

Mililani Intermediate School

BENJAMIN J. CAYETANO
GOVERNOR



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

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

JUL 10 1996

Mr. Gary Gill
Director
Office of Environmental
Quality Control
Central Pacific Plaza
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Final Environmental Assessment and
Finding of No Significant Impact
for Mililani Intermediate School
Facilities for a New School
TMK 9-5-02:por. 01

The Department of Accounting and General Services did not receive any comments during the 30-day public comment period which began on June 8, 1996. The agency has determined that this project will not have significant environmental effect and has issued a finding of no significant impact. Please publish this notice in the July 23, 1996 OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA. If there are any questions, please have your staff call Mr. Ralph Morita of the Planning Branch at 586-0486.

Very truly yours,

A handwritten signature in black ink, appearing to read "Gordon Matsuoka".

GORDON MATSUOKA
State Public Works Engineer

GC:jk
Attachments

84

1996-07-23-0A-*FEA - Mililani Intermediate School*

JUL 23 1996

FILE COPY

MILILANI INTERMEDIATE SCHOOL

FINAL

ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT
(NEGATIVE DECLARATION)

Prepared for:

Kajioka Okada Yamachi Architects

and

State Department of Accounting and General Services

Project No. 12-16-0916

Prepared by:

PBR HAWAII

Land Planning • Landscape Architecture • Environmental Studies

Honolulu, Hawaii

JULY 1996

MILILANI INTERMEDIATE SCHOOL

(Grade 6-8)

FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT (NEGATIVE DECLARATION)

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TABLE OF CONTENTS

OVERVIEW	1
PROJECT SUMMARY	1
1.0 IDENTIFICATION OF PROPOSING AGENCY	2
2.0 IDENTIFICATION OF ACCEPTING AUTHORITY	3
3.0 IDENTIFICATION OF AGENCIES CONSULTED	3
4.0 GENERAL DESCRIPTION OF THE ACTION'S TECHNICAL, ECONOMIC, SOCIAL, CULTURAL AND ENVIRONMENTAL CHARACTERISTICS	4
4.1 Technical Characteristics	4
4.1.1 Description of the Subject Property	4
4.1.2 Project Objectives	4
4.1.3 Overview of the Charette Process	5
4.1.4 Project Summary Description	11
4.1.5 Infrastructure Improvements	13
4.2 Economic Characteristics	13
4.2.1 Property Values of Existing Homes	13
4.2.2 Funding	13
4.3 Social Characteristics	14
4.4 Cultural Characteristics	14
4.5 Environmental Characteristics	14
4.5.1 Aesthetics	14
4.5.2 Traffic	15
4.5.3 Water Quality	15
5.0 SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT	16
5.1 Climate	16
5.2 Geology/Topography	16
5.3 Soil Classification	16
5.3.1 Detailed Land Classification	16
5.3.2 Soil Conservation Service Soil Survey	16
5.3.3 Agricultural Lands of Importance to the State of Hawaii	17
5.4 Flood and Drainage	18
5.5 Flora	18
5.6 Fauna	18

5.7	Air Quality	19
5.8	Noise	20
5.9	Visual Attributes	21
5.10	Historical/Archaeological and Cultural Sites	21
5.11	Public Services and Facilities	21
	5.11.1 Access	21
	5.11.2 Potable Water	22
	5.11.3 Wastewater	22
	5.11.4 Drainage	23
	5.11.5 Schools	23
	5.11.6 Parks and Recreation	24
	5.11.7 Police	25
	5.11.8 Fire	25
6.0	IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND ALTERNATIVES CONSIDERED	25
6.1	The Preferred Alternative	25
6.2	"No-Action Alternative"	26
6.3	Increase the Capacity of Existing Schools	26
6.4	Summary of Impacts	27
7.0	PROPOSED MITIGATION MEASURES	27
8.0	SIGNIFICANCE CRITERIA	29
9.0	DETERMINATION	34

LIST OF FIGURES

		<u>Following</u> <u>Page</u>
1	LOCATION MAP	1
2	TAX MAP/OWNERSHIP	1
3	DEVELOPMENT PLAN LAND USE MAP	1
4	EXISTING ZONING	1
5	SITE EVALUATION	4
6	VISUAL ANALYSIS	4
7	SITE PLAN	8
8	DETAILED LAND CLASSIFICATION	17
9	SCS SOIL SURVEY	18
10	ALISH	18
11	SEWER MASTER PLAN	23

APPENDICES

Appendix A	Terrestrial Flora and Fauna Survey
Appendix B	Archaeological Study
Appendix C	Sewer Master Plan for Mililani Mauka
Appendix D	Mililani Town Water Master Plan
Appendix E	Land Dedication Correspondence
Appendix F	Early Consultation Correspondence and Comments
Appendix G	Preliminary Space and Cost Program

OVERVIEW

This Environmental Assessment (EA) has been prepared for the Mililani Intermediate School in compliance with the provisions of Hawaii Revised Statutes (HRS) Chapter 343 and Sections 11-200-14 through 11-200-18 of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules.

As required by the Rules, this EA describes the following elements of the proposed project: 1) the technical, economic, social, cultural and environmental characteristics of the project; 2) the affected environment; 3) a summary of impacts and alternatives considered that would meet project objectives; 4) the mitigation measures proposed; 5) significance of environmental impacts; and, 6) determination.

Written comments and responses received in early consultation with various agencies can be found in Appendix F.

PROJECT SUMMARY

Project Name: Mililani Intermediate School

Applicant: Department of Accounting and General Services (DAGS)
Division of Public Works, State of Hawaii

Area: Tax Map Key Approximate
9-5-02: 1 (Por) Acres
15.5*

*Includes 0.5 acre slope area.

Existing Use: The subject parcel is currently vacant.

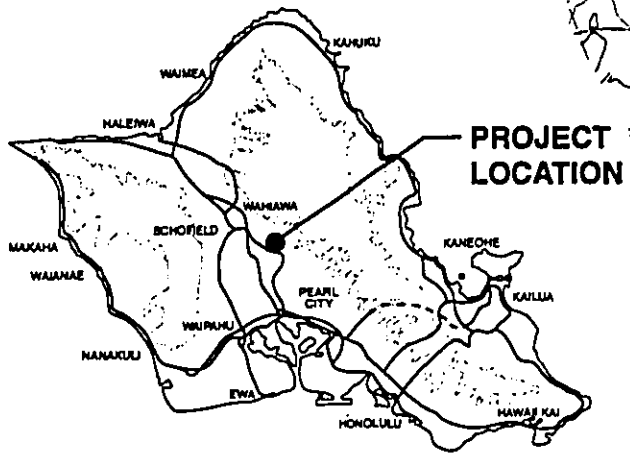
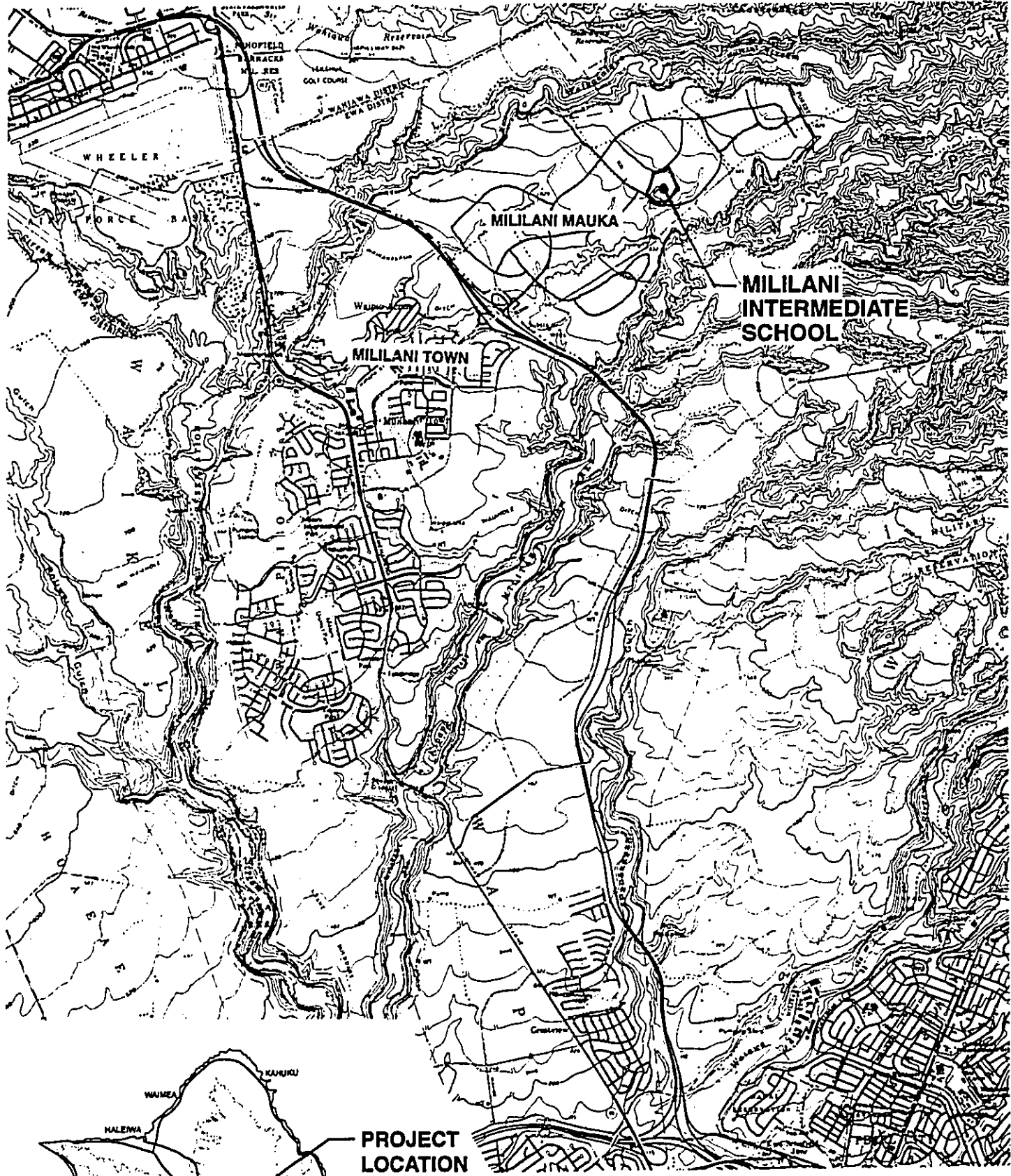
Proposed Use: Middle School Grades 6 - 8. All proposed classrooms and other school buildings will fit into the 15 acre campus site except for the play fields which are located in the adjacent 12+ acre City park site planned for joint use.

State Land Use District: Urban

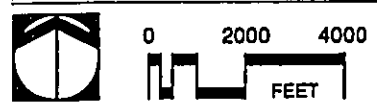
Central Oahu
Development Plan: Public Facility

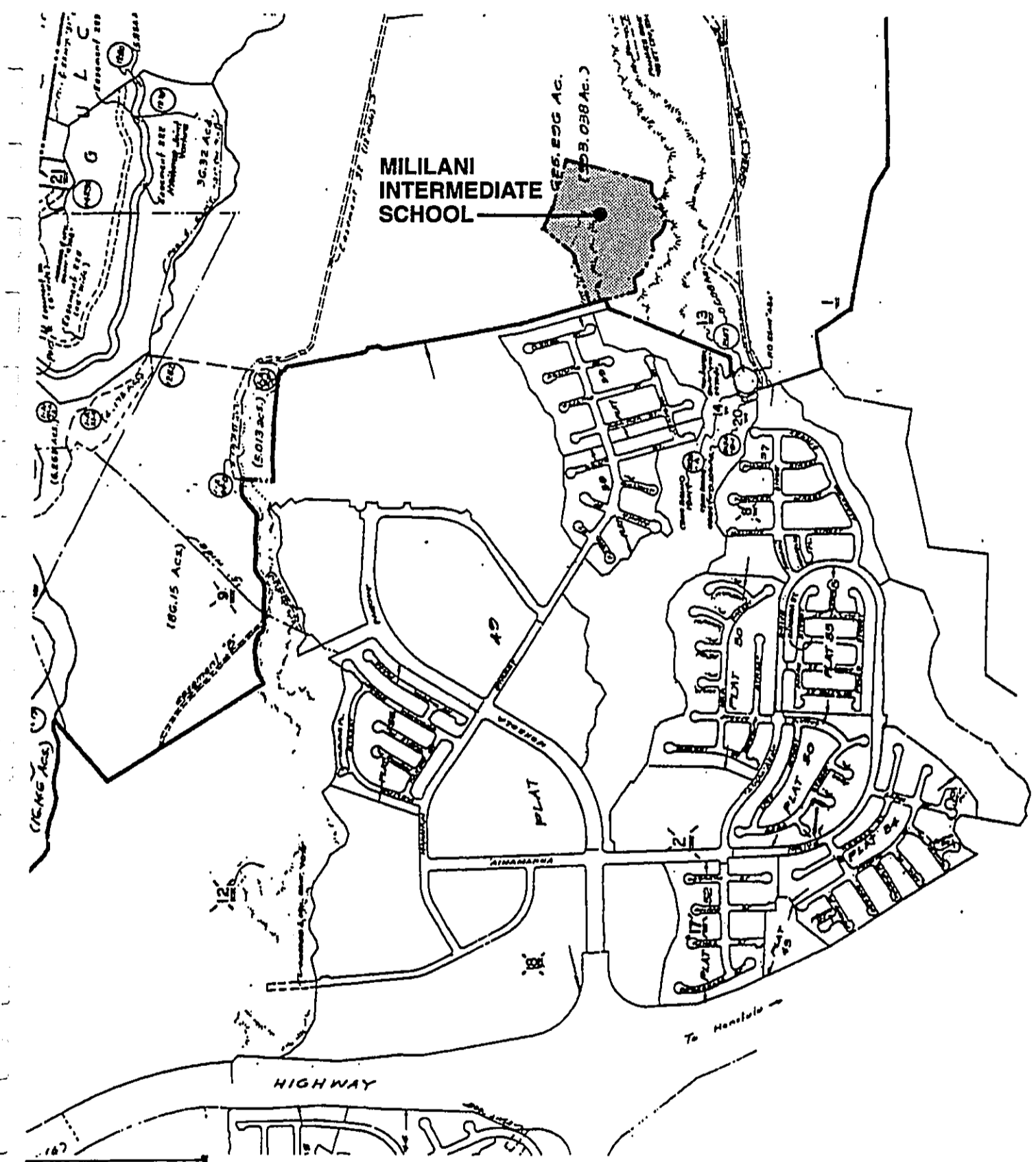
City and County of
Honolulu Zoning: A-1 Low Density Apartment

Mililani Intermediate School
Final EA and FONSI
July, 1996



**FIGURE 1
LOCATION MAP
MILILANI INTERMEDIATE SCHOOL**

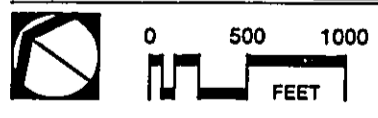




MILILANI
INTERMEDIATE
SCHOOL

FIRST	DISTRICT	
ZONE	SEG.	PLAT
9	5	02
CONTAINING		PARCELS
SCALE: 1 in = 600 ft.		

FIGURE 2
TAX MAP / OWNERSHIP
MILILANI INTERMEDIATE SCHOOL



April, 1996

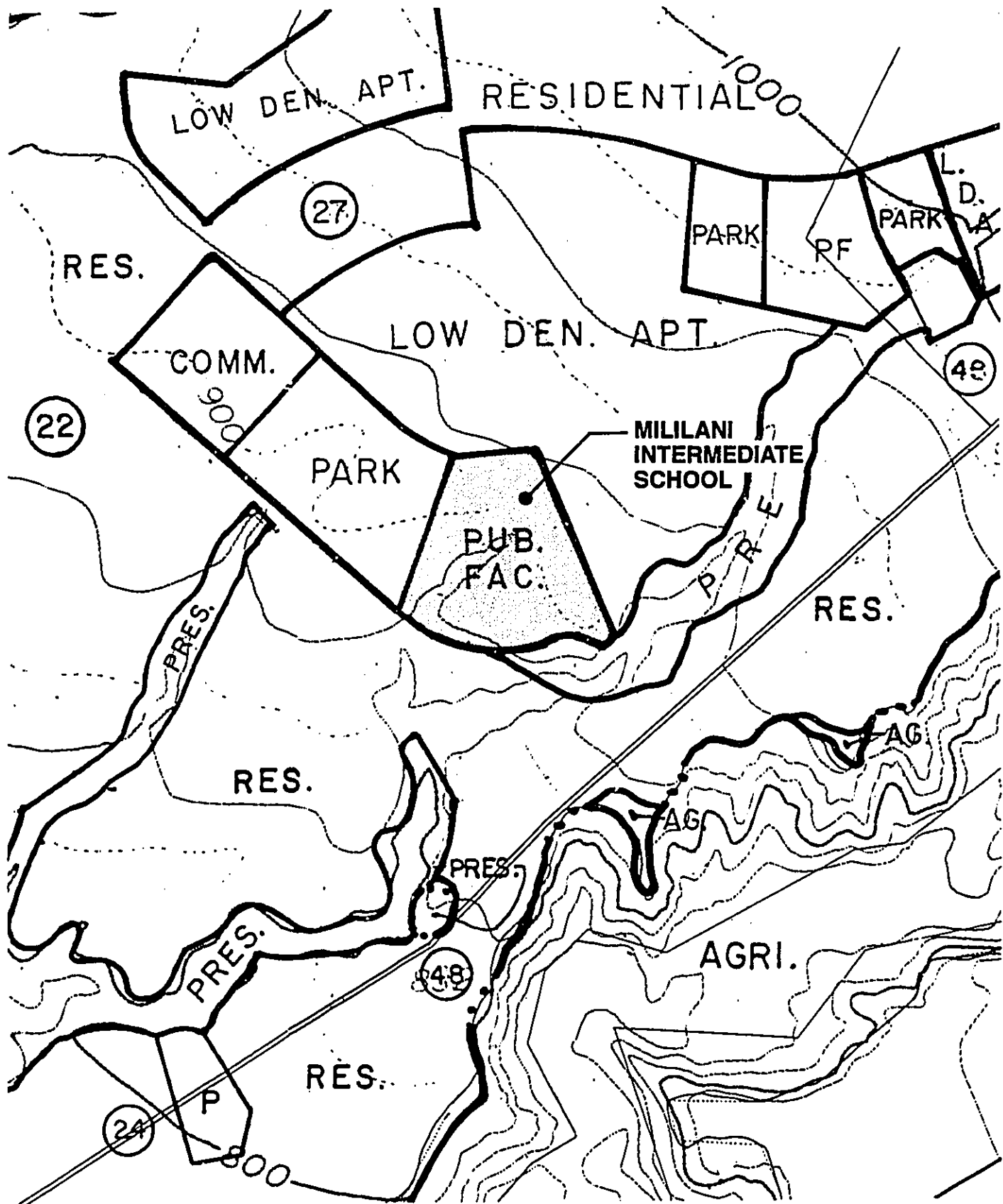
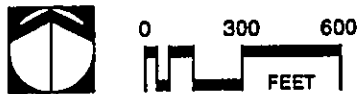


FIGURE 3
 DEVELOPMENT PLAN LAND USE MAP
 MILILANI INTERMEDIATE SCHOOL

Source: Department of General Planning City and
 County of Honolulu



May, 1996 **PBR**
HAWAII

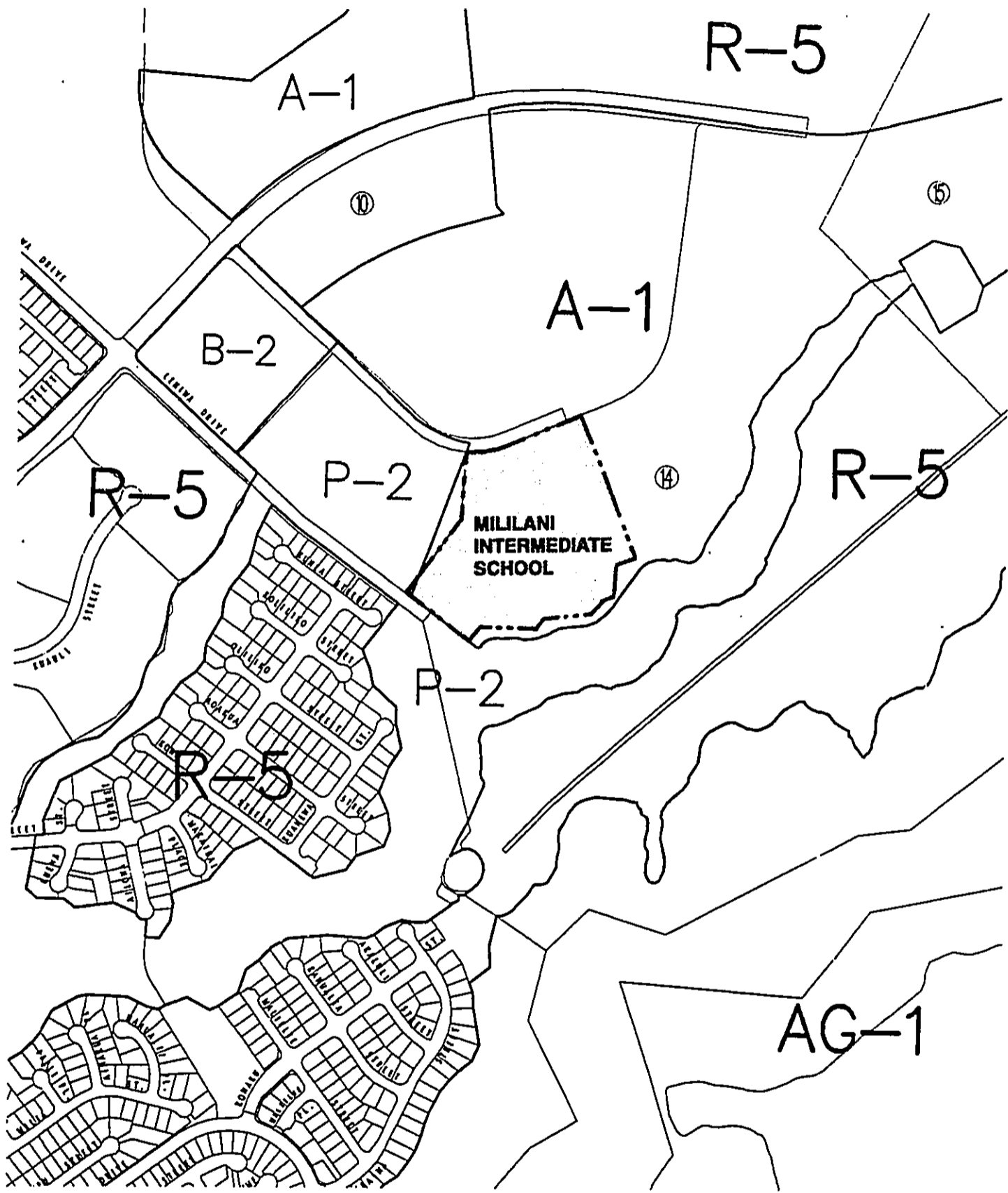
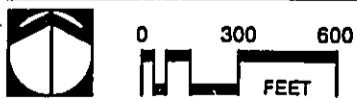


FIGURE 4
EXISTING ZONING
MILILANI INTERMEDIATE SCHOOL

Source: Dept. of Land Utilization City and County of Honolulu



Action Requested: Use of State Funds
Approving Agency: Governor, State of Hawaii

CHAPTER 205, HAWAII REVISED STATUTES (HRS)

Chapter 205, Hawaii Revised Statutes (HRS), establishes the State Land Use Commission (LUC) and gives this body the authority to designate all lands in the State as Urban, Rural, Agricultural, or Conservation District lands. Land use decisions within Urban District lands are generally left to the counties to control in accordance with local General Plans and zoning ordinances. As such, the entire subject property is located within the State Urban District, but land uses on the property are controlled by the City's Development Plan and Land Use Ordinance. Consequently, no action from the State Land Use Commission is required to implement development of the proposed Mililani Intermediate School.

ENVIRONMENTAL IMPACT STATEMENTS (CHAPTER 343, HRS)

In accordance with the State of Hawaii's Environmental Impact Statement Law, Chapter 343, HRS, there are Agency actions applicable to new development which trigger the environmental review process. One of these is the use of State lands and/or funds, and is the "trigger" applicable to the proposed project authorizing compliance with Chapter 343, HRS, in accordance with Section 11-200-5 (b) and (c). A Final Environmental Impact Statement was completed in February, 1987 for the Mililani Mauka Residential Community, which included a school site as a primary component of the master plan.

Because Chapter 343, HRS is applicable to the project, this EA has been prepared to identify whether "significant environmental effects" will result from project development. According to the Department of Health Rules which are governed by Chapter 343, HRS implementation, if "significant environmental effects" are not identified by an Environmental Assessment, preparation of a full Environmental Impact Statement is exempted, and a "negative declaration" of significant environmental effects is issued by the Accepting Authority. Otherwise, a Notice of Preparation is issued and processing of a full Environmental Impact Statement is required.

1.0 IDENTIFICATION OF PROPOSING AGENCY

The subject property is presently owned in fee by Castle and Cooke. However, the landowner has agreed to transfer the fee interest to the State for the purpose of developing the proposed educational facilities (see Appendix E). As such, the State Department of Accounting and General Services Division of Public Works is the proposing agency for the project.

Mililani Intermediate School
Final EA and FONSI
July, 1996

To identify the appropriate uses for the property, a master plan was prepared by Castle and Cooke for Mililani Mauka in 1987. This master plan (with minor revisions) is also reflected by the existing Central Oahu Development Plan Land Use Map. As such, the proposed Middle School is consistent with public and private development plans for Mililani Mauka. The mailing address and primary contact person for the proposing agency is:

Mr. Ralph Morita, Planning Branch
Division of Public Works
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

2.0 IDENTIFICATION OF ACCEPTING AUTHORITY

In accordance with Subchapter 4, Section 11-200-4, Hawaii Administrative Rules, "the Governor or an authorized representative," is the Accepting Authority "whenever an action proposes the use of state lands or the use of state funds or, whenever a state agency proposes an action within section 11-200-6(b)." Therefore, the governor or an authorized representative, as applicable, will be the Accepting Authority for the Mililani Intermediate School Environmental Assessment.

3.0 IDENTIFICATION OF AGENCIES CONSULTED

Consulted agencies or agencies which provided information in the preparation of this environmental assessment include the following:

State
Department of Accounting and General Services
Department of Agriculture
State Land Use Commission
Department of Education
Department of Health
Office of State Planning

City
Department of Land Utilization
Planning Department
Department of Transportation Services
Department of Parks and Recreation
Department of Public Works
Board of Water Supply
Fire Department

Federal

U.S.D.A. Soil Conservation Service

Citizen Groups and Individuals

Mililani School Community Based Management (SCBM) Group

Design Charette Process Participants (1/21/96 - 3/1/96)

4.0 GENERAL DESCRIPTION OF THE ACTION'S TECHNICAL, ECONOMIC, SOCIAL, CULTURAL AND ENVIRONMENTAL CHARACTERISTICS

4.1 Technical Characteristics

4.1.1 Description of the Subject Property

The site is comprised of approximately 15.5 acres of land (including a 0.5 acre slope easement), located between the future Kuaoa Street (60' Right of Way) and Lehiwa Drive (56' Right of Way) in Mililani Mauka (see Figure 1). A field survey has been conducted to identify the precise project boundaries and acreage (see Figure 2). As depicted in the Visual Analysis (Figures 6a to 6b), the subject property is presently vacant and used temporarily for the staging of construction equipment.

The project site is surrounded by the growing Mililani Mauka community. Surrounding land uses consist of planned multi-family and park/open space areas, and a small portion of single family residential development makai of Lehiwa Drive. A 12± acre community park is also planned for a parcel between Kuaoa Street and Lehiwa Drive located along the Wahiawa edge of the subject property. Existing or planned public facilities included in the vicinity (Mililani Mauka) include a fire station, elementary school(s), park and ride facility, and a district park.

The site has been extensively graded to make it flat to gently sloping except for a small portion of the property's edge along Lehiwa Drive. For the most part, views from the site are primarily toward the Koolau and Waianae mountain ranges and toward the adjacent ravine.

Existing views from multi-family residential areas up-slope from the site have been considered during the preparation of the project master plan. All parcels within Mililani Mauka Phase 2 have been zoned to reflect the corresponding development plan land use designations.

4.1.2 Project Objectives

To address the educational needs of the growing Mililani Mauka community, the proposed Intermediate School reflects the land uses originally proposed for this area by the Mililani Mauka Master Plan. The Mililani Mauka Master Plan has identified the centrally located subject parcel for the proposed use and established a pattern of compatible land uses surrounding the property reflecting a future urbanized residential community. Need for the project is clearly demonstrated

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Final EA and FONSI
July, 1996

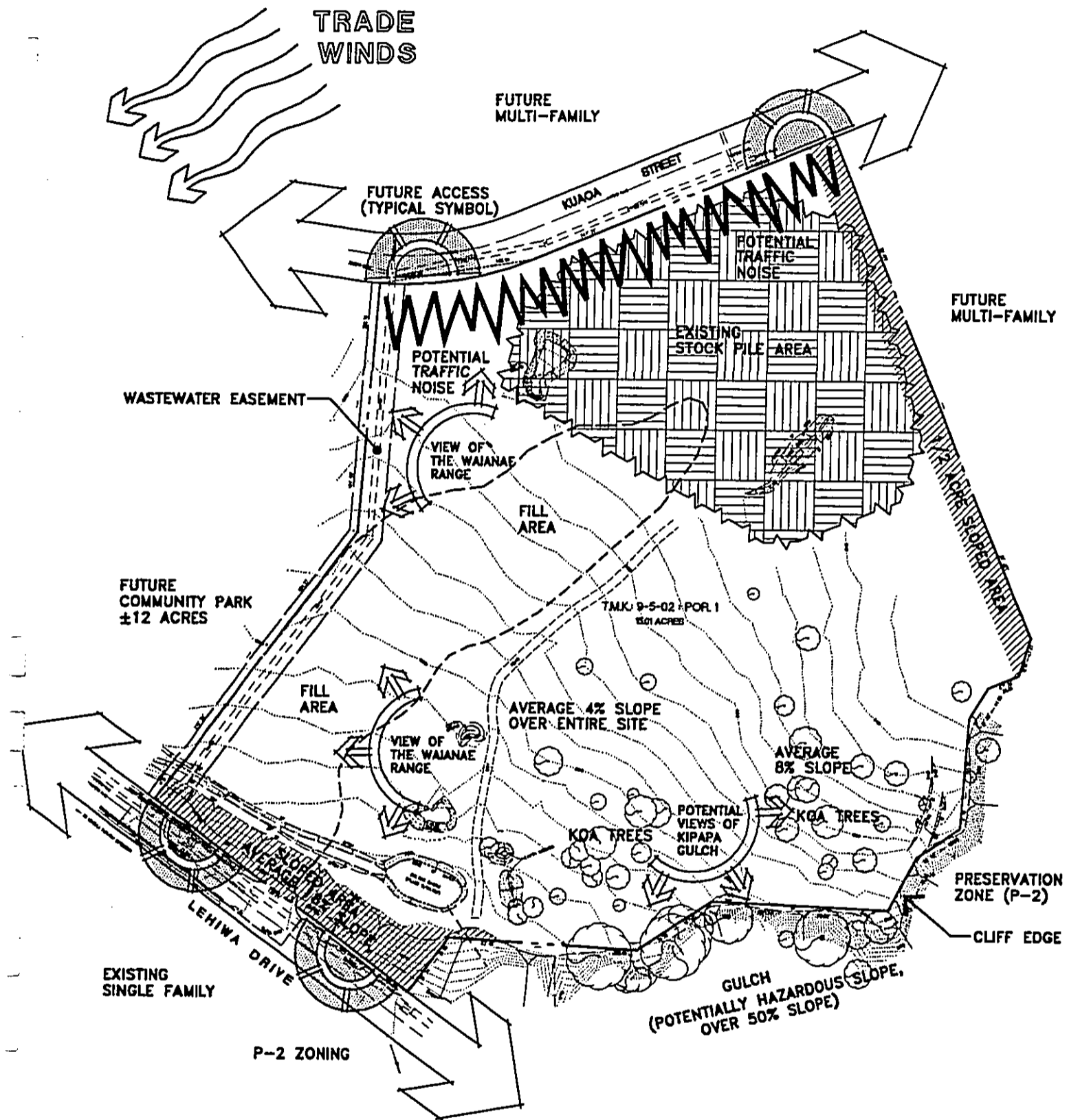
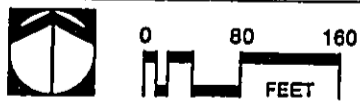


FIGURE 5
SITE EVALUATION
MILILANI INTERMEDIATE SCHOOL



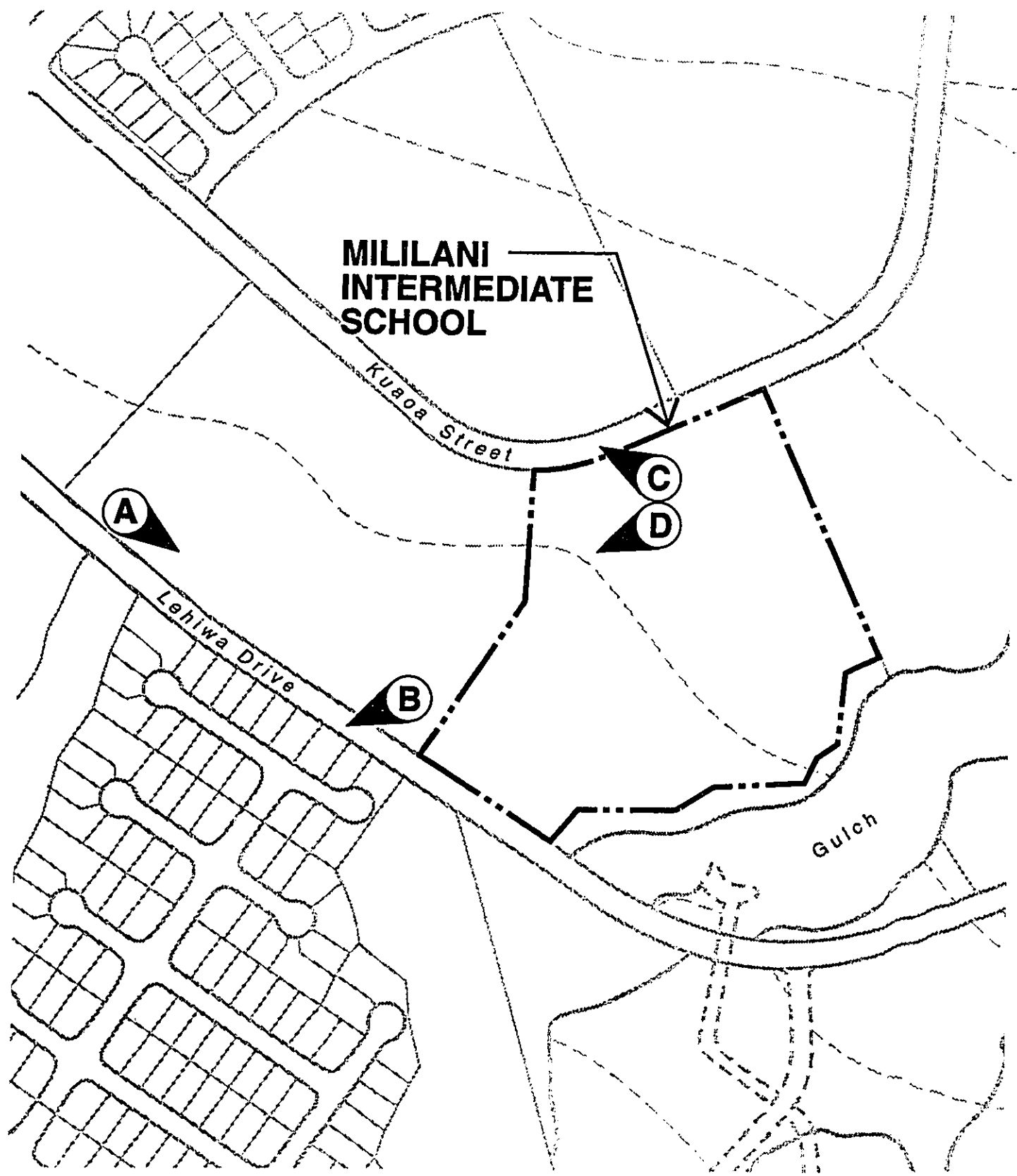
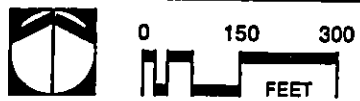
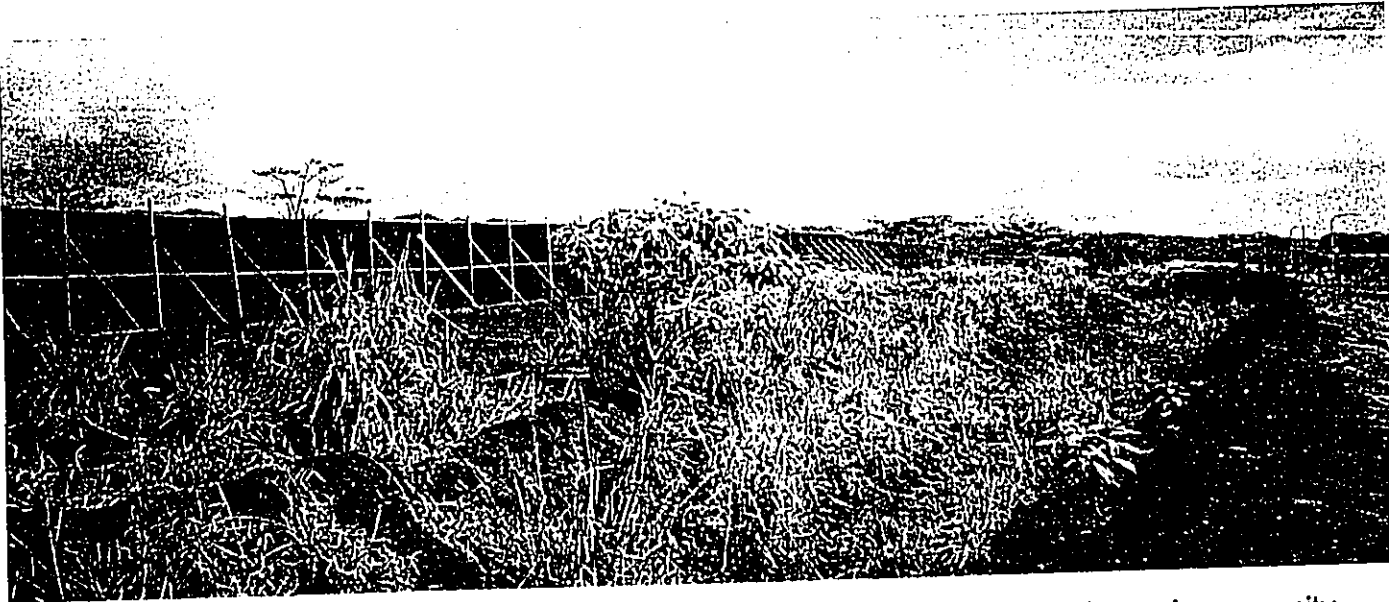


FIGURE 6
VISUAL ANALYSIS
MILILANI INTERMEDIATE SCHOOL



May, 1996 **PBR**



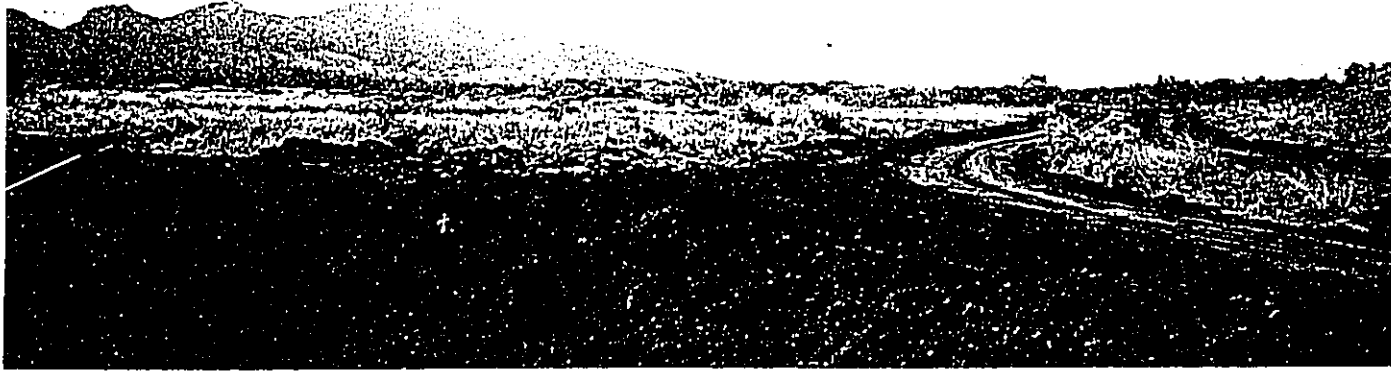
(A) View from Lehiwa Drive near future commercial area and boundary with planned community park looking toward Kipapa Gulch. Note temporary wind screen located within future park site as mitigation measure to control soil erosion. The park site has been extensively modified from previous agricultural uses.



(B) View from the corner of the community park site adjacent to subject property. Note growth of recently constructed single family residential development opposite Lehiwa Drive.

FIGURE 6a
VISUAL ANALYSIS
MILILANI INTERMEDIATE SCHOOL





© View from within school site looking toward the Waianae Mountain Range, Haleiwa, and the future Kuaoa Street. Site is essentially vacant with no agricultural activity.



© Note slope condition and distant roof tops of new residential development approaching subject property. Distant views are of Makakilo looking toward the Ewa Plain.

FIGURE 6b
VISUAL ANALYSIS
MILILANI INTERMEDIATE SCHOOL



by the growing population and continued expansion of Mililani Mauka and the lack of suitable existing facilities.

Mililani Intermediate School will be a year-round multi-track school. Three tracks of 675 students per track will comprise the total school enrollment of 2025 students. However, the design enrollment for the school facilities will accommodate two tracks, 1350 students, at any given time (See Section 4.1.4. Project Summary Description).

Project Phasing

Tentative plans call for a two phased development schedule with the first phase to be completed by September 1998. Funding for the first phase of construction is estimated at approximately \$18.0 million, with an overall appropriation of 20.0 million.(see Appendix G).

Phase one consists of site preparation (i.e. grading), "House E", the media center/exploratorium (shell and fit out of 2nd floor), cafeteria and kitchen (no music/or counselor facilities in Phase 1), the administration building, central plant, both entries with bus drop-off and parking lot, play courts, and fire lanes.

Phase two includes construction of Houses F and G, completion of the first floor center/exploratorium, and completion of the music and counselors facilities adjacent to the cafeteria. Phase two is scheduled to be completed the following year.

As such, the proposed school is centrally located to planned residential development. Proposed facilities will accommodate the latest "state of the art" facilities within separate buildings specifically designed for the uses proposed in the project description.

The program elements and project objectives of the proposed Mililani Intermediate School were identified by a School Community Based Management (SCBM) committee. Members from each of the area's the six Mililani complex schools were invited to participate in the committee. Subcommittees were formed to focus on technology, interdisciplinary teaming, advisor/advisee program, year round scheduling, and exploratory/co-curricular programs. The findings of the subcommittees formed a basis for the program recommendations reflected in the proposed site plan which was developed through a Design Charette Process as herein described.

4.1.3 Overview of the Charette Process

As educators and school administrators have developed new teaching philosophies to best benefit the current day student body, it has become apparent that educational facilities will also need to evolve. The design of Mililani Intermediate School will be based on an emerging Middle School concept which aims at encouraging integrated learning among sixth, seventh and eighth graders.

At the onset of the charette, the steering committee representing the Mililani complex SCBM group was elected to become decision makers for this project. Prior to the start of the charette process, the SCBM met for one year to research and develop a Middle School program to be implemented at this school. Subsequently, Kajioaka Okada Yamachi Architects was selected to design this school in conjunction with the Steering Committee and the community. Architects from The Orcutt/Winslow Partnership, a firm based in Arizona which specializes in school design, were brought on board as consultants as well as to facilitate the charette process.

Development Program

The charette began with a large group meeting involving teachers, administrators, students and community members focusing their discussions on learning concepts and general curriculum goals.

The primary goal of the first charette meeting was to provide a forum in which a multitude of ideas and concepts could be addressed and from which an overriding educational philosophy could be developed. In this initial meeting, Arizona consultants Paul Winslow and Chuck Hill led the group in a series of brainstorming exercises in which smaller groups considered a variety of learning options. By the end of the first day session the groups had ultimately developed educational models which represented their primary educational values.

The charette process continued with the Steering Committee and the Design Team meeting daily for one week. Necessary decisions that would dictate some of the design decisions became priority. Consequently the Steering Committee was urged to decide upon the preferred student body and staff organization of the school as well as the school's primary educational objectives. Following each day's meeting, the Design Team met to strategize the next day's plans as well as to discuss and develop a number of schemes that could be considered by the Steering Committee. Starting from lists of ideas and pages of sketches at the beginning of the first week, the Steering Committee in cooperation with the Design Team began to refine an educational model that best reflected their teaching philosophies.

In review of the schemes that were presented each day, certain fundamental educational concepts continued to emerge. One was that the organization of the school should be based on the "house" concept to create a sense of community and belonging among the students. Another was that exploratory, hands-on opportunities for learning should be central to the campus and to the students' learning experiences.

During the first week, the site and site issues were also introduced. The group was given the opportunity to become familiar with the characteristics of the site and also to become aware of the site constraints. Throughout the week, consultants were brought in to aid the group in making design decisions based on school and site requirements. DAGS Central Services Division, Student Transportation Services Branch Chief, George Okano, and Ben Gorospe from the State Department of Health Commission on Persons with Disabilities, informed the committee of the bus

Mililani Intermediate School
Final EA and FONSI
July, 1996

transportation requirements of the facility and the accessibility requirements of the site respectively. Given the realities of the site, the committee began to gear themselves towards a more site specific discussion by the middle of the week.

With consideration to these discussions, the Design Team developed six site specific schemes from which the Steering Committee was asked to create an optimal scheme to present at the first presentation meeting to the community.

Community Presentations

The first presentation was held at Mililani High School on January 25, 1996. Members of the Steering Committee and the Design Team presented the organizational scheme for the school that they had agreed upon, as well as an explanation of what the process had been during the last week. The discussion was then opened up for questions from the community and all comments were noted and recorded to be considered during the next phase of the charette.

Following this meeting, the Design Team was given a week to further organize and refine the existing scheme as well as to begin discussion on general building goals. During Phase 2 of the charette, which began on February 5th, the Design Team along with the Steering Committee began to brainstorm on specific building goals.

As in Phase 1 of the charette, the Design Team met each evening to review the day's discussion and to develop more refined schemes to present the next day. Phase 2 of the charette, however, was more focused on specific building requirements and space needs. Functional relationships between buildings and especially between spaces within buildings became a determining factor in the development of the building schemes.

At this stage of the process, the Design Team also became concerned with developing a preliminary space program that addressed the program space allotments as dictated by the DOE Facilities Branch. Moreover, during Phase 2 of the charette, phasing requirements also became a critical issue especially after the preliminary cost estimate was prepared. Consequently, the committee was forced to make decisions on which facilities were necessary for the school to function when it opened in 1998 based on the fixed first increment budget.

The second public presentation was held on February 9th in a forum similar to the first presentation. The Steering Committee and the Design Team presented to the community a schematic design for each building as well as a site plan, circulation diagrams, and a phasing diagram. The community again provided feedback and questioned certain aspects of the site and building plans that needed to be considered in the ensuing design phase.

Subsequent to this presentation, the Design Team spent two weeks further refining the building design. During this time, the architects met with the curriculum specialists to once again review the

space requirements in their areas. With this insight, the Design Team was able to rework the functional and space relationships for each building plan to result in more optimal opportunities for student learning. Some of the design decisions, however, were still determined by the need for the Design Team to adhere to the program spaces as required by the DOE Facilities and Support Services Branch. As a result, the preliminary space program as well as the preliminary cost estimate were updated.

During this time the architects met with the Building Department and Fire Department for preliminary plan reviews to see that the current plans met building codes and fire code requirements. The plans were also reviewed with the Department of Land Utilization with regard to zoning and building height restrictions.

Before the final presentation to the Mililani Community, the Design Team met with the Steering Committee for a final meeting to review the plans in progress. At this meeting, further refinements to the building plans were made. Each building was re-evaluated and space trade-offs were made when necessary.

The final presentation on February 29th marked the culmination of the Steering Committee's involvement in the charrette process. Again, it was a team presentation made by the Steering Committee and the Design Team to the community. The community and the Steering Committee voiced their comments as the Design Team were to take their comments and begin the schematic design phase of this project.

Charrette Summary Report

The Charrette Summary Report is a detailed account of the charrette process including daily meeting minutes, all presentation materials and pertinent consultant diagrams. The minutes record the charrette exercises as well as comments and design decisions as they were made by the Design Team, the Steering Committee, and the Consultants. The design decisions have been summarized in the following Design Conclusions section of the report.

DESIGN CONCLUSIONS

SITE

The 15 acre campus site will be accessed by two entries, a student bus drop-off at the north boundary of the campus and the parent/staff parking at the south. A slope easement of approximately 0.5 acres is also located along the mauka edge of the site. At the front of the campus, the Administration building will be easily accessible and identifiable from the parent/staff parking. All facilities are designed and will be constructed in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Hawaii Revised Statutes (HRS) Section 103-50, Design and Construction Requirements.

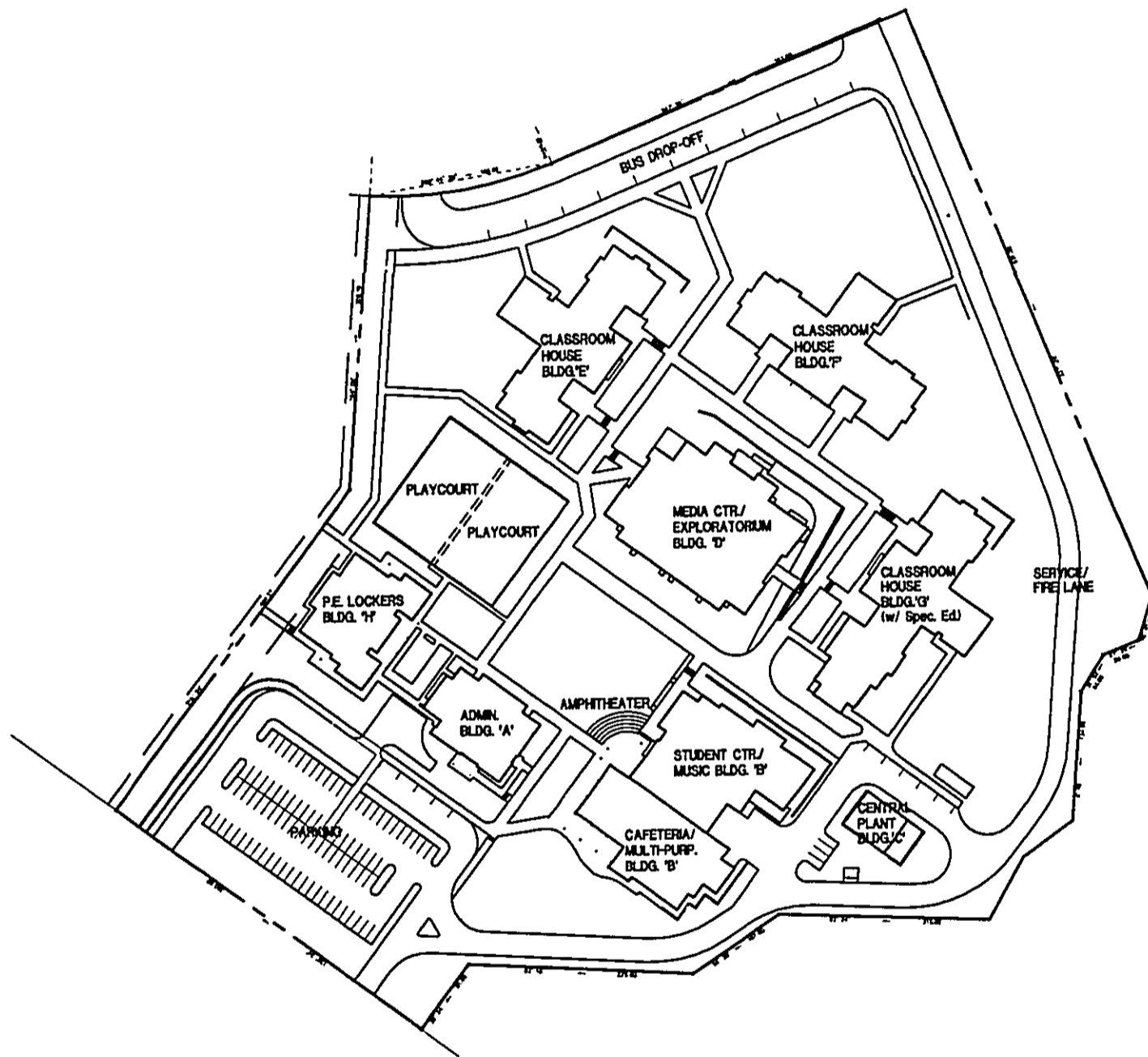


FIGURE 7
SITE PLAN
MILILANI INTERMEDIATE SCHOOL

Source: Kajjoka Okada Yamachi Architects



May, 1996 

Because the Cafeteria is also foreseen to be a frequently used community space, its location was also made convenient to the main public entry to the campus. The Music building has been integrated with the Cafeteria to permit easy sharing of the school's performance facilities which include a permanent stage adjacent to the dining area and an outdoor amphitheater. Because the exploratory curriculum is an emphasized component of the school's educational program, the Media Center/Exploratorium is located at the center of the campus. Classroom "houses" have been located around the Media Center/Exploratorium to allow all students direct access to this facility. The PE program will share the playfields on the neighboring park site and thus the facility has been located adjacent to the park. Courts have been designed on site to allow the school to have exclusive control of their use. Space for 12 portable classrooms has been earmarked in two locations on the north side of campus near the bus-drop off.

In addition to administration and student facilities, the campus will include a Central Plant. This would house the main equipment to support the A/C chilled water system, which will also produce hot water, and be located near the limits of the site to reduce the impacts of its noisy nature to the campus. The Central Plant has also been strategically placed near the Cafeteria facility in order to permit the joint-use of a service drive.

Pedestrians would enter the campus via a main public entrance off of Lehiwa Drive or by way of an equally well-designed entrance off Kuaoa Street at the north side of the campus. Once on campus, the primary circulation paths provide convenient access between the classroom "Houses" and the Media Center/Exploratorium. Pedestrian circulation paths will also be provided to the Administration building, Cafe/Music building, and to the PE building and out to the playfields.

Primary vehicular access to the campus will be via a bus drop-off at the Kuaoa Street entrance to the site and the parent/staff parking and drop-off area off of Lehiwa Drive. A service drive will enter off Lehiwa Drive and permit service vehicles convenient access to the Cafeteria facilities and the Central Plant. Disabled access will be accommodated by a handicapped drop-off which will allow easy access to primary campus circulation. Fire lanes have been provided for emergency vehicles to access the campus along the edge of the property (Figure 7).

Another main consideration in the development of the site plan was the use of exterior space for student social spaces. Thus, in addition to providing the students with an outdoor amphitheater, the campus will also offer a variety of gathering places where students can meet and socialize.

ADMINISTRATION

In order to accommodate any increased administrative requirements of a multi-track school, the administrative facilities, including general office space, Registrar's workroom, and conference rooms, have been slightly oversized. A PCNC (Parent Community Networking Center) room and public restrooms can be accessed even after office hours by a separate entry.

In order to allow students and faculty more convenient access to the Principal and Vice Principals, separate entrances have also been provided near their offices. The Principal's office maintains a clear view onto the center of the campus. Finally, to make the counselors' offices more approachable to the students, they have been moved out of the Administration building to the less formal Cafe/Music/Student Center.

CAFETERIA/MUSIC/STUDENT CENTER

The Cafeteria/Music/Student Center building will be built in two phases. During Increment 1, the dining and kitchen facilities will be built while the music and counseling portion of the building will be completed during Increment 2. The serving space was left flexible enough to allow the option of implementing a modified scramble serving system. A downsized dining area will have access to a view of the ocean and the Waianae mountains. The smaller dining area was a trade-off to allow an expanded music program which will include two full sized band rooms, a choral/orchestra room, and a keyboard room.

Because of the need to downsize the dining room, ample outdoor seating areas and covered lanais will be provided. An outdoor amphitheater as well as an indoor permanent stage adjacent to the dining area will be available to accommodate musical or drama performances.

The last component of the Cafe/Music building is the integration of the counselors' offices and the SAC (Student Activities Center) into the design to truly make this building a Student Center.

MEDIA CENTER/EXPLORATORIUM

At the center of the school, there will be a two-story Media Center/Exploratorium foreseen to be the heart of the campus. At the first level, a variety of exploratory study opportunities will be available to students. The exploratory curriculum will be largely project-based and students will have the chance to learn in a diversity of lab facilities while working on their projects. Central to the Exploratorium space will be a raised project area with computer stations where students can work in groups or individually on their projects and have easy access to the various lab spaces. The square footage trade-off that was necessary to create this project space was resolved by slightly downsizing the adjacent lab spaces.

The Exploratorium will include two Science labs, a FCS (Family Consumer Sciences) space, two Tech Ed spaces, neither of which will require heavy machinery or a large dust collector, and an Art room. Also on the Exploratorium level will be a shared demonstration room where teachers can address a number of students at once or students can present projects to their peers.

Above the Exploratorium on the second floor will be the Library/Media Center. It will be entered by a bridge entrance from the higher portion of campus, or an open stair that relates the Media Center to the first floor Exploratorium. In general this will be a large flexible space to house the

book stacks and computer stations, and also to allow students to study individually or in groups. The two student conference rooms are divided with a movable partition so that the space can be joined and used as a larger meeting room or a video control room. The Media Center will also provide a video production room and computer terminals.

In addition to a workroom, teachers will be provided with a planning center to support the multi-track system and promote team planning for an integrated curriculum. The main media control room for the campus will be located in the Media Center and provide the distribution of campus communications and data services. However, one of the most outstanding features of the Media Center will be its view of the campus and out to the ocean and the Waianae mountain range permitted by its second floor location.

HOUSES

The general philosophy of the Middle School concept is reflected in the design of the "Houses". The campus will have three House buildings strategically located to have convenient access to the Media Center/Exploratorium. The decision to provide three Houses was based on the assumption that the students could be divided among the Houses by grade level or in the future allow an integration of the varying grade levels.

Initially one-story buildings, the Houses became two-story due to the limited site space. Each two-story House will be composed of fourteen general classrooms and will include a mid-level lab space and computer resource room to be equally accessed by both floors within the house. These shared spaces would encourage cooperative learning along with a sense of community and belonging among the students. Within each House, there will be one teacher planning room and lounge to accommodate all the teachers. This facility, which would provide each teacher (on and off-track) with a personal desk space, should foster team planning and integrated teaching. Adjacent to the open stairway, there is an open flex space that can be used for informal group meetings, small presentations, and displays.

Classrooms have been designed to allow two classrooms to be combined during joint class activities and also have been provided with breakout rooms to encourage advisor-advisee talks, teacher-student conferences, and small group meetings.

A double size classroom space has been attached to House "G" in order to accommodate the need for an FSC (Fully Self-Contained) classroom space on the campus. The location of the FSC space was chosen for its proximity to the handicapped drop-off, and its close relationship to the rest of the campus. Because of the need for OT and PT (Itinerant Services) to be close to the FSC room, the Itinerant Special Ed space will be integrated with the FSC facility. An office will also be provided to accommodate speech therapy requirements.

PHYSICAL EDUCATION (PE) LOCKER BUILDING

The PE facilities will be required to accommodate 340-360 students on each side during any given session of the school year. Two classrooms have been incorporated into the design of the PE building. A generous lanai has been provided off the main entrance of the building to function as a student holding area. Larger paved areas will also be allotted off the side exits of the PE building to allow holding areas directed towards the playfields. The PE offices allow direct supervision by the teachers into the locker rooms and students have been provided with individual showers to accommodate their need for privacy at this age.

4.1.4 Project Summary Description

All facilities are designed and will be constructed in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Hawaii Revised Statutes (HRS) Section 103-50, Design and Construction Requirements. Site grading will also comply with ADAAG handicap access requirements in accordance with HRS, 103-50.

The concept includes a campus comprised of three classroom buildings, a centralized "media center/exploratorium", cafeteria/music building, a central chiller for air conditioning, an administration building, and a physical education building with 2 play courts. The exploratorium will also include home economics, business, and combined woods/metal shop.

Support facilities include bus parking and loading of Kuaoa Street, an 88 car parking lot with parent drop off area accessed by Lehiwa Drive, fire lanes, outdoor student areas, and miscellaneous site improvements such as retaining walls and sidewalks. The entire property is located adjacent to a community park, all within walking distance from planned residential areas proximate to the property. Infrastructure facilities to be expanded or improved include a drainage system, and water and wastewater systems, and electrical/communication systems. A brief description of the major land use elements of the Master Plan are presented below.

Land Use Summary

Based on the needs expressed by the Board of Education, Department of Education Facilities Branch, and community input, the following land use program was incorporated into the Mililani Mauka Middle School Master Plan, which represents approximately 65 percent open space as follows:

<u>Land Use Program</u>	<u>Approximate Building Footprints (Sq Ft)</u>
House E	17,660
House F	17,360
House G	19,150
Media/Exploratorium	24,100
Physical Education	8,530
Administration	7,140
Cafeteria/Music	26,190
Central Plant	2,180
Parking	66,000
Bus Drop-off	15,000
Courts	<u>20,440</u>
Total:	223,750+ sq ft
Misc Open Space	429,650± sq ft

*The building footprint areas shown here are approximate only and to be used for general planning purposes.

Figure 7 depicts the project site plan of the major structures proposed.

The following is an approximate list of major approvals and permits required for development of the proposed Middle School. From the earliest stages of the planning process, the Department of Accounting and General Services and their design team has worked with all affected agencies to obtain their comments and necessary approvals of plans and specifications (Refer to Appendix F).

<u>Permit or Approval</u>	<u>Authority</u>
Environmental Assessment	Governor
Subdivision Approval	City and County of Honolulu, Department of Public Works
Building/Grading Permit	Building Dept./Public Works
NPDES	State Department of Health
Height Waiver Request	City and County of Honolulu, Department of Land Utilization

Construction of the proposed school will begin upon completion of final construction plans and after the applicable subdivision and grading permits are issued. Construction phasing of the school will be within the first year following approval of all applicable land use entitlements and permits.

4.1.5 Infrastructure Improvements

All internal circulation, drainage, water, wastewater, electrical, and communication infrastructure will be funded by the State. The main Hawaiian Electric Company transmission line will be located underground along Lehiwa Street mitigating any potential adverse impacts to the site. Off-site infrastructure improvements are in place or will be provided by the developers of Mililani Mauka. Preliminary on-site infrastructure and site improvement costs are estimated at approximately \$7.0 million in 1996 dollars.

Engineering and architectural studies have been conducted to determine on-site drainage, traffic, and electrical/communication requirements. Off-site improvements such as water and wastewater capacity, electrical/communication, and roadway system improvements have been determined during the master planning process for Mililani Mauka and are in place to accommodate the proposed middle school development. As such, all off-site infrastructure is adequate and available for development of the proposed facility and no additional studies to identify off-site infrastructure improvements are required. Connections to water and wastewater facilities will be confirmed at the appropriate time in the approval and permitting process.

4.2 **Economic Characteristics**

4.2.1 Property Values of Existing Homes

According to the Real Property Tax Assessment Office, assessments are based upon primarily two broad factors: 1) the "neighborhood" in which the land is located; and 2) the fair market value of the land. Depending on the value of surrounding homes, development on adjacent properties may have a positive effect on surrounding land values relative to the existing vacant status of the property. Generally, close proximity to schools will enhance the property values of existing homes due to the premium paid by families with school age children. As such, property values should generally improve upon completion of the proposed Mililani Middle School.

4.2.2 Funding

Funding for the first phase of the proposed Mililani Middle School has been appropriated at \$18.0 million. The total appropriation from the Legislature was for \$20.0 million.

4.3 **Social Characteristics**

According to the City's 2010 population projections for Oahu, the 2010 population of Oahu is projected at 1,012,080, the Primary Urban Center at 489,141 (48.3 percent), Ewa at 102,578 (10.1 percent), and Central Oahu at 172,428 (17 percent). Based on these projections and the absence of residential development planned for the property, the Mililani Intermediate School will not facilitate new population growth in the area, but it will address a critical social need through the development

of educational facilities. Consequently, the Middle School will provide a necessary public facility in support of future residential development planned for surrounding properties.

4.4 Cultural Characteristics

The project site is located in Mililani Mauka, a residential area that began as part of Mililani, a master planned community established in the 1960s. During the late 1980's, development of the Mililani Mauka community began after many years as a pineapple producing area. During the agricultural period, the area was extensively modified and altered from its natural condition. As such, the property does not contain cultural remains, plants or animals of traditional Hawaiian gathering value, and is not currently used for cultural or religious practices. Consequently, the site does not contain significant cultural values or resources. Construction of the proposed school facilities, however, will provide new opportunities for cultural education, awareness and activities to take place.

4.5 Environmental Characteristics

In general, the subject property is not located in an environmentally sensitive zone such as floodplain, tsunami zone, erosion prone area, geologically hazardous land, estuary, coastal water, or area of sensitive flora and fauna habitat. Although the property does contain soils suitable for productive agriculture, agricultural use is not suitable within an existing urban area planned for residential land uses. Dust, noise, and use of pesticides and herbicides associated with agricultural land may not be compatible with adjoining land uses without severe restrictions on their use.

The primary environmental characteristics of concern to the community are the air and noise impacts typically associated with new urban development on lands adjacent to existing residential development. As such, mitigation measures will be necessary during construction to reduce potential air and noise impacts on adjacent properties. After construction, the design and configuration of new structures must reflect the surrounding residential community, views, circulation, open areas and security measures required to support the growing population in the area.

4.5.1 Aesthetics

The Mililani Intermediate School has been designed to integrate the proposed land uses into the planned Mililani Mauka community by integrating the site plan in recognition to adjoining land uses. For example, because the subject property is situated between a gulch and a community park, the site plan has located proposed physical educational facilities adjacent to the park. Along the gulch, a roadway and landscape buffer and planned chain-link fence will establish a physical separation from the steep slopes of the gulch. The bus drop-off and parking area are located adjacent to Kuaoa Street and Lehiwa Drive respectively, permitting a desired building setback from roadways which would mitigate potential noise and safety concerns.

Building architecture and heights have been designed to complement the surrounding land uses and other existing buildings located within the Mililani Mauka community. All applicable design guidelines and design criteria established by the Mililani community and Department of Education respectively have been addressed during the design process and will be reflected in the building architecture.

4.5.2 Traffic

According to the "Traffic Impact Study; Mililani Town Master Plan, Parsons, Brinkerhoff, Quade and Douglas, Inc. May 1984, the proposed Mililani Mauka schools will generate 13.1 trips/day/employee. Assuming approximately 70 employees, this equates to approximately 917 trips generated/day. Trip generation calculated on a per/student basis is provided in "Trip Generation" 5th Edition, Institute of Transportation Engineers (ITE), 1991, which estimates 1.09 trips per student/day. Based on the design enrollment of 675 to 1,350 students (1 to 2 tracks at any given time), the Mililani Intermediate School would generate approximately 735 to 1471 trips per day depending on the attendance level for that day. Therefore, the estimate of 917 trips provided in the Traffic Impact Study appears within this range.

To mitigate the potential traffic impacts that could be generated by the proposed project, the layout and design of the proposed site plan was coordinated with the City's Department of Transportation Services (DTS). According to DTS, the access from Kuaoa Street is acceptable provided that a standard dropped driveway wide enough to accommodate bus turning movements is provided. Location of the driveways should be coordinated with the Mililani Mauka community and a one-way counter-clockwise circulation pattern should be implemented. Internal travel lanes should be wide enough to accommodate two travel lanes for buses and appropriate signage is also necessary.

Similarly, the access from Lehiwa Drive is also acceptable. A standard dropped driveway should be constructed with east and west driveways one-way in and out, respectively. Appropriate signage is also required. DTS has no objections to the student drop-off area, turnaround area, and fire lane through and within the school site.

Because Kuaoa Street and Lehiwa Drive are not presently complete, a temporary access will be provided by the partial construction of Lehiwa Drive up to the proposed access locations. As phase two is developed and the Mililani Mauka community achieves build-out, Kuaoa Street will also be extended to provide the proposed bus drop-off area with access.

4.5.3 Water Quality

According to the State Department of Health, the Mililani Mauka community is located above the State's Underground Injection Control line. As such, the underlying groundwater is considered a potential source of potable water. Surface water quality will be maintained through a program of soil erosion control measures, Best Management Practices (BMP) during project construction.

5.0 SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Climate

The average annual rainfall of the area is approximately 40 to 50 inches. Near the mauka boundary of Mililani Mauka, the average annual rainfall is approximately 70 inches per year. Daytime summer temperatures average between a low of 66 degrees and a high of 82 degrees. Winter temperatures average between a low of 60 degrees and 75 degrees during daytime hours¹. These climatic conditions are important in determining design features such as the need for covered walkways, use of air conditioning, and orientation of buildings.

5.2 Geology/Topography

The topography has generally moderate slopes that reach up to 6 percent in some portions of the parcel. No significant geological or topographical physical features are present on the property. During rough grading of the site and during development of supporting infrastructure, the original topography, vegetation, and soils were significantly modified or removed (see Figure 1).

5.3 Soil Classification

There have been three soil suitability studies prepared for Hawaii whose principal focus has been on describing the physical attributes of soils for development and the relative agricultural productivity. These three soil suitability studies are: the *Detailed Land Classification*, the *Soil Conservation Service Soil Survey*, and the *Agricultural Lands of Importance to the State of Hawaii*. Although the subject property has been significantly altered by previous development, the following description of original soils is being provided as baseline information that may be of value for engineering and construction purposes.

5.3.1 Detailed Land Classification

The *Detailed Land Classification* (1965 through 1972) series was produced by the Land Study Bureau (LSB) of the University of Hawaii for each island. This series of reports were produced with the intention of developing a land inventory and productivity evaluation based on statewide "standards" of crop yields and levels of management.

The LSB land classification is a synthesis of the information found in the 1955 Soil Survey for the Territory of Hawaii as well as several other sources for data on geology, topography, climate, water

¹ University of Hawaii, Department of Geography, *Atlas of Hawaii*, Second Edition, Honolulu: University of Hawaii Press, 1983

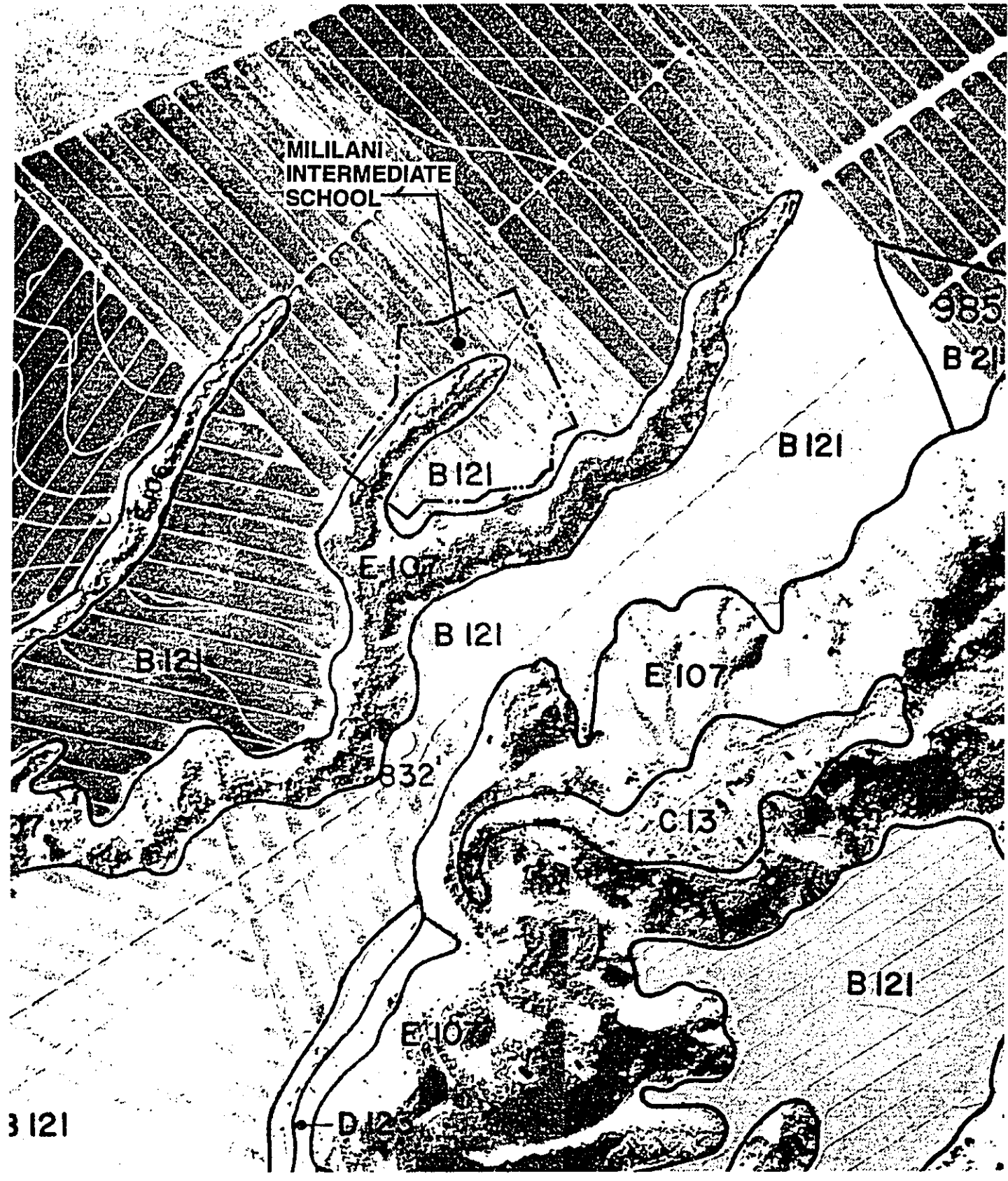
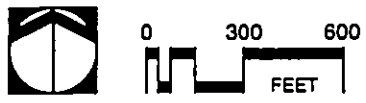


FIGURE 8
 DETAILED LAND CLASSIFICATION
 MILILANI INTERMEDIATE SCHOOL

Source: Land Study Bureau, University of Hawaii - State of Hawaii,
 December 1972



PIR
 HAWAII
 May, 1996

resources and crops. The LSB classification system groups lands into homogeneous units called Land Types, describes their condition and environment, delineates the areas on aerial photo base maps, rates the lands on their overall quality (productivity) in relation to other land, and appraises their performance under selected alternative agricultural crops. The productivity evaluations were based on statewide standards of crop yields and levels of management at the time the classification was made.

As shown on Figure 8, the subject property is designated as "B" by the Land Study Bureau and is considered good for agricultural purposes. It is non-stony, clay properties are non-expanding, drainage is good, and slopes are between 0 percent and 10 percent.

5.3.2 Soil Conservation Service Soil Survey

The Soil Conservation Service Report of 1972² series for each island was prepared by the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station. These reports are patterned after a soil classification procedure adapted for nationwide, uniform application. Soil types are ranked according to their suitability for most kinds of crops and characteristics applicable to development.

As shown on Figure 9, the original soils characteristic of the subject property are Leilehua silty clay (LeB) with slopes of 2 to 6 percent. A representative profile of the surface layer is dark reddish-brown silty clay about 12 inches thick. The subsoil is approximately 36 inches thick, is dark reddish-brown and dusky-red silty clay and clay that has subangular blocky structure. Permeability is moderately rapid, runoff is slow, and the erosion hazard is slight.

Although this Soil Conservation Service soil description is useful in determining the fundamental characteristics of soils, the extensive disruption of the soil column, mixing, and compaction of the soils has likely altered the drainage and permeability characteristics described.

5.3.3 Agricultural Lands of Importance to the State of Hawaii

The *Agricultural Lands of Importance to the State of Hawaii* (ALISH) (1977) system was also prepared for the entire state, based on criteria established by the Soil Conservation Service. "Prime Agricultural Land" is defined as "...land best suited for the production of food, feed, forage, and fiber crops. Two other classes of land used by the ALISH system are "Unique Agricultural Land" and "Other Important Agricultural Land". Both describe successively less productive soils. The entire 15 acre site has been designated as "Prime" agricultural land by the ALISH system. These lands are considered to have the soil quality, growing season, and moisture supply needed to produce a

² U.S. Department of Agriculture, Soil Conservation Service and University of Hawaii. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai*, State of Hawaii, August 1972

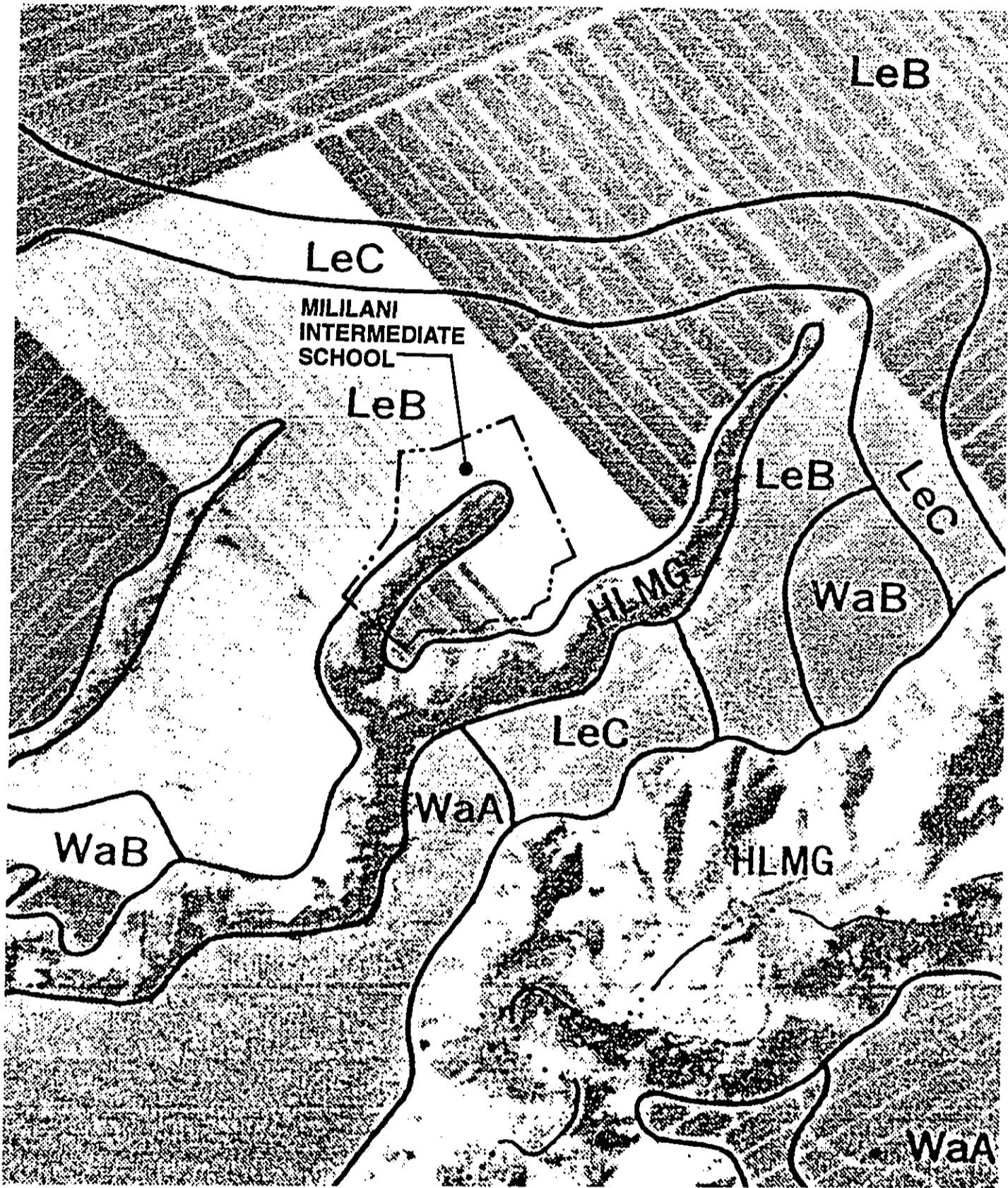
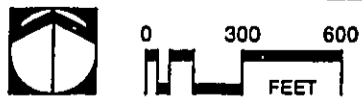
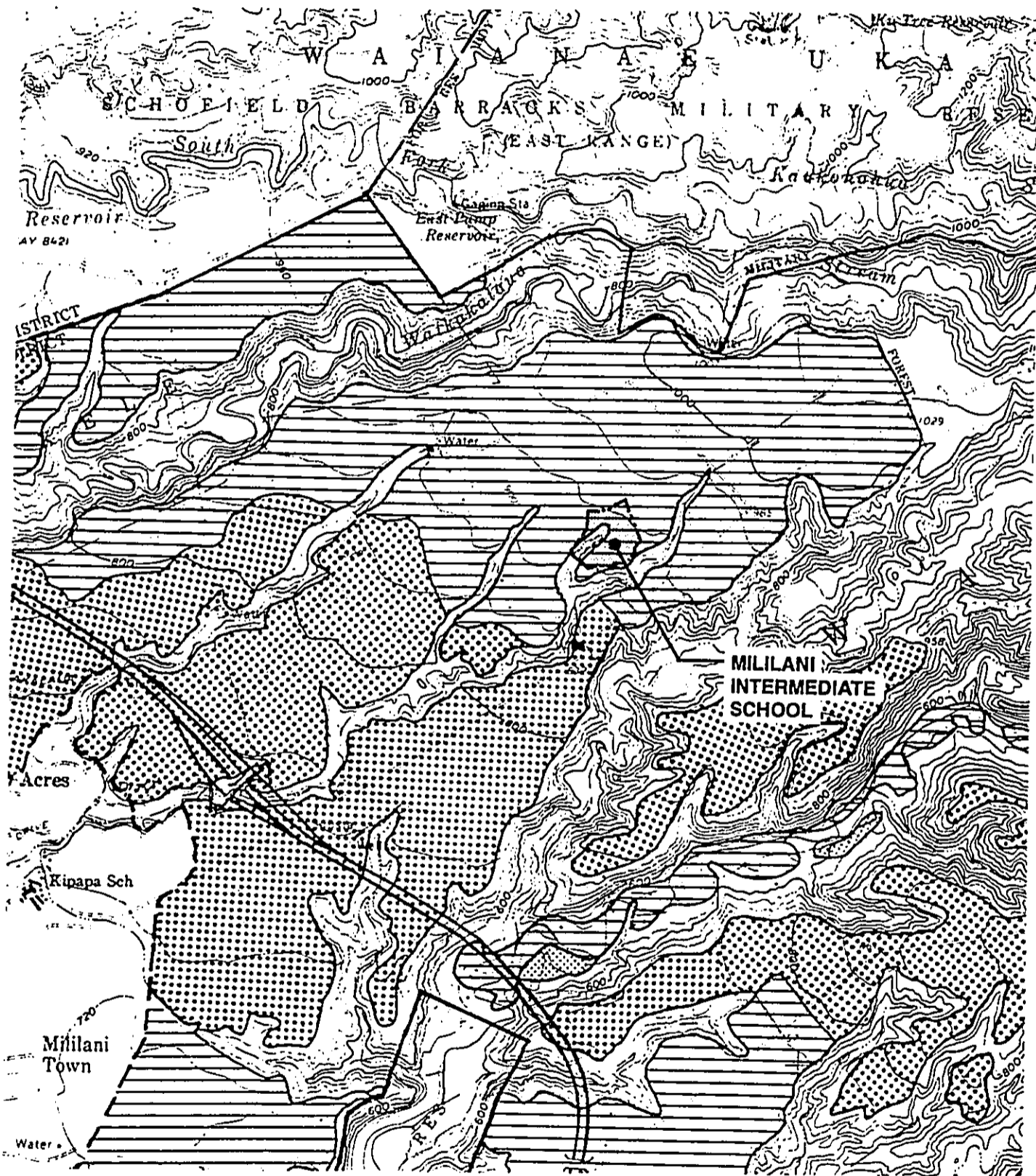


FIGURE 9
SCS SOIL SURVEY
MILILANI INTERMEDIATE SCHOOL




Source: U.S. Department of Agriculture, Soil Conservation Service & University of Hawaii, August 1972



May, 1996 

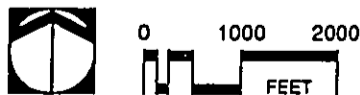


LEGEND

-  Prime Agricultural Lands
-  Unique Agricultural Lands
-  Other Important Agricultural lands

Source: Department of Agriculture-State of Hawaii, January 1977

FIGURE 10
ALISH
MILILANI INTERMEDIATE SCHOOL



May, 1996

sustained yield of crops economically when treated and managed according to modern farming methods.³ (refer to Figure 10).

5.4 Flood and Drainage

The Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) of March 4, 1987⁴, identifies the parcel as within "Zone X" which is defined as areas outside of the 500-year flood plain. As such, none of the subject property is subject to floods which may impact the design and/or location of project structures or improvements.

5.5 Flora

Because the entire subject property has previously been extensively modified by the agricultural grading and construction of the temporary construction facilities, all of the original flora characteristic of the area has been replaced with introduced scrub vegetation (see Appendix A). As illustrated by the Visual Analysis, existing site conditions do not indicate any significant or endangered flora resources. As such, the implementation of the proposed master plan will not have a significant impact on botanical resources.

During and after project buildout, the proposed landscape plan will establish a much more diverse assortment of flora species than is currently present on the property. In addition to the aesthetic values created by the new landscaping, its diversity will also contribute to the establishment of new habitat for birds and other animals. As such, no mitigation measures are necessary.

5.6 Fauna

Fauna on the property is primarily comprised of the typical assortment of feral mammals including cats, dogs, and mongoose often found in most urban areas of Oahu. Because the entire subject property has previously been extensively modified by agricultural cultivation, construction activities, and urban development, the native fauna habitats of the area have been previously replaced by agricultural activities and urban environment. Therefore, there are no known endangered or other threatened animal species or their habitats associated with the subject property (see Appendix A).

³ State of Hawaii, Department of Agriculture. *Agricultural Lands of Importance to the State of Hawaii: Island of Oahu*, Sheet O-9, Waipahu, Hawaii, January 1977

⁴ National Flood Insurance Program, Federal Emergency Management Agency, *FIRM Flood Insurance Rate Map: City and County of Honolulu, Hawaii*, Community Panel Number 150001 0065 B, Inset N, September 4, 1987

5.7 Air Quality

Regional and local climate, together with the type and amount of human activity, generally dictate the air quality at a given location. According to the Atlas of Hawaii, air quality in the area of the subject property is generally good. In terms of particulate matter, there are approximately 40 micrograms per cubic meter of suspended particulates on a 12-hour daytime average. In terms of carbon monoxide, the maximum concentration for any one hour period was found to be between 20 and 30 milligrams per cubic meter⁵. Fugitive dust from human activities and emissions from vehicular traffic represent the only significant sources of potential air quality impact relative to the subject property at the present time.

In general, air quality in Hawaii is excellent due to the predominant northeast trade winds, although some localized conditions, such as heavy traffic at intersections can negatively impact air quality. Within Mililani Mauka, the transportation system and projected traffic levels generated by the project, are not expected to significantly alter air quality in the area from current conditions. In addition, the close proximity of residential development to the proposed educational facilities is likely to encourage many pedestrian or bicycle users as an alternative to vehicular transportation.

To ensure that air quality continues to be high, both Federal and State standards have been established to identify ambient air quality and potential changes as they may occur in the future. At present, six parameters are regulated including: 1) particulate matter; 2) sulfur dioxide; 3) nitrogen dioxide; 4) carbon monoxide; 5) ozone; and 6) lead. Hawaii's standards are more stringent than comparable national limits except for sulfur dioxide.

It is possible that during construction, short-term air quality in the area may be impacted by exhausts generated from construction equipment and fugitive dust emissions during project grading. Therefore, best management practices will be employed to ensure that soil erosion control measures mitigate the impact of both water and air borne emissions of silt and dust.

Fugitive dust control can be accomplished by a watering program, covering open-bodied trucks, paving of parking areas, and establishment of landscaping to lower the potential for fugitive dust emission. Other short-term impacts from construction vehicle emissions and increased traffic should be insignificant. Similarly, no significant long-term air quality impacts are anticipated after project construction is completed.

⁵

University of Hawaii, Department of Geography, *Atlas of Hawaii*, Second Edition, Honolulu: University of Hawaii Press, 1983, pp. 67-68

5.8 Noise

Noise quality of the area is dominated by distant noise traffic emanating from the H-2 Freeway, occasional aircraft noise, sounds typical of residential areas, construction noise from adjoining properties, and naturally occurring sounds (i.e. birds and wind).

Typical noise standards for residential areas are shown on Table 2 .

TABLE 2
EXTERIOR NOISE EXPOSURE CLASSIFICATION
(RESIDENTIAL LAND USE)

Noise Exposure Class	Day-Night Sound Level	Equivalent Sound Level	Federal (1) Standard
Minimal Exposure	Not Exceeding 55 Ldn	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 Ldn But Not Above 65 Ldn	Above 55 Leq But Not Above 65 Leq	(2) Acceptable
Significant Exposure	Above 65 Ldn But Not Above 75 Ldn	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 Ldn	Above 75 Leq	Unacceptable

Note: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours.

Short-term noise may impact off-site areas during the initial construction phase emanating from on-site grading activities and movement of construction vehicles. Construction activities would be limited to daytime hours and comply with all applicable noise control regulations of the City and County of Honolulu and State of Hawaii. The use of noise suppression equipment on construction vehicles and construction curfew periods are required under the State Department of Health (DOH) noise regulations. Construction equipment will utilize required mufflers and be shut off when not operated.

After construction, potential project related noise impacts are primarily limited to localized noise generated by increased traffic volume, construction activity noise, and student noise typically associated with outdoor activities.

5.9 Visual Attributes

Existing views of the property are dominated by built features, the distant Koolau and Waianae Mountain Ranges, and Kipapa Gulch. As such, no specific or predominate natural features are visually associated with the subject property except for Kipapa Gulch. Views into Kipapa Gulch are available at some locations, however, existing vegetation and proposed landscaping will be utilized to establish a visual and safety buffer along the edge of the Gulch.

5.10 Historical/Archaeological and Cultural Sites

Due to the extensive grading and other modifications conducted on the property (Figure 6) for agricultural purposes, fill, and stockpiling of construction material, no significant archaeological or cultural sites are known to exist on the subject property. This was confirmed in the Final Environmental Impact Statement, February, 1987, prepared for Mililani Mauka. The only potentially significant sites in the area are the Waikakalaua and Kipapa Gulches where various battles between invading chiefs from neighboring islands took place. Kipapa Gulch also was the site of Heiau o Umi and agricultural terraces. No sites were identified on the subject property.

The Archaeological Report (Appendix B) concludes, "if any structural remains of an archaeological or historical nature ever existed on the subject property (sic. Mililani Mauka), pineapple cultivation has long since erased any such evidence. There thus is no archaeological reason why the development of Mililani Town cannot proceed as planned."

During any development activity involving the extensive modification of the land surface, there is always the possibility, however remote, that previously unknown or unexpected subsurface cultural features, deposits or burials might be encountered. Therefore, should any archaeologically significant features be uncovered during construction, immediate archaeological consultation will be sought with the Department of Land and Natural Resources in accordance with applicable regulations.

5.11 Public Services and Facilities

5.11.1 Access

Access to the parcel is provided primarily from Kuaoa Street and Lehiwa Drive. These internal roadways have been planned and designed to accommodate the existing and future transportation needs of the Mililani Mauka community, which also assumed development of the subject property as a school site. As such, no improvements to the existing and planned roadway system are required

except for onsite driveways connecting with the bus drop-off facility on Kuaoa Street and the parking lot adjacent to Lehiwa Drive.

5.11.2 Potable Water

According to the Mililani Town Water Master Plan (revised December 1995), the proposed educational uses located within Zone 1b (subject Mililani Middle School and proposed Elementary School), will require an average of approximately 0.438 mgd of potable water compared to a average of 4.098 mgd of potable water required for Mililani Mauka upon project buildout. This consumption rate assumed a fire flow rate of 2,000 gpm at a 2 hour duration (see Appendix D). According to the Department of Land and Natural Resources, daily consumption guidelines for schools on Oahu are 4,000 gallons/acre and 60 gallons/student. These guidelines equate to a consumption rate of 62,000 gallons/day and 81,000 gallons/day respectively, for a total daily consumption of approximately 143,000 gallons/day.

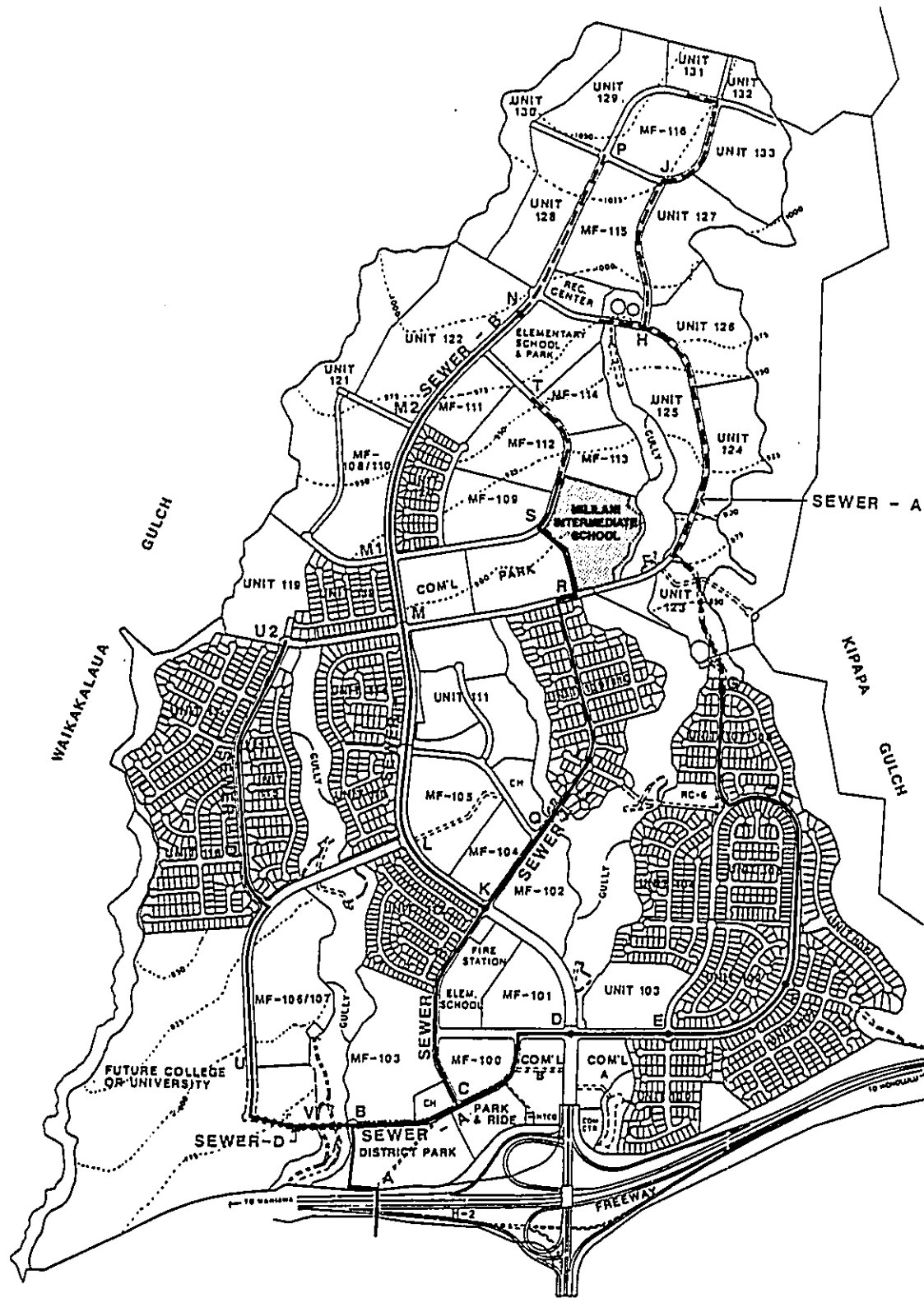
As indicated the proposed schools in Mililani Mauka will consume approximately 10 percent of the total projected potable water demand in Mililani Mauka at project buildout. However, the subject school site at this location has long been an element of the Mililani Mauka Master Plan. Therefore, the potable water demand for schools has long been included in the planning and design of the Mililani Mauka potable water system.

The water system for Mililani Mauka consists of existing Deepwells 9 & 10 and the existing wells 5 & 6 at the 865 elevation. Proposed wells 11 & 12 are also planned as a source located proximate to Deepwells 9 & 10. There are also four water reservoirs with a total storage capacity of 6.5 mg.

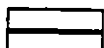

Based on the planned potable water demand at Mililani Mauka and the relatively low water requirements projected for the proposed Middle School, the water source, storage, and distribution facilities required to service the project are adequate and have been planned to accommodate the potable water needs of the proposed project.

5.11.3 Wastewater

According to the wastewater master plan prepared for Mililani Mauka, the proposed project will require the collection, treatment, and disposal of wastewater in accordance with applicable regulations of the Department of Wastewater Management (see Appendix C). Sewage capacity will be contingent on submittal and approval of a "Sewer Connection Application" form to project whether flows are within capacity and permit limitations of all affected infrastructure. According to the wastewater master plan, the peak flow generated by the proposed facility is approximately 1.32 mgd. Average wastewater flows, however, are projected at 0.331 mgd.

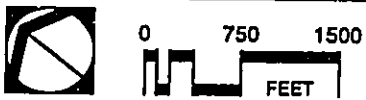


LEGEND

-  EXISTING SEWER OR UNDER CONSTRUCTION
-  FUTURE SEWERS

Source: EDP Hawaii Inc.

**FIGURE 11
SEWER MASTER PLAN
MILILANI INTERMEDIATE SCHOOL**



April, 1996

Wastewater Collection

Current wastewater collection lines (Figure 11) accessible to the subject property consists of a 12 inch line located between the proposed school site and community park. This line crosses Lehiwa Drive and ultimately connects to a 15 inch line and then a 18 inch line near the Mililani Mauka Elementary School. These existing wastewater collection lines gravity flow ultimately toward the Honouliuli Wastewater Treatment Plant (WWTP) located at Ewa where wastewater from Central Oahu is treated.

Wastewater Treatment

The present capacity of the Honouliuli WWTP is approximately 38 mgd. Available capacity is allocated by the City on a "first come, first serve" basis. However, a 13 mgd expansion of the facility is scheduled to be completed by December 1996. With this expansion and other improvements to the Waipahu Waste Water Pump Station and the Mililani Diversion Line Relief, preliminary estimates indicate that the Honouliuli WWTP will have sufficient capacity to accommodate the proposed project.

Effluent Disposal

Treated effluent from the Honouliuli WWTP is currently discharged via deep ocean outfall. This method of disposal will not be significantly impacted by development of the proposed project. Because a school inherently brings children into outdoor landscaped areas and the lack of treatment facilities proximate to the school site, the use of treated effluent for irrigation purposes is not planned.

5.11.4 Drainage

As with any new development, control of drainage during and after project construction is critical in protecting the quality of surface runoff and mitigating the potential impacts of off-site runoff on down-slope properties.

During construction, exposed soils and the establishment of impermeable surfaces (i.e. roofs, parking areas, etc.) can potentially concentrate surface flows into the exposed soils areas. This can increase the suspension of soil in the water and create off-site siltation in receiving waters. Similarly, off-site surface flows after construction must be controlled to retain water on-site, permit recharge of groundwater, and regulate the volume and velocity of discharged water. Therefore, during construction, best management practices will be employed to control the quantity and quality of runoff. Because the graded area will exceed 5 acres, a National Pollutant Discharge Elimination System (NPDES) permit will be required from the State Department of Health which would review and approve the best management practices proposed.

The NPDES program is administered by the Clean Water Branch of the State Department of Health (DOH). According to the NPDES regulations, a drainage plan and Best Management Practices (BNP) Plan to detail the measures to be taken to minimize soil erosion and discharge of pollutants into receiving water is required. The BMP describes the site and proposed construction activities and schedule. Soil erosion control mitigation measures must be in place before grading begins to minimize the exposure time of cleared areas and stabilizing techniques. Erosion control measures must be checked once a week and after periods of rainfall. A notice of intent must be issued to the DOH 90 days prior to construction activities.

Based on the amount of impermeable surfaces created by the proposed land uses, on-site and/or off-site drainage improvements to control the discharge of surface water will be developed to control the total off-site runoff after construction. Systems to control the quantity of quality of surface runoff will be designed in accordance with applicable City and State regulations. These include temporary wind screens, on-site water retention basins, establishment of groundcover, erosion control fabric, and landscaping (with automatic irrigation system) soon after initial grading is complete. Frequent watering will be implemented to mitigate emission of fugitive dust.

5.11.5 Schools

The public schools closest to the project site are the Kipapa Elementary School and Mililani Waena Elementary School on Kipapa Drive, Mililani Uka Elementary School on Kuahelani Avenue, Mililani Mauka Elementary School on Makaikai Street, and Mililani High School on Meheula Parkway. In addition, there is an undeveloped second elementary school site in Mililani Mauka. There is presently no middle or intermediate school in Mililani.

The proposed Mililani Intermediate School will not stimulate or increase the number students on Oahu, but respond to the need for additional educational facilities within the growing Mililani community. As such, children who would attend the Mililani Intermediate School are generally not students new to the Department of Education system as they already attend schools elsewhere within the State school system.

According to the State Department of Education's enrollment projections prepared for the Mililani Mauka EIS, two new elementary schools and one new intermediate (middle) school would be required to accommodate the projected residential development. Consequently, these facilities have been incorporated into the Mililani Mauka master plan. In addition, the Department of Accounting and General Services has been working closely with the State Department of Education to ensure that the educational needs of the community are adequately addressed as the project achieves build-out.

5.11.6 Parks and Recreation

The Department of Accounting and General Services has met with representatives of the City Department of Parks and Recreation (DPR), the State Department of Education (DOE), and the current landowner (Castle & Cooke), to discuss the potential joint use of the adjoining community park for recreational purposes.

According to DPR, the community park can be utilized for school purposes, however, provisions must be made to also accommodate the recreational needs of the general public. This will be achieved through scheduling of physical education classes to ensure that the community park is available to the general public on a predetermined basis. However, the development of the park must be completed prior to the opening of the school. The landowner will develop the open playfields within the park (approximately 4 acres) in time for the school opening under the condition that DOE maintains the open playfields until such time the landowner turns over the park site to the Department of Parks and Recreation, City and County of Honolulu. Provisions for recreation improvements and facilities (including parking) will be determined by the landowner and City and County of Honolulu Department of Parks and Recreation.

Other on-site facilities for active recreation, such as basketball courts, will also be available for student use which will reduce the overall use of the community park facilities.

In its present condition, the subject property provides no public recreational opportunities. However, with development of the proposed school and associated recreational facilities, the overall inventory of available recreational opportunities will be enhanced, thereby improving the efficient use of proposed recreational facilities.

5.11.7 Police

The District's police protection services are provided by officers from the Wahiawa Police Station located off California Avenue. This area is part of the Honolulu Police Department's Second District. Due to the location of the subject school site, response time is relatively prompt. In addition, the school will augment the City's police force with campus security guards as applicable.

As with any higher intensity land use, there will be an occasional and unavoidable demand for police protection services. The Department of Accounting and General Services will coordinate closely with the Police department to anticipate project implementation and phasing to permit adequate planning and advance notice of project completion.

Design of the facility will ensure that the proposed campus plan and design features implement appropriate lighting and other security measures. These include security gates and barriers, and other security devices and management practices.

5.11.8 Fire

There are two fire stations that will provide fire protection services to the proposed Mililani Intermediate School. The closest fire station is planned for a site adjacent to the Mililani Mauka Elementary School on Makaikai Street, which will have primary responsibility for fire protection in the area. A second fire station, Mililani Engine Company 36, is located near the intersection of Kuahelani Avenue and Kamehameha Highway in Mililani located approximately 1.5 miles from the proposed school site. As such, response times in case of emergency are relatively prompt and the combined capacity of the two fire stations will provide adequate fire protection capability. Access for emergency vehicles shall conform to applicable fire and building codes.

6.0 IDENTIFICATION AND SUMMARY OF IMPACTS AND ALTERNATIVES CONSIDERED

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-10, the considered alternatives to the proposed Middle School are limited to those that would allow the educational objectives of the project to be met, while minimizing potential adverse environmental impacts. The alternatives must also realistically address the project's economic limitations while also responding to the surrounding residential land uses that could be impacted by the project.

6.1 The Preferred Alternative

Although the final layout and configuration of the proposed site plan may be refined through the engineering design process and preparation of construction drawings, the proposed plan is considered to be the "best" from program requirement, land use planning, and fiscal impact perspectives. Its phased development will ensure that the long range use of the property contributes socially to the community's educational needs as the population of Mililani Mauka grows in the future.

The preferred alternative has been judged superior due to the efficient use of the property proximate to existing and future residential and recreational development planned for Mililani Mauka. Those environmental impacts that do occur can be mitigated by the installation of appropriate infrastructure improvements and implementation of best management practices during project construction. Use of physical buffers (i.e. landscaping, roadways, topography, etc.), have been incorporated into the site plan to integrate the project into the surrounding community's land uses.

In addition, by separating the major components of the school into buildings specifically designed to accommodate specific functions, the project development can be easily phased as funding and community need warrants.

6.2 "No-Action Alternative"

The "no-action" alternative would not be consistent with stated governmental policies of establishing new educational opportunities for the growing community that reflect the latest research into innovative educational techniques. In addition, the site would remain under-utilized while existing schools in the area would become over-crowded, negatively impacting their ability to provide quality education.

Sale of the property "as is" to private interests would require its eventual development due to the economic value of a large land parcel (with high development potential) located within an existing urban area. The site's close proximity to existing and planned residential land uses limits its suitability for agricultural, commercial, or industrial land uses, and would not be consistent with the master plan for Mililani Mauka. Residential development of the site is feasible, however, the need to provide educational opportunities for the residents of Mililani Mauka would be further exacerbated.

6.3 Increase the Capacity of Existing Schools

Without development of the proposed middle school, existing schools would require substantial expansion of facilities including land, buildings, and recreational facilities. However, a significant expansion of this kind would likely be disruptive to existing educational programs, costly, and inferior to the preferred alternative from a location perspective. In either case, land for expansion or a new site is necessary to accommodate the growth in projected enrollment.

In addition, renovation of existing schools would not provide the opportunity to master plan a new campus which incorporates the latest technology and separation of structures that may be utilized for uses incompatible with classrooms (i.e. classrooms and administration mixed with music, cafeteria, and physical education areas). Therefore, this alternative was rejected since there is no clear benefit relative to the preferred alternative.

6.4 Summary of Impacts

The potential impacts associated with the proposed middle school are not unique, but are typical of most development projects encompassing a 15-acre site. Similarly, higher intensity land uses would likely result in greater impacts, thereby requiring additional or more extensive mitigative measures.

With any development, air and noise impacts will occur, and additional demands on existing electrical/communication, water, and wastewater infrastructure systems will result. However, these impacts will also occur as the population of Oahu increases and as new educational facilities are developed at other locations. Therefore, the need to educate Oahu's citizens will exist with or without the project.

Project development will also require the use of public funds, expansion of the State's educational system, and police and fire protection services. These increased costs, however, will be paid to the state and city governments. Increased property tax revenues associated with improved residential development will be paid to the City and increased income/excise taxes paid to the State as the population of Mililani continues to grow in the future. Consequently, the project is an essential public service that will support future residential development and be funded over time by tax revenues.

It should be noted that the major environmental impacts related to the project's design and site plan, can be mitigated by the implementation of best management practices during construction to control soil erosion. Other impacts that could result after construction, such as noise and traffic, may be generated if outdoor events at the amphitheater or large outdoor gatherings occur. However, these impacts will be mitigated through adherence to State noise control regulations and through the design of buildings which incorporate sound attenuation measures. Traffic impacts will be mitigated through further coordination the Department of Transportation Services to ensure that ingress and egress to the property are appropriately designed.

Consequently, no significant environmental effects will result from the development of the subject property provided appropriate mitigation measures are employed throughout the construction period and during project operation.

7.0 PROPOSED MITIGATION MEASURES

As indicated above, few potential adverse impacts to the area are expected to result from implementation of the proposed site plan. Short-term impacts will result in the initial construction phase which will require on-site grading, trenching, and movement of vehicles within the project site. These activities will generate localized noise and dust during construction periods. Mitigation measures to minimize adverse air quality will include frequent watering of unpaved roads and construction areas, dust screens, and mulching and planting of ground cover and other vegetation as soon as possible after construction. Construction activities will be limited to daytime hours and comply with all applicable noise control regulations of the City and Department of Health.

Long-term impacts from the development will produce increased pedestrian traffic from teachers, administrative staff, and students. Potential noise from students talking, recreational activities, and the outdoor amphitheater will occur, however, these are expected to create only minimal impacts that may affect only the adjacent properties. (i.e. community park, Kipapa Gulch, and residents of the multi-family area mauka of the property) during periods when the school is in operation.

Visually, the property will also be altered from the vacant and unused condition, to become a significant architectural element in the urban landscape. In addition to the architectural structures, the project's landscape architecture will integrate the project into the surrounding residential setting.

The proposed project is not expected to have any impact on the micro climate of the project area or region. Planned structures would not be tall enough to significantly effect existing wind patterns; and new landscaping will not significantly effect temperature, although some localized cooling can be expected to result from the establishment of landscaping. No specific or predominate natural feature will be visually impacted by the development of the project site.

Recommended mitigation measures include the following:

Short term:

- Frequent watering during construction to maintain dust control.
- Grassing of swales and sodding as soon as practicable once grading has been completed.
- Wind screening as appropriate to limit fugitive dust.
- Restrict use of construction equipment to daylight hours to reduce noise impacts.
- Establishment of on-site drainage retention basins during construction to mitigate soil erosion and off-site runoff.

Long term:

- Establishment of appropriate landscaping to aesthetically integrate the site plan into the surrounding neighborhood.
- Where appropriate, create landscape buffers to reduce noise and glare adjacent to residential areas, especially along parking areas.
- Use of appropriate engineering, design and construction measures to ensure adequate drainage and irrigation of the site.
- Construct transportation roadway, parking and loading zone improvements in accordance with Department of Transportation Services to mitigate traffic generated by the proposed school.
- Incorporate an extensive system of walkways and bikeways to encourage pedestrian and bicycle use.
- Coordinate use of adjoining recreational facilities to minimize potential conflicts with other park users.

- Incorporate topography into building design to take advantage of grade separation and integrate buildings into existing landforms.

8.0 SIGNIFICANCE CRITERIA

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short-term and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impacts on the environment if it meets any one of the following criteria:

- **Involves a loss or destruction of any natural or cultural resources;**

Comment: The proposed project will not significantly impact scenic views of the ocean or any ridgelines from heavily traveled roadways in the area. Although the Koolau Mountains will form a backdrop from Lehiwa Drive, the project's architecture will reflect the surrounding land forms and other existing architecture in Mililani Mauka. The visual character of the area will change from the vacant condition to landscaped urban uses compatible with surrounding residential land uses. Presently, the subject property is not landscaped or otherwise improved.

Development of the project drainage system will follow design standards of the City to ensure controlled conveyance and discharge of storm runoff, and control of soil erosion to enhance the protection of water quality.

The property is not subject to coastal-related flooding. In addition, the subject property is located outside of the City's Special Management Area (SMA). As such, no significant coastal resources or views are impacted by development of the property.

As previously noted, no significant flora, fauna, or archaeological or historical sites are known to exist on the subject property, and none will be impacted by the proposed project. Should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phases of development, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

- **Curtails the range of beneficial uses of the environment;**

Comment: Although the subject property was previously used for agricultural production, the planned urbanization of Mililani Mauka (with construction of the proposed school), will

curtail the use of the property for agricultural purposes. However, the true "natural environment" associated with the property has already been curtailed by many years of agricultural activity. Consequently, returning the site to a natural environmental condition is not practical from a planning, environmental, or economic perspective.

- **Conflicts with the State's long-term goals or guidelines as expressed in Chapter 344, HRS;**

Comment: Development of the proposed Mililani Intermediate School is consistent with the Environmental Policies established in Chapter 344, HRS. These guidelines promote developments that do not negatively impact the environment, nor conflict with the State's environmental goals. As the Mililani Mauka project has received approvals from the State Land Use Commission and other state agencies, the project's consistency with Chapter 344, HRS has previously been confirmed by the State.

- **Substantially affects the economic or social welfare of the community or state;**

Comment: The proposed project will significantly contribute to the social welfare of Oahu's future population by providing school age children with the opportunity to attend school in a high quality educational environment proximate to their residences and prevent existing schools from over population. Surrounding land use patterns will not be negatively or significantly altered, nor will unplanned population growth or its distribution be stimulated. Development of the project will implement a primary component of the master plan approved for Mililani Mauka.

Consequently, development of the project will provide residents with a high quality living environment, centered around a neighborhood school. This harmonious relationship between home and the educational facilities proposed will significantly improve the quality of life for many residents, demonstrating a positive economic and social impact affecting the community.

- **Substantially affects public health**

Comment: Although the public (nearby residences) may potentially be impacted by air, noise, and water quality impacts, those affects on public health that do occur will be insignificant or not detectable, especially when weighed against the positive economic, social, and quality of life aspects associated with new educational facilities which create a positive impact for the community.

- **Involves substantial secondary effects, such as population changes or effects on public facilities;**

Comment: Existing and planned large-scale housing development projects within Mililani Mauka will establish a population requiring creation of new public and private facilities and services. As the overall population of Mililani Mauka grows in the future, the educational facility improvements proposed will become a primary component of a viable community. However, the proposed project will not in itself generate new population growth, but responds to the need for educational facilities and creation of new employment opportunities, both during and after construction. These jobs will provide temporary construction employment and permanent operational employment for instructors, management, and maintenance personnel.

Because the proposed school represents the implementation of the master plan for Mililani Mauka, the required infrastructure is in place, available, or scheduled for construction. As such, no significant infrastructure required for the project has not already been designed and planned during the review and approval process for Mililani Mauka.

- **Involves a substantial degradation of environmental quality;**

Comment: The proposed Middle School will replace the existing vacant condition of the property with the "urban" structures and landscaping associated with the school campus. This will mitigate the visual impact of the development as viewed from outside the site while the overall design will complement background vistas and surrounding land uses. There will be no substantial degradation of environmental quality, but the existing environmental setting will change from the present condition. With development of the new educational facilities, greater access to the property will be established allowing for new visual opportunities which previously did not exist when the property was used for agricultural production.

- **Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment to larger actions;**

Comment: By planning now to meet the future needs of the community, the Mililani Intermediate School is consistent with the existing and planned urban character of the neighborhood. None of the proposed uses will obstruct existing views or be visually incompatible with the surrounding character of existing and planned development. The larger action associated with development of Mililani Mauka has been previously approved by City and State regulatory agencies.

- **Substantially affects a rare, threatened or endangered species or its habitat;**

Comment: There are no known rare, threatened or endangered species or habitats associated with the subject property, or the implementation of the Mililani Mauka master plan. The diversity of the existing habitat will be enhanced with urban landscaping as compared to the low habitat diversity associated with pineapple production.

- **Detrimentially affects air or water quality or ambient noise levels;**

Comment - The quality of surface runoff will be maintained by the establishment of on-site retention basins during the construction phases of development to permit the retention of silt that could be suspended in surface runoff. After development, retention areas will serve the same function to control runoff and facilitate recharge of groundwater. Protection of groundwater resources will be enhanced by a centralized sewage collection, treatment, and disposal system.

Similarly, air quality will be controlled during construction by frequent watering, establishment of ground cover, and wind screens as applicable. After construction, soils will not be exposed, as compared to agricultural land use, thereby reducing the potential soil erosion from wind.

Ambient noise levels will increase relative to the present vacant condition due to the sounds of people talking, vehicles, and sounds associated with outdoor recreational activities. However, this change in noise level is not harmful or unusual since it is typical of most residential and educational land use development.

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

Comment: Development of the subject school site, which is located in the middle of the island, will not affect nor suffer damage by location near or on an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion prone area, geologically hazardous land, estuary, freshwater area, or coastal waters. Development of the property is compatible with the above criteria by implementing a critical element of a master planned community's social support system on a site suitable for the land uses proposed. The physical character of the subject property has been previously disturbed by agricultural activities associated with pineapple production and urban land uses associated with the development of Mililani Mauka. As such, the property no longer reflects a "natural environment". Shoreline, valleys, or ridges will not be impacted by the project.

- **Substantially affects scenic vistas and viewplanes identified in County or State plans or studies.**

Comment: The proposed facilities will not substantially affect State or County recognized viewplanes or vistas. Existing views from the area are of built features, the distant Koolau and Waianae Mountain Ranges, and Kipapa Gulch. No specific or predominate natural features are visually associated with the subject property.

The proposed project will not significantly impact scenic views of the ocean or any ridgelines from heavily traveled roadways in the area. Although the Koolau Mountains will form a backdrop from Lehiwa Drive, the project's architecture will reflect the surrounding land forms and other existing architecture in Mililani Mauka. The visual character of the area will change from the vacant condition to landscaped urban uses compatible with surrounding residential land uses. Presently, the subject property is not landscaped or otherwise improved. Under the proposed development, existing vegetation and proposed landscaping will be utilized to enhance the area and establish a visual and safety buffer along the edge of Kipapa Gulch.

Building architecture and heights have been designed to complement the surrounding land uses and other existing buildings located within Mililani Mauka. All applicable design guidelines and design criteria established by the Mililani community and Department of Education respectively have been addressed during the design process and will be reflected in the building architecture as applicable.

- **Requires substantial energy consumption.**

Comment: The proposed Mililani Middle School facilities follow the Hawaii State Model Energy Code in all aspects of design. The campus design incorporates a central plant that is more energy efficient in cooling building interiors than utilizing individual units for each building. In addition, the use of natural lighting, ventilation, and planned open space areas were considered in the architectural designs.

9.0 DETERMINATION

The location of the subject property reflects a logical opportunity for development of a school in an area master planned for intensive residential development. In addition, infrastructure improvements have been provided in a manner reflecting existing and planned land use patterns consistent with the Mililani Mauka master plan. Therefore, the size, scale, and location of the project adjacent to existing residential land uses will not significantly impact the surrounding community, but support a critical element of the Mililani Mauka master plan. Consequently, the applicant has determined that no significant environmental affects will result from development of the proposed project and that preparation of an Environmental Impact Statement (EIS) will not be required.

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MILANI INTERMEDIATE
SCHOOL

APPENDICES

MILILANI INTERMEDIATE
SCHOOL

APPENDIX A

TERRESTRIAL FLORA AND FAUNA SURVEY

TERRESTRIAL FLORA & FAUNA SURVEY
PROPOSED MILILANI-MAUKA PROJECT, ISLAND OF O'AHU

TERRESTRIAL FLORA & FAUNA SURVEY
PROPOSED MILILANI-MAUKA PROJECT, ISLAND OF O'AHU

INTRODUCTION

The study area consists of approximately 1,200 acres of land, presently zoned Agriculture, located mauka of Mililani Town, 'Ewa District, Island of O'ahu. The majority of the land is in pineapple cultivation; more or less undisturbed vegetation can be found in the two smaller gulches which run almost the length of the study area and on the peripheries of the study area.

Much of the existing vegetation on the study area would be removed or destroyed for the proposed housing development, however, these developed areas would be primarily on those lands already in cultivation. The vegetation in the two smaller gulch areas will be preserved and incorporated into a park. Jogging paths are included in the park plans. The vegetation on the peripheries is either on steep slopes or in forest reserve and will not be affected by construction activities.

A survey to assess the flora and fauna of the study area was conducted on 10 August 1985. A walk-through survey method was used. Access into the study area was by unpaved, dirt roads which run throughout the pineapple fields. Notes on the major vegetation types as well as species identification were made in the field. Species which could not be positively identified in the field were collected for later determination in the laboratory and herbarium. Notes were also made on the vertebrate fauna encountered during the survey.

By

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August 1985

rarely foraging in these areas--- the fields have few weedy species to provide an adequate seed source.

The barred (Geopelia striata) and spotted (Streptopelia chinensis) doves were the most frequently encountered birds. The red-vented bulbul (Pycnonotus cafer) was commonly observed feeding on ripe guava fruits in the gulch areas.

Mammals - The only endemic Hawaiian land mammal is the Hawaiian hoary bat (Lasiurus cinereus semotus). It is not known to occur in this type of habitat (Baich 1969).

Several introduced species of mammals are probably present in the study area, although they were not observed during this survey. These species include small mammals such as the roof rat (Rattus rattus), Polynesian rat (Rattus exulans), house mouse (Mus musculus), and small Indian mongoose (Herpestes surpunctatus). A number of ripe guava fruit appeared to have been gnawed. A few feral cats (Felis catus) may also be present in the study area.

Summary

No endangered bird or mammal species were observed in the study area. It is highly unlikely that they would occur here as the habitat has been greatly disturbed and modified.

All of the species found in the study area are introduced and some are serious pests to man and his cultivated crops.

TABLE 1
Bird Species Occurring in the Mililani-Mauka Study Area

Family	Species (Scientific name/Common name)	Status
Columbidae	<u>Streptopelia chinensis chinensis</u> Spotted dove, Java-necked dove	Y
	<u>Geopelia striata striata</u> Barred dove	Y
	<u>Pycnonotus cafer</u> Red-vented bulbul	Y
Sturnidae	<u>Acridotheres tristis tristis</u> Common mynah	Y
Zosteropidae	<u>Zosterops japonica japonica</u> Japanese white-eye	Y
Pringillidae	<u>Cardinalis cardinalis</u> Cardinal	Y
Phasianidae	<u>Carpodacus mexicanus frontalis</u> House finch, papaya bird	Y
	<u>Phasianus colchicus</u> Ring-necked Pheasant	Y

Y = Foreign. Introduced into Hawaii by man.

Scientific name

FERNS & FERN ALLIES

BLECHNACEAE

Blechnum occidentale L.

CHELANIACEAE

Dicranopteris linearis (Burm.) Underw.

HYPOLEPTACEAE

Pteridium aquilinum var. *decepsitum* (Gaud.) Tryon

LINTZACEAE

Sphenomeris chinensis (L.) Maxon

NEPHROLEPTACEAE

Nephrolepis multiflora (Roxb.) Jarrett ex Marioni

POLYPODIACEAE

Phlebodium aureum (L.) J. Sm.

Phytosorus scolopendria (Burm.) Pic.-Sera.

PSILOTTACEAE

Psilotum nudum (L.) Beauv.

MONOCOTYLEDONS

AMARYLLIDACEAE

Hippeastrum sp.

BROMELIACEAE

Ananas comosus (Stickn.) Merr.

COMMELINACEAE

Commelina benghalensis L.

Zebrina pendula Schmisl.

GRAMINEAE

Andropogon virginicus L.

Bambusa vulgaris Schrad. ex Vendl.

Brachiaria antica (Forst.) Stapf.

Cenchrus ciliaris L.

Common name

blechnum

uluhe, uluhi

braiken fern, kilau

pala'a

swordfern

rabbit's foot fern

maile-scented fern, lauvas

mos

Pineapple, hala-hahiki

hairy honohono

wandering Jew, honohono-'ula

broossage

feathery bamboo

Californiagrass

buffelgrass

Millani-Mauka

Scientific name

Cenchrus echinatus L.

Chloris inflata Link

Chloris sp.

Chrysopogon aciculatus (Retz.) Trin.

Cynodon dactylon (L.) Pers.

Digitaria adscendens (HBK.) Henr.

Digitaria radicata (Presl) Miq.

Digitaria sp.

Eleusine indica (L.) Gaertn.

Melinis minutiflora Beauv.

Oplismenus hirtellus (L.) Beauv.

Panicum maximum Jacq.

Paspalum conjugatum Berg.

Paspalum dilatatum Poir.

Paspalum orbiculare Forst. f.

Paspalum urvillei Steud.

Pennisetum purpureum Schumacher.

Phyllostachys bambusoides Sieb. & Zucc.

Rhynchoselytrum repens (Willd.) C.E. Hubb.

Setaria geniculata (Poir.) Beauv.

Sporobolus africanus (Poir.) Robyns & Tourneay

Stenotaphrum secundatum (Walt.) Ktze.

Tricachys insularis (L.) Nees

LILIACEAE

Aloe vera L.

Asparagus densiflorus (Kunth) Jessop cv. 'Sprangeri'

Corylinus terminalis (L.) Kunth

Dianella sandwicensis H. & A.

Banasevieria thyrsiflora Thunb.

MUSACEAE

Musa sp.

ORCHIDACEAE

Epidendrum sp.

Spathoglottis plicata Bl.

Common name

common sandbur, 'use'alu swollen fingergrass, mau'ulei

golden beardgrass, pilli-pilli'ula

Bernuda grass, manienie Henry's crabgrass

goosegrass, manienie-ali'i

molassesgrass

banketgrass, honohono-kukui

Guinea grass

Hilo grass, mau'u-Hilo

Dallinggrass

Ricegrass, mau'ulaiki

Vaseygrass

elephantgrass

fishpole bamboo

Natal redtop

African dropseed

buffalo grass, manienie-mahiki

sourgrass

alice, panini 'ava'ava

asparagus fern

ti, ki

'uki, 'uki-'uki

African bow string hemp

banana, mai'a

epidendrum

ground orchid

Status

X

X

X

X

X

X

X

X

X

X

X

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X

X

X

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X

X

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X

X

X

Millani-Mauka	Scientific name	Common name	Status
	<i>Cassia lechmansultiana</i> DC.	partridge pea, lauki	X
	<i>Crotalaria incana</i> L.	fussy rattiepod, kukas-hoki	X
	<i>Crotalaria pallida</i> Aiton	acronate rattiepod	X
	<i>Desmodium virgatum</i> (L.) Willd.	virgate mimosa	X
	<i>Desmodium triflorum</i> (L.) DC.	3-flowered beggarweed	X
	<i>Desmodium uncinatum</i> (Jacq.) DC.	Spanish clover	X
	<i>Indigofera suffruticosa</i> Mill.	indigo, 'iniko	X
	<i>Leucaena leucocephala</i> (Lam.) de Wit	kou-haole	X
	<i>Mimosa pudica</i> var. <i>unijuga</i> (Duchassa. & Walp.) Griseb.	sensitive plant, pua-hila-hila	X
	<i>Phaseolus lathyroides</i> L.	cow pea	X
	LOGANIACEAE		
	<i>Buddleja asiatica</i> Lour.	butterfly bush, dogtail, huele-'illo	X
	MALVACEAE		
	<i>Hibiscus rosa-sinensis</i> L.	red hibiscus	X
	<i>Malvastrum coromandelianum</i> (L.) Garcke	false mallow, haunoi	X
	<i>Sida spinosa</i> L.	prickly sida	X
	MELASTOMATACEAE		
	<i>Clidemia hirta</i> (L.) D. Don	Koster's curra	X
	MELIACEAE		
	<i>Melia azadirach</i> L.	Pride of India, Chinaberry, 'inia toon	X
	<i>Toona</i> sp.		X
	MENISPERMACEAE		
	<i>Coccoloba ferrandianus</i> Gaud.	Huehue, hue'ie	X
	MORACEAE		
	<i>Artocarpus heterophyllus</i> Lam.	jackfruit	X
	<i>Ficus elastica</i> Rob. ex Hornem.	Indian rubber tree	X
	<i>Ficus microcarpa</i> L. f.	Chinese banyan	X
	<i>Ficus</i> sp. 1	banyan	X
	<i>Ficus</i> sp. 2	banyan	X
	MYRTACEAE		
	<i>Eucalyptus citriodora</i> Hook.	lemon-scented gum	X
	<i>Eucalyptus deglupta</i> Bl.	Bagrae eucalyptus	X
	<i>Eucalyptus robusta</i> Sm.	swamp mahogany	X

Millani-Mauka	Scientific name	Common name	Status
	<i>Leptospermum scoparium</i> J.R. & G. Forst.	manuka	X
	<i>Metrosideros collina</i> sp. <i>polysorpha</i> (Gaud.) Rock	'ohi'a, 'ohi'a-lehua	X
	<i>Faidius cattileianus</i> Sabine forma <i>cattileianus</i>	strawberry guava, vaiawd	X
	<i>Faidius cattileianus</i> forma <i>lucidus</i> Deg.	yellow strawberry guava	X
	<i>Faidius guajava</i> L.	guava, kuava	X
	<i>Syzygium cumini</i> (L.) Skeels.	Java plum, palama	X
	<i>Syzygium jambos</i> L.	rose apple, 'ohi'a-loke	X
	MYRTACEAE		
	<i>Bougainvillea glabra</i> Choisy	bougainvillea	X
	OMALIDACEAE		
	<i>Omalis corniculata</i> L.	yellow wood sorrel, 'ihi	X
	PASSIFLORACEAE		
	<i>Passiflora edulis</i> Sims. forma <i>edulis</i>	purple liliko'i	X
	<i>Passiflora edulis</i> forma <i>flavicarpa</i> Deg.	yellow liliko'i	X
	<i>Passiflora ligularis</i> Juss.	sweet granadilla, lili-wai	X
	<i>Passiflora suberosa</i> L.	hushue-haole	X
	PROTEACEAE		
	<i>Gravillea robusta</i> A. Cunn.	silk oak, 'oka-kilika	X
	RUTACEAE		
	<i>Citrus aurantium</i> L.	sour orange	X
	<i>Citrus</i> sp.		X
	SANTALACEAE		
	<i>Santalum freycinetianus</i> Gaud.	sandalwood, 'ili-ahi	X
	SAPINDACEAE		
	<i>Dodonaea</i> sp.	'a'ali'i	X
	SOLANACEAE		
	<i>Solanum nigrum</i> L.	black nightshade, popolo	X
	STERCULIACEAE		
	<i>Waltheria indica</i> var. <i>americana</i> (L.) R. Br. ex Hook.	hi'alos, 'uhalos	X
	THYMELAEACEAE		
	<i>Wikstroemia</i> sp.	'akia	X

MILILANI INTERMEDIATE
SCHOOL

APPENDIX B
ARCHAEOLOGICAL STUDY

CHINIAGO INC.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785
July 15, 1985

Mr. Mark Haster
Heiber, Haster, Van Horn and Kimura
2222 Kalakaue Avenue
Suite 3507
Honolulu, Hawaii 96815

Dear Mr. Haster:

We have completed our literature search and archaeological reconnaissance survey of the area to be developed as the final phase of Milliani Town. Our fieldwork consisted of a brief pedestrian inspection of the area now planted in pineapple and somewhat more intensive pedestrian inspections of the two shallow gulches located on the property. No evidence of archaeological or historical remains was located during this fieldwork.

The literature search included inspection of Handy's The Hawaiian Planter (1940), McAllister's Archaeology of Oahu (1933), Sterling and Summers' Sites of Oahu (1978), Old maps on file at the State of Hawaii Survey Office, site maps on file at the State Historic Preservation Office, and reports and publications in the Hawaiian collection of the University of Hawaii. The literature search revealed a legend referring to Waikakalea and Kipapa Gulches, quoted in McAllister's 1933 study Archaeology of Oahu:

"Site 132. Waikakalea and Kipapa Gulches. According to Fornander Waikakalea is the place where the invading chiefs from Hawaii met Haikukahi, mo'i of Oahu, in battle;

"The fight continued from there to Kipapa Gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name 'Kipapa' from this circumstance. Punaluu was slain on the field which bears his name, the fugitives were pursued as far as Waimano, and the head of Hilo was cut off and carried in triumph to Honolulu, and stuck up at a place still called Poo-Hilo."

Also, McAllister recorded two sites in Kipapa Gulch:

"Site 130. Mosula heiau, on the Honolulu side of Kipapa Gulch just above Heiau o Uai, to which it is said to be a companion structure. The site is now covered with cane.

"Site 131. Heiau o Uai, was just northeast of the government road in the bottom of Kipapa Gulch on the slight elevation at the foot of the pali on the Honolulu side. The level elevation can still be seen, though planted in cane.

Handy's 1940 The Hawaiian Planter gives the following on page 82:

"It is said that terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikale. Wild taros grow in abundance in upper Kipapa Gulch."

In conclusion, if any structural remains of an archaeological or historical nature ever existed on the subject property, pineapple cultivation has long since erased any such evidence. There thus is no archaeological reason why the development of Milliani Town cannot proceed as planned.

If you have any questions, please do not hesitate to contact us.

Sincerely yours,



William Barrera, Jr.
President

MILILANI INTERMEDIATE
SCHOOL

APPENDIX C

SEWER MASTER PLAN FOR MILILANI MAUKA

Proposed Mililani-
Mauka Intermediate

SEWER MASTER PLAN

FOR

MILILANI MAUKA

AT

Waipio, Ewa, Oahu, Hawaii

Prepared for

Castle & Cooke Homes Hawaii, Inc.

Honolulu, Hawaii

Prepared by

EDP Hawaii Inc.
1164 Bishop Street, Suite 1515
Honolulu, Hawaii

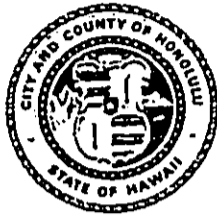
NOVEMBER, 1995

DAGS
PLANNING BRANCH
LIBRARY

DOE-
Central.

RECEIVED NOV 15 1995

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813



JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WCC 95-29

November 9, 1995

Mr. Robert W. Lau
EDP Hawaii Inc.
1164 Bishop Street, Suite 1515
Honolulu, Hawaii 96813

Dear Mr. Lau:

Subject: Mililani Mauka Sewer Master Plan, dated November 1995

We have reviewed and approve the subject sewer master plan. This statement shall not be construed as confirmation of sewage capacity reservation. Sewage capacity reservation is contingent on submittal and approval of a "Sewer Connection Application" form. Approval of this form is granted to projects with flows within capacity and permit limitations in all affected infrastructure. These infrastructure include, but are not limited to, the sewer lines, the Waipahu Wastewater Pump Station (WWPS), the Honouliuli Wastewater Treatment Plant (WWTP), and the Barbers Point Outfall. Additionally, Pearl City WWPS will be affected if the hydraulic pressure from Waipahu WWPS increases significantly. The Waipahu WWPS and the Pearl City WWPS both feed into the same West Loch Dual Force Mains.

Currently, we cannot accommodate all of Mililani Mauka due to limitations at the Honouliuli WWTP, the Waipahu WWPS, the Mililani Effluent Sewer Line, and the Mililani Offsite Sewer Line. The Honouliuli WWTP 1A-Secondary Treatment (13 mgd) project, the Waipahu WWPS Mod. Phase 2 project, and the Mililani Diversion Line Relief project are being funded by the Department's Capital Improvement Program to overcome some of these limitations. These projects are tentatively scheduled to be completed in December 1996, October 1996, and May 2001, respectively.

If you have any questions, please contact Ms. Tessa Yuen of the Division of Planning and Service Control at 523-4956.

Very truly yours,

A handwritten signature in black ink, appearing to read "Felix B. Limtiaco", is written over the typed name.
FELIX B. LIMTIACO
Director

SEWER MASTER PLAN

FOR

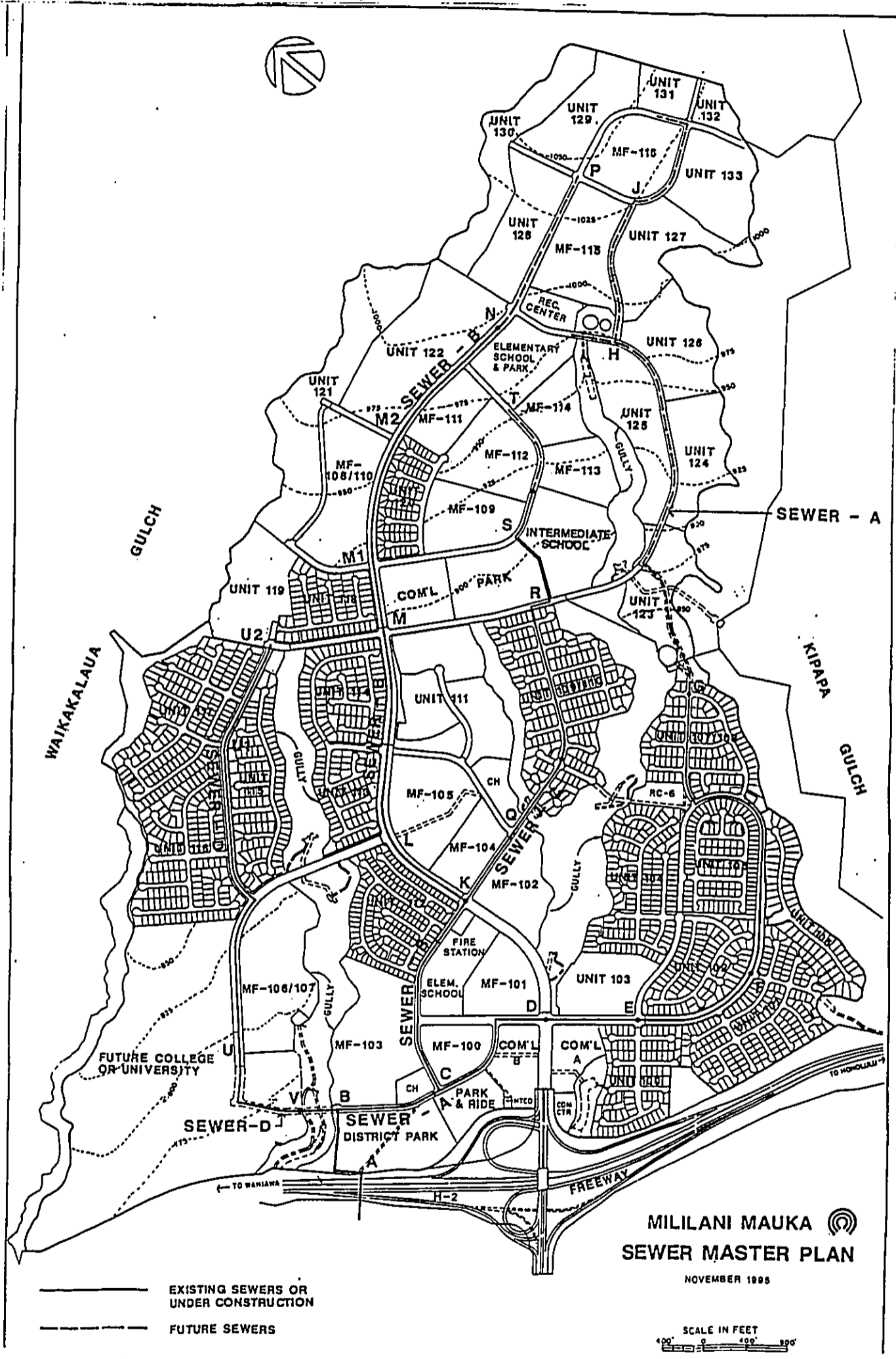
MILILANI MAUKA

The following is an updated Sewer Master Plan for the Mililani Mauka Development which supersedes the previously approved Sewer Master Plan prepared by EDP Hawaii Inc. and dated October, 1992.

The master plan has been revised to show the existing developments and trunk sewers that have been completed, or are under construction. The sewer flow calculations for these existing developments have also been updated.

Future trunk sewers to service proposed future developments are also shown on the master plan with estimated wastewater flows for the ultimate development updated herein.

The sewer from Mililani Mauka connects into an existing trunk sewer makai of the H-2 Freeway. Based on the "Mililani Trunk Sewer Adequacy Study" prepared by M&E Pacific, Inc. (dated January 1986), this makai trunk sewer has adequate capacity to accommodate the wastewater flows estimated for the ultimate Mililani Mauka Development.



MILILANI MAUKA
SEWER MASTER PLAN

NOVEMBER 1995

- EXISTING SEWERS OR UNDER CONSTRUCTION
- - - FUTURE SEWERS



MILLIAM PAWSA DEVELOPMENT
TRUNK SEWER-A
OCTOBER, 1975 (REVISED)

POINT	DESIGNATION	TYPE	AREA (ACS)	CURB AREA	NO. OF UNITS	FLOW FAC	FLOW	CURB		D.V.		DESIGN		DESIGN		LIMITING SECTIONS OF EXISTING SEWERS		
								AREA	FLOW	INFLOW	AVE	MAX	INFILL	PEAK	POINT SIZE	SLOPE	CITY	
J	UNIT-131	SF	7	7	21	320	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
	UNIT-132	SF	16	16	20	320	0.005	0.012	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000		
	UNIT-133	SF	14.4	21.4	66	320	0.028	0.040	0.000	0.003	0.003	0.003	0.003	0.003	0.003	0.003		
	PF-116	PF	13	34.4	210	224	0.047	0.087	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005		
	PF-115	PF	16	50.4	254	224	0.057	0.114	0.000	0.006	0.006	0.006	0.006	0.006	0.006	0.006		
	REC. CTR.		3.5	53.9	1	4800	0.006	0.150	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009		
	UNIT-127	SF	17	70.9	85	320	0.027	0.170	0.000	0.010	0.010	0.010	0.010	0.010	0.010	0.010		
	UNIT-126	SF	15	85.9	83	320	0.027	0.204	0.000	0.013	0.013	0.013	0.013	0.013	0.013	0.013		
	UNIT-125	SF	17	102.9	99	320	0.032	0.236	0.000	0.015	0.015	0.015	0.015	0.015	0.015	0.015		
	UNIT-124	SF	13	115.9	64	320	0.021	0.257	0.000	0.017	0.017	0.017	0.017	0.017	0.017	0.017		
	UNIT-123	SF	11	126.9	49	320	0.016	0.273	0.000	0.016	0.016	0.016	0.016	0.016	0.016	0.016		
	UNIT-107/108	SF	21.9	148.8	110	320	0.035	0.308	0.000	0.017	0.017	0.017	0.017	0.017	0.017	0.017		
	REC. CTR.-6		2.0	151.6	1	4800	0.004	0.314	0.000	0.019	0.019	0.019	0.019	0.019	0.019	0.019		
	UNIT-104	SF	14.3	145.9	55	320	0.018	0.314	0.000	0.020	0.020	0.020	0.020	0.020	0.020	0.020		
	UNIT-101	SF	27.5	193.4	171	320	0.055	0.386	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	UNIT-105	SF	17.3	210.7	109	320	0.027	0.491	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	UNIT-104	SF	21.7	235.4	135	320	0.043	0.484	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	UNIT-102	SF	17.1	252.5	83	320	0.027	0.491	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	UNIT-100	SF	16.8	249.3	93	320	0.030	0.521	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	UNIT-103	PF	11.1	280.4	100	224	0.022	0.543	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	COMPL.-A & COM. CTR.		6.3	286.7	1	27000	0.022	0.545	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	PF-102	PF	12	298.7	212	224	0.047	0.612	0.000	0.025	0.025	0.025	0.025	0.025	0.025	0.025		
	PF-101	PF	10.3	309.0	152	224	0.034	0.646	0.000	0.025	0.025	0.025	0.025	0.025	0.025	0.025		
	ELEV. SCH.		9.3	318.3	1	30000	0.030	0.676	0.000	0.025	0.025	0.025	0.025	0.025	0.025	0.025		
	COMPL.-B & HICO		7.5	325.8	1	24000	0.024	0.700	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	PF-100	PF	7.1	332.9	160	224	0.036	0.736	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	FROM SEWER-B		0	332.9			0.000	0.736	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	CHURCH		385.8	718.7			0.000	0.726	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	PF-103	PF	21	741.7	376	224	0.084	1.030	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		
	FROM SEWER-D		214.1	955.8			0.537	2.367	0.000	0.024	0.024	0.024	0.024	0.024	0.024	0.024		

NOTE:
BASED ON THE "MILLIAM TRUNK SEWER ADEQUACY STUDY"
PREPARED BY WAC PACIFIC INC. AND DATED JANUARY 1974.
THE EXISTING TRUNK SEWER (PART) OF THE H-2 FREeway
IS ADEQUATE TO ACCOMMODATE THE TOTAL PEAK FLOW
ESTIMATED HEREIN FOR MILLIAM PAWSA.

MILILANI PALKA DEVELOPMENT
TRUNK SEWER-8
OCTOBER, 1995 (1755288)

POINT	AREA DISTIC- WATION	TYPE DEV	AREA (ACS)	CUMH AREA	NO. OF UNITS	FLOW		CUMH FLOW		CUMH INFLOW		DESIGN FLOW		DESIGN INFIL		LIMITING SECTIONS OF EXISTING SEWERS CAPX POINT SIZE SLOPE CITY	
						FAC	FC	ARE	ARE	MAX FLOW	MAX FLOW	MAX FLOW	MAX FLOW	MAX FLOW	MAX FLOW		
						0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
P	UNIT-120	SF	15.9	15.9	80	320	0.026	5.000	0.026	0.027	0.120	0.002	0.027	0.130	0.020	0.149	P
	UNIT-129	SF	12.8	28.7	108	320	0.035	5.000	0.301	0.061	0.305	0.001	0.305	0.306	0.036	0.340	
	UNIT-128	SF	16.3	45.2	165	320	0.053	4.637	0.527	0.007	0.534	0.007	0.534	0.057	0.591	0.591	M
	UNIT-122	SF	28	73.2	280	320	0.070	4.152	0.841	0.013	0.854	0.013	0.854	0.092	0.945	0.945	M2
	UNIT-121	SF	30	103.2	335	320	0.083	3.995	0.982	0.015	0.997	0.015	0.997	0.129	1.126	1.126	
	PF-110	PF	7.2	110.4	115	224	0.026	3.995	0.982	0.015	0.997	0.015	0.997	0.129	1.126	1.126	
	PF-108	PF	10	120.4	160	224	0.035	3.767	1.174	0.019	1.193	0.019	1.193	0.151	1.344	1.344	
	UNIT-118	SF	13.3	133.7	70	320	0.022	3.000	1.242	0.021	1.263	0.021	1.263	0.167	1.430	1.430	
	UNIT-114	SF	17.8	151.5	93	320	0.030	3.702	1.331	0.022	1.353	0.022	1.353	0.189	1.543	1.543	
	UNIT-113	SF	12.9	164.4	82	320	0.020	3.643	1.389	0.024	1.413	0.024	1.413	0.206	1.619	1.619	
	PF-105	PF	14.6	179.0	280	224	0.043	3.552	1.570	0.028	1.598	0.028	1.598	0.224	1.822	1.822	
	FROM SEWER-C		0	179.0			0.000	3.552	1.570	0.028	1.598	0.028	1.598	0.224	1.822	1.822	
	UNIT-112	SF	20.3	398.1	144	320	0.052	3.018	3.021	0.043	3.063	0.043	3.063	0.481	3.545	3.545	K
	FIRE STA		0.7	398.8	1	1000	0.001	3.018	3.023	0.043	3.066	0.043	3.066	0.482	3.538	3.538	
	C		0	398.8			0.000	3.016	3.023	0.043	3.063	0.043	3.066	0.482	3.538	3.538	

MILILANI INTERMEDIATE
SCHOOL

APPENDIX D

**MILILANI TOWN WATER MASTER PLAN
(REVISED 12/95)**

Proposed Mililani--
Mauka Intermediate

DAES
READING ROOM
LIBRARY

**MILILANI TOWN
WATER MASTER PLAN**

Prepared for:

Mililani Town, Inc.
Honolulu, Hawaii

Prepared by:

M & E Pacific, Inc.
Engineers & Architects
1001 Bishop Street
Pauahi Tower, Suite 500
Honolulu, Hawaii 96813

December 1986
Revised December 1988
Revised December 1995

**DOE-Central
District**

DRAFT

12/27/95

TABLE OF CONTENTS

	<u>PAGE</u>
Introduction	1
Water Master Plan for Water Zones 2 and 3	2
Water Master Plan for Water Zone 1	3
Introduction	3
Design Criteria	3
Water Requirements	4
Source and Storage Facilities Requirements for Water Zone 1	4
Summary	6

Appendix A Hydraulic Analysis (Bound Separately)

TABLES

Table 1	Evaluation of Water Demands and Well Capacities
Table 2	Projected Water Requirements for Mililani Town
Table 3	Water Consumption Guidelines and Sizing Factors
Table 4	Projected Water Requirements for Zone 1

FIGURES

Figure 1	Water Service Zones and Supply Facilities for Mililani Town
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INTRODUCTION

Mililani Town is located in Central Oahu on the Schofield Plateau between Kipapa Gulch and Waipio Valley. Mililani Town, as ultimately planned, is divided into the three water service zones shown on Figure 1: zone 1 (elevation 765 to 1,050 feet), zone 2 (elevation 585 to 765 feet), and zone 3 (below elevation 585 feet).

Development of Mililani Town to date has been completed in areas makai of the H-2 freeway, within water zones 2 and 3.

Future development is planned for the 1,200 acres of zone 1 (zone 1a 477 acre, zone 1b 723 acre), also referred to as Mililani Mauka in this report. The proposed development north of the H-2 freeway will ultimately consist of single family units, apartment and retirement units, schools, churches, commercial areas, parks and a University of Hawaii West Oahu campus with provisions for related facilities.

Additional water supply facilities will be required to service the proposed developments in Mililani Town. It is the intent of this water master plan to address the following items:

1. Water Zones 2 and 3:

Identify the water sources installed for water zones 2 and 3.

2. Water Needs for Water Zone 1:

- a. Estimate the water requirements for zone 1.
- b. Identify potential water supply sources and storage requirements for zone 1.
- c. Establish an overall transmission system for zone 1.

WATER MASTER PLAN FOR WATER ZONES 2 AND 3

A water master plan for water zones 2 and 3 has been previously approved by the Board of Water Supply (BWS) in 1977. The water sources and storage facilities for zones 2 and 3 are --

1. Sources. A total of eight wells, each with a capacity of 2 MGD.
 - a. Existing sources - 8 wells
 - 1) Four wells (nos. 1 to 4 - Mililani Wells No. I) have been installed at the existing deepwell facility located just mauka of the H-2 freeway (see Figure 1). One unit functions as a standby.
 - 2) Two wells (nos. 5 and 6 - Mililani Wells No. II) have been installed at the existing 2.0 MG 865-foot reservoir site.
 - 3) Two wells - (nos. 7 and 8 - Mililani Wells No. III) have been installed at the existing 1.0 MG 685-foot reservoir site.
2. Existing Storage Facilities
 - a. Zone 2. 2.0 MG reservoir at spillway elevation 865 feet.
 - b. Zone 3. 1.0 MG reservoir at spillway 685 feet.

The existing water supply system for zones 2 and 3 includes a deepwell pumping facility, a well site at the 865-foot reservoir, a well site at the existing 685-foot reservoir and two reservoirs with 2.0 and 1.0 MG capacities, which serve zone 2 and zone 3, respectively. The system also includes a transmission and distribution pipe network.

Eight proposed wells in the master plan are operating as supply sources in the existing makai water system. The development of the remaining deepwell (Well No. 8) has just been completed.

The average daily consumption of Mililani Town are as follows 3.33 MGD (Zone 2) and 0.90 MGD (Zone 3). Table 1 shows the evaluation of water demands and well capacities.

The development of well no. 8 is designed to improve the overall water system in Mililani Town. The supply from well no. 8 will serve most of zone 3, with an average daily demand of 0.90 MGD (see Table 2). The, the overall performance and reliability of the makai water system will improve with the development of well no. 8 as it will be used as a standby unit for well no. 7.

WATER MASTER PLAN FOR WATER ZONE 1

Introduction

The water master plan for zone 1 is discussed in three sections: 1) design criteria; 2) projected water requirements and; 3) plan for new sources of supply, storage reservoirs and transmission system. Plan for on-site distribution pipelines for Mililani Mauka will be submitted separately at the appropriate time.

Design Criteria

Water zone 1 is divided into the two service subzones shown on Figure 1. Zone 1a consists of the service area above elevation 894 feet. Zone 1b consists of the remaining lower service areas of zone 1. The future water requirements and the planned water supply system for each subzone are based on the Water System Standards, City and County of Honolulu, Board of Water Supply (BWS). The applied design criteria for consumption rate, fire flow, pipeline size, reservoir storage, and demand factors are listed in Table 3.

Water Requirements

BWS consumption rates were used to predict the water demands for zone 1 presented in Tables 1, 2 and 4 and Exhibit A. Table 1 lists the expected water demands and well capacities, and Table 2 shows the projected water requirements for Mililani Town. The distribution of average daily demand listed in Table 4 for the individual parcels shown in Exhibit A was used in the hydraulic analysis of zone 1 water supply system. Appendix A presents the hydraulic calculations of the proposed Mililani Mauka water supply system.

Source and Storage Facilities Requirements for Water Zone 1

A proposed plan to meet the future water requirements for zone 1 is presented in this section. The proposed water supply source, storage facilities, and transmission system are designed based on the Water System Standards, BWS, for dedication to that agency.

A new deepwell pumping facility to supply zone 1 is located 0.43 miles from the 1,150-foot reservoir site (see Figure 1). The deepwell pumping station (Mililani Wells No. IV) will consist of three deepwells plus one standby unit (nos. 9 to 12). The wells will be spaced approximately 100 feet apart, and a 1,750 gpm line shaft turbine pump will be installed at each well. The water quality test results show no need for water treatment at this time. The following items shall be installed in or adjacent to the control building.

1. Well water level indicator - recorder and accessories
2. Flow indicator-record-totalizer
3. Electrical power and control devices
4. Chlorination equipment

5. Toilet facilities
6. Flow tubes and appurtenances
7. Discharge piping

The first of two reservoirs totaling 3.0 MG (1.5 MG each) has been constructed within the 1,150-foot reservoir site. Both reservoirs will serve zone 1a. The second reservoir will be phased into the water system when water needs for zone 1a show the need for additional storage volume. Two reservoirs at spillway elevation 1,150 feet are planned to minimize the construction costs in the mountainous terrain above Mililani Mauka.

Zone 1b is served by two reservoirs (2.0 MG and 1.5 MG) at spillway elevation 994 feet with a total capacity of 3.5 MG. Initially, water will be supplied to these reservoirs from the booster pump station located near the existing 865-foot reservoir. Any supply over demand for zones 2 and 3 would be pumped from the existing 865-foot reservoir to the 994-foot reservoirs serving zone 1b. As Mililani Mauka is developed, well no. 6 will be used as a source of water for zone 1b rather than as a standby unit for zones 2 and 3. The water from well no. 6 as well as the supply over demand for zones 2 and 3 would be pumped from the existing 865-foot reservoir to the 994-foot reservoirs. Eventually, water would also be supplied to the 994-foot reservoirs from well nos. 9 thru 12 at Mililani Well No. IV Station.

SUMMARY

The major facilities presented in this water master plan are as follows:

1. Source Development for Water Zones 2 and 3

Service Area	Water Zone 3
Additional Water Source	Well No. 8 (stand-by)

2. Water System for Water Zone 1

Service Area	Water Zone 1a	Water Zone 1b
Water Source	Mililani Mauka deepwell pumping system	Mililani Mauka deepwell pumping system/Mililani Makai deepwell pumping system
Storage	1.5 MG reservoir and 1.5 MG reservoir	2.0 MG reservoir and 1.5 MG reservoir
Transmission Line	Transmission line from mauka 1150 reservoir	Transmission line from 994-foot reservoir site

TABLE 1

EVALUATION OF WATER DEMANDS
AND
WELL CAPACITIES (MGD)

Zone 3 (685-Foot System)	
Capacity of Well #7	0.90
<u>Estimated Ultimate Demand - Zone 3</u>	<u>0.90 *</u>
Required From Zone 2	0.00
Zone 2 (865-Foot System)	
Capacity of Wells #1-6 (5 Active, 1 Standby)	4.50
<u>Estimated Ultimate Demand - Zone 2</u>	<u>3.33 *</u>
Net Capacity Available for Zone 1b	1.17 **
<u>Estimated Ultimate Demand for Zone 1b</u>	<u>2.31</u>
Required from Zone 1a (1150-Foot System)	1.14
<u>Estimated Ultimate Demand for Zone 1a</u>	<u>1.78</u>
Total Source Required from 1150-Foot System	2.92 ***

* Based on Average Annual Demand as of December 1994 (BWS Metered Consumption)

** Booster pump station to pump this quantity from the 865-foot reservoir to the 994-foot reservoirs.

*** 3 Active Wells and 1 Standby Well to be provided, each with 1750 GPM pumps (1.12 MGD average daily flow capacity per well).

TABLE 2

PROJECTED WATER REQUIREMENTS FOR MILILANI TOWN

	Zone 2		Zone 3		Zone 1a		Zone 1b	
	Total	Ave. Day Demand (MGD)	Total	Ave. Day Demand (MGD)	Total	Ave. Day Demand (MGD)	Total	Ave. Day Demand (MGD)
Present Average Day Demand, mgd		3.33 *		0.90 *				
Future Developments								
Single Family, units	--	--	--	--	1,668	0.834	1,496	0.748
Multi-Family, Retirement, and Apartment, units	--	--	--	--	1,617	0.647	2,019	0.808
Parks, acres	--	--	--	--	12.8	0.051	25.1	0.100
Schools, acres	--	--	--	--	27.0	0.108	109.6	0.438
Recreation Centers, acres	--	--	--	--	3.9	0.016	4.1	0.016
Churches, acres	--	--	--	--	--	--	2.0	0.008
Commercial, acres	--	--	--	--	9.0	0.027	12.5	0.038
Transit Facility, acres	--	--	--	--	--	--	5.7	0.023
CAP, acres	--	--	--	--	25.0	0.100	14.0	0.056
Fire Station	--	--	--	--	--	--	--	0.003
Highway Irrigation	--	--	--	--	--	--	--	0.077
Total		3.33		.90		1.783		2.315

* Ave. Annual Demand as of December 1994.

TABLE 3

WATER CONSUMPTION GUIDELINES AND SIZING FACTORS

A. CONSUMPTION RATE - per day

<u>Land Use</u>	<u>Average Daily Demand</u>
Single Family - Residential	500 gal/unit
Multi-Family - Residential	400 gal/unit
Retirement - Residential	400 gal/unit
Transit Facility, Schools, Parks, Churches, Recreation Centers, Community Association Planting (CAP)	4,000 gal/acre
Commercial	3,000 gal/acre

B. DEMAND FACTOR

Maximum Daily Demand = 1.5 x Average Daily Demand

Peak Hour Demand = 3.0 x Average Daily Demand

C. FIRE FLOW

<u>Land Use</u>	<u>Fire Flow</u>	<u>Duration</u>
Single Family - Residential	1,000 gpm	1 hour
Multi-Family - Residential	1,500 gpm	1 hour
Schools Small Commercial Centers	2,000 gpm	2 hours

D. PIPELINE SIZE

1. Pipeline shall be sized for peak hour flow with a minimum residual pressure of 40 psi and maximum velocity in the main of 6 feet per second.

2. Pipeline shall be sized for maximum day flow plus fire flow with a residual of 20 psi at the critical fire hydrant.

E. RESERVOIR STORAGE

1. Reservoir volume shall satisfy maximum daily demand, without inflow.

2. Reservoir volume shall satisfy maximum daily demand plus fire flow for duration of fire, with inflow.

TABLE 4

PROJECTED WATER REQUIREMENTS FOR ZONE 1

ZONE 1a (477-Acre)				
<u>Parcel</u>	<u>Type</u>	<u>No. of Units</u>	<u>Average Daily Demand (MGD)</u>	<u>Nodes Flow Distributed</u>
A	SF	88	.044	
B	SF	16	.008	3
C	SF	21	.010	2
D	SF	108	.054	6
E	SF	40	.020	7
F	SF	40	.020	7
G	SF	165	.082	9
H	SF	280	.140	9
I	MF	275	.110	11
J	SF	135	.067	15
K	SF	70	.035	14
L	SF	93	.046	16
M	SF	150	.075	17
N	CO	9	.027	18
O	SF	80	.040	20
P	MF	112	.045	20
Q	MF	300	.120	13
R	MF	192	.077	24
S	P	12.8	.051	21
T	S	15	.060	21
U	MF	144	.058	22
V	MF	128	.051	23
W	S & P	12	.048	24
X	P	3.9	.016	25
Y	MF	256	.102	25
Z	MF	210	.084	5
AA	SF	85	.043	3
BB	SF	83	.042	4
CC	SF	66	.033	27
DD	SF	49	.025	28
EE	SF	99	.050	29
	CAP	25	.100	26
SUB-TOTAL (Zone 1a)			1.783	19
			MGD	

Zone 1b (733-Acre)

<u>Parcel</u>	<u>Type</u>	<u>No. of Units</u>	<u>Average Daily Demand (MGD)</u>	<u>Nodes Flow Distributed</u>
a	SF	110	.055	42
b	P	2.8	.011	43
c	SF	55	.028	44
d	SF	171	.086	45
e	SF	135	.068	47
f	SF	109	.055	46
g	SF	83	.041	47
h	MF	100	.040	48
i	SF	93	.047	48
j	CO	5	.015	58
k	P	1.3	.005	58
l	CO	7.5	.023	51
m	TF	5.7	.023	52
n	S	0.3	.001	52
o	P	16.1	.064	53
p	MF	376	.150	54
q	CH	2	.008	52
r	MF	160	.064	51
s	MF	152	.061	50
t	S	9.3	.037	55
u	F	0.7	.003	56
v	SF	164	.082	56
w	MF	212	.085	71
x	MF	164	.065	71
y	SF	176	.088	70
z	MF	215	.086	68
aa	MF	280	.112	67
bb	SF	93	.047	66
cc	SF	62	.031	66
dd	SF	108	.054	64
ee	SF	137	.069	63
ff	MF	360	.143	62
gg	S	100	.400	61
hh	P, CAP	22.9	.091	72
ii	H2		.077	58
SUB-TOTAL (Zone 1b)			2.315 MGD	

Zone 1a = 1.783 MGD

Zone 1b = 2.315 MGD

TOTAL = 4.098 MGD

Designations:

- | | |
|--|--------------------------------------|
| SF = single family | CH = church |
| MF = multi-family, retirement, and apartment | CO = commercial |
| P = park, recreation center | S = school |
| TF = transit facility | CAP = community association planting |
| F = fire station | H2 = freeway irrigation |

Note: No. of units indicated for P, TF, CH, CO, S, CAP, H2, and F are in acres.

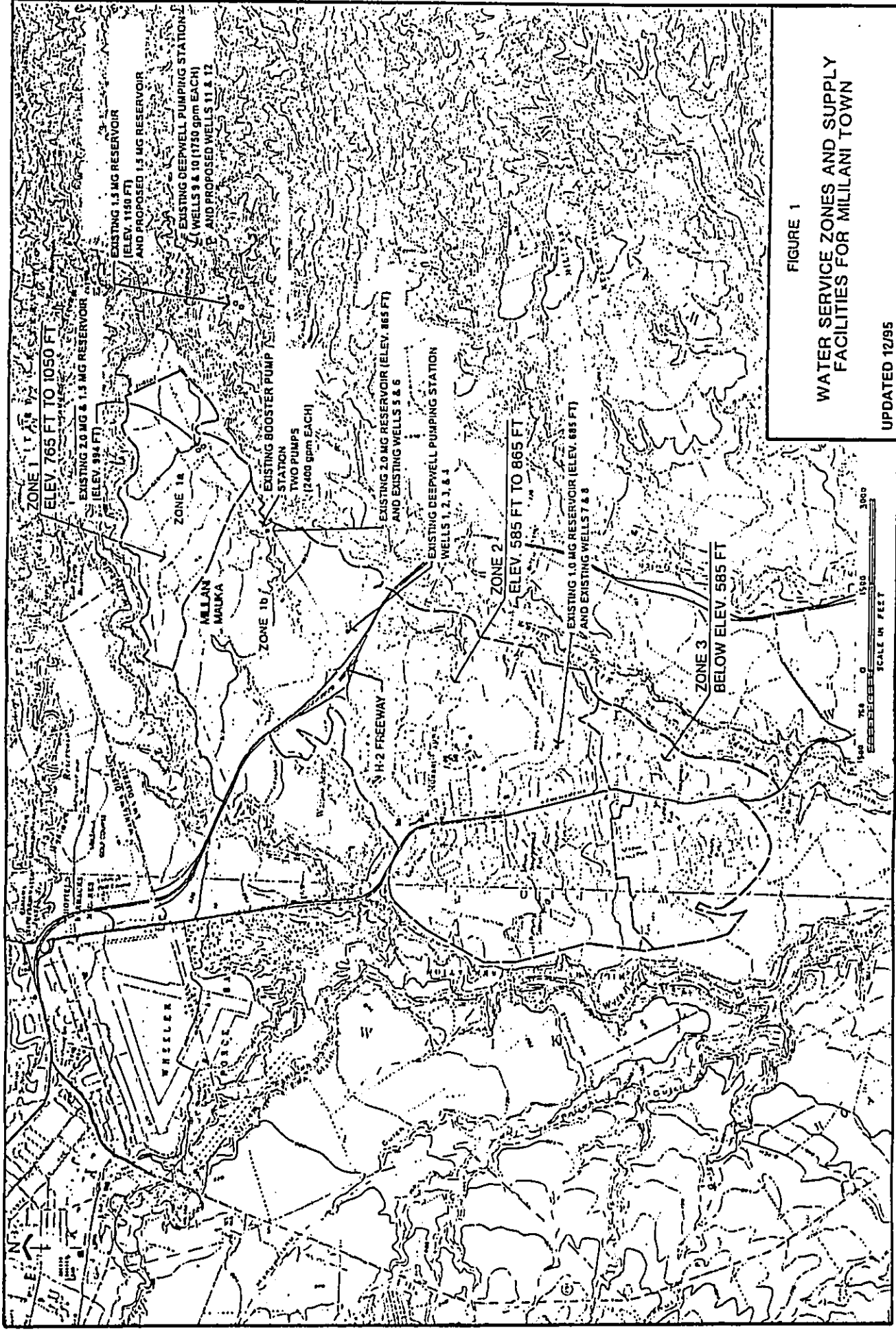


FIGURE 1
WATER SERVICE ZONES AND SUPPLY
FACILITIES FOR MILILANI TOWN

UPDATED 12/95

MILANI INTERMEDIATE
SCHOOL

APPENDIX E

LAND DEDICATION CORRESPONDENCE

Castle & Cooke
Homes Hawaii, Inc.

P.O. Box 3780, Honolulu, Hawaii 96808

January 11, 1995

Mr. Alfred K. Suga
Assistant Superintendent
Department of Education
State of Hawaii
P. O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Suga:

SUBJECT: Mililani Mauka Intermediate School Site

Enclosed as requested are three (3) prints of a metes and bounds map of the proposed Mililani Mauka Intermediate School site for your use in master planning and engineering. Castle & Cooke Homes Hawaii, Inc. is willing to dedicate this parcel of land provided that it be used for the proposed intermediate school.

Please note that the topographic information on the map was obtained prior to construction in the immediate area and may have been altered.

Should you need any information that would facilitate your master planning effort and coordination with our development please contact Alan Arakawa at 548-4869.

Very truly yours,

CASTLE & COOKE HOMES HAWAII, INC.


Wallace S. Miyahira
President

WSM:AA:jmk

cc: Larry Lum
Alan Arakawa

MILANI INTERMEDIATE
SCHOOL

APPENDIX F

**EARLY CONSULTATION CORRESPONDENCE AND
COMMENTS**

LC
Central

WILLIAM J. CAETANO
GOVERNOR



LEE CALLEJO
COMPTROLLER

MARY PATRICIA WINTERHOUSE
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 118, HONOLULU, HAWAII 96810

LETTER NO. _____

F A X C O V E R S H E E T
PLANNING BRANCH

TO: Mr. Lester Lai (528-4886) DATE: January 22, 1998
City & County of Honolulu SUBJECT: Proposed Mililani
Dept. of Parks & Recreation Intermediate School: Joint-Use
FAX NO. 588-4767 Assessment for Parking Lot and
FROM: Mr. Ralph Morita A.A. Open Playfields
588-0486 DAGS JOB NO. 12-15-0918
(page 1 of 3)

ITEMS TRANSMITTED AS CHECKED BELOW:		TOTAL NO. OF PAGES INCL. THIS PAGE:
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<input checked="" type="checkbox"/> For approval.	<input checked="" type="checkbox"/> For review and action.	
Originals <input type="checkbox"/> will <input checked="" type="checkbox"/> will not be mailed.		

Pursuant to the proposed Mililani Intermediate School project, DAGS has the following understandings related to the County park site adjacent to the proposed intermediate school site:

1. Castle & Cooke (subdivision developer) has not yet dedicated the lands to the County for the park site.
2. The Dept of Parks & Recreation (DPR) expects to develop the park site but can not request for any appropriations until the land has been turned over to the County.
3. Currently, there is no agreement between the State and the County regarding joint-use of the park site adjacent to the proposed intermediate school site.

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Ph. No. (808) 588-0800
Fax No. (808) 588-0482

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Proposed Mililani Intermediate School
Joint-Use Agreement for Parking Lot and Open Playfields
DAGS Job No. 12-18-0916
(page 2 of 3)

Therefore, DAGS provides the following comments for DPR review and consideration:

1. Castle and Cooke (subdivision developer) is currently requesting that vehicular access to the proposed intermediate school site be limited primarily to the upper Phase 7 subdivision roadway (refer to attachment subdivision master plan map) because of the anticipated heavy subdivision traffic on the lower Phase 5 subdivision roadway. However, the school frontage off the upper subdivision roadway is only about 500' and DAGS anticipates up to 1000' of frontage will be needed to adequately separate the bus traffic, student drop-off traffic, and school staff traffic. Therefore, DAGS requests DPR consideration of a joint-use agreement for a parking lot along the upper subdivision roadway (refer to attachment conceptual plan): it is estimated about 500' and 80' wide parking lot (assumes two lanes of traffic flow with parking stalls) or about 25,000 sf (about 0.8 acres) is needed from the 12 acre County park site.
2. DAGS/DOE are currently undergoing a "charrette" process to develop the program, master plan layout, and design guidelines for the subject intermediate school that is scheduled for a September 1998 opening (pending the availability of CIP construction funding in FY1997). Therefore, DAGS also requests DPR consideration of a joint-use agreement on the adjacent open playfields (refer to attachment conceptual plan): about 400' by 400' or 166,000 sf (about 4 acres) is needed from the 12 acre County park site.

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Fax No. (808) 586-0482

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Proposed Millilani Intermediate School
Joint-Use Agreement for Parking Lot and Open Playfields
DAGS Job No. 12-16-0916
(page 3 of 3)

Please call me as soon as possible on the above mentioned items related to the proposed joint-use agreement because preliminary determinations can impact the "charrette" process that could significantly delay the scheduled school opening.

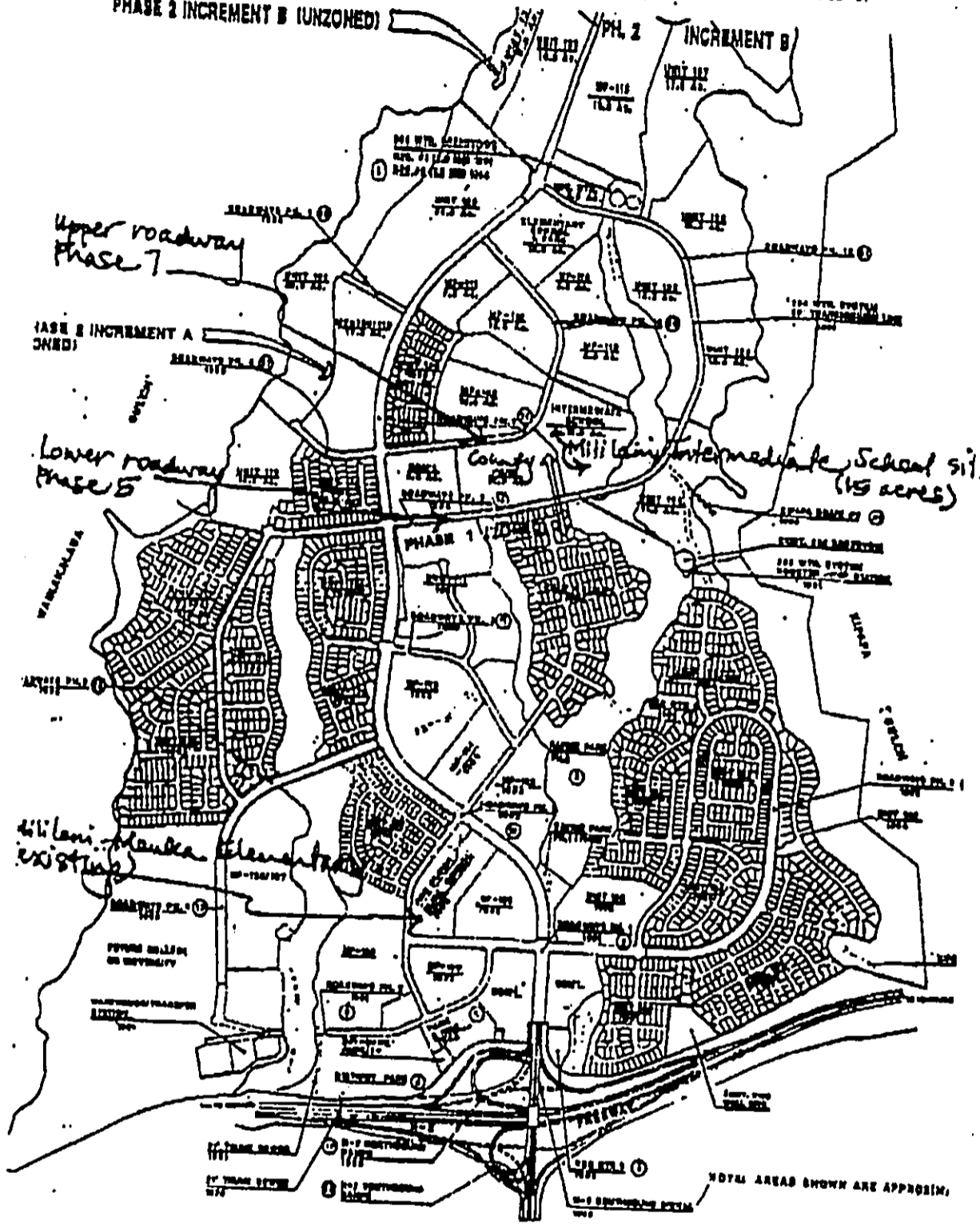
cc: Mr. Lester Chuck, DOB (FAX: 733-4885)

Halter Kobayashi, PMB

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PHASE 2 INCREMENT B (UNZONED)



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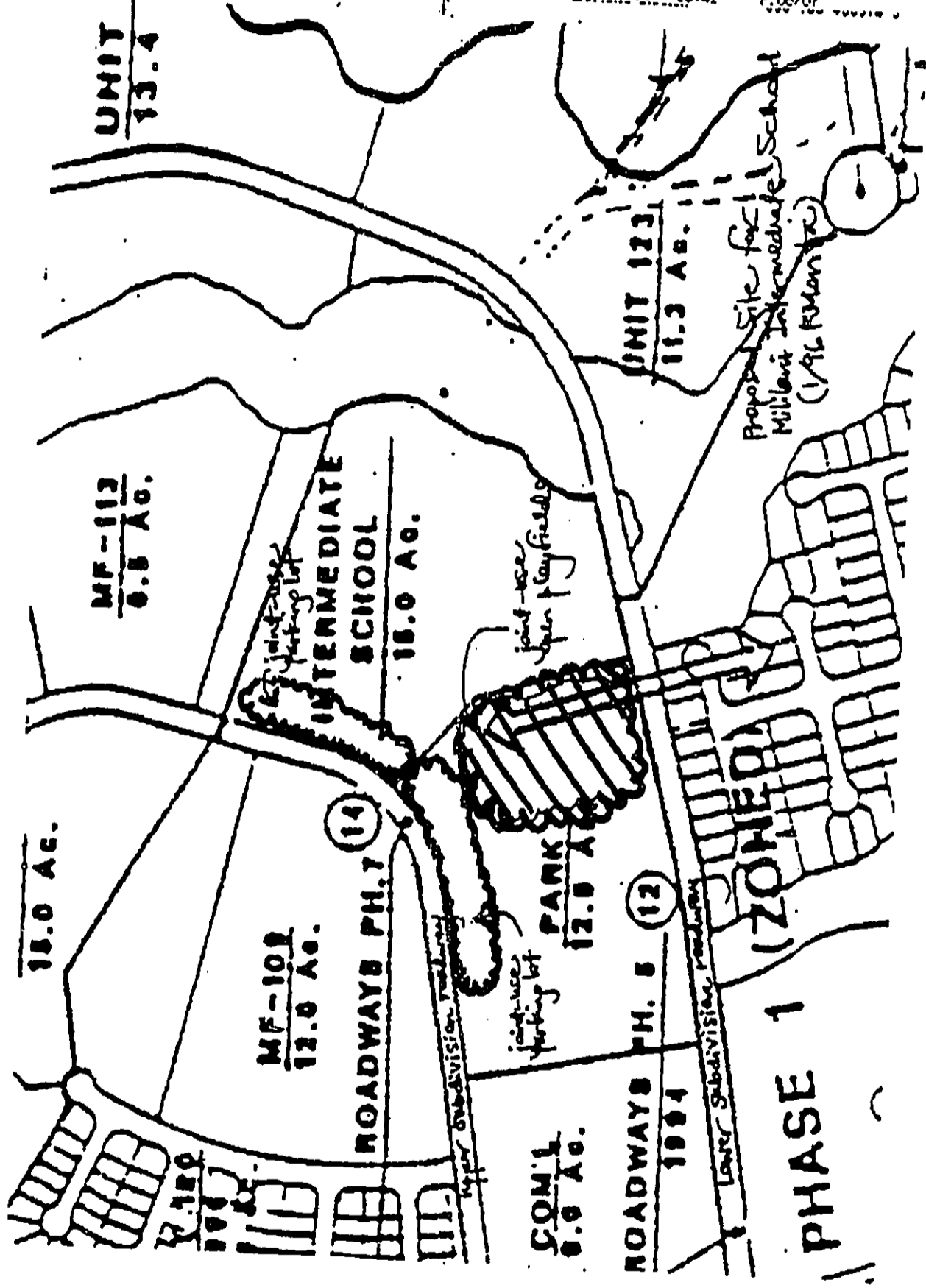
TENTATIVE - Subject to change without notice

MILILANI MAUKA DEVELOPMENT PLAN

JULY 1993

Proposed Mililani Intermediate School (156 R.Moritz)

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FACILITIES & SUPPORT Fax: 808-733-4865

Jan 23 '96 13:42

P.07/07

808 788 4865

ic

Central

WILLIAM J. GAYTANO
DIRECTOR



SAM CALLEJO
COMPTROLLER

MARY PATRICIA WATERHOUSE
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 110, HONOLULU, HAWAII 96810

LETTER NO. _____

F A X C O V E R S H E E T
PLANNING BRANCH

TO: Mr. Alan Arakawa DATE: January 22, 1996
Director, Engineering and SUBJECT: Proposed Millani
Land Development, C&C Intermediate School: Frontage
FAX NO. 848-6890 and/or Additional Access to
FROM: Mr. Ralph Morita School Site
888-0486 DAGS JOB NO. 12-16-0916

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Pursuant to the ongoing "charrette" process to develop the program, master plan layout, and design guidelines for the subject school which is scheduled to open by September 1998 (pending availability of CIP construction funds in FY1997), DAGS needs Castle & Cooke (C&C) comments on the following issues:

1. DAGS estimates that up to 1000' of roadway frontage is needed to separate bus traffic, student drop-off traffic, and school staff traffic for the subject school site (based on similar situation for the new Kapaa Intermediate School project). However, the proposed school site only has about 500' of frontage off the Phase 7 subdivision roadway that CAO is currently requiring the State use for primary vehicular access to the school site (in lieu of the lower Phase 8 subdivision roadway which C&C expects to be heavily used by the residents).
2. Therefore, DAGS requests C&C consideration of the following alternatives to address traffic concerns related to the school site operations:
 - A. Providing 500' of additional roadway frontage off the upper Phase 7 subdivision roadway (1000' total); or
 - B. Allowing vehicular access off both the upper and lower subdivision roadways.

Your immediate response to this matter is required because preliminary determinations can impact the "charrette" process.

If you do not receive legible copies of transmitted pages, please call:

Ph. No. (808) 586-0500
Fax No. (808) 586-0482

cc: Lester Cawick, DOE (FAX: 733-4865)
Walter Kobayashi, PMB

SENT BY:DAGS

: 1-23-96 :11:07AM :

PLANNING BRANCH

8036234061: # 1

BENJAMIN J. CAYITANO
GOVERNOR



SAM CALLEJO
COMPTROLLER

MARY PATRICIA WATERHOUSE
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 118, HONOLULU, HAWAII 96810

LETTER NO. _____

F A X C O V E R S H E E T
PLANNING BRANCH

TO: <u>Mr. Lester Chuck</u>	DATE: <u>January 23, 1996</u>
<u>DOE-Facilities Branch</u>	SUBJECT: <u>Mililani Intermediate</u>
	<u>School (New): Preliminary Bus</u>
FAX NO. <u>733-4865</u>	<u>Loading Requirements from DAGS</u>
FROM: <u>Mr. Ralph Morita A-S</u>	<u>Student Transportation Services</u>
<u>586-0486</u>	<u>DAGS Job No. 12-18-0918</u>

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Pursuant to telephone discussions with Mr. George Okano of DAGS Central Services Division/Student Transportation Services Branch (831-6739), confirmation of the following preliminary determinations are provided for the subject school:

1. Based on input from DOE on the school design enrollment, the service area, "year round/multi-track" operations, and DAGS' bus scheduling considerations, it is estimated the bus loading requirements for the subject school are as follows:
 - A. 10-12 bus stalls for general student transportation.
 - B. 2-4 bus stalls for handicapped student transportation.

NOTE: It is estimated that each bus is about 40' long and needs about 100' turning radius.

2. Based on operational concerns from other existing schools, Mr. George Okano also requests the respective bus loading areas be separated.

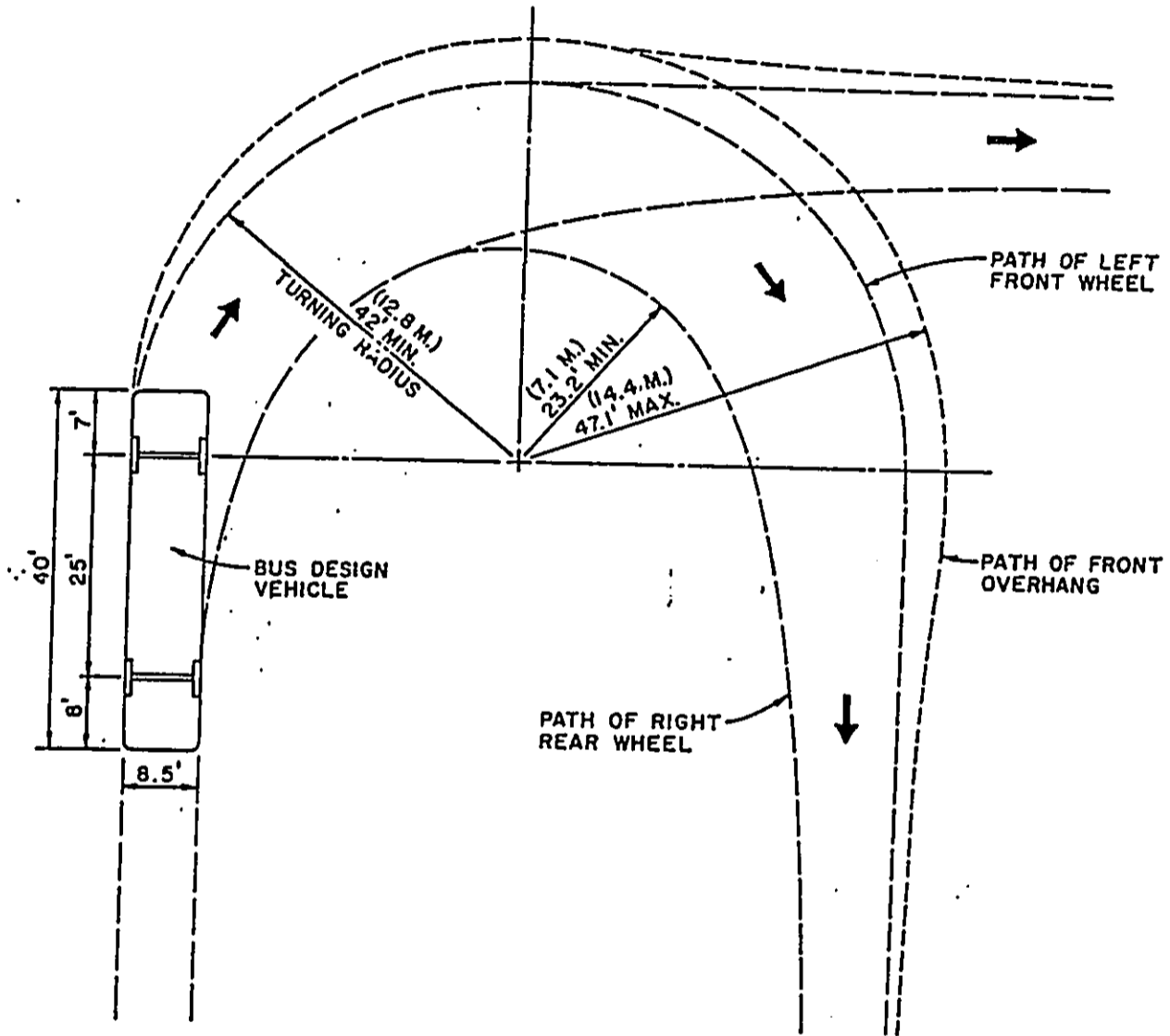
cc: Mr. George Okano,	DAGS	(FAX: 831-6750)
Mr. Walter Kobayashi,	PMB	
Ms. Aileen Hokama,	DOE-Central	(FAX: 623-4061)

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MINIMUM TURNING PATH FOR
BUS DESIGN VEHICLE.
SCALE: 1" = 20'

KAJIOKA
OKADA
YAMACHI



934 Pumehana Street / Honolulu, Hawaii / 96826 (808) 949-7770

Fax: (808) 946-0334

M E M O R A N D U M

ARCHITECTS

Date:	13 February 1996	<input type="checkbox"/> MEMO	<input checked="" type="checkbox"/> MINUTES
To:	File	<input type="checkbox"/> FIELD REPORT	<input type="checkbox"/> TELECON
Attention:		Present:	<input type="checkbox"/> OTHER
Project:	Mililani Intermediate School (6-8 grades) Master Planning & First Increment	Warren Tsark - Fire Dept. Plan Review Br. Mike Okada - KOYA Brenda Lowrey - KOYA	
Project No.	95070 DAGS Project No. 12-16-0916		

Preliminary Review Meeting for Fire Department Requirements
Tuesday, February 13, 1:00 p.m., HFD Plan Review Office, Honolulu Municipal Bldg.

A. Hazardous Material:

The Fire Department will not be allowing storage of hazardous materials in school facilities as it has been in the past. Too many teachers have been storing excess quantities and there is no monitoring of amounts; therefore, the Fire Department will be strictly adhering to the Fire Code and Building Code for allowable quantities in educational facilities, otherwise the occupancy will have to be changed to "H".

B. Site Plan Discussion

1. For fire truck access into the center of the site (to the Exploratorium) its okay to provide a "T" or "L" turn around rather than a loop path. Any "T" intersection will need 40' legs on both sides. See attached sheet for turning radius requirements.
2. If a fire lane is used exclusively for fire truck access the minimum width is 16 ft. However if it is shared with service vehicles then the minimum required width is 20 ft.
3. The fire lane should not cross covered walkways unless there is a minimum height clearance of 13'-6" and the walkway grade is at the same elevation as the adjacent fire lane.
4. Fire hydrants should be located to the best advantage of all buildings, and at corners, outside of the required turning radius.
5. The fire line should be a loop system with approximately 2,000gpm.

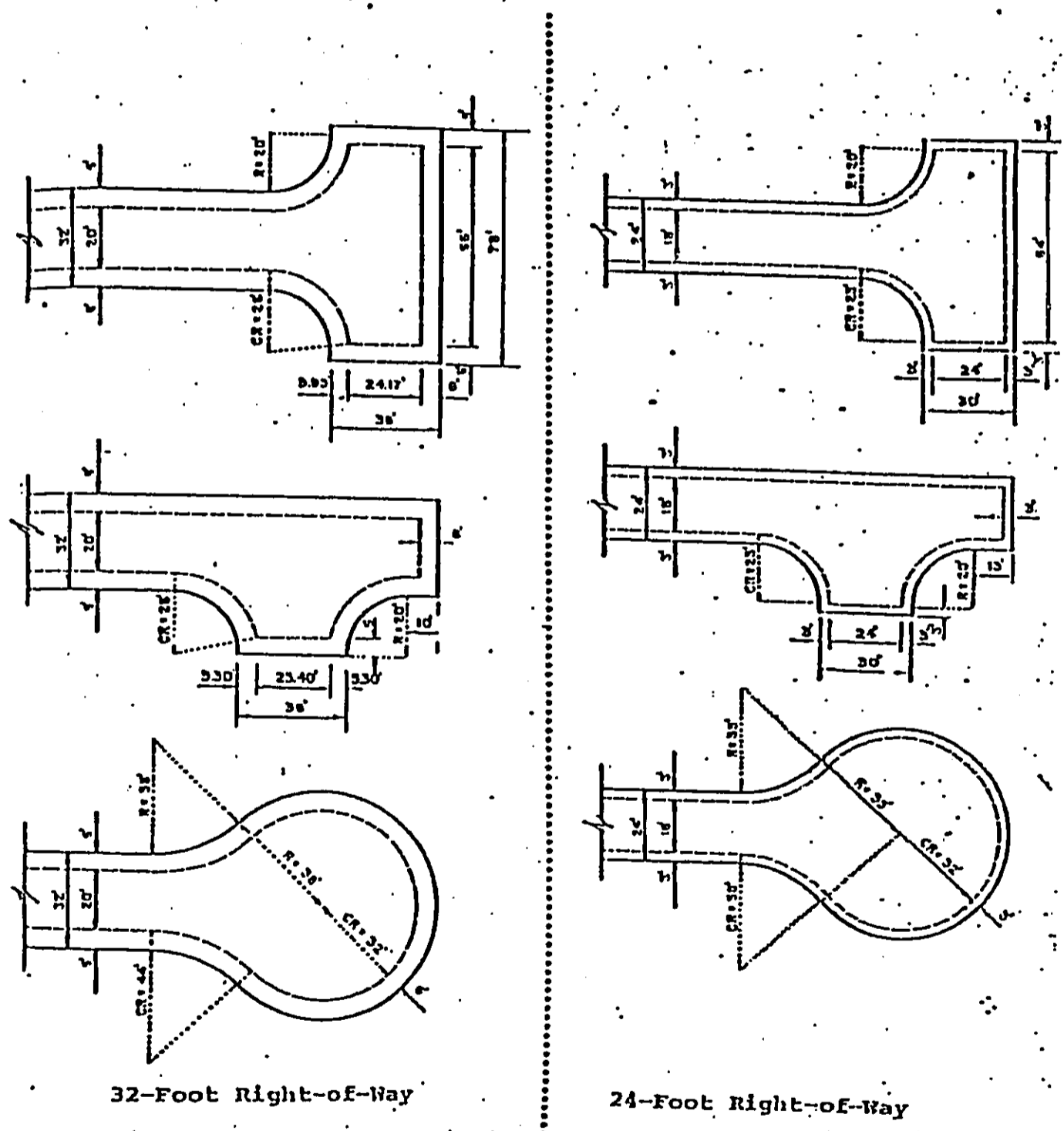
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By: Brenda Lowrey

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Excerpted from Traffic Standards Manual received from Fire Dept. Plan Review Branch 2.13.96
July 1976
Dept. of Trans Service CTC of NY

Figure III-5. TURN AROUND DETAIL



LEGEND
CR = CURB RADIUS

KAJIOKA
OKADA
YAMACHI

M E M O R A N D U M

934 Pumehana Street / Honolulu, Hawaii / 96826 (808) 949-7770

Fax: (808) 946-0334

ARCHITECTS

Date: 13 February 1996

To: File

Attention:

Project: Mililani Intermediate School (6-8 grades)
Master Planning & First Increment

Project No. 95070 DAGS Project No. 12-16-0916

MEMO MINUTES
 FIELD REPORT TELECON
Present: OTHER

Charlie Yee - Bldg. Dept. Plan Review
Mike Okada - KOYA
Brenda Lowrey - KOYA

**Preliminary Review Meeting for Building Department / UBC Requirements
Tuesday, February 13, 1:30 p.m., Bldg. Dept. Plan Review Office**

- A. Administration Building: B-2 Occupancy
If occupancy of office areas is less than 30 occupants (no need to count simultaneous use areas, but include storage areas at 1/300) then rated corridors are not a requirement. If occupant load is over 30 then the back corridor will need to be one hour rated.
- B. Classroom "House" Building: E Occupancy
1. Exiting will require one hour rated corridors. 25% of the wall areas to adjacent rooms can be wire glass in rated window frames. For calculating exiting distances in the corridor it is okay to use the path of travel, and from outside edge to outside edge of exit door locations.
 2. Elevator enclosure is not necessary.
- C. Exploratorium/Media Center: Media Ctr. A Occupancy (verify occupancy for total building).
1. One hour rating will be required for total building.
 2. Because of providing the two exit stairs within the Library the wall at the front of the Library by the open stair down to the Exploratorium will not have to be rated. Review UBC for requirements on exiting through adjoining rooms.
 3. Exploratorium: The two exit corridors will need to have one hour rated walls. The classroom spaces require swing door exits. Sliding doors are not counted as exits.
 4. Review UBC Chapter 8 for "Common atmosphere" requirements. Although walls between classrooms and center space won't require one hour separations they may require smoke and draft assemblies. (or possible exception if smoke detectors are provided throughout and maximum distance to an exit is 90 ft.).
- D. Cafeteria/Music Building: Verify occupancy for total building
1. Check mixed occupancy requirements. Cafeteria should be labeled "Multi-Purpose Room".
- E. PE Locker Rms./Classroom Building: Verify occupancy for total building
1. Exiting looks okay.

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By: Brenda Lowrey

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OKADA
YAMACHI



ARCHITECTS

934 Pumehana Street / Honolulu, Hawaii / 96826 (808) 949-7770

M E M O R A N D U M

Fax: (808) 946-0334

Date:	13 February 1996	<input type="checkbox"/> MEMO	<input checked="" type="checkbox"/> MINUTES
To:	File	<input type="checkbox"/> FIELD REPORT	<input type="checkbox"/> TELECON
Attention:		Present:	<input type="checkbox"/> OTHER
Project:	Mililani Intermediate School (6-8 grades) Master Planning & First Increment	Bob Bannister - DLU Mike Okada - KOYA Brenda Lowrey - KOYA	
Project No.	95070	DAGS Project No. 12-16-0916	

Preliminary Review Meeting for DLU / Zoning Requirements
Tuesday, February 13, 2:30 p.m., Dept. of Land Utilization Office

- A. Review of Site Plan: A-1 Low Density Apartment Zoning, Educational Uses allowed.
 - 1. Yard setbacks seem to be met.
 - 2. Provide enough parking per zoning requirements and include landscaping within parking areas.
 - 3. Sloping roofs are preferred, possibly even 5:12 or 5 1/2:12 rather than 4:12 slope.
- B. Classroom "House" Buildings: Two story structure with a mid level at the rear. Height will probably exceed 30 ft. height limit due to sloping metal roofs.
 - 1. Will need to submit for a variance in order to get building permit however there shouldn't be a problem since sloping roofs are keeping with the design intent of the neighboring community.
- C. Media Center/Exploratorium: Two story structure with sloping metal roof at center of campus. Height will exceed 30 ft. height limit.
 - 1. Will need to submit for a variance in order to get building . Again, there shouldn't be a problem since the building is at the center of the site, and the sloping roof and stepped back design will help to minimize the height impact.
- D. Next Review: Construction Documents should be submitted for review once design is totally set. Review set must be the same as what is submitted to the Building Department for the Building Permit review.

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By: Brenda Lowrey

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Design Br		Comments
Insp Br		Staff Study
Qual Contr Br		
2 Sec Hd	<i>[Signature]</i>	
3 PC	<i>[Signature]</i>	

(P) 1086.6

FEB 5 1996

TO: Files

FROM: Ralph Morita, Education Section Head

SUBJECT: Mililani Intermediate School (New)
 Master Plan/First Increment Coordination with
 Department of Parks and Recreation (DPR)
 DAGS Job No. 12-16-0916

DATE: January 31, 1996

WITH: Messrs. Jim Nakasone, Dan Takamatsu, Brian Suzuki,
 Wilbert Ching and Lester Lai, Department of Parks and
 Recreation; Mr. Lester Chuck, DOE Facilities Branch;
 Mr. Alan Arakawa, Castle & Cooke; Messrs. Norman
 Hayashida and Walter Kobayashi, DAGS Project Management
 Branch; Mr. Ralph Morita, DAGS Planning Branch

The following comments summarize the January 31, 1996 meeting on the subject topic:

1. DAGS Planning Branch requested the meeting to address the following issues related to development of the County park site adjacent to the proposed Mililani Intermediate School site:
 - A. Coordination for development of open playfield areas because pending availability of CIP construction funds, DAGS/DOE is trying to complete the first increment of a "year round/multi-track" intermediate school for a target September 1998 school opening (September 1999 at the latest) to address overcrowded conditions at up to twelve (12) existing schools in the Mililani service area:
 - (1) Therefore, about 165,000 square feet (sf) of open playfields in the adjacent park site needs to be available for the proposed Mililani Intermediate School use by the school opening.
 - (2) However, Castle & Cooke (C&C) is not able to develop the adjacent park site (i.e. master plan, mass grade, grass and install the irrigation system) for the subject

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intermediate school operations until at least the year 1999 or 2000 because C&C has already programmed its available resources to develop the District park site located elsewhere in the Mililani subdivision (per DPR requirements).

- B. Establishment of preliminary understandings related to a joint-use agreement specific for the proposed Mililani Intermediate School operations such as (limited to normal school hours throughout the year):

- (1) Scheduled use of the open playfields.
- (2) Relocation of paved playcourts from the school site and scheduled use.

NOTE: County park use of the intermediate school parking lots during non-school hours could also be considered.

- C. Planning and engineering coordination to:

- (1) Establish elevations along the boundary between the school site and the park site to ensure the access path to the open playfields complies with ADA requirements.
- (2) General location and/or orientation of the open playfields.

2. The determinations are summarized below:

- A. DPR cannot request appropriations to design and construct any support facilities (parking lot, restrooms, paved playcourts, playground equipment, etc.) and/or maintenance of the adjacent park site until the parcel is turned over to the County by C&C (Note: C&C also needs to complete the master plan, mass grade, grass and irrigate the park site prior to turning over to the County):

- (1) Therefore, DPR is not able to ensure the park site is available for the school's use in time for the target school opening.

(2) DPR is also not willing to consider the C&C proposal to develop the park site adjacent to the school site before development of the District park site because the District park site is expected to handle a much larger public demand (15 acres for the District park site vs. 12 acres for the park site adjacent to the subject school). It was also noted the State had expected the open playfields to be developed by others and had not programmed any project funding to develop the adjacent park site.

B. Pursuant to an existing general agreement between the DOE and the City and County of Honolulu, DPR is willing to allow joint-use of the park's facilities for school use:

(1) Scheduled use of the open playfields is not expected to be a problem because of ongoing good working relationships with the Central District administration.

(2) However, scheduled use of the paved playcourts could create some operational conflicts (even if the State agreed to pay for their construction on the park site).

NOTE: Therefore, it was mutually agreed the school's paved playcourts should remain on the school site, with the general understanding that the school could request for use of other paved playcourts on the park site and the park could request for use of the paved playcourts on the school site.

(3) Use of the school parking lots for park operations is open for further discussions.

C. C&C is willing to start master planning work for the park site adjacent to the school site:

(1) DAGS and C&C consultants can work together to establish the boundary elevations.

Files
Page 4

Ltr. No. (P)1086.6

(2) C&C and PDR can work together to develop the master plan layout.

NOTE: DPR indicated willingness to consider locating the open playfields as near as possible to the school site.

Ralph Morita

RALPH MORITA

RM:jy

cc: SPWE

Mr. Lester Chuck

Mr. Dan Takamatsu

Mr. Mike Okada

Mr. Alan Arakawa

Mr. Walter Kobayashi

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SIGN-IN SHEET

PROJECT WILILANI INTERMEDIATE SCHOOL SUBJECT PLAYCODET JOINT-USE AGREEMENT
MASTER PLANNING & FIRST INCUBENT PLACE 5TH FLOOR, PARKS & RECREATION.
 D.A.G.S. JOB NO. 12-16-0916 DATE WED. JAN 31, 1996
 TIME 9:00 AM - 10:30 AM.

DISCUSSIONS FOR PLAYFIELD &
 CH HONOLULU MUNICIPAL BLDG.
 CH HONOLULU MUNICIPAL BLDG.
 CH HONOLULU MUNICIPAL BLDG.

Name	Organization	Address	Telephone No.
ALTEK K. KOBAYASHI	STATE OF HAWAII DAGS EPD PROG. MGMT. BR.	1151 PUNCHBOWL ST. #427 P.O. Box 119, HAWAII, HI. 96810	586-0478 FAX: 586-0530
LESTER H. T. CHUCK	DOE - FACILITIES BRANCH	905 8th Avenue Honolulu HI 96821	733-4962 4865 (FAX)
Alan Arakawa	Castle & Cooke	650 Iwika Rd Hon. HI 96817	548-4869
NORMAN HAYASHIDA	DAGS-PM	1151 Punchbowl St 426 PM.	586-0472 586-0530
Ralph Morita	DAGS Planning	1151 Punchbowl St Rm 430	586-0486 586-0482 FAX
JIM NAKASENE	DPR FAC. DIV	650 SO. KING ST. HON. 96813	527-6306
Dan Takamatsu	"	"	527-6301
Bran Suzuki	"	"	527-6316
Wilbert Ching	DPR	650 S. King St. Honolulu 96813	527-6333
Suey Lan	DPR		523-4696

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3 ✓	

(P) 1087.6

FEB 5 1996

TO: Files

FROM: Ralph Morita, Education Section Head

SUBJECT: Mililani Intermediate School (New),
MP/First Increment
Coordination with Castle & Cooke (C&C)
DAGS Job No. 12-16-0916

ATTENDED BY: Mr. Ralph Morita, DAGS Planning
Mr. Lester Chuck, Ms. Aileen Hokama, DOE
Messrs. Alan Arakawa, Wally Hiroyama, C&C

The following comments summarize the February 2, 1996 meeting on the subject topic:

1. DAGS Planning Branch requested the meeting to address the following issues:
 - a. Coordination for development of open playfields on the adjacent park site in time for the target September 1998 school opening date (pending the availability of CIP construction funds).
 - b. Coordination for extension of Kuaoa Street and Lehiwa Drive in time for the target school opening date.
 - c. Agreement on the shape and size of the proposed school site.
2. The following decisions resulted from the meeting:
 - a. C&C agreed to develop the open playfields (mass grade, grass and install irrigation system for about 165,000 square feet of open playfield space per the DOE's requirements) in time for the school opening under the condition the DOE maintains the open playfields until such time C&C turns over the park site to the Department of Parks and Recreation, City and County of Honolulu.

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- b. C&C intends to complete extension of Kuaoa Street and Lehiwa Drive by 1999 or 2000 (subject to recovery of the housing market). Therefore, DAGS/DOE was asked to consider construction of temporary road extensions and/or get approval from the Department of Transportation Services, City and County of Honolulu to use only one of the driveway openings off Lehiwa Drive until Lehiwa Drive is extended. DAGS/DOE agreed to consider this request.
- c. Since DAGS/DOE could not justify the need to increase the size of the proposed school site (such as limiting the classroom buildings to only single story structures), it was mutually agreed:
- (1) C&C will develop a metes and bounds map, subdivide and dedicate 15 acres (with C&C slope easements moved out of the school property in its entirety) for the proposed school site to the State by the end of 1996 or prior to start of construction work.
 - (2) DAGS/DOE will develop an intermediate school facility that stays within the limits of the 15-acre site provided by C&C.

Prepared by:

Ralph Morita

RALPH MORITA

Date

RM:jk

cc: State Public Works Engineer
Ms. Aileen Hokama, DOE Central District
Mr. Lester Chuck, DOE Facilities Branch
Mr. Dan Takamatsu, Department of Parks and Recreation
Mr. Mel Hirayama, Department of Transportation Services
✓ Mr. Walter Kobayashi, DAGS Project Management Branch
Mr. Mike Okada, Kajioka, Okada, Yamachi
Mr. Alan Arakawa, Castle & Cooke

MILANI INTERMEDIATE
SCHOOL

APPENDIX G

PRELIMINARY SPACE AND COST PROGRAM

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fcfr.	Total Gross Floor Area
ADMINISTRATIVE CENTER - Building A										
Principal's Office	1	200 SF	200 SF	200 SF	Principal's Office	1	233 SF	233 SF		233 SF
Vice-Principal's Office	3	200 SF	600 SF	600 SF	Vice-Principal's Office	2	208 SF	416 SF		416 SF
General Office	1	420 SF	420 SF	420 SF	Vice-Principal's Office (Include YRE-MT clerk)	1	208 SF	208 SF		208 SF
YRE-MT Clerk	1	80 SF	80 SF	80 SF	(in General Office)	0	1,180 SF	1,180 SF		1,180 SF
FMS	1	100 SF	100 SF	100 SF	(in General Office)	0				
Duplicating Room	1	130 SF	130 SF	130 SF	(in General Office)	0				
Storage Room	1	240 SF	240 SF	240 SF	Storage Room	1	239 SF	239 SF		239 SF
Lobby	1	240 SF	240 SF	240 SF	Entry/Lobby	1	332 SF	332 SF		332 SF
Staff Conference Room	1	240 SF	240 SF	240 SF	Staff Conf. Rm.	1	262 SF	262 SF		262 SF
Registrar's Office	1	120 SF	120 SF	120 SF	Registrar's Office	1	120 SF	120 SF		120 SF
Registrar's Workroom	1	600 SF	600 SF	600 SF	Registrar's Workrm.	1	546 SF	546 SF		546 SF
Health Service:										
Treatment Room	1	170 SF	170 SF	170 SF	Treatment/Recovery Rm.	1	431 SF	431 SF		431 SF
Recovery Room	1	200 SF	200 SF	200 SF						
Nurse's Station/Waiting	1	150 SF	150 SF	150 SF	Nurse's Office	1	138 SF	138 SF		138 SF
Toilet	1	70 SF	70 SF	70 SF	Toilet	1	42 SF	42 SF		42 SF
Counselor's Office	0	140 SF			(Moved to Music Bldg)	0				
Special Services/Conf.	1	264 SF	264 SF	264 SF	Special Services/Conf.	2	223 SF	446 SF		446 SF
Staff Lounge	1	190 SF	190 SF	190 SF	Staff Lounge	1	235 SF	235 SF		235 SF
Mens's & Women's Toilet	2	70 SF	140 SF	140 SF	Men's & Women's Toilets	2	42 SF	84 SF		84 SF
Custodial Closet	1	40 SF	40 SF	40 SF	General Utility	1	30 SF	30 SF		30 SF
Hallway/Waiting Alcove	1	864 SF	864 SF	864 SF	Corridor 1	1	864 SF	864 SF		864 SF
PCNC	1	350 SF	350 SF	350 SF	PCNC	1	360 SF	360 SF		360 SF
Communications Room	1	60 SF	60 SF	60 SF	P/A Room	1	36 SF	36 SF		36 SF
Elec./Mech. Room	1	70 SF	70 SF	70 SF	Elec. Rm.	1	85 SF	85 SF		85 SF
Building Subtotal				5,538 SF				6,287 SF		
Areas not counted in Net Square Footage										
					Signal Rm	1	54 SF	54 SF		54 SF
					A/C Rm.	1	142 SF	142 SF		142 SF
					Corridor 1 (abv. FADS)	1	532 SF	532 SF		532 SF
					Corridor 2 (abv. FADS)	1	115 SF	115 SF		115 SF
Subtotal:										7,738 GSF
Building Total										
					Net to Gross Factor:					1.23

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fcl.	Total Gross Floor Area
CAFETERIA/MULTI-PURPOSE BUILDING - Building B										
Cafetorium/Multi-purpose Building - First Increment										
Student Dining Room	1	6,750 SF	6,750 SF	6,750 SF	Less sf-traded for Stage	1	5,216 SF	5,216 SF		
Port. Stage (On Dining)	1	480 SF	SF	SF	Stage (See Music)	0	SF	SF		
Stage Storage		(See Music)		SF	(See Music)	0	SF	SF		
Ramp/Chair Storage		(See Music)		SF	(See Music)	0	SF	SF		
Amplifier area		(See Music)		SF	(See Music)	0	SF	SF		
Halfway		(See Music)		SF	(See Music)	0	SF	SF		
Boy's Dressing/Storage		(See Music)		SF	(See Music)	0	SF	SF		
Girl's Dressing/Storage		(See Music)		SF	(See Music)	0	SF	SF		
Boy's toilet	1	70 SF	70 SF	70 SF	(See Music)	0	SF	SF		
Girl's Toilet	1	70 SF	70 SF	70 SF	Boy's Toilet Rm.	1	42 SF	42 SF		
Custodial Closet	1	40 SF	40 SF	40 SF	Girl's Toilet Rm.	1	42 SF	42 SF		
Staff Dining Room	1	525 SF	525 SF	525 SF	General Utility	1	36 SF	36 SF		
Area Subtotal				7,455 SF	Staff Dining Rm.	1	575 SF	575 SF		
								5,911 SF		
Food Service-Kitchen										
Food Prep Area	1	1,100 SF	1,100 SF	1,100 SF	Kitchen/Food Prep.	1	3,040 SF	3,040 SF		
Dry Storage	1	400 SF	400 SF	400 SF	Dry Storage Rm.	1	391 SF	391 SF		
Walk-In Refrigerator	1	120 SF	120 SF	120 SF	Included in Kitchen	1	SF	SF		
Walk-In Freezer	1	140 SF	140 SF	140 SF	"	1	SF	SF		
Serving Area	1	768 SF	768 SF	768 SF	"	1	SF	SF		
Tray Return Area	1	220 SF	220 SF	220 SF	"	1	SF	SF		
Can Wash Area	1	50 SF	50 SF	50 SF	"	1	SF	SF		
Pot & Pan Area	1	128 SF	128 SF	128 SF	"	1	SF	SF		
Office	1	100 SF	100 SF	100 SF	"	1	SF	SF		
Lockers & Toilets	2	91 SF	182 SF	182 SF	Locker Area	2	105 SF	105 SF		
				SF	Toilet Rm.	2	51 SF	102 SF		
Utility & Broom-Linen Clo	1	200 SF	200 SF	200 SF	Storage Rm.	1	90 SF	90 SF		
Heater Rm.	1	64 SF	64 SF	64 SF	Compressor Rm.	0	SF	SF		
Elec. & Compressor Rms	2	56 SF	112 SF	112 SF		1	54 SF	54 SF		
Area Subtotal				3,584 SF				3,838 SF		
Custodial Service Center										
Office/Storage/Repair	1	230 SF	230 SF	230 SF	Office/Stor./Repair	1	270 SF	270 SF		
Tool Room	1	60 SF	60 SF	60 SF	Tool Rm.	1	61 SF	61 SF		
Wtr Clos. w/ Opt. Shower	1	75 SF	75 SF	75 SF	Toilet/Shower Rm.	1	59 SF	59 SF		

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
Locker Area	1	36 SF	36 SF	36 SF	incl. In Cust. Office	0				
Area Subtotal				- 36 SF 401 SF				390 SF		

Building Subtotal

11,440 SF

Areas not counted in Net Square Footage

Main Campus Elec Rm.	1	384 SF								
Signal Rm.	1	56 SF								
Corridor	1	196 SF								
Subtotal:								636 SF		
Building Total								10,139 SF		

11,341 GSF

Net to Gross Factor: 1.12

Music Building/Student Center - Second Increment

Band Rooms:

100 Pupil main inst. rm	2	2,500 SF	5,000 SF	5,000 SF	Band Rm.	1	2,071 SF	2,071 SF		
Instrument practice room	6	115 SF	690 SF	690 SF	Band Rm.	1	2,176 SF	2,176 SF		
Instrument ensemble room	2	300 SF	600 SF	600 SF	group of 3 varying sizes	1	286 SF	286 SF		
Instrument repair & stor	2	250 SF	500 SF	500 SF	Ensemble Rm.	1	405 SF	405 SF		
Band Office/Library	2	185 SF	370 SF	370 SF	Instrument Storage Rm.	1	455 SF	455 SF		
					Instrument Stor. Closet	2	71 SF	142 SF		
					Library/Repair Office	1	203 SF	203 SF		
					Office	2	123 SF	246 SF		

Choral Room:

80 Pupil Main Choral R	0		1,440 SF		Choral/Orchestral Rm.	1	1,211 SF	1,211 SF		
Choral Office/Library	0		185 SF		Office/Library	1	162 SF	162 SF		
Robe Storage Rm.	0		150 SF		(double as Dressing Rms)	2	86 SF	172 SF		

Music Common Facilities:

Port. Stage (On Dining)	0				Theory/Keyboard Lab	1	436 SF	436 SF		
Stage Storage	1	480 SF			Permanent Stage	1	926 SF	926 SF		
Ramp/Chair Storage	1	250 SF	250 SF		Chair Storage	1	303 SF	303 SF		
Amplifier area	1	200 SF	200 SF		Amplifier Rm./Chair Lift	1	91 SF	91 SF		
Hallway	1	20 SF	20 SF		see below	0				
Boy's Dressing/Storage	1	120 SF	120 SF		(in Robe Storage Rm.)	0				
Girl's Dressing/Storage	1	180 SF	180 SF		(in Robe Storage Rm.)	0				
Vestibule	1	180 SF	180 SF		A/C Mech. Rm.	1	336 SF	336 SF		
Mechanical Room	1	160 SF	160 SF							
		150 SF	150 SF							

University of Maryland System
Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
Toilet Boys/Girls	2	96 SF	192 SF	192 SF	. see below	0	SF	SF		
Janitor's Closet	1	40 SF	40 SF	40 SF	General Utility	1	75 SF	75 SF		75 SF
Area Subtotal				8,652 SF				9,696 SF		
Student Center:						2	133 SF	266 SF		266 SF
Counselors' Offices	6	140 SF	840 SF	840 SF		4	134 SF	536 SF		536 SF
					SAC (Stud. Activity Ctr)	1	463 SF	463 SF		463 SF
Area Subtotal				840 SF				1,265 SF		1,265 SF
Building Subtotal				9,492 SF				10,961 SF		10,961 SF

Areas not counted in Net Square Footage

Counselors' Stor. Rm.	1	65 SF	65 SF	65 SF
Faculty Toilet Rm.	1	58 SF	58 SF	58 SF
Boy's Toilet Rm.	1	259 SF	259 SF	259 SF
Girl's Toilet Rm.	1	295 SF	295 SF	295 SF
Storage Closet	1	9 SF	9 SF	9 SF
Storage Rm.	1	270 SF	270 SF	270 SF
A/C Mech. Rm.	1	100 SF	100 SF	100 SF
Circulation	1	1,688 SF	1,688 SF	1,688 SF
Subtotal:			2,744 SF	2,744 SF

14,757 GSF

Net to Gross Factor: 1.35

EXPLORATORIUM / MEDIA CENTER - Building D

Library Media Center (Second Floor)	1	250 SF	250 SF	250 SF	250 SF	Office	1	210 SF	210 SF
Large Group Area	1	286 SF	286 SF	286 SF	286 SF	Large Group Area	1	7,395 SF	7,395 SF
Circulation Desk	1	3,616 SF	3,616 SF	3,616 SF	3,616 SF	(Includes 4 items below)	0	SF	SF
Reading/Study Booksh	1	266 SF	266 SF	266 SF	266 SF		0	SF	SF
Periodical	1	550 SF	1,650 SF	1,650 SF	1,650 SF		0	SF	SF
Resource Centers	3	252 SF	252 SF	252 SF	252 SF		0	SF	SF
Student Conference	1	800 SF	800 SF	800 SF	800 SF	(2 rms w/operable wall)	.1	333 SF	333 SF
Video Production Rm.	1	336 SF	336 SF	336 SF	336 SF	Video Prod. Rm.	1	320 SF	320 SF
Workrm./Production Rm.	1	324 SF	324 SF	324 SF	324 SF	Staff Workroom	1	770 SF	770 SF
Prof. Staff & Mat. Area	1	150 SF	150 SF	150 SF	150 SF	Prof. Staff Malls. Rm.	1	313 SF	313 SF
Storage Room	1	324 SF	324 SF	324 SF	324 SF	Storage Rm.	1	464 SF	464 SF
Mech./Elec. Room	1	150 SF	150 SF	150 SF	150 SF	Elec. Rm.	1	52 SF	52 SF

4/1/96

Page 4

Kajjoka Okada Yamacht Architects

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
Custodial Closet	1	40 SF	40 SF	40 SF	General Utility	1	35 SF	55 SF		
Staff Toilet	2	75 SF	150 SF	150 SF	Staff Toilet	1	43 SF	43 SF		
Media Control Center	1	450 SF	450 SF	450 SF	Media Control Ctr.	1	352 SF	352 SF		
Signal Processing Room	1	150 SF	150 SF	150 SF	Signal Rm. see above	0	SF	SF		
Teacher Ctr. (YRE-MT)	5	85 SF	425 SF	425 SF	Teacher Center	1	574 SF	574 SF		
(5 of 29 @ 85 sf ea.) Area Subtotal				9,145 SF				10,861 SF		

Areas not counted in Net Square Footage

A/C Room	1	311 SF	311 SF	311 SF
Storage	1	70 SF	70 SF	70 SF
Entry/Vestibule	1	656 SF	656 SF	656 SF
Subtotal:			1,037 SF	
2nd Floor Subtotal:				11,898 SF

Exploratorium (First Floor) Arts & Crafts	1	1,912 SF	1,912 SF	1,912 SF	Art Lab 1 (3-D) Storage-Art 1 Kiln Rm. Paint Rm. Art Lab 2 (2-D) Storage - Art 2 FCS Lab Storage-FCS Tech Ed Lab 1 Tools/Equip. Noisy Tech Lab Materials/Storage Exterior Storage Rm. Compressor Rm. Tech Ed Lab 2 Storage Rm.	1	1,098 SF 122 SF 148 SF 50 SF 1,096 SF 94 SF 1,979 SF 141 SF 1,358 SF 112 SF 457 SF 237 SF 36 SF 38 SF 1,958 SF 160 SF	1,098 SF 122 SF 148 SF 50 SF 1,096 SF 94 SF 1,979 SF 141 SF 1,358 SF 112 SF 457 SF 237 SF 36 SF 38 SF 1,958 SF 160 SF		
Home Economics(FCS)	1	1,895 SF	1,895 SF	1,895 SF		1	1,895 SF	1,895 SF		
Metals/Woods	1	3,388 SF	3,388 SF	3,388 SF		1	3,388 SF	3,388 SF		
Industrial Technology	2	3,388 SF	6,776 SF	6,776 SF		1	1,958 SF	1,958 SF		
Optional Science	2	1,600 SF	3,200 SF	3,200 SF	Explor. Science Lab 1 Teacher Prep. Rm. Explor. Science Lab 2 Teacher Prep. Rm. Demonstration Room Large Project Area	1	1,464 SF 180 SF 1,464 SF 180 SF 702 SF 1,405 SF	1,464 SF 180 SF 1,464 SF 180 SF 702 SF 1,405 SF		
Area Subtotal				17,171 SF				14,479 SF		

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
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Building Subtotal										
26,316 SF										
Areas not counted in Net Square Footage										
					Storage Rm.	1	88 SF	88 SF		88 SF
					Elevator/Elev. Mach. Rm.	1	92 SF	92 SF		92 SF
					Boys Toilet Rm.	1	229 SF	229 SF		229 SF
					Girls Toilet Rm.	1	315 SF	315 SF		315 SF
					General Utility	1	48 SF	48 SF		48 SF
					Open Stairs	1	250 SF	250 SF		250 SF
					Enclosed Stairs	2	232 SF	464 SF		464 SF
					First Flr. Signal Rm.	1	173 SF	173 SF		173 SF
					First Flr. Elec. Rm.	1	112 SF	112 SF		112 SF
					A/C Rm.	1	448 SF	448 SF		448 SF
					Corridor	1	3,042 SF	3,042 SF		3,042 SF
								5,261 SF		5,261 SF
								19,740 SF		19,740 SF
										34,544 GSF

Subtotal:
1st Floor Subtotal:
Building Total

34,544 GSF

Net to Gross Factor: 1.36

CLASSROOM HOUSE - Building E

Core Classrooms	6	900 SF	5,400 SF	5,400 SF	General Classroom 1	4	869 SF	3,476 SF		3,476 SF
Sixth Grade Classrooms	6	900 SF	5,400 SF	5,400 SF	General Classroom 2	4	915 SF	3,660 SF		3,660 SF
Special Ed. Resource	1	810 SF	810 SF	810 SF	General Classroom 3	4	853 SF	3,412 SF		3,412 SF
P.E. Classroom	1	900 SF	900 SF	900 SF	General Classroom 4	2	872 SF	1,744 SF		1,744 SF
					Classroom Count	14				
Gen'l Science (1 of 3)	1	1,600 SF	1,600 SF	1,600 SF	Explor. Science/Art Lab	1	1,164 SF	1,164 SF		1,164 SF
Comp. Res. Ctr. (1 of 3)	1	900 SF	900 SF	900 SF	Lab Stor/Prep Rm.	1	245 SF	245 SF		245 SF
Faculty Center (1 of 3)	1	835 SF	835 SF	835 SF	Explor. Computer Lab	1	895 SF	895 SF		895 SF
Teacher Ctr. (YRE-MT)	8	85 SF	680 SF	680 SF	Faculty Ctr. w/ YRE-MT	1	1,648 SF	1,648 SF		1,648 SF
(8 of 29 total @ 85sf ea.)					(Combined w/ Fac. Ctr.)	.0	SF	SF		SF
					(Includes staff toilets, stor. rm.)					
					Break-Out Rms.	.5	96 SF	480 SF		480 SF
								16,724 SF		16,724 SF
					Elevator/Elev. Mach. Rm.	1	92 SF	92 SF		92 SF
					Boys Toilet Rm.	2	325 SF	650 SF		650 SF
					Girls Toilet Rm.	2	332 SF	664 SF		664 SF

Areas Not in FADS (traded within total square footage):
Building Total

Areas not counted in Net Square Footage

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
					Outside Toilet Rm.	1	60 SF	60 SF		
					Open Stairs	1	195 SF	195 SF		
					Enclosed Stairs	2	227 SF	454 SF		
					First Flr. Signal Rm.	1	70 SF	70 SF		
					Second Flr. Signal Rm.	1	70 SF	70 SF		
					First Flr. Elec. Rm.	1	127 SF	127 SF		
					Second Flr. Elec. Rm.	1	60 SF	60 SF		
					General Utility	1	60 SF	60 SF		
					First Flr. A/C Rm.	1	135 SF	135 SF		
					Second Flr. A/C Rm.	1	128 SF	128 SF		
					Classrm. A/C Closets	10	20 SF	200 SF		
					Classrm. A/C Closets	4	22 SF	88 SF		
					Classrm. Closets	4	29 SF	116 SF		
					Circulation - 1st Flr.	1	2,603 SF	2,603 SF		
					Circulation - 2nd Flr.	1	2,505 SF	2,505 SF		
								8,277 SF		

Subtotal:
Building Total

28,439 GSF

Net to Gross Factor: 1.7

CLASSROOM HOUSE - Building F

Core Classrooms	6	900 SF	5,400 SF	5,400 SF	General Classroom 1	4	869 SF	3,476 SF	
Sixth Grade Classrooms	6	900 SF	5,400 SF	5,400 SF	General Classroom 2	4	915 SF	3,660 SF	
Special Ed. Resource	1	810 SF	810 SF	810 SF	General Classroom 3	4	853 SF	3,412 SF	
Health Classroom	1	900 SF	900 SF	900 SF	General Classroom 4	2	872 SF	1,744 SF	
					Classroom Count	14			
Gen'l Science (1 of 3)	1	1,600 SF	1,600 SF	1,600 SF	Explor. Science/Art Lab	1	1,164 SF	1,164 SF	
Comp. Res. Ctr. (1 of 3)	1	900 SF	900 SF	900 SF	Lab Stor/Prep. Rm.	1	245 SF	245 SF	
Faculty Ctr. (1 of 3)	1	835 SF	835 SF	835 SF	Explor. Computer Lab	1	895 SF	895 SF	
Teacher Ctr. (YRE-MT)	8	85 SF	680 SF	680 SF	Faculty Ctr. w/ YRE-MT	1	1,648 SF	1,648 SF	
					(Combined w/ Fac. Ctr.)	.0	SF.	SF.	
					(Includes staff toilets, stor. rm.)				
Areas Not In FADS (traded within total square footage):					Break-Out Rms.	.5	96 SF	480 SF	
Building Total				16,525 SF				16,724 SF	
Areas not counted in Net Square Footage					Elevator/Elev. Mach. Rm.	1	92 SF	92 SF	
					Boys Toilet Rm.	2	325 SF	650 SF	
					Girls Toilet Rm.	2	332 SF	664 SF	

1996 FADS Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
					Outside Toilet Rm.	1	60 SF	60 SF		
					Open Stairs	1	195 SF	195 SF		
					Enclosed Stairs	2	227 SF	454 SF		
					First Flr. Signal Rm.	1	70 SF	70 SF		
					Second Flr. Signal Rm.	1	70 SF	70 SF		
					First Flr. Elec. Rm.	1	127 SF	127 SF		
					Second Flr. Elec. Rm.	1	60 SF	60 SF		
					General Utility	1	60 SF	60 SF		
					First Flr. A/C Rm.	1	135 SF	135 SF		
					Second Flr. A/C Rm.	1	128 SF	128 SF		
					Classrm. A/C Closet	10	20 SF	200 SF		
					Classrm. A/C Closet	4	22 SF	88 SF		
					Classrm. Closet	4	29 SF	116 SF		
					Circulation - 1st Flr	1	2,603 SF	2,603 SF		
					Circulation - 2nd Flr	1	2,505 SF	2,505 SF		
								8,277 SF		

Subtotal:
Building Total

Net to Gross Factor: 1.7

28,439 GSF

CLASSROOM HOUSE - Building G

Core Classrooms	6	900 SF	5,400 SF	5,400 SF	General Classroom 1	2	869 SF	1,738 SF		
Sixth Grade Classrooms	5	900 SF	4,500 SF	4,500 SF	General Classroom 2	2	915 SF	1,830 SF		
Special Ed. Resource	2	810 SF	1,620 SF	1,620 SF	General Classroom 3	4	853 SF	3,412 SF		
Foreign Lang. Clstrm.	1	900 SF	900 SF	900 SF	General Classroom 4	2	872 SF	1,744 SF		
					General Classroom 5	1	802 SF	802 SF		
					General Classroom 6	1	907 SF	907 SF		
					General Classroom 7	1	1,031 SF	1,031 SF		
					General Classroom 8	1	920 SF	920 SF		
					Classroom Count	14				
Gen'l Science (1 of 3)	1	1,600 SF	1,600 SF	1,600 SF	Explor. Science Lab	1	1,164 SF	1,164 SF		
Comp. Res. Ctr. (1 of 3)	1	900 SF	900 SF	900 SF	Lab Storage	1	245 SF	245 SF		
Spec. Ed Self. Contained	1	1,400 SF	1,400 SF	1,400 SF	Explor. Computer Lab	1	895 SF	895 SF		
					Sp. Ed. Self. Contained	1	1,026 SF	1,026 SF		
					Spec. Ed. Storage	1	99 SF	99 SF		
					Boys Toilet Rm.	1	77 SF	77 SF		
					Girls Toilet Rm.	1	77 SF	77 SF		
Itinerant Special Ed.	1	330 SF	330 SF	330 SF	Shower	1	57 SF	57 SF		
					Itinerant Special Ed.	1	213 SF	213 SF		

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
Faculty Ctr. (1 of 3)	1	835 SF	835 SF	835 SF	Faculty Ctr. w/ YRE-MT	1	1,648 SF	1,648 SF		
Teacher Ctr. (YRE-MT) (8 of 29 total @ 85sf ea.)	8	85 SF	680 SF	680 SF	(Combined w/ Fac. Ctr.) (includes staff toilets, stor. rm.)	0	SF	SF		
Areas Not in FADS (traded within total square footage):					Break-Out Rms.	5	96 SF	480 SF		
Building Subtotal								18,365 SF		

Areas not counted in Net Square Footage

Elevator/Elev. Mach. Rm.	1	92 SF						92 SF		
Boys Toilet Rm.	2	325 SF						650 SF		
Girls Toilet Rm.	2	332 SF						664 SF		
Outside Toilet Rm.	1	60 SF						60 SF		
Open Stairs	1	195 SF						195 SF		
Enclosed Stairs	2	227 SF						454 SF		
First Flr. Signal Rm.	1	70 SF						70 SF		
Second Flr. Signal Rm.	1	70 SF						70 SF		
First Flr. Elec. Rm.	1	127 SF						127 SF		
Second Flr. Elec. Rm.	1	60 SF						60 SF		
General Utility	2	60 SF						120 SF		
First Flr. A/C Rm.	1	135 SF						135 SF		
Second Flr. A/C Rm.	1	128 SF						128 SF		
Classrm. A/C Closet	10	20 SF						200 SF		
Classrm. A/C Closet	4	22 SF						88 SF		
Classrm. Closet	4	29 SF						116 SF		
Circulation - 1st Flr	1	3,015 SF						3,015 SF		
Circulation - 2nd Flr	1	2,505 SF						2,505 SF		
Subtotal:										8,749 SF
Building Total										30,543 GSF
Net to Gross Factor:										1.66

PE Locker Shower Building (Boys+Girls) - Bldg. H

Girls Locker Room	1	1,040 SF	1,040 SF	1,040 SF	Locker Room	1	1,036 SF	1,036 SF		
Locker Room	1	400 SF	400 SF	400 SF	16 Individual showers	1	542 SF	542 SF		
Gang Shower Room	1	255 SF	255 SF	255 SF	Dressing Room	1	151 SF	151 SF		
Drying Room	1	120 SF	120 SF	120 SF	Included in Individual#	1	SF	SF		
Shower booth	1	100 SF	100 SF	100 SF	PE Office	1	144 SF	144 SF		
PE Office	1	100 SF	100 SF	100 SF	Faculty Locker/Shower	1	96 SF	96 SF		
Faculty Locker/Shower	1	150 SF	150 SF	150 SF	Toilet Room	1	280 SF	280 SF		
Toilet Rm.	1									7,684 SF

Schematic Design Space Program

1996 FADS TYPE/COMPONENT	Orig. No.	Unit Area	Ed Spec. Area	2/4/96 FADS Area	NEW OR REVISED TYPE/COMPONENT	Cur. No.	Current Unit Area	Current Net Area	NTG Fctr.	Total Gross Floor Area
Towel/Supply/Stor.	1	170 SF	170 SF	170 SF		0	SF	SF		
General Storage	1	275 SF	275 SF	275 SF	General Storage	1	90 SF	90 SF		
Janitor's closet	1	40 SF	40 SF	40 SF	General Utility	1	60 SF	60 SF		
Circulation Area	1	288 SF	288 SF	288 SF	Circulation / Vestibule	1	481 SF	481 SF		
Boys' Locker Room										
Locker Room	1	1,040 SF	1,040 SF	1,040 SF	Locker Room	1	1,036 SF	1,036 SF		
Gang Shower Room	1	400 SF	400 SF	400 SF	16 individual showers	1	519 SF	519 SF		
Drying Room	1	255 SF	255 SF	255 SF	Dressing Room	1	141 SF	141 SF		
Shower booth	1	120 SF	120 SF	120 SF	Included in individual #	1	SF	SF		
PE Office	1	100 SF	100 SF	100 SF	PE Office	1	144 SF	144 SF		
Faculty Locker/Shower.	1	100 SF	100 SF	100 SF	Faculty Locker/Shower	1	96 SF	96 SF		
Toilet Rm.	1	150 SF	150 SF	150 SF	Toilet Room	1	266 SF	266 SF		
Towel/Supply/Stor.	1	170 SF	170 SF	170 SF		0	SF	SF		
General Storage	1	275 SF	275 SF	275 SF	General Storage	1	90 SF	90 SF		
Janitor's closet	1	40 SF	40 SF	40 SF	Janitor's Closet	1	60 SF	60 SF		
Circulation Area	1	288 SF	288 SF	288 SF	Circulation / Vestibule	1	481 SF	481 SF		
P.E. Common Areas										
General Classroom	2	900 SF	1,800 SF	1,800 SF	General Classroom	2	900 SF	1,800 SF		
Laundry Room	1	150 SF	150 SF	150 SF	General Storage	1	300 SF	300 SF		
Heater/Elec. Room	1	150 SF	150 SF	150 SF	Laundry Room	1	168 SF	168 SF		
First Aid Room	1	120 SF	120 SF	120 SF	Electrical Room	1	96 SF	96 SF		
Building Subtotal				8,096 SF	First Aid Room	1	132 SF	132 SF		
							8,209 SF			
Areas not counted in Net Square Footage										
Subtotal:										
Signal Room 1 96 SF 96 SF										
Net to Gross Factor: 1.06										
8,720 GSF										
TOTAL SCHOOL AREA (Allowed by FADS) 112,097 SF										
Net to Gross Factor: (Proposed) 112,749 SF										
164,521 GSF										

MILILANI INTERMEDIATE
SCHOOL

PRELIMINARY SPACE AND COST PROGRAM
PHASE ONE

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS

CONSTRUCTION COST ESTIMATE^{1/}
(DESIGN STAGE: SCHEMATIC) DATE 8 APRIL 1996

PROJECT: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8), INCREMENT ONE - BLDGS A, B (PARTIAL), C, D (PARTIAL) & E

D.A.G.S. JOB NO.: 12-16-0916

ESTIMATE BASED ON: Bid opening on or before 1 DECEMBER 1996
Escalation assumed at 0.25 % per month.
Construction period assumed at 240 working days.

A. BUILDING AREAS (IN SQUARE FEET)

1. For Air-Conditioned Bldgs.	2. For Non Air-Conditioned Bldgs.
Gross Area - <u>42,282</u>	Gross Area - <u>13,463</u>
Net Area ^{2/} - _____	Lanai & Exterior Stair Area - _____
Gross Net - _____	

B. SUMMARY OF CONSTRUCTION COST

Building(s):	
Building A	\$ <u>1,142,308</u>
Building B	\$ <u>1,963,761</u>
Building C	\$ <u>1,093,141</u>
Building D	\$ <u>4,364,635</u>
Building E	\$ <u>3,691,064</u>
Site Work:	
Site elec (see attachments)	\$ <u>720,000</u>
Site Improvements	\$ <u>227,308</u>
Civil (see attachments)	\$ <u>4,200,500</u>
Landscaping (see attachments)	\$ <u>530,000</u>
Other Cost:	
Contingencies: 5.00%	\$ <u>896,636</u>
Total Construction Cost:	\$ <u>18,829,353</u>

C. 1. SQ. FT. COST OF BUILDING(S) \$ 219.84 /S.F.

2. SQ. FT. COST OF LANAI & EXT. STAIRS: \$ _____ /S.F.^{3/}

NOTE:

1/This summary sheet must accompany Consultant's cost estimate at each stage of design.

2/Net Area - programmed assignable area.

3/For non-air conditioned bldgs. only.
P.W. Form 1201

SIGNATURE (Principal of Firm)

COST MODEL SUMMARY SHEET
DESIGN STAGE: SCHEMATIC
D.A.G.S. JOB NO.: 12-16-0916

Title: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8) - INCREMENT Sheet 2 of 4
ONE - BLDGS. A, B (PARTIAL), C, D (PARTIAL) & E

Location: OAHU, HAWAII

Escalation: _____

Prepared By: Cost Engineering, Inc. Date: 8 APRIL 1996

Contingency: 5%

FER: N/A

SYSTEM DESCRIPTIONS	\$/SF	\$/SYS	SYS QUAN	TOTAL BUILDING	BUILT-IN EQUIPMENT
BUILDING A - ADMINISTRATION: 7,738 SF					
General requirements	7.22		7,738 sf	\$55,868	
Foundation	6.62		7,738 sf	\$51,226	
Slab on grade	9.90		7,738 sf	\$76,606	
Structural	0.74		7,738 sf	\$5,726	
Roof structure	16.16		7,738 sf	\$125,046	
Roofing	13.42		7,738 sf	\$103,844	
Exterior walls	7.20		7,738 sf	\$55,714	
Interior walls	8.95		7,738 sf	\$69,255	
Interior finishes	13.17		7,738 sf	\$101,909	
Doors	6.79		7,738 sf	\$52,541	
Windows	11.60		7,738 sf	\$89,761	
Specialties	6.77		7,738 sf	\$52,386	
Plumbing	3.85		7,738 sf	\$29,781	
AC/Ventilation	13.27		7,738 sf	\$102,719	
Electrical	21.96		7,738 sf	\$169,926	
TOTAL				\$1,142,308	
BUILDING B - CAFETORIUM: 11,341 SF					
General requirements	7.22		11,341 sf	\$81,882	
Foundation	8.35		11,341 sf	\$94,697	
Slab on grade	13.34		11,341 sf	\$151,289	
Structural	1.96		11,341 sf	\$22,228	
Roof structure	17.62		11,341 sf	\$199,828	
Roofing	11.85		11,341 sf	\$134,391	
Exterior walls	12.56		11,341 sf	\$142,443	
Interior walls	5.95		11,341 sf	\$67,479	
Interior finishes	15.64		11,341 sf	\$177,373	
Doors	10.87		11,341 sf	\$123,277	
Windows	4.08		11,341 sf	\$46,271	
Specialties	8.18		11,341 sf	\$92,769	
Food service equipment	3.06		11,341 sf	\$34,703	
Plumbing	8.27		11,341 sf	\$93,824	
AC/Ventilation	7.84		11,341 sf	\$88,948	
Electrical	36.36		11,341 sf	\$412,359	
TOTAL				\$1,963,761	

COST MODEL SUMMARY SHEET
 DESIGN STAGE: SCHEMATIC
 D.A.G.S. JOB NO.: 12-16-0916

Title: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8) - INCREMENT Sheet 3 of 4
ONE - BLDGS. A, B (PARTIAL), C, D (PARTIAL) & E
 Location: CAHU, HAWAII Escalation: _____
 Prepared By: Cost Engineering, Inc. Date: 8 APRIL 1996 Contingency: 5%

SYSTEM DESCRIPTIONS	\$/SF	\$/SYS	SYS QUAN	TOTAL BUILDING	BUILT-IN EQUIPMENT
BUILDING C - CENTRAL PLANT: 2,122 SF					
General requirements	7.22		2,122 sf	\$15,314	
Foundation	11.78		2,122 sf	\$24,991	
Slab on grade	17.61		2,122 sf	\$37,373	
Structural	0.74		2,122 sf	\$1,570	
Roof structure	16.15		2,122 sf	\$34,275	
Roofing	13.41		2,122 sf	\$28,464	
Exterior walls	11.73		2,122 sf	\$24,898	
Interior finishes	7.34		2,122 sf	\$15,573	
Doors	1.85		2,122 sf	\$3,925	
Windows	0.51		2,122 sf	\$1,080	
Specialties	0.07		2,122 sf	\$140	
Plumbing	67.25		2,122 sf	\$142,712	
AC/Ventilation	328.38		2,122 sf	\$696,826	
Electrical	31.10		2,122 sf	\$66,000	
TOTAL	\$515.14			\$1,093,141	
BUILDING D - LIBRARY/EXPLORATORIUM (SHELL/LOFT SPACE): 34,544 SF					
General requirements	3.61		34,544 sf	\$124,704	
Foundation	7.78		34,544 sf	\$268,752	
Slab on grade	9.68		34,544 sf	\$334,386	
Structural	8.98		34,544 sf	\$310,205	
Supported floor	10.08		34,544 sf	\$348,204	
Roof structure	20.43		34,544 sf	\$705,734	
Roofing	9.59		34,544 sf	\$331,277	
Exterior walls	9.16		34,544 sf	\$316,423	
Doors	1.75		34,544 sf	\$60,452	
Windows	9.48		34,544 sf	\$327,477	
Vertical transportation	2.17		34,544 sf	\$75,000	
Plumbing	1.05		34,544 sf	\$36,370	
AC/Ventilation	4.26		34,544 sf	\$147,325	
Electrical	10.80		34,544 sf	\$373,075	
SUBTOTAL	\$108.82			\$3,759,384	
LIBRARY - FINISHED SPACE: 12,991 SF					
Interior walls	3.18		12,991 sf	\$41,311	
Interior finishes	12.27		12,991 sf	\$159,400	
Doors	2.02		12,991 sf	\$26,242	
Specialties	11.97		12,991 sf	\$155,502	
AC/Ventilation	5.15		12,991 sf	\$66,904	
Electrical	12.00		12,991 sf	\$155,892	
SUBTOTAL	\$46.59			\$605,251	
TOTAL				\$4,364,635	

COST MODEL SUMMARY SHEET
 DESIGN STAGE: SCHEMATIC
 D.A.G.S. JOB NO.: 12-16-0916

Title: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8) - INCREMENT Sheet 4 of 4
ONE - BLDGS. A, B (PARTIAL), C, D (PARTIAL) & E
 Location: OAHU, HAWAII Escalation: _____
 Prepared By: Cost Engineering, Inc. Date: 8 APRIL 1996 Contingency: 5%

FER: N/A
 SYSTEM DESCRIPTIONS \$/SF \$/SYS SYS QUAN TOTAL BUILDING BUILT-IN EQUIPMENT

BUILDING E - CLASSROOMS HOUSE: 28,439 SF				
General requirements	3.61		28,439 sf	\$102,665
Foundation	5.41		28,439 sf	\$153,855
Slab on grade	4.30		28,439 sf	\$122,288
Structural	5.75		28,439 sf	\$163,524
Supported floor	11.22		28,439 sf	\$319,086
Roof structure	11.78		28,439 sf	\$335,011
Roofing	7.79		28,439 sf	\$221,540
Exterior walls	8.73		28,439 sf	\$248,272
Interior walls	2.85		28,439 sf	\$81,051
Interior finishes	12.19		28,439 sf	\$346,671
Doors	9.57		28,439 sf	\$272,161
Windows	10.19		28,439 sf	\$289,793
Specialties	10.11		28,439 sf	\$287,518
Vertical transportation	2.64		28,439 sf	\$75,000
Plumbing	2.71		28,439 sf	\$77,088
AC/Ventilation	3.78		28,439 sf	\$107,528
Electrical	17.16		28,439 sf	\$488,013
TOTAL	\$129.79			\$3,691,064

SITE IMPROVEMENTS				
Bridge walkway	90.75		144 sf	\$13,068
Retaining walls	103.00		2,080 lf	\$214,240
TOTAL				\$227,308

5-Apr-96		MILILANI MAUKA MIDDLE SCHOOL			
		COST ESTIMATE FOR SCHEMATIC PHASE			
		FOR CIVIL IMPROVEMENTS			
		BASED ON CONCEPTUAL PLANS			
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
FIRST INCREMENT					
SITE WORK					
	CLEARING AND GRUBBING	15	AC	\$2,000.00	\$30,000.00
	MASS GRADING	80000	CY	\$6.00	\$480,000.00
	DISPOSE OF SURPLUS FILL	40000	CY	\$10.00	\$400,000.00
	SITE GRADING	LS			\$70,000.00
	RETAINING WALLS(SEE STRUCTURAL ESTIMATE)	LS			\$0.00
PAVING					
	FIRE ROAD	1530	LF	\$140.00	\$214,200.00
	FIRE LANE(CONCRETE WALK)	14000	SF	\$10.00	\$140,000.00
	BUS PARKING	LS			\$100,000.00
	AUTO PARKING	LS			\$300,000.00
	SERVICE PARKING	LS			\$100,000.00
	PEDESTRIAN WALK	45000	SF	\$6.00	\$270,000.00
	PLAY COURT	LS			\$180,000.00
DRAINAGE SYSTEM					
	42" RCP	450	LF	\$130.00	\$58,500.00
	36" RCP	400	LF	\$120.00	\$48,000.00
	30" RCP	600	LF	\$115.00	\$69,000.00
	24" RCP	600	LF	\$95.00	\$57,000.00
	18" RCP	1000	LF	\$70.00	\$70,000.00
	DI OR CB	24	EA	\$6,000.00	\$144,000.00
	SPECIAL DMH	1	EA	\$10,000.00	\$10,000.00
	DMH	7	EA	\$5,000.00	\$35,000.00
	DETENTION BASIN	LS			\$50,000.00
SEWER SYSTEM					
	8" VCP	1800	LF	\$54.00	\$97,200.00
	6" VCP	400	LF	\$52.00	\$20,800.00
	SMH	13	EA	\$4,000.00	\$52,000.00
WATER SYSTEM					
	8" DIP	3000	LF	\$75.00	\$225,000.00
	6" DIP	2800	LF	\$70.00	\$182,000.00
	FIRE HYDRANT	11	EA	\$1,800.00	\$19,800.00
	SERVICE CONNECTIONS	4	EA	\$5,000.00	\$20,000.00
	8" DC METER	1	EA	\$20,000.00	\$20,000.00
	3" COMP METER	1	EA	\$10,000.00	\$10,000.00
MISCELLANEOUS					
	EROSION CONTROL	LS			\$30,000.00
	DUST CONTROL	LS			\$150,000.00
					\$3,852,500.00
CONTINGENCY AND INCIDENTALS, 15%					\$548,000.00
TOTAL ESTIMATE FOR FIRST INCREMENT					\$4,200,600.00

APR 6 - 1996

KAJIOKA OKAJI YAMAMOTO
ARCHITECTS, INC.

COST ESTIMATE SHEET (PRELIMINARY)

SHEET 1 OF 9

PROJECT TITLE:

DATE PREPARED: 4-4-96

MILILANI INTERMEDIATE SCHOOL
 MILILANI MAUKA, OAHU, HI
 DAGS PROJECT NO. 12-16-0916
 WAH JOB NO. 95-051

ESTIMATED BY: SH

QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL	
MECHANICAL WORK:								
I. FIRST INCREMENT								
A. AIR CONDITIONING AND VENTILATION								
1. CHILLER PLANT								
WATER CHILLERS	2	EA	65000	150000	18000	36000	83000	166000
COOLING TOWERS	2	EA	35000	70000	15000	30000	50000	100000
PUMPS	6	EA	4500	27000	1800	10800	6300	37800
UNDERGRD PIPING	3000	LF	35	105000	25	75000	40	180000
CONTROLS	1	LS	0	0	0	0	0	30000
STARTUP & TEST	1	LS	0	0	0	0	0	15000
SUBTOTAL							\$528,800	
15% OH							879,320	
SUBTOTAL							\$608,120	
10% PROFIT							860,812	
SUBTOTAL							\$668,932	
4.17% TAX							27,894	
SUBTOTAL CHILLER PLANT							\$696,826	
2. CLASSROOM HOUSE								
FCUS	18	EA	1500	27000	500	9000	2000	36000
PIPING	1600	LF	5	8000	5	8000	10	16000
PIPING INSULATION	1600	LF	2.5	4000	3.5	5600	6	9600
DUCTWORK	8000	LB	0.75	3750	0.75	3750	1.5	7500
DUCT INSULATION	8000	LB	0.5	2500	0.5	2500	1	5000
AIR DEVICES	80	EA	80	4000	70	3500	150	7500
TEST AND BALANCE	1	LS	0	0	0	0	0	10000
CONTROLS	1	LS	0	0	0	0	0	10000
MISC.	1	LS	0	0	0	0	0	10000

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APR 8 - 1996

KAJIOKA OKADA YAMACHI
 ARCHITECTS, INC.

SHEET 3 OF 9

QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
B. ADMINISTRATION BLDG.							
AHUs	3	EA	6000	12000	2500	5000	8500
FCUs	1	EA	1500	3000	500	1000	2000
PIPING	5000	LF	2500	12500	5	2500	10
PIPING INSULATION	5000	LF	2.5	12500	3	1750	1.5
DUCTWORK	5000	LF	0.75	4500	0.75	4500	1.5
DUCT INSULATION	5000	LF	0.5	2500	0.5	2500	1
FANS	10	EA	300	900	100	300	400
VAV BOX	10	EA	600	6000	200	2000	800
AIR DEVICES	2	EA	80	200	75	175	150
TEST AND BALANCE	1	EA	0	0	0	0	0
CONTROLS	1	EA	0	0	0	0	0
MISC.	1	EA	0	0	0	0	0
SUBTOTAL							\$77,950
15% OH							\$11,693
SUBTOTAL							\$89,643
10% PROFIT							\$89,643
SUBTOTAL							\$98,607
4.17% TAX							\$4,112
SUBTOTAL ADMINISTRATION BLDG							\$102,719
B. PLUMBING							
1. CENTRAL HOT WATER PLANT							
HOT WTR STR TANKS	2	EA	4000	8000	2000	4000	6000
HEAT PUMP	1	EA	2500	5000	1500	3000	4000
DESUPER HEATERS	1	EA	1500	3000	800	1600	2300
PUMPS	4	EA	2000	8000	800	3200	4000
UNDERGRD PIPING	1800	LF	15	27000	15	27000	30
STARTUP & TESTING	1	EA	0	0	0	0	0
CONTROLS	1	EA	0	0	0	0	0
MISC.	1	EA	0	0	0	0	0
SUBTOTAL							\$108,300
15% OH							\$16,245
SUBTOTAL							\$124,545
10% PROFIT							\$124,545
SUBTOTAL							\$137,000
4.17% TAX							\$5,712
SUBTOTAL CENTRAL HOT WATER PLANT							\$142,712

QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
2. CLASSROOM HOUSE							
WATER CLOSET	22	EA	400	200	4400	600	13200
URINAL	1	EA	450	2700	1200	550	3900
LAVATORY	16	EA	300	4800	3200	500	8000
SINK	3	EA	300	1800	1200	500	3000
WATER COOLER	3	EA	600	1800	2000	800	3400
WATER PIPING	600	LF	5	3000	3000	10	6000
WASTE & VENT	1000	LF	8	8000	8000	16	16000
MISC.	1	LS	0	0	0	0	0
SUBTOTAL							\$58,500
15% OH							\$8,775
SUBTOTAL							\$67,275
10% PROFIT							\$6,728
SUBTOTAL							\$74,003
4.17% TAX							\$3,086
SUBTOTAL CLASSROOM HOUSE							\$77,089
3. EXPLORATORIUM/MEDIA CENTER SHELL							
WATER CLOSET	3	EA	400	800	200	400	1200
LAVATORY	1	EA	300	300	200	600	1500
SINK	3	EA	300	900	600	500	1500
WATER COOLER	3	EA	600	1200	200	800	1600
WATER PIPING	400	LF	5	2000	2000	10	4000
WASTE & VENT	200	LF	8	1600	6400	16	12800
MISC.	1	LS	0	0	0	0	0
SUBTOTAL							\$27,500
15% OH							\$4,125
SUBTOTAL							\$31,625
10% PROFIT							\$3,163
SUBTOTAL							\$34,788
4.17% TAX							\$1,456
SUBTOTAL EXPLORATORIUM/MEDIA CENTER SHELL							\$36,244

QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
4. CAFETERIA/KITCHEN BLDG.							
WATER CLOSET	5	EA	400	200	1000	600	3000
LAVATORY	5	EA	300	200	1000	500	2500
SINK	1	EA	300	200	200	500	500
WATER COOLER	1	EA	500	200	200	800	800
WATER PIPING	2000	LF	10000	5	10000	10	20000
WASTE & VENT	2400	LF	19200	8	19200	16	38400
MISC.	1	LS	0	0	0	0	6000
SUBTOTAL							\$71,200
15% OH							\$10,680
SUBTOTAL							\$81,880
10% PROFIT							\$8,188
SUBTOTAL							\$90,068
4.17% TAX							\$3,756
SUBTOTAL CAFETERIA/KITCHEN BLDG.							\$93,824
5. ADMINISTRATION BLDG.							
WATER CLOSET	3	EA	400	200	500	500	1800
LAVATORY	3	EA	300	200	500	500	1500
SINK	1	EA	300	200	500	500	1500
WATER COOLER	1	EA	500	200	200	800	800
WATER PIPING	300	LF	1500	5	1500	10	3000
WASTE & VENT	500	LF	4000	8	4000	16	8000
MISC.	1	LS	0	0	0	0	6000
SUBTOTAL							\$21,500
15% OH							\$3,225
SUBTOTAL							\$24,725
10% PROFIT							\$2,473
SUBTOTAL							\$27,198
4.17% TAX							\$1,132
SUBTOTAL ADMINISTRATION							\$28,330
SUBTOTAL AIR CONDITIONING & VENTILATION							\$1,143,346
SUBTOTAL PLUMBING							\$579,776
TOTAL FIRST INCREMENT MECHANICAL							\$1,523,122

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APR 04 '96 10:47AM ECS, INC. (808)591-9098

P.2

LOCATION: OAHU, HAWAII DATE: APRIL 4, 1996
 AREA: MILILANI CONTRACT NO. 1
 PREPARED BY: DM APPROVED BY: VION TITLE OR ORGANIZATION: ECS, INC.
 PROJECT TITLE: MILILANI MAUKA MIDDLE SCHOOL
 ELECTRICAL COST ESTIMATE - SCHEMATIC DESIGN SPACE PROGRAM

DESCRIPTION	AREA		BLOG. COST	
	NO. OF UNITS	LN	\$ PER UNIT	TOTAL \$
FIRST INCREMENT				
ADMINISTRATION, BLDG. "A"	7,738	SF	18.3	141,605
CAPITONIUM, BLDG. "B"	11,341	SF	30.3	343,632
CENTRAL PLANT, BLDG. "C"	2,200	SF	25.0	55,000
BUILDING "D" SHELL ONLY	34,544	SF	9.0	310,896
MEDIA CENTER FINISHING	11,898	SF	10.0	118,980
CLASSROOM HOUSE, BLDG. "E"	28,439	SF	14.3	406,678
ELECTRICAL SITE WORK	1	LS	600,000	600,000
SUBTOTAL				1,976,791
ELECTRICAL SUBCONTRACTOR'S MARK-UPS				395,358
TOTAL ESTIMATED ELECTRICAL CONSTRUCTION COST - FIRST INCREMENT				2,372,150
* COSTS FOR UTILITY COMPANY SERVICES NOT INCLUDED				

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KAIIOKA OKADA YAMAMOTO
 ARCHITECTS, INC.

MILANI INTERMEDIATE
SCHOOL

PRELIMINARY SPACE AND COST PROGRAM
PHASE TWO

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS

CONSTRUCTION COST ESTIMATE^{1/}
(DESIGN STAGE: SCHEMATIC) DATE 8 APRIL 1996

PROJECT: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8), INCREMENT TWO - BLDGS B (PARTIAL), D (PARTIAL), F, G & H

D.A.G.S. JOB NO.: 12-16-0916

ESTIMATE BASED ON: Bid opening on or before 1 DECEMBER 1997
Escalation assumed at 0.25 % per month.
Construction period assumed at 240 working days.

A. BUILDING AREAS (IN SQUARE FEET)

1. For Air-Conditioned Bldgs.	2. For Non Air-Conditioned Bldgs.
Gross Area - <u>95,292</u>	Gross Area - <u>8,720</u>
Net Area ^{2/} - _____	Lanai & Exterior Stair Area - _____
Gross Net	

B. SUMMARY OF CONSTRUCTION COST

Building(s):	
Building B	\$ <u>2,448,600</u>
Building D	\$ <u>1,682,626</u>
Building F	\$ <u>3,687,902</u>
Building G	\$ <u>3,941,773</u>
Building H	\$ <u>1,412,465</u>
Site Work:	
Site elec (see attachments)	\$ <u>30,000</u>
Site Improvements	\$ <u>41,382</u>
Civil (see attachments)	\$ <u>232,200</u>
Landscaping (see attachments)	\$ <u>265,000</u>
Other Cost:	
Contingencies: 5.00%	\$ <u>687,097</u>
Total Construction Cost:	\$ <u>14,429,045</u>

C. 1. SQ. FT. COST OF BUILDING(S) \$ 126.65 /S.F.

2. SQ. FT. COST OF LANAI & EXT. STAIRS: \$ _____ /S.F.^{3/}

NOTE:

1/This summary sheet must accompany Consultant's cost estimate at each stage of design.

2/Net Area - programmed assignable area.

3/For non-air conditioned bldgs. only.
P.W. Form 1201

SIGNATURE (Principal of Firm)

COST MODEL SUMMARY SHEET
 DESIGN STAGE: SCHEMATIC
 D.A.G.S. JOB NO.: - -

Title: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8) - INCREMENT Sheet 2 of 3
TWO - BLDGS. B (PARTIAL), D (PARTIAL), F, G & H
 Location: OAHU, HAWAII Escalation: _____
 Prepared By: Cost Engineering, Inc. Date: 8 APRIL 1996 Contingency: 5%

FER: N/A
 SYSTEM DESCRIPTIONS \$/SF \$/SYS SYS QUAN TOTAL BUILDING BUILT-IN EQUIPMENT

BUILDING B - MUSIC: 14,757 SF

General requirements	7.22		14,757 sf	\$106,546	
Foundation	8.30		14,757 sf	\$122,483	
Slab on grade	13.64		14,757 sf	\$201,285	
Structural	2.12		14,757 sf	\$31,285	
Roof structure	20.63		14,757 sf	\$304,437	
Roofing	15.02		14,757 sf	\$221,650	
Exterior walls	11.16		14,757 sf	\$164,688	
Interior walls	6.35		14,757 sf	\$93,707	
Interior finishes	27.13		14,757 sf	\$400,357	
Doors	9.74		14,757 sf	\$143,733	
Windows	4.80		14,757 sf	\$70,834	
Specialties	9.85		14,757 sf	\$145,356	
AC/Ventilation	10.53		14,757 sf	\$155,363	
Electrical	19.44		14,757 sf	\$286,876	
TOTAL	\$165.93			\$2,448,600	

BUILDING D - EXPLORATORIUM - FINISHED SPACE: 21,553 SF

Interior walls	6.35		21,553 sf	\$136,862	
Interior finishes	18.28		21,553 sf	\$393,989	
Doors	2.99		21,553 sf	\$64,443	
Specialties	28.89		21,553 sf	\$622,666	
Plumbing	1.89		21,553 sf	\$40,784	
AC/Ventilation	7.67		21,553 sf	\$165,246	
Electrical	12.00		21,553 sf	\$258,636	
TOTAL	\$78.07			\$1,682,626	

BUILDING F - CLASSROOMS HOUSE: 28,439 SF

General requirements	3.61		28,439 sf	\$102,665	
Foundation	5.41		28,439 sf	\$153,855	
Slab on grade	4.30		28,439 sf	\$122,288	
Structural	5.75		28,439 sf	\$163,524	
Supported floor	11.22		28,439 sf	\$319,086	
Roof structure	11.78		28,439 sf	\$335,011	
Roofing	7.79		28,439 sf	\$221,540	
Exterior walls	8.73		28,439 sf	\$248,272	
Interior walls	2.85		28,439 sf	\$81,051	
Interior finishes	12.19		28,439 sf	\$346,671	
Doors	9.57		28,439 sf	\$272,161	
Windows	10.19		28,439 sf	\$289,793	
Specialties	10.11		28,439 sf	\$287,518	

COST MODEL SUMMARY SHEET
DESIGN STAGE: SCHEMATIC
D.A.G.S. JOB NO.: - -

Title: MILILANI INTERMEDIATE SCHOOL (GRADES 6-8) - INCREMENT Sheet 3 of 3
TWO - BLDGS. B (PARTIAL), D (PARTIAL), F, G & H
Location: OAHU, HAWAII Escalation: _____
Prepared By: Cost Engineering, Inc. Date: 8 APRIL 1996 Contingency: 5%

FER: <u>N/A</u>				BUILT-IN
SYSTEM DESCRIPTIONS	\$/SF	\$/SYS	SYS QUAN	TOTAL BUILDING EQUIPMENT
Vertical transportation	2.64		28,439 sf	\$75,000
Plumbing	2.60		28,439 sf	\$73,926
AC/Ventilation	3.78		28,439 sf	\$107,528
Electrical	17.16		28,439 sf	\$488,013
TOTAL	\$129.68			\$3,687,902
BUILDING G - CLASSROOMS HOUSE: 30,543 SF				
General requirements	3.61		30,543 sf	\$110,260
Foundation	5.41		30,543 sf	\$165,238
Slab on grade	4.30		30,543 sf	\$131,335
Structural	5.75		30,543 sf	\$175,622
Supported floor	11.22		30,543 sf	\$342,692
Roof structure	11.78		30,543 sf	\$359,797
Roofing	7.79		30,543 sf	\$237,930
Exterior walls	8.73		30,543 sf	\$266,640
Interior walls	2.85		30,543 sf	\$87,048
Interior finishes	12.19		30,543 sf	\$372,319
Doors	9.57		30,543 sf	\$292,297
Windows	10.19		30,543 sf	\$311,233
Specialties	10.11		30,543 sf	\$308,790
Vertical transportation	2.46		30,543 sf	\$75,000
Plumbing	2.42		30,543 sf	\$73,926
AC/Ventilation	3.52		30,543 sf	\$107,528
Electrical	17.16		30,543 sf	\$524,118
TOTAL	\$129.06			\$3,941,773
BUILDING H - PE LOCKER ROOM: 8,720 SF				
General requirements	7.22		8,720 sf	\$62,958
Foundation	9.83		8,720 sf	\$85,718
Slab on grade	12.10		8,720 sf	\$105,512
Structural	1.17		8,720 sf	\$10,202
Roof structure	17.23		8,720 sf	\$150,246
Roofing	12.85		8,720 sf	\$112,052
Exterior walls	8.59		8,720 sf	\$74,905
Interior walls	9.61		8,720 sf	\$83,799
Interior finishes	25.74		8,720 sf	\$224,453
Doors	3.45		8,720 sf	\$30,084
Windows	5.56		8,720 sf	\$48,483
Specialties	18.66		8,720 sf	\$162,715
Plumbing	8.08		8,720 sf	\$70,500
AC/Ventilation	5.09		8,720 sf	\$44,342
Electrical	16.80		8,720 sf	\$146,496
TOTAL	\$161.98			\$1,412,465
SITE IMPROVEMENTS				
Bridge walkway	90.75		456 sf	\$41,382
TOTAL	\$90.75			\$41,382

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5-Apr-96		MILILANI MAUKA MIDDLE SCHOOL			
		COST ESTIMATE FOR SCHEMATIC PHASE			
		FOR CIVIL IMPROVEMENTS			
		BASED ON CONCEPTUAL PLANS			
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
SECOND INCREMENT					
SITE WORK					
	CLEARING AND GRUBBING	0	AC	\$2,000.00	\$0.00
	MASS GRADING	0	CY	\$8.00	\$0.00
	DISPOSE OF SURPLUS FILL	0	CY	\$10.00	\$0.00
	SITE GRADING	LS			\$30,000.00
	RETAINING WALLS(SEE STRUCTURAL ESTIMATE)	LS			\$0.00
PAVING					
	FIRE ROAD	0	LF	\$140.00	\$0.00
	FIRE LANE(CONCRETE WALK)	0	LF	\$350.00	\$0.00
	BUS PARKING	LS			\$0.00
	AUTO PARKING	LS			\$0.00
	SERVICE PARKING	LS			\$0.00
	PEDESTRIAN WALK	5000	SF	\$6.00	\$30,000.00
	PLAY COURT	LS			\$0.00
DRAINAGE SYSTEM					
	42" RCP	0	LF	\$130.00	\$0.00
	36" RCP	0	LF	\$120.00	\$0.00
	30" RCP	0	LF	\$115.00	\$0.00
	24" RCP	0	LF	\$95.00	\$0.00
	18" RCP	300	LF	\$70.00	\$21,000.00
	DI OR CB	7	EA	\$6,000.00	\$42,000.00
	SPECIAL DMH	0	EA	\$10,000.00	\$0.00
	DMH	0	EA	\$5,000.00	\$0.00
	DETENTION BASIN	LS			\$0.00
SEWER SYSTEM					
	8" VCP	200	LF	\$54.00	\$10,800.00
	6" VCP	200	LF	\$52.00	\$10,400.00
	8MH	2	EA	\$4,000.00	\$8,000.00
WATER SYSTEM					
	8" DIP	0	LF	\$75.00	\$0.00
	6" DIP	0	LF	\$70.00	\$0.00
	FIRE HYDRANT	0	EA	\$1,800.00	\$0.00
	SERVICE CONNECTIONS	4	LS	\$5,000.00	\$20,000.00
	6" DC METER	0	EA	\$20,000.00	\$0.00
	3" COMP METER	0	EA	\$10,000.00	\$0.00
MISCELLANEOUS					
	EROSION CONTROL	LS			\$0.00
	DUST CONTROL	LS			\$30,000.00
					\$202,200.00
	CONTINGENCY AND INCIDENTALS, 15%				\$30,000.00
	TOTAL ESTIMATE FOR SECOND INCREMENT				\$232,200.00

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SHEET 6 OF 9
TOTAL COST

QUANTITY MATERIAL COST LABOR COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
MECHANICAL WORK							
I. SECOND INCREMENT							
A. AIR CONDITIONING AND VENTILATION							
1. CLASSROOM HOUSE							
FCU#	18 EA	1500	27000	500	9000	2000	36000
PIPING	1600 LF	5	8000	5	8000	10	16000
PIPING INSULATION	1600 LF	2.5	4000	3.5	5600	6	9600
DUCTWORK	5000 LB	0.75	3750	0.75	3750	1.5	7500
DUCT INSULATION	5000 LB	0.5	2500	0.5	2500	1	5000
AIR DEVICES	50 EA	80	4000	70	3500	150	7500
TEST AND BALANCE	1 LS	0	0	0	0	0	10000
CONTROLS	1 LS	0	0	0	0	0	10000
MISC.	1 LS	0	0	0	0	0	10000
SUBTOTAL							581,600
15% OH							87,240
SUBTOTAL							668,840
10% PROFIT							66,884
SUBTOTAL							\$735,724
4.17% TAX							30,700
SUBTOTAL CLASSROOM HOUSE							\$766,424
(2) HOUSES							\$1,532,848
2. FITOUT OF EXPLORATORIUM							
BACKUP A/C	1 EA	5000	5000	3000	3000	8000	8000
AHU#	2 EA	10000	20000	4000	8000	14000	28000
FCU#	4 EA	1500	6000	500	2000	2000	8000
PIPING	1200 LF	5	6000	5	6000	10	12000
PIPING INSULATION	1200 LF	2.5	3000	3.5	4200	6	7200
DUCTWORK	6000 LB	0.75	4500	0.75	4500	1.5	9000
DUCT INSULATION	6000 LB	0.5	3000	0.5	3000	1	6000
FAN#	3 EA	300	900	100	300	400	1200
VAV BOX	15 EA	800	12000	200	3000	800	12000
AIR DEVICES	40 EA	80	3200	70	2800	150	6000
TEST AND BALANCE	1 LS	0	0	0	0	0	8000
CONTROLS	1 LS	0	0	0	0	0	10000
MISC.	1 LS	0	0	0	0	0	10000
SUBTOTAL							\$125,400
15% OH							18,810
SUBTOTAL							\$144,210
10% PROFIT							14,421
SUBTOTAL							\$158,631
4.17% TAX							6,615
SUBTOTAL EXPLORATORIUM/MEDIA CENTER SHELL							\$165,246

SHEET 7 OF 9

QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
3. MUSIC BLDG.							
AHUs	6 EA	4000	24000	2500	15000	6500	39000
FCUs	3 EA	1500	4500	500	1500	2000	6000
PIPING	1200 LF	5	6000	5	6000	10	12000
PIPING INSULATION	1200 LF	2.5	3000	3.5	4200	6	7200
DUCTWORK	5000 LB	0.75	3750	0.75	3750	1.5	7500
DUCT INSULATION	5000 LB	0.5	2500	0.5	2500	1	5000
FANs	3 EA	300	900	100	300	400	1200
VAV BOX	10 EA	600	6000	200	2000	800	8000
AIR DEVICES	40 EA	80	3200	70	2800	150	6000
TEST AND BALANCE	1 LS	0	0	0	0	0	10000
CONTROLS	1 LS	0	0	0	0	0	10000
MISC.	1 LS	0	0	0	0	0	6000
SUBTOTAL							\$117,900
15% OH							\$17,685
SUBTOTAL							\$135,585
10% PROFIT							\$13,559
SUBTOTAL							\$149,144
4.17% TAX							\$6,219
SUBTOTAL MUSIC BLDG							\$155,363
4. PE BLDG.							
FCUs	2 EA	1500	3000	500	1000	2000	4000
PIPING	400 LF	5	2000	5	2000	10	4000
PIPING INSULATION	400 LF	2.5	1000	3.5	1400	8	2400
DUCTWORK	2000 LB	0.75	1500	0.75	1500	1.5	3000
FANs	4 EA	1500	6000	500	2000	2000	8000
AIR DEVICES	15 EA	80	1200	70	1050	180	2250
TEST AND BALANCE	1 LS	0	0	0	0	0	4000
CONTROLS	1 LS	0	0	0	0	0	3000
MISC.	1 LS	0	0	0	0	0	3000
SUBTOTAL							\$11,850
15% OH							\$5,042
SUBTOTAL							\$18,698
10% PROFIT							\$3,870
SUBTOTAL							\$42,567
4.17% TAX							\$1,775
SUBTOTAL PE BLDG							\$44,342

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QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
B. PLUMBING							
1. CLASSROOM HOUSE							
WATER CLOSET	18 EA	400	7200	200	3600	500	10800
URINAL	6 EA	450	2700	200	1200	650	3900
LAVATORY	16 EA	300	4800	200	3200	500	8000
SINK	6 EA	300	1800	200	1200	800	3000
WATER COOLER	3 EA	600	1800	200	600	800	2400
WATER PIPING	500 LF	5	2500	5	2500	10	5000
WASTE & VENT	1000 LF	8	8000	8	8000	16	16000
MISC.	1 LS	0	0	0	0	0	6000
SUBTOTAL							\$56,100
15% OH							\$8,415
SUBTOTAL							\$64,515
10% PROFIT							\$6,452
SUBTOTAL							\$70,967
4.17% TAX							\$2,959
SUBTOTAL CLASSROOM HOUSE (2) HOUSES							\$73,926 \$147,852
2. FITOUT OF EXPLORATORIUM							
WATER CLOSET	10 EA	400	4000	200	2000	600	6000
URINAL	3 EA	450	1350	200	600	650	1950
LAVATORY	6 EA	300	1800	200	1200	500	3000
SINK	6 EA	300	1800	200	1200	500	3000
WATER COOLER	2 EA	600	1200	200	400	800	1600
WATER PIPING	300 LF	5	1500	5	1500	10	3000
WASTE & VENT	400 LF	8	3200	8	3200	16	6400
MISC.	1 LS	0	0	0	0	0	6000
SUBTOTAL							\$10,950
15% OH							\$4,643
SUBTOTAL							\$15,593
10% PROFIT							\$3,559
SUBTOTAL							\$19,152
4.17% TAX							\$1,633
SUBTOTAL FITOUT OF EXPLORATORIUM							\$40,784

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QUANTITY MATERIAL COST LABOR COST TOTAL COST

DISCRIPTION	UN- IT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
4. PE BLDG.							
WATER CLOSET	12 EA	400	4800	200	2400	600	7200
LAVATORY	14 EA	300	4200	200	2800	500	7000
URINAL	4 EA	450	1800	200	800	650	2600
SINK	1 EA	300	300	200	200	500	500
WATER COOLER	2 EA	600	1200	200	400	800	1600
SHOWER	22 EA	300	6600	300	4400	500	11000
WATER PIPING	800 LF	5	4000	5	4000	10	8000
WASTE & VENT	600 LF	8	4800	8	4800	16	9600
MISC.	1 LS	0	0	0	0	0	6000
SUBTOTAL							\$53,500
15% OH							7,925
SUBTOTAL							\$61,425
10% PROFIT							6,143
SUBTOTAL							\$67,568
4.17% TAX							2,822
SUBTOTAL PE BLDG.							\$70,390
 SUBTOTAL AIR CONDITIONING & VENTILATION							\$580,008
SUBTOTAL PLUMBING							\$259,136
TOTAL SECOND INCREMENT MECHANICAL							\$839,534

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LOCATION: OAHU, HAWAII DATE: APRIL 4, 1996
 AREA: MILILANI CONTRACT NO.:
 PREPARED BY: DM APPROVED BY: VOM TITLE OR ORGANIZATION: ECS, INC.
 PROJECT TITLE: MILILANI MAUKA MIDDLE SCHOOL
 ELECTRICAL COST ESTIMATE - SCHEMATIC DESIGN SPACE PROGRAM

DESCRIPTION	AREA		BLOG. COST	
	NO. OF UNITS	UM	\$ PER UNIT	TOTAL \$
SECOND INCREMENT				
MUSIC, BLDG. "B"	14,757	SF	16.2	239,063
EXPLORATORIUM FINISHING	19,740	SF	10.0	197,400
CLASSROOM HOUSE, BLDG. "F"	28,439	SF	14.3	406,678
CLASSROOM HOUSE, BLDG. "G"	30,543	SF	14.3	436,765
PE LOCKER, BLDG. "H"	8,720	SF	14.0	122,080
ELECTRICAL SITE WORK	1	LG	25,000	25,000
SUBTOTAL				1,426,986
ELECTRICAL SUBCONTRACTOR'S MARK-UPS				285,397
TOTAL ESTIMATED ELECTRICAL CONSTRUCTION COST - SECOND INCREMENT				1,712,383
* COSTS FOR UTILITY COMPANY SERVICES NOT INCLUDED				

"PORTABLE" BUILDINGS 12 EA 15,000.0 180,000

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