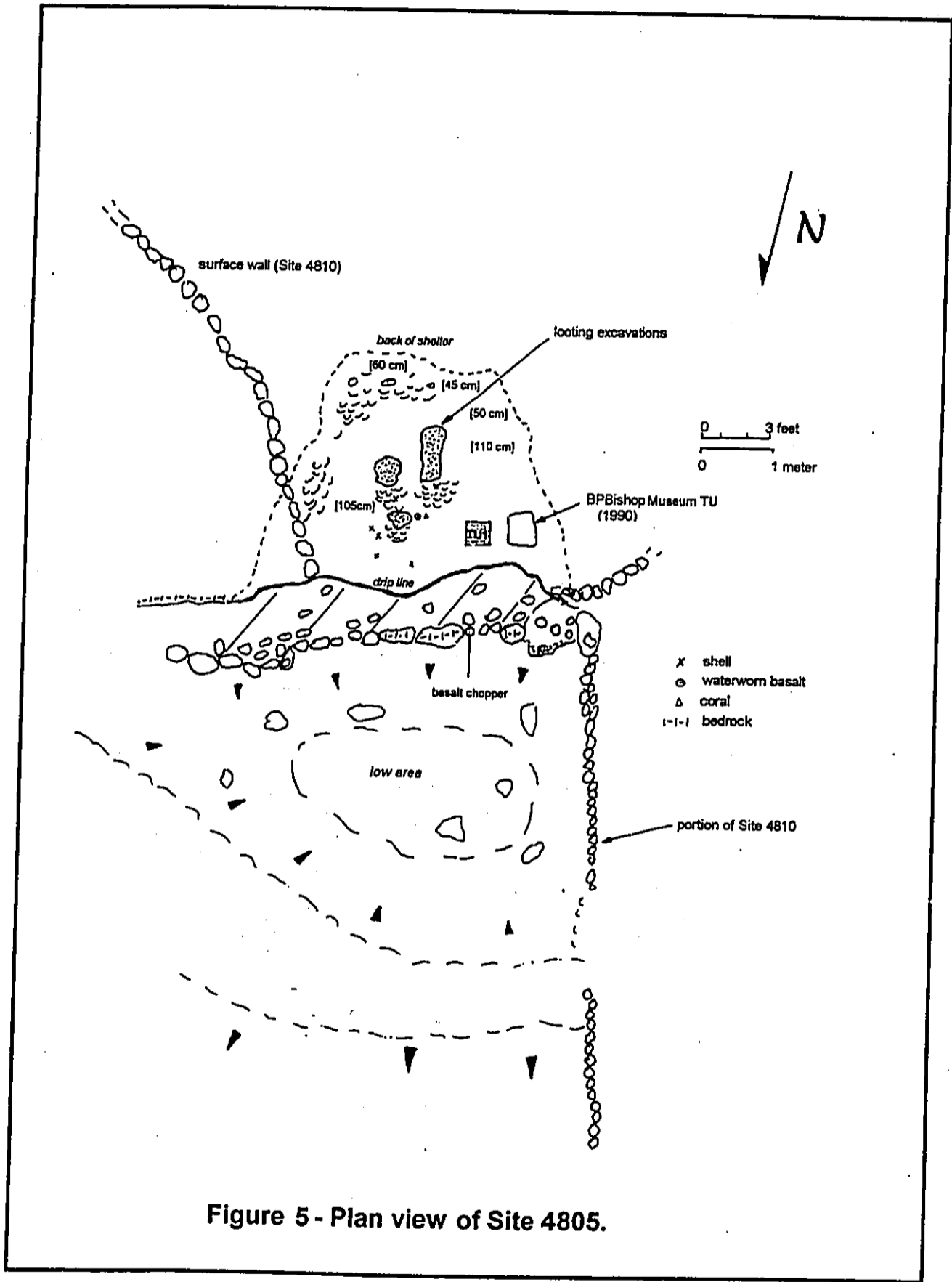


Figure 5 - Plan view of Site 4805.

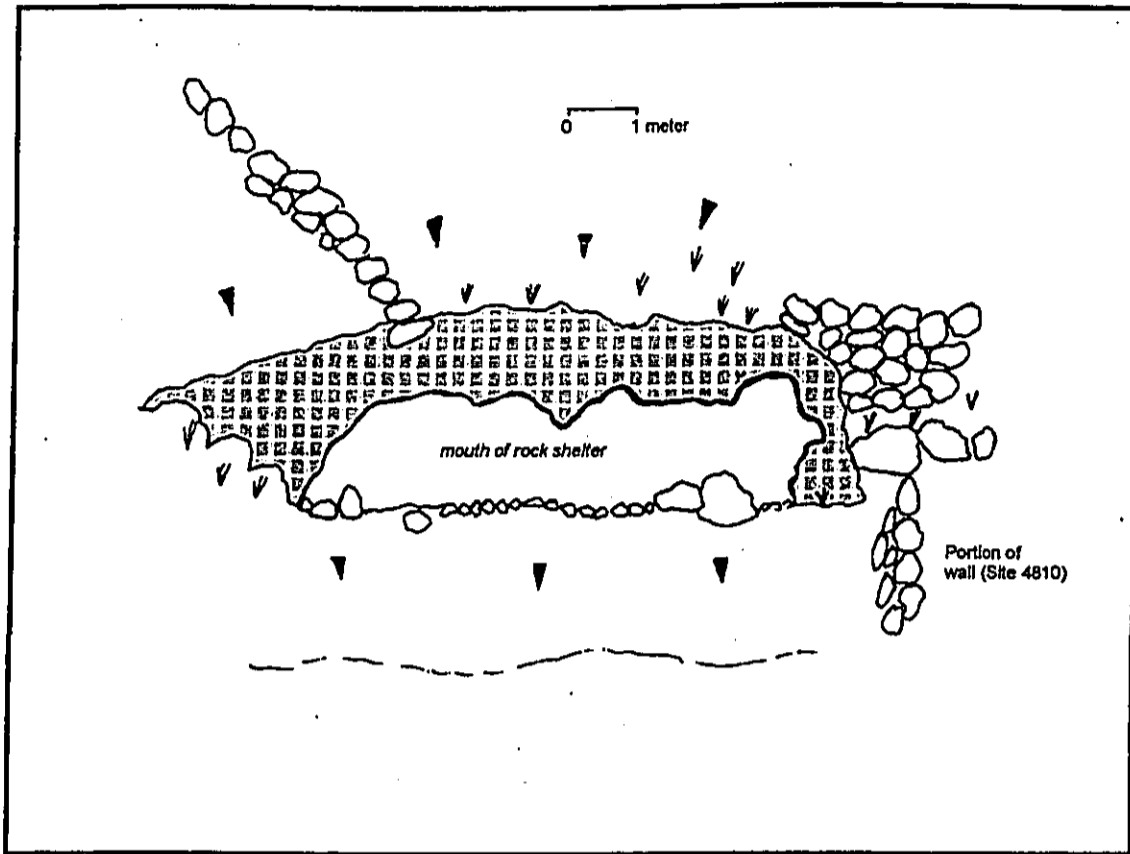


Figure 6 – Profile of Site 4805 rock shelter—view to south.

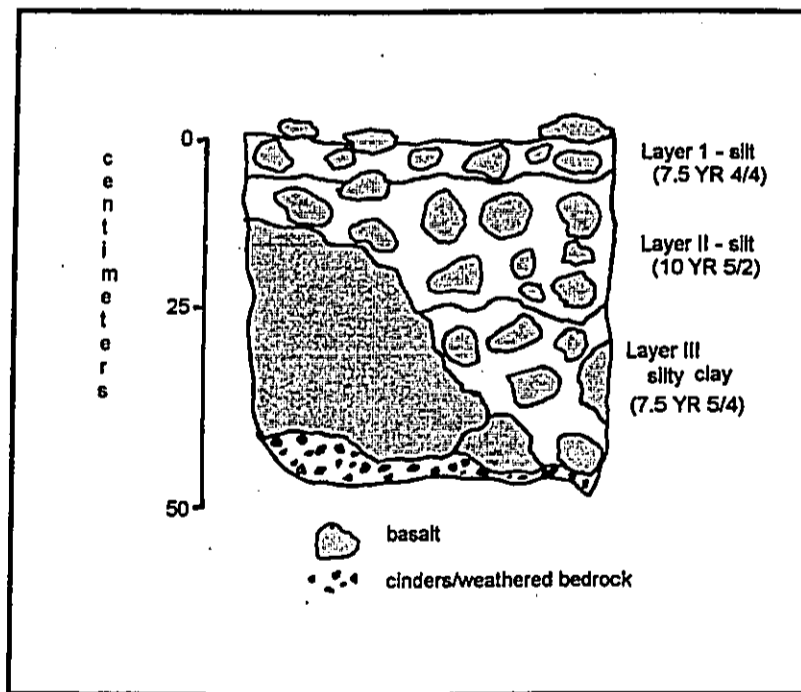


Figure 7 – West face profile—Test Unit 1.

extended up to 25 cm. below the existing surface of the overhang. Modest amounts of material culture remains were recovered from this deposit. Collected cultural materials consisted of 27.0 g. of common marine gastropods, 1.6 f. of bivalves, 10.3 g. of echinoderm body parts, 2.9 g. of pig bone, and 1.1 g. of fish bone. In addition, a small, unworked flake of volcanic glass (0.1 g.) was recovered from Level 2 (16-25 cmbs.). Rockiness increased with depth (i.e. 60 to 80% by volume) and the lower portion of Level 2 was essentially sterile.

Layer III consisted of loose, brown (7.5 YR 5/4) silty clay. This dry soil was very rocky (over 80% by volume) and did not yield any cultural materials. Excavation was halted at a maximum depth of 50 cmbs. in cinder and weathered bedrock.

### Discussion

Subsurface results yielded food midden remains and an unworked volcanic glass flake. In addition a large basalt chopper was found on a level area in front of the overhang. Portions of the interior have been previously disturbed by looters, and B.P. Bishop Museum archaeologists. Site 4805 is interpreted as an overhang shelter that was likely used for temporary habitation in precontact times.. This conclusion is based upon the types of cultural materials that were recovered, and the lack of any post-contact items. It seems that Site 4805 also was utilized in post-contact times, although no post-contact material culture remains were found during our investigation. The radiocarbon sample obtained by the Bishop Museum in 1990 did yield a post-contact age range, however.

### Site 50-50-14-4806

This second rock overhang shelter was identified during our pedestrian survey of the parcel. It lies at c. 66 feet AMSL, near the central portion of the northern project border. The shoreline is c. 200 meters (650 feet) to the west. This overhang is located along an exposed face of an *a'a* finger ridge (Photo 9). Vegetation in the general area includes alien species such as buffelgrass, annual weeds, and scattered *kiawe* trees. Native vegetation includes scattered *'ilima* and *'uhaloa* shrubs, and isolated *wili wili* trees. This lava tube faces the south and is c. 2 meters above a natural drainage area.

The dimensions of the covered portion of the overhang are c. 7.8 meters E-W by 2.4 meters N-S by a maximum of 0.8 meters high (Figure 8). Some possible crude stacking was noted on the eastern portion of the lava tube opening. A relatively level, sloping area (c. 10 meters square) extends from the entrance of this shelter. At the time of the investigation, the interior of the shelter was littered with 8-foot lengths of 1 x 2 lumber, weathered plastic sheeting and several plastic planters. In addition, cat, young deer and bird bones were noted scattered around the floor of the shelter. These relatively recently deposited bones exhibited gnawed, tooth marks. A decomposing mongoose carcass was also located near a low pebble and cobble pile. Finally, a weathered piece of cowrie shell was noted near the back of the overhang.

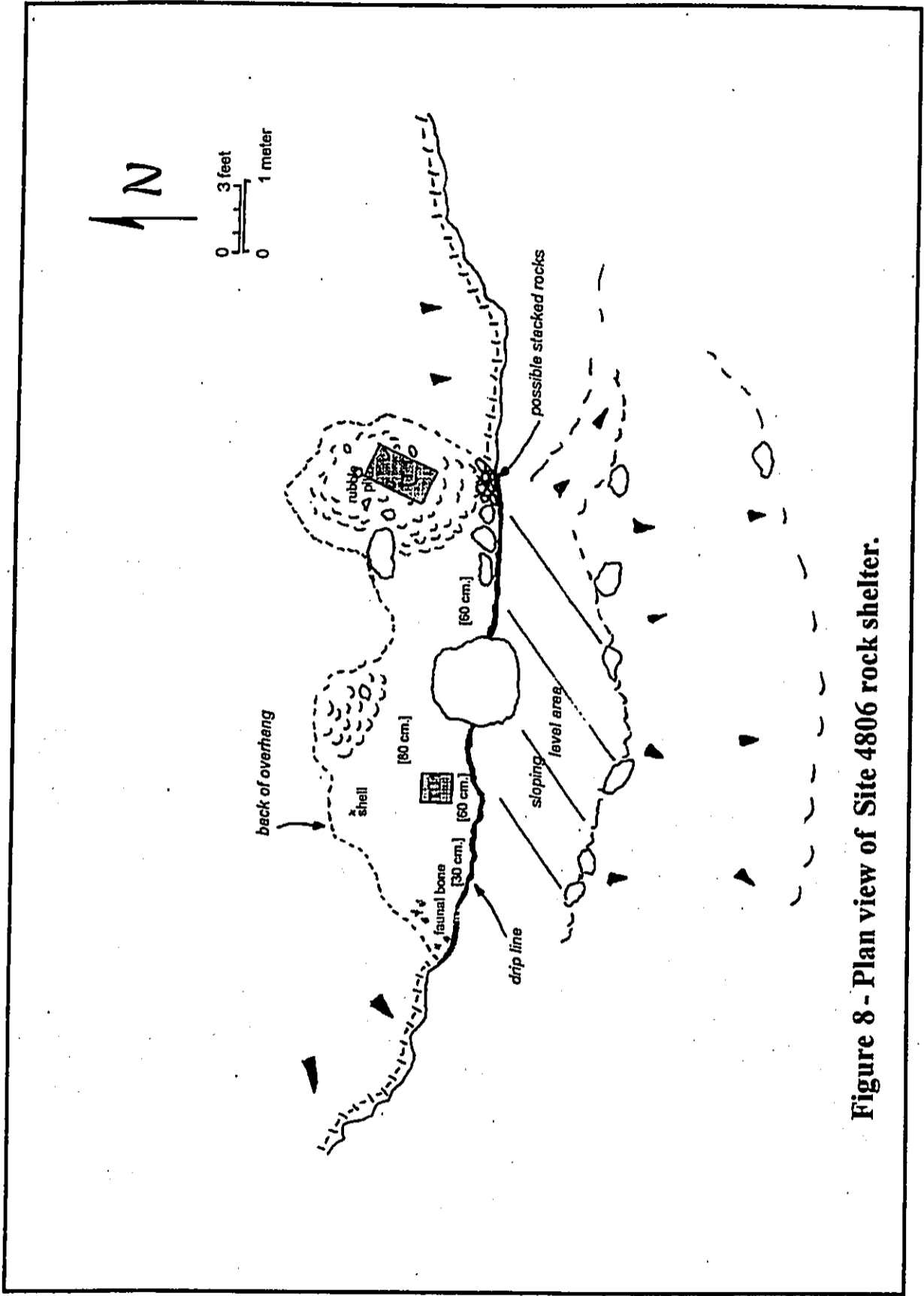


Figure 8 - Plan view of Site 4806 rock shelter.

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A test unit, measuring 50 by 50 cm., and a test trench measuring 50 by 100 cm. were excavated in the shelter. The test unit was utilized to sample subsurface soil conditions, and the test trench was placed in a rubble pile in the northeastern part of the overhang.

#### Test Unit 1

This unit (50 by 50 cm.) was oriented N-S and was a maximum of 37 cm. deep. Three stony strata were encountered before excavation was terminated at weathered bedrock (Figure 9).

Layer I (0-6 cmbs.) was made up of brown (7.5 YR 5/4) silty clay. This dry, compact soil yielded a few pieces of marine shell (2.3 g. of *Cypraea*), 1.2 g. of sea urchin body parts, 1.1 g. of mammal (rat) bone, and a trace of charcoal (0.3 g.). In addition, several small pieces of clear plastic sheeting were found just under the surface.

Layer II (6-21 cmbs.) consisted of grayish brown (7.5 YR 5/2) silty clay. This semi-compact stratum contained modest amounts of material culture remains, including 7.1 g. of common marine gastropods (*Cypraea*, *Nerita picea* and *Cellana*), 3.5 g. of sea urchin parts and an small amount of charcoal (2.1 g.).

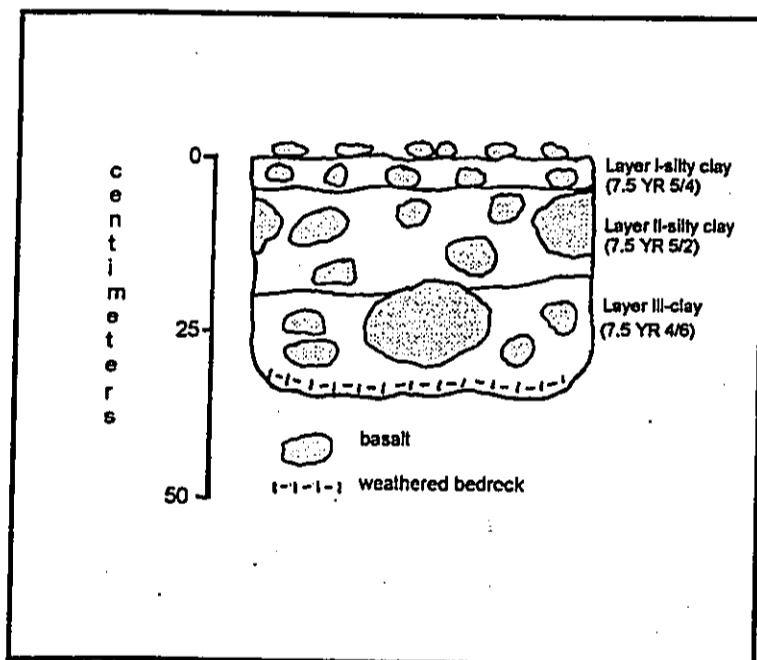


Figure 9— North face profile of Test Unit 1.

Rockiness increased with depth, and the soil boundary with the underlying stratum was indistinct.

Layer III was composed of strong brown (7.5 YR 4/6) clay. This compact layer contained quantities of angular pebbles and cobbles (c. 70% by volume). The stratum did not yield any cultural materials and excavation was halted in weathered bedrock.

### Test Trench 1

This trench was placed in the highest portion of the rubble pile in the northeastern portion of the overhang shelter, in order to investigate this pile and determine what was located under it. A 50 by 100 cm. area was cleared of rubble, and it became evident that the pile was made up of roof-fall. This rubble pile was found to be up to 35 cm. deep and to rest on exposed bedrock and very thin (less than 5 cm.) silt. No material culture remains other than bits of plastic sheeting were found.

### Discussion

Subsurface investigation yielded modest amounts of materials interpreted as food midden in TU 1. While post-contact cultural materials were found near the surface, only indigenous food remains were located below the surface zone. Although there were no indigenous artifacts recovered, it appears probable that this overhang shelter site was utilized in precontact times as a temporary shelter. Its most recent use has been as a storage area for materials likely used in the cultivation of illegal marijuana plants.

### Site 50-50-14-4807

This site is located on and along the flank of an a'a finger ridge near the northwestern corner of the project area (Figure 10; Photo 10). Site 4807 consists of a surface scatter of waterworn branch coral and a possible lava tube cupboard. The site extends from c. 41 to 53 feet AMSL. Alien vegetation observed in the general vicinity includes *kiawe* trees, buffelgrass, annual weeds, and scattered *koa haole*. In addition, *'ilima* shrubs were relatively common in areas of exposed a'a, and a few *wili wili* trees were present. The area in and around the site is actively being used as an informal *lua* by nearby beach visitors, and has been impacted by other activities in the recent past.

The site is truncated by a well-made, core-filled rock wall (Site 4809), placed near its eastern (*mauka*) boundary. The construction of this well-built wall would have required quantities of rock collected from the general area. In addition more recent rock gathering activities are evident along the western (*makai*) side of the site. These modern collection activities appear to have completely dismantled a section of another wall—Site 4810.

Site 4807 covers an area of about 150 square meters. It consists of a low concentration (less than 1 piece per square meter) of branch and waterworn coral pieces. In addition, a piece of weathered cowrie (*Cypraea* sp.) was also noted on the surface of the site. A small lava tube is located 4.5 meters to the east (*mauka*) of the Site 4809 rock wall. A single piece of coral was found in this possible cupboard (Photo 11). However, no other material culture remains were present in the 50 by 45 cm. high opening. Two other small lava tubes located nearby did not contain any cultural materials.

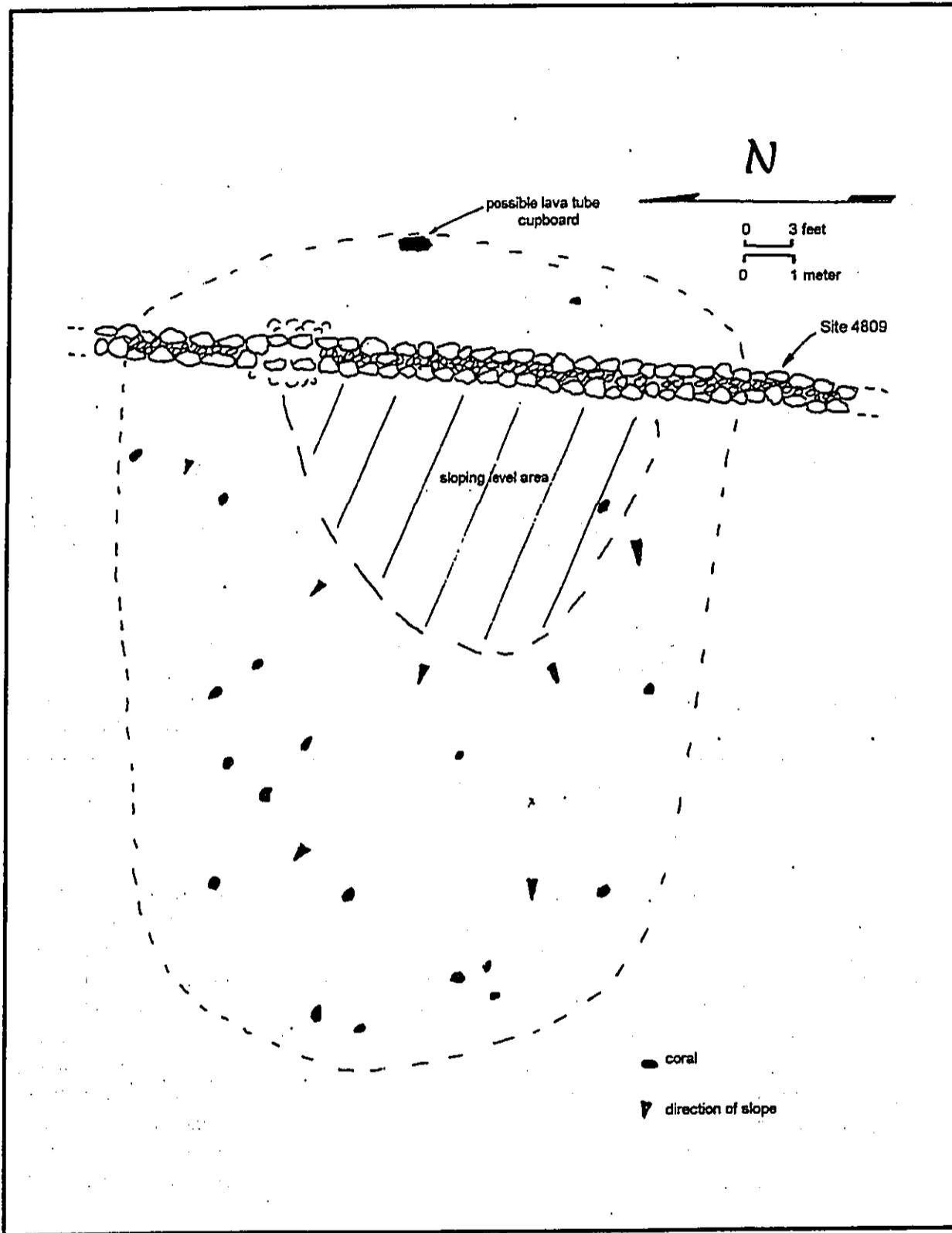


Figure 10 – Plan view of Site 4807 surface scatter, and portion of Site 4809 wall.

## Discussion

Site 4807 is a low concentration surface scatter of coral. The small lava tube that contains a piece of coral is tentatively considered to be part of this site. However, the single piece of coral may have been placed within the small lava tube in more recent times. The function of Site 4807 remains somewhat unclear. The upper portion of this site would have had an unobstructed view of the nearby ocean if the existing *kiawe* trees were not present. However, there is no soil deposit present, making it essentially impossible to undertake subsurface sampling at this site. The site has also been impacted by recent rock harvesting activities and is actively being used as a toilet by beachgoers. The presence of waterworn and beach coral suggests it possibly was an area where ceremonial activity took place in precontact times.

### Site 50-50-14-4808

This site consists of a small overhang. It lies at c. 22 feet AMSL and is located near the base of a sloping *a`a* flow (Photo 12). Vegetation in the area is dominated by dense *kiawe* and *koa haole* trees, and alien weeds. Site 4808 is located c. 30 meters north of the Site 4807 surface scatter. The Site 4810 wall is partly intact in the general vicinity of the overhang, and appears to have been built around the shelter as a livestock barrier.

The mouth of the overhang shelter is up to 1.2 by 0.8 meters wide by 1.3 meters deep. It appears to be unmodified. It may have been used as a temporary shelter. However, it is important to note that there is very little soil deposited on the floor of the shelter. There were no portable remains noted other than recently deposited human feces. This overhang is tentatively interpreted as a temporary habitation area that may have been used in precontact times, and continues to be used today.

### Site 50-50-14-4809

This site consists of a long, well-built wall. It is the most dominant historic property present on the subject parcel (Photos 13 & 14). It begins just to the north of the subject parcel's northern boundary, and traverses a large portion of the project area. The wall lies between 23 and 90 feet AMSL. It is c. 400 meters long (1320 feet) and is in generally good condition. The bulk of this wall is intact, and ranges in height from 0.9 to 1.4 meters by up to 0.9 meters in width. It is faced on both sides and is core-filled. Typical rocks used in its construction include angular boulders (50 to 80 cm. in diameter) along portions of its base and angular cobbles (20 to 40 cm. in diameter) elsewhere. Exposed sections of the wall contained smaller fill stones, typically less than 15 cm. in diameter. We did not find any coral or shell associated with the wall over its entire length. In addition, we did not note any waterworn rocks incorporated in the construction of the wall.

It should be noted that this wall appears to have formerly extended east (*mauka*) of the project area. While the construction of Makena-Alanui Drive destroyed a portion of this site, a probable remnant of the wall was found on the golf course side of the road.



## Discussion

The labor expenditure required to build this site was significantly greater than that used in the construction of any of the other walls on the study property. It is well constructed and the selection of stones appears to have been planned, rather than just the casual collection of readily available materials. It is faced and core-filled, a technique which also varies from the rest of the walls. It appears to fall roughly along the *ahupua'a* boundary between Palauea and Keauhou (Maps 3). As noted in the background section, during the Mahele one *ahupua'a* was granted to Kamehameha I's granddaughter (Palauea), and the other was a Konohiki Award (Keauhou) made by Kamehameha III. The latter *ahupua'a* was purchased by James Makee in 1856, and the former sold at public auction in 1862—also to Makee. This suggests that the boundary wall may have been constructed before the lands were acquired by the ranch. The site was probably used as a cattle wall, and probably built by someone who controlled a relatively large labor force. Many other cattle walls of lesser quality were constructed in Makena during the early part of the 19<sup>th</sup> century, to keep wild cattle from roaming through homesteads.

### Site 50-50-14-4810

This site is the second longest wall present on the project area. It begins near the northern boundary and extends to the south. Most of this wall is intact and it is c. 230 meters (750 feet) long. It crosses rocky terrain that ranges from c. 20 to 60 feet AMSL. In general, the condition of the feature ranges from poor to fair. It is essentially a single rock thickness in width (30 to 60 cm.), and typically is 3 to 5 courses in height (70 to 110 cm.). The construction is fairly casual, and the overall labor expenditure on this site was generally low.

Portions of the wall have been impacted by the rock collection activities of modern wall builders, and bulldozing. This latter activity may have occurred during World War II. Areas of partial or total destruction include a c. 25 meter section adjacent to and west of Site 4807, in portions to the south of the Site 4805 rock shelter, and in the area adjacent to and south of Site 4804.

## Discussion

Site 4810 is interpreted as an animal containment wall associated with the ranching era. Its construction likely impacted portions of the Site 4804 enclosure (Feature A).

### Site 50-50-14-4811

This wall segment is located near the northeastern corner of the property. Soil deposits are very thin in much of this portion of the subject parcel. Extensive bulldozing activities in the area have impacted portions of Site 4811. It appears likely that these earthmoving activities have taken place within the last 10 years or so. The vegetation in this part of the parcel is dominated by alien species including *kiawe* trees, buffelgrass and annual weeds.

Site 4811 is in generally poor condition and is about 50 meters (170 feet) long. It is poorly constructed of stacked, angular cobbles and boulders that range from 20 to 70 cm. in diameter. The wall ranges from 30 to 70 cm. in height and is made up of 1 to 3 courses of rocks. This site is interpreted as an animal containment wall.

#### Site 50-50-14-4812

This site is another wall that is located in the southeastern portion of the project area (Photo 15). It abuts the Site 4809 wall and extends southeast to Makena-Alanui Drive. Activities related to the construction of this road have truncated the wall. It appears to continue on the golf course side of the road (*mauka*). It crosses very rocky terrain that ranges from 62 to 88 feet AMSL. Vegetation is dominated by alien species such as *kiawe* and *koa haole* trees, buffelgrass, and various annual weeds. Several cacti were also noted on this section of the parcel. While not dominant, *wili wili* trees are common as are indigenous *'ilima* and *'uhaloa* shrubs.

The Site 4812 wall ranges from 0.9 to 1.9 meters in height. It is constructed from angular cobbles and small boulders, and is 3 to 6 rock courses high. The bulk of the wall is single stacked (only 1 rock in width). However, a c. 15-meter section near Makena-Alanui Drive is from 2 to 3 rocks in width.<sup>23</sup> Site 4812 is c. 115 meters (375 feet) long and has been truncated by a rough bulldozed access track that crosses this part of the project area.<sup>24</sup> Like the nearby Site 4809 wall, this site also appears to have been truncated by the construction of Makena-Alanui Drive. Site 4812 is interpreted as a cattle containment wall, possibly associated with the ranching era in Makena.

#### Site 50-50-14-4813

This is the southernmost site present on the parcel. Like Sites 4809 and 4812, it also has been truncated by the placement of Makena-Alanui Drive. It also crosses very rocky terrain that ranges from 61 to 72 feet AMSL (Photo 16). While alien vegetation is also prevalent in this portion of the parcel, native species, such as *wili wili* trees, and *'ilima* shrubs are common.

The Site 4813 wall ranges from 0.7 to 1.1 meters in height by 0.6 to 0.9 meters in width. It is faced in some sections, but is not core filled. It typically ranges from 3 to 5 courses in height by 1 or 2 rocks in width. The wall is in generally fair condition and its construction quality ranges from fair to good. The relative labor output for the placement of this barrier was moderate. The wall is c. 42 meters (140 feet) in overall length. It has been truncated by past bulldozing activities on this part of the property. Site 4813 is interpreted as an animal containment wall.

<sup>23</sup> The wall in this section is not core-filled, however.

<sup>24</sup> This same bulldozed track also impacted Site 4810, another wall located near Keoneoi'o Makena Road.

## SUMMARY AND CONCLUSIONS

A total of 10 archaeological sites were located during our archaeological inventory survey of this very rocky parcel. These historic properties include Site 4804, a small complex that contains a possible ceremonial structure, 3 rock overhang shelters (Sites 4805, 4806 and 4808), a low density coral surface scatter (Site 4807), and 5 walls (Sites 4809 through 4813). Portions of all of these sites have been impacted by one or more of the following post-contact activities—additional wall construction; rock harvesting; bulldozing; artifact looting and marijuana cultivation.

Of the above activities, bulldozing was found to have damaged the most sites. In particular, the walls—especially sites 4810 and 4811—were found to have suffered the most damage. Looters searching for artifacts compromised a sizable portion of the subsurface cultural deposit at Site 4805, an overhang shelter. It appears that rock harvesting has destroyed a c. 25-meter long section of the Site 4810 wall. This modern activity also removed numbers of rocks within the Site 4807 coral surface scatter. Finally, the marijuana cultivators left considerable amounts of modern materials and trash in the Site 4806 rock shelter.

The site density on this parcel is lower than it is on the larger, adjacent parcel to the north. However, this difference is not surprising, given the extremely rugged nature of the *a'a* flow on the subject property.

### Site Significance Assessments

All 10 of the historic properties located on parcel MF-21 are deemed significant under Criterion "D" of State and Federal historic preservation guidelines. Two of the sites are also significant under additional criteria.

The Site 4804 complex is associated with the mid- to late-precontact period. The Feature A enclosure is interpreted as a possible ceremonial structure, primarily because of its location which has a commanding view of the ocean to the west, and the inclusion of natural outcrop features within the enclosure. Features B and C are probably low intensity activity areas. The modest amounts of food remains recovered from TU 2 in Feature C suggest that it was utilized for temporary habitation, perhaps in connection with possible ceremonial activities. Site 4804 is still considered to be significant under Criterion "D" for its information content. In addition, it also qualifies for significance under Criterion "E" for its traditional cultural value.

The Site 4805 overhang shelter appears to have been utilized during precontact times. Subsurface testing recovered food midden and a volcanic glass flake. Coral and shell were also found under the drip line, and a large, dense basalt chopper was recovered

just outside the mouth of the overhang. While radiocarbon dating of this shelter yielded a post-contact age, the lack of any clearly post-contact material remains tends to support the notion that this feature was used as temporary shelter in precontact times. It is a relatively rare example of a traditional coastal rockshelter in this part of Maui. It remains significant under Criterion "D".

The second overhang shelter—Site 4806—is interpreted as a probable precontact temporary habitation area. The modest material culture remains recovered from this overhang indicate that usage was not frequent. This shelter is more distant from the Palauca shoreline than is Site 4805. Site 4806 is still considered to be significant for its information content.

Site 4807 is a low-density surface scatter of coral. Its function and possible age remain unclear. Modern disturbances and the lack of any soil deposits in this area make it unlikely that further information can be obtained from this site. It is therefore considered "no longer significant".

The Site 4808 overhang does not have any soil deposits in it or near it. It is possible that it was opportunistically used in both pre- and post-contact times, simply because it could provide available cover in episodes of inclement weather. It appears very unlikely that additional information can be obtained from this site, and it is considered "no longer significant".

Site 4809 is a very good example of a faced, core-filled wall. This is a post-contact wall, which appears to fall along the boundary between the *ahupua'a* of Palauca and Keauhou, and probably served as a cattle wall. It is still considered to be significant under Criterion "D". It is also considered to be significant under Criterion "C", being an excellent example of its type.<sup>25</sup>

Sites 4810, 4811, 4812 and 4813 are all interpreted as post-contact structures. They are all walls, which were used for animal containment during the mid- to late 19<sup>th</sup> and early 20<sup>th</sup> centuries. These walls are no longer considered to be significant for their information content. In conclusion, 6 of the sites are "no longer significant" and need no further work or protection. Four significant historic sites survive in the project area.

## Mitigation Recommendations

In-place preservation is recommended for 4 of the sites on parcel MF-21. Site 4804 is still considered significant for its information content. In addition, this complex contains a probable ceremonial structure (Feature A) and retains cultural importance. Sites 4805 and 4806 are good examples of near-coastal rock overhang shelters in this part of Maui, and should be preserved. Data recovery is recommended in the event that one or both sites cannot be preserved. Site 4809 is a very good example of a faced, core-filled wall which appears to mark the *ahupua'a* boundary. In-place preservation is recommended for as much of this wall as possible. Limited data recovery is recommended for any section of this long wall that may need to be removed.

<sup>25</sup> It also may qualify for significance under Criterion "F"—for its traditional cultural importance, i. e., marking the boundary between 2 important Mahele land awards.

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**TABLE 1**

Summary of Subsurface Results - Site 4804

	Feature A: enclosure			Feature C	
	TU1 LI1/L1	TU1 LI1/L1	TU1 LI1/L2	TU2 LI1/L1	TU2 LI1/L2
<b>GASTROPOD:</b>					
Cellana sp.	0.1		0.1	6.4	1.6
Conus sp.	0.5			2.1	1.4
Cypraea sp.	14.6	8.1	4.1	30.9	7.4
Granula sandwicensis					
Littorina pintado	0.1	0.1	0.4		
Nerita picea			0.2		
Nerita sandwicensis					
Operculum					
Planaxis sp.					
Strombus sp.				1.6	
Tellinidae sp.					
Terebridae sp.					



Thaididae sp.					
Turbo sandwicensis					
Unidentified	0.1	1.5	0.8		1.3
<b>BIVALVIA</b>					
Isognomon sp.					
Brachidontes sp.					
unidentified					
<b>ECHINOIDEA</b>					
Sea urchin	8.3	24.5	4.5	0.4	
Pencil urchin	0.5	0.4	4.9		
<b>CRAB</b>					
<b>BONE</b>					
Teeth, mammal					
Pig bone					
Mammal					
Fish					
Unidentified					
<b>CORAL</b>					
Kukui nut shell					
Charcoal					13.7
UNWORKED BASALT FLAKES (pieces)	3.6 (2)	138.6 (4)	0.3 (1)		17.6 (1)
UNWORKED VOLCANIC GLASS FLAKES (pieces)					
UNWORKED CORAL (pieces)	68.6 (2)	3.0 (7)	3.0 (2)		
WATERWORN PEBBLES (pieces)	80.6 (2)		16.6 (1)		
<b>FIRE-CRACKED ROCKS</b>					
<b>CHALCEDONY (Jasper)</b>					
<b>ARTIFACTS</b>					
	U.S. Penny 1986	1 piece plastic			

Weight in grams

**TABLE 2**

**Summary of Subsurface Results - Site 4805**

	Test Unit		
	Layer III (Level 1)	Layer II (Level 1)	Layer III (Level 2)
<b>GASTROPODA</b>			
Cellana sp.	2.0		0.7
Conus sp.	3.0	3.1	1.0
Cypraea sp.	10.1	9.1	2.0
Granula sandwicensis			
Littorina pintado		0.2	
Nerita picea	2.5	5.4	2.8
Nerita sandwicensis			
Opercilum			
Planaxis sp.			
Gyrineum pusillum	4.4		
Strombus sp.			
Tellinidae sp.			
Terebridae sp.			
Thaididae sp.			
Turbo sandwicensis	2.1		
Unidentified		1.6	1.1
<b>BIVALVIA</b>			
Isognomon sp.	2.0	1.0	0.6
Brachidontes sp.			
unidentified	1.6		
<b>ECHINOIDEA</b>			
Sea urchin	2.6	5.5	4.6
Pencil urchin			0.2
<b>CRAB</b>		0.7	
<b>BONE</b>			
Teeth, mammal			
Pig bone	3.6		
Mammal		0.6	2.3
Fish	0.1	0.4	0.7
Unidentified			
<b>FLORAL</b>			
Kukui nut shell			
Charcoal			
<b>UNWORKED BASALT FLAKES (pieces)</b>			
<b>UNWORKED VOLCANIC GLASS FLAKES (pieces)</b>			0.1 (1)

UNWORKED CORAL (pieces)	0.5 (1)		
Hammerstone	(surface find) 2157.0		

Weight in grams

TABLE 3

Significance Assessments

Site Number	Significance Criterion	Component/Feature	Interpreted function	Age	Integrity	Proposed Mitigation
4804	D, E	3	Temporary habitation; Feature A possible ceremonial structure.	P	F-G	Preservation
4805	D	2	Temporary habitation (rock shelter)	P/H	P-F	Preservation
4806	D	1	Temporary habitation (rock shelter)	P	F	Preservation
4807	NLS <sup>26</sup>	1-2	Surface scatter—function unknown	U	P-F	No further work.
4808	NLS	1	Rock overhang—possible temporary habitation	P/H	G	No further work.
4809	D, C	1	Possible boundary wall—animal containment	H	F-G	Preservation; data recovery if removed.
4810	NLS	1	Wall—animal containment	H	P-F	No further work.
4811	NLS	1	Wall—animal containment	H	P	No further work.
4812	NLS	1	Wall—animal containment	H	P-F	No further work.
4813	NLS	1	Wall—animal containment	H	P-F	No further work.

<sup>26</sup> Criterion "D"—has yielded or is likely to yield information important for research on prehistory or history.

Criterion "C"—an excellent example of its type.

<sup>27</sup> P=precontact; H=historic/post-contact; U=unknown.

<sup>28</sup> E=excellent; G=good; F=fair; P=poor.

<sup>29</sup> NLS=no longer significant.



Photo 1 - View to southeast from top of Site 4804, Feature A. Note coral pieces on wall in lower left of photo.



Photo 2 - View of Feature A enclosure—looking north.



Photo 3 – View to the northwest—Feature C, Site 4804, with Feature A in background. Keoneoiu-Makena road is on the left.

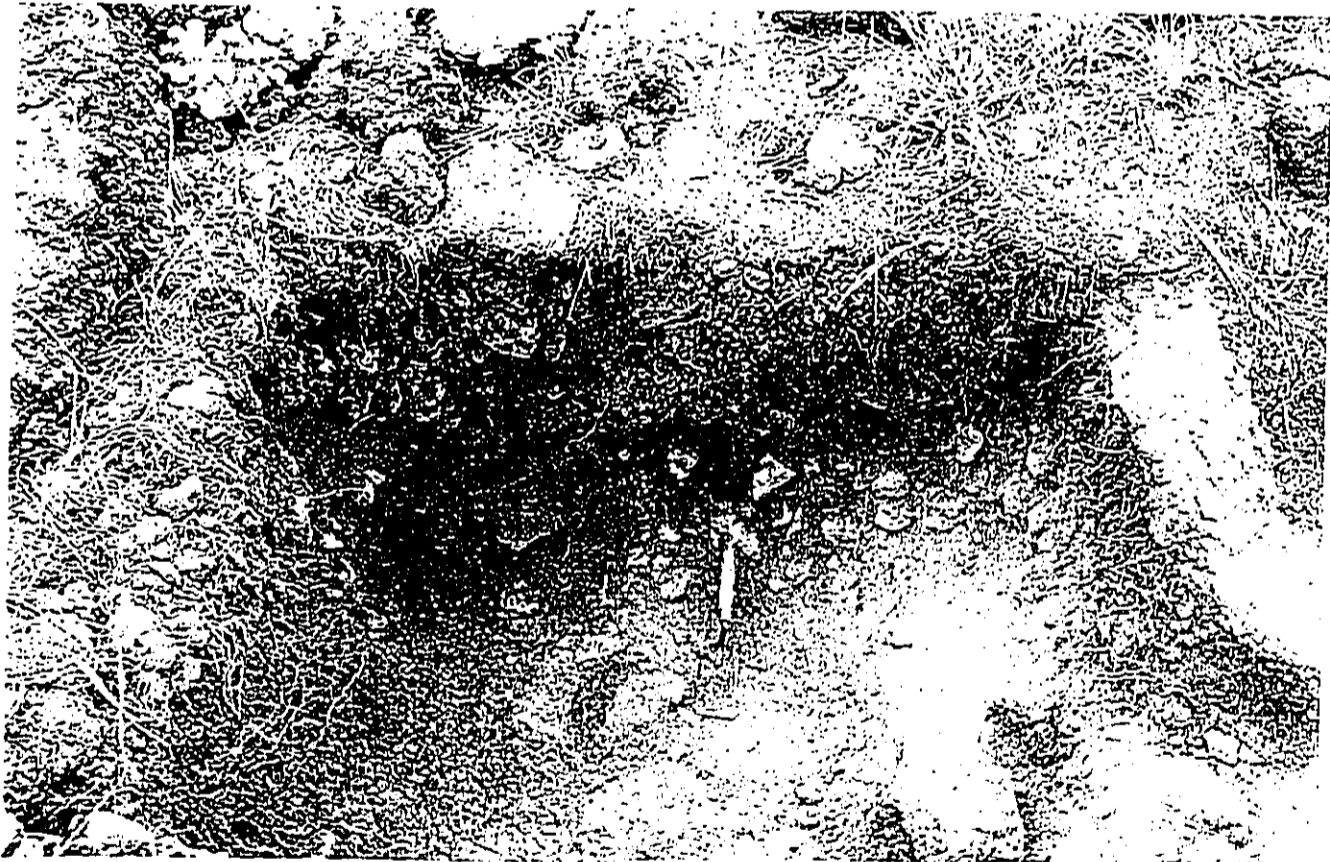


Photo 4 – South face profile of Test Unit 1, Site 4804. Note coral in upper left corner.



Photo 5 - General view to the east of Site 4805 rock shelter. Site 4810 wall in foreground, and Site 4809 in background.



Photo 6 - Site 4805 rock shelter—view to the south. Note looter's disturbance in shelter opening.



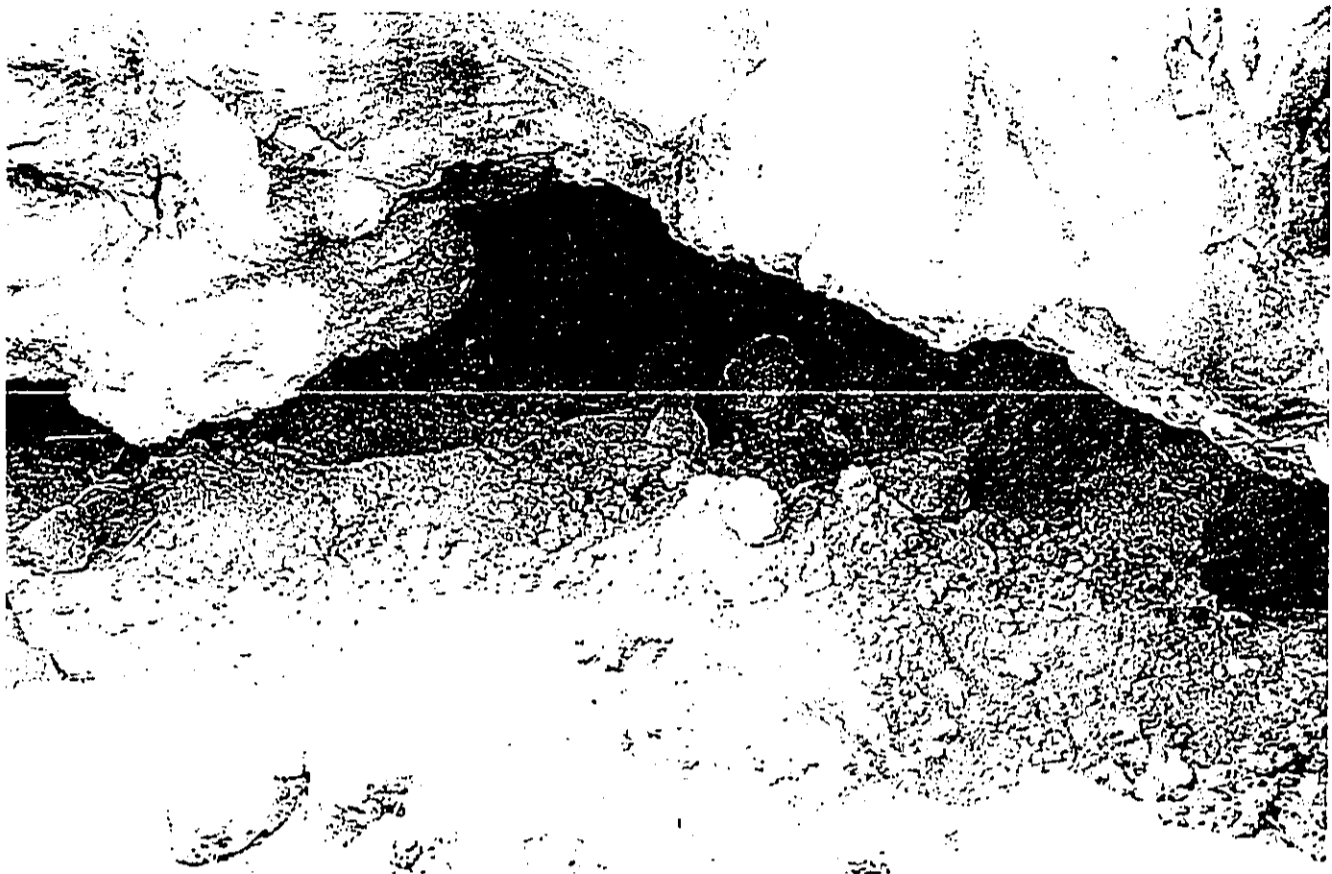


Photo 7 – Closer view of looter's disturbance at Site 4805.

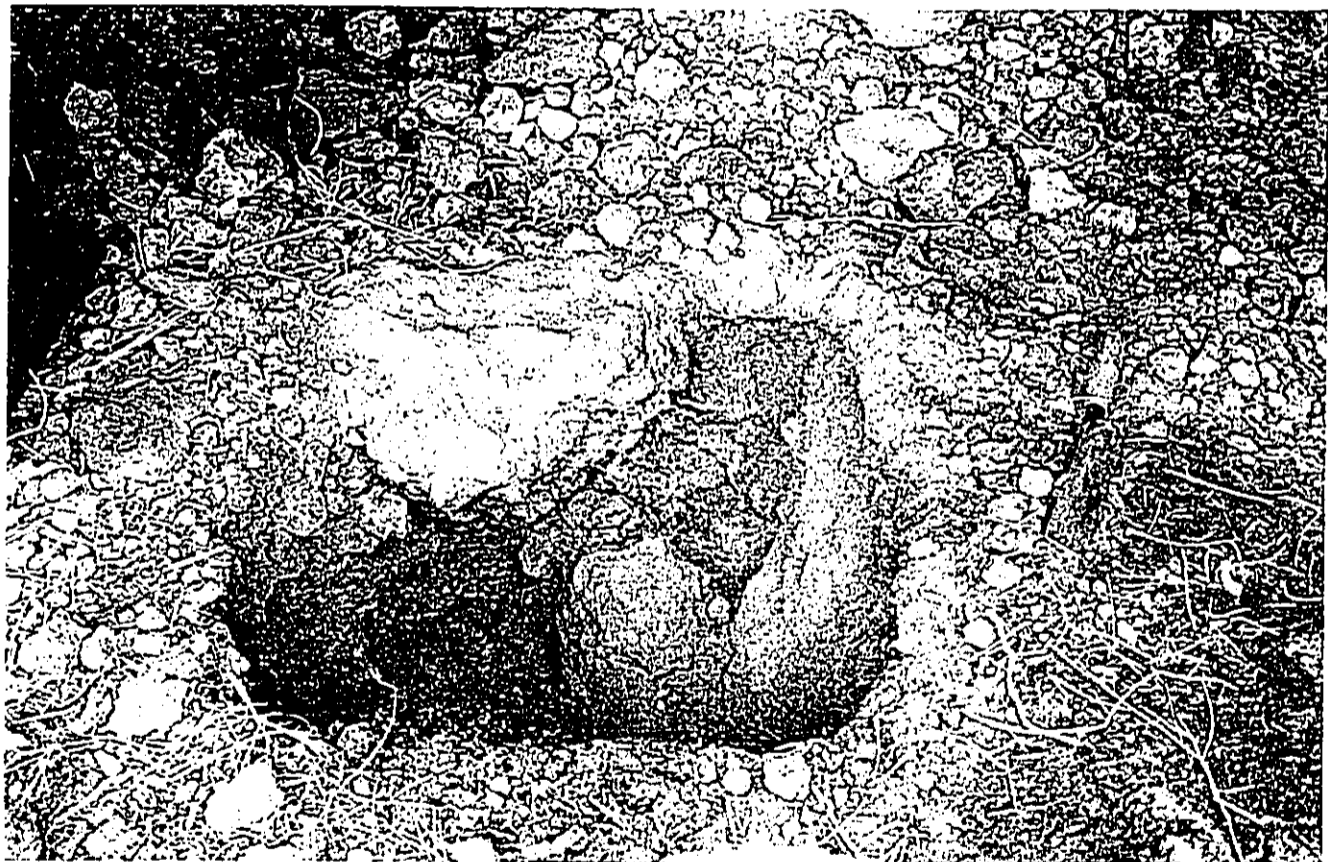


Photo 8 – South face profile of Test Unit 1, Site 4805.



**Photo 9 – Site 4806 rock shelter—view to the north.**



**Photo 10 – General view to the east across portion of Site 4807 surface scatter. Note recent rock removal area at lower left, and Site 4809 wall in background.**

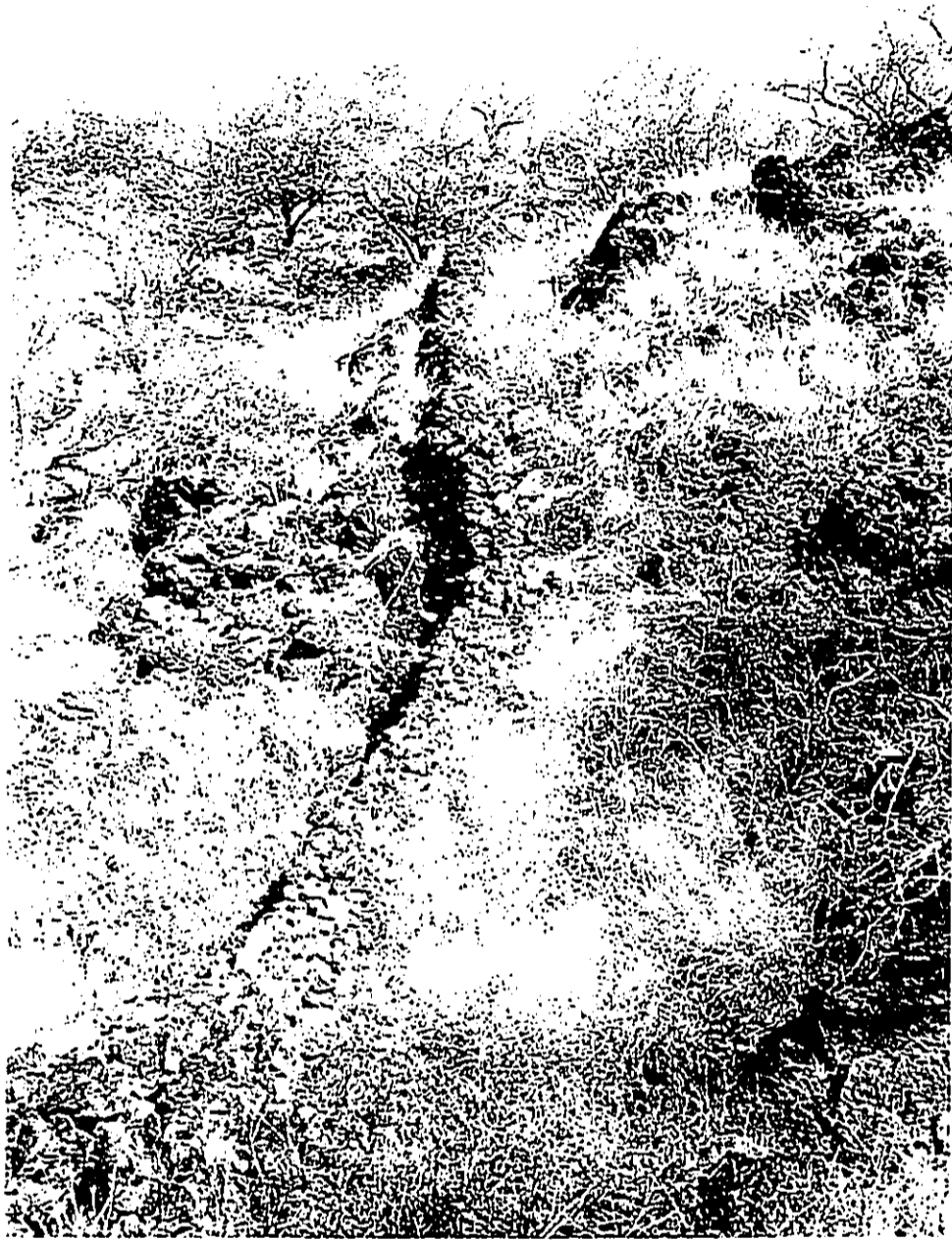




Photo 11 – Possible lava tube cupboard, Site 4807. View to the north—Site 4809 wall at left.



Photo 12 – Site 4808 overhang—view to the east.



**Photo 13 – General view to the south of the Site 4809 wall in the vicinity of Site 4805.**

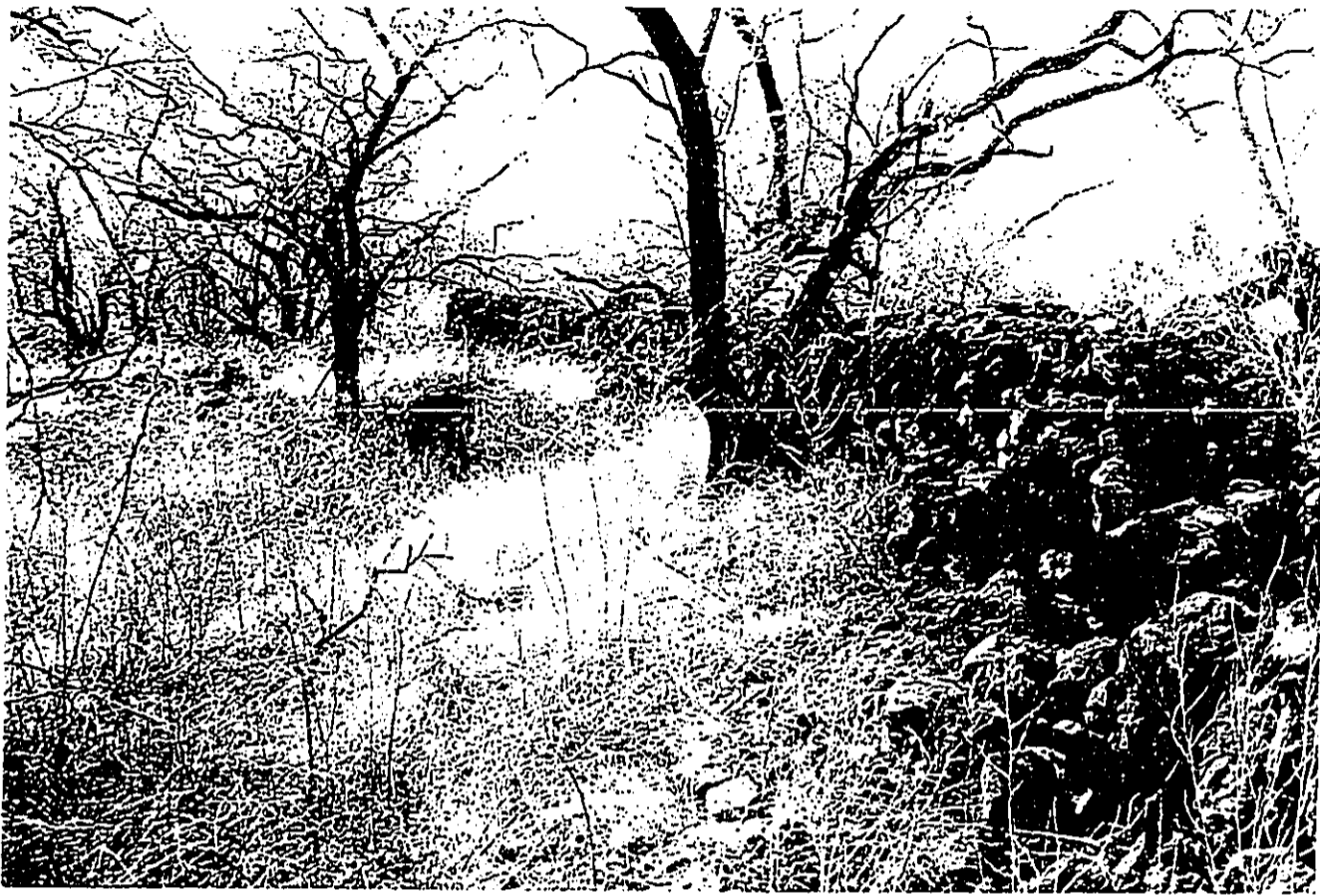


Photo 14 – General view of the Site 4809 wall—view to the southeast.



Photo 15 – Portion of the Site 4812 wall near Makena-Alanui Drive—view to the north.



Photo 16 - Section of the Site 4813 wall—view to the southwest.

# ***Appendix B-1***

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***Letter from State Historic  
Preservation Division  
Dated May 4, 2000***

BENJAMIN J. CAYITANO  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhewa Building, Room 555  
801 Kamehale Boulevard  
Kapolei, Hawaii 96707

TIMOTHY S. JOHNS, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY  
JANET S. KAWALO

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT

May 4, 2000

Mr. Erik Fredericksen  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

LOG NO: 25381  
DOC NO: 0005RC08

Dear Mr. Fredericksen:

**SUBJECT: Review of Revised Archaeological Inventory Survey – Parcel MF-21  
Palauca, Makawao District (Honua'ula), Maui  
TMK: 2-1-23:1**

This letter reviews the revisions to this report which our staff received on April 3, 2000 as revised pages (E. Fredericksen & D. Fredericksen 2000. An Archaeological Inventory Survey of Parcel MF-21 ...Xamanek ms.). The revisions were made in response to our letter of March 7, 2000 (Log: 25,046; Doc: 0003RC11).

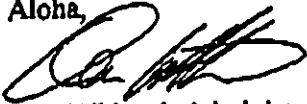
The revisions are fine, and the report is now acceptable.

We now agree with all your significance evaluations for the 10 sites in the project area. Four significant historic sites are present – 4804 (a small religious structure), 4805 and 4806 (rock shelters which were temporary habitations), and 4809 (a ranch era boundary wall).

We also agree with the mitigation commitment to preserve all 4 significant sites.

The next step in the review process is the submittal of a preservation plan to be approved by our office. Typically, this would be a condition of any approved Maui County permit or subdivision.

Aloha,

  
Don Hibbard, Administrator  
State Historic Preservation Division

RC:dnm

c: Land Use & Codes Administration (File 2.2586), Public Works Department,  
County of Maui  
Planning Department, County of Maui



# ***Appendix B-2***

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***Letter from State Historic  
Preservation Division  
Dated October 24, 2000***

FROM : ERIK FREDERICKSEN

FAX NO. : 8085726118

Nov. 27 2000 04:24PM P2

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



TIMOTHY E. JONES, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
LUNAHUANA AND WATER RESOURCE MANAGEMENT

DEPUTIES  
JANET I. KAWILO  
LIVANEL NISHOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
Kakuhine Building, Room 656  
601 Kamohāiwa Boulevard  
Kapolei, Hawaii 96707

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS  
WATER RESOURCE MANAGEMENT  
LOG NO: 28158 ✓  
DOC NO: 0008MK09

October 24, 2000

Mr. Erik Fredericksen  
Xamenek Researches  
P.O. Box 131  
Pukalani, Maui, Hawaii 96788

Dear Mr. Fredericksen:

**Subject: Review of An Archaeological Preservation Plan for a Portion of  
Land Known as Parcel MF-21,  
Palauoa Ahupua'a and Keauhou Ahupua'a, Honua'ula Moku, Makawao District,  
Island of Maui (TMK: 2-1-23:1)**

Thank you for the opportunity to review the preservation plan which our staff received on 24 July 2000. (Fredericksen 2000, *An Archaeological Preservation Plan for a Portion of Land Known as Parcel MF-21, Palauoa Ahupua'a and Keauhou Ahupua'a, Honua'ula Moku, Makawao District, Island of Maui TMK: 2-1-23:1...Xamenek ms*).

The preservation plan includes one site for interpretive preservation (4804, a small shrine) and three sites for "as is" preservation (two temporary habitations of precontact age and one ranching era wall).

A few minor changes are needed to the plan. Also, consultation with the local Hawaiian community was not indicated in the preservation plan, and as policy when site interpretation is involved, we cannot formally accept the plan until we see evidence of consultation (any comments on the plan, and how these comments were taken into account). This can be an appendix to the plan.

For the interpretive preservation of Site 4804, a small shrine, we are requesting some minor changes to your sign text, so it will be easier for the public to understand (see attachment). We have a minor request for a change to the signs for 4805 and 4806.

Should you have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169).

Aloha,

DON HIBBARD, Administrator  
State Historic Preservation Division

MK:an

Attachment

cc: John Min, Director, Department of Planning, County of Maui, FAX 270-7634  
Bert Ratte, County of Maui, Land Use and Codes, FAX 270-7972



## ATTACHMENT

## NEEDED REVISIONS TO PRESERVATION PLAN MF-21 PROJECT

## XAMANEK

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**Site 4804 – Small Shrine**

1. Calling this site a ceremonial structure has too broad a meaning, which can lead to confusion among the general public. Given its size, we assume that this is likely to be a small shrine. In the future, when you start to describe the site (e.g., on page 5), please provide a little more summary information on the site. In this case, that would have been the type of religious structure that this was, and the archaeological evidence for this conclusion. For this plan, you need to revise the wording on a few pages to indicate that this is a small shrine.
  - a. p. 1, para. 3, line 3. Replace "ceremonial structure" with "small shrine".
  - b. p. 4, para 2, line 2. Replace "ceremonial structure" with "small shrine".
  - c. P. 5, item 1, line 1. Replace "ceremonial site" with "small shrine".
  - d. P. 7, under Signage, line 1. Replace "ceremonial site" with "small shrine".
2. Sign Text, p. 8. The following changes are needed or recommended:
  - a. Heading. Replace line 2 with "A Pre-European Contact Hawaiian Shrine" Shrine is required. Pre-European Contact is a needed clarification.
  - b. Heading. Line 3. Which ahupua'a is it in – Palauca or Keauhou? Indicate the correct one.
  - c. Text, line 1. Replace "ceremonial site" with "small shrine".
  - d. Text, line 3-4. Replace "A large heiau ... north of this site." with "In late pre-European times, a number of houses and a medium-sized heiau (temple) were located 400 meters (1,250 ft.) north along the coast in Palauca." This clarifies that the sites to the north were more than just a heiau, but a settlement, and clarifies their chronology and ahupua'a location.
  - e. Text, lines 4-6. Replace "Subsurface ... 1500s-1600s" with "Archaeological excavations at this site have dated its use back to the A.D. 1500s-1600s." Archaeological excavations is more general and understandable to the public. You don't need mid- to late precontact period, as this will mean little to the public. Also, place this sentence after "This site ... marine resource exploitation." They provide the specifics on this site.
  - f. Text, last sentence. Place this sentence just before "In late pre-European times, a number of houses .... in Palauca." These two sentences then provide the general setting for the sites.

**Sites 4805 and 4806**

1. Sign text, pp. 8. Heading. The sites are probably not in both ahupua'a. Specify which ahupua'a they are in, either Palauca or Keauhou.
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# ***Appendix B-3***

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***Archaeological  
Preservation Plan***

**An Archaeological Preservation Plan for a Portion of Land  
Known as Parcel MF-21,  
Palauea *Ahupua'a* and Keauhou *Ahupua'a*,  
Honua'ula *Moku*, Makawao District, Island of Maui  
(TMK: 2-1-23:1)**

**Prepared for:**

**Mr. Eric Taniguchi, AIA  
Pacific Rim Land, Inc.  
Kihei, Maui**

**Prepared by:**

**Erik M. Fredericksen  
Xamanek Researches  
Pukalani, Maui**

**(Revised 3 December 2000)**

## INTRODUCTION

The subject parcel (TMK: 2-1-23: 1) is located in the southwestern portion of Palauea *ahupua'a* and the northwestern part of Keauhou *ahupua'a*, Honua'ula *moku*, Makawao District, Island of Maui (Map 1). This c. 23-acre triangular property is known as Parcel MF-21 (Map 2). It lies near the shoreline of Makena in an area, which is rich in both pre- and post-contact cultural resources. The project area is bounded on the north by land owned by Palauea Investors, LLC. Makena-Alanui Drive borders the eastern side of MF-21, and Keoneo'io-Makena Road runs along its western boundary. The Palauea beach area lies directly across (i.e. west) the latter road.

Xamanek Researches was first contacted about this property in late 1998. Mr. Eric Taniguchi, AIA, Pacific Rim Land, Inc. subsequently contracted us to undertake an archaeological inventory survey of MF-21 in the early fall of 1999. We conducted our fieldwork on an intermittent basis from late September through November 1999.

We located a total of 10 archaeological sites during the course of our inventory survey [Figure 1] (Fredericksen and Fredericksen, March 2000). These sites consisted of a small complex that includes a small shrine (Site 50-50-14-4804), three rock overhang shelters (Sites 4805, 4806, and 4808), a low-density surface scatter of coral (Site 4807), and 5 walls (Sites 4809 through 4813). All sites qualified for significance under Criterion "D" of Federal and State historic preservation guidelines. Site 4804 also qualified for significance under Criterion "E" for its cultural significance. Site 4809 is also considered to be significant under Criterion "C" because it is an excellent example of its type.<sup>1</sup> Six of the sites were no longer considered significant for their information content at the conclusion of the inventory survey (i.e. Sites 4807, 4808 and 4810 through 4813). The remaining 4 historic properties—Sites 4804, 4805, 4806, and 4809—were recommended for in-place preservation.

The following preservation plan has been prepared for Mr. Eric Taniguchi, AIA, in order to fulfill requirements set forth by the State Historic Preservation Division (SHPD) in a 4 May 2000 acceptance letter of the archaeological inventory survey (Doc. No.: 0005RC08). This plan, when accepted, will be incorporated in the planning process

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<sup>1</sup> Site 4809 may also qualify for significance under Criterion "E" for its traditional cultural value because it marks the boundary between 2 important Mahele land awards.

for the development of the property. As currently proposed, the subject parcel will be subdivided into 7 agricultural lots with underground water, sewer, electric, and telephone services installed (Map 2). This preservation plan is based, in part, upon several discussions with Eric Taniguchi of Pacific Rim Land, Inc., SHPD requirements, and a visit to the project area with Dr. Melissa Kirkendal, SHPD Maui archaeologist on 8 July 2000.

## BACKGROUND RESEARCH

As previously noted, the subject parcel is located in Palauea and Keauhou *ahupua'a*, Honua'ula *moku*, Makawao District, Maui. Evidence from earlier archaeological research projects indicates that this general area was primarily exploited for marine resources, with agriculture playing a more marginal, secondary role (Gosser et al., 1993, p. xv.). Land use conditions in this region did not change dramatically until post-contact times.

Information from various studies in this coastal area indicate that sweet potato, banana and dry land taro were cultivated in post-contact times. Seasonally arid conditions and typically thin, rocky soil likely kept production at low levels (Ibid. pp. 21-27).

In 1905, the twelve traditional *moku* of Maui were combined into five larger administrative districts and it was at this time that Honua'ula became part of Makawao District (Barrere, 1975, p. 31). Marine exploitation and marginal agriculture continued in the general area, with cattle ranching and sugar plantation agriculture contributing to changes in land use from the mid-19<sup>th</sup> century onward to the present (Gosser et al., 1993, pp. 29-34).

Following World War II, the major economic force affecting land use in the general Makena/Wailea area has been the visitor industry. Major projects have subsequently developed large tracts of land and produced world-class resorts and golf courses. A large increase in the number of tourists to this area and Maui in general has resulted from resort development. In addition to large-scale projects, there has been an increase in the development of smaller parcels of land such as the present property.

## PREVIOUS ARCHAEOLOGICAL WORK

Winslow Walker conducted his island-wide archaeological survey in 1931. Since then, increasing numbers of archaeological research projects have been concerned with the Wailea/Makena area of Maui. In discussing previous archaeological work in this area, Gosser referred to a few of the regional investigations undertaken in the recent past, with Soehren, (1963), Chapman and Kirch (1979), and Kirch (1985) serving as examples (Gosser, et al., p. 10, 1993).

Continuing with a discussion of archaeological work in the area since 1969, Gosser notes that this work has mostly consisted of discontinuous surveys, data recovery studies and archaeological monitoring of construction/development projects for hotels and resort destination centers. Examples he refers to include projects conducted by Kirch (1969, 1970), Barrera (1974), Cleghorn (1974, 1975a, 1975b), Davis and Bordner (1977), Dicks and Haun (1987), Cordy and Athens (1988), Gosser (1993), [Ibid. pp. 10 - 11].

In addition, an increasing number of archaeological projects have been conducted for smaller developments in this area in more recent times. Xamanek Researches has carried out several of these smaller studies including 6 inventory surveys, 2 data recovery projects, and a monitoring program within 2 km. of the subject parcel. Most recently, we have conducted 2 archaeological inventory surveys at Palauea Beach—across from Parcel MF-21.

**PRESERVATION PLAN FOR SITES LOCATED ON  
PARCEL MF-21, PALAUEA AND KEAUAHOU  
AHUPUA'A, HONUA'ULA MOKU,  
MAKAWAO DISTRICT, MAUI ISLAND  
(TMK: 2-1-23: 01)**

The plan outlined here follows suggestions in the SHPD rules (HAR Title 13, Subtitle 6, Chapter 148, pp. 2-5).

**Identification of Site(s) to be preserved**

Four sites are recommended for preservation on Parcel MF-21—Site 4804 (a small, precontact shrine), Site 4805 and Site 4806 (rock shelters which served as temporary habitation areas), and Site 4809 (a well-constructed ranch era boundary wall). Site 4804 is considered to be the most significant of the four due to its traditional cultural value.

**Preservation Tasks**

Recommended mitigation measures for the above sites include interpretive preservation for Site 4804, and passive, "as is" preservation for the remaining historic properties—Sites 4805, 4806, and 4809. Signage will be designed and worded to describe Site 4804, and note its traditional cultural value. While the latter 3 sites have limited interpretive value and are recommended for "as is" preservation, small identification signs are nevertheless recommended for Sites 4805 and 4806. It is felt that this step is necessary, in order to help ensure their long-term integrity.

**Short-term preservation**

To help ensure protection of the cultural features during future project site construction, it is recommended that the 4 sites first be marked with orange-plastic construction fencing or other means of delineating the site perimeters in order to reduce the possibility of inadvertent damage. It is also recommended that all *kiawe* trees be flush

cut within the recommended site preservation areas and the tree roots left in place to rot. This methodology will minimize potential disturbance to the sites slated for preservation.

### Long-term preservation

As noted earlier, Site 4804 is recommended for interpretive preservation. The rationale for this recommendation is based upon the site's traditional cultural significance (see Appendix A for information on consultation with local Hawaiian community members). The 3 remaining sites (Sites 4805, 4806 and 4809) are recommended for passive, "as is" preservation because of their more limited interpretive value and their comparative isolation on Parcel MF-21. Recommended long-term actions for each of these sites are listed below:

#### Site 4804 (refer to Figure 2)

1. Interpretive preservation is recommended for this small shrine. Site 4804 lies within c. 10 m of the old Keoneo'io-Makena Road. Access to the preservation area will be from the shoulder of the road on the southern side of the site. The shoulder on this part of the road currently provides enough space for several vehicles to park. The developers are aware of the need for parking and do not plan to change the configuration of the shoulder adjacent to the paved surface of the road.
2. Interpretive signage will be placed on the eastern (*mauka*) side of the Site 4804 preservation area. The placement of this sign will help to inform the public of the site's significance. However, given the site's cultural significance, it has been requested that access to the shrine itself be for traditional cultural purposes (see Appendix A). Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. Provisions for access to the general site area will be made for native Hawaiian members of the community who wish to visit it for traditional cultural purposes. Access to the shrine itself by the general public will not be encouraged (see Appendix A).
4. It is recommended that a black cinder path lead from the shoulder to the site. The planned location of this path has been reviewed by Xamanek Researches and members of Hui Alanui o Makena to help ensure that the site is not inadvertently harmed by the placement of the pathway.
5. At this time, minimal landscaping actions are recommended for Site 4804, including flush cutting *kiawe* trees that are nearby. The site lies on an 'a 'a flow and very little soil is present. It may be possible—over time—to



encourage drought tolerant native plants such as *'ilima (Sida fallax)* in the site preservation area. A request—accepted by the developer's representative—has been made to mark the western boundary of the preservation area with a native hedge and boulders to help lessen potential impact by road improvement activities in the future.

6. A preservation area buffer of at least 10 meters is recommended for this site.

**Site 4805 (refer to Figure 3)**

1. This probable, precontact temporary habitation site consists of a lava tube overhang and a small platform. It is located c. 30 m east (*mauka*) of Keoneo'io-Makena Road. No formal access is proposed for this site due to its limited interpretive value and its somewhat hazardous location. Passive, "as is" preservation is recommended.
2. Signage is proposed for this site to help identify it and ensure its long-term integrity. The sign should be placed on the northern side of Site 4805. Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.
4. A preservation area buffer of 5 meters is recommended for this site.

**Site 4806 (refer to Figure 4)**

1. This site also is interpreted as a probable, precontact temporary habitation site. It consists of a lava tube overhang, a small, rough platform, and a possible access path/ramp. It is located c. 30-m south of the northern boundary of the project area. No formal access is proposed for this site due to its limited interpretive value and its isolated and hazardous location. Passive, "as is" preservation is recommended.
2. Signage is proposed for this site to help identify it and ensure its long-term integrity. The sign should be placed on the southern side of Site 4806. Text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function).
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.

4. A preservation area buffer of 5 meters is recommended for this site.

#### Site 4809 (refer to Map 2)

1. This site is interpreted as a ranch era boundary wall. No formal access is proposed for this well constructed wall due to its limited interpretive value and its generally isolated and hazardous location. Passive, "as is" preservation is recommended for this site.
2. No signage is recommended for this c. 400-m long wall.
3. No landscaping recommendations are proposed at this time other than the removal of *kiawe* trees within the site preservation area. Trees will need to be flush cut, in order to avoid negative impacts to the site.
4. A preservation buffer of 1 meter is recommended for this long boundary wall.<sup>2</sup>

#### Perpetual Maintenance and Access

The preservation areas will be maintained by the property owner(s). Precautions against unnecessary intrusions at each of the above site preservation areas will be the responsibility of the property owner(s). The preservation areas shall be generally cleared by hand. However, hand-held weed eaters may be used when necessary. Access to the Site 4804 preservation area for traditional cultural practices will also be the responsibility of the property owner(s). Suggested times for traditional access to Site 4804 are from 8:00 a.m. to sunset (see Appendix A). Permission for visitation at any other time would be by agreement with the landowner.

#### Signage

For Site 4804 (small precontact shrine), interpretive signage will be placed in the *mauka* or eastern portion of the preservation area (Figure 2). The text and graphics will relay information revealed from archaeological testing of the feature (i.e., age and function). It is important to note that signs will deteriorate over time and, consequently, should be periodically replaced.

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<sup>2</sup> Portions of this wall will need to be breached, in order to develop some of the proposed lots. Limited data recovery work is recommended for these sections, in order to obtain additional information about the Site 4809 wall.

While Site 4804 is in generally fair condition, restoration is not proposed at this time. Rather, it is recommended that the site be preserved, "as is," with some interpretive signage. As noted earlier, access should be allowed for traditional purposes (see Appendix A). The proposed heading and text of this sign are as follows:

**a. Heading of sign:**

Site 4804  
A Pre-European Contact Hawaiian Shrine  
Keauhou *ahupua'a*, Honua'ula *moku*,  
Island of Maui

**b. Text of sign (A brown background with black lettering is recommended):**

"This small shrine lies at the top of a small *pu'u* that once had commanding view of the Palauea coastline. This site was likely associated with the acquisition of marine resources in Palauea. Archaeological excavations at Site 4804 have dated its use back to the A.D. 1500s-1600s. This site is part of a complex of Hawaiian sites in the Palauea area. In late pre-European contact times, a coastal *ko'a* (fishing shrine), a number of *hale* (houses) and a medium-sized *heiau* (temple) were located within c. 400 m (1250 ft) north along the coast in Palauea."

"Site 4804 has traditional cultural value. Please respect it. Damage to this site is punishable under Chapter 6E-11, Hawaii Revised Statutes"

"Please do not go beyond this point except for traditional cultural practices."

**c. Size of sign:**

The recommended size for the Site 4804 sign is 2-ft. (0.61 m.) by 1-ft. (0.3 m.).

Signage is proposed for Sites 4805 and 4806 to help ensure their long-term integrity. The text and graphics should relay basic information revealed from archaeological testing of the feature (i.e., age and function). The Site 4805 and 4806 rock overhang shelters have limited interpretive value. Consequently, it is recommended that both sites be protected as is, rather than interpreted. However, these sites should be

clearly marked, in order to help ensure long-term integrity. The proposed heading and text of each sign is the same and follows:

**a. Heading of sign:**

Site 4805 (or 4806)  
Rock Shelter used for Temporary Habitation  
Palau<sup>ea</sup> *ahupua'a*, Honua'ula *moku*,  
Island of Maui

**b. Text of sign (A brown background with black lettering is recommended):**

"This rock overhang shelter is a native Hawaiian archaeological site. Please respect it. Damage to this site is punishable under Chapter 6E-11, Hawaii Revised Statutes"

**c. Size of sign:**

The recommended sizes for the Site 4805 and Site 4806 signs are 1.5-ft. (0.45 m.) by 1-ft. (0.3 m.).

At the writing of this plan, no signage is proposed for the Site 4809 boundary wall.

**References**

- Barrere, Dorothy  
June 1975 Wailea—Waters of Pleasure for the Children of Kama. Bishop Museum, Honolulu, Hawaii.
- Fredericksen, Erik M. and Demaris L. Fredericksen  
March 2000 An Archaeological Inventory Survey of Parcel MF-21, Palauea and Keauhou *Ahupua'a*, Honua'ula *Moku*, Makawao District, Maui Island (TMK: 2-1-23: 01) Prepared for Eric Taniguchi, AIA, Pacific Rim Land, Inc. by Xamanek Researches, Pukalani, Maui.
- Gosser, Dennis C., Clark, Stephan D. and Dixon, Boyd  
August 1993 Na Lawai'a o 'AO'AO Kona O Ka Moku: Excavations at the Southern Acreage and Lot 15, Wailea, Maui, by Bishop Museum, Honolulu, for Wailea Resort Company Ltd., Wailea, Maui, Hawaii
- State of Hawaii, Department of Land and Natural Resources  
December 1996 TITLE 113 (Hawaii Administrative Rules, State Historic Preservation Division Rules) SUBTITLE 13 (State Historic Preservation Rules) CHAPTER 275 (Rules Governing Procedures for Historic Preservation Review. Draft, Honolulu, Hawaii.

## APPENDIX A

### Consultation with local Hawaiian community members

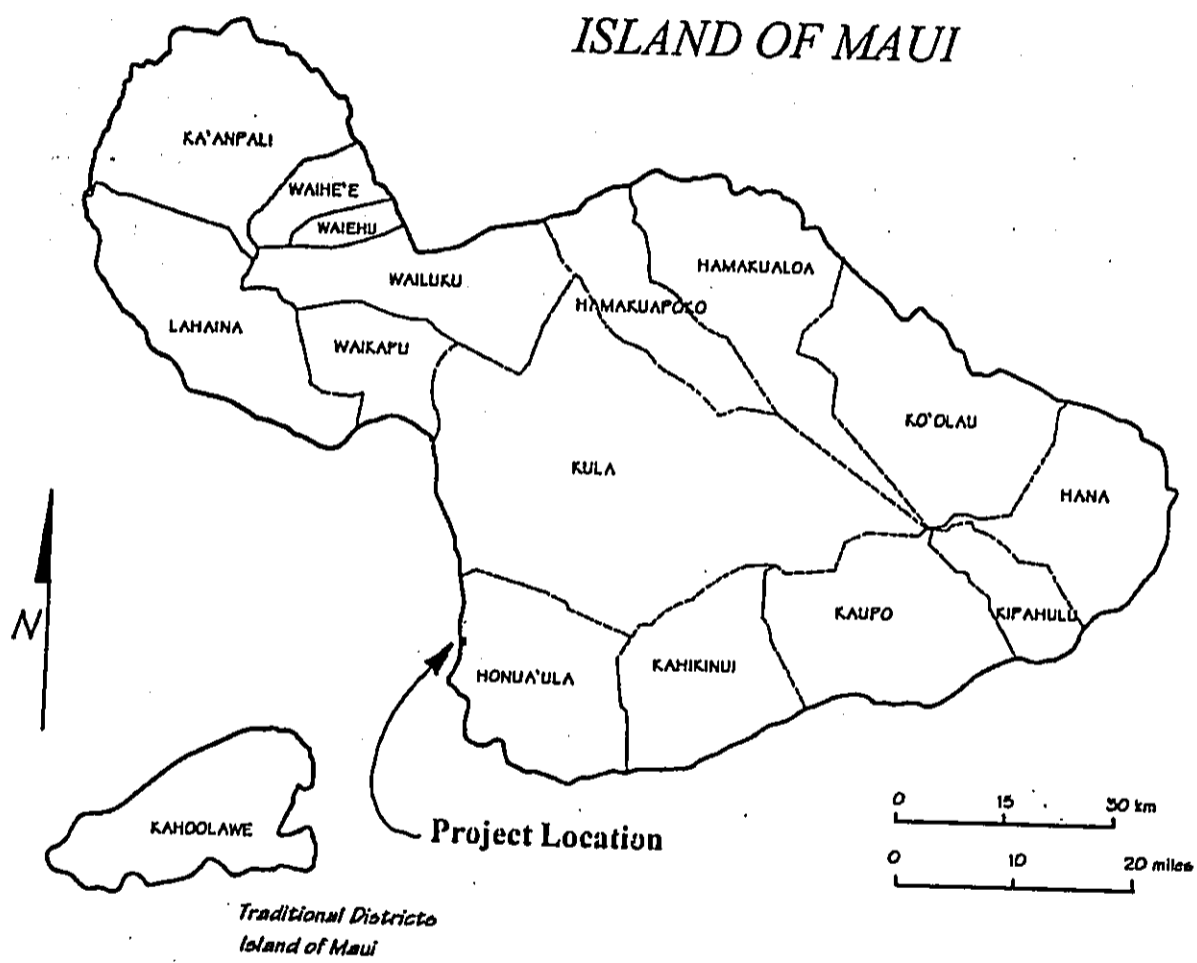
A field visit to the Site 4804 shrine was conducted on 21 November 2000 in order to obtain additional comments on the Preservation Plan. Erik Fredericksen met with Ms. Dana Naone Hall and Mr. Les Kuloloio of Hui Alanui o Makena in order to address questions and to obtain any comments on the draft Preservation Plan. In addition, Ms. Becky Broudy Collins, Project Manager for Pacific Rim Land, Inc., and Ms. Gwen Hiraga of Munekiyo, Arakawa & Hiraga, Inc. were present to answer questions about the proposed development and provide other pertinent information. Both Ms. Hall and Mr. Kuloloio were in agreement that Site 4804 has significant traditional cultural value. They did have four requests regarding 1) access, 2) the placement of an access trail to the shrine, 3) the placement and wording of the sign, and 4) the attachment of the Preservation Plan at the time of subdivision. These four requests are discussed below.

1. **Access to Site 4804.** Both Ms. Hall and Mr. Kuloloio requested that access for Native Hawaiian traditional cultural practices only occur at the shrine itself. Given the proximity of Site 4804 to the existing road, both were concerned about the long-term integrity of the site. Daylight access for traditional cultural practices between 8:00 a.m. and sunset was agreed upon. In addition, flexibility for evening visitation was requested. Permission for visitation during non-daylight hours would be by agreement with the landowner:
2. **Placement of the access trail.** Both Ms. Hall and Mr. Kuloloio requested that an access trail to the site not lead all the way up to the shrine (Feature A). They felt that the placement of the cinder trail would negatively impact the integrity of this portion of the site. It was also felt that the termination of the trail near the base of the *pu'u* in the preservation area could help to reduce casual foot traffic to the shrine itself (see Figure 2).
3. **Placement and wording of the sign.** Both Ms. Hall and Mr. Kuloloio requested that interpretive signage not be placed along the roadside. They felt that this placement would encourage nontraditional (especially high volume tourism) use of this site. They requested that the sign be placed at the end of the access trail to the site preservation

area, and the sign state that access beyond the end of the trail be for Native Hawaiian traditional cultural practices only (see Figure 2). It was also requested that a coastal *ko'a* in the general vicinity of Site 4804 be included in the signage wording.

4. **Attachment of the Preservation Plan at the time of subdivision.** A request was made that the Preservation Plan be attached by declaration on the parcel that will contain the Site 4804 preservation area at the time of subdivision.

The Project Manager for the MF-21 development, Ms. Becky Broudy Collins, was willing to have the above requests incorporated into the site preservation plan. She also agreed to carry out 4) at the time of subdivision. The above requests were subsequently shared with two members of the Makena Community Association (MCA). Ms. Gwen Hiraga contacted Mr. Edward Chang and Mr. Rudy Luurwai, both long-time Makena residents and MCA members. Both men indicated that they *did not* have any additional concerns about access issues at Site 4804. They also indicated that they felt comfortable with the access and signage proposals for this site.



**Map 1: General location of the project area.**







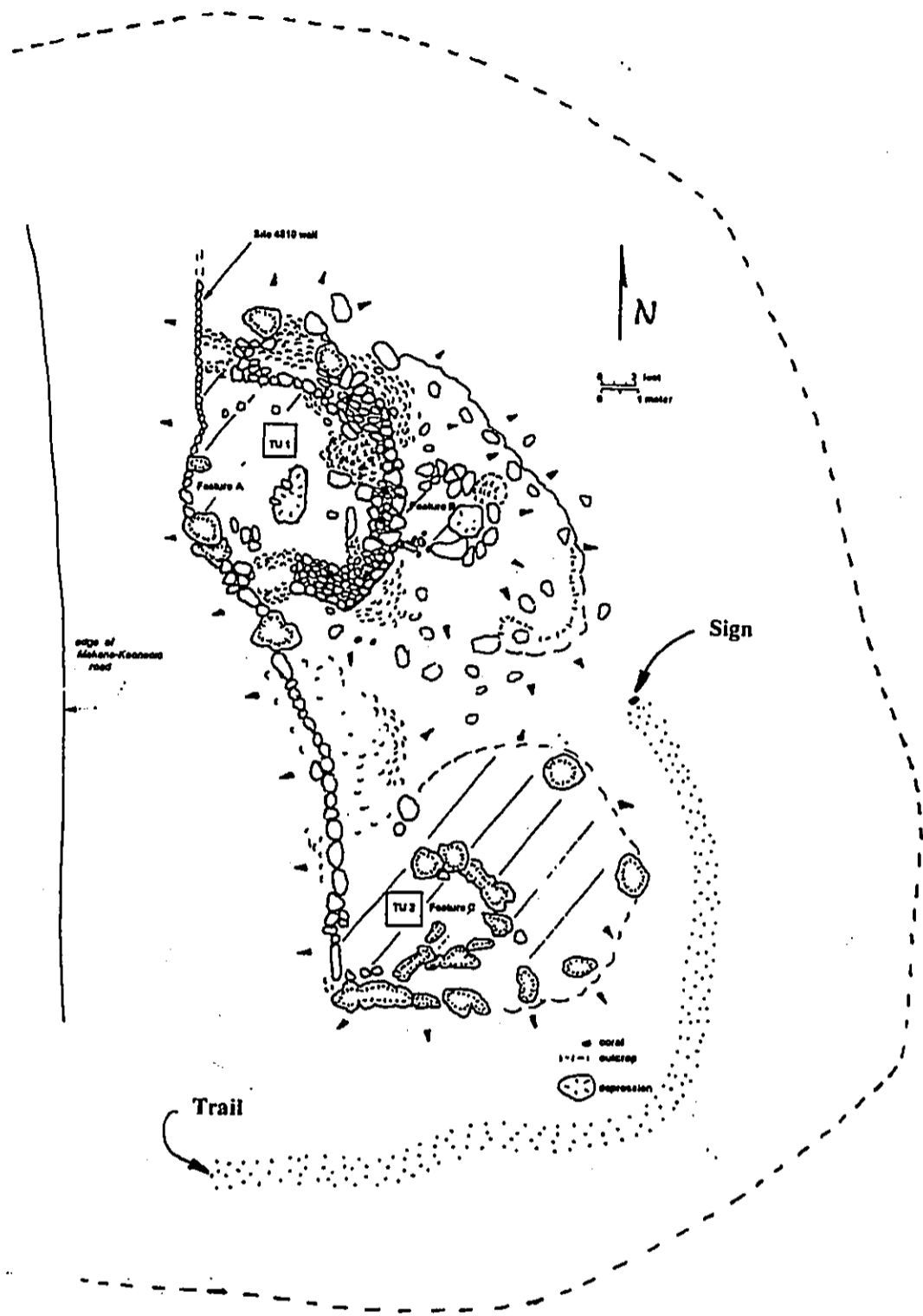


Figure 2: Plan of Site 4804 preservation area.

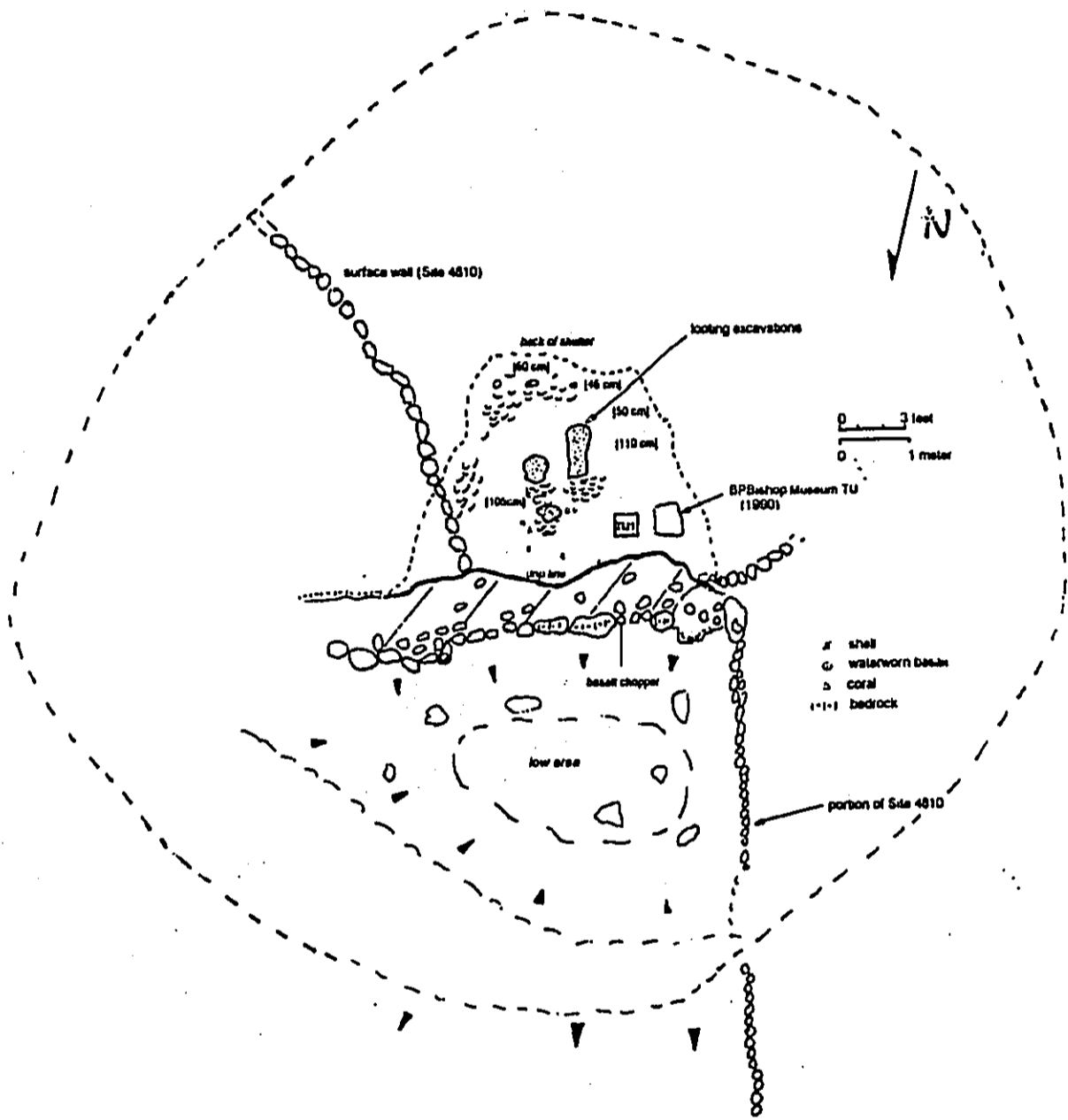


Figure 3: Plan of Site 4805 preservation area.

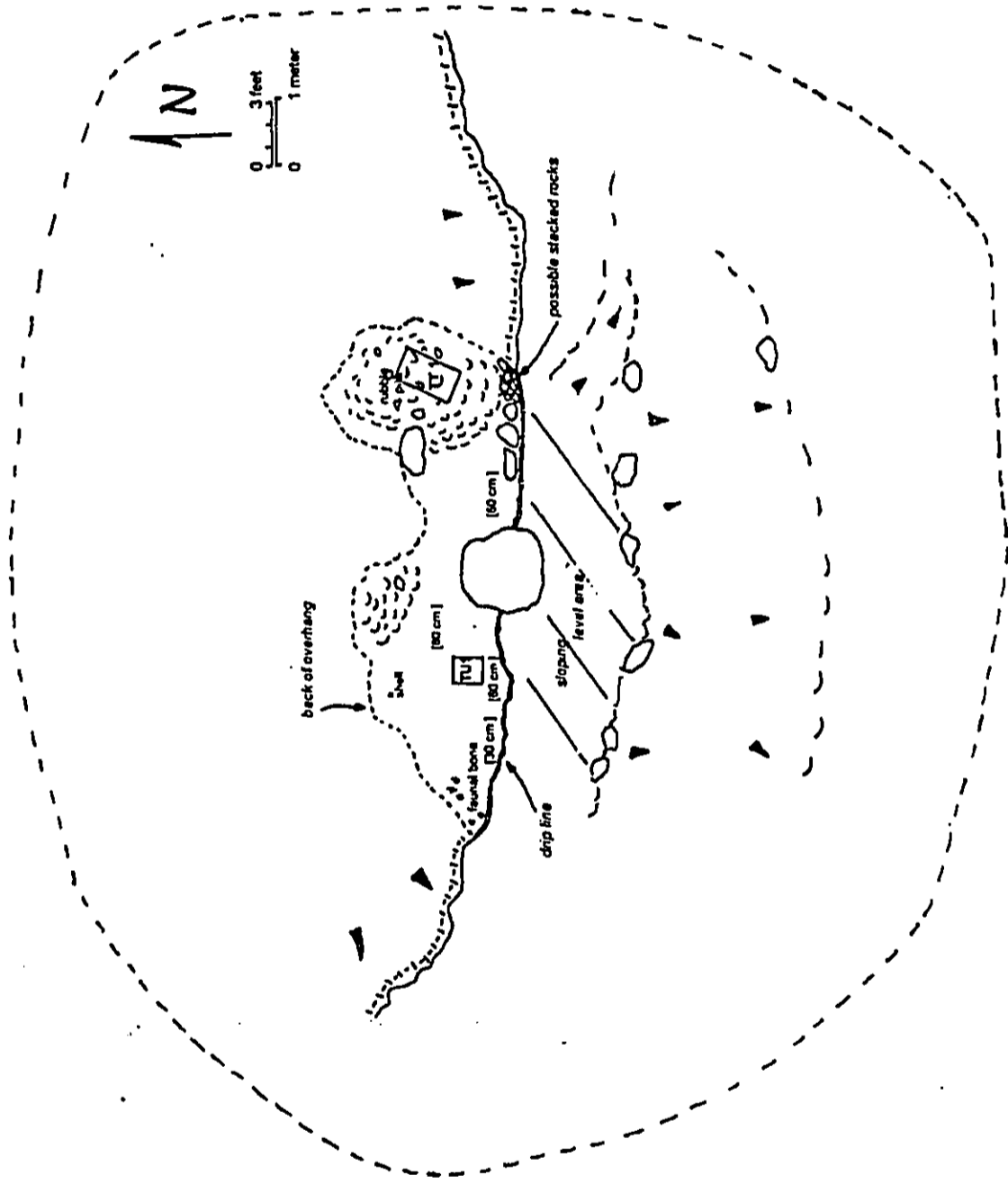


Figure 4: Plan of Site 4806 preservation area.

# ***Appendix C***

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***Preliminary Engineering  
Report***

**PRELIMINARY ENGINEERING REPORT  
FOR  
PALAUEA 7-LOT SUBDIVISION  
MF-21 LOT 325**

**AT  
PALAUEA, MAKAWAO, MAUI, HAWAII**

**TMK: (2) 2-1-23: 001**

**PREPARED FOR  
PACIFIC RIM LAND, INC.**

**BY  
AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS**

**October 1999  
July 2000  
December 2000**

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**APPENDIX A: EXHIBITS**

- 1 PROJECT LOCATION VICINITY MAP
- 2 VICINITY MAP
- 3 PROPOSED WATER SYSTEM IMPROVEMENTS
- 4 PROPOSED SEWER SYSTEM IMPROVEMENTS
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- 6 OFFSITE HYDROLOGY MAP
- 7 FLOOD ZONE
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**APPENDIX B: PRELIMINARY HYDROLOGIC CALCULATIONS**

**APPENDIX C: PRELIMINARY WATER DEMAND CALCULATIONS**

**APPENDIX D: PRELIMINARY WASTEWATER FLOW CALCULATIONS**



**Preliminary Engineering Report  
For  
MF-21 Subdivision - Pacific Rim Land**

**At**

**Palauea, Makawao, Maui, Hawaii  
Tax Map Key: (2) 2-1-23: 01**

**I. INTRODUCTION**

The purpose of this report is to summarize the preliminary civil engineering design criteria for Palauea Subdivision. It evaluates the existing site conditions and defines requirements for grading, drainage, sewer, and water utilities, along with other miscellaneous site improvements.

**II. PROPOSED PROJECT**

The project site is a 23.103 acre parcel of land located in Palauea, Maui, Hawaii. The parcel is designated by Tax Map Key (2) 2-1-23: 01. The area is currently zoned Agricultural by the Land Use Commission and the Kihei-Makena Community Plan. Refer to Appendix A, Exhibits 1: Project Location Map and 2. Vicinity Map.

**III. EXISTING CONDITIONS**

**A. Adjacent Land Uses**

The site is triangular in shape and is surrounded by a variety of land uses. The northern boundary is an undeveloped parcel of land, Tax Map Key (2) 2-1-23: 02, scattered with numerous archeological sites. Situated along the eastern boundary is Makena Alanui and the Wailea Emerald Golf Course. Marking the

western boundary is Keoneoio Makena Road, commonly referred to as "Old Makena Road". Downstream on the west are Palauea and Poolenalena Beaches and several private residences. Keoneoio Makena Road and Makena Alanui continue towards the south and connect at a junction forming the Southern tip of the parcel.

#### **B. Topography and Soil Conditions**

The site is currently undeveloped and overgrown with dry brush, weeds, and kiawe trees. Elevations on site range between 10 feet mean sea level (msl) and 116 feet ms. The land slopes at an average of 9.4 percent towards the western boundary.

There are two different soil classifications on the project site; very stony land (rVS) and Makena loam, Stony complex (MXC). The rVS type soil make up the majority of the project site. The MXC type soil covers a strip running along the western boundary of the lot.

Very stony land (rVS) describe areas where 50 to 90 percent of the surface is covered by stones and boulders. Very stony land occurs mainly on slope ranges between 7 and 30 percent. On Maui, this soil classification consists of Aa type lava with a thin covering of volcanic ash.

Makena loam, stony complex (MXC) covers the remaining majority of the site. This soil complex is actually a combination of two soils, Makena Loam and Stony Land. These well-drained soils are found on the lower leeward slopes of Haleakala, typically between the Kamaole and Makena areas on Maui's southern coast. Characteristics of this soil are moderately rapid to rapid permeability and slow to medium runoff. Erosion hazard varies from zero in the Stony land areas of the complex, to moderate in the Makena loam areas.

Soil classifications and descriptions are taken from the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) publication, Soil Survey of the Islands of Kauai, Oahu, Molokai, Maui, and Lanai.

**C. Roadways**

There are no existing roadways within the project site's boundaries. Access to the project site is provided by the bordering roadways, Makena Alanui and Keoneoio Makena Road (Old Makena Road) on the eastern, western, and southern boundaries. Wailea Alanui joins Makena Alanui to provide the major connection of the area to the rest of Maui.

**D. Drainage**

Runoff within the project boundaries generally flow in a westerly direction via several drainageways running through the property. A portion of the runoff continues in a westerly direction over Keoneoio Makena Road, through several private properties, and eventually into the ocean.

There are several drainage structures within the property all serving to drain adjacent properties on the east. Culverts along Makena Alanui provide drainage for the Wailea Emerald Course, a portion of the runoff from the entrance road to the Wailea Gold Course Clubhouse, as well as properties upstream of those. Drainage structures along Makena Alanui consists of 1-60" culvert discharging into the northeast corner of the site, 3-66" and 2 single barrel 24" culverts which discharge into the east central portion of the project site, and an 18" culvert emptying into the southeast corner of the site

Two major drainage ways traverse the property in a westerly direction. The first path routes the discharge from the 1-60" culvert on the northeast portion of the site. The runoff follows the general westerly slope then turns toward the north into the neighboring property (Tax Map Key: (2) 2-1-23: 02). The second drainage way conveys runoff from the 3-66" culverts on the east central portion of the site. The discharge from this set of culverts follow a defined drainage path and into a natural depression adjacent to Keoneoio Makena Road. Overflow from

this depression sheet flows over Keoneio Makena Road, through an unimproved parcel of land used as a beach access, and eventually into the ocean.

**E. Wastewater**

The site is currently unoccupied and generates no wastewater flow. An existing 6" sewer force main runs within Makena Alanui on the east. There are no existing sewer system utilities within Keoneio Makena Road on the west.

**F. Water**

Currently there are no existing water system utilities on-site. Water systems in the vicinity include a 12" waterline running within Keoneio Makena Road along the western boundary and a 30" water transmission main along the eastern boundary. The existing 12" waterline serves properties on the ocean front along Keoneio Makena Road.

**G. Flood Zone**

The project site resides in Flood Zone "C". Flood Zone "C" is described as an area of minimal flooding. All flood zone designations and descriptions are according to a Flood Insurance Rate Map (FIRM), Panel Number 150003-0330B (June 1, 1981), as provided by the Federal Emergency Management Agency (FEMA). Refer to Appendix A, Exhibit 6: Flood Zone.

**IV. PROPOSED IMPROVEMENTS**

**A. Grading Plan**

Grading for the proposed project includes minimal excavation and embankment for the subdivision improvements. Improvements include