

BENJAMIN J. CAYETANO
GOVERNOR



PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

July 29, 2002

RECEIVED

02 JUL 31 A8:27

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

MEMO TO: Ms. Genevieve K.Y. Salmonson, Director
Office of Environmental Quality Control
Department of Health

F R O M: *Patricia Hamamoto*
Patricia Hamamoto, Superintendent
Department of Education

SUBJECT: Final Environmental Assessment
Maui Lani Elementary School

In accordance with the provisions of Chapter 343, Hawai'i 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.

The Department of Education has reviewed comments received during the public comment period and has determined that there will be no significant impact as a result of the proposed project. Therefore, we are filing a Finding of No Significant Impact (FONSI).

We enclosed one copy of the OEQC Publication form. Four copies of the Final EA will be mailed under separate cover by the consultant. The consultant will also be sending a revised project summary via e-mail to your office for publication. We request that notice of the Final EA be published in the next edition of the Environmental Notice.

If you have any questions, please contact Ms. Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

PH:HM:hy

Enclosures

cc: A. Suga, OBS
Munekiyo & Hiraga, Inc.

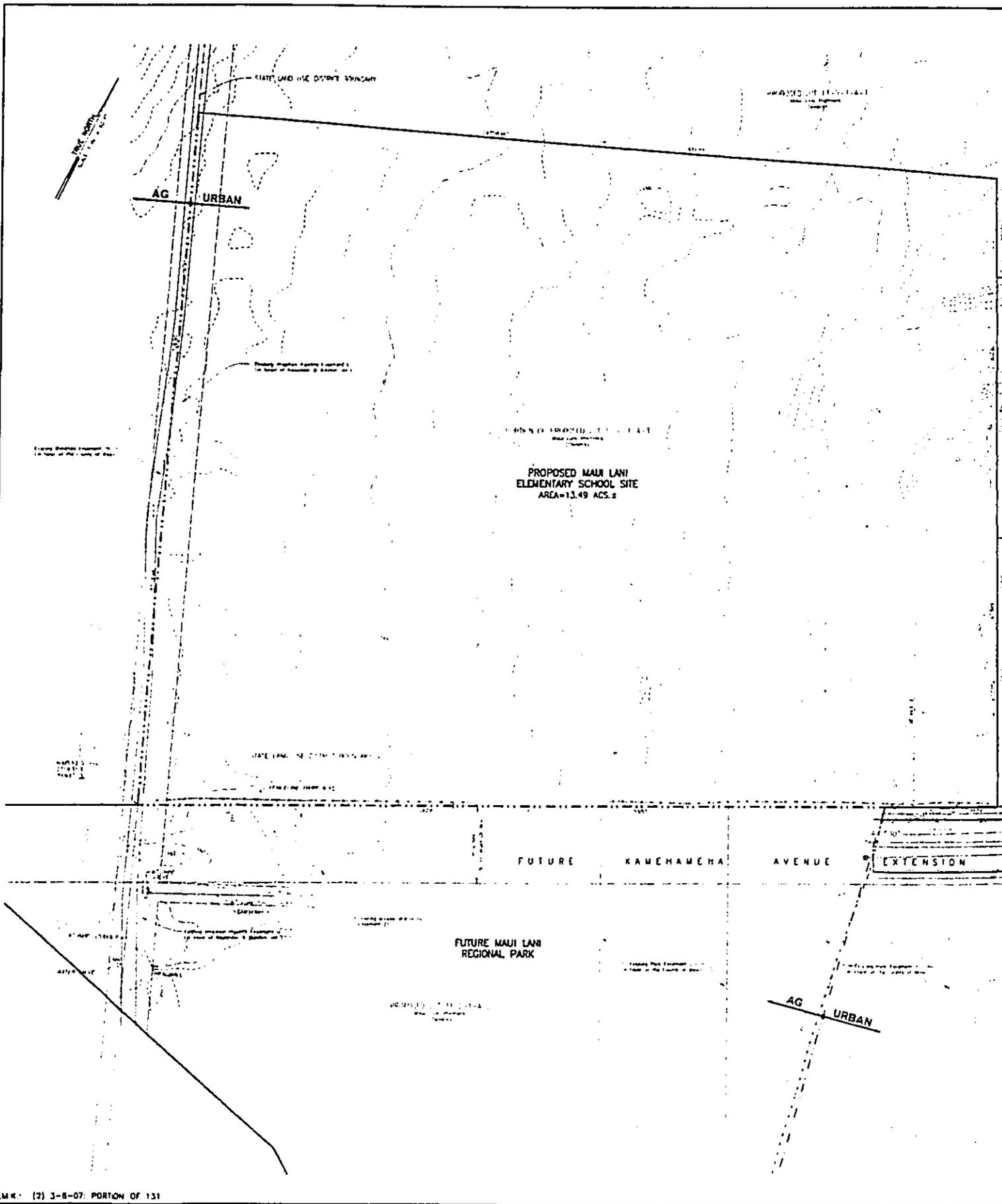
AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

79

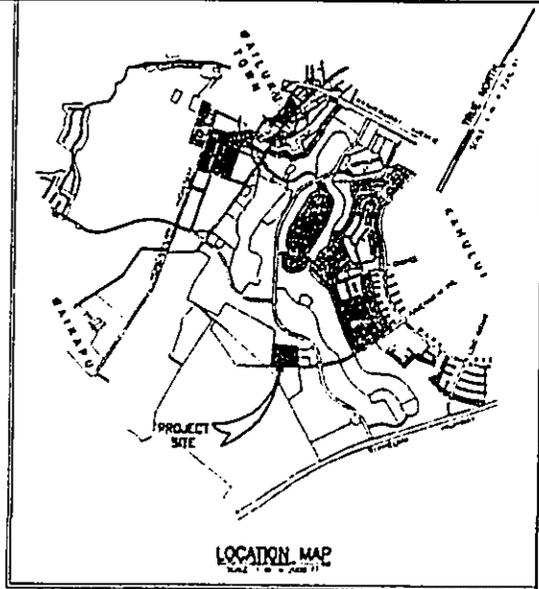
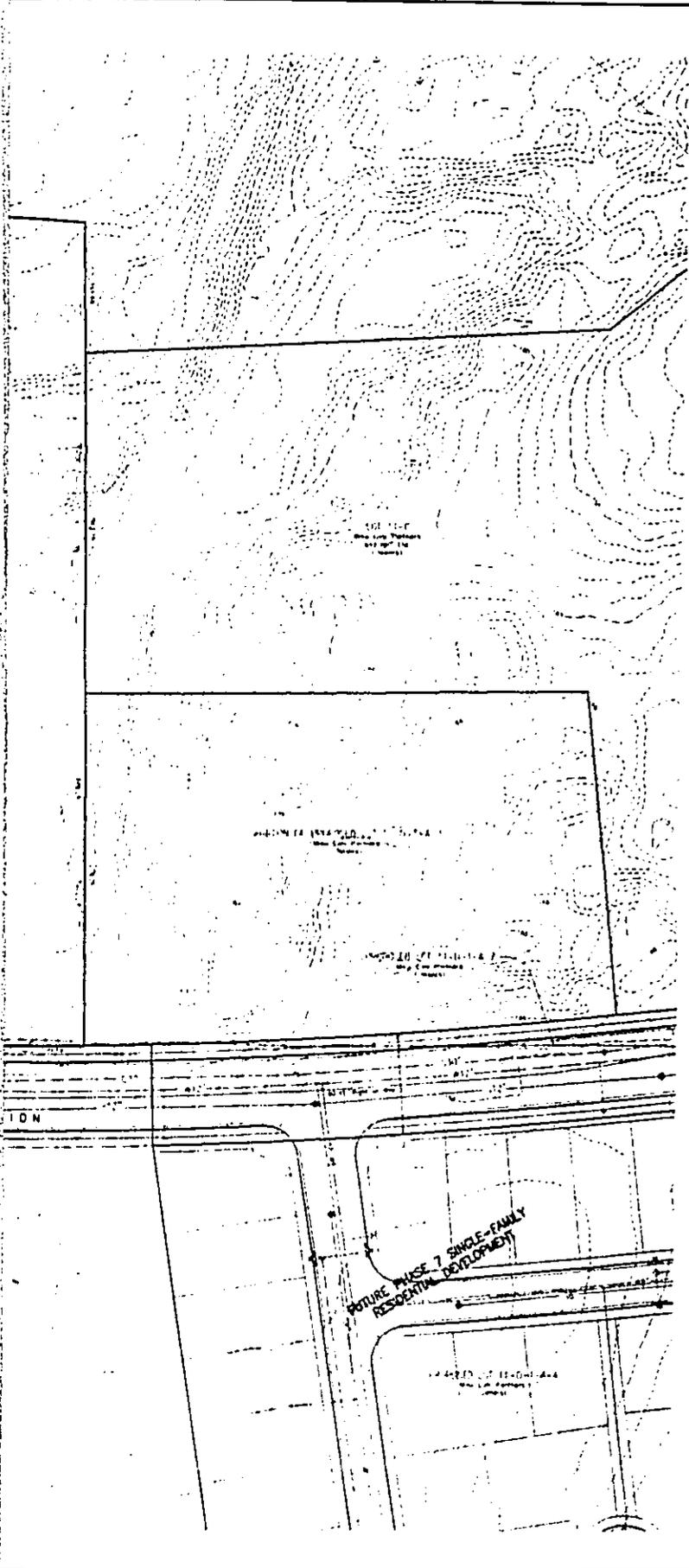
Appendix D

***Infrastructure Servicing
to Project Site***

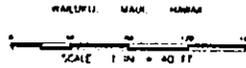
DOCUMENT CAPTURED AS RECEIVED



DOCUMENT CAPTURED AS RECEIVED



PROPOSED MAUI LANI ELEMENTARY SCHOOL SITE



OWNERS MAUI LANI PARTNERS
ADDRESS HONOLULU, HAWAII

Appendix E

***Preliminary Drainage Evaluation
Letter Report and Projected
Water and Wastewater Demand,
Prepared By Warren S. Unemori
Engineering, Inc., May 7, 2002***



May 7, 2002

Mr. Michael Munekiyo
Munekiyo & Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo,

Subject: Maui Lani Elementary School - Preliminary Drainage Evaluation
Kahului, Maui, Hawaii

This letter is intended to provide a brief overview and discussion of how the drainage needs of the proposed Maui Lani Elementary School may be accommodated.

Master Drainage Plan

The Maui Lani Project District lacks a route by which storm runoff from Maui Lani could drain directly into the ocean. Instead, storm runoff generated within Maui Lani is directed into a series of stormwater retention basins integrated into the Dunes Golf Course. These retention basins must be properly sized and shaped to enable them to capture and hold the storm runoff without flooding the adjoining urban areas.

Hydrologic Impact

The development of the proposed 13.5 acre school site will be accompanied by increases in both the peak discharge and stormwater volume due to the additional impermeable area created by building rooftops, concrete walkways and paved parking lots that are a typical part of a modern school facility. The magnitude of this change has been estimated by applying the hydrologic methods and criteria specified in the County of Maui's "Rules for the Design of Storm Drainage Facilities"¹:

¹Title MC-15, Department of Public Works and Waste Management, Subtitle 01, Chapter 4, "Rules for the Design of Storm Drainage Facilities in the County of Maui."

Mr. Michael Munekiyo
Preliminary Drainage Evaluation for Maui Lani Elementary School
Kahului, Maui, Hawaii
Page 2 of 3

- Increase in peak discharge: The peak discharge resulting from a 50-year storm event is expected to increase from 13 cubic-feet-per-second (cfs) to 35 cfs.
- Increase in runoff volume: The 13.5 acre site is expected to shed an additional 3 acre-ft (5000 c.y.) of runoff volume during a 100-year storm event once it has been fully developed.

Stormwater Routing and Disposal

Storm runoff generated by the Elementary School may be safely disposed of by conveying it to the stormwater retention areas within the Dunes at Maui Lani Golf Course in accordance with the original master drainage plan². Exhibit "A" illustrates two possible alternatives for accomplishing this.

Alternative 1: Storm runoff from the Elementary School could be conveyed by either an open drainage channel or underground drainline north through the currently undeveloped Park/Recreation Center site, across the future alignment of Maui Lani Parkway, through a future SF Residential area, and into Retention Basin 5 near the 4th Fairway of the Dunes Golf Course.

Alternative 2: Storm runoff from the Elementary School could also be directed into an underground drainline located under Kamehameha Avenue Extension, which would convey the runoff to the Dunes Golf Course and discharge it into Retention Basin 6 near the 17th Fairway.

²"Drainage Report for Maui Lani Golf Course," prepared by Sato & Associates, Inc. for Maui Lani Partners, June 1995.

Mr. Michael Munekiyo
Preliminary Drainage Evaluation for Maui Lani Elementary School
Kahului, Maui, Hawaii
Page 3 of 3

Stormwater Retention Capacity

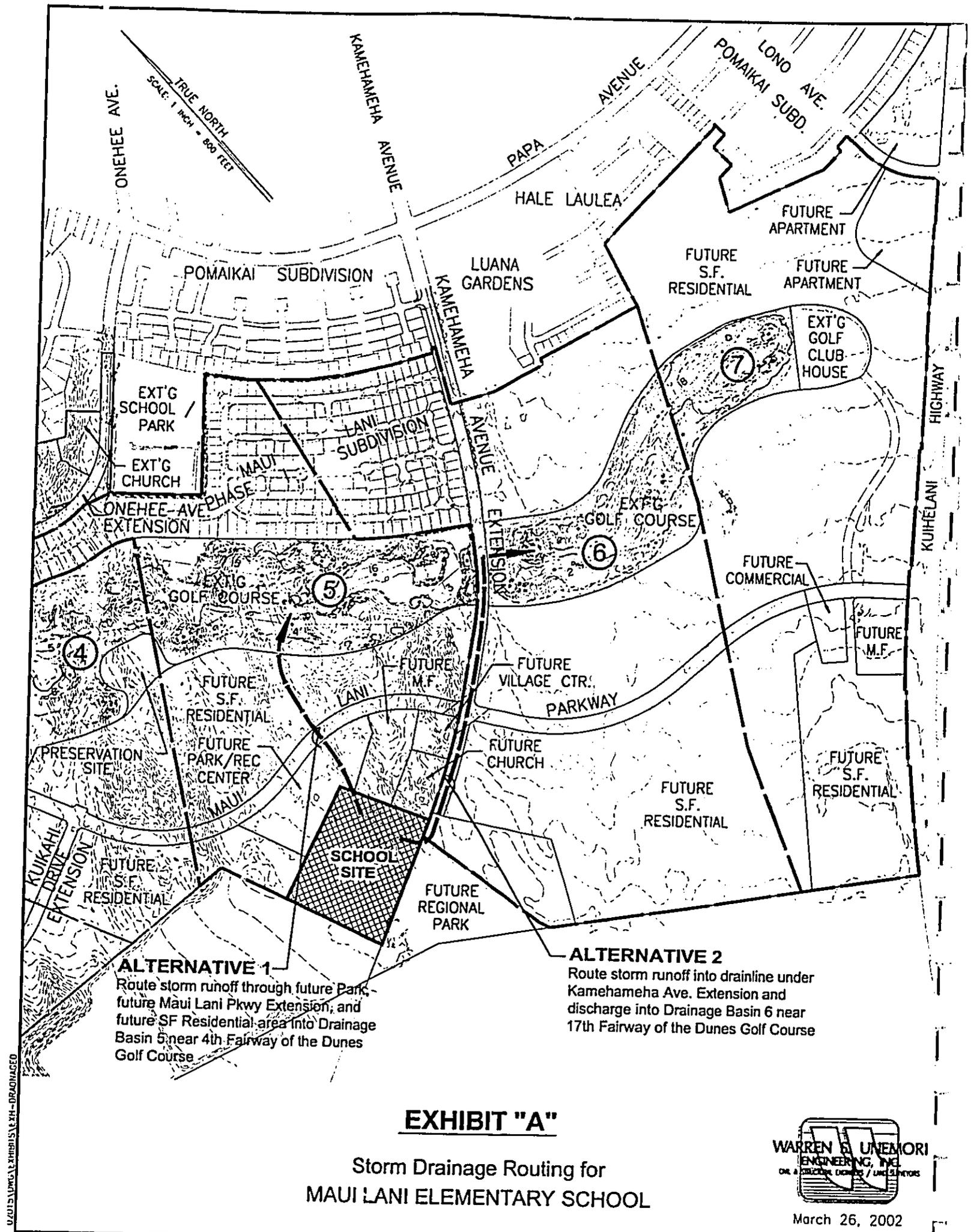
The projected post-development retention storage requirements for the proposed Elementary School are summarized in Exhibit "B". A further assessment of available retention capacity will need to be undertaken to determine whether sufficient capacity already exists in the golf course to accommodate the stormwater disposal requirements of the proposed Elementary School, or whether additional retention capacity will need to be developed.

Very truly yours,



Darren Unemori, P.E., P.L.S

enc.



U:\DWG\1\X\15\1515\1515-DRAGPAGE0

Drainage Retention Basin No.	Required Stormwater Retention Volumes		
	Storage Required for Existing Development	+ Marginal Contribution from Developed School Site	= Required Post-Development Storage
5	114,000 c.y.	+ 5,000 c.y.	= 119,000 c.y.
6 and 7	215,000 c.y.	+ 16,000 c.y.*	= 231,000 c.y.

* The original master drainage plan presumed that the 13.5 acres of land on which the proposed Elementary School is located would drain into Retention Basin No. 5. Consequently, diverting the Elementary School runoff to Retention Basins 6 / 7 increases the marginal storage requirement of Basins 6 / 7 by 16,000 c.y., of which 11,000 c.y. is attributable to the existing site and 5,000 c.y. is attributable to development.

EXHIBIT "B"

Projected Stormwater Retention Requirements for
MAUI LANI ELEMENTARY SCHOOL

MAUI LANI ELEMENTARY SCHOOL
Projected Water and Wastewater Demand

May 7, 2002

Average Daily Water Consumption

Method 1:

$$1700 \text{ gals/Ac/day}^* \times 13.5 \text{ Ac.} = 22,950 \text{ gallons/day}$$

Method 2:

$$60 \text{ gals/student/day}^{**} \times 650 \text{ students} = 39,000 \text{ gallons/day}$$

Average Daily Wastewater Demand

$$(650 \text{ students} + 80 \text{ staff}) \times 25 \text{ gal/capita/day}^{***} = 18,250 \text{ gallons/day}$$

*Source: Department of Water Supply, County of Maui, Water System Standards, Volume 1, 1985, Table 15 - Domestic Consumption Guideline: Average Daily Demand, pg 35.

**Ibid.

***Source: Department of Wastewater Management, City and County of Honolulu, Design Standards of the Department of Wastewater Management, Volume 1, July 1993, Chapter 20: Design of Sewers, pg 19.

Appendix F

***Drainage Report, Maui Lani
Golf Course, Prepared by
Sato & Associates, Inc.,
June 1995 (Without Time of
Concentration Calculations)***

DRAINAGE REPORT

**MAUI LANI GOLF COURSE
MAUI LANI DEVELOPMENT
KAHULUI, MAUI, HAWAII**

TMK: 3-8-07

Prepared for:

MAUI LANI PARTNERS

Prepared by:

SATO & ASSOCIATES, INC.

JUNE 1995

I. PROJECT LOCATION

The Maui Lani Golf Course is part of the Maui Lani Development Site which is located on approximately 975 acres of land bordered by Kaahumanu Avenue to the North, Kuihelani Highway to the South, Waiale Reservoir to the West, and various residential areas to the East. The area designated for the Maui Lani Golf Course runs roughly through the middle of the site in a North to South direction.

II. PROJECT DESCRIPTION

The proposed project involves grading approximately 193 acres of land for the construction of the Maui Lani Golf Course.

The Maui County Interim Drainage Standards require that storm runoff from developed areas be retained onsite or mitigated by a new drainage system to the ocean. Storm runoff from offsite areas upstream of the developed site is allowed to "pass through" the site and retain its normal course.

To fulfill these requirements, storm runoff from the proposed Maui Lani Development will be retained onsite. The grading of the Maui Lani Golf Course will include the development of numerous retention basins to accommodate the runoff from the proposed Maui Lani Development site. Per the Maui County Interim Drainage Standards, these retention basins will provide adequate capacity to store the runoff and provide a two foot minimum freeboard. These retention basins will store runoff generated from the proposed Maui Lani Development site only. Storm runoff produced from areas offsite will be intercepted and conveyed to an offsite retention basin.

III. EXISTING CONDITIONS

The existing conditions for the proposed Maui Lani Development site, including the golf course, consists of mounds and depressions of various slopes and sizes. Under current conditions storm runoff from the site collects in the depressions and percolates into the ground. Excess storm water runoff flows into the developed areas along the eastern boundary. It is the latter condition that is of most concern because certain areas to the east of the site experience flooding during severe storms. Also, the existing Waiale Reservoir has an overflow spillway that drains into the proposed Maui Lani Development site. This spillway will be relocated with the development of the Maui Lani site.

IV. DRAINAGE AREAS AND IMPROVEMENTS

The Maui Lani Development site has been divided into eight drainage areas based on the proposed mass grading plan for the project. Figure 3 illustrates these drainage areas. Only the sections within the drainage areas that are designated for the construction of the Maui Lani Golf Course shall be graded. For the Maui Lani Golf Course grades and maximum water surface elevations of the retention basins see the "Mass Grading Plans for the Maui Lani Golf Course" prepared by Warren S. Unemori Engineering, Inc., and

Nelson, Wright, Haworth Golf Course Architects.

Areas 1 through 5 have their own respective stormwater runoff retention basins located within the golf course area. Areas 6 & 7 share a common retention basin within their golf course areas. The stormwater runoff from Area 8 will be accommodated by the retention basin in Area 4.

The storage volumes required for the onsite retention basins were calculated using the SCS Hydrograph method. Per the County of Maui's standards, hydrographs generated from a 24 hour duration storm with a 100 year recurrence interval were used. Also per the County of Maui's standards, no consideration was given to the percolation of runoff into the soil of the golf course.

- A. Drainage Area 1 is located in the northern portion of the proposed Maui Lani Development site. It is bordered by Kaahumanu Avenue and the Maui Memorial Hospital. The area is approximately 91.1 acres in size and consists of slopes varying from 1% to 35%. The golf course portion is approximately 23.3 acres in size and is located in the southeastern corner of Area 1. Existing runoff currently flows to a low spot in the golf course area. The projected storm runoff from the future development of Area 1 is 405 cubic feet per second (cfs) and the runoff storage volume required is approximately 94541 cubic yards (c.y.). The grading of the golf course area includes the construction of a 203119 c.y. retention basin in the approximate location of the existing sump to accommodate the runoff.

Based on a maximum water surface elevation of 141 feet, the fairway and green of Hole 5 and the fairway of Hole 6 will be inundated. Based on a 25 year storm water surface elevation of 128 feet, the fairways of Holes 5 & 6 will be inundated by stormwater runoff.

- B. Drainage Area 2 is located just south of Area 1 along the eastern boundary of the proposed Maui Lani Development site. The area is approximately 88.4 acres in size and consists of slopes ranging from 1% to 50%. The golf course portion occupies approximately 27.0 acres and runs through the western region of the drainage area. Existing runoff currently sheet flows to a low spot adjacent to the residential area bordering the site. The estimated storm runoff generated from the future development of Area 2 is 313 cfs and the runoff storage volume required is approximately 90670 c.y. The grading of the golf course area includes a 126485 c.y. retention basin that will accommodate runoff from the future development of Area 2 and reduce runoff to the existing low spot.

Based on a maximum water surface elevation of 121 feet, the fairway and green of Hole 7 and the fairway of Hole 8 will be inundated. Based on a 25 year storm water surface elevation of 117 feet, storm runoff will inundate the green and fairway of Hole 7, and the fairway of Hole 8.

- C. Drainage Area 3 is located to the west of Area 2 and adjacent to the existing Waiale Reservoir site. This area consists of slopes ranging from 1% to 50% and covers an area of approximately 85.6 acres. The area designated for the golf course is approximately 26.8 acres and runs across the eastern region of the drainage area. The existing runoff in this area flows to a low spot in the northern region of the area. The projected runoff from produced from the future development of Area 3 is 428 cfs and the runoff storage volume required is approximately 86313 c.y. Grading for the golf course portion incorporates a 134713 c.y. retention basin to accommodate runoff from the future development.

Based on a maximum water surface elevation of 161 feet, the fairway and green of Hole 2 and the fairway of Hole 3 will be inundated. Based on a 25 year storm water surface elevation of 117 feet, the fairways of Holes 2 & 3 will be inundated.

- D. Drainage Area 4 is located south of Areas 2 & 3 and is bordered by the Maui Waena Intermediate School site to the east and portions of the Waiale Reservoir site to the west. The area is approximately 96 acres in size with slopes ranging from 2% to 50%. The golf course portion is 36.4 acres in size located in the eastern region of the drainage area near the school. Existing runoff generated in this area currently sheet flows toward the Maui Waena Intermediate School site. The estimated runoff from the future development of Area 4 is 407 cfs and the runoff storage volume required is approximately 95348 c.y. The grading of the golf course area includes a 167545 c.y. retention basin to accommodate the runoff generated from the future development of both Areas 4 & 8 (see section G). This will decrease the amount of runoff that sheet flows toward the school.

Based on a maximum water surface elevation of 151 feet, the fairway of Hole 9 and the practice range will be inundated. Based on a 25 year storm water surface elevation of 148 feet, the practice range will be inundated by stormwater runoff.

- E. Drainage Area 5 is located to the southeast of Area 4. The area is 124.3 acres in size with slopes ranging from 1% to 25%. The golf course portion occupies approximately 36.9 acres running through the drainage area in a North to South direction. The area designated for the golf course is currently the low spot for the western half of the drainage area. Storm runoff from the eastern section sheet flows toward the residential areas along the eastern boundary. The runoff generated from the future development of Area 5 is estimated at 423 cfs and the storage runoff storage volume required is approximately 131325 c.y. The grading of the golf course includes the construction of two retention basins, with a total volume of 133423 c.y., to accommodate runoff generated from the future development of Area 5.

Based on a maximum water surface elevation of 126 feet, the fairways of Holes 10, 11, 17, & 18, the green of Hole 11, and the Tee of Hole 17 will be inundated. Based on a 25 year storm water surface elevation of 113 feet, runoff

will inundate the fairway of Hole 10, the green and fairway of Hole 11, and the tee and fairway of Hole 17.

- F. Drainage Areas 6 & 7 are located to the south of Area 5. They both consist of slopes from 1% to 10% and they covers a total area of 345 acres. The golf course portions total 42.6 acres in size and run across the eastern half of the drainage areas. Existing storm runoff currently flows toward a residential area on the eastern boundary of the site. The combined projected storm runoff from the future development of Areas 6 & 7 is 944 cfs and the runoff storage volume required is approximately 272653 c.y. The grading of the golf course areas includes the construction of one 291207 c.y. retention basin to accommodate the runoff generated from the future development of both areas. This will reduce the amount of runoff that flows toward the residential area.

Based on a maximum water surface elevation of 101 feet, the fairways of Holes 12, 13, 14, 15, & 16 will be inundated along with the greens of Holes 13 & 14, and the Tee of Hole 14. Based on a 25 year storm water surface elevation of 98 feet, runoff will inundate the fairways of Holes 12, 13, 14, 15, & 16.

- G. Drainage Area 8 is located in the western most portion of the site, just south of the Waiale Reservoir site. The area is 72.5 acres in size with slopes ranging from 5% to 40%. There is no area within Area 8 designated for the construction of the Maui Lani Golf Course. Existing runoff generated from this area flows north toward the Waiale Reservoir and has little if any affect on the drainage situation of the golf course area. The projected storm runoff generated from the future development of Area 8 is 244 cfs and the runoff storage volume required is 68405 c.y. This runoff will drain into the retention basin located in Area 4.

V. DRAINAGE CALCULATIONS

As required by the County of Maui's Interim Drainage Standards, storm runoff quantities and runoff storage volumes were calculated using the SCS Hydrograph Method. The following two conditions were analyzed:

- 1) 25 year recurrence interval;
24 hour duration;
8 inch rainfall depth (see Figure 1)
- 2) 100 year recurrence interval;
24 hour duration;
10 in rainfall depth (see Figure 2).

Separate hydrographs for each condition were generated for all drainage areas. These hydrographs were then routed through their respective retention basins. In situations

where more than one drainage area shared the same retention basin (i.e. Areas 6 & 7), a hydrograph was generated from the combined conditions of both drainage areas and then routed through the basin. The results are presented in Tables 1 & 2. All hydrologic calculations are shown in the Appendix.

VI. CONCLUSIONS

Construction of the Maui Lani Golf Course is not expected to produce any adverse drainage impacts to adjacent or downstream properties. In fact, the development of the golf course will improve the drainage situation of the various adjacent residential areas. This will be achieved through the construction of numerous, large retention basins within the golf course itself. These basins will store the storm runoff generated from the future development of the Maui Lani Large Lot Subdivision site thereby reducing the runoff that sheet flows to the adjacent areas.

All retention basins provide adequate capacity to accommodate the storm runoff generated from their respective drainage areas. All retention basins sustain these capacities while maintaining the 2' minimum freeboard.

TABLE 1: RUNOFF VOLUME RESULTS FOR 100 YEAR STORM

Area Property	Units	Drainage Area							
		1	2	3	4	8	5	6	7
Total Area	Ac.	91.1	88.4	85.6	96.0	72.5	124.3	174.3	168.9
Golf Course Area	Ac.	23.3	27.0	26.8	36.4	0	36.8	15.2	27.4
Soil Type and Hyd. Class									
Puouone Sand - Class C	Ac.	91.1	88.4	85.6	96.0	72.5	124.3	101.3	52.9
Jaucus Sand - Class A	Ac.	0	0	0	0	0	0	73.0	116.0
Weighted SCS Curve Number		85	84	83	82	82	84	79	69
Time of Concentration and Travel	Hr.	0.30	0.47	0.24	0.29	0.51	0.45	0.40	0.50
Peak Flow	cfs	405	313	428	407	260	427	944	
Time of Peak Flow	Hr.	10.2	10.4	10.2	10.2	10.4	10.4	10.4	
Runoff Storage Volume Required*	c.y.	94541	90670	86313	95348	68405	131325	272653	
Maximum Water Surface Elevation*	ft.	141	121	161	151	101	126	101	
Runoff Storage Volume Available*	c.y.	203119	126485	134713	167545	133423	291207		

TABLE 2: RUNOFF VOLUME RESULTS FOR 25 YEAR STORM

Area Property	Units	Drainage Area							
		1	2	3	4	8	5	6	7
Total Area	Ac.	91.1	88.4	85.6	96.0	72.5	124.3	174.3	168.9
Golf Course Area	Ac.	23.3	27.0	26.8	36.4	0	36.8	15.2	27.4
Soil Type and Hyd. Class									
Puouone Sand - Class C	Ac.	91.1	88.4	85.6	96.0	72.5	124.3	101.3	52.9
Jaucus Sand - Class A	Ac.	0	0	0	0	0	0	73.0	116.0
Weighted SCS Curve Number		85	84	83	82	82	84	79	69
Time of Concentration and Travel	Hr.	0.30	0.47	0.24	0.29	0.51	0.45	0.40	0.50
Peak Flow	cfs	309	238	324	307	196	324	674	
Time of Peak Flow	Hr.	10.2	10.4	10.2	10.2	10.4	10.4	10.4	
Runoff Storage Volume Required*	c.y.	72197	69083	65421	73117	52513	100236	196053	
Runoff Storage Volume Available*	c.y.	203119	126485	134713	163269	133423	291207		

* NOTE: These values do not include required 2 feet freeboard.

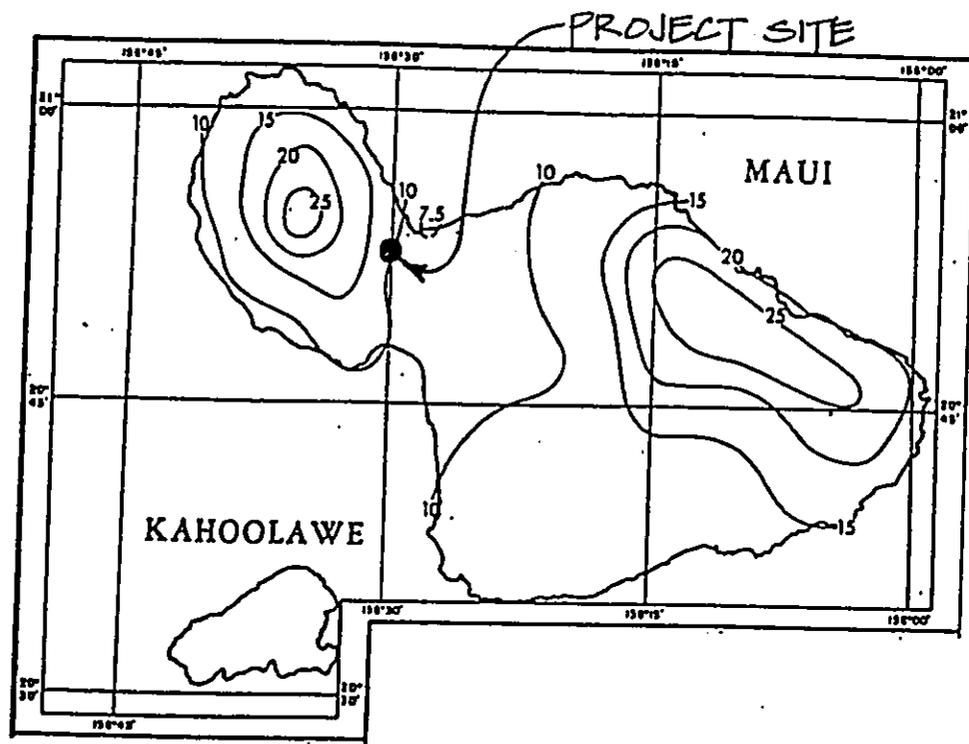


FIGURE 1: 25-YEAR, 24-HOUR RAINFALL (INCHES)

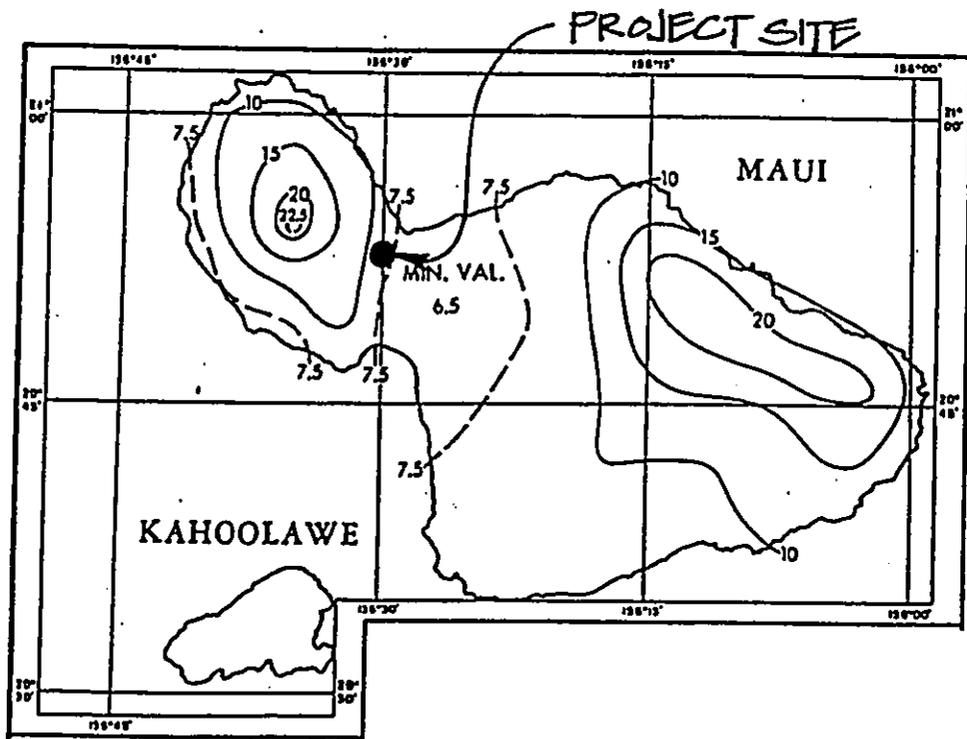


FIGURE 2: 100-YEAR, 24-HOUR RAINFALL (INCHES)

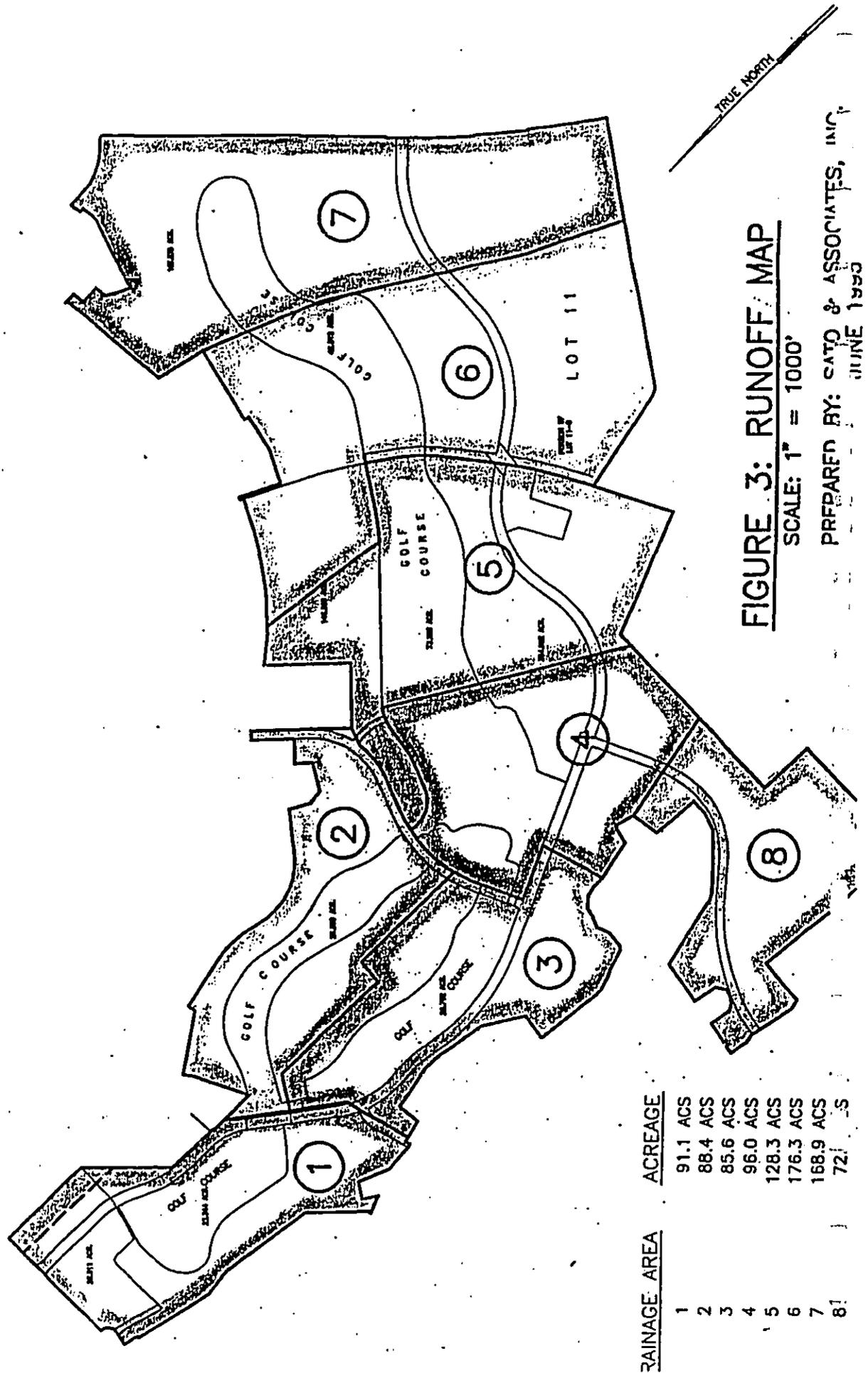


FIGURE 3: RUNOFF MAP

SCALE: 1" = 1000'

PREPARED BY: SATO & ASSOCIATES, INC.
JUNE 1990

VII. REFERENCES

1. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* August 1972. United States Department of Agriculture, Soil Conservation Service.
2. *Interim Drainage Standards for County of Maui.* January 1994. Department of Public Works and Waste Management, County of Maui.
3. *Rainfall Frequency Atlas of the Hawaiian Islands, Technical Paper No. 43.* 1962. United States Department of Commerce, Weather Bureau.
4. *Urban Hydrology for Small Watersheds.* June 1986. Soil Conservation Service, United States Department of Agriculture.

Appendix G

***Cultural Impact Assessment
Letter from Les Kuloloio,
March 19, 2002***

Les Kuloloio 469 Maalo Street, Kahului, Maui, Hawaii 96732

March 19, 2002

Ms. Leiane Goo
Director of Project Development
P.O. Box 1500
Wailuku, Hawaii 96793

**Re: Application for the Maui Lani Elementary School
TMK No. 3-8-07:131 portion of**

Dear Leiane:

As a consultant to the Maui Lani Development both as a Cultural Advisor and Archeological Monitor for almost ten years, I am providing this letter of consultation relating to cultural resources and impacts at the proposed Elementary School project site. My name is Les Kuloloio and I was born and raised on the Island of Maui. I am of Hawaiian descent and my genealogy is available (Mo'okuauhau family).

As a member of the Hui Ala Nui O Makena, my sensitivities were exposed to Hawaii's cultural past as we struggled with the Honokahua Burial Project for five years. A new understanding was developed within me as to the traditional and cultural practices of our past, and the current problems we all go through in today's society and ways of life. Today many of us continue to share this sacred experience and caring of the Iwi of our Kupuna.

Unlike Honokahua, the Maui Lani Development Project is unique due to the commitment they have shown to establishing cultural flexibility and balances and a communication network in the management of historical preservation issues. Maui Lani has designated over seven historic preservation sites in cooperation with the Maui/Lanai Burial Council, and continues to staff all construction projects with archeological monitors. They have also provided an on-site laboratory for the cataloguing of archeological remains. As recognized Cultural Advisors and members of the Hawaiian community, we encourage the professionally trained to be part of the social, cultural and economic process, as we face the challenges of maintaining a cultural and spiritual balance while allowing society to develop to meet the needs of our children.

The proposed school site is currently not being used for any cultural gatherings, nor is it cultivated using any traditional Hawaiian practices. The site is mostly over-grown with non-native weed grasses and *haole koa* shrubs. It is my opinion that the development of this project site will have little or no impact on the cultural practices of the indigenous people.

Please feel free to contact me on my voice/pager (281-7652) should you have any questions.

Sincerely,



Les Kuloloio
Cultural Advisor

Appendix H

***Traffic Study, Maui Lani
Development Roadway Master
Plan, Wailuku, Hawaii, Prepared
by Parsons Brinckerhoff, May 2002***

TRAFFIC STUDY

**Maui Lani Development
Roadway Master Plan**
WAILUKU, HAWAII

May 2002



Over a Century of Engineering Excellence

TRAFFIC STUDY

Maui Lani Development Master Plan

Wailuku, Maui, Hawaii

May 2002

Prepared For:

Maui Lani Partners
810 Richards Street, Suite 900
Honolulu, Hawaii 96813
(808) 528-3699

Prepared By:

Parsons Brinckerhoff Quade & Douglas, Inc.
Pacific Tower - Suite 3000
1001 Bishop Street
Honolulu, HI 96813
(808) 531-7094

PBQD Reference Number:
16353A

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	EXISTING CONDITIONS	5
	A. LAND USE	5
	B. ROADWAY NETWORK.....	5
	1. <i>Regional Arterial Roadways</i>	5
	2. <i>Sub-Regional Collector Roadways</i>	6
	C. TRAFFIC VOLUMES	7
	D. TRAFFIC OPERATIONS.....	8
III.	PROJECTED TRAFFIC CONDITIONS	12
	A. TRAVEL DEMAND ESTIMATION	13
	1. <i>Trip Generation</i>	14
	2. <i>Trip Distribution</i>	16
	3. <i>Project-Generated Traffic Assignment</i>	16
	4. <i>Background Traffic Volumes</i>	17
	5. <i>Total Traffic Assignment</i>	17
	B. TRAFFIC OPERATIONS EVALUATION	18
IV.	PROPOSED ROADWAY PHASING PLAN	26
	A. PHASE 1 (YEAR 2002/2003)	26
	B. PHASE 2 (YEAR 2004)	27
	C. PHASE 3 (YEAR 2006)	28
	D. PHASE 4 (YEAR 2008)	28
	E. PHASE 5 (YEAR 2010)	29
	F. IMPROVEMENTS TO HANDLE REGIONAL TRAFFIC	30
V.	SUMMARY AND CONCLUSION	38

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Figure 1 Vicinity Map	3
Figure 2 Conceptual Development Plan	4
Figure 3 Existing Peak Hour Traffic Volumes.....	9
Figure 4 Phase 1 Projected Peak Hour Traffic Volumes	19
Figure 5 Projected Phase 2 Peak Hour Traffic Volumes	20
Figure 6 Projected Phase 3 Peak Hour Traffic Volumes	21
Figure 7 Projected Phase 4 Peak Hour Traffic Volumes	22
Figure 8 Projected Phase 5 Peak Hour Traffic Volumes	23
Figure 9 Projected Phase 1 Roadway Improvements.....	33
Figure 10 Projected Phase 2 Roadway Improvements.....	34
Figure 11 Projected Phase 3 Roadway Improvements.....	35
Figure 12 Projected Phase 4 Roadway Improvements.....	36
Figure 13 Projected Phase 5 Roadway Improvements.....	37

LIST OF TABLES

Table 1 Existing Intersection Peak Hour Level of Service	10
Table 2 Maui Lani Trip Generation Summary	15
Table 3 Projected Phase 5 Peak Hour Intersection Level of Service.....	24
Table 4 Maui Lani Roadway Improvement Phasing Plan	31

I. INTRODUCTION

Maui Lani is a master planned community that is currently being developed in the Wailuku-Kahului area of Maui. At buildout, it will include residential, commercial, recreation, public, and quasi-public land uses. A new elementary school is included in the proposed development.

Maui Lani is located south and west of existing residential developments and generally between Kuihelani Highway and Waiale Drive. Figure 1 illustrates the approximate location of the Maui Lani Development.

Over the past ten years, Maui Lani has implemented the first elements of its master plan, starting with the Dunes at Maui Lani Golf Course and modules 1B and 1C of its single-family residential development. Currently, Maui Lani is implementing its module 2 parcels, The Island and Bluffs residential subdivisions. The approval process is also underway for module 8A, a proposed light industrial park complex in the southwest portion of the Maui Lani Development. Although not owned by Maui Lani Development, the commercial/medical parcel (modules 3A and 3B) at the intersection of Maui Lani Parkway and Kaahumanu Avenue is currently undergoing site plan review with Maui County.

Maui Lani proposes to implement major roadway infrastructure improvements. The roadway infrastructure improvements associated with Maui Lani Development will serve more than the direct needs of project traffic. The proposed Maui Lani Parkway, and the extensions of Onehee Avenue, Kamehameha Avenue, and Kuikahi Drive are expected to handle a significant amount of non-project traffic as well. Maui Lani Parkway and these other roadways will, therefore, benefit the Wailuku-Kahului area by providing an alternative route to the heavily traveled Kaahumanu Avenue.

Because these roadway improvements are extensive and costly, the improvements are being phased in as Maui Lani is developed. So far, Maui Lani has extended Onehee Avenue and Kamehameha Avenue to south. A segment of Maui Lani Parkway between Kaahumanu Avenue and the new Mahalani Street Extension that connects it to Waiale Drive has been constructed. The first phase of the segment of Maui Lani Parkway between Kuihelani Highway and Kamehameha Avenue will be constructed next year.

The purpose of this traffic study is to develop a phasing plan for the implementation of the balance of the proposed Maui Lani roadway improvements. Figure 2 illustrates the conceptual development plan, illustrating the individual development modules within Maui Lani. The phasing plan will be tied to the development of these modules.

II. EXISTING CONDITIONS

A. Land Use

The area surrounding the Maui Lani Development is characterized by a variety of land uses. Residential development exists to the north of Maui Lani. Integrated within the residential development area are two elementary schools (Lihikai School and Kahului School), Maui Waena Intermediate School, and Maui High School. The Kahului Community Center is also located in this area north of Maui Lani. Further to the north, along Kaahumanu Avenue between Maui Lani Parkway and Puunene Avenue, are Baldwin High School, War Memorial Complex, Keopuolani Park, Maui Memorial Hospital, Kaiser Clinic, Maui Police Headquarters, Maui Community College, and the Kaahumanu Shopping Center. The eastern boundary of Maui Lani is Kuihelani Highway and beyond it are actively cultivated sugar cane fields. South of Maui Lani, the land is primarily vacant or in pineapple cultivation. West of Maui Lani is a mixture of existing residential and public facility development.

B. Roadway Network

1. Regional Arterial Roadways

The major regional roadways in the vicinity of Maui Lani Development are Kuihelani Highway, Kaahumanu Avenue, and Honoapiilani Highway.

Kuihelani Highway is currently a two-lane arterial highway. Its posted speed is 55 miles per hour (mph) except for selected segments in the vicinity of intersections. It is the primary highway connecting central Maui to Maalaea and West Maui. The State of Hawaii Department of Transportation (HDOT) is currently widening Kuihelani Highway to 4 lanes from Puunene Avenue to Honoapiilani Highway, and this widening is expected to be completed by August 2002. At Puunene Avenue, the name of this roadway changes from Kuihelani Highway to Dairy Road. Dairy Road is a 4-lane major collector that provides continuity to Hana Highway and beyond to Kahului Airport.

Kaahumanu Avenue is a four-lane arterial highway that connects Wailuku and Kahului. Near Maui Mall, it curves to the south and become Hana Highway, continuing as a

major arterial to provide regional access to Dairy Road, Haleakala Highway, Paia, and east Maui.

Honoapiilani Highway begins as High Street, a two-lane, major collector roadway in Wailuku Town. At Keanu Street it becomes Honoapiilani Highway, which provides access from Wailuku to areas south of Wailuku including Waikapu and beyond to Maalaea and West Maui. The Maui Long-Range Land Transportation Plan, indicates that the long-range transportation goal is to allow the segment of Honoapiilani Highway between Keanu Street and Kuikahi Drive to operate as a major collector like High Street. Consistent with this goal are projects to provide alternatives to Honoapiilani Highway in this area such as the current widening of Kuihelani Highway and the provision of an alternative route to Honoapiilani Highway using Kuikahi Drive, Waiale Drive, and the Mahalani Extension.

2. Sub-Regional Collector Roadways

Several roadways provide access to the regional arterial roadway and circulation within the Kahului-Wailuku area. These are: Waiale Drive, Papa Avenue, Onehee Avenue, Kamehameha Avenue, Wakea Avenue and Puunene Avenue.

Waiale Drive currently provides north-south circulation in the vicinity of the Kehalani residential development and provides access to Wailuku and the Lower Main Street corridor. It is currently a two-lane roadway posted at 25mph. It is paved north of Kuikahi Drive, and as it passes under Main Street, its name becomes Lower Main Street, providing access into the Lower Wailuku area.

Papa Avenue provides east-west circulation through the existing residential subdivision area located north of Maui Lani. It is a two-lane roadway that is posted at 25 mph. It starts at Kaahumanu Avenue on its west end and effectively ends at Puunene Avenue on its east end.

Onehee Avenue currently provides north-south circulation for Maui Lani and the residential areas north of it. It currently extends from Wakea Avenue south to the access to the Island and Bluffs Subdivision of Maui Lani. It also provides direct access to Maui Waena Intermediate School, located south of Papa Avenue. Between Maui

Waena Intermediate School and its current southern terminus within Maui Lani, Onehee Avenue is a four-lane collector roadway. North of Maui Waena Intermediate School, it is a two-lane collector roadway. The north end of Onehee Avenue terminates opposite a driveway for the Queen Kaahumanu Shopping Center.

Kamehameha Avenue also provides north-south circulation within Maui Lani and the subdivision area north of it. It currently extends from the Dunes Golf Course Temporary Access Road, located within Maui Lani, into Kahului, terminating at Hana Highway near the Kaahumanu Avenue/ Hana Highway curve. Adjacent to Module 1B, Kamehameha Avenue is a four-lane collector roadway. North of this point, it is a two-lane roadway until Puunene Avenue. Between Lono Avenue and Hana Highway, it functions as an east-west major urban collector, paralleling Kaahumanu Avenue and serving Kahului Shopping Center, the Maui Mall, and other commercial uses in that area.

Wakea Avenue is an east-west collector that provides circulation between the Queen Kaahumanu Shopping Center area and the commercial area in Kahului near Alamaha Avenue. It starts at Kaahumanu Avenue on its west end and terminates at Hana Highway on its east end.

Puunene Avenue is a major collector between Kahului and Puunene. It provides north-south circulation within urban Kahului area and also provides access to the regional arterials of Kuihelani Highway and Mokulele Highway. Within Kahului, it is mostly a 4-lane roadway with turn lanes at major intersections. Between Wakea Avenue and Kuihelani Highway, it is a two-lane roadway. East of Kuihelani Highway, it is a four-lane roadway for a short distance but returns to a two-lane cross-section that curves southward and becomes Mokulele Highway.

C. Traffic Volumes

Traffic volumes were collected from April 2 to April 3, 2001 during the AM and PM peak periods at the following intersections:

- Papa Avenue/ Onehee Avenue
- Papa Avenue/Kamehameha Avenue
- Papa Avenue/Lono Avenue

-
- Papa Avenue/Puunene Avenue
 - Honoapiitani Highway/Kuikahi Drive
 - Kulhelani Highway/Maui Lani Access.

Additionally, data previously collected at the Kaahumanu Avenue/Baldwin High School/ Maui Lani Parkway Intersection were updated to reflect current conditions. At the time the data was collected, the Mahalani Street Extension was not complete. Figure 3 illustrates the existing traffic volumes.

D. Traffic Operations

Intersection operations were evaluated at the following intersections:

- Papa Avenue/Onehee Avenue;
- Papa Avenue/Kamehameha Avenue;
- Papa Avenue/Lono Avenue;
- Honoapiitani Highway/Kuikahi Drive;
- Kulhelani Highway/Maui Lani Access;
- Kaahumanu Avenue/Baldwin High School/Maui Lani Parkway.

The intersection capacity analysis methods documented in the 2000 Highway Capacity Manual were used to evaluate intersection operations at these intersections. Table 1 summarizes the results of the traffic analyses.

Table 1
Existing Intersection Peak Hour Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Papa Ave/Onehee Ave	C	27.8	C	24.0
Northbound Approach	C	29.2	C	20.5
Southbound Approach	C	28.6	C	22.0
Eastbound Approach	C	25.0	C	23.3
Westbound Approach	C	28.4	C	27.4
Papa Ave/Kamehameha Ave	Unsignalized			
Papa Eastbound Left	A	8.6	A	8.0
Papa Westbound Left	A	8.6	A	8.3
Kamehameha Northbound Left/Through	F	157.2	F	83.2
Kamehameha Northbound Right	B	11.4	B	10.7
Kamehameha Southbound Left/Through	F	79.8	E	47.2
Kamehameha Southbound Right	B	11.8	B	10.3
Papa Ave/Lono Ave	Unsignalized			
Lono Northbound Left	A	8.3	A	7.7
Lono Southbound Left	A	7.6	A	7.3
Papa Eastbound Left	F	52.2	C	17.9
Papa Eastbound Through/Right	C	19.6	B	14.0
Papa Westbound Left	C	25.0	C	15.1
Papa Westbound Through/Right	D	31.5	C	15.7
Honoapiilani Hwy/Kuikahi Dr Ext	C	29.2	C	20.5
Northbound Approach	C	29.2	C	20.5
Southbound Approach	C	28.6	C	22.0
Eastbound Approach	C	25.0	C	23.3
Westbound Approach	C	28.4	C	27.4
Note: Delay is expressed in seconds/vehicle.				

Table 1 (Continued)
Existing Intersection Peak Hour Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Kuihelani Hwy/Maui Lani Access	Unsignalized			
Kuihelani Left	A	8.8	A	9.7
Maui Lani Left	C	19.9	C	17.1
Maui Lani Right	B	11.4	B	10.6
Kaahumanu Ave/Maui Lani Pkwy	C	27.8	C	24.0
Northbound Approach	C	26.1	B	12.9
Southbound Approach	B	13.8	B	14.1
Eastbound Approach	D	48.6	D	48.0
Westbound Approach	C	28.6	D	48.3
Note: Delay is expressed in seconds/vehicle.				

As shown, the analyzed intersections located on the major regional arterials of Honoapiilani Highway, Kuihelani Highway, and Kaahumanu Avenue operate well for peak hour conditions. Vehicles at the unsignalized intersections of Kamehameha Avenue and Lono Avenue on Papa Avenue currently experience delay for the left-turn movements controlled by STOP signs.

III. PROJECTED TRAFFIC CONDITIONS

The Maui Lani Roadway Master Plan assesses roadway needs for future modules of the Maui Lani development.

Modules 1A (Golf Course), 1B (Single-Family Detached), 1C (Single-Family Detached), and 2A (Single-Family Detached) are complete and treated as part of the existing condition. Concurrent with the development of these modules, Onehee Avenue and Kamehameha Avenue were extended to the south, and Onehee Avenue was improved adjacent to Maui Waena Intermediate School. Additionally, the segment of Maui Lani Parkway between Kaahumanu Avenue and the Mahalani Extension is constructed to its ultimate four-lane cross-section.

Recently, the County of Maui constructed the Mahalani Extension between Waiale Drive and Maui Lani Parkway and the Kuikahi Drive Extension between Honoapiilani Highway and Waiale Drive. These extensions allow Waiale Drive to provide an alternative route to the segment of Honoapiilani Highway between Kuikahi Drive and Wailuku Town. It also allows Maui Lani Parkway to serve this traffic to Kaahumanu Avenue.

As part of the Dunes at Maui Lani Golf Course development, an access on Kuihelani Highway was constructed at the location of the future Maui Lani Parkway/Kuihelani Highway intersection. A temporary maintenance road runs from this intersection location to a point where it curves north and joins Kamehameha Avenue. Although this is a private road, there is significant usage of this road by non-Dunes Golf Course traffic as a shortcut to and from Papa Avenue. By next year, this roadway will be replaced by the first phase of Maui Lani Parkway between Kuihelani Highway and Kamehameha Avenue. Half of the ultimate 4-lane Maui Lani Parkway will be constructed. Within the same time frame, Kamehameha Avenue will be extended south to intersect with Maui Lani Parkway.

Future traffic conditions were evaluated for five future scenarios related to planned development phases of the Maui Lani Development. Approximate years for implementation are shown in parenthesis, but market conditions will drive the actual implementation schedule.

-
1. Phase 1 (Year 2002/2003) – Module 2B (Island and Bluffs) and Module 2C (Single-Family Detached);
 2. Phase 2 (Year 2004) – Module 3A (Medical Offices), Module 3B (Commercial Retail), Module 7A (Single-Family Detached), Module 8A (Light Industrial), and Module 12 (Elementary School);
 3. Phase 3 (Year 2006) – Module 5 (Single-Family Detached), Module 6A (Single-Family Detached), Module 6B (Multi-Family), Module 6C (Village Center), Module 6D (Church), and Module 8B (Single-Family Detached);
 4. Phase 4 (Year 2008) – Module 10 (Single-Family Detached), Module 11A (Single-Family Detached), and Module 11B (Multi-Family);
 5. Phase 5 (Year 2010) – Module 1D (Single-Family Detached), Module 4 (Apartment), Module 7B (Single-Family Detached), Module 7C (Multi-Family), Module 7D (Commercial), Module 9A (Single-Family Detached), and Module 9B (Church).

Vehicular trip generation was estimated for the total Maui Lani development for each of these phases. Travel demand for each phase was then developed based on the roadway system assumed to be in place at the time the phase is implemented. Key traffic impact issues for each phase were then evaluated. The findings of these evaluations were then used to identify needed roadway improvements for each phase of Maui Lani Development.

A. Travel Demand Estimation

Travel demand for the completed Maui Lani Development was projected by estimating vehicular traffic generated by the proposed development, directionally distributing the estimated traffic, and assigning the distributed traffic to the available roadway network. Different phases of the Maui Lani Development have different assignments, because the roadway network connections are different for each phase. Therefore, trip generation and trip distribution will be documented for the entire Maui Lani

Development, while traffic assignment will be documented for each phase of the project.

1. Trip Generation

Vehicular trips generated by the proposed Maui Lani Development were estimated using trip generation relationships documented in the Institute of Transportation Engineers publication, Trip Generation, 6th Edition. Table 2 summarizes the estimated vehicle trips for the AM and PM peak hours by anticipated project phase.

As shown in Table 2, Maui Lani Development proposes to construct a new community that contains 2,500 single-family detached dwelling units and 367 multi-family dwelling units at buildout. The community will also contain a new elementary school, 2 church sites, a regional park, and a community center. To help contain trips within the development, two neighborhood commercial sites are proposed, totaling approximately 26,189 square feet of floor area. Two parcels at the edges of the proposed development involve non-residential uses: a light industrial park the southwest corner of the development and a commercial and medical development at the Maui Lani Parkway/ Kaahumanu Avenue intersection.

Table 2
Maui Lani Trip Generation Summary

Module	Land Use	ITE Code	Intensity	units	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
Phase 1	2002/2003							
2B	Single-Family	210	89	du	16	47	44	25
2C	Single-Family	210	37	du	7	20	18	10
Phase 1	Sub-Total				23	67	62	35
Phase 2	2004							
3A	Medical Office	720	104,000	sf	202	51	85	230
3B	Retail	820	125,100	sf	111	71	349	379
7A	Single-Family	210	335	du	59	177	167	94
8A	Light Industrial	110	56.3	ac	351	72	71	253
12	Elem. School	520	500	student	86	59	60	70
Phase 2	Sub-Total				809	430	732	1,026
Phase 3	2006							
5	Single-Family	210	145	du	26	77	72	41
6A	Single-Family	210	240	du	42	127	120	67
6B	Multi-Family	220	61	du	5	26	24	12
6C	Village Center	820	11,108	sf	26	17	71	77
6D	Church	560	1		5	5	5	5
8B	Single-Family	210	135	du	24	71	67	38
Phase 3	Sub-Total				128	323	359	240
Phase 4	2008							
10	Single-Family	210	320	du	56	169	160	90
11	Single-Family	210	320	du	56	169	160	90
11	Apartment	220	119	du	10	51	47	23
Phase 4	Sub-Total				122	389	367	203

Table 2
Maui Lani Trip Generation Summary
(Continued)

Module	Land Use	ITE Code	Intensity	units	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
Phase 5	2010							
1D	Single-Family	210	65	du	11	34	32	18
4	Apartment	220	119	du	10	51	47	23
7B	Single-Family	210	120	du	21	63	60	34
7D	Commercial	820	13,081	sf	29	19	79	85
7C	Multi-Family	220	68	du	6	29	27	13
9A	Single-Family	210	210	du	37	111	105	59
9B	Church	560	1		5	5	5	5
Phase 5	Sub-Total				119	312	355	237

Note: Trip Generation relationships documented in Institute of Transportation Engineers publication, Trip Generation, 6th edition per ITE Code.

2. Trip Distribution

Directional distribution of trips is expected to differ based on the type of land use. Peak hour traffic associated with residential land uses is typically oriented toward places of employment. The neighborhood commercial distribution is oriented primarily within the Maui Lani development. The light-industrial land use is oriented toward residential areas during the peak hour time periods as workers arrive from and depart to their homes. The major commercial land use located at the Maui Lani Parkway/Kaahumanu Avenue intersection is oriented toward a mixture of employment and residential concentrations. This is due to the frequent tendency for travelers to link their shopping trips, so that a shopping trip for groceries would take place within the trip from work to home in the afternoon.

3. Project-Generated Traffic Assignment

The directionally distributed traffic was assigned to the roadway system based on the roadway network assumed to be in place at the time the Maui Lani Development phase was completed.

4. Background Traffic Volumes

Maui Lani Parkway, Kuikahi Drive Extension, Onehee Avenue Extension, and Kamehameha Avenue Extension are all expected to provide alternative routes for traffic currently using Kaahumanu Avenue, Papa Avenue, Onehee Avenue, and Kamehameha Avenue. Therefore, the traffic using these new roadways constructed by Maui Lani Development must handle

Phases 1 through 3 are not expected to change existing travel patterns significantly. While roadways are extended or improved, the connections between points of travel are not altered. Starting with Phase 4, Maui Lani Development will provide new connectivity, first with the extension of Kuikahi Drive to connect with Maui Lani Parkway and then with incremental construction of Maui Lani Parkway. These improvements will provide alternative routes for Maui residents in the Wailuku-Kahului area and will alter non-Maui Lani traffic patterns.

An annual growth rate of 2 percent was assumed for non-Maui Lani traffic. This percentage is based on recent annual population growth rate of approximately 3 percent for the Wailuku CDP and projected annual growth in the government and finance/banking sectors of employment of approximately 1 percent. These growth rates are based on figures published in the Maui County Data Book 2001.

Background traffic was growth factored for the years identified for the project phases and adjusted based on the roadway network assumed to be available in the particular year.

5. Total Traffic Assignment

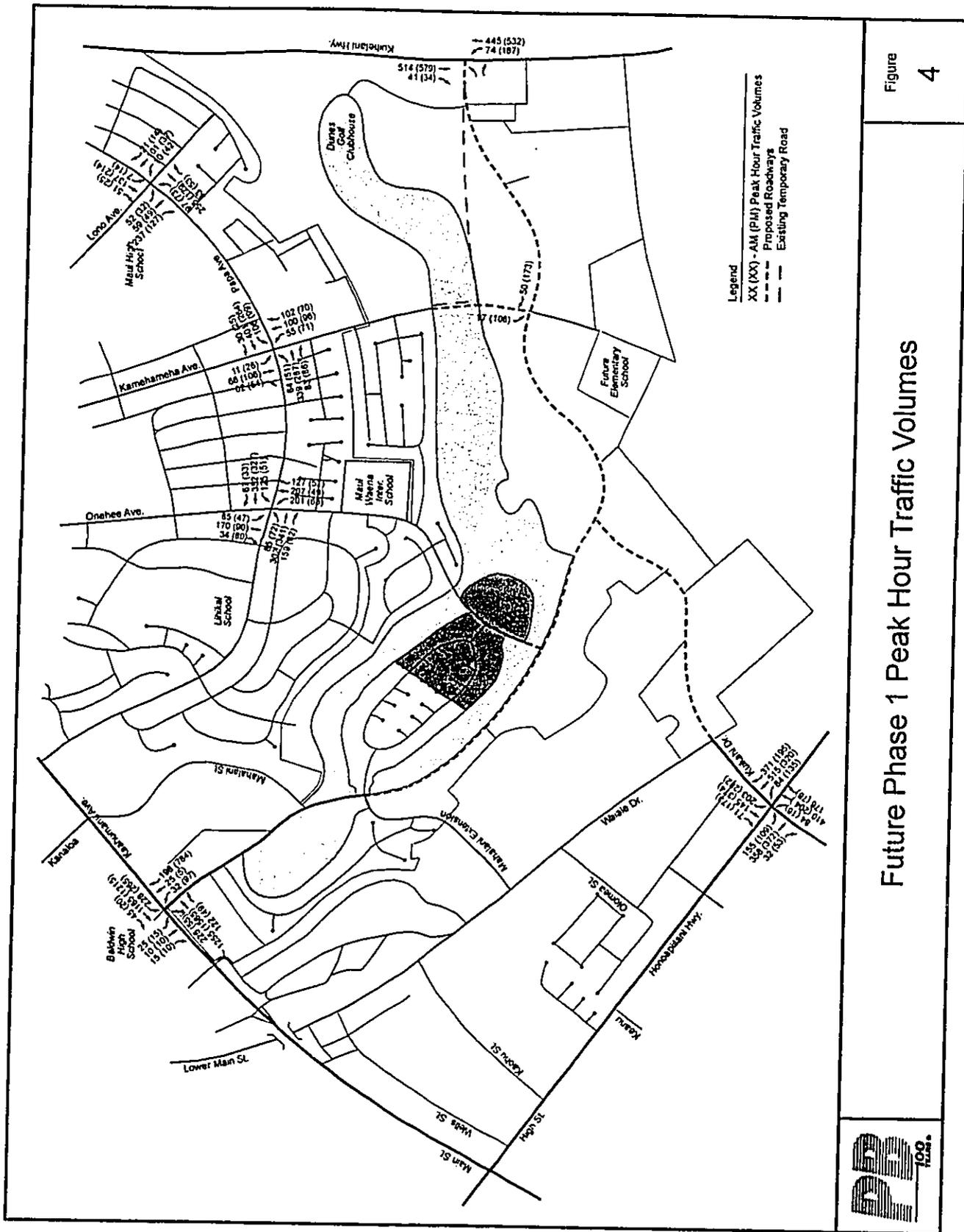
The project-generated traffic assignment and the background traffic were added together to produce total traffic assignments for the five phase scenarios.

Figures 4 through 8 illustrate these traffic volumes. These traffic volumes were then evaluated to determine traffic impacts and potential roadway improvements needed.

B. Traffic Operations Evaluation

Signalized and unsignalized Intersection methods documented in the 2000 Highway Capacity Manual were used to evaluate projected traffic operations for the five development phase scenarios.

Table 3 summarizes the resulting intersection level of service for Phase 5 which is full buildout of the proposed Maui Lani Development.



Future Phase 1 Peak Hour Traffic Volumes

Figure 4



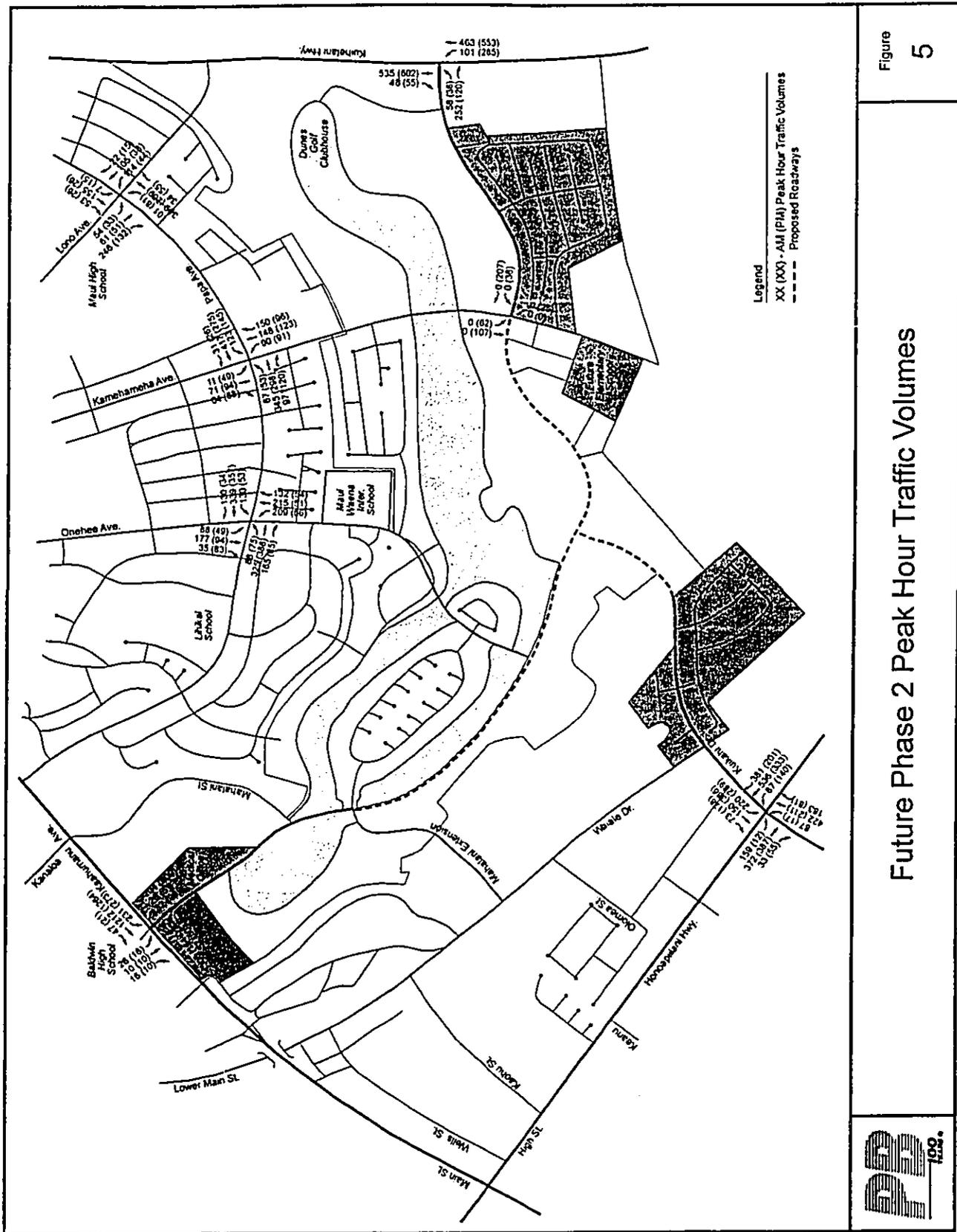


Figure 5

Future Phase 2 Peak Hour Traffic Volumes



Table 3
Projected Phase 5 Peak Hour Intersection Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Papa Ave/Onehee Ave	C	27.8	C	24.0
Northbound Approach	C	29.2	C	20.5
Southbound Approach	C	28.6	C	22.0
Eastbound Approach	C	25.0	C	23.3
Westbound Approach	C	28.4	C	27.4
Papa Ave/Kamehameha Ave	C	27.8	C	24.0
Northbound Approach	C	29.2	C	20.5
Southbound Approach	C	28.6	C	22.0
Eastbound Approach	C	25.0	C	23.3
Westbound Approach	C	28.4	C	27.4
Papa Ave/Lono Ave	C	27.8	C	24.0
Northbound Approach	C	29.2	C	20.5
Southbound Approach	C	28.6	C	22.0
Eastbound Approach	C	25.0	C	23.3
Westbound Approach	C	28.4	C	27.4
Honoapiilani Hwy/Kuikahi Dr Ext	C	42.2	D	42.6
Northbound Approach	D	38.6	D	38.6
Southbound Approach	D	40.3	D	51.1
Eastbound Approach	D	48.8	D	35.5
Westbound Approach	D	43.8	D	51.1
Kuikahi Dr Ext/Waiale Drive	C	22.0	C	29.6
Northbound Approach	D	43.3	D	43.3
Southbound Approach	B	14.2	C	22.4
Eastbound Approach	C	23.7	C	28.4
Westbound Approach	D	46.4	D	51.3

Note: Delay is expressed in seconds/vehicle.

Table 3 (Continued)
Projected Phase 5 Peak Hour Intersection Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Kuihelani Hwy/Maui Lani Pkwy	B	14.5	B	16.4
Northbound Approach	B	14.1	B	12.9
Southbound Approach	B	13.8	B	14.1
Eastbound Approach	C	16.2	C	27.6
Kaahumanu Ave/Maui Lani Pkwy	C	19.9	D	28.8
Northbound Approach	D	25.3	D	29.1
Southbound Approach	D	30.4	C	24.5
Eastbound Approach	C	18.2	D	30.4
Westbound Approach	C	20.0	D	27.1
Note: Delay is expressed in seconds/vehicle.				

IV. PROPOSED ROADWAY PHASING PLAN

Maui Lani Development will significantly expand the Wailuku-Kahului roadway system. Maui Lani Parkway and connections to it via Kamehameha Avenue, Onehee Avenue, Kuikahi Drive, and Mahalani Street, will provide alternatives to Kaahumanu Avenue, currently the sole east-west primary arterial in the Wailuku-Kahului area.

Providing roadway infrastructure is expensive, however, and not needed all at once to handle the traffic generated by it is, therefore, proposed to phase the construction of these roadway connections in concert with the development within Maui Lani.

The five development phases previously discussed are the primary roadway infrastructure phases as well. Table 4 summarizes the proposed roadway improvements associated with each phase of development. Because some of the roadway improvements are needed, partly, to accommodate traffic that is not associated with Maui Lani, an estimate of pro-rata share is also provided in Table 4. This pro-rata share is based on the percentage of Maui Lani traffic volume using the roadway facility where improvements are recommended. Figures 9 through 13 illustrate the proposed roadway improvements for each phase.

A. Phase 1 (Year 2002/2003)

Module 2B is completed and is the second phase of the Island and Bluffs subdivision. Onehee Avenue has been extended from Maui Waena Intermediate School to the Island and Bluffs access as a four-lane collector roadway. The Island and Bluffs access is open to traffic. Module 2C (single-family residential) is expected to be the next phase of residential development and will connect to Onehee Avenue directly opposite the Islands and Bluffs access.

Based on the volumes generated by Modules 2B and 2C, no further improvements are required on Onehee Avenue.

B. Phase 2 (Year 2004)

Modules 3A (medical office), 3B (commercial retail), 7A (single-family residential), 8A (light industrial), and 12 (elementary school) are projected to be completed by Year 2004.

Modules 3A and 3B are being developed by others at the intersection of Maui Lani Parkway and Kaahumanu Avenue. As part of the agreements with Maui County during the initial development approval process for these modules, Maui Lani Parkway was constructed to its full four-lane cross-section and a traffic signal was installed at the intersection. Appropriate turn lane modifications were implemented at the Kaahumanu Avenue/Maui Lani Parkway/Baldwin High School Access intersection. Module 3A and 3B are located adjacent to Kaahumanu Avenue and would obtain access via Maui Lani Parkway approximately 500 feet south of Kaahumanu Avenue. Module 3B would also have a secondary access on Kainani Street which will soon have its intersection with Kaahumanu Avenue signalized by the State of Hawaii Department of Transportation.

Because Maui Lani Parkway has been constructed to its full cross-section at this location and a traffic signal has been installed at the Kaahumanu Avenue/Maui Lani Parkway/Baldwin High School intersection, no further improvements, beyond appropriate access configuration at the Module 3A/3B accesses, are needed.

Modules 7A (residential) and 12 (elementary school) will be located along Kamehameha Avenue in the vicinity of the proposed Maui Lani Parkway. As part of this phase, it is proposed to extend Kamehameha Avenue south to the elementary school site as a two-lane roadway with median turn lanes. The temporary Maui Lani access road would be vacated and half of the ultimate Maui Lani Parkway will be constructed between Kuihelani Highway and Kamehameha Avenue. This new roadway would intersect Kuihelani Highway at the same location as the existing Maui Lani access but would have a different alignment between this intersection and Kamehameha Avenue. Based on the intersection analysis for this phase, the Kuihelani Highway/Maui Lani Parkway intersection could remain an unsignalized intersection.

The Papa Avenue/Kamehameha Avenue intersection would need to be signalized, however. Kamehameha Avenue would not need to be widened, but it is recommended

to channelized the northbound approach to Papa Avenue to have an exclusive right-turn lane and a shared through/left lane. Exclusive left-turn phases are recommended for the Papa Avenue approaches to this intersection.

Module 8A will initially access only Waiale Drive opposite Kuikahi Drive. Kuikahi Drive would be extended east to the boundary of the module 8A parcel as a two-lane collector roadway. As part of the Module 8A development, the Waiale Drive/Kuikahi Drive intersection would be signalized when warranted.

C. Phase 3 (Year 2006)

Modules 5 (single-family residential), 6A (single-family residential), 6B (multi-family residential), 6C (village center commercial), 6D (church), and 8B (single-family residential) are part of this phase.

Module 5 is located along Maui Lani Parkway between Module 3A (near Kaahumanu Avenue) and the Mahalani Street Extension and is projected to contain only 145 single-family residential units. It is proposed to intersect Maui Lani Parkway opposite a driveway for the proposed medical office building and is proposed to have an access on the Mahalani Street Extension. It is projected that both accesses could operate as unsignalized intersections with STOP-sign control on the Module 5 access approaches. It is also recommended to provide left-turn lanes for vehicles turning into Module 5.

Modules 6A, 6B, 6C, 6D, and 8B are located along the future Maui Lani Parkway, west of Kamehameha Avenue. To provide access to these parcels, Maui Lani Parkway would be constructed between Kamehameha Avenue and the future alignment of Kuikahi Drive Extension. Only half of the roadway would be constructed. The intersection of Maui Lani Parkway and Kamehameha Avenue would operate as an unsignalized intersection with STOP-sign control on the Maui Lani Parkway approaches.

D. Phase 4 (Year 2008)

Modules 10 (single-family residential) and 11 (single-family and apartment) are part of this phase.

These parcels are located north of the future Maui Lani Parkway and between Kuihelani Highway and Kamehameha Avenue. Module 10 is expected to access Maui Lani Parkway opposite the access for Module 7A and via the existing Golf Course Clubhouse Access Road. It is also assumed to access Kamehameha Avenue opposite the access for Module 6A.

Module 11 is assumed to access Kamehameha Avenue opposite the existing Kuuhoa Street (Module 1B) and the future Maui Lani Parkway via the Golf Course Clubhouse Roadway.

E. Phase 5 (Year 2010)

Modules 1D (single-family residential), 4 (apartment), 7B (single-family residential), 7C (multi-family residential), 7D (commercial center), and 9 (single-family residential) were assumed to develop in this phase.

Module 1D is an extension of the already developed Module 1C, which is located west of Onehee Avenue and adjacent to the existing residential subdivision. It will utilize the module 1C roadways for access and will also have supplemental access via Kea Street. No improvements are needed with this module.

Module 4 is located at the end of Lono Avenue. It is assumed that Lono Avenue would not be connected to Kuihelani Avenue as part of this phase.

Modules 7B, 7C, and 7D are located adjacent to and south of future Maui Lani Parkway, just west of Kuihelani Highway. Traffic will access these modules via a driveway located opposite the existing roadway that leads to the Dunes Golf Course Clubhouse. During this phase, this intersection would not need to be signalized, but it should be designed in a manner that allows signalization once regional traffic is allowed to utilize Maui Lani Parkway.

Module 9 is located west of the Kuikahi Drive alignment and south of future Maui Lani Parkway. As part of this phase, Maui Lani Parkway would be extended west to Onehee Avenue and Onehee Avenue would be extended to meet Maui Lani Parkway. The traffic generated by Module 9 is not expected to generate further improvements on

traffic generated by Module 9 is not expected to generate further improvements on Onehee Avenue, but the connection of Onehee Avenue to Maui Lani Parkway is expected to increase traffic on Onehee Avenue. This increased traffic can be accommodated in the existing two lanes of Onehee Avenue.

With these final modules, in place, all roadways within Maui Lani development can operate using two-lane roadways (one lane in each direction) with median left-turn lanes.

It is anticipated that at this level of development, the Kamehameha Avenue/Maui Lani Parkway intersection would need to be signalized.

F. Improvements to Handle Regional Traffic

As discussed in the section describing Phase 5, most the Maui Lani generated traffic can be handled on two-lane roadways with median turn lanes. However, the roadways within Maui Lani Development will also provide system connectivity. That connectivity includes completing Maui Lani Parkway between Onehee Avenue and Mahalani Street Extension and connecting Kuikahi Drive Extension to Maui Lani Parkway.

When these system connections are implemented, it is expected that regional traffic will change their traffic patterns to take advantage of the alternate routes. At that time, Maui Lani Parkway, Onehee Avenue, and Kamehameha Avenue would need to be expanded to their ultimate 4-lane cross-sections.

Additionally, traffic signals would probably be required at the Kuikahi Drive Extension/Maui Lani Parkway, the Onehee Avenue/Maui Lani Parkway, the Mahalani Street Extension/Maui Lani Parkway, and the Golf Course Clubhouse Road/Maui Lani Parkway intersections.

The extension and connection of Lono Avenue would help to reduce traffic on Papa Avenue and Kamehameha Avenue. However, it is expected to increase traffic on Lono Avenue, south of Papa Avenue. Additionally, it would create a signalized intersection on Kuihelani Highway, which would need approval from the State of Hawaii Department of Transportation.

Table 4
Maui Lani Roadway Improvement Phasing Plan

Phase	Approx. Year	Roadway Name	Description of Improvement	Cost Share
1	2002	Onehee Avenue	Extend south as 4-lane collector from existing Module 1B to Island and Bluffs access.	100% Maui Lani
2	2004	Kainani Street, Maui Lani Parkway	Connect Commercial Module 3B to Kainani Street. Signalize 3A and 3B access on existing Maui Lani Parkway when warranted.	100% Other Developers
	2004	Kamehameha Avenue	Construct 3-lane cross-section from existing Module 1B to proposed elementary school.	100% Maui Lani
	2004	Kamehameha Avenue	Signalize Papa Avenue/Kamehameha Avenue intersection.	25% Maui Lani 75% Others
	2004	Maui Lani Parkway	Construct half of roadway from Kamehameha Avenue to Kuihelani Highway. Provide channelization of turning movements at Kamehameha/Maui Lani and Maui Lani/Kuihelani.	100% Maui Lani
	2004	Kuikahi Drive Extension	Construct half of Kuikahi Drive Extension from Waiale to Light Industrial Park (Module 8A) boundary.	100% Maui Lani
	2004	Kuikahi/Waiale	Signalize Kuikahi/Waiale intersection.	100% Maui Lani
3	2006	Maui Lani Parkway	Construct half of Maui Lani Parkway from Kuikahi Drive extension to Kamehameha Avenue.	100% Maui Lani
	2006	Kuikahi Drive Extension	Construct half of Kuikahi from Module 8B boundary to future Maui Lani Parkway. Kuikahi Drive not a through street between Waiale and Maui Lani Parkway.	100% Maui Lani

Table 4 (Continued)
Maui Lani Roadway Improvement Phasing Plan

Phase	Approx. Year	Roadway Name	Description of Improvement	Maui Lani Share
4	2008	Maui Lani Parkway	Expand Maui Lani Parkway to 4-lane cross-section from Kuihelani Highway to Golf Club House Access Road.	100% Maui Lani
5	2010	Maui Lani Parkway	Extend half of Maui Lani Parkway between Kuikahi Extension and Onehee Avenue.	100% Maui Lani
Regional Traffic Needs	Variable	Onehee Avenue	Expand Onehee Avenue to 4-lane cross-section from Maui Waena Intermediate School to Papa Avenue for sub-regional, non-project traffic.	100% Others
	Variable	Kuikahi Drive	Connect through and expand to 4-lane cross-section between Module 8B boundary and Maui Lani Parkway for sub-regional, non-project traffic.	100% Others
	Variable	Maui Lani Parkway	Expand Maui Lani Parkway to 4-lane cross-section from Onehee to Kamehameha for regional, non-project traffic.	100% Others
	Variable	Maui Lani Parkway	Connect Maui Lani Parkway between Mahalani Extension and Onehee Avenue for regional, non-project traffic.	100% Others
	Variable	Maui Lani Parkway Intersections	Signalize Onehee, Kuikahi, and Kamehameha intersections on Maui Lani Parkway when warranted.	100% Others

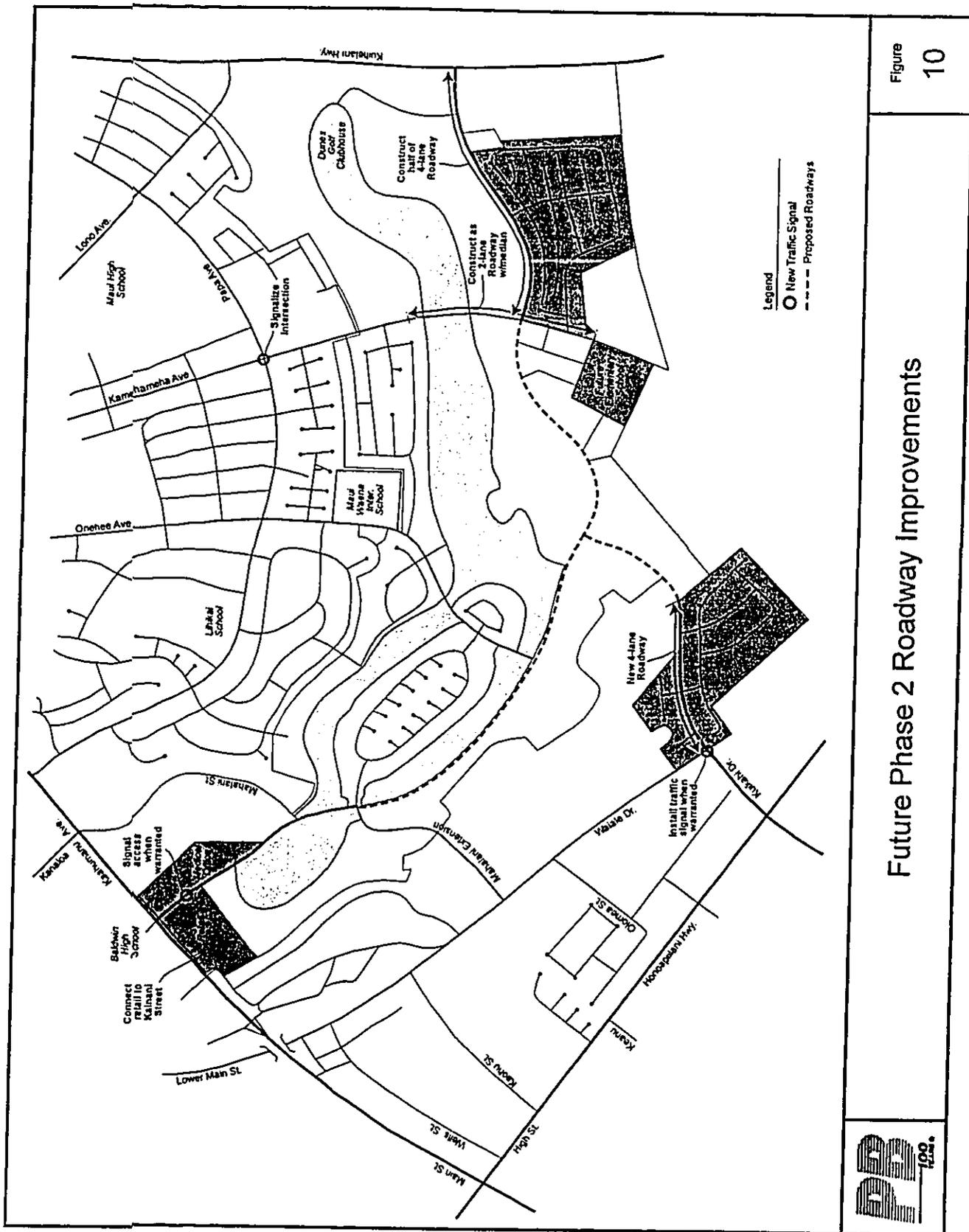
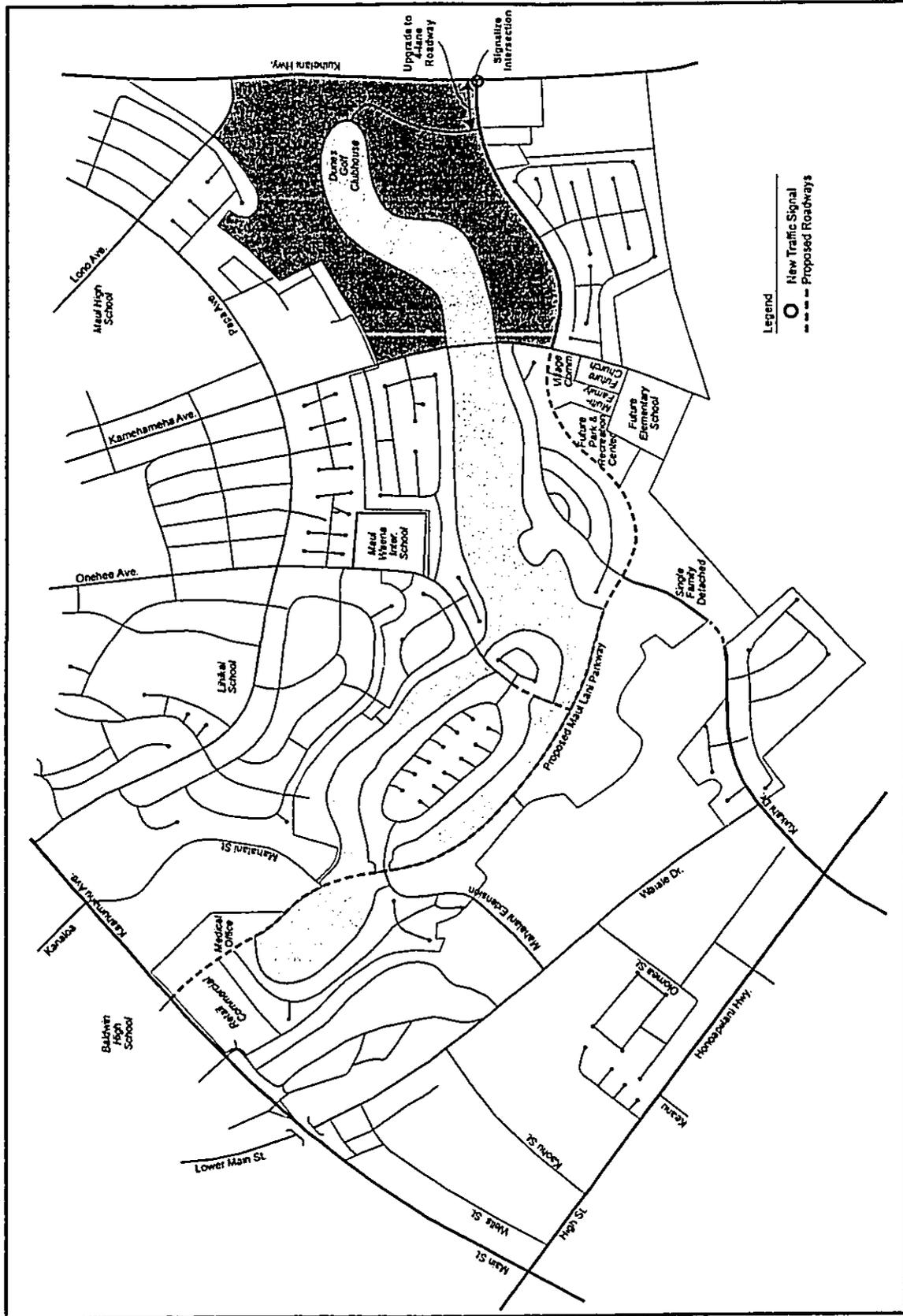


Figure 10

Future Phase 2 Roadway Improvements





Legend
 ○ New Traffic Signal
 - - - Proposed Roadways

Figure
 12

Future Phase 4 Roadway Improvements



V. SUMMARY AND CONCLUSION

A traffic study was completed for the proposed buildout of the Maui Lani Development. It found that with the roadway infrastructure improvements recommended enabled the surrounding roadway system to accommodate the traffic generated by the proposed development.

Additionally, the roadway infrastructure proposed as part of the Maui Lani Development has the potential to enhance sub-regional transportation within the Wailuku-Kahului area by providing alternative routes to the existing Kaahumanu Avenue and Papa Avenue. The accommodation of these sub-regional trips on the Maui Lani roadway system require roadway sizing that is larger than would be required if only Maui Lani traffic was being accommodated.

A phasing plan was developed that allows Maui Lani to incrementally develop while handling its traffic needs. The phasing plan builds toward the infrastructure that, as described above, would benefit the sub-region.

Given this level of assumed development and infrastructure construction, it is concluded that the Maui Lani would provide a net transportation benefit to the central Maui area.

A p p e n d i x I

***Maui Lani Elementary School,
Functional Analysis Concept
Development, Executive
Summary, May 21, 2002***

A Project By:

MAUI LANI
SCHOOL, LLC

Master Plan
MAUI LANI ELEMENTARY SCHOOL
Kahului, Maui, Hawaii

EXECUTIVE SUMMARY

May 21, 2002

EXECUTIVE SUMMARY REPORT
FUNCTIONAL ANALYSIS CONCEPT DESIGN STUDY

MAUI LANI ELEMENTARY SCHOOL
Department of Education - State of Hawai'i
Maui School District - Maui, Hawai'i

May 21, 2002

INTRODUCTION

- A. A functional analysis concept development study (FACD) for the Master Plan of the Maui Lani Elementary School was conducted from April 9—May 21, 2002. The purpose of this project is to provide the facilities to accommodate 650 students in grades K through 5 with the potential for providing a year-round, multi-track learning center. The FACD process was initiated to facilitate the timely delivery of the project *within budget and to accommodate an optimization of user requirements*. This process involved interaction with designated representatives from DOE-Maui District, DOE- Facilities Branch, DOE- Safety and Security, DOE- Library Services, Maui Lani School LLC. and the design team. The intent is that these approved plans will establish the basis for design for follow-up preparation of final construction and contract bid documents.
- B. The starting point for the design was a 0% concept developed by the design team, Architects Hawaii, as a result of preliminary investigation and discussions with the DOE and Maui Lani School LLC. Project scope and requirements are described in this document. The following narrative describes the concept developed for Maui Lani Elementary School based on the analysis of the user's functional requirements and the data gathered from review meetings with DOE representatives and field investigation. In addition, the narrative summarizes the agreed upon project scope, critical project elements, and decisions made in formulating the approved concept design.
- C. Maui Lani Elementary School is intended to help relieve the pressure of overcrowding at Lihikai and Kahului Elementary Schools.

Maui Lani Elementary School
FACD Executive Summary Report
May 21, 2002

- D. The school will be designed to accommodate 650 students. By operating as a year-round, multi-track facility, a total enrollment of 850 students can be accommodated.
- E. The use of the school site is at this time limited to public school and ancillary school recreational uses.
- F. Additional square footage was added to the (FADS) Facilities Assessment and Development Schedule for a pre-school, CSSS, SSC/EA, and a Tech Coordinator's office.
- G. As of this date, the intention of the developer is to turn the project over to the DOE in January 2004 with occupancy occurring the following school year.
- H. The intent of the school's design, as expressed by the Maui District Steering Committee, should reflect an inclusive, open, partnership-oriented philosophy which is learner-centered. In addition, the school must be flexible enough to foster practices of living and interacting together as "a community."

Maui Lani Elementary School
FACD Executive Summary Report
May 21,2002

Project Background

- The area to be served by the Maui Lani School is a new community currently under development. The community developer, Maui Lani indicated its intention to dedicate approximately thirteen (13) acres of land (the school site) with the Maui Lani Project District Phase II approval, (TMK: 3-8-07 : por. 131).
- The Maui Lani School is intended to help relieve the pressure of the over crowding at Kahului and Lihikai Elementary Schools in Central Maui.
- The school will be designed to accommodate 650 students. By operating the school as a year-round, multi-track facility, a total enrollment of 866 students can be accommodated.
- The use of the school shall be limited to public school and ancillary school recreational uses.
- Additional square footage was added to the FADS prior to the start of the FACD process. The DOE has increased the recommended square footage for elementary school classrooms to 980 sq. ft. from previous 918 sq. ft. The net square footage total is 62,054 SF.
- Existing square footage was adjusted to the FADS through the FACD process for breakout rooms, one additional Special Education self contained room, etc. (more coming). However, the net square footage did not exceed 62,054 SF.
- To accommodate programs that the Steering Committee valued, some adjustments to the FADS have been made.
- The intent is to have the project ready for occupancy in January 2004.
- The intent of the school's design, as expressed by the Maui Lani School steering committee, should reflect a serviced-based philosophy. The school must be flexible enough to serve the diverse learning needs of students and parents and to foster practices of living and working together with the "community".
- The careful selection and use of designated space for technologies to promote and support the community of learners in Central Maui is integral to the project.

Maui Lani Elementary School
FACD Executive Summary Report
May 21,2002

III. FUNCTIONAL ANALYSIS

A. PROJECT OBJECTIVES

The objective for Maui Lam Elementary School is to have a community-oriented, interactive learner-centered school that can serve the diverse learning needs of students, parents, community members, community agencies/organizations, and business partners. The careful selection and use of technologies to promote and support the community of learners in Maui Lani is integral to the project. The school will have the potential to operate on a year-round, multi-track schedule.

B. SITE CIRCULATION AND FUNCTIONAL RELATIONSHIPS

1. BUILDING SITING

The various buildings of the proposed school are consolidated to be more cost-effective, safe and secure. There are numerous open site areas within the school campus to provide opportunities for interaction and building relationships. Both the Cafetorium and the Administration/Student Center/Library-Media Center are situated in such a way as to be as accessible as possible to students and visitors, and at the same time, to be able to control access when needed.

2. FUNCTIONAL RELATIONSHIPS

A major consideration regarding the design for the site layout was to accommodate the anticipated traffic patterns and accommodate the parking needs of the staff and visitors. Because many parents/guardians accompany their children in the morning to class and to the Cafetorium to eat breakfast, specific attention was paid to providing abundant parking stalls and accessible passenger loading zones for safe drop-off and pickup.

The Administration Building also houses the Student Center and the Library/Media under one roof. It is located where it will be prominently visible from the school's primary access driveway. The Cafetorium is located near the street and open field area since this facility will be used for after school hours by the A+ Program and will be available to the community as a meeting facility. A covered playing court is directly across the Cafetorium and provides additional space for audiences to gather when school performances take place in the large grassy area

Maui Lani Elementary School
FACD Executive Summary Report
May 21,2002

located between the Cafetorium and Administration Building. The Library/Media Center is attached and situated at the other end of the Administration Building and close to the classrooms, for convenient access by students. The Classroom Buildings are located along the uppermost elevation of the property, with each Classroom Building having its own courtyard, breakout spaces, and opportunities to use existing spaces for a variety of purposes. Special education resource rooms are located at the entrance to the Classroom Buildings.

IV. SPECIAL DESIGN AND COST CONSIDERATIONS

A. COMMUNITY LEARNING VS. INDIVIDUAL LEARNING

Additional supervised spaces or breakout areas are provided for in each Classroom Building to allow "teaming" and collaboration on projects by small groups of students. The classrooms are designed for maximum flexibility and multiple use.

B. YEAR-ROUND,MULTI TRACK CAPABILITY

This requires classrooms and support areas except the Cafetorium to be air-conditioned. Work space and storage for off-track teachers need to be provided. Storage for off-track student supplies is also necessary.

C. NEW TECHNOLOGY PROVISIONS IN CLASSROOMS

Large group conduits are necessary to allow computer networking, data base access, video viewing, tele-video conferencing, teaching, etc in the classrooms and library. The increased technology in the classroom and on campus is a significant element in the design of spaces and relationship of areas.

D. SPECIAL EDUCATION PRE-SCHOOLS SELF-CONTAINED CLASS

The addition of this class was provided with appropriate accommodations to the floor plan of Classroom Buildings to allow for this classroom to be placed on the ground floor, along with the Intensive Learning Program (ILP) classroom and a Severely Multiple Handicap (SMH) classroom.

V. PROJECT SCHEDULE

A. Construction is scheduled for completion in January 2004.

AUG 8 2002

FILE COPY

2002-08-08-MA-FEA-

*Final
Environmental Assessment*

**MAUI LANI
ELEMENTARY SCHOOL**

Prepared for:

July 2002

Maui Lani Partners
and
The Accepting Agency
State of Hawaii,
Department of Education


MUNEKIYO & HIRAGA, INC.

*Final
Environmental Assessment*

**MAUI LANI
ELEMENTARY SCHOOL**

Prepared for:

July 2002

Maui Lani Partners
and
The Accepting Agency
State of Hawaii,
Department of Education


MUNEKIYO & HIRAGA, INC.

CONTENTS

Preface	i
I. PROJECT OVERVIEW	1
A. PROJECT LOCATION, EXISTING USE, AND LAND OWNERSHIP	1
B. BACKGROUND	1
C. PROPOSED ACTION	3
1. Project Need	3
2. Proposed Action	3
II. DESCRIPTION OF THE EXISTING ENVIRONMENT	8
A. PHYSICAL ENVIRONMENT	8
1. Surrounding Land Uses	8
2. Climate	9
3. Topography and Soil Characteristics	9
4. Flood and Tsunami Hazard	12
5. Flora and Fauna	12
6. Archaeological Resources	15
7. Air Quality	16
8. Noise	17
9. Visual Resources	17
B. SOCIO-ECONOMIC ENVIRONMENT	17

1.	Population	17
2.	Economy	18
C.	PUBLIC SERVICES	18
1.	Recreational Facilities	18
2.	Police and Fire Station	18
3.	Solid Waste	19
4.	Health Care	19
5.	Schools	19
D.	INFRASTRUCTURE	20
1.	Roadways	20
2.	Wastewater	24
3.	Water	24
4.	Drainage	25
5.	Electrical, Telephone and CATV Systems	25
III.	POTENTIAL IMPACTS AND MITIGATION MEASURES	27
A.	PHYSICAL ENVIRONMENT	27
1.	Surrounding Land Uses	27
2.	Topography	27
3.	Flora and Fauna	27
4.	Archaeological Resources	28
5.	Cultural Resources Impact Assessment	29
6.	Air Quality	31

7.	Noise	32
8.	Scenic and Open Space Resources	32
9.	Environmentally Sensitive Areas	33
10.	Traditional Mountain and Ocean Access	33
11.	Use of Chemicals and Fertilizers	33
B.	SOCIO-ECONOMIC ENVIRONMENT AND PUBLIC SERVICES	34
1.	Population and the Local Economy	34
2.	Police, Fire, and Medical Services	34
3.	Schools	34
4.	Solid Waste	35
C.	INFRASTRUCTURE	35
1.	Traffic	35
2.	Water	36
3.	Wastewater	37
4.	Drainage and Erosion Control	37
5.	Electrical, Telephone and CATV Systems	39
D.	CUMULATIVE AND SECONDARY IMPACTS	39
E.	OPERATIONAL CONSIDERATIONS	40
IV.	RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS	41
A.	STATE LAND USE DISTRICTS	41
B.	MAUI COUNTY GENERAL PLAN	41

C.	WAILUKU-KAHULUI COMMUNITY PLAN	43
1.	Socio-Economic Aspects	43
a.	Population	43
2.	Physical Aspects	45
a.	Land Use	45
3.	Support Systems: Human Systems	45
a.	Education	45
D.	COUNTY ZONING	46
E.	COASTAL ZONE MANAGEMENT	46
V.	SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED	56
VI.	ALTERNATIVES TO THE PROPOSED ACTION	57
A.	PREFERRED ALTERNATIVE	57
B.	EXPANSION OF KAHULUI AND LIHIKAI ELEMENTARY SCHOOLS	57
C.	SITE ALTERNATIVES	57
D.	ALTERNATIVE SITE LAYOUT	58
E.	NO ACTION ALTERNATIVE	58
VII.	IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES	59
VIII.	FINDINGS AND CONCLUSIONS	60
IX.	LIST OF PERMITS AND APPROVALS	64
X.	FUNCTIONAL ANALYSIS CONCEPT DEVELOPMENT (FACD) STUDY PROCESS	65

XI.	AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS	68
-----	---	----

XII.	COMMENTS RECEIVED DURING THE 30-DAY DRAFT ENVIRONMENTAL ASSESSMENT COMMENT PERIOD AND RESPONSES TO COMMENTS	162
------	---	-----

REFERENCES	i
------------	---

LIST OF APPENDICES

A	Development Plans
B	Archaeological Monitoring Plan
C	Letter Dated May 20, 1999 to State Historic Preservation Division
D	Infrastructure Servicing to Project Site
E	Preliminary Drainage Evaluation Letter Report and Projected Water and Wastewater Demand, Prepared by Warren S. Unemori Engineering, Inc., May 7, 2002
F	Drainage Report, Maui Lani Golf Course, Prepared By Sato & Associates, Inc., June 1995 (Without Time of Concentration Calculations)
G	Cultural Impact Assessment Letter from Les Kuloloio, March 19, 2002
H	Traffic Study, Maui Lani Development Roadway Master Plan, Wailuku, Hawaii, Prepared by Parsons Brinckerhoff, May 2002
I	Maui Lani Elementary School, Functional Analysis Concept Development, Executive Summary, May 21, 2002

LIST OF TABLES

1	Maui Lani Roadway Improvement Phasing Plan
2	FACD Schedule and Objectives

LIST OF FIGURES

1	Project Site Location Map	2
2	Conceptual Site Plan	5
3	Elevations	6
4	Soil Association Map	10
5	Soil Classifications	11
6	ALISH Designations	13
7	Flood Insurance Rate Map	14
8	State Land Use District Boundary Map	42
9	Wailuku-Kahului Community Plan Map	44

mauilanischool\in\alea.rpt

Preface

The State of Hawaii, Department of Education and Maui Lani Partners propose as part of the Wailuku-Kahului Project District 1 (Maui Lani) the development of an elementary school for Kindergarten to Grade 5 for a projected enrollment of 650 students under a normal school calendar and designed to serve 865 students under a Year Round Education/Multi-Track (YRE/MT) calendar. The lands underlying the 13.49-acre project site are currently zoned Residential PD-WK/1 and designated Project District 1 in the Wailuku-Kahului Community Plan. Elementary schools are a permitted use in the Residential district subject to the approval of the County of Maui Planning Commission. Accordingly, an application for a County Special Use Permit to develop an elementary school in a residential district will be filed with the Maui Planning Department. In addition, an application for Project District Phase II approval will also be sought for the proposed project.

The proposed project will involve the commitment of State funds which is a trigger to Chapter 343, Hawaii Revised Statutes and an environmental assessment is being prepared pursuant to Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules. Accordingly, this document (prepared for the accepting agency, the State of Hawaii, Department of Education) addresses the project's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the proposed action.

It should be noted that "Maui Lani Elementary School" is the name used to identify the proposed project and the name may change in the future as a result of the anticipated input from community and district groups during the planning and development process.

Chapter 1

Project Overview

I. PROJECT OVERVIEW

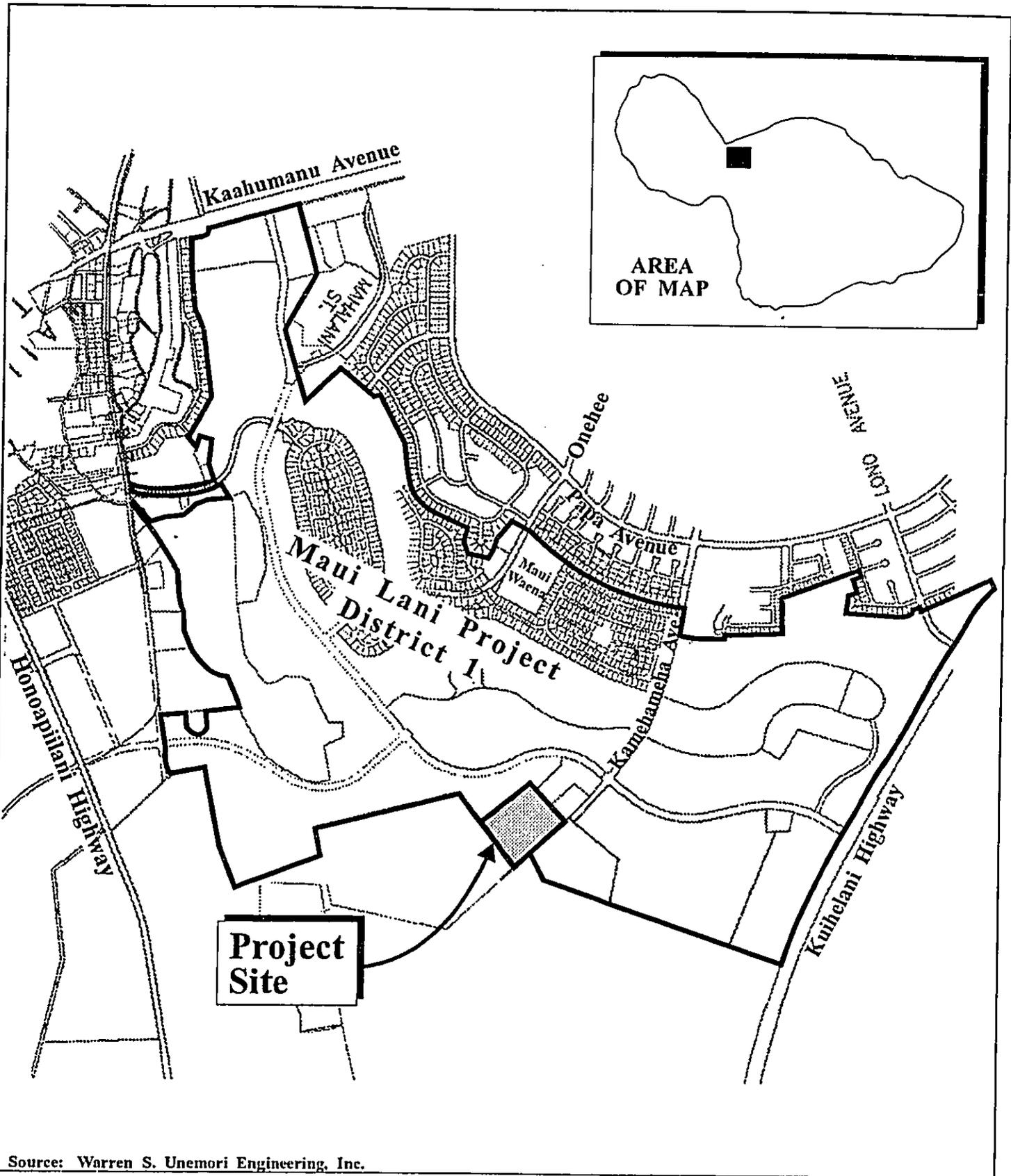
A. PROJECT LOCATION, EXISTING USE, AND LAND OWNERSHIP

The applicant, Maui Lani Partners, on behalf of the State of Hawaii, Department of Education, proposes the development of an elementary school for Kindergarten to Grade 5 on approximately 13.49 acres of land (TMK 3-8-07:portion of 131), located off of Kamehameha Avenue, west of Maui Lani Parkway. See Figure 1. The lands surrounding the project site are designated for single- and multi-family uses, park and recreation center uses, park uses, public/quasi-public and commercial uses. These lands are presently undeveloped.

The project site is vacant, being overgrown with a variety of plant species, including kiawe trees, haole koa, and other grasses and weeds.

B. BACKGROUND

The Environmental Impact Statement prepared in 1977 for the Waiale Development Plan (Maui Lani Project District) pursuant to Chapter 343, Hawaii Revised Statutes, disclosed the proposed development of approximately 3,065 residential units, elementary school sites, golf course, parks and commercial land uses. The Waiale Development Plan was adopted pursuant to Maui County Code Chapter 19.78 in 1990 and zoned Wailuku-Kahului Project District 1 (Maui Lani). This 1,012-acre master planned community is spatially integrated with the existing Wailuku-Kahului urban fabric. Implementation of the project district has proceeded in accordance with its planned elements. To date, the Dunes at Maui Lani, an 18-hole golf course, approximately 385 single-family residential units, and major infrastructure improvements including an overall drainage system, construction of a portion of the Maui Lani Parkway and extension of Kamehameha and Onehee Avenues have been built.



Source: Warren S. Unemori Engineering, Inc.

Figure 1 Maui Lani Elementary School
Project Site Location Map

NOT TO SCALE



MUNEKIYO & HIRAGA, INC.

C. PROPOSED ACTION

1. Project Need

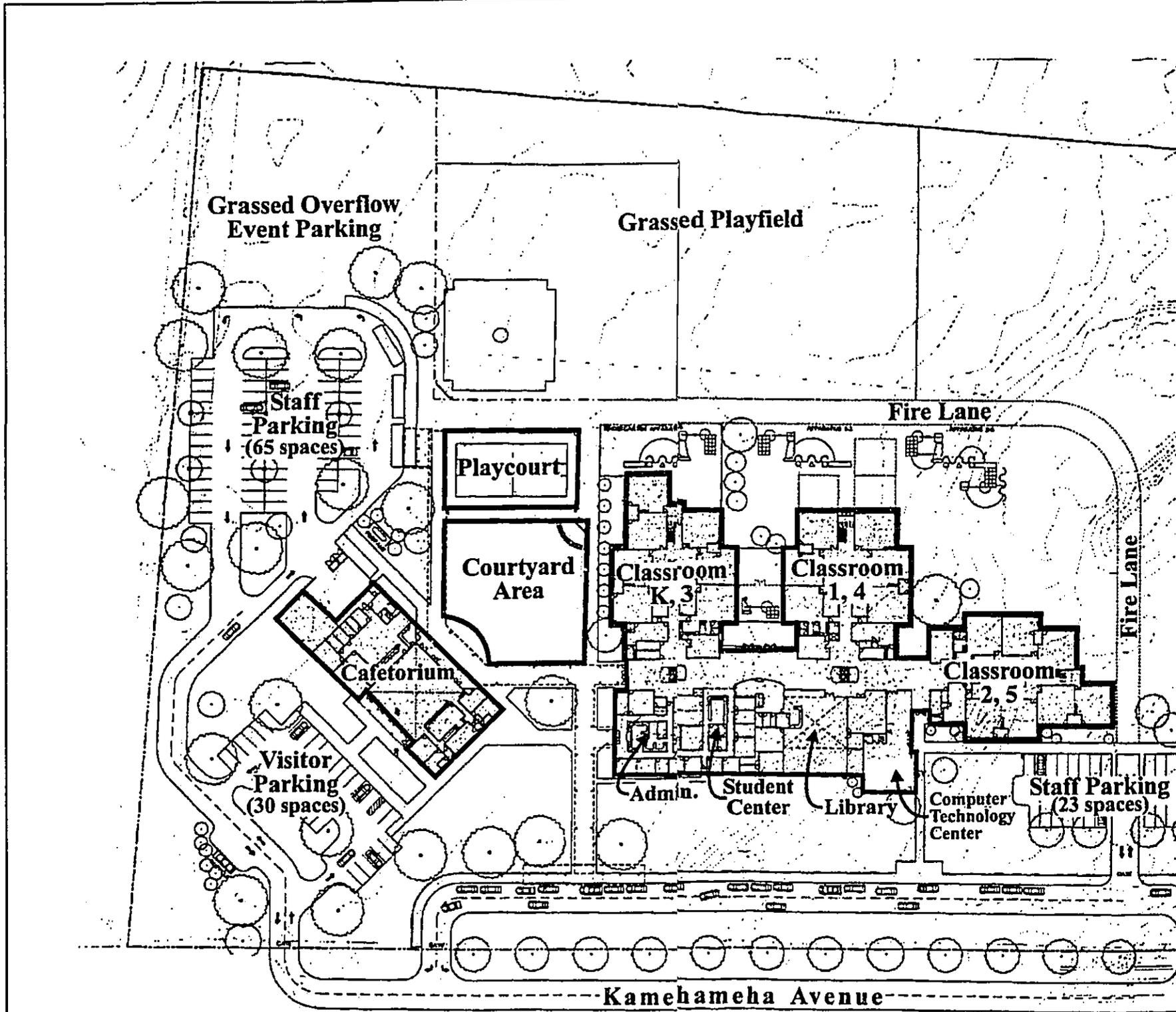
The need for an elementary school stems from the implementation of the residential component of the Maui Lani Project District. The 3,300 residential units slated for development within the project district will generate approximately 825 elementary school aged students. As well, additional elementary school facilities are needed to relieve near capacity conditions at Kahului Elementary School which has a capacity for 954 students and has a 2002 enrollment of 832 students and over capacity conditions at Lihikai Elementary School which has a capacity for 1,020 students and has a 2002 enrollment of 1,161 students (telephone interview, Department of Education, Facilities and Support Services Branch, February 26, 2002).

2. Proposed Action

As mentioned in Chapter VI.D. of the Draft EA, the design of the proposed elementary school was concurrently being articulated through a Functional Analysis Concept Development (FACD) study process. As a result, although the scope and scale of the proposed action has not altered from the project disclosure in the Draft EA, a more efficient project site plan and building design has been developed for the proposed action. The two-classroom buildings were consolidated to be more cost-effective, safe and secure. The site layout was refined to accommodate the anticipated traffic patterns and accommodate the parking needs of the staff and visitors. As a result, abundant parking stalls and accessible passenger loading zones for safe drop-off and pick-up were incorporated in the proposed site plan.

The applicant is proposing to develop an elementary school for Kindergarten to Grade 5 and related improvements for a projected student enrollment of 650 students under a normal school calendar and 865 students under a YRE/MT calendar. The proposed project will have a total gross floor area of approximately 98,825 square feet contained in two (2) buildings. The main building will house the Administration offices, Student Center facilities, Library-Media Center and classrooms. The functional spaces within the building are joined by a two-story interior mall. The portion of the building housing the classrooms will be two (2) stories, with 20 classrooms on the first floor and 15 classrooms on the second floor. The main building will be prominently visible from the primary access driveway off Kamehameha Avenue. The driveway leads to a 23-stall staff parking lot and provides a large student drop-off/loading area, bus stop shelter and a flow through traffic lane. See Appendix A. The cafetorium building is situated to the west of the main building and is accessed by a second driveway which also leads to a 30-stall visitor parking lot and beyond to a 65-stall staff parking lot. See Figure 2 and Figure 3. Facilities to be developed also include a playcourt, courtyard and a grassed playfield.

The lands underlying the proposed project site are currently designated for single- and multi-family use in the Wailuku-Kahului Community Plan. Pursuant to Chapter 19.78, Wailuku-Kahului Project District 1 (Maui Lani), elementary schools are a permitted use in Residential PD-WK/1 district subject to the approval of the County of Maui Planning Commission. An application for a County Special Use Permit to develop an elementary school in a residential district has been filed with the County Planning Department. In addition, an application for Project District Phase



Source: Architects Hawaii Limited

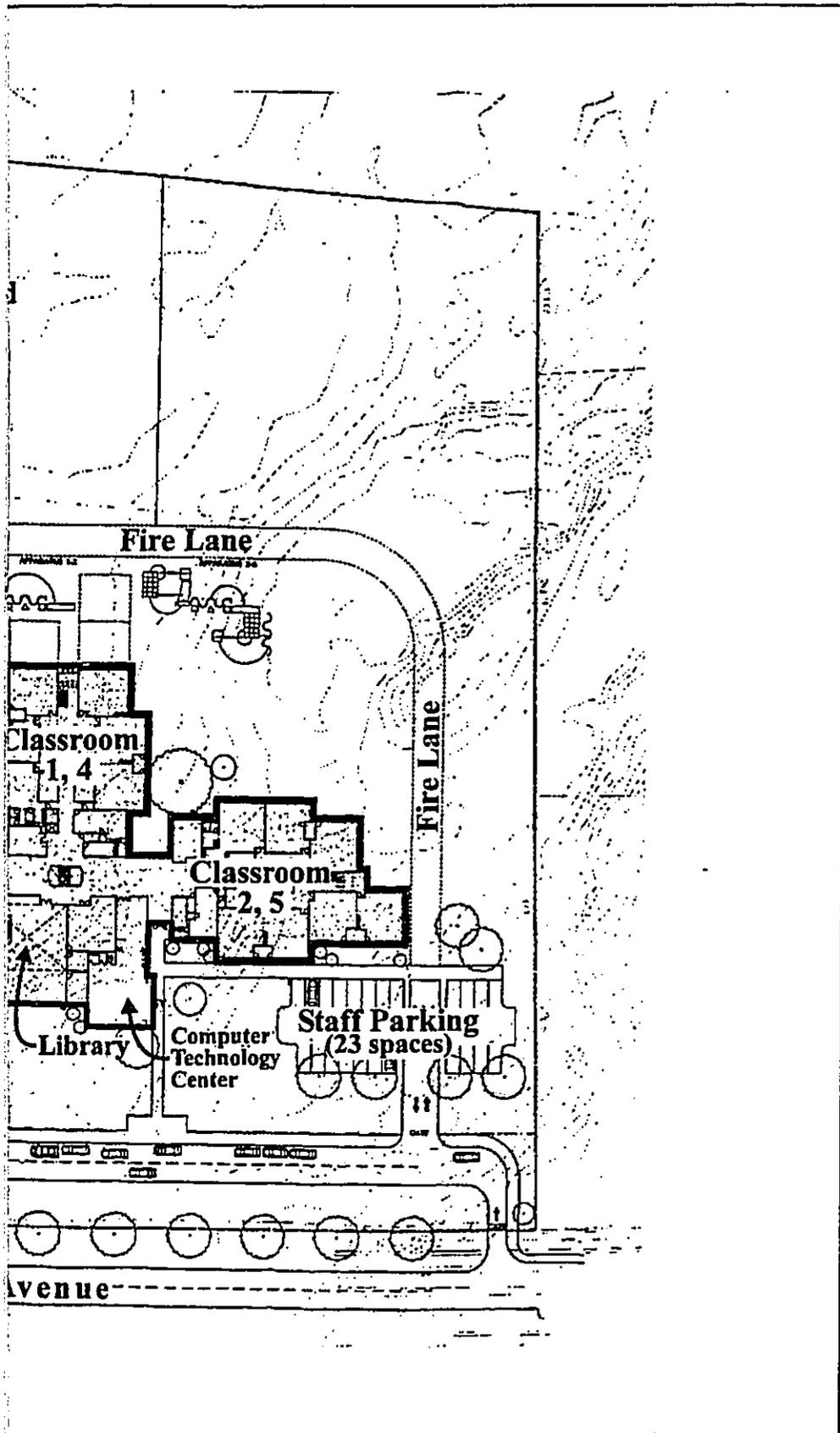
Figure 2

Maui Lani Elementary School Conceptual Site Plan



Prepared for: Maui Lani Partners

DOCUMENT CAPTURED AS RECEIVED



y School
lan

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

DOCUMENT CAPTURED AS RECEIVED



East Elevation



Cafetorium

Drop Off

Administration

**Student
Center**

South Elevation

Source: Architects Hawaii Limited

Figure 3

**Maui Lani Elementary School
Elevations**



Prepared for: Maui Lani Partners

DOCUMENT CAPTURED AS RECEIVED



levation



**dent
iter**

Library

**Computer Tech
Center**

Classroom

levation

**mentary School
ions**

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

II approval has been filed for the proposed project.

The estimated construction cost for the improvements is approximately \$25 million. Construction of the proposed improvements will commence upon the receipt of all necessary regulatory permits and approvals.

The proposed school will be developed in a single phase with an anticipated completion date of January 2004.

Chapter II

***Description of the
Existing Environment***

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

The project site is located in Kahului, the island of Maui's center of commerce. Kahului is home to Kahului Harbor, the island's only deep water port, and the Kahului Airport, the second busiest airport in the State. With its proximity to the harbor and airport, the Kahului region has emerged as the focal point for heavy industrial, light industrial and commercial activities and services such as warehousing, baseyard operations, automotive sales and maintenance, and retailing for equipment and materials suppliers. Kahului is considered Central Maui's commercial retailing center with the Kaahumanu Center, Maui Mall and Kahului Shopping Center located within the region. Wailuku, on the other hand serves as the seat of County and State governments, with several agencies headquartered in the civic center area between Kaohu Street and Main Street. Wailuku also serves as a center for professional services including, medical, dental, legal and design professions.

The Maui Lani Project District lies in the midst of the Wailuku-Kahului urban core. Land uses surrounding the project district include existing residential areas of Kahului, as well as public/quasi-public uses found in the vicinity of the Maui Memorial Medical Center. Lands along the easterly extent of the project are bordered by sugar cane fields managed by HC&S. Lands in the vicinity of the project site are currently undeveloped.

2. **Climate**

Like most areas of Hawaii, Maui's climate is relatively uniform year-round. Characteristic of Hawaii's climate, the project site experiences mild and uniform temperatures year round, moderate humidity and a relatively consistent northeasterly tradewind. Variation in climate on the island is largely due to local terrain.

Average temperatures at the project site (based on temperatures recorded at Kahului Airport) range from lows in the 60's to highs in the 80's. August is historically the warmest month, while January and February are the coolest. Rainfall at the project site averages approximately 20 inches per year. Winds in the Kahului region are predominately out of the north-northeast and northeast.

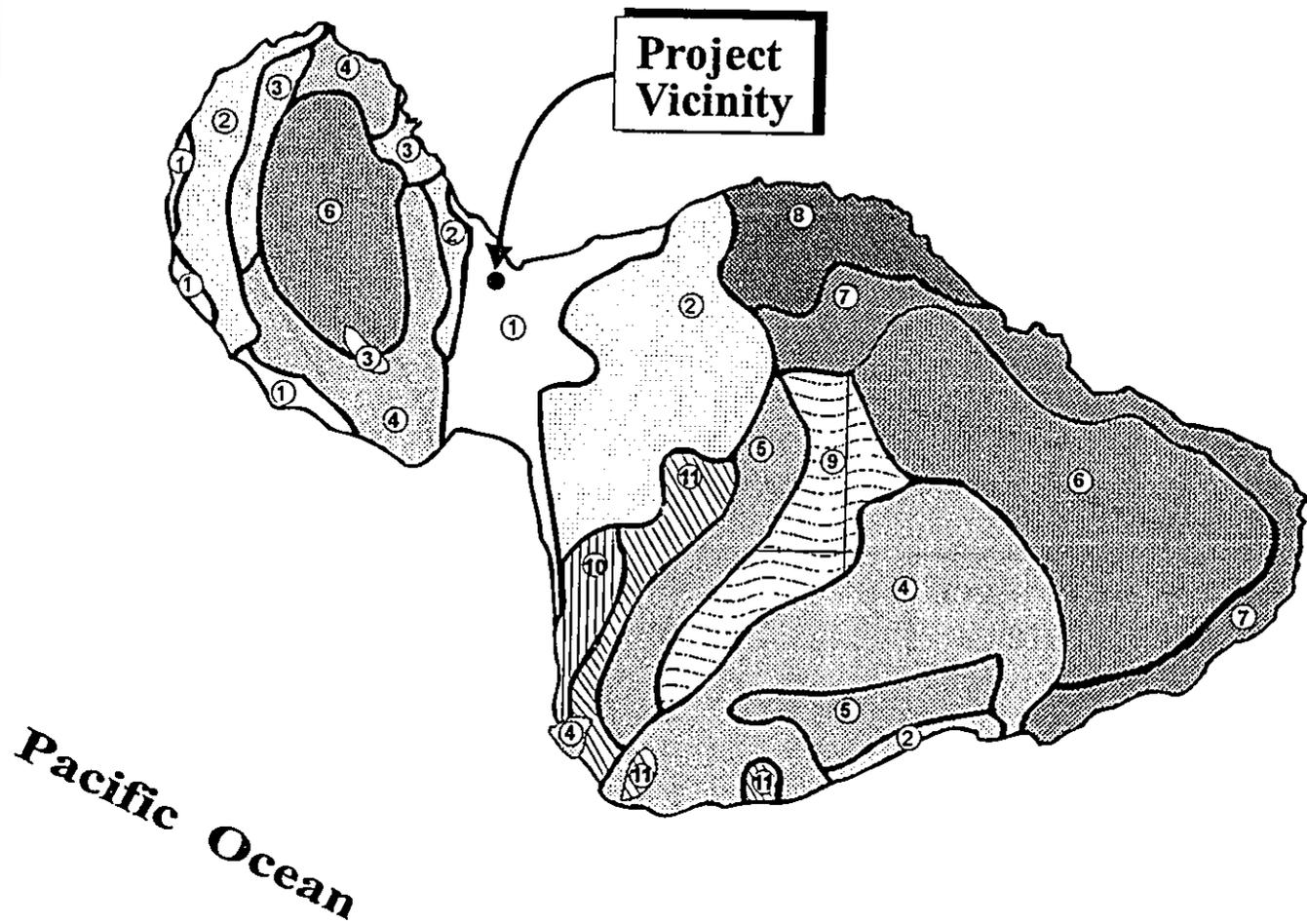
3. **Topography and Soil Characteristics**

The existing topography of the project site ranges from approximately 150 feet above mean sea level (amsl) in the southeastern portion of the site to approximately 162 feet amsl in the western portion of the project site. Lands generally slope towards the east with the majority of the site having slight slopes.

Underlying the majority of the project district and the project site in particular, are soils belonging to the Pulehu-Ewa-Jaucas association. See Figure 4. This soil association is characteristically deep and well-drained and located on alluvial fans and in basins. The soil type specific to the project site is of the Puuone Series' Puuone Sand classification (PZUE). See Figure 5. PZUE soils predominate in the Kahului region and is typified by a sandy surface layer underlain by cemented sand. Permeability is rapid above the cemented layer, runoff is slow, and the hazard of

LEGEND

- | | |
|---|---|
| <p>① Pulahu-Ewa-Jaucas association</p> <p>② Wainkoa-Keahua-Molokai association</p> <p>③ Honolua-Olelo association</p> <p>④ Rock land-Rough mountainous land association</p> <p>⑤ Puu Pa-Kula-Pane association</p> <p>⑥ Hydrandepts-Tropaquods association</p> | <p>⑦ Hana-Makalae-Kailua association</p> <p>⑧ Pauwela-Haiku association</p> <p>⑨ Laumai-Kaipoi-Olinda association</p> <p>⑩ Keawakapu-Makena association</p> <p>⑪ Kamaole-Oanapuka association</p> |
|---|---|



Map Source: USDA Soil Conservation Service

Figure 4 **Maui Lani Elementary School**
Soil Association Map

NOT TO SCALE




MUNEKIYO & HIRAGA, INC.

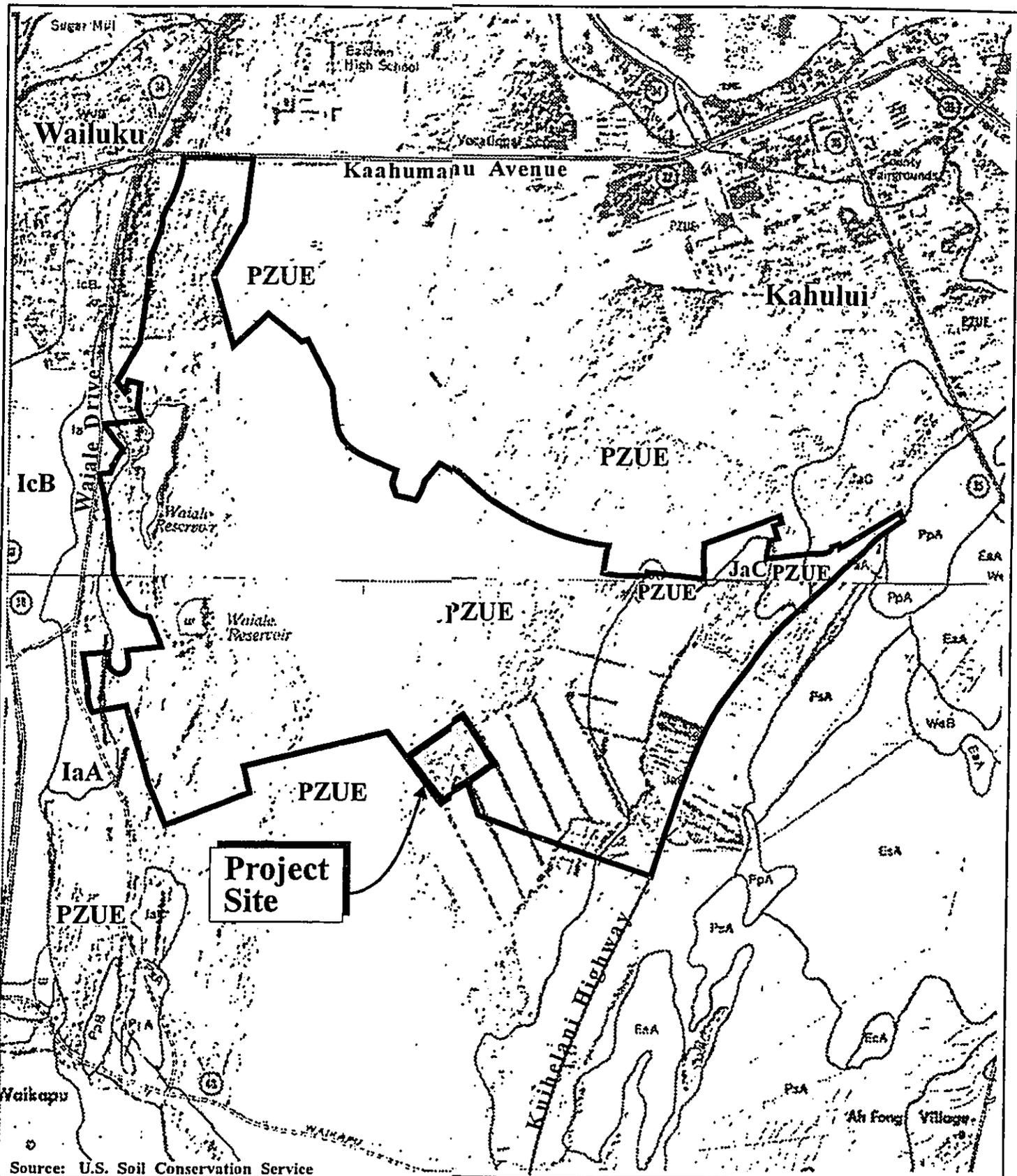


Figure 5

Maui Lani Elementary School

Soil Classifications

NOT TO SCALE



MUNEKIYO & HIRAGA, INC.

wind erosion is moderate to severe. Naturally occurring vegetation on this series include bermuda grass, kiawe, and lantana.

The State of Hawaii's Agricultural Lands of Importance to the State of Hawaii (ALISH) system classifies the 13.49-acre project site as "Other Important Agricultural Land". See Figure 6. The ALISH system classifies lands into "Prime", "Unique", and "Other Important Agricultural Land, with remaining, non-classified lands placed into the "Unclassified" category. Utilizing modern farming methods, "Prime" agricultural lands have the soil quality, growing season and moisture supply needed to produce sustained crop yields economically, while "Unique" agricultural lands possess a combination of soil quality, location, growing season, and moisture supply to produce sustained high yields of a specific crop. "Other Important Agricultural Land" includes those which have not been rated "Prime" or "Unique".

4. **Flood and Tsunami Hazard**

According to the flood insurance rate map produced by the Federal Emergency Management Agency (FEMA), the project site is not situated in any designated flood plain and is designated Zone "C", an area of minimal flooding. These properties are not subject to tsunami inundation. See Figure 7.

5. **Flora and Fauna**

Vegetation in the project site is composed primarily of weedy exotic species common to disturbed low-elevation areas throughout Hawaii. Species present include kiawe (*Prosopis pallida*), koa haole (*Leucaena Leucocephala*), castor bean (*Ricinus communis*), ironwood (*Casuarina equisetifolia* Stickm), guinea grass (*Panicum*

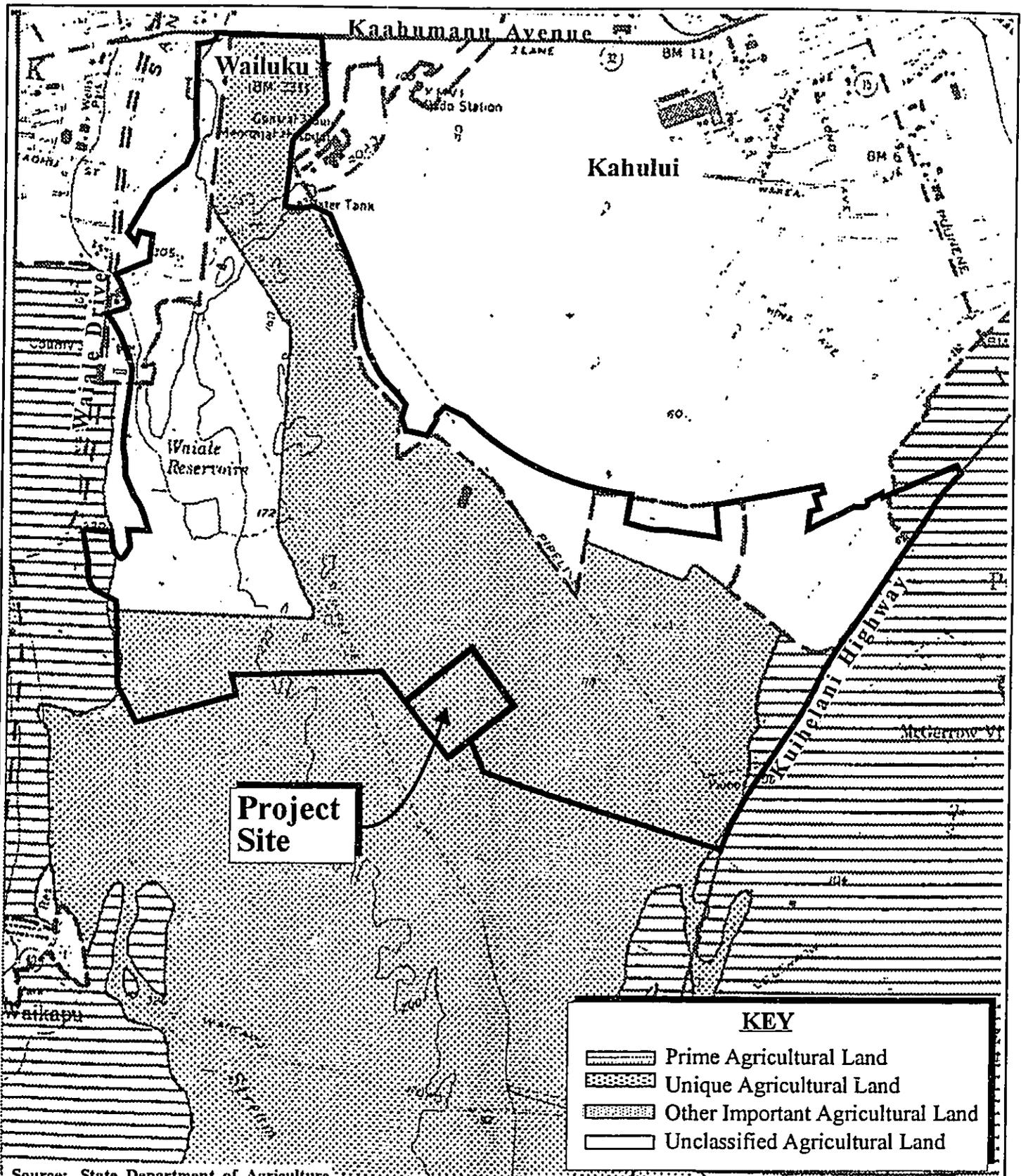


Figure 6

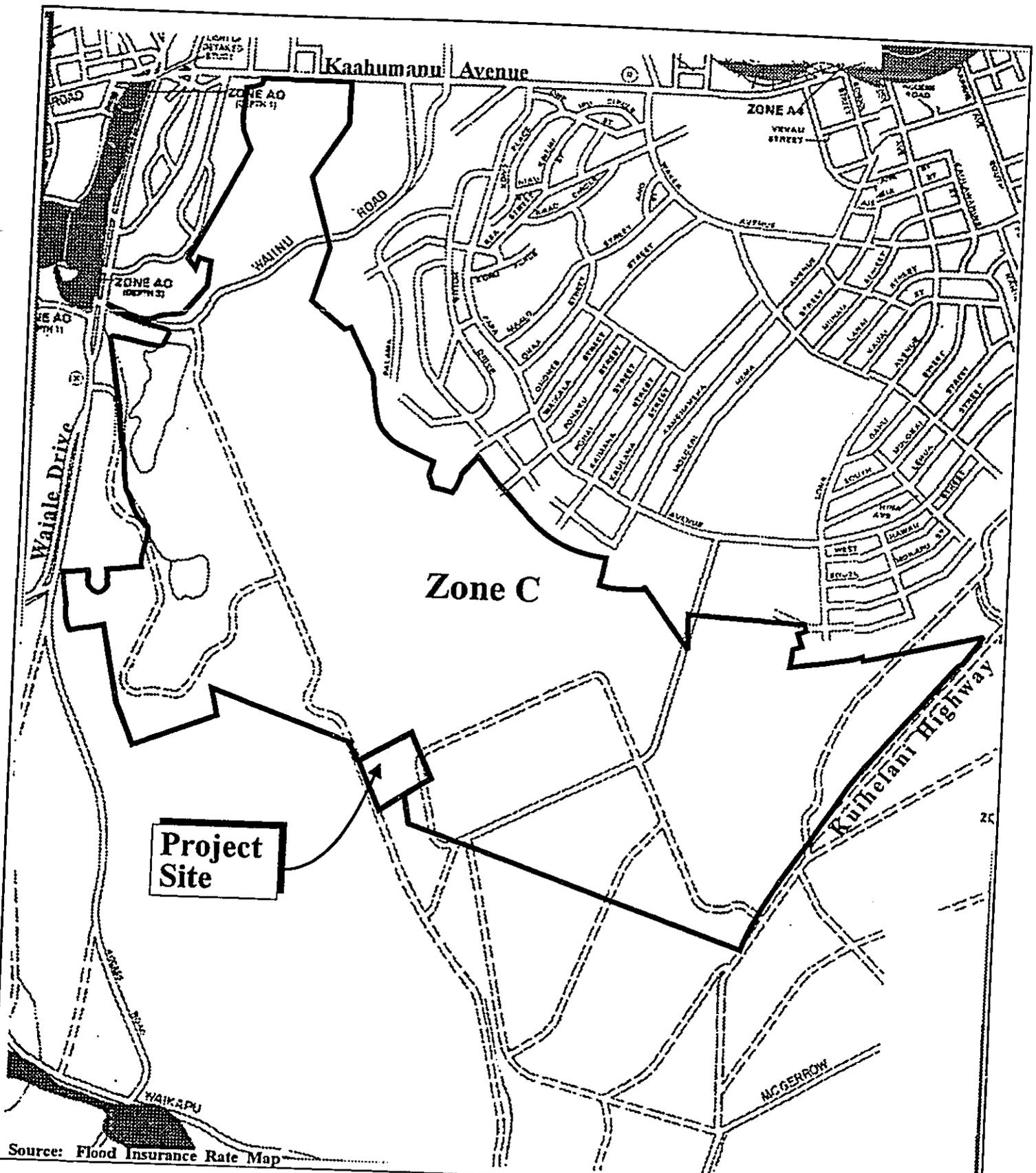
Maui Lani Elementary School

ALISH Designations

NOT TO SCALE



MUNEKIYO & HIRAGA, INC.



Source: Flood Insurance Rate Map

Figure 7

Maui Lani Elementary School
Flood Insurance Rate Map

NOT TO SCALE



MUNEKIYO & HIRAGA, INC.

maximum), and common weeds. Two (2) common indigenous species are known to have been found in the vicinity of the project site, morning glory (*Ipomoea congesta*) and ilima (*Sida spp.*). No rare or endangered species are known to be found in the area.

Fauna and avifauna typically found in the vicinity of the project site are composed of common introduced species. Fauna include mongoose (*Herpestes auropunctatus*), black rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans*), and house mouse (*Mus Musculus*). Avifauna commonly found in the project environs include several species of doves, common Indian Myna (*Acridotheres tristis*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus frontalis*), Indian gray francolin (*Francolinus pondicerianus interpositus*), red-billed Leiothrix (*Leiothrix lutea*), mockingbird (*Mimus polyglottos*), Japanese white-eye (*Zosterops japonicus*), warbling silverbill (*Lonchura malabarica cantans*), spotted munia (*Lonchura punctulata*), and cardinal (*Cardinalis cardinalis*). Two (2) indigineous birds have been observed in the vicinity of the project site, the Pacific golden plover (*Pluvialis dominica fulva*) and Wandering tattler (*Heteroscelus incanus*). There are no rare or endangered species of fauna or avifauna found at the project site.

There are no streams or wetlands in the vicinity of the project site.

6. Archaeological Resources

A generic monitoring plan for the Maui Lani Project District, including the project site, was prepared in March 1996 by Aki Sinoto Consulting. This plan was prepared based on the results of

the subsurface sampling program completed in the fall of 1995. Refer to Appendix B.

The State Historic Preservation Division (SHPD) has reviewed the generic monitoring plan and agrees that the plan adequately addresses the required procedures and new monitoring plans are not warranted for each new increment of work within the Maui Lani Development area. Refer to Appendix C.

7. **Air Quality**

Air quality in the Wailuku-Kahului region is considered to be good as emissions from point sources, including Maui Electric Company's power plant and Hawaiian Commercial and Sugar Company's sugar mill, and non-point sources such as automobile emissions, do not generate problematic concentrations of pollutants.

The State of Hawaii Department of Health maintains two (2) air quality monitoring stations on the island of Maui, one (1) in Paia and the second in Kihei. Both sites monitor for particulate matter less than or equal to 10 micrometers (PM_{10}). According to data collected at the stations, in 1998 the annual average concentration of PM_{10} at the Kihei and Paia stations were $33 \mu\text{g}/\text{m}^3$ and $17 \mu\text{g}/\text{m}^3$, respectively. This is well below the national and state standard of $150 \mu\text{g}/\text{m}^3$. Although levels of particulate matter increase when agricultural burning takes place, prevalent tradewinds from the north and northeast minimize nuisance air quality problems in the vicinity.

8. **Noise**

The Maui Lani Project District is largely unaffected by urban sources of noise in Kahului. It is noted that aircraft approach to Kahului Airport is located to the southeast of the project district. Aircraft noise contours from this approach do not extend to the project district area.

9. **Visual Resources**

The Maui Lani Project District is situated within the central valley of Maui. With its valley "basin" location, views to Haleakala to the east and the West Maui Mountains mauka of Wailuku Town are available. The project site itself is not considered a scenic or unique scenic corridor or area.

B. SOCIO-ECONOMIC ENVIRONMENT

1. **Population**

The population of the County of Maui has exhibited a relatively strong growth over the past decade. Between 1990 and 2000, the U.S. Census found that the State of Hawaii population grew from 1,108,229 to 1,211,537, a 9.3 percent growth over ten years. This translates to an average annual growth rate of 0.89 percent. Maui County population, however, has grown from 100,374 in 1990 to 128,241 in 2000, an average annual growth rate of 2.7 percent (U.S. Census 2000). Growth in Maui County is expected to continue, with resident population projections to the year 2010 estimated to be 140,060 (Community Resources, Inc., January 1994).

2. **Economy**

The Kahului region is the island's center of commerce. Combined with the neighboring region of Wailuku, the Wailuku-Kahului region encompasses a broad range of commercial, service, and governmental activities. In addition, the region is surrounded by significant acreages of agricultural lands including sugar cane fields managed by HC&S and pineapple fields managed by Maui Land & Pineapple Company. It is noted that lands formerly utilized for macadamia nut crops (managed by Wailuku Agribusiness Company) to the north of Wailuku Town are no longer in active cultivation. The vast expanse of agricultural lands is considered a key component of the local economy.

C. **PUBLIC SERVICES**

1. **Recreational Facilities**

The Wailuku-Kahului region provides a full range of recreational opportunities, including shoreline and boating activities at the Kahului Harbor and adjoining beach parks, and individual and organized athletic activities at numerous County parks. The War Memorial Complex, for example, located along Kaahumanu Avenue, includes a gymnasium, swimming pool, tennis courts, youth baseball fields, football and soccer practice areas, the War Memorial Stadium and baseball stadium. Also found in the Wailuku-Kahului area are the Kahului Community Center, Kanaha Beach Park, and Keopuolani Park, a regional recreational facility.

2. **Police and Fire Station**

Police protection for the Wailuku-Kahului region is provided by the County Police Department headquartered in Wailuku on Mahalani

Street. The Maui Lani Project District is served by the Department's Wailuku Patrol Division.

Fire prevention, suppression, and protection services for the Wailuku-Kahului region are provided by the County Department of Fire Control's Wailuku Station, located in Wailuku Town. In addition, the Department's Kahului Station is located nearby along Dairy Road, between Puunene Avenue and Hana Highway.

3. 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 is disposed at the County's 55-acre Central Maui Landfill, located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

4. Health Care

Maui Memorial Medical Center, the only major medical facility on the island, services the Wailuku-Kahului region. Acute, general and emergency care services are provided by the 196-bed facility. In addition, numerous privately operated medical/dental clinics and offices are located in the area to serve the region's residents.

5. Schools

The Wailuku-Kahului region is served by the State Department of Education's public school system, as well as several privately operated schools accommodating elementary, intermediate and high school students. Department of Education facilities in the

Kahului area include Lihikai and Kahului Schools (Grades K-5), Maui Waena Intermediate School (Grades 6-8), and Maui High School (Grades 9-12). Existing facilities in the Wailuku area include Wailuku Elementary School (Grades K-5), Iao Intermediate School (Grades 6-8), and Baldwin High School (Grades 9-12). Maui Community College, a branch of the University of Hawaii, is located in Kahului along Kaahumanu Avenue and serves as the island's higher education institution.

The proposed 13.49-acre school site is planned for elementary school use from Kindergarten to Grade 5 with a design capacity for 650 students under a normal school calendar and 865 students under a YRE/MT calendar.

D. INFRASTRUCTURE

1. Roadways

a. Regional Roadway System

The Maui Lani Project District is served by a roadway network which includes arterial, collector and local roads. Major roadways include Maui Lani Parkway which presently connects to Kaahumanu Avenue to the north, the principal linkage between Wailuku and Kahului, and in the future will connect to Kuihelani Highway to the east, a State highway linking West Maui to Kahului via Honoapiilani Highway. Waiale Road runs parallel in a north/south direction along the westerly boundary of the project district. Waiale Road is a two-lane County roadway.

Maui Lani Parkway will be the main east/west roadway through the project district to eventually extend to connect

with the Kuihelani Highway. Kamehameha and Onehee Avenues are main collector roadways extending into the project district.

Access to the project site will be provided by the westward extension of Kamehameha Avenue. This roadway will terminate in the vicinity of the project site.

b. Maui Lani Roadway Master Plan Implementation Schedule

The master roadway development plan for the Maui Lani Project District is anticipated to be implemented as development proceeds over the next 8 year period. The existing roadway improvements have been implemented to access the Dunes at Maui Lani Golf Course and 385 residential units covering an area of approximately 124.5 acres in the project district. The roadway improvements completed to date include the construction of the Maui Lani Parkway from Kaahumanu Avenue to Mahalani Street from the northern boundary of the project district; and extension of Onehee Avenue and Kamehameha Avenue to access the residential developments in the northeastern areas of the project district.

The Mahalani Street extension connecting Kaahumanu Avenue to Honoapiilani Highway via Mahalani Street, Waiale Road, and Kuikahi Drive was recently completed. The improvements to this roadway network are expected to reduce the current through-traffic on Honoapiilani Highway by providing alternative paths into Wailuku, Lower Wailuku

and Kahului. As well, extension of Onehee Avenue with two (2) additional lanes and a golf cart underpass are currently underway in association with the residential expansion of the Maui Lani Island and Bluff Subdivision. The contract for the work to build the two (2) southbound lanes of the Maui Lani Parkway from Kuihelani Highway to Kamehameha Avenue was recently awarded and construction will soon be underway.

Future roadway improvements will be phased as set out in Table 1 below:

Table 1

MAUI LANI ROADWAY IMPROVEMENT PHASING PLAN			
Phase	Approx. Year	Roadway Name	Description of Improvement
1	2002	Onehee Avenue	Extend south as 4-lane connector to Island and Bluff subdivision access
2	2004	Kamehameha Avenue	Construct 3-lane cross-section from eastern Project District boundary to proposed elementary school
2	2004	Kamehameha Avenue	Signalize Papa Avenue/Kamehameha Avenue intersection
2	2004	Maui Lani Parkway	Construct half of roadway from Kamehameha Avenue to Kuihelani Highway. Provide channelization of turning movements at Kamehameha/Maui Lani and Maui Lani/Kuihelani
2	2004	Kuikahi Drive Extension	Construct Kuikahi Drive Extension from Waiale to proposed Light Industrial Subdivision boundary
2	2004	Kainani Street	Connect commercial area along Kaahumanu Avenue to Kainani Street and to existing Maui Lani Parkway
2	2004	Kuikahi/Waiale	Signalize Kuikahi/Waiale intersection
3	2006	Maui Lani Parkway	Construct half of Maui Lani Parkway from Kuikahi Drive extension to Kamehameha Avenue
3	2006	Kuikahi Drive Extension	Extend half of Kuikahi Drive to Maui Lani Parkway
4	2008	Maui Lani Parkway	Extend half section of Maui Lani Parkway to Onehee Avenue and connect
4	2008	Maui Lani Parkway	Expand Maui Lani Parkway to 4-lane cross section from Kuihelani Highway to the commercial and multi-family parcels on the west and to the Golf Clubhouse on the east of Maui Lani Parkway
5	2010	Maui Lani Parkway	Extend half of 4-lane Maui Lani Parkway between Kuikahi and Onehee Avenue

Source: Parsons Brinckerhoff, May 2002

2. **Wastewater**

Present wastewater improvements in the project district have been extended from the County of Maui sewerlines in conjunction with the development of the single-family residential subdivisions along Onehee and Kamehameha Avenues. There presently is no sewer system in close vicinity of the project site. Installation of a 12-inch sewer line will be carried out with the extension of Kamehameha Avenue. See Appendix D. The proposed school site is estimated to generate approximately 18,250 gallons of wastewater per day. The existing lines through Kahului, to and including the Kahului Wastewater Reclamation Facility, all have the capacity to handle the projected wastewater generated by the proposed project.

3. **Water**

Domestic water for the Wailuku-Kahului region is provided by the Department of Water Supply's (DWS's) Central Maui System. Water for the Central Maui System is provided by wells in Mokuhanu in Iao Valley and in Upper Waiehu. These well sources draw water from the basal lens referred to as the Iao Aquifer, which has an estimated sustainable yield of 20 MGD. As of November 2001, the rolling average groundwater withdrawals from this aquifer were 17.5 MGD (November 2001 Department of Water Supply Pumping Report).

Water for the project site and vicinity is provided by the Iao Source. A 12-inch transmission line conveys water from this source to a 3.0 MG concrete storage tank located approximately 1.2 miles east of the project site. A series of 18- and 12-inch distribution lines transport water along Kamehameha Avenue. Non-potable

water for irrigation and landscaping purposes is not available in the vicinity of the project site.

Water service to the project site will be provided by extending the 12-inch water main on Kamehameha Avenue. See Appendix D. It is estimated that average daily water consumption will range from 22,950 to 39,000 gallons per day.

4. **Drainage**

The drainage improvements for the developed single-family residential subdivisions and golf course include a system of concrete curb and gutters along roadways, an underground collection system conveying collected stormwater runoff to a series of retention basins designed within the golf course.

Presently, drainage improvements are not available in the vicinity of the project site. Stormwater runoff sheet flows across these areas and infiltrates into the ground. Peak discharge resulting from a 50-year storm event on the project site is presently calculated at 13 cubic feet per second (cfs). See Appendix E.

The drainage master plan for Maui Lani Project District, prepared by Sato & Associates, Inc. in 1995, and currently being implemented as areas are developed indicates that the golf course is designed and constructed for retention purposes. See Appendix F.

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

Electrical, telephone and CATV service is provided on overhead lines along the westerly boundaries of the project site and along

Waiale Road. Underground service is provided within the completed residential subdivisions. Services are provided by Maui Electric Company, Ltd., Verizon Hawaii and Hawaii Cablevision.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

The proposed project is located within an area designated for residential, recreational, educational, and public uses, but is presently undeveloped.

As part of the overall Maui Lani Master Planned Project District, the proposed school is not anticipated to have an adverse effect on surrounding land uses and activities.

2. Topography

Site work for the proposed improvements of the subject property which is currently occupied by kiawe, koa haole, and grass vegetation will involve clearing, grubbing, and grading, as well as excavation and fill. To the extent practicable, finished contours will follow existing grades to minimize earthwork costs and maintain existing drainage patterns.

While terrain will be locally modified to meet design requirements, the proposed improvements are not anticipated to adversely alter topographic characteristics in the vicinity.

3. Flora and Fauna

There are no known significant habitats or rare, threatened, or endangered species of flora, fauna, or avifauna on the subject property. The property consists primarily of kiawe, koa haole, and grass vegetation. There are no streams or wetlands located on the site.

As previously noted, fauna and avifauna found in the vicinity are typical of the Wailuku-Kahului urban area. The proposed project is not anticipated to have an adverse impact upon these components of the environment.

4. *Archaeological Resources*

Coordination will be undertaken with the SHPD to ensure that appropriate investigations are undertaken prior to ground-altering activities. Construction at the project will be monitored in accordance with the approved monitoring plan. Refer to Appendix B. As noted in the monitoring plan, there will be full-time monitoring during all construction-related, ground-altering activities.

In selected, non-sensitive areas, initial subsurface exposures will be closely monitored to establish the extent and nature of previous subsurface disturbance. During the course of monitoring, should continued full-time monitoring become unwarranted, the most appropriate alternative procedures, such as part-time, spot check, or on-call monitoring will be implemented in consultation with the SHPD and the Maui/Lana'i Islands Burial Council (MLIBC). An on-island archaeologist(s) will be assigned to this project to permit flexibility and expedient response time for on-call situations.

Should any significant remains, other than human burials, be exposed, construction-related activities in the immediate area shall be halted until the monitor can record and mitigate the remains or determine if additional data recovery procedures are needed. A data recovery plan may need to be prepared for review and concurrence by SHPD, prior to commencing with any data recovery

work. All standard archaeological methods and practices for recording and collection of data will be followed.

Should any human remains be exposed, all construction activities will be halted in the immediate vicinity, measures will be taken to ensure temporary protection of the remains *in situ*, and the SHPD and Burials Program of the Department of Land and Natural Resources will be notified. Determination of the ethnic origin of the remains shall be attempted with minimal disturbance and displacement of the remains. Final disposition of the remains will be determined by the SHPD in consultation with the Maui/Lanai Islands Burial Council (MLIBC). A Burial Treatment or Preservation Plan may also be prepared for concurrence by SHPD and MLIBC.

5. **Cultural Resources Impact Assessment**

The Maui Lani Project District is located in the Wailuku ahupua'a, a traditional land division extending from the mountain to the sea. Wailuku, which means "water of killing" (Pukui and Curtis, 1974), was the political and military power on Maui during the seventeenth and eighteenth centuries. Wailuku was considered to be one of the most fertile areas for agriculture and became an economically important district during the prehistoric and protohistoric period (Scientific Consultant Services Inc., 1998). The Iao Valley had extensive agricultural development in the upper reaches and large agricultural terraces were also developed in the lower river basins. Permanent settlements were established around the agricultural areas, as well as near Kahului Harbor and surrounding coastal areas. In the 1830's the Wailuku ahupua'a had a population of approximately 2,250, mostly concentrated near the Iao Valley and Iao Stream (Scientific Consultants Services Inc., 1998).

During the Mahele of 1848, which divided the lands among government, royalty, and commoners, Wailuku ahupua'a was declared Crown Lands (Sinoto, 1995). By 1865, Wailuku Sugar Company began leasing Crown Lands in the Wailuku ahupua'a in the vicinity of Lower Main Street and the Iao Stream to grow sugar cane. In 1882, the eastern portion of the Wailuku ahupua'a was awarded to Claus Spreckels as Grant 3343, totaling 24,000 acres to grow sugar cane. Only a southern portion of the Maui Lani Project District, south of Kamehameha Avenue, was cultivated in sugar cane (Sinoto, 1995). Sugar cane was never cultivated in major portions of the Wailuku Sand Hills, which make up a majority of Maui Lani property.

The results from archaeological studies within the project district, Barrera (1976), Neller (1984), Rounno and Cleghorn (1990), Rotunno-Hazuka et al, (1995), and Sinoto and Pantaleo (1995), indicate a general absence of evidence of traditional Hawaiian cultural activities other than for burial purposes. Surface structural remains have been non-existent and the occurrence of midden and artifacts have been limited to the fringe areas, just beyond the project district boundaries, in the transition zone between the Wailuku Sand Hills and the surrounding areas (Sinoto, 1995).

In order to obtain a range of cultural resource perspectives in the project district, additional informant data was provided by Leslie Kuloloio. Mr. Kuloloio was born and raised on the island of Maui. He is of Hawaiian descent and his genealogy is traced through the Mo'okuauhau family. He is a member of the Hui Ala Nui O Makena. He states that the proposed project site is currently not being used for any cultural gatherings, nor is it cultivated using any

traditional Hawaiian practices. His assessment of the cultural impact is that the proposed project will have little adverse impact on the cultural practices of the indigenous people. See Appendix G.

From a cultural perspective, the project district primarily covers lands that were formerly used for burials. In this regard, over seven (7) historical preservation sites have been designated within the project district in cooperation with the Maui/Lana'i Burial Council. A preservation area of approximately 3.04 acres has been established within the project district. In addition to the preservation of historical resources, a cultural advisor is consulted on all land use development matters and to monitor all ground altering activity during site development.

6. **Air Quality**

Emissions from construction equipment and other vehicles involved in construction activities may temporarily affect the ambient air quality within the immediate vicinity. However, these effects can be minimized by properly maintaining construction equipment and vehicles.

In addition, dust generated during construction, especially from earth-moving operations such as excavating, trenching, and filling, may also result in a temporary decrease in ambient air quality. Mitigation measures include utilizing dust barriers, waterwagons, and/or sprinklers to control dust, and watering graded areas upon the completion of daily construction activities and/or weekends and holidays to the extent practicable.

On a long-term basis the proposed school is not anticipated to adversely impact air quality.

7. **Noise**

Ambient noise conditions may be temporarily affected by construction activities. Heavy construction machinery, such as backhoes, dump trucks, front-end loaders, paving equipments, and material-transport vehicles, are anticipated to be the dominant noise-generating sources during the construction period.

Proper equipment and vehicle maintenance are anticipated to minimize noise levels. Equipment mufflers or other noise attenuating equipment may also be employed as required. All construction activities will be limited to daylight working hours. In the context of existing and future surrounding land uses, the proposed school is not anticipated to generate adverse noise impacts.

8. **Scenic and Open Space Resources**

As viewed from the subject property, Haleakala is visible to the east and Iao Valley and the West Maui Mountains to the west.

The proposed improvements will integrate landscaping, open space areas and aesthetically designed structures to provide facilities which satisfy spatial requirements and are compatible with the surrounding environment.

The subject property is not part of a scenic corridor and will not affect views from inland vantage points. Accordingly, the proposed

project is not anticipated to have an adverse impact upon the visual character of the surrounding area.

9. **Environmentally Sensitive Areas**

There are no environmentally sensitive areas on or around the project site.

10. **Traditional Mountain and Ocean Access**

There are no known traditional and mountain access trails in or around the project site.

11. **Use of Chemicals and Fertilizers**

Use of herbicides will generally be limited to the initial landscape establishment period on the site. Pesticides are anticipated to be used only as a treatment and not as a preventive measure. As a treatment, application usage will be minimal. In addition, plant selection for the project will be based on hardiness, drought tolerance, pest resistance, as well as aesthetic concerns.

Nitrogen/Phosphorus/Potash mixed fertilizers are anticipated to be applied to lawn areas, groundcover, and flowering shrubs. With proper irrigation management practices, leaching and runoff of fertilizers should be negligible.

No adverse effects on surface, underground and marine resources are anticipated.

B. SOCIO-ECONOMIC ENVIRONMENT AND PUBLIC SERVICES

1. Population and the Local Economy

The proposed school is anticipated to accommodate educational facility needs of families moving into the Maui Lani Project District.

On a short-term basis, the project will support construction and construction-related employment. Accordingly, the project will have a beneficial impact on the local economy during the period of construction.

From a long-term perspective, the proposed project will benefit the economy through the contribution of wages and salaries for teachers and educational support staff, as well as the purchase of goods and services from local service providers and business/commercial establishments.

2. Police, Fire, and Medical Services

Police, fire and medical services are not expected to be adversely impacted by the proposed project. The proposed school will not affect the service capabilities for emergency services.

3. Schools

The proposed project will alleviate the present near capacity conditions at Kahului Elementary School and the overcrowding experienced at Lihikai Elementary School. Viewed in this context, the proposed project will have a positive impact on education and school facilities.

The proposed project, along with Kahului and Lihikai Elementary Schools, will feed students into Maui Waena Intermediate School.

The growth in student enrollment will result from the residential development within Maui Lani and will be generated whether the proposed elementary school is built or not built. Nevertheless, additional facilities will be required at the intermediate level to handle growth in student enrollment. In this regard, the Department of Education is currently expanding facilities at Maui Waena Intermediate and Iao Intermediate Schools.

4. **Solid Waste**

A solid waste management plan will be developed in coordination with the Solid Waste Division of the County Department of Public Works and Waste Management (DPWWM) for the disposal of clearing and grubbing material during construction. Solid waste collection and disposal will be provided by a private refuse service.

C. **INFRASTRUCTURE**

1. **Traffic**

A traffic study was completed for the proposed buildout of the Maui Lani development. See Appendix H. Based on future traffic projections, Maui Lani development generated traffic, and taking into consideration sub-regional connectivity traffic, a phasing program of roadway improvements is proposed for traffic mitigation. The traffic study identified the following roadway improvements to mitigate proposed development to the year 2004.

- Extend Kamehameha Avenue south as a two-lane roadway with median turn lanes.
- Construct two (2) lanes of the ultimate Maui Lani Parkway between Kuihelani Highway and Kamehameha Avenue. (Based on the intersection analysis for this phase, the Kuihelani Highway/Maui Lani Parkway intersection could remain an unsignalized intersection.)

-
- Signalize the Papa Avenue/Kamehameha Avenue intersection.
 - Channelize the northbound approach to Papa Avenue to have an exclusive right-turn lane and shared through/left lane.
 - Construct exclusive left-turn phases for the Papa Avenue approaches to the Kamehameha Avenue intersection.

In general, the phasing plan allows Maui Lani to incrementally develop while handling its traffic needs. Given the assumed development of the Maui Lani Project District and roadway infrastructure construction, it is concluded that the Maui Lani development would provide a net transportation benefit to the Central Maui area.

2. Water

Domestic water and fireflow requirements, as well as connection to the County's domestic water system, will be coordinated with the Department of Water Supply (DWS) as part of the project's building permit application process.

Storage, transmission and source development obligations will be fulfilled as part of, and in conjunction with, payment of the comprehensive meter fee.

The proposed water system improvements will be constructed in accordance with applicable regulatory design standards. The proposed project is not anticipated to have an adverse effect on water sources and storage facilities, as well as water transmission and distribution systems.

3. **Wastewater**

An allocation of capacity as well as any necessary wastewater contribution calculations will be coordinated with the DPWWM as part of the project's building permit application process.

Applicable wastewater assessment fees for the Wailuku-Kahului Wastewater Treatment Facility will be paid prior to approval of the building permit as specified in Chapter 14.34 of the Maui County Code.

All wastewater system improvements will be constructed in accordance with applicable regulatory design standards. The proposed project is not anticipated to have an adverse impact upon the region's wastewater capacities and facilities.

4. **Drainage and Erosion Control**

The peak discharge resulting from a 50-year storm event is expected to increase from 13 cfs to 35 cfs as a result of the proposed project. In the Maui Lani Project District Master Drainage Plan (Section IV.B.) prepared in 1995 by Sato & Associates, Inc. the increase in runoff resulting from development within the project district is directed towards the golf course, which is the designated retention basin. Storm runoff generated by the proposed project may be safely disposed of by conveying it to the stormwater retention areas within the Dunes at Maui Lani Golf Course in accordance with the master drainage plan. Two (2) alternatives are under consideration. Refer to Appendix E.

Alternative 1: Storm runoff would be conveyed by either an open drainage channel or underground drainline north through the proposed

Park/Recreation site, across the future alignment of Maui Lani Parkway, through a future SF residential area, and into Retention Basin 5 near the 4th Fairway of the Dunes Golf Course.

Alternative 2: Storm runoff would be directed into an underground drainline located under Kamehameha Extension, which would convey the runoff to the golf course and discharge it into Retention Basin 6 near the 17th Fairway.

A more detailed assessment will be undertaken in the design phase to quantify retention capacity in the golf course and determine the most appropriate alternative for site drainage.

The proposed grading and drainage plans for the proposed project will be designed to produce no adverse effects by storm runoff to adjacent properties. All drainage improvements will conform to County standards and will be coordinated with the County DPWWM.

To control soil erosion during construction, the following measures will be implemented:

- Minimize time of construction.
- Dust control by temporary water sprinkler system or water wagons or both, if necessary, and if possible, using non-potable water.
- All exposed areas shall be protected immediately after grading is completed by grassing or mulching.
- All exposed slopes (cut and fill) shall be protected by grassing and by constructing temporary swales at the top of the slopes.

Implementation of these best management practices will minimize the loss of soil during construction.

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

Electrical, telephone, and cable system requirements will continue to be provided by MECO, GTE Hawaiian Tel, and Hawaiian Cablevision, respectively.

D. **CUMULATIVE AND SECONDARY IMPACTS**

A cumulative impact is defined as an impact to the environment which results from the incremental impact of an action when added to other past, present, and reasonable foreseeable future actions regardless of what agency or person undertakes such other actions.

On a long-term basis, the proposed new elementary school will benefit the socio-economic fabric of the community by fulfilling the public's need for educational facilities. In addition, the proposed project would support additional employment opportunities, either directly or indirectly, and contribute to the local economy through its contribution of wages, salaries, and benefits. The proposed action is not anticipated to adversely impact infrastructure and other public service systems and facilities.

No cumulative adverse impacts to traffic are anticipated. Rather, the roadway infrastructure improvements proposed for the development of the Maui Lani Project District would provide a net transportation benefit to the Central Maui area. No adverse cumulative impacts on the overall drainage system or on adjacent properties are anticipated since all stormwater runoff resulting from the development within the project district will be directed towards the golf course which is designed to be the designated retention basin. Cumulative impacts to water source supply

and water use will be mitigated by on-site improvements to water storage capacities and by off-site pro-rata new source development costs which will be borne as part of the comprehensive meter fee as prescribed in the Rules and Regulations of the Department of Water Supply. Maui Lani Project District is largely unaffected by urban sources of noise, therefore, no cumulative impacts on noise are anticipated. The most probable source of adverse air quality impacts would be emissions from overall project district traffic. The phased roadway improvements, including the construction of the Maui Lani Parkway and extension of Kamehameha Avenue, will facilitate traffic flow and reduce emission concentration levels. In addition, the presence of relatively constant tradewinds will dissipate vehicular emissions minimizing the potential of cumulative adverse air quality impacts. No significant habitats or rare, endangered or threatened species of flora or fauna have been identified on the proposed site or in the project district, therefore, adverse cumulative impacts to floral and faunal resources are not anticipated.

An Environmental Impact Statement Preparation Notice, which has recently been submitted to the Office of Environmental Quality Control for publication, and the subsequent draft EIS will address cumulative impacts of the entire Maui Lani Project District Development.

E. OPERATIONAL CONSIDERATIONS

The new elementary school will be operated by the Department of Education. Although calendar year scheduling (i.e., year-round versus traditional calendar) has not been defined for the school, this operational consideration is not anticipated to have adverse impacts upon the environment. The school will operate Monday through Friday following standard school hours. As with other public school facilities, occasional night-time and weekend use of the school will occur.

Chapter IV

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

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, HRS, relating to the Land Use Commission, establishes the four major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation". The subject property is within the "Urban" district. See Figure 8. The proposed action involves the implementation of the project district and is consistent with the provisions of the "Urban" district.

B. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (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 the 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:

Objective:

- To provide Maui residents with continually improving quality educational opportunities which can help them better understand themselves and their surroundings and help them realize their ambitions.

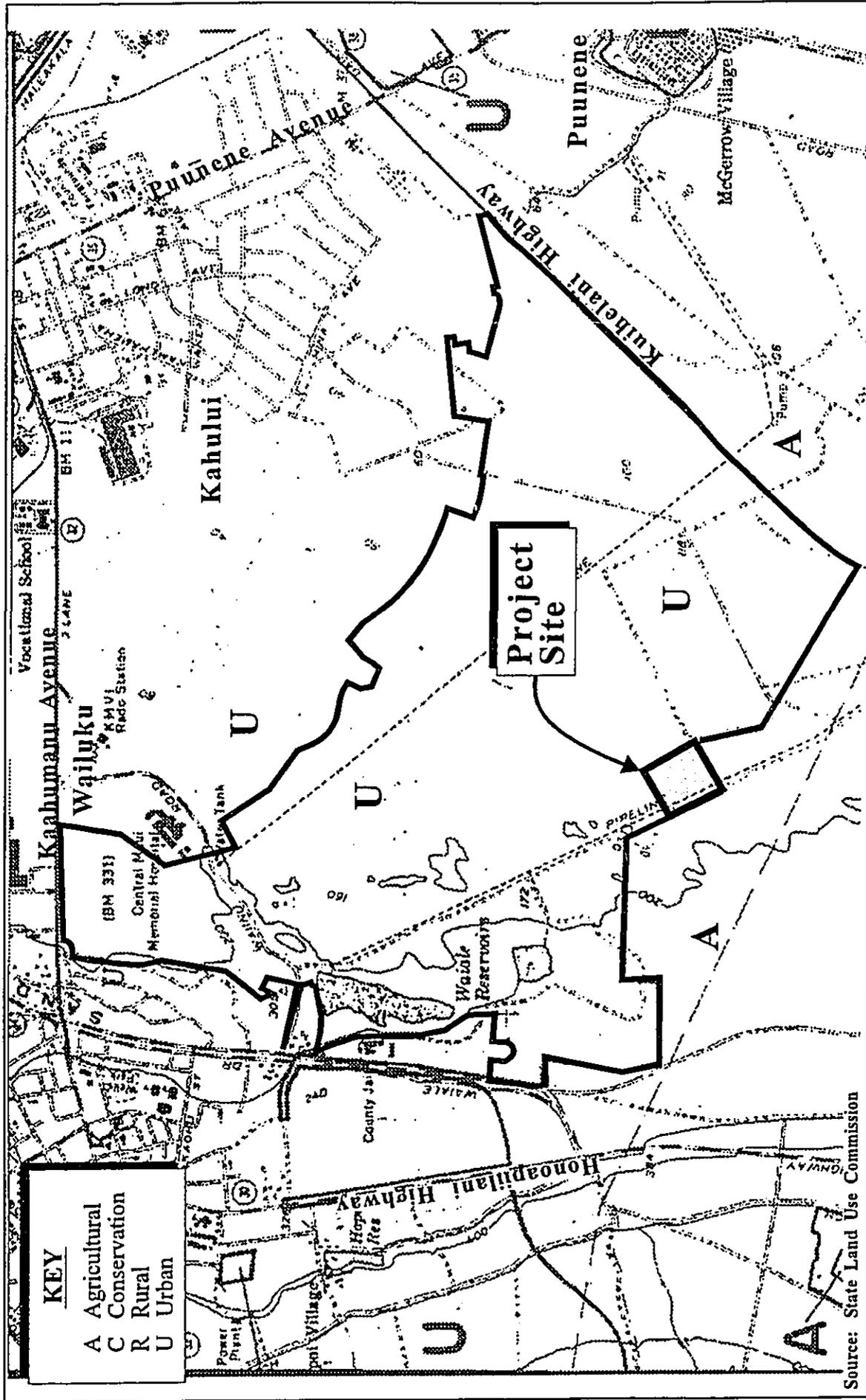
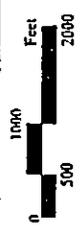


Figure 8

Maui Lani Elementary School
State Land Use District Boundary Map



Policies:

- Require that quality educational facilities and services be available to all residents.
- Seek continual improvement in the quality of education at all levels for all residents.
- Support the State in its efforts to recruit quality teachers and develop expanded and upgraded facilities in a timely manner.
- Support the State and the Maui community in the provision of improvement and timely development of facilities.

C. WAILUKU-KAHULUI COMMUNITY PLAN

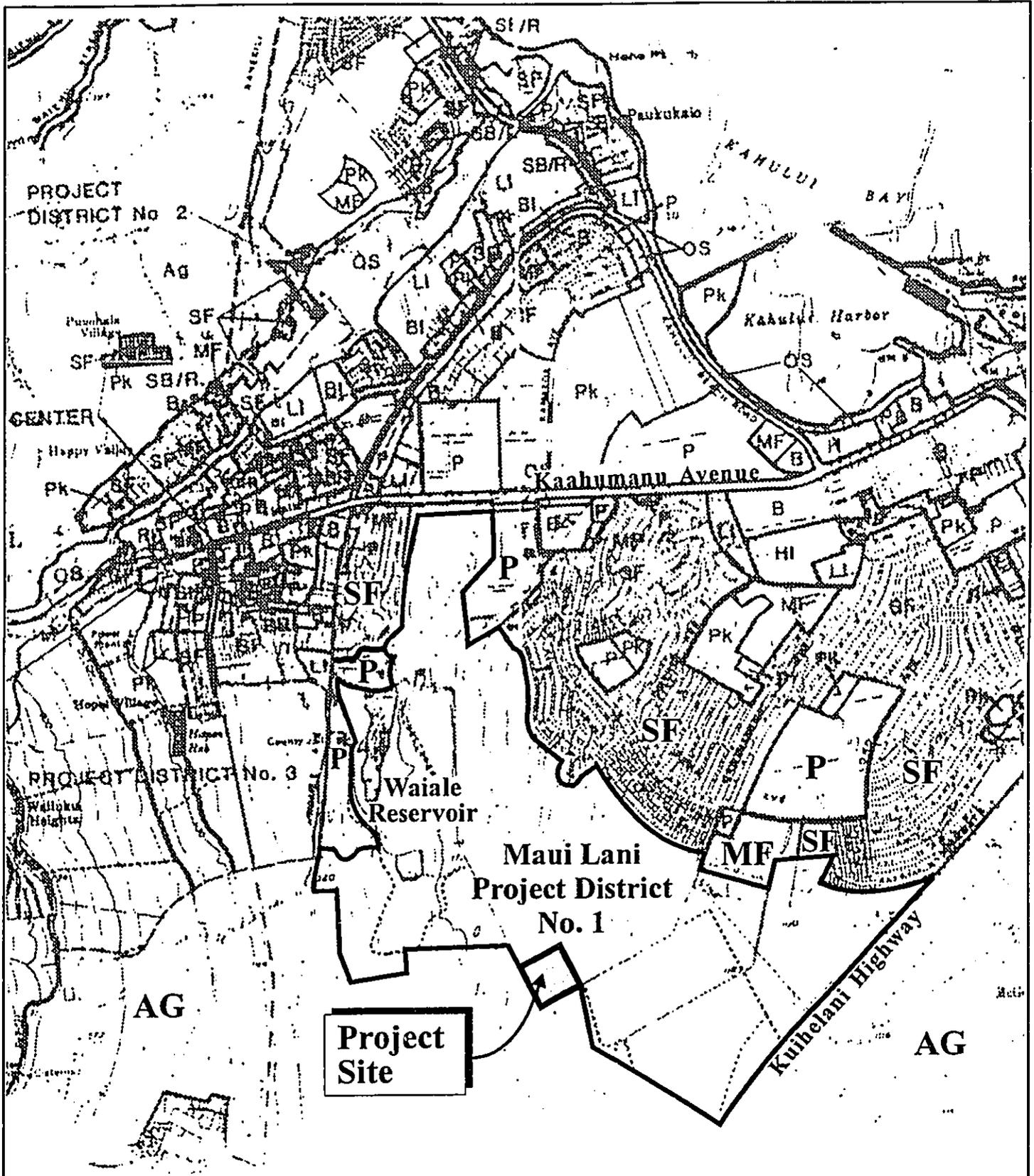
The subject parcel is located in the Wailuku-Kahului Community Plan region which is one of nine Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. See Figure 9. The subject property is designated "Project District 1" by the Community Plan. The proposed project is consistent with the Wailuku-Kahului Community Plan and carries out the following recommendations of the plan:

1. Socio-Economic Aspects

a. Population

Direct residential growth to areas providing contiguous outward expansion of existing residential areas, where public



Source: County of Maui

Figure 9

Maui Lani Elementary School
Wailuku-Kahului Community Plan Map

NOT TO SCALE



services can expand in an efficient and economical manner.

2. **Physical Aspects**

a. **Land Use**

Establish a project district approach for the major residential growth areas adjacent to Wailuku, Kahului, and Waiehu to allow flexibility in master planning. These project districts may contain a variety of residential unit types as well as supporting community services, including business, public recreational and educational facilities.

3. **Support Systems: Human Systems**

a. **Education**

Allocate sufficient land areas as part of residential project district specifications to meet future school site needs.

The Wailuku-Kahului Community Plan describes Project District 1 in the following terms:

"PROJECT DISTRICT 1 (Maui Lani) 1012 acres

Guidelines should be based on the master plan for this residential community which will provide about 3300 residential units of various types. Alternative to promote affordable housing such as experimental and demonstration housing shall be considered in the residential development. An open space and recreation system which may include a golf course, future school sites, and community or regional scale commercial shopping facilities shall be integrated in the development to serve the expanding Wailuku-Kahului population..."

It is noted that the proposed school complies with the Wailuku-Kahului Community Plan description of Project District 1. The proposed project is located within a part of Project District 1.

D. COUNTY ZONING

Project District Zoning for "Wailuku-Kahului Project District 1" was approved by Ordinance No. 1872 in 1989. This zoning district provides for the development of a residential community along with an integrated open space and recreation system, future school sites, and community or regional scale commercial shopping facilities to serve the Wailuku-Kahului population.

The proposed elementary school with a Year Round Education/Multi-Track design enrollment of 865 students will be developed on lands designated Residential PD-WK/1 and "MF" and "SFD" on the Maui Lani Land Use Plan. The "MF" designation refers to the multi-family MF subdistrict and the "SFD" designation refers to the single-family SF-5 subdistrict in the Maui Lani project district standards ordinance.

Elementary schools are permitted as special uses within the residential designated districts, subject to the approval of the County of Maui Planning Commission.

Accordingly, an application for a County of Maui Special Use Permit to develop an elementary school within the Single-Family and Multi-Family district of the Maui Lani Project District is required for action by the Maui Planning Commission.

In addition, an application for Project District Phase II approval to develop the elementary school on the proposed site is needed.

E. COASTAL ZONE MANAGEMENT

The Hawaii Coastal Zone Management Program (HCZMP), as formalized in Chapter 205A, HRS, establishes objectives and policies for the

preservation, protection, and restoration of natural resources of Hawaii's coastal zone.

As set forth in Chapter 205A, HRS, this section addresses the proposed action's relationship to applicable coastal zone management considerations. It is noted that the Maui Lani Project District is not within the County of Maui's Special Management Area.

(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 uses 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, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed elementary school is not anticipated to adversely impact demands on coastal recreational facilities. Recreational area needs of the project district are addressed through the allocation of approximately 26.8 acres for parks within the project district.

(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 archaeological monitoring plan developed for the Maui Lani Project District appropriately covers the proposed school site. This monitoring plan will be followed during development of

the proposed project. Should any inadvertent human burials, archaeological deposits or cultural artifacts be located during site work, the find will be protected from damage and the SHPD will be promptly notified to formulate an appropriate mitigative 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 that are not coastal dependent to locate in inland areas.

Response: The proposed elementary school will be architecturally designed to be compatible with surrounding properties. The project district itself is not within a scenic view corridor and does not adversely impact views to and along the shoreline.

(4) **Coastal Ecosystems**

Objective:

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

Policies:

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Improve the technical basis for natural resource management;
- (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (D) 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
- (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: As documented in the drainage report for the Maui Lani development site, additional onsite post-development runoff will be retained in the golf course. The design and construction of the drainage system for the project district will be coordinated with the County Department of Public Works and Waste Management to ensure that stormwater runoff is adequately accommodated by the system and does not adversely affect downstream and adjacent properties. In addition, Best Management Practices (BMPs) will be implemented as part of the site construction work for the proposed elementary school. In this regard, appropriate technical measures will be implemented to mitigate adverse impacts to coastal ecosystems.

(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;
- (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 proposed elementary school has been located to provide a centrally accessible site. By providing opportunity for new elementary school facilities, the proposed project will provide for long-term balance in school facility development for the Central Maui area. The elementary school site will be conveniently accessed by adjacent single-family residential developments.

(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; and
- (D) Prevent coastal flooding from inland projects.

Response: The proposed elementary school site is not located within an environmentally sensitive area which is subject to natural hazards. Appropriate technical measures will be designed and implemented to address stormwater management requirements for the project site.

(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: The proposed actions will be disclosed through the environmental assessment process (pursuant to Chapter 343,

Hawaii Revised Statutes), as well as the County of Maui's Special Use Permit and Project District Phase II application review, notification and hearing processes. In this regard, the proposed actions are consistent with the objective and policies for managing development.

(8) **Public Participation**

Objectives:

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

Policies:

- (A) Promote public involvement in coastal zone management processes;
- (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 issues, developments, and government activities; and
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: As noted above, public review and participation for the proposed actions will be provided through compliance with Chapter 343, Hawaii Revised Statutes, and the County of Maui's application permitting requirements.

(9) **Beach Protection**

Objectives:

Protect beaches for public use and recreation.

Policies:

- (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and 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 elementary school site is not located in proximity to beach areas and will not affect beach processes or uses.

(10) **Marine Resources**

Objectives:

Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (C) 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;
- (D) 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

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

Response: The proposed actions will not adversely impact marine resources. The proposed elementary school site is not located in proximity to shoreline areas.

Chapter V

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

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project will result in some construction-related impacts as described in Chapter III, Potential Impacts and Mitigation Measures.

Potential effects include noise-generated impacts occurring from site preparation and construction activities. In addition, there may be temporary air quality impacts associated with dust generated from construction activities, and exhaust emissions discharged by construction equipment.

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

Chapter VI

***Alternatives to the
Proposed Action***

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. PREFERRED ALTERNATIVE

The proposed project incorporating a building housing the Administration offices, Student Center facilities, Library-Media Center and 35 classrooms on two (2) levels and a separate cafetorium building represents the preferred alternative. This alternative was an outcome of a six (6) session Facility Analysis Concept Development (FACD) process and results in a functional, easy to maintain, and cost-effective site plan and building design. Development of the new educational facility will accommodate growth in student enrollment resulting from the residential development within the project district, as well as relieve near capacity and over capacity conditions at existing elementary schools in Kahului.

B. EXPANSION OF KAHULUI AND LIHIKAI ELEMENTARY SCHOOLS

Kahului Elementary School has a capacity for 954 students and currently has an enrollment of approximately 832 students. Lihikai Elementary School has a capacity for 1,020 students and currently has an enrollment of 1,161 students.

Over 800 elementary students are projected to be generated by the Maui Lani community at buildout. Expansion of Lihikai and Kahului Elementary Schools to accommodate this additional enrollment is not an option DOE desires for both facility and programmatic reasons. The long-term solution is construction of a new elementary school in the area.

C. SITE ALTERNATIVES

The Maui Lani Project District Land Use Map, attached to Ordinance No. 1924 and amended through Ordinance No. 1939, had designated two (2) school sites of 5 acres and 8 acres located to the south of Kuikahi Drive and southwest of the intersection of Maui Lani Parkway and Kamehameha

Avenue, respectively. In reviewing the Maui Lani Land Use Map, Maui Lani Partners has determined that a consolidated elementary school site of approximately 13.49 acres more readily addresses the current educational site requirements from 10 to 12 acres for elementary schools as established by the Department of Education, Facilities and Support Services standards.

D. ALTERNATIVE SITE LAYOUT

As previously noted, project design was articulated through a FACD study process. Maui Lani Partners, in cooperation with the State Department of Education, met with community and professional stakeholder groups to receive input into facility design and program delivery services. A preferred alternative site layout resulted through this planning and design process. The spatial relationships of the educational facility components on the site changed from the conceptual site plan as proposed in the Draft EA. However, the overall scope and scale of the proposed project remained the same with design parameters for a projected enrollment of 865 students under a Year Round Education/Multi-Track calendar and a total gross floor area of approximately 98,825 square feet.

E. NO ACTION ALTERNATIVE

The existing Kahului and Lihikai Elementary School facilities are currently operating at or near capacity. Future growth and development in the Wailuku-Kahului region will only add to the overcrowding at the existing schools. The "no action alternative" does not represent a responsible option in addressing elementary school educational needs in the region.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project will result in the commitment of approximately 13.49 acres of land for the development of a third elementary school in Kahului. While the commitment of this land precludes other uses, the projected need for additional educational services and facilities is considered essential.

No other significant irreversible and irretreivable commitments of resources have been identified in connection with the proposed action.

Chapter VIII

**Findings and
Conclusions**

VIII. FINDINGS AND CONCLUSIONS

Every phase of the proposed action, expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. Discussion of project conformance to the criteria is noted as follows:

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

The project will not result in the loss or destruction of any valuable natural resources. The project area is not used for any cultural gatherings or related traditional Hawaiian practices.

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

The proposed action will not curtail the range of beneficial uses of the environment. Environmental parameters such as air quality, water quality, and scenic views will not be adversely affected by the project.

3. **The Proposed Action Does Not Conflict With the State's Long-Term Environmental Policies or Goals or Guidelines as Expressed in Chapter 344, HRS**

The State Environmental Policy and Guidelines are set forth in Chapter 344, HRS. The proposed action is in consonance with the policies and guidelines of this chapter.

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

There will be direct benefit to the local economy through the provision of construction and construction-related employment during the

implementation of the new elementary school. In the long term, the proposed project will promote the community's social welfare by providing needed new educational facilities for residents living in the Wailuku-Kahului community.

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

No adverse impacts to the public's health and welfare are anticipated.

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

The implementation of the Maui Lani Master Plan reflects a comprehensive development of land use needs for the project district to address market conditions and infrastructure requirements. In the context of the project district's master plan, therefore, secondary impacts associated with the development of the proposed land uses may include new demand generated for public facilities and infrastructure systems by residents and employees of the business and commercial districts. These outcomes have been considered as part of the project district planning process which addresses land use from a comprehensive planning standpoint. In particular, the proposed Maui Lani Project District provides land use allocations for parks and school sites. In addition, infrastructure requirements have been updated and implementation of said improvements will be phased to coincide with development. The proposed new elementary school addresses development of educational facilities to coincide with residential development within the Maui Lani Project District.

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

During the construction phase of the proposed project, nuisance impacts associated with construction may be experienced (i.e., noise, fugitive

dust). However, these impacts will be mitigated through implementation of best management construction practices. As a master planned community, the Maui Lani Project District has been designed to minimize impacts to the environment through proper engineering and phasing of drainage systems and the allocation of land uses which are compatible with the surrounding Wailuku-Kahului urban core.

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

The new school is proposed in the context of the Maui Lani Project District. The Maui Lani Project District is a master-planned community which has incorporated phased implementation of infrastructure and public service improvements. No cumulative impacts resulting in considerable effects on the environment are anticipated.

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, or avifauna or their habitats within the project limits.

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, and installation of dust screens will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance, will be used during construction activities.

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

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 proposed elementary school site is not located within an environmentally sensitive area. In addition, the site is not located within a flood hazard or tsunami inundation area.

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

The proposed project will not affect scenic and open space resources and will not affect scenic view corridors.

13. **The Proposed Project 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 substantial or excessive within the context of the region's overall energy consumption.

Based on the foregoing findings, it is concluded that the proposed action is not anticipated to result in any significant impacts. Accordingly, this environmental assessment is being processed as a final Finding of No Significant Impact (FONSI).

Chapter IX

**List of Permits
and Approvals**

IX. LIST OF PERMITS AND APPROVALS

The following State and County permits and approvals are required for project implementation.

State of Hawaii Approvals

- a. Archaeological Mitigation Plan, State Department of Land and Natural Resources, State Historic Preservation Division

Land Use Approvals

- a. County Special Use Permit
- b. Project District Phase II Approval
- c. Project District Phase III Approval

Construction Permits (as applicable)

- a. Grading
- b. Community Noise Permit
- c. Building Permit

Chapter X

***Functional Analysis
Concept Development
(FACD) Study Process***

X. FUNCTIONAL ANALYSIS CONCEPT DEVELOPMENT (FACD) STUDY PROCESS

The State of Hawaii, Department of Education, in cooperation with Maui Lani Partners, set up six (6) sessions with community and professional stakeholder groups in the FACD study process.

The concept design team included the following community and professional representatives:

1. Cory Kimura, Project Coordinator, Maui Lani School LLC
2. Joe Farrell, Principal Architect, Architects Hawaii
3. Terry McFarland, Architect, Architects Hawaii
4. Nick Nichols, Facilities Planner, DOE
5. Donna Whitford, Complex Area Superintendent, DOE
6. Sue Nomura, Librarian, Wailuku Elementary School
7. Arlene Shinozuka, Tech Coordinator, Maui Waena Intermediate School
8. Lauren Shinozuka, Student
9. Dean Kawabata, Homeowner
10. Roger Yamooka, Administrative Support Services Manager, Maui District, DOE
11. Bruce Anderson, Maui District Officer, DOE
12. Lawrence Jōyo, Principal, Waihe'e School
13. Eve Green, Homeowner
14. April Pettit, SASA, Maui Waena Intermediate School
15. Leiane Paci, Maui Lani School LLC
16. Lillian Rivera, Parent Community Network Coordinator, DOE
17. Bernie San Nicholas, Special Ed. Resource Teacher, Maui District, DOE
18. Lee Hoxie, Principal, Maui Community School for Adults
19. Donald Brandenburg, Maui Lani School LLC
20. Linda Chun, Teacher (Gr. 2), Lihikai School

-
21. Sanford Beppu, Facilities and Support Services, Department of Education
 22. Rodney Goo, Safety, Department of Education
 23. Daijo Kaneshiro, Library Services, Department of Education
 24. Linda Kawachi, 5th Grade Teacher, Wailuku Elementary School
 25. Jamie Yap, Principal, Maui Waena Intermediate School
 26. Dayle Hanta, Teacher (Gr. K/1), Waihe'e School
 27. Kaipo Miller, Principal, Princess Nahienaena School
 28. Stephen Misialek, Business Support, Maui District DOE
 29. Leila Hayashida, Teacher, Waihe'e School
 30. Charlene Yashiro, Counselor, Waihe'e School
 31. Lawrence Paranada, Homeowner
 32. Jon Kimoto, Counselor, Lihikai School
 33. Lyla Berg, Facilitator, Lyla Berg & Associates

The FACD meeting schedule and meeting objectives are presented in Table 2. The outcome of the FACD process helped to define the school's functional requirements and conceptual design. See Appendix I. The following main issues were raised during the FACD sessions.

Table 2

FACD SCHEDULE AND OBJECTIVES	
Date/Place	Activity
Tuesday, April 9, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Opening Session: Introductions • FACD process and outcomes • Articulation of preliminary educational plan • Presentation of sample baseline schematic drawings
Tuesday, April 16, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Site visitation • Site design work session Team creates spatial relationships Review and comment on architect options
Tuesday, April 23, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Site design work session • Comments on site plan to refine options and reach agreements
Tuesday, April 29, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Finalize site plan design • Building concept design work session
Tuesday, May 9, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Presentation of refined building concept designs • Comments on building concept designs
Tuesday, May 21, 2002 Maui Lani Clubhouse	<ul style="list-style-type: none"> • Presentation of ultimate site plan and building designs • Comments and approval sign-off

1. On-site traffic flow to provide more area for student pick-up and drop-off;
2. On-site parking to accommodate staff parking and visitor parking for community events;
3. Accessibility of school counselors to students and in close proximity to classrooms;
4. Location and grouping of classrooms;
5. Location of administration building and cafeteria to be easily visible, accessible and provide safety and security to the school grounds; and
6. Community use of facilities and accessibility to buildings.

Through the successful FACD process, the proposed Maui Lani Elementary School reflects a conceptual development plan that can serve the diverse learning needs of students, parents, community members, community agencies/organizations and business partners.

Chapter XI

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

XI. 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 any necessary 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. William Lennan
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. David Blane, Director
State of Hawaii
Office of Planning
Department of Business, Economic,
Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804
5. Patricia Hamamoto, Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804
6. Denis Lau, Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814
7. Herbert Matsubayashi
District Environmental Health
Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793
8. Gilbert Coloma-Agaran, Chairperson
State of Hawaii
Department of Land and Natural
Resources
P. O. Box 621
Honolulu, Hawaii 96809
9. Don Hibbard
State of Hawaii
Department of Land and Natural
Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707
10. Brian Minaai, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

-
11. Fred Cajigal, Maui District Engineer
State of Hawaii
**Department of Transportation
Highways Division**
650 Palapala Drive
Kahului, Hawaii 96732
12. Clayton Ishikawa, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732
13. Floyd Miyazono, Director
County of Maui
**Department of Parks and
Recreation**
1580 C. Kaahumanu Avenue
Wailuku, Hawaii 96793
14. John Min, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793
15. Tom Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793
16. David Goode, Director
County of Maui
**Department of Public Works
and Waste Management**
200 South High Street
Wailuku, Hawaii 96793
17. Alice Lee, Director
**Department of Housing and
Human Concerns**
200 South High Street
Wailuku, Hawaii 96793
18. David Craddick, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793
19. Maui Electric Company Ltd.
P.O. Box 398
Kahului, Hawaii 96732
20. Glenn M. Okimoto, Comptroller
Department of Accounting and
General Services
P.O. Box 119
Honolulu, Hawaii 96810

MAR 08 2002



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

REPLY TO
ATTENTION OF

March 6, 2002

Regulatory Branch

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

This letter responds to your request for comments on the project summary for the Maui Lani Elemenatary School, dated March 1, 2002. 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 information in the document concerning the presence or absence of streams or wetlands on the project site.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200200230.

Sincerely,

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

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



March 25, 2002

Mr. George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858-5440

SUBJECT: Proposed Maui Lani Elementary School Early Consultation

Dear Mr. Young

Thank you for your letter of March 6, 2002.

We acknowledge your comment in regards to the provision of information concerning the presence or absence of streams or wetlands on the project site and will provide this information in the Draft EA. A copy of the Draft EA will be provided to your Department for review and comment.

Thank you again for the early response provided by the Department of the Army.

Very truly yours,

A handwritten signature in black ink, appearing to read "Mich Hirano", with a long horizontal flourish extending to the right.

Mich Hirano, AICP

MH:sa
cc: Leiane Goo, Maui Lani Partners
maui.laniland.useagency 002



MAR 19 2002

GLENN M. OKIMOTO
COMPTROLLER
MARY ALICE EVANS
DEPUTY COMPTROLLER

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. PWD02.P153

MAR 18 2002

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Hirano:

Subject: Maui Lani Elementary School
Early Consultation for Draft Environmental Assessment

Thank you for this opportunity to provide early input on the Environmental Assessment (EA) for the proposed Maui Lani Elementary School. The Department of Accounting and General Services does not have any comments at this time due to insufficient information for this project.

We look forward to reviewing your Draft EA .

Should you have any questions or require further assistance, please call me at 586-0400 or have your staff contact Mr. Ralph Morita of the Public Works Division at 586-0486.

Very truly yours,

GLENN M. OKIMOTO
State Comptroller

c: Mr. Raynor Minami, DOE Facilities and Support Services Branch



March 25, 2002

Mr. Glenn M. Okimoto
State Comptroller
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

SUBJECT: Proposed Maui Lani Elementary School Early Consultation

Dear Mr. Okimoto:

Thank you for your letter of March 18, 2002.

We acknowledge your response and have noted the contacts provided should we need further assistance on this matter from your Department.

A copy of the Draft EA will be provided to your Department for review and comment.

Thank you again for your response to our request for early consultation.

Very truly yours,

A handwritten signature in black ink, appearing to read "M. Hirano", followed by a horizontal line.

Mich Hirano, AICP

MH:sa
cc: Leiane Goo, Maui Lani Partners
mauilani@indususe.agency 003

BENJAMIN J. CAYETANO
GOVERNOR



MAR 25 2002

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

March 27, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Hirano:

Subject: Maui Lani Elementary School
Environmental Assessment Pre-Consultation

The Department of Education offers the following comment on the subject pre-consultation:

The environmental assessment should include as much detail as is available on the layout of the school campus. If there are going to be issues raised regarding access, views, etc., we want to be aware of them early in the planning process to avoid delays during design and construction.

Thank you for the opportunity to respond. If you have any questions, please call Mr. Sanford Beppu of the Facilities and Support Services Branch at 733-4862.

Very truly yours,

A handwritten signature in cursive script that reads "Patricia Hamamoto".

Patricia Hamamoto
Superintendent

PH:hy

cc: A. Suga, OBS



May 8, 2002

Patricia Hamamoto, Superintendent
Department of Education
State of Hawaii
P. O. Box 2360
Honolulu, Hawaii 96804

SUBJECT: Proposed Maui Lani Elementary School
Environmental Assessment Early Consultation

Dear Ms. Hamamoto:

Thank you very much for your letter of March 27, 2002 and the comment provided therein.

We acknowledge your comment to provide as much details as is available on the site plan and the conceptual building design so that potential issues may be identified early in the planning process.

We have also forwarded your letter to Architects Hawaii, the project architect so that they are aware of your Department's comments.

Very truly yours,

Mich Hirano, AICP

MH:lfm

cc: Leiane Goo, Maui Lani Partners
Joseph Farrell, AIA, Architects Hawaii
Sanford Beppu, Facilities and Support Services, Department of Education

maulani\ndususe\doe.ltr

MAR 18 2002

BENJAMIN J. CAYETANO
GOVERNOR



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

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

In reply, please refer to:
EMD / CWB

03PKP045.02

March 18, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: **Maui Lani Elementary School**

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and has the following comments:

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for any future project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.
2. If any future construction project involves any of the following discharges into State waters, a National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each type of discharge:
 - a. Storm water runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale.

Note: After March 10, 2003, an NPDES permit will be required for discharges of storm water associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more.

- b. Hydrotesting water; and

MAR 18 2002

BENJAMIN J. CAYETANO
GOVERNOR



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

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

In reply, please refer to:
EMD / CWB

03PKP045.02

March 18, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: **Maui Lani Elementary School**

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and has the following comments:

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for any future project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.
2. If any future construction project involves any of the following discharges into State waters, a National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each type of discharge:
 - a. Storm water runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale.

Note: After March 10, 2003, an NPDES permit will be required for discharges of storm water associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more.

- b. Hydrotesting water; and

Mr. Mich Hirano
March 18, 2002
Page 2

c. Construction dewatering effluent.

Notices of Intent (NOI) for NPDES general permit coverages should be submitted at least 30 days before the discharge is to occur. NOI forms can be downloaded from the CWB website at <http://www.state.hi.us/doh/eh/cwb/forms/index.html>.

Should you have any questions, please contact Ms. Kris Poentis of the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:cu



May 8, 2002

Dennis R. Lau, P.E., Chief
Clean Water Branch
State Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

**SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation**

Dear Mr. Lau:

Thank you for your letter dated March 18, 2002 on the above subject.

We acknowledge your comments and will contact the Army Corps of Engineers to identify whether a Federal permit will be required for the proposed project. A copy of the Draft Environmental Assessment will be forwarded to the Department of the Army for review and comment.

We also acknowledge your comments regarding storm water runoff associated with construction activities that result in the disturbance of equal to or greater than five acres of land area. Further coordination will be carried out with the Department of Health to determine if a National Pollutant Discharge Elimination System (NPDES) permit will be required for the proposed project.

Again thank you for your Department's comments.

Yours very truly,

Mich Hirano, AICP

MH:to
cc: Leiane Goo, Maui Lani Partners
mauilani/indususe/school/dohltr.001

BENJAMIN J. CAYETANO
GOVERNOR



MAR 25 2002

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

LORRIN W. PANG, M.D., M.P.H.
MAUI DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

March 22, 2002

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Hirano:

Subject: Maui Lani Elementary School

Thank you for the opportunity to participate in the environmental assessment early consultation process for the proposed Maui Lani Elementary School. The following comments are offered:

1. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.
2. HAR, Chapter 11-46 sets maximum allowable sound levels from stationary equipment such as compressors and HVAC equipment. The attenuation of noise from these sources may depend on the location and placement of these types of equipment. This should be taken into consideration during the planning, design, and construction of the building and installation of these types of equipment.

Should you have any questions, please call me at 984-8230.

Sincerely,

A handwritten signature in black ink, appearing to read "Herbert S. Matsubayashi".

Herbert S. Matsubayashi
District Environmental Health Program Chief

c: Lance Tauoa



May 8, 2002

Herbert S. Matsubayashi
District Environmental Health
Program Chief
Department of Health
Maui District Health Office
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Maui Lani Elementary School

Dear Mr. Matsubayashi:

Thank you for your letter of March 22, 2002 in response to the early consultation letter for the above project.

We acknowledge your comment regarding a noise permit which may be required prior to construction and have forwarded a copy of your Department's letter to the project architects for their consideration.

We also note your comment with respect to sound levels from stationary equipment and have also informed the project architects to consider this factor in the planning, design and construction of the proposed school facilities.

Thank you again for your Department's early comments on the proposed project.

Very truly yours,

Mich Hirano, AICP

MH:lfm

cc: Leiane Goo, Maui Lani Partners
Joseph Farrell, AIA, Architects Hawaii

maulani/indususe@dohmaui.hi

APR 05 2002



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

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

April 3, 2002

LD-NAV
L-1294/1614
MAUILANIEELESCHOOL.RCM2

Munekiyo and Hiraga, Inc.
Mich Hirano, AICP
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: Review: Pre-Consultation for the Preparation of a Draft
Environmental Assessment
Applicant: Maui Lani Partners
Project Name: Maui Lani Elementary School
Consultant: Munekiyo and Hiraga, Inc. (Mich Hirano)
Location: Wailuku-Kahului Project District 1

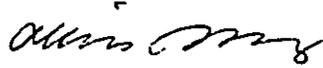
This is a follow-up to our letter to you (MAUILANIEELESCHOOL.RCM)
dated April 1, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Commission on Water Resource
Management comments.

The Department of Land and Natural Resources has no other comment
to offer on the subject matter at this time.

Should you have any questions, please contact Nicholas A. Vaccaro
of the Land Division Support Services Branch at (808) 587-0438.

Very truly yours,


DIERDRE S. MAMIYA
Administrator

C: Maui District Land Office

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



RECEIVED
LAND DIVISION

BRUCE S. ANDERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT &
P.O. BOX 621
HONOLULU, HAWAII 96809
March 20, 2002

2002 MAR 20 P 3:20

TO: Mr. Harry Yada, Acting Administrator
Land Division

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

SUBJECT: Maui Lani Elementary School Draft EA Pre-Consultation

FILE NO.: MAUILANIELESCHOOL.COM

A handwritten signature in black ink, appearing to read "Linnel T. Nishioka".

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:

The aquifer that serves as the water supply source for this project 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 ground-water 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.



May 8, 2002

Dierdre S. Mamiya, Administrator
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

**SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation**

Dear Ms. Mamiya:

Thank you very much for your letter of April 3, 2002 and the comments provided by the Commission on Water Resource Management on the above subject.

We acknowledge your recommendation for coordination with the County of Maui to incorporate the proposed project into the County's Water Use and Development Plan. In this regard, we have contacted the County of Maui Department of Water Supply for comments on the proposed project during the early consultation phase of the environmental assessment. We will also provide the Department of Water Supply with a Draft of the Environmental Assessment for review and comment during the 30-day comment period.

We also acknowledge your comments regarding the possible designation of the aquifer as a water management area and will work closely with the Department of Water Supply to ensure proper coordination will be carried out during project development.

Dierdre S. Mamiya, Administrator
May 7, 2002
Page 2

Again, thank you very much for your Department's comments on the proposed project.

Very truly yours,



Mich Hirano, AICP

MH:to
cc: Leiane Goo, Maui Lani Partners
maulani/indususe/school/dlnrtr.002

APR 03 2002



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 821
HONOLULU, HAWAII 96808
April 1, 2002

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

LD-NAV
MAUILANIEELESCHOOL.RCM

L-1294/1511/1534

Munekiyo and Hiraga, Inc.
Mich Hirano, AICP
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: Review: Pre-Consultation for the Preparation of a Draft
Environmental Assessment
Applicant: Maui Lani Partners
Project Name: Maui Lani Elementary School
Consultant: Munekiyo and Hiraga, Inc. (Mich Hirano)
Location: Wailuku-Kahului Project District 1

Thank you for your letter dated March 1, 2002, pertaining to the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division transmitted a copy of your letter covering the proposed project to the following DLNR Divisions for their review and comment:

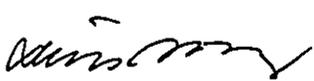
- Division of Forestry & Wildlife
- Division of State Parks
- Historic Preservation Division
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Engineering Branch
- Land Division Maui District Land Office

Attached herewith is a copy of the Land Division Engineering Branch comment.

The Department of Land and Natural Resources has no other comment to offer at this time. Please provide to us four (4) copies of the Draft Environment Assessment when they become available.

Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at (808) 587-0438.

Very truly yours,


DIERDRE S. MAMIYA
Administrator

C: Maui District Land Office

DLNR-LAND DIVISION
ENGINEERING BRANCH

COMMENTS

LD-NAV/LOG1294

Ref.: MAUILANIELESCHOOL.COM

COMMENTS

For your information, the project site, according to FEMA Community Panel Number 150003 0190 D (Dated March 16, 1995), is located in Zone C (No Shading). This is an area of minimal flooding.

The Draft Environmental Assessment should include project water demand and infrastructure required to meet water demands.



May 8, 2002

Dierdre S. Mamiya, Administrator
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation

Dear Ms. Mamiya:

Thank you very much for your letter of April 1, 2002 providing comments by the Land Division Engineering Branch on the above subject.

We acknowledge your comment regarding assessment of project water demand and infrastructure to meet water demands and will include this assessment in the Draft Environmental Assessment.

As requested, we will forward four (4) copies of the Draft Environmental Assessment for your review.

Thank you again for your Department's comments.

Very truly yours,

Mich Hirano, AICP

MH:to

cc: Leiane Goo, Maui Lani Partners

mauilan/indususe/school/dlnrtr.001

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUIHEWA BUILDING, ROOM 555
801 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

APR 08 2002

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNELL NISHIOKA

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

April 2, 2002

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 29528 ✓
DOC NO: 0203CD39

Dear Mr. Hirano,

**SUBJECT: Chapter 6E-42 Historic Preservation Review Pertaining to the Information Request for the Proposed Maui Lani Elementary School
Wailuku Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-8-007:131**

Thank you for the opportunity to review and comment on the information request pertaining to the proposed Maui Lani Elementary School, which was received by this office on March 4, 2002. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject parcel.

Based on the submitted information request, we understand Maui Lani Partners proposes to the development of an elementary school on the currently undeveloped 13.49 acres site.

We have previously reviewed and commented on the Preliminary Plat Review for the Proposed Maui Lani – Phase 7/Increment 1 Subdivision (SHPD DOC NO.: 0203CD05/LOG NO.: 29329). As the proposed project appears to be in this same area, our previous comments, which are restated below, still apply.

A search of our records indicates the proposed project area has not undergone an archaeological inventory survey. Although this area has been subject to previous disturbance as a result of modern commercial agriculture (Pantaleo & Sinoto 1996), the USDA Soil Survey indicates this area is located in the Pu`uone Sand Dune, which is known to contain both isolated and clusters of pre-Contact human burials. Recent on-going archaeological work conducted in this area suggests that it is likely that significant historic sites (and site remnants) may be present beneath the till zone.

Because of the potential of human burials to be present beneath the till-zone, we recommend that no action be taken on the proposed undertaking until an archaeological inventory survey, to be conducted in the form of subsurface testing, has been conducted of the proposed project area. An acceptable report documenting the findings of the inventory survey will need to be submitted to this office for review.

Mr. Mich Hirano
Page 2

Given the high level of cultural sensitivity, based on the presence of numerous known burials in the Maui Lani project area, we also recommend an archaeological monitor be present during all construction/development related ground disturbing activities conducted in association with the proposed subdivision. An acceptable monitoring plan is currently in place for the Maui Lani projects, and this plan and its stipulated directives can still be used for this project.

In addition, given the extent of the Maui Lani Project and the archaeological monitoring reports associated with this project which are still outstanding, we request the following condition be attached to the subject subdivision permit application, should it be approved:

The archaeological consultants will establish a report schedule, in consultation with this office, which will establish an acceptable time frame for the submittal of all of the outstanding archaeological monitoring reports, associated with the Maui Lani Project, to the State Historic Preservation Office for review and acceptance.

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

Aloha,



Don Hibbard, Administrator
State Historic Preservation Division

CD:jen



May 8, 2002

Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
Room 555, 601 Kamokila Boulevard
Kapolei, Hawaii 96707

**SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation**

Dear Mr. Hibbard:

Thank you for your letter of April 8, 2002 and the comments provided by the State Historic Preservation Division (SHPD) on the above subject.

We acknowledge your comments regarding a need for an archaeological inventory survey in the form of subsurface testing of the proposed project area prior to undertaking any action on the proposed project. We understand "action" to mean ground altering activities. We further confirm that an acceptable report documenting the findings of the inventory survey will be submitted to the SHPD for review and comment prior to any ground altering activity on the proposed project.

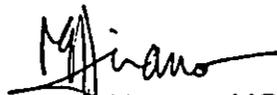
We acknowledge your comments regarding the current monitoring plan which is still in place for development within the Maui Lani Project District. We also confirm the SHPD's recommendation that an archaeological monitor be present during all construction/development related ground disturbing activities. In this regard, we have forwarded your letter to the project architects so that they may incorporate the requirement for archaeological monitoring during construction related ground disturbing activities in the construction specifications documents.

We acknowledge your comments regarding a report schedule for the outstanding archaeological monitoring reports. In this regard, we have forwarded a copy of your letter to Maui Lani Partners so they may coordinate with your office and the project archaeologist to provide an acceptable report schedule.

Don Hibbard, Administrator
May 8, 2002
Page 2

Again, thank you very much for your comments.

Very truly yours,


Mich Hirano, AICP

MH:to
cc: Leiane Goo, Maui Lani Partners
maui.lan/school/shpdtr.001

BENJAMIN J. CAYETANO
GOVERNOR



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

MAR 19 2002

BRIAN K. MINAAI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSHITA
JADINE Y. URASAKI

IN REPLY REFER TO:

HWY-PS
2.5970

Ms. Mich Hirano, AICP
Munekiyo & Hirano, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hirano:

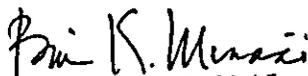
Subject: Maui Lani Elementary School, EA Consultation Phase

Thank you for your letter of March 1, 2002, requesting our review and comments regarding the proposed Maui Lani Elementary School. We have the following comments:

1. A traffic Impact Analysis Traffic (TIAR), should be prepared and submitted to us for our review and comments.
2. The report should evaluate project impacts on our State highway facilities (especially at the Maui Lani Parkway/Kuihelani Highway Intersection) and discuss appropriate roadway mitigation measures.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,


BRIAN K. MINAAI
Director of Transportation



May 8, 2002

Brian K. Minaai, Director
State Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

**SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation**

Dear Mr. Minaai:

Thank you for your letter of March 19, 2002 on the above subject.

The traffic engineer will be conducting a traffic impact analysis to address the impacts that development within the Maui Lani Project District will have on State Highways' facilities. As appropriate, roadway mitigation measures will be identified in the traffic impact analysis and incorporated in the Draft EA.

A copy of the Draft EA and traffic impact analysis report will be provided to your Department for review and comment.

Thank you again for the early input provided by the Department of Transportation.

Very truly yours,

Mich Hirano, AICP

MH:to

cc: Leiane Goo, Maui Lani Partners

Wayne Yoshioka, Parsons Brinckerhoff Quade & Douglas

mauiianindususeagency.004

Environment

BENJAMIN J. CAYETANO
GOVERNOR



**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

MAR 15 2002

BRIAN K. MINAII
DIRECTOR

DEPUTY DIRECTORS
JADINE Y. URASAKI
Jean L. Oshita

IN REPLY REFER TO:

HWY-M2.068-01

March 13, 2002

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

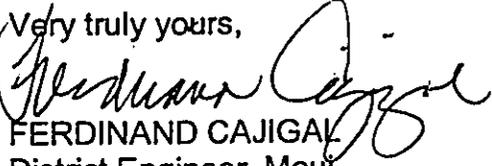
Dear Mr. Hirano:

Subject: Maui Lani Elementary School
ME 02-12
Kahului, Maui, Hawaii

Thank you for giving us the opportunity to review and comment on the proposed development. Based on our review of the proposed project, a Traffic Impact Analysis Report will be required to determine if there will be any impacts to our facilities.

If there are any questions or concerns, please call Paul M. Chung at 873-3535.

Very truly yours,


FERDINAND CAJIGAL
District Engineer, Maui

/pmc

MUNEKIYO HIRAGA, INC.

March 25, 2002

Mr. Ferdinand Cajigal
District Engineer, Maui Division
State Department of Transportation, Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

SUBJECT: Proposed Maui Lani Elementary School

Dear Mr. Cajigal:

Thank you for your letter of March 13, 2002 on the above subject.

The traffic engineer will be conducting a traffic impact analysis to address the impacts that development within the Maui Lani Project District will have on State Highways' facilities.

A copy of the Draft EA and traffic impact analysis report will be provided to your Department for review and comment.

Thank you again for the early input provided by the Department of Transportation.

Very truly yours,



Mich Hirano, AICP

MH:sa

cc: Leiane Goo, Maui Lani Partners

Wayne Yoshioka, Parsons Brinckerhoff Quade & Douglas (SIG R.011)

maui.lani.industry.agency.004



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

MAR 14 2002

JAMES "KIMO" APANA
Mayor

ALICE L. LEE
Director

PRISCILLA P. MIKELL
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

March 7, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: MAUI LANI ELEMENTARY SCHOOL

We have reviewed your March 1, 2002 letter and attachments
and have no comment to offer.

Thank you for the opportunity to comment.

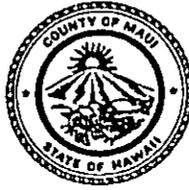
Very truly yours,

ALICE L. LEE
Director

ETO:hs

c: Housing Administrator

JAMES "KIMO" APANA
Mayor



MAR 25 2002

FLOYD S. MIYAZONO
Director

GLENN T. CORREA
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION
1580-C Kaahumanu Avenue, Wailuku, Hawaii 96793

March 19, 2002

Mich Hirano, AICP
Munekiyo Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

RE: Maui Lani Elementary School

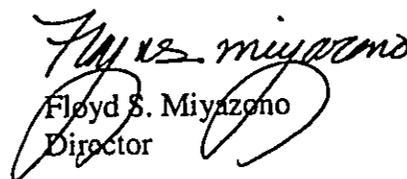
Dear Mr. Hirano:

Thank you for the opportunity to review and provide early comment on the proposed elementary school project.

At this time we have no comment to offer concerning this matter. We may have comments or questions upon review of the Draft Environmental Assessment.

Should you have any questions or need of other information, please call me, or Patrick Matsui, Chief of Parks Planning & Development at 808-270-7931.

Sincerely,

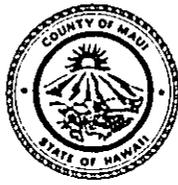

Floyd S. Miyazono
Director

Quality Seamless Service – Now and for the Future

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director



MAR 19 2002

COUNTY OF MAUI
DEPARTMENT OF PLANNING

March 15, 2002

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

RE: Preliminary Comments on a Draft Environmental Assessment (EA)
for the Proposed Maui Lani Elementary School, TMK 3-8-007:131
(por. of), Kahului, Maui, Hawaii

We have reviewed the above-referenced project and have the following comments:

1. The Wailuku-Kahului Community Plan identifies the subject site as part of the Maui Lani Project District on the land use map. In addition to the land use map there are several goals, policies and objectives in the Community Plan which shall be addressed in the Draft EA.
2. Title 19, Chapter 19.78, Section 19.78.060, Maui County Code (MCC), attaches the enclosed Exhibit A Maui Lani Land Use Map (Map) in the Project District Ordinance. Said Map identifies a five acre undeveloped school/park site and an 8 acre undeveloped school site in different locations as the proposed elementary school site. Further, the new 13.49 acre school site is currently identified on the Map as a portion of the 19 acre Single Family, portion of the 4 acre Multi-family and a portion of the 7.8 acre Park/Recreation Center lots. It is further noted that the 12 acre Maui Waena Intermediate School lot is part of the Maui Lani Project District.

Pursuant to Chapter 19.78, "elementary schools" are identified as

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

Quality Seamless Service - Now and for the Future

a special use in the single family and multi-family sub-districts. In the Recreation/facilities sub-district "schools" are identified as a permitted use. Although the proposed school site is not the designated school site on the Map, the sub-districts within the Maui Lani Project Districts makes provisions for elementary schools as a special or permitted use. A County Special Use Permit will be required for the establishment of the proposed elementary school site within the residential and multi-family sub-districts.

3. An amendment of Chapter 19.78, Section 19.78.060, Exhibit A Maui Lani Land Use Map is not required in order to develop the proposed school site since the existing sub-districts make provisions for the proposed use. However, it is advisable that the Map be revised at a later date to reflect the proposed changes to the school sites and to make provision for additional area to accommodate the loss of acreage for the park/recreation center.

Although the Map was attached to Chapter 19.78 of the Maui County Code, this is not the current practice in establishing the project district ordinance. The Maui Lani Project District is an exception to the normal practice. The attachment of the Map in Title 19, Chapter 19.78, MCC, removes any flexibility in proposing site changes to the project district since an amendment of MCC is required for each land use change. This is in direct conflict with the purpose and intent of a project district development which is to "provide for a flexible and creative planning approach rather than specific land use designations, for quality developments."

4. We concur that a concurrent application for Project District Phase II amendment is required to amend the approved preliminary site plan to reflect the proposed changes. The current project district identifies the Maui Lani Parkway connector roadway between Kaahumanu Avenue and Kuihelani Highway and the future connection to Kuikahi Drive and Honoapiilani Highway. Of concern is these improvements have not been completed while the project district continues to be developed. Development of the new school site will also add to the traffic in the area and impact the existing roadways primarily Kamehameha Avenue and Papa

Mr. Mich Hirano
March 15, 2002
Page 3

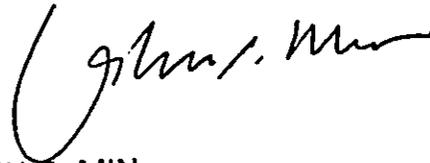
Avenue. These concerns should be addressed in the draft EA.

After Phase II Project District Approval is granted by the Maui Planning Commission, the development will require a Project District Phase III approval of the final site plan from the Maui Planning Department.

5. Although the 12 acre site for Maui Waena Intermediate School was included in the original project district in 1990 the population in the Wailuku-Kahului area has changed. The Draft EA should include potential impacts an additional elementary school in the Wailuku-Kahului area will have on both middle and high school facilities in the area.

Thank you for the opportunity to comment. If additional clarification is required, please contact Ms. Colleen M. Suyama, Staff Planner, of this office at 270-7735.

Very truly yours,

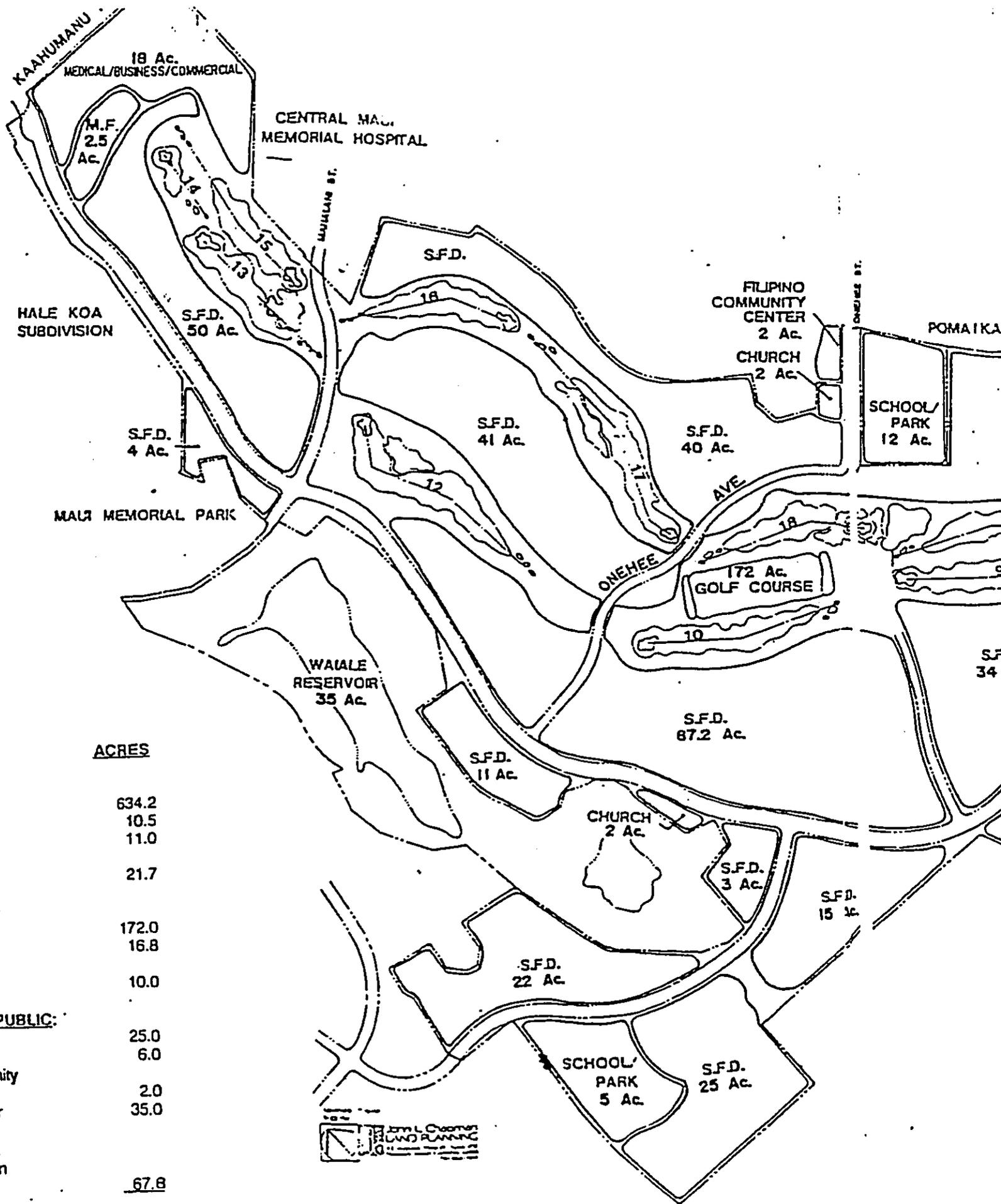


JOHN E. MIN
Planning Director

JEM:CMS:tlm

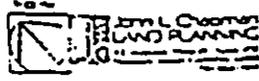
Enclosure

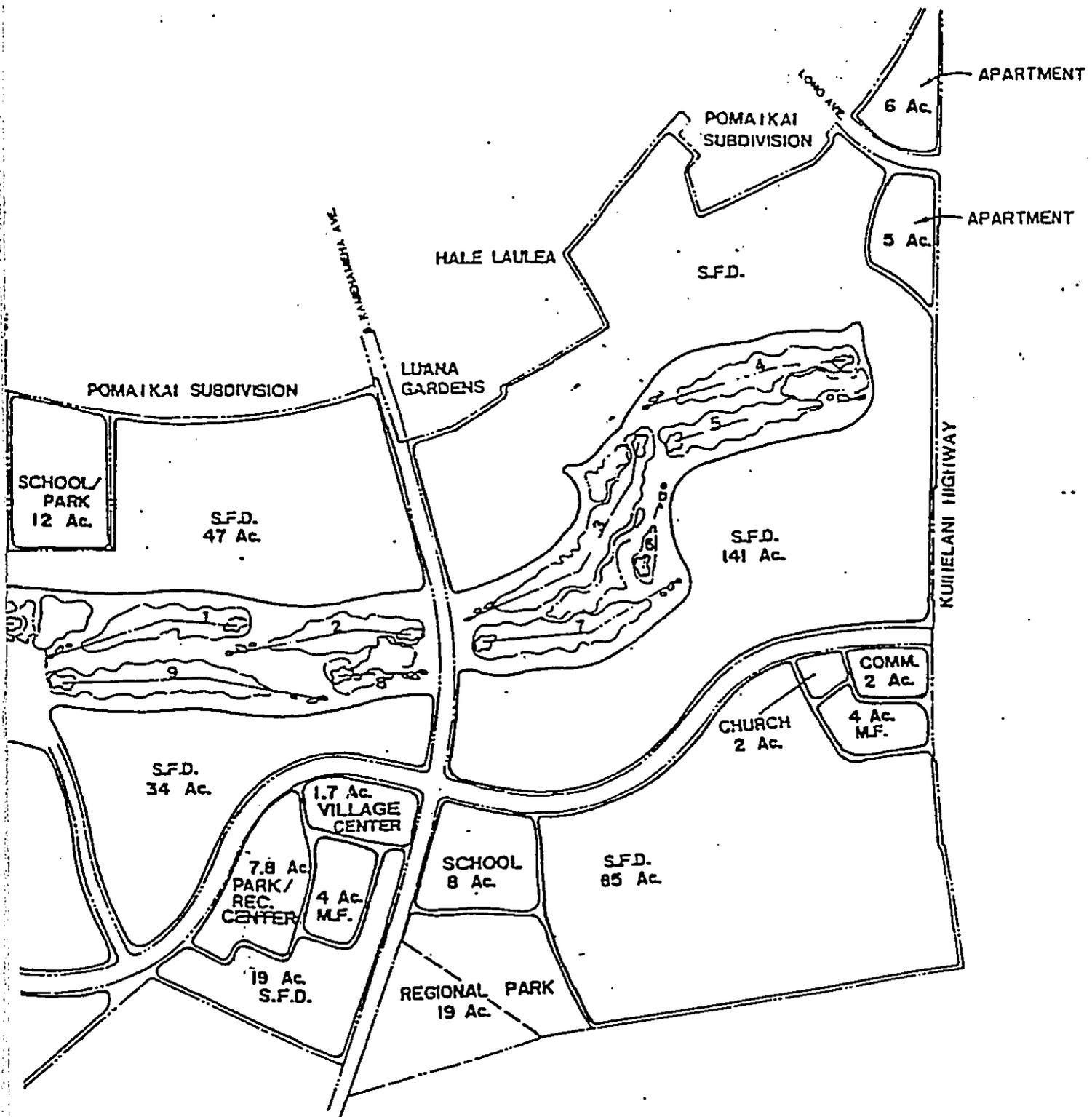
c: Clayton I. Yoshida, AICP, Deputy Planning Director
Colleen M. Suyama, Staff Planner
Ann T. Cua, Staff Planner
Project Folder
General File
(S:\ALL\COLLEEN\MauiLaniSchoolPreIEA.wpd)



**MAUI LANI
LAND USE PLAN**

USE	ACRES
RESIDENTIAL:	
Single Family	634.2
Condominiums	10.5
Apartments	11.0
COMMERCIAL:	
	21.7
RECREATIONAL:	
Golf Course	172.0
Parks	16.8
Additional Park Area	10.0
PUBLIC/QUASI-PUBLIC:	
School/Park	25.0
Church Sites	6.0
Filipino Community Center	2.0
Waiale Reservoir	35.0
MAJOR ROADS:	
Circulation/Open Space	67.8
TOTAL	1012.0 Acres





REV. SEPT. 4, 1990
 REV. AUGUST 8, 1990
 AUGUST 3, 1990

02/1290



'02 MAR -4 P2:39

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

March 1, 2002

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

SUBJECT: Maui Lani Elementary School

Dear Mr. Min:

Maui Lani Partners proposes as part of the Wailuku-Kahului Project District 1 (Maui Lani) the development of an elementary school for Kindergarten to Grade 5 for a projected enrollment of 650 students. The 13.49-acre project site is currently undeveloped. The underlying lands are zoned Residential PD-WK/1 and designated for single- and multi-family use in the Wailuku-Kahului Community Plan. Elementary schools are a permitted use in the Residential district subject to the approval of the County of Maui Planning Commission. An application will be made to the Maui Planning Commission for a County Special Use Permit to develop an elementary school in a residential district. A concurrent application will also be made to the Maui Planning Commission for a Project District Phase II approval for the proposed project.

A project location map and infrastructure servicing plan for the proposed elementary school are attached for your reference. See Figure 1 and Figure 2. The proposed action involves the development of elementary educational facilities to include approximately 35 classrooms, a library facility, administration facility, cafetorium, covered playground, outdoor recreational facilities, a bus shelter, student drop off, and on-site parking. It is estimated that the total gross educational facility building area will be approximately 100,000 square feet. Access into the proposed elementary school site will be provided off of the westerly extension of Kamehameha Avenue. Site planning and building design will evolve through a collaborative process incorporating input from State and community educational stakeholders.

The proposed project is intended to accommodate the demand for elementary school facilities resulting from the residential development within the Maui Lani Project District, as well as relieve growth in future student enrollment at Kahului and Lihikai Elementary Schools.

environment
planning

John Min, Director
March 1, 2002
Page 2

Inasmuch as the proposed school will be utilized by the State Department of Education and will involve the commitment of State funds, an environmental assessment (EA), pursuant to Chapter 343, Hawaii Revised Statutes, will be prepared. As part of the EA early consultation process, we are, on behalf of Maui Lani Partners, seeking early input as part of the EA preparation process. In this regard, your written comments regarding the proposed action by March 21, 2002 will be very much appreciated. Comments received by this date will be incorporated in the Draft EA.

Please note that a copy of the Draft EA will be sent to you as part of the formal 30-day public comment period provided by Hawaii Administrative Rules, Title 11, Chapter 200.

If there are any questions or if additional information is needed regarding the project scope, please do not hesitate to call.

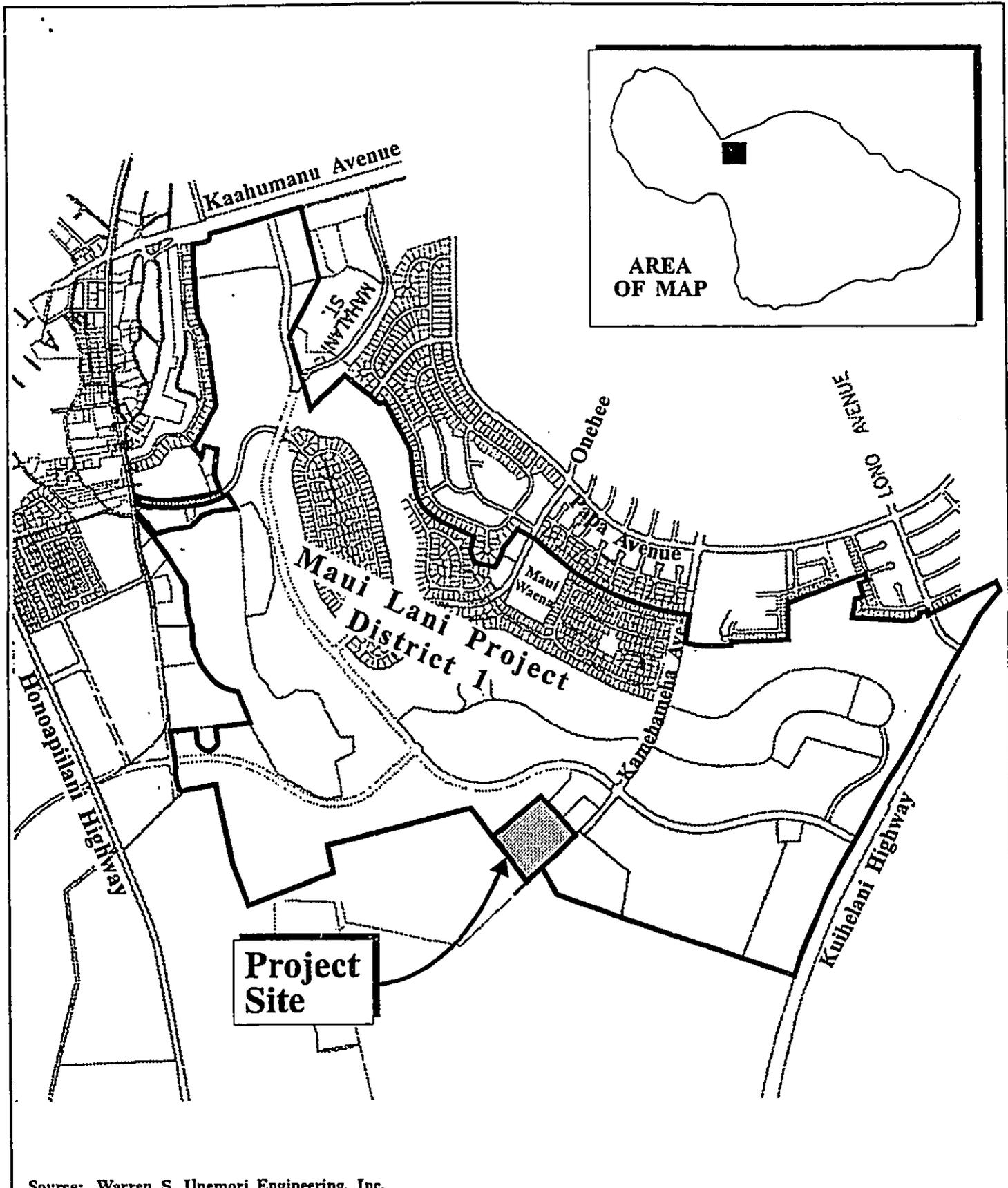
Very truly yours,



Mich Hirano, AICP

MH:to
Attachments

cc: Leiane Goo, Maui Lani Partners
mauilani/indususe/school/agency.tr



Source: Warren S. Unemori Engineering, Inc.

Figure 1 Maui Lani Elementary School
Project Site Location Map

NOT TO SCALE



Prepared for: Maui Lani Partners

MUNEKIYO & HIRAGA, INC.



March 25, 2002

Mr. John Min, Director
Department of Planning
2200 Main Street, Rm #335
Wailuku, Hawaii 96793

SUBJECT: Proposed Maui Lani Elementary School Early Consultation

Dear Mr. Min:

Thank you very much for your letter of March 15, 2002.

In response to your comments, we offer the following information.

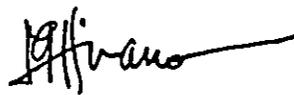
1. The goals, policies and objectives in the Wailuku-Kahului Community Plan will be addressed in the Draft Environmental Assessment (EA).
2. A concurrent application for a County Special Use Permit and a Project District Phase II amendment approval as per Chapter 19.45.050 Maui County Code will be submitted to the County of Maui Department of Planning for processing in order to establish the proposed elementary school site within the residential and multi-family subdistricts.
3. We acknowledge your comments regarding the need to revise the Maui Lani Land Use Map as per Chapter 19.78 of the Maui County Code to make provision for additional area to accommodate the loss of acreage for the park/recreation center. A request to amend Chapter 19.78 will be made under a separate application to address spatial allocation modifications to the Maui Lani Project District.
4. In reply to the comment regarding Project District Phase II amendment see Item 2, above. The phasing of roadway improvements within the Maui Lani Project District will be addressed in the Draft EA. The traffic engineer will be carrying out a traffic impact assessment report and as such your comments with respect to impacts on Kamehameha and Papa Avenues will be addressed in the Draft EA.
5. The Draft EA will include discussion on the potential impacts the proposed project will have on Maui Waena Intermediate School, Lihikai Elementary School and Kahului Elementary School.

Mr. John Min, Director
March 25, 2002
Page 2

A copy of the Draft EA will be included in the County Special Use Permit and Project District Phase II amendment application for your further review and comment.

Again, thank you for the early input provided by the Department of Planning.

Very truly yours,



Mich Hirano, AICP

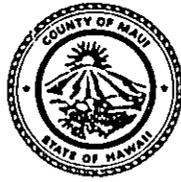
MH:sa

cc: Leiane Goo, Mau Lani Partners

Wayne Yoshioka, Parsons Brinckerhoff Quade & Douglas (w/yoshi)

maulaniindususeplanntr004

APR - 4 2002



**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 270-7816 • Fax (808) 270-7833**

March 13, 2002

Ms. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku HI 96793

RE: Maui Lani Elementary School

Dear Ms. Hirano:

Thank you for the opportunity to provide comments in preparation of the EA for this project. The Department of Water Supply provides the following information:

Fire flow and domestic calculations will be required during the building permit process so that system improvements and adequate meter sizing can be determined. DWS-approved fire flow calculation methods include: "Guide for Determination of Required Fire Flow - Insurance Services Office, 1974" and "Fire Flow" - Hawaii Insurance Bureau, 1991.

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 February 1, 2002 were 17.407 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. Two wells in North Waihee were brought on-line in July 1997 and another two adjacent wells were brought on-line during 2000. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. 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. The applicant is subject to the Central Maui Source Development Joint Venture (CMJV). Water requirements must be coordinated with DWS pursuant to the CMJV agreement.

We recommend that the following water conservation measures be included in the EA and implemented in project design and construction:

Utilize Non-Potable Water for irrigation and dust control during construction where feasible

Eliminate Single-Pass Cooling: Single-pass, water-cooled system 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.

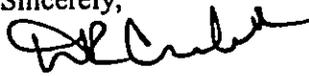
Use Climate-adapted Plants: The project is located in the "Maui County Planting Plan" - Plant Zone 3. We encourage the applicant to utilize appropriate native and non invasive species in landscaping. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species. Please refer to the attached brochure: "Saving Water In The Yard - What and 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. As an alternative, provide the more automated, soil-moisture sensors on controllers.

The project overlies the Kahului aquifer. The Department of Water Supply strives to protect the integrity of surface and groundwater resources by encouraging the applicant to adopt best management practices (BMPs) designed to minimize infiltration and runoff from all construction and vehicle operations. We have attached sample BMPs for principle operations for reference. Additional information can be obtained from the State Department of Health.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7199.

Sincerely,



David Craddick
Director
emb

c: engineering division

applicant, with attachments:

"The Costly Drip"

"Saving Water in the Yard-What and How to Plant in your Area"

A Checklist of Water Conservation Water Conservation Ideas for Schools and Public Buildings

Ordinance 2108 - An Ordinance Amending Chapter 16.20 of the Maui County Code, Pertaining to the Plumbing Code

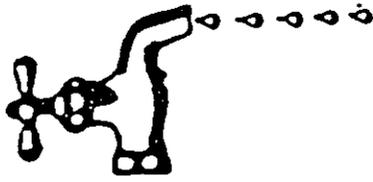
Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters

By Water All Things Find Life

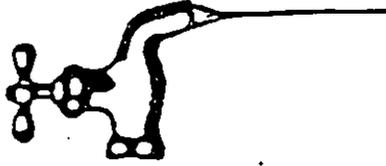
"THE COSTLY DRIP"



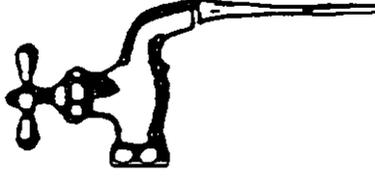
Slowly Dripping
Spigot Wastes
15 Gallons a day.



1/32" Leak Wastes
25 Gallons a day.



1/16" Stream Wastes
100 Gallons a Day.



1/8" Stream Wastes
400 Gallons a day.

Yellow

Zone 3

Zone-specific Native and Polynesian plants for Maui County

TYPE: F Fern G Grass Gr Ground Cover Sh Shrub P Palm S Sedge Tr Tree V Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
G	<i>Colubrina asiatica</i>	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	<i>Eragrostis monticola</i>	Kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Eragrostis variabilis</i>	'emo-foa	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Fimbristylis cymosa</i> ssp. <i>spalhacea</i>	mau'u'aki'aki fimbriatylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	<i>Boerhavia repens</i>	alena	0.5'	4'	sea to 1,000'	Dry to Medium
Gr	<i>Chamaesyce celastroides</i> var. <i>laevis</i>	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Cressa truxillensis</i>	cressa	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	<i>Heliotropium anomalum</i> var. <i>argenteum</i>	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium
Gr	<i>Ipomoea tuboides</i>	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	<i>Jacquemontia ovalifolia</i> ssp. <i>sandwicensis</i>	pa'u o hii'aka	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	<i>Lipochaeta integrifolia</i>	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	<i>Peperomia leptostachya</i>	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	<i>Plumbago zeylanica</i>	'ilie'e	1'			
Gr	<i>Sesuvium portulacastrum</i>	'akulikuli, sea-purslane	0.5'	2'	sea to 1,000'	Dry to Wet
Gr	<i>Sida fallax</i>	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Tephrosia purpurea</i> var. <i>purpurea</i>	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta rockii</i>	nehe	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta succulenta</i>	nehe	2'	5'	sea to 1,000'	Dry to Wet
Gr - Sh	<i>Lycium sandwicense</i>	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium
P	<i>Cocos nucifera</i>	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	<i>Pritchardia hillebrandii</i>	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	<i>Mariscus javanicus</i>	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium

Yellow

Zone 3

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	<i>Argemone glauca</i> var. <i>decipiens</i>	pua kela	3'	2'	sea to 3,000'	Dry to Medium
Sh	<i>Bidens mauiensis</i>	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium
Sh	<i>Bidens menziesii</i> ssp. <i>menziesii</i>	ko'oko'olau	1'	3'		
Sh	<i>Bidens micrantha</i> ssp. <i>micrantha</i>	ko'oko'olau	1'	3'		
Sh	<i>Chenopodium oahuense</i>	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	<i>Dianella sandwicensis</i>	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	<i>Gossypium tomentosum</i>	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium
Sh	<i>Hedyotis</i> spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	<i>Lipochaeta lavarum</i>	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Osteomeles anthylifolia</i>	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	<i>Scaevola sericea</i>	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	<i>Senna gaudichaudii</i>	Kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	<i>Solanum nelsonii</i>	'akia, beach solanum	3'	3'	sea to 1,000'	Dry to Medium
Sh	<i>Styphelia tameiameia</i>	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	<i>Vitex rotundifolia</i>	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	<i>Wikstroemia uva-ursi</i> <i>kauaiensis</i> <i>kauaiensis</i>	'akia, Moloakai osmanthus	8'	6'	sea to 1,000'	Dry to Medium
Sh - Tr	<i>Broussonetia papyrifera</i>	wauke, paper mulberry	10'	10'	sea to higher	Dry to Medium
Sh - Tr	<i>Myoporum sandwicense</i>	naio, false sandalwood	8'	8'	sea to 3,000'	Dry to Medium
Sh - Tr	<i>Notofrichium sandwicense</i>	kulu'i	6'	8'	sea to higher	Dry to Medium
Sh - Tr	<i>Dodonaea viscosa</i>	'a'ali'i	50'	50'	sea to 3,000'	Medium to Wet
Tr	<i>Aleurites moluccana</i>	candlenut, kukui	60'	40'	sea to 3,000'	Medium to Wet
Tr	<i>Calophyllum inophyllum</i>	kamani, alexandrian laurel	12'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Canthium odoratum</i>	Alaha'e, 'oha'e, waha'e	30'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Cordia subcordata</i>	KOU	12'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Diospyros sandwicensis</i>	lama	20'	20'	sea to 1,000'	Dry
Tr	<i>Erythrina sandwicensis</i>	wiliwili	25'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua				

YELLOW

Zone 3

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Morinda citrifolia	Indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Nesoluma polynesianum	keahi	15'	15'	sea to 3,00'	Dry
Tr	Nestegis sandwicensis	piohua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pandanus tectorius	hala, puhala (HALELISI)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Reynoldsia sandwicensis	'oho makai	20'	20'	1,000' to 3,000'	Dry
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
black wattle	Acacia mearnsii	Mimosaceae
blackberry	Rubus argutus	Rosaceae
blue gum	Eucalyptus globulus	Myrtaceae
boconia	Bocconia frutescens	Papaveraceae
broad-leaved cordia	Cordia alliodora	Boraginaceae
broomsedge, yellow bluestem	Andropogon virginicus	Poaceae
buffelgrass	Cenchrus ciliaris	Poaceae
butterfly bush, smoke bush	Buddleia madagascariensis	Buddleiaceae
cats claw, Mysore thorn, wait-a-bit	Caesalpinia decapetala	Caesalpinaceae
common ironwood	Casuarina equisetifolia	Casuarinaceae
common velvet grass, Yorkshire fog	Holcus lanatus	Poaceae
iddlewood	Cilicaryxylum spinosum	Verbenaceae
fire tree, faya tree	Myrica faya	Myricaceae
glorybower	Clerodendrum laponicum	Verbenaceae
hairy cat's ear, gosmore	Hypochoeris radicata	Asteraceae
haole koa	Leucaena leucocephala	Fabaceae
ivy gourd, scarlet-fruited gourd	Coccinia grandis	Cucurbitaceae
juniper berry	Cilicaryxylum caudatum	Verbenaceae
kahili flower	Grevillea banksii	Proteaceae
klu, popinac	Acacia farnesiana	Mimosaceae
logwood, bloodwood tree	Haematoxylon campechianum	Caesalpinaceae
loquat	Eriobotrya japonica	Rosaceae
meadow ricegrass	Ehrharia stipoides	Poaceae
melaleuca	Melaleuca quinquenervia	Myrtaceae
miconia velvet leaf	Miconia calvenscens	Melastomataceae
narrow-leaved carpetgrass	Axonopus fissifolius	Poaceae
oleaster	Elaeagnus umbellata	Elaeagnaceae
oriental mangrove	Bruguiera gymnorhiza	Rhizophoraceae
padang cassia	Cinnamomum burmannii	Lauraceae
palmgrass	Setaria palmifolia	Poaceae
pearl flower	Heterocentron subtripinervium	Melastomataceae
quinine tree	Cinchona pubescens	Rubiaceae
salin leaf, caimitillo	Chrysophyllum oliviforme	Sapotaceae
silkwood, Queensland maple	Flindersia brayleyana	Rutaceae
silky oak, silver oak	Grevillea robusta	Proteaceae
silawberry guava	Psidium cattleianum	Myrtaceae
swamp oak, saltmarsh, longleaf ironwood	Casuarina glauca	Casuarinaceae
sweet vernalgrass	Anthoxanthum odoratum	Poaceae
tree of heaven	Allanhus altissima	Simaroubaceae
trumpet tree, quarumo	Cecropia obtusifolia	Cecropiaceae
white ginger	Hedychium coronarium	Zingiberaceae
white moho	Heliocarpus popayanensis	Tiliaceae
yellow ginger	Hedychium flavescens	Zingiberaceae

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
	<i>Jasminum fluminense</i>	Oleaceae
	<i>Arthrostema ciliatum</i>	Melastomataceae
	<i>Dissois rotundifolia</i>	Melastomataceae
	<i>Erigeton karvinskianus</i>	Asteraceae
	<i>Eucalyptus robusta</i>	Myrtaceae
	<i>Hedychium gardnerianum</i>	Zingiberaceae
	<i>Juncus planifolius</i>	Juncaceae
	<i>Lophosolen confertus</i>	Myrtaceae
	<i>Medinilla cumingii</i>	Melastomataceae
	<i>Medinilla magnifica</i>	Melastomataceae
	<i>Medinilla venosa</i>	Melastomataceae
	<i>Melastoma candidum</i>	Melastomataceae
	<i>Melinis minutiflora</i>	Poaceae
	<i>Olea europaea</i>	Melastomataceae
	<i>Oxyspora paniculata</i>	Poaceae
	<i>Panicum maximum</i>	Poaceae
	<i>Paspalum urvillei</i>	Poaceae
	<i>Passiflora edulis</i>	Passifloraceae
	<i>Phormium tenax</i>	Agavaceae
	<i>Pinus taeda</i>	Pinaceae
	<i>Prosopis pallida</i>	Fabaceae
	<i>Pterolepis glomerata</i>	Melastomataceae
	<i>Rhodomyrtus tomentosa</i>	Myrtaceae
	<i>Schefflera acinophylla</i>	Araliaceae
	<i>Syzygium jambos</i>	Myrtaceae
	<i>Acacia melanoxylon</i>	Mimosaceae
Australian blackwood	<i>Cyathia cooperi</i>	Cyatheaceae
Australian tree fern	<i>Sphaeropteris cooperi</i>	Cyatheaceae
Australian tree fern	<i>Bidens pilosa</i>	Asteraceae
Beggar's tick, Spanish needle	<i>Bracharia mutica</i>	Poaceae
California grass	<i>Ficus microcarpa</i>	Moraceae
Chinese banyon, Maylayan banyon	<i>Asystasia gangetica</i>	Acanthaceae
Chinese violet	<i>Schinus terebinthifolius</i>	Anacardiaceae
Christmasberry, Brazilian pepper	<i>Acacia confusa</i>	Mimosaceae
Formosan koa	<i>Senecio mikanioides</i>	Asteraceae
German ivy	<i>Lonicera japonica</i>	Caprifoliaceae
Japanese honeysuckle	<i>Clidemia hirta</i>	Melastomataceae
Koster's curse	<i>Lantana camara</i>	Verbenaceae
Lantana	<i>Furcraea foetida</i>	Agavaceae
Mauritius hemp	<i>Fraxinus uhdei</i>	Oleaceae
Mexican ash, tropical ash	<i>Hunnemannia tumaritifolia</i>	Papaveraceae
Mexican tulip poppy	<i>Angiotesis evecla</i>	Marattiaceae
Mules foot, Madagascar tree fern	<i>Corynocarpus laevigatus</i>	Corynocarpaceae
New Zealand laurel, Karakaranul	<i>Lepospermum scoparium</i>	Myrtaceae
New Zealand tea	<i>Corfaderia jubata</i>	Poaceae
Pampas grass	<i>Castilleja elastica</i>	Moraceae
Panama rubber tree, Mexican rubber tree	<i>Ardisia elliptica</i>	Myrsinaceae
Shoebution ardisia	<i>Passiflora mollissima</i>	Passifloraceae
Banana poka		

Selection

As a general rule, it is best to select the largest and healthiest specimens. However, be sure to note that they are not pot-bound. Smaller, younger plants may result in a low rate of plant survival.¹ When selecting native species, consider the site they are to be planted in, and the space that you have to plant. For example: Mountain species such as koa and maile will not grow well in hot coastal areas exposed to strong ocean breezes. Lowland and coastal species such as wiliwili and Kou require abundant sunshine and porous soil. They will not grow well with frequent cloud cover, high rainfall and heavy soil.

Consider too, the size that the species will grow to be. It is not wise to plant trees that will grow too large.² Overplanting tends to be a big problem in the landscape due to the underestimation of a species' height, width or spread.

A large, dense canopied tree such as the kukui is a good shade tree for a lawn. However, its canopy size and density of shade will limit what can be planted in the surrounding area. Shade cast by a koa and ohia lehua is relatively light and will not inhibit growth beneath it.

Keep seasons in mind when you are selecting your plants. Not all plants look good year round, some plants such as ilima will look scraggly after they have flowered and formed seeds. Avoid planting large areas with only one native plant. Mixing plants which naturally grow together will ensure the garden will look good all year round.³ Looking at natural habitats helps to show how plants grow naturally in the landscape.

When planting an area with a mixed-ecosystem, keep in mind the size and ecological requirements of each plant. Start with the hardiest and most easily grown species, but allow space for fragile ones in subsequent plantings.

Acquiring natives

Plants in their wild habitat must be protected and maintained. It is best and easiest to get your plants from nurseries (see list), or friend's gardens. Obtain proper permits from landowners and make sure you follow a few common sense rules:

- ▶ collect sparingly from each plant or area.
- ▶ some plants are on the state or Federal Endangered Species list. Make sure you get permits (see app. A,B)

¹ K. Nagata, P.6

² K. Nagata, P.9

³ Nagata, P.9

Soil

Once you have selected your site and the plants you wish to establish there, you must look at the soil conditions on the site. Proper soil is necessary for the successful growth of most native plants, which perform poorly in hard pan, clay or adobe soils. If natives are to be planted in these types of soil, it would be wise to dig planting holes several times the size of the rootball and backfill with 50-75% compost.⁴ A large planting hole ensures the development of a strong root system. The plant will have a headstart before the roots penetrate the surrounding poor soil.⁵

It is recommended that native plants not be planted in ground that is more dense than potting soil. If there is no alternative, dig a hole in a mound of soil mixed with volcanic cinder which encourages maximum root development. Fill the hole with water, if the water tends to puddle or drain too slowly, dig a deeper hole until the water does not puddle longer than 1 or 2 minutes.⁶ Well-drained soil is one of the most important things when planting natives as you will see in the next section.

Irrigation

Most natives do very poorly in waterlogged conditions. Do not water if the soil is damp. Water when the soil is dry and the plants are wilting. Once established, a good soaking twice a week should suffice. Deep soaking encourages the development of stronger, and deeper root systems. This is better than frequent and shallow watering which encourage weaker, more shallow root systems.

The following is a watering schedule from Kenneth Nagata's Booklet, *How To Plant A Native Hawaiian Garden*:

WATER REQUIREMENT

Heavy
Moderate
Light

WATERING FREQUENCY

3x / week
2x / week
1x / week

Red clay soils hold more water for a longer period of time than sandy soils do. If your area is very sunny or near a beach, things will dry out faster. Even in the area of one garden, there are parts that will need more or less water. Soils can vary and amount of shade and wind differ. After plants are established (a month or two for most plants, up to a year for some trees), you can back off watering.

⁴ Nagata, p. 6

⁵ Nagata, p. 8

⁶ Nagata, p. 8

Automatic sprinkler systems are expensive to install and must be checked and adjusted regularly. Above-ground systems allow you to monitor how much water is being put out, but you lose a lot due to malfunctioning of sprinkler heads and wind. The most efficient way to save water and make sure your plants get enough water, is to hand-water. This way you are getting our precious water to the right places in the right amounts.⁷

Fertilizer

An all-purpose fertilizer 10-10-10 is adequate for most species. They should be applied at planting time, 3 months later, and 6 months thereafter. Use half the dosage recommended for ornamentals and pay special attention to native ferns which are sensitive to strong fertilizers. Use of organic composts and aged animal manures is suggested instead of chemical fertilizers. In addition, use of cinders for providing trace minerals is strongly recommended.⁸

Natives are plants which were here hundreds of years before the polynesians inhabited the Hawaiian Islands. They were brought here by birds, or survived the harsh ocean conditions to float here. They are well-adapted to Hawaii's varying soil and environmental conditions. This is why they make prime specimens for a xeriscape garden. However, natives will not thrive on their own, especially under harsh conditions. On the other hand, like any other plant, if you over-water and over-fertilize them, they will die. Follow the instructions given to you by the nursery you buy the plant from, or from this booklet. Better yet, buy a book (suggested readings can be found in the bibliography in the back of this pamphlet), read it, and learn more about native plants. I guarantee that you will be pleased with the results.

⁷ Bornhorst, p. 19-20

⁸ Nagata, p. 6

Propagation

There are many ways to propagate and plant-out native Hawaiian species. One of the most thorough and helpful book is Heidi Bornhorst's book, *Growing Native Hawaiian Plants*. The easiest, and best way to obtain natives for the novice gardener is to get them from a reputable nursery (see appendix c). That way all you will have to do is know how to transplant (if necessary) and plant-out when you are ready. These are the two methods I have listed here.

Transplanting

1. Use pots that are one size bigger than the potted plant is in
2. Get your potting medium ready

Good potting medium is a ½, ½ mixture of peat moss and perlite. If the plant is from a dry or coastal area, add chunks of cinder or extra perlite. If it is a wet forest species, add more peat moss or compost. Be aware that peat moss is very acidic and certain plants react severely to acidity.

If the plant is to eventually be planted into the ground, make a mix of equal parts peat moss, perlite, and soil from the area in which the plant is to be planted. Slow-release fertilizer can be mixed into the potting medium.

3. Once pots, potting medium, fertilizer and water are ready, you can begin re-potting. Keep the plant stem at the same depth it was in the original pot. Avoid putting the plant in too large a pot, as the plant may not be able to soak up all the water in the soil and the roots may drown and rot.

Mix potting medium and add slow-release fertilizer at this time. Pre-wet the medium to keep dust down and lessen shock to the plant. Put medium in bottom of pot. Measure for the correct depth in the new pot. Make sure there is from ½ to 2 inches from the top of the pot so the plant can get adequate water. Try to stand the plant upright and center the stem in the middle of the pot.

Water the plant thoroughly after transplanting. A vitamin B-1 transplanting solution can help to lessen the transplant shock. Keep the plant in the same type of environment as it was before, sun or shade. If roots were broken, trim off some of the leaves to compensate for the loss.⁹

Planting out

1. Plant most native Hawaiian plants in a sunny location in soil that is well-drained.
 2. Make the planting hole twice as wide as the root ball or present pot, and just as deep.
- If the soil is clay-like, and drains slowly, mix in some coarse red or bland cinder, coarse perlite or

⁹ Bornhorst, p.20-21

coarse compost. Place some slow-release fertilizer at the bottom of the hole.

3. Carefully remove the plant from the container and place it in the hole.

The top of the soil should be at the same level as the top of the hole, if it is too high or too low, adjust the soil level so that the plant is at the right depth.

4. Water thoroughly after you transplant.

Mulch

Most natives cannot compete with weeds, and therefore must be weeded around constantly in order to thrive. Mulch is a practical alternative, which discourages and prevents weeds from growing.

Hawaii's hot, humid climate leads to the breaking down of organic mulches. Thick organic mulches such as wood chips and leaves, may also be hiding places for pests.

Stone mulches are attractive, permanent and can help to improve soil quality. Red or black cinder, blue rock chips, smooth river rocks and coral chips are some natural choices.¹⁰ Macadamia nut hulls are also easy to find and can make a nice mulch.¹¹

Never pile up mulch right next to the stem or trunk of a plant, keep it a few inches away.

¹⁰ Bornhorst, p. 24

¹¹ Nagata, p. 7

PLACES TO SEE NATIVES ON:

The following places propagate native Hawaiian plants from seeds and/or cuttings. Their purpose is to protect and preserve these native plants. Please contact them before going to view the sites, they can provide valuable information and referral to other sources.

Maui:

1. Hoolawa Farms, P.O. Box 731, Haiku, Hawaii, 96708 572-4835
2. The Hawaiian Collection, 1127 Manu St., Kula, Hawaii, 96790 878-1701
3. Kula Botanical Gardens, RR 4, Box 228, Kula, Hawaii, 96790 878-1715
4. Maui Botanical Gardens, Kanaloa Avenue across from stadium 243-7337
5. Kula Forest Reserve, access road at the end of Waipouli Rd.
Call the Maui District Forester 984-8100
6. Wailea Point, Private Condominium residence, 4000 Wailea Alanui,
public access points at Four Seasons Resort or Polo Beach 875-9557
7. Kahanu Gardens, National Tropical Botanical Garden,
Alau Pl, Hana, Hawaii, 96713 248-8912
9. Kahului Library Courtyard, 20 School Street, Kahului, Hawaii 873-3097

ZONES

The Maui County Planting Plan has compiled a system of 5 zones of plant growth for Maui County. The descriptions of zones and maps for these zones are as follows:

Zone 1:

Wet areas on the windward side of the island. More than 40 inches of rain per year. Higher than 3,000 feet.

Zone 2:

Cool, dry areas in higher elevations (above 1,000 feet). 20 to 40 inches of rain per year.

Zone 3:

Low, drier areas, warm to hot. Less than 20 inches of rain per year. Sea level to 1,000 feet.

Zone 4:

Lower elevations which are wetter due to proximity of mountains. 1,000 to 3,000 feet.

Zone 5:

Salt spray zones in coastal areas on the windward side.

These zones are to be used as a general guide to planting for Maui County. In addition to looking at the maps, read the descriptions of the zones and decide which zone best fits your area. Plants can be listed in more than one zone and can be planted in a variety of conditions. For best results, take notes on the rainfall, wind, sun and salt conditions of your site. Use the zones as a general guide for selection and read about the plants to decide which best fits your needs as far as care and or function.

PLACES TO BUY NATIVES ON:

Maui:

1. **Hoolawa Farms** **575-5099**
 P O Box 731
 Haiku HI 96708
 The largest and best collection of natives
 in the state. They will deliver, but it's
 worth the drive to go and see!
 Will propagate upon request

2. **Kula True Value Nursery** **878-2551**
 Many natives in stock
 Get most of their plants from Hoolawa Farms
 They take special requests

3. **Kihei Garden and Landscape** **244-3804**

4. **Kihana Nursery, Kihei** **879-1165**

5. **The Hawaiian Collection** **878-1701**
 Specialize in Sandalwood propagation
 Will propagate special requests

water conservation for Schools and Public Buildings

General Suggestions

- Increase employee, faculty and student awareness of water conservation. Brochures explaining how to conserve water at home are available from the Board of Water Supply.
- Read water meter daily to monitor the success of water conservation efforts.
- Conduct contests for employees, students and faculty (e.g., posters, slogans or conservation ideas); locate suggestion boxes in prominent areas.
- Install signs that encourage water conservation in restrooms—leaflets suitable for display or distribution are available from the Board of Water Supply.
- When cleaning with water is necessary, use budgeted amounts.

Physical Plant - Building Maintenance

- Minimize the water used in cooling equipment, such as air compressors, in accordance with the manufacturer's recommendations.
- Reduce the load on air conditioning units by shutting air conditioning off when and where it is not needed.
- Maintain insulation on hot water pipes.
- Check water supply system for leaks, and turn off any unnecessary flows.
- Repair dripping faucets, showers, and continuously running toilets.
- Avoid excessive boiler and air conditioner blowdown. Monitor total dissolved solids levels, and blowdown only when needed.
- Reduce the water used in toilet flushing by either adjusting the vacuum flush mechanism or installing toilet tank displacement devices (dams, bottles, or bags).
- Instruct clean-up crews to use less water for mopping.
- Change window cleaning schedule from periodic to an on-call, as required bases.
- Install flow reducers and faucet aerators in all plumbing fixtures.
- As appliances or fixtures wear out, replace with water-saving models.

Cafeteria and Food Service

- Turn off the continuous flow used to clean the drain trays of the coffee/milk/soda beverage island; clean the trays only as needed.
- Turn dishwashers off when dishes are not being processed. Wash full loads only. Replace spray heads to reduce water flow.
- Recycle rinse water from the dishwasher or recirculate it to the garbage disposer.
- Pre-soak utensils and dishes in ponded water instead of using a running water rinse.

- Avoid thawing foods under running water by using other available alternatives, including microwave ovens.
- Wash vegetables in ponded water, do not let water run in prep sink.
- Minimize use of ice machines and adjust them to dispense less ice.
- Use water from the steam table in place of fresh water to wash down the cook's area.

Pool

- Lower pool water to reduce amount of water splash out.
- Reduce amount of water used to backflush pool filters.
- Use a pool cover to reduce evaporation when pool is not being used.

Laundry

- Water conservation ideas for Laundries can be obtained from the Board of Water Supply.

Exterior Areas

- Wash autos, buses and trucks less often.
- Discontinue using water to clean sidewalks, driveways, loading docks, and parking lots. Consider using brooms or motorized sweepers.
- Avoid landscape fertilizing and pruning that stimulate excessive growth.
- Remove unhealthy plants so that remaining plants benefit from the water saved.
- In many cases, older, established plants require only infrequent irrigation. Look for indications of water need such as wilt, change of color, or dry soils.
- Limit landscaping additions and alterations. In the future, design landscapes which require less water.
- Incorporate xeriscape (water management) techniques into the design.
- Install soil moisture overrides or timers on sprinkler systems. Time waterings, when possible, to occur in the morning when wind and evaporation are lowest. Irrigation equipment should apply water uniformly.
- Investigate the advantages of installing drip irrigation systems.
- Mulch around plants to reduce evaporation and discourage weeds.
- Remove thatch and aerate turf to encourage the movement of water to the root zone.
- Begin a flexible watering schedule, watering only when needed and not on windy or rainy days.
- Avoid runoff, and make sure sprinklers cover just the lawn or garden, not sidewalks, driveways or gutters.

ORDINANCE NO. 2108

BILL NO. 6 (1992)

Draft 1

A BILL FOR AN ORDINANCE AMENDING
CHAPTER 16.20 OF THE MAUI COUNTY
CODE, PERTAINING TO THE PLUMBING CODE

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Title 16 of the Maui County Code is amended by adding a new section to Chapter 10 of the Uniform Plumbing Code to be designated and to read as follows:

"16.20.675 Section 1050 added. Chapter 10 of the Uniform Plumbing Code is amended by adding a new section, pertaining to low-flow water fixtures and devices, to be designated and to read as follows:

Sec. 1050 Low-flow water fixtures and devices. (a) This section establishes maximum rates of water flow or discharge for plumbing fixtures and devices in order to promote water conservation.

(b) For the plumbing fixtures and devices covered in this section, manufacturers or their local distributors shall provide proof of compliance with the performance requirements established by the American National Standards Institute (ANSI) and such other proof as may be required by the director of public works. There shall be no charge for this registration process.

(c) Effective December 31, 1992, only plumbing fixtures and devices specified in this section shall be offered for sale or installed in the County of Maui, unless otherwise indicated in this section. All plumbing fixtures and devices which were installed before December 31, 1992, shall be allowed to be used, repaired or replaced after December 31, 1992.

(1) Faucets (kitchen): All kitchen and bar sink faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two-tenths gallons per minute at sixty pounds per square inch of water pressure.

(2) Faucets (lavatory): All lavatory faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two tenths gallons per minute at sixty pounds per square inch of water

pressure.

(3) Faucets (public rest rooms): In addition to the lavatory requirements set forth in paragraph (2), lavatory faucets located in rest rooms intended for use by the general public shall be of the metering or self-closing types.

(4) Hose bibbs: Water supply faucets or valves shall be provided with approved flow control devices which limit flow to a maximum three gallons per minute.

EXCEPTIONS: (A) Hose bibbs or valves not used for fixtures or equipment designated by the director of public works.

(B) Hose bibbs, faucets, or valves serving fixed demand, timing, or water level control appliances, and equipment or holding structures such as water closets, pools, automatic washers, and other similar equipment.

(5) Showerheads: Showerheads, except where provided for safety or emergency reasons, shall be designed, manufactured, or installed with a flow limitation device which will prevent a water flow rate in excess of two and one-half gallons per minute at eighty pounds per square inch of water pressure. The flow limitation device must be a permanent and integral part of the showerhead and must not be removable to allow flow rates in excess of two and one-half gallons per minute or must be mechanically retained requiring force in excess of eight pounds to remove.

(6) Urinals: Urinals shall be designed, manufactured, or installed so that the maximum flush will not exceed one gallon of water. Adjustable type flushometer valves may be used provided they are adjusted so the maximum flush will not exceed one and six tenths gallons of water.

(7) Water closets (toilets): Water closets shall be designed, manufactured, or installed so that the maximum flush will not exceed one and six tenths gallons of water.

(d) Beginning December 31, 1992, it is unlawful to sell or install any plumbing fixtures or devices not specified in this section, except as permitted under this section.

(e) The director of public works may exempt the use of low-flow water fixtures and devices if there is a finding that the use of such fixtures and devices would not be consistent with accepted engineering practices and would be detrimental to the public health, safety and welfare.

(f) Any person violating this section shall be fined \$250 for each violation and shall correct all instances of non-compliance for which a citation is issued. Violation of this section shall constitute a violation as defined in section 701-107 Hawaii Revised Statutes and shall be enforceable by employees of the department of public works. The foregoing fine may also be imposed in a civil, administrative proceeding pursuant to Rules and Regulations adopted by the department of public works in accordance with chapter 91 Hawaii Revised Statutes."

SECTION 2. New material is underscored. In printing this bill, the County Clerk need not include the underscoring.

SECTION 3. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:



HOWARD M. FUKUSHIMA
Deputy Corporation Counsel
County of Maui
c:\wp51\ords\flows4\pk

DOCUMENT CAPTURED AS RECEIVED

WE HEREBY CERTIFY that the foregoing BILL NO. 6 (19 92), Draft 1

1. Passed FINAL READING at the meeting of the Council of the County of Maui, State of Hawaii, held on the 1st day of May, 1992, by the following votes:

Howard S. KIHUNE Chair	Patrick S. KAWANO Vice-Chair	Vince G. BAGOYO, Jr.	Goro HOKAMA	Alice L. LEE	Ricardo MEDINA	Wayne K. NISHIKI	Joe S. TANAKA	Lainala TERUYA DRUMMOND
Aye	Aye	Excused	Excused	Aye	Aye	Aye	Aye -	Aye

2. Was transmitted to the Mayor of the County of Maui, State of Hawaii, on the 1st day of May, 1992.

DATED AT WAILUKU, MAUI, HAWAII, this 1st day of May, 1992.

FILED

Howard S. Kihune
HOWARD S. KIHUNE, CHAIR
Council of the County of Maui

Daryl T. Yamamoto
DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

THE FOREGOING BILL IS HEREBY APPROVED THIS 5th DAY OF MAY, 1992.

Linda Crockett Lingle
LINDA CROCKETT LINGLE, MAYOR
County of Maui

I HEREBY CERTIFY that upon approval of the foregoing BILL by the Mayor of the County of Maui, the said BILL was designated as ORDINANCE NO. 2108 of the County of Maui, State of Hawaii.

Daryl T. Yamamoto
DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

Passed First Reading on January 17, 1992.
Effective date of Ordinance May 5, 1992.

I HEREBY CERTIFY that the foregoing is a true and correct copy of Ordinance No. 2108, the original of which is on file in the Office of the County Clerk, County of Maui, State of Hawaii.

Dated at Wailuku, Hawaii, on

County Clerk, County of Maui

FILED

DOCUMENT CAPTURED AS RECEIVED

Environmental Protection
Agency

Washington, DC 20460

January 1993



Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters

Issued Under the Authority of
Section 6217(g) of the Coastal Zone Act
Reauthorization Amendments of 1990

III. CONSTRUCTION ACTIVITIES

A. Construction Site Erosion and Sediment Control Management Measure

- (1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and
- (2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

1. Applicability

This management measure is intended to be applied by States to all construction activities on sites less than 5 acres in areas that do not have an NPDES permit³ in order to control erosion and sediment loss from those sites. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The goal of this management measure is to reduce the sediment loadings from construction sites in coastal areas that enter surface waterbodies. This measure requires that coastal States establish new or enhance existing State erosion and sediment control (ESC) programs and/or require ESC programs at the local level. It is intended to be part of a comprehensive land use or watershed management program, as previously detailed in the Watershed and Site Development Management Measures. It is expected that State and local programs will establish criteria determined by local conditions (e.g., soil types, climate, meteorology) that reduce erosion and sediment transport from construction sites.

Runoff from construction sites is by far the largest source of sediment in urban areas under development (York County Soil and Water Conservation District, 1990). Soil erosion removes over 90 percent of sediment by tonnage in urbanizing areas where most construction activities occur (Canning, 1988). Table 4-14 illustrates some of the

³ On May 27, 1992, the United States Court of Appeals for the Ninth Circuit invalidated EPA's exemption of construction sites smaller than 5 acres from the storm water permit program in *Natural Resources Defense Council v. EPA*, 965 F.2d 759 (9th Cir. 1992). EPA is conducting further rulemaking proceedings on this issue and will not require permit applications for construction activities under 5 acres until further rulemaking has been completed.

measured sediment loading rates associated with construction activities found across the United States. As seen in Table 4-14, erosion rates from natural areas such as undisturbed forested lands are typically less than one ton/acre/year, while erosion from construction sites ranges from 7.2 to over 1,000 tons/acre/year.

Table 4-14. Erosion and Sediment Problems Associated With Construction

Location	Problem	Reference
United States	Sediment loading rates vary from 36.5 to 1,000 ton/ac/yr. These are 5 to 500 times greater than those from undeveloped land. Approximately 600 million tons of soil erodes from developed sites each year. Construction site sediment in runoff can be 10 to 20 times greater than that from agricultural lands.	York County Soil and Water Conservation District, 1990
Franklin County, FL	Sediment yield (ton/ac/yr): forest < 0.5 rangeland < 0.5 tilled 1.4 construction site 30 established urban < 0.5	Franklin County, FL
Wisconsin	Erosion rates range from 30 to 200 ton/ac/yr (10 to 20 times those of cropland).	Wisconsin Legislative Council, 1991
Washington, DC	Erosion rates range from 35 to 45 ton/ac/yr (10 to 100 times greater than agriculture and stabilized urban land uses).	MWCOG, 1987
Anacostia River Basin, VA, MD, DC	Sediment yields from portions of the Anacostia Basin have been estimated at 75,000 to 132,000 ton/yr.	U.S. Army Corps of Engineers, 1990
Washington	Erosion rates range from 50 to 500 ton/ac/yr. Natural erosion rates from forests or well-sodded prairies are 0.01 to 1.0 ton/ac/yr.	Washington Department of Ecology, 1989
Anacostia River Basin, VA, MD, DC	Erosion rates range from 7.2 to 100.8 ton/ac/yr.	USGS, 1978
Alabama North Carolina Louisiana Oklahoma Georgia Texas Tennessee Pennsylvania Ohio Kentucky	1.4 million tons eroded per year. 6.7 million tons eroded per year. 5.1 million tons eroded per year. 4.2 million tons eroded per year. 3.8 million tons eroded per year. 3.5 million tons eroded per year. 3.3 million tons eroded per year. 3.1 million tons eroded per year. 3.0 million tons eroded per year. 3.0 million tons eroded per year.	Woodward-Clyde, 1991

Eroded sediment from construction sites creates many problems in coastal areas including adverse impacts on water quality, critical habitats, submerged aquatic vegetation (SAV) beds, recreational activities, and navigation (APWA, 1991). For example, the Miami River in Florida has been severely affected by pollution associated with upland erosion. This watershed has undergone extensive urbanization, which has included the construction of many commercial and residential buildings over the past 50 years. Sediment deposited in the Miami River channel contributes to the severe water quality and navigation problems of this once-thriving waterway, as well as Biscayne Bay (SFWMD, 1988).

ESC plans are important for controlling the adverse impacts of construction and land development and have been required by many State and local governments, as shown in Table 4-13 (in the Site Development section of this chapter). An ESC plan is a document that explains and illustrates the measures to be taken to control erosion and sediment problems on construction sites (Connecticut Council on Soil and Water Conservation, 1988). It is intended that existing State and local erosion and sediment control plans may be used to fulfill the requirements of this management measure. Where existing ESC plans do not meet the management measure criteria, inadequate plans may be enhanced to meet the management measure guidelines.

Typically, an ESC plan is part of a larger site plan and includes the following elements:

- Description of predominant soil types;
- Details of site grading including existing and proposed contours;
- Design details and locations for structural controls;
- Provisions to preserve topsoil and limit disturbance;
- Details of temporary and permanent stabilization measures; and
- Description of the sequence of construction.

ESC plans ensure that provisions for control measures are incorporated into the site planning stage of development and provide for the reduction of erosion and sediment problems and accountability if a problem occurs (York County Soil and Water Conservation District, 1990). An effective plan for urban runoff management on construction sites will control erosion, retain sediments on site, to the extent practicable, and reduce the adverse effects of runoff. Climate, topography, soils, drainage patterns, and vegetation will affect how erosion and sediment should be controlled on a site (Washington State Department of Ecology, 1989). An effective ESC plan includes both structural and nonstructural controls. Nonstructural controls address erosion control by decreasing erosion potential, whereas structural controls are both preventive and mitigative because they control both erosion and sediment movement.

Typical nonstructural erosion controls include (APWA, 1991; York County Soil and Water Conservation District, 1990):

- Planning and designing the development within the natural constraints of the site;
- Minimizing the area of bare soil exposed at one time (phased grading);
- Providing for stream crossing areas for natural and man-made areas; and
- Stabilizing cut-and-fill slopes caused by construction activities.

Structural controls include:

- Perimeter controls;
- Mulching and seeding exposed areas;
- Sediment basins and traps; and
- Filter fabric, or silt fences.

Some erosion and soil loss are unavoidable during land-disturbing activities. While proper siting and design will help prevent areas prone to erosion from being developed, construction activities will invariably produce conditions where erosion may occur. To reduce the adverse impacts associated with construction, the construction management measure suggests a system of nonstructural and structural erosion and sediment controls for incorporation into an

ESC plan. Erosion controls have distinct advantages over sediment controls. Erosion controls reduce the amount of sediment transported off-site, thereby reducing the need for sediment controls. When erosion controls are used in conjunction with sediment controls, the size of the sediment control structures and associated maintenance may be reduced, decreasing the overall treatment costs (SWRPC, 1991).

3. Management Measure Selection

This management measure was selected to minimize sediment being transported outside the perimeter of a construction site through two broad performance goals: (1) reduce erosion and (2) retain sediment onsite, to the extent practicable. These performance goals were chosen to allow States and local governments flexibility in specifying practices appropriate for local conditions.

While several commentors responding to the draft (May 1991) guidance expressed the need to define "more measurable, enforceable ways" to control sediment loadings, other commentors stressed the need to draft management measures that do not conflict with existing State programs and allow States and local governments to determine appropriate practices and design standards for their communities. These management measures were selected because virtually all coastal States control construction activities to prevent erosion and sediment loss.

The measures were specifically written for the following reasons:

- (1) Predevelopment loadings may vary greatly, and some sediment loss is usually inevitable;
- (2) Current practice is built on the use of systems of practices selected based on site-specific conditions; and
- (3) The combined effectiveness of erosion and sediment controls in systems is not easily quantified.

4. Erosion Control Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Erosion controls are used to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Erosion control is based on two main concepts: (1) disturb the smallest area of land possible for the shortest period of time, and (2) stabilize disturbed soils to prevent erosion from occurring.

■ a. *Schedule projects so clearing and grading are done during the time of minimum erosion potential.*

Often a project can be scheduled during the time of year that the erosion potential of the site is relatively low. In many parts of the country, there is a certain period of the year when erosion potential is relatively low and construction scheduling could be very effective. For example, in the Pacific region if construction can be completed during the 6-month dry season (May 1 - October 31), temporary erosion and sediment controls may not be needed. In addition, in some parts of the country erosion potential is very high during certain parts of the year such as the spring thaw in northern areas. During this time of year, melting snowfall generates a constant runoff that can erode soil. In addition, construction vehicles can easily turn the soft, wet ground into mud, which is more easily washed offsite. Therefore, in the north, limitations should be placed on grading during the spring thaw (Goldman et al., 1986).

b. Stage construction.

Avoid areawide clearance of construction sites. Plan and stage land disturbance activities so that only the area currently under construction is exposed. As soon as the grading and construction in an area are complete, the area should be stabilized.

By clearing only those areas immediately essential for completing site construction, buffer zones are preserved and soil remains undisturbed until construction begins. Physical markers, such as tape, signs, or barriers, indicating the limits of land disturbance, can ensure that equipment operators know the proposed limits of clearing. The area of the watershed that is exposed to construction is important for determining the net amount of erosion. Reducing the extent of the disturbed area will ultimately reduce sediment loads to surface waters. Existing or newly planted vegetation that has been planted to stabilize disturbed areas should be protected by routing construction traffic around and protecting natural vegetation with fencing, tree armoring, retaining walls, or tree wells.

c. Clear only areas essential for construction.

Often areas of a construction site are unnecessarily cleared. Only those areas essential for completing construction activities should be cleared, and other areas should remain undisturbed. Additionally, the proposed limits of land disturbance should be physically marked off to ensure that only the required land area is cleared. Avoid disturbing vegetation on steep slopes or other critical areas.

d. Locate potential nonpoint pollutant sources away from steep slopes, waterbodies, and critical areas.

Material stockpiles, borrow areas, access roads, and other land-disturbing activities can often be located away from critical areas such as steep slopes, highly erodible soils, and areas that drain directly into sensitive waterbodies.

e. Route construction traffic to avoid existing or newly planted vegetation.

Where possible, construction traffic should travel over areas that must be disturbed for other construction activity. This practice will reduce the area that is cleared and susceptible to erosion.

f. Protect natural vegetation with fencing, tree armoring, and retaining walls or tree wells.

Tree armoring protects tree trunks from being damaged by construction equipment. Fencing can also protect tree trunks, but should be placed at the tree's drip line so that construction equipment is kept away from the tree. The tree drip line is the minimum area around a tree in which the tree's root system should not be disturbed by cut, fill, or soil compaction caused by heavy equipment. When cutting or filling must be done near a tree, a retaining wall or tree well should be used to minimize the cutting of the tree's roots or the quantity of fill placed over the tree's roots.

g. Stockpile topsoil and reapply to revegetate site.

Because of the high organic content of topsoil, it cannot be used as fill material or under pavement. After a site is cleared, the topsoil is typically removed. Since topsoil is essential to establish new vegetation, it should be stockpiled and then reapplied to the site for revegetation, if appropriate. Although topsoil salvaged from the existing site can often be used, it must meet certain standards and topsoil may need to be imported onto the site if the existing topsoil is not adequate for establishing new vegetation.

■ h. *Cover or stabilize topsoil stockpiles.*

Unprotected stockpiles are very prone to erosion and therefore stockpiles must be protected. Small stockpiles can be covered with a tarp to prevent erosion. Large stockpiles should be stabilized by erosion blankets, seeding, and/or mulching.

■ i. *Use wind erosion controls.*

Wind erosion controls limit the movement of dust from disturbed soil surfaces and include many different practices. Wind barriers block air currents and are effective in controlling soil blowing. Many different materials can be used as wind barriers, including solid board fence, snow fences, and bales of hay. Sprinkling moistens the soil surface with water and must be repeated as needed to be effective for preventing wind erosion (Delaware DNREC, 1989); however, applications must be monitored to prevent excessive runoff and erosion.

■ j. *Intercept runoff above disturbed slopes and convey it to a permanent channel or storm drain.*

Earth dikes, perimeter dikes or swales, or diversions can be used to intercept and convey runoff above disturbed areas. An earth dike is a temporary berm or ridge of compacted soil that channels water to a desired location. A perimeter dike/swale or diversion is a swale with a supporting ridge on the lower side that is constructed from the soil excavated from the adjoining swale (Delaware DNREC, 1989). These practices should be used to intercept flow from denuded areas or newly seeded areas to keep the disturbed areas from being eroded from the uphill runoff. The structures should be stabilized within 14 days of installation. A pipe slope drain, also known as a pipe drop structure, is a temporary pipe placed from the top of a slope to the bottom of the slope to convey concentrated runoff down the slope without causing erosion (Delaware DNREC, 1989).

■ k. *On long or steep, disturbed, or man-made slopes, construct benches, terraces, or ditches at regular intervals to intercept runoff.*

Benches, terraces, or ditches break up a slope by providing areas of low slope in the reverse direction. This keeps water from proceeding down the slope at increasing volume and velocity. Instead, the flow is directed to a suitable outlet, such as a sediment basin or trap. The frequency of benches, terraces, or ditches will depend on the erodibility of the soils, steepness and length of the slope, and rock outcrops. This practice should be used if there is a potential for erosion along the slope.

■ l. *Use retaining walls.*

Often retaining walls can be used to decrease the steepness of a slope. If the steepness of a slope is reduced, the runoff velocity is decreased and, therefore, the erosion potential is decreased.

■ m. *Provide linings for urban runoff conveyance channels.*

Often construction increases the velocity and volume of runoff, which causes erosion in newly constructed or existing urban runoff conveyance channels. If the runoff during or after construction will cause erosion in a channel, the channel should be lined or flow control BMPs installed. The first choice of lining should be grass or sod since this reduces runoff velocities and provides water quality benefits through filtration and infiltration. If the velocity in the channel would erode the grass or sod, then riprap, concrete, or gabions can be used.

■ n. *Use check dams.*

Check dams are small, temporary dams constructed across a swale or channel. They can be constructed using gravel or straw bales. They are used to reduce the velocity of concentrated flow and, therefore, to reduce the erosion in

a swale or channel. Check dams should be used when a swale or channel will be used for a short time and therefore it is not feasible or practical to line the channel or implement flow control BMPs (Delaware DNREC, 1989).

o. *Seed and fertilize.*

Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once a dense vegetative cover has been established. However, often seeding and fertilizing do not produce as thick a vegetative cover as do seed and mulch or netting. Newly established vegetation does not have as extensive a root system as existing vegetation and therefore is more prone to erosion, especially on steep slopes. Care should be taken when fertilizing to avoid untimely or excessive application. Since the practice of seeding and fertilizing does not provide any protection during the time of vegetative establishment, it should be used only on favorable soils in very flat areas and not in sensitive areas.

p. *Use seeding and mulch/mats.*

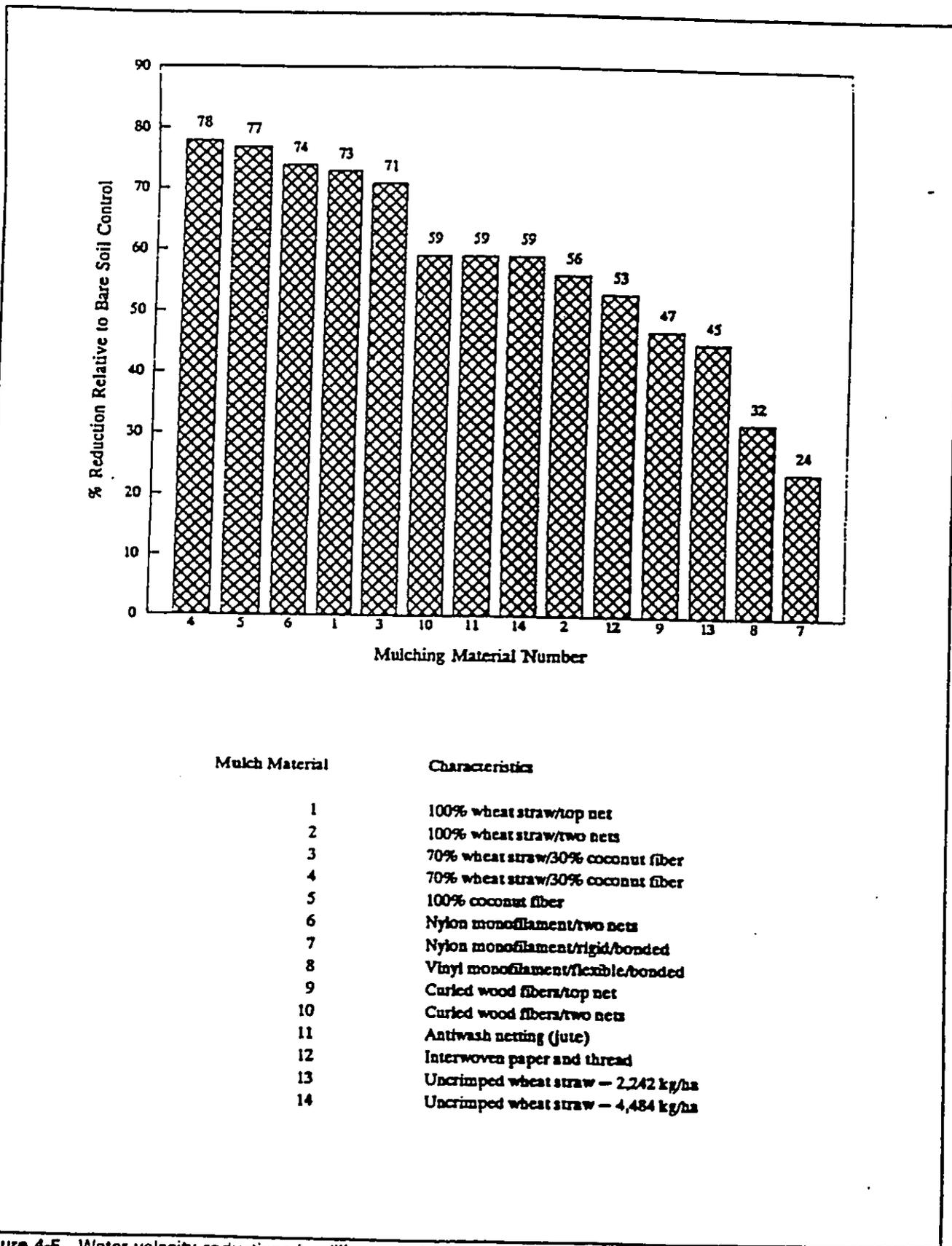
Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once the vegetative cover has been established. The mulching/mats protect the disturbed area while the vegetation becomes established.

The management of land by using ground cover reduces erosion by reducing the flow rate of runoff and the raindrop impact. Bare soils should be seeded or otherwise stabilized within 15 calendar days after final grading. Denuded areas that are inactive and will be exposed to rain for 30 days or more should also be temporarily stabilized, usually by planting seeds and establishing vegetation during favorable seasons in areas where vegetation can be established. In very flat, non-sensitive areas with favorable soils, stabilization may involve simply seeding and fertilizing. Mulching and/or sodding may be necessary as slopes become moderate to steep, as soils become more erosive, and as areas become more sensitive.

q. *Use mulch/mats.*

Mulching involves applying plant residues or other suitable materials on disturbed soil surfaces. Mulchs/mats used include tacked straw, wood chips, and jute netting and are often covered by blankets or netting. Mulching alone should be used only for temporary protection of the soil surface or when permanent seeding is not feasible. The useful life of mulch varies with the material used and the amount of precipitation, but is approximately 2 to 6 months. Figure 4-5 shows water velocity reductions that could be expected using various mulching techniques. Similarly, Figure 4-6 shows reductions in soil loss achievable using various mulching techniques. During times of year when vegetation cannot be established, soil mulching should be applied to moderate slopes and soils that are not highly erodible. On steep slopes or highly erodible soils, multiple mulching treatments should be used. On a high-elevation or desert site where grasses cannot survive the harsh environment, native shrubs may be planted. Interlocking ceramic materials, filter fabric, and netting are available for this purpose. Before stabilizing an area, it is important to have installed all sediment controls and diverted runoff away from the area to be planted. Runoff may be diverted away from denuded areas or newly planted areas using dikes, swales, or pipe slope drains to intercept runoff and convey it to a permanent channel or storm drain. Reserved topsoil may be used to revegetate a site if the stockpile has been covered and stabilized.

Consideration should be given to maintenance when designing mulching and matting schemes. Plastic nets are often used to cover the mulch or mats; however, they can foul lawn mower blades if the area requires mowing.



Mulch Material	Characteristics
1	100% wheat straw/top net
2	100% wheat straw/two nets
3	70% wheat straw/30% coconut fiber
4	70% wheat straw/30% coconut fiber
5	100% coconut fiber
6	Nylon monofilament/two nets
7	Nylon monofilament/rigid/bonded
8	Vinyl monofilament/flexible/bonded
9	Curled wood fibers/top net
10	Curled wood fibers/two nets
11	Antwash netting (jute)
12	Interwoven paper and thread
13	Uncrimped wheat straw - 2,242 kg/ha
14	Uncrimped wheat straw - 4,484 kg/ha

Figure 4-5. Water velocity reductions for different mulch treatments (adapted from Harding, 1990).

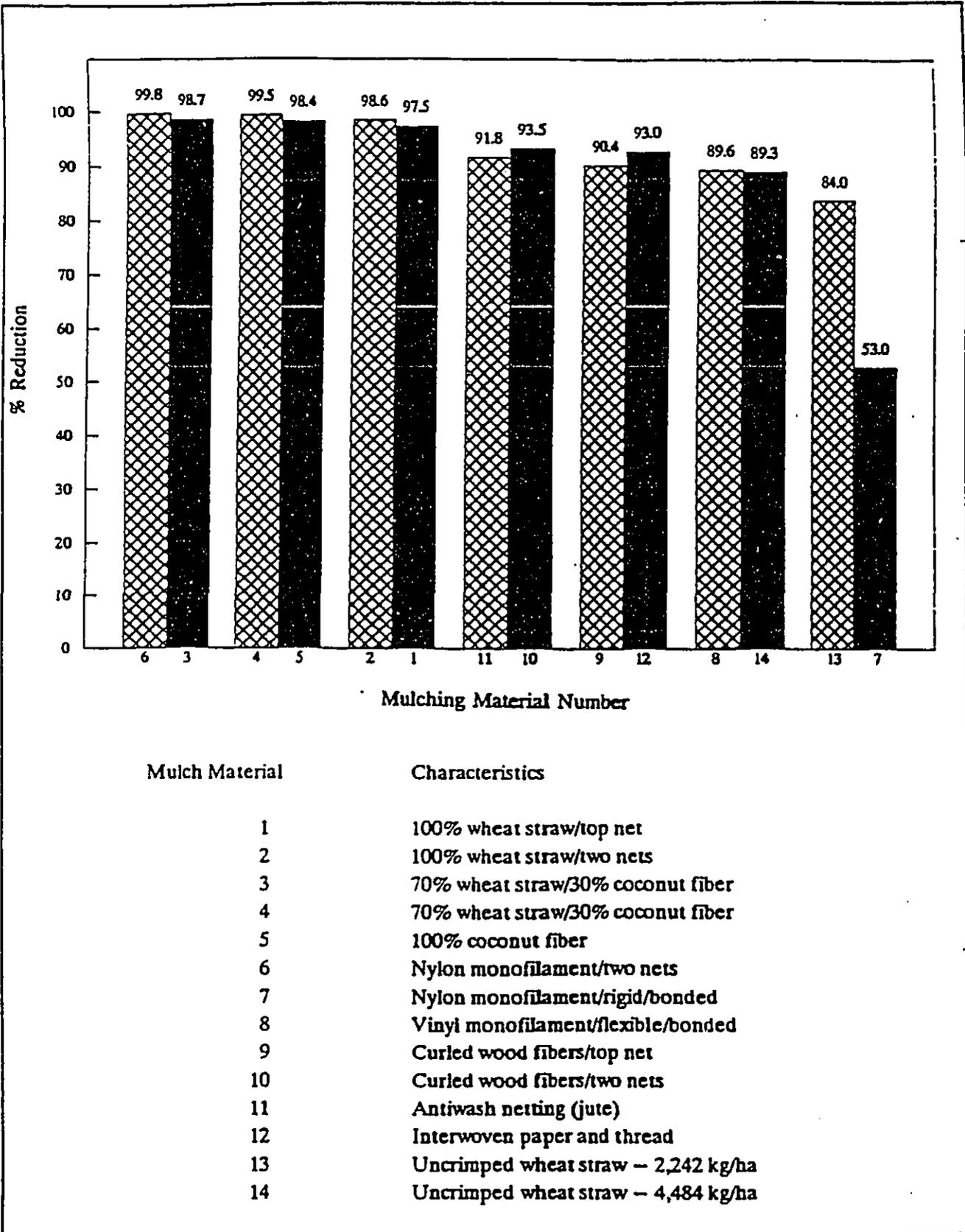


Figure 4-6. Actual soil loss reductions for different mulch treatments (adapted from Harding, 1990).

r. Use sodding.

Sodding permanently stabilizes an area. Sodding provides immediate stabilization of an area and should be used in critical areas or where establishment of permanent vegetation by seeding and mulching would be difficult. Sodding is also a preferred option when there is a high erosion potential during the period of vegetative establishment from seeding.

s. Use wildflower cover.

Because of the hardy drought-resistant nature of wildflowers, they may be more beneficial as an erosion control practice than turf grass. While not as dense as turfgrass, wildflower thatches and associated grasses are expected to be as effective in erosion control and contaminant absorption. Because thatches of wildflowers do not need fertilizers, pesticides, or herbicides, and watering is minimal, implementation of this practice may result in a cost savings (Brash et al., undated). In 1987, Howard County, Maryland, spent \$690.00 per acre to maintain turfgrass areas, compared to only \$31.00 per acre for wildflower meadows (Wilson, 1990).

A wildflower stand requires several years to become established; maintenance requirements are minimal once the area is established (Brash et al., undated).

5. Sediment Control Practices⁴

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Sediment controls capture sediment that is transported in runoff. Filtration and detention (gravitational settling) are the main processes used to remove sediment from urban runoff.

a. Sediment Basins

Sediment basins, also known as silt basins, are engineered impoundment structures that allow sediment to settle out of the urban runoff. They are installed prior to full-scale grading and remain in place until the disturbed portions of the drainage area are fully stabilized. They are generally located at the low point of sites, away from construction traffic, where they will be able to trap sediment-laden runoff.

Sediment basins are typically used for drainage areas between 5 and 100 acres. They can be classified as either temporary or permanent structures, depending on the length of service of the structure. If they are designed to function for less than 36 months, they are classified as "temporary"; otherwise, they are considered permanent structures. Temporary sediment basins can also be converted into permanent urban runoff management ponds. When sediment basins are designed as permanent structures, they must meet all standards for wet ponds.

b. Sediment Trap

Sediment traps are small impoundments that allow sediment to settle out of runoff water. Sediment traps are typically installed in a drainageway or other point of discharge from a disturbed area. Temporary diversions can be

⁴Adapted from Goldman (1986).

used to direct runoff to the sediment trap. Sediment traps should not be used for drainage areas greater than 5 acres and typically have a useful life of approximately 18 to 24 months.

c. Filter Fabric Fence

Filter fabric fence is available from many manufacturers and in several mesh sizes. Sediment is filtered out as urban runoff flows through the fabric. Such fences should be used only where there is sheet flow (i.e., no concentrated flow), and the maximum drainage area to the fence should be 0.5 acre or less per 100 feet of fence. Filter fabric fences have a useful life of approximately 6 to 12 months.

d. Straw Bale Barrier

A straw bale barrier is a row of anchored straw bales that detain and filter urban runoff. Straw bales are less effective than filter fabric, which can usually be used in place of straw bales. However, straw bales have been effectively used as temporary check dams in channels. As with filter fabric fences, straw bale barriers should be used only where there is sheet flow. The maximum drainage area to the barrier should be 0.25 acre or less per 100 feet of barrier. The useful life of straw bales is approximately 3 months.

e. Inlet Protection

Inlet protection consists of a barrier placed around a storm drain drop inlet, which traps sediment before it enters the storm sewer system. Filter fabric, straw bales, gravel, or sand bags are often used for inlet protection.

f. Construction Entrance

A construction entrance is a pad of gravel over filter cloth located where traffic leaves a construction site. As vehicles drive over the gravel, mud, and sediment are collected from the vehicles' wheels and offsite transport of sediment is reduced.

g. Vegetated Filter Strips

Vegetated filter strips are low-gradient vegetated areas that filter overland sheet flow. Runoff must be evenly distributed across the filter strip. Channelized flows decrease the effectiveness of filter strips. Level spreading devices are often used to distribute the runoff evenly across the strip (Dillaha et al., 1989).

Vegetated filter strips should have relatively low slopes and adequate length and should be planted with erosion-resistant plant species. The main factors that influence the removal efficiency are the vegetation type, soil infiltration rate, and flow depth and travel time. These factors are dependent on the contributing drainage area, slope of strip, degree and type of vegetative cover, and strip length. Maintenance requirements for vegetated filter strips include sediment removal and inspections to ensure that dense, vigorous vegetation is established and concentrated flows do not occur. Maintenance of these structures is discussed in Section II.A of this chapter.

6. Effectiveness and Cost Information

a. Erosion Control Practices

The effectiveness of erosion control practices can vary based on land slope, the size of the disturbed area, rainfall frequency and intensity, wind conditions, soil type, use of heavy machinery, length of time soils are exposed and unprotected, and other factors. In general, a system of erosion and sediment control practices can more effectively reduce offsite sediment transport than can a single system. Numerous nonstructural measures such as protecting natural or newly planted vegetation, minimizing the disturbance of vegetation on steep slopes and other highly

erodible areas, maximizing the distance eroded material must travel before reaching the drainage system, and locating roads away from sensitive areas may be used to reduce erosion.

Table 4-15 contains the available cost and effectiveness data for some of the erosion controls listed above. Information on the effectiveness of individual nonstructural controls was not available. All reported effectiveness data assume that controls are properly designed, constructed, and maintained. Costs have been broken down into annual capital costs, annual maintenance costs, and total annual costs (including annualization of the capital costs).

b. Sediment Control Practices

Regular inspection and maintenance are needed for most erosion control practices to remain effective. The effectiveness of sediment controls will depend on the size of the construction site and the nature of the runoff flows. Sediment basins are most appropriate for drainage areas of 5 acres or greater. In smaller areas with concentrated flows, silt traps may suffice. Where concentrated flow leaves the site and the drainage area is less than 0.5 ac/100 ft of flow, filter fabric fences may be effective. In areas where sheet flow leaves the site and the drainage area is greater than 0.5 acre/100 ft of flow, perimeter dikes may be used to divert the flow to a sediment trap or sediment basin. Urban runoff inlets may be protected using straw bales or diversions to filter or route runoff away from the inlets.

Table 4-16 describes the general cost and effectiveness of some common sediment control practices.

c. Comparisons

Figure 4-7 illustrates the estimated TSS loading reductions from Maryland construction sites possible using a combination of erosion and sediment controls in contrast to using only sediment controls. Figure 4-8 shows a comparison of the cost and effectiveness of various erosion control practices. As can be seen in Figure 4-8, seeding or seeding and mulching provide the highest levels of control at the lowest cost.

Table 4-15. ESC Quantitative Effectiveness and Cost Summary

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sod	Immediate erosion protection where there is high erosion potential during vegetative establishment.	Average: 99% Observed range: 98% - 99% References: Minnesota Pollution Control Agency, 1989; Pennsylvania, 1983 cited in USEPA, 1991	2	Average: \$0.2 per ft ² [\$11,300 per acre] Range: \$0.1 - \$1.1 References: SWRPC, 1991; Schueler, 1987; Virginia, 1980	Average: 5% Range: 5% Reference: SWRPC, 1991	\$0.20 per ft ² \$7,500 per acre
Seed	Establish vegetation on disturbed area.	After vegetation established- Average: 90% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberits, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: \$400 per acre Range: \$200 - \$1000 per acre References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986; Virginia, 1980	Average: 20% Range: 15% - 25% References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991	\$300 per acre
Seed and Mulch	Establish vegetation on disturbed area.	After vegetation established- Average: 80% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberits, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: \$1,500 per acre Range: \$600 - \$3,500 per acre References: Goldman, 1986; Washington DOT, 1990; NC State, 1980; Schueler, 1987; Virginia, 1980; SWRPC, 1991	Average: NA ^b Range: NA References: None	\$1,100 per acre

Table 4-15. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Terraces	Break up long or steep slopes.	Observed range: <u>Land Slope</u> 1-12% 12-18% 18-24%	2	Average: \$5 per lin ft Range: \$1 - \$12 References: SWRPC, 1991; Goldman, 1986; Virginia, 1991	Average: 20% Range: 20% Reference: SWRPC, 1991	\$4 per lin ft
All Erosion Controls	Reduce amount of sediment entering runoff.	<u>Reduction in Erosion</u> 70% 60% 55% Additionally, if the slope steepness is halved, while other factors are held constant, the soil loss potential decreases 2-1/2 times. If both the slope and length are halved, the soil loss potential is decreased 4 times. References: Goldman, 1986; Beasley, 1972	--	Varies but typically low	Varies but typically low	Varies but typically low

NA - Not available.
^a Useful life estimated as length of construction project (assumed to be 2 years).
^b For Total Annual Cost, assume Annual Maintenance Cost = 2% of construction cost.

Table 4-16. ESC Quantitative Effectiveness and Cost Summary for Sediment Control Practices

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sediment basin	Minimum drainage area = 5 acres, maximum drainage area = 100 acres	Average: 70% Observed range: 55% - 100% References: Schueler, 1990; Engle, BW and Jarrett, AR, 1990; Baumann, 1990	2	Less than 50,000 ft ³ storage Average: \$0.60 per ft ³ storage (\$1,100 per drainage acre ^c) Range: \$0.20 - \$1.30 per ft ³ storage Greater than 50,000 ft ³ storage Average: \$0.3 per ft ³ storage (\$550 per drainage acre ^c) Range: \$0.10 - \$0.40 per ft ³ storage References: SWRPC, 1991	Average: 25% Range: 25% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	Less than 50,000 ft ³ storage \$0.40 per ft ³ storage \$700 per drainage acre ^b Greater than 50,000 ft ³ storage \$0.20 per ft ³ storage \$800 per drainage acre ^c
Sediment trap	Maximum drainage area = 5 acres	Average: 80% Observed range: (-7%) - 100% References: Schueler, et al., 1990; Tahoe Regional Planning Agency, 1989; Baumann, 1990	1.5	Average: \$0.80 per ft ³ storage (\$1,100 per drainage acre ^c) Range: \$0.20 - \$2.00 per ft ³ storage References: Denver COG cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986	Average: 20% Range: 20% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	\$0.70 per ft ³ storage \$1,300 per drainage acre ^c
Filter Fabric Fence	Maximum drainage area = 0.5 acre per 100 feet of fence. Not to be used in concentrated flow areas.	Average: 70% Observed range: 0% - 100% sand; 80% - 99% silt-loam; 50% - 80% silt-clay-loam; 0% - 20% References: Munson, 1991; Fisher et al., 1984; Minnesota Pollution Control Agency, 1989	0.5	Average: \$3 per lin ft (\$700 per drainage acre ^c) Range: \$1 - \$8 per lin ft References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986; Virginia, 1991; NC State, 1980	Average: 100% Range: 100% References: SWRPC, 1991	\$7 per lin ft \$850 per drainage acre ^c

Table 4-16. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Straw Bale Barrier	Maximum drainage area = 0.25 acre per 100 feet of barrier. Not to be used in concentrated flow areas.	Average: 70% Observed Range: 70% References: Virginia, 1980 cited in EPA, 1991	0.25	Average: \$4 per lin ft (\$1,600 per drainage acre ^d) Range: \$2 - \$6 per lin ft References: Goldman, 1986; Virginia, 1991	Average: 100% Range: 100% References: SWRPC, 1991	\$17 per lin ft \$6,800 per drainage acre ^d
Inlet Protection	Protect storm drain inlet.	Average: NA Observed Range: NA References: None	1	Average: \$100 per inlet Range: \$50 - \$150 References: SWRPC, 1991; Denver COG cited in SWRPC, 1991; Virginia, 1991; EPA cited in SWRPC, 1991	Average: 60% Range: 20% - 100% References: SWRPC, 1991; Denver COG cited in SWRPC, 1991	\$150 per inlet
Construction Entrance	Removes sediment from vehicles wheels.	Average: NA Observed Range: NA References: None	2	Average: \$2,000 each Range: \$1,000 - \$4,000 References: Goldman, 1986; NC State, 1990 With washrack: Average: \$3,000 each Range: \$1,000 - \$5,000 References: Virginia, 1991	Average: NA ^e Range: NA References: None	\$1,500 each \$2,200 each

Table 4-16. (Continued)

Practices	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years) ^a	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Vegetative Filter Strip	Must have sheet flow.	Average: 70% Observed Range: 20% - 80% References: Hayes and Halrston, 1983 cited in Casman, 1990; Dillaha et al., 1989, cited in Glick et al., 1991; Virginia Department of Conservation, 1987; Nonpoint Source Control Task Force, 1983 cited in Minnesota PCA, 1988; Schueler, 1987	2	Established from existing vegetation. Average: \$0 Range: \$0 References: Schueler, 1987	Average: NA Range: NA References: None	NA
				Established from sod. Average: \$11,300 per acre Range: \$4,500 - \$48,000 per acre References: Schueler, 1987; SWRPC, 1991		

NA - Not available.

- ^a Useful life estimated as length of construction project (assumed to be 2 years)
- ^b For Total Annual Cost, assume Annual Maintenance Cost=20% of construction cost.
- ^c Assumes trap volume = 1800 c/acre (0.5 inches runoff per acre).
- ^d Assumes drainage area of 0.5 acre per 100 feet of fence (maximum allowed).
- ^e Assumes drainage area of 0.25 acre per 100 feet of barrier (maximum allowed).

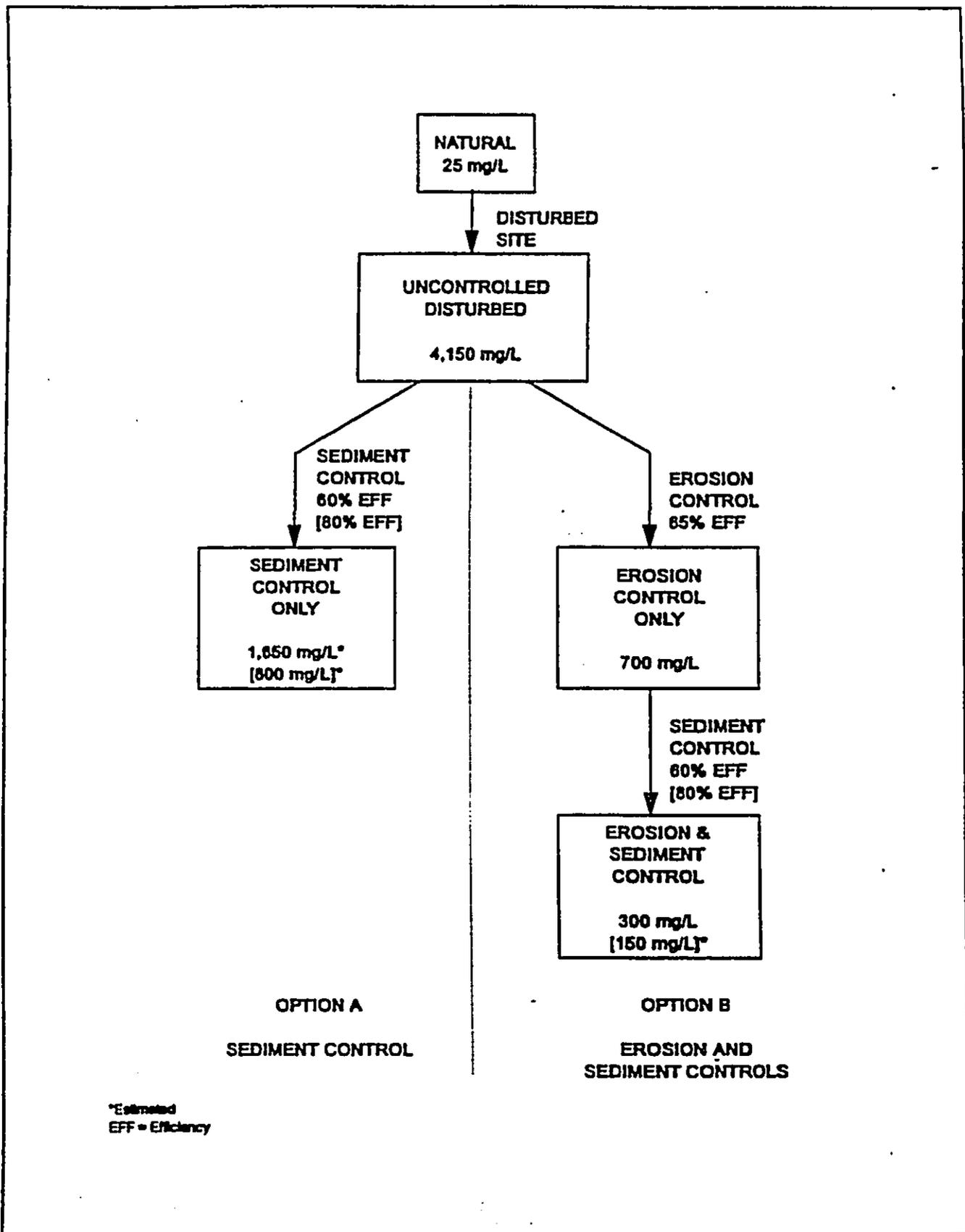


Figure 4-7. TSS concentrations from Maryland construction sites. (Schueler, 1987).

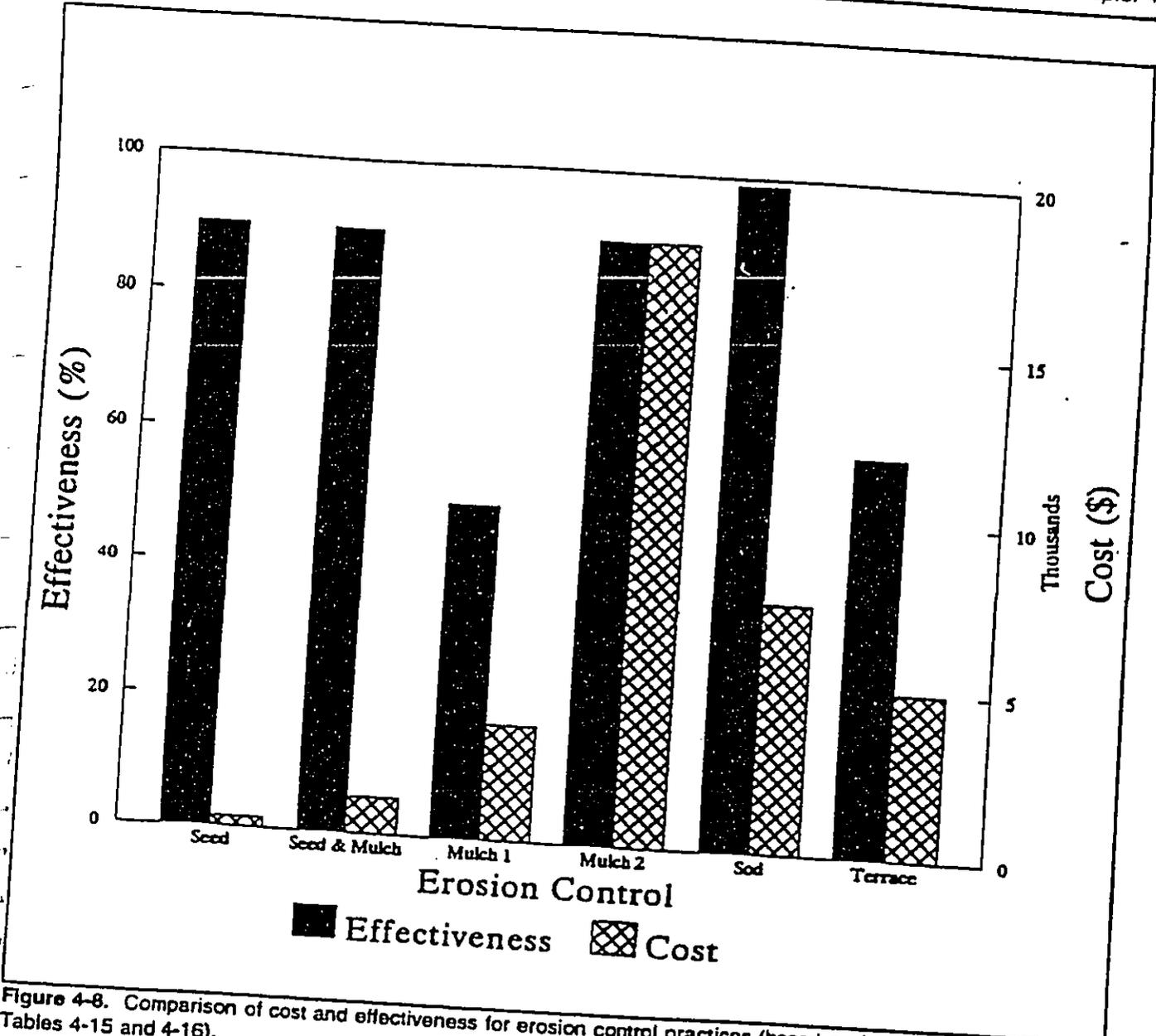


Figure 4-8. Comparison of cost and effectiveness for erosion control practices (based on information in Tables 4-15 and 4-16).

B. Construction Site Chemical Control Management Measure

- (1) Limit application, generation, and migration of toxic substances;
- (2) Ensure the proper storage and disposal of toxic materials; and
- (3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

1. Applicability

This management measure is intended to be applied by States to all construction sites less than 5 acres in area and to new, resurfaced, restored, and reconstructed road, highway, and bridge construction projects. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformance with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The purpose of this management measure is to prevent the generation of nonpoint source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

Many potential pollutants other than sediment are associated with construction activities. These pollutants include pesticides (insecticides, fungicides, herbicides, and rodenticides); fertilizers used for vegetative stabilization; petrochemicals (oils, gasoline, and asphalt degreasers); construction chemicals such as concrete products, sealers, and paints; wash water associated with these products; paper; wood; garbage; and sanitary wastes (Washington State Department of Ecology, 1991).

The variety of pollutants present and the severity of their effects are dependent on a number of factors:

- (1) The nature of the construction activity. For example, potential pollution associated with fertilizer usage may be greater along a highway or at a housing development than it would be at a shopping center development because highways and housing developments usually have greater landscaping requirements.
- (2) The physical characteristics of the construction site. The majority of all pollutants generated at construction sites are carried to surface waters via runoff. Therefore, the factors affecting runoff volume,

such as the amount, intensity, and frequency of rainfall; soil infiltration rates; surface roughness; slope length and steepness; and area denuded, all contribute to pollutant loadings.

- (3) **The proximity of surface waters to the nonpoint pollutant source.** As the distance separating pollutant-generating activities from surface waters decreases, the likelihood of water quality impacts increases.

a. Pesticides

Insecticides, rodenticides, and herbicides are used on construction sites to provide safe and healthy conditions, reduce maintenance and fire hazards, and curb weeds and woody plants. Rodenticides are also used to control rodents attracted to construction sites. Common insecticides employed include synthetic, relatively water-insoluble chlorinated hydrocarbons, organophosphates, carbamates, and pyrethrins.

b. Petroleum Products

Petroleum products used during construction include fuels and lubricants for vehicles, for power tools, and for general equipment maintenance. Specific petroleum pollutants include gasoline, diesel oil, kerosene, lubricating oils, and grease. Asphalt paving also can be particularly harmful since it releases various oils for a considerable time period after application. Asphalt overloads might be dumped and covered without inspection. However, many of these pollutants adhere to soil particles and other surfaces and can therefore be more easily controlled.

c. Nutrients

Fertilizers are used on construction sites when revegetating graded or disturbed areas. Fertilizers contain nitrogen and phosphorus, which in large doses can adversely affect surface waters, causing eutrophication.

d. Solid Wastes

Solid wastes on construction sites are generated from trees and shrubs removed during land clearing and structure installation. Other wastes include wood and paper from packaging and building materials, scrap metals, sanitary wastes, rubber, plastic and glass, and masonry and asphalt products. Food containers, cigarette packages, leftover food, and aluminum foil also contribute solid wastes to the construction site.

e. Construction Chemicals

Chemical pollutants, such as paints, acids for cleaning masonry surfaces, cleaning solvents, asphalt products, soil additives used for stabilization, and concrete-curing compounds, may also be used on construction sites and carried in runoff.

f. Other Pollutants

Other pollutants, such as wash water from concrete mixers, acid and alkaline solutions from exposed soil or rock, and alkaline-forming natural elements, may also be present and contribute to nonpoint source pollution.

Revegetation of disturbed areas may require the use of fertilizers and pesticides, which, if not applied properly, may become nonpoint source pollutants. Many pesticides are restricted by Federal and/or State regulations.

Hydroseeding operations, in which seed, fertilizers, and lime are applied to the ground surface in a one-step operation, are more conducive to nutrient pollution than are the conventional seedbed-preparation operations, in which fertilizers and lime are tilled into the soil. Use of fertilizers containing little or no phosphorus may be required by

local authorities if the development is near sensitive waterbodies. The addition of lime can also affect the pH of sensitive waters, making them more alkaline.

Improper fueling and servicing of vehicles can lead to significant quantities of petroleum products being dumped onto the ground. These pollutants can then be washed off site in urban runoff, even when proper erosion and sediment controls are in place. Pollutants carried in solution in runoff water, or fixed with sediment crystalline structures, may not be adequately controlled by erosion and sediment control practices (Washington Department of Ecology, 1991). Oils, waxes, and water-insoluble pesticides can form surface films on water and solid particles. Oil films can also concentrate water-soluble insecticides. These pollutants can be nearly impossible to control once present in runoff other than by the use of very costly water-treatment facilities (Washington Department of Ecology, 1991).

After spill prevention, one of the best methods to control petroleum pollutants is to retain sediments containing oil on the construction site through use of erosion and sediment control practices. Improved maintenance and safe storage facilities will reduce the chance of contaminating a construction site. One of the greatest concerns related to use of petroleum products is the method for waste disposal. The dumping of petroleum product wastes into sewers and other drainage channels is illegal and could result in fines or job shutdown.

The primary control method for solid wastes is to provide adequate disposal facilities. Erosion and sediment control structures usually capture much of the solid waste from construction sites. Periodic removal of litter from these structures will reduce solid waste accumulations. Collected solid waste should be removed and disposed of at authorized disposal areas.

Improperly stored construction materials, such as pressure-treated lumber or solvents, may lead to leaching of toxics to surface water and ground water. Disposal of construction chemicals should follow all applicable State and local laws that may require disposal by a licensed waste management firm.

3. Management Measure Selection

This management measure was selected based on the potential for many construction activities to contribute to nutrient and toxic NPS pollution.

This management measure was selected because (1) construction activities have the potential to contribute to increased loadings of toxic substances and nutrients to waterbodies; (2) various States and local governments regulate the control of chemicals on construction sites through spill prevention plans, erosion and sediment control plans, or other administrative devices; (3) the practices described are commonly used and presented in a number of best management practice handbooks and guidance manuals for construction sites; and (4) the practices selected are the most economical and effective.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

■ a. Properly store, handle, apply, and dispose of pesticides.

Pesticide storage areas on construction sites should be protected from the elements. Warning signs should be placed in areas recently sprayed or treated. Persons mixing and applying these chemicals should wear suitable protective clothing, in accordance with the law.

Application rates should conform to registered label directions. Disposal of excess pesticides and pesticide-related wastes should conform to registered label directions for the disposal and storage of pesticides and pesticide containers set forth in applicable Federal, State, and local regulations that govern their usage, handling, storage, and disposal. Pesticides and herbicides should be used only in conjunction with Integrated Pest Management (IPM) (see Chapter 2). Pesticides should be the tool of last resort; methods that are the least disruptive to the environment and human health should be used first.

Pesticides should be disposed of through either a licensed waste management firm or a treatment, storage, and disposal (TSD) facility. Containers should be triple-rinsed before disposal, and rinse waters should be reused as product.

Other practices include setting aside a locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage area, and notifying neighboring property owners prior to spraying.

b. Properly store, handle, use, and dispose of petroleum products.

When storing petroleum products, follow these guidelines:

- Create a shelter around the area with cover and wind protection;
- Line the storage area with a double layer of plastic sheeting or similar material;
- Create an impervious berm around the perimeter with a capacity 110 percent greater than that of the largest container;
- Clearly label all products;
- Keep tanks off the ground; and
- Keep lids securely fastened.

Oil and oily wastes such as crankcase oil, cans, rags, and paper dropped into oils and lubricants should be disposed of in proper receptacles or recycled. Waste oil for recycling should not be mixed with degreasers, solvents, antifreeze, or brake fluid.

c. Establish fuel and vehicle maintenance staging areas located away from all drainage courses, and design these areas to control runoff.

Proper maintenance of equipment and installation of proper stream crossings will further reduce pollution of water by these sources. Stream crossings should be minimized through proper planning of access roads. Refer to Chapter 3 for additional information on stream crossings.

d. Provide sanitary facilities for construction workers.

e. Store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff of pollutants and contamination of ground water.

f. Develop and implement a spill prevention and control plan. Agencies, contractors, and other commercial entities that store, handle, or transport fuel, oil, or hazardous materials should develop a spill response plan.

Post spill procedure information and have persons trained in spill handling on site or on call at all times. Materials for cleaning up spills should be kept on site and easily available. Spills should be cleaned up immediately and the contaminated material properly disposed of. Spill control plan components should include:

- Stop the source of the spill.
- Contain any liquid.
- Cover the spill with absorbent material such as kitty litter or sawdust, but do not use straw. Dispose of the used absorbent properly.

■ *g. Maintain and wash equipment and machinery in confined areas specifically designed to control runoff.*

Thinners or solvents should not be discharged into sanitary or storm sewer systems when cleaning machinery. Use alternative methods for cleaning larger equipment parts, such as high-pressure, high-temperature water washes, or steam cleaning. Equipment-washing detergents can be used, and wash water may be discharged into sanitary sewers if solids are removed from the solution first. (This practice should be verified with the local sewer authority.) Small parts can be cleaned with degreasing solvents, which can then be reused or recycled. Do not discharge any solvents into sewers.

Washout from concrete trucks should be disposed of into:

- A designated area that will later be backfilled;
- An area where the concrete wash can harden, can be broken up, and then can be placed in a dumpster; or
- A location not subject to urban runoff and more than 50 feet away from a storm drain, open ditch, or surface water.

Never dump washout into a sanitary sewer or storm drain, or onto soil or pavement that carries urban runoff.

■ *h. Develop and implement nutrient management plans.*

Properly time applications, and work fertilizers and liming materials into the soil to depths of 4 to 6 inches. Using soil tests to determine specific nutrient needs at the site can greatly decrease the amount of nutrients applied.

■ *i. Provide adequate disposal facilities for solid waste, including excess asphalt, produced during construction.*

■ *j. Educate construction workers about proper materials handling and spill response procedures. Distribute or post informational material regarding chemical control.*



May 8, 2002

David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793

SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation

Dear Mr. Craddick:

Thank you for your letter of March 13, 2002 on the above subject.

We acknowledge your comments regarding fire flow and domestic water consumption calculations and have provided your comments to the project architects so that system improvements and adequate meter sizing can be determined during the building permit process.

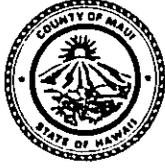
We acknowledge your comments regarding the sources and expected potable and non-potable water usage and will provide an estimated range of use in the Draft Environmental Assessment document. We also acknowledge your comments regarding water conservation measures. We have forwarded a copy of your letter to the project architects so that your comments regarding water conservation measures and best management practices can be implemented in the project design and construction.

Again, thank you very much for the Departments comments on the proposed project.

Very truly yours,

Mich Hirano, AICP

MH:to
cc: Leiane Goo, Maui Lani Partners
mauilani/indususe/school/dwa/tr.001



JAMES "KIMO" APANA
MAYOR

OUR REFERENCE
ty
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

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

MAR 27 2002



THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUNHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

March 20, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Hirano:

SUBJECT: Maui Lani Elementary School

Thank you for your letter of March 1, 2002, requesting comments on the above subject.

We have reviewed the proposed summary and have enclosed our comments and recommendations. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

Acting Assistant Chief Lawrence Hudson
for: Thomas M. Phillips
Chief of Police

Enclosures

c: John E. Min, Planning Department

COPY

TO : THOMAS PHILLIPS, CHIEF OF POLICE
VIA : CHANNELS
FROM : RYAN RODRIGUES, COMMUNITY POLICE OFFICER KAHULUI
SUBJECT : MAUI LANI ELEMENTARY SCHOOL

Sir, this communication is being submitted regarding the above-mentioned subject matter.

On Monday, March 11th 2002, I was assigned to review a memo sent to our Department by Munekiyo and Hiraga Inc. This memo outlined a plan for the development of a new elementary school within the Maui Lani project area. The site for this project is planned to be located on an extension of Kamehameha Avenue located on the Waikapu side of the golf course (refer to attached map). The following concerns need to be addressed.

- Traffic signals at Kamehameha Avenue and Papa Avenue need to be installed. This will improve safety at this intersection. .
- Kamehameha Avenue (section of roadway between Papa Avenue and Luana Gardens) needs to be improved and re-painted (lane markings are faded or nonexistent).

This communication is being submitted for your perusal.

NOTED.

SGT [Signature] 104

THANK YOU,
RYAN RODRIGUES E#0312
3/15/02 11:00 HOURS

Comments in
Review.

alafc
[Signature]
3/19/02

Capt. [Signature]
3/18/02



May 8, 2002

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

**SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation**

Dear Chief Phillips:

Thank you very much for your letter dated March 20, 2002 on the above subject.

We acknowledge your comment regarding installation of traffic signals at Kamehameha Avenue and Papa Avenue. The traffic study carried out for the Maui Lani Project District recommended that this intersection be signalized in phase with the Maui Lani Elementary School Project.

With respect to roadway improvements on Kamehameha Avenue the traffic study recommended to channel the northbound approach to Papa Avenue to have an exclusive right-turn lane and a shared through/left lane. We acknowledge your comment regarding the need for improvements and restriping of the lanes on Kamehameha Avenue between Papa Avenue and Luana Gardens. Based on the traffic analysis, however, widening of Kamehameha Avenue was not an identified mitigation for traffic impact resulting from the proposed project. Appropriate coordination will be undertaken with the Department of Public Works and Waste Management to address roadway improvements for the proposed school.

Again, thank you very much for the comments provided by the Maui Police Department.

Very truly yours,

Mich Hirano, AICP

MH:yp
cc: Leiane Goo, Maui Lani Partners
maulani@indususe@school/mpd.hi

MAR 19 2002



March 15, 2002

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Hirano:

Subject: Maui Lani Elementary School

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, Maui Electric Company (MECO) at this time has no objections to the proposed project.

MECO currently does not have facilities near the area of the proposed school and therefore encourages the project's consultant meet with us as soon as practical so that we may discuss the electrical requirements of this project.

MECO has received a service request (M0007867) for the project "Maui Lani Parkway / Kamehameha Ave Extension". This project, as proposed, would bring MECO facilities near the subject elementary school. It is not known if the timing of this extension will satisfy the needs of the subject elementary school.

If you have any questions or concerns, please call Fred Oshiro at 872-3202.

Sincerely,

A handwritten signature in black ink, appearing to read "Neal Shinyama". The signature is fluid and cursive, written in a professional style.

Neal Shinyama
Manager, Energy Delivery

NS/fo

March 25, 2002

Mr. Neal Shinyama
Manager, Energy Delivery
Maui Electric Company
210 W. Kamehameha Avenue
Kahului, Hawaii 96732

SUBJECT: Maui Lani Elementary School Early Consultation

Dear Mr. Shinyama:

Thank you very much for your response to our request for early consultation on the above subject.

In regards to a recent service request for the "Maui Lani Parkway/Kamehameha Extension, which will bring MECO facilities near the proposed elementary school site, we understand that the timing of this extension will satisfy the needs of the subject elementary school proposal. However, we have also noted your request for early discussions with the project consultants to determine electrical requirements for the proposed project and have forwarded a copy of your letter to the project architects, Architect Hawaii in Honolulu so that the detailed requirements for site servicing can be coordinated with your office.

Again, thank you for your early response to the proposed Maui Lani Elementary School project.

Very truly yours,



Mich Hirano, AICP

MH:sa

cc: Leiane Goo, Maui Lani Partners
Joseph Farrell, AIA, Architects Hawaii (via mail)

maulani\indus\sa\agency.005

Chapter XII

***Comments Received During
the 30-Day Draft Environmental
Assessment Comment Period
and Responses to Comments***

BENJAMIN J. CAYETANO
GOVERNOR



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENT QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

May 31, 2002

Patricia Hamamoto
Department of Education
PO Box 2360
Honolulu, HI 96804

Attn: Sanford Beppu

Dear Ms. Hamamoto:

Subject: Draft environmental assessment (EA) for Maui Lani Elementary School

We have the following comments:

Significance criteria:

The purpose of an analysis according to the significance criteria is to determine if a project may have significant impacts, one of which is secondary impacts. In the draft EA your discussion of criterion #6 on secondary impacts states that "In the context of the project district's master plan, ... secondary impacts associated with the development of the proposed land uses may include new demand generated for public facilities and infrastructure systems by residents and employees of the business and commercial districts." If significant impacts are possible, then an EIS must be prepared for the overall project.

Given that Maui Lani Development, originally covered in the 1977 Waiale Development EIS, is now 25 years old, it seems appropriate that an updated EIS be prepared. Keep in mind that projects disclosed in EISs are considered not only for their component elements and characteristics, but also in relation to the existing social environment, economic environment and physical environment. If project elements have not changed but one of these environments has, then the project becomes in essence a new project, which must then be disclosed.

Segmentation: The Environmental Impact Statement law prohibits segmentation of larger projects and requires that full disclosure of impacts be made on projects in their entirety. The school is part of the larger Maui Lani Development. Since the Development is not yet fully constructed, it is essential that you discuss the larger project in its entirety, with the school as one component.

Cumulative Impacts: Section III.D., *Cumulative and Secondary Impacts*, includes a definition of cumulative impacts, but no discussion and analysis. Maui Lani Development in its entirety, along with other projects in the area, needs to be considered in a discussion and analysis of cumulative

Patricia Hamamoto
May 31, 2002
Page 2

impacts. Factors should include traffic, noise, air quality, water resources and water use (especially important given Maui's long-standing water shortage), drainage and flora and fauna.

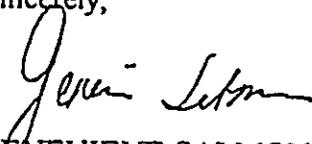
Contacts: Consultation with community or citizen groups, or the nearest neighbors or neighboring landowners, is an important part of the EA review process. Your draft EA distribution list includes Maui Electric as the only non-governmental organization. If you included community groups in the FACD sessions, mentioned in Section X, be sure to list them in the final EA. If not, consult with community groups about the proposed project, allowing them sufficient time to review the draft EA and submit comments. Document all contacts in the final EA.

FACD sessions: In the final EA list the issues raised during the sessions. Also list the dates of the sessions.

Permits and approvals: To your permits section add a possible water use permit from the Commission on Water Resources Management, DLNR; and an archeological mitigation plan approval from the State Historic Preservation Division of DLNR.

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,



GENEVIEVE SALMONSON
Director

c: Mich Hirano, Munekiyo & Hiraga
Leiane Goo, Maui Lani Partners

BENJAMIN J. CAYETANO
GOVERNOR



JUL 24 2002

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

July 22, 2002

MEMO TO: Ms. Genevieve K.Y. Salmonson, Director
Office of Environmental Quality Control

F R O M: Patricia Hamamoto, Superintendent
Department of Education

SUBJECT: Draft Environmental Assessment (EA) for
Maui Lani Elementary School

Thank you for your letter dated May 31, 2002 which provided comments on the subject project. In response to those comments, we offer the following information:

Response to Significance Criteria

The 1977 Environmental Impact Statement (EIS) for the Waiale Development Plan (Maui Lani Project District) prepared pursuant to Chapter 343, Hawaii Revised Statutes, disclosed the proposed development of approximately 3,065 residential units, two elementary school sites, golf course, parks, and commercial land uses. Implementation of the Maui Lani Project District has been carried out in accordance with the original plan with the development of the Dunes at Maui Lani Golf Course, the commercial areas in the vicinity of Kaahumanu Avenue, construction of the Maui Lani Parkway and Mahalani Street extension in the northwestern portion of the project district, the extension of Onehee and Kamehameha Avenues, and the development of approximately 385 residential units.

As mentioned in the Draft EA, Chapter VIII, Findings and Conclusions, criterion No. 6:

The implementation of the Maui Lani Master Plan reflects a comprehensive development of land use needs for the project district to address market conditions and infrastructure requirements. In the context of the project district's master plan, therefore, secondary impacts associated with the development of the proposed land uses may include new demand generated for public facilities and infrastructure systems by residents and employees of the business and commercial districts.

Ms. Genevieve K.Y. Salmonson
Page 2
July 22, 2002

As stated in the findings of secondary impacts, the proposed Maui Lani Elementary School project is seen as a mitigating action to provide additional educational facilities in the Wailuku-Kahului region as the Maui Lani Project District is developed. Secondary and cumulative impacts were also addressed with respect to regional traffic issues.

The Traffic Study, Maui Lani Development Roadway Master Plan (Draft EA, Appendix G), concluded that the overall implementation of the proposed roadway improvements associated with the implementation of the project district would provide a net transportation benefit to the Central Maui area.

To date, implementation of the Maui Lani Project District has not changed from the project elements disclosed in the 1977 Waiale Development Plan EIS. The development of the roadways, water, sewer and drainage infrastructure and areas of residential, golf course, and commercial development follow the general land use pattern established in the original development plan. The development of school facilities was disclosed in relation to the overall parameters of the project district master plan.

Based on the comments received during the 30-day review period, no significant concerns have been raised by the reviewing agencies that would indicate significant adverse impacts or unresolved issues associated with the proposed action.

Response to Segmentation

The Waiale Development Plan EIS disclosed the project elements which included the development of approximately 3,065 residential units, a golf course, village center and neighborhood commercial uses, park, and open spaces covering a total area of approximately 1,015 acres adjacent to the urban centers of Wailuku and Kahului. Impacts to the physical environment such as water resources, airborne emissions, noise generation from construction and traffic, and impacts on terrestrial plant and animal life, archaeological and cultural resources, and visual character were assessed for the entire development.

The socioeconomic environment including population changes, employment opportunities, real property tax revenues, and impacts on public services and facilities was also addressed.

Impacts to infrastructure including traffic, water system, sewerage system, and drainage system were also addressed for the development of the project district in its entirety and were fully disclosed. Development of the proposed school site as a component of the overall project district was addressed in the Waiale Development Plan EIS.

Ms. Genevieve K.Y. Salmonson
Page 3
July 22, 2002

The current Environmental Assessment for the proposed Maui Lani Elementary School project is triggered by the proposed use of state funds. Discussion of the overall project district development, as appropriate in the present context, is addressed in relation to the roadway and drainage master plan for the project district (see Draft EA, Chapter II.D.1., 4., Appendix G and Appendix E, respectively).

Response to Cumulative Impacts

The cumulative impacts of the development of the Maui Lani Project District with respect to traffic are discussed in Chapter III.1. and Appendix G. The traffic study concluded the development of Maui Lani Project District and roadway infrastructure construction would provide a net transportation benefit to the Central Maui area.

The impact of the Maui Lani Project District on the overall drainage system is addressed in Chapter III.4 and Appendix E. No adverse cumulative impacts on the drainage system are anticipated since all storm water runoff resulting from the development within the project district is directed towards the golf course, which is designed to be the designated retention basin.

We acknowledge your comments regarding water use and the terrestrial environment. The Final EA will include discussion of the cumulative impact of the proposed action on water resources and water use as well as discussion of the cumulative impact on noise, air quality, and floral and faunal resources.

Response to Contacts

The Facility Analysis Concept Development (FACD) undertaken by the Department of Education involved active participation by a number of stakeholders and community members. We acknowledge your comment regarding contacts and will list community and professional FACD participants in the Final EA.

Response to FACD Sessions

We acknowledge your comments regarding the FACD process. The Final EA will provide a list of meeting dates and meeting objectives covering the six (6) FACD sessions held in the community. A list of participants will also be provided as well as a list of the major issues raised during the FACD process.

Ms. Genevieve K.Y. Salmonson
Page 4
July 22, 2002

Response to Permits and Approvals

We acknowledge your comments with respect to permits and will add approval of an archaeological mitigation plan from the State Historic Preservation Division, Department of Land and Natural Resources, in the Final EA.

In response to the comment regarding a water permit, we wish to note that under arrangements with Maui Lani School, LLC, (developer), water services for the proposed project will be provided by the County of Maui, Department of Water Supply.

If you have any questions, please call Ms. Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

PH:HM:hy

cc: A. Suga, OBS
Munekiyo & Hiraga, Inc.



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

July 19, 2002

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

2002 JUL 22 12:55
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

2/3931

LD-NAV
Ref: MAUILANIELESCHOOLDEA.RCM2
L-3625/3701/3709/3484/48

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

-Attn: Joseph Alueta

Dear Mr. Min:

I.D. No.: PH2 2002/001 and CUP 2002/0002
Applicant: Maui Lani Partners
Project: Maui Lani Elementary School
Authority: County of Maui Department of Planning
TMK: 2nd/ 3-8-007: 131

This is a follow-up to our letter (Ref: MAUILANIELESCHOOLDEA.RCM) to you dated July 18, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Land Division Engineering branch comment.

The Department of Land and Natural Resources has no other comment to offer on the subject matter.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0438.

Very truly yours,

CHARLENE E. MAMIYA
Administrator

C: Maui District Land Office

DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Engineering Branch

COMMENTS

We confirm that the proposed project site, according to FEMA Community-Panel No. 150003 0190 D, is located in Zone C. This is an area of minimal flooding.

Chapter II, Section D.4 should be rewritten to discuss the on-site (school site) drainage improvements, and show the relationship the Maui Lani Golf Course Drainage Report (Appendix E) has with the proposed project.

Please include the State Civil Defense in the coordination efforts of this proposed public school project. Public school facilities are ideal sites for emergency shelters. To provide an emergency shelter that is safe from various natural hazards, certain design criteria are recommended. The project should be evaluated to meet these criteria during the planning stage, instead of retrofitting the structures after completing construction.

Should you have any questions, please call Eric Yuasa of the Project Planning Section at 587-0229.

Signed: Andrew M. Monden
ANDREW M. MONDEN, CHIEF ENGINEER

Date: 7/1/02



JUN 17 03:22 WATER & LAND

RECEIVED
LAND DIVISION

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

2002 JUL -1 P 1:10

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION

P.O. BOX 621

HONOLULU, HAWAII 96803

June 17, 2002

LD/NAV

Ref.: MAUILANIELESCHOOLDEA.CMT2

L-3484

Suspense Date: 7/10/02

MEMORANDUM:

- TO:
- Division of Aquatic Resources
 - XX Division of Forestry & Wildlife
 - XX Division of State Parks
 - Division of Boating and Ocean Recreation
 - OO Historic Preservation Division (RD)
 - XX Commission on Water Resource Management
 - Land Division Branches:
 - Planning and Technical Services
 - ✓ XX Engineering Branch
 - OO Maui District Land Office (RD)

FROM: *J* Dierdre S. Mamiya, Administrator *D. Mamiya*
Land Division

SUBJECT: Review: Draft Environmental Assessment (MAY 2002)
 Applications: Special Use Permit and Project District
 Development Approval
 Authority: County of Maui Department of Planning
 I.D. Nos: PH2 2002/0001 and CUP 2002/0002
 Applicant: Maui Lani Partners on behalf of the
 State of Hawaii Department of Education
 Consultant: Munekiyo and Hiraga, Inc.
 Project: Maui Lani Elementary School
 Location: Wailuku-Kahului Project District 1
 TMK: 2nd/ 3-8-07: Portion of 131

Please review the attached DEA covering the subject matter and submit your comments (if any) on Division letterhead (signed and dated) 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: *DM*

Date



July 24, 2002

Dierdre S. Mamiya, Administrator
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Maui Land Elementary School Draft Environmental Assessment and
Special Use Permit Application

Dear Ms. Mamiya:

Thank you for your letter to John Min, Planning Director, Department of Planning, dated July 19, 2002, providing comments from the Engineering Branch on the subject document and application.

We acknowledge your comments regarding discussion of the on-site drainage improvements and have amended this section to show its relationship to the Maui Lani Golf Course Drainage Report (Appendix E).

We acknowledge your comments regarding the coordination with the State Civil Defense and have forwarded your letter to the Department of Education and the project design consultant for their information and appropriate action.

Thank you again for your comments.

Very truly yours,

Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners
Joseph Farrell, AIA, Architects Hawaii

mauilani/school/dlnr/003

Jul-16-02 07:22am

From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-626 P.01/03 F-234

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAK, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNEL NASHOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIWEWA BUILDING, ROOM 655
801 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

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

02/3787

July 11, 2002

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

LOG NO: 30270 ✓
DOC NO: 0207CD21

Dear Mr. Min:

SUBJECT: Chapter 6E-42 Historic Preservation Review Pertaining to the Applications for Project District II Approval and County Special Use Permit for the Use Permit for the Proposed Maui Lani Elementary School (Subject I.D.: PH2 2002/0001, CUP 2002/0002). Wailuku Ahupua`a, Wailuku District, Island of Maui. TMK: (2) 3-9-007:131

Thank you for the opportunity to review and comment on the Applications for Project District Phase II Approval and County Special Use Permit for the proposed Maui Lani Elementary School, which was received by our staff on 17 June 2002. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject parcel.

We have previously reviewed and commented on the Permit Application for Grubbing Only... (SHPD DOC NO: 0206CD22/LOG NO: 30072), the Preliminary Plat Review for the Proposed Maui Lani - Phase 7/Increment 1 Subdivision (SHPD DOC NO: 0203CD05/LOG NO: 29329), and for the pre-consultation Draft Environmental Impact Assessment (SHPD DOC NO: 0204CD24/LOG NO: 29626). As the proposed project appears to be in this same area, our previous comments, which are restated below, still apply.

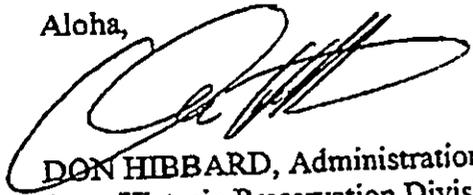
A search of our records indicates the proposed project area has not undergone an archaeological inventory survey. Although this area has been subject to previous disturbance as a result of modern commercial agriculture (Pantaleo & Sinoto 1996), the USDA Soil Survey indicates this area is located in the Pu'uone Sand Dune, which is known to contain both isolated and clusters of pre-Contact human burials. Recent on-going archaeological work conducted in this area suggests that it is likely that significant historic sites (and site remnants) may be present beneath the till zone.

Because of the potential of human burials to be present beneath the till-zone, we recommend that no action be taken on the proposed undertaking until an archaeological inventory survey, involving subsurface testing, has been conducted of the proposed project area. An acceptable report documenting the findings of the inventory survey will need to be submitted to this office for review.

Given the high level of cultural sensitivity, based on the presence of numerous identified burials in the Maui Lani project area, we also recommend an archaeological monitor be present during all construction/development related ground disturbing activities conducted in association with the proposed subdivision. An acceptable monitoring plan is currently in place for the Maui Lani projects, and this plan and its stipulated directives can still be used for this project.

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

Aloha,



DON HIBBARD, Administration
State Historic Preservation Division

CD:amk



July 24, 2002

Don Hibbard, Director
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

SUBJECT: Maui Lani Elementary School Draft Environmental Assessment and
Special Use Permit Application.

Dear Mr. Hibbard:

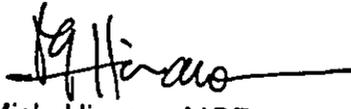
Thank you for your letter dated July 11, 2002 to John Min, Planning Director, Department of Planning, providing comments on the subject document and application. We would like to provide the following information in response to your comments.

We confirm that an archaeological inventory survey will be undertaken on the subject property prior to any ground-altering or ground-disturbing activities. We further confirm that an acceptable report documenting the findings of the inventory survey will be submitted to your office for review and approval.

As indicated in Chapter III.A.4. of the Draft EA, and in accordance with the approved monitoring plan, an archaeological monitor will be present to monitor all construction-related, ground-altering activities.

Thank you again for the comments provided by the State Historic Preservation Division.

Very truly yours,


Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners

mauilani/school/shpdltr.002



va/3045

STATE OF HAWAII '02 JUN -6 P12:18
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500 DEPT OF PLANNING
HONOLULU, HAWAII 96813 COUNTY OF MAUI
RECEIVED

June 4, 2002

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

(HRD #02-601)

Subject: Draft Environmental Assessment (DEA) for
Maui Lani Elementary School
TMK: 3-8-07: portion of 131

Dear Mr. Min:

Thank you for the opportunity to comment on the above referenced project. The Office of Hawaiian Affairs offers the following comments.

Archaeological and Historical sites

Because the project area primarily covers lands that were formerly used for burials, OHA is concerned with the project area and the high probability of encountering human burials and remains. No excavating or ground altering activities should commence until an archaeological inventory has been conducted. Moreover, the proposed project should not proceed until a burial/treatment or preservation plan has been reviewed by the State of Hawai'i Historic Preservation Division (SHPD) and the Maui/Lana'i Island Burial Council. If you have any questions, please contact Mark A. Mararagan, policy analyst at 594-1756.

Sincerely,

Jalna Keala
Acting Hawaiian Rights Division Director

Mr. John E. Min, Planning Director
Department of Planning
County of Maui
June 4, 2002
Page Two

cc: OHA Board of Trustees
Clyde W. Namu'o, OHA Administrator
Maui CAC



July 24, 2002

Jalna Keala, Acting Hawaiian Rights Division Director
State Of Hawaii
Office of Hawaiian Affairs
711 Kapi'olani Boulevard Suite 500
Honolulu, Hawaii 96813

SUBJECT: Maui Lani Elementary School Draft Environmental Assessment and
Special Use Permit Application

Dear Ms. Keala:

Thank you for your letter to John Min, Planning Director, Department of Planning, dated June 4, 2002 providing comments on the subject document and application. We wish to provide the following information in response to your comments.

Due to the potential for encountering sensitive cultural finds on the project site, an archaeological inventory survey will be undertaken and an acceptable report documenting the findings of the inventory survey will be submitted to the State Historic Preservation Division for approval. These two (2) actions will be carried out prior to any ground-altering or ground-disturbing activities on the site.

In reply to your comment regarding a burial/treatment or preservation plan, we wish to note that these items are site specific and normally are required when burials or cultural resources are encountered. There currently is a monitoring plan in place for the Maui Lani Project District. This plan will be followed during construction activities and an archaeological monitor will be present during all construction-related, ground-altering activities. We acknowledge and confirm appropriate steps will be taken and depending on the circumstances, a burial/treatment or preservation plan will be prepared and processed with the SHPD and/or the Maui/Lani Island Burial Council.

Jalna Keala, Acting Hawaiian
Rights Division Director
July 24, 2002
Page 2

Thank you again for your comments.

Very truly yours,

A handwritten signature in black ink, appearing to read "Mich Hirano", with a long horizontal line extending to the right.

Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners

maui.lan/school/ohallr.001

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

July 19, 2002

Patricia Hamamoto, Superintendent
Department of Education
P. O. Box 2360
Honolulu, Hawaii 96804

Dear Ms. Hamamoto:

Attn: Sanford Beppu, Facilities and Support Services

RE: Draft Environmental Assessment (EA) for the Maui Lani Elementary
School at TMK: 3-8-007:131

In conjunction with the above-referenced assessment, the Maui Planning Department (Department) is processing a County Special Use Permit and Project District Phase 2 Approval for the proposed Maui Lani Elementary School. The Department's comment period on the above project ended on July 15, 2002. Comments received to date have been forwarded to your consultant, Munekiyo and Hiraga, Inc. We also understand that the comment period for the Draft EA ended on June 22, 2002.

The Department received a copy of a letter from the Office of Environment Quality Control dated May 31, 2002, regarding the appropriateness of an updated Environmental Impact Statement (EIS). Although the acceptance of the final EA or any decision to process an updated EIS is under your agency's authority, the Department has no objections to the continued processing of an EA for the following reasons:

1. The comments received to date essentially identified no concerns or objections to the project. The only significant comments to date were from the Department of Land and Natural Resources, State Historic Preservation Division (SHPD) and the Office of Hawaiian Affairs (OHA) relative to cultural remains and human burials.

The consultant has responded that an archaeological inventory survey and acceptable archaeological report will be submitted to SHPD for review prior to any ground disturbing activities, as well as the

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

Quality Seamless Service - Now and for the Future

Patricia Hamamoto, Superintendent
July 19, 2002
Page 2

presence of an archaeological monitor during construction/development related ground disturbing activities. It should be noted that the current applications are related to establishing the land use for the project. During the Project District Phase 3 approval process, the construction plans will be reviewed by the Department. Prior to the Phase 3 approval, the inventory survey and acceptable monitoring plan will be required.

Relative to concerns over human burials, it is our understanding that a burial plan was developed and accepted by the Maui/Lanai Burial Council for the Maui Lani project which should address the concerns raised by OHA.

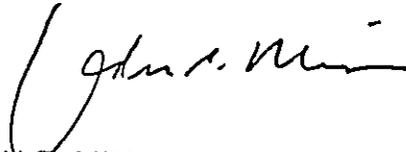
2. The 1977 Environmental Impact Statement for the Waiale Development Plan (Maui Lani Project District) prepared pursuant to Chapter 343, Hawaii Revised Statutes, disclosed the proposed development of approximately 3,065 residential units, two (2) elementary school sites, golf course, parks and commercial uses. Implementation of the Maui Lani Project District has been carried out generally in accordance with the original plan with the development of the Dunes at Maui Lani Golf Course, the commercial lots near Kaahumanu Avenue, and the approximately 385 residential units built to date. The proposed Maui Lani Elementary School is a continuation of the development of the original plan. Further, rather than creating new impacts that were anticipated in the original EIS, the proposed Maui Lani Elementary School project is seen as a mitigative action to provide additional educational facilities in the Wailuku-Kahului region. The residential development of Maui Lani and within the Wailuku-Kahului region have created new demands for an elementary school. Further, any impacts that may be created are local rather than external or regional since the school is proposed to support the existing and proposed Maui Lani residential community.

We do not believe the Maui Lani Elementary School raises any new issues or impacts that were not considered by the previous EIS. Further, the scale of the project within the Maui Lani Project District does not justify the processing of an updated EIS. We further recognize the critical need for the new school today and the need for timely processing of the applications.

Patricia Hamamoto, Superintendent
July 19, 2002
Page 3

Again, we have no objections to the processing of the EA. Thank you for the opportunity to comment on the project. If additional clarification is required, please contact Ms. Colleen Suyama, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN
Planning Director

JEM:CMS:smb

c: Clayton Yoshida, AICP, Deputy Planning Director
Mich Hirano, AICP, Munekiyo & Hiraga, Inc.
Colleen Suyama, Staff Planner
Project File
General File
(K:\WP_DOCS\PLANNING\EA\2002\02EAMauiLaniElemSchool\DOELtr.wpd)



July 24, 2002

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

SUBJECT: Maui Lani Elementary School Draft Environmental Assessment and
Special Use Permit Application

Dear Mr. Min:

Thank you for your letter to Patricia Hamamoto, Superintendent, Department of Education, dated July 19, 2002 on the subject document and application.

We acknowledge your comments regarding the continued processing of the application on the basis of the environmental assessment.

Thank you again for your response.

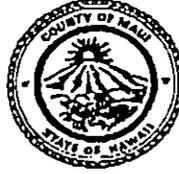
Very truly yours,

Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners

mauilani/school/plannlr.001



'02 JUL -8 A9:45

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 270-7816 • Fax (808) 270-7833

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

July 5, 2002

Ms. Colleen Suyama, Planner
Planning Department
County of Maui
250 S High Street
Wailuku HI 96793

RE ID: PH2 2002/0001; CUP 2002/0002
TMK: (2)3-8-007:131
Project Name: Maui Lani Elementary School

Dear Ms. Suyama:

Thank you for the opportunity to review this application. The Department of Water Supply has the following comments:

Based on system standard guidelines, potential water usage for this project would range from 22,000 to 39,000 gallons per day. The project area is served by the Central Maui System. The major source for this system is the Iao Aquifer. Rolling annual average withdrawals from the Iao Aquifer as of May 1, 2002 were 16.432 MGD. The regulatory sustainable yield for this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resources Management will designate Iao Aquifer. Four wells withdrawing from the Waihee aquifer currently supplement the Central Maui System. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals. Nevertheless, the applicant 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.

Fire and domestic calculations should be required during the building permit process so that system improvements and adequate meter sizing can be determined. DWS-approved fire flow calculation methods for use include: "Guide for Determination of Required Fire Flow - Insurance Services office, 1974" and "Fire Flow" - Hawaii Insurance Bureau, 1991.

As stated in the application material, water service for this project will be provided by extending the 12-inch water main on Kamehameha Avenue. We recommend that the applicant coordinate with our Engineering Division during the development process.

We likewise recommend that the applicant adopt the following water conservation measures in project design where appropriate:

Eliminate Single-Pass Cooling: Single-pass, water cooled systems should be eliminated per Maui County Code Subsection 14.21.20. These units pass water once-through for cooling and then dispose of the water into the drain. 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: The project is located in the "Maui County Planting Plan"- Plant Zone 3. We encourage the applicant to utilize appropriate native and non invasive species in landscaping. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species.

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. As an alternative, provide the more automated, soil-moisture sensors on controllers.

Look for Opportunities to Conserve Water Around the Property: A few examples: When clearing driveways, etc. of debris, use a broom instead of a hose, periodically check for leaks in faucets and toilet tanks.

The Department of Water Supply strives to protect the integrity of surface and groundwater resources by encouraging the applicant to adopt best management practices (BMPs) designed to minimize infiltration and runoff from construction and vehicle operations. BMPs for principle operations can be obtained from the State Department of Health.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7199.

Sincerely,



David Craddick
Director

eam
c:: engineering division
applicant



July 24, 2002

David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793

SUBJECT: Maui Lani Elementary School Draft Environmental Assessment and
Special Use Permit Application

Dear Mr. Craddick:

Thank you for your letter to Colleen Suyama, Staff Planner, Department of Planning, dated July 5, 2002 providing comments on the subject document and application. We wish to provide the following information in response to your comments.

We acknowledge your comment that an assessment of water availability for the proposed project will be made by the Department of Water Supply at the time of the application for the water meter or meter reservation. Water services will be coordinated with the Department of Water Supply as appropriate.

We acknowledge your comment regarding coordination with the Department of Public Works and Waste Management, Engineering Division during the development process to determine fire and domestic water flow calculations. We have forwarded a copy of your letter to the project design consultant for their information and action.

We acknowledge your comments regarding water conservation measures and have forwarded a copy of your letter to the project design consultant for their review and appropriate action.

We acknowledge your comments regarding best management practices to minimize infiltration and runoff from construction and vehicle operations and have forwarded a copy of your letter to the project design consultant for their review and appropriate action.

David Craddick, Director
July 24, 2002
Page 2

Thank you again for your comments on the subject document and application.

Very truly yours,

A handwritten signature in black ink, appearing to read "Mich Hirano", with a long horizontal stroke extending to the right.

Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners
Joseph Farrell, AIA, Architects Hawaii

maui.lani/school/dwsllr.002



POLICE DEPARTMENT COUNTY OF MAUI



JAMES "KIMO" APANA
MAYOR

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

THOMAS M. PHILLIPS
CHIEF OF POLICE

OUR REFERENCE
YOUR REFERENCE

KEKUHAPUIO R. AKANA
DEPUTY CHIEF OF POLICE

July 8, 2002

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

'02 JUL 10 AM 0:40

MEMORANDUM

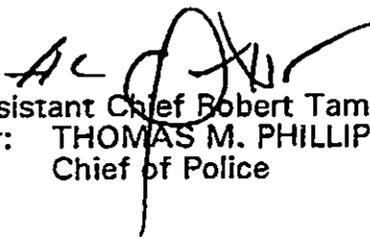
TO : JOHN E. MIN, PLANNING DIRECTOR

FROM : THOMAS M. PHILLIPS, CHIEF OF POLICE

SUBJECT : I.D.: PH2 2002/0001, CUP 2002/0002
 TMK: 3-8-007:131
 Project
 Name: Maui Lani Elementary School
 Applicant: Maui Lani Partners

- No further recommendation or comment is necessary or desired.
- Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project. We are returning the application booklet which was provided for our comments.


 Assistant Chief Robert Tam Ho
 For: THOMAS M. PHILLIPS
 Chief of Police

Enclosures

DOCUMENT CAPTURED AS RECEIVED

Jul-10-02 01:37pm

From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-602 P.02/02 F-160

COPY

TO : THOMAS PHILLIPS, CHIEF OF POLICE

VIA : CHANNELS

FROM : RYAN RODRIGUES, COMMUNITY POLICE OFFICER /D-I (KAHULUI)

SUBJECT : MAUI LANI APPLICATION FOR A SPECIAL USE PERMIT/
RE: MAUI LANI ELEMENTARY SCHOOL

A-4
7/8/02

Sir, this communication is being submitted for your information and perusal.

On July 3rd, 2002, I was assigned to review and comment on the above-mentioned subject matter.

A review of the application submitted found no additional concerns at this time. Provided that the installation of traffic signals at Papa Avenue and Kamehameha Avenue are installed prior to the completion of this project.

Thank you for allowing us the opportunity to review and comment on this project plan.

[Signature]
 Ryan RODRIGUES, E.0312
 7/3/02 1133 HOURS
 COMMUNITY POLICE OFC.
 KAHULUI / D-I

Noted, no other concerns except at noted by Officer RODRIGUES regarding the traffic signal installation..

[Signature]
 Sgt. Barry AOKI 1041
 07/03/02 @ 1645 hours

FORWARD FOR REVIEW
[Signature]
 7/8/02



July 24, 2002

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

SUBJECT: Maui Lani Elementary School - Draft Environmental Assessment
Early Consultation

Dear Chief Phillips:

Thank you very much for your letter dated March 20, 2002 on the above subject.

We acknowledge your comment regarding installation of traffic signals at Kamehameha Avenue and Papa Avenue. The traffic study carried out for the Maui Lani Project District recommended that this intersection be signalized in phase with the Maui Lani Elementary School Project.

With respect to roadway improvements on Kamehameha Avenue the traffic study recommended to channel the northbound approach to Papa Avenue to have an exclusive right-turn lane and a shared through/left lane. We acknowledge your comment regarding the need for improvements and restriping of the lanes on Kamehameha Avenue between Papa Avenue and Luana Gardens. Based on the traffic analysis, however, widening of Kamehameha Avenue was not an identified mitigation for traffic impact resulting from the proposed project. Appropriate coordination will be undertaken with the Department of Public Works and Waste Management to address roadway improvements for the proposed school.

Again, thank you very much for the comments provided by the Maui Police Department.

Very truly yours,

Mich Hirano, AICP

MH:yp
cc: Leiane Goo, Maui Lani Partners
mauilani@ndusus.e/school/mpd/lr

JAMES "KIMO" APANA
Mayor



FLOYD S. MIYAZONO
Director

GLENN T. CORREA
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

1580-C Kaahumanu Avenue, Wailuku, Hawaii 96793

July 10, 2002

MEMO TO: John E. Min, Planning Director

FROM: *FLOYD S. MIYAZONO*
FLOYD S. MIYAZONO, Director

SUBJECT: MAUI LANI ELEMENTARY SCHOOL
PH2 2002/0001, CUP 2002/0002

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

02 JUL 15 09:41

We have reviewed the subject application and have no comments to submit at this time.

Thank you for the opportunity to review and comment. Please contact me or Mr. Patrick Matsui, Chief of Planning and Development, at extension 7387 if there are any questions.

c: Patrick Matsui, Chief-Planning and Development



July 24, 2002

Floyd S. Miyazono, Director
Department of Parks & Recreation
County of Maui
1580-C Kaahumanu Avenue,
Wailuku, Hawaii 96793

SUBJECT: Maui Lani Elementary School Draft Environmental Assessment and
Special Use Permit Application

Dear Mr. Miyazono:

Thank you for your letter to John Min, Planning Director, Department of Planning, dated July 10, 2002 regarding the subject document and application.

We acknowledge that the Department of Parks and Recreation has no comment to offer at this time.

Thank you again for your response.

Very truly yours,

Mich Hirano, AICP

MH:tn

cc: Patricia Hamamoto, Department of Education
Leiane Paci, Maui Lani Partners

maulani/school/dprltr.001

References

References

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

County of Maui, The General Plan of the County of Maui, September 1990 Update.

County of Maui, Wailuku-Kahului Community Plan, December 1987.

County of Maui, Department of Water Supply, November 2001 Water Supply Pumping Report, December 10, 2001.

County of Maui, Office of Economic Development, Maui County Data Book, December 1998.

County of Maui, Office of Economic Development, Maui County Data Book, June 2001.

Department of Business, Economic Development and Tourism, The State of Hawaii Data Book 1992.

Department of Education, Facilities and Support Services Branch, February 15, 2002.

Munekiyo, Arakawa & Hiraga, Inc., Application for Project District Phase II and Project District Special Use Approvals - Maui Lani Retirement Community, September 1999.

Munekiyo, Arakawa & Hiraga, Inc., Draft Environmental Assessment - Maui Memorial Medical Center Expansion Improvements, May 1999.

R.M. Towill Corp., Public Facilities Assessment Report, August 1992.

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

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

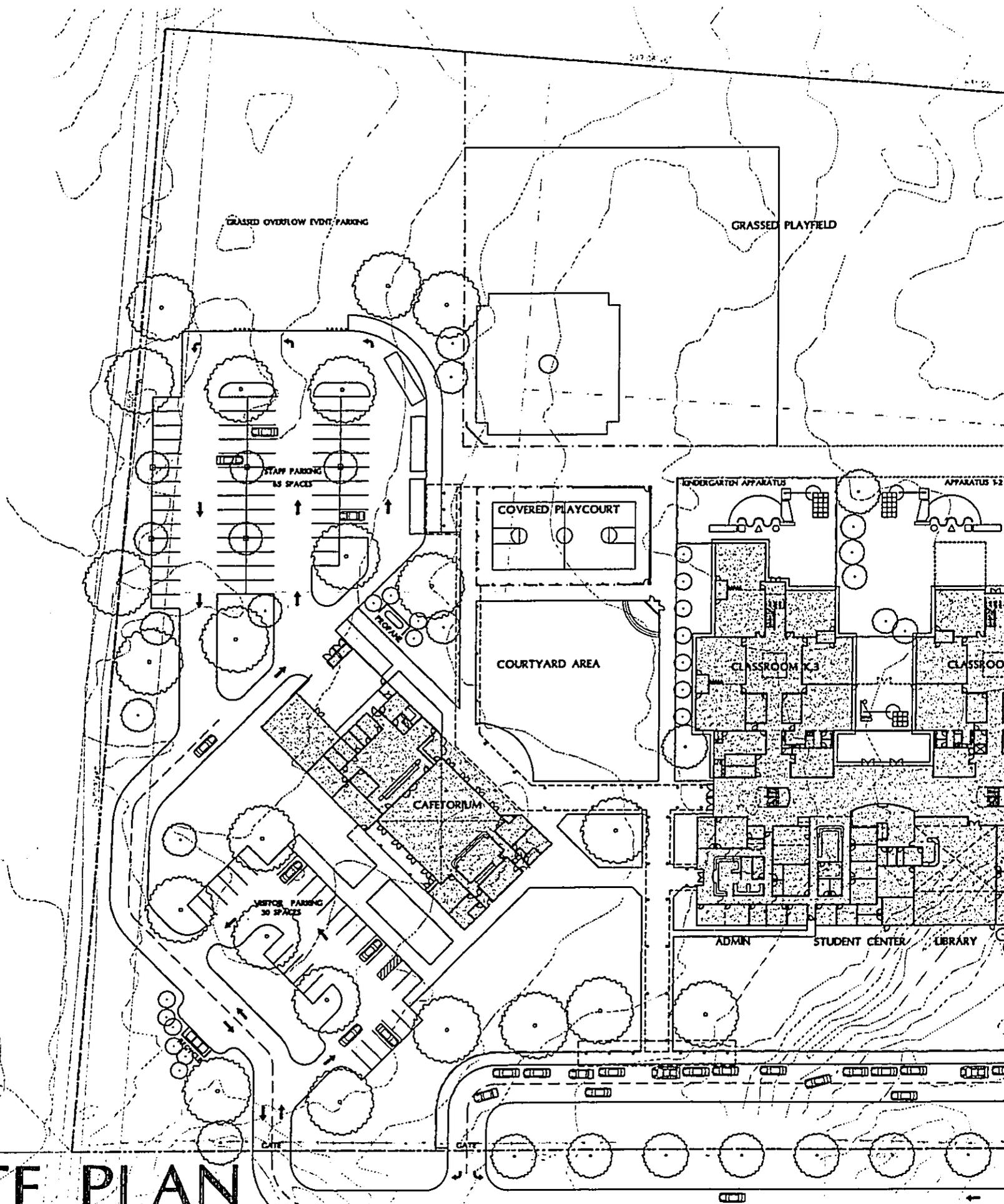
U.S. Census, 2000.

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

Appendices

Appendix A

Development Plans

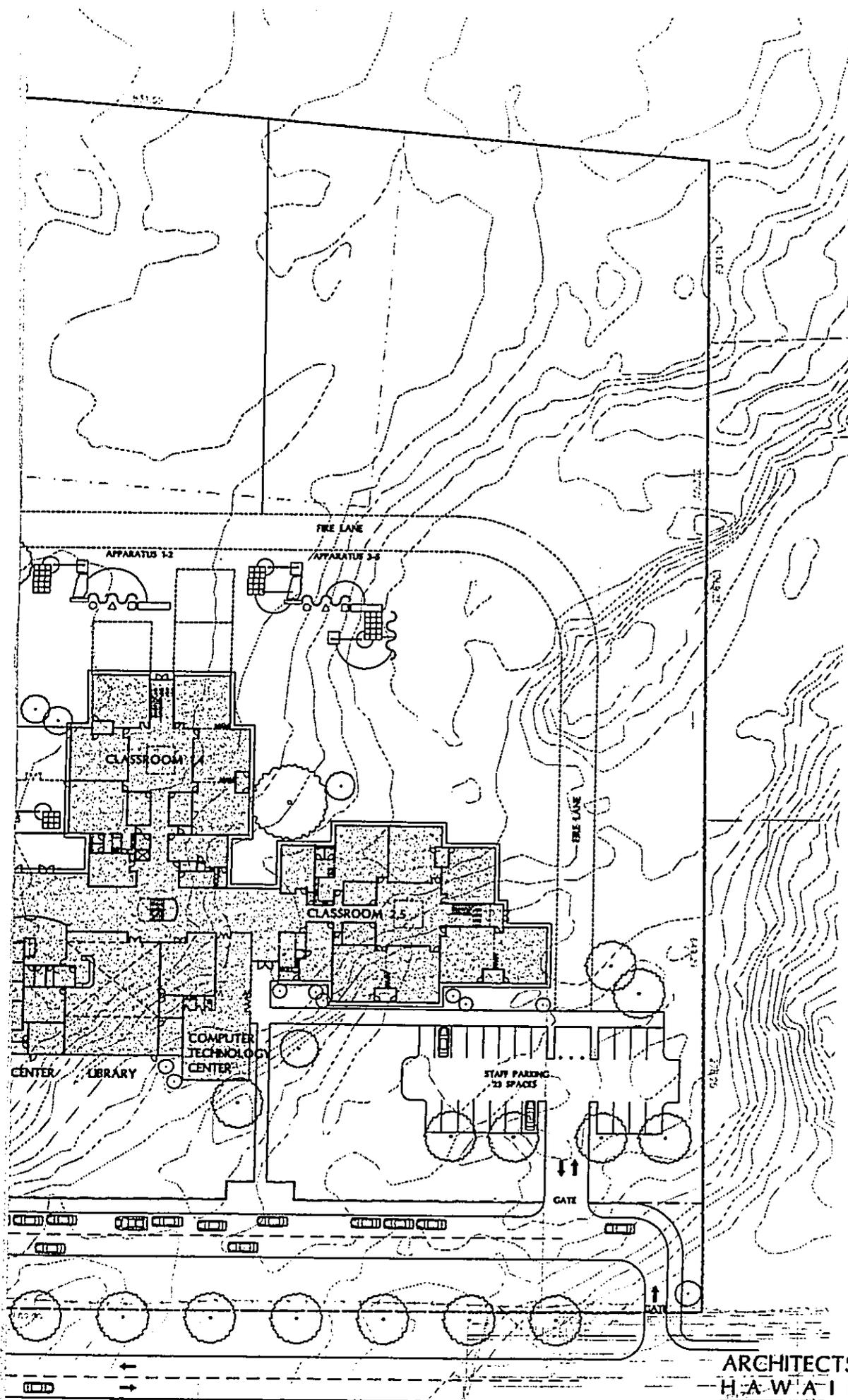


SITE PLAN

NORTH 5 20 60 120 MAY 28, 2002



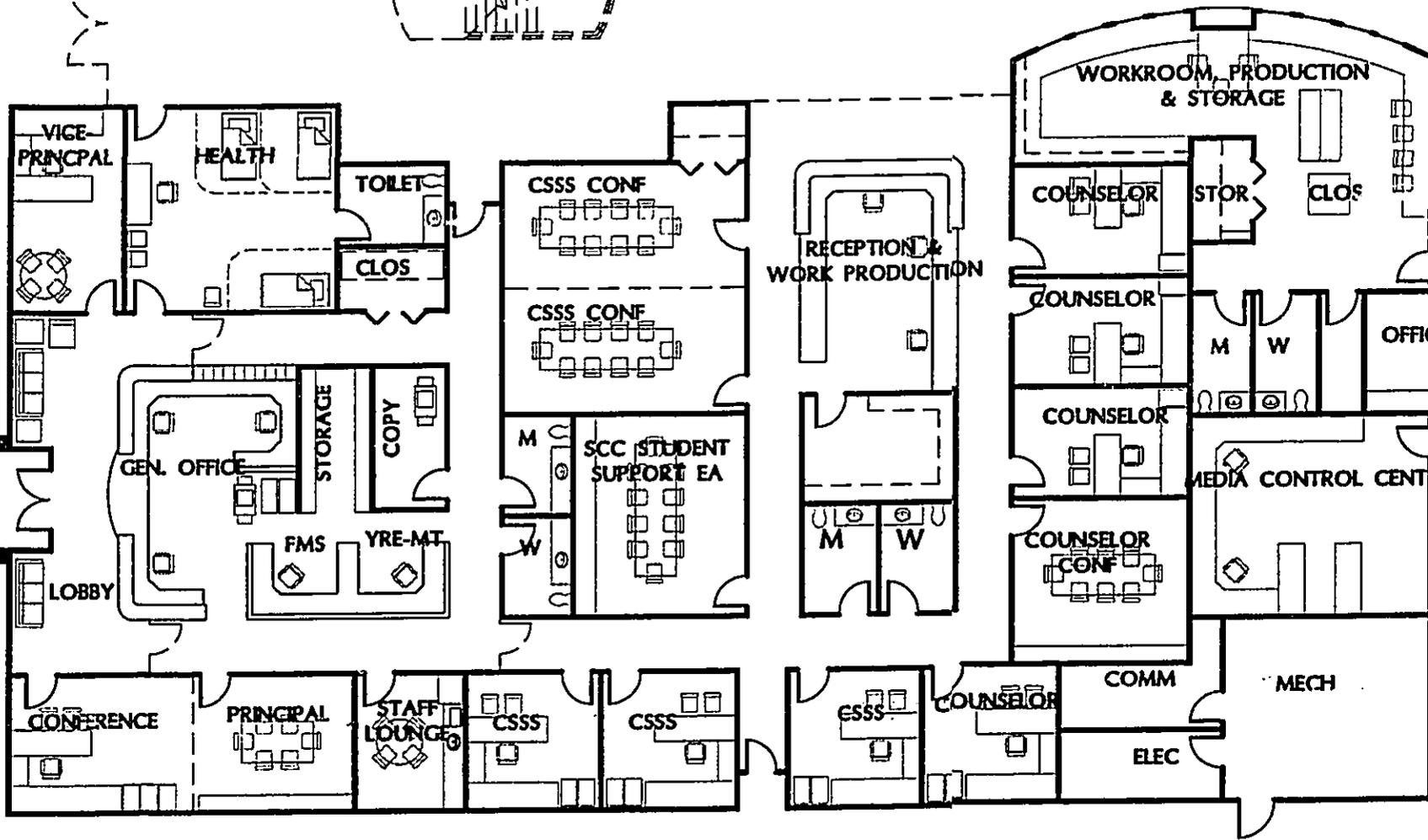
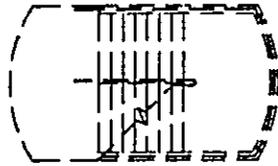
DESIGNED BY: [unreadable] DRAWN BY: [unreadable]



ARCHITECTS
HAWAII
LIMITED

A-1 SHT 1 OF 6

CLASSROOM BUILDING



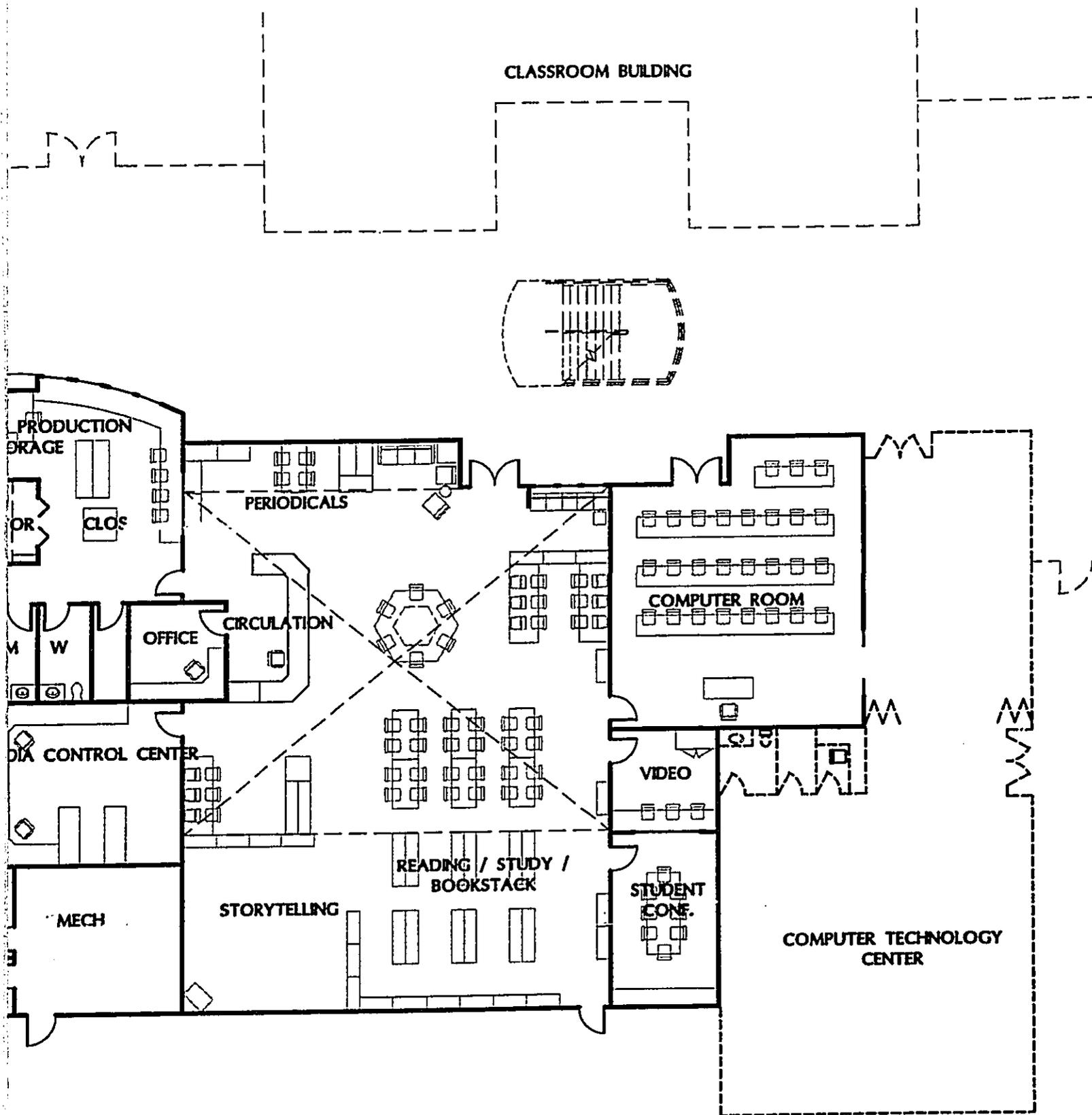
ADMIN / STUDENT CENTER / LIBRARY / COMPUTER

SCALE: 1/16"=1'-0"



NORTH

CLASSROOM BUILDING

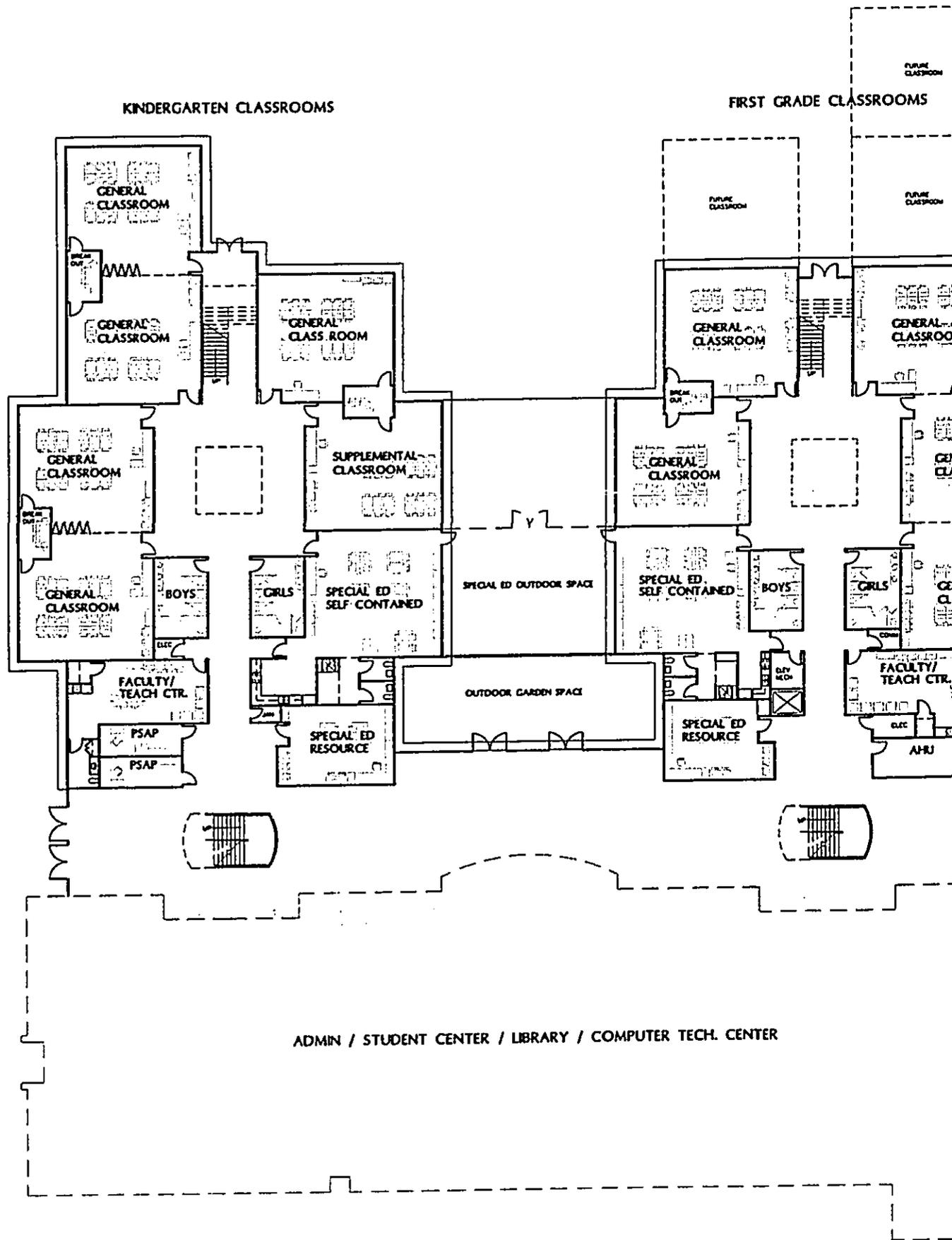


COMPUTER TECH. CENTER

MAY 28, 2002

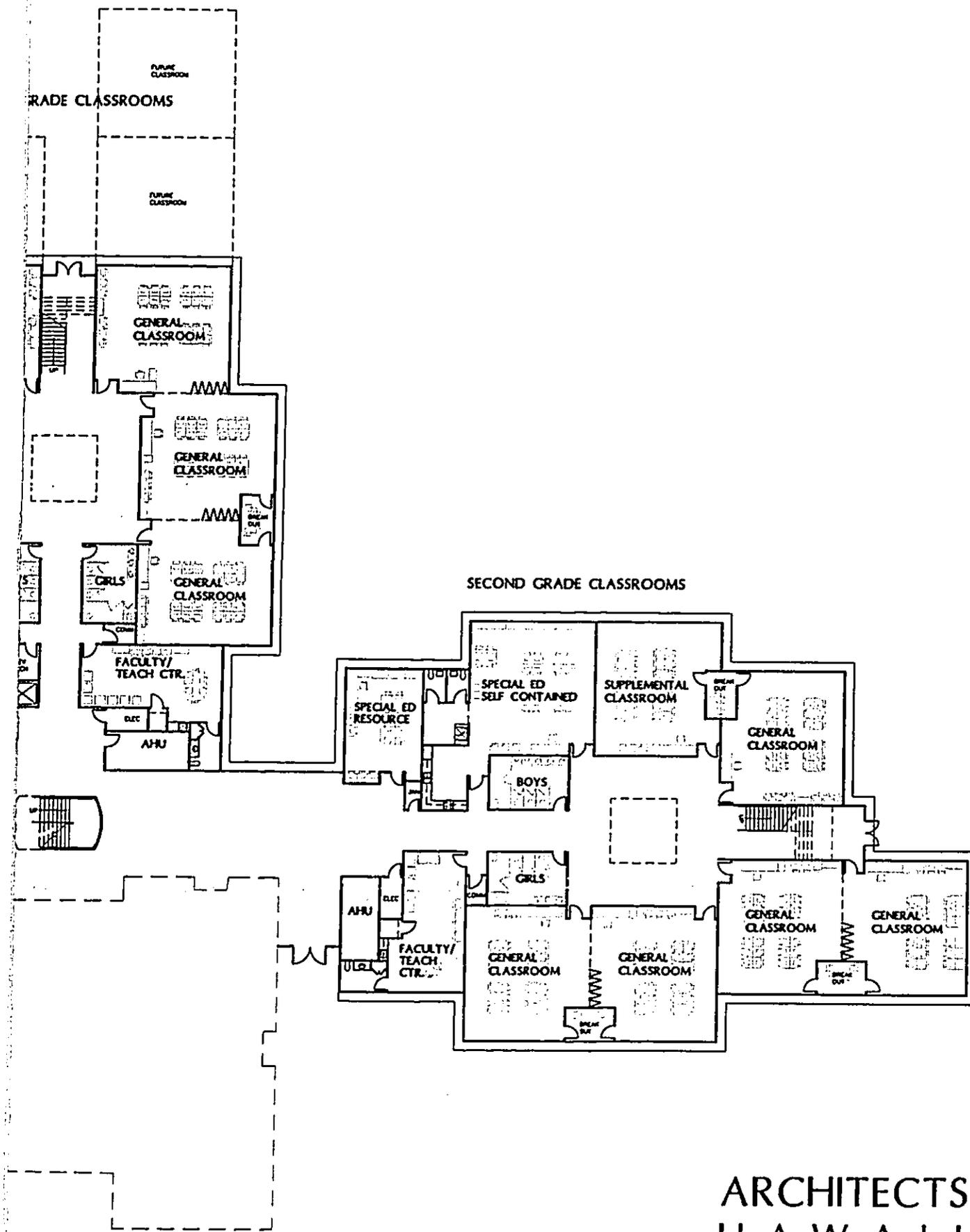
**ARCHITECTS
HAWAII
LIMITED**

A-2 SHT 2 OF 6



CLASSROOM BUILDING: GROUND FLOOR

SCALE: 1/32"=1'-0"



D FLOOR PLAN

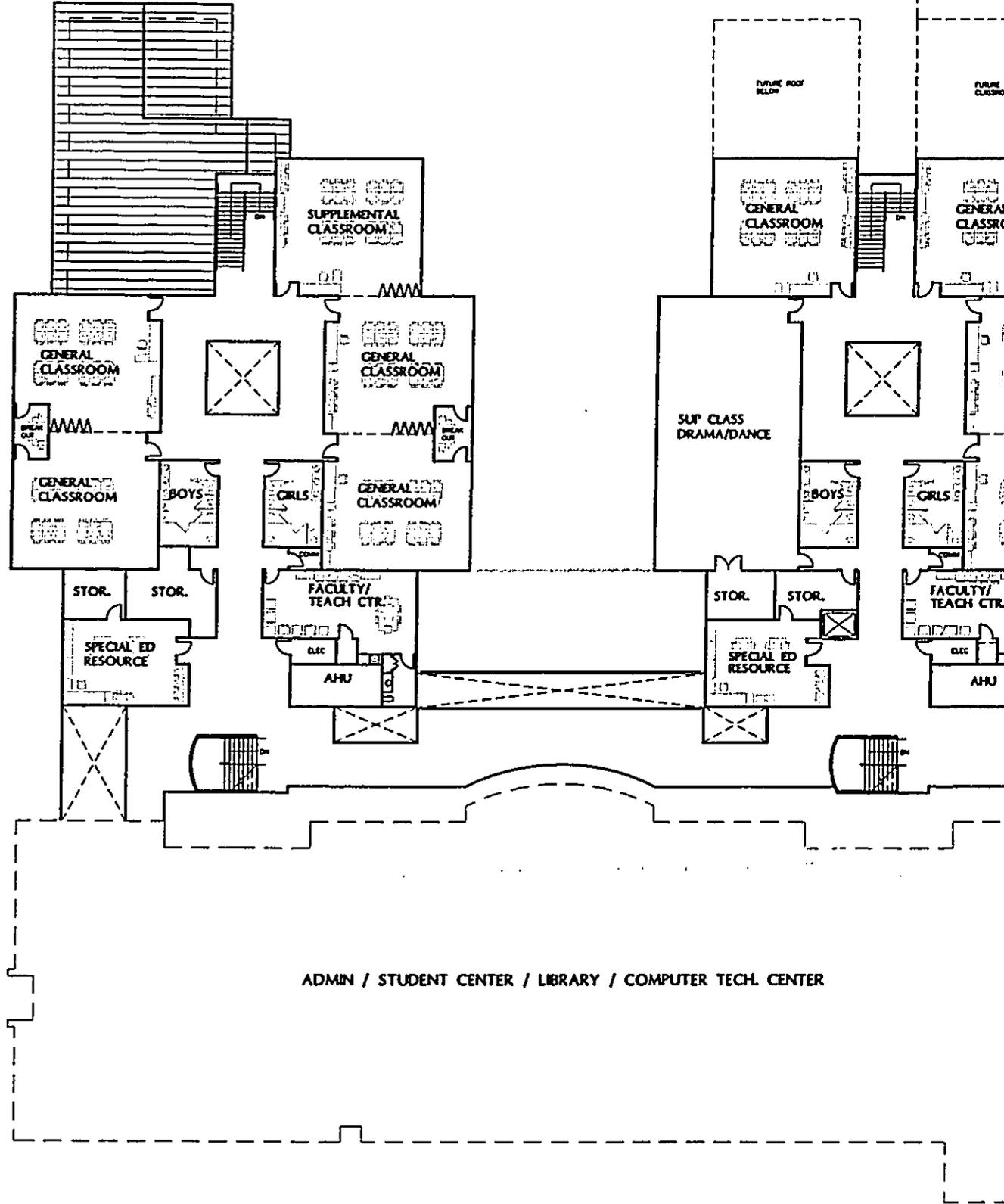
MAY 28, 2002

**ARCHITECTS
HAWAII
LIMITED**

A-3 SHT 3 OF 6

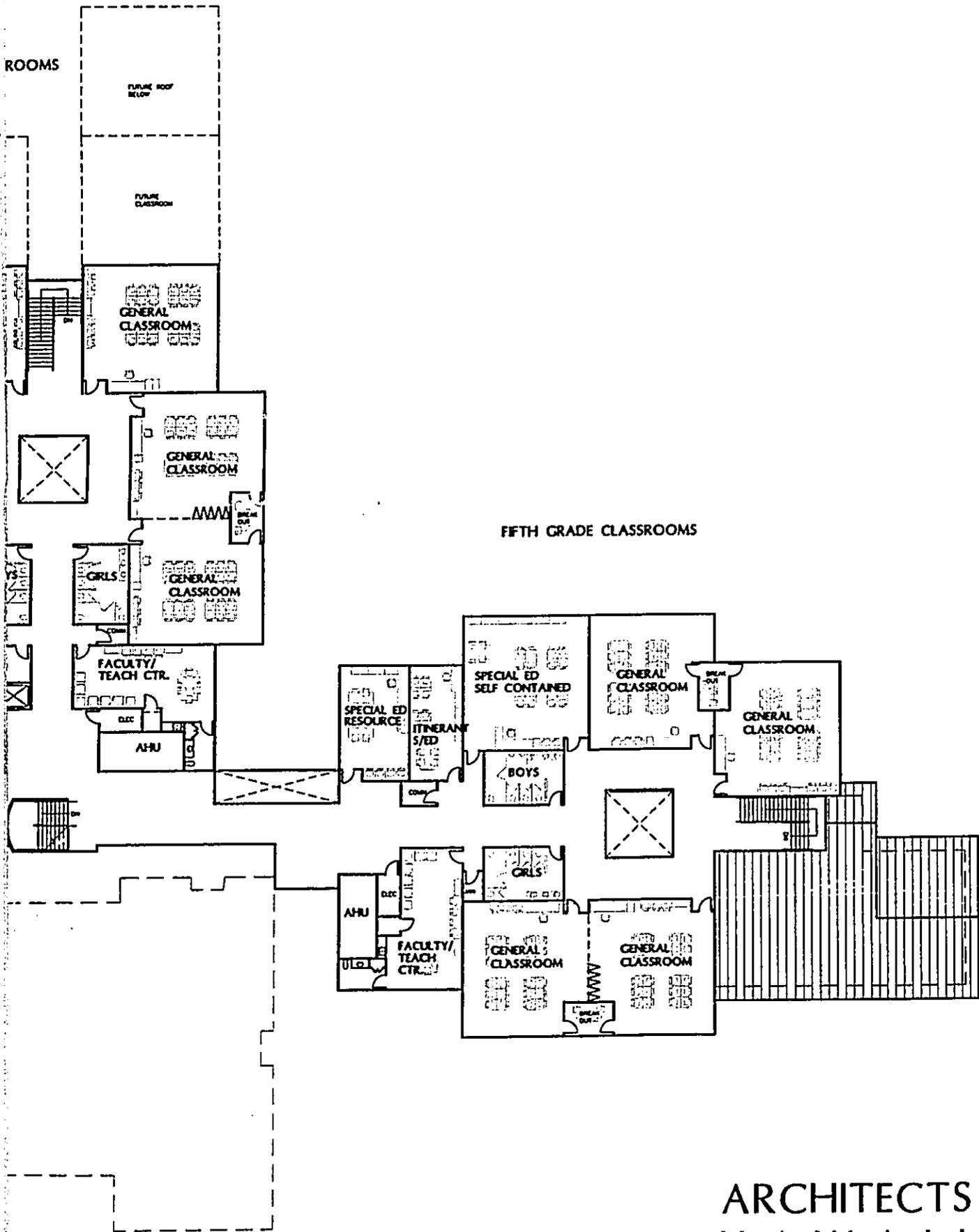
THIRD GRADE CLASSROOMS

FOURTH GRADE CLASSROOMS



CLASSROOM BUILDING: SECOND FLOOR

SCALE: 1/32"=1'-0"

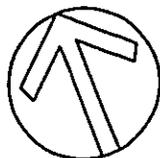
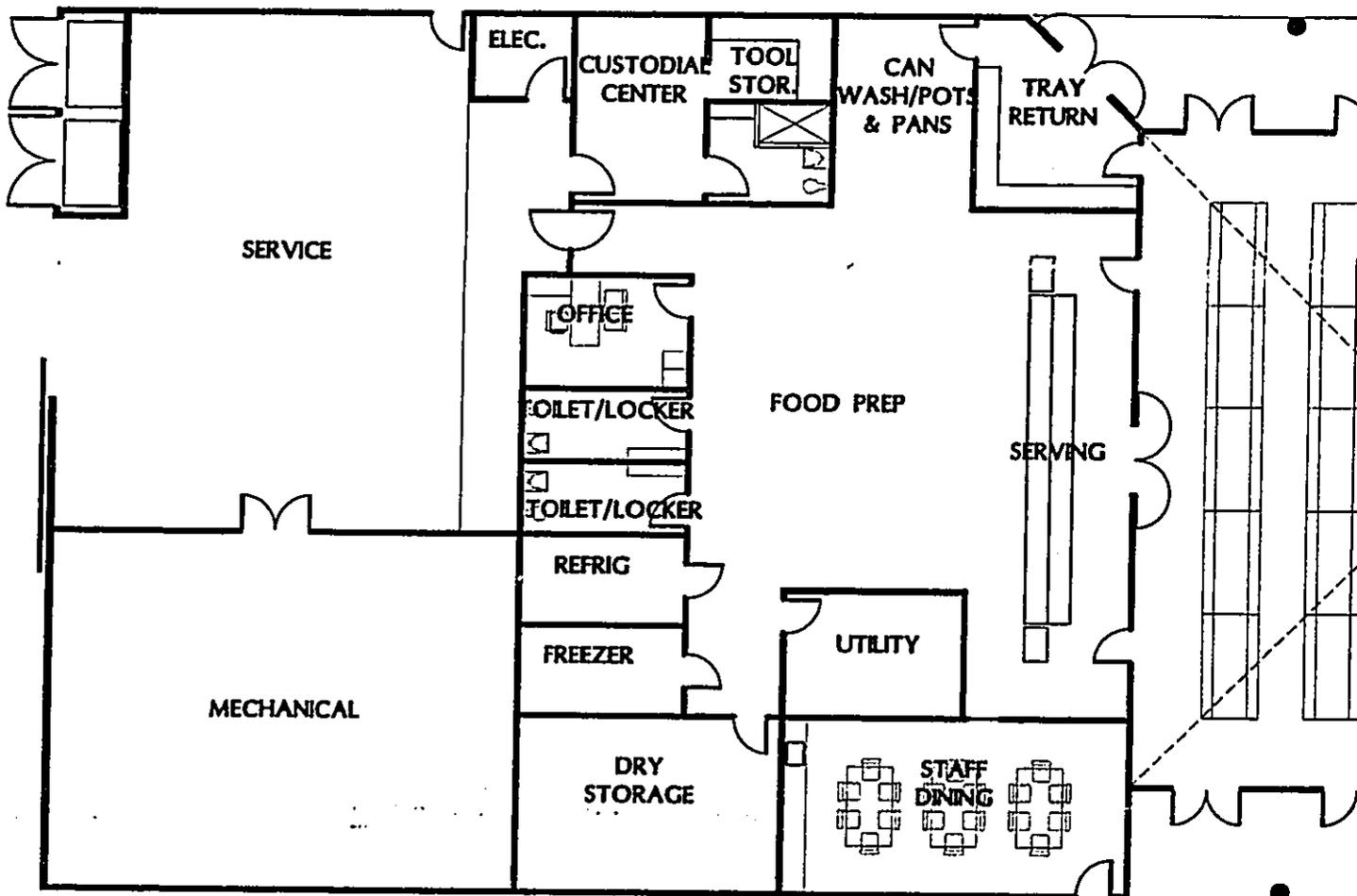


FLOOR PLAN

MAY 28, 2002

**ARCHITECTS
HAWAII
LIMITED**

A-4 SHT 4 OF 6

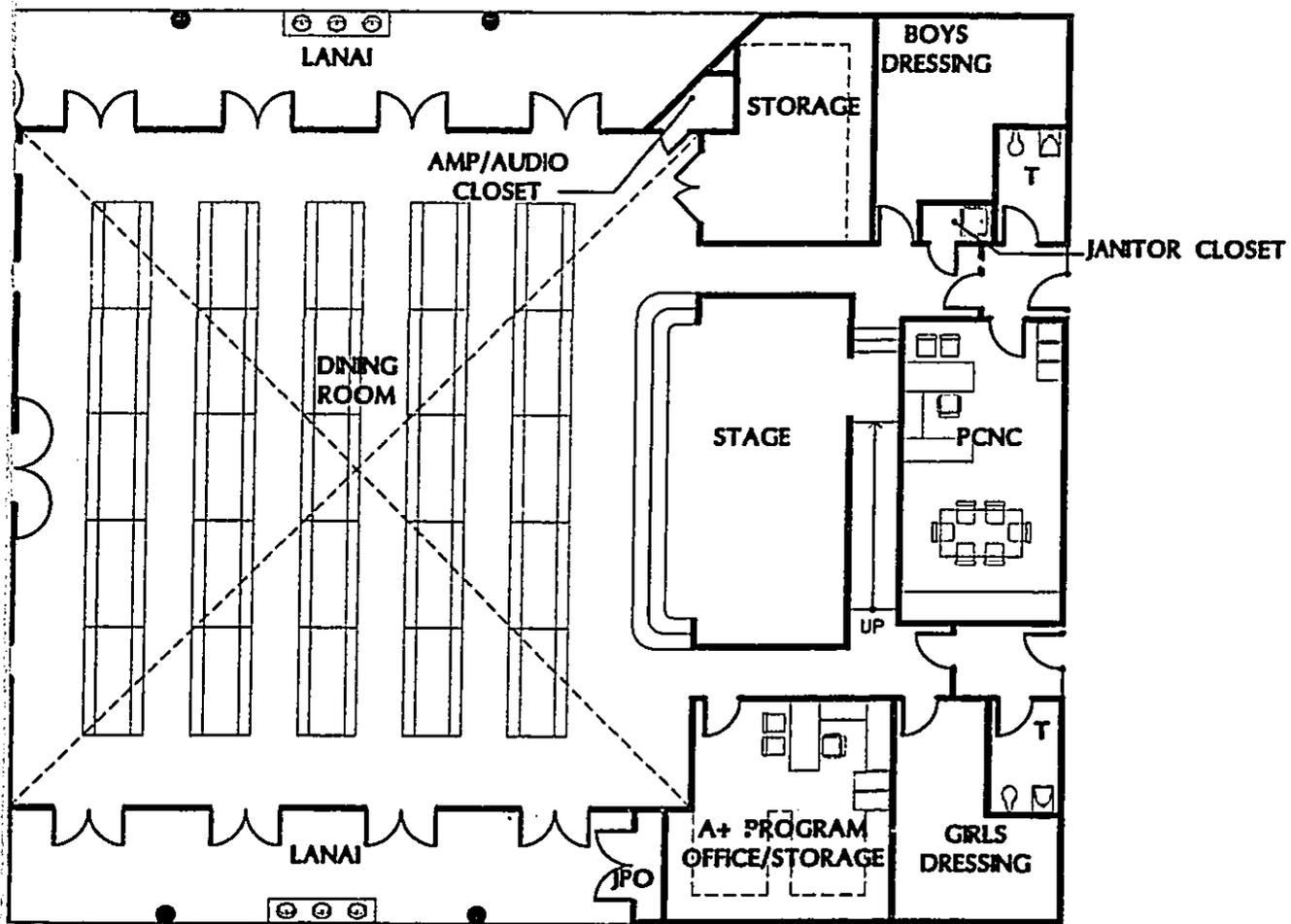


NORTH

CAFETORIUM FLOOR PLAN

SCALE: 1/16"=1'-0"

MAY 28, 2002



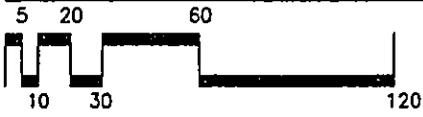
**ARCHITECTS
HAWAII
LIMITED**

A-5 SHT 5 OF 6



EAST ELEVATION

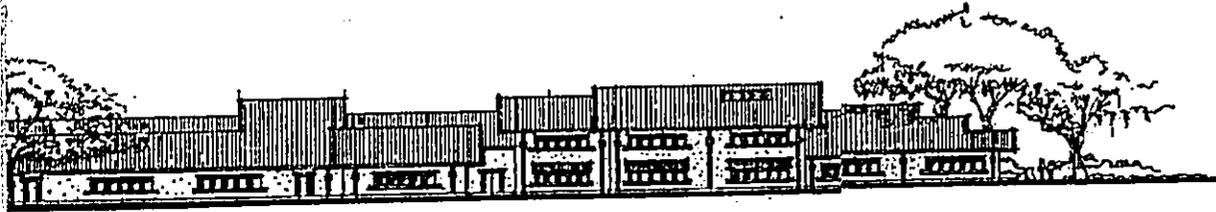
MAY 28, 2002



SOUTH ELEVATION

MAY 28, 2002





ARCHITECTS
HAWAII
LIMITED
A-6 SHT 6 OF 6

Appendix B

Archaeological Monitoring Plan

ASC95-6c

ARCHAEOLOGICAL MONITORING PLAN
FOR THE PROPOSED MAUI LANI DEVELOPMENT AREA
WAILUKU AHUPUA'A, WAILUKU DISTRICT, MAUI ISLAND
TMK:3-8-07:2,110

Prepared For:
Maui Lani Partners, Ltd.
810 Richards Street, Suite 900
Honolulu, Hawai'i 96813

March 1996

Aki Sinoto Consulting
2333 Kapiolani Blvd., No. 2704
Honolulu, Hawai'i 96826

INTRODUCTION

At the request of Maui Lani Partners, Ltd., Aki Sinoto Consulting of Honolulu will undertake archaeological monitoring during all construction-related vegetation clearing, surface grubbing, mass grading, and excavations within the proposed Maui Lani development area. Following the archaeological subsurface sampling program completed in 1995, the regulatory review process for the final report (Pantaleo and Sinoto 1996) was satisfactorily completed in February of 1996. The results of the subsurface sampling program concluded that the occurrence of burials was relatively uncommon and generally unpredictable, with multiple burials manifested in localized cluster(s). Further pre-construction testing was deemed unfeasible and archaeological monitoring during construction, with particular emphasis on selected areas of increased sensitivity, was recommended. *This monitoring plan presents a generic scope of work to be followed for all pertinent phases within the total development area.*

PROJECT AREA

The project area is located in the extensive sand dunes of the Wailuku Sandhills in the *ahupua'a* of Wailuku, in the District of Wailuku, on Maui Island (Fig. 1). The roughly 1000 acre, elongate Maui Lani property (TMK 3-8-07:2,110) is bounded by Maui Waena Intermediate School, Pomaikai Subdivision, and other existing developed areas along the eastern periphery; Ka'ahumanu Avenue at its northern terminus; existing residential lots paralleling Waiale Road, the Waiale Reservoir, and open lands along the western periphery; and Kuihelani Highway at its southern terminus (Fig. 2).

EXPECTABILITY OF SUBSURFACE REMAINS

The recent archaeological subsurface sampling program resulted in the identification of *in situ* human remains in three separate localities. These remains consisted of; two isolated individuals at Localities 12 (Site 50-50-04-4146) and 21 (Site 50-50-04-4147), and a burial complex (Site 50-50-04-2797) in the abandoned sand borrow pit located east of the Onehee Street extension and southwest of the Maui Waena Intermediate School.

In addition, two more areas of potential sensitivity were identified from the occurrence of small bone fragments, at Localities 9 and 10, on the centerline of the golf course. Small human bone fragments have been found in this area since the initial surface assessment of the centerline was conducted in July of 1994. Due to the fragmentary nature of these remains and the negative results of testing in the area, secondary deposition resulting from displacement caused by extensive previous disturbance is suspected.

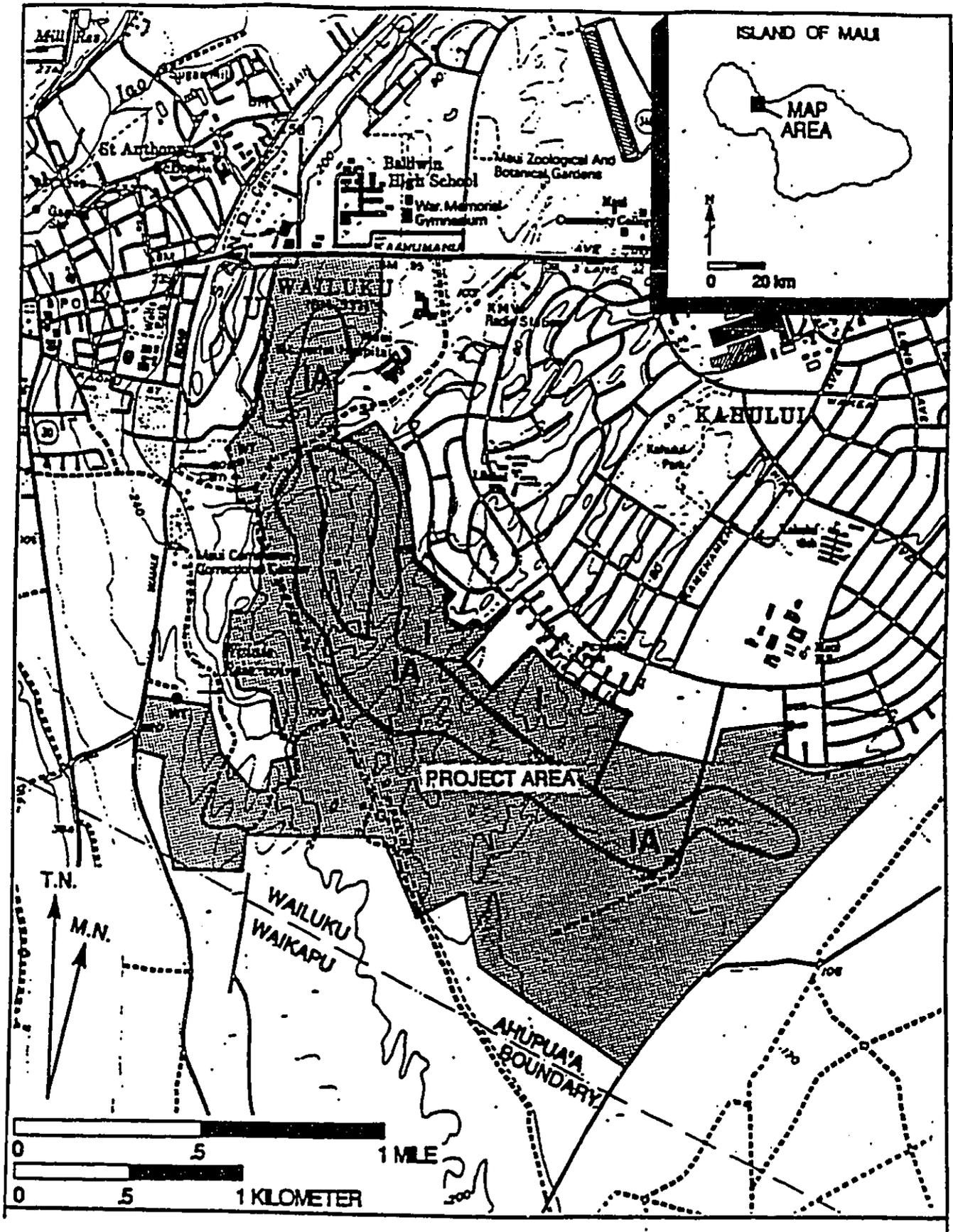


Figure 1. Location of Project Area on USGS Wailuku Quadrangle.

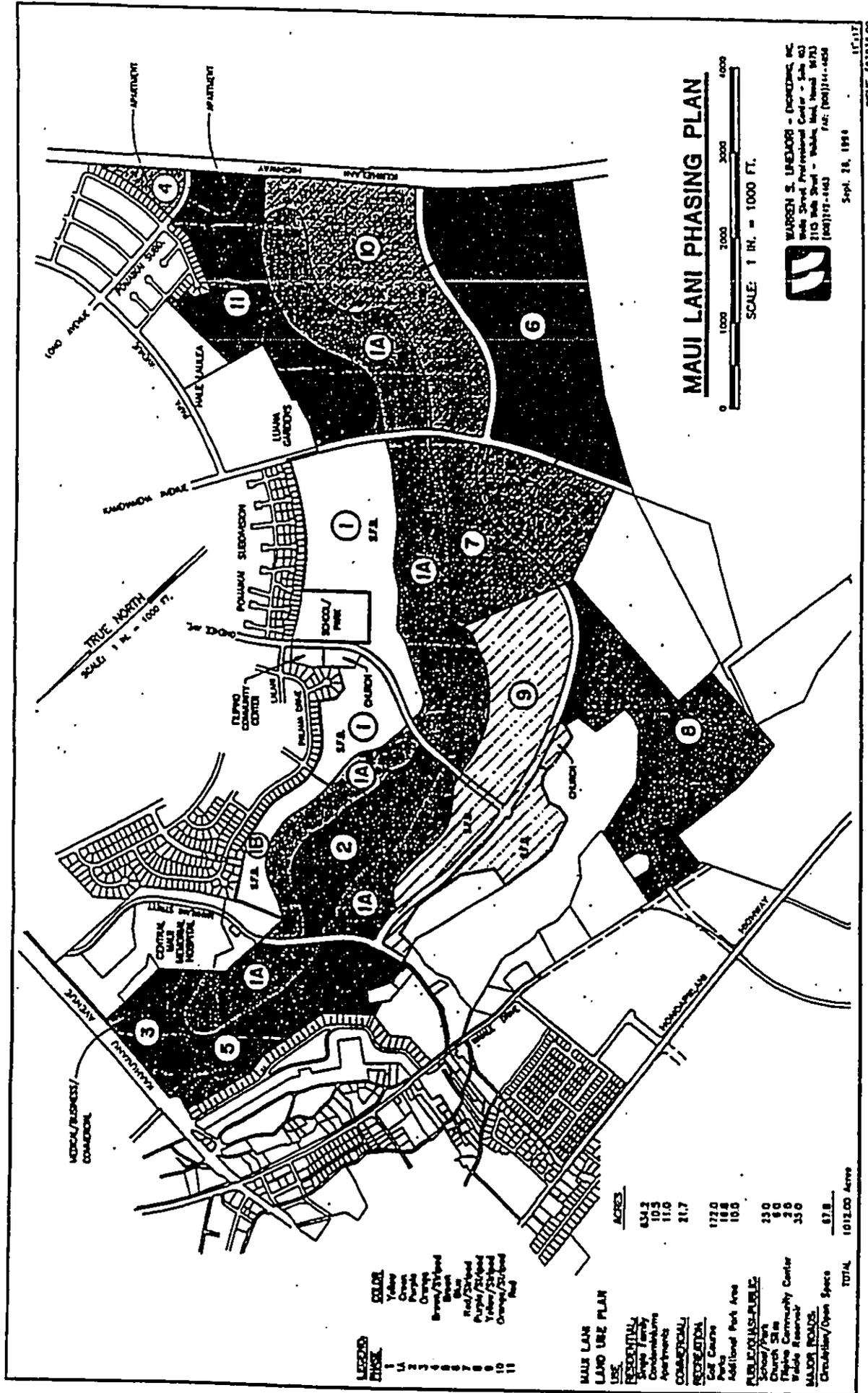


Figure 2. The Maui Lani Development Phasing Plan.

Based largely on the low frequency resulting from the recent investigations, 5 positive results from 93 test units (5.3% frequency), the occurrence of burials are considered to be generally unpredictable and relatively uncommon. However, the occurrence of the two isolates, Sites 4146 and 4147, in the highest areas of the project area, may suggest a cultural predilection for prominent geographical features. To date, Site 2797 is the only complex of multiple burials present within the project area. Besides burials no other surface or subsurface cultural remains were located in the project area. Thus, burials, isolated individuals and multiple clusters, constitute the most likely cultural remains to be encountered during surface altering construction activities.

MONITORING PLAN

Prior to commencement of construction, a coordination meeting shall be held involving representatives of all pertinent parties. Archaeological monitoring personnel shall be introduced. The procedures to be followed for monitoring, authority of the monitor to halt work in the immediate vicinity of a discovery, the kinds of features the archaeologist is interested in, the avoidance of preservation areas, contractor's concerns, and safety protocols for working around large earthmoving equipment shall be discussed and explained.

Since previous projects in neighboring areas, such as the Maui Waena Intermediate School, have encountered burials, fulltime monitoring during all construction-related, ground-altering activities shall be instituted. As normal practice, one archaeological monitor will be assigned to each piece of equipment being used for clearing or grading.

METHODOLOGY

In selected, non-sensitive areas, initial subsurface exposures will be closely monitored to establish the extent and nature of previous subsurface disturbance. During the course of monitoring, should continued full-time monitoring become unwarranted, the most appropriate alternative procedures, such as part-time, spot check, or on-call monitoring will be implemented in consultation with the State Historic Preservation Division of the Department of Land and Natural Resources (SHPD/DLNR) and the Maui/Lana'i Island Burial Council (MLIBC). An on-island archaeologist(s) will be assigned to this project to permit flexibility and expedient response time for on-call situations.

Should any significant remains, other than human burials, be exposed, construction-related activities in the immediate area shall be halted until the monitor can record and mitigate

the remains or determine if additional data recovery procedures are needed. A data recovery plan may need to be prepared for review and concurrence by SHPD, prior to commencing with any data recovery work. All standard archaeological methods and practices for recording and collection of data will be followed.

Should any human remains be exposed, all construction activities will be halted in the immediate vicinity, measures will be taken to ensure temporary protection of the remains *in situ*, and the State Historic Preservation Division and Burials Program of the Department of Land and Natural Resources will be notified. Determination of the ethnic origin of the remains shall be attempted with minimal disturbance and displacement of the remains. Final disposition of the remains will be determined by the State Historic Preservation Division in consultation with the Maui and Lana'i Island Burial Council. A Burial Treatment or Preservation Plan may also be prepared for concurrence by SHPD and MLIBC.

Following completion of monitoring procedures, all necessary laboratory procedures will be undertaken. This may include; the processing, cataloging, and analysis of artifacts; analyses of any collected samples as warranted; and outside consultant analysis of radiocarbon samples. The collected data will be synthesized and compiled into a final report. All records, notes, photographs, and maps will be archived at Aki Sinoto Consulting. The final disposition of artifactual and sample materials will be determined in coordination with the landowner. All burials and burial goods shall be preserved *in situ* or reinterred with the burials at the predetermined reinterment localities.

REFERENCES CITED

- Pantaleo, Jeffrey and Aki Sinoto
1996 *Archaeological Subsurface Sampling of the Proposed Maui Lani Development Phases 1 and 1A, Wailuku Ahupua'a, Wailuku District, Maui Island (TMK 3-8-07:2, 110)*. Manuscript Report prepared for Maui Lani Partners, Ltd. Aki Sinoto Consulting, Honolulu.
- 1996 *A Burial Treatment Plan for Site 50-50-04-2797, 4146, 4147 and Inadvertent Findings During Archaeological Monitoring of Maui Lani Phase 1 and 1A Parcels, Wailuku Ahupua'a, Wailuku District, Maui Island (TMK 3-8-07:2, 110)*. Prepared for Maui Lani Partners, Ltd. Aki Sinoto Consulting, Honolulu.
- 1996 *Archaeological Monitoring Plan for Phases 1 and 1A of the Proposed Maui Lani Development, Wailuku Ahupua'a, Wailuku District, Maui Island (TMK 3-8-07:2,110)*. Prepared for Maui Lani Partners, Ltd. Aki Sinoto Consulting, Honolulu.

Appendix C

***Letter Dated May 20, 1999
to State Historic
Preservation Division***

Aki Sinoto Consulting - Cultural Resource Management
2333 Kapalani Blvd. No. 2704, Honolulu, Hawaii 96826 Tel (808)941-9538 Fax (808)942-1096

May 20, 1999

Dr. Ross Cordy
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Oahu, HI 96707

Dear Dr. Cordy:

Subject: Generic Monitoring Plan for the Maui Lani Development Area
Wailuku, Maui Island (TMK 3-8-07:2, 110)

In March of 1996, Aki Sinoto Consulting submitted a revised final monitoring plan for the initial phases of golf course and residential subdivision construction at the Maui Lani Development area. Concurrently, a generic monitoring plan that could be applied for the rest of the development area was produced. Both plans were similar and based on the results of the subsurface sampling program completed in the fall of 1995.

Currently, the Maui County is requesting of my client, a new monitoring plan for each new development increment for which a County permit is sought. A new plan does not appear to be warranted in view of the existing generic plan that has already received concurrence from your Division. The total development area consists primarily of sand dunes so that environmental conditions do not vary greatly from increment to increment other than the degree of prior disturbance. Thus, no changes in methodology are necessitated. Still, the preparation of separate, case-specific Burial Treatment, Preservation, and/or Data Recovery Plans may be necessary for significant discoveries.

However, progressive experience gained through almost two years of monitoring in the subject area dictate the following refinements in procedure:

- 1) immediate areas surrounding a findspot shall be tested manually,
- 2) mechanical testing in sensitive areas shall consist of blading rather than trenching,
- 3) monitoring shall continue into silt/loam substrates underlying the sand, and
- 4) fulltime monitoring shall be conducted in previously cultivated areas.

If you agree that the existing monitoring plan is adequate for the total development area, please sign on the line below and return this letter to Aki Sinoto Consulting. We appreciate your kind assistance.

Sincerely,



Aki Sinoto
Consulting Archaeologist

We agree that the existing plan adequately addresses the required procedures and new monitoring plans are not warranted for each new increment of work within the Maui Lani Development Area.

Ross Cordy Date: 6/12/99
Ross Cordy, Ph.D. SHPD/DLNR
BUREAU CHIEF FOR ARCHAEOLOGY