GLENN M. OKIMOTO
COMPTROLLER

MARY ALICE EVANS
DEPUTY COMPTROLLER

BENJAMIN J. CAYETANO
GOVERNOR

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

RECEIVED
LETTER NO. (P)1047.2

'02 JAN 29 P3:16

OFC. OF ENVIRONMENTAL
QUALITY CONTROL

JAN 28 2002

MEMORANDUM

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control

FROM: Gordon Matsuoka
Public Works Administrator

SUBJECT: Final Environmental Impact Assessment (EA)
Finding of No Significant Impact (FONSI)
Mililani Mauka II Elementary School
Mililani Mauka, Oahu, Hawaii
TMK 9-5-02:01

The Department of Accounting and General Services has reviewed the comments received during the 30 day public comment period which began on June 8, 2001. The agency has determined that this project will not have any significant environmental effects and has issued a FONSI. Please publish this notice in the February 8, 2002, issue of The Environmental Notice. Enclosed are the following items:

Four (4) copies of the Final EA
Completed OEQC Publication Form
Completed Final EA Distribution Cover Letter to the Participants
Completed Final EA Distribution List

If you have any questions regarding the Final EA/FONSI, please call Mr. Ralph Morita of the Planning Branch at 586-0486. Thank you for your attention to this matter.

RY:mo
Attachments
c: Mr. Clifford Murakami, Pacific Architects
Mr. Walter Kobayashi, DAGS PMB

2002-02-08-OA-FEA-

MASTER PLAN
FINAL ENVIRONMENTAL ASSESSMENT

for

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI MAUKA, OAHU, HAWAII
DAGS JOB NO. 12-16-2605

for the

Central School District
Department of Education
State of Hawaii

by the

Department of Accounting and General Services
Division of Public Works
State of Hawaii

prepared by:

Pacific Architects, Inc.

January 2002

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OVERVIEW

This Final Environmental Assessment (EA) has been prepared for Mililani Mauka II Elementary School, Mililani Mauka, Oahu, Hawaii (Figure 1). Owned by Castle & Cooke Homes Hawaii, Inc. and to be conveyed to the State of Hawaii, Mililani Mauka II Elementary School is identified as Tax Map Key 9-5-002: 001 with an estimated land area of 12 acres. The proposed school will serve 650 pre-kindergarten through fifth grade students (Figure 2) with a year-round multi-track option to accommodate an additional 216 students.

The intent of this Final EA is to be in compliance with provisions of Hawaii Revised Statutes (HRS) Chapter 343. It is anticipated that this Final EA will establish a finding of no significant impact (FONSI).

PROJECT SUMMARY

Project:	Mililani Mauka II Elementary School Master Plan
Proposing Agency:	Department Accounting and General Services-State of Hawaii
Determining Agency:	Department of Education-State of Hawaii Department of Accounting & General Services-State of Hawaii
Location:	Mililani Mauka (Zoning Map No. 9 Waipio Crestview) Central District (Department of Education) Central Oahu
Tax Map Key:	9-5-002: 001 Overall (Temporary) Undergoing Subdivision
Land Owner:	State of Hawaii
Area:	12 Acres
State Land Use Designation:	Agricultural District Urban District
Development Plan Area:	Central Oahu Parks & Recreation, Public Quasi-Public, Preservation, Agricultural, Low Density Apartment, Residential
Land Use Map:	A-1 (Figure 3)
Zoning:	A-1
Existing Use:	Agricultural
Contact Person:	Mr. Ralph Morita, Planning Branch Division of Public Works State of Hawaii Department of Accounting & General Services P.O. Box 119 Honolulu, Hawaii 96810 Phone: 586-0486 Fax: 586-0482

1.0 IDENTIFICATION OF PROPOSING AGENCIES

The new Mililani Mauka II Elementary School is being constructed to provide an educational facility that is necessary to accommodate elementary school age students that live in housing being constructed by Castle and Cooke Homes Hawaii, Inc. (CCHH) at Mililani Mauka. The increase of elementary school age children in the area resulting from the continued development of additional housing has already exceeded the design capacity of the existing Mililani Mauka I Elementary School.

State of Hawaii Department of Accounting and General Services Division of Public Works is the Proposing Agency for this project.

2.0 IDENTIFICATION OF ACCEPTING AUTHORITY

The Department of Accounting and General Services or an authorized representative is the Accepting Authority for this project.

3.0 IDENTIFICATION OF AGENCIES CONSULTED

The following are agencies, which provided information in the preparation of this final environmental assessment:

State
Department of Accounting and General Services
Department of Education
Department of Health
Disability and Communication Access Board

City
Department of Design and Construction
Department of Planning and Permitting
Department of Transportation Services
Honolulu Fire Department
Honolulu Police Department
Board of Water Supply

Citizen Groups and Individuals
Castle & Cooke Homes Hawaii, Inc.
Mililani Town Association
Mililani Neighborhood Board No. 25
Mililani /Launani Valley Neighborhood Board No. 35

Public Utilities & Providers
Hawaiian Electric Company
Verizon Hawaii
Oceanic Cable

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

4.1.0 TECHNICAL CHARACTERISTICS

The State of Hawaii Department of Education and Department of Accounting and General Services has prepared a Mililani Mauka II Elementary School Master Plan, for State of Hawaii land located at Mililani Mauka, Oahu, Hawaii. Owned by the State of Hawaii, Mililani Mauka II Elementary School is identified as Tax Map Key 9-5-002: 001 with an estimated land area of 12 acres. (Note: The property is currently in the process of being sub-divided and conveyed to the State of Hawaii from the current land owner, Castle & Cooke Homes Hawaii, Inc.)

4.1.1 Description of the Subject Property. The school site is a 12-acre property bounded by the existing Meheula Parkway to the north, Lehiwa Drive (construction scheduled to start January 2001) to the east, Kuaoa Street (construction to be completed in August 2000) to the west, and multi family development (under construction) to the south. Upon completion of construction and dedication, the City and County of Honolulu will own the roads that bound the site. Meheula Parkway is a four lane, divided arterial with posted speed of 25 miles per hour and 88 feet right of way. Lehiwa Drive and Kuaoa Street are two lane collector roads with 56-foot right of way.

Generally, the site slopes at roughly 3% from the northeast corner to the southwest corner with embankments along Lehiwa Drive, Kuaoa Street, and along the southern boundary. Elevations on the site vary from an elevation of 994.00 along Meheula Parkway to an elevation of 972.00 at the southwest corner of the site. Embankments vary from 0 to 8 feet along Lehiwa Drive, from 2 to 16 feet along Kuaoa Street, and from 8 to 16 feet along the southern boundary. The embankment along the southern boundary is not in the school property.

The existing on-site drainage system consists of a berm along the southern boundary that collects sheet flow from the site and conveys storm water to a detention basin on the southwest corner of the site. The detention basin with perforated pipe riser appears to have been constructed to collect and detain storm water runoff during the grading of the site. Drainage system in Kuaoa Street includes a 36-inch diameter drain line with a 36-inch diameter drain line stubbed into the school site to drain the school site.

The existing water system in Lehiwa Drive consists of a 16-inch diameter line. The waterline is connected to an existing 1.5 million-gallon reservoir at an elevation of 1150.00 MSL (Mean Sea Level). Average static water pressure on the school site is 70 pounds per square inch.

The existing sewer system in Kuaoa Street consists of an 8-inch diameter line with an 8-inch diameter sewer line stubbed out to the school site to provide the school with a sewer connection.

4.1.2 Project Objectives. The Master Plan (Figure 4) is based on the following goals and objectives derived from the Functional Analysis Concept Design (FACD)

Project Objective: FACILITATE ACCESS

Design Objective:

- Provide safe vehicle access to site and minimize traffic congestion
- Locate public components near parking and main entrance
- Provide secondary access to playing field

Project Objective: ENHANCE SECURITY

Design Objective:

- Control school access points (use existing property lines and fences)
- Place access near administration
- Maintain view planes (particularly from administration)
- Separate public spaces from school spaces
- Maintain view planes (vertical and horizontal)

Project Objective: ENHANCE SAFETY

Design Objective:

- Avoid abrupt grade changes
- Provide adequate lighting
- Separate pedestrians and vehicles
- Separate passenger vehicles and buses
- Consolidate drop off points
- Accommodate pedestrians

Project Objective: COMPLY WITH ADA REGULATIONS

Design Objective:

- Fully comply with American with Disabilities Act Accessibility Guidelines (ADAAG) and Children's Design Guidelines

Project Objective: REDUCE OPERATING COST, REDUCE CONSTRUCTION COST, AND IMPROVE HABITABILITY

Design Objective:

- Maximize east-west building orientation or minimize north-south orientation
- Avoid placing large paved areas upwind (northeast) of buildings and play fields
- Avoid placing noise and odor producing buildings or spaces upwind of

instructional facilities

- Incorporate energy efficient design and construction to reduce energy consumption
- Use increased thermal insulation to reduce heat gains to the interiors of the buildings
- Consider solar angles and wind directions
- Use common/standard construction components where applicable
- Provide adequate space around equipment for maintainability
- Use durable construction materials
- Reduce chemicals, mold, and mildew i.e. reduce use of formaldehyde containing materials, control humidity, and increase ventilation rates
- Use simple systems
- Minimize utility runs
- Minimize grading
- Minimize underground drainage structures
- Reduce paved areas
- Take advantage of energy rebates
- Use high value systems
- Eliminate unnecessary costs

Project Objective: SUPPORT MAUKA II EDUCATIONAL PROGRAM

Design Objective:

- Allow for some integration of outdoor and indoor instructional areas
- Minimize walking distance between facilities as much as possible.
- Provide a large courtyard area similar to Mililani Mauka I Elementary School to allow for large student-body/community gathering. Provide outdoor "stage" area for special functions.
- Provide large covered area outside of dining room to allow for covered outdoor seating.
- Provide access to classrooms from interior corridor.
- Add kiln room to Cafetorium and provide "gang" toilet student restrooms.
- Add single-use children toilets, janitor's closet and storage to covered playcourt.
- Provide fire sprinkler system in two-story classroom building for "piece of mind", even if the building code does not require it.
- Pair all general Classrooms and provide operable interconnecting partitions for optional "team teaching".
- Provide Break-out Rooms between each paired general Classrooms.
- Provide assembly areas in corridors for grade level gatherings.
- Provide permanent stage in lieu of folding, portable stage at Cafetorium.
- Provide space at outdoor playground for small soccer field.

Project Objective: DEVELOP INTUITIVE CIRCULATION ROUTES

Design Objective:

- Use distinctive architectural styles and make primary buildings visible from main entrance and classrooms
- Place student support facilities proximate to classrooms
- Place public components proximate to main entrance

4.1.3. Overview of Functional Analysis Concept Design (FACD) Process. A Function Analysis Concept Development (FACD) study was conducted on Mililani Mauka II Elementary School (Mauka II), Mililani Mauka, Oahu, Hawaii to prepare a master plan for development of a new elementary school.

Participants in the FACD Process consisted of the following committees and agencies:

- Department of Accounting and General Services-Division of Public Works

- Department of Education (DOE)
  1. Superintendent-Central District
  2. Director-Facilities and Support Services Branch

- Mililani Mauka II Steering Committee
  1. DOE-Teachers and Principal
  2. Mililani Town Association Representative
  3. Community Members
  4. Parents

- Consultants
  1. Architect-Pacific Architects, Inc.
  2. Civil Engineer-Mitsunaga & Associates, Inc.
  3. Landscape Architect-Hawaii Design Associates, Inc.
  4. Structural Engineer-Mitsunaga & Associates, Inc.
  5. Mechanical Engineer-Mechanical Enterprises, Inc.
  6. Electrical Engineer-Itano & Associates, Inc.
  7. Geotechical-Fewell Geotechnical Engineering, Ltd
  8. Food Service-George Matsumoto & Associates, Inc.
  9. Cost Estimator-Rider Hunt Levett & Bailey
  10. Acoustical-Y. Ebisu & Associates, Inc.
  11. Daylighting Consultant-Innovative Design
  12. Facilitator-MTK International
  13. Traffic Consultant-Parsons Brinckerhoff Quade & Douglas
  14. Topography-M&E Pacific

The products of the master planning study include an approved site plan, circulation plan, notional floor plans, exterior architectural theme, and landscaping plan that support the planned education program for the school and that can be constructed within authorized budgets. FACD is a function based, consensus building process that uses the architectural charette format to collaboratively undertake a task. It will produce an

approved partnering agreement at the end of the on-site phase of the study. Publication and approval of this document is an important milestone in the acquisition of the Mililani Mauka II Elementary School because follow-on construction contract documents will be based on the approved scope and design concept described in this document. Changes can be made to the scope and concept after that milestone is achieved, but changes after that time may impact costs and affect the timely acquisition of the facility.

The on-site phase of the FACD study was conducted 28 June to 14 July 2000 and included representatives of the Department of Education Central District (CDO), Department of Accounting and General Services Planning Branch (DAGS), Department of Education Facilities and Support Services Branch (DOE Facilities), Honolulu Police Department, teacher and school administration representatives, community and school parent representatives, and Pacific Architects, Inc. (PAI). The educators, school administrators, DOE facilities representatives, and community and parent representatives were organized into a 12 member steering committee that provided unity input to the Mililani Mauka II master plan development process.

4.1.4 Project Summary Description. The following school components are included in the master plan: administration, cafetorium, library, classrooms, covered playcourt, play fields, and play areas. Parents and visitors access the administration and cafetorium buildings more frequently than the classrooms and library. As shown on the site plan, these buildings should be placed closer to the main entrance of the school to facilitate this access. The classrooms and library are student areas and can be placed further away from the main school entrance. They should, however, be closely linked. Teacher and other teaching support areas are closely linked to the classrooms and should optimally be located in the classroom building or in close proximity. Other support facilities such as the play field and recreational components have greater flexibility in their siting, but should optimally be located near the classrooms and the cafetorium.

The recommended facility siting is shown in the attached site plan. The plan, in general, accommodates the functional relationships shown on the site plan. The plan incorporates a spacious courtyard that is the focal point upon entry into the school complex. The courtyard is functional and is sized to accommodate the anticipated student, parent, and visitor audience at school performances. An outdoor performing area is developed for the front entrance to the Library that fronts one side of the courtyard. Configuring the planned 36 classrooms into a 12 classroom, one-story building and a second 24 classroom, 2-story building allowed the development of a compact campus that reduces student walking distances from the classrooms to support facilities. The library is sited proximate to the classrooms and is expected to be the nerve center of the academic part of the school complex.

An Administration/Comprehensive Student Support Services (CSSS) Building, Cafetorium with conventional kitchen, Library/ Media Center/Computer Resource Center Building, two (2) Classroom buildings, a Covered Playcourt, and a Mechanical Building are included in the planned Mililani Mauka II Elementary School.

The school will have a design capacity for 650 students with the ability to serve 866 students on a year-round education, multi-track (YRE-MT) educational system. Thirty-six (36) permanent classrooms consisting of fifteen (15) grade K-2 general classrooms, twelve (12) grade 3-5 general classrooms, three (3) supplemental classrooms, two (2)

fully self-contained (FSC) special education classrooms, one (1) FSC special education pre-school classroom, and three (3) special education resource classrooms will be constructed. A site for three (3) peak enrollment supplemental portable classrooms and space for a future, permanent six (6) classroom building is also planned.

Administration / CSSS Building

The single story building is designed to permit interrelated uses of the facilities for administration, health services, standard and special counseling services, and the Parent Community Network Coordinator (PCNC) office. The Administration building is situated at the front of the school with access towards the interior of the school campus (Figure 5).

The Administration/CSSS building will consist of a lobby, general office for office staff, an Facilities Management System (FMS) staff and the YRE-MT clerk, principal and vice-principal's offices, a staff conference room, staff lounge, student activities coordinator office, three (3) counselors' offices, a conference/special room, PCNC office, Health room, storage room, staff restrooms, Junior Police Officer (JPO) storage, two (2) CSSS conference rooms, two (2) CSSS offices, storage, and a Student Services Coordinator (SSC) office.

The lobby is entered from the front of the campus adjacent to the entry/drop-off drive.

The general office will provide space for the year-round, multi-track system staff.

The staff conference room is located between the principal and vice-principal's offices with primary use by the principal. A movable partition or sliding door between the principal's office and the conference room is provided.

The health room is accessible from the exterior, towards the campus, and also from the interior corridor.

The PCNC office is accessible from the exterior and also the interior corridor. Access to the restrooms in Administration from the PCNC after normal school hours is provided.

The staff lounge is centralized and accessible to all staff. The lounge is located adjacent to the general office to allow visual access by the staff.

The CSSS conference rooms and offices are accessible from the exterior. The CSSS and SSC offices do not have full-time staff and need not be on an exterior wall. The CSSS spaces are designed to be segregated from the balance of the building for after hour use. A unisex restroom will be provided for the CSSS activities.

The counselors' offices are accessed from the exterior, towards the campus, with a waiting lounge. The counselors' offices are located on the exterior wall with windows.

Library Media Center/Computer Resource Center

The single-story Library Media Center/Computer Resource Center is comprised of the librarian's office, circulation desk, reading/study/bookstack area, periodical area, storytelling area, student conference room, video production room, computer resource room, workroom/production room, professional staff and material area, storage room,

media control center, signal processing room, mechanical/electrical rooms, staff toilets, and custodial closet. The librarian's office should be adjacent to the circulation desk and should have visual control over the whole library (Figure 6).

The reading/study bookstack area, periodical area, and storytelling area is included in one large area with the circulation desk. Separation of the activity areas is with furniture and bookstacks.

The student conference room is combined with the video production room.

The computer resource center is accessible from the library and the exterior via a hallway and will serve as a computer laboratory. Library access from the computer resource center can be locked during after school hours to allow the computer resource center to be used when the library is closed. Staff restrooms in the library can be accessed from the computer resource center when the library is locked.

The workroom/production room and professional staff and material area is a single room adjacent to the librarian's office and storage. This area is used by the faculty and should be accessible from the exterior. Anticipated after-hour use by the staff will necessitate locking-off this area from the rest of the library. The staff toilets are adjacent to this space.

All doors from the reading/study bookstack and general area should have vision panels for visual control into all spaces.

The Library is centralized to the classroom buildings.

<u>Cafetorium</u>

The single-story Cafetorium is comprised of a conventional kitchen, student dining area, a fixed platform, boys' and girls' dressing rooms, A+ program office and storage, staff dining room, custodial service center, boys' and girls' toilets, amplifier room, chair storage, and custodial closet (Figure 7).

The conventional kitchen will prepare meals for the 650 on-track students. Students are served in two shifts. The kitchen will have direct access to the service yard and loading area. The kitchen can be closed-off from the student dining area to prevent kitchen noise from adversely affecting students in the dining area.

The student dining area is designed to seat one-half of the student design enrollment of 650 students or 325 students per serving. The dining room will also serve as a multi-purpose room for stage and other program activities. The student dining room will face the courtyard and will have a covered exterior area for possible outdoor dining. The dining room will be naturally ventilated, provided with ceiling fans and window treatments which will maximize natural airflow.

The fixed platform is approximately eighteen (18) inches high with risers from the dining area. Because a portion of the programmed dining area has been deleted to make-up for the area lost to the fixed platform, the platform may also be utilized for dining. Accessibility for the physically disabled is provided via a ramp. Platform curtains and track lighting for the platform is provided as well as motorized movie projection screen at

the front of the platform. An amplified public address system with microphone jacks at the platform and in the dining area is provided.

The boys' and girls' dressing rooms are located to allow access to a hallway leading to the exterior. This will allow access to the dressing rooms for outdoor assemblies.

The A+ program office and storage is combined into one room with access to the dining room and the exterior. The office is located towards the parking area.

The staff dining room will be designated for kitchen staff only and is located inside the kitchen. Faculty and staff will eat in the various staff lounges.

The custodial service center is located adjacent to the kitchen service area.

The adjoining service area has an exterior wall towards the adjacent classroom building to provide a safety barrier to the students and staff. The front of the service area will have nominal landscaping, however, will be generally open to allow visual security of the rear kitchen door. The central mechanical air-conditioning plant is housed in an acoustically controlled building located adjacent the service area. Liquid propane gas (LPG) tank for the kitchen equipment and trash dumpsters are located in the service area. The loading area will accommodate expected delivery trucks and vehicles.

Classroom Building (Single Story)

The single-story classroom building includes seven (7) K-2 general classrooms, three (3) supplemental classrooms, one (1) fully self-contained (FSC) special education classroom, one (1) FSC special education pre-school classroom, one (1) special education resource center, (1) itinerant services room, one (1) faculty/teacher center, two (2) "gang" boys' and girls' toilets, and a custodial room. All classrooms are accessible from the interior corridor as well from the exterior (Figure 8).

The general classrooms are paired with another classroom and have an interconnecting "break-out" rooms for small group or individual activities. Movable partitions are also provided to allow the rooms to be used as a combined room for "team teaching". Operable metal windows are used to provide natural lighting, aesthetics, and security.

The self-contained special education classrooms and pre-school will have accessible boys' and girls' toilets and an accessible shower. Covered lanais with sliding glass doors from the classrooms are provided.

The faculty/teacher center is a combination of the DOE's programmed faculty center and teacher centers. The center will have storage rooms for grade level supplies, etc., two (2) staff toilets, a lounge area, and general faculty work area. The center has sufficient storage to store off-track faculty and student items.

The boys' and girls' "gang" toilets will have water closets, urinals, and lavatories as required by the Department of Health. Fixture counts are based on the programmed student count of twenty (20) to twenty-five (25) students per classroom.

Classroom Building (Two-Story)

The two story Classroom Building will consist of twelve (12) grade 3-5 general

classrooms, eight (8) grade K-2 classrooms, one (1) fully self-contained special education K-5 classroom, one (1) special education resource center, three (3) supplemental classrooms, one (1) faculty/teacher center, two (2) "gang" boys' and girls' toilets, a custodial room, and a hydraulic elevator (Figure 9).

All grade 3-5 general classrooms are located on the second floor.

All general classrooms are paired and have an interconnecting "break-out" room for small group or individual activities. Movable partitions are also provided. Operable windows are used.

The faculty/teacher center and student toilets are similar to these facilities in the one-story classroom building.

Covered Playcourt

The single story covered playcourt will include a basketball court with a clear height of roughly 24 feet. The entire court is covered with a metal structure. The open sides are enclosed with roughly 10-foot high chain-link fencing. Metal siding is installed above the chain-link fencing. Lockable doors or gates are provided (Figure 10).

Boys' and Girls' toilets, a general utility room, A+ storage, and storage for school equipment is also provided. A signal/electrical room is also provided for school furnished equipment if desired.

4.2 Economic Characteristics. The new Mauka II Elementary School will serve 650 pre-kindergarten through fifth grade students on a 12-acre campus. The planned construction program defined in the Facilities Assessment and Development Schedule (FADS) provides for the construction of a multi-track school (year-round school) with 55,908 net square feet (NSF) of classrooms (36 classrooms), 21,792 NSF of support facilities, and 116,916 square feet (sf) of fields and open play areas. The school is being budgeted at an estimated cost of roughly $19.1 million that is expected to be appropriated in two allocations.

The acquisition schedule for the new Mililani Mauka II School targets school start-up in January 2004 to coincide with the Mililani Mauka Middle School schedule. The following projected design and construction schedule was developed to meet this ambitious schedule:

Design and Construction Schedule

Milestone	Target Dates
FACD	28 June through 14 July 2000
Master plan Report Submittal	May 2001
Design	1 October 2000 through December 2001
Bid	January 2002
Award Construction Contract (Notice to	March 2002

Proceed)	
Construction	February/March 2002 through October 2003
Outfitting	October through December 2003
Start School	January 2004

4.2.1 FACD Cost Target. The planned $21 million budget for Mililani Mauka II includes $20 million for construction with the balance being used for furniture and initial school outfitting. The project team will develop a design concept that can be constructed within the $20 million construction budget.

4.2.2 Aquisition Strategy. The new Mauka II School will be procured with fixed price, request for proposal (RFP) procurement vehicle. Construction contract award will be made to the lowest qualified bidder.

4.2.3 Commitment To Meet Budget. The current cost estimate for the project is $20.979 million, including $1.9 million design contingency that exceeds the programmed construction cost of $0.979 million. Refinement of the design contingency is necessary to allow construction of the new elementary school. $1.0 million in funds are programmed in the budget to procure and install furnishings and equipment.

4.2.3 Project Scope. The project will include the following components:

Component	Cost
Site Work	$ 4,225,192
Administration/CSSS	$ 1,147,755
Library/Media Center	$ 1,185,440
Cafetorium	$ 1,889,246
2-Story Classroom Building	$ 4,257,205
1-Story Classroom Building	$ 2,633,843
Mechanical/Electrical Building	$ 178,364
Covered Playcourt	$ 663,278
OH, Profit, General Conditions	$ 2,880,634
Design Contingency	$ 1,907,489
Total	$20,979,000*

*Schematic Cost Estimate, 4/04/01

4.2.5 Construction Phasing. The project is being funded in two allocations with funding increments projected for July 2001 and July 2002. The construction contract for the work will be advertised, bid and awarded as one contract with the amount of work the construction contractor can undertake being limited by the funds available until July 2002. The construction, however, will not be phased, and the Contractor will construct the project with a turn-over date for the entire project, complete.

4.3 SOCIAL CHARACTERISTICS

Mililani Mauka II Elementary School will address the social need through the development of educational facilities to support the recent construction of residential

projects.

4.4 CULTURAL CHARACTERISTICS

Mililani was a new master plan community established in the 1960's developed from agricultural lands. The area was extensively modified and altered from its natural condition. It is unlikely that there are any cultural values or resources.

Since then, the community has expanded with new residential, commercial and educational facilities. Mililani Mauka Community developed in the 1980's has grown through the past years. The new Mililani Mauka II Elementary School will provide educational opportunities for the community.

4.5 ENVIRONMENTAL CHARACTERISTICS

4.5.1 Aesthetics. The planned Mauka II Elementary school project is in conformance with the master plan for the Mililani Mauka area that was prepared by CCHH. The design concept prepared for the project will conform to landscaping and exterior architectural themes specified for the Mililani Mauka area.

The planned school site is presently zoned for a low-density apartment development. Current City and County of Honolulu zoning ordinances limit building height to 30 feet above the adjacent ground elevation. The planned two-story classroom building will exceed this allowed height. The State Department of Education must obtain a zoning waiver from the building height limit to construct the two-story classroom.

The landscaping theme will reflect and perpetuate the 'up-country' image of the Mililani Mauka Plant Palette, which consists of evergreen trees, conifers and cypresses. This palette aims to enhance the existing characteristics of the mountainous environment and elaborate on the cool and forest-like experience (Figure 11).

The landscape planting will primarily be used to meet the aesthetic concerns of the school site but will also function to define open spaces, enhance pedestrian circulation, provide shade, and reduce erosion along the slopes.

4.5.2 Traffic. Traffic circulation and the design objective to provide safe vehicular access and to minimize traffic congestion are major considerations. Meheula Parkway is a major vehicle circulation conduit in Mililani Mauka. The City and County of Honolulu traffic department will not permit vehicle entry and exit to the school from Meheula unless it is shown that access from Meheula is safe. The FACD traffic consultant recommends against access from Meheula Parkway. Kuaoa and Lehiwa can serve as alternate access points. An entrance on Kuaoa Street will require a left turn into on-coming traffic for vehicles arriving from Meheula Parkway. Projected traffic volumes indicate that traffic on Kuaoa Street will be heavier than on Lehiwa Drive. It is also expected that most school traffic will arrive at the school from Meheula Parkway. A school entry from Lehiwa will be easier and will avoid the left turn into on-coming traffic.

Entrance and exit from the site is on Lehiwa Drive. The entry driveway is located approximately 160 feet from Meheula Parkway. The driveway will run parallel to the

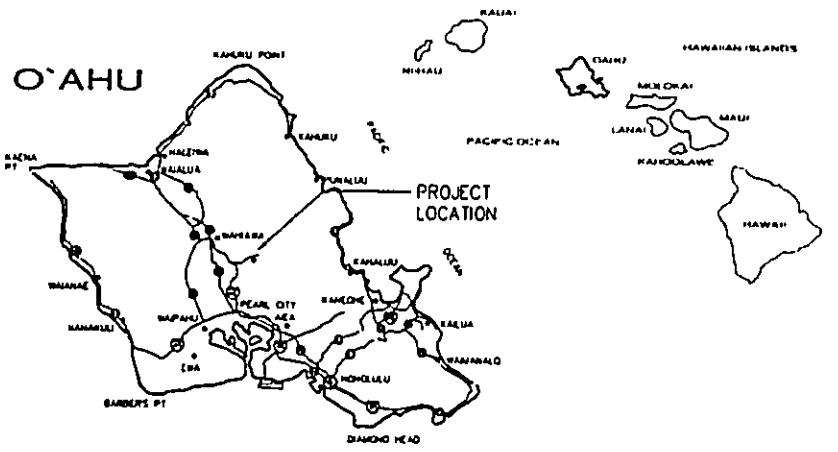
administration building and cafetorium. Space is provided for students to be dropped off and picked up. This entrance road is thirty feet wide to provide adequate space to allow a bus to pass when one is parked at the curb. A sidewalk is provided along the driveway from Lehiwa Drive to the drop off/pick up area. Staff and visitor parking is provided in the lot parallel to the entrance road. This lot will include 63 parking stalls, which includes 3 van accessible stalls. An additional 7 parking spaces for staff are provided south of the mechanical utility building. A service road to the cafetorium and mechanical/electrical room is provided. Driveway, service road, and parking lots are paved with asphalt concrete. Sidewalks are concrete.

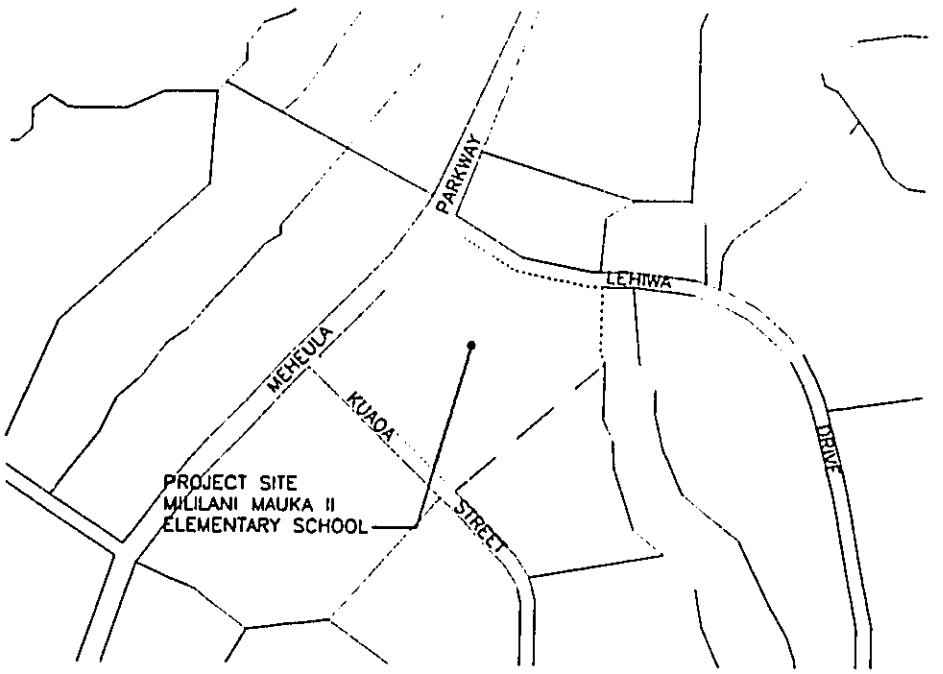
Fire lanes are provided. Fire access lanes will have twenty-foot wide clear space. The entrance is between the administration building and cafetorium. Fire lanes are provided along and between buildings. Fire access roads are paved with concrete.

A Traffic Impact Assessment Study has been prepared by Parsons Brinckerhoff Quade and Douglas, dated April 2001. The study concludes that the increased traffic anticipated for the new school will not have a significant impact to the peak hour traffic conditions. Recommendations, however, will be to monitor the intersection of Lehiwa Drive and Meheula Parkway and provide a signalized intersection as needed.

4.5.3 Water Quality. Mililani Mauka Community is located above the State's Underground Injection Control line according to the State Department of Health. The underlying ground water is considered a potential source of potable water.

LIST OF FIGURES



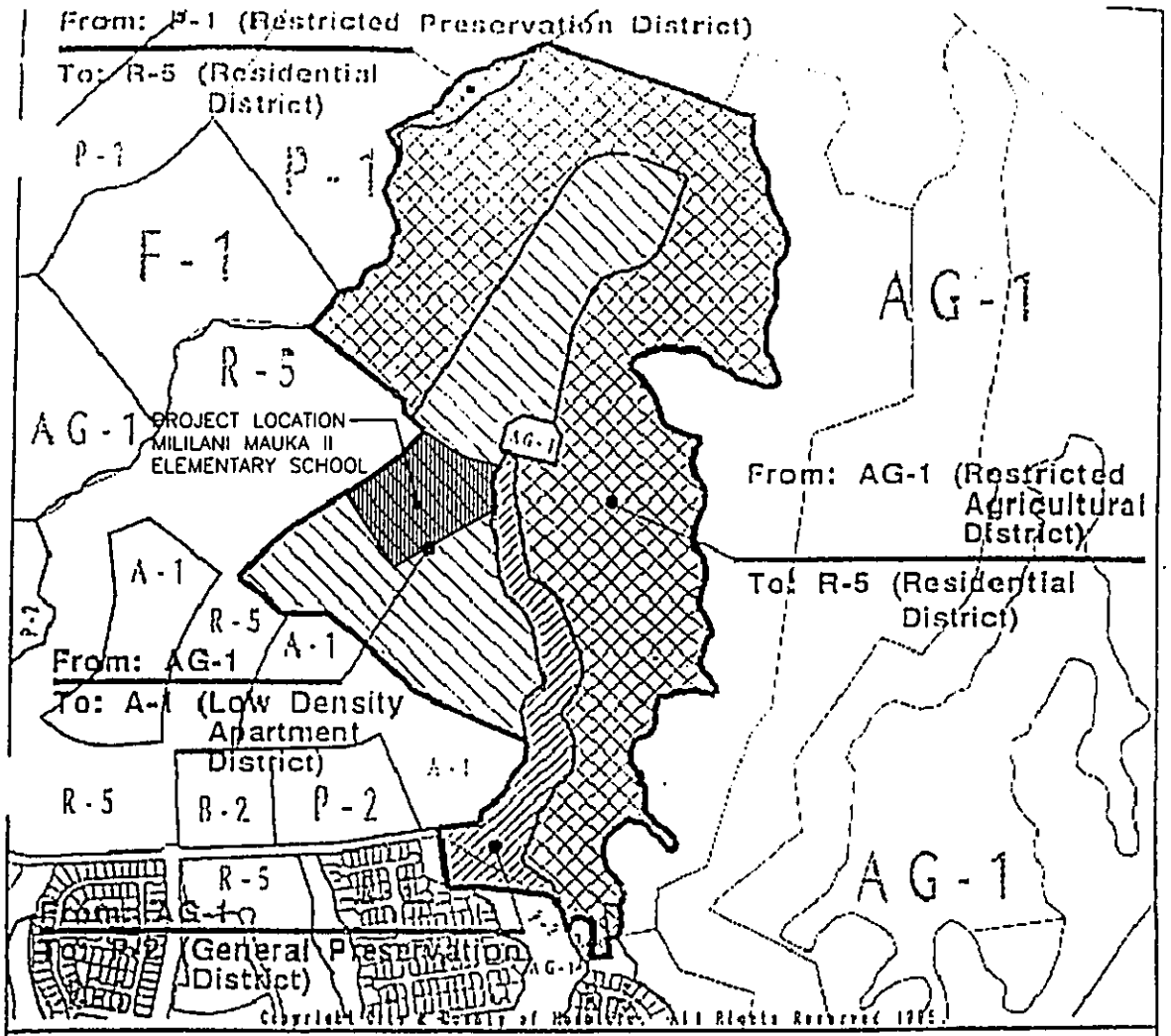


LOCATION MAP

NORTH

SC: N.T.S.

EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII LOCATION MAP	FIGURE 1

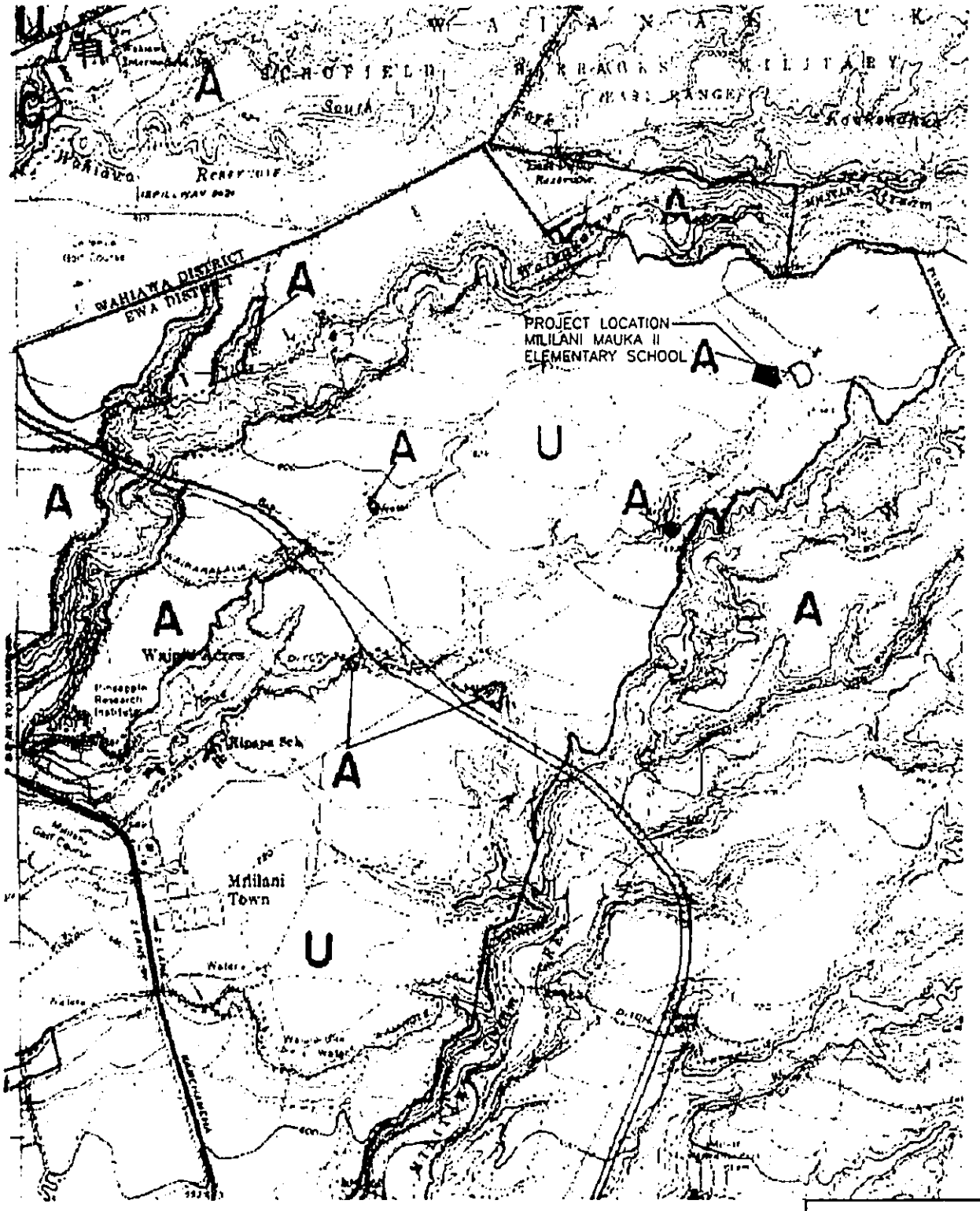


ZONING MAP

NORTH

SC: N.T.S.

EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII ZONING MAP	FIGURE 2



STATE LAND USE MAP

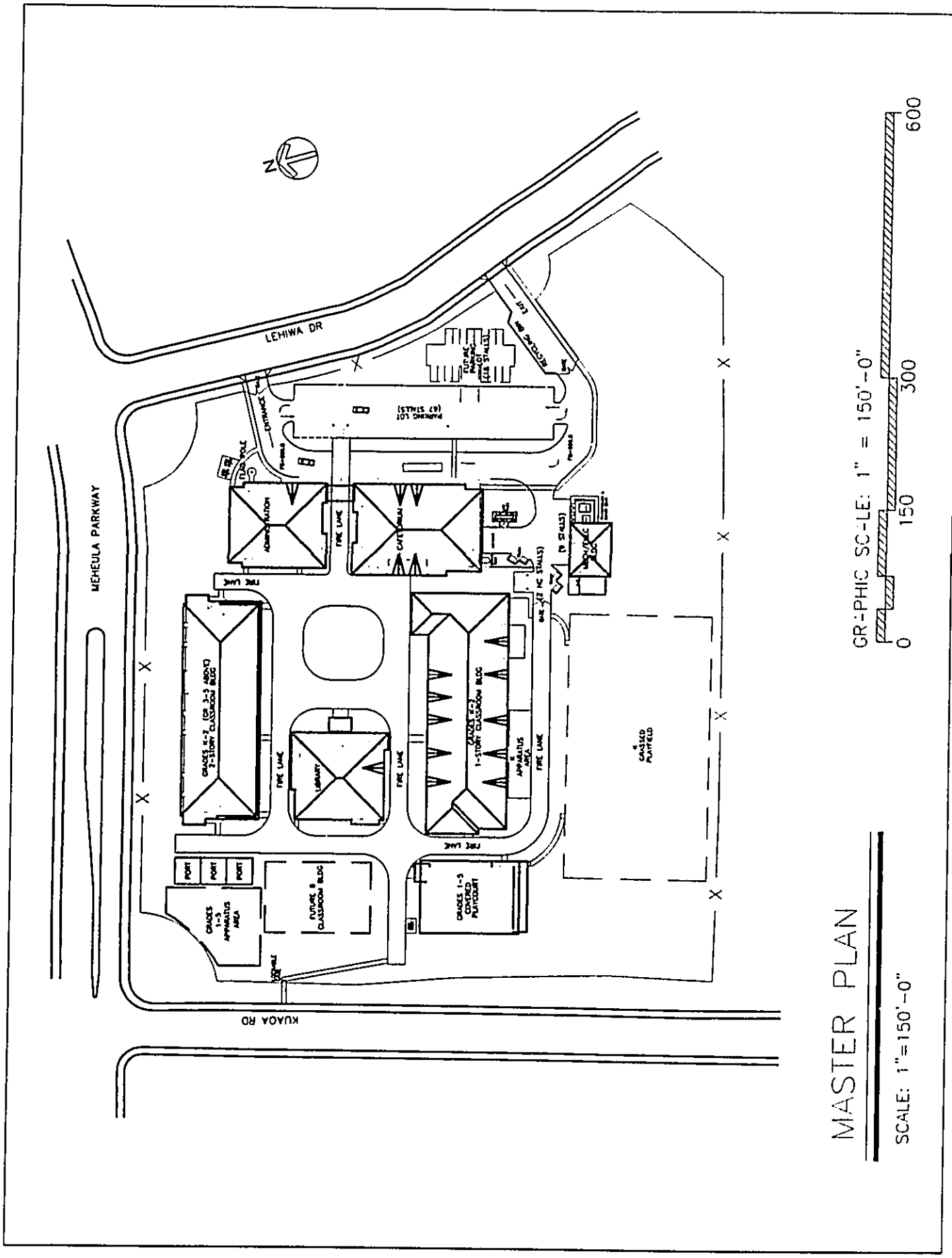
NORTH

SC: N.T.S.

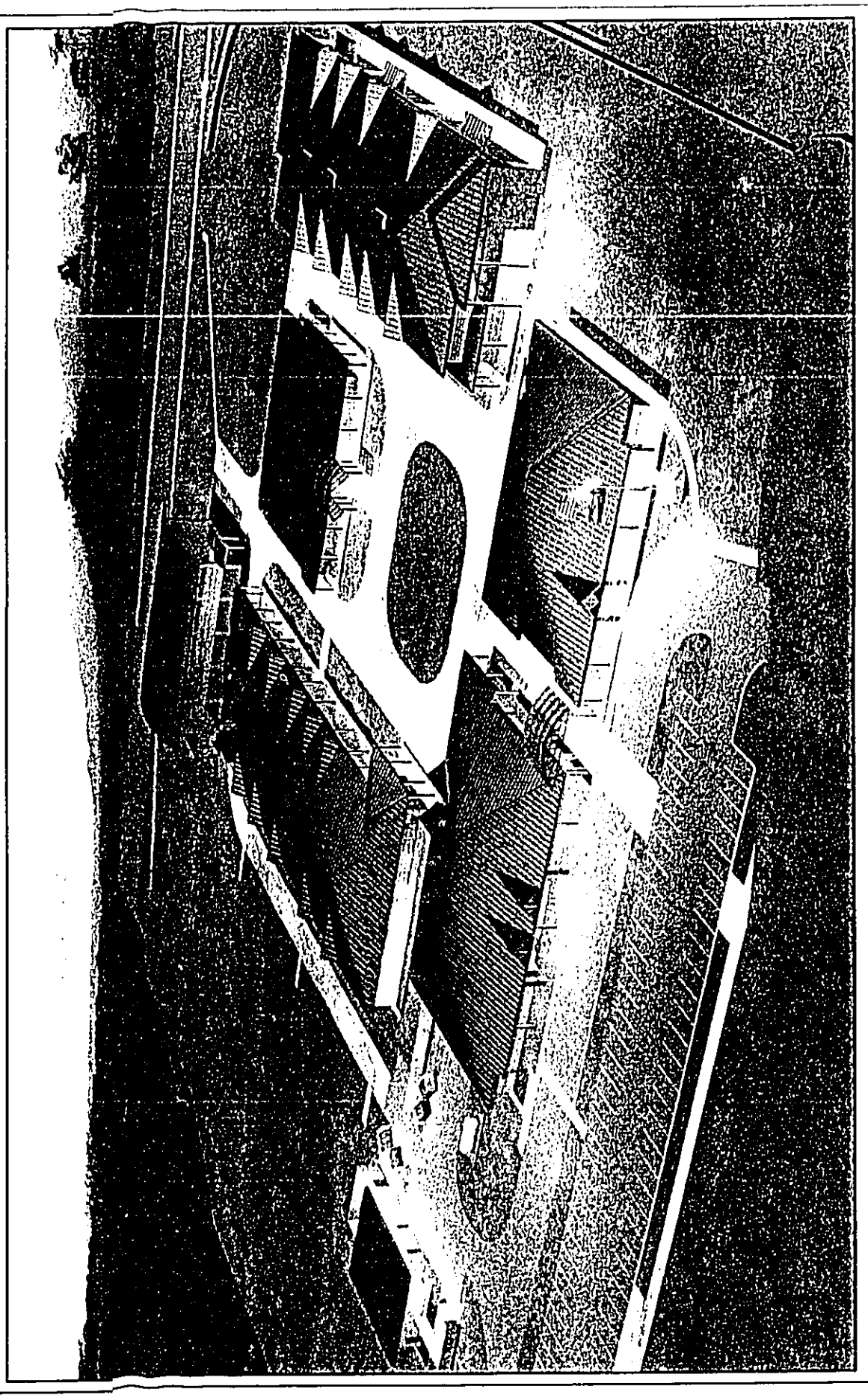
LEGEND

A	AGRICULTURE
C	CONSERVATION
U	URBAN

EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII STATE LAND USE MAP	FIGURE 3



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII MASTER PLAN	FIGURE 4



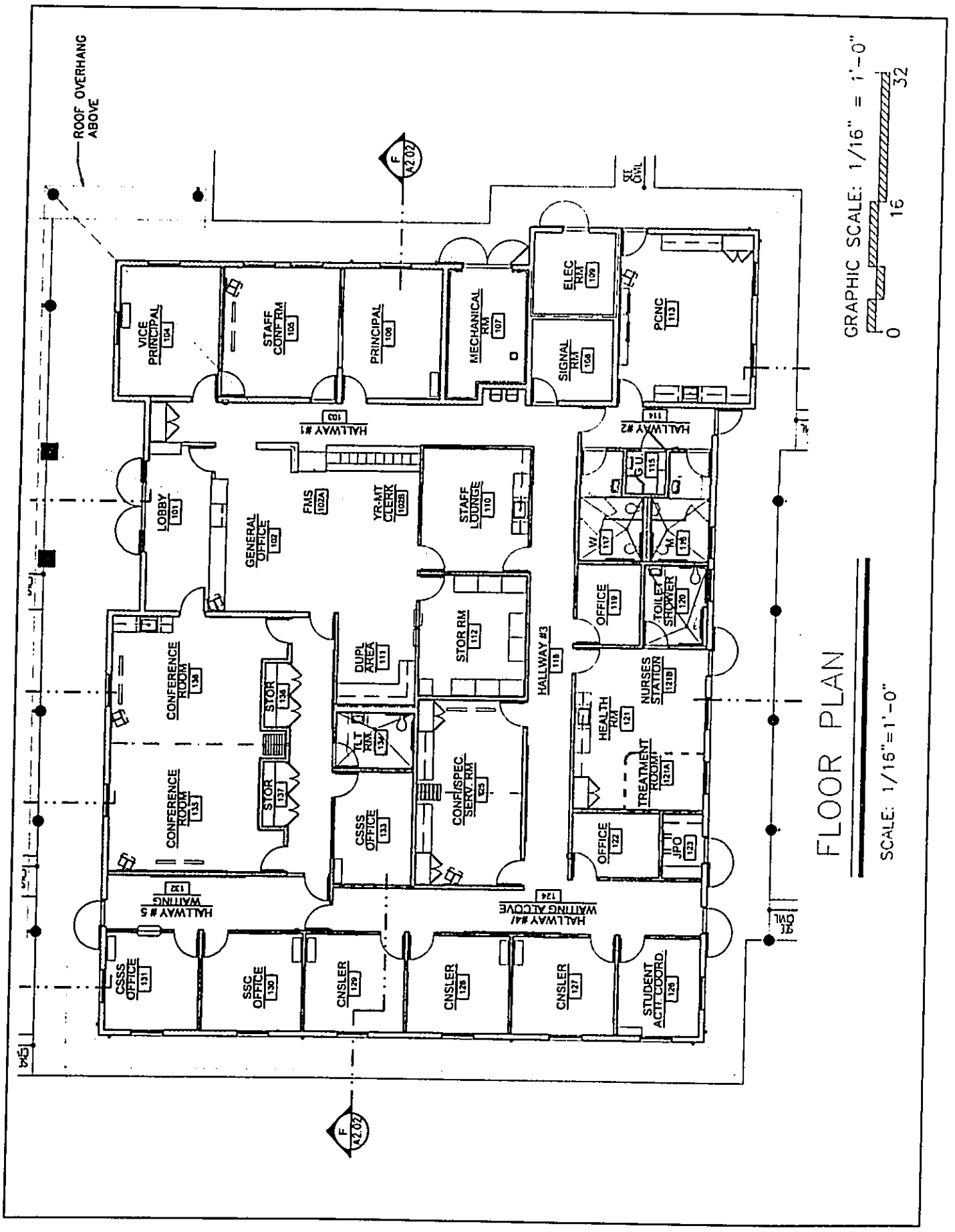
GRAPHIC SCALE: 1" = 100'-0"

0 100 200

PERSPECTIVE

N.T.S.

EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII MASTER PLAN	FIGURE 4a



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII ADMINISTRATION/CSSS BUILDING	FIGURE 5

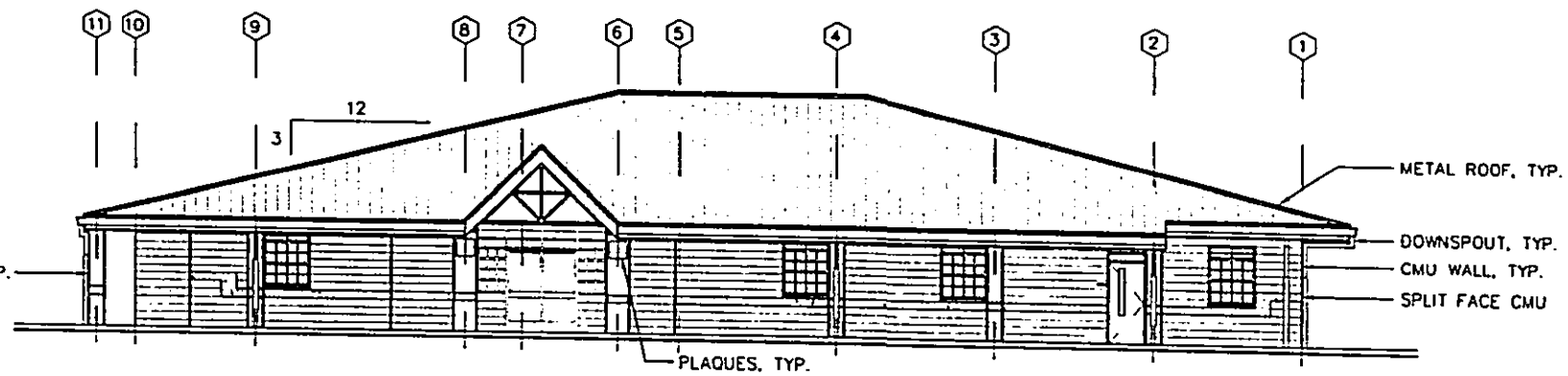
EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

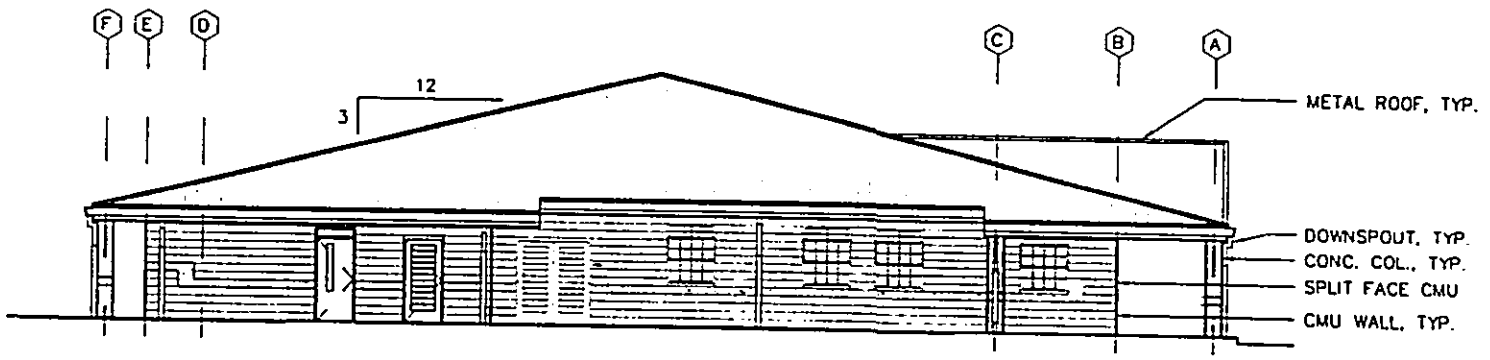
PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI
OAHU
HAWAII

ADMINISTRATION/CSSS BUILDING

FIGURE 5a



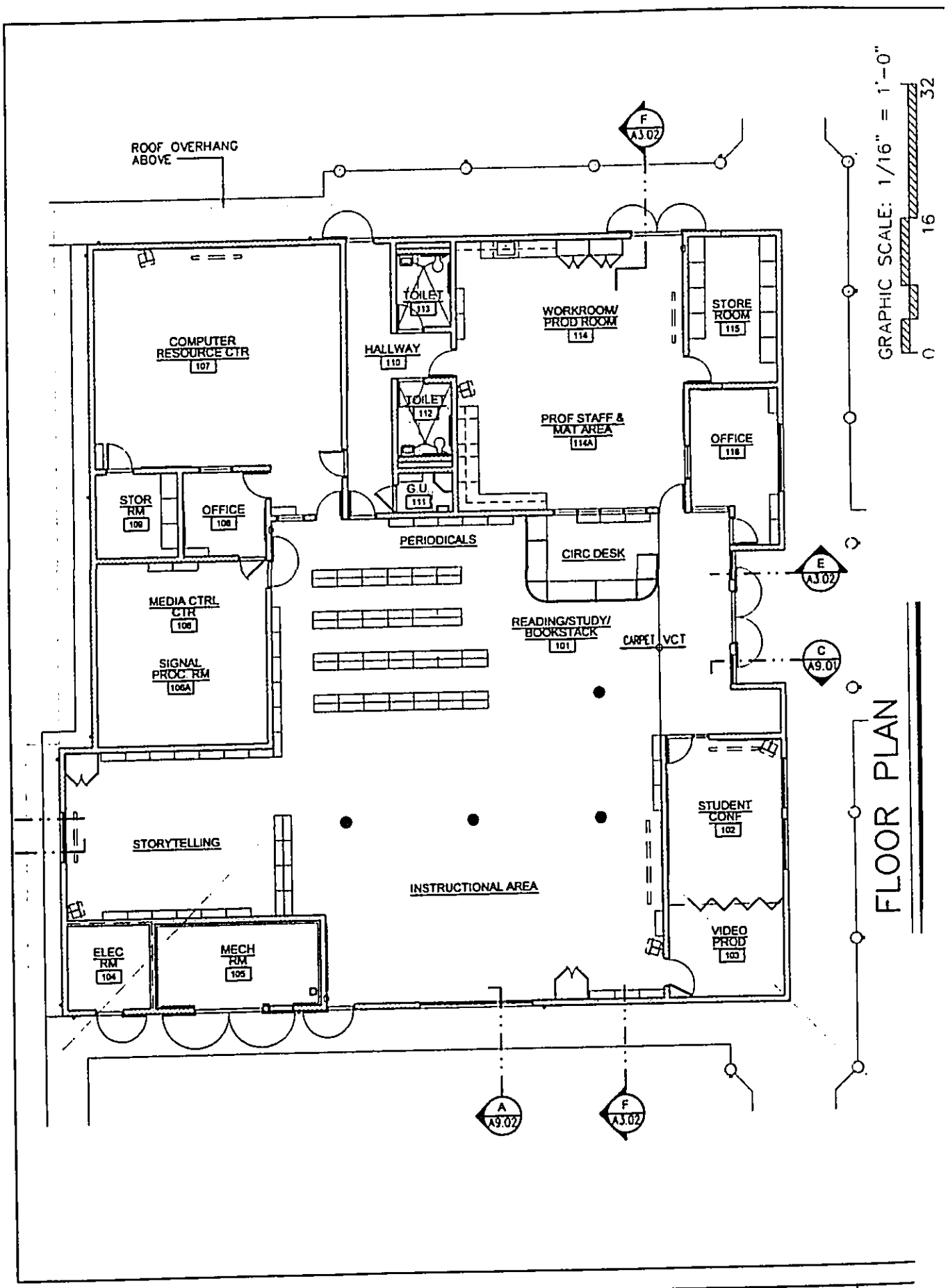


ELEVATIONS

SCALE: 1/16"=1'-0"

GRAPHIC SCALE: 1/16" = 1'-0"

0 16 32



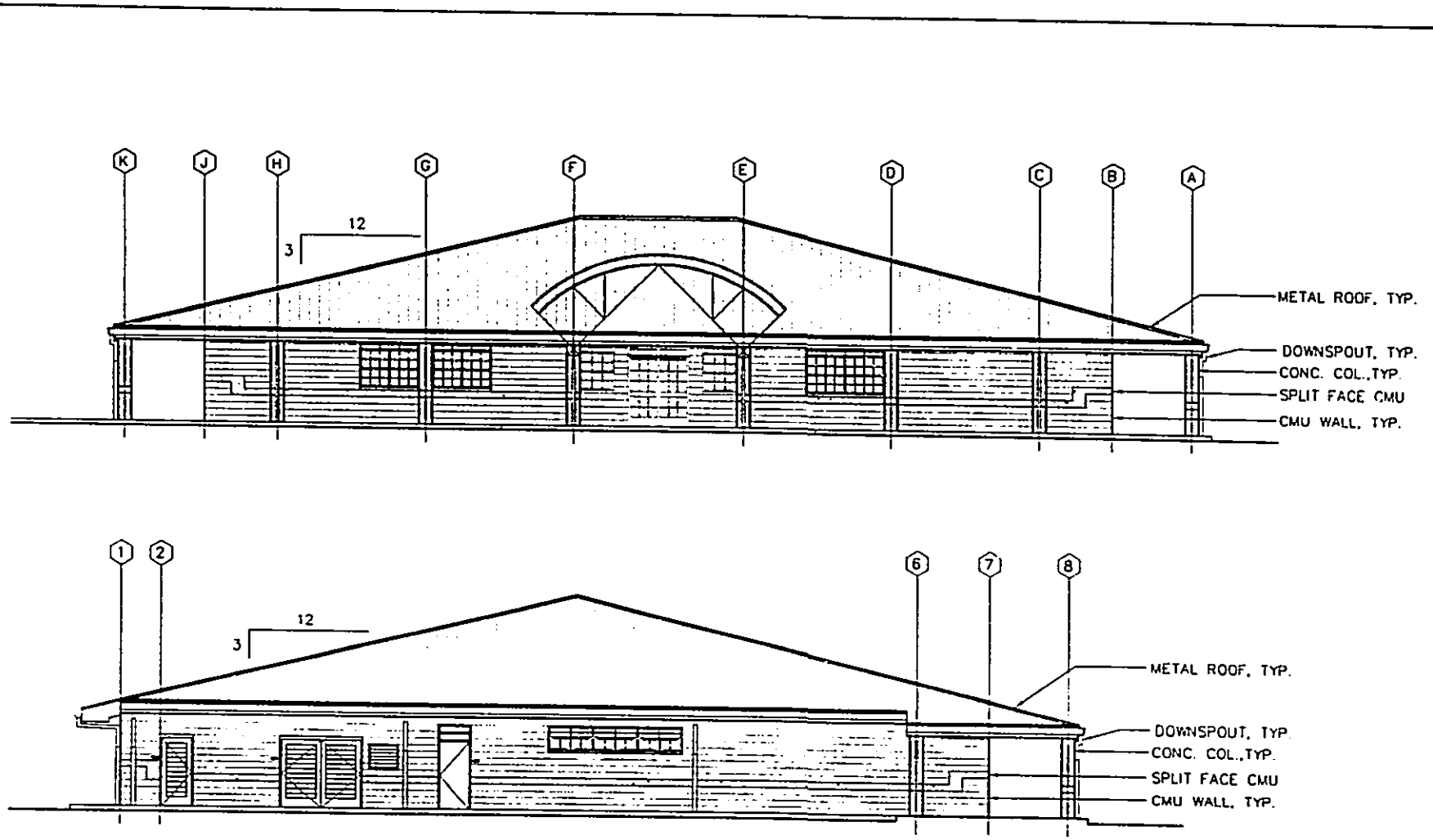
EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII LIBRARY MEDIA CENTER/COMPUTER RESOURCE CENTER BUILDING	FIGU E

EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI OAHU HAWAII

LIBRARY MEDIA CENTER/COMPUTER RESOURCE CENTER BUILDING



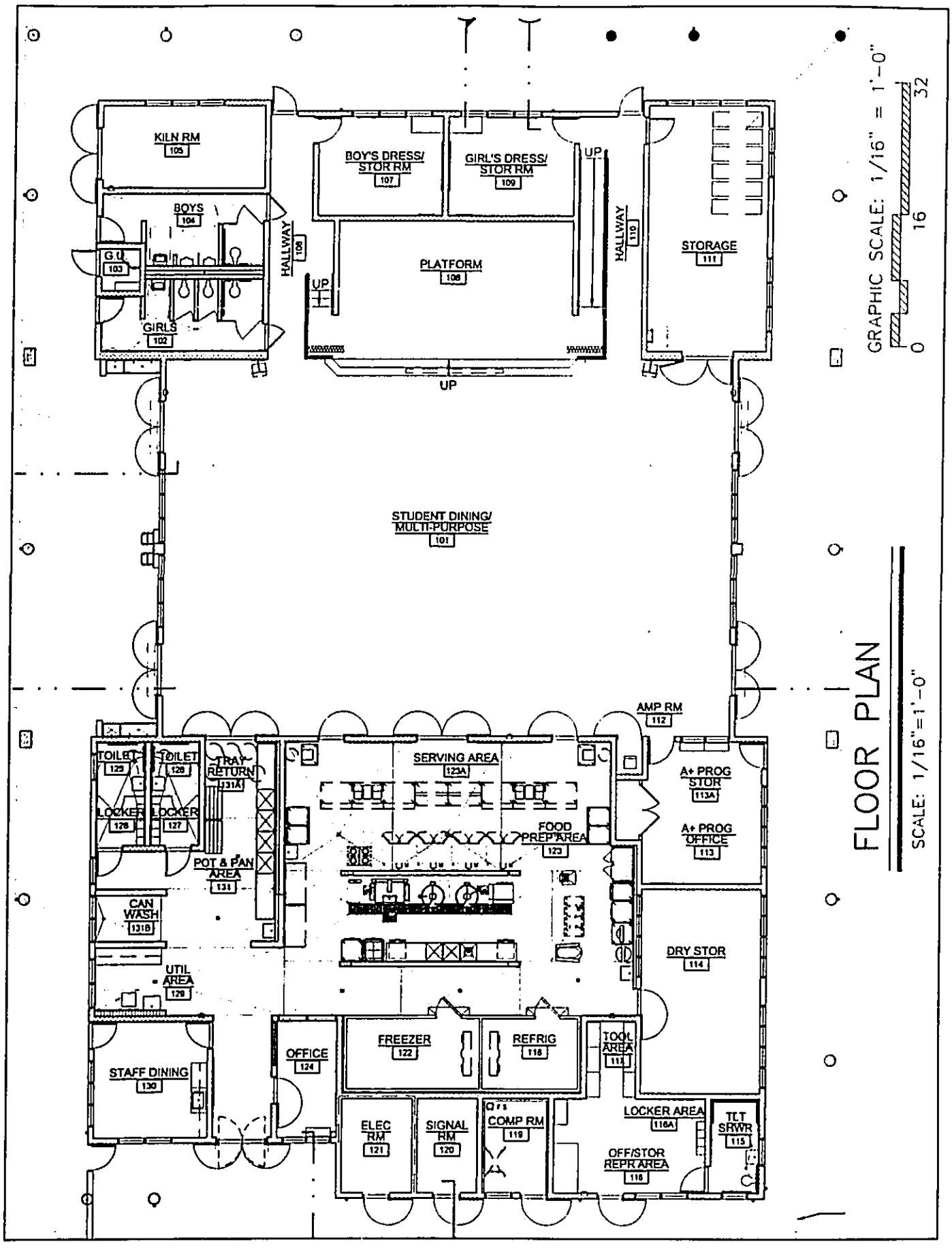
ELEVATION

SC:1/16"=1'-0"

GRAPHIC SCALE: 1/16" = 1'-0"

0 16 32

FIGURE 6a



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII CAFETORIUM BUILDING	FIGURE 7

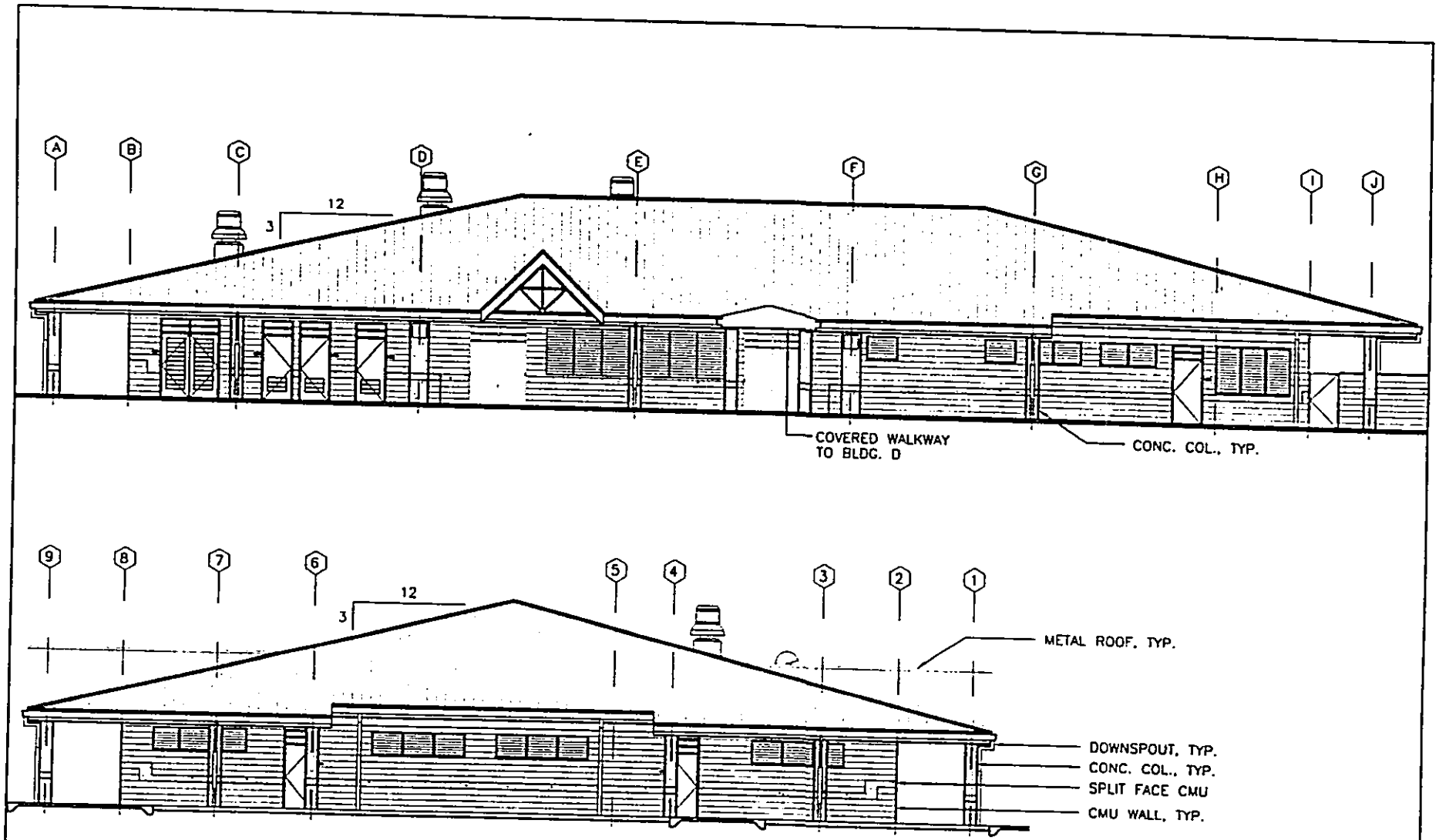
ENVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI OAHU HAWAII

CAFETORIUM BUILDING

FIGURE 7A

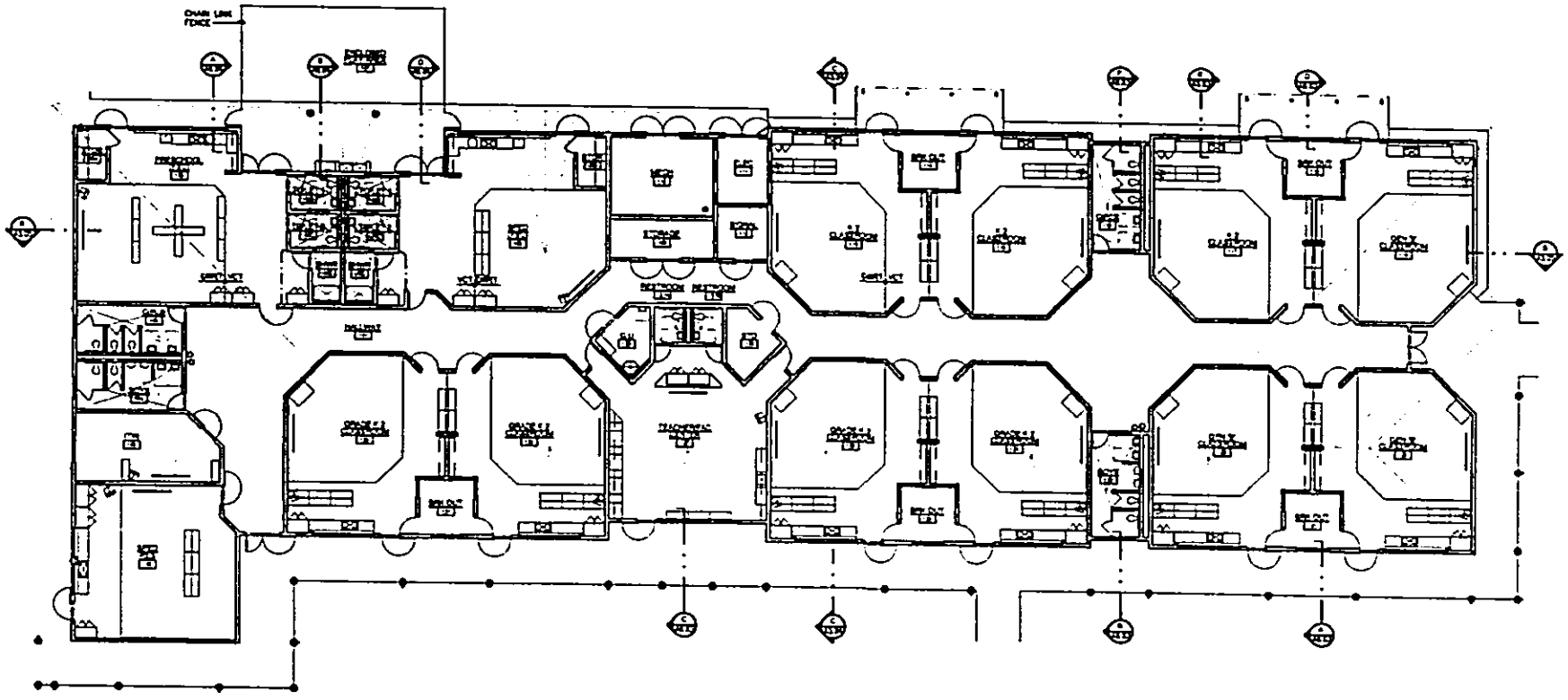


ELEVATIONS

SCALE: 1/16"=1'-0"

GRAPHIC SCALE: 1/16" = 1'-0"

0 16 32



FLOOR PLAN

SCALE: 1/32"=1'-0"

GRAPHIC SCALE: 1/32" = 1'-0"

0 32 62

EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI OAHU HAWAII

CLASSROOM BUILDING (SINGLE STORY)

FIGURE 8

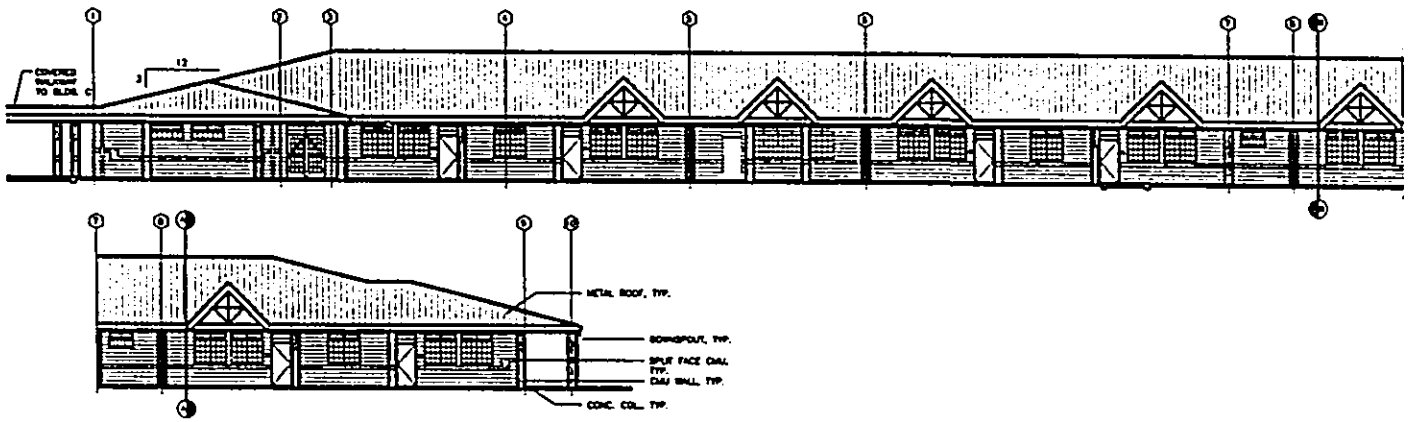
EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

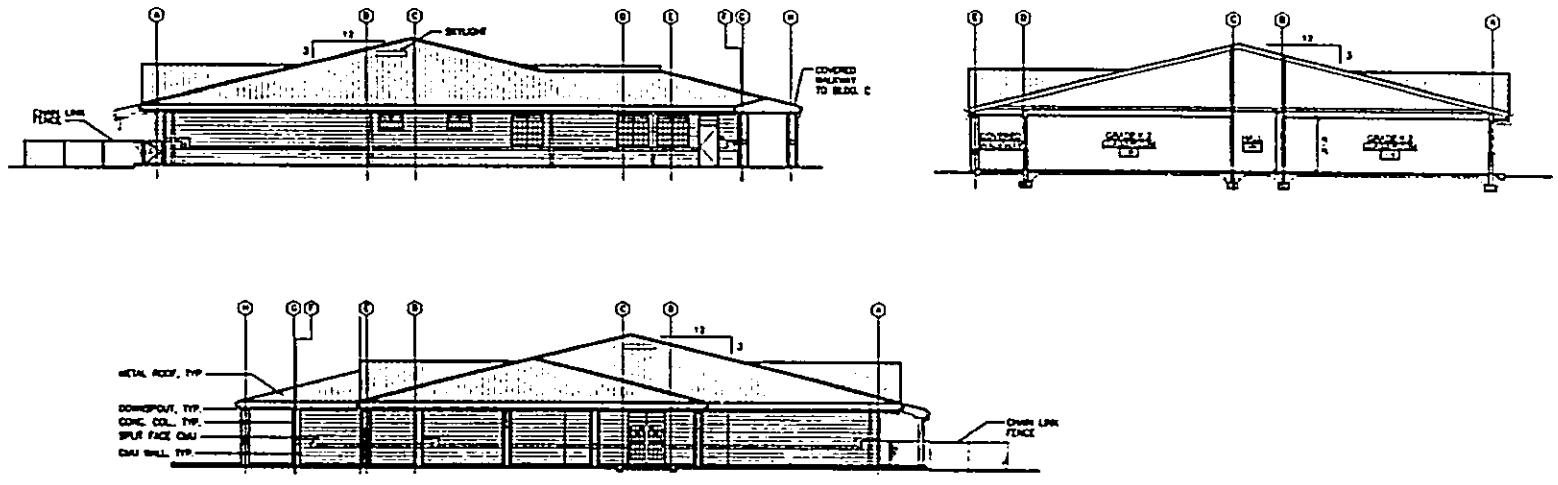
PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI · OAHU · HAWAII

CLASSROOM BUILDING (SINGLE STORY)

FIGURE 8a



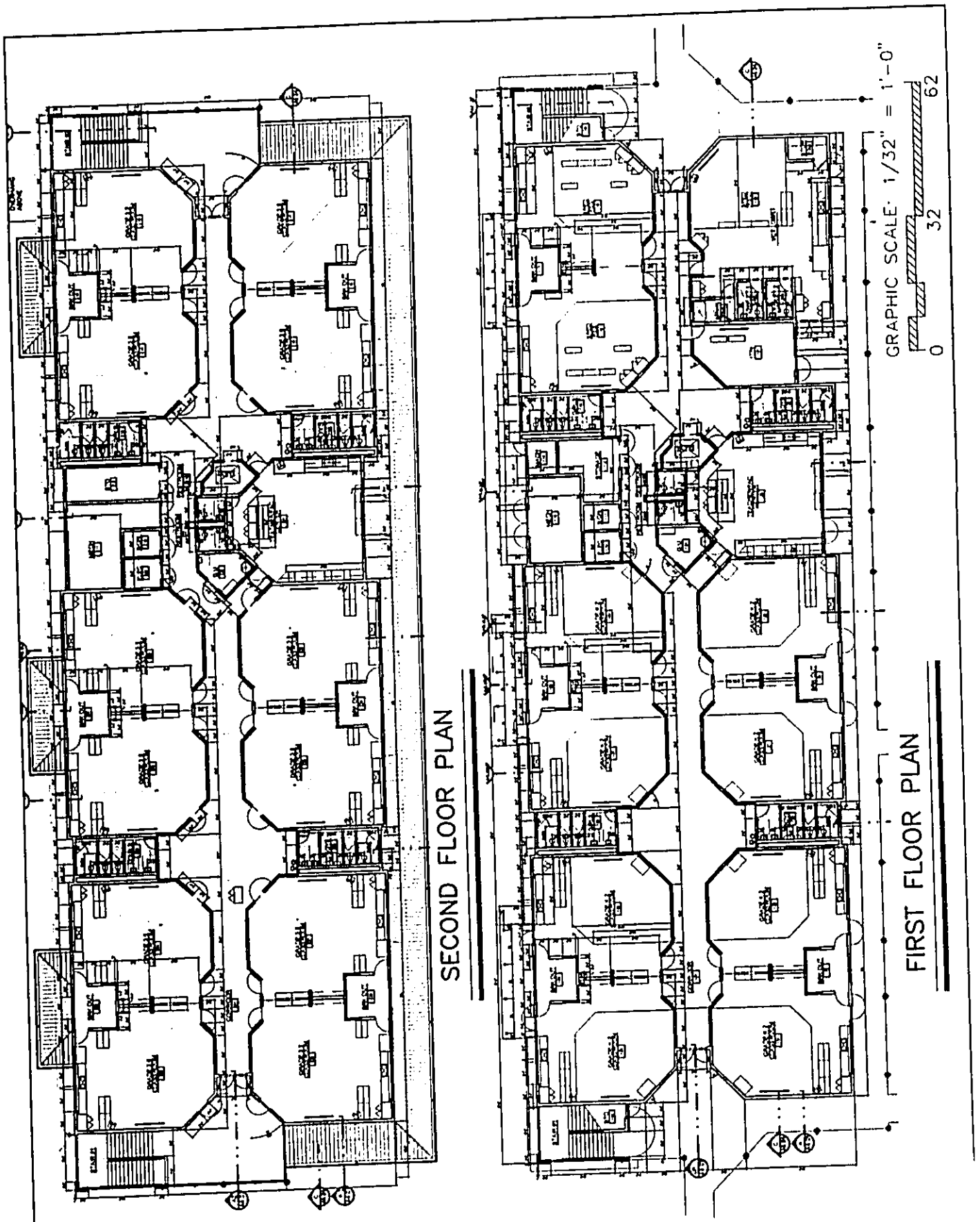


ELEVATIONS

SCALE: 1/32"=1'-0"

GRAPHIC SCALE: 1/32" = 1'-0"

0 32 62



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII CLASSROOM BUILDING (TWO STORY)	FIGURE 9

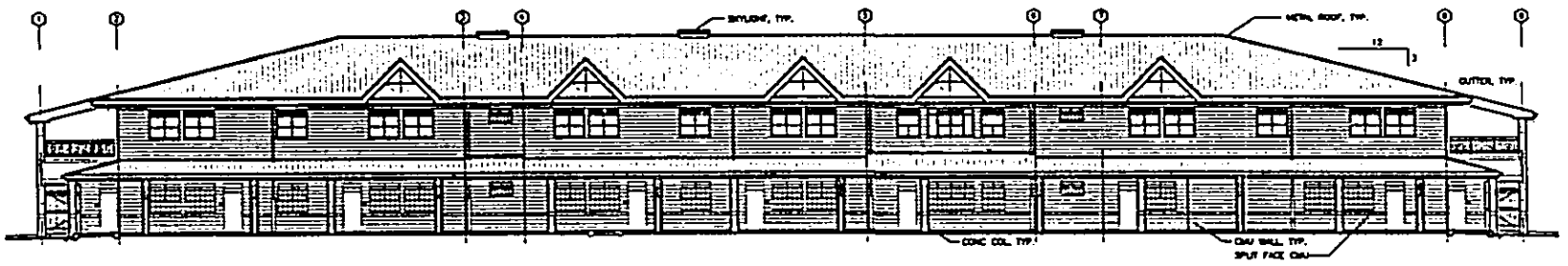
EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

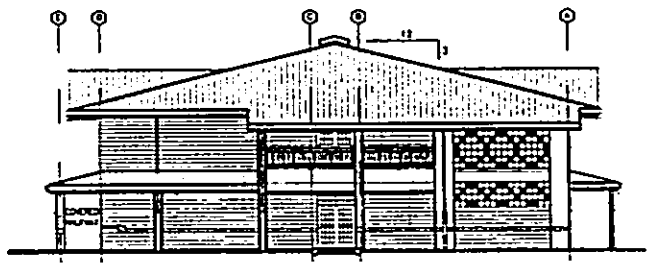
PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI OAHU HAWAII

CLASSROOM BUILDING (TWO STORY)

FIGURE 9a



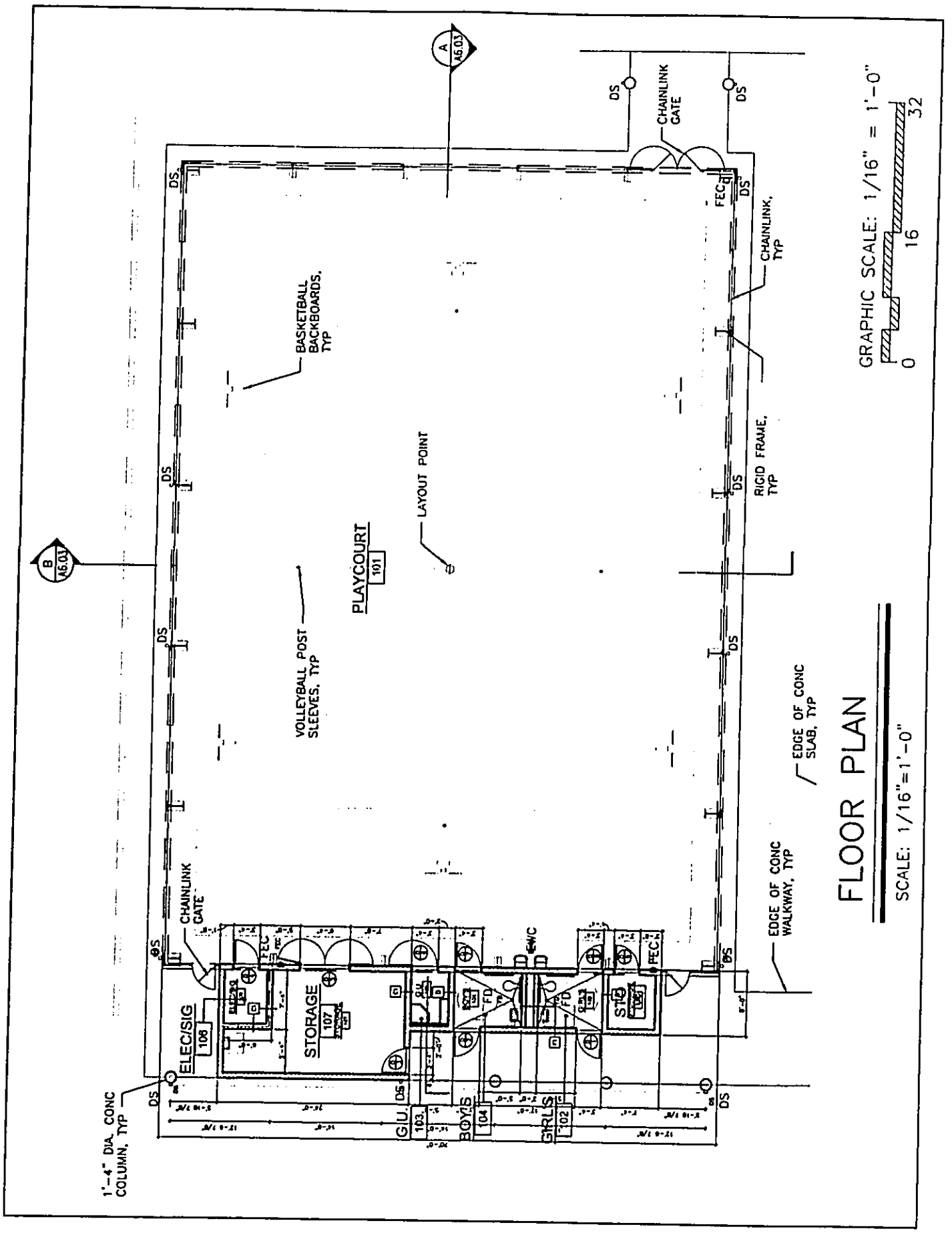


ELEVATIONS

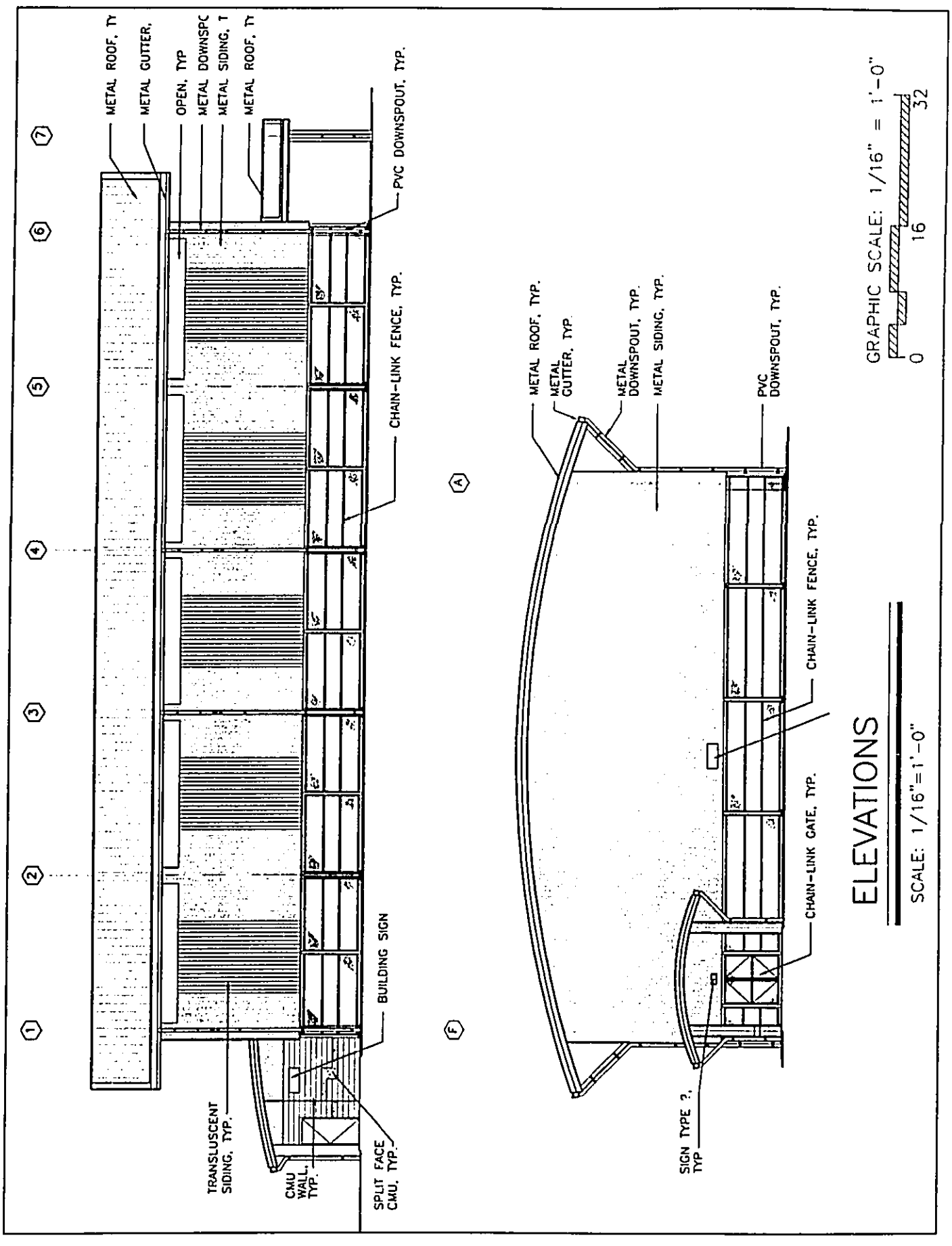
SC: 1/32" = 1'-0"

GRAPHIC SCALE: 1/32" = 1'-0"

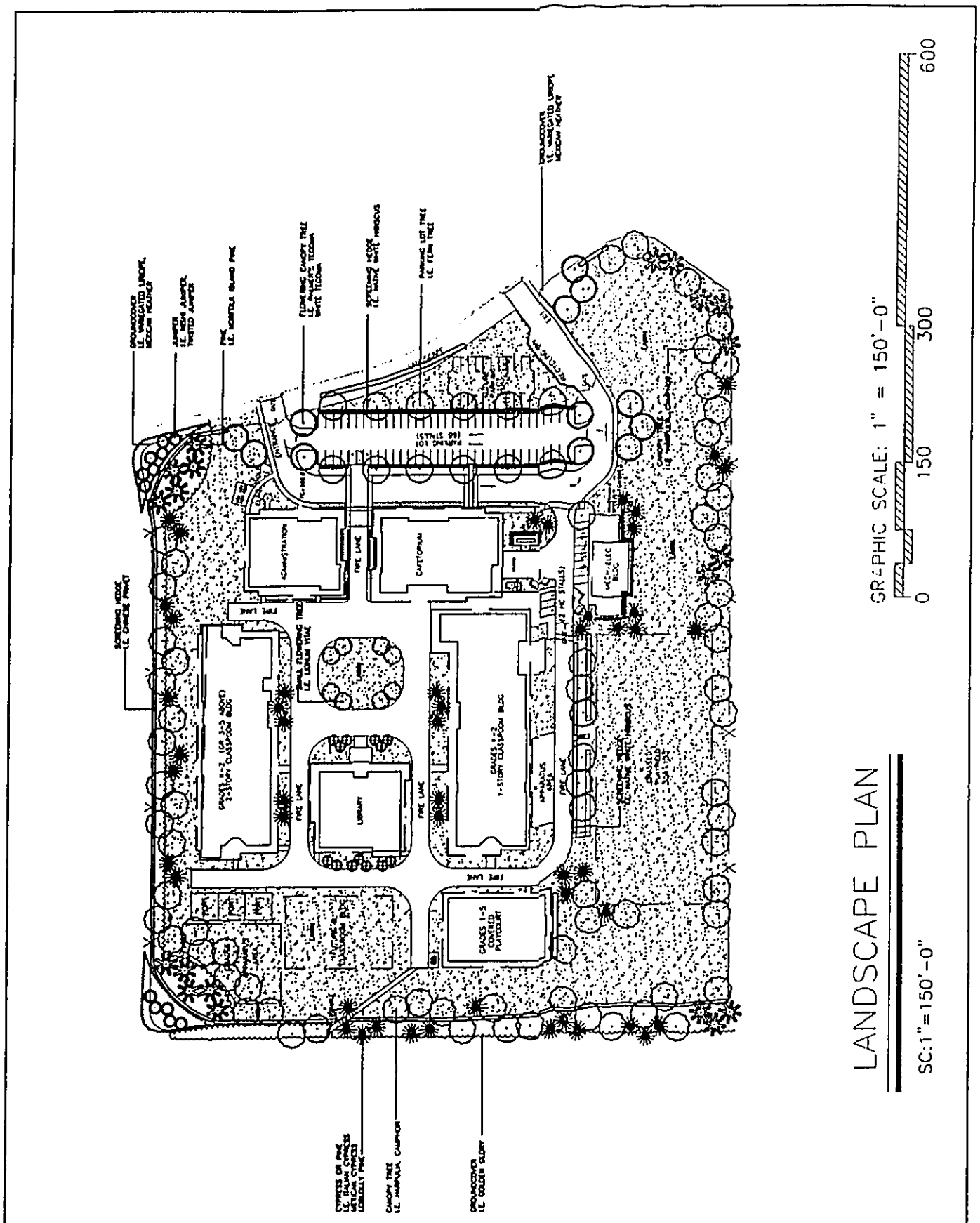
0 32 62



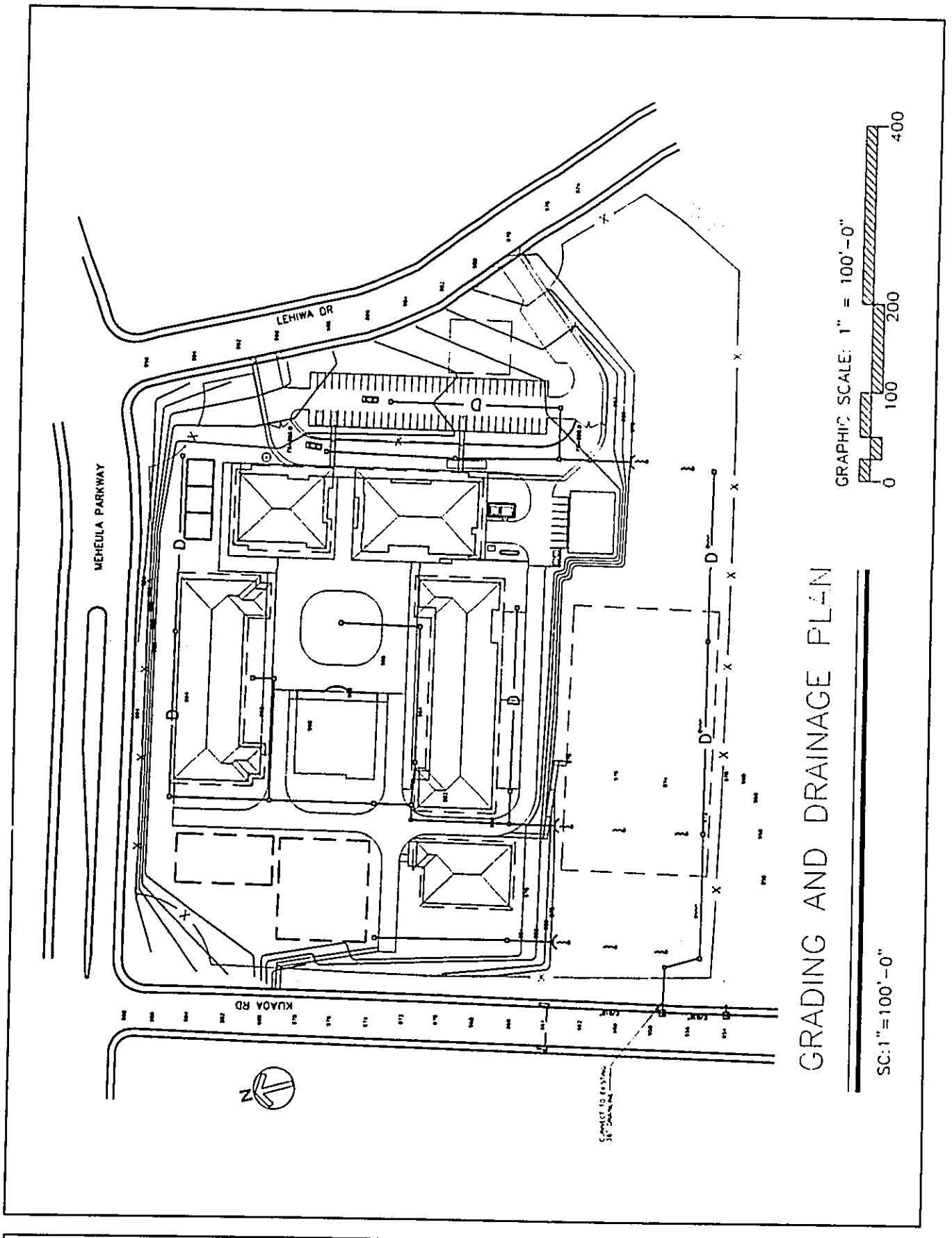
EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII COVERED PLAYCOURT	FIGURE 10



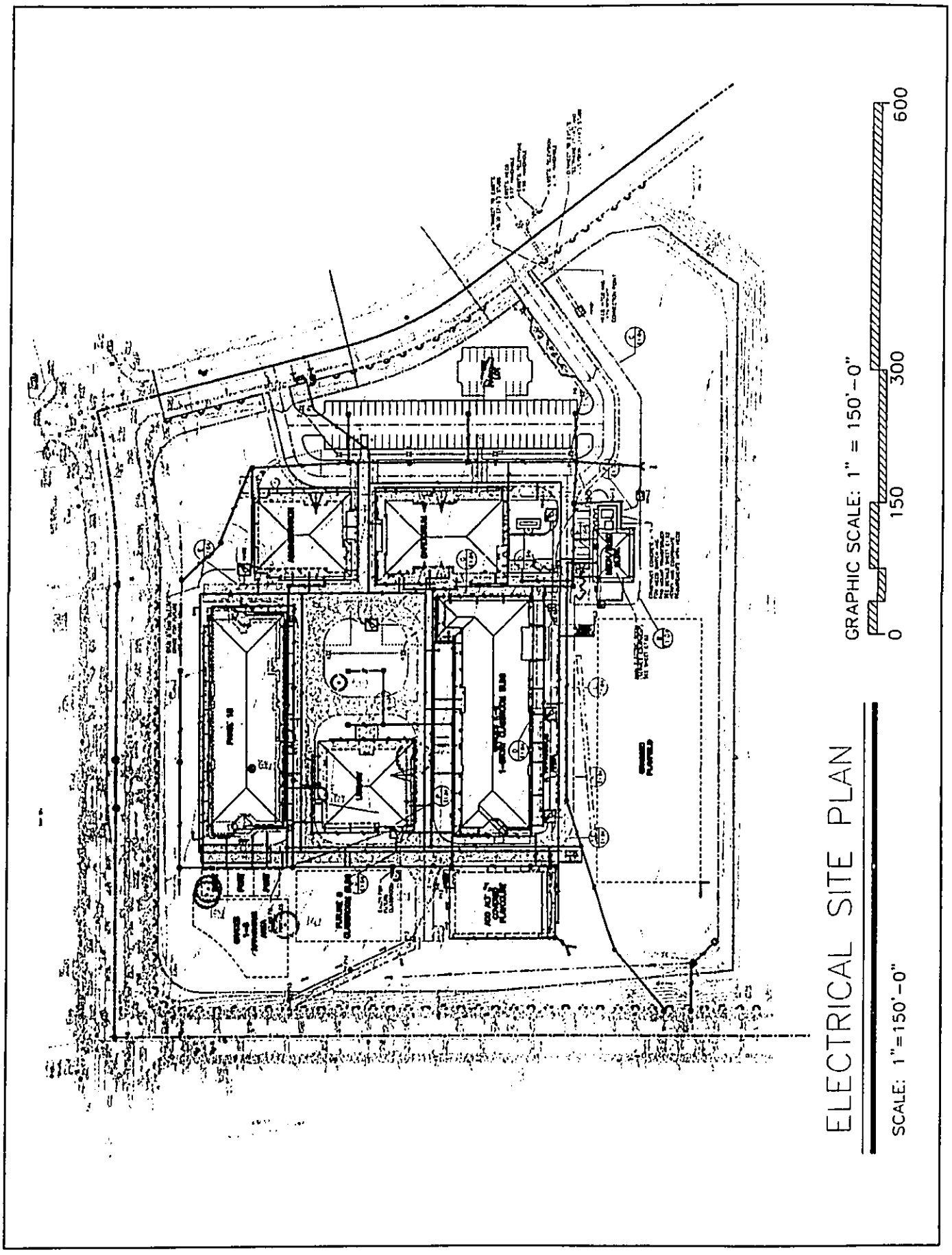
EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII COVERED PLAYCOURT	FIGURE 10a



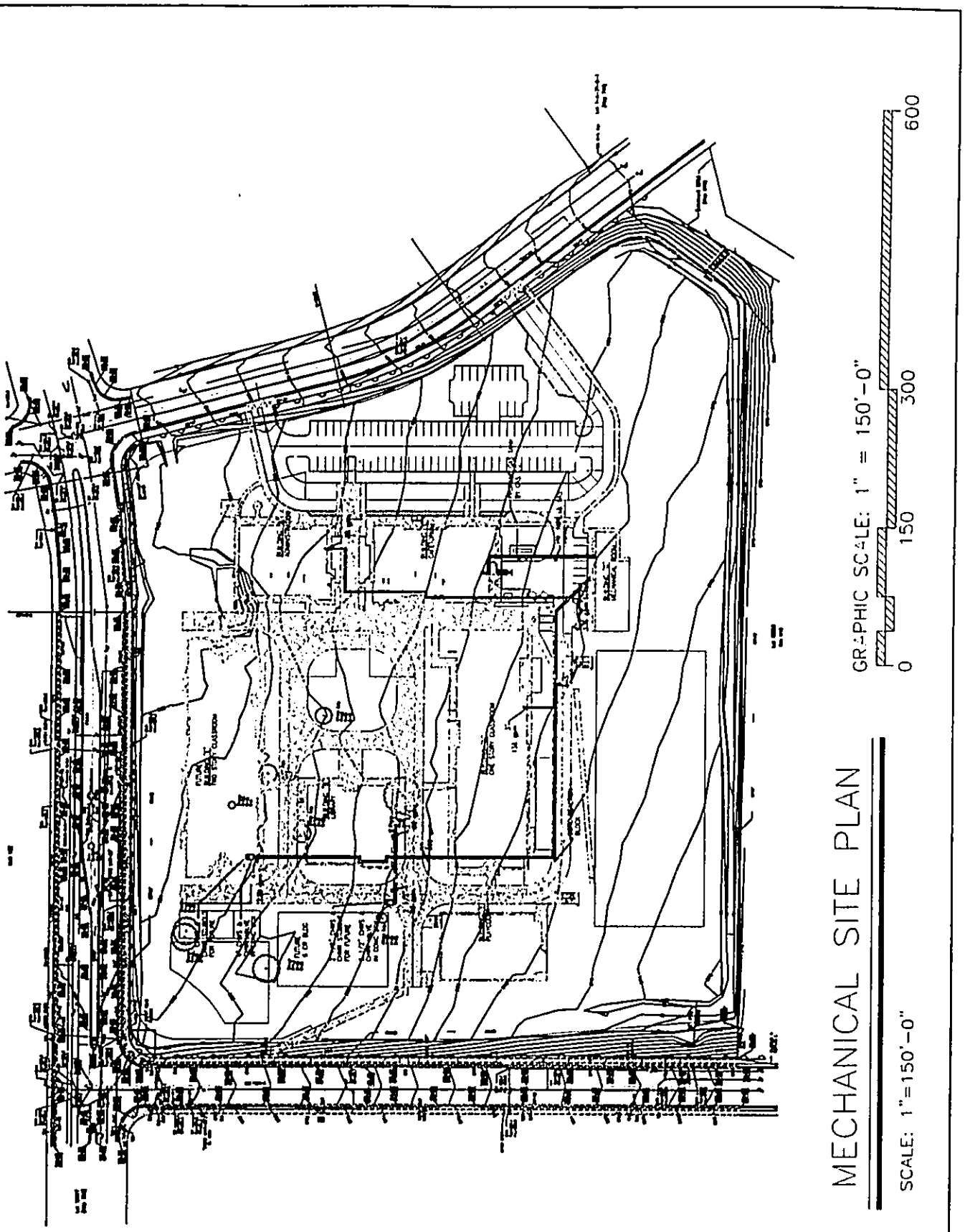
EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII LANDSCAPE PLAN	FIGURE 11



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII GRADING AND DRAINAGE PLAN	FIGURE 12



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII ELECTRICAL SITE PLAN	FIGURE 13



EVIRONMENTAL ASSESSMENT D.A.G.S. JOB NO. 12-16-2605 PREPARED BY: PACIFIC ARCHITECTS, INC.	MILILANI MAUKA II ELEMENTARY SCHOOL MILILANI OAHU HAWAII MECHANICAL SITE PLAN	FIGURE 14

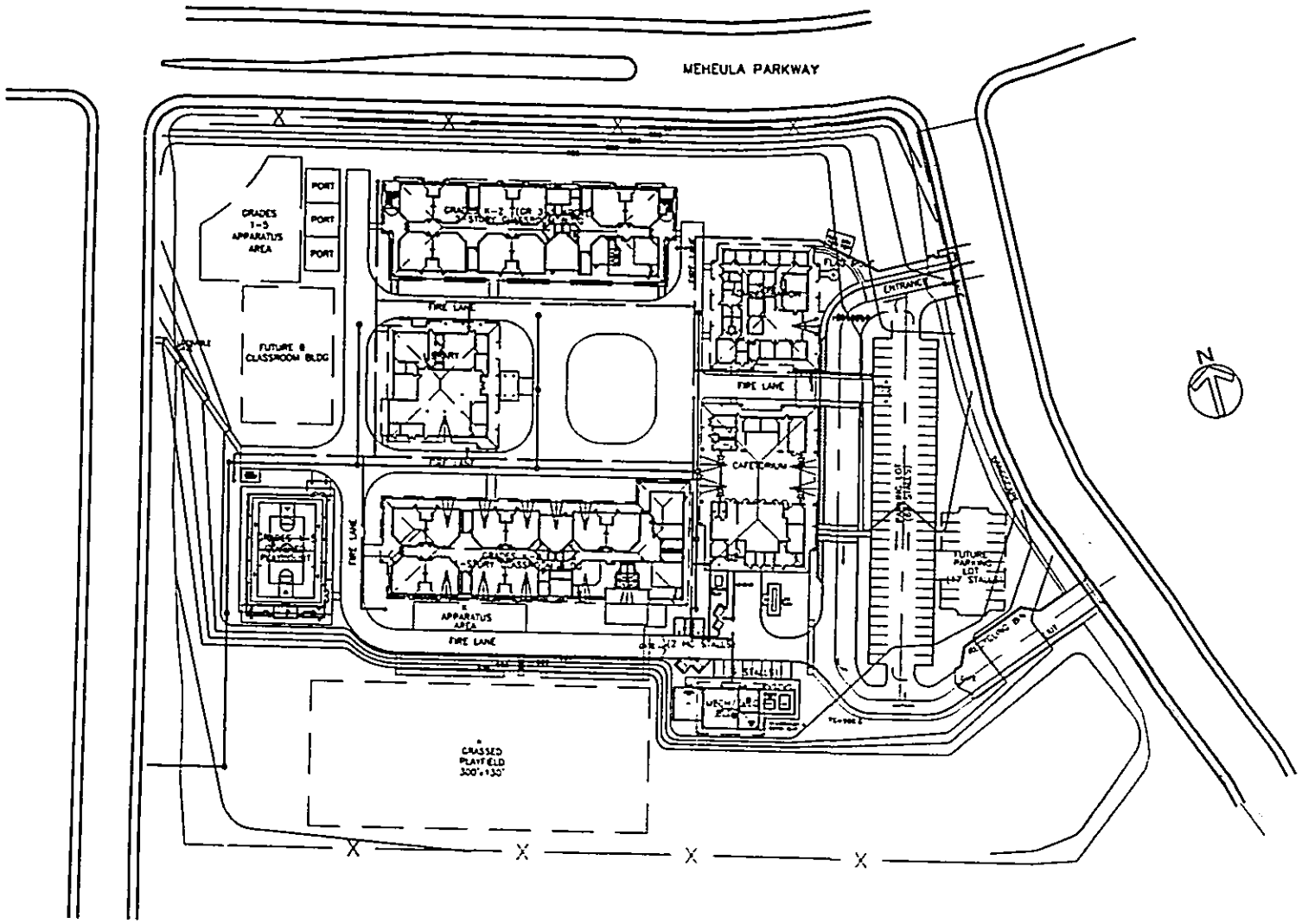
EVIRONMENTAL ASSESSMENT
D.A.G.S. JOB NO. 12-16-2605

PREPARED BY:
PACIFIC ARCHITECTS, INC.

MILILANI MAUKA II ELEMENTARY SCHOOL
MILILANI
OAHU
HAWAII

WATER AND SEWER PLAN

FIGURE 15



WATER & SEWER PLAN

SCALE: 1"=150'-0"

GRAPHIC SCALE: 1" = 150'-0"

0 150 300 600

5.0 SUMMARY OF DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1. CLIMATE

Rainfall in the higher areas of Mililani Mauka average roughly 40 - 60 inches of rain per year. The prevailing ground slope and the need to retain runoff on site for a limited time suggest that the down stream areas in the southwest corner of the site should probably be reserved for playing fields or open areas.

The prevailing wind direction is from the northeast. It is desirable that heat sinks such as large paved areas and facilities that emit noxious air emissions be placed downwind of the school.

The sun track across the site during the day is shown on Figure 4. Optimally, buildings should be oriented perpendicular to this track. Placing the long sides of the building with a north and south orientation will reduce the interior heat load and glare caused by the low angle morning and afternoon sun and facilitate bringing in daylight for supplemental lighting.

5.2. SOILS

The elementary school site consists of existing residual soils in the northern third of the site that were formerly cultivated for pineapple production. The southern two-thirds of the site consists of engineered fills that range in thickness from one foot to roughly 16 feet in thickness. Soft spots and localized loose fills are expected. Proof-rolling of the site with a heavy tamping compactor, such as a Caterpillar 825B, to delineate soft spots is recommended. The soils on-site are expected to provide adequate support for the proposed elementary school and its related earthwork and site improvements. However, the moderate expansion potential of the existing engineered fills and deeper residual soils, and the anticipated high in-situ moisture contents of the natural residual soils will require some special design and construction considerations. Although the moderately expansive soils should not affect the building foundations, they can lift the concrete slabs-on-grades and cause distress in the slab. Removal of the expansive soils under the slabs is recommended. The expansion of the soils and their correspondingly low California Bearing Ratio (CBR) would also require thicker than normal pavements for the driveways and parking areas of the school and placement of granular sub-base beneath the sidewalks.

Shallow building foundations are anticipated. Footings are designed for an allowable bearing capacity of 3,000 pounds per square foot (p.s.f.). This value may be increased by one-third for short-term wind or seismic loads.

Pavement sections will consist of 2 inches of asphalt concrete paving (ACP), 6 inches of untreated Aggregate Base Course (UTB), and 12 to 18 inches of select sorrow sub-base (SB) placed on the compacted sub-grade. Where buses and truck traffic is anticipated, the ACP for the pavement sections is increased to 3 inches.

Soil testing for hazardous materials will be conducted by the Land Owner as required by the State of Hawaii before conveyance and transfer of ownership. The soil sampling has been conducted and testing is being undertaken. A report of the findings will be prepared and submitted to the State and its findings included in this report.

5.3. TOPOGRAPHY

The planned Mililani Mauka II site is a gently sloping site that is generally suitable for elementary school development. Steep embankment slopes on the southern and western boundaries and housing on the southern boundary make development of vehicle access more difficult in these areas.

The finish grades for the school are fairly flat, approximately 2%, with some isolated areas with 3 horizontal to 1 vertical slopes. Grading is accomplished by lowering (cutting) the northern portion of the site by 8 feet and raising (filling) the southern portion 7 feet to provide a fairly level platform for the school. Total excavation and embankment is estimated at roughly 33,000 cubic yards of excavation and 25,000 cubic yards of embankment (Figure 12).

The site drains from the northwest to the southeast. The estimated existing 10-year storm runoff is 16 cubic feet per second (cfs). The storm runoff will increase to 44 cfs after the school is built. Storm water is conveyed in swales to drain inlets and catch basins. Drain lines will connect drain inlets and catch basins. The swale along the southern boundary will be retained and reinforced as necessary to provide a barrier to the adjacent property. The play field will be grassed and sloped to allow for the drain water to flow across the field to a drainage inlet at the southern corner of the site. The play field will naturally detain run-off from on-site rain water. Engineering calculations will be prepared for approval by the City and County of Honolulu.

5.4. FLOOD HAZARD

Based on the Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) dated March 4, 1987, the project is within "Zone X" which is defined as areas outside of the 500-year flood plain.

5.5. FLORA & FAUNA

Existing land was used for agricultural for pineapple industry. Over the years, extensive alteration to the area was made to develop the Mililani Community from a master plan in the 1960's. Therefore, there are no significant flora or fauna in the area.

5.6. AIR QUALITY

The U.S. Environmental Protection Agency sets national ambient air quality standards for

sulfur dioxide, carbon monoxide, minus ten microns particulate matter, nitrogen dioxide, lead, ozone, and hydrocarbons. Non-attainment areas require permitting of all major pollution sources. Attainment areas require installation of best available control technology for all major sources (Major Industrial Categories 100 T/yr. or any source 250 T/yr) and must fall within the next increment of degradation. Major pollution sources require an air quality permit before construction. There are no potential air pollution components in the project.

5.7 NOISE

The project site is located in a quiet noise zone due to the rural and undeveloped characteristic of the area. The dominant ambient noise source at the school site is aircraft and small arms noise from military training operations in East Range. Future traffic along Meheula Parkway, Kuaoa Street, and Lehiwa Drive are expected to become a more dominant noise source following full development of the Mililani Mauka area. Background ambient noise levels along the interior site boundaries are probably less than 55 dBA during the daytime and at or below 45 dBA during the nighttime periods. The existing ambient noise levels on the project site should not impact the future school operations since the classrooms, library, and administrative spaces are air-conditioned. The multi-purpose student dining room will not be air conditioned, but adequate (100+ feet) setback distances from the perimeter roadways are available for this facility. In addition, the student dining room is provided with a public address system, so that intermittently high levels of background ambient noise should not impact student assemblies in that facility.

The more critical site noise design considerations involve the potential noise from mechanical equipment at the school site onto adjacent properties to the north, west, and south. The State Department of Health (DOH) controls noise from stationary mechanical equipment if they exceed allowable limits along the school boundary. The siting of buildings on the school campus (during the FACD phase) plus the addition of sound attenuation treatment on noisy equipment (during the design phase) is used to comply with State DOH noise limits. The eastside of the project site fronts a planned community recreational center. At the present time, the school site is in the State Urban District, and zoned A-1 for low-density apartment uses. The adjacent properties to the north, west, and south are planned for development as single family residential subdivisions. Noise attenuation of school equipment is required to meet current State Department of Health single-family residential noise limits of 45 dBA (nighttime) and 55 dBA (daytime).

The southeast corner of the school site is presently zoned Preservation (P-2), and will require that noise emissions from school equipment not exceed the single-family residential noise limits.

5.8 VISUAL ATTRIBUTES

Views from the school can also take advantage of the mountain vistas to the southwest. However, optimum building orientation to take full advantage of the view conflicts with the optimum orientation for daylighting.

5.9 HISTORICAL/ARCHAEOLOGICAL AND CULTURAL SITES

The National Historic Preservation Act (NHPA) requires agencies to take into account the effect of Federal undertakings on any district, building, structure, or object included or eligible to be included in the National Register of Historic Places (NRHP). NHPA further requires that the State Historic Preservation Officer and the President's Advisory Council on Historic Preservation be given an opportunity to comment on the action.

There are no known historic or cultural properties on the planned site that qualify for preservation under NHPA

A Cultural Impact Assessment and an Archaeological Inventory Survey, both dated 12/19/00, has been conducted by Pacific Legacy, Inc. with negative findings. The Cultural Impact Assessment and Archaeological Inventory Survey were reviewed and approved by the Department of Land and Natural Resources (DLNR), Historic Preservation Division, per letter dated 10/2/01.

5.10 PUBLIC UTILITIES

5.10.1 Electrical. *Utility* Service: Hawaiian Electric Company (HECO) has indicated that primary service is available along either Meheula Parkway or Lehiwa Drive. This area is currently under design so the exact service connection point cannot be determined at this time.

HECO will install and maintain a pad mount switch and transformer on the school campus. The primary switch and transformer are located near the mechanical/electrical utility building that is sited near the planned cafetorium.

Empty pullboxes and ductlines with pullstring are provided for future buildings and electrical loads.

An underground ductline system will be installed to accommodate the future portable classrooms (Figure 13).

Telephone

Empty conduits with "mule tape" (per GTE Hawaiian Tel requirements) will run underground from the existing GTE Hawaiian Telephone Company service on either Meheula Parkway or Lehiwa Drive. The main incoming telephone service is terminated at the Main Distribution Frame (MDF) located at the Signal Processing Room. The Signal Processing Room is located in the library building.

Empty pullboxes and ductlines with pullstring are provided for each building. Ductlines to individual buildings will originate from the Signal Processing Room (MDF) and be terminated at an Intermediate Distribution Frame (IDF) located with a Signal Termination Room at each building.

Empty conduits with mule tape are provided to all telephone outlets. Installation of telephone instruments and cabling are included in the construction contract. The

construction contractor will make arrangements for the telephone system to be installed and telephone service provided by a telephone service provider such as Verizon Hawaii.

Telephone outlets are combination type with ADATA (Administrative data) outlet.

Cable Television

Empty conduits with pullstring are run underground from the existing Oceanic Cable service on either Meheula Parkway or Lehiwa Drive. The main incoming television service is terminated at the Main Distribution Frame (MDF) located at the Signal Processing Room.

Empty pullboxes and ductlines with pullstring are provided for each building. Ductlines to individual buildings will originate from the Signal Processing Room (MDF) and be terminated at an Intermediate Distribution Frame (IDF) located with a Signal Termination Room at each building.

Empty conduits with pull string are provided from the television IDF to individual outlet locations.

Public Address Systems

Public Address (PA) system will originate from the General Office area in the Administration Building. The master, public address system equipment is located in the Signal Processing Room of the Library Building.

Conduits and cables will run underground from the PA equipment in a ductline and pullbox system to a communication backboard located in the Signal Termination Room of each building.

Conduits, microphone receptacles, and speaker receptacles are provided for use with portable sound system equipment in the covered playcourt. Built-in PA equipment is not provided.

Integrated Communication System

The communication system is an "Integrated Communication System". The system will accommodate the following features: 1) public address system, 2) intercom system, 3) music system, 4) video "call-up" system, and 5) provisions for installation of a future interface with the telephone system.

Each Classroom is provided with a public address speaker and a pushbutton to initiate calls. The system is designed for future "telephone" handset for placing or receiving intercom calls, video call-ups and potential telephone service.

Administrative Data (ADATA) and Instructional Data (IDATA)

Data systems for ADATA and IDATA are routed from the Signal Processing to data backboards in the Signal Termination Room of each building. ADATA and IDATA cables are installed in an underground ductline and pullbox system.

Data cable from the building's patch panel to individual outlets will not exceed 300-feet in length.

ADATA outlets are combined with the telephone outlets.

Program Bell System

A program bell system is provided for the campus. Power line carrier, non-coded receivers, and 10" bells are provided at each building. The time control "master station" is located in the General Office area of the Administration Building.

Lighting

Illumination levels will conform to the levels recommended by the Illuminating Engineering Society (IES).

Lighting design will conform to the State of Hawaii "Green Light" program and the Hawaii County, Building Energy Efficiency Standards (State Model Energy Code).

Energy efficient light sources are used in each area to meet the recommended IES illumination levels. Fluorescent lamps with 32 watt, T-8 (Octron) type lamps and electronic ballasts are used in interior locations. Shielded low-pressure sodium lamps conforming to the Hawaii County Ordinance 88-122 relating to outdoor lighting are used at exterior locations. High power factor type ballasts are used for HID luminaires. Exterior luminaires are suitable for "high humidity" outdoor use.

5.10.2 Water. A 12" water line connected to the existing 16" water line in Lehiwa Drive will supply water for domestic consumption, irrigation, and fire flow on the campus. An 8" x 2" MFM/MCT meter located in Lehiwa Drive will monitor flow into the campus. The MFM/MCT meter will allow pipelines on the campus to convey domestic, irrigation, and fire flow water. Separate domestic and fire flow lines will not be needed. Downstream from the meter, a backflow prevention unit is placed to prevent water in the campus from flowing back into the Board of Water Supply's (BWS) distribution system. The distribution system on campus will consist of water lines, bends, tees, gate valves, and fire hydrants. The main distribution system is looped to allow the use of smaller pipelines and to make connections to the buildings easier. Fire hydrants are located to provide fire protection to all parts of the buildings. Estimated domestic water consumption is 39,000 gallons per day. Fire flow is 2,000 gallons per minute (Figure 14).

5.10.3 Sewage. The sewage system will consist of sewer lines, cleanouts, and manholes. Sewage lines from the buildings will connect to the site sewer system. The site sewage system will collect and convey sewage to the southwest corner of the site and connect to the stub provided on Kuaoa Street. Estimated sewage generation is 30,000 gallons per day (Figure 15).

5.10.4 Drainage. The existing site drains from the northwest to the southwest. The estimated existing 10-year storm runoff is 22 cubic feet per second (cfs). The 10-year storm runoff will increase to 37 cfs after the school is built. Around the buildings the storm water is collected in swales and drain inlets and conveyed in drainlines and for water quality control discharged through two outlets onto the playfield. The storm water is naturally filtered as it crosses the playfield and collected in a grassed swale along the southern boundary and along Kuaoa Street. The swale along the southern boundary will be retained/improved to collect the storm water. The filtered water will drain into inlets that will convey the storm water in an existing 36" drainage stub in Kuaoa Street.

6.0 IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

The proposed elementary school will improve the quality of life by providing an education facility to support the community of Mililani Mauka. It will serve as an educational facility for the community from pre-kindergarten to 5th grade levels. The proposed elementary school will be implemented in the Master Plan of Mililani Mauka as envisioned for the community.

6.1 Preferred Alternative. The building layout and configuration of the facilities on the project site was developed from a Functional Analysis Concept Development (FACD) Process. The design team consisted of state and city agencies, steering committee made up of members from the Mililani Mauka Community and professional consultants.

The final layout of the school campus may be refined through the design process and preparation for construction documents. The proposed plan is considered the "ideal" from the design team based on the following:

- Functional relationships of school activities
- Accommodates anticipated students, teachers, parents and visitors
- Configuration of buildings allows development of a compact campus
- Reduces student walking distances from classrooms to support facilities
- Contributes to the community educational needs for the expanding community

6.2 No Action Alternative. A "No Action" will result in the Master Plan not being implemented to provide a proposed elementary school to support the expanding community of Mililani Mauka. Adjacent schools will become over crowded and may have a negative impact to provide quality education for the community.

SECTION 7.0 PROPOSED MITIGATION MEASURES

7.1 DESCRIPTION OF ASSESSMENT

The proposed project will not create any impact to the site and its surrounding environment.

7.2 SHORT TERM IMPACTS

Short-term noise impacts on nearby residences may occur during the construction. Use of Department of Health construction noise curfew periods during evening, nighttime, early morning hours, and during weekends and holidays is recommended to minimize noise impacts on nearby residences during phase 2 construction. Noise from phase 2 construction activities should not seriously impact school operations because most school buildings are air-conditioned.

7.3 LONG TERM IMPACTS

The completed new elementary school will be implemented in the Mililani Mauka *Community Master Plan*. This project will serve the community as an educational facility from pre-kindergarten to 5th Grade.

Installation of a chain link fence around the site is planned to prevent children from wandering off the site.

Kuaoa Street and Lehiwa Drive will have walkways into the site. To allow access by the disabled, all walkways into the site will have a maximum running slope of 5% and a maximum cross slope of 2%. In addition to walkways, fire lanes will provide access to the buildings and will have a maximum cross slope of 2%. At least one route accessible to the disabled is provided to all buildings and playing fields.

The landscape design is functional and incorporates the following objectives:

- Minimizes landscape maintenance
- Reduces solar glare on buildings
- Minimizes erosion on cut and fill slopes and in open areas
- Directs pedestrian circulation away from slopes
- Creates spaces to congregate and relax

SECTION 8.0 SIGNIFICANCE CRITERIA

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (11-200-12). The relationship of the proposed project to these criteria is discussed below:

No irrevocable commitment to loss or destruction of any natural or cultural resources would result.

Mililani Community was developed from a Master Plan in the 1960's. Over the years, the area has been extensively altered to provide for residential, educational, recreational and commercial facilities. In the 1980's , Mililani Mauka Community was developed for an expanding community in Mililani. It is highly unlikely that significant archaeological sites are present at the project area.

The action would not curtail the range of beneficial uses of the environment.

The master plan for a new elementary school will expand and enhance educational opportunities and will serve the expanding Mililani Mauka Community.

The proposed action does not conflict with the state's long term environmental policies or goal and guidelines

The State's environment policies and guidelines are set forth in Chapter 344, Hawaii Revised Statutes, "State Environment Policy". Two broad policies are espoused:

A. Conservation of Natural Resources
B. Enhancement of Quality of Life

The master plan conforms to these two broad policies. It enhances and expands the educational facilities, while the design intent is to protect the surrounding resources.

The economic or social welfare of the community or state would not be substantially affected.

The proposed elementary school will contribute the quality of life to provide an education facility to support the community of Mililani Mauka. A high quality education facility within adjacent residential area will implement a primary component of the approved master plan of Mililani Mauka.

The proposed action does not substantially affect health.

During construction of the new elementary school, adjacent residential areas may experience potential noise, dust and minor inconveniences that a normal construction site creates. However, the project will incorporate mitigating measures to reduce inconveniences during construction as well as daily operation when the school is constructed.

Public health will not be adversely affected by the proposed actions.

No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated.

Mililani Mauka II Elementary School will become a primary component in the community. The elementary school responds to the need for an education facility for children in the pre-kindergarten to 5th Grade Levels.

No substantial secondary impacts are anticipated. The construction will provide employment opportunities during and after construction of the elementary school. Jobs will provide employment for construction industry during construction and the education staff for the completed facility.

No substantial degradation of environmental quality is anticipated.

The new elementary school will have no substantial degradation of environmental quality. The facility is not within any areas prone to wave storms.

The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effects on the environment.

Mililani Mauka II Elementary School will meet the future needs of the community. It will be implemented on the existing and planned urban character in the area.

No rare, threatened or endangered species or their habitats would be affected.

Over the years, Mililani Community has been extensively altered from agricultural lands developed in the Master Plan in 1960's. There are no indigenous or endangered species at the existing areas. No rare, threatened or endangered species or their habitants will be substantially affected by the proposed new elementary school.

Air quality, water or ambient noise levels would not be detrimentally affected.

The proposed project will create only minimal impacts to the site during construction period. Noise, dust and minor inconveniences that a normal construction site creates are expected. These inconveniences may be controlled by frequent watering, establishment of wind-screens, and ground-cover.

An increase in the ambient noise level will be directly associated with school activities and operation (increased ambient noise levels will primarily be limited to school operational hours). However, this change in ambient noise level is not

unusual or harmful, and is typical for most residential and urban land use developments.

The project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geological hazardous lands, estuaries, fresh water or coastal waters.

The project is not located within any environmentally sensitive areas. The development of the site is located in the middle of the island of Oahu and will not be affected by flood plains, tsunami zones, erosion-prone areas, geological hazardous lands, estuaries, fresh water or coastal waters. The project site is in "Zone X" which is defined as areas outside of the 500-year flood plain per the Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) of March 4, 1987.

The project would not substantially affect scenic vistas and view planes identified in County or State plans or studies.

The project site is not located within any scenic vistas and/or view planes identified by the County or State.

The project would not require substantial energy consumption.

This project will comply with the State of Hawaii "Green Light" program, the Hawaii County, Building Energy Efficiency Standards (State Model Energy Code) and will conform with all governing energy code requirements.

SECTION 9.0 DETERMINATION

The proposed project will generally consist of the construction of a new elementary school, including but not limited to an Administration/CSSS Building, a Library Media Center/Computer Resource Center, a Cafetorium, a Classroom Building (Single Story), a Classroom Building (Two Story), a Covered Playcourt, a Mechanical/Electrical Building, site improvements, new driveway and drop-off, new parking lot, landscaping, etc., as indicated on the master site plan. Major site grading, earthwork, and normal construction activity can be expected. While the construction of these facilities and improvements will create short term nuisances, dust control and other pollution control measures will be incorporated into the scope of the project to mitigate and minimize dust, noise, etc., to within all regulatory codes and restrictions governing this project. Erosion control measures are also included into the scope of this project.

The proposed project is not anticipated to cause any long term, adverse environmental impacts. There are no known significant habitats or rare, endangered or threatened species of flora or fauna or archaeological sites located on the project site. No adverse environmental impacts are anticipated towards the area's infrastructure systems and public services.

Based on the foregoing, it is determined that the proposed project will not result in any significant adverse environmental impacts.

SECTION 10.0 LIST OF REQUIRED APPROVALS AND PERMITS

During the implementation stages of the project, the applicant will be working with the State and County review agencies for examination and approval of project plans and specifications. The community has also had the opportunity to provide input into the process during the FACD planning and design process and through presentations to the Neighborhood Board meetings.

Permit/Approval	**Responsible Agency**
Grading/Building Permits	Department of Planning and Permitting City and County of Honolulu
Zoning Waiver	Department of Planning and Permitting City and County of Honolulu

SECTION 11.0 REFERENCES

Hawaii, State of, Office of Environmental Quality Control, *The Environmental Guidebook*, Honolulu, Hawaii, October 1997.

Helber, Hastert, VanHorn and Kimura Planners, *Mililani Mauka Residential Community Final Environmental Impact Statement*, Honolulu, Hawaii, July 1987

Pacific Architects, Inc., *Partnering Agreement for Mililani Mauka II Elementary School*, July 24, 2000.

PBR Hawaii, *Mililani Intermediate School Final Environmental Assessment and Finding of No Significant Impact (Negative Declaration)*, Honolulu, Hawaii, July 1996.

SECTION 12.0 COMMENTS AND RESPONSES

The public comment period as required by Chapter 343, Hawaii Revised Statutes, on the Draft EA resulted in the following Responses from governmental agencies, community organizations and individuals. The comments and our responses are included in this section.

12.1 COMMENTS RECEIVED ON THE DRAFT EA

Federal

Department of the Army, Civil works, Technical Branch

State of Hawaii

Department of Education
Department of Transportation
Office of Environmental Quality Control
Office of Hawaiian Affairs

City and County of Honolulu

Board of Water Supply
Department of Planning and Permitting
Department of Parks and Recreation
Police Department
Fire Department

Community

Mary Anne Selander, Mililani Neighbor Hood Board No. 25
Laura Brown

12.2 DRAFT EA COMMENT LETTERS AND THE APPLICANT'S RESPONSES

The following section includes letters responding to the Draft EA and the Applicants Responses.

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

REPLY TO
ATTENTION OF

July 3, 2000

RECEIVED - DAGS
DIV OF PUBLIC WORKS
2001 JUL -6 P 2:48

Civil Works Technical Branch

Mr. Ralph Morita
State of Hawaii
Department of Accounting and General Services
1151 Punchbowl Street, Room 430
Honolulu, Hawaii 96813

Dear Mr. Morita:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Mililani Mauka II Elementary School, Oahu (TMK 9-5-2: 1). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, a DA permit will not be required for the project.

b. The flood hazard information provided on page 17 of the DEA is correct.

Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

James Pennaz, P.E.
Chief, Civil Works
Technical Branch

RECEIVED
JUL 6 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Comptroller .....
State P.W. Engr. .....
P.W. Secty .....
Staff Serv. .....
Planning Br. .....
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AUG 28 2001

Mr. James Pennaz, P.E. Chief
Civil Works, Technical Branch
U.S. Army Engineer District, Honolulu
Ft Shafter, Hawaii 96819

Dear Mr. Pennaz:

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your review and response to our Draft EA report for the Mililani Mauka II Elementary School. We acknowledge your confirmation that the information in the subject report within your purview is acceptable.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

Gordon Matsuoka

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Muranaka, Pacifc Architects
Mr. Clifford Leong, Project Management Branch

BENJAMIN J. CAYETANO
GOVERNOR

PAUL G. LeMAHIEU, Ph.D.
SUPERINTENDENT

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUN 27 P 2:29

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

DIVISION OF ADMINISTRATIVE SERVICES

June 26, 2001

DIVISION OF PUBLIC WORKS

TO:	FOR	INITIAL:
PW Adm	Approval	
PW Sec	Signature	
Staff Svcs Br	Information	
Planning Br	Your File	
Proj Mgmt Br	See Me	
Design Br	Comments	
Inspec Br	Investigate & Report	
Qual Cont Br		
Leasing Sr		

MEMO TO: Mr. Gordon Matsuoka, Public Works Administrator
Division of Public Works, DAGS

A T T N: Mr. Ralph Morita, Planner
Planning Branch

F R O M: Alfred K. Suga, Acting Assistant Superintendent
Division of Administrative Services

SUBJECT: Mililani Mauka II
Draft Environmental Assessment

The Department of Education has no comment on the subject draft environmental assessment.

Thank you for the opportunity to respond.

AKS:SB:hy

cc: G. Salmonson, OEQC
C. Murakami, Pacific Architects

RECEIVED
JUN 28 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

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AUG 28 2001

MEMORANDUM

TO: Mr. Alfred K. Suga
Acting Assistant Superintendent
Department of Education

FROM: Gordon Matsuoka
Public Works Administrator

SUBJECT: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02: 01

Thank you for your June 26, 2001, review and response acknowledging that you have no comments to offer to the subject Draft EA.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

RY:mo

c: Mr. Clifford Muranaka, Pacifc Architects
Mr. Clifford Leong, Project Management Branch

BENJAMIN J. CAYETANO
GOVERNOR

RM tru 6/29/01

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUN 29 A 8:23

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

IN REPLY REFER TO:

HWY-PS

DIVISION OF PUBLIC WORKS
TO: FOR: INITIAL:

I	PW Adm		Approval
	PW Sec		Signature
	Staff Svcs Br		Information
I	Planning Br		Your File
	Proj Mgmt Br		See Me
	Design Br		Comments
	Inspec Br		Investigate & Report
	Qual Cont Br		
	Leasing Br		

JUN 27 2001

TO: RALPH MORITA, HEAD ENGINEER
EDUCATIONAL SECTION, PUBLIC WORKS DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

FROM: BRIAN K. MINAAI
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT, MILILANI MAUKA II ELEMENTARY SCHOOL, MILILANI MAUKA, TMK: 9-5-02: 01

Thank you for providing this opportunity to review the Draft Environmental Assessment for the proposed school.

The project is not anticipated to have a significant impact to our State facilities. The proposed elementary school will be located along roads under county jurisdiction. The improvements made at Interstate H-2 and the Mililani Interchange are expected to satisfactorily accommodate the current planned growth.

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

c: OEQC, Ms. Genevieve Salmonson
Pacific Architects, Inc., Mr. Clifford Murakami

RECEIVED
JUN 29 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Comptroller
State P.W. Engr
P.W. Secty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
Inspec. Br.
Quality Control
Leasing Br.
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Fiscal Off.

AUG 31 2001

MEMORANDUM

TO: The Honorable Brian K. Minaai, Director
Department of Transportation

FROM: Wayne H. Kimura
State Comptroller

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your June 27, 2001, review and response to our Draft EA for the Mililani Mauka II Elementary School. We appreciate your acknowledgment of no significant impact to your facilities.

Thank you for your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

RY:mo

c: Mr. Clifford Murakami, Pacific Architects
Mr. Clifford Leong, Project Management Branch

6/27/01 VS

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

cc: DOE-Facilities Branch
DOE-Central District
DAGS Project Management Branch

June 27, 2001

RECEIVED
JUN 27 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Gordon Matsuoka
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

Attention: Ralph Morita

Dear Mr. Matsuoka:

Subject: Draft Environmental Assessment (EA) for Mililani Mauka II Elementary School

We have the following comments to offer:

Two-sided pages: In order to reduce bulk and save on paper, please consider printing on both sides of the pages in the final document.

Accepting authority: Please note that, for environmental assessments, the accepting authority is the same as the applicant agency. DAGS will make the determination of significant impact, or lack of significant impact, after reviewing the final EA and all the comment letters and responses.

Acronyms/abbreviations list: Such a list would be very helpful for the reviewer, if placed at the beginning of the text. For example, section 5.9 contains the undefined abbreviation NHPA. The Project Summary (section 4.1.4) contains the following abbreviations: CSSS, FMS, YRE-MT, PCNC, JPO, SSC. CSSS is used extensively throughout the EA and never defined. Please include this list in the final EA.

Contacts: Document all contacts in the final EA, including those made during the pre-consultation phase, and include copies of any correspondence. This is especially true of contacts made with community members or community groups.

Paving; landscaping: HRS 103D-407 requires the use of recycled glass in paving materials whenever possible, and HRS 103D-408 requires the use of native Hawaiian flora whenever and wherever possible. For the text of these sections of HRS contact our office for a paper copy or go to our homepage at http://www.state.hi.us/health/oeqc/index.html.

Permits and approvals: In the final EA list all required permits and approvals for this project and give the status of each.

Determination from Historic Preservation Division: Documentation of concurrence with the attached archeological report from the Historic Preservation Division of DLNR must appear in the final EA.

Capacity: Koa Ridge Development by Castle & Cooke Homes, at 1248 acres and 6200 residential units, will add over 1500 additional elementary students to this area. Will the proposed elementary school be able to accommodate any of these students?

Significance criteria: The discussion and analysis in section 8 did not include two criteria that were added as of August 31st, 1996. Please include them, with the appropriate analysis, in the final EA:

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies;
(13) Requires substantial energy consumption.

Visual impacts: Include drawings or renderings of the proposed buildings and any proposed landscaping that show the final appearance of the project.

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Clifford Murakami

Comptroller
State P.W. Engr.
P.W. Socty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
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Quality Control
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OCT - 4 2001

MEMORANDUM

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Control

FROM: Gordon Matsuoka
Public Works Administrator

SUBJECT: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your review and response to our Draft EA report for the Mililani Mauka II Elementary School. Your comments that addressed issues related directly to our further analysis/revisions to the report will be acted on and incorporated in the Final EA. Our response to the balance of your comments are as follows:

1. Paving, landscaping

   The design effort will address this issue in accordance with existing State laws and coordinated with Mililani Town Association requirements.

2. Determination from State Historic Preservation Division

   The project archaeologist will obtain the State Historic Preservation Division's concurrence with the archaeological report.

3. Capacity

   The DOE has no plans for any of the Mililani schools to absorb the increased number of students from the proposed Koa Ridge Development.

Your review and comments submitted regarding the subject report are appreciated. Your letter along with this response will be included in the Final EA.

RY:mo
c: Mr. Clifford Murakami, Pacific Architects
Mr. Norman Hayashida, Project Management Branch

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUN 2? A 8:47

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

RECEIVED
JUN 29 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

June 20, 2001

Mr. Ralph Morita
Department of Accounting and
General Services
151 Punchbowl Street
Honolulu, HI 96813

Subject: Mililani Mauka II Elementary School – Draft Environmental Assessment

Dear Mr. Morita:

Thank you for the opportunity to comment on the above referenced project. OHA would like to recommend that native plants be introduced when landscaping the project site. The selection of the trees and plantings should be guided by consideration of the vegetation that existed in the area prior to sugar cane cultivation.

If you have any questions, please contact Jerry B. Norris at 594-1847 or email him at jnorris@oha.org.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

cc: OHA Board of Trustees
Randall K. Ogata, OHA Administrator
Genevieve Salmons, OEQC
Clifford Murakami, Pacific Architects, Inc.

DIVISION OF PUBLIC WORKS

TO:	FOR / INITIAL:
1 PW Adm	Approval
PW Sec	Signature
Staff Svcs Br	✓ Information
2 Planning Br	✓ Your File
Proj Mgmt Br	✓ See Me
Design Br	Comments
Inspec Br	Investigate & Report
Qual Cont Br	
Leasing Br	

Comptroller .....
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SEP 28 2001

MEMORANDUM

TO: Mr. Colin C. Kippen, Jr., Deputy Administrator
Office of Hawaiian Affairs

FROM: Gordon Matsuoka
Public Works Administrator Gordon Matsuoka

SUBJECT: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your June 20, 2001, review and response to our Draft EA report for the Mililani Mauka II Elementary School. We intend to incorporate native plants into our landscaping to the extent that they are appropriate to the site conditions and as coordinated with applicable Mililani Town Association requirements. Since we are finding that many of the native plant species are not suitable for the poor soil conditions at the site, we may limit our use of native plants to special area where we can amend the site conditions to allow the introduction of the native plants.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

RY:mo
c: Mr. Clifford Murakami, Pacific Architects
Mr. Norman Hayashida, Project Management Branch

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

DRAFT 7/6/01
RY

July 6, 2001

Mr. Wayne Kimura, State Comptroller
Department of Accounting and General Services
State of Hawaii
P. O. Box 119
Honolulu, Hawaii 96810

Attention: Ralph Morita

Dear Mr. Kimura:

Subject: Your Transmittal of the Draft Environmental Assessment for the Mililani Mauka II Elementary School, Mililani Mauka, TMK: 9-5-02: 01

Thank you for the opportunity to review the subject document for the proposed elementary school.

We have the following comments to offer:

1. The elementary school has a water allocation of 51,600 gallons per day.

2. The availability of water will be determined when the Building Permit Application is submitted for our review and approval.

3. The proposed project is subject to Board of Water Supply cross-connection control requirements prior to the issuance of the Building Permit Application.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Governor, State of Hawaii c/o Office of Environmental Quality Control
Pacific Architects, Inc.

Comptroller
State P.W. Engr.
P.W. Secty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
Inspec. Br.
Quality Control
Leasing Br.
Contracts (P)1558.1
Fiscal Off.

AUG 28 2001

Mr. Clifford S. Jamile
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Jamile:

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02: 01

Thank you for your July 6, 2001, review and response to our Draft EA report for the Mililani Mauka II Elementary School. Your confirmation of a water allocation of 51,600 gallons per day is acknowledged. The balance of your comments regarding issues addressed during the building permit phase is noted.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Muranaka, Pacific Architects
Mr. Clifford Leong, Project Management Branch

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

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CITY OF PUBLIC WORKS
2001 JUL -9 P 12:43

cc: DAGS Design Branch
Diane Kashiwai

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA K C. CHEE
DEPUTY DIRECTOR

2001/CLOG-2606(RY)

July 9, 2001

RECEIVED
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DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Mr. Ralph Morita
Department of Accounting and General Services
State of Hawaii
1151 Punchbowl Street, Room 430
Honolulu, Hawaii 96813

Dear Mr. Morita:

Draft Environmental Assessment for the Mililani Mauka II Elementary School
Tax Map Key 9-5-2: Portion 1, Mililani Mauka, Oahu

Thank you for the opportunity to review the subject Environmental Assessment. Our comments are as follows:

1. Central Oahu Sustainable Communities Plan, Final Review Draft of March 2001

The proposed school is consistent with the general policies and planning principles for school facilities in the Central Oahu Sustainable Communities Plan, Final Review Draft (SCP). In addition, the school's design conforms to the concept of "Schools as Community Centers" of the SCP which pertains to schools often serving as cultural or recreational centers and as meeting facilities for the surrounding community.

2. Wastewater Disposal

With respect to wastewater disposal, our records indicate that the proposed elementary school was approved under a Sewer Connection Application File (No. 2001/SCA-0085) for 650 students.

3. Zoning Requirements

For structures that exceed the maximum permitted height, the Department of Education will need to obtain a zoning waiver instead of a zoning variance as stated in the Environmental assessment. In addition, as clarified by your staff, 'pre-kindergarten'

students only refer to those students below the kindergarten age level who fall under the Special Education Program, and thus, not intended for regular students which could be considered accessory if owned and operated by the Department of Education.

If you have any questions, please contact Raymond Young of our staff at 527-5839.

Sincerely yours,

for RANDALL K. FUJIKI, AIA
Director of Planning and Permitting

RKF:lh
Doc 103932

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

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JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR
LORETTA K.C. CHEE
DEPUTY DIRECTOR

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JUL 6 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

ET

July 2, 2001

TO: AGENCIES, NEIGHBORHOOD BOARDS, ISLANDWIDE AND COMMUNITY ORGANIZATIONS

FROM: RANDALL K. FUJIKI, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: 2001 DEVELOPMENT PLAN ANNUAL AMENDMENT REVIEW

On July 2, 2001, the Department of Planning and Permitting submitted to the Planning Commission a report for the 2001 Development Plan (DP) Annual Amendment Review.

Enclosed for your information is a copy of the Central Oahu Development Plan Annual Amendment Review report. The proposed amendment would redesignate a site, previously reserved for the University of Hawaii West Oahu Campus, from Public Facility to Residential and Low Density Apartment.

There were no amendments proposed to the Primary Urban Center in this year's Annual Amendment Review.

The Planning Commission and City Council will hold a public hearing on the proposed amendment. Additional copies of the report are available for pick-up at the Department of Planning and Permitting, Planning Division 7th floor of the Honolulu Municipal Building, 650 South King Street.

RKF:mo
g:dlu/general/ipd/dplum/ltrsaar.wpd
Attachment

DIVISION OF PUBLIC WORKS
TO: FOR INITIAL:

✓	PW Adm		Approval
	PW Sec		Signature
	Staff Svcs Br	✓	Information
✓	Planning Br		Your File
	Proj Mgmt Br		See Me
	Design Br		Comments
	Inspec Br		Investigate & Report
	Qual Cont Br		
	Leasing Br		

2001 DEVELOPMENT PLAN

ANNUAL AMENDMENT REVIEW

CENTRAL OAHU

JULY 2, 2001

Department of Planning and Permitting
City and County of Honolulu
Honolulu, Hawaii

PROPOSED AMENDMENTS TO THE CENTRAL OAHU DEVELOPMENT PLAN 2001 ANNUAL AMENDMENT REVIEW

INTRODUCTION

One amendment to the Central Development Plan Land Use Map was presented in the Agency and Public Review Package distributed in February 2001.

The subject proposal seeks to amend a portion of the Central Oahu Development Plan Land Use Map by redesignating approximately 104.2 acres of land from "Public Faculities" to "Residential" and "Low Density Apartment".

The Department of Planning and Permitting is recommending approval of the Land Use amendment request for:

01/CO-1 Mililani Mauka, Phase III

This recommendation is being forwarded to the Planning Commission for review.

State Agencies

Department of Accounting and General Services
Department of Agriculture
Department of Business, Economic Development & Tourism
Department of Education
Department of Hawaiian Home Lands
Department of Health
Housing and Development Corporation of Hawaii
Department of Human Services
Department of Land and Natural Resources
State Office of Planning
Department of Transportation
Hawaii Community Development Authority
Land Use Commission
Oahu Metropolitan Planning Organization
Office of Environmental Quality Control
Office of Hawaiian Affairs
University of Hawaii

Island wide Organizations

APA Public Issues Committee
Chamber of Commerce
Common Cause/Hawaii
Hawaii Farm Bureau Federation
Hawaii's Thousand Friends
Land Use Research Foundation
League of Women Voters
Leeward Oahu Transportation Management Association
Outdoor Circle
Waimanalo Managed Community Growth Support Network
Neighborhood Boards (All Boards)
Hawaiian Electric Company
Hawaiian Railway Society
International Longshoremen's & Warehousemen's Union

Community Organizations

Kamilonui Farmers Cooperative
Ka Nupepa
Leeward Oahu Jaycees
Leeward Oahu Lions Club
Palehua Community Association
Sierra Club
St. Joseph's Church
SMS Research
Village Park Community Association
Wahiawa Community and Businessmen's Association
Waikalani Woodlands Homeowners Association
Wailani Neighborhood Association
Waipahu Business Association
Waipahu Community Association
Waipahu Cosmopolitan Club
Waipahu Cultural Garden
Waipahu Hongwanji Mission
Waipahu Neighborhood Improvement Association
Waipahu 2000 Community Council
Waipahu United Church of Christ

01/CO-1

MILILANI MAUKA, PHASE III

DEPARTMENT OF PLANNING AND PERMITTING
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION OF CITY AND COUNTY DEPARTMENT OF PLANNING AND PERMITTING (DPP)	)	FILE NO. 2001/CO-1

REVIEW AND RECOMMENDATION PERTAINING TO AN AMENDMENT TO THE CENTRAL OAHU DEVELOPMENT PLAN, FOR THE PROPOSED MILILANI MAUKA, PHASE III PROJECT

I. APPLICATION

A. Basic Information

INITIATED BY	:	Director, Department of Planning and Permitting
APPLICANT	:	Castle & Cooke Homes Hawaii, Inc.
LANDOWNERS	:	Castle & Cooke Homes Hawaii, Inc.
LOCATION	:	The proposed project is located on a site previously planned for a future university within Mililani Mauka Phase I development.
TAX MAP KEY	:	9-5-49: portion of parcel 27
LAND AREA	:	104 Acres (Approximate)
STATE LAND USE DISTRICT	:	Urban
DEVELOPMENT PLAN LAND USE MAP	:	Public Facility

II. FINDINGS OF FACT

On the basis of the evidence presented, the Director has found:

A. Description of Site/Surrounding Uses: The Mililani Mauka residential development is located within the Central Oahu Development Plan area, between Kipapa and Waikakalaua Gulches. The proposed project site (Phase III) is located within the north-western corner of the Mililani Mauka Phase I development. The Phase III site is bound by H-2 Freeway to the west, Waikakalaua Gulch to the north, Pacific Islanders residential & I'i Vista multi-family developments to the east, and Koolani Drive and North Gully to the south. Soils within the site are classified as Leilehua silty clay ((LeB), Wahiawa silty clay (WaA, WaB, and WaC), Manana silty clay loam (MoB and MoC), and Helemano silty clay (HMLG). Elevations range from 700 to 900 feet. Slopes average approximately four percent with slopes ranging from two percent to close to ten percent. Areas within the project site that exceeds ten percent are limited to small areas which borders the Waikakalaua Gulch and North Gully.

The site was previously used for the cultivation of pineapples, which was discontinued in the early 1990's. Portions (approximately 28% or 29.6 acres) of the project site are currently being used to support the applicant's residential construction operations. The remaining portions of the site are currently vacant.

Surrounding land uses include the Launani Valley residential development to the north, Islanders and I'i Vista residential developments to the east, Olaloa residential development and the Mililani Mauka District Park to the south, and the H-2 freeway to the west.

B. Permits/Approvals: Upon approval of this development plan amendment, the property will be eligible for a proposed change in zoning to R-3.5 Residential and A-1 Low Density Apartment districts. Additional subdivision, grading, and building approvals would be required.

C. Public Agency Comments: The following public agencies were requested to evaluate the project in terms of their facilities and services:

1. **City and County**

Board of Water Supply
Budget and Fiscal Services
Office of the City Clerk
City Council
Department of Community Services
Department of Design and Construction
Department of Environmental Services
Department of Facility Maintenance
Fire Department
Customer Service Department
Neighborhood Commission
Department of Parks and Recreation
Police Department
Department of Transportation Services

environmental assessment are reproduced in the Final EA and comments directed to the 2001 Annual Amendment Review (AAR) are in Attachment B. There were two AAR letters received by the department. The letters expressed concerns related to potential traffic congestion, inadequate schools facilities, noise from military training, loss of farmland, inadequate park facilities, and inadequate commercial support.

Any written comments received by the Department of Planning and Permitting after the writing of this report will be forwarded to the Planning Commission via separate transmittal.

III. ANALYSIS

A. Authority: This amendment, initiated by the Director of Planning and Permitting, is being processed under the provisions of Section 24-1.13(a) (3), Revised Ordinances of Honolulu 1993, as amended (Development Plan Common Provisions), which states in pertinent part:

> "Amendments to these common provisions and each development plan shall be considered by the council as part of the annual amendment review procedure ..."

B. Justification: A market study, "Market Study of A Master Planned Community at Koa Ridge Makai and Waiawa", prepared by Prudential Locations Real Estate Sales & Research indicates that development in Central Oahu in the ten year period from 2000 to 2009 will have a shortfall of 3,415 units, even with an additional 1,500 units projected from the Waiawa by Gentry development.

The applicant intends to alleviate some of the projected shortfall within the Central Oahu area by providing additional residential units within the existing Mililani Mauka community. This redesignation and subsequent rezoning would provide an additional 800 units to the housing market.

The proposed change would eliminate the proposed university site and replace it with proposed single family residences and apartments and/or townhouses units that will be compatible with and similar to the existing developments in Mililani Mauka Phase I and II. The proposal by the applicant would result in approximately 522 single-family units and 304 multi-family units, or a net increase of approximately 103 dwelling units approved under a previously accepted EIS for Mililani Mauka Phase I and II. The additional 103 units would increase the projected population in the Central Oahu by 0.3 percent of the 2010 population projection.

C. Compliance with Environmental Laws: The original Environmental Impact Statement, "Mililani-Mauka, Residential Community", February 1987, was completed under Chapter 343, Hawaii Revised Statutes (HRS). A subsequent document, "Development Plan Land Use Amendment and Final Environmental Assessment from Public Facilities to Residential and Low Density Apartment for Mililani Mauka, Phase III", June 2001, was completed to address the proposed change in proposed use from a university to residential and low

Physical Development and Urban Design

Objective A: To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed and appropriate for the areas in which they will be located.

Policy 2: Coordinate the location and timing of new developments with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.

Policy 4: Require new developments to provide or pay the cost of all essential community services, including roads, utilities, schools, parks, and emergency facilities that are intended to directly serve the development.

F. Development Plan of the City and County of Honolulu: The applicable development plan for Central Oahu (CO) is currently the document, maps, and processes implemented prior to the Charter amendments of 1992. As such, Central Oahu is subjected to both Development Plan Common Provisions and Development Plan Special Provisions for Central Oahu. This amendment to the CO Development Plan Land Use Map is being proposed under the provisions of the Annual Amendment Review process.

The proposed change in designation is from "Public Facility" to "Residential" and "Low Density Apartment". The proposed change in designation to "Residential" will allow a change in zoning to a residential district (e.g. R-3.5) and the "Low Density Apartment" designation would support a change in zoning to "A-1" Low Density Apartment district. The Development Plan Special Provisions for Central Oahu specify a general height limit of 25 feet for buildings on the lands designated for Residential and 30-feet for buildings on lands designated for Low Density Apartment.

G. Draft Central Oahu Sustainable Communities Plan: Pursuant to the 1992 Amendments to the City Charter, the Central Oahu Development Plan is in the process of being revised from a parcel-specific orientation to a more visionary and conceptual plan. The proposed Central Oahu Sustainable Communities Plan contains vision statements and implementing policies that support sustaining Central Oahu's unique character, lifestyle, and economic opportunities by focusing future residential development in master planned suburban communities within an Urban Community Boundary and on revitalized Waipahu and Wahiawa.

The Urban Community Boundary is established to define and contain the intended extent of urbanized or "built-up" areas within the Central Oahu district. The purpose is to accommodate the projected increase in population for the area and to provide adequate lands to support established communities while protecting lands outside this boundary for agriculture and other resource and open space values. Mililani Mauka is identified as one the master planned suburban communities within the Urban Community Boundary. The proposed Phase III development is consistent with the existing and planned residential communities policies and guidelines contained within the proposed plan.

Sec. 24-1.5 (2) of the Development Plan Common Provisions sets forth general principles and control for the establishment of a park and recreation facilities. Community bases parks and recreation sites (public and private) should have reasonable accessibility and should be close proximity to the residents it is intended to serve. Open space and recreation provision for suburban and new development areas states that "suburban and new development areas shall include land for open space and recreation purposes at a minimum of 2 acres per thousand persons."

The Mililani District Park will be located within 0.25 mile from the Phase III development. The district park is currently under construction and should be available for public use by the by the end of the year. The Phase III residents recreation needs could be fulfilled by the district park.

Based on the estimated projected population represented by 6,743 units in Mililani Mauka, approximately 41 acres of park/open space area would be needed based on the above DP guideline of two acres per thousand persons. Therefore, sufficient park/open space has been provided by the applicant.

However, park lands will be addressed again through the zone change process as well as under the park dedication ordinance.

Police

The Wahiawa Police Station will service the proposed Phase III development. The police services needed for the proposed Phase III development versus the earlier planned university are not expected to be significantly greater. The Police Department indicated additional services and facilities improvements may be required.

The Director acknowledges the concern of the Police Department, and notes that the resulting increase in the real property tax base will also allow for additional revenue to enhance funding of such City services and facilities improvements.

Solid Waste

Refuse collection for the single family residential units is proposed to be collected by the City and County of Honolulu and the multi-family units would be serviced by the private collection service. Solid waste from both sites will be disposed through incineration at the H-Power facility, or disposed of at an approved landfill.

For City refuse collection service, the applicant would be required to obtain approval from the Department of Environmental Services no later that twelve months before residential occupancy.

Utilities

Hawaiian Electric Co. (HECO) acknowledged that there are adequate facilities available to accommodate and serve the proposed development. Electrical distribution equipment will be installed by the applicant and dedicated to HECO.

For telephone and cable service, the applicant indicated that they will coordinate the Phase III project with Verizon Hawaii and Oceanic Cable.

Wastewater

The proposed Phase III project would be connected to the City's municipal wastewater system which is currently serviced by the Honouliuli Wastewater Treatment Plant (WWTP). The Honouliuil WWTP has a designed capacity of 32 mgd and would be able accommodate the Phase III project .

The applicant may be required to prepare a revised wastewater master plan for the Phase III project. Required wastewater system improvements for the Phase III porject would be funded by the applicant.

IV. CONCLUSION

The Director hereby makes the following Concludsions:

Based upon the foregoing analysis, the proposed development plan land use map change from Public Facility to Residential and Low Density Apartment is not in conflict with State and City land use policies, and public facilities and services, both existing and planned will not be adversely affected by the proposal.

V. RECOMMENDATION

Based on the foregoing findings of fact and analysis, I recommend that this Development Plan amendment be approved. Please review the proposed amendment and forward it, together with your findings and recommendation, through the Mayor to the City Council.

ATTACHMENT A

DPP REF. NO.: 2001/CO-1
MAP REF. NO.: 2001/CO-1.1
NB AREA: Mililani Mauka-Launani Valley, NB No. 35

CENTRAL OAHU
DEVELOPMENT PLAN LAND USE MAP AMENDMENT
BEING CONSIDERED

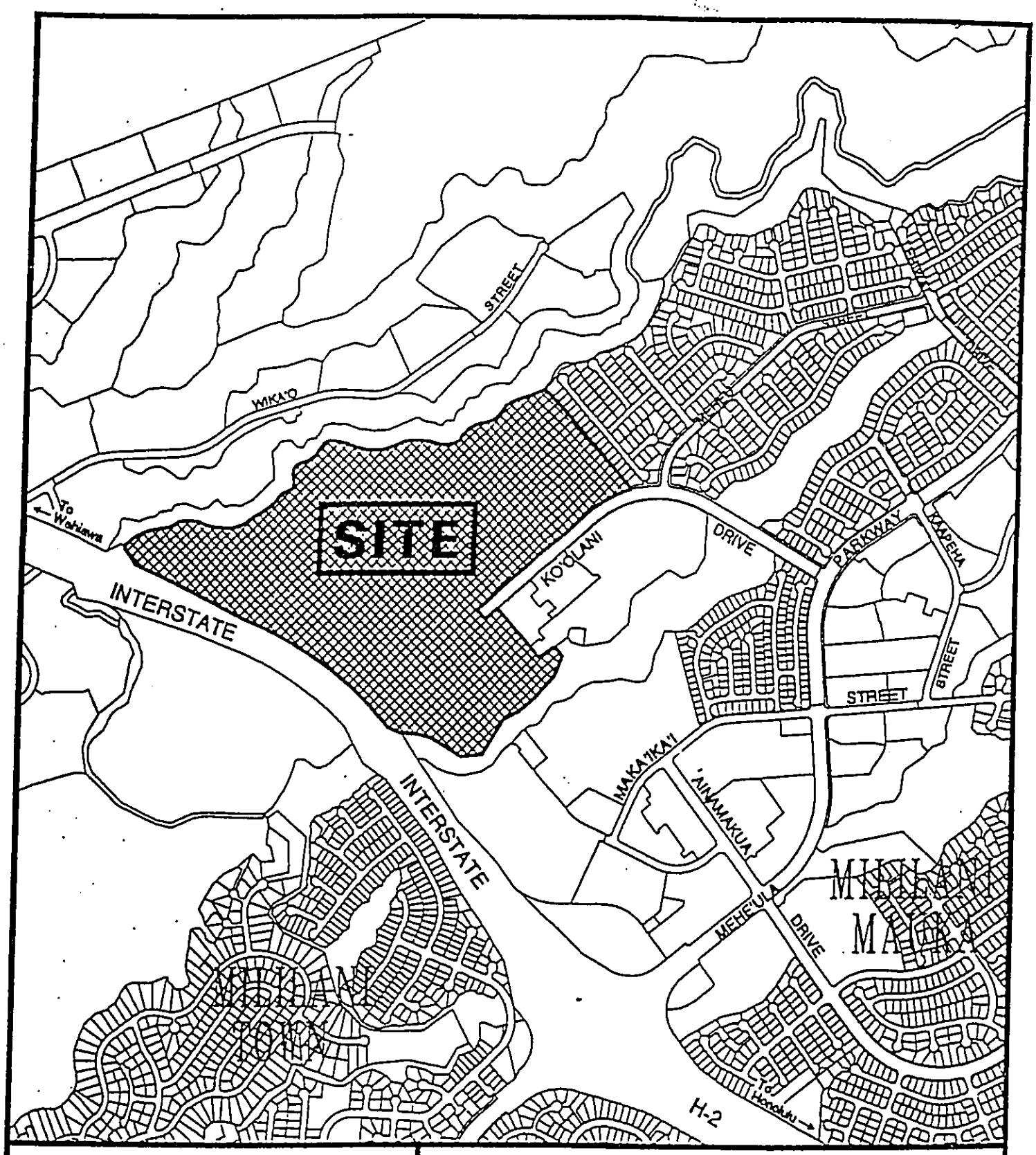
Project Title: Mililani Mauka, Phase III

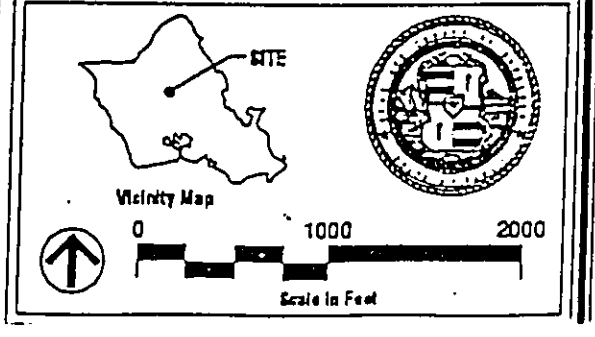
Amendment/Project Information

Amendment Request: To amend a portion of the Central Oahu Development Plan Land Use Map from Public Facilities to Residential, and Low Density Apartment.

Requested By: Castle & Cooke Homes Hawaii, Inc.

Location:	The proposed project is located on a site previously planned for a future university within Mililani Mauka Phase I development. The site is bounded by H-2 Freeway to the west, Waikakalaua Gulch to the north, Pacific Islanders residential & I'i Vista multi-family developments to the east, and Koolani Drive and North Gully to the south.
Area:	Approximately 104.2 acres
TMK:	9-5-49: portion of parcel 27
Address(es) of Subject Area:	Not applicable.
Owner/Developer:	Castle & Cooke Homes Hawaii, Inc.
Agent:	Kusao & Kurahashi, Inc.
Basis for Request:	The applicant, Castle & Cooke Homes Hawaii, Inc. proposes to redesignate approximately 104.2 acres of land in Mililani Mauka from Public Facilities to Residential (94.2 acres) and Low Density Apartment (20 acres). The 104.2 acre Phase III development site was originally part of the Mililani Mauka Phase I development, on a site previously planned for a future university (University of Hawaii, West Oahu Campus). Since the original proposal, the applicant has been informed by the University of Hawaii (UH) that they would develop the UH West Oahu Campus at Kapolei and therefore, would no longer need the Mililani site.





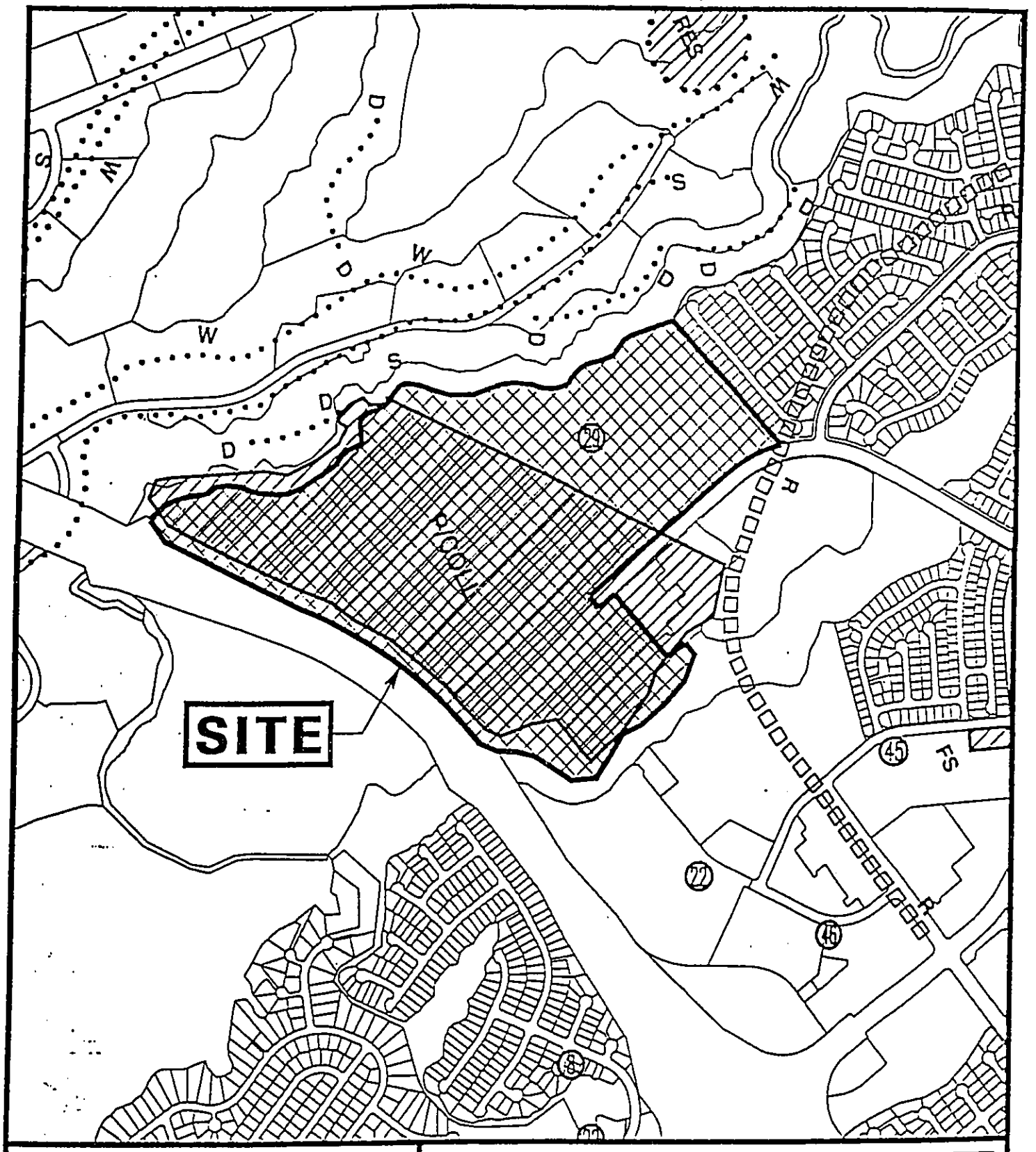
LOCATION MAP

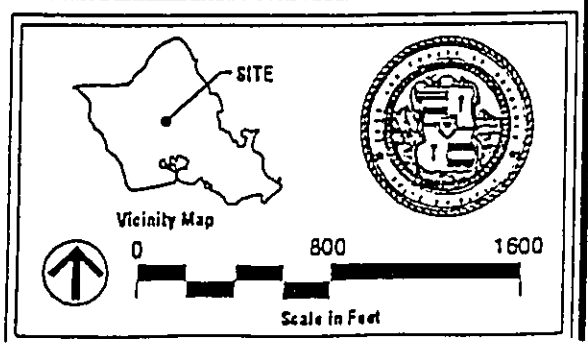
MILILANI MAUKA

FOLDER NO.: 2001/CO-1

TAX MAP KEY: 9-5-49: Por. 27

DATE PREPARED: June 2001





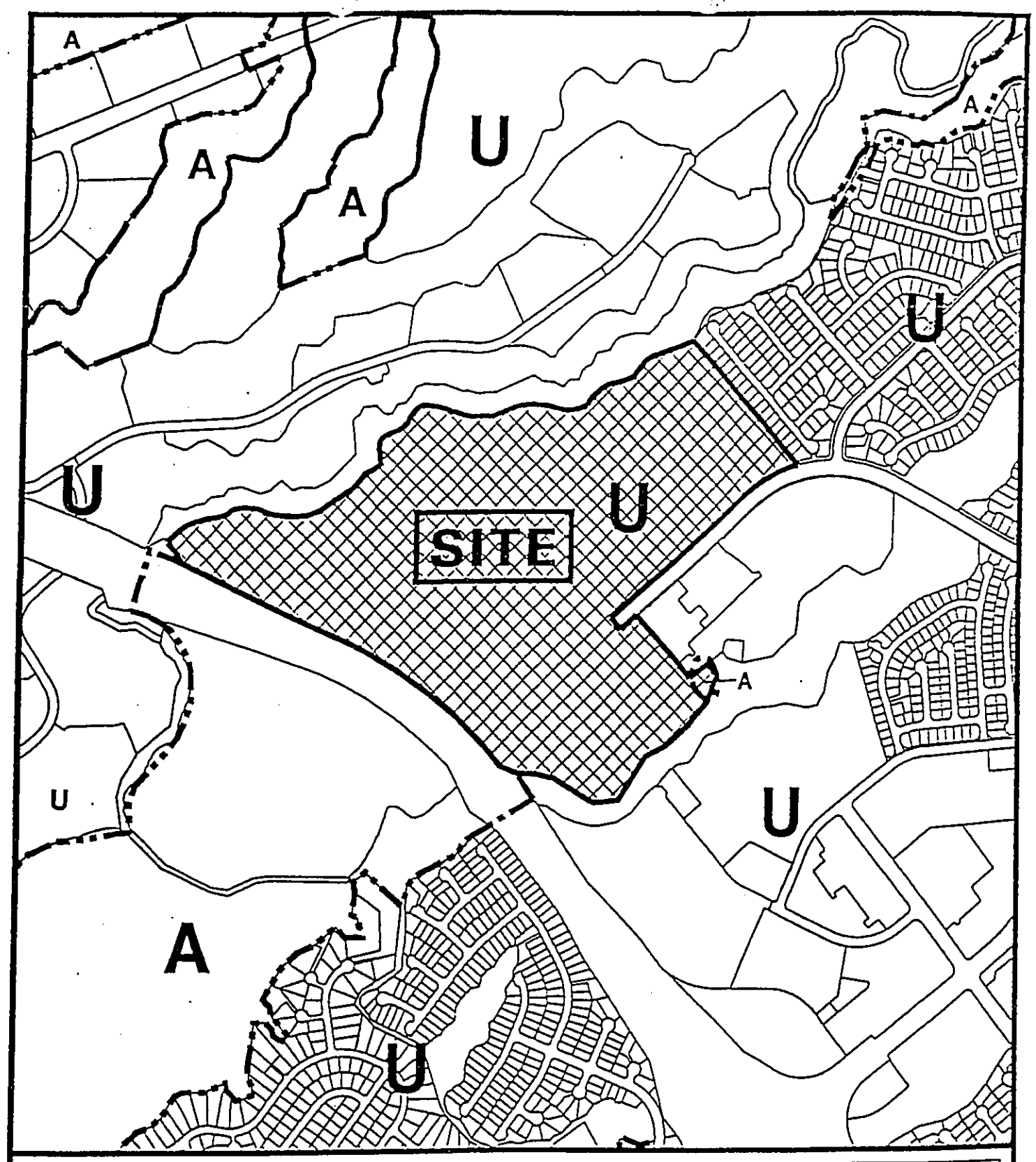
PORTION OF

DEVELOPMENT PLAN PUBLIC FACILITIES MAP CENTRAL OAHU

FOLDER NO.: 2001/CO-1

TAX MAP KEY: 9-5-49: Por.27

DATE PREPARED: June 2001



PORTION OF

STATE LAND USE MAP
WAIPAHU

FOLDER NO.: 2001/CO-1

TAX MAP KEY: 9-5-49: Por.27

DATE PREPARED: June 2001

ATTACHMENT B
(Public Agency Comments)

BENJAMIN J. CAYETANO
GOVERNOR

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

LETTER NO. (P) 1141.1

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DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

Mr. Randall K. Fujiki, AIA, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Agency and Public Review Package for the 2001 Development Plans Annual Amendment Review
DPP Amendment No. 2001/CO-1

Thank you for the opportunity to review the subject Development Plan. We do not have any existing, planned, or programmed facilities to service the proposed development. Therefore, we have no comments. However, we recommend that you contact other State agencies (such as the Department of Education and Department of Health) to verify if they have any comments/recommendations regarding the amendments.

If there are any questions regarding the above, please have your staff call Mr. Tyler Fujiyama of the Planning Branch at 586-0490.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

TF:mo

We have no further comments to offer at this time. We appreciate the opportunity to review and comment on the proposed amendment.

If you have questions regarding this matter, please contact me or Russell Kumabe of our office at 587-3822.

Sincerely,

BERT SARUWATARI
Acting Executive Officer

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Dept. Of Planning & Permitting
C & C OF HONOLULU

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

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

March 23, 2001

LD/NAV
LOG-605

Ref.: 2001CO-1.RCM

Honorable Randall K Fujiki, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

SUBJECT: City and County of Honolulu, Department of Planning and Permitting 2001 Development Plan Annual Amendment Review for Central Oahu, Island of Oahu, Hawaii (Reference No. 2001/CO-1)
Request by Castle & Cooke Homes Hawaii, Inc. – Public Facility to Residential – 104.2 acres – TMK: 1st/9-5-49 portion of parcel 27

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

We had transmitted the subject information material to our appropriate divisions for their review and comment. The department has no comment to offer on the subject matter.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of our Land Division Support Services Branch at 808-587-0438.

Very truly yours,

DEAN Y. UCHIDA
Administrator

C: Oahu District Land Office

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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LAND DIVISION

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DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

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

GILBERT S. COLOMA-AGARAN
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

March 21, 2001

TO: Mr. Dean Uchida, Administrator
Land Division

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

SUBJECT: City and County of Honolulu, Department of Planning and permitting
Development Plan Annual Amendment Review, Central Oahu, Oahu, Hawaii
Request by Castle & Cooke Homes Hawaii, Inc. – Public Facility to Residential

FILE NO.: 2001CO-1.COM

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

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

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[X] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

BENJAMIN J. CAYETANO
GOVERNOR

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

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

IN REPLY REFER TO:

STP 8.9861

April 12, 2001

'01 APR 20 AM 10 47
DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

Mr. Randall K. Fujiki
Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Development Plans Annual Amendment Review

Thank you for your transmittal requesting our review of the subject amendment.

In addition to our prior comments of March 8, 2001, HWY-PS 2.1929 (copy attached) the developer should comply with all applicable outstanding conditions that were placed on the Mililani Mauka development. Applicable outstanding conditions include but are not limited to on-site and off-site improvements, prorata share to support a rideshare program and circulator bus route within Mililani, prorata share of regional roadway improvements, and etc.

We appreciate the opportunity to provide comments.

Very truly yours,

BRIAN K. MINAAI
Director of Transportation

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
236 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GENEVIEVE SALMONSON
DIRECTOR

'01 APR 5 PM 3 02

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

April 4, 2001

Mr. Randall K. Fujiki
Director
City & County of Honolulu
Department of Planning & Permitting
650 S. King Street
Honolulu, Hi 96813

Re: Agency And Public Review Package For the 2001 Development Plans Annual Amendment Review

Dear Mr. Fujiki,

We have reviewed the description of the subject project provided by your letter dated February 15, 2001, and suggest the following:

1. Consideration of cumulative impacts of all surrounding areas (ex. Koa Ridge Master Plan) must be addressed.

We have no other comments to offer at this time, but will reserve further comments when the documents are submitted.

Should you have any questions, please feel free to call our office at 586-4185.

Sincerely,

Genevieve Salmonson
Director

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

March 14, 2001

TO: RANDALL K. FUJIKI, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: FOR CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT: *YOUR MEMORANDUM OF FEBRUARY 15, 2001 REGARDING* THE AGENCY AND PUBLIC REVIEW PACKAGE FOR THE 2001 DEVELOPMENT PLANS ANNUAL AMENDMENT REVIEW

We have reviewed the 2001 Development Plans (DP) Annual Amendment Review package and have no objections to the proposed amendment to the Central Oahu DP Land Use Map for Mililani Mauka Phase III change in designation, from Public Facilities to Residential and Low Density Apartment.

The developer will be required to install the necessary on-site water system improvements to serve the proposed development.

If you have any questions, please contact George Kuo at 527-5235.

01-0217
To: Laverne

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us/planning

'01 FEB 28 AM 10 32
DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
Acting DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

RECEIVED
DEPARTMENT OF
FACILITY MAINTENANCE
FEB 15 4 45 PM '01

February 15, 2001

From: DFM
To:

TO: AGENCIES, ~~RESPECTIVE~~ NEIGHBORHOOD BOARDS, AND ~~COMMUNITY~~ ORGANIZATIONS

FROM: ~~RANDALL~~ K. FUJIKI, AIA, ACTING DIRECTOR Kathy Sokugawa
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: AGENCY AND PUBLIC REVIEW PACKAGE FOR THE 2001 DEVELOPMENT PLANS ANNUAL AMENDMENT REVIEW

Attached for review and comment is the 2001 Development Plan (DP) Annual Amendment Review (AAR) package. Included in the package is a proposed amendment to the Central Oahu DP Land Use Map that is being considered by the Department.

Affected neighborhood boards and community organizations will receive a detailed description of the proposed amendment which could impact their area.

As you may be aware, the island's eight Development Plans have gone, or, are going through major revisions involving land use and procedural changes. In those development plan areas where new conceptual plans have been adopted by City Council (Ewa, East Honolulu, Koolaupoko, Koolauloa, North Shore, and Waianae), the Annual Amendment Review process is superseded and no longer applicable.

New projects proposed for these areas may apply directly for a zone change, and are evaluated against the policies and guidelines of the new plans.

For the Central Oahu and the Primary Urban Center Development Plan areas, proposed revised plans are in the public review stage; however, the Annual Amendment Review process remains applicable.

Agency and public review guidelines are provided in the document. In addition to comments relative to these guidelines, we would appreciate any additional related comments and/or recommendations you believe should be considered in our review of the proposed amendments.

The deadline for submitting your written comments is April 16, 2000. When submitting your comments, please refer to the DPP Amendment No. 2001/CO-1.

Additional information may be obtained by contacting the Eugene Takahashi of our staff at 527-6022.

RKF:mo
g:dlu/general/cpd/dpzcb/aar2001.ltr
Attachment

February 23, 2001
We do not have any comments. If you have any questions, please call Laverne Higa at x-6246.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

'01 APR 17 PM 3 36

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

TP2/01-00741R

April 16, 2001

MEMORANDUM

TO: RANDALL K. FUJIKI, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: CHERYL D. SOON, DIRECTOR

SUBJECT: 2001 DEVELOPMENT PLANS ANNUAL AMENDMENT REVIEW

This is in response to your February 15, 2001 request for review and comments on the Castle & Cooke Homes Hawaii, Inc. proposal to amend the Central Oahu Development Plan (DP) Land Use Map in Mililani Mauka.

Based on the traffic impact analysis contained in the EA/DP amendment application, the Department of Transportation Services has no objection to the DP re-designation because the analysis shows that the anticipated traffic impact of the 826-unit residential project, to include low-density townhouse, will be less in comparison to the previously planned university campus.

Please note that DTS would like to encourage, for the change in land use of the 104-acre site, the new layout to be transit, bicycle and pedestrian-friendly, with street systems suitable for transit operation, easy access to transit service, integration of bike facilities, and internal connections for pedestrians.

Should you have any questions, please contact Bruce Nagao of the Transportation Planning Division at Local 6899.

Cheryl D. Soon

CHERYL D. SOON

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at Local 6976.

CHERYL D. SOON

cc: Office of Environmental Quality Control
Kusao & Kurahashi, Inc.

Hawaiian Electric Company, • PO Box 2750 • Honolulu, HI 96840-000

'01 MAR 21 PM 3 57

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

March 19, 2001

Mr. Randall K. Fujiki, AIA
Director, Planning and Permitting
City & County of Honolulu
650 South King St.
Honolulu, Hawaii 96813

Dear Mr. Randy Fujiki:

Subject: **Development Plan Land Use Map Amendment for Central Oahu, Mililani Mauka, Phase III DPP Amendment No. 2001/CO-1**

Thank you for the opportunity to comment on the subject Land Use Map Amendment. Hawaiian Electric Company (HECO) has no objections to the Development Plan amendment under consideration or the proposed project. HECO has some existing 46kV and 12kV lines in the area of development (See Fig. 1). We will need continued access for maintenance of our facilities. Redesignating the land will not affect any of our existing easements. Should there be a need for relocation of our existing facilities or the installation of new service facilities, HECO will work with the developer, Castle & Cooke Homes Hawaii.

Our evaluation of the area indicates we have adequate facilities available to accommodate and serve the proposed development. We also have room for expansion as the electrical loads in the overall Mililani-Mauka development continues to increase.

We appreciate your efforts to keep us apprised of your projects in the planning process. If you have any questions, please call me at 543-7819 or Rouen Liu at 543-7245.

Sincerely,

Ken T. Morikami, Director
Project Management Division

Attachment

cc: Eugene Takahashi

'01 MAY 9 PM 3 02

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

94-639 Kuaie Street
Mililani, Hawaii 96789

Director of Planning and Permitting
Attention: Community Planning Division
650 South King Street, 7th Floor
Honolulu, Hawaii 96813-3017

I'm writing to respond to the 2001 Development Plan Annual Amendment Review for Central Oahu. I feel this change in land use is a bad idea for Mililani and Oahu residents. The sole beneficiary will be the owner of Castle and Cooke Homes Hawaii, Inc. The reasons that this land use change should not be made is as follows:

1. The proposed change of land use from public facilities to residential will have a negative impact on traffic on the already overtaxed roadway to Mililani. The public facilities land use would have been a source of jobs, and taken some cars off the road headed downtown. Residential development does exactly the opposite and puts more people on the road.

2. Castle and Cooke Homes has not planned well past development. Their construction of homes right up to military training area, and the resulting public outcry demonstrates this. The lack of adequate areas for schools is a second example. They have left the bare minimum area for schools which hasn't left room for a expansion. They could have left a buffer through good planning around the military area, and left the room needed for schools.

3. Their Realtors have not provided the disclosure required by law when selling homes in Mililani. The first example of this lack of disclosure is those new residents who were surprised to hear military training exercises down the gulch from their new homes. For this the Military is not at fault, Castle and Cooke is. Secondly, they have disclosed to buyers that Mililani is a "planned community" with certain restrictions on landowners in the area. What they have not disclosed was that they have exempted their own property from these requirements. This first came to light when they allowed new development to occur at their shopping center that was not in keeping with the design requirements of the community. They should practice better disclosure and also include all the property into the Mililani covenants that they have previously deceptively excluded.

4. The land to be developed is rated as prime farmland by USDA. As we continue to replace farmland with development, which changes the character of the Island that attracts people in the first place. There are also implications for any federal funding in support of this conversion.

Their should be a moratorium on any new construction in Mililani until traffic problems are solved, and sufficient schools are available for the anticipated growth. Adding more homes to the already overdeveloped area is not a part of the solution, but will only add to the problems.

Sincerely,

Doug Fabrey Barb Fabrey

education in Mililani keeps declining, many of us would jump at the chance to send our children to a world-class private school in our own community

Other Mililani Mauka issues never addressed by Castle & Cooke and/or the city are increasing. There is only one road, Meheula Parkway to access Mililani Mauka. Yes, it is a four-lane divided highway, but it is also only 25 MPH even though there is no direct access to anything from it. Meheula Parkway, on the other side of Kamehameha, is 35 MPH, and there are also atleast 3 routes to get into Mililani. The many small cul-de-sacs with many small children in the area have a 25 MPH limit. It is ridiculous to expect people to drive the same speed in such opposing settings. It seems that Meheula Parkway is just a speed trap and there is little concern for the overall community.

With exception to the new tot-lot, there is one park in Mililani Mauka. It is next to the middle school that must use it during school hours. Because there are no restroom facilities, the field is not sanctioned for use by local children's sporting events. There is a minimum of 5 sanctioned parks, in addition to the District Park, in Mililani Town. Even with the planned District Park in Mililani Mauka it does not adequately address the needs of all Mililani Mauka.

There is almost no commercial support for Mililani Mauka. Other than Castle & Cooke, only Tesoro, McDonalds, and a small HI Tel office have found this area to be good enough for business. There is only one church, even if it does have a preschool. There need to be some incentives fo businesses, grocery stores, gas stations, and restaurants to start building here.

It is easy to see, that there are several problems facing Mililani. Someone needs to fix them before creating more. Mililani Mauka definitely does not need another 826 units as proposed in phase III! Even if this letter is too late for an environmental assessment for the project, it is valid for the land use map and the other hoops that Castle & Cooke will need to go through to up their profits at Mililani's expense. Please consider my concerns and pass them along at other meetings you attend.

Sincerely,

Christy L. Zeuner

ATTACHMENT C
(Draft Ordinance)

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE _____

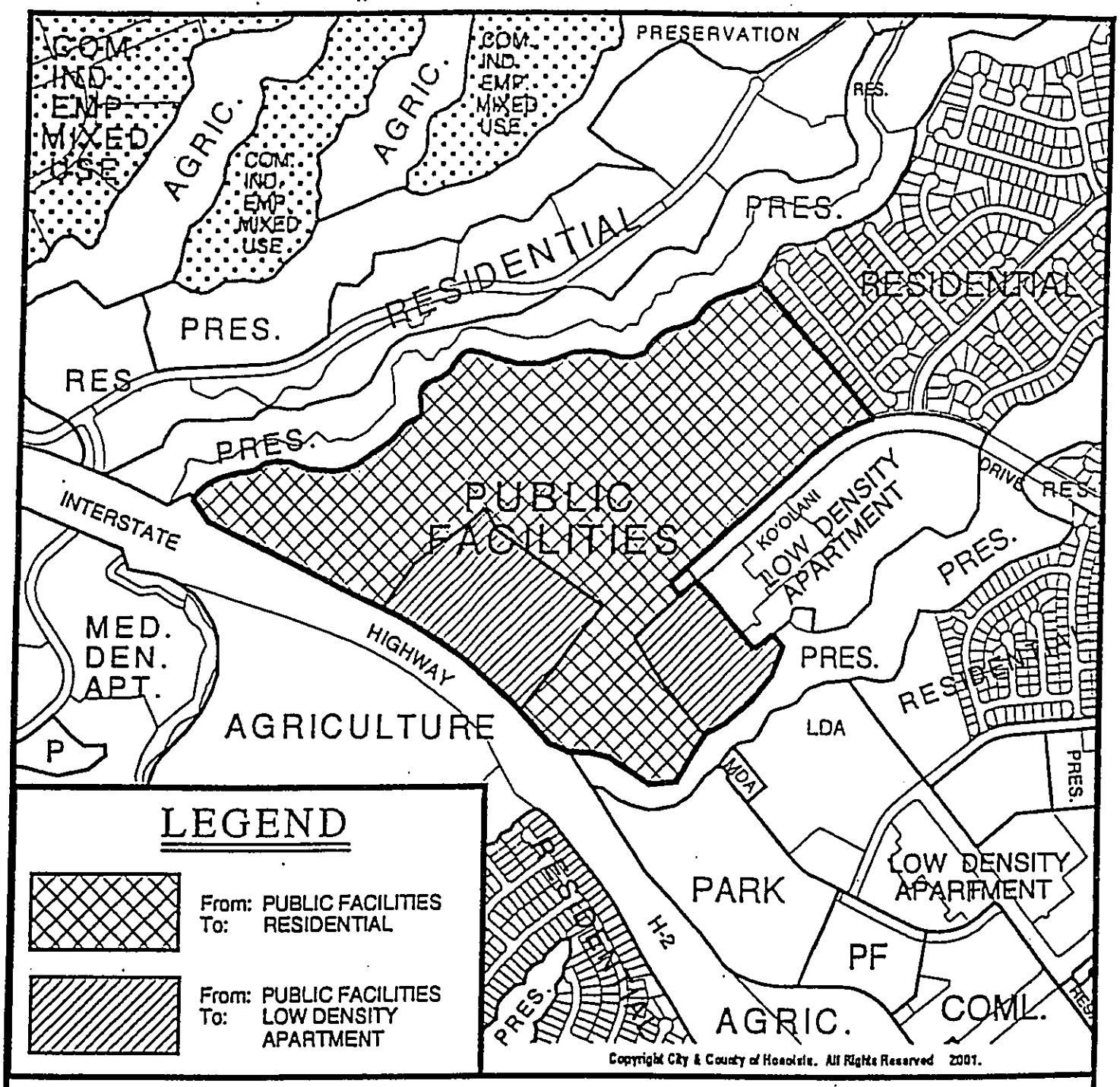
BILL _____

A BILL FOR AN ORDINANCE

TO AMEND PORTION OF THE DEVELOPMENT PLAN LAND USE MAP FOR CENTRAL OAHU BY CHANGING THE LAND USE MAP DESIGNATION FOR A PORTION OF A CERTAIN PARCEL OF LAND SITUATED IN MILILANI MAUKA, OAHU, HAWAII.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION I. Portion of the Development Plan Land Use Map for Central Oahu area is hereby amended by changing the land use map designation for a certain parcel of land in Mililani Mauka, Oahu, Hawaii, from public facility to residential and low density apartment, as shown on the map attached hereto, marked Exhibit A, and by reference made a part hereof.



LEGEND

From: PUBLIC FACILITIES
To: RESIDENTIAL

From: PUBLIC FACILITIES
To: LOW DENSITY APARTMENT

PORTION OF

DEVELOPMENT PLAN LAND USE MAP

CENTRAL OAHU

PROJECT NAME: MILILANI MAUKA PHASE III

APPLICANT: CASTLE & COOKE HOMES HAWAII, INC.

TAX MAP KEY: 9-5-49: Por.27

FOLDER NO.: 2001/CO-1

LAND AREA: Approx. 104.2 Acres

PREPARED BY: DEPARTMENT OF PLANNING & PERMITTING
CITY AND COUNTY OF HONOLULU

0 800 1600
Scale in Feet

PUBLIC HEARING: PLANNING COMMISSION CITY COUNCIL

ORD NO

2001/LU-1

Comptroller
State P.W. Engr.
P.W. Secty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
Inspec. Br.
Quality Control
Leasing Br.
Contracts
Fiscal Off. (P)1582.1

SEP - 7 2001

Mr. Randall K. Fujiki, Director
Department of Planning and Permitting
City and County of Honlulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment(EA)
TMK: 9-5-01:01

Thank you for your review and response to our Draft EA report for the Mililani Mauka II Elementary School. We acknowledge your confirming that the Draft EA is consistent with the Central Oahu Sustainable Communities Plan, Final Review Draft of March 2001 as well as the wastewater disposal requirements of the City and County of Honolulu.

Regarding the subject project's zoning requirements, we will correct the report's use of the word "variance" instead of "waiver" while discussing the need to meet City and County of Honolulu building height requirements.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Murakami, Pacific Architects
Mr Norman Hayashida, Project Management Branch

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 10TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4182 • FAX: 527-5725 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

EDWARD T. "SKIPPA" DIAZ
DEPUTY DIRECTOR

June 15, 2001

Mr. Ralph Morita
Department of Accounting and
General Services
Kalanimoku Building, Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Morita:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment relating to the development of Mililani Mauka II Elementary School.

The Department of Parks and Recreation has no comments on the Draft Environmental Assessment. We request that you remove this department as a consulted party for the balance of the environmental permitting process.

Should you have any questions, please contact Mr. John Reid, Planner, at 547-7396.

Sincerely,

W. D. Balfour, Jr.

WILLIAM D. BALFOUR, JR.
Director

WDB:cu
(1733JR)

cc: Office of Environmental Quality Control
Pacific Architects, Inc.

RECEIVED
JUN 21 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Comptroller .....
State P.W. Engr. .....
P.W. Secty .....
Staff Serv. .....
Planning Br. .....
Proj. Mgmt. Br. .....
Design Br. .....
Inspec. Br. .....
Quality Control .....
Leasing Br. .....
Contracts (P)1560.1
Fiscal Off. .....
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AUG 28 2001

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City and County of Honolulu
650 South King Street, 10th Floor
Honolulu, Hawaii 96813

Dear Mr. Balfour:

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your June 15, 2001, review and response acknowledging that you have no comments to offer to the subject Draft EA. As requested, we will remove your Department as a consulted party for the balance of this project.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

Gordon Matsuoka

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Muranaka, Pacifc Architects
Mr. Clifford Leong, Project Management Branch

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.co.honolulu.hi.us

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUL -6 P 2:48

JEREMY HARRIS
MAYOR

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JUL 9 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

LEE D. DONOHUE
CHIEF

MICHAEL CARVALHO
ROBERT AU
DEPUTY CHIEFS

OUR REFERENCE CS-JD

July 2, 2001

DIVISION OF PUBLIC WORKS

TO:	FOR:	INITIAL:
PW Adm	Approval	
PW Sec	Signature	
Staff Svcs Br	Information	
Planning Br	Your File	
Proj Mgmt Br	See Me	
Design Br	Comments	
Inspec Br	Investigate & Report	
Qual Cont Br		
Leasing Br		

Mr. Ralph Morita
Department of Accounting and General Services
Kalanimoku Building, Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Morita:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Mililani Mauka II Elementary School Master Plan.

As a means of minimizing potential criminal activity in and around the school campus, we would like to recommend that the principles of crime prevention through environmental design be considered in designing the facility. Please contact Lieutenant Brian Chang of District 2 (Wahiawa) at 622-2179 for any assistance in this area.

We would further like to recommend that the intersection of Meheula Parkway and Lehiwa Drive as well as the intersection of Meheula Parkway and Kuaoa Street be signalized for both pedestrian and vehicular safety in the area.

During construction activity, we will anticipate an increase in calls for police service because of dust complaints. However, after the project has been completed and the school becomes operational, we believe that this project should have minimal impact on calls for police services.

If there are any questions, please call Carol Sodetani of the Support Services Bureau at 529-3658.

LEE D. DONOHUE
Chief of Police

By
EUGENE UEMURA
Assistant Chief
Support Services Bureau

cc: Ms. Genevieve Salmonson, OEQC
Mr. Clifford Murakami, Pacific Architects, Inc.

cc: Carol Kwan, CCHHI 626-3664

Serving and Protecting with Aloha

Comptroller
State P.W. Engr
P.W. Secty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
Inspec. Br.
Quality Control
Leasing Br.
Contracts (P)1629.1
Fiscal Off.

SEP 28 2001

Mr. Eugene Uemura, Assistant Chief
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Assistant Chief Uemura:

Subject: Mililani Mauka II Elementary School
Draft Environmental Assessment (EA)
TMK (1) 9-5-02:01

Thank you for your July 2, 2001, review and response to our Draft EA report for the Mililani Mauka II Elementary School. Your comments will be considered during the design phase of the project.

Regarding traffic lights, we have no objections to their installation. However, a traffic evaluation study has been completed for this project and it concluded that signalized intersections are not warranted even after completion of the school. Should future traffic conditions warrant signalizing the intersections, the developer has committed to providing traffic lights at one intersection.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

Gordon Matsuoka

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Murakami, Pacific Architects, Inc.
Mr. Norman Hayashida, Project Management Branch

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425
HONOLULU, HAWAII 96819-1869

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUL -6 P 2:49

JEREMY HARRIS
MAYOR

RECEIVED
JUL 9 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

June 29, 2001

DIVISION OF PUBLIC WORKS

TO:	FOR	INITIAL:
1 PW Adm	Approval	
PW Sec	Signature	
Staff Svcs Br	Information	
Planning Br	Your File	
Proj Mgmt Br	See Me	
Design Br	Comments	
Inspec Br	Investigate & Report	
Qual Cont Br		
Leasing Br		

Mr. Ralph Morita
Department of Accounting and General Services
State of Hawaii
Kalanimoku Building, Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Morita:

Subject: Draft Environmental Assessment for Mililani Mauka II Elementary School
Tax Map Key: 9-5-002: 001

We received your memorandum regarding the Draft Environmental Assessment for the Mililani Mauka II Elementary School.

The Honolulu Fire Department (HFD) requests that the following be complied with:

1. Provide a private water system where all appurtenances, hydrant spacing, and fire flow requirements meet Board of Water Supply standards.

2. Provide a fire department access road within 150 feet of the first floor of the most remote structure. Such access shall have a minimum vertical clearance of 13 feet 6 inches, be constructed of an all-weather driving surface complying with Department of Transportation Services (DTS) standards, capable of supporting the minimum 60,000 pound weight of our fire apparatus, and with a gradient not to exceed 20%. The unobstructed width of the fire apparatus access road shall meet the requirements of the appropriate county jurisdiction. All dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround having a radius complying with DTS standards.

3. Submit civil drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

Sincerely,

JOHN CLARK
Acting Fire Chief

JC/KS:jo

cc: Genevieve Salmonson, Office of Environmental Quality Control
Clifford Murakami, Pacific Architects, Inc.

Comptroller .....
State P.W. Engr. .....
P.W. Secty .....
Staff Serv. .....
Planning Br. .....
Proj. Mgmt. Br. .....
Design Br. .....
Inspec. Br. .....
Quality Control .....
Leasing Br. .....
Contracts .....
Fiscal Off. (P)1562.1 ....
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.....

AUG 28 2001

Mr. John Clark, Acting Fire Chief
Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, Hawaii 96819-1869

Dear Mr. Clark:

Subject: *Mililani Mauka II* Elementary School
Draft Environmental Assessment (EA)
TMK: (1) 9-5-02:01

Thank you for your June 29, 2001, review and response to our Draft EA report for the Mililani Mauka II Elementary School. Please be informed that the project's on-site water system will be connected to the Board of Water Supply. The balance of your comments will be addressed during the design phase of the project (i.e., fire access lanes, plan submittals, etc.).

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

Gordon Matsuoka

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Muranaka, Pacifc Architects
Mr. Clifford Leong, Project Management Branch

GOVERNOR, STATE OF HAWAII
% OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET ROOM #702
HONOLULU, HAWAII 96813

A COVER LETTER FOR 4 PAGES...PLUS THIS COVER

SUBJECT: A FULL SIZE....ONE TRACK MILILANI MAUKA ELEMENTARY SCHOOL

SPECIAL NOTE:

1) A new Elementary School....Mauka Elementry built about 6 years ago.....over crowded.

2) A new Middle School Mililani Middle School built 2 plus years ago.....at $40 Million Bucks..

Full to Capasity. Difficult Family Concerns for lack of continunity between school age children having different school dates.

The children coming out of 5th grade in Mililani and going onto the "track for their 6th grade"...SOME OF THEM COME OUT OF ELEMENTARY AND ARE THROWN INTO THIS NEW CONCEPT WITHIN DAYS OF FINISHING 5th GRADE.

TWO OF MY ASSPCIATES CHILDREN ARE EFFECTED THIS YEAR.

PARENTS HAVE TESTIFIED THEIR CHILDREN NEVER CATCH UP WITH THE FIRST MIDDLE SCHOOL YEAR....

3) ARE THEY TRYING NOW TO CHANGE THE TRACKS TO THREE FROM FOUR...TEACHERS CANNOT COPE.

CHILDREN CANNOT COPE. PARENTS ARE FRANTIC. SINGLE PARENTS ARE MORE FRANTIC.

HOW ABOUT THE CHILDREN. ONE OF OURS THIS YEAR IS STILL IN CLASS...WILL GO TO OREGON TO CAMP FOR ONE WEEK...A WEEK AFTER HE FINISHES THIS 6th YEAR LAST TRACK. When HE RETURNS HE AS ONE WEEK....ONE WEEK OF SUMMER AND BACK TO CLASSES.

4) CAN WE REALLY WASTE 4 OR 5 YEARS OF OUR BABIES LIFES BY PERMITTING THIS NONSENSE FOR KINDERGARDEN TO 5TH GRADE SEE 5 YEARS TO 10 YEARS.

This terrible plan is PLANNING TO FORCE THESE BABIES INTO CLASSES FOR 45 DAYS...OFF FOR 21 DAYS...WHERE ARE THEY 4 or 5 TIMES A YEAR FOR 3 WEEKS? THROWN IN FRONT OF A TV or POORLY STIMULATED HOLDING AREAS.....

THIS IS HOW THE FELIX SITUATION EXPLODED. SAT ON OUR HANDS. MOSTLY INEPT AT ADVISING PARENTS OR HELPING OUR CHILDREN. NOW WE WANT TO EXPERMENT WITH A NEW RRRRRR ENTIRE SCHOOL AGE GROUP OF OUR CHILDREN. HELP

cc: DOE-Facilities Branch
SPWA/DAGS Project Management Branch

8 JULY 2001

Department of Accounting and General Services
Kalanimoku Bldg. Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Attn: Mr. Ralph Morita

Comments: Mililani MaukaII Elemenatry School Draft

4.1.0 "The property: 9-5-002-001" while it it being conveyed by the developer Castle & Cooke...It is a cost bore by EACH NEW OWNER. It is a develoment cost. It is not donated. It is not given. It is a normal "designation of a school site" which is required of the developer as a cost of development of a community...and is paid for by the buyers of developed properties.

The unfortunate constant reference of "donated land" confuses the community members...and leads to grave misunderstanding of their rights to require quality and sufficent facilities.

4.1.3 The FACD process is severely flawed and the current "Draft" would be even worse if several members of our Mililani Community had not made the contributions to the vague design and lay out of our school.

1) Pacific Architects, Inc showed the least professional attitude and talent I have ever seen from a professional AIA. A) They presented a canned version of the school. B) the resisted all efforts to make changes absolutely necessary to the end results. C) They came with a overhead presentation and no preliminary work with the group they were supposed to serve. D) My best observation would be...they had their design fee and contract...no more work. (I have worked with Architectural firms for years across the mainland and here.)

2) The control of our Community's biggest asset...a new school by a Central Dist DOE rather than we advise...she consents....the school will be with us for 50 years or more. How long will the DOE employees feel the mistakes they make in our lives...Our children's lives.

3) Community members ...of 2...One a full time working person...not able to spend all of the hundreds of hours and so stated. And the Second.....Asleep in the 2 meetings I saw him present. The detail of this selection is so very outrageous.

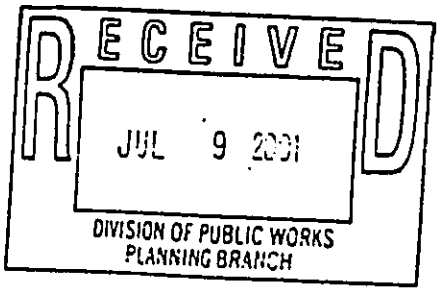
4) The overused reference to the charette format is planned consensus building...not free thinking consensus building.

CORRECTION

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

cc: DOE-Facilities Branch
SPWA/DAGS Project Management Branch

8 JULY 2001



Department of Accounting and General Services
Kalanimoku Bldg. Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Attn: Mr. Ralph Morita

Comments: Mililani MaukaII Elemenatry School Draft

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5.7 NOISE ...dominant noise...aircraft and small arms.. followed by full development along Meheula Parkway Kuaoa Street and Lehiwa Drive...will become the dominant noice source....except for the MECHANICAL EQUIPMENT AT THIS SCHOOL. Let's do something about that NOW.

Again the Cafetorium...student dining room MUST BE AIR.CONDITIONED.

This facility...in case anyone has forgotten is to be a community facility as well as for our students. It must be A/C.

6.2 "No Action will result in existing overcrowded schools and have a negative impact on education.

Where do wisdoms...like this come from? We are overcrowded. We will still be overcrowded if this school is not exparded as we build it now.

How can we be subjected to statments like 6.2?

AS TO DESIGN: Again community of Mililani members who just kept voicing our objections to a canned presentation with no changes resulted in some improvments.

Many more could have been made with an ARchitectural Firm willing to share with us and help us have a great new School.

The facade of this building facing the street must be looked at seriously. Example the "coupola" to quote the Archt. about 6 or so stretched across the long building....are uneven. They do not match the structure.

And along with the"up country" comments in this presentation I suggest they wanted to "please" by making it look like the TownCenter. Remember the Center is already 10 years old.

Think 21st Century.

NOTE: (page 9) Adminstration/CSSS... Figure 5..floor plan. The design of our last elementary school suddenly becomes a adm monster full of SIX COUNSLER OFFICES...TWO CONFERENCE ROOMS...HUGE SUPPORT OFFICE POOL. Suggesting it is for the Dist. OUR NEED IS CLASSROOMS. THIS MASSIVE SPACE FOR THE NEW IDEA...POORLY REASONED OF MANAGING HEALTH AS WELL AS EDUCATION. WHAT PARENT WILL ALLOW THEIR CHILD K THROUGH 5 5 yrs through 10 years old...TO BE SEEN OR COUNSELED BY A "WHO DECIDES THE CREDENTIALS OF THESE EXPERTS" WITHOUT THE PRESENCE OF A PARENT? WHY DO WE NEED ALL OF THESE HUGE SPACES FOR ONE ON ONE. THESE COUNSLERS SHOULD BE IN THE HALLWAYS IN NITCHES WHERE THEY ARE AVAILABLE AND OBSERVING NEEDS OF CHILDREN. NOT IN PRIVATE OFFICES. IT IS NUTS.

Mary Anne Schneider

JULY 8, 2001

MEMO TO: Mr. Ralph Morita
Dept of Accounting and General Services

From: MaryAnne Selander MKS
Neighborhood Board 25
Mililani Town, Hawaii
623-3288 722-0087

Members of the Mililani Community have invested four years...four years plus, making many sacrifices of our time, often penalizing our families or our business...to testify before the Board of Education, attent meetings with concerned parents, advise, assist, plead with our local legislature and city council members....because we are dedicated to education of our children finding a new level of caring and improving the quality of education and family nurturing we surely deserve.

We have advised you:

1) We want our children in classrooms not tc exceed 22 students.

2) We want all of our children in single track schedules, and though there is much agreement that summer breaks from regular sessions allow more growth for the average child than a longer regular school session...if we can see positive improvement in all academic areas of our children's progress, then a longer school year is acceptable.

3) We want class rooms fully equipt with both the desks and the teacher...and all the supplies each child will require for the entire year.

4) We want the Board of Education to review and approve the class schedule of subjects, electives and the quality of assignment of busy projects at the expense of classroom instruction time.

5) We want to raise the level of community imput into our schools that teachers will feel supported, and students will feel they are full members of our community and that committment of our community will raise the level of instruction, and parental assistance, High School Students will see tripple gain in scholastic achievment and scholarships.

6) We want an end to the joining of DOE and Developer interests deciding on the size of our schools, the size of our playgrounds and the type of school schedule that suits their needs...never ours.

7) We want the Board of Education to LISTEN NOW to the particular needs of Mililani Community of Owners and Parents and give us this last school in size and design to fulfil the needs of our community...not developers...not DOE employees.

4.1.4 We continue to insist this will be a one track full size school.

The Architect has stated in the end meeting. It would only require 3 Million additional monies to build a 2nd story NOW on the one story building...adding 12 class rooms.

Looking at the cost projections it looks like from 1.6 to 2 Million.

Now we have a design fee budgeted for $250,000 to look at a future 6 class room building....I am sure we will spend more monies..take our very small land areas for our children's play. Build the portables at $130,000 each...No.

If you are really reviewing. Really. The above solution...a 2nd story Now. No small classroom bldg and no portables.

CAFETORIUM: This building needs to be air conditioned. It will be using the PA System. It will be used by the entire community. The noise level you are already admitting may require monitoring by the DOH.

Who decided no A/c? Again I am certain the Community of Mililani Owners did not agree.

I believe the design on the fixed stage needs more thought and work. Another item to become obsolete ...at children's expense.

4.2.3 $1.0 Million Dollars for furnishings and fixtures... Who is the talent for this job? We have a lovely little 30 year old school in Mililani (Waena)...30 years and never was it furnished to match the structure.

4.5.1 "The landscape theme will reflect the "up-country" image of the Mililani Mauka Plant Palette"...Who created that statment...

4.5.3 Water "Underlying ground water is considered a POTENTIAL source of potable water? What.

4.5.2 Question the number of access for walking handicapped or other restrictions.

5.2 Soil Engineered Fills...suggests trouble with settling and especially reference to the needed care and supervision of tamping...followed by .."High in-situ moisture and the possible distress causing buckling sidewalks and parking lots. ....Which will all belong to our community as to the use and confort of the facility.....Who will be running the store?

4.5.2....Traffic Light. Again. Of course traffic will build. Of course our children will be at risk crossing streets. Parsons etc call for a signalized light at the intersection of Meheula and Lehiwa Srive....and of course the developer will duck it on his way out...We know the time needed for a Light... Who should pay?

Comptroller
State P.W. Engr.
P.W. Secty
Staff Serv.
Planning Br.
Proj. Mgmt. Br.
Design Br.
Inspec. Br.
Quality Control
Leasing Br.
Contracts (P)1700.1
Fiscal Off.

NOV - 9 2001

Ms. MaryAnne Selander
Mililani Neighborhood Board No. 25
c/o Neighborhood Board Commission
530 South King Street, Room 400
Honolulu, Hawaii 96813

Dear Ms. Selander:

Subject Mililani Mauka II Elementary
Draft Environmental Assessment (EA)
TMK 9-5-02:01

Thank you for your review and response to our Draft EA report for the subject school. Regarding your seven (7) general comments in the educational areas of concern such as classroom sizes, multi-track scheduling, school equipment, and the actions of the Board of Education, we acknowledge that you have already provided these viewpoints during the planning phases of this project. For the balance of your comments, our responses are provided:

4.1.0 The developer's conveyance of the school site to the Department of Education(DOE) without compensation for the land is considered to be a "donation" to the State. Therefore, this is not considered to be a State project cost in this Assessment.

Although school construction costs are funded by State taxes (which are provided by all taxpayers in the State), final decisions regarding planning or design issues that have cost impacts must be made by the DOE, the agency which has statewide responsibility for education.

4.1.3 The Functional Analysis Concept Development (FACD) process is one initiated by the DOE and represents a consensus building process that seeks to include a wide array of school, community, and outside professional input in order to achieve a well planned school in a relatively short time. Although the DOE is unable to implement all of the differing ideas and opinions provided, consensus was generally reached on all issues. We agree that as you indicated, the community provided valuable input to the decision making process.

4.1.4 Prior to the start of design, the DOE determined that Mililani Mauka II would be a year-round multi-track school with community support for the decision.

The DOE policy is <u>not</u> to air condition cafetoriums.

4.2.3 The subject school will be provided with furniture and equipment appropriate for the school.

4.5.1 The FACD steering committee requested that the landscape theme reflect that of the neighboring community.

4.5.2 The design for the school will be reviewed and approved by the State Disability and Communication Access Board.

In addition, Castle and Cooke Homes Hawaii has committed to providing traffic lights on Lehiwa Drive when traffic loads warrant them.

5.2 The buildings and sidewalks will be appropriately designed and engineered to meet the existing soil conditions and applicable building code requirements.

5.7 Every effort will be made to minimize noise that will interfere with a quiet environment that is conducive to an effective learning atmosphere. As indicated earlier, DOE's policy is to <u>not</u> air condition cafetoriums.

6.2 HRS Chapter 343, the State's environmental impact law requires an assessment on this issue. Therefore, although crowding of Mililani schools is widely known, this fact along with the "No action alternative" must be formally included in the EA.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Murakami, Pacific Architects
Mr. Norman Hayashida, Project Management Branch

BENJAMIN J. CAYETANO
GOVERNOR

RECEIVED
DIV. OF PUBLIC W...
2001 OCT 25 A 8:38

DIVISION OF ADMINISTRATIVE SERVICES
[redacted]

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

Patricia Hamamoto
[redacted]
Interim Superintendent

October 25, 2001

MEMO TO: Mr. Gordon Matsuoka, Public Works Administrator
Public Works Division, DAGS

ATTN: Mr. Ralph Morita, Planning Branch

FROM: Raymond M. Minami, Facilities Director
Facilities and Support Services Branch

SUBJECT: Mililani Mauka II Elementary School
Master Plan & First Increment
DAGS Job No. 12-16-2605

TO: PW Adm. — Approval
PW Sec. — Signature
Staff Spec. — Information
Proj. — File
Deleg. — Comments
Inspec. — Investigate &
Qual. —

In response to Laura Brown's July 9, 2001 comments to the Draft Environmental Assessment for Mililani Mauka II Elementary School, the Department of Education offers the following response:

Thank you for sharing your opinion in regard to the Draft Environmental Assessment for the subject project. The Department of Education (DOE), however, does not concur with your comments. Through a series of meetings and the Functional Analysis Concept Development (FACD) process, input was received and decisions were made for the project through a task force and steering committee consisting of DOE personnel, parents, and community representatives. At the end of the FACD, conceptual plans and a summary were published and then the project proceeded into the design development phase. The steering committee continued to make the decisions throughout this phase.

The charette/FACD process has been used on all the DOE's new school projects for about the past eight years. It is a process that allows input and decisions to be made by a group of people closest to the ultimate users (the students, staff, and community of the respective area).

If you should have any questions, please call Mr. Theron Nichols at 733-4863 or 735-6291.

RMM:TFN:jmb

cc: A. Suga, DAS
G. Griffiths, Central District Office
C. Murakami, Pacific Architects

RECEIVED
OCT 26 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

DOE - Central District
SPWA/DAGS Project Management Branch
PACIFIC ARCHITECTS

RECEIVED - DAGS
DIV. OF PUBLIC WORKS
2001 JUL 10 P 12:34

Ms. Laura Brown
94-1060 Anania Circle #116
Mililani, Hawaii 96789

July 9, 2001

RECEIVED
JUL 10 2001
DIVISION OF PUBLIC WORKS
PLANNING BRANCH

Depart of Accounting and General Services
Kalanimoku Bldg. Room 430
1151 Punchbowl Street
Honolulu, Hawaii 96813

Attn: Mr. Ralph Morita

RE: Comments on Mililani Mauka II Elementary School, Draft Environmental Assessment

Dear Sir:

Overview, Page 1 The Land Use Agreement for Mililani Mauka explicitly requires "adequate educational facilities". DOE Edspecs require 12 acres for an elementary school. Land Use Agreements also require an adjacent 4-acre park. This would amount to 16 acres total. Under this plan, the community is being deprived of 4 acres under state ordinances. Multi-track is an emergency overcrowding measure. It was never designed to be used in the building of new schools. Under the Board of Education's Small School Policy, the new school would be full before it is built just using overflow from Mililani Mauka 1. The DOE has already indicated it does not project funding for any additional schools in this area; however, over 3,000 more homes are scheduled to be built in Mililani Mauka. This will require the construction of additional schools, further straining the CIP budget. Impact fees have been collected, and could be used to build an adequate school. Using this money to "kickback" for portables deceives the public, since money is also budgeted out of state funds for portables.

4.1.0 Please refer to Land Use Agreements for required acreage.

4.1.3 Steering Committee—Meetings were held at 2PM in the afternoon, not enabling the community to attend. I understanding that the MTA Representative slept during the presentations. Members were hand-selected by Central District DOE administration.

4.2.3 **Project Summary**—As asked for by the community, the addition of one additional story, at the cost of $3 million, (or less, according to your figures of $2.6M for 1 story and $4.2M for two story) would eliminate the need for multi-track, and would accommodate all projected children in the new development. As designed, the building is unaesthetic, with a massive roof, that wastes otherwise useable space. The CSSS building (administration) wastes much additional space that could be better utilized by building classrooms for smaller, not larger

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July 9, 2001

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populations. The partition design, or pod concept, was used 30 years ago at Mililani Waena and was found to be a complete failure due to noise levels. Kapolei is already having problems with this design. This problem as exacerbated children's learning disabilities and excludes IDEA/504 children from an appropriate learning environment. CSSS is not a "best practices" model and creates more unnecessary administration at a time when government is looking to privatize and cut back. Ditto for multi-track. Multi-track design eliminates 12 classrooms from a traditional design. **Cafetorium**—A survey sent out by Central District DOE asked parents if they would prefer air-conditioned, multi-track, or non-air-conditioned traditional. The survey did not say "partially air-conditioned". This design does not include air-conditioning in the cafetorium. Three hundred and twenty five elementary children in a room in the middle of summer without air-conditioning will be unbearable and unmanageable. This is more than double the children handled at other elementary schools at one time. **Classroom Building** – Breakout rooms have been proven to be ineffective and a waste of space. They are not large enough for any type of group activities. They have been used inappropriately for isolation of students due to behavior. Storage rooms for "off-track" materials also waste valuable classroom space. How will teachers develop a permanent sense of place for the security of children? **Special Education** – What is a special education resource center? Will special education children be integrated into the general population and have use of the library and media center? **Covered playcourt** – Chain link fencing? Metal siding? Lockable gates? Are you sure you are not building a prison vs. a school for 5 to 10 year olds? Why not just build a gym? At other schools, children go out to play after lunch. However, this design would require the children to pass in front of classrooms to get to the playcourt on the other side of the school, creating visual distractions to the children in the classrooms. **Parking** – The parking lot is inadequate for school functions with the prohibition of on-street parking.

4.2.1 Cost schedules previously released show an elementary school costs $17 million to build, not $20 milllion. The extra three million should be used to cover the cost of an additional story on the single story building, saving future building costs.

4.2.3 What does "refinement of the design contingency is necessary to allow construction of the new elementary school" mean? Why is $1.9 million in design contingency added, when the state has adopted the multi-track prototype design in order to save costs and the legislature, during the last session, appropriated $1.8 million for the design? Before this was adopted, standard design fees noted in the CIP budget were $1.8 million. $2.9M in profit seems highly excessive.

4.2.4 **Social Characteristics** – Social needs would be far more greatly met with construction of schools "concurrent to" not subsequent to construction of homes. Infrastructure needs arise directly from the impact of development.

4.5.1 **Aesthetics** – The height variance could have been avoided with the construction of a single story school on 12 acres of land with an adjoining 4-acre, joint use, City and County park, as originally planned.

4.5.2 **Traffic** – Has the traffic from the middle school in combination with the elementary school on Kuaoa Street been considered? The road is narrow and will have to accommodate the transport of 2,000 at any given time. By contrast,

CORRECTION

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Mililani HS, with 2,000 students has access from two major roadways, two residential streets, and 5 parking lots with exits. A traffic light should installed before, not after, the construction.

5.2 **Soils** – Will the developer or the state be responsible for the improvements and additional costs for preparing unstable soils? As a prior dump and pineapple field, will the ground be treated for termites before construction and appropriate materials used to prevent infestation?

5.3.1 Will the playfield be constantly wet, based on this description, with runoff and in an area that gets 40-60 inches of rain per year?

6.0 **Quality of Life** – The school as designed will not contribute to quality of life in Mililani Mauka, it will detract from it. The demographics of the area show that most families with children have two working parents. There are no daycare facilities in the area, as originally planned in the Master Plan. (There is, however, a sign for a daycare!) Parents with mean household incomes of $50K per year will now have to pay approximately $1,800/yr./per child for daycare, if and when they can find it. Unlike middle school, children of this age cannot legally be left unattended. Multi-track scheduling will create an unbearable burden to these families. As mentioned before, the schedule and design of the classrooms does not represent a good learning environment and may exacerbate learning disorders such as central auditory processing deficits and ADHD. The future development of Koa Ridge will further impact and overcrowd the scarce Mililani Mauka infrastructure being provided by the developer, which will impact schools, parks, and quality of life in Mililani Town.

Summary

The State's pigheaded instance on building schools too small for their communities, using a multi-track design that is reminiscent of inner city ghetto vs. middle class America violates all land use ordinances set in place to protect property values and ensure quality of life. In spite of community opposition, our elected and appointed officials follow their own agendas and build monuments to their stupidity—only to have taxpayers pay through the nose later.

That will be the legacy of this administration to our children, ensuring Hawaii's third world status for years to come.

Sincerely,

Laura Brown

Cc: Governor, State of Hawaii
C/o Office of Environmental Quality Control
235 S. Beretania ST. Rm 792
Honolulu, HI 96813
Attn: Genevieve Salmonson

Comptroller .....
State P.W. Engr .....
P.W. Secty .....
Staff Serv. .....
Planning Br. .....
Proj. Mgmt. Br. .....
Design Br. .....
Inspec. Br. .....
Quality Control .....
Leasing Br. .....
Contracts (P)1698.1
Fiscal Off. .....

NOV - 7 2001

Ms. Laura Brown
94-1060 Anania Circle #116
Mililani, Hawaii 96789

Dear Ms. Brown:

Subject Mililani Mauka II Elementary
Draft Environmental Assessment(EA)
TMK 9-5-02:01

Thank you for your review and response to our Draft EA report for the subject school. Our following responses are provided in the respective order of your comments.

Overview, Page 1

The Department of Education(DOE) requirement for an elementary school is 12 acres including the playfield. Prior to the start of design, the DOE determined that Mililani Mauka II would be a year-round multi-track school.

The DOE will build additional schools as needed in order to accommodate student populations that exceed the design capacity of the existing schools.

4.1.0 The warranty deed the DOE will receive from Castle and Cooke Homes will be for 12 acres for the Mililani Mauka II Elementary School campus.

4.1.3 Meetings of the Steering Committee were arranged for the convenience of the Committee members because they were willing to dedicate their time for this project.

4.1.4 Program space requirements are established by the DOE. Through a series of meetings and the Functional Analysis Concept Development (FACD) process, input was received and decisions were made for the

project through a task force and steering committee consisting of DOE personnel, parents, and community representatives. At the end of the FACD, conceptual plans and a summary were published and then, the project proceeded into the design development phase. The steering committee continued to make decisions throughout this phase.
The charette/FACD process has been used on all the DOE's new school projects for about the past eight years. It is a process that allows input and decisions to be made by a group of people closest to the ultimate users (the students, staff, and community of the respective area).

4.2.1 The projected construction cost is based on the current conceptual design proposed by the architect. Because of the limited funding available, the DOE is mandated to keep the project within appropriated funds.

4.2.3 Design contingency funds are necessary due to possible increased construction costs as a result of design requirements developed during the later design phases of the project.

4.2.4 DOE constantly attempts to keep classroom spaces in line with the projected number of school students. However the uncertainties of market forces and the necessary timing of receipt of legislative appropriations do not always work out ideally.

4.5.1 The two-story classroom building was decided by the Steering Committee because of available space limitations (i.e., everyone wanted to keep the large open play field area).

4.5.2 A traffic study was prepared for this project and the site design has considered the traffic concerns. In addition, Castle & Cooke Homes Hawaii has committed to providing traffic lights at Lehiwa Drive when traffic loads warrant them.

5.2 Geotechnical studies of the soil conditions have been made and recommendations were implemented in the design for the structures.

5.3.1 The site drainage system design will address County drainage regulations and will try to minimize continuously wet play field conditions resulting from high rainfall conditions in the area.

6.0 The DOE believes that with the generous input from students, staff, and community representatives, the proposed school will be a positive contribution to the community.

We appreciate your participation in the Draft EA review process. Your letter along with this response will be reproduced in the Final EA.

Sincerely,

Gordon Matsuoka

GORDON MATSUOKA
Public Works Administrator

RY:mo
c: Mr. Clifford Murakami, Pacific Architects
DAGS Project Management Branch

APPENDIX

CULTURAL IMPACT ASSESSMENT

ARCHAEOLOGICAL INVENTORY SURVEY

TRAFFIC IMPACT ASSESSMENT REPORT

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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

DEPUTIES
JANET E. KAWELO
LINNEL NISHIOKA

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

October 2, 2001

Clifford K. Murakami, AIA
Principal
Pacific Architects, Inc.
2020 S. King Street
Honolulu, Hawaii 96826

LOG NO: 28292 ✓
DOC NO: 0110EJ01

Dear Mr. Murakami:

SUBJECT: Chapter 6E-8 Historic Preservation Review – Archaeological Inventory Survey for the Proposed Mililani Mauka II Elementary School, Waipi`o Ahupua`a, Island of O`ahu
Waipi`o, `Ewa, O`ahu
TMK: 9-5-002:001 por.

Thank you for the opportunity to comment on the report documenting the results of an archaeological inventory survey of the proposed Mililani Mauka II Elementary School site (*Archaeological Inventory Survey for the Proposed Mililani Mauka II Elementary School, Waipi`o Ahupua`a, Island of O`ahu*, LeSuer and Cleghorn, 2000). We apologize for the delay in reviewing this report.

The survey appears to have adequately covered the entire project area and we believe that the report has documented the lack of archaeological and/or historic sites in the proposed project area. Because no historic sites were located within the project area, we believe that the construction of the proposed elementary school will have "no effect" on significant historic sites.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

c: Ralph Morita, SOH, DAGS, Planning Branch
Paul Cleghorn, Pacific Legacy

CULTURAL IMPACT ASSESSMENT
FOR THE PROPOSED MILILANI MAUKA 2 ELEMENTARY SCHOOL
WAIPI`O AHUPUA`A, ISLAND OF O`AHU
TMK 9-5-02:por. 1

prepared by:

C. Celeste LeSuer, B.A.
and
Paul L. Cleghorn, Ph.D.

Pacific Legacy, Inc.
332 Uluniu Street
Kailua, Hawai`i

prepared for:

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawai`i 96726

19 December 2000

ABSTRACT

A cultural impact assessment was conducted for the general area associated with a 12-acre parcel in Mililani Mauka 2 that is being proposed for an elementary school. This assessment consisted of archival and oral historical research aimed at determining what cultural practices may have occurred in the general area. An emphasis was placed on traditional Hawaiian cultural practices. The archival and oral historical research indicated that the area was not used intensively during traditional times. Furthermore this parcel has been under intense pineapple cultivation for more than 50 years, so that any material remains that might have been present form traditional uses of the area would have been destroyed. Consequently, it was concluded that the proposed development of an elementary school will not have an adverse effect to any cultural activities in this area.

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LIST OF FIGURES

1.0 INTRODUCTION

Pacific Legacy, Inc. under contract to Pacific Architects, Inc. conducted a cultural impact assessment as well as an archaeological inventory survey for the proposed Mililani-Mauka 2 Elementary School in the upper phase of the Castle & Cooke Mililani-Mauka residential development area (TMK 9-5-02:por. 1) (Figures 1 and 2)). The results of the archaeological inventory survey are reported on separately (LeSuer and Cleghorn 2000). This report presents the results of the cultural impact assessment. Much of the traditional history obtained from archival research undertaken for the archaeological inventory is repeated here.

This cultural impact assessment was undertaken for compliance with the State of Hawaii policy under Chapter 343, HRS, which, in part, requires the reporting of significant environmental effects to cultural resources that may result from proposed actions subject to said policy. Cultural beliefs, practices, and features related to Native Hawaiian and other ethnic groups are considered and analyzed as to the potential impact of the proposed actions. Chapter 343, HRS policy further stipulates that the cultural portion of an environmental assessments shall, in most cases, pertain to a greater geographical area—usually the *ahupua'a*; to ensure that relative cultural practices which may occur outside of the project area are not effected.

2.0 RESULTS OF ARCHIVAL RESEARCH: TRADITIONAL HISTORY

The project parcel is located on Punalu`u Plain. This plain is referred to in a Native Hawaiian oral history documented by Abraham Fornander in 1879, and is shown on Sterling and Summers (1978) archaeological map of the `Ewa District. Fornander documented an ancient battle from which three traditional place names were a result: the Punalu`u Plain, Kipapa Gulch, and Po`o Hilo. Of the battle Fornander writes:

> a raid by some restless and turbulent Hawaii chiefs, whom the pacific temper of *Mailikukalii* and the wealthy condition of his island had emboldened to attempt the enterprise, as well as the *éclat* that would attend them if successful, a very frequent motive alone in those days. The invading force landed at first at Waikiki, but, for reasons not stated in the legend, altered their mind, and proceeded up the Ewa lagoon and marched inland. At Waikakalaua they met *Mailikukalii* with his forces, and a sanguinary battle ensued. The fight continued from there to the 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. Punaluú was slain on the plain 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 Honouliuli, and stuck up at a place called Poo Hilo (Fornander 1969:89-90).

Pukui, Elbert, and Mookini (1974:113) infer this battle likely took place during the 14th century, and that Kipapa (placed prone) Gulch received its name after the bloody battle. Po`o Hilo is located in Honouliuli, and is still referred to today.

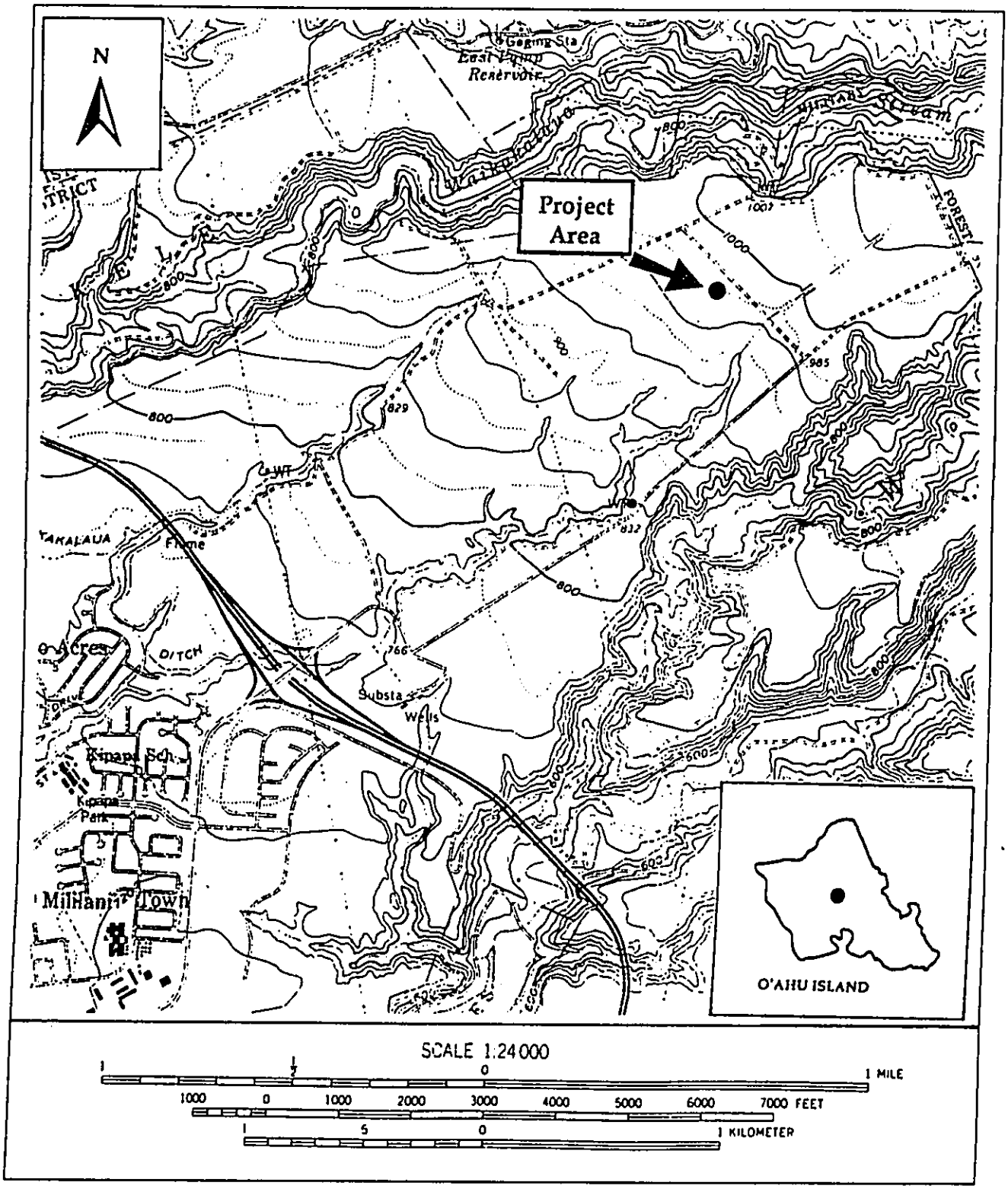

Figure 1. Approximate location of Project Area on USGS Waipahu Quadrangle Map (1983).

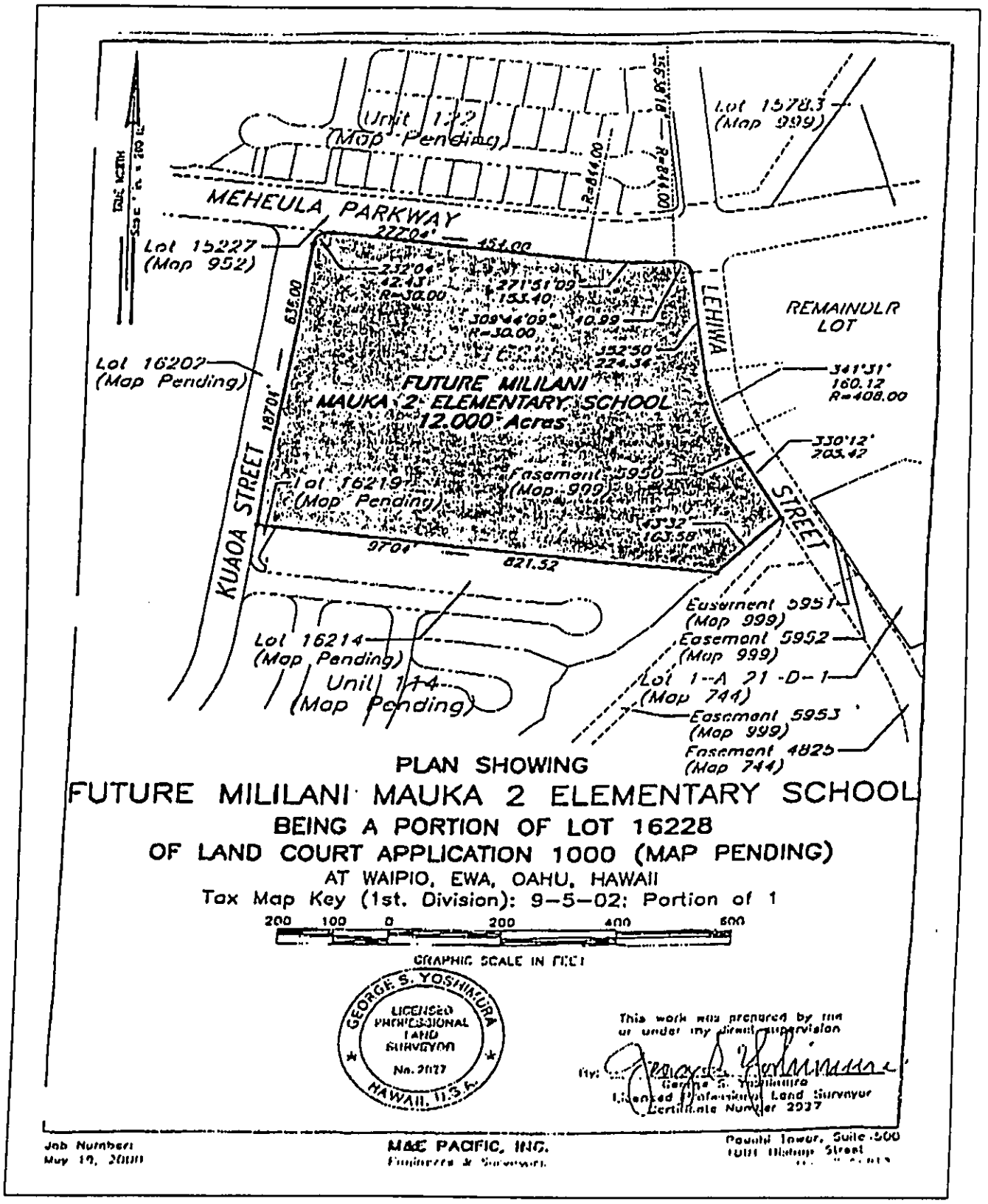

Figure 4. Project Parcel Location Map.

2.1 Pre-Contact

The coastal plains of `Ewa contained the majority of the traditional settlement communities (Dye and Komori 1992; Cordy 1996; Tuggle and Tuggle 1997). The gulch streams drained into the bays of Keawalau O Pu`uloa (Pearl Harbor), providing for fertile agricultural land. Handy and Handy (1972:169) write that these bays offered the most favorable locality in all the Hawaiian Islands for the building of fishponds and fish traps, and that the lowlands were ideal terrain for the cultivation of irrigated *lo`i* (irrigated taro terraces). It is further noted that taro cultivation, however, was moderate and that the district of `Ewa was "noted for the quality rather than the quantity of its *poi* made from the *ka`i* variety of taro." In addition, this harbor provided the summer home for mullet, and had a unique variety and abundance of edible shellfish including the *pipi* (pearl oyster).

The *ali`i* of the district of `Ewa settled in a community called Lepau, a populous *ali`i* dwelling place located at a mid-east point of the Waipi`o Ahupua`a Peninsula (McAllister 1933:106). Two large fishponds—Loko Eo and Loko Hanaloa—marshlands, and the Homaikaia fishery area were on the peninsula surrounding Lepau. The famous *ka`i* taro, most likely was cultivated at least partially on the surrounding marshes.

In describing the uplands, which include the project area, Handy and Handy write:

> The hinterland consisted of deep valleys running far back into the Ko`olau range. Between the valleys were ridges, with steep sides, but a very gradual increase of altitude. The lower parts of the valley sides were excellent for the culture of yams and bananas. Farther inland grew the *`awa* for which the area was famous. The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods in famine time.
>
> The people needed this resource because `Ewa, particularly the western part, got very little rain in the summer months when the trade winds dropped their moisture in the interior. Stream water for irrigation, however, was always abundant. . .
>
> In the interior was the same avifauna, including the birds whose feathers were prized for feather capes, helmets, and *lei* making. In fact this, with its spacious *wao* inland, was the region where these birds were most numerous. There were more extensive areas also where *wauke* and *mamaki*, which supplied bast for the making of *tapa* [sic], grew in abundance, in fact, `Ewa was famous for its *mamaki*. There was, too, much *olona* grown in the interior, and wild bananas and yams flourished (Handy and Handy 1972 469-470).

In *The Hawaiian Planter*, Handy writes that:

> between West Lock of Pearl Harbor and Loko Eo the lowlands were filled with terraces which extended for over a mile up into the flats along Waikele Stream. The lower terraces were formerly irrigated partly from the Waipahu Spring, which Hawaiians believe came all the way through the mountains from Kahuku. It is said that terraces formerly existed on the flats in

> Kipapa Gulch for at least 2 miles upstream above its junction with Waikele. Wild taros grow in abundance in upper Kipapa Gulch. . .
>
> where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted to bananas, beans, cane, and small gardens. For at least 2 miles upstream there were small terrace areas (Handy 1940:82).

2.2 Contact to 1800

Kamakau writes that in 1783, the Maui Chief Kahekili invaded O`ahu and forced O`ahu Chief Kahahana, his wife, and a friend to live in hiding for two and a half years. This exile was spent hiding out in the upland forests. It is written that many people felt sorry for Kahahana's group, and that people living in remote upland and gulch areas aided his small group with necessities (Kamakau 1960:136-137). Ultimately, Kahahana was betrayed by his wife's brother in Waikele. Kahekili sent his men to kill Kahahana and his friend.

McAllister reports that in 1793, Vancouver anchored at the entrance of Kaihuopalaai (West Lock Bay) and observed that:

> The part of the island opposite to us was low...forming a level country between the mountains that compose the east (Koolau) and west (Waianae) ends of the island. This tract of land was of some extent but did not seem to be populous, nor to possess any great degree of natural fertility; although we were told that, at a little distance from the sea, the soil is rich, and all the necessaries of life are abundantly produced.
>
> Mr. Whitbey observed...from the number of houses within the harbour it should seem to be very populous (McAllister 1933 as cited in Sterling and Summers 1978:36).

The many oral histories that mention people living in remote areas, in pre and early post-contact years, clearly establish that the coastal community population observed from foreign vessels is but a partial description of Hawaii's population and land use. It attests to continual use of remote lands for subsistence, including traditional seasonal and famine gathering. John Papa I`i writes:

> Here is a wonderful thing about the land of Waipio. After a famine had raged in the land, the removal of new crops from the taro patches and gardens was prohibited...This proclamation was called *kapu`ohi`a* because, while the famine was upon the land, the people had lived on mountain apples (*`ohi`a `ai*), tis, yams, and other upland foods. On the morning of Kane an offering of taro greens and other things was made to remove the *`ohi`a* prohibition (I`i 1959:77).

The chief Kahekili, mentioned above, died in 1794 and his son Kalanikupule took over as the *Moi* of O`ahu. His reign was short, for he was defeated a year later in the Battle of Nuuanu by Kamehameha`s invading forces. This victory established the coming unification of Hawaii under Kamehameha. Following Kamehameha`s conquest of O`ahu, he established his first place of residence in Waikiki. John Papa I`i (1959:17-20) recounts that in 1796, King

Kamehameha I arrived in Waikiki with his great *peleleu* fleet of canoes, which were intended for the invasion of Kaua`i.

Arriving on O`ahu with the king were members of the Luahine-Luluku lineage—including Papa I`i, a later chief of Waipi`o (I`i 1959:17-20). The family and descendents of Papa I`i figure prominently into the historical era of Waipi`o Ahupua`a. Luluka and Keaka were the childhood guardians of Kamehameha I. The King had built a stone house at Helumoa, Waikiki, where one of his wives Kaahumanu went to while away the time (I`i 1959:17). The children of Luluka and Keaka—Kamalo and Wawae—and their relatives were put in charge of this royal residence. Luluka had also mated with Keakaakipoo, with whom he had several children including Papa I`i and a girl named Ilipeahi.

Papa I`i had moved to Waipi`o where the king had given him authority, land, and the Hanaloa fishpond in addition to his land holdings and residence *Hale O Papa* in Waikiki. The I`i name gained further distinction as Papa became medical *kahuna* to the king. It is noted that in late 1803 or early 1804 the king became ill while living with the chiefs at Halaulani, Waipi`o. He recovered under the care of Papa I`i (I`i 1959:33). Papa I`i was most skilled medical *kahuna*, specializing in the diagnoses of ailments and the selection of medicine for treatment (I`i 1959:45-46). In 1806, following the *`oku`u* disease epidemic, which caused a great amount of deaths, a method of training promising members of the court as medical kahunas is believed to have developed. It is noted that Papa`s methods were greatly feared because a patient fainted often, thought he recovered completely afterward (I`i 1959:46). Papa I`i was considered the most skilled in his art, and maintained his position as medical *kahuna* to King Kamehameha and his chiefs (I`i 1959:46).

During the reign of Kalaniopuu , Kamahauluae—who appears to be a son from an earlier mating of Luluka—returned to Kau to be with his chief Kamehameha. He took his younger brothers with him. Papa I`i may have been among this group. While in Ka`u, Kamahauluae mated with Wanaoa, and they had three sons. Later Wanaoa mated with Kanepililua and had Kamaloo. A third mating with Kuaena produced their son John Papa I`i, on August 2, 1800. The birth took place at Kumelewai, Waipi`o, in the district of `Ewa on O`ahu, on the land of his uncle Papa I`i (I`i 1959:20).

The father of Wanaoa was also a blood relative of Luluka and Keaka. John Papa I`i's father, Kuaena, was related to the mother of Boki, a chiefly *ali`i* lineage. As mentioned above, the Luluka lineage were descendants of the lineage of Luahine, a line of *Haloa* (ruling chiefs). I`i writes that "As Luluka, the family name of Luahine and Palena, was found only in the presence of the chiefs, they were all recognized in the courts." (1959:19). In one generation the I`i family of Waipi`o experienced a immoderate cultural change from Papa I`i's ancient and distinguished *ali`i* lineage—which was enhanced by his traditional medical *kahuna* status—to the equally distinguished democratic and religious career of his nephew John Papa I`i.

2.3 1800 to 1900 and The Mahele Land Commission Awards

J.F. Brown depicts the environment surrounding the project area on an 1877 map of Waipi`o (Figure 3). He describes a grassy plain lying between Waikakalaua Gulch to the north and

Kipapa Gulch to the south. To the east is the west boundary of a very irregular Ohia and Koa tree forest, which extends eastward to the west boundary of the Koolau Mountain Range. This native forest may have been an important traditional resource for a variety of forest products, including large trees for houses, canoes, etc, and brightly colored birds, the feathers of which were important for chiefly symbols. To the west lies Waikele Ahupua`a and the southward drainage system for the Waikakalaua, Wai`eli, Kipapa, and Waikele Streams. These streams drain through the Waikele Stream into Kaihuopalaei (the West Lock Sea of Pearl Harbor). These stream beds may have been important resources for traditional agricultural pursuits.

John Papa I`i recounts a story about an earlier time when his uncle Papa I`i was the authority in Waipi`o: "the *konohiki* (Kawelo) of Waikele instructed "the men of the land to fetch the double canoe that was beached...in Waipi`o. The Waipi`o men prevented the Waikele people from taking the canoe because they felt the order should have come from their own leader" (I`i 1959:76). John Papa I`i further comments: "O companions, see how well the people served their leader. The peace of the land of Waipi`o was well known while the high chiefs were in charge and up to the time of Papa's death.", which is believed to have taken place in 1813 (I`i 1959:77,115).

At the age of ten (1810) John Papa I`i was placed under his uncle's supervision, for proper placement at court. Papa Ii placed his namesake in the household of Liholiho, Kamehameha II. In 1820, Liholiho sent him to study under Hiram Bingham, so the king could observe the effects of the new Christian teachings (1959:ix). He became superintendent of O`ahu schools by 1841, and an important member of the court of Kamehameha III.

Additional positions of distinction John Ii held included: an appointment to a newly organized Treasury Board, member of the Privy Council, Board of Land Commissioners member, House of Nobles member, member of the Hawaiian Constitution drafting committee, member of the House of Representatives, and associate justice of the Supreme Court of Hawaii. He spent his life working for a democratic form of government for Hawaii. He also spent much of his life in the service of the Christian ministry and its furtherance in Hawaii (I`i 1959:ix).

Papa I`i received his land holdings in Waipi`o, Waikiki and other locations from Kamehameha I. Kamehameha II and Kamehameha III extended much of these land holdings to his nephew John Papa Ii throughout his service to them. The I`i holdings were guaranteed during the Mahele.

I`i claimed the entire ahupua`a of Waipi`o "...without any division or commutation" (Barrere 1994:73). John Papa I`i died on May 2, 1870. He left his estate to His widow Maraea Kamaunaukea Kapuahi, his daughter Irene, and various Kaikaina and relatives (Barrere 1994:75).

Documents relating to other awards in the general area, provide additional evidence of historic land use in Waipi`o. John Neddles Gilman was awarded acreage in the *`ili* of Waikakalaua, and

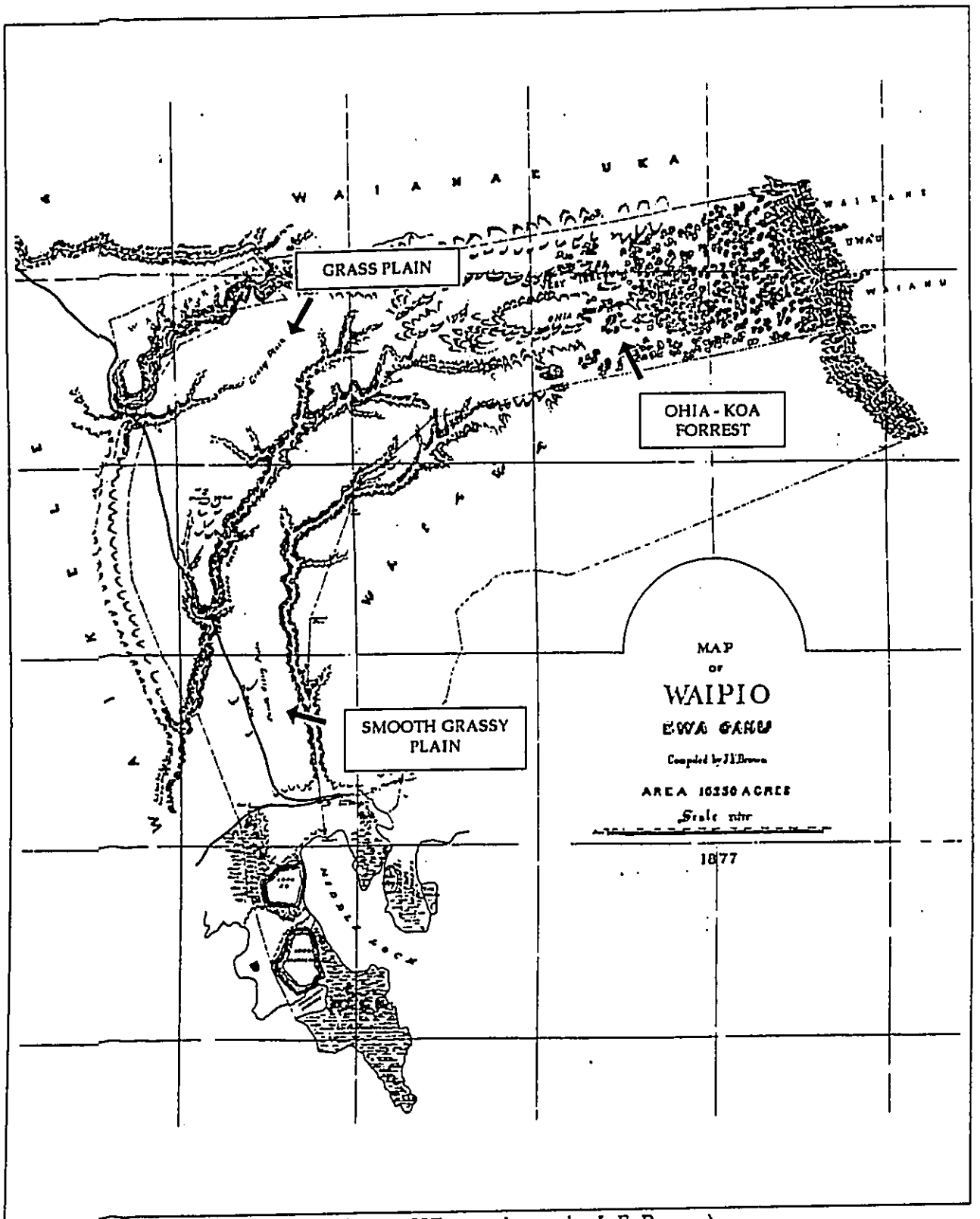

Figure 3, 1887 Map of Waipi`o (after a 1887 map drawn by J. F. Brown).

included areas on tablelands and in the Gulch. Land Court testimony documents that O`ahunui (a large stone shaped like the island of O`ahu) was located, at the northeast corner of the *`ili* of Waikakalaua; the location of the stone was supposedly a favorite destination of Honolulu travelers in the late 1800s (McAllister 1933). Castle & Cooke Inc. purchased the Gilman property in 1930, and leased the lands to farmers. Brian Gray documents that Harold Stearns acquired the gulch land, as it was of no value to Castle & Cooke Inc. for pineapple production (Gray 1985:25). Stearns developed forty-three farm lots in the gulch, and sold the Reverend Harold Headricks the remaining land. The Reverend began the Waikalani Woodlands Phase I and Phase II development projects, through his company Headricks Development, Inc. He later filed for bankruptcy and the Towne Realty, Inc. company acquired development rights (Gray 1985:25).

Hommon and Ahlo's historical research revealed that 1846 Privy Council minutes also reported "that taro patches in the "upper portion of Waikakalaua" belonged to an individual named Ohua" (Hommon and Ahlo 1983:5). This evidence establishes the use of Waikakalaua Gulch for Native Hawaiian taro subsistence as late as the mid-nineteenth century.

Historical activity noted by Hommon and Ahlo's research of the 1846 Privy Council minutes include: "an indenture of a lease was prepared "between His Hawaiian Majesty's Minister of the Interior...and Arthur P. Brickwood of Honolulu..." for a tract of land in Waikakalaua, that land being used for pasture." (Hommon and Ahlo 1983:5).

Table 1 presents a summary of historic land use in the general area.

Table 1: Dates of Various Land Acquisition and Use Related to Waipi`o

Date	Land Owner	Received from	Location	Source
1795	Kamehameha I	Conquest	Hawai`i	Fornander 1969
1796-1800	Papa I`i, (? to ca. 1813)	Kamehameha I	Waipi`o	I`i 1959:20
1813/ 1840's	John Papa I`i, (1800-1870)	Kamehameha II (Liholiho)	Waipi`o LCA 8241 (20,540 acres)	State Archives
1846	John Neddles Gilman	Kamehameha II (Liholiho)	Royal Grant 6, `ili of Waikakalaua	LCA Map 1000
1870	Maraea I`i, (widow) and Irene Kahalelaukoa I`i Brown, daughter, etc.	John Papa I`i Estate Probate	Waipi`o	Riford 1986:22
1895 ca.	Oahu Railway and Land Co.	I`i Estate	Kipapa Gulch rail tract	Conde and Best 973:313.
1896	Mark Robinson	?	LCA 7260:5, 252 Kula acres in Waikakalaua Gulch	Riford 1986:26.
1897	Dillingham/Oahu Sugar Co.	Mark Robinson	LCA 7260:5, 252 Kula acres in Waikakalaua Gulch	Riford 1986:26.

1897 (lease)	Dillingham/ Oahu Sugar Co.	I`i Estate	Waipo mauka 3,400 acres	Conde and Best 1973:313.
1933 use, 1945 take over	U. S. Military	?	Waipi`o and Waikele Ahupua`a, in Kipapa and Waikakalaua Gulches	Conde and Beste 1973:315.
1950	Hapco	I`i Estate	I`i Estate (extent unknown)	Advertiser

3.0 CULTURAL INTERVIEWS AND CONTACTS

In addition to the archival research presented above, oral historical research was conducted regarding the potential of the project to impact cultural practices in the area. The following individuals and organizations were contacted in an attempt to identify persons with expertise and knowledge about the area and about cultural resources and practices in the area.

In an attempt to identify individuals knowledgeable in traditioanl cultural practices in the area, the Office of Hawaiian Affairs (OHA) was contacted to assist in locating knowledgeable traditional and historic informants and possible descendents of past residents of Waipi`o Ahupua'a, who might provide traditional and historic information for the area. Persons contacted at OHA:

Randy Ogata Administrator, Office of Hawaiian Affairs letter response from Colin Kippen, Jr.

Colin Kippen's letter suggested that we contact Mr. Tom Lenchanko, who is one of the caretakers of Kukaniloko, the birth stone of Wahiawa. The junior author spoke on the telephone at length with Tom Lenchanko, and learned the following:

- The Punalu`u Plain, where the project area is located, was used as a pathway in olden times for people traveling from Waialua in the north to Pu`uloa in the south.
- There was probably some agriculture being practiced in the area, but Lenchanko thinks that most of the evidence for this would have been destroyed by pineapple plantation activities. Some evidence of traditional agricultural activities may be present in the more inland preservation lands.
- The Punalu`u Plain was the site of a large battle, when in the late 1400s two brothers from Hilo and a Maui Chief came to O`ahu for battle. The O`ahu forces, under the leadership of a Punalu`u chief were victorious and the heads of the Hilo chiefs were hung on posts at Po`o Hilo, which was located in the vicinity of the current St Francis West is located. According to Lenchanko, 4,000 warriors were killed in Kipapa Gulch.

- Lenchanko thinks that evidence for traditional uses on most of the Punalu`u Plain has been destroyed by the years of pineapple plantation activities. However, he thinks that the gulches have some potential for containing vestiges of the native plant community that once existed here. Care needs to be exercised in treating these gulches.

Two additional individuals were identified as potential sources of traditional practices in the area:

Lurline Lee, Hawaiian Civic Club of Wahiawa
Pelikikena (President)

Barara E, Dunn Hawaiian Historical Society
Administrative Director

Tom Lechanko provided the junior author with Ms. Lee's telephone number, but repeated attempts to contact her failed.

The junior author contacted Ms. Dunn via the telephone. Ms. Dunn did not know of the names of any knowledgeable individuals, but provided some direction to the archival research that was being undertaken.

The Dole Pineapple Company was contacted in an attempt to establish a chronology of historic cultural and agricultural activities—in the area of the current project parcel—and to identify possible informants. The attempt was not brought to fruition. The Dole Corporation recently donated all retained historic documentation to the Hawaii and Pacific Collection of the University of Hawaii, Manoa Hamilton Library. The Dole material consists of extensive and numerous folders. Dole employee's contacted for assistance included:

Barbara Awo	Director of Human Resources	Referred to UHM library and J.Wong
Janis Wong	Human Resources Administrator	Referred to UHM library and Castle & Cooke Corporation
Dr. Vriesenga	President, Dole Food Company	No response to date

Additional attempts to identify and locate informants who participated in the area's pineapple agricultural activities was unsuccessful. Persons contacted for assistance in locating agricultural informants include:

Bill Aspold, and Bob Leona, Pastors	Waipi`o Faith Assembly of God Church	No members related to pineapple, referred to Mililani Missionary Churc

Norman Okasaku, Pastor	Mililani Missionary Church	Ground-breaking blessing For Mililani-Mauka development, April 6,1990. Referred to Harry Sanders at Castle & Cooke
Harry Sanders	Castle & Cooke	No response at writing

The State Historic Preservation Department was contacted for assistance with the Dole Corporation agricultural chronology for the project parcel area. Muffet Jourdane, Assistant O`ahu archaeologist, provided a listing of indexed newspaper articles pertaining to the pineapple industry events.

The Castle and Cooke Real Estate Corporation office in Mililani-Mauka was contacted for information on the chronology of the development phases. No interviews were granted, however, pamphlets and a development map that includes the current project parcel were provided. Persons contacted at Castle & Cooke:

Receptionist	Mililani-Mauka Office	
Harry Sanders	Castle & Cooke	No response at writing

4.0 DISCUSSION

The archival and oral historical research conducted indicates that the plain where the project parcel is located is named Punalu`u after the O`ahu chief that was killed there. This battle, that probably took place in the 14th century AD, is probably one of the most important events that took place in this area. Several place names of the area are derived from this event (e.g., Punalu`u, Kipapa, and Po`o Hilo).

Apparently this area was also used as a thoroughfare for travelers passing through the area from Waialua on the north shore to Pu`uloa on the south shore. No specific trails have been documented, however.

The area also appears to have had some agricultural importance in traditional times, with *awa*, yams, and bananas being specifically referenced. The gulch bottoms were probably also important for raising irrigated taro. While agricultural activities probably had some importance in the area, it seems that the resources in the forest zone were more important. The forest zone apparently contained: wild yams and bananas that could be used as food resources in times of famine; *wauke* and *mamake* for making tapa; and *olona* for making cordage. In addition, a rich avifauna existed, whose feathers were used for making capes, helmets, etc. for the *ali`i*.

While the general area surrounding the project parcel appears to have been traditionally important in Hawaii's history, most of the material remains associated with these activities have long been destroyed as a result of pineapple plantation activities. The Punalu`u Plain was first

transformed from a grassy plain to an intensively cultivated plain of pineapples. Now it is being transformed into a highly developed residential community.

It does not appear that the proposed development will have any adverse effects to traditional cultural activities in this area.

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ARCHAEOLOGICAL INVENTORY SURVEY
FOR THE PROPOSED MILILANI MAUKA 2 ELEMENTARY SCHOOL
WAIPI`O AHUPUA`A, ISLAND OF O`AHU
TMK 9-5-02:por. 1

prepared by:

C. Celeste LeSuer, B.A.
and
Paul L. Cleghorn, Ph.D.

Pacific Legacy, Inc.
332 Uluniu Street
Kailua, Hawai`i

prepared for:

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawai`i 96726

19 December 2000

ABSTRACT

An archaeological inventory survey was conduced on a 12-acre parcel in Mililani Mauka 2 for a proposed elementary school. Archival research indicated that the area was not used intensively during traditional times. Furthermore this parcel has been under intense pineapple cultivation for more than 50 years. Consequently, it was predicted that no archaeological remains would be found on the parcel. The pedestrian survey of the project parcel substantiated this prediction – no archaeological sites were found. The report concludes by recommending no further archaeological work for this project.

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1.0 INTRODUCTION

Pacific Legacy, Inc., under contract to Pacific Architects, Inc., conducted an archaeological inventory survey of the proposed location for the Mililani-Mauka 2 Elementary School in the upper phase of the Castle & Cooke Mililani-Mauka residential development area (TMK 9-5-02:por. 1). The following report is to be included in an Environmental Assessment for the propose project.

1.1 Project Area Description

The project area is located in `Ewa District on the island of O`ahu (Figure 1). It is within Waipi`o *ahupua`a*, on the upper northeastern plain (Figure 2). The northern boundary of the *ahupua`a*, for the most part, follows Waikakalaua Gulch. The gulch curves southward at the area of the northeast extension of Waikele *ahupua`a*, and flows into Waikele Stream. The name Waipi`o stems from its geographic character, and translates as "curved water" (Pukui, Elbert, and Mookini 1974:227). *Waiawa ahupua`a* forms the south and east boundaries of Waipi`o, and Waikele *ahupua`a* forms the north and west boundaries.

The Mililani-Mauka Town Phase 2 residential development area is upland of Interstate H-2, and the current project area is located near the far east end of the residential development (Figure 3). This area is characterized by sloping tablelands bounded by Waikakalaua Gulch to the north-northeast and west, Kipapa Gulch to the south, the `Ewa Forest Reserve land and the Ko`olau Mountain Range to the east, and by Kamehameha Highway and Waikele Ahupua`a to the west. The project parcel is bounded on the north by Meheula Parkway, on the east by Lehiwa Street, and on the west by Kuaoa Street (Figure 4).

The environment surrounding the Mililani-Mauka residential phase includes an elevation that varies between 700 to 1,000 feet above sea level. Rainfall in the area averages between 40 to 50 inches (1016 t 1270 mm) per year (Armstrong 1983:62). Vegetation in the project area consists primarily of grasses with some feral pineapple (*Ananas comosus)* and a few *Albizzia* sp. Trees.

1.2 Methodology

A pedestrian survey of the entire project area was conducted on 28 September 2000. Paul Cleghorn and Celeste LeSuer conducted the surface inspection. The current condition of the project area was documented with 35mm color film. The field team was prepared to was prepared to map and describe all archaeological remains, but since none were found (see Section 2.0 below) these tasks were not performed.

Archival research was conducted at the following repositories:

- Bishop Museum Archives
- Bureau of Conveyances

- Hamilton Library at the University of Hawaii
- State Library
- Survey Office
- Tax Map Office

2.0 WAIPI`O AHUPUA`A, THE PUNALU`U PLAIN AND THE PRESENT PROJECT AREA: Cultural And Historical Documentation

The project parcel is located on Punalu`u Plain. This plain is referred to in a Native Hawaiian oral history documented by Abraham Fornander in 1879, and is shown on Sterling and Summers (1978) archaeological map of the `Ewa District (Figure 5). Fornander documented an ancient battle from which three traditional place names were a result: the Punalu`u Plain, Kipapa Gulch, and Po`o Hilo. Of the battle Fornander writes:

> a raid by some restless and turbulent Hawaii chiefs, whom the pacific temper of *Mailikukahi* and the wealthy condition of his island had emboldened to attempt the enterprise, as well as the *éclat* that would attend them if successful, a very frequent motive alone in those days. The invading force landed at first at Waikiki, but, for reasons not stated in the legend, altered their mind, and proceeded up the Ewa lagoon and marched inland. At Waikakalaua they met *Mailikukahi* with his forces, and a sanguinary battle ensued. The fight continued from there to the 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. Punaluú was slain on the plain 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 Honouliuli, and stuck up at a place called Poo Hilo (Fornander 1969:89-90).

Pukui, Elbert, and Mookini (1974:113) infer this battle likely took place during the 14th century, and that Kipapa (placed prone) Gulch received its name after the bloody battle. Po`o Hilo is located in Honouliuli, and is still referred to today.

2.1 Pre-Contact

The coastal plains of `Ewa contained the majority of the settlement communities (Dye and Komori 1992; Cordy 1996; Tuggle and Tuggle 1997) (Figure 5). The gulch streams drained into the bays of Keawalau O Pu`uloa (Pearl Harbor), providing for fertile agricultural land. Handy and Handy (1972:169) write that these bays offered the most favorable locality in all the Hawaiian Islands for the building of fishponds and fish traps, and that the lowlands were ideal terrain for the cultivation of irrigated *lo`i* (irrigated taro terraces). It is further noted that taro cultivation, however, was moderate and that the district of `Ewa was "noted for the quality rather than the quantity of its *poi* made from the *ka`i* variety of taro." In addition, this harbor provided the summer home for mullet, and had a unique variety and abundance of edible shellfish including the *pipi* (pearl oyster).

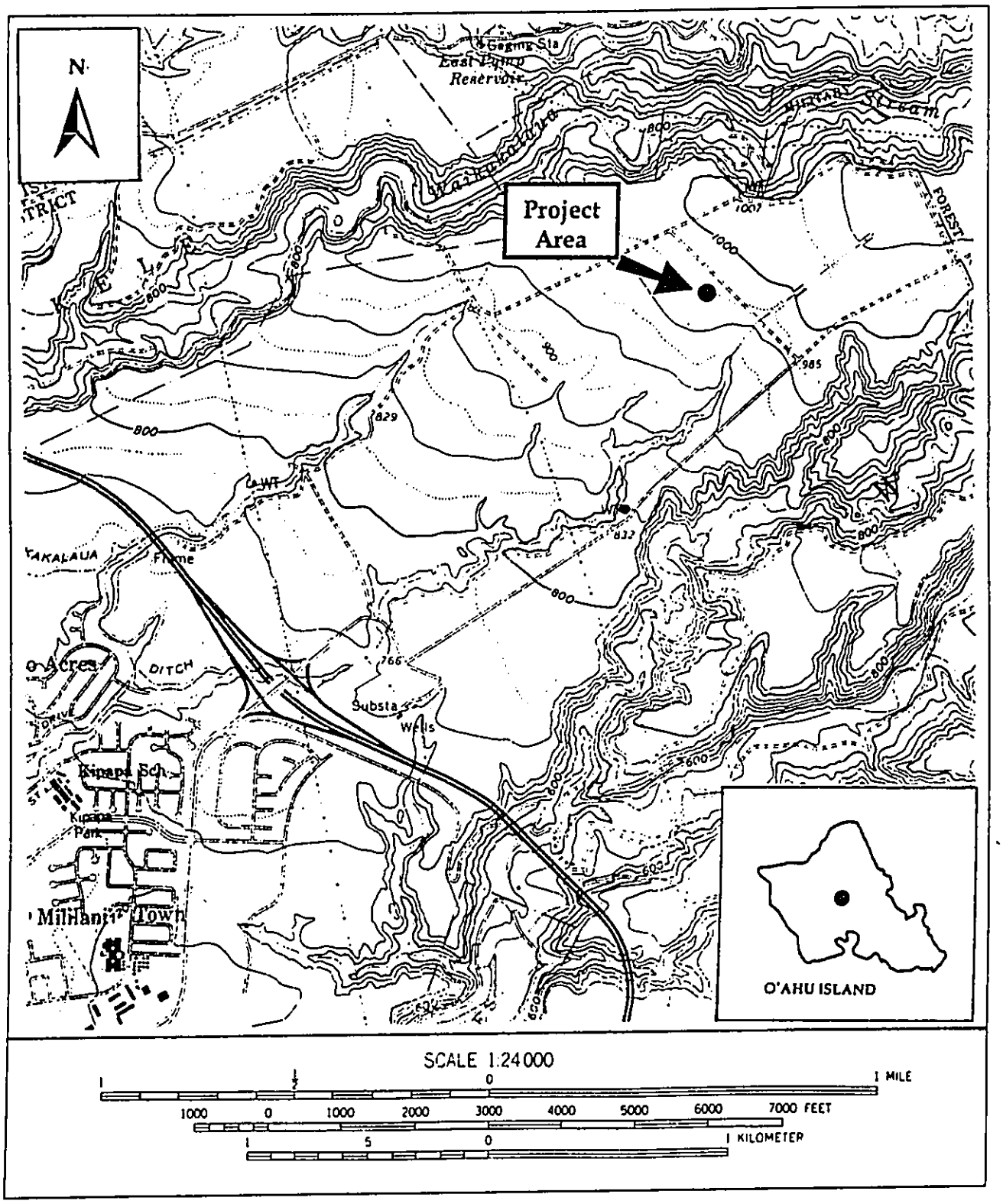

Figure 1. Approximate location of Project Area on USGS Waipahu Quadrangle Map (1983).

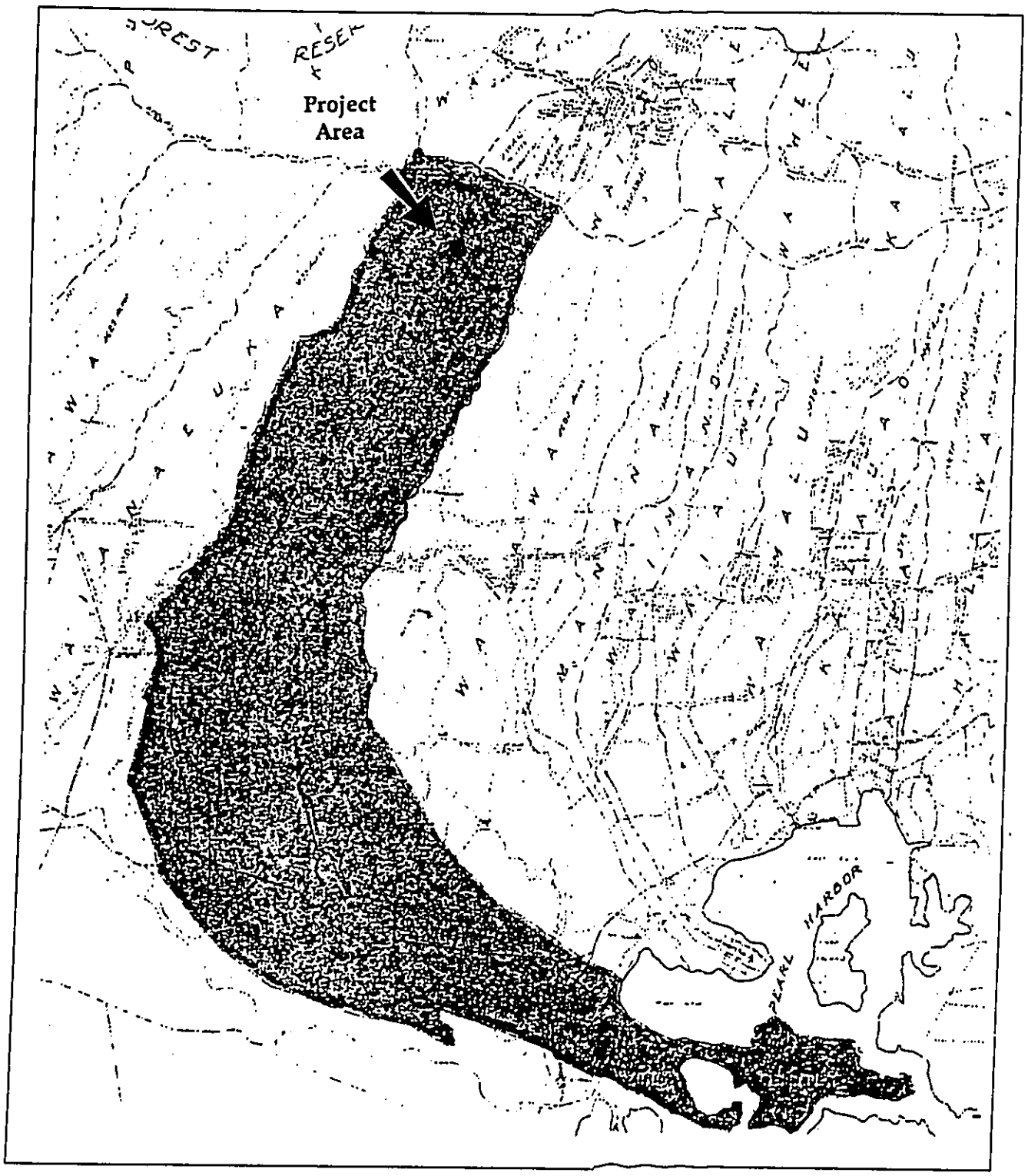

Figure 2. Location of Waipi`o *Ahupua`a* (1924 Hawaii Territory Survey Map).

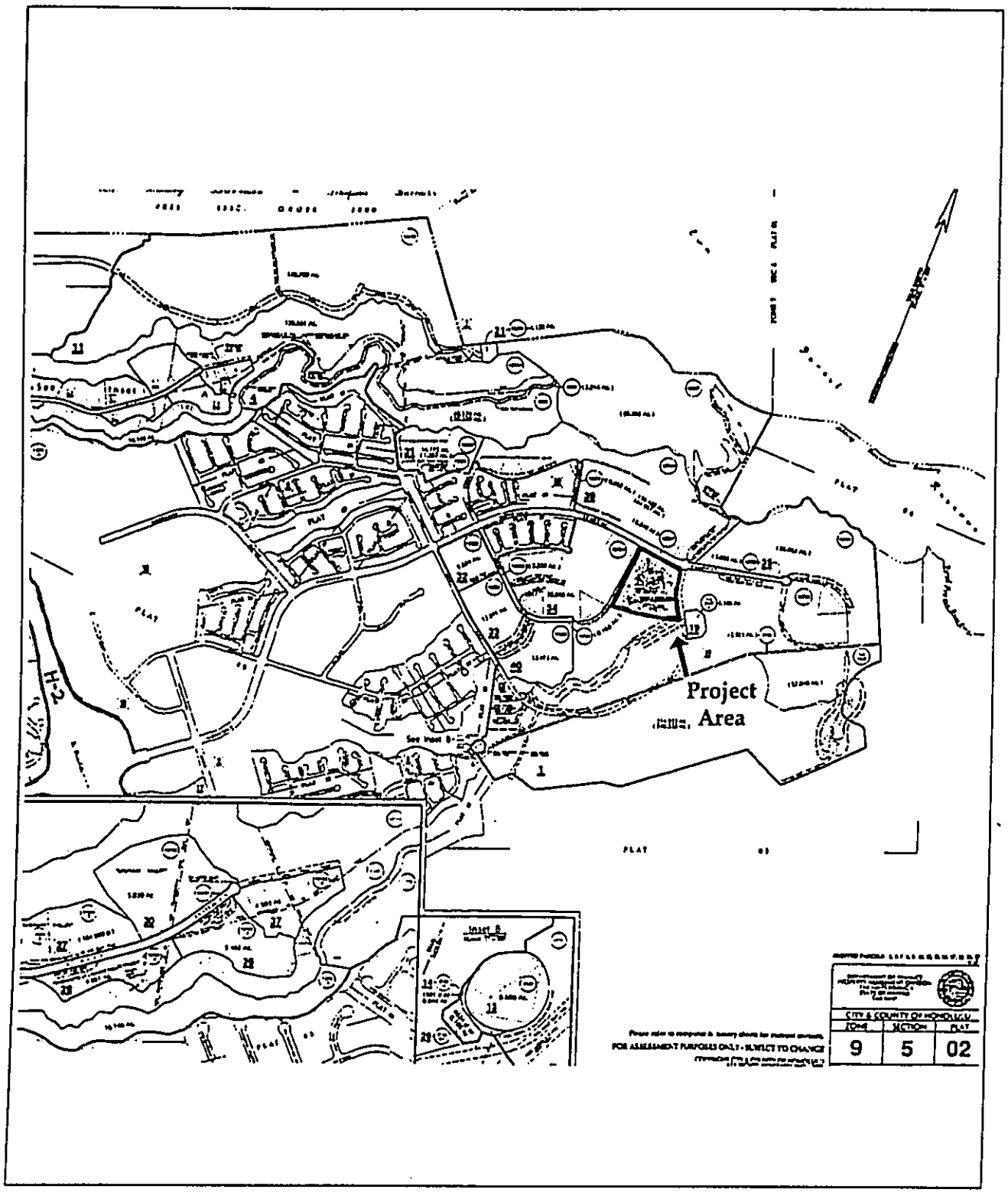

Figure 3. Mililani-Mauka Residential Development, 1997-1998 (Tax Map 9-5-02).

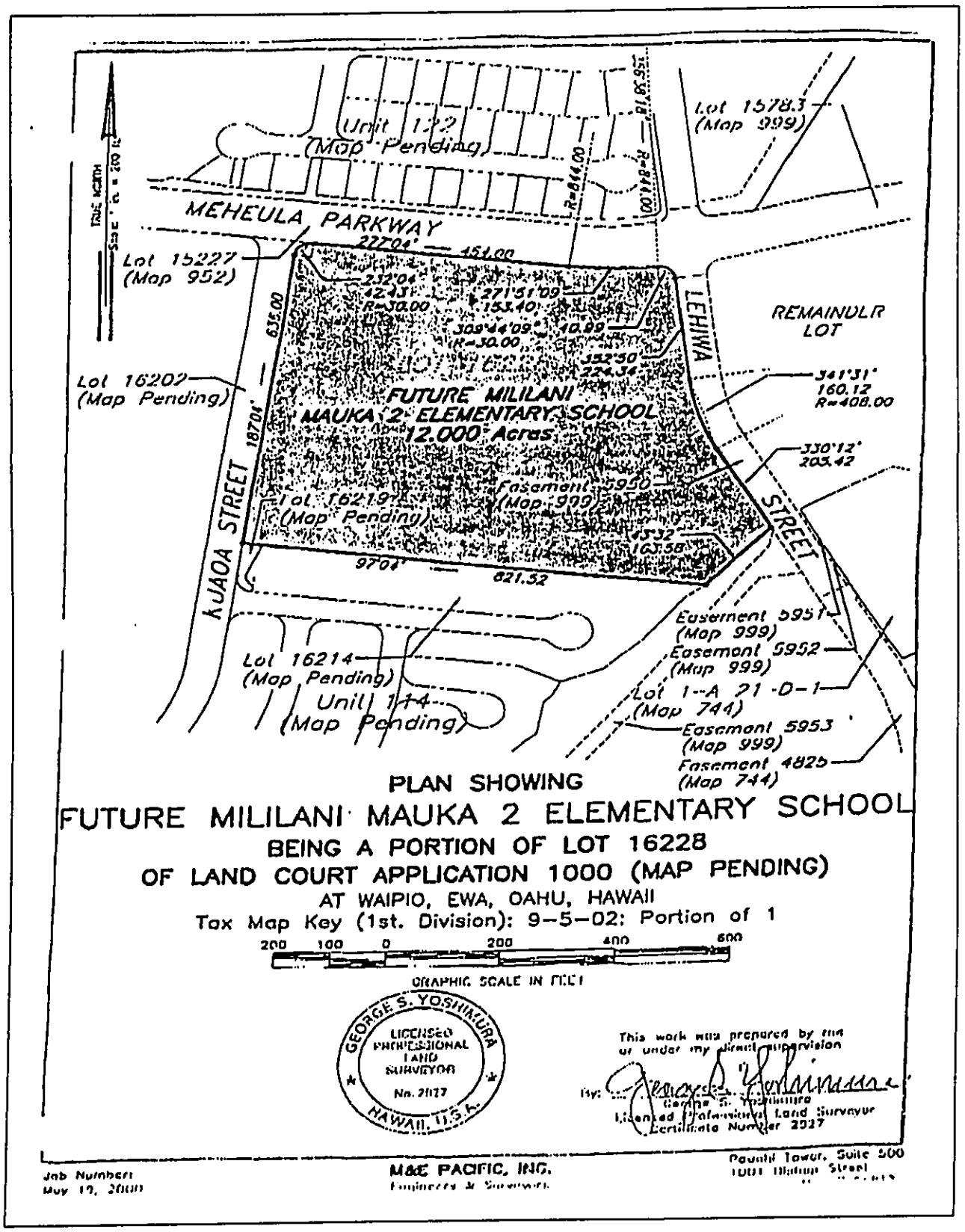

Figure 4. Project Parcel Location Map.

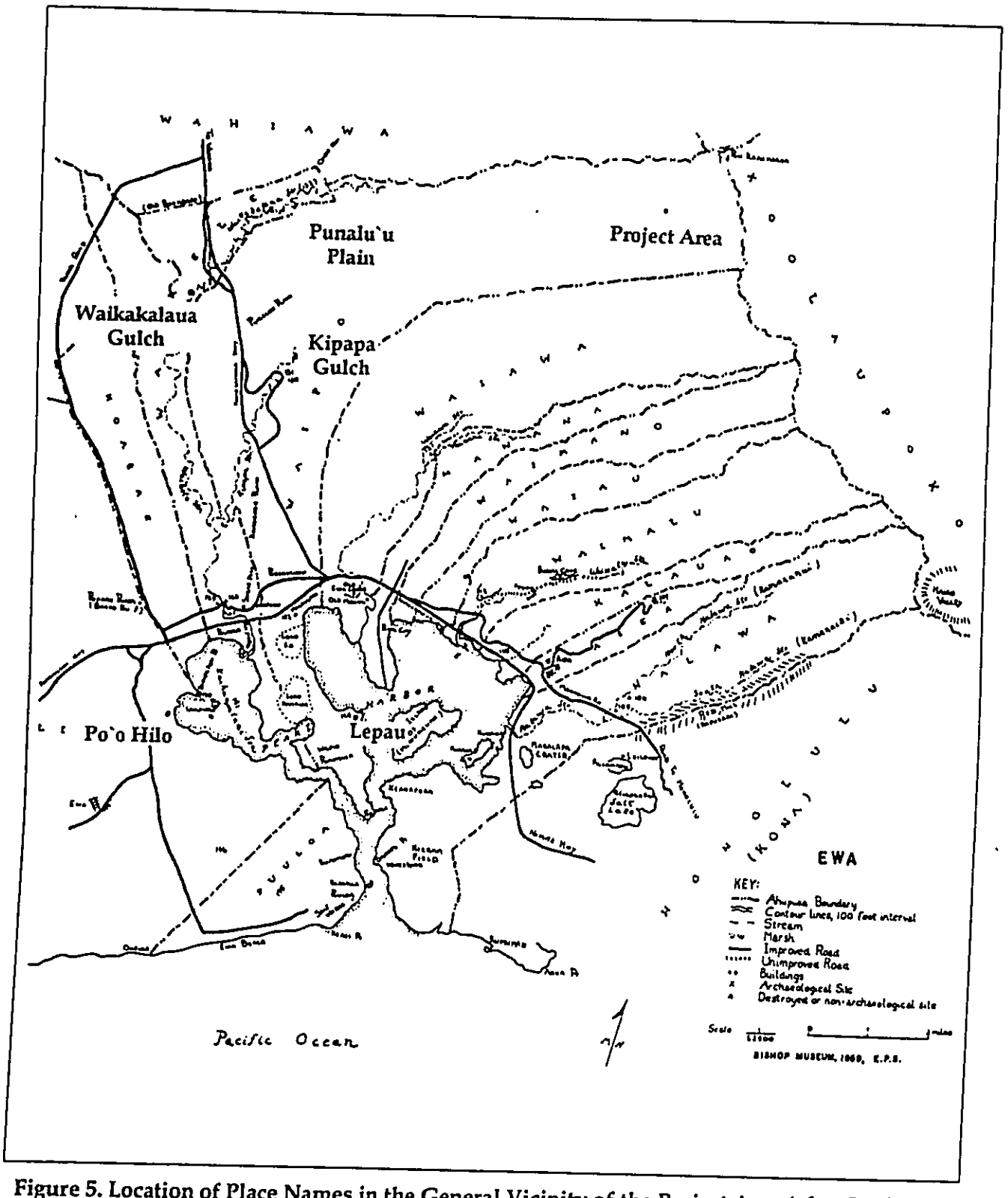

Figure 5. Location of Place Names in the General Vicinity of the Project Area (after Sterling and Summers 1978: Ewa District Map).

The *ali`i* of the district of `Ewa settled in a community called Lepau, a populous *ali`i* dwelling place located at a mid-east point of the Waipi`o Ahupua`a Peninsula (McAllister 1933:106). Two large fishponds—Loko Eo and Loko Hanaloa—marshlands, and the Homaikaia fishery area were on the peninsula surrounding Lepau (Figure 5). The famous *ka`i* taro, most likely was cultivated at least partially on the surrounding marshes.

In describing the uplands, which include the project area, Handy and Handy write:

> The hinterland consisted of deep valleys running far back into the Ko`olau range. Between the valleys were ridges, with steep sides, but a very gradual increase of altitude. The lower parts of the valley sides were excellent for the culture of yams and bananas. Farther inland grew the *`awa* for which the area was famous. The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods in famine time.
>
> The people needed this resource because `Ewa, particularly the western part, got very little rain in the summer months when the trade winds dropped their moisture in the interior. Stream water for irrigation, however, was always abundant. . .
>
> In the interior was the same avifauna, including the birds whose feathers were prized for feather capes, helmets, and *lei* making. In fact this, with its spacious *wao* inland, was the region where these birds were most numerous. There were more extensive areas also where *wauke* and *mamaki*, which supplied bast for the making of *tapa* [sic], grew in abundance, in fact, `Ewa was famous for its *mamaki*. There was, too, much *olona* grown in the interior, and wild bananas and yams flourished (Handy and Handy 1972 469-470).

In *The Hawaiian Planter*, Handy writes that:

> between West Lock of Pearl Harbor and Loko Eo the lowlands were filled with terraces which extended for over a mile up into the flats along Waikele Stream. The lower terraces were formerly irrigated partly from the Waipahu Spring, which Hawaiians believe came all the way through the mountains from Kahuku. It is said that terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikele. Wild taros grow in abundance in upper Kipapa Gulch. . .
>
> where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted to bananas, beans, cane, and small gardens. For at least 2 miles upstream there were small terrace areas (Handy 1940:82).

2.2 Contact to 1800

Kamakau writes that in 1783, the Maui Chief Kahekili invaded O`ahu and forced O`ahu Chief Kahahana, his wife, and a friend to live in hiding for two and a half years. This exile was spent hiding out in the upland forests. It is written that many people felt sorry for Kahahana's group, and that people living in remote upland and gulch areas aided his small group with necessities (Kamakau 1960:136-137). Ultimately, Kahahana was betrayed by his wife's brother in Waikele. Kahekili sent his men to kill Kahahana and his friend.

McAllister reports that in 1793, Vancouver anchored at the entrance of Kaihuopalaai (West Lock Bay) and observed that:

> The part of the island opposite to us was low...forming a level country between the mountains that compose the east (Koolau) and west (Waianae) ends of the island. This tract of land was of some extent but did not seem to be populous, nor to possess any great degree of natural fertility; although we were told that, at a little distance from the sea, the soil is rich, and all the necessaries of life are abundantly produced.
>
> Mr. Whitbey observed...from the number of houses within the harbour it should seem to be very populous (McAllister 1933 as cited in Sterling and Summers 1978:36).

The many oral histories that mention people living in remote areas, in pre and early post-contact years, clearly establish that the coastal community population observed from foreign vessels is but a partial description of Hawaii's population and land use. It attests to continual use of remote lands for subsistence, including traditional seasonal and famine gathering. John Papa I`i writes:

> Here is a wonderful thing about the land of Waipio. After a famine had raged in the land, the removal of new crops from the taro patches and gardens was prohibited...This proclamation was called *kapu`olti`a* because, while the famine was upon the land, the people had lived on mountain apples (*`olti`a ai*), tis, yams, and other upland foods. On the morning of Kane an offering of taro greens and other things was made to remove the *`ohi`a* prohibition (I`i 1959:77).

The chief Kahekili, mentioned above, died in 1794 and his son Kalanikupule took over as the *Moi* of O`ahu. His reign was short, for he was defeated a year later in the Battle of Nuuanu by Kamehameha`s invading forces. This victory established the coming unification of Hawaii under Kamehameha. Following Kamehameha`s conquest of O`ahu, he established his first place of residence in Waikiki. John Papa I`i (1959:17-20) recounts that in 1796 the King Kamehameha I arrived in Waikiki with his great *peleleu* fleet of canoes, which were intended for the invasion of Kaua`i.

Arriving on O`ahu with the king were members of the Luahine-Luluku lineage—including Papa I`i, a later chief of Waipi`o (I`i 1959:17-20). The family and descendents of Papa I`i figure prominently into the historical era of Waipi`o Ahupua`a. Luluka and Keaka were the childhood guardians of Kamehameha I. The King had built a stone house at Helumoa, Waikiki, where one of his wives Kaahumanu went to while away the time (I`i 1959:17). The children of Luluka and Keaka—Kamalo and Wawae—and their relatives were put in charge of this royal residence. Luluka had also mated with Keakaakipoo, with whom he had several children including Papa I`i and a girl named Ilipeahi.

Papa I`i had moved to Waipi`o where the king had given him authority, land, and the Hanaloa fishpond in addition to his land holdings and residence *Hale O Papa* in Waikiki. The I`i name gained further distinction as Papa became medical *kahuna* to the king. It is noted that in late 1803 or early 1804 the king became ill while living with the chiefs at Halaulani, Waipi`o. He

recovered under the care of Papa I`i (I`i 1959:33). Papa I`i was most skilled medical *kahuna*, specializing in the diagnoses of ailments and the selection of medicine for treatment (I`i 1959:45-46). In 1806, following the *`oku`u* disease epidemic, which caused a great amount of deaths, a method of training promising members of the court as medical kahunas is believed to have developed. It is noted that Papa`s methods were greatly feared because a patient fainted often, thought he recovered completely afterward (I`i 1959:46). Papa I`i was considered the most skilled in his art, and maintained his position as medical *kahuna* to King Kamehameha and his chiefs (I`i 1959:46).

During the reign of Kalaniopuu , Kamahauluae—who appears to be a son from an earlier mating of Luluka—returned to Kau to be with his chief Kamehameha. He took his younger brothers with him. Papa I`i may have been among this group. While in Ka`u, Kamahauluae mated with Wanaoa, and they had three sons. Later Wanaoa mated with Kanepililua and had Kamaloo. A third mating with Kuaena produced their son John Papa I`i, on August 2, 1800. The birth took place at Kumelewai, Waipi`o, in the district of `Ewa on O`ahu, on the land of his uncle Papa I`i (I`i 1959:20).

The father of Wanaoa was also a blood relative of Luluka and Keaka. John Papa I`i's father, Kuaena, was related to the mother of Boki, a chiefly *ali`i* lineage. As mentioned above, the Luluka lineage were descendants of the lineage of Luahine, a line of *Haloa* (ruling chiefs). I`i writes that "As Luluka, the family name of Luahine and Palena, was found only in the presence of the chiefs, they were all recognized in the courts." (1959:19). In one generation the I`i family of Waipi`o experienced a immoderate cultural change from Papa I`i's ancient and distinguished *ali`i* lineage—which was enhanced by his traditional medical *kahuna* status—to the equally distinguished democratic and religious career of his nephew John Papa I`i.

2.3 1800 to 1900 and The Mahele Land Commission Awards

John Papa I`i recounts a story about an earlier time when his uncle Papa I`i was the authority in Waipi`o: "the *konohiki* (Kawelo) of Waikele instructed "the men of the land to fetch the double canoe that was beached...in Waipi`o. The Waipi`o men prevented the Waikele people from taking the canoe because they felt the order should have come from their own leader" (I`i 1959:76). John Papa I`i further comments: "O companions, see how well the people served their leader. The peace of the land of Waipi`o was well known while the high chiefs were in charge and up to the time of Papa's death.", which is believed to have taken place in 1813 (I`i 1959:77,115).

At the age of ten (1810) John Papa I`i was placed under his uncle's supervision, for proper placement at court. Papa I`i placed his namesake in the household of Liholiho, Kamehameha II. In 1820, Liholiho sent him to study under Hiram Bingham, so the king could observe the effects of the new Christian teachings (1959:ix). He became superintendent of O`ahu schools by 1841, and an important member of the court of Kamehameha III.

Additional positions of distinction John I`i held included: an appointment to a newly organized Treasury Board, member of the Privy Council, Board of Land Commissioners member, House of Nobles member, member of the Hawaiian Constitution drafting committee, member of the

House of Representatives, and associate justice of the Supreme Court of Hawaii. He spent his life working for a democratic form of government for Hawaii. He also spent much of his life in the service of the Christian ministry and its furtherance in Hawaii (I`i 1959:ix).

Papa I`i received his land holdings in Waipi`o, Waikiki and other locations from Kamehameha I. Kamehameha II and Kamehameha III extended much of these land holdings to his nephew John Papa Ii throughout his service to them. The I`i holdings were guaranteed during the Mahele.

I`i claimed the entire ahupua`a of Waipi`o "...without any division or commutation" (Barrere 1994:73). John Papa I`i died on May 2, 1870. He left his estate to His widow Maraea Kamaunaukea Kapuahi, his daughter Irene, and various Kaikaina and relatives (Barrere 1994:75).

Documents relating to other awards in the general area, provide additional evidence of historic land use in Waipi`o. John Neddles Gilman was awarded acreage in the *`ili* of Waikakalaua, and included areas on tablelands and in the Gulch. Land Court testimony documents that O`ahunui (a large stone shaped like the island of O`ahu) was located, at the northeast corner of the *`ili* of Waikakalaua; the location of the stone was supposedly a favorite destination of Honolulu travelers in the late 1800s (McAllister 1933). Castle & Cooke Inc. purchased the Gilman property in 1930, and leased the lands to farmers. Brian Gray documents that Harold Stearns acquired the gulch land, as it was of no value to Castle & Cooke Inc. for pineapple production (Gray 1985:25). Stearns developed forty-three farm lots in the gulch, and sold the Reverend Harold Headricks the remaining land. The Reverend began the Waikalani Woodlands Phase I and Phase II development projects, through his company Headricks Development, Inc. He later filed for bankruptcy and the Towne Realty, Inc. company acquired development rights (Gray 1985:25).

Hommon and Ahlo's historical research revealed that 1846 Privy Council minutes also reported "that taro patches in the "upper portion of Waikakalaua" belonged to an individual named Ohua" (Hommon and Ahlo 1983:5). This evidence establishes the use of Waikakalaua Gulch for Native Hawaiian taro subsistence as late as the mid-nineteenth century.

Historical activity noted by Hommon and Ahlo's research of the 1846 Privy Council minutes include: "an indenture of a lease was prepared "between His Hawaiian Majesty's Minister of the Interior...and Arthur P. Brickwood of Honolulu..." for a tract of land in Waikakalaua, that land being used for pasture." (Hommon and Ahlo 1983:5).

Table 1 presents a summary of historic land use in the general area.

Table 1: Dates of Various Land Acquisition and Use Related to Waipi`o

Date	Land Owner	Received from	Location	Source
1795	Kamehameha I	Conquest	Hawai`i	Fornander 1969
1796-1800	Papa I`i, (? to ca. 1813)	Kamehameha I	Waipi`o	I`i 1959:20
1813/ 1840's	John Papa I`i, (1800-1870)	Kamehameha II (Liholiho)	Waipi`o LCA 8241 (20,540 acres)	State Archives
1846	John Neddles Gilman	Kamehameha II (Liholiho)	Royal Grant 6, `ili of Waikakalaua	LCA Map 1000
1870	Maraea I`i, (widow) and Irene Kahalelaukoa I`i Brown, daughter, etc.	John Papa I`i Estate Probate	Waipi`o	Riford 1986:22
1895 ca.	Oahu Railway and Land Co.	I`i Estate	Kipapa Gulch rail tract	Conde and Best 973:313.
1896	Mark Robinson	?	LCA 7260:5, 252 Kula acres in Waikakalaua Gulch	Riford 1986:26.
1897	Dillingham/Oahu Sugar Co.	Mark Robinson	LCA 7260:5, 252 Kula acres in Waikakalaua Gulch	Riford 1986:26.
1897 (lease)	Dillingham/ Oahu Sugar Co.	I`i Estate	Waipo mauka 3,400 acres	Conde and Best 1973:313.
1933 use, 1945 take over	U. S. Military	?	Waipi`o and Waikele Ahupua`a, in Kipapa and Waikakalaua Gulches	Conde and Beste 1973:315.
1950	Hapco	I`i Estate	Ii Estate (extent unknown)	Advertiser

2.4 1900 through World War II (1945)

The turn of the century brought the introduction of commercial pineapple agriculture in Hawaii. Most of the Waipi`o plains were eventually cultivated. A brief history of the Hawaiian Pineapple Company (HPC) is included in a summary document prepared by Susan M. Campbell for the Dole Corporation historical files (Cambell 1990). The Dole files were donated to the Hawaii and Pacific Collection of Hamilton Library, at the University of Hawaii, Manoa. Campbell's history is summarized here. The pineapple industry in Hawaii began in 1901 with the establishment of the Hawaiian Pineapple Company by James D. Dole. This venture began on 12 acres of land in Wahiawa. In the following years, HPC expanded and additional companies entered the rapidly growing pineapple industry. By 1932 pineapple was the second

largest industry in Hawaii. Seven plants were packing pineapples by 1934, and by 1938 canneries were attracting visitors.

2.5 1945 to Present

Most of Waipi`o was planted in pineapple and sugar by 1945, although other uses are documented. Demand for Hawaiian canned pineapple began to drop following the war years and fresh pineapple supported the market. Problems with labor and union negotiations were ongoing, and many foreign countries were developing a pineapple industry. Evidence from the *Index To The Honolulu Advertiser And Honolulu Star-Bulletin 1929 To* 1967, which was compiled by the Friends of the Library of Hawaii, outlines the circumstances affecting the Waipi`o pineapple industry in the 20th c. and is presented here (Hawaii Library Services and Friends of the Library of Hawaii 1988:1503-1505).

On August 4, 1950, the *Advertiser* printed an article announcing the purchase of the Ii estate by Hapco, suggesting the sale as signifying the prosperity of the industry. In a November 29, 1955 *Star Bulletin* article, the Hapco president was reported as stating that sales were growing. The *Advertiser* reported an all-time high in exports for 1956 on March 9, 1957. In the following year (May 27, 1958), the *Advertiser* reported that the Nielsen Marketing Survey Company stated that pineapple sales were slipping.

Oceanic Properties Inc.—a subsidiary company of the Castle & Cooke Inc.—drafted a twenty year land plan in 1958 for a 3,500 acre community, the future Mililani Town; it was determined that this development would make better use of Castle & Cooke Inc. O`ahu land holdings. Campbell writes that J. D. Dole's Hawaiian Pineapple Company established a land planning and development department in 1960, and that stockholders changed the name of the company to the Dole Corporation. In 1961, the company merged into Castle & Cooke, Inc. (Campbell: 1990:2).

Problems in the pineapple industry continued with increased shipping rates, tariffs, and union demands; these were reported in both the *Advertiser* and the *Star Bulletin* (Hawaii Library Services and Friends of the Library of Hawaii 1988:1503-05). Exports were down in 1964, but by 1967 fresh pineapple exports surpassed the Hawaiian coffee industry output. A labor shortage was reported in the *Advertiser* and the *Star Bulletin* on October 19, 1967.

The pineapple industry was coming to an end on the Punalu`u Plain, and Castle & Cooke Inc. subsidiary Oceanic Properties Inc. developed a master plan for the Mililani Town residential community of Waipi`o. The first single-family residences were built in 1968, in the lower Mililani Town area. The Dole Corporation became a part of Castle & Cooke Foods in 1970 (Campbell 1990:2). Construction in 1970 and 1971 included the Village Center North shopping center, a recreation center for home owners, a Bank of Hawaii branch, and 1,200 additional residential units. The construction of the Mililani portion of the H-2 Freeway began in 1973. Mililani Town reached an estimated population of 12,396 by May of 1975, with 3,402 single and multi-family residential units. By 1981 the Mililani Town population had increased to 22,000, and units reached 6,200.

The current project parcel and adjacent areas were observed and reported as planted in pineapple as late as 1985, by William Barrera (Barrera 1985). Barrera's report was included in a 1987 Final Environmental Impact Statement, with a map showing the extent of pineapple cultivation on the *Punalu`u* Plains at the time of Barrera's survey (Helber, Hastert, Van Horn and Kimura 1987).

On April 6, 1990, Pastor Norman Okasaku of the Mililani Missionary Church, performed the ground-breaking blessing ceremony for the Mililani-Mauka Phase of the residential development project (Personal Communication, October 2000). In 1990, construction in this phase began, and the Mililani Technology Park was to be completed. In 1991 the first Mililani-Mauka residents moved in. That same year Oceanic Properties Inc. was renamed Castle & Cooke Properties Inc., and Mililani Town Inc. became Castle & Cooke Residential Inc. (Mililani Town Intormational Brochure; see Appendix). By 1994, Mililani Town population had grown to approximately 33,000. The Town Center was completed that same year, with a total of 568,000 square feet of leaseable space. Mililani Middle School was designed to open in June 1998, with a high-tech cabling system with built-in modem capabilities (ibid.).

During the present survey, construction of new homes is underway to the immediate north, northwest, and south of the project parcel.

3.0 PREVIOUS ARCHAEOLOGY

In 1983, Hommon and Ahlo conducted an archaeological reconnaissance survey in Waikele *ahupua`a*, near the lower west border of Waikakalaua Gulch and Waipi`o *ahupua`a* (Hommon and Ahlo 1983). One archaeological site was identified (Site 50-80-09-3401), an agricultural terrace located on the eastern side of the gulch. Hommon and Ahlo noted a stacked retaining wall, located at the rear of the terrace to impede erosion from the slope behind it. Narrow-gauge railroad ties used to construct a barbed wire fence, which marked the southern boundary of the project area, were noted and described. Hommon and Ahlo also noted that both sides of the gulch have been uses as a dumping ground for modern rubbish. No further archaeological or historical research or preservation was recommended because of insufficient significance.

In 1985, Joseph Kennedy conducted a 70-acre reconnaissance archaeological survey within Waikakalaua Gulch. The survey extended from the *mauka* side of the H2 Freeway to approximately one mile inland and within the walls of the gulch. Kennedy reported that a permanent stream ran the length of the gulch, and that a jeep road, with two concrete bridges (1 collapsed) in the mauka portion, ran the length of the property. Additional observations included significant erosion evident on the west side of the gulch in the *makai* section of the project property, and evidence of earth moving activities within the gulch. The latter was most likely related to stream diversion and widening activities carried out by Harold Stearns, when the property was in his possession. One archaeological site—a non-irrigated agricultural terrace was recorded (Site 50-80-09-4843); located on the west side of the gulch and measuring over 75

feet long. Kennedy infers that this site was likely used for the cultivation of sweet potato or dryland taro. Kennedy recommended no further archaeological work.

In 1985, William Barrera reported on a 270 acre archaeological reconnaissance survey at Kilohana in Waipi`o *ahupua`a*. The project area was triangular shaped and north of Waipahu, bounded by Kipapa Gulch on the west side, Kamehameha Highway on the east, and sugarcane fields on the south side. Barrera writes that Summers and Sterling (1978) refer to the area as Kanoenoe Plain. Barrera's survey consisted of one-day pedestrian survey.

In 1987, Margaret Rosendahl reported on the results of a 2.75 acre archaeological reconnaissance survey of the Mililani Town Station, Waipio *ahupua`a*. The project area fronts Kamehameha Highway on the west side and is adjacent to Mililani High School on the east side, with Meheula Parkway to the south. Rosendahl reported that no archaeological features were found. She added that the parcel topsoil had been altered, possibly for a soil bank for stadium seats along the west side of the Mililani High football field. Rosendahl recommended no further archaeological work.

In 1988, Hammatt and Borthwick reported on and archaeological reconnaissance and subsurface testing in upper and lower Kipapa Gulch, in the ahupua`a of Waipi`o. The project area includes 371 acres within the Kipapa Military Reservation; it consists of two separate survey areas, one in upper and one in lower Kipapa Gulch. No previously undocumented sites were located. Subsurface testing was conducted at a site previously recorded by Rosendahl (1987) in upper Kipapa Gulch, Site 50-80-09-9529, which is interpreted as a laborer's camp used during the construction of the Waiahole Water Company Siphon installation. Two 1 meter square test trenches were excavated at this site in relation to a core filled wall and a stone lined hearth. Two traditional artifacts—a polished basalt flake and a volcanic glass flake— were found associated with historic metal and glass artifacts (0-20cmbs), these were interpreted as related to historic activities. A large portable stone altar, believed to be Okinawan, remained on the site and was recommended for preservation and removal to a museum. State Historic Preservation Department Site 50-80-09-9530—the O`ahu Sugar Company Weir Station—which was also documented by Rosendahl in 1987, was relocated in upper Kipapa Gulch. The intact remains of a dressed stone ditch constructed for water irrigation was also recommended for preservation, due to its importance as a monument to the sugar industry irrigation engineering.

In 1988, Hammatt, Schidler, and Borthwick reported on a 422 acre reconnaissance survey within the Waikakalaua Gulch in the ahupua`a of Waikele. Remnants of several historic sites were noted including: the OR&L railway junction where a spur to the north east of the pineapple cannery met the mainline continuing north to Wahiawa and Schofield Barracks; several concrete building pads and other miscellaneous concrete structures clustered on level elevation above Kipapa Junction; a presumed sewage treatment plant; a siphon, tunnels, and access road; and grading and filling associated with the construction of the OR&L railway (Hammatt 1988). Two agricultural terraces were also observed. The two terraces were constructed of pahoehoe boulders and backed by cobbles and pebbles. They were interpreted as associated with the O`ahu Sugar Company. No further archaeological work was recommended.

In 1989, Nagaoka and Davis reported on archaeological subsurface survey testing, and monitoring for Pupu`ole Park in Waipahu, on the eastern end of the `Ewa plain in Waikele *ahupua`a*. The project area was bounded by Waipahu Intermediate School on the north, Waikele Stream on the east, Pearl Harbor on the south, and by Pupupuhi Street apartment buildings on the west. It was noted that an 1889 map revealed that the property had been part of the shoreline of Pearl Harbor, and that the area was altered with the construction of an O`ahu Railway & Land Company railroad berm by 1895. The railway crossed the shallows of the harbor, isolating the former shoreline and creating an impounded marshland. A foreign mangrove species *Rhizophora mangle L.* overran the area seaward of the OR&L berm and completely blocked the view of the harbor. Subsurface test results revealed that events further up slope caused continued and alternating erosion and deposition through the project area. Historic and prehistoric cultural material were found in the context of long-term erosion followed by redeposition into the shallow inlet of Pearl Harbor. Although no prehistoric sites were located, radiocarbon dating indicated that cultural activities contributing to the formation of these deposits date to about he 16th century AD.

In 1990 Aki Sinoto reported on an archaeological reassessment reconnaissance survey of a 70 acre portion of Waikakalaua Gulch in Waikele *ahupua`a*. The project area was south of the `Ewa/Wahiawa District boundary, and northeast of the H2 Freeway beginning under the overpass bridge and extending to near the second concrete bridge, which is collapsed. Sinoto reported that although prehistoric cultural activities probably took place at the lower valley elevations, extensive ground disturbance during the last century may provide another explanation for the absence of prehistoric remains in the upper gulch areas. Several historic features were recorded, including: a historic habitation site (habitation platforms, well-constructed retaining walls, and excavated water catchments); historic roadbeds; and retaining walls. Foreign historic artifacts were collected from the surface and most were dated between 1890 and 1916. One earlier date—1887 to 1900—was attributed to two glass Japanese *sake* bottles with applied lips, however, this date is for Western technology. Japanese acquisition of the glass applied lip finish technology is later, moving these bottles into a post 1916 time frame.

On June 7th of 1993, Cathleen Dagher and Nathan Napoka attempted to map and record the O`ahunui Stone (SHPD 0-1171). An invitation to the Waikakalaua Stream Realignment Project blessing ceremony was extended by Tom Lenchencko, at which time he offered to take them to the O`ahunui Stone to record and map its location. The attempt was not successful. An unclear location pointed out in a northeast direction from a slope near the project area, was the extent of the identification of the location for the O`ahunui Stone. Directly in front of Dagher was a swale and the ridge above, no identifiable stone was seen. Lenchencko proceeded to point out petroglyphs, but no intentional markings were discerned on the boulders. Another attempt to reveal the location of the O`ahunui Stone was attempted by Daniel Au, however, his attempt was thwarted when kupuna refused to give permission.

In 1994, James Moore and Joseph Kennedy conducted archaeological investigations in Waikakalaua Gulch in the *ahupua`a* of Waikele. They documented structural features for two historic sites. Site 50-80-09-4812 was identified as a probable agricultural feature located within a ravine and consisting of 19 *ahu* (stone mounds), a capped stone flume channel modification,

and a terrace that was likely modified into a horse path to cross the ravine. Site 50-80-09-4813 consists of historic structures related to a nursery and including two stone pavements, and 8 stone walled and soil backed terraces with associated cisterns . Moore and Kennedy noted that State Site 4812 was considered as the site of the O`ahunui Stone by several community members, however, no stone found resembled the island of O`ahu. He also noted that historical sources mapped two other sites as being the location of this legendary stone (McAllister 1933:130, Sterling and Summers 1978:137), leaving considerable confusion over the actual location.

In 1994, Tomonari-Tuggle and Welch reported their results of a historical review and archaeological survey just above the junction of Waikakalaua and Kipapa Gulches in Waikele *ahupua`a*. The project area was described as located on the sloping tablelands above the town of Waipahu. The project area is a long and narrow strip above the steep eastern sides of Waikele and Kipapa Gulches. Two sites were recorded during the pedestrian survey of the north portion of the project area: a basalt boulder alignment was located on the edge of a gully running downslope from the water tower; and a historical feature complex of military remains. None of the remains were evalu ıted to be of either historical or archaeologicai significance.

4.0 SUMMARY AND PREDICTIONS

It appears from the archival data summarized in Sections 2 and 3 above, that traditional Hawaiian settlements were concentrated along the coast adjacent to rich marine and aquacultural resources. Some of he traditional activities appear to have extended up the large gulches in the form of irrigated agricultural systems.

It has been shown in Section 2 above, that large-scale pineapple plantation activities dominated the general area, including the project parcel, for over 50 years. Plantation activities included bulldozing, tilling, and disking the fields for the cultivation of pineapples.

Previous archaeological surveys adjacent and near to the project parcel failed to find any archaeological sites on the upland plains. This lack of findings, combined with the large scale pineapple plantation activities leads us to predict that no archaeological sites will be found in the project parcel.

5.0 RESULTS

Initial inspection of the project parcel revealed that it resembled a grassy oasis-like parcel in the center of a rapidly developing area (Figures 6 and 7). The northern ca. 25% portion of the project parcel was being used as a heavy equipment staging area for the adjacent development (Figures 8 and 9). The survey of the parcel revealed that the entire parcel has been significantly impacted in the past. Recent historic trash has been dumped in the area and dump piles are visible. Traces of plastic mulch paper rows with feral pineapples are still present in portions of the project area (Figures 10 and 11).

No archaeological sites were found.

Figure 6. Project Parcel (view to the north).

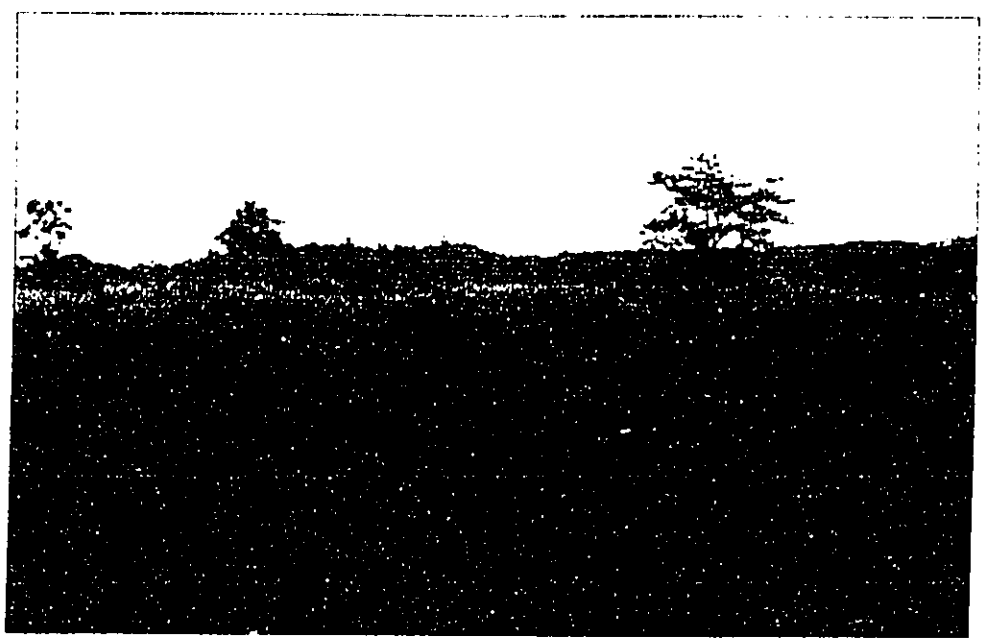

Figure 7. Project Parcel (view to the northeast)

Figure 8. Heavy Equipment Staging Area (view to the southeast).

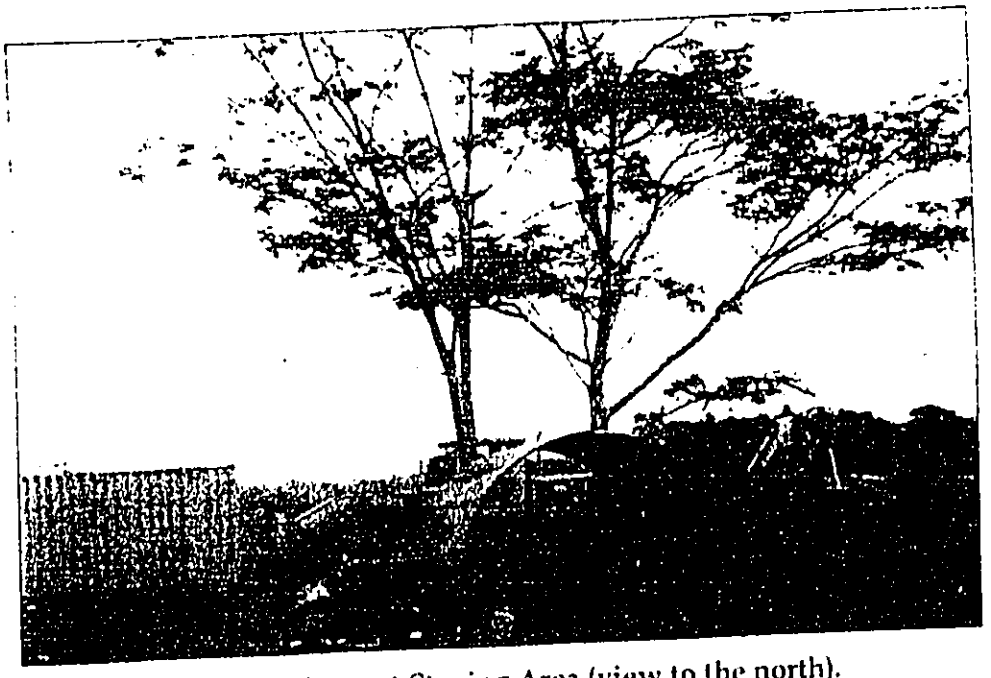

Figure 9. Heavy Equipment Staging Area (view to the north).

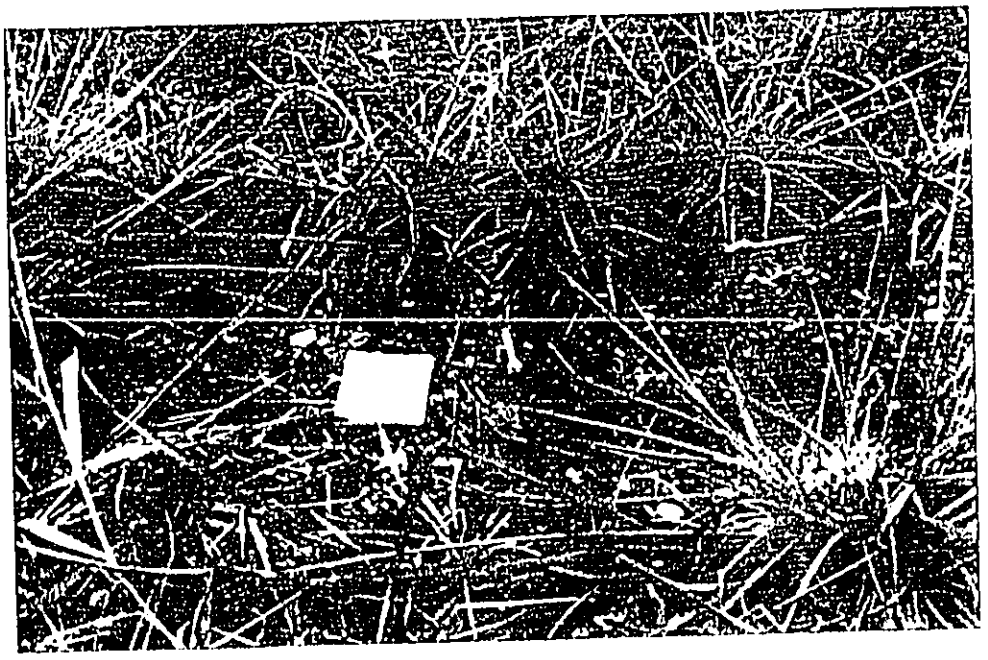

Figure 10. Plastic Mulch Paper Rows.

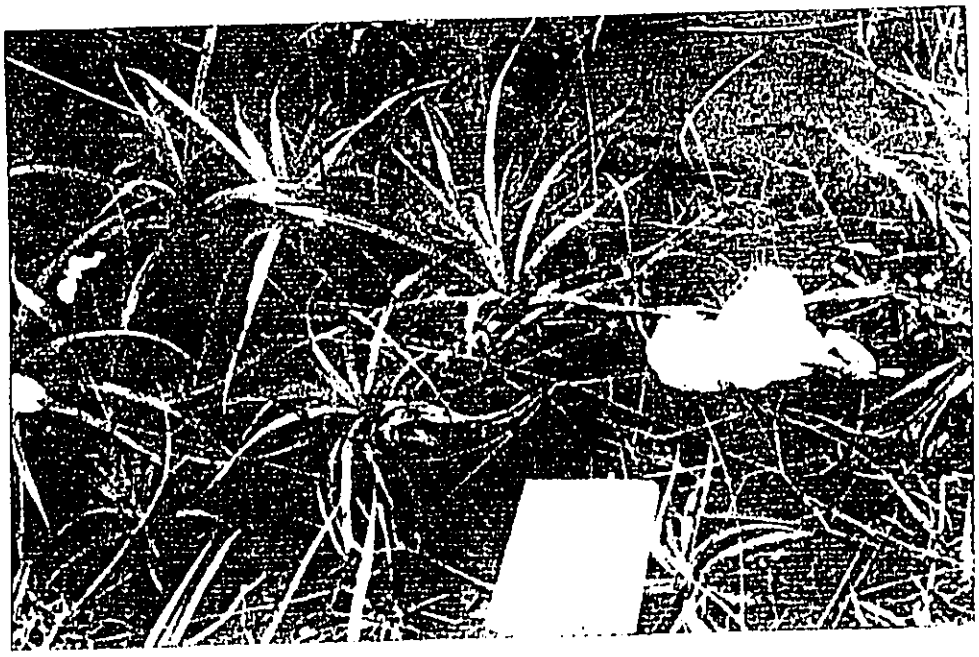

Figure 11. Feral Pineapple.

6.0 SUMMARY AND RECOMMENDATIONS

Archival research indicated that traditional uses of the area surrounding the project parcel were probably quite limited. Most traditional activities probably took place near the coast or in the large gulches. This combined with the fact that the area was intensively cultivated for pineapples for over 50 years led to the prediction that no archaeological sites would be found in the project parcel. This prediction was correct – no archaeological sites were found.

Given the lack of any archaeological sites being found on the project parcel, and the unlikelihood that any archaeological remains might be present, we recommend that no further archaeological work is necessary for this project.

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APPENDIX

MILILANI INFORMATIONAL BROCHURE

Mililani at a Glance

Mililani Master Development Plan:
3,500 acres
50,000 residents
Approximately 15,000 dwelling units

Under Development:
1,200 acres
Additional 6,600 dwelling units

Current Mililani Community:
Approximately 33,000 residents
Approximately 11,000 dwelling units

Population:
Approximately 33,000 (1/1/94)

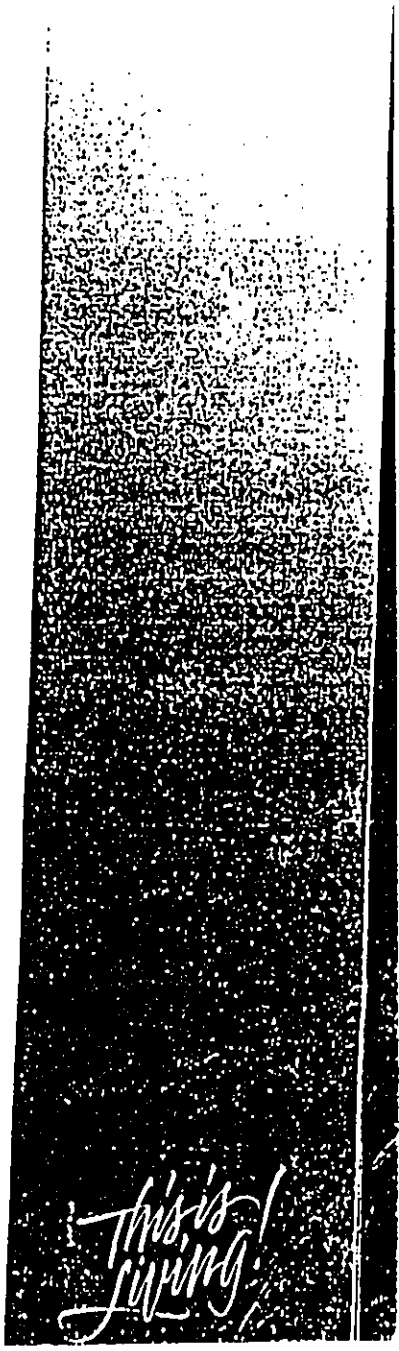
History:
1958: First draft of Mililani Master Development Plan
1964: Approval for first 740 acres
1968: June, opening ceremonies
1968: June, first 112 single family homes offered for sale, 12 units represented the first affordable homes sold through the Honolulu Redevelopment Agency
1986: Mililani named Hawaii's first and only All America City by the Citizen's Forum on Self Government of the National Municipal League in Washington, D.C.
1990: Development begins on Mililani Mauka
1992: First residents move into Mililani Mauka
1994: Mililani Mauka Sales Information Center opens

Rainfall:
Average annual rainfall ranges from 40 to 50 inches near the H-2 freeway to 75 inches at the far mauka boundary.

Temperature:
Daytime summer: low 66°F, high 82°F
Daytime winter: low 60°F, high 75°F
Average wind speed is 10 miles per hour

Geography:
Elevation varies from 700 feet above sea level to 1,000 feet in the northern areas of the development. Mililani lies between Kipapa Gulch to the east and Waikakalaua Gulch to the north; the northeastern boundary is the 'Ewa Forest Reserve.

Archaeology:
A legendary battle between invading chiefs from Hawai'i and Mailikukahi, the moi or ruler of O'ahu, took place in Waikakalaua Gulch where the invaders were defeated. "Kipapa" was reportedly named from the battle; the gulch was paved with slain warriors and kipapa means "pavement, a level terrace, to pave."



Mililani Town Timeline

1958
Determined to make better use of its 40,000 acres of land in Oahu, Castle & Cooke Inc. drafted a plan for a 3,500-acre community to be constructed over a 20-year period to meet the needs of Oahu's growing population.

1965
Oceanic Properties Inc., a wholly-owned subsidiary of Castle & Cooke Inc., announced the name of the new Central Oahu community would be Mililani Town, which means "to look up to."

1966
Oceanic hired Sacramento, Calif.-based Murchison Construction Co. to build the first 800 homes at Mililani Town using Hawaii contractors.

Mililani Golf Course opened Dec. 3.

Mililani Town Inc. was created as a subsidiary of Oceanic Properties to carry out the business of the new town development.

1967
Mililani awarded contracts for a sewage treatment plant and the town's first two water wells.

Construction of the new community began with the first single-family residences ready for public introduction in early 1968.

1968
Dedication ceremonies.

A total of 92 of the 108-house-and-lot packages in the first increment had been sold in an advance sales program.

1969
Construction of the $867,000 neighborhood shopping complex began.

1970
Mililani Town purchased 54 acres for an intermediate and high school from the state for $3 million.

Village Center North, a 30,000-square-foot shopping center, was completed with 80 percent leased.

The first recreation center was ready for homeowner's use.Bank of Hawaii opened a branch office.1971 - By the end of the year, Mililani Town had completed 1,200 units since 1968 and projected an increase to 2,100 units by the end of 1972.

1973 - The H-2 freeway construction began to connect Mililani to the H-1 freeway.

1974
Oceanic Properties sold the Village Center North shopping center at Mililani Town to Foodland Super Market founder Maurice J. Sullivan and McDonald's Restaurants operator Franchise Realty Interstate Corp. Also included in the transaction was an adjacent nine-acre parcel zoned for commercial use the new owners were planning to develop.

1975
By May, Mililani Town had developed 3,402 single- and multi-family units, and the town has an estimated population of 12,396. Projections called for a total of 4,235 residential units to be completed by mid-1976 for an estimated population of 14,946.

1977
Construction began for the third recreation center for the community.

1978
Plans to build the Mililani Town Center were under way. The first phase of the complex would consist of a 305,000-square-foot shopping center and mall shops with a gross leasable area of some 119,000 square feet.

1981
By that year, Mililani Town had developed 1,500 acres with approximately 6,200 dwelling units, housing a population of almost 22,000 people.

1982
The state Department of Planning & Economic Development recommends rezoning land in the Mililani area for the development of a high technology industrial park to expand the opportunities for employment on Oahu.

1987
The Hawaii Technology Park was officially renamed the Mililani Technology Park. It was scheduled for completion in early 1990.

1990
Development for the last phase of the town, Mililani Mauka, began. Its first residents moved into their new homes in 1991.

1991
Oceanic Properties became Castle & Cooke Properties Inc., and Mililani Town Inc. was renamed Castle & Cooke Residential Inc.

1994
The Town Center of Mililani was completed with a total of 568,000 square feet of leasable space.

1998
Mililani Middle School, which will feature a high-tech, school-wide cabling system with built-in modem capabilities, is scheduled to open in June.

TRAFFIC IMPACT ASSESSMENT REPORT

MILILANI MAUKA II ELEMENTARY SCHOOL
Mililani, Hawaii

April 2001

Prepared For:

Pacific Architects, Inc.
2020 S. King Street
Honolulu, Hawaii 96826
(808) 949-1601

Prepared By:

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

PBQD Reference Number:
16335A-01

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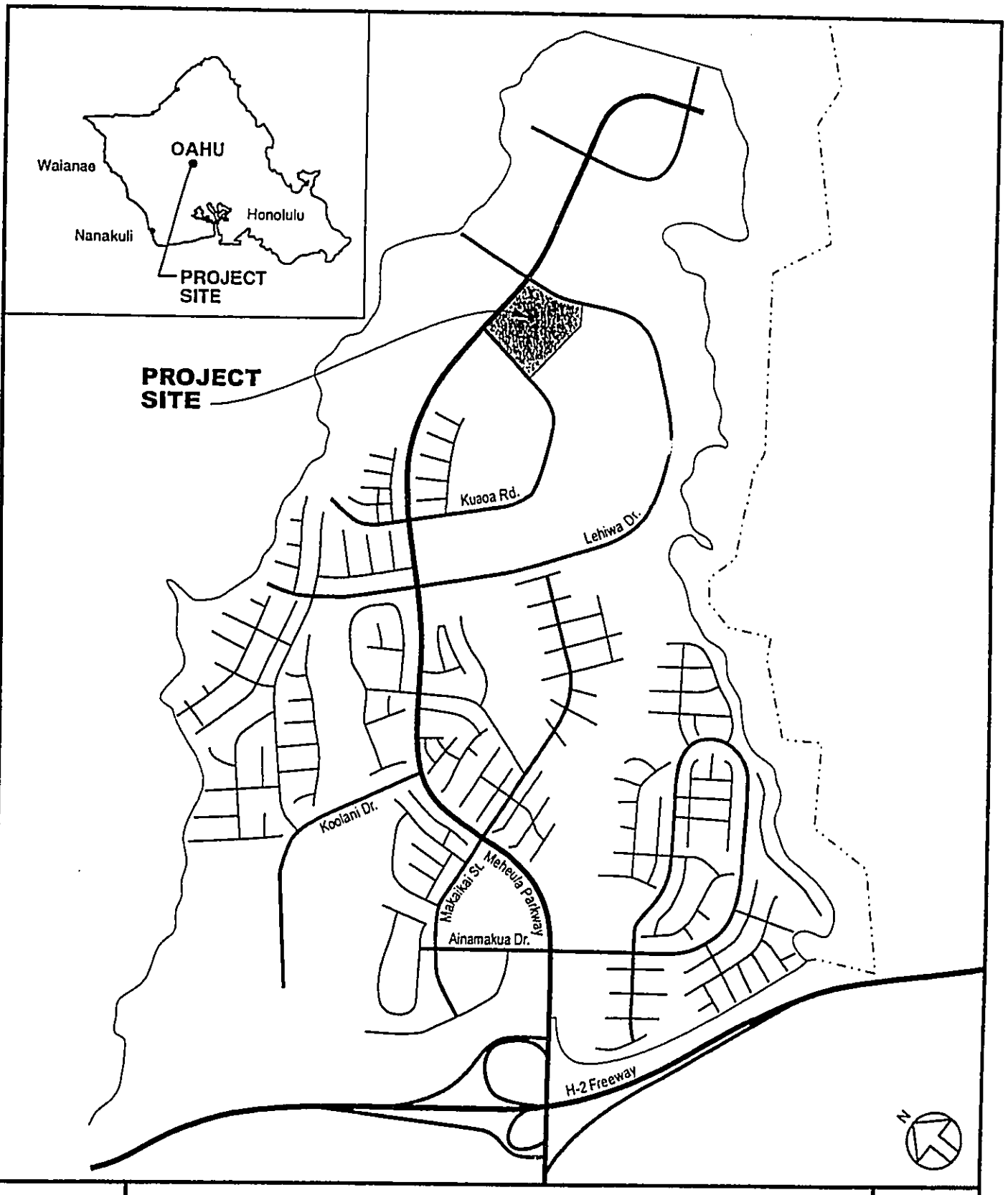
I. INTRODUCTION

The State of Hawaii Department of Accounting and General Services (DAGS) proposes to construct a second elementary school in the Mililani Mauka development on approximately 12 acres of land in Mililani, Hawaii. Figure 1 illustrates the location of the site.

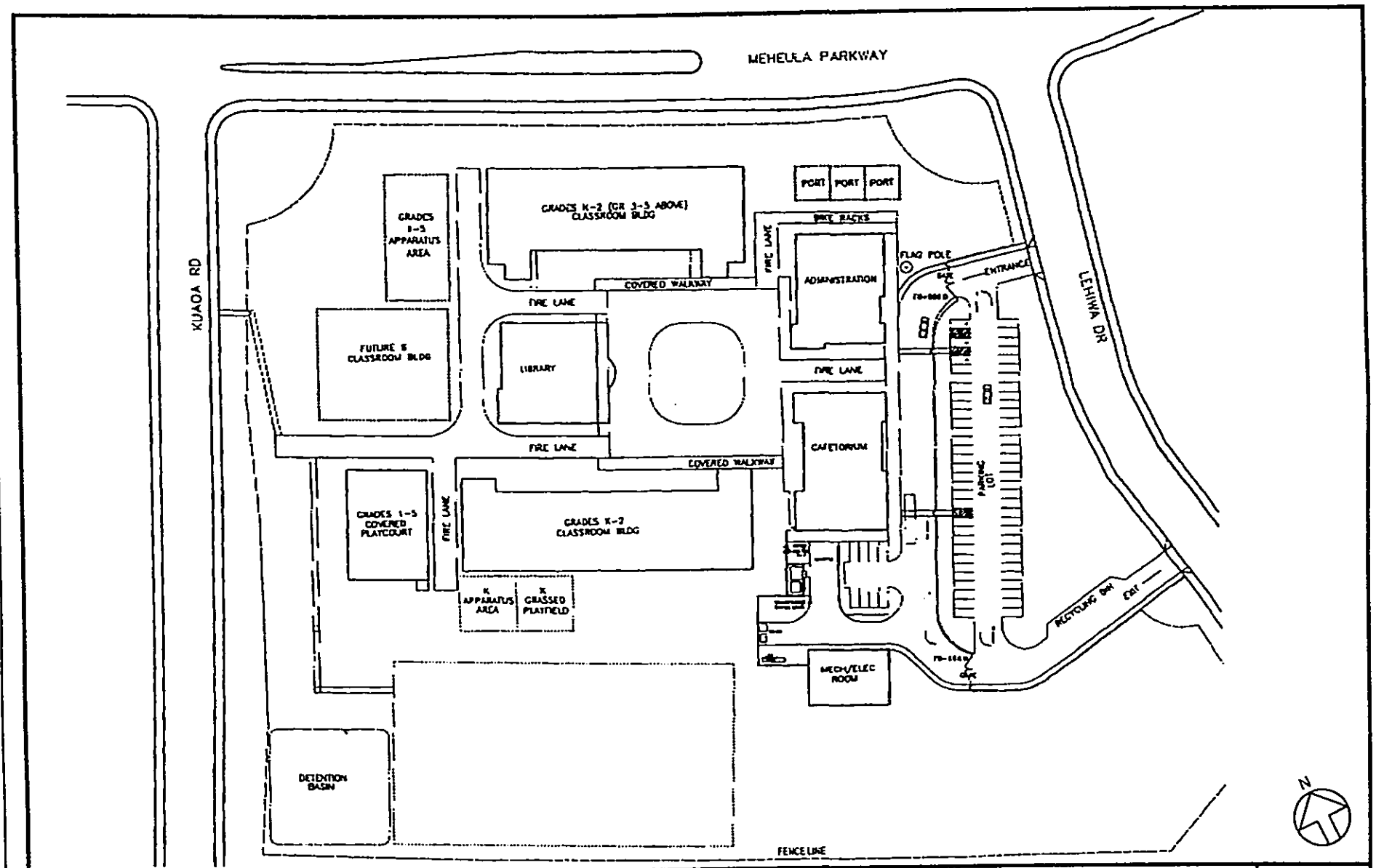
The proposed elementary school will accommodate 650 students at one time. If multi-track scheduling is used, 866 students could be accommodated per year. The proposed school site is consistent with master planning by Castle & Cooke Homes Hawaii, Inc. for the Mililani Mauka development. The proposed site would be located south of Meheula Parkway, between upper Kuaoa Drive and upper Lehiwa Drive. The overall school site is proposed to be divided into park and school with the park site adjacent to upper Kuaoa and the school site adjacent to upper Lehiwa. Access to the school site is proposed on upper Lehiwa Drive. Figure 2 illustrates a conceptual site plan for the Mililani Mauka II Elementary School.

The proposed school is projected to be operational in time for the year 2003-2004 school year. The purpose of this report is to document the study assumptions and methodology and to summarize the findings and recommendations regarding traffic impacts of the Mililani Mauka II Elementary School.



VICINITY MAP

Figure 1



SITE PLAN

Figure 2

II. EXISTING CONDITIONS

The proposed Mililani Mauka II Elementary School parcel is located on the south-side of Meheula Parkway, between upper Kuaoa Street and the future upper Lehiwa Drive. The existing roadway conditions and intersection operations are described in the following sections.

A. Existing Roadway System

1. Existing Roadways

Roadways within the study area include:

a. Meheula Parkway
b. Lehiwa Drive
c. Kuaoa Street

a. Meheula Parkway

Presently, the section of Meheula Parkway through the Mililani Mauka development extends from the Mililani Interchange to a point mauka of upper Lehiwa Drive. Within this section, Meheula Parkway is a four-lane, divided arterial with a posted speed limit of 25 miles per hour. In the vicinity of Lehiwa Drive and Kuaoa Street, Meheula Parkway has a right-of-way of 88 feet. Within the Mililani Mauka development, Meheula Parkway is the "spine" road, which the collector roadways connect to. The existing collector roadways are Ainamakua Drive, Maka'ika'i Street, Koolani Drive, Kaapeha Street, Lehiwa Drive, and Kuaoa Street. Currently, Meheula Parkway is constructed to a point mauka of the future upper Lehiwa Drive.

b. Lehiwa Drive

Lehiwa Drive will ultimately be a loop roadway located south of Meheula Parkway that begins and ends on Meheula Parkway. It is a roadway with a 56-foot right-of-way width. Currently, only the lower (toward H-2) segment of Lehiwa Drive has been constructed, and it provides access to Mililani Intermediate School for automobiles. It also provides access to a park, located adjacent to and north of Mililani Intermediate School. Based on the Mililani Roadway Master Plan, its intersection with Meheula Parkway is planned to be

signalized when warranted, but currently, it is unsignalized with STOP-sign control on the Lehiwa Drive approach.

c. Kuaoa Street

Kuaoa Street is also a loop roadway located south of Meheula Parkway. It is concentric with Lehiwa Drive, with both Kuaoa intersections on Meheula Parkway located between the existing and future Lehiwa Drive intersections. Like Lehiwa Drive, it also is constructed as a roadway with a 56-foot right-of-way width. The entire Kuaoa Street has been constructed, and it provides access to existing and future residential development. It also provides general access to a park and bus access to the Mililani Intermediate School. Based on the Mililani Roadway Master Plan, the lower Kuaoa Street/Meheula Parkway intersection is planned to be signalized when warranted, but it is currently unsignalized with STOP-sign control on the Kuaoa approach. Based on the Mililani Roadway Master Plan, the upper Kuaoa Street/Meheula Parkway intersection is also planned to be signalized when warranted, but it is currently an unsignalized intersection with STOP-sign control on the Kuaoa Street approach.

B. Existing Traffic Volumes

The area in the vicinity of the proposed Mililani Mauka II Elementary School is currently under construction. As such, existing traffic volumes consist primarily of construction vehicles and prospective homebuyers and realtors. Therefore, existing traffic volumes were not counted.

C. Existing Intersection Operations

The proposed development is consistent with the Mililani Mauka Master Plan, and the previously completed Mililani Mauka Roadway Master Plan accounted for the proposed elementary school in its analysis. The analysis for the Mililani Mauka II Elementary School will focus on the specific traffic impacts at the proposed school driveways and changes in forecast traffic due to changes in access locations.

III. FUTURE TRAFFIC CONDITIONS WITHOUT MILILANI MAUKA II ELEMENTARY SCHOOL

The Mililani Mauka II Elementary School is expected to be operational by the 2003-2004 school year. Traffic operations were evaluated for two future conditions: Future without the Mililani Mauka II Elementary School and Future with the Mililani Mauka II Elementary School. This section evaluates traffic conditions without the proposed school.

A. Future Traffic Volumes

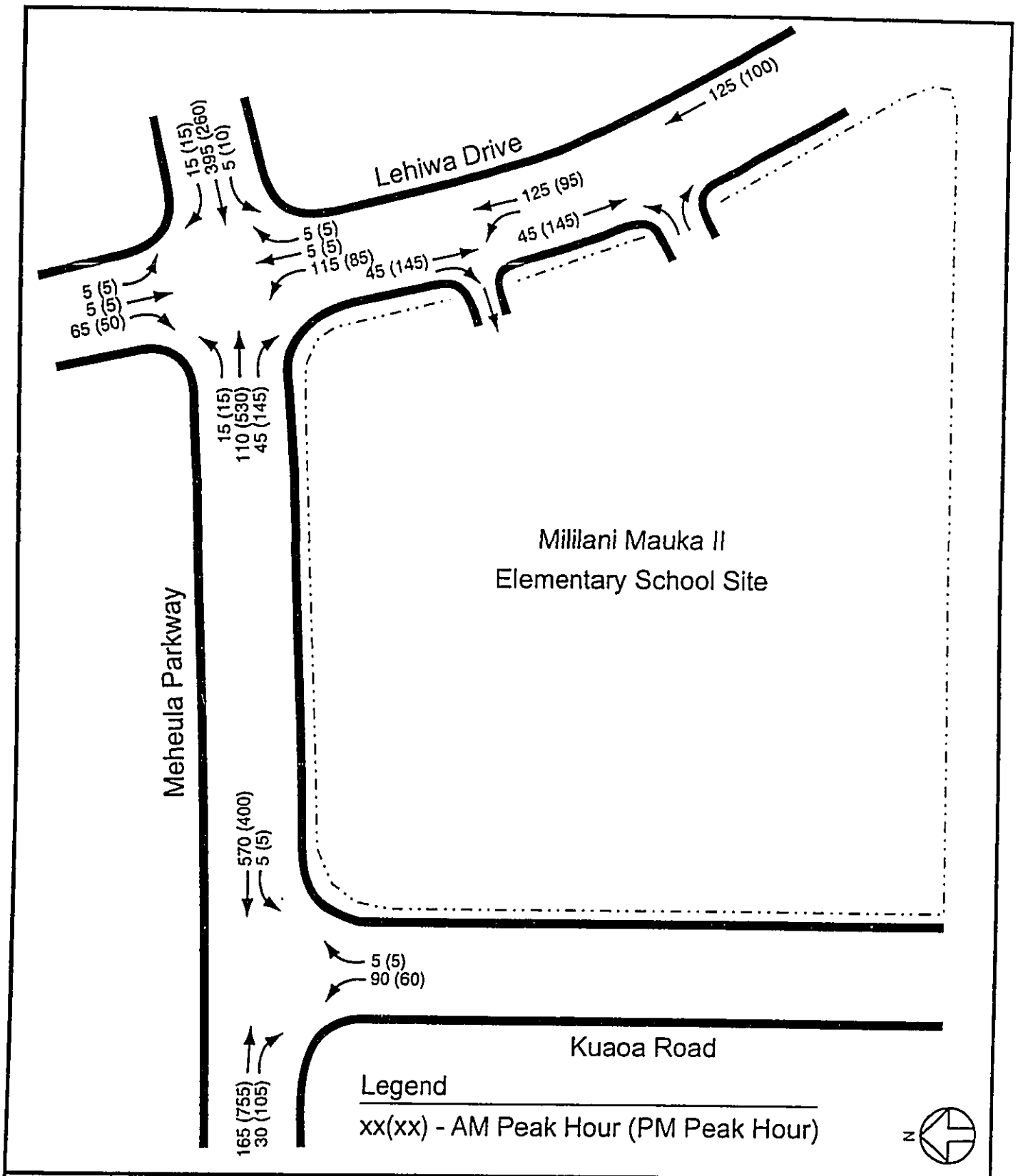
For the purpose of this study, it was assumed that the Mililani Mauka development would be fully developed. This is a worst-case scenario since traffic volumes on Meheula Parkway and Lehiwa Drive would be greatest at build out. Analyses completed under this scenario would best identify roadway improvements and intersection control needs. The future volumes were developed from the current Mililani Roadway Master Plan Study, March 1996 with adjustments for recent changes in development buildout. These are shown in Figure 3.

B. Future Intersection Operations

The volumes in Figure 3 were analyzed using the 2000 Highway Capacity Manual methodologies for unsignalized and signalized intersections. Table 1 summarizes the results.

The level of service analysis projects that the project area intersections will operate acceptably as unsignalized intersections. Left turns out of Kuaoa Street are expected to experience some delays during the PM peak hour, but these are within an acceptable range for peak hour conditions.

Definitions of intersection levels of service are included in Appendix A, and copies of the intersection analysis worksheets are included in Appendix B of this report.



PROJECTED BACKGROUND
PEAK HOUR TRAFFIC VOLUMES

Figure 3

Table 1

Summary of Future Buildout Intersection Level of Service

Without Mililani Mauka II Elementary School

INTERSECTION	A.M. Peak Hour LOS	A.M. Peak Hour DELAY (sec/veh)	P.M. Peak Hour LOS	P.M. Peak Hour DELAY (sec/veh)
Meheula Parkway/upper Lehiwa Drive (unsignalized)				
EB Left from Meheula to Lehiwa	A	8.1	A	7.8
WB Left from Meheula to Lehiwa	A	7.5	A	8.9
NB Left from Lehiwa to Meheula	B	12.9	C	18.2
NB Through/Right from Lehiwa	B	10.7	B	12.8
SB Left/Through from Lehiwa	B	12.4	B	14.3
SB Right from Lehiwa	A	9.8	A	9.3
Meheula Parkway/upper Kuaoa Street (Unsignalized)				
WB Left from Meheula to Kuaoa	A	7.6	A	9.6
NB Left from Kuaoa	B	13.3	D	25.4
NB Right from Kuaoa	A	8.8	B	11.5

Copies of the analysis worksheets are included in Appendix B of this report.

IV. FUTURE TRAFFIC CONDITIONS - WITH MILILANI MAUKA II ELEMENTARY SCHOOL

Vehicle trips generated by the proposed Mililani Mauka II Elementary School were added to the future baseline traffic volumes shown in Figure 3 of this report and analyzed to determine their traffic impacts. The general location of the proposed elementary school is consistent with the scenario analyzed by the Mililani Mauka Roadway Master Plan Study. The primary difference is that the current proposed site plan proposes access for the elementary school would Lehiwa Drive instead of on Kuaoa Street. This change directed more traffic to upper Lehiwa Drive, increasing projected traffic at its intersection with Meheula Parkway and decreasing the projected traffic at the upper Kuaoa Street intersection.

A. Vehicle Trips Generated

Trip generation was based on the ITE publication, Trip Generation, 6th Edition as adjusted in the Mililani Mauka Roadway Master Plan Study. The adjusted rates are more conservative than those contained in Trip Generation because they attempt to account for the PM peak hour activity associated with the A-Plus after school care program operational in this state. The trip generation rates for peak hour of adjacent street traffic were used. Table 2 summarizes the estimated trip generation.

Table 2

Mililani Mauka II Elementary School

Trip Generation Summary

Peak Period	In	Out	Total
Morning Peak Hour	120	80	200
Evening Peak Hour	50	80	130

The distribution of vehicle trips generated by the Mililani Mauka II Elementary School was based on the projected distribution of residential housing within the service area of the proposed school. This translated into about 30% from areas mauka of upper Lehiwa, 40% from areas below upper Lehiwa, 15% from areas south on Lehiwa Drive, and 10% from areas north of Meheula Parkway. Figure 4 illustrates the assignment of the trips generated by the proposed Mililani Mauka II Elementary School onto the study area roadway network.

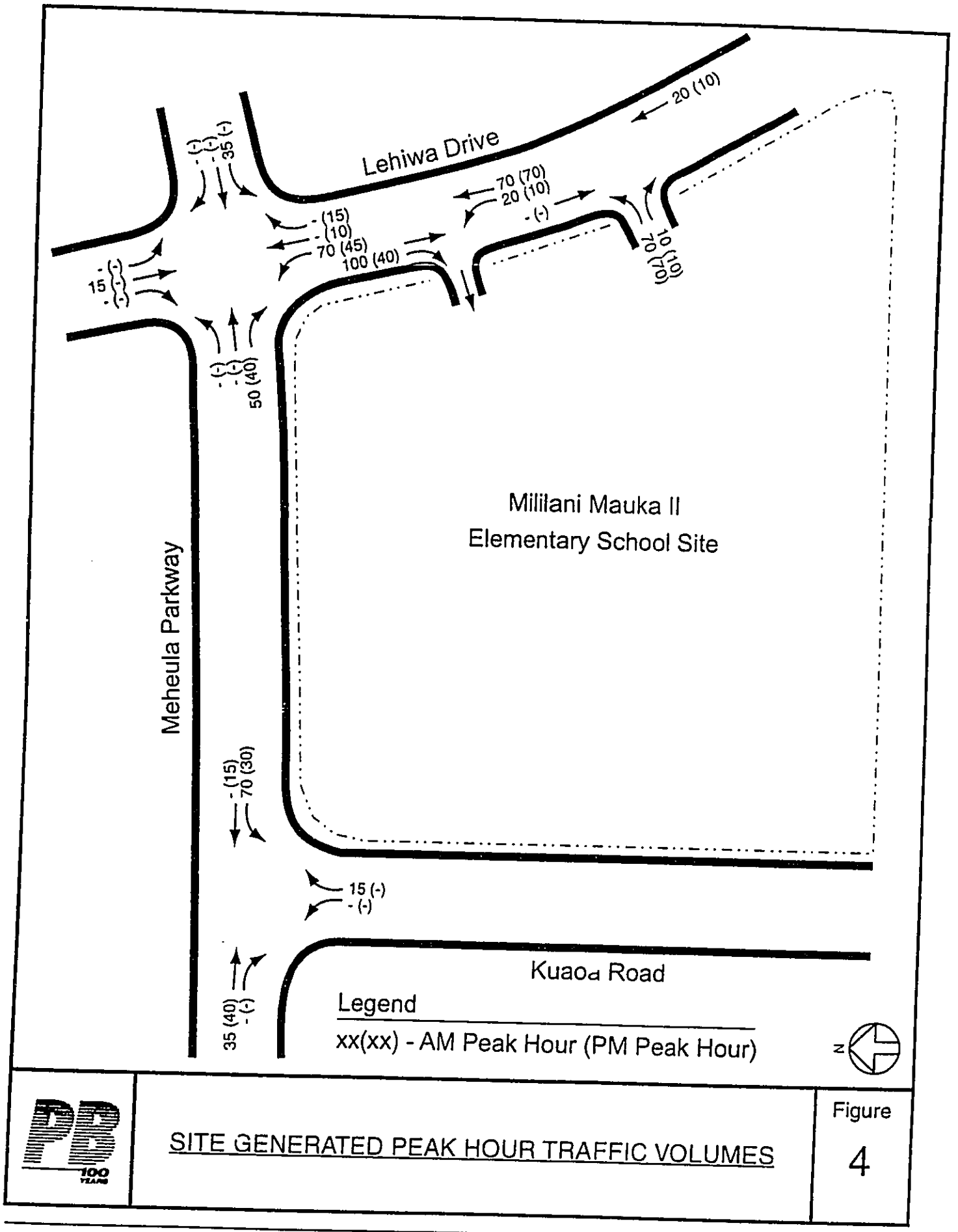
B. Total Future Buildout Traffic Volumes

Vehicle trips generated by the proposed Mililani Mauka II Elementary School were added to the Future Buildout Background Traffic Volumes to estimate the Total Future Buildout Traffic Volumes with the Mililani Mauka II Elementary School. The traffic volumes are shown in Figure 5.

C. Future Intersection Operations

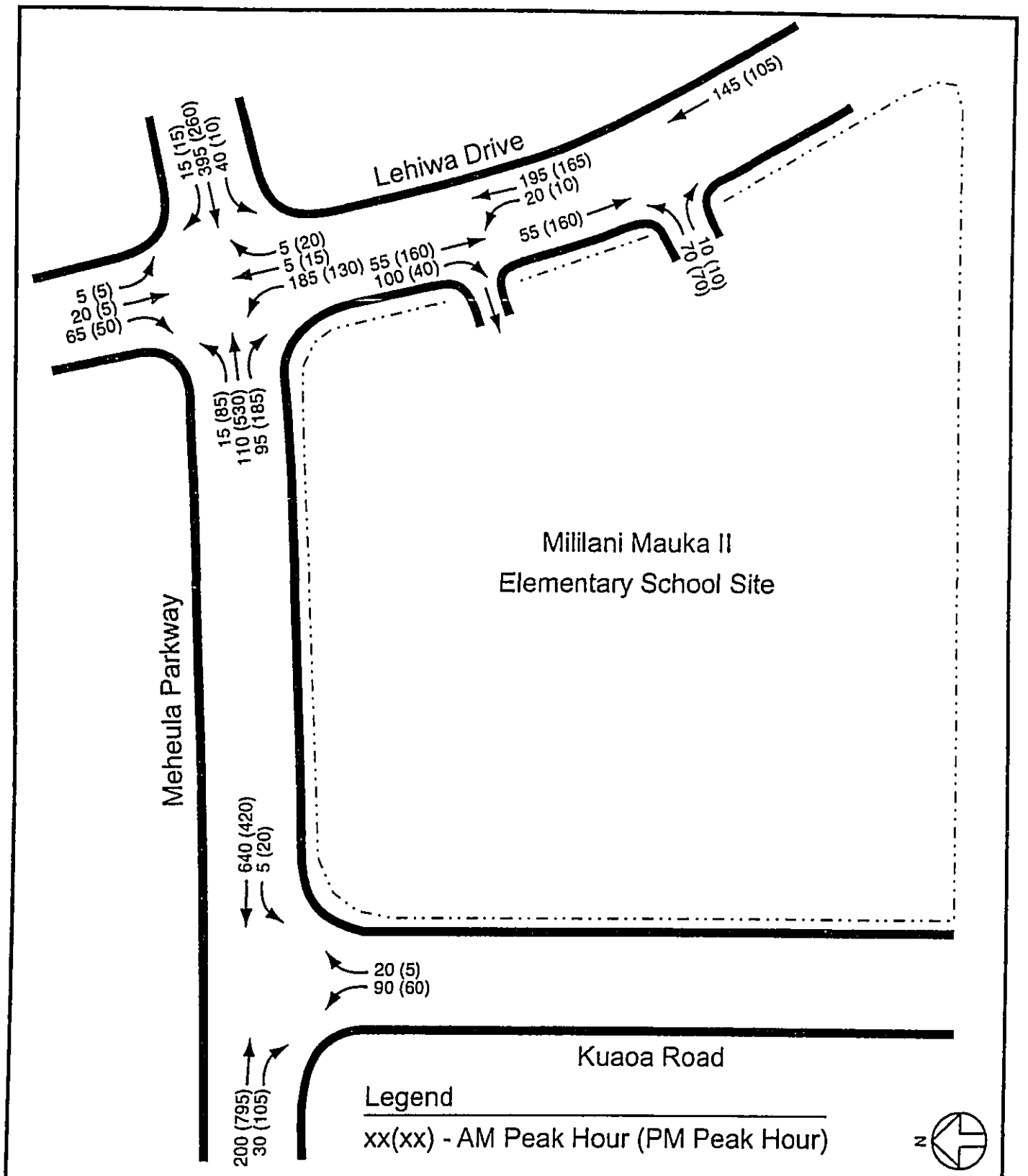
The peak hour volumes in Figure 5 were analyzed using the 2000 Highway Capacity Manual methodologies for unsignalized and signalized intersections. Table 3 summarizes the results of the analyses.

The level of service analysis indicates that the project area intersections will continue to operate well when the project is implemented. Level of Service is projected to remain at LOS B or better with only slight increases in delay over the baseline 2002 conditions.



SITE GENERATED PEAK HOUR TRAFFIC VOLUMES

Figure 4



PROJECTED TOTAL BUILDOUT
PEAK HOUR TRAFFIC VOLUMES

Figure 5

Table 3

Future Buildout Intersection Level of Service

With Mililani Mauka II Elementary School

INTERSECTION	A.M. Peak Hour LOS	A.M. Peak Hour DELAY (sec/veh)	P.M. Peak Hour LOS	P.M. Peak Hour DELAY (sec/veh)
Meheula Parkway/upper Lehiwa Drive (unsignalized)				
EB Left from Meheula to Lehiwa	A	8.1	A	8.0
WB Left from Meheula to Lehiwa	A	7.7	A	9.1
NB Left from Lehiwa to Meheula	C	16.4	D	29.9
NB Through/Right from Lehiwa	B	11.2	B	14.2
SB Left/Through from Lehiwa	B	13.4	C	16.8
SB Right from Lehiwa	A	9.8	A	9.3
Meheula Parkway/upper Kuaoa Street (Unsignalized)				
WB Left from Meheula to Kuaoa	A	7.7	A	9.8
NB Left from Kuaoa	B	14.4	D	30.0
NB Right from Kuaoa	A	9.0	B	11.5
Lehiwa Drive/Mililani Mauka II Elementary School Exit (Unsignalized)				
Left out of Exit	A	10.0	B	10.5
Right out of Exit	A	8.6	A	9.1
Lehiwa Drive/Mililani Mauka II Elementary School Entrance (Unsignalized)				
NB Left into Entrance	A	7.5	A	7.6

Definitions of intersection levels of service are included in Appendix A, and copies of the intersection analysis worksheets are included in Appendix B of this report.

V. SUMMARY AND CONCLUSIONS

The State of Hawaii Department of Accounting and General Services (DAGS) proposes to construct a second elementary school in the Mililani Mauka development on approximately 12 acres of land in Mililani, Hawaii. Figure 1 illustrates the location of the site.

The proposed elementary school will accommodate 650 students at one time. If multi-track scheduling is used, 866 students could be accommodated per year. The proposed school site is consistent with master planning by Castle & Cooke Homes Hawaii, Inc. for the Mililani Mauka development. The proposed site would be located south of Meheula Parkway, between upper Kuaoa Drive and upper Lehiwa Drive. The overall school site is proposed to be divided into park and school with the park site adjacent to upper Kuaoa and the school site adjacent to upper Lehiwa. Access to the school site is proposed on upper Lehiwa Drive. Figure 2 illustrates a conceptual site plan for the Mililani Mauka II Elementary School.

A. Summary of Traffic Analysis

The existing condition involves roadways under construction, and the analyses, therefore, focused on projected future buildout traffic conditions. These conditions were derived from the Mililani Mauka Roadway Master Plan, adjusted to account for updated development plans and the new school access configuration.

Traffic volumes with and without the proposed Mililani Mauka II Elementary School were estimated. These volumes were used by intersection capacity analysis tools documented in the 2000 Highway Capacity Manual. The resulting projected future buildout intersection operations, both with and without the proposed school, were then evaluated.

This evaluation of intersection operations, expressed as intersection level of service (LOS), is summarized in Table 4.

Table 4

Summary of Intersection Capacity Analyses

Intersection	Movement	Without School				With School			
		AM		PM		AM		PM	
		LOS	delay	LOS	delay	LOS	delay	LOS	delay
Meheula Parkway/ Upper Lehiwa Drive	EB LT from Meheula to Lehiwa	A	8.1	A	7.8	A	8.1	A	8.0
	WB LT from Meheula to Lehiwa	A	7.5	A	8.9	A	7.7	A	9.1
	NB LT from Lehiwa to Meheula	B	12.9	C	18.2	C	16.4	D	29.9
	NB TH/RT from Lehiwa	B	10.7	B	12.8	B	11.2	B	14.2
	SB LT/TH from Lehiwa	B	12.4	B	14.3	B	13.4	C	16.8
	SB RT from Lehiwa	A	9.8	A	9.3	A	9.8	A	9.3
Meheula Parkway/ Upper Kuaoa Street	WB LT from Meheula to Kuaoa	A	7.6	A	9.6	A	7.7	A	9.8
	NB LT from Kuaoa to Meheula	B	13.3	D	25.4	B	14.4	D	30.0
	NB RT from Kuaoa to Meheula	A	8.8	B	11.3	A	9.0	B	11.5
Lehiwa Drive/ School Exit	LT out of Exit	n.a.	n.a.	n.a.	n.a.	A	10.0	B	10.5
	RT out of Exit	n.a.	n.a.	n.a.	n.a.	A	8.6	A	9.1
Lehiwa Drive/ School Entrance	LT into Entrance	n.a.	n.a.	n.a.	n.a.	A	7.5	A	7.6

n.a. = not applicable, EB=eastbound, WB=westbound, NB=northbound, SB=southbound, LT=left turn, RT=right-turn

Definitions of intersection levels of service are included in Appendix A, and copies of the intersection analysis worksheets are included in Appendix B of this report.

B. Traffic Impacts

As shown in Table 4, most intersection movements are projected to operate well during the peak hours of the day, with or without the proposed Mililani Mauka II Elementary School. The left turns out of upper Kuaoa Street and upper Lehiwa Drive will experience the greatest amount of delay, assuming unsignalized intersection control with STOP-sign control on the Kuaoa and Lehiwa approaches. This is typical for two-way Stop sign controlled intersections. The addition of the proposed elementary school increases this delay, but the resulting intersection LOS is still acceptable for peak hour traffic conditions.

C. Recommendation

1. Intersection Signalization

Although the intersection delays for the left turns out of upper Kuaoa Street and upper Lehiwa Drive are within acceptable ranges, the potential for signalization at these two intersections on Meheula Parkway were examined. Based on the projected traffic volumes at buildout of Mililani Mauka, it was found that neither intersection would satisfy the traffic signal warrants, as defined by the Manual on Uniform Traffic Control Devices (MUTCD), based on traffic volume. The traffic delay warrant, as defined by MUTCD, would also not be satisfied. Based on these evaluations, it is recommended that the upper Kuaoa Street intersection with Meheula Parkway be operated as an unsignalized intersection with STOP-sign control on the upper Kuaoa Street approach. The Lehiwa Drive intersection, as previously stated, also does not satisfy traffic signal warrants based on volume or delay. However, the Lehiwa Drive/Meheula Parkway intersection is likely to be part of a key pedestrian access route into the proposed Mililani Mauka II Elementary School. As such, it is recommended that intersection be initially operated as an unsignalized intersection with STOP-sing control on the upper Lehiwa Drive approaches. Crossing guards would be advisable immediately before and after the school day to help school children cross at the Meheula Parkway/upper Lehiwa Drive intersection. The intersection should be monitored and tested on a regular basis to see if the school crossing warrant, as defined by the Manual on Uniform Traffic Control Devices (MUTCD), is satisfied. At the time the school crossing is met, a traffic signal installation should be considered at this intersection.

2. Upper Lehiwa Drive Roadway Striping

Figure 6 illustrates the recommended pavement striping at the Meheula Parkway/Upper Lehiwa Drive intersection. It is suggested that the striping on upper Lehiwa Street, south of Meheula Parkway, be carried south to the Mililani Mauka II Elementary exit driveway with an appropriate break at the entrance driveway to the school. South of the school exit driveway, Lehiwa Drive could be striped with just a centerline.

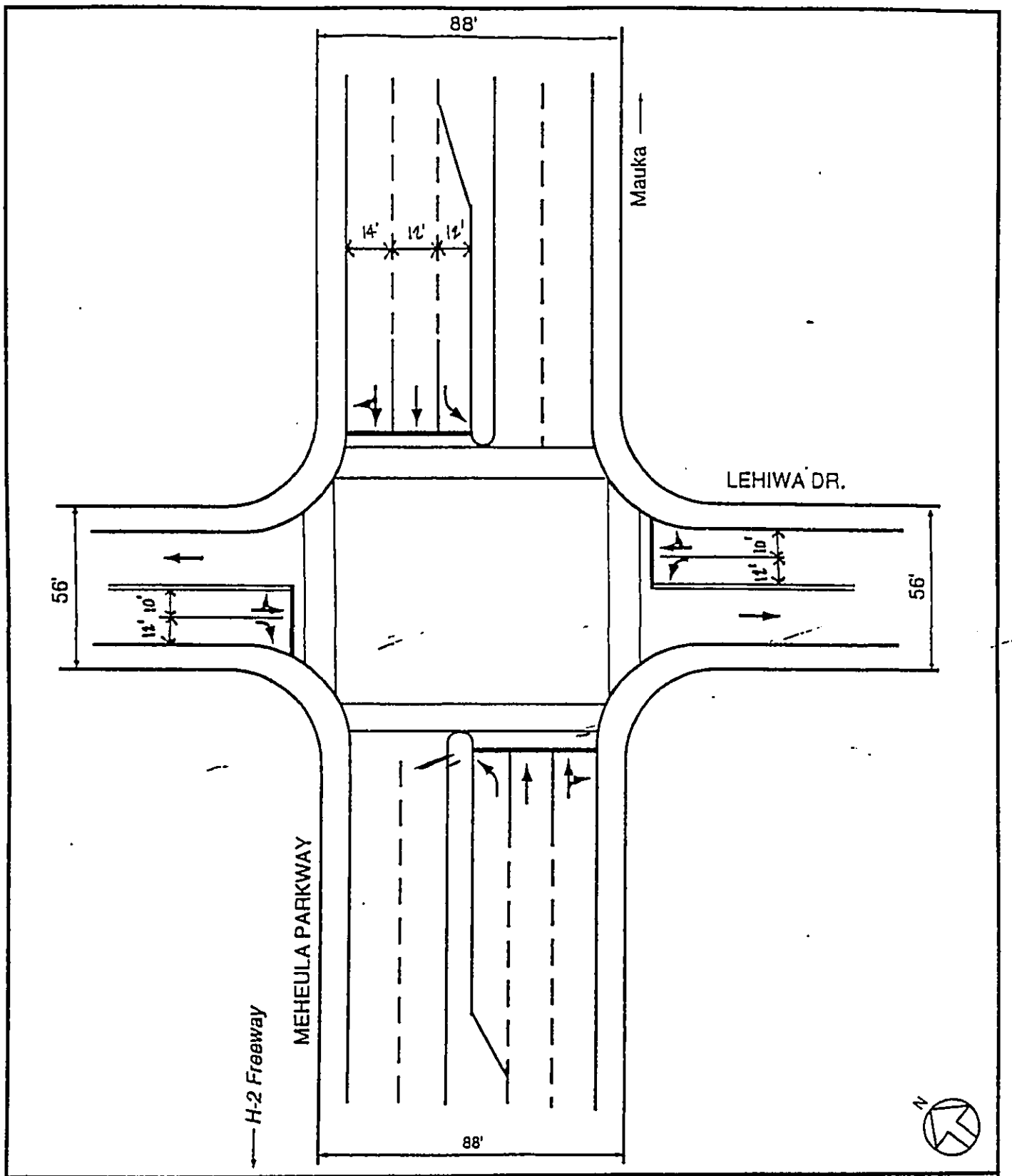


Figure 6

MEHEULA PARKWAY/LEHIWA DRIVE INTERSECTION

3. On-Street Parking

Because the entire pavement width of upper Lehiwa Drive would be needed for traffic lanes and to maximize visibility at the entrance and exit driveways of the Mililani Mauka II Elementary School, it is recommended to prohibit on-street parking along both sides of the south leg of upper Lehiwa Drive from Meheula Parkway to a point approximately 200 feet south of the Mililani Mauka II Elementary School exit driveway.

D. Conclusion

Based on the analyses and review of conditions in this traffic study, it is concluded that with the recommended actions, the existing and future roadway system can accommodate the traffic generated by the proposed Mililani Mauka II Elementary School. The proposed school is consistent with land uses assumed for the Mililani Mauka Roadway Master Plan.

APPENDIX A
INTERSECTION LEVEL OF SERVICE DEFINITIONS

Appendix A Levels of Service Definitions

The *Highway Capacity Manual* defines six Levels of Service (LOS), labeled A through F, from best to worst conditions. Levels of Service for signalized and unsignalized intersections are defined in terms of average user delays. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

For unsignalized intersections, the *Highway Capacity Manual* evaluates gaps in the major street traffic flow and calculates available gaps for left-turns across oncoming traffic and for the left and right-turns onto the major roadway from the minor street.

LEVEL-OF-SERVICE A: Little or no delay.

LEVEL-OF-SERVICE B: Short traffic delays.

LEVEL-OF-SERVICE C: Average traffic delays.

LEVEL-OF-SERVICE D: Long traffic delays.

LEVEL-OF-SERVICE E: Very long traffic delays.

LEVEL-OF-SERVICE F: Demand volume exceeds capacity, resulting in extreme delays with queuing that may cause severe congestion and affect other movements at the intersection.

APPENDIX B

INTERSECTION CAPACITY ANALYSIS WORKSHEETS

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*wyy*
Agency/Co.	
Date Performed	*4/6/01*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Meheula/Upper Lehiwa*
Jurisdiction	*Honolulu*
Analysis Year	*Future Buildout - Background*
Project ID	*16343A*

East/West Street: *Meheula Parkway*
Intersection Orientation: *East-West*
North/South Street: *Upper Lehiwa Drive*
Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*15*	*530*	*145*	*10*	*260*	*15*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*530*	*145*	*10*	*260*	*15*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*85*	*5*	*5*	*5*	*5*	*50*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*85*	*5*	*5*	*5*	*5*	*50*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*		*TR*	*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*L*		*TR*	*LT*		*R*
v (vph)	*15*	*10*	*85*		*10*	*10*		*50*
C (m) (vph)	*1300*	*926*	*357*		*470*	*399*		*891*
v/c	*0.01*	*0.01*	*0.24*		*0.02*	*0.03*		*0.06*
95% queue length	*0.04*	*0.03*	*0.93*		*0.07*	*0.08*		*0.18*
Control Delay	*7.8*	*8.9*	*18.2*		*12.8*	*14.3*		*9.3*
LOS	*A*	*A*	*C*		*B*	*B*		*A*
Approach Delay	--	--	*17.7*			*10.1*		
Approach LOS	--	--	*C*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*wyy*
Agency/Co.	
Date Performed	*4/6/01*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Meheula/Upper Lehiwa*
Jurisdiction	*Honolulu*
Analysis Year	*Future Buildout - Background*
Project ID	*16343A*

East/West Street: *Meheula Parkway*
North/South Street: *Upper Lehiwa Drive*
Intersection Orientation: *East-West*
Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*15*	*110*	*45*	*5*	*395*	*15*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*110*	*45*	*5*	*395*	*15*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*115*	*5*	*5*	*5*	*5*	*65*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*115*	*5*	*5*	*5*	*5*	*65*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*		*TR*	*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*L*		*TR*	*LT*		*R*
v (vph)	*15*	*5*	*115*		*10*	*10*		*65*
C (m) (vph)	*1160*	*1438*	*570*		*644*	*495*		*808*
v/c	*0.01*	*0.00*	*0.20*		*0.02*	*0.02*		*0.08*
95% queue length	*0.04*	*0.01*	*0.76*		*0.05*	*0.06*		*0.26*
Control Delay	*8.1*	*7.5*	*12.9*		*10.7*	*12.4*		*9.8*
LOS	*A*	*A*	*B*		*B*	*B*		*A*
Approach Delay	--	--	*12.7*			*10.2*		
Approach LOS	--	--	*B*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*wyy*
Agency/Co.	
Date Performed	*Future Buildout-Background*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Meheula Parkway/Upper Kuaoa*
Jurisdiction	*Honolulu*
Analysis Year	*Future Buildout-Background*
Project ID	

East/West Street: *Meheula Parkway* | North/South Street: *Upper Kuaoa Street*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*165*	*30*	*5*	*570*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*165*	*30*	*5*	*570*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*90*	*0*	*5*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*90*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*90*		*5*			
C (m) (vph)		*1390*	*522*		*945*			
v/c		*0.00*	*0.17*		*0.01*			
95% queue length		*0.01*	*0.62*		*0.02*			
Control Delay		*7.6*	*13.3*		*8.8*			
LOS		*A*	*B*		*A*			
Approach Delay	--	--	*13.1*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*wyy*	Intersection	*Meheula/Upper Kuaoa*
Agency/Co.		Jurisdiction	*Honolulu*
Date Performed	*Future Buildout-Background*	Analysis Year	*Future Buildout-Background*
Analysis Time Period	*PM Peak*	Project ID	*16331A*

East/West Street: *Meheula Parkway*	North/South Street: *Upper Kuaoa Street*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*755*	*105*	*5*	*400*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*755*	*105*	*5*	*400*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*60*	*0*	*5*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*60*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*60*		*5*			
C (m) (vph)		*790*	*236*		*579*			
v/c		*0.01*	*0.25*		*0.01*			
95% queue length		*0.02*	*1.01*		*0.03*			
Control Delay		*9.6*	*25.4*		*11.3*			
LOS		*A*	*D*		*B*			
Approach Delay	--	--	*24.3*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	wyy
Agency/Co.	
Date Performed	4/6/01
Analysis Time Period	AM Peak

Site Information

Intersection	Meheula/Upper Lehiwa
Jurisdiction	Honolulu
Analysis Year	Future Buildout - Total
Project ID	16343A

East/West Street: Meheula Parkway
North/South Street: Upper Lehiwa Drive
Intersection Orientation: East-West
Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	110	95	40	395	15
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	15	110	95	40	395	15
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	185	5	5	5	5	65
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	185	5	5	5	5	65
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	L		TR	LT		R
v (vph)	15	40	185		10	10		65
C (m) (vph)	1160	1378	501		592	438		808
v/c	0.01	0.03	0.37		0.02	0.02		0.08
95% queue length	0.04	0.09	1.74		0.05	0.07		0.26
Control Delay	8.1	7.7	16.4		11.2	13.4		9.8
LOS	A	A	C		B	B		A
Approach Delay	--	--	16.1			10.3		
Approach LOS	--	--	C			B		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*wyy*
Agency/Co.	
Date Performed	*4/6/01*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Meheula/Upper Lehiwa*
Jurisdiction	*Honolulu*
Analysis Year	*Future Buildout - Total*
Project ID	*16343A*

East/West Street: *Meheula Parkway*
North/South Street: *Upper Lehiwa Drive*
Intersection Orientation: *East-West*
Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*85*	*530*	*185*	*10*	*260*	*15*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*85*	*530*	*185*	*10*	*260*	*15*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	*7*	*8*	*9*	*10*	*11*	*12*
	L	T	R	L	T	R
Volume	*130*	*15*	*20*	*5*	*5*	*50*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*130*	*15*	*20*	*5*	*5*	*50*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*		*TR*	*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*L*		*TR*	*LT*		*R*
v (vph)	*85*	*10*	*130*		*35*	*10*		*50*
C (m) (vph)	*1300*	*895*	*274*		*426*	*315*		*891*
v/c	*0.07*	*0.01*	*0.47*		*0.08*	*0.03*		*0.06*
95% queue length	*0.21*	*0.03*	*2.61*		*0.27*	*0.10*		*0.18*
Control Delay	*8.0*	*9.1*	*29.9*		*14.2*	*16.8*		*9.3*
LOS	*A*	*A*	*D*		*B*	*C*		*A*
Approach Delay	--	--	*26.5*			*10.5*		
Approach LOS	--	--	*D*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*wyy*	Intersection	*Meheula/Upper Kuaoa*
Agency/Co.		Jurisdiction	*Honolulu*
Date Performed	*Future Buildout-Total*	Analysis Year	*Future Buildout-Total*
Analysis Time Period	*AM Peak*	Project ID	

East/West Street: *Meheula Parkway*	North/South Street: *Upper Kuaoa Street*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*200*	*30*	*5*	*640*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*200*	*30*	*5*	*640*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*90*	*0*	*20*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*90*	*0*	*20*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*90*		*20*			
C (m) (vph)		*1350*	*471*		*922*			
v/c		*0.00*	*0.19*		*0.02*			
95% queue length		*0.01*	*0.71*		*0.07*			
Control Delay		*7.7*	*14.4*		*9.0*			
LOS		*A*	*B*		*A*			
Approach Delay	--	--	*13.5*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*wyy*
Agency/Co.	
Date Performed	*Future Buildout-Total*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Meheula/Upper Kuaoa*
Jurisdiction	*Honolulu*
Analysis Year	*Future Buildout-Total*
Project ID	

East/West Street: *Meheula Parkway*
North/South Street: *Upper Kuaoa Street*
Intersection Orientation: *East-West*
Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*795*	*105*	*20*	*420*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*795*	*105*	*20*	*420*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	*7*	*8*	*9*	*10*	*11*	*12*
	L	T	R	L	T	R
Volume	*60*	*0*	*5*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*60*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*20*	*60*		*5*			
C (m) (vph)		*763*	*204*		*562*			
v/c		*0.03*	*0.29*		*0.01*			
95% queue length		*0.08*	*1.23*		*0.03*			
Control Delay		*9.8*	*30.0*		*11.5*			
LOS		*A*	*D*		*B*			
Approach Delay	--	--	*28.5*					
Approach LOS	--	--	*D*					

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: wyy
Intersection: Upper Lehiwa Drive/School Exit
Count Date: Future Buildout
Time Period: AM Peak

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	5	10	12
Volume:	145	55	70	10
HFR:	145	55	70	10
PHF:	1.00	1.00	1.00	1.00
PHV:	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Eastbound 0
# of vehicles: Westbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

ane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	N	N	N	Y	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared ln volume, major th vehicles:	0	0
Shared ln volume, major rt vehicles:	0	0
at flow rate, major th vehicles:	1700	1700
at flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

ength of stu/ period, hrs: 1.00

orksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	10	12
c c,base	7.1	6.2
t c,hv	1.0	1.0
P hv	0.00	0.00
: c,g	0.2	0.1
G	0.00	0.00
t 3,lt	0.7	0.0
: c,T:		
1 stage	0.00	0.00
t c		
1 stage	6.4	6.2

Follow Up Time Calculations:

Movement	10	12
: f,base	3.5	3.3
c f,HV	0.9	0.9
P hv	0.00	0.00
: f	3.5	3.3

Worksheet 6 Impedance and capacity equations

tep 1: RT from Minor St.	9	12
Conflicting Flows		55
otential Capacity		1018
edestrian Impedance Factor		1.00
ovement Capacity		1018
Probability of Queue free St.		0.99

tep 4: LT from Minor St.	7	10
onflicting Flows		200
otential Capacity		793
edestrian Impedance Factor		1.00
Maj. L, Min T Impedance factor		1.00
aj. L, Min T Adj. Imp Factor.		1.00
ap. Adj. factor due to Impeding mvmnt		1.00
ovement Capacity		793

Worksheet 10 delay,queue length, and LOS

ovement	1	4	7	8	9	10	11	12
			|			||------	
			|			||	------|
			|			||	|
(vph)						70		10
C m(vph)						793		1018
v/c						0.09		0.01
95% queue length								
Control Delay						10.0		8.6
LOS						A		A
Approach Delay							9.8	
Approach LOS							A	

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

nalyst: wyy
ntersection: Upper Lehiwa Drive/School Exit
ount Date: Future Buildout
Time Period: PM Peak

ntersection Orientation: North-South Major St.

Vehicle Volume Data:

ovements:	2	5	10	12
Volume:	105	160	70	10
FR:	105	160	70	10
HF:	1.00	1.00	1.00	1.00
HV:	0.00	0.00	0.00	0.00

edestrian Volume Data:

lovements:									
Flow:									
ane width:									
alk speed:									
Blockage:									

edian Type:	None
of vehicles:	0

Flared approach Movements:

of vehicles: Eastbound	0
of vehicles: Westbound	0

ane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	N	N	N	N

Channelized:	N
Grade:	0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	N	N	N	N

hannelized:	N
rade:	0.00

ane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized:	N
rade:	0.00

ane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	N	N	N	Y	N	N	N

hannelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
hared ln volume, major th vehicles:	0	0
Shared ln volume, major rt vehicles:	0	0
at flow rate, major th vehicles:	1700	1700
at flow rate, major rt vehicles:	1700	1700
umber of major street through lanes:	1	1

ength of study period, hrs: 1.00

orksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	10	12
c,base	7.1	6.2
c,hv	1.0	1.0
hv	0.00	0.00
c,g	0.2	0.1
3	0.00	0.00
3,lt	0.7	0.0
c,T: 1 stage	0.00	0.00
c 1 stage	6.4	6.2

Follow Up Time Calculations:

Movement	10	12
f,base	3.5	3.3
f,HV	0.9	0.9
hv	0.00	0.00
f	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows		160
Potential Capacity		890
edestrian Impedance Factor		1.00
ovement Capacity		890
Probability of Queue free St.		0.99

tep 4: LT from Minor St.	7	10
Conflicting Flows		265
otential Capacity		728
edestrian Impedance Factor		1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
ap. Adj. factor due to Impeding mvmnt		1.00
ovement Capacity		728

Worksheet 10 delay, queue length, and LOS

Movement	1	4	7	8	9	10	11	12
(vph)								
m(vph)								
v/c						70		10
95% queue length						728		890
Control Delay						0.10		0.01
LOS								
Approach Delay						10.5		9.1
Approach LOS						B		A
							10.3	
							B	

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: wyy
Intersection: Upper Lehiwa Drive/School Entrance
Count Date: Future Buildout
Time Period: AM Peak

Intersection orientation: North-South Major St.

Vehicle Volume Data:

Movements:	1	2	5	6
Volume:	20	195	55	100
VFR:	20	195	55	100
PHF:	1.00	1.00	1.00	1.00
PHV:	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Eastbound 0
# of vehicles: Westbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

ane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

.hannelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
.hared ln volume, major th vehicles:	0	0
Shared ln volume, major rt vehicles:	0	0
"at flow rate, major th vehicles:	1700	1700
at flow rate, major rt vehicles:	1700	1700
.umber of major street through lanes:	1	1

.ength of study period, hrs: 1.00

'orksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1
. c,base	4.1
t c,hv	1.0
? hv	0.00
. c,g	
;	0.00
t 3,lt	0.0
: c,T:	
1 stage	0.00
t c	
1 stage	4.1

:ollow Up Time Calculations:

Movement	1
: f,base	2.2
. f,HV	0.9
P hv	0.00
: f	2.2

Worksheet 6 Impedance and capacity equations

:tep 2: LT from Major St.	4	1
Conflicting Flows		155
Potential Capacity		1438
edestrian Impedance Factor		1.00
ovement Capacity		1438
Probability of Queue free St.		0.99

Worksheet 10 delay,queue length, and LCS

ovement	1	4	7	8	9	10	11	12
(vph)	20							
C m(vph)	1438							

v/c	0.01
95% queue length	
Control Delay	7.5
LOS	A
Approach Delay	
Approach LOS	

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: wyy
ntersection: Upper Lehiwa Drive/School Entrance
ount Date: Future Buildout
Time Period: PM Peak

ntersection Orientation: North-South Major St.

Vehicle Volume Data:

ovements:	1	2	5	6
Volume:	10	165	160	40
HFR:	10	165	160	40
HF:	1.00	1.00	1.00	1.00
HV:	0.00	0.00	0.00	0.00

edestrian Volume Data:

ovements:

Flow:
ane width:
alk speed:
Blockage:

Median Type: None
of vehicles: 0

Flared approach Movements:

of vehicles: Eastbound 0
of vehicles: Westbound 0

ane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	Y	N	N	N

hannelized: N
rade: 0.00

ane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

'ane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

hannelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
hared ln volume, major th vehicles:	0	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
at flow rate, major rt vehicles:	1700	1700
umber of major street through lanes:	1	1

ength of study period, hrs: 1.00

'orksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1
c,base	4.1
c,hv	1.0
hv	0.00
c,g	0.00
3,lt	0.0
c,T: 1 stage	0.00
c 1 stage	4.1

Follow Up Time Calculations:

Movement	1
f,base	2.2
f,HV	0.9
P hv	0.00
t f	2.2

Worksheet 6 Impedance and capacity equations

tep 2: LT from Major St.	4	1
Conflicting Flows		200
Potential Capacity		1384
edestrian Impedance Factor		1.00
lovement Capacity		1384
Probability of Queue free St.		0.99

Worksheet 10 delay,queue length, and LOS

ovement	1	4	7	8	9	10	11	12
(vph)	10							
C m(vph)	1384							

v/c	0.01
5% queue length	
ontrol Delay	7.6
LOS	A
Approach Delay	
pproach LOS	