EWA MAKAI MIDDLE SCHOOL

DRAFT ENVIRONMENTAL ASSESSMENT

NOVEMBER 2008

PREPARED FOR:
STATE OF HAWAII
DEPARTMENT OF EDUCATION

PREPARED BY:
SSFM INTERNATIONAL INC.

DRAFT ENVIRONMENTAL ASSESSMENT

FOR

ʻEWA MAKAI MIDDLE SCHOOL PROJECT

ʻEWA, OʻAHU, HAWAIʻI

NOVEMBER 2008

PROPOSING AGENCY:

Department of Education
State of Hawaiʻi
1390 Miller Street
Honolulu, Hawaiʻi 96804

PREPARED BY:

SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaiʻi 96817

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INTRODUCTION

A summary of pertinent project related information is provided in Table 1.1 below.

Table 1.1 Summary Information

Project Name:	‘Ewa Makai Middle School
Proposing Agency:	Department of Education State of Hawai‘i 1390 Miller Street Honolulu, Hawai‘i 96804 Contact: Benjamin Miura
Accepting Authority:	Department of Education, State of Hawai‘i
EA Consultant:	SSFM International, Inc. 501 Sumner Street, Suite 620 Honolulu, Hawai‘i 96817 Contact: Jared K. Chang
Project Description:	This project involves the development of a new middle school for the Ewa community. The design will utilize concepts developed during planning charette held in the spring of 2005. The school will be designed for sustainability and, to the extent possible, will be designed to meet or exceed the Leadership in Energy and Environment Design (LEED) Silver Certification rating.
Project Location:	The project site is located within the Gentry master planned development of ‘Ewa Makai. The site is bounded on the east by a portion of the Kapolei Parkway. Gentry is planning a residential development to the north, and bordering the site to the west is open space set aside as a regional drainage way. Haseko’s Ocean Pointe development is to the south. Figure 1.1 shows the projects general location.
Tax Map Key:	TMK (1) 9-1-069: 027
Existing Use:	The project site is currently undeveloped.
Land Ownership:	Gentry Investment Properties, the parcel will be deeded to the State of Hawai‘i for educational use.
Land Area:	18.542 Acres
State Land Use:	Urban
County Zoning:	A-1, Low Density Apartment District
Development Plan:	Low and Medium Density Residential
SMA District:	Not located within the City’s Special Management Area (SMA)

PROJECT LOCATION MAP

Figure 1.1

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source:
Topographic Map, USGS 2003
2003 DoLorme
Street Atlas USA 2004 Plus

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1.1 PURPOSE FOR ENVIRONMENTAL ASSESSMENT

The Department of Education (DOE), State of Hawai'i, is proposing to develop a new middle school in 'Ewa involving the design and construction of the proposed 'Ewa Makai Middle School. The school will be designed for sustainability, and to the extent possible to be designed to meet or exceed the Leadership in Energy and Environment Design (LEED) Silver Certification rating.

The 'Ewa Makai Middle School will be able to accommodate large student enrollments, provide flexible uses of classroom spaces, utilize sustainable design criteria, and provide a nurturing academic environment. The proposed middle school complex is planned to consist of single-story structures that total approximately 150,000 square feet of floor area.

Environmental Requirements & Proposing Agency

The 'Ewa Makai Middle School Project would involve the use of State funds for the development of this new school. As a result, this project is subject to State environmental documentation requirements.

This Draft Environmental Assessment (Draft EA) was prepared in conformance to the regulatory and documentation requirements prescribed under Chapter 343, Environmental Impact Statements, Hawai'i Revised Statutes (HRS), and Title 11, Chapter 200 (Environmental Impact Statement Rules) of the State Department of Health's Administrative Rules (HAR). A Negative Declaration, also referred to as A Finding of No Significant Impact (FONSI) is anticipated for this project.

The State DOE is the Proposing Agency for this project. This project subsequently involves an "Agency Action" being undertaken by this department under State environmental regulations. As a result, the State DOE is also serving as the "Approving Agency" for this environmental assessment.

1.2 EXISTING LAND USE DESIGNATIONS

State Land Use District

Under Chapter 205, HRS, all lands in the State of Hawai'i are classified into four major land use districts (State Land Use Districts) which are the Urban, Rural, Agricultural, and Conservation districts (State of Hawaii 2000). The project site and its surrounding residential areas are classified as "Urban District" on the State's Land Use District Boundary Map. Figure 1.2 shows the project area in relation to the State land use designations.

City and County Development/ Sustainable Community Plans

The project site is located within the City and County of Honolulu's 'Ewa Development Plan. This plan, adopted in 1997 (revised in 2000) and currently being revised by the City, includes the vision, policies, and guidelines to guide public policy, investment, and decision-making within 'Ewa through the 2020 horizon and beyond (City 2000).

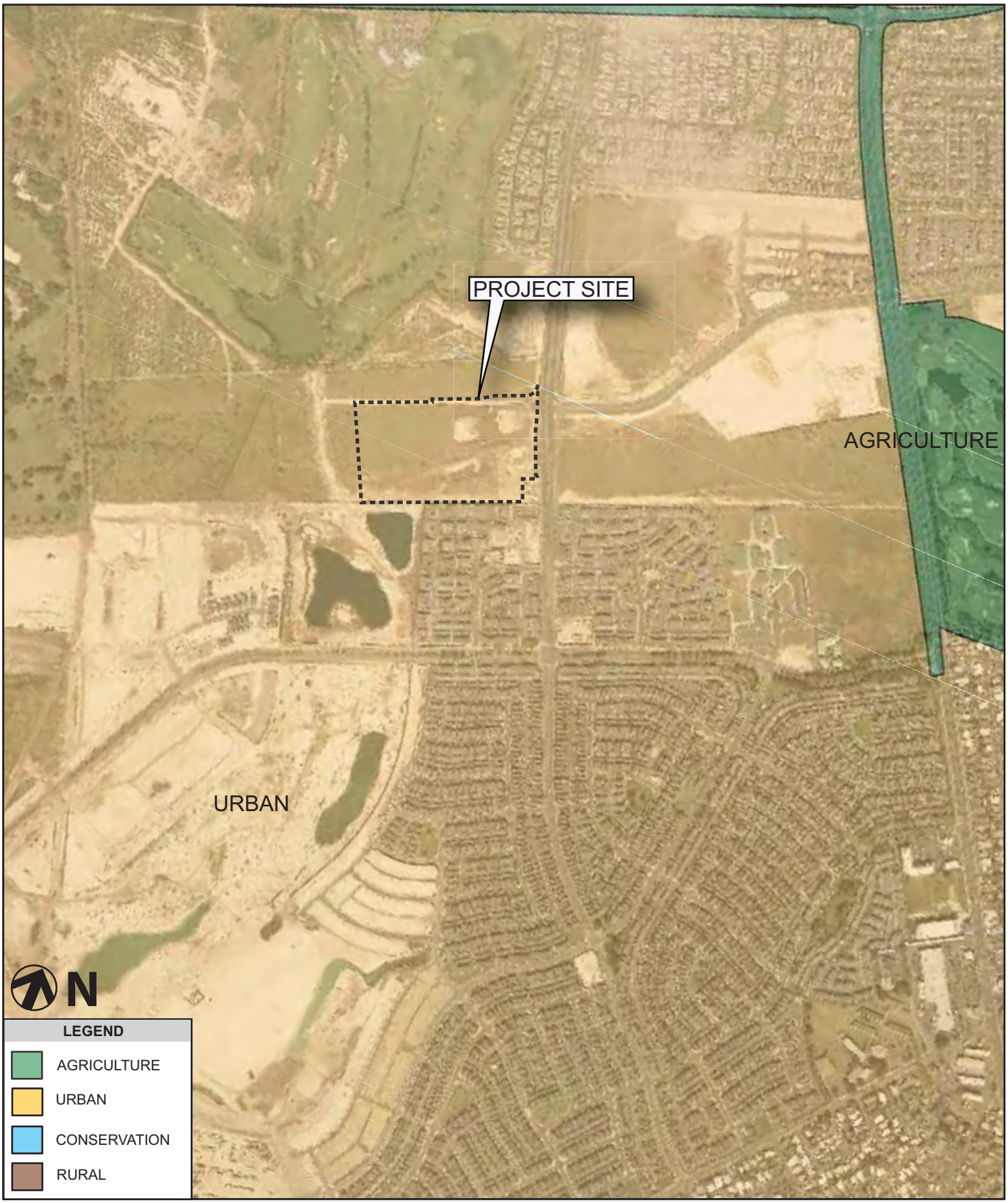
Under this Development Plan's Urban Land Use Map, the project site is designated as "low and medium density residential". Figure 1.3 shows the project site in relation to the 'Ewa Development Plan Urban Land Use Map. Discussion of the project's consistency with this development plan is provided in Chapter 7 of this document.

City and County Zoning Districts

All lands within the City are categorized, or zoned, into specific districts. These districts and the land uses permitted within them are regulated under the City's Land Use Ordinance (Chapter 21, Revised Ordinances of Honolulu), and are shown on zoning maps. This Land Use Ordinance addresses a wide range of development and design standards, permitted uses, administration, and procedures for zone changes or other approvals. The project site is zoned A-1, Low Density Apartment. Figure 1.4 shows the project site in relation to the City's zoning designations. Discussion of the project's consistency with this zoning district is provided in Chapter 7 of this document.

Special Management Area

Under Chapter 205A (Coastal Zone Management Act) of the Hawaii Revised Statutes, the County is given authorization to regulate land uses located within the established Special Management Area (SMA) for the Island of Oahu. Review of Oahu's SMA map for the 'Ewa Middle School site and immediate surrounding area determined that the entire school campus is situated outside of the County's Special Management Area, therefore a SMA permit will not be required.



STATE LAND USE DISTRICT BOUNDARY MAP

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Figure 1.2

Source:
- Hawai'i Aviation, 2008 (Aerial)
- State Land Use Commission, 2006

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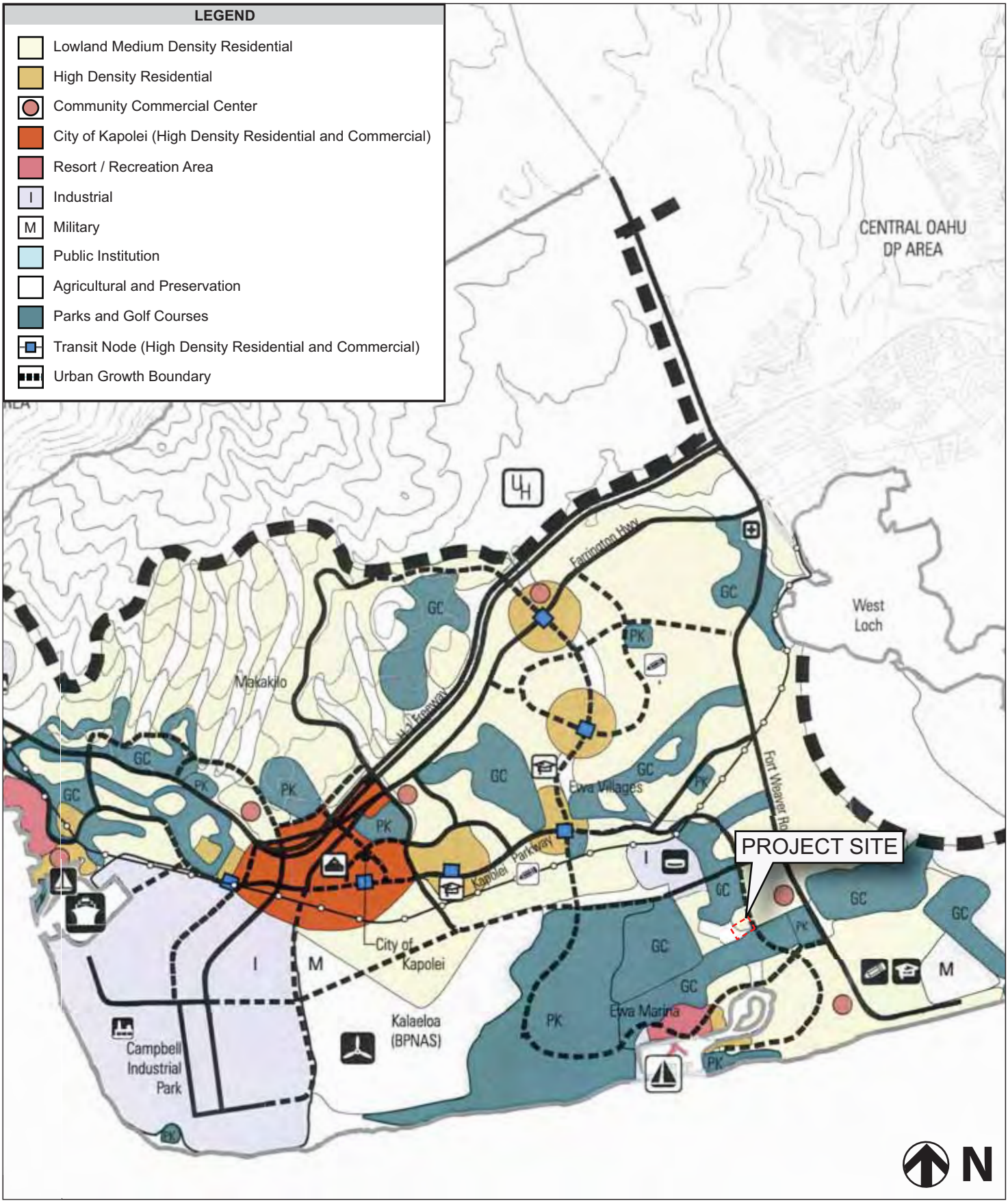

'EWA DEVELOPMENT PLAN LAND USE MAP

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Figure 1.3

Source:
- Planning Department, C&C of Honolulu, August, 1997

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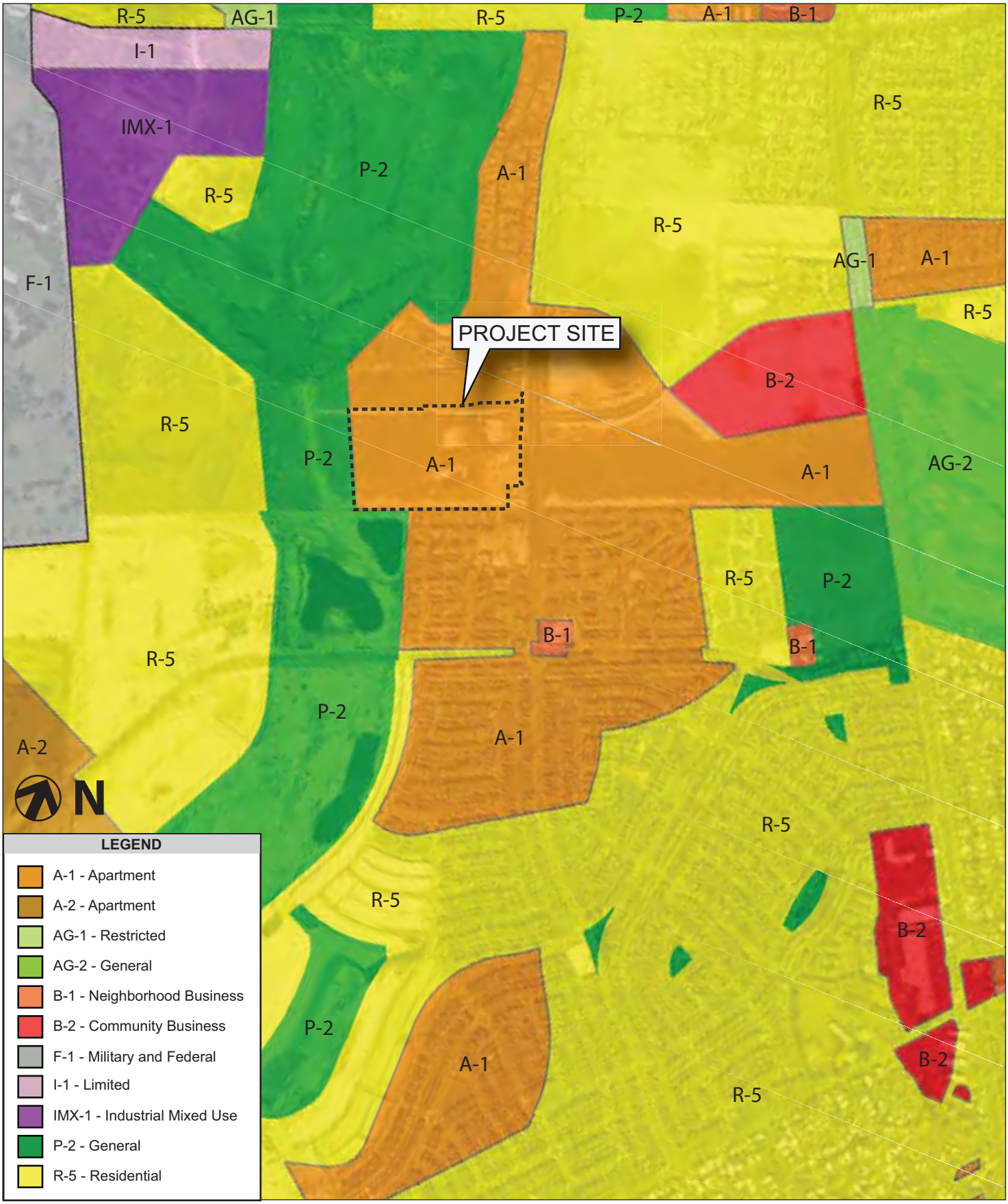

CITY ZONING DISTRICT MAP

Figure 1.4

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source:
- Hawai'i Aviation, 2008 (Aerial)
- Honolulu Land Information System (Holis), January 2006

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CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT LOCATION AND VICINITY

The project site is within the Gentry Ewa Makai development. The site is bounded on the east by a portion of the Kapolei Parkway. A planned residential development will be situated north of the project site, bordering the site to the west is open space set aside as a regional drainage way. Haseko's Ocean Pointe development is adjacent to the south. The site is located in Tax Map Key (TMK) (1)-9-1-069: 027.

Existing and Future Surrounding Land Uses

The project site was formerly in sugar cane production use for approximately 100 years. This use has since been abandoned and the project site currently holds very little by way of groundcover. Vegetation that remain are fairly sparse and do not serve as a scenic or visual resource. No other uses of the site have been noted since its clearing.

When viewed in total, the project area is located south of a growing planned community developed by the applicant. This area consists of single family and multi family homes, planned opened spaces and some commercial development. The area immediately north of the project site also includes the Coral Creek Golf Course which was designed to accommodate drainage from the existing and future developments within the area. Further to the northwest lie the other Varona, Tenney and Renton Villages.

The area west of the project consists largely of the Barbers Point Golf Course located in the area now known as Kalaeloa. While this area was the site of a former Naval Air Station, much of the area has recently been turned over to the State and City for residential and community development.

The areas south of the Gentry's Ewa Makai site include the Ocean Pointe Community located west of Fort Weaver Road, and the Hawai'i Prince Golf Course located east of Fort Weaver Road. The areas within the Ocean Pointe community are planned to include residential areas, a golf course, an elementary school site, and a district park. Even further south lies 'Ewa Beach Town.

PROJECT VICINITY MAP

Figure 2.1

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source:
Hawai'i Aviation,
Jan 2008 (Aerial)

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2.2 PROJECT NEED AND OBJECTIVES

2.2.1 Need for New Middle School

The 'Ewa Makai Middle School is needed by the State Department of Education's (DOE) Leeward District in order to accommodate the 'Ewa community's need for an additional middle school educational facility. The development and implementation of several large master planned communities such as 'Ewa by Gentry, 'Ewa Villages, and Ocean Pointe is expected to add thousands of new housing units to the region over the next decade. Thus, the proposed middle school is situated within the 'Ewa by Gentry development to serve its residents and also adjacent community residents.

Since 1993, the total school enrollment for the Leeward District has increased from approximately 31,500 to over 40,000 students presently. Rapid development in both 'Ewa and Kapolei have created an imperative need for additional schools and classroom space. State Department of Education's (DOE) 6-year projected enrollments for the Campbell Complex is presented below in Table 2.1. Based on this table, between 2008 and 2013 student enrollments are projected to increase by approximately 609 students or 7 percent (%).

The Leeward District is made up of the Campbell, Kapolei, Pearl City, Waipahu, Nānākuli, and Wai'anae Complexes. Currently, within the Campbell Complex there are seven (7) elementary schools, one (1) middle school, and one (1) high school. The proposed middle school would be added to the Campbell Complex as the 2nd middle school.

Table 2.1 2008-2013 PROJECTED ENROLLMENT
Campbell Complex-LEEWARD DISTRICT

	2008	2009	2010	2011	2012	2013
High School						
Campbell High	2431	2411	2451	2516	2580	2629
Middle School						
Ilima Int	1357	1390	1410	1430	1460	1504
Elementary Schools						
Ewa Beach	332	331	333	334	335	332
Ewa El	941	947	947	959	957	953
Holomua	1452	1464	1483	1466	1455	1442
Iroquois Point	661	671	677	676	673	656
Kaimiloa	618	615	610	606	600	593
Keoneula	896	998	1077	1114	1148	1183
Pohakea	474	470	459	464	465	479
TOTAL	9162	9297	9447	9565	9673	9771

Source: Department of Education, Information Management Architecture

2.2.2 New Middle School Project Objectives

The purpose of this project is to provide classroom facilities to accommodate the rapid development in the 'Ewa-Kapolei area pressing need for additional schools and classroom space. The proposed middle school design is intended to serve approximately 1,050 sixth to eighth grade students with the capability of servicing 1,400 students through the use of year round multi-track schedule. Students will come from the surrounding Campbell complex, within the DOE's Leeward District.

In 2005, a task force was formed to assist in developing an educational plan to be used as guidance during the design charette for this new middle school. Subsequently, three design charette sessions were held on March 15 to 18th, April 11-15th, and May 9-11th. During the charette, the successful involvement of students, parents, teachers and others in the 'Ewa community, allowed the design of this school to be shaped by the vision of the community and emphasized their beliefs and values. A summary of the charette sessions was compiled in a report titled *'Ewa Makai Middle School, Creating the School of Tomorrow*, and a copy is included in Appendix C of this document.

Sustainable Design (LEED) Objective

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a certification program and nationally accepted standard for the design, construction and operation of high performance "green buildings." This system encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria (USGBC 2008). The concepts relating to sustainability and sustainable development are central to those guiding the current *green building* movement.

Green building is generally defined as the practice of improving the efficiency with which buildings use resources such as energy, water, and materials, while reducing the impacts on human health and the environment through better siting, design, construction, operation, maintenance and removal. Green building techniques help the environment by improving air and water quality, reducing solid waste, and conserving natural resources. Benefits to the economy include reduced operating costs and optimized life-cycle economic performance. Health benefits to the community include improved air, thermal, and acoustic environments; minimized development impact strain on local infrastructure, and positively contribute to the overall quality of life (USGBC 2008). *Green* schools are healthy for students, teachers and the environment. If properly designed and constructed, these schools are productive learning environments with ample natural light, high-quality acoustics and air that is safe to breathe.

The proposed 'Ewa Makai Middle School is required to be LEED certified with a Silver Certification rating as mandated per State Law, Act 96 requirements. The school's design will utilize the "LEED for Schools" rating system which would need to achieve 37 points out of a possible 79 points for a Silver Certification rating. The school's design team has currently identified 39 achievable points, while another 14 additional points are considered possible with further research and

development. Actual verification of credits will not be known in some cases until after design and/or construction through post-construction activities, since such credits entail a processed sequence of events. Certification will be awarded after construction is complete and all related credits have been verified.

The following are sustainable design features for which LEED credits will be sought: 1) Energy efficient and innovative mechanical systems which may include a displacement type air conditioning system; 2) Natural lighting, day lighting, shading devices and views; 3) Energy efficient light fixtures; 4) Water efficient plumbing fixtures; 5) Controllable systems; 6) Radiant barrier in the roof assembly; 7) Higher R-value roof insulation, 8) Low E insulated windows 9) Low emitting materials; 10) Ventilation effectiveness; 11) Construction Indoor Air Quality Management Plan; 12) Recycled Materials; 13) Fire suppression systems without HCFC's or Halon 14) Locally manufactured materials; 15) Recycling of construction waste materials; and 16) Use of non-potable water for irrigation. A LEED scorecard briefly identifying the potential sustainable design features that are planned for the new school is included in Appendix D of this document.

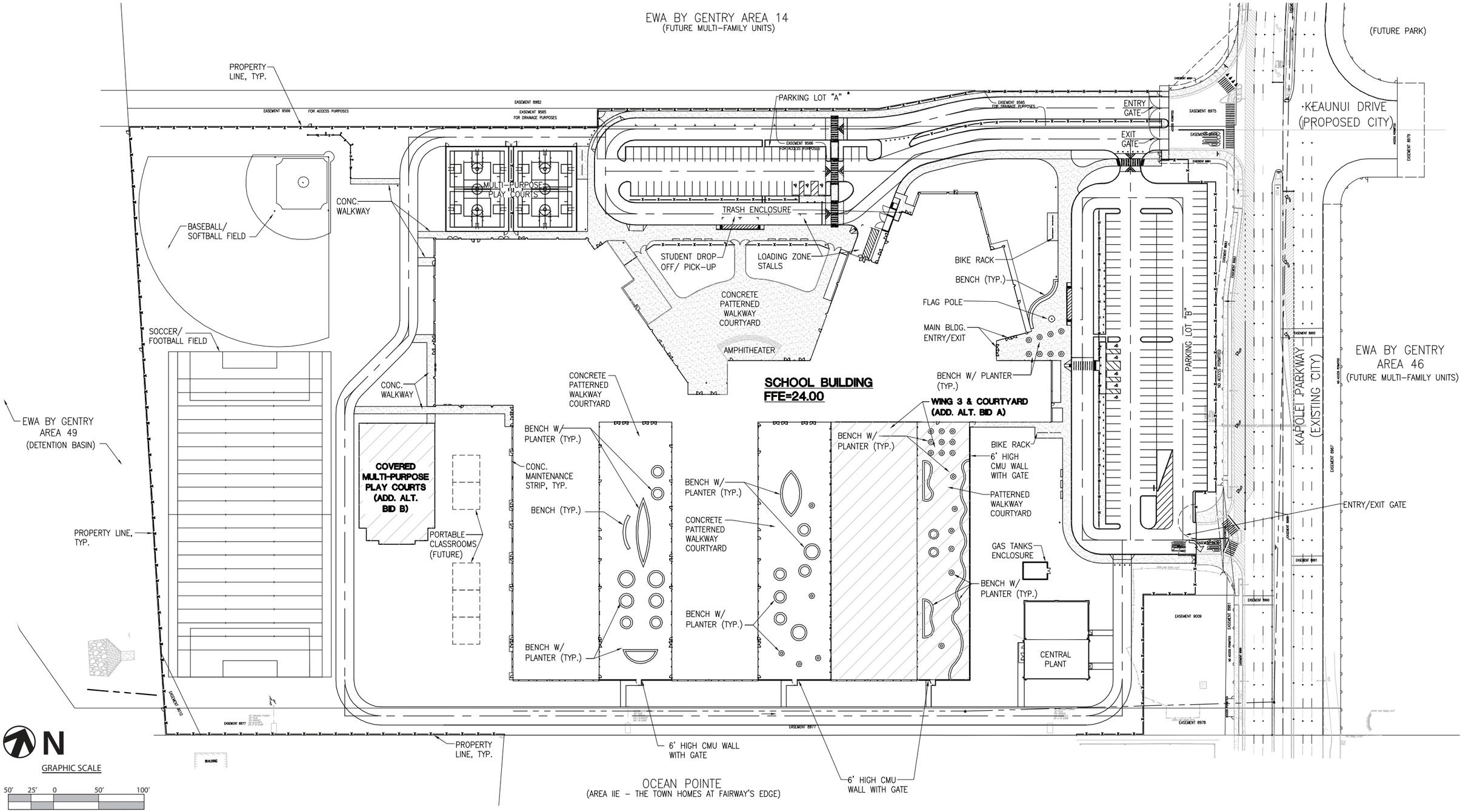
2.3 DESCRIPTION OF PROJECT

The project would include the construction of a new middle school and accessories providing a necessary educational facility to serve both students and faculty. More detailed discussions of the proposed 'Ewa Makai Middle School facilities are provided in this section. Figure 2.2 provides a Site Plan showing general locations of proposed facilities in relation to the project site. Figure 2.3 provides a floor plan of the school campus which is divided and described as "sectors."

Located in 'Ewa, the school will serve 1,050 sixth to eight grade students, and up to 1,400 students though the use of year-round schooling. Thus, it will be designed to accommodate a year round multi-track schedule, provide flexibility in the use of classroom spaces, use financial and facility resources cost effectively, utilize sustainable design criteria, and provide a nurturing and exciting academic environment.

The school will have special features such as: (1) an indoor dining facility; (2) outdoor learning gardens; (3) cluster of classrooms that foster interdisciplinary teaching; (4) specialty classrooms for music, art, technology, family and consumer science, dance and performance and health and fitness; (5) a library media center; (6) internet linkage to enable students to access worldwide communication networks; and (7) an Administration area with separate Student Center for support services consisting of the registrar, counseling, and health center.

The design of the school will provide opportunities for grouping of students into different teams or learning clusters. The school shall support the three specialty focus areas of environmental studies, performing arts, and health and fitness.



SITE PLAN

Figure 2.2

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source:
Mitsunaga and Associates, October2008

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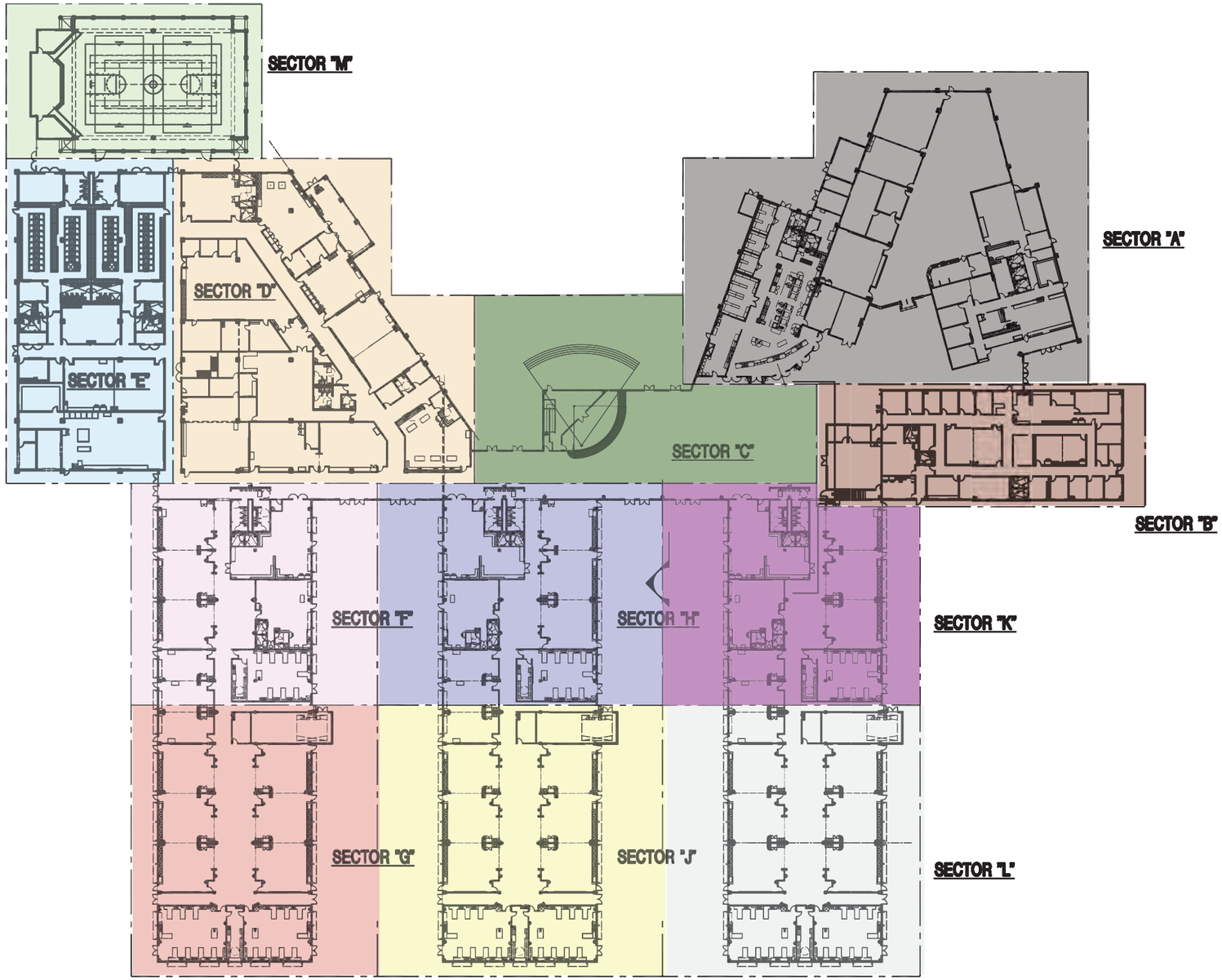


LEGEND

Sector	Description
A	Admin/Library/Dining/Kitchen
B	Student Services (Counseling)
C	Dining/Commons
D	Electives
E	Electives
F	Neighborhood 1
G	Neighborhood 1
H	Neighborhood 2
J	Neighborhood 2
K	Neighborhood 3
L	Neighborhood 3
M	Multi-Purpose Play Courts

N

GRAPHIC SCALE

40' 20' 0 40' 80'

OVERALL FLOOR PLAN

Figure 2.3

Source:
Mitsunaga and Associates, November 2007

'Ewa Makai Middle School
State of Hawai'i, Department of Education

2.4 MAIN SCHOOL BUILDING AND FACILITIES

The school will utilize a one-story, one-building structure to house various facilities being planned. The school building would encompass the following main school facilities including the administrative offices, kitchen and dining areas, library, student services center, and classroom learning environments. This section will discuss each of these main school facilities by "sector" and associated groupings. Floor plans drawings of each sector described in this section is provided in Appendix D of this document. A summary table of the interior floor area (net) for the school is provided below in Table 2.2 below.

Table 2.2 Interior Floor Area Summary

Main School Building Facility	Actual Provided (Net SF)
Administration Center (Sector "A")	3,167
Library (Sector "A")	11,898
Food and Dining Areas (Sectors "A" and "C"	17,355
Student Services Center (Sector "B")	8,316
Elective Classrooms (Sectors "D" and "E")	34,012
Classroom Neighborhood 1 (Sectors "F" and "G")	19,136
Classroom Neighborhood 2 (Sectors "H" and "J")*	19,136
*Classroom Neighborhood 3 (Sectors "K" and "L", Add. Alt)**	*19,136*
Covered Play Court (Add Alt.)	*8,352*
SUBTOTAL INTERIOR AREA*	140,508
Exterior, Interior Walls and Misc Circulation	6,572
TOTAL BUILDINGS AREA	196,274

*Net calculated floor areas exclude non-programmed areas such as corridors, interior commons, and non-educational facilities (mechanical and electrical rooms, etc.).

*Classroom Neighborhood 3 and Covered Play Court are additive alternatives. Construction of these facilities may require a possible Phase 2 of construction dependent upon available funding.

Administration/Library/Dining/Kitchen

The "A" sector of the school building includes the administration offices, library, kitchen and a portion of the common dining facilities. The remainder of the dining facilities is shown in sector "C". These facilities are located near the schools main entrance in the northeast corner of the campus.

Administrative Center

The school's administrative offices will accommodate the offices of the Principal, Vice-Principals, and administrative staff. It is important for the administration to monitor and maintain control of activities occurring on the campus. This center will also have a lobby, duplication room, staff conference room, staff lounge, restrooms, and a receiving/storage room.

Library

The design and setting of the library is aimed to reflect the high values placed on literacy by the school and community. This location takes into account the importance of learning resources, whether through books or utilization of new technology for learning. The library will include a computer lab, student conference room, circulation desk, librarian's office, teacher workroom, and virtual reality room. The virtual reality room was envisioned during the design as a classroom space with the capabilities for 21st century learning, be it web conferencing, projecting holographic images, or the creation of a true virtual reality environment.

Kitchen and Common Dining Facilities

The common dining facility will be designed to allow for flexibility in accommodating the dining needs of the students and faculty while allowing for school assembles and similar events. Thus, the indoor dining facility will serve as a multi-functional performance area that can be opened up to an outside performance amphitheater which will share a common "backstage" room.. A permanent "stage" will be included along with secured storage spaces that could be used by the school outside user groups.

Student Services Center

The "B" sector of the campus includes the student services center and counseling offices. This facility is located near the schools administrative center due to the strong connections between administration and counselors that need to be maintained. This center purposefully groups together the counselors, student activities center, support services for special education, the Parent Community Networking Center (PCNC), health center, and safety officer.

Classroom Learning Environment

The project utilizes a one-building concept which houses various learning environments and is consistent with the project's design concept to provide opportunities for grouping of students into different teams or "learning clusters." The main school building will include 60 total classrooms and up to five (5) portable classrooms could also be provided in the future, as necessary.

Classroom Neighborhoods

The main classroom building is centrally located within the campus and features three (3) classroom neighborhoods which are intended to foster flexible and interdisciplinary teaching. The classroom neighborhoods have been designed with movable walls to allow classes to easily utilize common interior spaces. This further allows classrooms to be flexible while maintaining a safe and secure environment for students, teachers, and the community.

Each classroom neighborhood features nine (9) general classrooms, three (3) resources classrooms, three (3) science classrooms, interior commons areas, a special education needs classroom, and a teacher/faculty center along with accessory facilities such as adequate restrooms, a mechanical room and electrical room. The floor plans of the three classroom neighborhoods are identical. The preliminary floor plan for a single classroom neighborhood is provided in Appendix D and consists of sectors "F" and "G," collectively. The second and third classroom neighborhoods are made up of sectors "H" with "J" and "K" with "L," preliminary plans for these classroom facilities are also included in the appendices.

Elective Classrooms

Elective classes are academic courses that can be chosen by the student from a set of options. A specialty classroom wing will be included in the schools design to house the various elective classrooms such as music, art, technology, family and consumer science, dance and performance arts, and health and fitness. A floor plan showing the elective classrooms layout is provided in Appendix D and consists of sectors "D" and "E," collectively.

2.5 OTHER FACILITIES AND INFRASTRUCTURE

Covered Multi-Purpose Play Court

The school's design provides a covered multi-purpose play court located along the north side of the project site. This will be an open-air structure separate from the main school structure. A floor plan of the play court is included in Appendix D and identified as sector "M." This indoor play court will be able to accommodate basketball and volleyball sport activities and will include a stage with secured storage areas.

Outdoor Areas and Amphitheater

Outdoor play fields and multi-purpose play courts are included in the project design located at the western portion of the project site. A designated area and backstop fence will be provided to accommodate baseball and softball sport activities. There will be a large open grassed field that can be used as a football or soccer field, the areas surrounding the field would also be grassed. Two (2) un-covered multi-purpose courts will also be provided that can be used for basketball or volleyball sport activities. An amphitheater area will be provided in the north side of the main building in the area sheltered by the kitchen and elective wing. This secured area will include a hardscaped plaza and a grassy hill area for informal seating.

Vehicle, Parking and Pedestrian Access

There will be two vehicular access points into the school, one at the intersection of Keaunui Drive and Kapolei Parkway, and one located about 450 feet south of this intersection which functions as a right-in-right-out only driveway. There are two parking areas as shown on the site plan (Figure 2.2) and collectively the school will have a total of 205 standard parking stalls which includes 8 handicap accessible stalls. A connecting driveway will be located between the two parking areas; vehicular access thru this driveway will be restricted by a gate for controlled access.

The Keaunui Drive intersection access point will lead vehicles into a parking lot which also serves as a student drop-off/ pick-up area. The roadway leading into this parking lot will be 2-lanes where the outside lane acts as the student drop-off/ pick-up lane and the inside lane acts as the through lane. This parking lot will have 59 standard parking stalls and 3 handicap accessible stalls.

The second access of Kapolei Parkway is limited to right-in-right-out movements. Similar to the other parking area, a 2-lane roadway would be provided where the outside lane would act as the bus drop-off/ pick-up lane and the inside as a through lane. This parking area would have 138 standard stalls and 5 handicap accessible stalls.

Design of this project includes the planning for walkways to access the school. These walkways will be located along Kapolei Parkway to the east, and from the future ‘Ewa Gentry residential subdivision to the north, and from the existing residential subdivision to the south. Public walkways and accessible routes planned in this project will comply with Americans with Disabilities (ADA) Guidelines and design plans will be submitted to the Disability and Communications Access Board (DCAB) for ADA review.

2.6 DEVELOPMENT SCHEDULE AND ESTIMATED COSTS

A conceptual phase cost estimate has been prepared for Ewa Makai Middle School. This estimate is for on-site civil, landscape, architectural, mechanical, electrical and structural costs. The total estimated cost of the proposed school construction, in terms of 2005 dollars is approximately $64.3 Million Dollars. Construction of the school is expected to be completed in 2010.

This estimate does not include the cost of the portable classrooms shown on the site plan. It does not include design fees, permit fees, utility connection services fees, furniture that is provided by the State, or any other costs not directly related to the construction of the school.

2.7 LISTING OF REQUIRED PERMITS

A listing of required discretionary land use approvals and ministerial permits for this project is provided. No Federal permitting requirements are triggered by this project.

State of Hawai‘i Permits

- National Pollutant Discharge Elimination System (NPDES) Permit (for construction)

City and County of Honolulu Permits

- Planning Department Plan Approval
- Grubbing, Grading, and Stockpiling Permit
- Building Permit
- Height Variance

2.8 ALTERNATIVES CONSIDERED

Alternatives considered to the proposed construction of the new middle school facility consisted of: 1) not implementing the project (No Action Alternative), 2) alternative site configurations and building design. In summary the no action alternative was dropped from further consideration, because they would not adequately address the project need and objectives compared to promptly proceeding with the proposed project.

No Action Alternative

The No Action Alternative would proceed by not implementing the proposed development of the new middle school. This alternative would result in the continued shortage of educational facilities to meet the needs of the rapidly growing ‘Ewa community. Consequently, this alternative was eliminated because it would not properly address the need for a new middle school in ‘‘Ewa. Furthermore, funds for this project are being appropriated, and taking no action to construct the new middle school would result in those appropriations lapsing.

Alternative Site Configurations and Building Designs

The school building configuration was selected after considering alternative site layouts for the new middle school facilities. The final site layout chosen would be one that best serves the project needs and objectives. Carefully consideration was made of alternative site layouts and building designs during the design charette. As discussed earlier, copy of the charette summary report is provided in Appendix C.

During the 2nd session of the design charette, community task group along with consulted architects were able to produce ten (10) conceptual varying building and site schemes. The following schemes were:

- Scheme A – Consolidated Buildings in a Campus Plan.
- Scheme B – Three Neighborhood Cluster in a Campus Plan.
- Scheme C – One Building Three Neighborhoods.
- Scheme D – Three Neighborhoods, Open Campus Plan.
- Scheme E – One Building, Two Neighborhoods.
- Scheme F – One Building, Three Neighborhoods.
- Scheme G – One Building, Three Neighborhoods Variation.
- Scheme H – One Building, Two Neighborhood Variation.
- Scheme I – Three Neighborhood, Partial Campus Plan with Village Green.

- Scheme J – Neighborhood, Partial Campus Plan with Village Green.

During the 3rd session, the task group and architects consolidated all ideas and discussion from the previous day and developed three (3) conceptual building/site schemes. Three schemes would then be the project site alternatives. The schemes were again presented to the consulted parties. The final schemes were:

- Scheme A – One Building with Media Center as the Hub with Three Neighborhoods.
- Scheme B – Three Neighborhoods, Partial Open Campus Plan with Village Green.
- Scheme C – One Building, Three Neighborhoods.

In summary, Scheme C had the most comments in its favor and the group also favored the one-building concept. Scheme C was then further refined up to the specific elements of the plan and re-visited the educational goals as it relates to the building plan. It was then determined that Scheme C would set the conceptual design of the future ‘Ewa Makai Middle School because it best represented the goals and objectives of the community task force and ‘Ewa residents.

CHAPTER 3
PHYSICAL AND BIOLOGICAL ENVIRONMENT

This chapter describes the existing surrounding environment in the vicinity of the project site. The probable environmental impacts associated with the construction impacts and operation of the new school. Mitigative measures are recommended, if necessary.

3.1 CLIMATE, TOPOGRAPHY, AND SOILS

Climate

O'ahu's temperatures have small seasonal variation such that the temperature range averages about 7 degrees between the warmest months (August and September) and the coolest months (January and Febuary) and about 12 degrees between day and night. Average monthly temperatures range from 73 to 81 degrees Fahrenheit throughout the year. Average daily maximum temperatures usually run from the low 80's in winter to the high 80's in summer, while daily minimum temperatures run from the mid-60's to the low 70's, respectively.

Temperatures in the 'Ewa area is expected to be similar to island-wide averages. Monthly temperatures recorded in 2003 at 'Ewa Plantation (Station No. 741) averaged about 77 degrees and varied between 86 and 69 degrees (NOAA 2003). The low-variability temperatures are associated with the mid-ocean location of the islands and to the small seasonal variation in the amount of energy received from the sun.

While most precipitation in Hawai'i occurs during the winter months, the 'Ewa area has a semi-arid climate. Annual rainfall in the 'Ewa area is typically non-substantial with an average of 21 inches per year (WRCC 2007). Similarly, monthly average rainfall is low with generally less than 1 inch of rainfall during the summer (June to August) and less than 4 inches during the winter months (November to January).

Winds are predominantly "trade winds" from the east-northeast, except for occasional periods when "Kona" storms generate strong winds from the south, or when the trade winds are weak and land breeze to sea breeze circulations develop. Trade wind speeds average between 5 and 15 miles per hour providing relatively good ventilation throughout the island. Lower velocities (less than 10 mph) occur frequently, giving way to light, variable wind conditions through the winter and on into early spring.

Topography

The topography of the project site is generally flat due to its former use for sugarcane cultivation. Currently, the site is sparsely covered with various weeds and small bushes. Elevations associated with this project site average around 20 feet above mean sea level (msl) with minimal variation throughout the entire site. The ground slopes slightly downward in a north to south

direction and is approximately 1 percent. There are no other significant topographic features present on the property, such as steep slopes (ex. Greater than 20%).

Soils

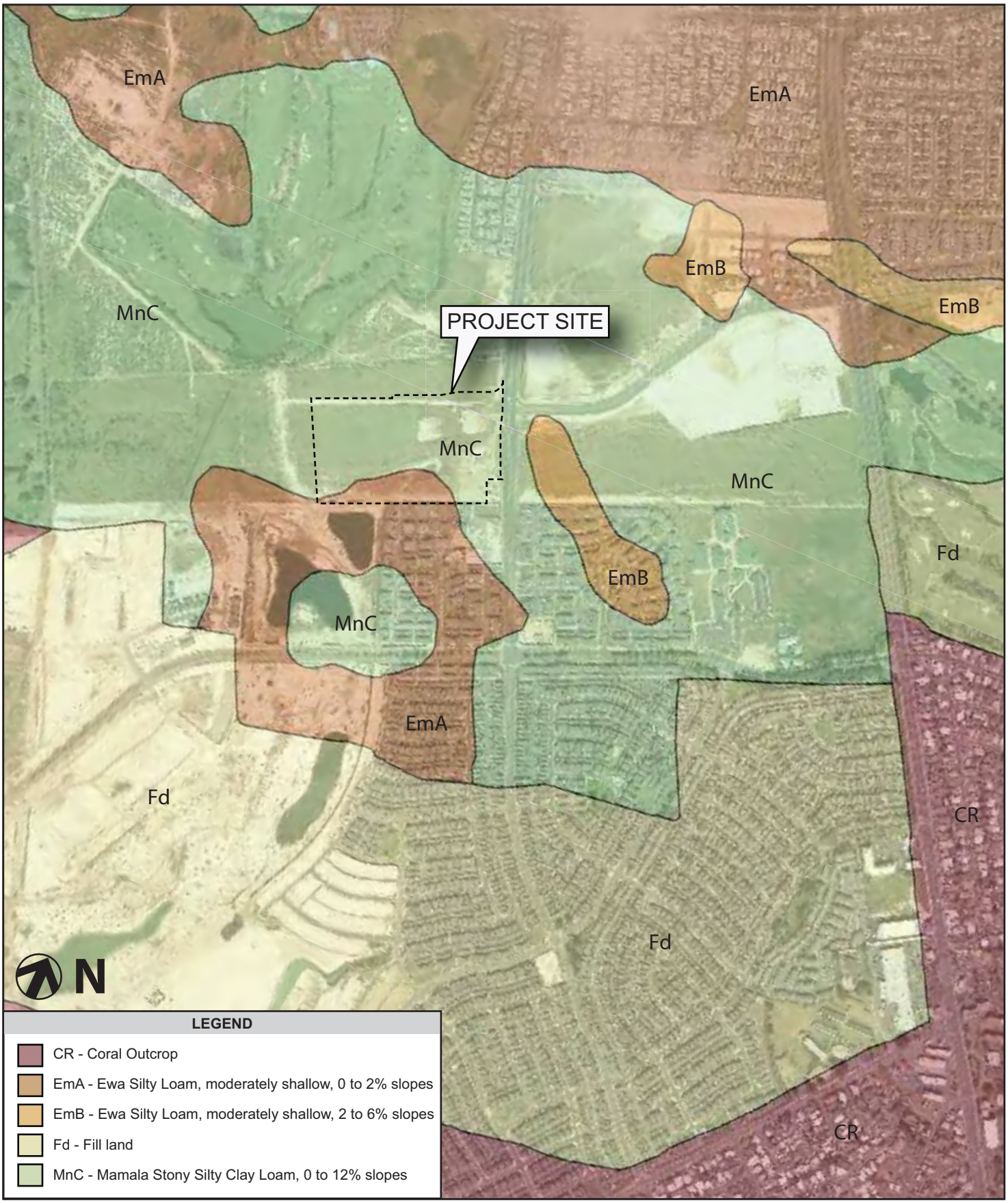
The U.S. Department of Agriculture, Soil Conservation Service's *Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i* includes general soil maps developed for these islands based upon soil surveys. As indicated by the soil maps, the project site is situated on lands within the *Lualualei-Fill land-'Ewa* general soil association. This soil association is characterized by deep, nearly level to moderately sloping, well-drained soils that have a fine-textured or moderately fine textured subsoil or underlying material and areas of fill land; on coastal plains (SCS 1973).

There are two specific soil types of this Lualualei-Fill land-'Ewa soil association present within the project site. Soils in the northern portion of the project site are within the Mamala Series while a smaller southern portion is within the 'Ewa Series. A brief description of the specific soil types are included below. Figure 3.1 graphically shows these soil types found (SCS 1973).

1. Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes (EmA). Surface layer composed of a dark reddish-brown silty clay loam about 18 inches thick with very slow runoff. The erosion hazard no more than slight. This soil is used for sugarcane cultivation, truck crops, and pastures.
2. Mamala stony silty clay loam, 0 to 12 percent slopes (MnC). Surface layer composed of dark reddish-brown stony silty clay loam about 8 inches thick with moderate permeability. The subsoil is dark reddish-brown silty clay loam about 11 inches thick. Typically used for sugarcane, truck crops, and pasture.

Impacts on Climate, Topography, and Soils

The project is not anticipated to have significant impacts to the climate or topography of the project site. Localized impacts to the site's microclimate can be expected to affect wind patterns and temperatures, however these will have a small affect on surrounding urban areas. With respect to the soil type and quality, the grading will follow Best Management Practices (BMP) as provided for in the Nationwide Pollution Discharge Elimination System (NPDES) construction permits. Furthermore, a site specific construction BMP Plan will be submitted to the State Department of Health prior to the start of grading activities.



SOIL SURVEY MAP

Figure 3.1

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source:
- Hawai'i Aviation, 2008 (Aerial)
- Soil Survey Geographic (SSURGO) database, 2006

SSFM INTERNATIONAL

3.2 NATURAL HAZARDS

This section addresses only those natural and urban-related hazards applicable to the project site. Of the potential natural hazards, only earthquakes, hurricane, and flooding hazards are applicable. These natural hazards are addressed below.

Flooding and Tsunami Inundation

The project site is located within Zone D as designated on the Flood Insurance Rate Map (FIRM), Community-Panel Number 150001 0310 F (2004), prepared for the Federal Emergency Management Agency (FEMA). Zone D are areas with possible but undetermined flood hazards (FEMA, 2004). No flood hazard analysis has been conducted.

The project site is not identified as a vulnerable inundation area as depicted on State Civil Defense Tsunami Evacuation Zone Maps (PDC 1998). According to these maps, the project site is situated well inland of critical evacuation zones near the shoreline.

Earthquake Hazards

Although difficult to predict, an earthquake of sufficient magnitude causing structural or other property damage may occur in the future. However, except for the island of Hawai‘i, the Hawaiian Islands are not situated in a high seismic area subject to numerous earthquakes (Macdonald et al., 1983).

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions from the inflation or shrinkage of magma reservoirs beneath, which are segments of the volcano shift (Macdonald et al., 1983). However, earthquakes cannot be avoided or predicted with any degree of certainty, and an earthquake of sufficient magnitude (greater than 5 on the Richter Scale) may cause damage to the tunnel and supporting structures.

Hurricane Hazards

The three major elements that make a hurricane hazardous are: 1) strong winds and gusts, 2) large waves and storm surges, and 3) heavy rainfall (FEMA, 1993). A hazard mitigation report prepared by the Federal Emergency Management Agency after Hurricane Iniki in 1992 determined that nine hurricanes approached within 300 nautical miles (about one day’s travel time) of the Hawaiian Islands’ coastlines between 1970 and 1992 (FEMA, 1993).

Impacts and Mitigation Measures

Appropriate drainage improvements would be provided to serve the proposed school and its supporting structures and address surface runoff in compliance with the City’s rules relating to drainage standards. Such plans will be submitted for City review and approval during the project’s design phase.

Although the possibility of earthquakes on O‘ahu is moderately low, potential damage to the school may occur from an earthquake of sufficient magnitude. However, damages to

the proposed school would be minimal because appropriate City building code standards will be followed. Thus, the risk of potential damage to this project will be no greater than that of similar homes, businesses, and other State facilities on the island of O'ahu.

A hurricane of significant strength and high winds passing close to the island could cause damages to the project area. However, the proposed school would be constructed of suitable materials and designed to comply with City building code requirements thereby minimizing its susceptibility to structural damage from a Hurricane of significant strength.

3.3 AIR QUALITY

Air quality in Hawai'i is generally characterized as clean and low in pollution. Northeast tradewinds that are predominant throughout the year typically carry emissions and other air pollutants from inland areas out toward the ocean.

National ambient air quality standards (NAAQS) have been established by the U.S. Environmental Protection Agency (EPA) that set standards for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and concentrations of particulate matter less than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$). In addition, the State of Hawai'i has also established standards for hydrogen sulfide. State ambient air quality standards are more stringent than the comparable national limits (NAAQS) except for the standards for sulfur dioxide, particulate matter and lead, which are set at the same levels.

The State Department of Health (DOH) has nine monitoring stations on the island of O'ahu, which samples for particulate matter less than 10 microns (PM_{10}). The nearest monitoring station is a State and Local Air Monitoring Station (SLAMS) located approximately 4 miles away from the site in Kapolei Business Park. This station monitors the amount of "coarse" particles found in the air; generally from sources such as road and windblown dust, and crushing and grinding operations. Based upon the State DOH's 2006 air quality data for the island of O'ahu, there were no occurrences of PM 2.5 nor PM10 greater than the National or State standards.

Impacts and Mitigation Measures

Short-term minor impacts on air quality from construction activities would predominantly be associated with fugitive dust emissions and exhaust emissions from on-site construction equipment. Disruption of traffic and workers' vehicles may also affect air quality during construction. Fugitive dust emissions would generally arise from clearing, grading, and other dirt moving activities associated with site clearing and ground preparation for the new school facility. However, such impacts are not expected to be significant because they would only be temporary and BMP measures are available to minimize emissions.

State air pollution controls prescribed under the Department of Health's (DOH) rules (Chapter 11-59, HAR "Ambient Air Quality Standards" and Chapter 11-60.1, HAR "Air Pollution Control") prohibit visible emission of fugitive dust from construction activities at the property line. Therefore, a dust control plan would be prepared and implemented to have the

contractor comply with these regulations. Adequate fugitive dust control can usually be accomplished by establishing a frequent watering program or implementing other measures to address grubbing and grading activities. Thus, impacts from fugitive dust emissions can be mitigated by implementing appropriate measures which would be further determined as part of the project's design.

Air pollutant emissions from school operations would be generated by the cafeteria kitchen and from the air-conditioning system. The school facility will be air conditioned by a central chilled water plant located in a separate Central Plant Building. A distributed system separating the classroom facility into several air conditioning zones would allow for continued operation in the event of an equipment failure. The air conditioning system will be impacted by LEED requirements to include the Energy and Atmosphere Credit and the Optimize Energy Credit.

A relatively significant source of air pollution associated with the school's operation is from vehicles that carry students, faculty and staff, and visitors to and from the school. The places most affected by this would be the parking lots and onsite-driveways. These areas are situated away from classrooms and away from surrounding residences. Furthermore, the school is not anticipated to generate an excessive amount of additional traffic and vehicle emissions therefore should not violate State or Federal ambient air quality standards.

After construction, motor vehicles coming to and from the proposed development will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without the proposed project. During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are within both the state and the national ambient air quality standards. In the year 2010 without the project, carbon monoxide concentrations were predicted to increase at some locations and decrease at others, but concentrations would likely remain unchanged or increase slightly at some locations compared to the without-project case: worse-case concentrations should remain within both national and state standards. Implementing mitigation measures for traffic-related air quality impacts is unnecessary and unwarranted due to the small impact the project.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

After the proposed project is completed, any long-term impacts on air quality in the project area due to emissions from project-related motor vehicle traffic should be small. Worse-case concentrations of carbon monoxide should remain within both the state and the national ambient air quality standards. Implementing any air quality mitigation measures for long-term traffic-related impacts is probably unnecessary and unwarranted.

Any long-term impacts on air quality due to indirect emissions from supplying the project with electricity and from the disposal of waste materials generated by the project will likely be insignificant based on the relatively small magnitudes of these emissions. Nevertheless, indirect emissions from project electrical demand could likely be reduced somewhat by incorporating energy-saving features into project design requirements.

Due to the relatively close proximity of industries located at Campbell Industrial Park, occasional impacts on the project from emissions emanating from these facilities will probably be unavoidable. Such impacts may occur in conjunction with the coincidental occurrences of industry malfunctions and westerly winds, both of which are relatively infrequent events.

3.4 NOISE

Existing Noise Environment

This section focuses on addressing the proposed project related noise and probable impacts. Noise generated by this project would generally involve short-term construction related noise generated by equipment, ambient noises from the surrounding environment. Consequently, the existing noise in the area should be compatible with the proposed project and improvements and activities should not generate noise levels exceeding State and Federal guidelines and standards.

A significant source of ambient noise is generated from landings and take-offs at the Honolulu International Airport, located 6.4 miles to the east of the site and Kalaeloa Airport, located 3.0 miles west of the site which is less apparent as few fly over the site. Based from the Honolulu International Airport Master Plan Update and Noise Compatibility Program, they have projected the noise exposure of the airport to the surrounding environment and it shows the school site as falling between 55dB and 60 dB daytime noise contours for Honolulu International Airport, both at the time of the report and as projected for the year 2020. According to the 1998 Kalaeloa Airport Master Plan, the school site is well outside the 55 dB noise contour projected for the year 2020. Furthermore, aircraft noise at the school site (Day-Night Average Sound Level of 55 to 60 dB), will be at a level which the Airports Division of the State Department of Transportation noise compatibility guidelines indicate is compatible with the proposed school use.

The second source of ambient noise is from ongoing construction in developing residential areas. The construction noise from adjacent areas is expected to be unavoidable but temporary. The third source of ambient noise within the project site is from vehicles on Keone‘ula Boulevard, East Hanson Road and Fort Weaver Road and Kapolei Parkway. Consequently, ambient noise levels expected on the school site once it is in operation are not expected to affect school operations. One

way to mitigate and reduce the ambient noise is to make sure that all noise-sensitive areas (i.e., the classrooms, library, and administrative spaces) will be air-conditioned. The closed windows will greatly reduce, minimize or remove ambient noise from the surroundings. The design and site planning of the noise-sensitive buildings are positioned and placed away from roadways so that vehicular traffic noise will be buffered or reduced.

Noise Generated by the School

The proposed project will generate noise issues in the site and for the adjacent surroundings but it is expected that the generated noise levels would not exceed State and Federal guidelines and standards.

Under Title 11, Chapter 46 (Community Noise Control), Hawai'i Administrative Rules (HAR), the State Department of Health (DOH) has established guidelines and standards for assessing environmental noise impacts and has set noise limits as a function of land use. Three classes of zoning districts are defined which specify maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. According to DOH regulations, the project site is situated within the Class B Zoning District.

Potential noise impacts associated with this project would mainly be associated with short-term construction activities, air-conditioning and other mechanical equipment, vehicular traffic and outdoor student activities and play at this site.

Another noise source associated with the proposed project comes from vehicular traffic. The vehicular noise is normally limited to school hours and concentrated principally in the morning and afternoon peak pick-up and drop-off hours. The main access road to the site is well away from noise sensitive uses.

Noise from outdoor student activities and play may occasionally carry over into the nearby residential area of 'Ewa Gentry. The school play grounds/fields may become regular noise from children playing during recess hours. Periodic activities on the outdoor assembly lawn are also likely to be heard within neighboring residential areas. Noise levels associated with these activities are typically modest, and they are limited to mid-day time periods when playground noise is least disruptive and other noise is also present.

Noise Associated with Construction Activities

Construction of the new school would involve grading and ground disturbance construction activities which will generate some audible noise. Actual noise levels produced would depend on the methods employed throughout construction. Earthmoving equipment such as bulldozers and diesel-powered trucks would probably be the loudest equipment used during construction. Typical ranges of construction equipment noise vary between 70 and 95 dBA. Construction activities are not planned to be conducted at night, so the nighttime noise level requirements are not be applicable. It is expected that construction activities are limited to regular working hours (7:00 a.m. to 3:00 p.m., Monday to Friday). Actual length of exposure to construction noise at any receptor location will

probably be less than the total construction period for the entire project.

Impacts and Mitigative Measures

The noise sensitive properties which are predicted to experience the highest noise levels during construction activities are the existing residences nearby. As a mitigative measure, adjacent residential owners who may potentially be affected by the construction noise can be notified by the contractor of planned dates and time prior to the start of impending construction activities. Another measure to control construction noise includes the use of mufflers on power equipment and vehicles. All construction-related vehicles traveling on the roadway must also meet the vehicle noise level requirements set by the DOH. Additional measures to mitigate noise barriers will be placed to fence in the noise within the project site. The said noise barriers will be constructed in accordance with State DAGS and DOE specification.

Adverse impacts from construction noise are not expected significant due to the temporary nature of the work and due to the administrative controls available for its regulation.

The school air-conditioning and other mechanical equipment will generate noise. But the air-conditioning equipment that will be used is to be properly selected that the equipment will efficiently provide the power needed and at the most moderate noise that will be produced. Also, the enclosures will be properly located and designed to moderate noise emissions from these sources. Moreover, operating time of the equipment would be only during daytime hours and DOH regulations will ensure that noise from stationary mechanical equipment will be muffled as necessary if it exceeds allowable limits along the school boundary.

A traffic management plan has been prepared for this project and will be coordinated with the appropriate State and City agencies. Noise from vehicles entering and leaving the school will be modest compared to the noise generated by through-traffic on major roads.

3.5 SCENIC AND AESTHETIC RESOURCES

Existing important visual resources in the ‘Ewa areas were identified to determine the possible impacts resulting from the proposed school. Resources used in identifying existing visual resources included the *O‘ahu General Plan* (City 2002) and *‘Ewa Development Plan* (PD 2000). Visual resources consists of scenic resources such as major land forms, open spaces, viewing points, scenic drives, and other physical features that create the visual quality of the island.

Existing Visual Resources

The *Oahu General Plan* (City, 2002) aims to protect O‘ahu’s important scenic views, especially recognizing those views seen from highly developed and heavily traveled areas. According to the General Plan, public facilities and utilities should be located in areas least likely to obstruct important views of the mountains and the ocean.

The *'Ewa Development Plan* (PD, 2000) identified important scenic resources such as existing visual landmarks and significant vistas. The Development Plan's Map of Natural, Historic and Scenic Resources depict the vantage points and orientation of major panoramic views of landmarks within the 'Ewa plain. The significant views identified consist of the mauka and makai views from the H-1 Freeway including distant views of the shoreline, views of na pu'u at Kapolei, Pālailai, and Makakilo, and views of central Honolulu and Diamond Head Crater.

Some portions of Coral Creek Golf Course and Barber's Pointe Military Golf Course are visible from the project site. Based upon a field inspection of the project site for the new school and immediate surrounding area, there were no unique natural or topographical features, landmarks, or other land forms of significant or important visual character identified. Photos of the project site are included in Appendix A.

Impacts to Scenic and Aesthetic Resources

To assess visual impacts, the policies and objectives from the *Oahu General Plan's* section addressing scenic views and resources were considered in evaluating the project's effects. With respect to the General Plan, this project is not expected to have a significant impact on views of the Wai'anae Mountain Range or the ocean. The project site and surrounding area does not have any significant land forms nor would it be considered a scenic roadway corridor. The school is proposed to be situated adjacent to existing residential buildings and other structures. Furthermore, the classroom and school facility structures will be one-story structures.

The surrounding community will generally consist of residential homes characterized by two-story apartments or townhomes, medium density residential housing and open spaces. Consequently, this project is not expected to significantly interfere with existing mauka and makai views by current surrounding residents. These diminishing views are already expected as buildings are erected on previously undeveloped parcels because of the areas relatively flat topography.

The proposed school involves a design concept intended to honor the history of the region by incorporating a historic 'Ewa plantation style into the architecture. The school building will have a simple roof form, deep overhangs and articulated windows similar to the 'Ewa Plantation residential style. Hip/gable roofs and generous eaves will provide protection from the sun.

3.6 BIOLOGICAL ENVIRONMENT

3.6.1 Botanical Resources

A field survey of botanical resources associated with the project area was performed by Char & Associates in June 2001 for the ‘‘Gentry ‘Ewa Makai Development”.

The purpose of this survey was to assess the botanical resources over the entire ‘Ewa Makai Development site consisting of approximately 283 acres. The proposed middle school site was included in the areas assessed by the survey. Primary objectives of the survey were to provide a general description of the vegetation on the site; inventory the flora; search for threatened and endangered species as well as species of concern; and identify areas of potential concern and propose appropriate mitigation measure.

Existing Botanical Resources

The landscape of the project site has been heavily modified by extensive sugarcane cultivation occurring in the location of the proposed middle school site. The size has recently been mass graded as part of the ‘‘Ewa Gentry Makai master plan development. Prior to 1995, the site was under active sugarcane cultivation. After 1995, portions of the site have been used for grazing horses resulting in sparse vegetation coverage (see photo►).

View of project site facing south.

A botanical survey of the site conducted by Char in 1991 described dense fields of sugar cane on the cultivated portions of the site, and weedy vegetation on the cultivated areas such as along cane haul roads, irrigation ditches, and the Kalo‘i drainage channel.

The 2001 study found there were no plants that are listed as threatened endangered species or species of concern in the project site. The vegetation found on the project site consists of live and dried up patches of weedy plants with young kiawe trees. A listing of other plant species observed during this survey is included in Table 3.1.

The State Department of Land and Natural resources (DLNR), Division of Forestry and Wildlife created maps showing the concentrations of threatened and endangered plant species throughout the major island of the State. These maps were digitized into ArcGIS format by the State Office of Planning in 1992. On these maps, each island is divided into distinct zones of threatened and endangered species concentrations, ranging from low to very high concentrations, and identifies areas of little to no concentration. Based upon review of these maps, the project site is located in an area considered to have “little to no threatened or endangered species”.

Table 3.1
Listing of Plant Species in the Project Area

FLOWERING PLANTS - DICOTYLEDONES			
Family	***Scientific Name***	***Common Name***	***Status***
ASTERACEAE (Daisy family)	Calyptocarpus Vialis Less.	Straggler Daisy	x
EUPHORBIACEAE (Spurge family)	Chamaesyce hirta (L.) Millsp.	Hairy Spurge, Garden Spurge	x
	Ricinus communis (L.)	Castor Bean, Koli	x
FABACEAE (Pea family)	Leucaena leucocephala (Lam.) de Wit	Koa Haole	x
MALVACEAE (Mallow family)	Malvastrum coromandelianum (L.) Garcke	False Mallow, Hauuoi	x
NYCTAGINACEAE	Boerhavia Coccinea	Hogweed, Red Spiderling	x
FLOWERING PLANTS - MONOCOTYLEDONES			
POACEAE (Grass family)	Cenchrus ciliaris L.	Buffelgrass	x
	Panicum maximum Jacq.	Guinea Grass	x

Status = distributional status

x = introduced or alien = all those plants brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's arrival in the islands in 1778

Source: Char and Associates (2001)

Probable impacts on Botanical Resources

The project would not have any significant impacts on the botanical resources present on the site. None of the vegetation identified within this project site or immediate vicinity is know to be Federal- or State-listed threatened or endangered, or candidate threatened or endangered species. All of the plants can be found in similar vegetation types throughout the ‘Ewa plain. Also, there are no known natural or historic wetlands within the project site or immediate area. Therefore, the project is not expected to have a significant impact on existing botanical resources.

3.6.2 Avifaunal and Faunal

An avifaunal and feral mammal survey was conducted for the ‘Ewa Gentry Makai Development Project by Faunal Surveys in May 2001. This survey documented the species of birds and mammals on or near the project site, investigated all habitats on the property, and recorded any natural resources important to native and migratory birds.

Avian Resources

No native birds were recorded or observed during the two-day field survey. Two species of migratory birds were observed during the survey. Averages of eighteen Pacific Golden-Plover were tallied during the two days. Five Ruddy Turnstone were seen on the 2nd survey day. Neither of these species are endangered or threatened and are the two most common migrants to Hawai‘i (Hawai‘i Audubon Society 1993, Pratt et al. 1987). Sixteen species of introduced birds were recorded, none of which are endangered or threatened. Table 3.2 lists these species and gives their relative abundance.

Although the endangered Short-eared Owl, also known as the Hawaiian Owl or *Pueo*, was not observed during the survey, there is a possibility for their occurrence. Pueo nest on the ground and forage over open fields and forests. They are known to occur in ‘Ewa and have been observed on nearby properties. The available habitats and location of the proposed middle school site is likely not appropriate for other native birds. The absence of wetlands also makes this property unattractive to native waterbirds.

Table 3.2 Avifaunal and Feral Mammal Survey

Name	*Scientific Name*	*Relative Abundunce*
Cattle egret	Bubulcus ibis	R
Common Myna	Acridotheres tristis	A
Common Waxbill	Estrilda astrild	A
House Finch	Carpodacus mexicanus	A
House Sparrow	Passer domesticus	R
Japanese White-eye	Zosterops japonicus	U
Java Sparrow	Padda oryzivora	C
Northern Cardinal	Cardinalis cardinalis	C
Northern Mockingbird	Mimus polyglottos	U
Nutmeg Mannikin	Lonchura punctulata	A
Red-crested Cardinal	Paroaria coronata	U
Red-vented Bulbul	Pycnonotus cafer	C
Ring-necked Pheasant	Phasianus colchicus	R
Sky Lark	Alauda arvensis	A
Spotted Dove	Streptopelia chinensis	C
Zebra Dove	Geopelia striata	A

Relative Abundunce estimates are based on the following scale: Abundant (A) = 25 +; Common (C) = 15-24; Uncommon (U) = 5-14; Rare (R) = less than 5 tallied for the entire time of the survey
Source: Bruner (2001)

Faunal Resources

There was one mammal species observed within the project site which is the Small Indian Mongoose. A total of three mongoose were tallied during they survey period. Feral cats and rats were not observed but likely occur on and near the project site. The endangered Hawaiian Hoary Bat was not observed.

Probable Impacts on Avifaunal and Faunal Resources

The array of avian species observed during the survey consist of typical introduced birds that normally occur in the lowlands in this region of O‘ahu. No unique resources important to native birds were discovered on the project site. Vegetation on the project site consists primarily of introduced species and weeds, and there are no wetlands present on the project site or in the immediate vicinity which may serve as important nesting or foraging habitat for endangered or threatened species. Therefore, this project should not have a significant impact on important avian or mammalian species that may be present in the area.

With the project, existing feral mammals utilizing the property would be displaced due to development of the ‘Ewa Makai Middle School. However, this change would not result in a significant negative impact on potential mammalian species present on the property or in the surround area because they consist predominantly of alien species such as rodents or feral animals which are harmful to native avian and plant communities.

3.6.3 Hydrological Resources and Streams

Under the State’s Water Resource Protection Plan, aquifers in the Island of O‘ahu have been classified under an aquifer coding system. Under this system, the island is divided into Aquifer Sectors which then have Aquifer Systems located within each sector. An Aquifer Sector reflects an

area with broad hydrogeological (subsurface) similarities while maintaining traditional hydrographic (surface), topographic and historical boundaries. The Aquifer System is an area within a sector that is more specifically defined by hydrogeologic continuity (CWRM 1990).

The ‘Ewa Makai Middle School site is situated within the Pearl Harbor Aquifer Sector (302). This sector includes the hydrologic units of Waimalu, Waiawa, Waipahu, Kunia and ‘Ewa. The proposed school site is situated within the Waipahu hydrologic unit (30203). The Waipahu, Waimalu, and Waiawa Systems contain a basal lens in the Koolau volcanic series and a deep, effective capprock of sediments causes high groundwater heads in all Systems (CWRM 1990).

The Pearl Harbor Aquifer Sector has an estimated sustainable yield of 158 million gallons per day (mgd). The Waipahu System (30203), in which the proposed school is situated, has an estimated sustainable yield of 50 mgd. There are no intermittent or perennial streams located in the project site.

Probable Impacts on Hydrological Resources and Streams

Construction of the new middle school and associated facilities is expected to have minimal impacts on the surrounding groundwater system. There will be an increase in developed impervious surface areas from this project that would decrease the amount of localized groundwater recharge occurring at the project site. However, this decrease is expected to be negligible and inconsequential to the overall function of the area’s natural hydrogeologic system. Furthermore, construction activities would not alter existing streams or drainage patterns associated with any perennial streams. The middle school will also be appropriately designed to comply with State and City requirements to address runoff and drainage. As a result, the project should not adversely impact the underlying aquifer system nor contaminate potable water sources.

3.7 HISTORIC, ARCHAEOLOGICAL AND CULTURAL RESOURCES

3.7.1 Historic and Archaeological Resources

By the 1850’s cattle ranching was firmly established at ‘Ewa with an estimated 12,000 head of cattle. By 1877, James Campbell was said to have some 32,000 head of wild cattle (Briggs 1926, quoted in Kelly 1991:162). The sugar industry in Hawai’i began to rapidly expand in the 1890’s and severely altered the appearance of the ‘Ewa Plain. Construction for the O’ahu Railway & Land (OR&L) railroad began in 1889 and eventually went around the island. This opened up ‘Ewa and the rest of O’ahu for sugar, pineapple, and eventually military use.

By the 1920s, Honouliuli was used almost exclusively for sugar cultivation and ranching. The ‘Ewa Plantation Company controlled approximately 12,000 acres which included sugar cane, a sisal plantation, residential areas for several thousand people, and a limestone quarry. The O’ahu Sugar Company controlled 3,000 acres although not all of it was planted in sugar. Honouliuli Ranch, the largest landowner, controlled approximately 20,000 acres with much of it considered waste because it contained gullies and rock. Six thousand acres were reportedly planted in pineapple, or forest and wetland.

Frierson (1973) indicates that the ‘Ewa Plantation Company drastically altered the landscape in attempt to increase the amount of fertile agricultural land. Prior to the rainy season, the plantation excavated drainage ditches from the lower slopes of the Wai’anae range down to the lowlands. Vertical channels were cut into the adjacent slopes to encourage erosion. By 1931, ‘Ewa Plantation had seventy artesian and four surface wells with eighteen pumps (Wilcox 1996:107).

The ‘Ewa Plantation was acquired by O’ahu Sugar Company in 1970 who operated two mills in ‘Ewa and Waipahu. During the 1970’s, sugarcane cultivation in the ‘Ewa Plain began to slowly decline. The O’ahu Sugar Company eventually ceased sugarcane cultivation operations at ‘Ewa in 1994.

Previous Archaeological Research and Findings

An Archaeological Survey was conducted for this property by Pacific Legacy, Inc. (PLI) in 2002. The study was prepared for the ‘Ewa Gentry Makai residential housing, commercial and industrial mixed uses, community facilities and open spaces development consisting of approximately 283 acres (TMK’s 9-1-010: 007 and 9-1-069: 005). The location of the proposed middle school site is included in this study.

There have been vast prior archaeological researches for the proposed project area and ‘Ewa Plain. These studies are related to the extensive development that has occurred in the ‘Ewa Plain in the last 30 years.

In 1988, The Bishop Museum (Davis 1988) conducted archeological testing for the ‘Ewa Gentry project. The project area was situated in an area previously utilized for sugar cane cultivation. A surface survey previously conducted by Kennedy (1988) for the same area failed to identify any archaeological sites. No archaeological sites were identified during testing.

Archaeological Fieldwork and Results

The archaeological survey for this study consisted of the following typical fieldwork procedures: 1) a review of the relevant previous archaeological research conducted in the immediate area; 2) review of historic documents and literature pertaining to the area; 3) a survey of the proposed project area; and 4) the preparation of a final report summarizing results of the survey and recommendations for future work.

Due to impacts of cattle ranching, sugarcane cultivation, military activities, and ongoing residential and road development activities, prehistoric remains were not expected within the ‘Ewa Gentry Makai project area. The study found the entire study area had undergone dramatic alterations from agricultural and developmental use. No archaeological resources were present within the project area and the archival research and review of previous archaeological studies on the ‘Ewa Plain show that the area has been subject to extensive land use alterations.

Probable Impacts on Historic and Archaeological Resources

There are no surface sites or potential historic resources visibly present on the project

site where the new middle school will be located. As shown on the site photos in Appendix A, these areas consist of flat open areas with sparse vegetation. It is evident the project site has been disturbed over time as part of the sugarcane cultivation occurring since over 100 years ago. Therefore, there should be no effect on historic sites or archaeological resources in the areas where the new middle school will be located.

While there are no surface archaeological sites present on the project site, there still remains the possibility that subsurface historic sites such as cultural layers or human burials may be discovered during construction activities. However, the project site for the proposed middle school is estimated to have use for sugarcane cultivation for about 100 years, and is unlikely that any subsurface cultural remains are present within the project area.

In the event subsurface human remains or other indications of human activity older than 50 years are encountered during construction activities, all work would stop emmediatly and the SHPD notified. The treatment of any human remains encountered would be determined, and conducted in accordance with the applicable requirements of Chapter 6E, HRS, and Chapter 13-300, HAR. Furthermore, as a precautionary measure, construction personnel involved in development activities on the site would be informed of the possibility of inadvertent cultural finds, and would be made aware of the appropriate notification measures to follow.

3.7.2 Cultural Resources

A Cultural Impact Assessment was conducted for this property by Pacific Legacy, Inc. (PLI) in 2002 in conjunction with the Archaeological Survey for the ‘Ewa Gentry Makai project, which encompasses the proposed site for the ‘Ewa Makai Middle School. This cultural impact assessment was prepared to satisfy Act 50, concerning traditional cultural practices and features that might be affected by the proposed development are identified and assessed.

The archival and oral historical research conducted indicates that project site is located on the ‘Ewa Coral Plain within an area traditionally refered to as the plain of Kaupea, known as the barren place for mischievous wandering spirits called *ao ku’ewa*. Further distinction places the project site near or in an area named Kelea. These areas are located within the ahupua‘a of Honouliuli and Pu’uloa.

This area is documented as having been a main thoroughfare for travelers to the settlements on the western coastline. A trail is documented in oral history as having passed between Pu’u o Kapolei and Pu’u o Palailai.

The ahupua‘a of Honouliuli has a rich cultural history and legendary fame. The area is referred to in many chants and oral histories. The importance of Pu’u o Kapolei as a seasonal solstice landmark related to an ancient cultural viewing event, of which the project area lies in the direct path, is of particular cultural importance. The traditional place name Kaupea, and its cultural significance as the “earthly place for wandering mischievouse ao ku’Ewa” who did not make it to the desired

afterlife realm, identifies the area as an important part of the ancient Hawaiian belief system.

The PLI cultural assessment also found that during pre- and post-contact years, the project parcel and surrounding areas did not have enough adequate subsistence resources to support a large human settlement area. The resources within this ahupua'a of Honouliuli were mainly limited to marine resources, fertile coastline and stream gulch area agricultural lands. Avifauna was also available on the 'Ewa Plain.

Probable Impacts on Cultural Resources

In terms of cultural resources, this project is not expected to significantly affect traditional native Hawaiian cultural practices or other cultural practices. There are no known traditional cultural practices currently occurring within the proposed middle school project site. This area generally consists of sparsely vegetated land with no significant botanical or archaeological resources present.

This project would not significantly restrict access to other surrounding areas that may be used for cultural practices because the middle school would be limited to the site. Thus, the project would not prevent assess to shoreline areas or surrounding mauka (inland) areas that may be used for traditional gathering or other cultural practices. Furthermore, the middle school will be surrounded by residences since the adjacent land uses are primarily residential. Temporary construction activities would also not restrict or prohibit access to other land areas that may be considered significant for cultural practices.

3.8 HAZARDOUS SITE ASSESSMENT

A Phase II Environmental Site Assessment (ESA) was conducted for the project by Myounghee Noh & Associates, L.L.C. (MNA) and is included in Appendix F of this document. The purpose of this Phase II ESA was to confirm the presence or absence of any *recognized environmental conditions (REC)* within the project area. Additionally, this ESA was to identify potential risks from the environmental contaminants, if any, to construction workers and occupants of the proposed middle school.

The analytical results were compared to the State of Hawai'i Department of Health (DOH) Environmental Action Levels (EALs) for soil with unrestricted land use above a non-drinking water resource and greater than150 from surface water. Based on the sampling results and analysis, MNA has concluded that *recognized environmental conditions* do not exist within the proposed 'Ewa Makai Middle School location with respect to the EALs. No further investigation is recommended.

Since contaminants are found below elevated levels, additional assessment or remedial action is not needed. Therefore, this project would not require mitigative measure such as removal or remedial plans in compliance with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

CHAPTER 4
ECONOMIC AND SOCIAL FACTORS

This chapter discusses the project's probable impact on economic and fiscal factors associated with the State and City, as well as social factors such as changes in resident population, housing, and character of the community.

4.1 ECONOMIC AND FISCAL FACTORS

Construction of the new middle school and other accessory improvements should have an overall positive economic impact mainly associated with the creation of short-term construction related jobs and long-term jobs for the school's faculty and staff.

Short-Term Construction Related Jobs

Construction and operation of the school will generate some employment. However, the construction jobs will be temporary and not substantial when compared with the extensive construction activities. Direct construction jobs would typically consist of on-site laborers, tradesmen, mechanical operators, supervisors, etc. Direct construction jobs created would also stimulate indirect and induced employment within other industries on the island such as retail, restaurants, material distributors, and other related businesses supporting the construction industry.

These new jobs would generate additional personal income for construction workers. Personal income is defined as the wages paid to the direct construction workers or operational employees associated with a development. It is anticipated that these construction jobs would likely be filled by residents from the Island of Oahu employed within the construction industry.

Long-Term Jobs

The proposed school is expected to generate approximately 100 new jobs for faculty and staff for operation and maintenance. The new jobs created by the school are not considered high enough to significantly affect employment levels or economic activity in the local community. The new 'Ewa Makai Middle School will be part of the DOE statewide system that can draw workers from other parts of the island. Based from the 2006 Superintendent's 17th Annual Report of the Department of Education of the State of Hawai'i , there was a total of 21,059 full time school staff for the State of Hawai'i.

Fiscal Factors

Fiscal impacts associated with this project would primarily involve some additional tax revenue generated to the State. Tax revenue sources for State government will composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate income tax, and personal income tax from construction workers and long-term permanent jobs. Construction related tax revenues are one-time or short-term increased in revenue since they are only associated

with construction activities. However, operational jobs will continually increase tax revenues due to their long-term nature.

4.2 SOCIAL FACTORS

The proposed new middle school project is not expected to change the existing resident population in the ‘Ewa community or region. This project is a State-initiated capital improvement project to provide a needed educational facility. There are no new residential units or visitor units associated with this project, and no in-migration of individuals to reside within the City would result. As a result, there should be no impact on the existing resident population.

This project would also not change or alter the character of the Ewa community or the character of the district. The project essentially adds a new middle school to the Campbell-complex within the State Department of Education’s Leeward District on the island, which would address issues of educational needs for the school complex. Consequently, this project would not change existing uses in the surrounding area or have a significant impact on surrounding land uses.

4.3 SECONDARY AND CUMULATIVE IMPACTS

Secondary Impacts

Secondary impacts, or indirect effects, are effects which are caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable. Such effects may include growth-inducing impacts and other effects related to changes in land use patterns, population density or growth rate, and related effects on air, water, and other natural systems.

This project is not expected to significantly affect the City’s resident population growth projected for the ‘Ewa community and surrounding region, and thus would not generate the associated secondary effects on infrastructure, public facilities, and housing. Although, the project is adding a new middle school, the addition should not significantly affect the City’s rate of in-migration or potential relocation of residents to the ‘Ewa community. Such decisions would be more appropriately based upon other economic factors (jobs), housing supply and costs, etc. which are not significantly impacted by this project.

Construction of this project is expected to generate minor short-term impacts associated with these activities. Creation of short-term jobs are not expected to generate a substantial number of workers in-migrating to the Island of O‘ahu to fill these construction jobs. It is anticipated that qualified local contractors on the island or within the State of Hawai‘i would likely be used for the project’s construction. These workers would thus have minimal if any permanent effect on the City’s residential population or housing demand.

Cumulative Impacts

Cumulative impacts are effects on the environment which result from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions. The cumulative impacts associated with this new middle school includes assessing the implementation of the project

to evaluate it, and incorporating other known planned improvements within the area and study year that would effect or be affected by the project.

There are a number of ongoing major private development projects occurring within the ‘Ewa area in the vicinity of the proposed middle school during the design and construction completion date for the project. In the immediate vicinity of the project site, there are many low to medium density single-family and multi-family residential homes being constructed concurrently. Best management practices such as erosion control and other mitigative measures would be implemented by the contractor during construction activities. This includes compliance with all applicable permits and regulations such as those concerning noise control and air quality. As a result, there should be minimal disruption, if any, to construction activities for both the new middle school and surrounding residences. Furthermore, the continued development of residential homes should not adversely affect the school’s future operations and activities.

Therefore, the discussion of impacts presented within this document has included the cumulative impacts associated with the new middle school and other reasonably foreseeable future actions being implemented. The assessment results in this document show that there are no major cumulative impacts associated with this project.

CHAPTER 5
INFRASTRUCTURE FACILITIES

This chapter discusses the project's probable impacts on infrastructure facilities serving the project site, as well as, surrounding areas.

5.1 WATER FACILITIES

Completion of the new middle school would result in an increase in water demand associated the BWS potable water system. The school's water system will accommodate 658 fixture units (fu) and be designed to meet 165 gallons per minute (gpm) flow volume. A reduced pressure principle backflow preventer will also be provided, as required by BWS.

Fire hydrants will be located on-site and supply sufficient fire flow at 2000 gpm residual pressure. In accord with Honolulu Fire Department (HFD) code, locations of on-site fire hydrants will not exceed 150-feet from any fire water supply apparatus.

Non-potable water facilities will be provided for the school. A new RW1 water line for the irrigation system will connect to a 12-inch non-potable RW1 water line along the Kapolei Parkway extension. This water will be used for landscaping a total area of about 393,000 square feet (sf).

Probable Impacts on Water Facilities

Water allocations are determined by the Honolulu Board of Water Supply (BWS). Early consultation with BWS has confirmed that an adequate water supply should be available for the proposed school via a new 12-inch water line within the Kapolei Parkway extension. Typical BWS Water System Facilities charges for resource development, transmission and daily storage would be applied to the approved water permit. Construction plans will be appropriately coordinated with the DOW and HFD during the design phase of this project, and the availability of water will be confirmed when ministerial permits are applied for. Thus, this project is not expected to have a significant impact on water facilities.

5.2 WASTEWATER FACILITIES

The proposed school will connect to the Honouliuli Wastewater Treatment Plant (WWTP) which is owned and operated by the City and County of Honolulu. The Honouliuli WWTP service area encompasses approximately 76,000 acres and ranges from Red Hill, up to Mililani and extends to Ko Olina. Starting service in 1984, the plant has a current design average dry weather flow capacity of 38 mgd, with future plans to further expand capacity to 51 mgd (HWEA 2007).

The school is expected to generate approximately 30,000 gallons per day (gpd) of sanitary sewage. This average sewage flow allocation is based on an assumed 25 gallons per person, per day for up to 1150 person, plus 1,250 gallons per day for wet weather infiltration/inflow. This will be collected in a system of on-site pipes designed to comply with applicable City design standards.

Wastewater collection from the school will be accommodated by two separate pump systems. A portion of the school's sewerage system will be conveyed through an 8-inch sewer line to a new City and County of Honolulu 18-inch sewer line located along Kapolei parkway. A second wastewater connection will connect to an existing 12-inch line along the southern boundary via an 8-inch sewer line.

The wastewater will be directed to a new Wastewater Pump Station (WWPS) to be located at the end of the Kapolei Parkway extension road at the southeast corner of the school site. The WWPS will be designed for an average flow of .816 MGD with a peak flow capacity of 2.760 MGD and will ensure the efficient conveyance of Wastewater to the Honouliuli Wastewater Treatment Plant (WWTP) via 12-inch force main. Therefore, the Honouliuli WWTP system should be able to accommodate the additional wastewater being generated by the proposed school.

Probable Impacts on Wastewater Facilities

Construction plans will be appropriately coordinated with the City and State Department of Health (DOH) during the design phase of this project, and the proposed sewer system will meet applicable City Department of Wastewater Management design standards. As a result, this project not expected to have a significant impact on wastewater facilities.

5.3 DRAINAGE FACILITIES

The project site is located outside of the 100-year flood plain (Zone D) of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map for this area. Therefore, therefore it has not been subject to significant flooding. The site is located in the vicinity of an intermittent stream known as Kalo'i Gulch, which also serves a major drainageway to help prevent upland areas from flooding during heavy rainstorms.

The proposed school is located within a 68-acre drainage basin developed in accordance with the ''*Ewa Makai West Drainage Master Plan*, prepared by Engineering Concepts, Inc in October 2006. This is one of four (4) adjacent drainage systems described in the master plan to connect to Kalo'i Gulch and/or Coral Creek Golf Course. This drainage system will connect to an existing 84-inch (RCP) drainage pipe located along the southern boundary of the site and within a 30-foot drainage easement for the 'Ewa by Gentry Community Association. Drainage patterns will follow existing conditions, where applicable, where runoff sheet flows to landscaped areas or swales and drainage inlet structures.

Probable Impacts on Drainage Facilities

The 'Ewa Makai Middle School will increase impervious areas on the project site due to construction of buildings, driveways, walkways and parking lots. The school's facilities will utilize a stormwater runoff collection system consisting of downspouts connecting to a subsurface drainage system.

Development of this project should have minimal impacts on the existing drainage pattern and conditions associated with the project site and proposed school. Grading of the

project site will be conducted in conformance with the City Grading Ordinance and will follow Best Management Practices as indicated in the applicable National Pollution Discharge Elimination System (NPDES) Permit. A site specific construction BMP plan will be submitted to the State Department of Health (DOH) prior to grading commencement. All construction related discharges will comply with the State's Water Quality Standards. Drainage plans will also be reviewed and approved by the City, and necessary improvements implemented.

5.4 SOLID WASTE FACILITIES

Solid waste collection, disposal and recycling operations serving 'Ewa is provided by the City Department of Environmental Services, Refuse Division. However, a private company under contract to the State would conduct regular pick-up and proper disposal of solid waste generated by this school.

Probable Impacts on Solid Waste Facilities

Construction of this school will generate some solid waste, which is typical of construction related activities. The volume of solid waste is expected to be minor and temporary due to the limited area of development. The contractor will be required to remove all debris from the site and properly dispose of them in accordance with agency regulations. Such activities are expected to have a minimal impact on City solid waste facilities.

5.5 TRANSPORTATION FACILITIES

A Traffic Impact Analysis Report (TIAR) was prepared by Mr. Roger Dyar, P.E. for the project in 2008. The TIAR followed the recommended practice and guidelines described in the Institute of Transportation Engineering (ITE) *Traffic Access and Impact Studies for Site Development* (1991(. The ITE guidelines are accepted by the Hawai'i Department of Transportation (HDOT) and the City & County of Honolulu as the preferred method for preparing traffic studies for land development projects. The approach consisted of assessing existing conditions, prediction background traffic growth, and assessing traffic conditions in the year of opening of the school. It was determined that the school should be fully built and occupied by the year 2010.

Existing Facilities and Conditions

The 'Ewa Makai Middle School project site is located on Kapolei Parkway about 4,000 feet south of its intersection with Geiger Road. It is located in the western section of 'Ewa, a rapidly growing area with several new residential and commercial developments underway. Kapolei Parkway has a cross-section of three lanes in each direction in the vicinity of the project site

The intersection of Kapolei Parkway at Geiger Road is controlled by an actuated traffic signal. The intersection of Keoneula Boulevard at Kailoelea Drive is also controlled by an actuated traffic signal. A copy of the traffic signal plan and timing information for these intersections are provided in Appendix B of the TIAR.

Kapolei Parkway is the major roadway providing vehicular access to the ‘Ewa Makai Middle School project site. Kapolei Parkway is City owned and maintained, and is a two-way collector street generally running in a mauka-makai (north-south) direction parallel to Fort Weaver Road. Kapolei Parkway serves as one of the major roadways providing vehicular access to the communities of ‘Ewa and Kapolei. As shown on the location map, this roadway primarily serves residential areas within the ‘Ewa communities.

Kapolei Parkway is a four- to six-lane road, two-directional with a median. However, immediately adjacent to the project site Kapolei Parkway becomes five-lanes wide, with three-lanes northbound and two-lanes southbound. South (makai) of the Keoneula Boulevard intersection, the road is striped for four-lanes (two each direction) and eventually decreases to two-lanes (one lane each direction).

Kapolei Parkway has a posted speed limit of 30 miles per hour (mph) in the area of the project site. Crosswalks for pedestrians are provided south of the project site at the intersection of Keoneula Blvd. There is no on-street parking permitted along the roadway fronting the project site.

Existing Traffic Volumes

Manual traffic counts were taken at four (4) study network intersections on May 24, 2007 during the morning peak period between 6:00 and 8:30 a.m., and during the afternoon peak period between 3:00 and 6:00 p.m. Observations of the general traffic conditions were also made. There were no accidents or unusual traffic patterns that were observed during the count period.

The counts showed that the morning peak hour occurred from 7:00 to 8:00 a.m., and the afternoon peak hour occurred from 3:00 to 4:00 p.m. Results of the traffic count data is provided in the TIAR, Appendix E of this document. Using the traffic data collection results, the peak period for morning traffic was shown to last from 6:00 to 8:00 a.m. The peak period for the afternoon traffic was shown to last from 3:00 to 6:00 p.m.

Future Traffic Conditions

Two (2) traffic studies done in previous years for major developments in the nearby ‘Ewa Beach areas were available and information from these two studies was used in the preparation of this report. The two major developments are: ‘Ewa By Gentry project and the Ocean Pointe project.

The ‘Ewa By Gentry project is expected to have about 1879 residential units, 30 acres of light industrial uses, a community recreational center, two churches and two neighborhood parks and be completed in the year 2010. The traffic study for this project was completed by Parsons Brinckerhoff in 2003. The Ocean Pointe development will have about 4850 residential units, a marina, visitor accommodations, retail shops, 20 acres of parks and a golf course. It is expected the full project would be completed in the year 2014. The traffic study for the Ocean Point project was completed by Pacific Planning and Engineering, Inc. in 2001. The traffic volumes from these two developments were then factored based on the predicted 2010 build schedules and upstream and downstream turning percentages to forecast added trips for each study intersection for the morning and afternoon

peak hours. Additional details can be found in Chapter 3 of the TIAR, included in Appendix E of this document.

Future Traffic Signals

The traffic studies for ʻEwa By Gentry and for Ocean Point developments envision the need to install future traffic signals at two locations:

1. Kapolei Parkway and Keaunui Drive
2. Kapolei Parkway and Keoneula Boulevard

The Synchro runs made with the middle school in place assume the installation of traffic signals due to the traffic volume added by the ʻEwa By Gentry and Ocean Point projects. Analysis shows that the volumes for the two peak hours studied, justify signalization.

The decision on installation of traffic signals would come when the City and County of Honolulu (City) and State Department of Transportation (HDOT) determine that it is warranted based on a detailed signal warrant study. However, based on the future traffic volumes and the design of these two intersections, it is evident that traffic signal control will be needed.

Conclusions

Existing traffic volumes and traffic forecasts can be found in the TIAR, Appendix E of this document. As a result of the analysis of the data collected and the predicted traffic conditions, the following conclusions are made:

The traffic added to the street network at build out of the school will in and of itself not create any significant traffic congestion or traffic flow problems. This is based on a comparison of traffic volumes for the a.m. and p.m. peak hours with and without the school in place but with the background growth due to the ʻEwa By Gentry and Ocean Point projects. Furthermore, consideration should be given to addition of right turn lanes for the two new school entrances.

As ʻEwa By Gentry and Ocean Point continue towards fuller build-out, traffic signals will be needed to accommodate background and new school traffic at the intersections of Kapolei Parkway at Keaunui Drive and at Kapolei Parkway at Keoneula Boulevard. These signals were envisioned by the ʻEwa By Gentry and Ocean Point traffic impact analysis study reports done for those projects and verified by this TIAR. It is recommended to conduct the updated signal warrants at least every two years.

Recommendations

Considerations of additional right turn lanes on Kapolei Parkway at the two new school entrances following full build out. While the NCHRP 279 criteria indicate the possible need for the turn lanes, the HCM analysis shows acceptable LOS without the lanes. It will be necessary to review this with the City and HDOT.

The City and HDOT should continue to monitor traffic volume growth on Kapolei Parkway resulting from the on-going development of the ‘Ewa By Gentry and Ocean Point projects. At some point, signalization will be required for the intersections of Kapolei Parkway and Keaunui Drive and Kapolei Parkway and Keoneula Boulevard. It is recommended that these signals be in place before the construction of the school is completed.

The signals which will be necessary at the intersections of Kapolei Parkway at Keaunui Drive and Kapolei Parkway at Keoneula Boulevard should have pedestrian features on all approaches. The TIAR assumes about 350 students walking to school each day and many of them will need to cross Kapolei Parkway at these locations. Pedestrian signals and push buttons along with well-marked crosswalks will be essential. Crossing guard protection at peak school times may also be needed and should be considered. The school district may want to consider establishment of a safe routes to school program for this school due to the large number of potential walkers and the newness of the school and residential neighborhood. Adequate radii should be provided for the school access points along with sufficient on-site storage for vehicle queues.

CHAPTER 6
PUBLIC FACILITIES AND SERVICES

This chapter discusses the projects probable impact on public facilities and utilities serving the project site and surrounding area.

6.1 ELECTRICAL AND COMMUNICATION FACILITIES

Electrical service lines are presently located along Fort Weaver Road. Electrical service is available and will be provided by the Hawaiian Electric Company (HECo). The 'Ewa by Gentry development will improve roadways and infrastructure to include a primary ductline that will serve the new school. HECo will be kept informed of the project requirements to ensure that appropriate service and infrastructure development is provided in a timely manner.

Telephone service will be provided by the Hawaiian Telcom (HT) underground distribution system located along Kapolei Parkway. Similarly, new ductlines to serve the school will be provided by 'Ewa by Gentry's roadways and subdivision infrastructure improvements project. Cable television service will be provided by the Oceanic Time Warner Cable (OTWC) underground distribution system located along Kapolei Parkway.

Probable Impacts on Electrical and Communication Facilities

The new school will create an increased demand for electrical and communication services. However, this increased demand is not expected to have a significant impact on HECo's distribution facilities or power generation facilities. Appropriate coordination will also be conducted with these utility companies during the projects design to ensure appropriate services and utilities are provided and properly programmed for.

The Gas Company, LLC also maintains underground utility gas mains in the project vicinity which serves the surrounding commercial and residential customers in the area. Appropriate coordination with The Gas Company will be conducted during the project's design phase to minimize any potential conflicts with the existing gas facilities in the area.

6.2 EDUCATIONAL FACILITIES

The Leeward District currently contains 15 public schools operated under the State Department of Education (DOE). These schools are divided by complex-area and collectively make up the Campbell Complex area. Within the Campbell Complex area there are seven (7) elementary schools, one (1) middle school, and one (1) high school. The proposed middle school would be added to the Campbell complex as the 2nd middle school.

Probable Impacts to Educational Facilities

This project would add a new middle school facility to DOE's Campbell-Complex. As discussed in Chapter 2, this is a much needed educational facility to serve 'Ewa's steadily growing population.

6.3 POLICE PROTECTION

The Honolulu Police Department (HPD) provides services to the ‘Ewa District from their District 8 Headquarters (Kapolei Station) located at 1100 Kamokila Boulevard. The District 8 encompasses the communities of ‘Ewa, ‘Ewa Beach, Westloch, Barbers Point, Kapolei, Makakilo, Campbell Industrial Park, Honokai Hale, Koolina, Nānākuli, Maili, Wai‘anae, Makaha, Makua and Kaena.

Probable Impacts on Police Protection

Based on early consultation with HPD, this project should have minimal impact on the police department’s operations or ability to provide adequate protection services to the surrounding ‘Ewa area and larger District 8 communities either during construction or upon completion of the new school. Off-duty police staff may be hired to assist in directing traffic during construction activities if necessary. However, this assistance will likely be minimized as the majority of the construction activities will occur within the site, and will not involve closure of any roadways.

6.4 FIRE PROTECTION

The Honolulu Fire Department (HFD) has one fire station near the project site located in ‘Ewa. The ‘Ewa Beach Fire Station is located at 91-832 Pohakupuna Road approximately 1.7 miles from the project site. As discussed earlier in this document, adequate fire apparatus supply access will be provided within the school along with sufficient fire flow for new fire hydrants located on-site.

The ‘Ewa Makai Middle School will be protected throughout by wet pipe fire sprinkler systems in accordance with applicable National Fire Protection Association (NFPA) standards and codes. The projected available water supply is expected to be adequate to supply the anticipated fire sprinkler demands. The fire sprinkler system will be monitored for water flow and valve tamper by a building fire alarm system. Furthermore, fire extinguishers will be provided throughout the school in accordance with the City’s Uniform Fire Code and NFPA standards.

Probable Impacts on Fire Protection Facilities

Development of the school is not expected to have a significant impact on the Fire Department’s operations or ability to provide protection services to the new school or surrounding ‘Ewa community. The new school will be designed to meet fire and building code requirements. This will include providing necessary hydrants and meeting fire flow requirements for water system improvements. Appropriate design plans will also be coordinated with HFD for their review and approval.

6.5 RECREATIONAL FACILITIES

The ‘Ewa by Gentry Makai development has included a significant amount of new parks and open spaces in the master plan. These include a 3.5-acre park in the eastern portion of the site (that will be part of a larger 10-acre park), an 8-acre site within the central site, and a 14-acre open space

site located west of the project site. A 2-acre parcel is reserved for a recreational/community facility adjacent to the project site. It is also anticipated that portions of the school property will be available for public use provided within the Gentry 'Ewa Makai master plan which will exceed the City's planning requirements for parks and open spaces.

Probable Impacts on Recreational Facilities

Based upon early consultation with the City Department of Parks and Recreation (DPR), the new school is not expected to have a significant impact on any programs or facilities of the Department. Construction activities associated with this project would also not involve the use of these recreational facilities or impede existing activities occurring there. Design of the project would include developing appropriate erosion control plans and best management practices to minimize runoff from surrounding stream waters. These plans will be reviewed and approved by appropriate agencies. Therefore, implementation of such plans would provide sufficient measures to minimize impacts to recreational facilities.

6.6 MEDICAL FACILITIES

Medical facilities located within the 'Ewa community includes the Hawai'i Medical Center Wert or formerly the St. Francis Medical Center West facility, and is located at 91-2141 Fort Weaver Road, northeast of the project site. This is the nearest hospital and has 102 total bets comprised of 90 adult and pediatric beds and 12 intensive care beds. The next nearest medical facility is the Kapi'olani Medical Center at Pali Momi which serves west O'ahu communities and is located near Pearl Ridge.

Probable Impacts on Medical Facilities

It is not anticipated that the proposed project will have an impact on the service capabilities of Hawai'i Medical Center West. The school is not expected to affect the Center's ability to provide medical services for the area residents and general public.

CHAPTER 7
CONFORMANCE WITH PLANS AND POLICIES

This chapter discusses the project's conformance with the State Land Use District regulations, State Environmental Policy (Chapter 344, HRS), and the regulations, policies, and goals set forth under the *City and County of Honolulu General Plan,* Zoning district regulations prescribed under *Honolulu County Code* and the State and County Water Plans.

7.1 STATE LAND USE DISTRICT

The State Land Use Boundary Map for the 'Ewa community indicated that the new middle school project site is classified as "Urban" District. Chapter 1 included a figure showing the project site in relation to the established State land use districts.

Permitted uses or activities in the Urban District are provided by ordinances or regulations of the County within which the Urban District is situated. Thus, Urban District lands on the island of O'ahu are regulated by ordinances or regulations of the City and County of Honolulu (City).

7.2 CHAPTER 344, STATE ENVIRONMENTAL POLICY

This section discusses the project's conformance and consistency with the pertinent goals, policies, and guidelines described under Chapter 344, HRS, State Environmental Policy.

Environmental Policy

1. ***Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawai'i.***

   The project would be consistent with this environmental policy because there will be no significant impacts to the natural resources of the project site or surrounding areas. The school would be located in a area designated by the 'Ewa Gentry Makai master planned development. As discussed in this document, the school would be compatible to adjacent land uses consisting of mostly residential and commercial. Thus, this project would not have an adverse impact on natural resources or the environment.

   The project site is relatively level thus minimizing the need for extensive grading. The design of this school will protect and safeguard the unique natural environment and characteristics associated with this project area. School facilities and structures would meet all applicable Federal, State, and City building requirements and regulations to protect the environment. Best management practices would be implemented during construction to

minimize runoff and other short term impacts such as fugitive dust and noise. Thus, this project would have no adverse effects on natural resources such as conservation lands, and is not anticipated to impact the shoreline or ocean waters.

2. Enhance the quality of life by:

A. Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial;

B. Creating opportunities for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments;

C. Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and

D. Establishing a commitment on the part of each person to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources.

The project would be consistent with these policies pertaining to the quality of life. The new school would serve the educational needs of the existing surrounding community. The school would not have significant impacts affecting the existing or future resident population in ʻEwa or the establishment of a new community. The proposed school does not involve any new homes or visitor unit, and short-term construction jobs are expected to be filled by Hawaiʻi residents not resulting in any in-migration. The creation of new permanent jobs needed for school operations is not expected to have significant impacts on the ʻEwa population.

Guidelines

1. Population.

A. Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation,

B. Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.

The project does not involve any new homes or visitor units, and short-term jobs are expected to be filled by Hawaiʻi residents not resulting in any in-migration. The project would not have a significant effect on the existing or future resident population in ʻEwa.

2. Land, water, mineral, visual, air, and other natural resources.

A. Encourage management practices which conserve and fully utilize all natural resources;

B. Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;

C. Promote the recycling of waste water;

D. Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas;

E. Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.

The project would be consistent with these guidelines because the school would not impact those resources identified as watersheds and water sources, forests, and open space areas. Landscaped areas will be irrigated using recycled water. The project would not impact an area that is valuable as an open space since the project site has been planned as part of the 'Ewa Gentry Makai development.

Best management practices would be following to minimize runoff effect during the project's construction. Design will incorporate appropriate measures to minimize erosion and address appropriate drainage.

3. Flora and fauna.

A. Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard

B. Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment.

As discussed in Chapter 3, there would be no impacts to endangered species of indigenous plants or animals since none are known to be present on the project site or immediate surrounding area. The project would not introduce any new plants or animals that may cause an ecological hazard. Landscaping of the school would include native as well as other plants compatible and complimentary to the surrounding environment. Thus, the project is consistent with these guidelines.

4. Parks, recreation, and open space.

A. Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses;

B. Protect the shorelines of the State from encroachment of artificial improvements, structures, and activities;

The project is consistent with these guidelines since the proposed school is located outside of the shoreline area and would not restrict access to any shoreline areas. The project is not expected to impact cultural resources as discussed in Chapter 3, since there are no known traditional cultural practices affect by the construction or operations of the proposed school.

5. Energy.

A. Encourage the efficient use of energy resources.

Design of the ‘Ewa Makai Middle School is aimed at achieving LEED Silver Certification rating which would maximize energy use at the proposed school by incorporating design features such as renewable energy and natural lighting, through green building.

6. Community life and housing.

A. Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods which reflect the culture and mores of the community;

B. Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation;

C. Encourage the reduction of environmental pollution which may degrade a community;

D. Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.

This project would be consistent with these guidelines

7. Citizen participation.

A. Provide for expanding citizen participation in the decision making process so it continually embraces more citizens and more issues.

The State environmental review process allows for public and government agencies to express concerns and provide comments associated with the project. Such opportunities include the early consultation (pre-assessment) efforts and availability of the Draft EA for public review. Thus, the public consultation process incorporated with this environmental review process provides the general public and decision-makers with a diverse array of information to consider in evaluating this project.

7.3 CITY AND COUNTY OF HONOLULU GENERAL PLAN

This section discusses the projects conformance with pertinent objectives and policies from the City and County of Honolulu's *General Plan*. The General Plan is intended to be a dynamic document which sets forth the long-range objectives and policies for the general welfare and, together with the City Charter, provides a direction and framework to guide the programs and activities of the City and County of Honolulu.

Population

1. Objectives

A. To control the growth of Oahu's resident and visitor populations in order to avoid social, economic, and environmental disruptions.

B. To plan for future population growth.

C. To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.

2. Policies

A. Seek to maintain a desirable pace of physical development through City and County regulations.

B. Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population.

C. Manage physical growth and development in the urban-fringe and rural areas so that

1) An undesirable spreading of development is prevented; and

2) Their population densities are consistent with the character of development and environmental qualities desired for such areas.

D. Seek a year 2010 distribution of residential population, with Waianae having 3.8% to 4.2% of the islandwide population.

The project would be consistent with these objectives and policies since it would not increase the resident population in the Ewa district or affect the island-wide resident population distribution percentages. Development of the new middle school will add a new school to DOE's Campbell-complex within the Leeward District, and implement and support the area's educational programs and needs. Funds expended for this project reflects an efficient effort to support the needs of Ewa's students. This project would not promote an undesirable spreading of development in 'Ewa because improvements are consistent with the area's planned land uses, and thus will not directly contribute to additional undesirable development on surrounding areas.

Economic Activity

1. Objectives

A. To promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living.

B. To prevent the occurrence of large scale unemployment.

2. Policies

A. Encourage the development in appropriate locations on Oahu of trade, communications, and other industries of a nonpolluting nature.

B. Encourage the training and employment of present residents for currently available and future jobs.

The project would be consistent with these policies and objectives, as it would support new students who will attend 'Ewa Makai Middle School with educational programs, and allow for them to participate elective educational programs planned by the school. By facilitating and supporting the proposed school's educational programs and activities, this project would provide students with better education, training, and skills for pursuing higher education. This project thus promotes employment opportunities enabling people to attain a decent standard of living and prevent the occurrence of large scale unemployment.

Natural Environment

1. Objectives

A. To protect and preserve the natural environment.

B. To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.

2. Policies

A. Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.

B. Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water-recharge areas, distinctive land forms, and existing vegetation.

This project is not an incompatible development with the surrounding natural environment since there are no important or significant natural monuments on the project site or in the surrounding vicinity. The school will be appropriately designed to meet State DOE and DAGS building requirements for the school. Appropriate consideration has been given to the natural features associated with the building site. The site is relatively flat and absent of distinctive land forms, does not involve a water recharge area, and absent of significant or important vegetation. The proposed school campus is not located within the flood area, thus, the school is not susceptible to flooding.

C. Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.

D. Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.

E. Protect the natural environment from damaging levels of air, water, and noise pollution.

F. Protect plants, birds, and other animals that are unique to the State of Hawaii and the Island of Oahu.

G. Protect mature trees on public and private lands and encourage their integration into new developments.

H. Protect the Island's well-known resources.

I. Protect Oahu's scenic views, especially those seen from highly developed and heavily traveled areas.

J. Locate roads, highways, and other public facilities and utilities in areas where they will least obstruct important views of the mountains and the sea.

As discussed in the various sections of this document, the project is not expected to have a significant impact on the natural environment or plants, birds, or other animals unique to the island and State. No mature trees would be affected by this project and well-known resources will not be affected. The main effects associated with this project would be construction related. However, best management practices and other design measures will be incorporated to mitigate the short-term nuisances caused by construction activities. Scenic views would not be adversely impacted by the project since the there are no scenic resources or landmarks on the project site nor are there any important viewing locations along the highway affected by this project as discussed in Chapter 3.

Energy

1. Objectives

A. To fully utilize proven alternative sources of energy.

2. Policies

A. Encourage the use of commercially available solar energy systems in public facilities, institutions, residences, and business developments.

The project would consider the use of alternative sources of energy where applicable and is subject to LEED Silver Certification design features, as discussed in Chapter 2.

Physical Development and Urban Design

1. Objectives

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.

B. To maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live.

C. To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.

D. To promote and enhance the social and physical character of Oahu's older towns and neighborhoods.

2. Policies

A. Plan for the construction of new public facilities and utilities in the various parts of the Island according to the following order of priority: first, in the primary urban center; second, in the secondary urban center at Kapolei; and third, in the urban-fringe and rural areas.

B. Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.

C. Phase the construction of new developments so that they do not require more regional supporting services than are available.

D. Require new developments to provide or pay the cost of all essential community services…that are intended to directly serve the development.

E. Locate community facilities on sites that will be convenient to the people they are intended to serve.

The project would comply with these objectives and policies because this new classroom building project has been appropriately planned for and programmed by the State DAGS as part of their state-wide capital improvement program. The timing of this development is consistent with the availability of infrastructure facilities as discussed in this document. This classroom building will not require more regional supporting services than present in Ewa, and will not require additional community services as discussed in Chapter 5. The project will improve facilities and support educational programs provided by State DOE.

F. Exclude from residential areas, uses which are major sources of noise and air pollution.

G. Integrate the City and County's urban-design plan into all levels of physical planning and developmental controls.

H. Require the consideration of urban-design principles in all development projects.

I. Require new developments in stable, established communities and rural areas to be compatible with the existing communities and areas.

The project would not be a major source of noise and air pollution, and will be compatible with the existing community and surrounding area. Urban design plans and principles would be considered and implemented to provide a school of high aesthetic and functional standards that complements surrounding 'Ewa community. However, the building's design would first need to comply with State DAGS and DOE design criteria and facility requirements.

J. Preserve and maintain beneficial open space in urbanized areas.

K. Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve.

L. Encourage new construction to complement the ethnic qualities of the older communities of Oahu.

The project would preserve and maintain beneficial open space in urbanized areas since the shoreline area will be kept open. The school's design will meet high aesthetic and functional standards in compliance with State DAGS and DOE facility standards and requirements. Finally, this building will complement the character of the surrounding 'Ewa community by following an appropriate "plantation" style architectural design to accentuate the history of the 'Ewa region.

Public Safety

1. Objectives

A. To protect the people of Oahu and their property against natural disasters and other emergencies, traffic, and fire hazards, and unsafe conditions.

2. Policies

A. Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.

B. Design safe and secure public buildings.

C. Provide adequate staff to supervise activities at public facilities.

The project would be consistent with these objectives and policies because it would not interfere with the protection of the general public and their property against natural disasters and unsafe conditions. The school would not be sited within a flood zone, and is not located near the shoreline. The school would also be situated well outside of tsunami evacuation zones. However, the building's design will incorporate necessary features to secure school facilities and equipment.

Health and Education

1. Objectives

A. To protect the health of the people of Oahu.

B. To provide a wide range of educational opportunities for the people of Oahu.

2. Policies

A. Coordinate City and County health codes and other regulations with State and Federal health codes to facilitate the enforcement of air-, water-, and noise-pollution controls.

B. Support education programs that encourage the development of employable skills.

C. Encourage the construction of school facilities that are designed for flexibility and high levels of use.

D. Encourage continuing improvement in the quality of higher education in Hawaii.

E. Encourage the development of diverse opportunities in higher education.

The project would be designed to meet all Federal, State, and City health codes and regulations. Construction activities would also meet applicable regulations to minimize pollution which includes implementing best management practices such as erosion control plans. The new middle school will support educational programs for students learning employable skills and assist in preparing them to pursue higher education opportunities. The building design was developed in consultation with appropriate stakeholders to ensure that the facilities are designed for flexibility and a high level of use by the school faculty and community.

Culture and Recreation

1. Objectives

A. To protect Oahu's cultural, historic, architectural, and archaeological resources.

B. To foster the visual and performing arts.

2. Policies

A. Encourage the restoration and preservation of early Hawaiian structures, artifacts, and landmarks.

B. Identify, and to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.

C. Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.

As discussed in Chapter 3, the project is not expected to impact cultural, historic, architectural, or archaeological resources.

7.4 'EWA DEVELOPMENT PLAN

This section discusses the project's conformance with general policies, and principles set out by the *'Ewa Development Plan (2000)*. The current 'Ewa Development Plan is in the process of being updated by the City and is expected to be completed in the near future. Early consultation with the City Department of Planning and Permitting (DPP) has indicated the consistency assessment of the proposed school project with the updated development plan would remain accurate.

Historic and Cultural Resources

1. General Policies

A. Physical references to Ewa's history and cultural roots should be emphasized to help define Ewa's unique sense of place. Existing visual landmarks should be protected, and creation of new culturally appropriate landmarks should be supported.

B. Whenever possible, significant vistas should be retained.

2 Planning Principles

A. ***Compatible Setting.*** *The context of an historic site is usually a significant part of its value. Care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. The appropriate treatment should be determined by the particular qualities of the site and its relationship to its physical surroundings.*

B. ***Public Views.*** *Public views include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources, and other landmarks, and view corridors between significant landmarks. The design and siting of all structures should reflect the need to maintain and enhance available views of significant landmarks. Whenever possible, overhead utility lines and poles that significantly obstruct public views should be relocated or placed underground.*

The new middle school project is not expected to impact significant historic properties or cultural resources and practices, as discussed in Chapter 3. No know historic, archaeological or cultural resources are known to exist within the project site adjacent areas. Significant view planes identified by the development plan would not be affected by the proposed project since the school would consist of one-story structures and is located in an already urbanized area with residential and commercial structures. Thus, the project would not have an adverse significant impact on important mauka-makai views within in the 'Ewa area. Furthermore, there are no significant natural landmarks located on or in the vicinity of the project site. Consequently, short-term construction activities and future operations of the proposed school would not impact significant vistas or natural landmark resources, or historical, archaeological, and cultural resources or

practices. However, in the event subsurface historic sites such as cultural layers or human burial are encountered during construction, all work would stop and the SHPD would be notified.

Water Allocation and System Development

1. General Policies

A. ***Use of Non-potable Water****. An adequate supply of nonpotable water should be developed for irrigation and other suitable uses on the Ewa Plain in order to conserve the supply of potable water and to take advantage of dual water systems constructed by 'Ewa developers.*

The project is consistent with this policy since the proposed school will feature a dual water system by using non-potable water for irrigation of landscaped areas, thereby helping to conserve the supply of potable water.

Wastewater Treatment

1. General Policies

A. All wastewater produced by new developments in Ewa should be connected to a regional or municipal sewer service system.

The project is consistent with this policy because the wastewater generated by the proposed school will be directed to the Honouliuli Wastewater Treatment Plant (WWTP) currently serving the 'Ewa community. As discussed in Chapter 5, it is anticipated that the Honouliuli WWTP system would be able to accommodate the additional wastewater being generated by the proposed school. Construction plans will be appropriately coordinated with the City and State Department of Health (DOH) during the design phase of this project, and the proposed sewer system will meet applicable City Department of Wastewater Management design standards.

School Facilities

1. General Policies

A. The State Department of Education should review and recommend on the adequacy of school facilities, either at existing schools or at new school sites to be made available when the development is completed.

B. Developers should pay their fair share of all costs needed to insure provision of adequate school facilities for the children living in their developments.

2. Planning Principles

A. ***Schools as Community Centers****. Because of the difficult financial problems for all sectors, new communities are likely to have fewer churches, private social halls, and recreation facilities. As a result, schools may have to assume important*

functions as cultural and recreational centers and as meeting facilities. The State DOE should design school facilities to facilitate community use during non-school hours and weekends.

C. ***Fair Share Contribution.*** *The City will support the State Department of Education's request for fair share contributions from developers of residential projects to insure that adequate school facilities are in place at existing and new schools to meet the needs of residents.*

The new ‘Ewa Makai Middle School will be designed to be functionally efficient and aesthetically pleasing in compliance with State DAGS and DOE design criteria and facility requirements. The building design concept was developed in consultation with appropriate stakeholders including ‘Ewa community residents to ensure that the facilities are designed for flexibility and a high level of use by the school faculty and community. The architecture of the new school facility will utilize building forms and materials reflecting Hawaii’s heritage and the history of ‘Ewa’s plantation era

As part of the overall ‘Ewa by Gentry-Makai development and master plan, State DOE and Gentry have reached a fair share contribution agreement to ensure that adequate school facilities are in place to meet the growing needs of new community. As a result, the 18-acre project site parcel has been bestowed to the State DOE for the purpose of developing a new middle school.

7.5 CITY AND COUNTY OF HONOLULU ZONING DISTRICT

The project site and surrounding land is presently zoned “A-1, Low Density Apartment” by the City and County of Honolulu. Under the *Land Use Ordinance*, Chapter 21, Revised Ordinances of Honolulu (ROH), the new middle school is a permitted use in the A-1, Low Density Apartment zoning district as a public use and structure (§21-3.40 and §21-10.1, ROH).

The project would generally be consistent with the development standards for this A-1, Low Density Apartment zoning district. Waivers, if necessary, would be applied for from the City. The design plans will be coordinated with the City Department of Planning and Permitting for their review and approval.

CHAPTER 8
AGENCY AND PUBLIC CONSULTATION

8.1 PRE-ASSESSMENT CONSULTATION (DRAFT EA)

Letters providing project information along with a preliminary site plan were sent to various consulted parties in May 2007 to solicit their initial comments and concerns associated with the project as part of the preparation of this Draft EA. A listing of agencies and organizations for which consultation letters were sent is provided below. Those providing written responses are identified with a "»" symbol. Copies of written comments received along with responses to them are included in Appendix B. Comments received have been addressed in the appropriate sections of this Draft EA.

FEDERAL AGENCIES

- Department of the Army, U.S. Army Corps of Engineers, Honolulu
- Department of the Interior, Water Resources Division, U.S. Geological Survey
- » Department of the Interior, National Park Service, Pacific West Region
- Department of the Interior, Fish & Wildlife Service, Pacific Islands Region
- Department of Transportation, Federal Highway Administration, Hawai'i Division
- » Department of Agriculture, Natural Resource and Conservation Service

STATE AGENCIES

- » Department of Accounting and General Services
- Department of Business, Economic Development and Tourism
- » Land Use Commission, DBEDT
- Office of Planning, DBEDT
- Department of Education
- Department of Hawaiian Homelands
- » Department of Health, Environmental Planning Office
- Department of Defense
- » State Civil Defense
- Department of Land and Natural Resources
- State Historic Preservation Division, DLNR
- » Land Division, DLNR
- » Department of Transportation
- » Office of Hawaiian Affairs
- Department of Agriculture

CITY & COUNTY OF HONOLULU AGENCIES

- » Department of Design and Construction
- » Department of Community Services
- » Department of Planning and Permitting
- Department of Environmental Services

» Department of Parks and Recreation
» Department of Facility Maintenance
» Department of Transportation Services
» Honolulu Fire Department
» Honolulu Police Department
» Honolulu Board of Water Supply

ORGANIZATIONS & INDIVIDUALS

- ‘Ewa Neighborhood Board No.23
- Makakilo/Kapolei/Honokai Hale No.34
- Honolulu City Council District 1
- 43rd Representative District
- 20th Senate District

UTILITY COMPANIES

- Hawai‘i Electric Company
- Hawaiian Telcom
- Oceanic Time Warner

» The Gas Company

CHAPTER 9
FINDINGS AND ANTICIPATED DETERMINATION

To determine whether a proposed action may have a significant effect on the environment, the State Approving Agency and Federal Lead Agency need to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The Approving Agency's review and evaluation of the proposed action's effect on the environment would result in a determination whether: 1) the action would have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action would not have a significant effect warranting a Finding of No Significant Impact (FONSI).

This chapter discusses the results of the environmental assessment conducted for the proposed Ewa Makai Middle School Project in relation to the 13 Significance Criteria prescribed under the State Department of Health's Administrative Rules, Title 11, Chapter 200. The purpose of this assessment was to consider the "significance" of potential environmental effects which includes the sum of effects on the quality of the environment along with the overall and cumulative effects. The resulting findings are discussed below for each criteria.

9.1 PRELIMINARY FINDINGS

This section discusses the in relation to the 13 Significance Criteria prescribed under the State Department of Health's Administrative Rules Title 11, Chapter 200.

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

The proposed middle school would not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. The proposed school would be constructed on lands already filled and graded and no cultural resources were found on the site prior to grading. Therefore, there is very little if any potential for the destruction or loss of any significant resources described above. There would also be no adverse impacts to any endangered or threatened botanical, faunal, geological, or other natural resource.

2. Curtails the range of beneficial uses of the environment.

The project site has formerly been used for sugarcane cultivation, but has remained uncultivated for a significant amount of time. Existing surrounding uses would continue undisturbed as the new middle school during and after construction is completed. As discussed in Chapter 7, the project is consistent with the planned use for the area and thus would not significantly impact the existing uses or the surrounding environment.

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

The project would not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS. This Draft EA addressed the probable impacts associated with the construction and operation of the new middle school which would primarily be associated with short-term construction activities. Thus the proposed project would be consistent in conserving natural resources in the area and enhancing the quality of life for residents in 'Ewa specifically that of students who are planned to attend the new middle school.

4. Substantially affects the economic or social welfare, cultural practices of the community or State.

As discussed in Chapter 4, the project would not have any significant negative impacts on the economic structure of the 'Ewa region, or the social welfare of the 'Ewa community in the short-term or long-term. The project would create short-term temporary jobs and long-term permanent jobs creating economic benefit by generating personal income. In terms of cultural impacts, there are no known traditional cultural practices occurring within the project area. Consequently, the proposed project is not expected to have an impact on cultural resources or traditional cultural practices.

5. Substantially affects public health.

The project would not substantially affect public health since it would strictly involve the development of a new middle school. The proposed development would be sensitive to public health by addressing the impacts of noise, dust, and runoff during construction activities.

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

The project does not have any secondary impacts on the social environment or infrastructure and public facilities. There would not be any elements of the project contributing to in-migration of residents or additional visitors to the island since it does not involve residential housing or visitor accommodations. Therefore, it will not foster population growth or economic development.

7. Involves a substantial degradation of environmental quality.

The proposed project would not involve a substantial degradation to the quality of the environment. The school would be constructed within already urbanized areas, and necessary measures would be implemented during construction to minimize impacts on the surrounding environment.

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

The project is not part of a larger action and does not involve a commitment for larger actions. The project does not involve residences or visitor units and will not increase the resident population in ‘Ewa. Furthermore, the school is needed to fulfill the educational requirements of an area already planned for substantial development.

9. Substantially affects a rare, threatened, or endangered species, or its habitat.

There are no known rare, threatened, or endangered botanical resources on the project site, or faunal and avifaunal species inhabiting the area which may be affected by construction activities or the operation of the new middle school. Best management practices would be implemented to minimize runoff and impacts associated with construction activities. Thus, the project is not expected to substantially affect rare, threatened, or endangered species or potential habitat for such species.

10. Detrimentally affects air or water quality or ambient noise levels.

The project should not have a detrimental significant impact on air, water quality, or ambient noise levels. Impacts associated with these factors would be limited to short-term construction activities. However, such impacts are expected to be minor due to the relatively minor amount of grading and excavation proposed. To further minimize impacts, best management practices would be applied where applicable and construction activities would be subject to applicable State regulations discussed under Chapter 3.

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

The project area is not located in an environmentally sensitive area that may be susceptible to suffer damage by being located in an area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters. The project site is situated well outside of the State Tsunami Evacuation zone and not within the City SMA.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The project site and surrounding area do not have any significant land forms nor would it be considered within a scenic roadway corridor. The school is proposed to be situated adjacent to existing residential buildings and other structures. Furthermore, the classroom and school facility will consist of one-story structures and involves a design concept intended to honor the history of the region by incorporating a historic ‘Ewa plantation style into the architecture. Consequently, this project is not expected to significantly interfere with existing mauka and makai views identified in county or state plans.

13. Requires substantial energy consumption.

The project will require an increase in energy consumption; however the project would not require substantial energy consumption or a significant increase in electrical facilities to serve the ʻEwa Makai Middle School. The proposed school can be serviced using existing electrical distribution facilities and power generating sources and will be designed to minimize overall energy consumptions. The LEED Silver Certification rating involves energy efficient design criteria aimed at maximizing the facility's energy use.

9.2 ANTICIPATED DETERMINATION

Based upon the information and results of the assessments conducted for the project site; it is anticipated that a Finding of No Significant Impact (FONSI) determination should be warranted for the ʻEwa Makai Middle School Project. The findings supporting this anticipated determination are based upon the previous discussion of the project's affect on the environment in relation to the 13 Significance Criteria.

CHAPTER 10
REFERENCES

Bruner, Phil. (May 2001). *Faunal Survey for the Ewa Gentry Project Site and the Surrounding Area*.

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APPENDICES

APPENDIX A

Photos of Project Site and Surrounding Areas

View of project site from NE corner

View of project site from NE corner

View of project site from NW corner

SITE PHOTOS

'Ewa Makai Middle School
State of Hawai'i, Department of Education

APPENDIX A

Source:
SSFM International, inc.
2008

View of project site from East
(from Kapolei Parkway)

View of project site from SW corner
along south border

Intersection of Keanui Drive and
Kapolei Parkway from south

SITE PHOTOS

'Ewa Makai Middle School
State of Hawai'i, Department of Education

APPENDIX A

Source:
SSFM International, inc.
2008

APPENDIX B

Early Consultation Comments And Responses

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 523-4730 • Internet: www.honolulu.gov

MUFI HANNEMANN
MAYOR

MELVIN N. KAKU
DIRECTOR

RICHARD F. TORRES
DEPUTY DIRECTOR

TP5/07-210980R

July 6, 2007

SSFM INTERNATIONAL, INC.
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FILE

FILE COPY

Mr. Jared K. Chang, Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Ewa Makai Middle School

Thank you for your May 29, 2007 letter, requesting our pre-consultation comments on the subject project. We have the following comments for your consideration as you prepare the draft environmental assessment (EA):

1. If future public bus transit operations and facilities are envisioned adjacent to the project site, then early coordination with this department's Public Transit Division is essential. This will ensure that planned roadway improvements incorporate bus operations in their planning and design, including Americans with Disabilities Act (ADA) compliance.

2. The location of the buildings should facilitate around-campus mobility by persons with disabilities. It is also recommended that the vehicular access zone for student drop-offs/pick-ups be designed for ADA accessibility, in general, and to facilitate ingress/egress by TheHandi-Van vehicles, in particular.

3. The draft EA should include a traffic impact study. This study should address and discuss the traffic impacts of the project on the City street network. Mitigation measures proposed to minimize the impact of the project on City roadways should also be discussed. The draft EA should address pedestrian access and safety to the proposed school. This should include measures for providing safe routes to school from

surrounding residential neighborhoods, particularly those within close proximity to the school.

4. Traffic control plans should be prepared for each phase of the construction work. In order to minimize traffic impacts, project construction should be phased to ensure that work scheduled for a certain day can be started and completed during the same work day. Limiting construction work to off-peak daytime hours should be used as a means to further minimize traffic impacts on the surrounding neighborhood.

5. Appropriate project notification should be provided to the area neighborhood board, as well as community residents, businesses, emergency personnel, bus personnel, etc. They should be kept apprised of the details of the proposed project and the impacts the project may have on the local street network area.

We look forward to reviewing the draft EA. Should you have any questions regarding these comments, please contact Ms. Faith Miyamoto of the Transportation Planning Division at 768-8350.

Sincerely,

Melvin N. Kaku

MELVIN N. KAKU
Director

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Wayne Yoshioka, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street. Third Floor
Honolulu, HI 96813

Dear Director Yoshioka:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the Department of Transportation Services pre-assessment comments on the 'Ewa Makai Middle School. Your comments are addressed in the order received.

1. TheBus currently provides service in this area. With the completion of the rapid transit project, it is expected that current routes will be altered to serve as feeders into the rapid transit line. The State Department of Education will provide school bus service to 'Ewa Makai Middle School, approximately eight buses in the morning and again in the afternoon.

2. Private vehicle and bus pick-up and drop-off will be at the first driveway, and the access zone design will incorporate ADA accessibility for HandiVan, the school buses and others.

3. A Traffic Impact Analysis Report (TIAR) is included in the Draft Environmental Assessment (EA), including a discussion of mitigations. The TIAR recommends right turn lanes at two locations. Furthermore, the TIAR demonstrates that traffic would improve if the two traffic signals were installed before 2010, one at Kapolei Parkway and Keaunui Drive and the other at Kapolei Parkway and Keoneula Boulevard. These two traffic signals were identified in the traffic studies for 'Ewa by Gentry and for Ocean Pointe as mitigation of those projects at the appropriate time during build-out that they are warranted. . Consistent with your comment regarding safe routes to schools, these two signals should have timing that provides the necessary timing for pedestrian crossing, as nearly one-third of the students are expected to walk or bicycle to school.

4. A traffic control plan for construction will be prepared to minimize traffic impacts. Given the location of the school off of a new, as yet built road, this should not be a major problem.

5. The project proponent will notify the neighborhood board, community association, emergency personnel, TheBus, and area businesses regarding details of the project and it's proposed schedule and impacts.

If you have any questions on this matter, please call me at (808) 531-1308.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU HAWAII 96813
TELEPHONE: (808) 529-3111 INTERNET: www.honolulupd.org

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-DK

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FILE

June 18, 2007

FILE COPY

Mr. Jared K. Chang
Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

This is in response to your letter of May 29, 2007, requesting comments on a Pre-Assessment Consultation, Draft Environmental Assessment, for the `Ewa Makai Middle School project.

This project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Michael Moses of District 8 at 692-4253 or Mr. Brandon Stone of the Executive Office at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By
JOHN P. KERR
Assistant Chief of Police
Support Services Bureau

Serving and Protecting With Aloha

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. John Kerr, Assistant Chief of Police
Support Services Bureau
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai'i 96813

Dear Mr. Kerr:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 18, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no unanticipated impact on the facilities or operations. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

May 29, 2007

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FILE COPY

Mr. Lawrence T. Yamamoto, State Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
300 Ala Moana Boulevard, Room 4-118
Honolulu, HI 96850-0050

Dear Mr. Yamamoto:

Subject: 'Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

The State of Hawai'i, Department of Education (DOE), is proposing the new 'Ewa Makai Middle School project in the 'Ewa District, the Island of O'ahu.

The purpose of this project is to provide a new middle school to accommodate 'Ewa's increasing student population as well as support the community needs for such facilities. A project summary and accompanying site location map (Exhibit A) and Site Plan (Exhibit B) are enclosed for your information and records.

A Draft Environmental Assessment (Draft EA) is now being prepared for this project to comply with State environmental regulations under Hawai'i Revised Statutes (HRS) Chapter 343, and Hawai'i Administrative Rules (HAR) Title 11, Chapter 200, Department of Health, State of Hawai'i. Therefore, this letter and attachments are being provided to solicit any comments, concerns, or regulatory requirements you may have in regards to this project so that it may be addressed in the Draft EA.

We would greatly appreciate your cooperation in providing us with any written comments within 21-days from the date of this letter. If you have any questions on this matter, please call me at (808) 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner
Email: jchang@ssfm.com

cc: Project Summary, Location Map (Exhibit A) and Site Plan (Exhibit B)

UNITED STATES DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

HAWAII INTERDISCIPLANARY REVIEW FORM

Review of: Pre-Assessment for DEA 'Ewa Makai Middle School
(Name of Document) 'Ewa, Hawaii

*Review Leader: _____ Date Distributed: 5/29/07

Comment to be returned to Review Leader by: 6/18/07

	Reviewer	Initial	Date Comments Returned
____	Deputy State Conservationist	____	____
____	State Conservation Engineer	____	____
✓	State Soil Scientist (retired)	MM	6/12/07
____	State Resource Conservationist	____	____
____	State Biologist	____	____
____	Public Affairs Specialist	____	____
____	Design Engineer	____	____
____	Civil Engineer	____	____
____	Plant Materials Specialist	____	____
✓	DC Area Service Ctr.	CK	6/18/07
____	____	____	____

Comments: None at this time
Please send TMK #.

*Review Leader will indicate staff member(s) requested to review and concur in this document.

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone. (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Lawrence T. Yamamoto, State Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
300 Ala Moana Boulevard, Room 4-118
Honolulu, Hawai'i 96850-0050

Dear Mr. Yamamoto:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 18, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments at this time. The TMK number has been provided above as requested. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1138.7

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

JUN 15 2007

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JUN 19 2007
jkc
FILE

FILE COPY

Mr. Jared K. Chang, Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment
Ewa, Oahu, Hawaii

Thank you for your May 29, 2007 letter. This project does not directly impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Bruce Bennett of the Public Works Division at 586-0491.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Laurence K. Lau, DOH-OEQC

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Russ K. Saito, State Comptroller
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810

Dear Mr. Saito:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 15, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments to offer at this time. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

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

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SSFM INTERNATIONAL, INC
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JUN 18 2007

FILE

June 12, 2007

HRD07_3061

Jared K. Chang, Planner
SSFM International
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

Dear Mr. Chang:

Re: 'Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

The Office of Hawaiian Affairs (OHA) is in receipt of your May 29, 2007 letter initiating consultation prior to the preparation of a draft Environmental Assessment (EA) for a project in 'Ewa, O'ahu.

This important Department of Education project will provide a new middle school to accommodate the project areas increasing student population.

While OHA has no specific comments at this time, we request to continue to be included in any future consultations regarding this project.

Thank you for initiating consultation at this early stage and OHA looks forward to the opportunity of a comprehensive review of the draft EA. Should you have any questions, please contact Keola Lindsey, Lead Advocate-Culture at 594-1904 or keolal@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Clyde W. Namu'o, Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Dear Mr. Namu'o:

Subject: 'Ewa Makai Middle Schoo
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 12, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments to offer at this time and will be included in future consultations. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 • HONOLULU HAWAII 96813 • AREA CODE 808 • PHONE: 527-5311 • FAX 527-5498

MUFI HANNEMANN
MAYOR

DEBORAH KIM MORIKAWA
DIRECTOR

MARK K. OTO
SENIOR ADVISOR

SSFM INTERNATIONAL, INC.
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JKC
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FILE COPY

June 13, 2007

Mr. Jared K. Chang
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: 'Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for providing us with the opportunity to review and comment on the 'Ewa Makai Middle School Pre-Assessment Consultation for Draft Environmental Assessment (DEA).

We have determined that the subject project will have no impact on the projects and programs of the Department of Community Services at this time. However, we would like to note that Geiger Road is misspelled on the location map that was attached to the letter you sent us regarding this project. We appreciate the opportunity to provide these comments and look forward to reviewing the DEA when it becomes available. Questions regarding this matter may be directed to Mr. Randy Wong at 768-7747.

Sincerely,

Deborah Kim Morikawa
Director

DKM:rg

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Ms. Deborah K. Morikawa, Director
Department of Community Services
City and County of Honolulu
715 South King Street, Suite 311
Honolulu, Hawai'i 96813

Dear Ms. Morikawa:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for your letter dated June 13, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that you have determined that the proposed project will have no impact on the programs of the Department of Community Services at this time. We acknowledge that Geiger Road is misspelled and has been corrected. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1268. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

Pat Owan

From: Jared Chang
Sent: Tuesday, June 05, 2007 8:19 AM
To: bhutto@scd.hawaii.gov
Subject: Pre-Assessment Consultation - Ewa Makai Middle

Bob,

We appreciate you taking the time to review our pre-assessment consultation information for the Ewa Makai Middle School.

Per our telephone discussion on June 5, 2007, we note the State Civil Defense has no comments on the project at this time.

Mahalo,

Jared K. Chang
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Direct: (808) 356-1242
Fax: (808) 521-7348

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Major General Robert Lee
State Civil Defense
3949 Diamond Head Road
Honolulu, Hawai'i 96816

Dear Major General Lee:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the telephone call on June 5, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments on the project at this time. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 523-4567
Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

CRAIG I. NISHIMURA, P.E.
DEPUTY DIRECTOR

SSFM INTERNATIONAL, INC.
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JUN 15 2007
jkc
FILE

FILE COPY

June 14, 2007

Mr. Jared K. Chang, Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96813

Dear Mr. Chang:

Subject: Ewa Makai Middle School
Pre-Assessment Consultation for
Draft Environmental Assessment
Ewa, Oahu, Hawaii

Thank you for giving us the opportunity to comment on the above Ewa Makai Middle School Pre-Assessment Consultation for Draft Environmental Assessment (EA).

The Department of Design and Construction (DDC) has no comments to offer at this time, however, DDC would like to see the draft EA when it is published.

Very truly yours,

Eugene C. Lee, P.E.
Director

ECL:lt (210985)

c: DDC Facilities Division

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Eugene Lee, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawai'i 96813

Dear Mr. Lee:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 14, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments to offer at this time. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

SSFM INTERNATIONAL, INC.
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 20, 2007

SSFM International
501 Sumner Street Suite 620
Honolulu, Hawaii 96817

Attention: Jared Chang

Gentlemen:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment on Department of Education Ewa Makai Middle School, Ewa, Oahu

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Land Division – Oahu District, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 4, 2007

MEMORANDUM

FR.

~~TO:~~ **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
__Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division – Oahu District Gavin Chun, Barbara Lee

TO.

FROM: Russell Y. Tsuji
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for Ewa Makai Middle School
LOCATION: Ewa, Oahu
APPLICANT: SSFM International on behalf of the Department of Education

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by June 15, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
(X) We have no comments.
( ) Comments are attached.

Signed: Ezequiel Santos
Date: 6/5/07

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Russell Y. Tsuji, Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Tsuji:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 20, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department and the Land Division have no comments to offer on the subject matter. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

LINDA LINGLE
GOVERNOR

ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

SSFM INTERNATIONAL, INC.
RECEIVED
JUL 05 2007

FILE COPY
FILE

July 2, 2007

Mr. Jared K. Chang, Planner
SSFM International
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment
Ewa Makai Middle School
Ewa, Oahu, Hawaii

Thank you for your letter dated May 29, 2007, requesting comments regarding the subject Draft Environmental Assessment.

Pursuant to §205-3.1(c), Hawaii Revised Statutes, and given the location, scope, and nature of the proposed activity, we have no comments to offer at this time.

Please feel free to contact me at 587-3822 should you require clarification or any further assistance.

Sincerely,

ANTHONY J. H. CHING
Executive Officer

SSFM INTERNATIONAL

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Orlando Davidson, Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawai'i
P.O. Box 2359
Honolulu, Hawai'i 96804

Dear Mr. Davidson:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated July 2, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We confirm your determination that the project area is in pursuant to §205-3.1, Hawai'i Revised Statutes, and have no comments to offer at this time. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
300 Ala Moana Boulevard, Box 50165
Room 6-226
Honolulu, Hawaii 96850-0053

IN REPLY REFER TO:
H4217

May 30, 2007.

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SSFM INTERNATIONAL, INC
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FILE

Mr. Jared K. Chang, Planner
SSFM International
501 Sumner Street, Suite 620
Honolulu, HI 96817

Re: **Pre-Assessment Consultation**
Preparation of Draft Environmental Assessment (DEA)
'Ewa Makai Middle School, 'Ewa, Oahu.

Dear Mr. Chang:

We are in receipt of the above referenced document (received May 30, 2007) and have no comments at this time. Thank you for the opportunity to be included in the pre-assessment consultation.

Sincerely,

Frank R. Hays,
Pacific Area Director

TAKE PRIDE IN AMERICA

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Frank R. Hays, Pacific Area Director
U.S. Department of the Interior
National Park Service
Pacific West Region
300 Ala Moana Boulevard, Box 50165
Suite 6-226
Honolulu, Hawai'i 96850-0053

Dear Mr. Hays:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated May 30, 2007 (RE: H4217) providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments at this time. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215 Kapolei, Hawaii 96707
Phone (808) 692-5054 • Fax (808) 692-5857
Website www.honolulu.gov

MUFI HANNEMANN
MAYOR

SSFM INTERNATIONAL, INC.
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LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO
07-518

June 7, 2007

FILE COPY

Mr. Jared K. Chang
SSFM International, Inc.
591 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment
Ewa, Oahu, Hawaii

Thank you for giving us the opportunity to comment on the pre-assessment consultation for the draft environmental assessment. We have no comments to offer at this time.

Please keep us informed as your project progresses.

Should you have any questions, please call Larry Leopardi, Chief of the Division of Road Maintenance, at 768-3600.

Sincerely,

Laverne Higa

Laverne Higa, P.E.
Director and Chief Engineer

LH:sm

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Craig Nishimura, P.E., Acting Director & Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, Hawai'i 96707

Dear Mr. Nishimura:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 7, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comments to offer at this time and you will be kept informed as project progresses. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

DEPARTMENT OF PARKS AND RECREATION

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
PHONE: (808) 692-5561 • FAX: 692-5131 • INTERNET: www.co.honolulu.hi.us

SSFM INTERNATIONAL, INC.
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JUN 06 2007
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MUFI HANNEMANN
MAYOR

LESTER K. C. CHANG
DIRECTOR

DANA L. TAKAHARA-DIAS
DEPUTY DIRECTOR

June 5, 2007

FILE COPY

Mr. Jared K. Chang, Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment - Ewa, Oahu, Hawaii

Thank you for the opportunity to comment at the Pre-Assessment Consultation Stage of the Environmental Assessment relating to the State of Hawaii's proposed Ewa Makai Middle School Project.

The Department of Parks and Recreation has no comment and as the proposed project will not impact any program or facility of this department, you are invited to remove us as a consulted party from the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

Sincerely,

LESTER K. C. CHANG
Director

LKCC:mk
(211016)

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Lester K.C. Chang, Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawai'i 96707

Dear Mr. Chang:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 5, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your department has no comment and the proposed project will not impact any program or facility. At your request, we will remove your department from the balance of the Environmental Assessment process.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

LINDA LINGLE
GOVERNOR OF HAWAII

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

SSFM INTERNATIONAL, INC.
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JUL-0 2-2007
JKC
FILE

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPO-07-122

June 27, 2007

FILE COPY

Mr. Jared K. Chang
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

SUBJECT: Pre-Assessment Consultation for Ewa Makai Middle School
Ewa, Oahu, Hawaii
TMK: (1) 9-1-069: 005

Thank you for allowing us to review and comment on the subject application. The document was routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Clean Water Branch, Hazard Evaluation & Emergency Response Office, and General comments.

Clean Water Branch

Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Anti-degradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. Please call the Army Corps of Engineers at (808) 438-9258 to see if this project requires a Department of the Army (DA) permit. Permits may be required for work performed in, over,

and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

3. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi)

   b. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the start of the construction activities.**

   c. Treated effluent from leaking underground storage tank remedial activities.

   d. Once through cooling water less than one (1) million gallons per day

   e. Hydro-testing water.

   f. Construction dewatering effluent.

   g. Treated effluent from well drilling activities

   h. Circulation water from decorative ponds or tanks

   You must submit a separate NOI form for each type of discharge at least 30 days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

4. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating

your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at 586-4309.

Hazard Evaluation & Emergency Response Office (HEER)

Lands formerly used for sugarcane production are now being developed into communities where residential home, schools and commercial businesses are being constructed. Chemicals associated with the sugarcane industry persist in soils today and may be a threat to public health and the environment. The HEER Office has identified former sugarcane production areas for assessment throughout the state and plans to work with property owners to conduct environmental assessment to identify and address soil contaminants prior to finalizing development plans for the properties.

The parcel listed for the Ewa Makai Middle School project was used for sugarcane production and should be assessed for chemicals associated with the sugarcane industry. If contaminants are found at elevated levels, then additional assessment is needed to determine potential risks and the need for remedial action. Removal or remedial plans must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan

If you have any questions please contact Laura Young at 586-4249

General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
CWB
HEER

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Kelvin H. Sunada, Manager
State of Hawai'i
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, Hawai'i 96801

Dear Mr. Sunada:

Subject: 'Ewa Makai Middle Schoo
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 27, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

Consultation with the Department of Army was conducted to identify and address project impacts to waters under their jurisdiction. The results will be included in the Draft EA. Any potential project impacts to State waters will be addressed to meet applicable criteria found in your Department's Administrative Rules.

NPDES permits and related permits will be identified and addressed in the Draft EA. A copy of the applicable NPDES permit application will be submitted to the State Historic Preservation Division for their review. Discharges associated with the project will comply with the applicable State Water Quality Standards under your Administrative Rules and requirements of Subsection 342D-50(1), HRS.

A Phase II Environmental Site Assessment (ESA) was conducted for this project site and will be discussed in the Draft EA. We have met with Hazard Evaluation and Emergency Response (HEER) Office staff to discuss the details and scoping of the Phase 2 ESA being completed for this project.

The Draft EA will include an adequate review of the standard comments provided via the Department of Health's website. As such, the proposed project will be designed in compliance with all applicable rules and regulations as promulgated by your Department's Administrative Rules. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

BOARD OF WATER SUPPLY

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

SSFM INTERNATIONAL, INC
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MUFI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman
SAMUEL T. HATA
ALLY J. PARK
ROBERT K. CUNDIFF
MARC C. TILKER

LAVERNE T. HIGA, Ex-Officio
BARRY FUKUNAGA, Ex-Officio

CLIFFORD P. LUM
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager and Chief Engineer

June 20, 2007

FILE COPY

Mr. Jared K. Chang, Planner
SSFM International, Incorporated
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Your Letter of May 29, 2007 on the Draft Environmental Assessment
Pre-Assessment Consultation for Ewa Makai Middle School

Thank you for allowing us the opportunity to comment on the subject document.

The existing water system will be adequate to accommodate the proposed Ewa Makai Middle School when the proposed water system improvements on Kapolei Parkway are installed and placed in service. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

Irrigation for the proposed middle school should be provided by the R-1 non-potable water system in the area.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

for KEITH S. SHIDA
Principal Executive
Customer Care Division

Water for Life . Ka Wai Ola

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Keith S. Shida
Principal Executive
Customer Care Division
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawai'i 96843

Dear Mr. Shida:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for your letter dated June 20, 2007 regarding the pre-assessment consultation efforts for preparation of the Draft Environmental Assessment for the subject project.

We confirm your information that the existing water system is adequate to accommodate the proposed improvements. A water allocation will be obtained during the design phase of the project.

Design plans will be coordinated with your department for review and approval as part of ministerial permits required for this project. The applicant will also pay the required Water System Facilities Charges when water is made available. Your department's cross-connection control and backflow prevention requirements will be incorporated in the project's design.

The on-site fire protection requirements will be coordinated with the Fire Prevention Bureau for the Honolulu Fire Department. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723 7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

SSFM INTERNATIONAL, INC.
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JKC
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June 14, 2007

Mr. Jared K. Chang, Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Preassessment Consultation for Draft Environmental Assessment
Ewa Makai Middle School
Ewa, Oahu, Hawaii

In response to your letter dated May 29, 2007, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from a fire apparatus access road as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)

2. Provide a water supply, approved by the county, capable of supplying required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

   On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of the 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

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

Should you have any questions, please call Battalion Chief Lloyd Rogers of our Fire Prevention Bureau at 723-7151.

Sincerely,

KENNETH G. SILVA
Fire Chief

KGS/SK:bh

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Kenneth G. Silva, Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai'i 96813-5007

Dear Mr. Silva:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for your letter dated June 14, 2007 regarding the pre-assessment consultation efforts for preparation of the Draft Environmental Assessment for the subject project.

The school will have designated fire access lanes in accordance to City and County of Honolulu, Fire Department Standards and Uniform Fire Code. The fire access routes will encompass all building structures and be clearly marked with appropriate signage and markings.

Adequate water supply will be provided. The Honolulu Board of Water Supply has acknowledged the existing water system would be adequate to serve the proposed school. Fire Hydrants will be located on-site to meet the Honolulu Fire Departments 150-foot coverage requirement.

Furthermore, we appreciate your information on the Uniform Fire Code requirements for this type of project. Design plans will be coordinated with your department through the review process. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

LINDA LINGLE
GOVERNOR

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

BARRY FUKUNAGA
DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.2513

SSFM INTERNATIONAL, INC
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FILE COPY

June 6, 2007

Mr. Jared K. Chang
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

Subject: Pre-Assessment Consultation for a Draft Environmental Assessment
Ewa Makai Middle School, Oahu

Thank you for your notification on the subject proposed new public school.

The Ewa Region is experiencing significant growth from different development projects. The circulation around and traffic associated with the proposed school is a factor we are interested in for our analysis of the cumulative traffic impacts to our highways. A traffic assessment report (TIAR) should be provided in the Draft Environmental Assessment. The TIAR should reflect the designed enrollment and staffing for the school and to any future capacity of the school.

Also, the school can be affected by the aircraft operations from Kalaeloa Airport and Honolulu International Airport. Aircraft noise, flight tracks, proper construction of the school facilities and necessary notification of aircraft flights overhead should be covered in your Draft Environmental Assessment.

We request that at least four (4) copies of the Draft Environmental Assessment be provided for review by our departmental and divisional (highways and airports) staff.

We appreciate the courtesy of your consultation and for the opportunity to provide our initial comments.

Very truly yours,

BARRY FUKUNAGA
Director of Transportation

SSFM INTERNATIONAL

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Brennon T. Morioka, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Mr. Morioka:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated June 6, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

Your interests in the traffic circulation around and associated with the proposed school will be addressed in the Draft Environmental Assessment. A traffic assessment report is being prepared for this project and will be included in the Draft EA. The TIAR document will include information on projected student enrollment associated with a previous Master Plan developed for this school. Traffic impacts would be more appropriately addressed when other facilities are programmed for implementation.

Noise impacts associated will be addressed in the Draft Environmental Assessment as suggested.

Four copies of the Draft EA will be provided when published. If you have any question on this matter, please call me 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

THE GAS COMPANY

SSFM INTERNATIONAL, INC
RECEIVED
JUL 23 2007
jkc
FILE

P.O. Box 3000
Honolulu, Hawaii 96802-3000

FILE COPY

July 18, 2007

SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Attention: Mr. Jared K. Chang

Subject: Draft Environmental Assessment
'Ewa Makai Middle School
Pre-Assessment Consultation for Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Please be advised that The Gas Company, LLC maintains underground utility gas mains in the project vicinity, which serves commercial and residential customers in the area. We would appreciate your consideration during the project planning and design process to minimize any potential conflicts with the existing gas facilities in the project area.

Thank you for the opportunity to comment on the Draft Environmental Assessment. Should there be any questions, or if additional information is desired, please call Stason Nishimura at 594-5689.

Sincerely,

Charles E. Calvet, P.E.
Manager, Engineering

CEC:ks
07-147

SSFM INTERNATIONAL

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

October 28, 2008

SSFM 2007_032.000

Mr. Charles E. Calvet, P.E.
Manager, Engineering
The Gas Company
P.O. Box 3000
Honolulu, Hawai'i 96802

Dear Mr. Calvet:

Subject: 'Ewa Makai Middle School
TMK: 1-9-069:027
Pre-Assessment Comments, Draft Environmental Assessment
'Ewa, O'ahu, Hawai'i

Thank you for the letter dated July 18, 2007 providing pre-assessment consultation comments for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

Applicable issues pertaining to the subject project will be addressed in the Draft EA. A copy of the Draft EA will be provided when published.

If you have any questions on this matter, please give me a call at (808) 531-1308. Thank you.

Sincerely,

SSFM INTERNATIONAL, INC.

Jared K. Chang
Planner

APPENDIX C

2005 Design Charette Summary Report

EWA MAKAI MIDDLE SCHOOL

Creating the School of Tomorrow

"DYNAMIC"

"PERFORMANCE"

"COMMUNITY"

DESIGN CHARETTE

Final Report – June 2005

For the Department of Education ♦ **By Mitsunaga & Associates, Inc. and The Orcutt/Winslow Partnership**

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EXECUTIVE SUMMARY

Ewa Makai Middle School – The School of Tomorrow

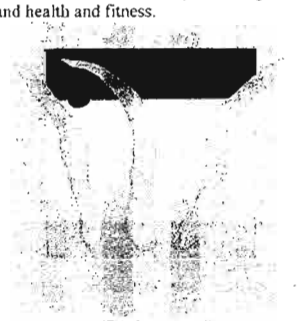
In early 2005, a task force was formed to assist in developing an educational plan to be used as guidance during the design charette for this new middle school in Ewa Region. This task force formulated a very unique educational plan that focused on exploration which specifically supports the three areas of environmental studies, performing arts, and health and fitness.

In addition, because of the involvement of the students, parents, teachers, and others in the community, the design of the school was guided by their beliefs and values. The program developed by the community drove the design of the school, allowing form to follow function.

"When you drive pass this school, don't look at it as just a building. It is much more than that. Every nook and cranny has been thoughtfully designed to enhance and support the education of children who enter it's door.
--Anne Greseth-Kim

Located in Ewa, one of Oahu's fastest growing communities, the school will serve 1,050 sixth to eighth grade students. It was designed to accommodate a year round multi-track schedule, provide flexibility in the use of classroom spaces, use financial and facility resources cost effectively, utilize sustainable design criteria, and provide a nurturing and exciting academic environment.

An Island School for the Future
Shaped by the vision of the community, Ewa Makai Middle School will emphasize an exploratory curriculum as an integral part of the vision of the school. The design of the school will provide opportunities for grouping of students into different teams or learning clusters. The design of the school shall support the three specialty focus areas of environmental studies, performing arts, and health and fitness.



"Performance"

With these focus areas in mind, the design of the school has very special features such as:

- An indoor dining facility is incorporated into the design which will also serve as a multi-functional performance area. This indoor performance area will also open up to an outside performance amphitheater which supports the curriculum direction for Ewa Makai Middle School.
- Secure outdoor learning gardens are provided in the design and located with direct access from the science classrooms and adjacent to the clusters of other core classrooms. The arrangement supports the environmental studies focus area.
- A cluster of classrooms that foster interdisciplinary teaching that also 'break" out into interior commons spaces. These classrooms have movable walls to create flexible learning environments. The arrangement will house three classrooms for core subjects, a science classroom and adjacent resource classrooms.
- A specialty classroom wing that houses all the specialty classrooms such as music, art, technology, family and consumer science, dance and performance and health and fitness.
- A virtual reality room is incorporated into the design plans as a way to look towards the future. Holographic projections will eventually enliven the classroom. History, for example, will not seem so "outdated." How much more significant great men and women

become when students can see and hear them.

- A library media center, with library and computer facilities, was located to serve parent and students' needs.
- State-of-the art technology will be provided throughout the school, and internet linkage will enable students to access worldwide communication networks.
- The administration area has been separated into administration functions and student center for support services. This will give students an ease of access for student activities.
- The entire building is designed with the "Shopping Mall" concept in mind. Staff and students both expressed a strong desire for a safe, indoor, and nurturing environment. This environment needs to have a variety of spaces to explore and learn from.
- The building, containing more than 150,000 s.f. with 52 classrooms, has been designed with a rich indoor feeling that encourages exploration and performance. The spaces make students feel comfortable, safe and nurtured.
- The exterior architectural style has been inspired by the plantation villages of Ewa.
- The community's efforts in designing the school have generated a deep sense of ownership and pride. This is likely to spread, as others in the community share in the cultural, technological, and recreational resources of the school.

"No limitations, no restraints, freedom, flexibility, capabilities, brainstorm, expand, synergy, creativity, personality, virtual reality, holograms ....Whew!!!! How exciting!! Can't wait to see the dream come true and be able to touch, hold, see, utilize the ideas that one time floated in our heads."

--Ari Caracol

The final charette meeting held on May 11, 2005 presented a uniquely designed one-building school. The feeling that the design invoked to the community was a safe, exciting, and nurturing school. The design supports the educational plan.

Community-Based Design

At the outset in early 2005, the Department of Education (DOE) formed a Task Force to represent the community, in exploring ideas for the school, to develop an education plan, and to prepare for the upcoming design charette.

An educational plan was formulated and was used to guide the design charette.

A steering committee was formed to represent the various stakeholders and be decision makers for the charette.

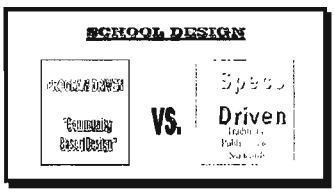
Participants and on-lookers also included representatives from the DOE, Department of Accounting and General Services (DAGS), nearby developers, the community, parents, and students.

Three design charettes was comprised of three sessions on March 15 – 18th., April 11 – 15th., and May 9 – 11th, 2005. This report provides a summary of the charette sessions and the resultant conceptual plans. The design program, basis for design, detailed notes, and FADS tradeoff comparisons are included as appendices.

This book is provided as both a history of the process and also to be used as an owner's manual in how to use this school. Every aspect of the design of the school has been based on sound educational principles and decisions made by the steering committee.

COMMUNITY DESIGN PROCESS SUMMARY

COMMUNITY-BASED DESIGN



The Task Force

The Task Force was a group of DOE staff; teachers, administrators, and representatives of developers; representatives from the community; parents; students; and organizations who share an interest in the design and direction of the school.

The Steering Committee

The Steering Committee consisted of 11 Task Force members who committed to participate in the design charette process full-time. They were responsible for representing the Task Force in making all the design decisions throughout the charette sessions. Also joining the steering committee during the charette sessions were various members of the Department of Education, Department of Accounting and General Services, community business representatives and community organizations.

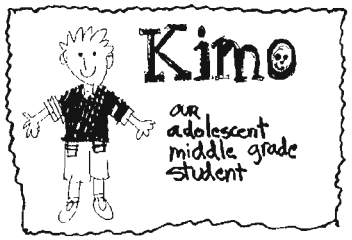
The Student Representatives

A group of students from the Campbell complex area provided input on desired learning environments. Students the provided review and comment as ideas were considered for incorporation into the final design.

The Start of the Visioning Process

In the three months prior to the charette the Task Force conducted meetings to develop a vision and educational plan. A common understanding of the needs of adolescents and key educational concepts that would guide the design of the school was formulated.

Characteristics of Middle School Students



Middle school students were characterized as follows:

Emotional Characteristics

- Self conscious
- Easily embarrassed
- Catty – most fights occur at 7th grade
- Hold grudges
- Do not like the spotlight
- Feel safe with a group
- Helpful
- Want to feel love
- Very emotional

Social Characteristics

- Friends are important
- Form cliques
- Act silly to mature
- Start to distance themselves from parents
- Affected by trends and fads
- Lots of peer pressure
- Like to talk

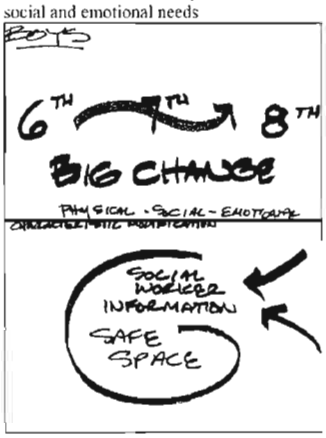
What the Students Want

The students identified the following as desirable attributes of a middle school:

- School should be all enclosed and air-conditioned
- Places to socialize and eat.
- Computer access
- Places that clubs can gather and meet.
- Ease of access to counselors and a safe and confidential place.
- Performance areas.
- Student store that can sell things and food
- Game rooms
- Vending machines
- More choices such as students can pick the foods to eat
- A green house
- A swimming pool and water slide
- Clean building
- Sound proof rooms
- Fewer exits and more security
- Places for lockers and storage
- Student activity room

- Places to rest and furniture such as bean bags
- Variety of activities
- Places are designed to make it easier for students to learn
- Hands-on activities
- Fitness center
- Homely feeling in the school

This information focused the groups' attention on adolescents and led to further developments in the school environment that would meet their unique academic, social and emotional needs



EWA MAKAI MIDDLE SCHOOL'S VISION AND GUIDING PRINCIPLES

Vision
The Ewa Makai Middle School's vision and guiding principles were developed by the task force and guided the steering committee during the design

Ewa Makai Middle School's Vision

"Ewa Makai Middle School - where learners are inspired to explore"

This statement guided the theme of the design. The resulting school provides countless areas of exploration space.

The Mission
Together we will:
1. Cultivate a safe, nurturing and rich environment through interactive partnerships and symbiotic relationships
2. Engage in a dynamic, responsive curriculum to produce life-long learners
3. Unify a sense of community pride by fostering partnerships through the community
4. Be receptive to technological advancements while encouraging the growth of positive, productive citizens.

Guiding Principles and General Instructional Needs

Educational concepts and general instructional needs including the following:

- Elements of middle school education and the changing needs of adolescents.
- Need for smaller learning communities within the middle school environment.
- School will support teaming within grade levels and provide the flexibility to cluster teams.
- Curriculum can be delivered through a variety of instructional strategies and group settings.
- Provide relevant learning opportunities through hands-on, activity based experiences.
- Flexibility through clustering of spaces and use of operable walls.
- Provisions to support multi-track schedule.
- Provide an exploratory curriculum.
- Inclusion for special education students.
- Provide an exploratory curriculum focusing on three specialty focus areas – environmental studies, performing arts, and health and fitness.
- Provide a student center and counseling to support the middle school student.
- Involve the community.
- Connection of administration to the school.
- Importance of the Library/Resource Center.
- Incorporate the student dining area as a performance area.
- Inclusion of the outdoor areas as part of the learning experience.
- Providing safety and security of staff.

These principles served as an important reference to the steering committee turned as the design of the school progressed.

Design Themes
The guiding principles also led to the development of design themes, which are listed below.

- Provides an environment in which students and staff feel safe.
- Provides a rich variety of learning environments
- Provides a dynamic and flexible learning environment that will allow team and interdisciplinary teaching
- Is a sustainable school and is environmentally friendly.
- Connections to the outside environment from classrooms

Curricular Emphases
While the school would offer its students a full range of options, the Task Force wanted the school to be known for the education it provided in three specialty curriculum focus areas:
- Environmental Studies
- Performing Arts
- Health and Fitness

The school features a multitude of informal performance areas, environmental friendly learning gardens, sustainable design concepts, and indoor and outdoor areas for health and fitness. With these curricular emphases students will be ready to take their place in the everyday world.

The Charette Process

The charette process consisted of a series of intense, brainstorming, project design sessions in which all appropriate groups came together. The process facilitated and accelerated communication and decision-making, and provided the opportunity for significant input by more people than the traditional design process allows.

The design charette for Ewa Makai Middle School was scheduled in three sessions, held over a two month period from March 2005 till early May 2005. During this time, the steering committee translated the ideas and themes, developed by the Task Force, into the physical design of the school. Each charette session focused on a different aspect of the design.

Charette One – March 14 -18, 2005
- Day one: Learning strategies and processes
- Day Two: Student characteristics and space implications
- Day Three: Understanding the FADS and social patterns and structures
- Day Four: Site constraints and alternative diagrams and discussion of the educational elements in relation to the FADS,
- Day Five: Discussion on alternative site plan diagrams in relation to teaching and learning strategies

Charette Two – April 11 – 14, 2005
- Day One: Re-discussion on learning styles and how they relate to the building, formulation of alternative plan diagrams on the site.
- Day Two: Presentation of various site development schemes, and various design element spaces of the building.
- Day Three: Review of specific needs and refinement of the floor plan
- Day Four: Input from the students and refinement of the plans
- Day Five: Presentation of site plan, floor plans and 3D character of various interior spaces.

Charette Three – May 9 – 11, 2005
- Day One: Review of floor plan and spaces and exterior elevations
- Day Two: Presentation of revised floor plan and spaces
- Day Three: Final presentation of the conceptual plan

At the end of the final charette session, the steering committee presented the conceptual design of the school to the task force, community-at-large, and State

representatives from both the Senate and House.

During the session, the Orcutt/Winslow Partnership served as facilitators for the process (For purposes of this document, they are identified as facilitators). They guided the steering committee in making informed decisions that shaped the design of the school, and ensured coherency between the Committee's educational plan and the design for the school.

In conjunction with the charette, architects from Mitsunaga & Associates, Inc. transformed the steering committee's decisions and concepts into physical spaces and forms (For purposes of this document, they are identified as architects). Each day, work developed during the sessions were compiled and interpreted into design drawings and concepts. This enabled the committee to make on-going decisions and revisions to the function, placement, and look of the school. Floor plans, elevations, a 3-D model, and renderings were completed for review.

The final product resulted in a cohesive conceptual design that represented the community's vision for the school.

Una explaining her group's concept

Paul Winslow- "I guarantee you that tour buses will come to your school to see it"

Tony Chun explaining his group's concept

Working on the schemes

The students

More students

PROGRAM PLANNING

PLANNING REQUIREMENTS

A a public school, Ewa Makai Middle School was planned in accordance with specifications for planning, design, and construction. An initial FADS program was provided to the consultants. As an essential part of the design charette process, Mitsunaga & Associates, Inc. conducted a technical analysis of the State's program requirements for the school. During the charette sessions, these program requirements were incorporated with the community's ideas for Ewa Makai Middle School to produce the conceptual design and revised program requirements and schedules.

Among the program requirements evaluated and summarized in this section are vehicular access, noise control, parking and security. Included in the Appendices are the DOE Facilities Assessment and Development Schedule (FADS), a comparison of the FADS and proposed space allocations for Ewa Makai Middle School.

Background
The proposed Ewa Makai Middle School will be able to accommodate large enrollments, provide flexibility in the use of classroom spaces, and use financial and facility resources effectively.

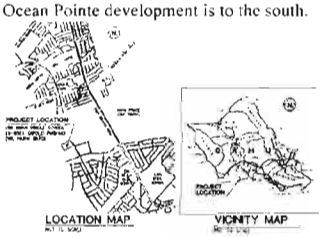
The school was planned for a design enrollment of 1,050 students with the capability of servicing 1,400 students through the use of year round multi-track schedule. (During any given school session in the year three out of four tracks would occupy the school facility).

Vicinity Map

Vicinity Map

The students will come from the surrounding Campbell High School complex, within the DOE's Leeward District. According to the DOE, school enrollment in the Leeward District was 31,449 students in 1993 and has grown to over 40,000 students presently. The rapid development in the Ewa-Kapolei area has created a pressing need for additional schools and classroom space.

The project site is within the Gentry development of Ewa Makai. The site is bounded on the east by the as yet un-constructed portion of Kapolei Parkway. Gentry is planning a residential development to the north, and bordering the site to the west is open space set aside as a regional drainage way. Haseko's Ocean Pointe development is to the south.



PROGRAM REQUIREMENTS

Noise Control
The design evolved into a single building where acoustical separation is important. This single structure will help mitigate sound transmission from the school to the surrounding community. The playfields are located to the west of the school building, adjacent to the regional drainage way.

Vehicular Access
Two driveways will provide access to the site. The main driveway will lead into the site directly from the intersection of Kapolei Parkway and Keaunui Drive. This driveway will lead to a student drop-off/pick-up zone, a staff and visitor parking area, and a service area for the cafeteria. The second driveway is from Kapolei Parkway and limited to right-in and right-out movement. This will be primarily used for staff parking and for buses.

Parking
The criteria for the City & County of Honolulu's Land Use Ordinance (LUO) call for 1 stall per 20 students of design capacity and 1 stall per 400 s.f. of office space. The LUO requires that the number of students be based on the Uniform Building Code's Table of Occupant Load Factor (from Table 10-A, 1 student per every 20 s.f. of classrooms and 1 per 50 s.f. of school shops and vocational rooms.) Therefore although the DOE's design capacity for the school is 1,050, per the LUO the required number of stalls would be
2946 Occupant (Classrooms)/20 - 147 stalls
17,662 s.f. (Office)/400 = 44 stalls
Total Stalls Required per LUO – 191

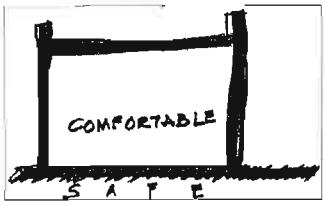
Loading
Loading requirements include bus loading and unloading, student drop-off areas, and service loading zones. DOE requested space to load 8 buses for the new school. City & County of Honolulu requires that the loading, unloading and stacking of vehicles be accomplished within the campus.

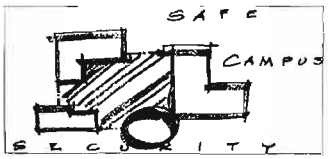
Students are often dropped off and picked up by their parents and the accommodation of an efficient student drop-off zone is required within the campus, separate from the bus loading. In addition, service vehicles must have convenient access to the school's administration and cafeteria facilities and adequate trash pickup sites be appropriately situated within the campus.

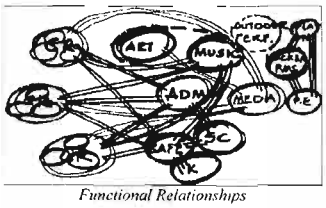
Security
The public's health, general welfare and safety on campus are concerns for all DOE facilities. Security and safety systems should be provided for day and potential night time use of the campus facilities. Ground floor windows must be specified with intermediate mullions or security grilles. Other means of deterring break-ins may be included in the building design when necessary.

Throughout the charette, discussions on safety of the campus were brought up.

Additional measures, such as electronic security systems for the administration, media center, and computer rooms, and other high-risk spaces need to be funded with operational funds rather than CIP project funds. The installation of these electronic systems, including conduit, wiring and electronic devices, will need to be coordinated during the design







Functional Relationships

Exploration

CHARETTE ONE
March 14 – 15, 2005

THE OBJECTIVE – LEARNING STRATEGIES AND SITE CONCEPT

The main objective of this charette was to come up with a site concept for Ewa Makai Middle School. It would locate the school buildings or building, playing fields, parking and drop off points in relation to one another and to the streets and neighboring properties. In order to reach this goal, preliminary discussion had to take place in regards to learning strategies and how students learn and teachers teach. Organizational concepts in relation to space implications had to be well thought out in order to come up with a building configuration that would fit the social patterns and structures for this school. Throughout this charette, The Orcutt/Winslow Partnership architects embarked on a series of group exercises to draw out ideas from the steering committee.

Group Activities
The Facilitators led the charette participants through a series of small group activities each day to help them explore options and prepare for the decisions involved in establishing a site concept. A full accounting and record of the activities is included in the appendix.

Day One:
1. The groups were asked: How do we learn and where do we learn?
2. This lead to an exercise to discuss teaching styles.
3. Finally, the participants discussed their ideas on the site concept and the "Right School" for the Ewa Community.

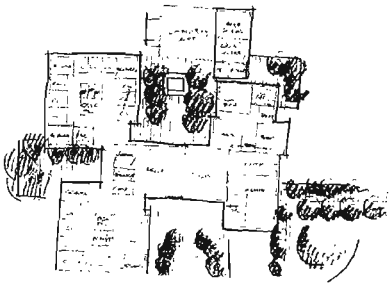
Day Two:
1. The participants were asked to describe the typical characteristics of a middle school adolescent. This exercise provided insight into space implications for the school.
2. This led to a second exercise discussing how we can create experiences in spaces that are non-traditional.
3. Finally, each group examined certain specific spaces for the school and came up with design suggestions and ideas.

Day Three
1. The facilitators asked the participants to present their homework assignment from the night before. Their homework was: **"Think outside the box."** Various innovative ideas were presented.
2. The second part of the day was spent reviewing the FADS (Facility Assessment Development Schedule), determining the exact count of classrooms, and functional relationships.

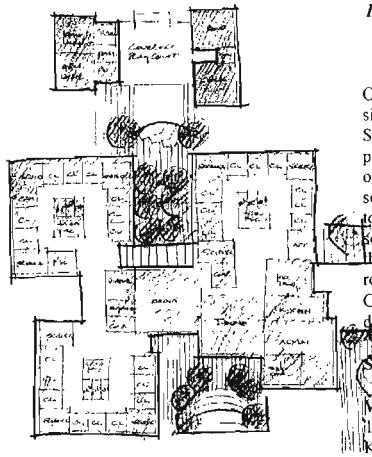
Day Four:
1. Participants presented their ideas to create an exciting space as the first exercise.
2. The facilitators then asked the groups to come up with concepts for one classroom Neighborhood. Various conceptual plans were developed.
3. The Gentry (developer) civil engineer then discussed the site constraints.

Day Five:
The facilitators and architects worked the night before to come up with different site concepts based on the week's discussion.

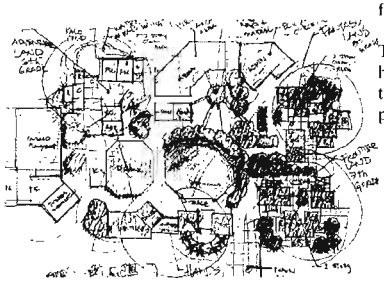
Four schemes were presented:
Three of the schemes featured a single building concept. One of the schemes featured a campus plan with separate buildings and large open spaces.


One Building - Scheme A

One Building – Scheme B



One Building Scheme C



Individual Buildings in an Open Campus SchemeD

On the last day of the charette, a definitive site concept was not decided upon. The Steering Committee wavered on whether to proceed with a one building scheme or an open campus scheme with a number of separate buildings. The group was leaning towards exploring further a one-building scheme due to the intriguing possiblilities this offered such as safety and security and relationship to the educational plan. Certain specific objectives, however, were decided upon as follows:

SITE CONCEPTS

Visual Front/Physical Front
The visual front of the school will be along Kapolei Parkway. Circulation and access to the school will occur at the Northeast corner of the site. This highly visible corner will convey the image of the school, friendly and open to the community.

The steering committee discussed that a highly identifiable entry be designed for the school and a circulation path to direct pedestrians be placed at this corner.

"Identifiable Entry"
The physical front entrance to the school will be on the northeast corner of the site and it was desired that the administrative services be placed there. Nearby and possibly adjacent to the Administration will be the Media Center. A fire access lane that is minimum 20 ft. wide should be provided around the site or buildings.

Parking and Drop-Off
Bus drop-off and parking will be along Kapolei Parkway and a secondary access drive and parking for parent drop-off will be at the north side of the site. Access from Kapolei Parkway will only be right turn in and right turn out as mandated by the City. The City also requested a deceleration lane along Kapolei Parkway. The parent drop-off access and parking will be allowed to left turn, right turn or go straight out.

Playing Fields
The play courts, and playing fields will be located on the West side of the property.

Site accommodation for a covered playcourt will also be provided. Since the actual building was not set at this charette, further discussion on the final location of the covered playcourt was deferred until later.

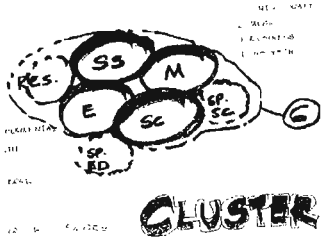
BUILDING CONCEPTS

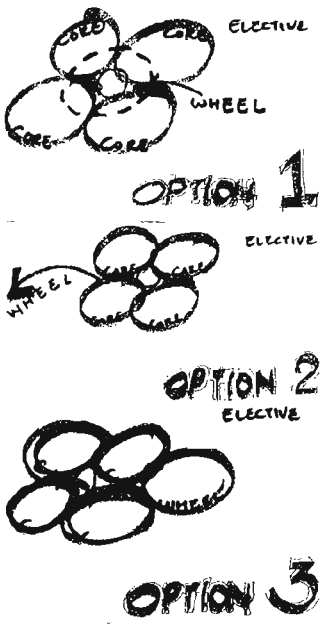
Kinds of Buildings
The exact configuration of the buildings or building was not set at this charette since the group was still deciding on the concept of a separate building campus scheme or a one building scheme. The group did desire certain "big ideas" or "Aha's" be incorporated into the final concept as follows:

- Amphitheater which may be the "heart" of the school
- Places in the school that students can explore
- A safe and secure campus
- Inviting and low maintenance
- Identifiable entry
- Performance areas
- Provide lots of shade and socialization areas
- Obstacle route and running track around the school
- Theme park setting
- Indoor mall concept
- Food kiosks, information center, student store
- More storage
- One story rather than 2 story buildings since stairwells may be a security issue
- Room that can be used for life-sized projections

Support Facilities
A central plant is needed for air conditioning and electrical power. The DAGS coordinator suggested during the charette that the central plant be placed near Kapolei Parkway since the utilities come off this road.

Curriculum
A lengthy discussion occurred during this charette on the actual classroom cluster and learning style that would be done in Ewa Makai Middle School. Options included a four core setup with a "wheel" teacher at the center and an elective outside, a four core setup with the "wheel" and elective subject outside, a five classroom setup with the wheel as part of the core and elective subject outside, and special education inclusion. The final classroom setup and final classroom count was not decided until the second charette session.





Technological Access Throughout
The technological infrastructure for cabling will be provided with funding from the State's Capital Improvements Programs (CIP) budget.

The school will be equipped to keep pace with the technologies found in the workplace and in the world. Students will

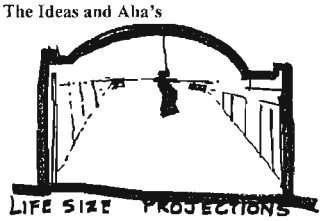
be able to simulate work environments to get a real sense of the world, facilitating their transition from school to work.

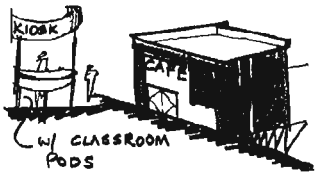
Voice/video and data connection capability will be provided not only in the classrooms but throughout the school.

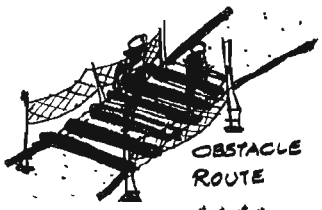
Internet access will provide linkages to world wide communication networks. The potential for networking with the Ewa Beach community will also be explored.

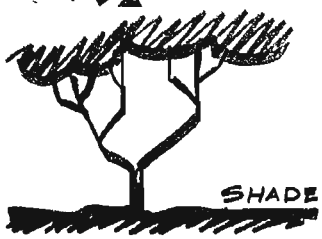
These technologies will allow for flexibility as 21st century concepts such as the electronic or virtual reality school can make it possible for life-long learning to take place virtually everywhere in the school, home and workplace.

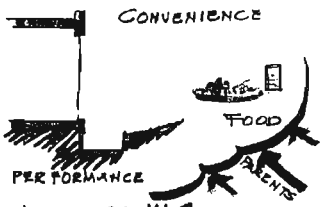
The Ideas and Aha's

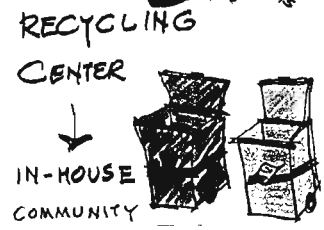










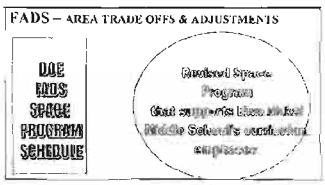


CHARETTE TWO

April 11 -15, 2005

THE OBJECTIVE – BUILDING AND SITE DEVELOPMENT

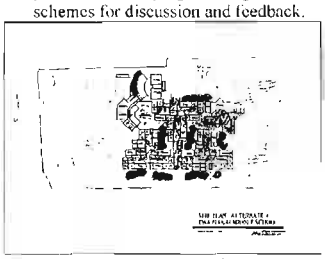
The main objective of this charette was to develop the spaces for the building and to further develop the site concept. Within the three week break prior to this charette, the Architects refined the FADS and area program with the DOE and tried to further examine each of the building concepts presented during Charette One.



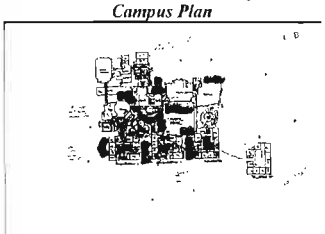
The DOE Facilities Assessment and Development Schedule (FADS) was used as the basis for forming the room schedule with the type, quantity and size of rooms. The FADS was revised to support Ewa Makai Middle School's specific curricula and educational plan by way of tradeoff.

Day One

1. Facilitators re-visited Charette One decisions to refresh the group's memory. An exercise was conducted asking the group to present ideas on learning styles and how they relate to the building. The architects then presented 10 varying building and site schemes for discussion and feedback.

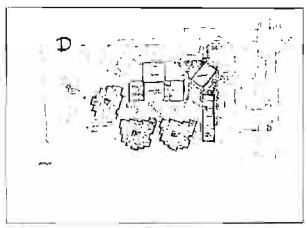


Scheme A – Consolidated Bldgs. in a Campus Plan

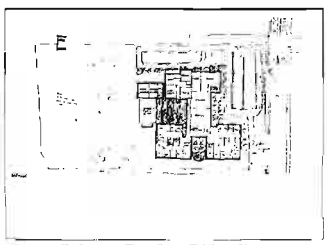


Scheme B – Three Neighborhood Cluster in a Campus Plan

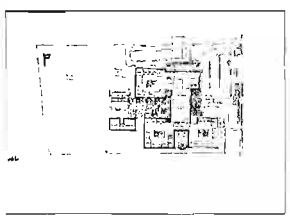
Scheme C – One Bldg. – Three Neighborhoods



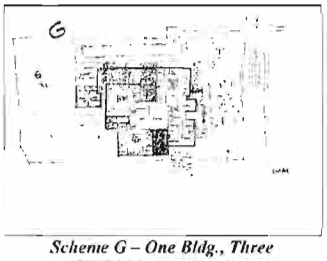
Scheme D – Three Neighborhoods, Open Campus Plan



Scheme E – One Bldg., Two Neighborhoods



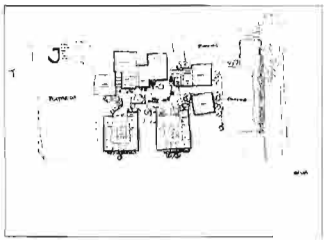
Scheme F – One Bldg., Three Neighborhoods



Scheme G – One Bldg., Three Neighborhoods Variation

Scheme H – One Bldg., Two Neighborhood Variation

Scheme I – Three Neighborhood, Partial Campus Plan with Village Green

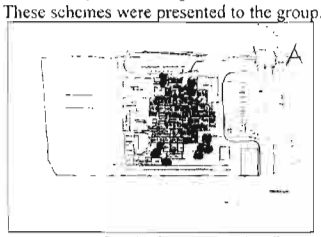


Scheme J – Two Neighborhood, Partial Campus Plan with Village Green

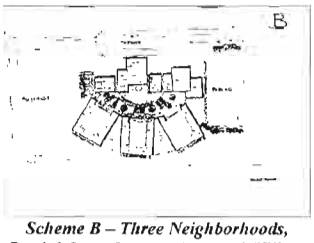
The afternoon session of this day one's charette reviewed and discussed all the different schemes. The group continued to waver on the one building closed campus idea or the separate building open campus plan.

Day Two

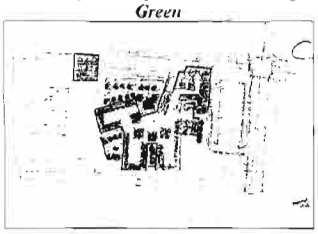
The Architects consolidated the ideas and discussion from Day one and came up with three conceptual building/site schemes. These schemes were presented to the group.



Scheme A – One Bldg. with Media Center as the hub with Three Neighborhoods



Scheme B – Three Neighborhoods, Partial Open Campus Plan with Village Green



Scheme C – One Bldg., Three Neighborhoods

The steering committee discussed and made comments on each of the three schemes. Scheme C had the most comments in it's favor and the group started leaning in the direction of a one building concept.

Day Three

This day's exercise further refined specific elements of the plan and re-visited the educational goals as it relates to the building plan.

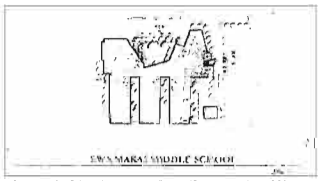
Day Four

1. The architects presented further refinements on the plan and the group further refined the plan. Specific areas of discussion were:
   - The electives area
   - Administration
   - Kitchen
   - Teacher planning
   - Special education and the FSC rooms
   - Performance areas

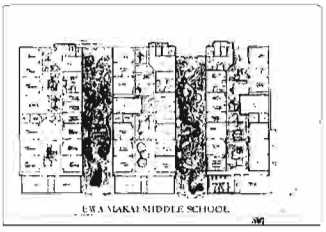
2. Later during the day, selected students came and discussed their ideas on what they wished for Ewa Makai Middle School.

Day Five

The Architects presented a further refinement of the ideas presented on this last day. A conceptual plan and 3-D space renderings were presented to define the character of the school.

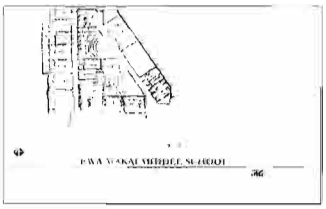


Overall Site Plan – One Bldg. with Three Neighborhoods

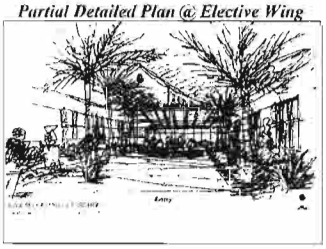


Partial Detailed Plan @ Neighborhoods

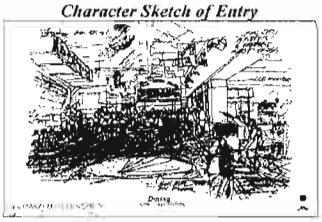
Partial Detailed Plan @ Administration/Media Center/Kitchen



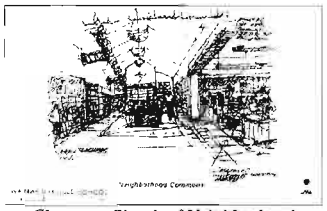
Partial Detailed Plan @ Elective Wing



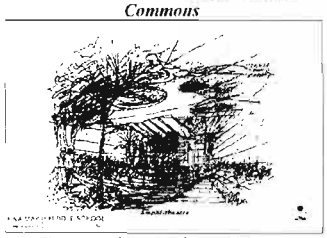
Character Sketch of Entry



Character Sketch of Dining Commons



Character Sketch of Neighborhood Commons



Character Sketch of Amphitheater

Charette Two Design Results Summary

Features of this conceptual plan included:

- A one building concept for the entire middle school.
- Three separate "Neighborhoods" with an interior commons.
- Classroom setup allowing interdisciplinary team teaching with adjacent science classrooms and resource classrooms
- Operable walls between classrooms to allow team teaching and collaboration
- An indoor dining area with a performance area
- An Administration area at the front entry of the school
- A separated Comprehensive Student Support area, Counseling Center, and Student Activity Center that allows ease of access by students
- An electives wing that houses art, dance, computer, music and supplemental classrooms
- A physical education area directly adjacent to the playfields and the covered playcourt
- Incorporation of a Virtual Reality Room near the Media Center
- Incorporation of an outdoor amphitheater to support the school's educational plan of performance
- Outdoor learning gardens adjacent to the Neighborhood wings to support the school's educational plan of environmental studies
- A Fitness Center and PE classroom to support the school's education plan of health and fitness

"WOW"

--Annette Nishikawa--

Comments on the Design

After reviewing the plans, the group said:

- The design had a feeling of safety and security
- The amphitheater was the "heart" of the school
- It felt like they were at "Kahala Mall"
- There was flexibility in the classroom layout
- There was a discussion on de-centralizing the restrooms and spreading them out at the classroom core. The group responded that since this is a security issue, they preferred if the restrooms remained centralized near the dining area for safety, security and easy surveillance.

The Steering Committee then commented on the individual space layouts for further refinement and this Charette Two ended.

CHARETTE THREE

May 9 – 11th, 2005

The main objective of this charette was to confirm the outcomes of the previous charettes. Working with the site and building concepts from Charettes One & Two, the architects developed a cohesive conceptual design in the three weeks prior to the start of Charette Three. This conceptual design captured the educational goals previously presented and the community's vision for the school.

Day One:

This day was spent reviewing a more finalized floor plan of the building. The Steering Committee generated some review comments on certain spaces and functional relationships.

Some comments received were:

- Adjustments of a few of the science classrooms placement within the neighborhoods.
- Addition of storage areas
- Revisions at the CSSS and workrooms spaces
- Adjustments at the counselor offices, lobby, and waiting
- Adjustments at the elective area such as the art classrooms, music and special education
- Addition of teacher's restrooms at the elective area
- Adjustments at the custodial center

Day Two

The Architects completed the revisions requested from Day One. Additional comments were received as follows:

- Revise storage area adjacent to the covered playcourts to be more secure
- Revise teacher's workroom to have access to the movable storage area
- Revise some classrooms and science rooms to show more flexible furniture
- Add storage in the dining area for chair and stage storage
- Revise counters at administration lobby to allow access to storage

Day Three

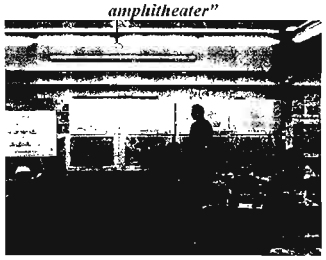
The Architects and Steering Committee presented the final concept on Day Three. Included in the presentation were final plan drawings showing an overall floor plan and detailed plans of certain areas of the building, a site plan, exterior elevations, renderings and a scale model. Simple furniture plans were provided only to depict scale and interior concepts. The renderings of the school from different perspectives brought to life the physical spaces of the campus and buildings, and depicted how these spaces will function.

A few of the selected Steering Committee members were asked to present certain parts of the building and site. The plans and renderings succeeded in capturing the Steering Committee's vision for the school.

"As I look at this school's design, I firmly believe that tour buses will be bringing in people to view it and students will be breaking down it's doors to enter"

--Paul Winslow—

"Debbie Hatada explaining the amphitheater"



"Marvin explaining the function of the Neighborhoods"

"The Architectural Team with Senator Espero and Representative Pine"

FINAL DESIGN CONCEPTS

CIVIL PLAN

Grading and Drainage
Grading will conform to City & County of Honolulu codes and ordinances. On-site fill will be used wherever possible. Fill slopes will not exceed 2:1 at building foundations, and site grading will have slopes of 3:1 or less whenever possible. Erosion, dust and pollution controls will meet all government requirements.

The 18.542 acre site for the school is located in the Ewa Plains as part of a residential area master planned by Gentry.

The internal drainage system for the school will use swales wherever possible, with a minimum slope of one percent. Building finished floors will be higher than the surrounding grades, and runoff will be directed away from the building.

Wastewater/Water
The potable water supply will be off the Kapolei Parkway master meter, which will have provisions for a fire meter as well. Fire hydrants will be installed on the site.

Roadways
Access to the school will be off Kapolei Parkway. Two access drives/roads are planned for the school. The North access will be for parent drop-off and the east access off Kapolei Parkway will be right turn in and right turn out only for buses.

LANDSCAPE PLAN

Design Approach
The landscape concept for the Ewa Makai Middle School will support the design of the classroom building and addresses function, the Hawaiian culture, the climate of the Ewa plains, and landscape maintenance.

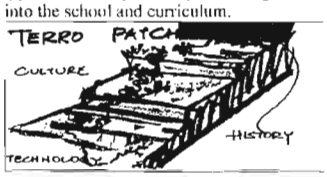
Plan Features
Entry
The school will have a sign at the corner or near Kapolei Parkway and the entry drive. The sign will have accent landscaping to support it such as palms and low ground covers.

Entry Plaza
The entrance to the school will be a welcoming landscaped plaza with special paving, accent palms, built-in seating, and an identification sign for the school and near the administration. It will be a place where students can meet friends before or after school.

Amphitheater
The Amphitheater will be the main gathering space for the school. It will have raised seating that may accommodate upwards to about 1000 people. The space will be shaded by a fabric-like structure that could be in the form of sail. the floor of the amphitheater will be paved with special paving in a blue wave pattern suggesting a voyage on the sea.

Classroom Courtyards
Each classroom courtyard will have a theme which supports the middle school curriculum and Ewa Makai Middle School's educational plan. Examples are: Space, Native Hawaiian Species, and an ahupua'a. Students may be encouraged to help maintain these spaces. If a lo'i is integrated into the design, students could be involved in the planting and harvesting of taro.

The courtyards are long and linear. The landscape design will break up the spaces and create smaller gathering spaces. Natural shapes and curvilinear forms will lessen the liner feel of the space During the charette sessions, the Steering Committee specifically requested these types of landscape concepts be integrated into the school and curriculum.

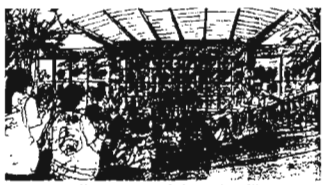


ARCHITECTURAL PLAN

Siting
The preferred one-building concept was sited to achieve a safe, secure and dynamic school environment for students, teachers, and the community. The Administration area and Media Center was sited on the Northeast corner of the building as the first point of entry for students. Students would enter the building at this corner and be directed into a "mall" like space. Off the South side of the mall will be the three Classroom Neighborhoods. The central commons of the building will be the dining facility where students can socialize and gather. At the West wing of the building will be all the specialty classrooms, electives and the PE Locker/Showers. The PE component will be directly adjacent to the covered playcourt and outdoor playfields and playcourts.

"Social and gathering places"

As a major venue for community as well as school events, the outdoor amphitheater is centrally located at the North end of the building and is actually the "heart" of the school.



"The heart of the school"

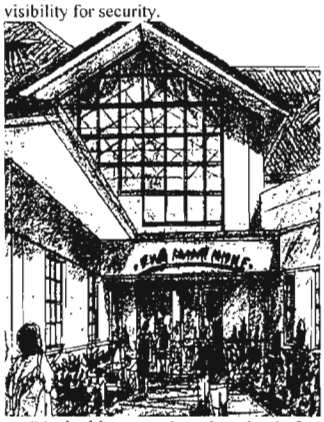
Historic Ewa Plantation Style
Honoring the history of the region, the school building will have a simple roof form, deep overhangs and articulated windows of the Ewa Plantation residential style. Hip/gable roofs and generous eaves will provide protection from the sun. Clerestory windows at various location throughout the building will provide daylighting options which enhances learning. Cool, soothing exterior materials will add a feeling of comfort for the staff and students. Vibrant interior finishes and colors will enhance the performance aspect of the school.

"The historic Ewa style"

Diversity, Comfort, Safety and Security
This one-story building will be designed with both a residential and spacious feeling that promotes responsibility through a sense of pride and ownership. Flexible learning environments will support diverse instructional strategies and group as well as individual learning experiences.

"A variety of learning spaces"

Inviting entries, indoor-outdoor spaces and landscaped courtyards will provide a variety of places for student interaction. Buildings will be designed with view and daylight windows as well as to ensure visibility for security.



"An inviting entry into the school of tomorrow"

STRUCTURAL PLAN

Foundation and Floor Slab
The structural system will be slab-on-grade, with a foundation of continuous and spread footings bearing on situ stiff or engineered fill.

Concrete slab-on-grade will be reinforced and on a moisture barrier.

Walls and Columns
Exterior, bearing and shear walls will be grouted concrete masonry units (CMU) or reinforced concrete walls. Poured-in-place concrete or CMU columns will be used to support beams and girders.

Roof
A steel roof and insulation will be supported by structural steel beams, trusses or frames. Purlins will be used to support the span between the steel beams, trusses or frames.

MECHANICAL PLAN

Fire Sprinklers
As required by code, the building will be protected by a wet pipe fire sprinkler system. To minimize vandalism, fire sprinkler risers will be placed indoors and sprinkler heads will be concealed pendant type.

Air Conditioning
The building will be provided with air conditioning. No air conditioning will be provided for the covered playcourt, locker/showers, restrooms and the kitchen except for the kitchen manager's office. In this school, since the dining area is part of the interior commons, the area will be air conditioned.

Plumbing System
Floor-mounted, flush valve water closets, urinals, wall-hung lavatories, floor drains and a hose bibb will be provided for restrooms. fixtures will be selected to meet ultra-flow flow requirements. No hot water will be provided to these restrooms.

All classrooms or as required will be provided with countertop stainless steel sinks, with a solids interceptor. No hot water will be provided. The science classrooms will be provided with acid-resistant sinks and countertops. The kitchen next to the dining area will be provided with a grease trap at the exterior of the building.

The PE Locker/Shower facilities will be provided with private showers Hot water will be provided to all showers. Shower valves will be a pressure compensated type with volume and temperature control.

Handicapped accessibility provisions will be designed using the *American with Disabilities Act Accessibilities Guidelines*. Fixture heights will be designed to adult height dimensions.

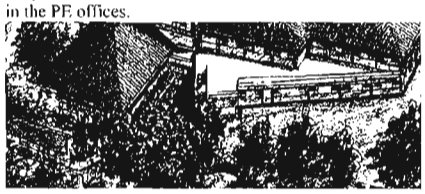
ELECTRICAL PLAN

Electrical System
Primary power will be provided by Hawaiian Electric Company. An underground system will deliver power from Kapolei Parkway to the primary switch and service transformer dedicated to the campus.

Secondary power for the school will originate from a new pad-mounted transformer and will be routed to a metering switchboard in the central plant building.

Technology Infrastructure
The technology infrastructure for cabling will be provided. For the Neighborhood building wings and all other classroom building wings, telephone and television cables will be installed to the terminal blocks on the intermediate distribution frame backboards, and data cables will be installed to the fiber distribution cabinets on the intermediate distribution frame backboards.

Telephone, television and data cables will be installed to all outlets in the administration area, dining, student activities area, and media center. Also, telephone and data cables will be installed in the PE offices.



Telephone System
Telephone service will be provided by Hawaiian Telephone Company. The telephone service will be routed through an underground system to the signal room in the Media Center.

Cable Television System
Cable television service will be provided by Oceanic Cable Co. The cable television service will be routed through an underground system to the signal room in the Media Center.

Exterior Lighting
Energy-efficient, high pressure sodium luminaires will be provided around the exterior of the building for security and general illumination. High pressure sodium pole-mounted lights will be provided for illumination of all driveways and parking areas.

General area lighting will be provided for the outdoor amphitheater stage area. Low-level landscape lighting will be provided for accent lighting. If budget allows, specialty performance lighting may be included. The exterior lights will be operated by a lighting contactor with time switch control.

Interior Lighting
General interior illumination will be provided by energy-efficient fluorescent luminaires, and will be recessed into the ceiling wherever possible.

As required by code, emergency lighting will be provided within selected fluorescent luminaires. Illuminated exit signs will be provided for all emergency exits and exit passageways.

For large rooms, multi-level and/or zoning switching will be provided for energy conservation and selectivity for task illumination. Track-type lighting and wall box dimmers will be provided for the stage area in the dining commons. As budget allows, specialty lighting may be provided.

Fire Alarm System
A campus-wide, integrated fire alarm system will be provided, with the main fire alarm control panel located within the administration area. Fire alarm equipment for the entire building will also be provided. Additional devices, such as smoke detectors, food service fire protection system connections and sprinkler system connections, will be provided as necessary.

CONCEPTUAL DESIGN SUMMARY

CIVIL PLAN

- Conformance to City and County of Honolulu grading codes and ordinances
- On-site fill used wherever possible
- Fill slopes not to exceed 2:1 at building foundations; site grading slopes of 3:1 or less wherever possible
- Erosion, dust and pollution controls per government requirements
- Site outside 100-year flood plain
- Swales for internal drainage system wherever possible with a minimum one percent slope
- Building finished floors higher than surrounding grades; direct run-off away from buildings
- Potable water supply off Kapolei Parkway master meter; includes provisions for fire meter
- Install fire hydrants on site
- Access to school off Kapolei Parkway by way of two access roads

LANDSCAPE PLAN

- Landscape plan supports the educational plan and middle school concept
- Dramatic landscaped plaza at the entry that is welcoming using special paving, accent palms and trees, built-in seating and identification signage
- Medium to large canopy trees for shade in large, open spaces to medium trees for shade in tighter areas and to define student gathering places
- Special landscaping at the amphitheater to depict a sailing voyage
- Cultural garden courtyards that are themed to support the middle school curriculum for Ewa Makai Middle School

ARCHITECTURAL PLAN

- A one-building concept to provide a safe, secure but dynamic school environment
- Administration and the Media Center located near the front entry of the school
- Comprehensive Student Support Services, Student Activities, and Counseling situated for ease of access for students

- The amphitheater at the heart of the school
- Building design honors the history of the region which is the Ewa Plantation style
- Simple roof forms, deep overhangs and articulated windows
- Hip/gable roofs and generous eaves for protection from the sun
- Cool, soothing exterior materials and finishes and colors for added comfort
- Vibrant interior colors to enhance learning
- Three Neighborhoods that support the flexible learning environment, interdisciplinary team teaching and diverse instructional strategies and learning experiences
- Variety of inviting indoor-outdoor spaces for student interaction
- View and clerestory windows for daylighting and security

STRUCTURAL PLAN

- Slab-on-grade, with foundation of continuous and spread footings, bearing on solid material
- Reinforced concrete slab-on-grade with moisture barrier
- Exterior, bearing and shear walls of grouted CMU or reinforced concrete walls
- Poured-in-place concrete or CMU columns to support beams and girders

- Steel roof and insulation supported by structural steel beams, trusses or frames

MECHANICAL PLAN

- Wet pipe fire sprinkler system for entire building
- Air conditioning for entire building; no air conditioning for covered playcourt. PE lockers/showers, kitchen except for manager's office
- For restrooms, ultra-low flow water closets, urinals, wall-hung lavatories, floor drains and hose bibb
- For classrooms, countertop stainless steel sinks, with solids interceptor
- For science classrooms, acid resistant sinks and countertops
- For kitchen, grease trap at exterior of the building
- Private showers in the PE locker/showers
- Handicapped accessibility design using *American with Disabilities Act Accessibility Guidelines*

ELECTRICAL PLAN

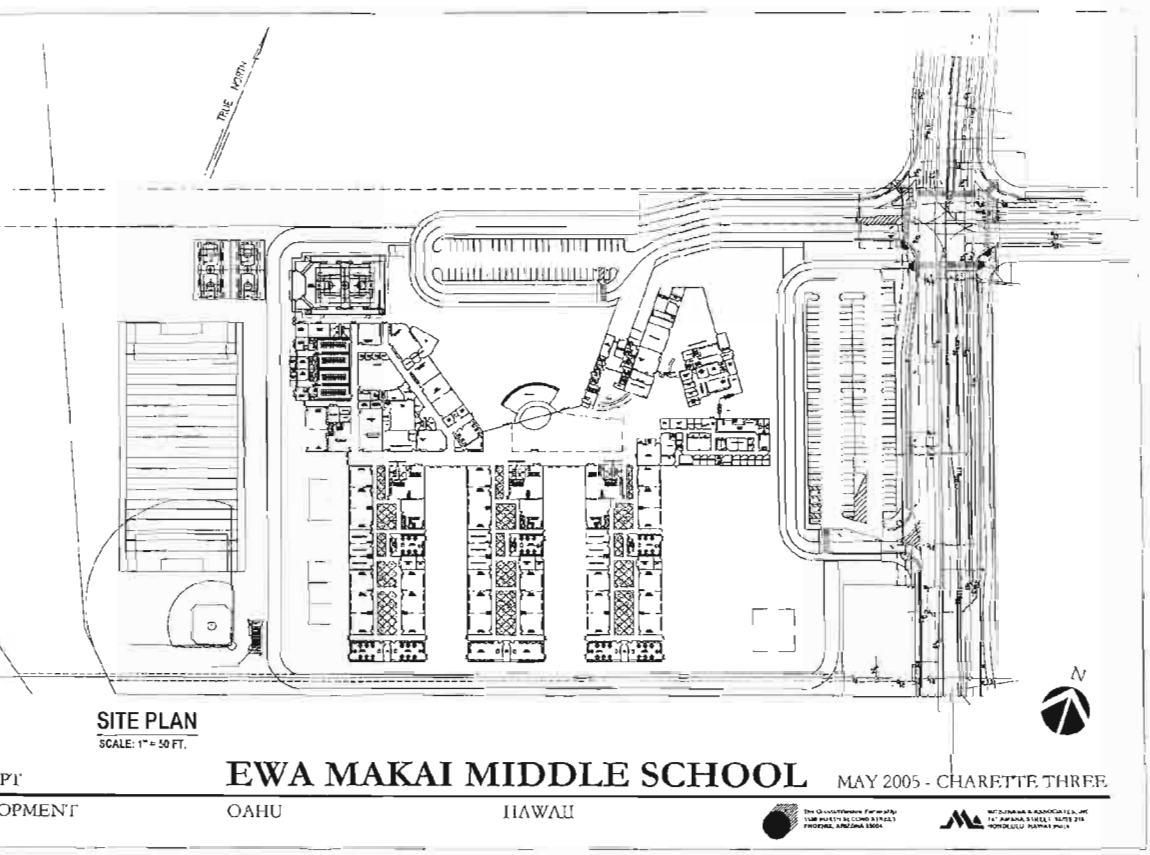
- Electrical power from Hawaiian Electric Company
- Technology infrastructure includes installation of telephone, television and data cables to the intermediate distribution frame backboards for the building and to all outlets in administration, dining and media center
- Telephone service from Hawaiian Telephone Company
- Cable television service from Oceanic Time Warner Cable
- Energy-efficient, high pressure sodium luminaires around building exterior
- High-pressure sodium pole-mounted lights for driveway and parking areas
- General area lighting for outdoor stag area. As budget allows, specialty theatrical lighting may be added
- Low-level landscape lighting for accent lighting only
- General interior illumination by energy efficient fluorescent luminaires
- Emergency lighting as required by code
- For large rooms, multi-level and/or zoning switching for energy conservation and selectivity for task
- Track-type lighting and wall box dimmers for dining area stage
- Campus-wide, integrated fire alarm system
- Fire alarm equipment in building
- Smoke detectors, food service fire protection system connections and sprinkler system connections as necessary

COST ESTIMATES

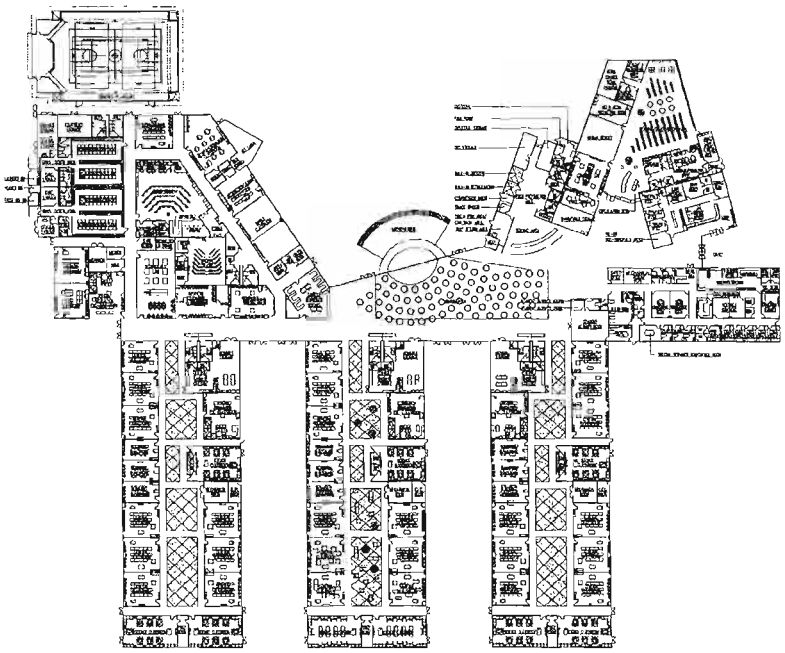
A conceptual phase cost estimate has been prepared for Ewa Makai Middle School. This estimate is for on-site civil, landscape, architectural, mechanical, electrical and structural costs. The total estimated cost of the proposed school construction, in terms of 2005 dollars, is approximately **$64.3 Million Dollars.**

This estimate does not include the cost of the portable classrooms shown on the site plan. It does not include design fees, permit fees, utility connection services fees, furniture and equipment costs for furniture that is provided by the State, or nay other costs not directly related to the construction of the school.

CONCEPTUAL DESIGN



SITE PLAN



GRAPHIC SCALE

CONCEPT

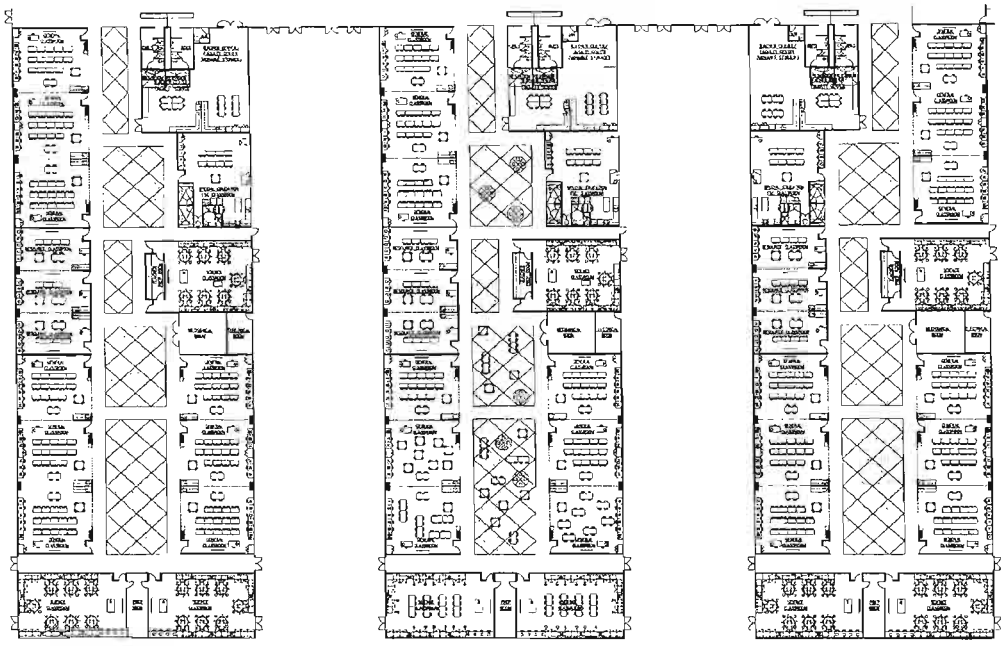
DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

MAY 2005 - CHARETTE THREE

OAHU HAWAII

OVERALL BUILDING PLAN



GRAPHIC SCALE

CONCEPT

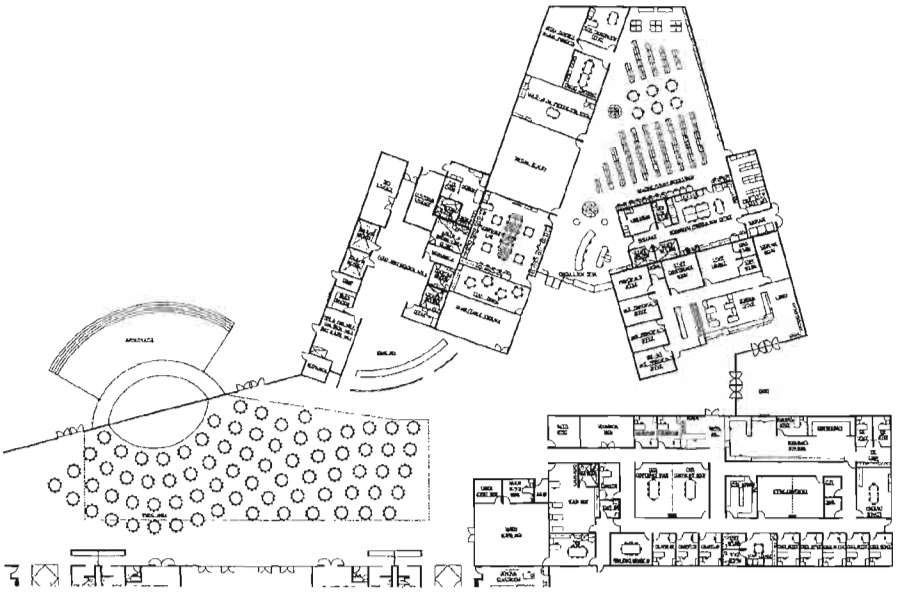
DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

MAY 2005 - CHARETTE THREE

OAHU HAWAII

DETAILED PLAN @ NEIGHBORHOODS



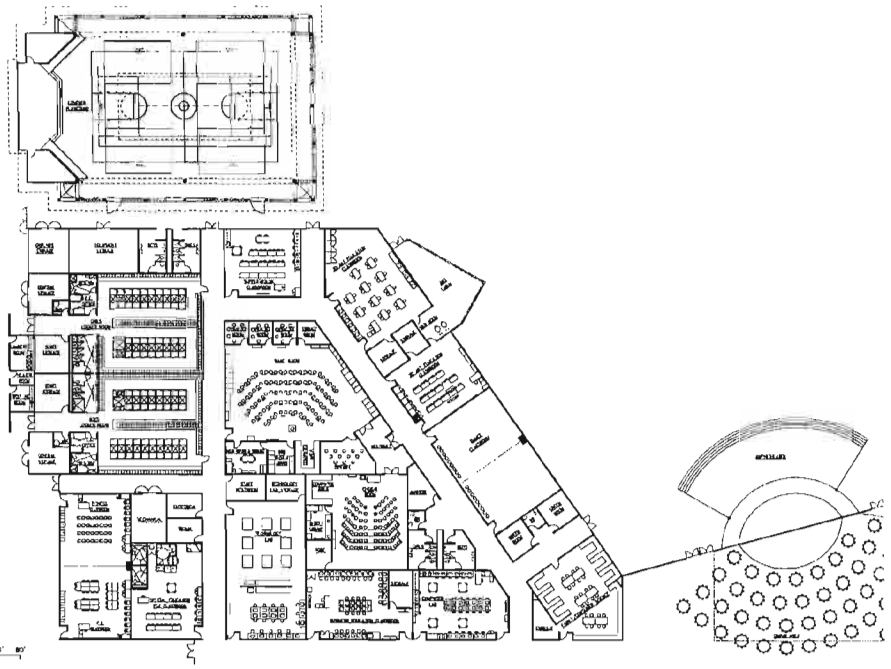
CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

MAY 2005 - CHARETTE THREE

DETAILED PLAN @ ADMINISTRATION/LIBRARY WING



GRAPHIC SCALE

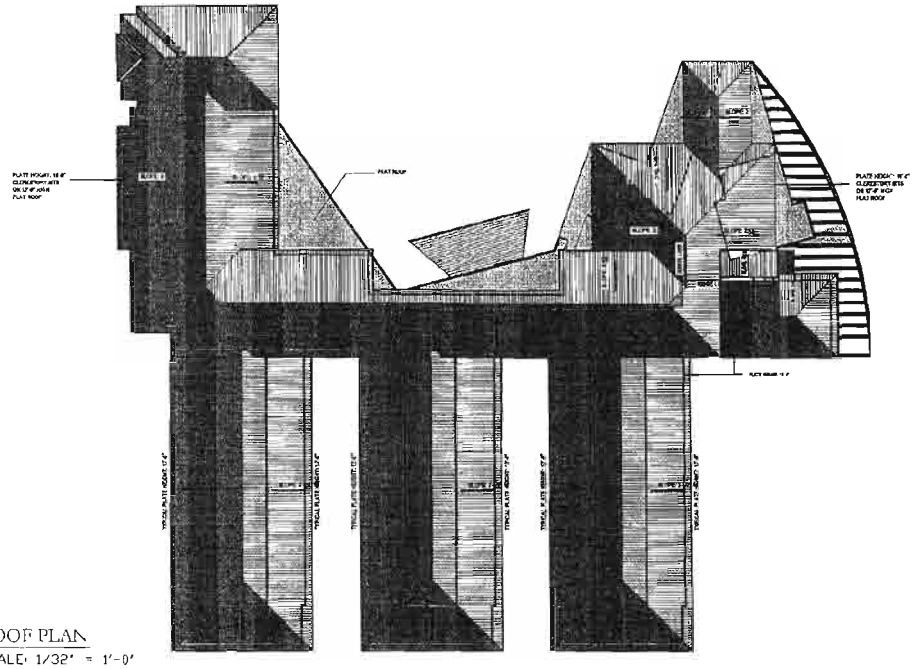
CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

MAY 2005 - CHARETTE THREE

DETAILED PLAN @ SPECIALTY CLASSROOM WING.



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

N

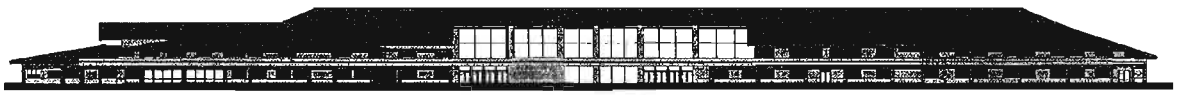
ONCEPT **EWA MAKAI MIDDLE SCHOOL** MAY 2005 - CHARETTE THREE

EVELOPMENT OAHU HAWAII

ROOF PLAN

SOUTH ELEVATION

EAST ELEVATION



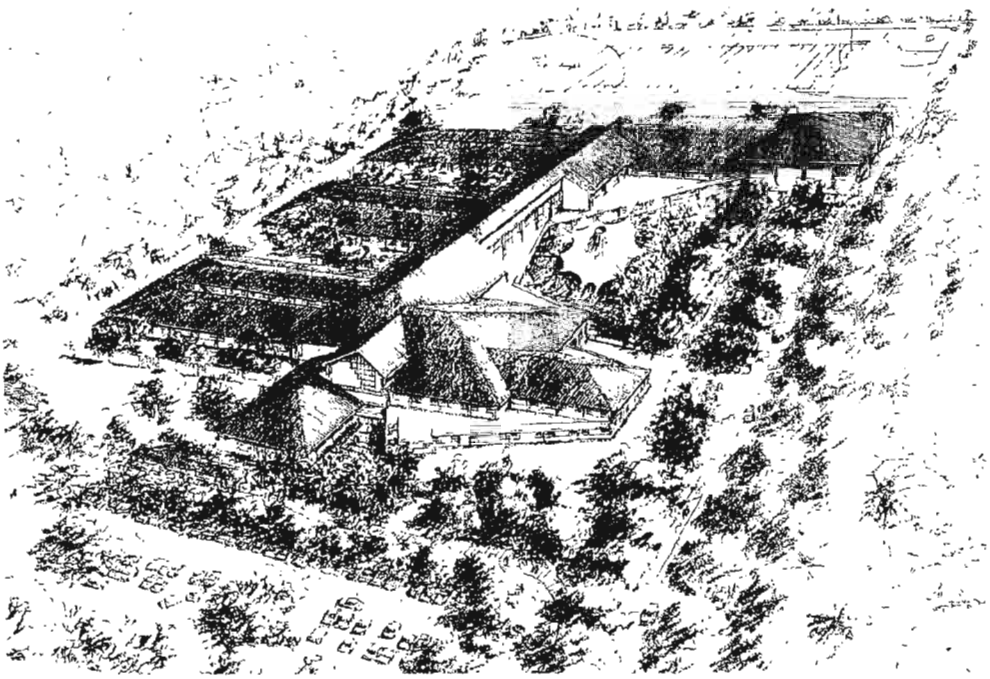
NORTH ELEVATION

WEST ELEVATION

0 10 40 80 100 Ft
SCALE: 1" = 20 FT.

ONCEPT **EWA MAKAI MIDDLE SCHOOL** MAY 2005 - CHARETTE THREE

EXTERIOR ELEVATIONS



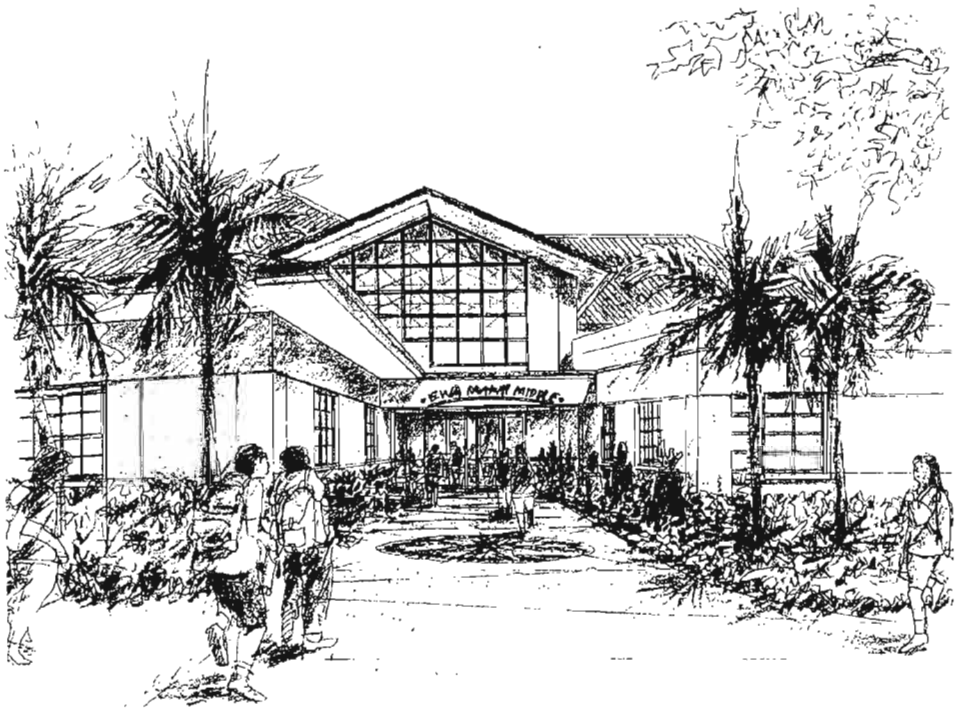
PROJECT CHARACTER SKETCH

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

MAY 2005- CHARETTE THRE



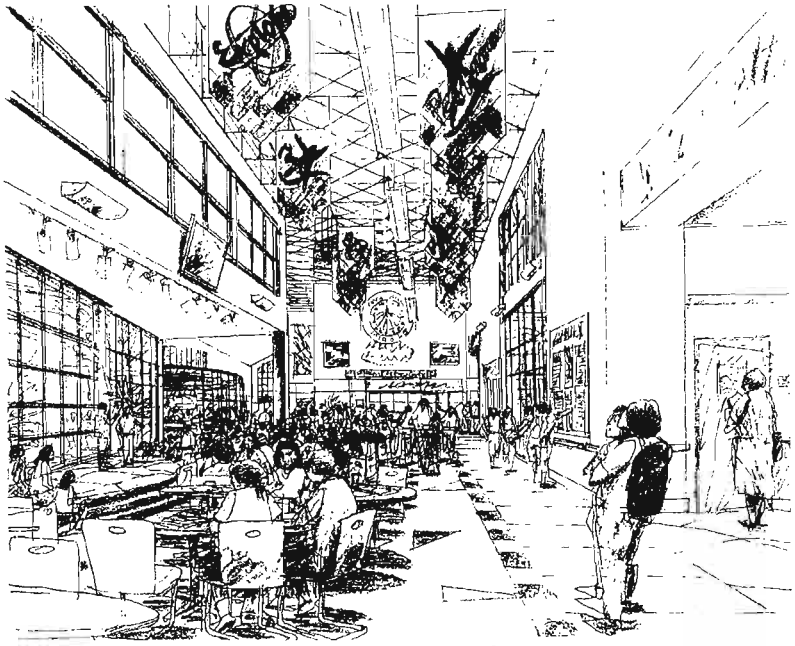
SCHOOL ENTRANCE

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

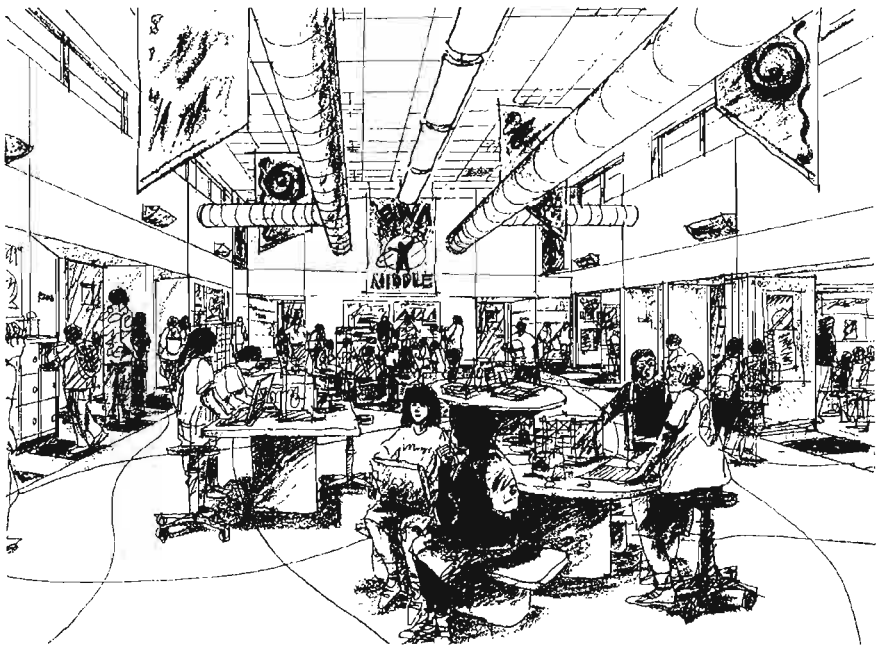
OAHU HAWAII

MAY 2005- CHARETTE THREE



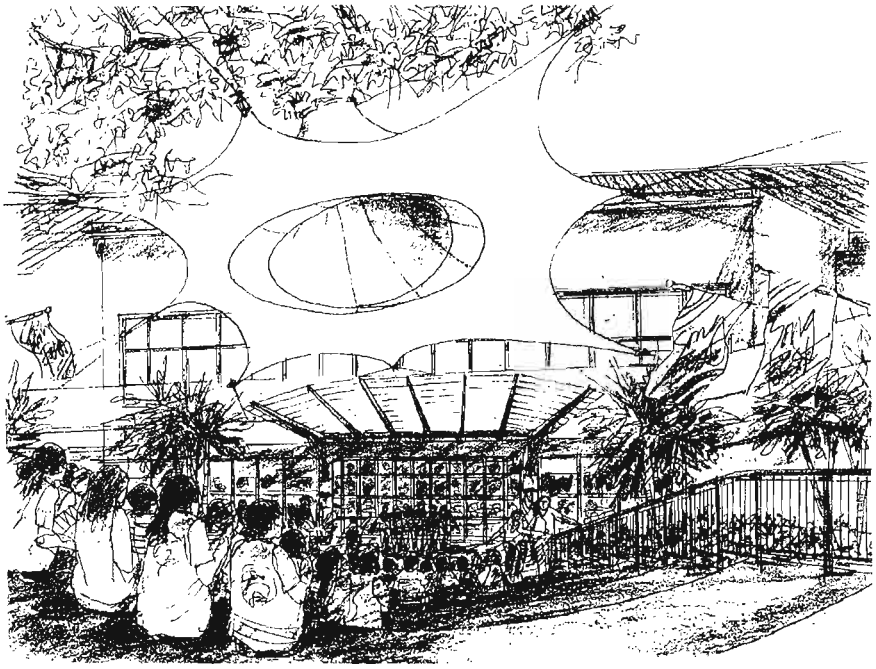
MAIN COMMONS/ DINING AREA

CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — OAHU HAWAII — MAY 2005- CHARETTE THREE



NEIGHBORHOOD COMMONS

CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — OAHU HAWAII — MAY 2005- CHARETTE THREE



OUTDOOR AMPHI-THEATER

CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — OAHU HAWAII — MAY 2005- CHARETTE THREE

IN CONCLUSION

WHAT'S NEXT FOR THE SCHOOL OF TOMORROW – EWA MAKAI MIDDLE SCHOOL

The Design Process Continues
The Architects will continue to develop the design for the Ewa Makai Middle School. They will meet with teachers and other DOE specialists in programming sessions to determine the detailed plans, layouts and furnishing requirements. The schedule for the completion of the final architectural plans have not yet been decided.

The Challenge
The final design of the Ewa Middle School is directly related to the vision and educational curriculum of the school. This school is a model that has never before been seen in the State of Hawaii since it is a one-building school. It establishes a new model for the educational program and facilities specifications for Hawaii's middle schools. It will increase the middle schools' abilities to meet the needs of Hawaii's adolescents. An in doing so, it will change the future of Hawaii.

Imagine

Imagine a middle school that embraces the responsibility of educating the youth of Hawaii so that they are thoroughly prepared for the world that they are about to enter.

Imagine a middle school that is, above all a learning community where the academic achievement of every student can stand up to the standards of national scrutiny.

Imagine a middle school that functions as a transitional experience, preparing each student for the next stage of life, whatever that may be for that individual.

Imagine a middle school that is a gateway to multiple options.

Imagine a middle school that prepares each student to be a life long learner, while at the same time supporting its educators to continue the learning process as well.

Imagine a middle school that provides for good citizenship and for full participation in the life of democracy.

Imagine a middle school that contributes to the personal development of young people as social beings who have needs beyond the strictly academic.

Imagine a middle school that lays the foundation for students to participate comfortably in an increasingly technological society.

Imagine a middle school that equips young people for life in a country and world in which interdependency will link their destiny to that of others, however, different those others may be from them.

Imagine a middle school that is an institution that unabashedly advocates in behalf of young people

Imagine this middle school serving the children and communities of Hawaii.

"This group went out on a limb because that is where the fruit is. They began to fulfill the destiny which was concealed in the marrow of their bones and they seized the moment. This school will face adversities but trouble creates the capacity to handle it and it will come down to how much fire you have in your belly."

--**Steven D. Wong** quoting from various authors--

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- Una Wilding
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- Marvin Yonamine

THE STEERING COMMITTEE:

- Lydell Acosta
- Ari Caracol
- Anthony Chun
- Anne Greseth-Kim
- Randy Ibarra
- John Okinaka
- Una Chan
- Debra Hatada
- Marvin Yonamine
- Annette Nishikawa
- Nick Nichols

HASEKO REPRESENTATIVE:

- Sharene Tam

GENTRY REPRESENTATIVE:

- Debra Luning

DAGS/DOE:

- George Coates
- Dail Rhee
- Galyn Nakatsuka
- Nick Nichols
- Brenda Lowrey
- Janna Mihara

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- Dr. Caroline Lobo, A.I.A.

MITSUNAGA & ASSOCIATES, INC.

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- Hisako Uriu
- Janel Nishida

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- Frances Rivero – Boy's & Girls Club
- Yvette Vasquez – Kapolei Middle
- Kirby Nii – Kapolei Middle
- Anson Chan – Kapolei Middle
- Kathy Infiesto – Kapolei Middle
- Charles Deville – Kapolei Middle
- Ariel Villanueva – Kapolei Middle
- Eric Kanemoto – CKW School Support
- Representative Kimberly Pine
- Senator Willlie Espero

Charette Participants

APPPENDICES

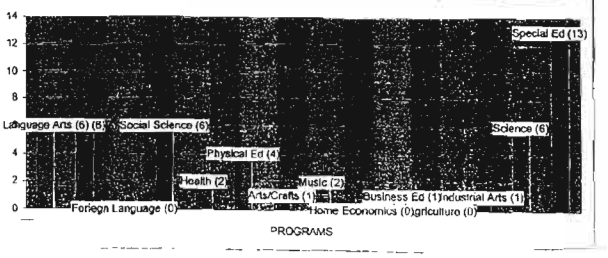
DOE FADS SCHEDULE

SCHOOL NAME —2cNEW	Ewa Makai	Middle	Master	YRE-M17	
DISTRICT	Example	COMPLEX: Example	Air Cond ?		
GRADE ORGANIZATION:	BOTT:		TOP:	8	RAINFALL

CURRENT ENROLLMENT	
REGULAR ENROLLMENT	n/a
SEPC ED ENROLLMENT	
PROJECTED SPECIAL EDUCATION ENROLLMENT @ DESIGN	158
SPED CLRM(S) @ % ENROLL	
DESIGN ENROLLMENT	1050
REGULAR ENROLLMENT	892
SPECIAL ED @ 15.0% of DE	158

GENERAL CLRM	25
SCIENCE CLRM	5
SPEC ED —2c(12 /Clr	13
SUPPL PORTABLES	0
PEAK PORTABLES	5

DESIGN ENROLLMENT 1050		Existing No.	% sf	—fRemain 0		
Language Arts —2c—6F+(2)		0			6	6
Mathematics —2c—6F+(2) Gr		0			6	6
Foreign Language					0	0
Social Studies —2c—6F+(2) I		0			6	6
Health —2c—6F+(1) Gr 6 Pro		0			2	2
Physical Ed. —2c—6F+(2) Gr		0			4	4
Arts & Crafts —6F—2c +(0.50		0			1	1
Music —6F—2c+(0.50) Gr 6 F		0		150 (2ct)	2	2
Family & Consumer Science		0			0	0
Business Education		0			1	1
Agriculture		0			0	0
Industrial Arts		0			1	1
Science —2c—6F+(4) Gr 6 Pi		0			6	6
Special Education		0		0	13	13
Grade (6) General Clrms		0			1	1
TOTAL PERMANENT CLRMS						
Supplemental Program Permanents		0			5	5
Plus Peak Portables						
	15	0			54	54



A-1

Max Project Area = 120802

COMPONENT							
GENERAL CLASSROOMS							
General Classroom "A"	25	980	24500		—2	24500	24500
Gen Classroom "B" & "C"	5	980	4900		—2	4900	4900
SPECIAL CLASSROOMS							
Self Contained	4	1880	7520		—2	7520	7520
Resource	9	980	8820		—2	8820	8820
ART							
General Purpose Art Rm	1	2050	2050		—2	2050	2050
MUSIC							
Choral		1925	0			0	0
Band	2	3730	7460		—2	7460	7460
Common Area	1	600	600		—2	600	600
PE							
	0		0				0
MINIMUM PERMANENT CLRM REQUIRED BY EDSPEC						49	
PERMANENT CLRMS REQUESTED BY SCHOOL PLAN						54	

Max Project Area = 120802

COMPONENT	School Area = EDSPEC	BUDGET $				PROJECT $	
FAMILY & CONSUMER SCIENCE							
Family & Consumer Science	0	2550	0			0	0
BUSINESS EDUCATION							
Shorthand / Typing	1	1380	1380		—2	1380	1380
AGRICULTURAL ARTS							
Horticulture	0	2860	0			0	0
INDUSTRIAL ARTS							
Metals Laboratory [—I—2c0	0	4160	0			0	0
Woods Laboratory [—I—2c0	0	4160	0			0	0
Combined Metal/Wood [—I—2c	1	4160	4160		—2	4160	4160
Industrial Technology	0	2950	0			0	0
SCIENCE							
General Science	6	1750	10500		—2	10500	10500
Optional Science	0	2260	0			0	0
MINIMUM PERMANENT CLRM REQUIRED BY EDSPEC						49	
PERMANENT CLRMS REQUESTED BY SCHOOL PLAN						54	

Max Project Area = 120802

COMPONENT	School Area = EDSPEC	BUDGET $				PROJECT $	
Administrative Center	1			10460	—2	10460	10460
Library Media Center	1			10381	—2	10381	10381
Dining/Multi-Purpose	1			8765	—2	8765	8765
Food Service - Kitchen (CNV)	1			3926	—2	3926	3926
Custodial Service Center	1			420	—2	420	420
Faculty Center (3 Req'd)	3			900 2700	—2	2700	2700
Computer Center (2 Req'd)	2			1200 2400	—2	2400	2400
Itinerant Special Educat'n	1			330	—2	330	330
Teacher Center(s)	27			100 2700	—2	2700	2700
Optional Support Spaces **				0			0
PE Locker Shower	1			6830	—2	6830	6830
Staff Parking	Stalls	1/8		131	0		131
Visitor Parking	Stalls	LS		15	0		15
TOTAL CLRM CLASSROOM AI				71890			71890
TOTAL SUPT CLASSROOM AR				48912			48912
				TZU8UZ			TZU8UZ

Max Project Area = 120802

COMPONENT	School Area = EDSPEC	BUDGET $	PROJECT $

The Unit areas and ED SPEC areas shown on the School Summary and on the individual facility component area tables are net Educational Program and School Support floor areas and do not include area required for building structure, systems, service enclosures, auxiliary rooms, corridors, and passageways unless specifically shown otherwise in the tables.

- Comprehensive Student Support System (CSSS)	2300 sf
- Student Support Coordinator/Educational Assistant (SSC/EA)	330 sf
- Student Activities Room/Store/Storage	900 sf

Total FADS Program Area =	120,802
2% of FADS Program Area for Storage =	2,416
Total School Program Area =	123,218

A-2

28 Pupil Activity Area	1	450	450				450
12 pupil Activity area	1	257	257				257
Individual activity area	1	78	78				78
Teacher station*	1	60	60				60
Circulation area*	1	135	135				135
							0
							0
Area General Classroom "A"			980				980

School Area = EDSPEC BUDGET $ PROJECT $

Edspec GCR Area	1	980	980				980
							0
							0
							0
							0
Area General Classroom "B"			980				980

Edspec GCR Area	1	980	980				
Area General Classroom "C"			980				0

School Area = EDSPEC BUDGET $ PROJECT $

The number of supplemental portable classrooms will be reduced by number of type "B" classrooms selected.

Additions to type "C" classrooms do not alter anything (max area, any classroom count, etc.)

A-3

Max Project Area = 120802

School Area = EDSPEC BUDGET $ PROJECT $

Large Group Area	1	500	500				500
Small Group / Motor Develop	1	530	530				530
Technology	1	60	60				60
Craft/Woodwork Area	1	180	180				180
Home Living	1	120	120				120
Food Service	1	160	160				160
Restroom	2	70	140				140
Shower	1	50	50				50
Laundry	1	80	80				80
Teacher Station	1	60	60				60
Area of Self Contained Clrm			1880				1880
Lecture area	1	522	522				522
Small group activity area	1	458	458				458
							0
Area of Resource Classroom			980				980

School Area = EDSPEC BUDGET $ PROJECT $

Small Group Meeting	1	330	330				330
							0
							0
Area of Itinerant Services			330				330

Total All Itinerant Services	1	330	a To Support		330
Total All Self Contained	4	7520			7520
Total All Resource Services	9	8820			8820

School Area = EDSPEC BUDGET $ PROJECT $

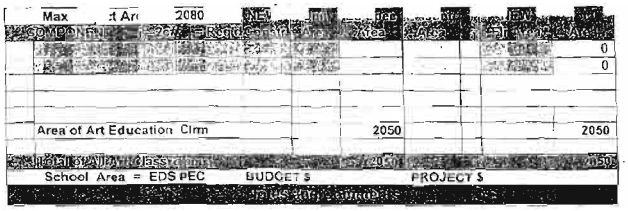
Classroom-35 pupil	1	1225	1225				
Horticulture lab-35 pupil	1	1225	1225				
Fertilizer/insecticide room	1	80	80				
Equipment room	1	250	250				
Oil and gas storage room	1	80	80				
Area of Indoor Areas			2860				0

School Area = EDSPEC BUDGET $ PROJECT $

Lath house (outdoor)	1	800	800				
Lumite Green house (outdoor)	1	1600	1600				
Mist house (outdoor)	1	100	100				
Composting	1	60	60				
Area of Outdoor Areas			2560				0
** Outdoor Area not Counted in Maximum School Area							

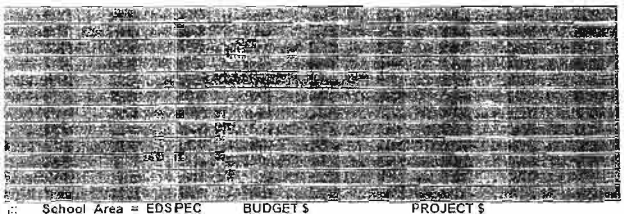
School Area = EDSPEC BUDGET $ PROJECT $

32 pupil general purpose room	1	1600	1600				1600
Kiln room*	1	140	140				140
Storage	1	180	180				180
Computer Area	1	130	130				130
							0
							0
							0
							0



				0
				0
Area of Art Education Clrm		2050		2050

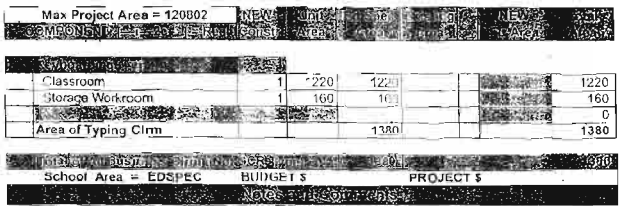
School Area = EDSPEC BUDGET $ PROJECT $



School Area = EDSPEC BUDGET $ PROJECT $

Classroom Area	1	980	980	
Area of Gen Business Clrm			980	0

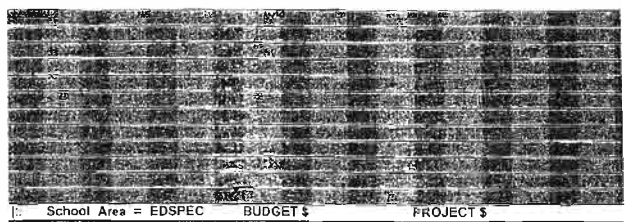
Classroom Area	1	980	980	
Area of Notetaking Clrm			980	0



Max Project Area = 120802

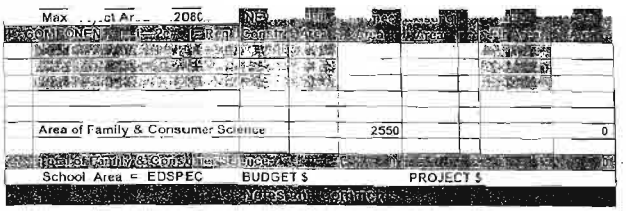
Classroom	1	1220	1220	1220
Storage Workroom	1	160	160	160
Area of Typing Clrm			1380	1380

School Area = EDSPEC BUDGET $ PROJECT $



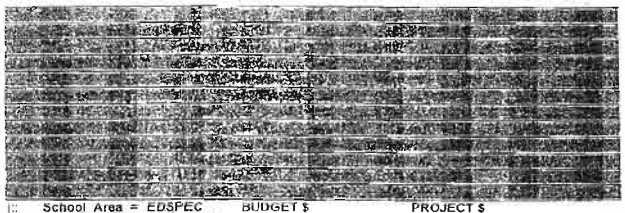
School Area = EDSPEC BUDGET $ PROJECT $

Classroom/Dining Area	1	960	960	
Food Preparation Area	6	100	600	
Clothing and Textiles Area	1	370	370	
Home Furnishings Area	1	160	160	
Storage Room	1	140	140	
Laundry Room	1	60	60	
Computer Area (9 stations)	1	200	200	
General Utility Room	1	40	40	



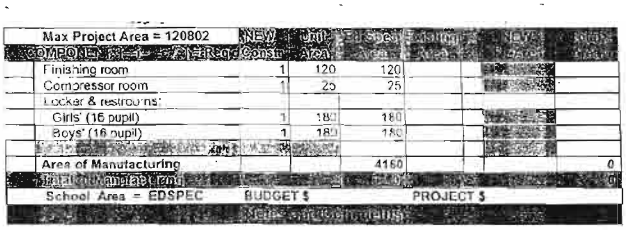
Area of Family & Consumer Science		2550		0

School Area = EDSPEC BUDGET $ PROJECT $



School Area = EDSPEC BUDGET $ PROJECT $

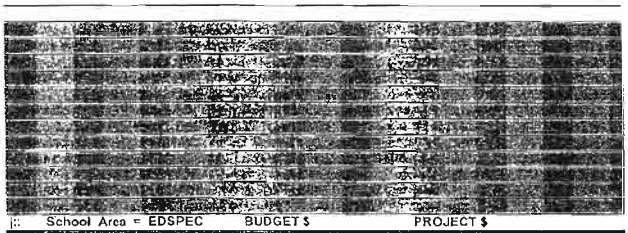
32 pupil classroom	1	980	980	
Office	1	100	100	
Supplies & parts room	1	75	75	
Bench metalwork area	1	1100	1100	
Hot metalwork area	1	130	130	
Machine toolwork area	1	570	570	
Project storage rooms	6	90	540	
Materials storage room	1	160	160	



Max Project Area = 120802

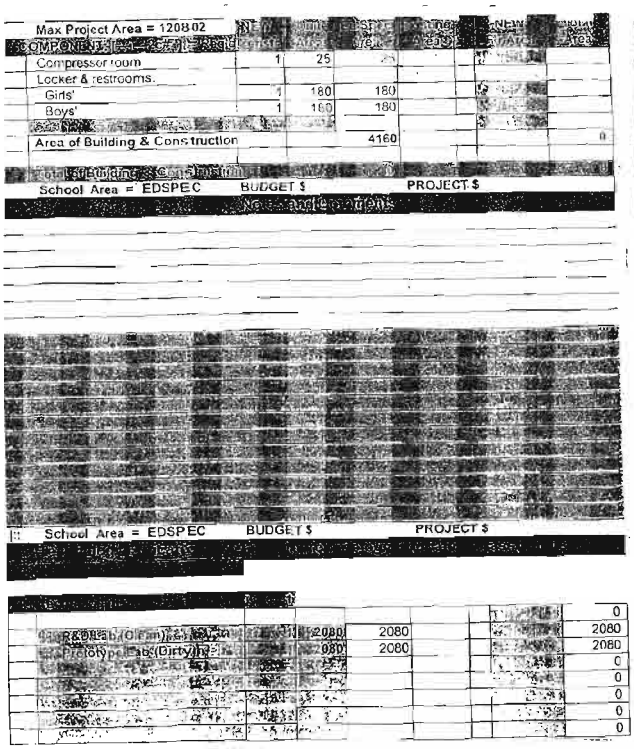
Finishing room	1	120	120	
Compressor room	1	25	25	
Locker & restrooms:				
Girls' (16 pupil)	1	180	180	
Boys' (16 pupil)	1	180	180	
Area of Manufacturing			4160	0

School Area = EDSPEC BUDGET $ PROJECT $



School Area = EDSPEC BUDGET $ PROJECT $

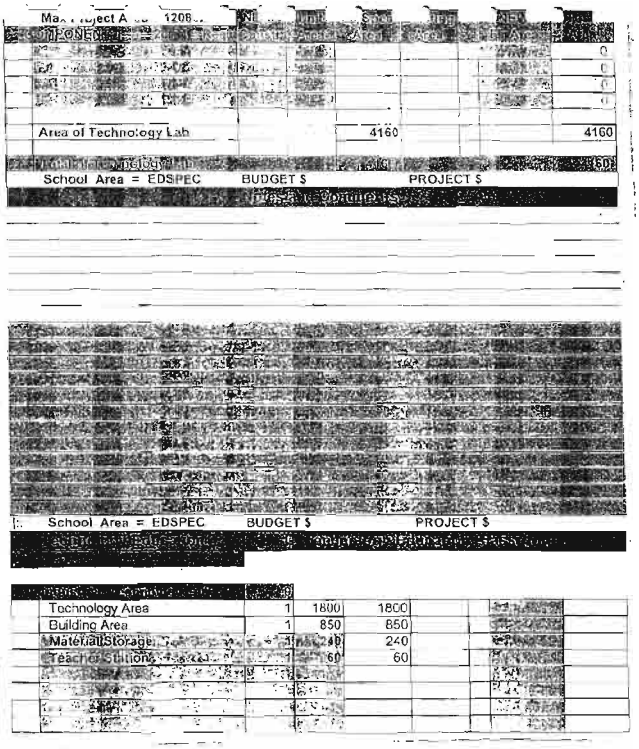
32 pupil classrooms	1	980	980	
Office	1	100	100	
Supplies & parts room	1	75	75	
Bench woodwork area	1	1100	1100	
Machine woodwork area	1	700	700	
Project storage rooms	6	90	540	
Materials storage room	1	160	160	
Finishing room	1	120	120	



Max Project Area = 120802

COMPONENT					
Compressor room	1	25			
Locker & restrooms:					
Girls'	1	180	180		
Boys'	1	160	180		
Area of Building & Construction			4160		0

School Area = EDSPEC BUDGET $ PROJECT $



Area of Technology Lab 4160 4160

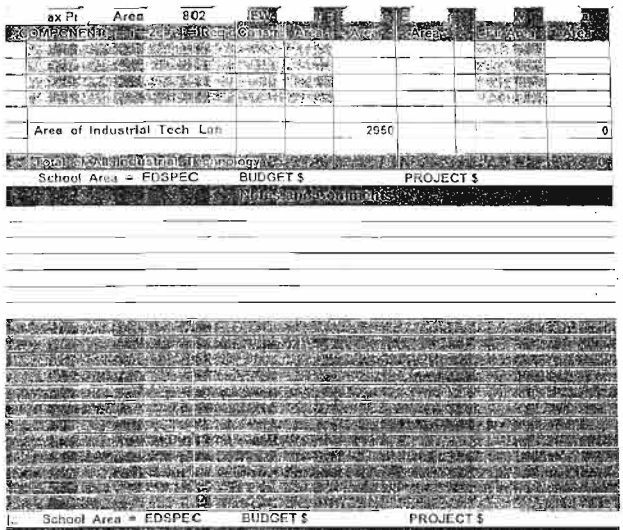
School Area = EDSPEC BUDGET $ PROJECT $

School Area = EDSPEC BUDGET $ PROJECT $

School Area = EDSPEC BUDGET $ PROJECT $

				0
	1	2080	2080	2080
	1	080	2080	2080
				0
				0
				0
				0

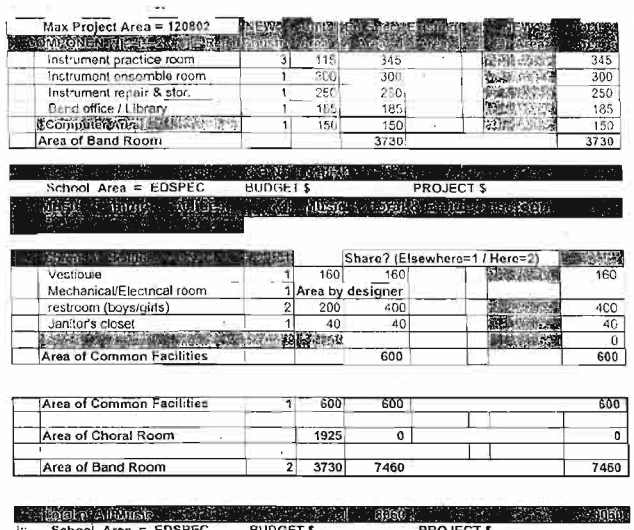
Technology Area	1	1800	1800	
Building Area	1	850	850	
Material Storage	1	240	240	
Teacher Stations	1	60	60	



School Area = EDSPEC BUDGET $ PROJECT $

	Share? (1=Elsewhere / 2=Here)			
80 pupil main choral room	1	1440	1440	
Choral office / Library	1	185	185	
Robe Building & Construction	1	150	150	
Computer Area	1	150	150	
Area of Choral Room			1925	0

	Share? (1=Elsewhere / 2=Here)			
100 pupil main instrument room	1	2500	2500	2500

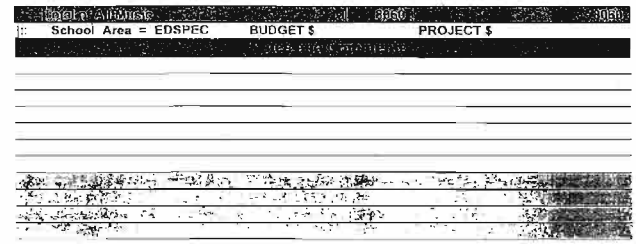


Instrument practice room	3	115	345	345
Instrument ensemble room	1	300	300	300
Instrument repair & stor.	1	250	250	250
Band office / Library	1	185	185	185
Computer Area	1	150	150	150
Area of Band Room			3730	3730

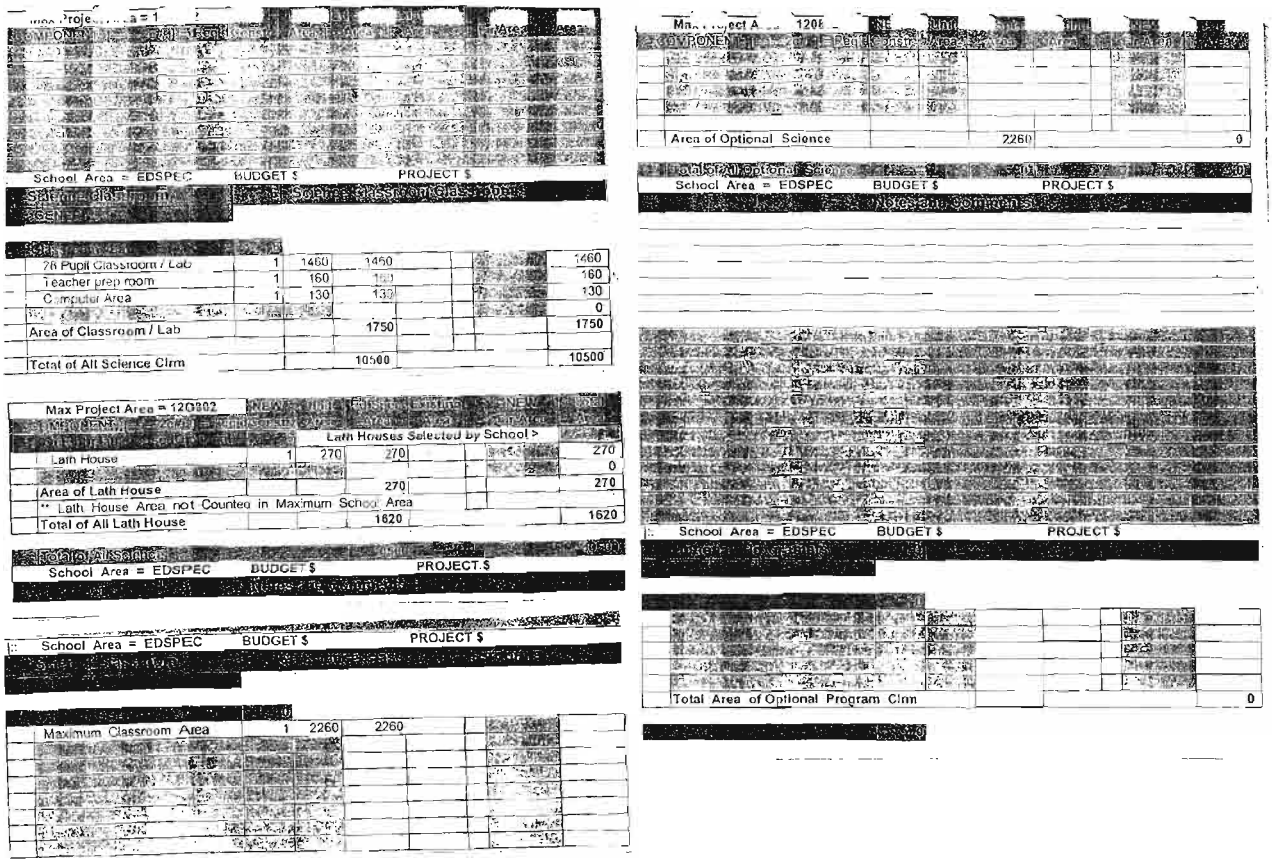
School Area = EDSPEC BUDGET $ PROJECT $

		Share? (Elsewhere=1 / Here=2)		
Vestibule	1	160	160	160
Mechanical/Electrical room	1	Area by designer		
restroom (boys/girls)	2	200	400	400
Janitor's closet	1	40	40	40
				0
Area of Common Facilities			600	600

Area of Common Facilities	1	600	600	600
Area of Choral Room		1925	0	0
Area of Band Room	2	3730	7460	7460



School Area = EDSPEC BUDGET $ PROJECT $



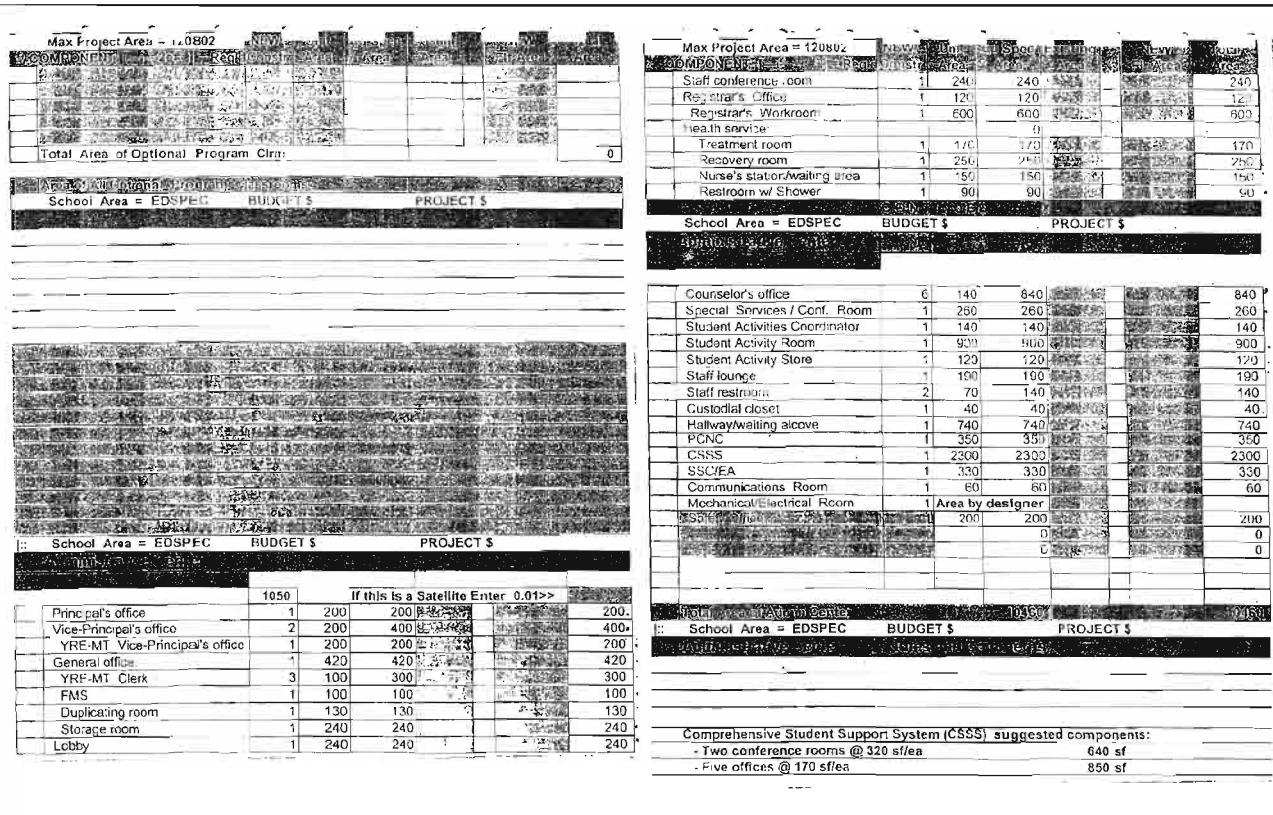
26 Pupil Classroom / Lab	1	1460	1460			1460
Teacher prep room	1	160	160			160
Computer Area	1	130	130			130
						0
Area of Classroom / Lab			1750			1750
Total of All Science Clrm			10500			10500

Lath House	1	270	270			270
						0
Area of Lath House			270			270
** Lath House Area not Counted in Maximum School Area						
Total of All Lath House			1620			1620

Maximum Classroom Area	1	2260	2260			

Area of Optional Science			2260			0

Total Area of Optional Program Clrm						0



Staff conference room	1	240	240			240
Registrar's Office	1	120	120			120
Registrar's Workroom	1	600	600			600
Health service:			0			
Treatment room	1	170	170			170
Recovery room	1	250	250			250
Nurse's station/waiting area	1	150	150			150
Restroom w/ Shower	1	90	90			90

Counselor's office	6	140	840			840
Special Services / Conf. Room	1	260	260			260
Student Activities Coordinator	1	140	140			140
Student Activity Room	1	900	900			900
Student Activity Store	1	120	120			120
Staff lounge	1	190	190			190
Staff restroom	2	70	140			140
Custodial closet	1	40	40			40
Hallway/waiting alcove	1	740	740			740
PCNC	1	350	350			350
CSSS	1	2300	2300			2300
SSC/EA	1	330	330			330
Communications Room	1	60	60			60
Mechanical/Electrical Room	1	Area by designer				
	1	200	200			200
			0			0
			0			0

	1050	If this is a Satellite Enter 0.01>>				
Principal's office	1	200	200			200
Vice-Principal's office	2	200	400			400
YRE-MT Vice-Principal's office	1	200	200			200
General office	1	420	420			420
YRE-MT Clerk	3	100	300			300
FMS	1	100	100			100
Duplicating room	1	130	130			130
Storage room	1	240	240			240
Lobby	1	240	240			240

Comprehensive Student Support System (CSSS) suggested components:

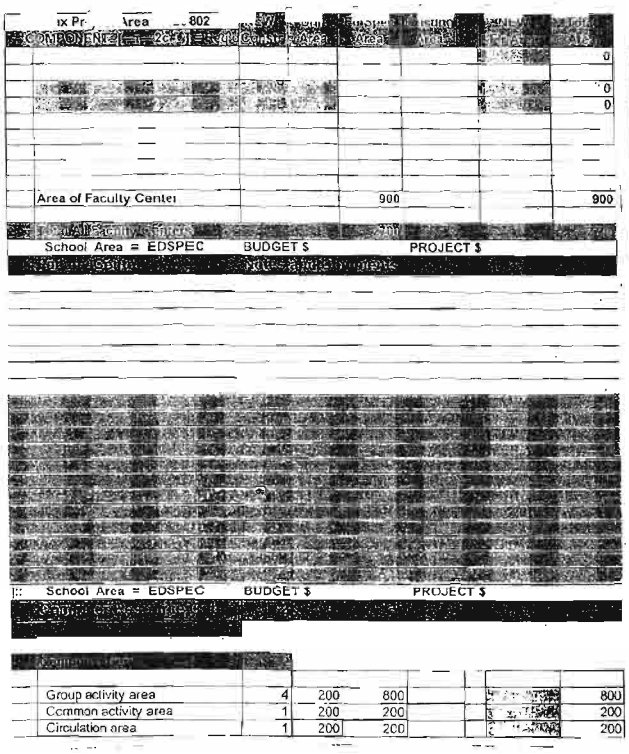
- Two conference rooms @ 320 sf/ea	640 sf
- Five offices @ 170 sf/ea	850 sf

ix Pr	Area 802					
COMPONENT						
- Reception / work/ storage area @ 490 sf/ea				490 sf		
- Restrooms 2 @ 60 sf/ea				120 sf		
- Circulation @ 260 sf/ea				200 sf		
			Total	2300 sf		
Student Support Coordinator / Educational Assistant Room (SSC/EA)						330 sf
School Area = EDSPEC	BUDGET $		PROJECT $			
	1050		If this is a Satellite Enter 0.01>>			
Design Enrollment (DE)	1050					
Stucent dining room	1	7200	7200			7200
0-300 3600						

301-600 DE*12						
601-1200 7200						
1201-up DE*6						
Portable stage area		480	0			0
Superimposed on dining Rm						
Stage storage	1	250	250			250
Ramp/chair storage	1	200	200			200
Amplifier area	1	20	20			20
Hallway	1	120	120			120
Boy's dressing/storage room	1	180	180			180
Girl's dressing/storage room	1	180	180			180
Boy's restroom	1	70	70			70
Girl's restroom	1	70	70			70
Custodial closet	1	40	40			40
Staff dining room	1	435	435			435
School Area = EDSPEC	BUDGET $		PROJECT $			
					If this is a Satellite Enter 0.01>>	
Office/stor./repair area		230	230			230
Locker area	1	40	40			40
Tool room	1	60	60			60
Restroom w/ Shower	1	90	90			90
						0
Total Area Custodial Service			420			420
Total Area Cafe/Multipurpose			8765			8765
School Area = EDSPEC	BUDGET $		PROJECT $			
					If this is a Satellite Enter 0.01>>	
Food preparation area	1	1100	1100			1100
Dry Storage	1	400	400			400
Walk-in Refrigerator	1	120	120			120
Walk-in Freezer	1	110	110			110
Serving area	1	768	768			768

Max Project Area = 12080						
COMPONENT						
Tray Return Area	1	720	720			720
Can Wash Area	1	50	50			50
Pot & Pan Area #1	1	128	128			128
Pot & Pan Area #2						
Transport Cart Storage Area						
Office	1	100	100			100
Lockers and restrooms	2	100	200			200
Utility and broom linen closet	1	200	200			200
Heater, El, & Compressor Rms	3	Area by designer				
			0			0
School Area = EDSPEC	BUDGET $		PROJECT $			
					If this is a Satellite Enter 0.01>>	
Office	1	248	248			248
Large group area:						
Circulation desk	1	286	286			286
Reading/study/bookstack	1	4489	4489			4489
Periodical	1	266	266			266

Max Project Area = 120802						
COMPONENT						
Resource Centers	3	550	1650			1650
Student conference	1	252	252			252
Video Production Room			0			0
Workroom/production room	1	800	800			800
Prof. Staff & mat. area	1	336	336			336
Storage room	1	324	324			324
Mechanical & Electrical room	2	Area by designer				
Custodial closet	1	40	40			40
Staff restroom	2	70	140			140
Media Contro. / Signal Process	1	600	600			600
Tech coordinator's office	1	300	300			300
Multi/Media production room	1	650	650			650
						0
			0			0
School Area = EDSPEC	BUDGET $		PROJECT $			
Work area	1	230	230			230
Lounge area	1	150	150			150
Gen. Clrm. storage room	1	380	380			380
Staff restrooms	2	70	140			140



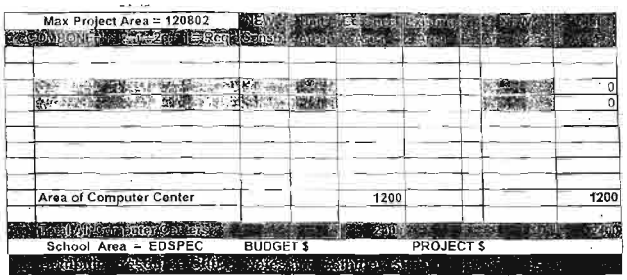
					0
					0
					0
Area of Faculty Center			900		900

School Area = EDSPEC BUDGET $ PROJECT $

School Area = EDSPEC BUDGET $ PROJECT $

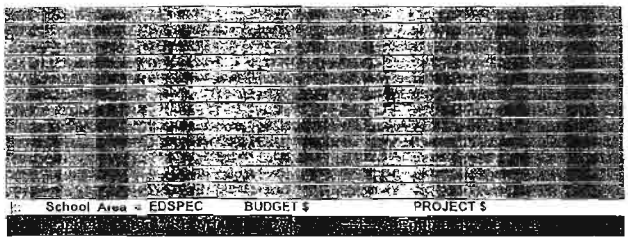
Group activity area	4	200	800		800
Common activity area	1	200	200		200
Circulation area	1	200	200		200

Max Project Area = 120802



					0
					0
Area of Computer Center			1200		1200

School Area = EDSPEC BUDGET $ PROJECT $



School Area = EDSPEC BUDGET $ PROJECT $

Teacher work stations (Each)	1	60	0		
Conference room (/ Station)	1	20	0		
Storage (/ Station)	1	50	0		
Area of Teacher Center	130 SF / Tchr		0		0

Max Project Area = 120802

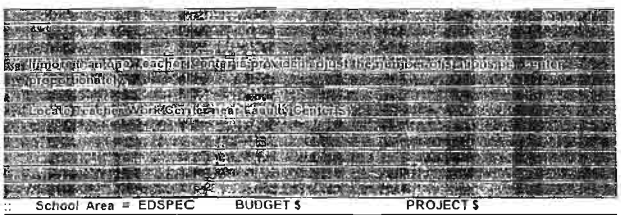
Teacher work stations (Each)	1	60	0		
Conference room (Each)	1	20	0		
Storage (Each)	1	50	0		
Area of Teacher Center	130 SF / Tchr		0		0

TOTAL NUMBER OF TEACHER STATIONS PROVIDED IN ALL SPECIAL STATIONS

SCHOOL SPEC PROVIDES 100 SQ FT OF TEACHER CENTER / TEACHER

School Area = EDSPEC BUDGET $ PROJECT $

Number of Stations is based on —bThree (3) Track Schedule" with —b525 students In each Tracks .Attending at any one time.



School Area = EDSPEC BUDGET $ PROJECT $

			0		0
			0		0
			0		0
Total Area of Optional Space			0		0

Max Project Area = 120802

Total Area of Optional Space			0		0

			0		0

School Area = EDSPEC BUDGET $ PROJECT $

School Area = EDSPEC BUDGET $ PROJECT $

Locker room	1	1040	1040		1040
Individual Shower Stall	24	40	960		960
Shower booth (ADA)	1	60	60		60

COMPONENT	Qty	Area	Total
PE office	1	100	100
Faculty/locker/shower/restroom	1	100	100
restroom	1	150	150
Towel/supply stor	1	250	250
General storage	1	275	275
Janitor's closet	1	40	40
Circulation area	1	300	300
			0
			0

School Area = EDSPEC BUDGET $ PROJECT $

Locker room	1	1040	1040	1040
Individual Shower Stall	24	40	960	960
Shower booth (ADA)	1	60	60	60
PE office	1	100	100	100
Faculty/locker/shower/restroom	1	100	100	100
restroom	1	150	150	150
Towel/supply stor	1	250	250	250
General storage	1	275	275	275
Janitor's closet	1	40	40	40
Circulation area	1	300	303	300
				0
				0

School Area = EDSPEC BUDGET $ PROJECT $

Laundry room	1	160	160	160
Heater & Electrical room	2	Area by designer		
First-Aid room	1	120	120	120
				0

Max Project Area = 120802

COMPONENT						Total
						0
Area of Comm PE Lckr / Shwr			280			280
Area of Girls PE Lckr / shwr			3275			3275
Area of Boys PE Lckr / shwr			3275			3275

School Area = EDSPEC BUDGET $ PROJECT $

A-15

Sch rea PEC BUE JEC

MEDIAN ANNUAL RAINFALL 21

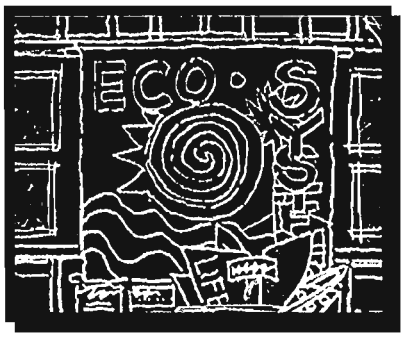
Playfield "A"	1	90000	90000		90000	90000
Playfield "B"	1	75000	75000		75000	75000

Max Project Area = 120802

COMPONENT						
Playcourt	1	10368	10368		10368	10368
Covered Playcourt	1	10368	10368		10368	10368
Storage	1	1230	1230		1230	1230

School Area = EDSPEC BUDGET $ PROJECT $

Playcourts to be located on school site



COMPARISON OF FADS & PROPOSED SPACE ALLOCATIONS

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
School Name: Ewa Makai Middle School				School Name: Ewa Makai Middle School						
Design Enrollment	1050			Design Enrollment	1050					
Regular Enrollment	892			Regular Enrollment	892					
Special Ed @ 15% of D.E.	158			Special Ed @ 15% of D.E.	158					
General Classrooms	25	18+4PE+2Hlth+1Gr6		General Classrooms	27	9 Teams of 3(LA, SS & Math)= 27 = 18(6 ea.of LA, SS, M)+2 PE+2 Health +1 Gr 6 + 4 SpEd Resource Clsrms)				
Arts/BPA Classrooms	4			Arts/BPA Classrooms	5	1Art, 1BusEd, 1 Industrial Tech (downsized for trade offs), 2 Music (downsize 2nd Band to Choral for trade offs)				
Science Classrooms	6			Science Classrooms	9	start with (6 Science @ 1,750) + (3 SpEd Resource @ 980) & redistribute for 9 total Science Rms				
Max. Adjustment (1 add'l BPA)	1			PE Classrooms	2	1 of which is designated for Fitness (traded 2 to use as Generals for core neighborhoods)				
Special Education (FSC)	4			Special Education (FSC)	4	downsized from 4 @ 1880 to 4 @ 1,380 (3 FSC, 1 to house CSAP) 'extra' traded to Resource Rooms				
Special Education (Resource)	9			Special Education (Resource)		from original classroom count 9: 4 (Generals in cores) - 3 (for science) = 2 *lost (52 instead of 54)				
						9 new Resource Rms @ 600sf (not in Clsrm Count, will provide home base for each Core Team SpEd Resource Teacher)				
						SF for 9 smaller rms from remaining 2 Resource Clsrms + trade offs in SpEd FSC and Music				
5 Supplemental (Perm.)	5			Supplemental Classrooms	5	1 General, 1 Family/Consumer Science (980+920 from Indus Tech), 1 Dance (980+980 from Indus Tech), 1 Art				
Permanent Classrooms	**54**			**Permanent Classrooms**	**52**	(Additional Art=980 +220 from Music), 1 Virtual Reality (980+220 from Music)				
Peak Portables	5			Peak Portables	5					
Total - All Classrooms	59			Total - All Classrooms	57					
Staff Parking	131									
Visitor Parking	15									
Total Parking	146			Proposed Parking Count						
(DOE Reqments, Consultant to verify design w/ C&C reqments)										
CLASSROOMS				CLASSROOMS						
General Classroom "A"	**25**			**General Classroom "A"**	27			27		trade off: 2 Health, 2 PE & 1 6th Grade Adj. + 4 Resource Clsrms
(6 LA, 6 SS, 6 Math, 4 PE, 2 Health, 1 6th Grade Adj.)				(9 LA, 9 SS, 9 Math-with free periods to use for electives/exploratory wheel classes to total 27 General Classrooms						
28 Pupil Activity Area	1	450	450	28 Pupil Activity Area	1	450	450			
12 Pupil Activity Area	1	257	257	12 Pupil Activity Area	1	257	257			
Individual Activity Area	1	78	78	Individual Activity Area	1	78	78			
Teacher Station	1	60	60	Teacher Station	1	60	60			
Circulation Area	1	135	135	Circulation Area	1	135	135			
Area of Gen. Clsrm. "A"			980	Area of Gen. Clsrm. "A"			980			
Area of All Gen. Clsrm. A	**25**	**980**	**24500**	**Area of All Gen. Clsrm. A**			**26,460**		-3,920	trade off SF= +3,420 (from Resource) + 500 (from SpEd FSC)
				2 PE General Classrooms	**2**			**2**		
				1 PE Classroom	1	980	980			
				1 PE Fitness Room	1	980	980			
				Area of All PE Classrooms			**1,960**			

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
Supplemental Classrooms				**Summary of Supplemental Classrooms**						
General Classroom "B"	5			**General Classroom "B"**	**5**					
area descriptions same as	1	980	980	Family & Consumer Science	1	1,900	1,800	*		980 General + 920 (from Industrial Tech)
General Classroom "A" unless identified as different type-				Dance & Performance	1	1,960	1,860	*		980 General + 980 (from Industrial Tech)
then see revised listing w/ area breakdown under new name				General (CSAP or elective)	1	980	980	1		
Area of Gen. Clsrm. "B"			980	Art Classroom	1	1,200	1,200	*		980 General + 220 (from Band downsizing to Choral)
				Virtual Reality Classroom	1	1,200	1,200	*		980 General + 220 (from Band downsizing to Choral)
Area-All Gen. Clrm. B/C	**5**	**980**	**4900**	**Area of General Supplementals**			980	(*see individual room descriptions for rooms w/SF above 980 SF)		
Special Education	**13**			**Special Education**	**13**					
Self Contained Classrooms	**4**			**Self Contained Classrooms**	**4**			**4**		3 to be used as FSC (Fully Self Contained SpEd Classrooms
Large Group Area	1	500	500	Large Group Area (&....)	1	610	610			4th to be used for CSAP (Comprehensive School Alienation Program)
Small Group/Motor Developm.	1	530	530	Small Group/Motor Developm	combined w/ Large Group					
Technology	1	60	60	Technology	1	60	60			
Craft/Woodwork Area	1	180	180	Craft/Woodwork Area (&...)	1	300	300			
Home Living	1	120	120	Home Living	combined w/ Large Group					
Food Service	1	160	160	Food Service	combined w/ Large Group					
Restroom	2	70	140	Restroom	2	70	140			
Shower	1	50	50	Shower	1	50	50			
Laundry	1	80	80	Laundry	1	80	80			
Teacher Station	1	60	60	Teacher Station	2	60	120			
Area of Self Contained Clsrm.			1880	Area of Self Contained Clsrm.			1,360		+2,080	trade off SF (-500 to Core Clsrms, -1,580 to add'l Science)
Resource Services Clsrm	**9**			**Resource Services**	**9**			*		Resource Rms not counted in Classroom count due to smaller SF
Lecture Area	1	522	522	Lecture / Small Group	1	480	480			980 SF from 7 Resource rooms traded to provide 4 more General
Small Group Activity Area	1	458	458	Technology	1	60	60			Classrooms and extra SF for 3 more Science Rooms
				Teacher Station	1	60	60			
Area of Resource Classroom			980	Area of Resource Classroom			600		+3,420	trade off SF (-3,420 to General Core Classrooms)
Itinerant Services Room	**1**			**Itinerant Services Room**	**1**					
Small Group Meeting	1	330	330	Small Group Meeting	1	330	330			
Area of Itinerant Services			330	Area of Itinerant Services			330			
*Total All Itinerant Services	1	330	330	*Total All Itinerant Services	1	330	330			
Total All Self Contained	4	1,880	7520	Total All Self Contained	4	1,360	5,440			
Total All Resources Services	9	960	8820	Total All Resources Services	9	600	5,400			
Total All* Special Education	**13**		**16340**	**Total All* Special Education**			**10,840**			
*Itinerant SF counted as Support Area				*Itinerant SF counted as Support Area						

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
Art and BPA Classrooms				**Art / BPA / Electives / Specialty Classooms:**						
Agriculture Arts	0			**Art Education Classroom**	1					2nd Art Room = one of 5 Supplemental Clsrms at 960 SF
Agriculture Arts Classroom	0			Instructional Area	1	1,000	1,000			
				Teacher Station	1	60	60			
				Storage	1	140	140			
				Area of Art Education Clasrm.			1,200		-220	trade off SF = +220 (from Band downsizing to Choral)
Art Education	1									
Art Education Classroom	1			**Art Education Classroom**	1					
32 Pupil General Purpose Rm	1	1,600	1600	32 Pupil General Purpose Rm	1	1,600	1,600			
Kiln Room	1	140	140	Kiln Room	1	140	140			
Storage	1	180	180	Storage	1	180	180			
Computer Area	1	130	130	Computer Area	1	130	130			
Area of Art Education Clasrm.	1		2050	Area of Art Education Clsrm.			2,050			No change from original FADS
Total of All Art Classrooms	1	2050	2050	**Total - All Art Classrooms**	2		3,250	2		
Business Education	1									
General Business Classroom	0									
Note Taking Classroom	0									
Keyboard/Typing Clsrm.	1			**Business Ed Classroom**	1					
Classroom	1	1,220	1220	Instructional + Teacher Station	1	1,220	1,220			
Storage Workroom	1	160	160	Storage Workroom	1	160	160			
Area of Typing Classroom	1		1380	Area of Business Classroom			1,380			No change from original FADS
Total-All Bus. Ed Clsrm.	1	1380	1380	**Total-All Bus. Ed Clsrm.**	1	1,380	1,380	1		
Family/Consumer Science	0			**Family/Consumer Science**	1					Added as one of the 5 Supplemental Classrooms at 960 SF
Family/Cons. Sc. Clsrm.	0			Instructional Area	1	1,600	1,600			
				Teacher Station	1	60	60			
Technology Education	1			Technology	1	60	60			
Manufacturing	0			Storage Room	1	180	180			
Building and Construction	0			Area of Family & Consumer Science			1,900		-920	trade off SF = +920 from Industrial Tech
Industrial Technology Lab	0			**Total-All Family/Cons. Sci.**	1		1,900	1		
Technology Lab	1			**Technology Lab**	1					
R & D Lab (Clean)	1	2,080	2080	Lab(Computer/Robotics/Tech)	1	2,000	2,000			
Prototype Lab (Dirty)	1	2,080	2080	Teacher Station	1	60	60			
				Storage Room	1	200	200			
Area of Technology Lab	1		4160	Area of Technology Lab			2,260			
Total-All Ind. Technology	1	4160	4160	**Total-All Ind. Technology**	1		2,260	1	+1,900	trade off SF (-920 to Family/Cons. Sci., -980 to Dance)

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
Music (Choral & Band)	1			**Music**						
Choral Room	0			**Choral Room**	1					originally 2 Band Rms. 1 traded for Choral & add'l SF for trade offs
				80 Pupil Main Choral Room	1	1,440	1,440			
Band Room	2			Choral Office & Library	1	185	185			
100 Pupil Main Instrument Rm	1	2,500	2500	Robe Building & Construction	1	150	150			
Instrument Practice Room	3	115	345	Computer Area	1	150	150			
Instrument Ensemble Room	1	300	300	Area of Choral Room			1,925			
Instrument Repair & Storage	1	250	250	**Band Room**	1					
Band Office/Library	1	185	185	100 Pupil Main Instrument Rm.	1	2,500	2,500			
Computer Area	1	150	150	Instrument Practice Room	3	115	345			
Area of Band Room	1		3730	Instrument Ensemble Room	1	300	300			
				Instrument Repair & Storage	1	250	250			
Common Facilities	1			Band Office/Library	1	185	185			
Vestibule	1	160	160	Computer Area	1	150	150			
Mechanical/Electrical Room	1		by designer	Area of Band Room			3,730			
Restroom (boys/girls)	2	200	400	**Common Facilities**	1					
Janitor's Closet	1	40	40	Vestibule	1	160	160			
Area of Common Facilities	1	600	600	Mechanical/Electrical Room	1		by designer			
				Restroom (boys/girls)	2	200	400			
Area of Common Facilities	1	600	600	Janitor's Closet	1	40	40			
Are of Choral Room	0	1,925	0	Area of Common Facilities			600			
Area of Band Room	2	3,730	7460							
Total of All Music	2		8060	**Total of All Music**	2		6,255	2	+1,805	trade off SF (-220 2nd Art, -220 Virtual Reality, -1,365 for add'l Sci.)
Gen. Science Clsrm./Lab	6			**Gen. Science Clsrm./Lab**	9					
28 Pupil Classroom/Lab	1	1,460	1460	28 Pupil Classroom/Lab	1	1,254	1,254			9 Science Labs required for 9 Teams, and use for electives
Teacher Prep Room	1	160	160	Technology	1	60	60			Clsrm/Labs downsized from 1,750 to 1,495 and trade off SF added
Computer Area	1	130	130	Teacher Station	1	60	60			
Area of Classroom/Lab	1		1750	Teacher Prep Room	1	120	120			
				Area of Science Clsrm/Lab			1,494			
Total-All Science Clsrm.	6	1750	10500	**Total of All Science Clsrm/Labs**			13,446	9	-2,946	trade off SF = +1,580 (from SpEd FSC) +1,365 (from Music) **+1add'l SF from**

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
				Dance & Performance Arts	1					one of 5 Supplemental Classrooms at 980 SF
				Instructional Area	1	1,700	1,700			
				TeacherStation	1	60	60			
				Technology	1	60	60			
				Storage	1	140	140			
				Area of Dance/Perf. Clsrm			1,960			
				Area of Dance/Perf. Clsrm			1,960	1	-980	trade off SF = +980 SF (from Industrial Tech)
				Virtual Reality Classroom	1					one of 5 Supplemental Classrooms at 980 SF
				Instructional Area	1	1,000	1,000			
				Teacher Station	1	60	60			
				Storage	1	140	140			
				Area of Virtual Reality Room			1,200			
				Area of Virtual Reality Room			1,200	1	-220	trade off SF = +220 (from downsizing Band to Choral)
Subtotal - All Classrooms	54		71890	Subtotal - All Classrooms			71,891	52	-1	extra 1 SF needed for Science Classroom/Labs

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
SUPPORT AREA										
Administrative Center	1			Administrative Center	1					
Principal's Office	1	200	200	Principal's Office	1	200	200			
Vice Principal's Office	2	200	400	Vice Principal's Office	2	200	400			
YRE-MT Vice Principal's Off	1	200	200	YRE-MT Vice Principal's Off	1	200	200			
General Office	1	420	420	General Office	1	420	420			
YRE_MT Clerk	3	100	300	YRE_MT Clerk	3	100	300			
FMS	1	100	100	FMS	1	100	100			
Duplicating Room	1	130	130	Duplicating Room	1	130	130			
Storage Room	1	240	240	Storage Room	1	240	240			
Lobby	1	240	240	Lobby	1	240	240			
Staff Conference Room	1	240	240	Staff Conference Room	1	240	240			
Registrar's Office	1	120	120	Registrar's Office	1	120	120			
Registrar's Workroom	1	600	600	Registrar's Workroom	1	600	600			
Health Services:				Health Services						
Treatment Room	1	170	170	Treatment Room	1	170	170			
Recovery Room	1	250	250	Recovery Room	1	250	250			
Nurse's Station/Waiting Area	1	150	150	Nurse's Station/Waiting Area	1	150	150			
Restroom w/ Shower	1	90	90	Restroom w/ Shower	1	90	90			
Counselor Office	6	140	840	Counselor Office	6	140	840			
Special Services/Conf. Room	1	260	260	Special Services/Conf. Room	1	260	260			
Student Activities Coord (SAC)	1	140	140	Student Activities Coord.(SAC)	1	140	140			
Student Activity Room	1	900	900	Student Activity Room	1	900	900			
Student Activity Store	1	120	120	Student Activity Store	1	120	120			
Staff Lounge	1	190	190	Staff Lounge	1	190	190			
Staff Restroom	2	70	140	Staff Restroom	2	70	140			
Custodial Closet	1	40	40	Custodial Closet	1	40	40			
Hallway/Waiting Alcove	1	740	740	Hallway/Waiting Alcove	1	740	740			
PCNC	1	350	350	PCNC	1	350	350			
CSSS	1	2,300	2300	CSSS	1	2,300	2,300			
Offices										
Conf Rms										
SSC/EA	1	330	330	SSC/EA	1	330	330			
Communications Room	1	60	60	Communications Room	1	60	60			
Mechanical/Electrical Room	1		by designer	Mechanical/Electrical Room	1		by designer			
Safety Office	1	200	200	Safety Office	1	200	200			
Total Area-Admin. Center	1		10460	Total Area-Admin. Center	1		10,460			

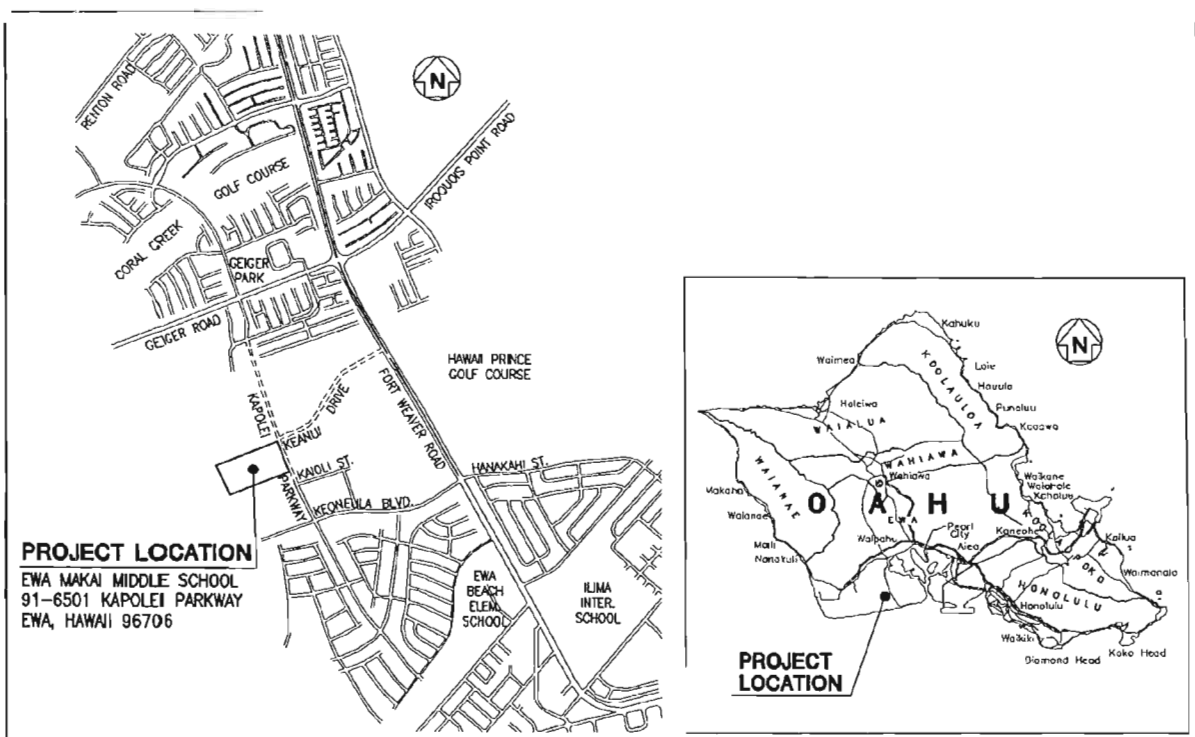
2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
Dining/Multi-Purpose	1			**Dining/Multi-Purpose**	1					
Student Dining Room (DE=1050)	1	7,200	7200	Student Dining Rm (DE=1050)	1	7,200	7,200			
Portable Stage -Superimposed on Dining Rm.				Portable Stage -Superimposed on Dining Rm.						
Stage Storage	1	250	250	Stage Storage	1	250	250			
Ramp/Chair Storage	1	200	200	Ramp/Chair Storage	1	200	200			
Amplifier Area	1	20	20	Amplifier Area	1	20	20			
Hallway	1	120	120	Hallway	1	120	120			
Boy's Dressing/Storage Room	1	180	180	Boy's Dressing/Storage Room	1	180	180			
Girl's Dressing/Storage Room	1	180	180	Girl's Dressing/Storage Room	1	180	180			
Boys' & Girls' Restrooms	2	70	140	Boys' & Girls' Restrooms	2	70	140			
Custodial Closet	1	40	40	Custodial Closet	1	40	40			
Staff Dining Room	1	435	435	Staff Dining Room	1	435	435			
Total Area of Cafeteria/M.P.			8765	Total Area of Cafeteria/M.P.			8,765			
Custodial Service Center	1			**Custodial Service Center**	1					
Office/Storage/Repair Area	1	230	230	Office/Storage/Repair Area	1	230	230			
Locker Area	1	40	40	Locker Area	1	40	40			
Tool Room	1	60	60	Tool Room	1	60	60			
Restroom w/Shower	1	90	90	Restroom w/Shower	1	90	90			
Total Area of Cust. Serv. Cent.			420	Total Area of Cust. Serv. Cent.			420			
Total Area-Café/Custod.			**9185**	**Total Area-Café/Custod.**			**9,185**			
Food Service - Kitchen	1			**Food Service - Kitchen**	1					
Food Preparation Area	1	1,100	1100	Food Preparation Area	1	1,100	1,100			
Dry Storage	1	400	400	Dry Storage	1	400	400			
Walk-in Refrigerator	1	120	120	Walk-in Refrigerator	1	120	120			
Walk-in Freezer	1	140	140	Walk-in Freezer	1	140	140			
Serving Area	1	768	768	Serving Area	1	768	768			
Tray Return Area	1	720	720	Tray Return Area	1	720	720			
Can Wash Area	1	50	50	Can Wash Area	1	50	50			
Pot & Pan Area #1	1	128	128	Pot & Pan Area #1	1	128	128			
Pot & Pan Area #2	-	-	0	Pot & Pan Area #2	-	-	0			
Transport Cart Storage Area	-	-	0	Transport Cart Storage Area	-	-	0			
Office	1	100	100	Office	1	100	100			
Lockers and Restooms	2	100	200	Lockers and Restooms	2	100	200			
Utility and Broom-Linen Closet	1	200	200	Utility and Broom-Linen Closet	1	200	200			
Heater, Elec. & Compressor Rm	3		By Designer	Heater, Elec. & Compressor Rm	3		By Designer			
Total Area of Kitchen			3925	**Total Area of Kitchen**			**3,926**			
Library Media Center	1			**Library Media Center**	1					
Office	1	248	248	Office	1	248	248			
Large Group Area:				Large Group Area:						
Circulation Desk	1	286	286	Circulation Desk	1	286	286			

2005 Fads	Original	Unit	Fads	NEW OR REVISED	Number	Unit Area	Revised	Clsrm.	Tradeoff	Remarks
TYPE/COMPONENT	Number	AreaSF	Area	TYPE/COMPONENT		Sq. Ft.	FADS	Count	Recap	
Reading/Study/Bookstack	1	4,489	4489	Reading/Study/Bookstack	1	4,489	4,489			
Periodical	1	266	266	Periodical	1	266	266			
Resource Centers	3	550	1650	Resource Centers	3	550	1,650			
Student Conference	1	252	252	Student Conference	1	252	252			
Workroom/Production Office:	1	800	800	Workroom/Production Office:	1	800	800			
Prof. Staff & Materials Area	1	336	336	Prof. Staff & Materials Area	1	336	336			
Storage Room	1	324	324	Storage Room	1	324	324			
Mechanical & Electrical Room	2	-	By Designer	Mechanical & Electrical Room	2	-	By Designer			
Custodial Closet	1	40	40	Custodial Closet	1	40	40			
Staff Restroom	2	70	140	Staff Restroom	2	70	140			
Medial Control/Signal Process	1	600	600	Medial Control/Signal Process	1	600	600			
Tech Coordinator's Office	1	300	300	Tech Coordinator's Office	1	300	300			
Multi-Media Production Room	1	650	650	Multi-Media Production Room	1	650	650			
Total Area of Library Media Center			**10381**	**Total Area of Library Media Center**			**10,381**			
Faculty Center	3			**Faculty Center**	3					
Work Area	1	230	230	Work Area	1	230	230			
Lounge Area	1	150	150	Lounge Area	1	150	150			
Gen. Clrm. Storage Room	1	380	380	Gen. Clrm. Storage Room	1	380	380			
Staff Restrooms	1	140	140	Staff Restrooms	2	70	140			
Area of Faculty Center			900	Area of Faculty Center			900			
Total - All Faculty Centers	3	900	**2700**	**Total - All Faculty Centers**	3	900	**2,700**			
Teacher Center (YRE-MT)	27			**Teacher Center (YRE-MT)**	3					
Area of Teacher Center	1	100	100	Conf Area	1	240	240			
Per School EDSPEC				YRE-MT 20 Teacher Area	1	480	480			
				YRE-MT Cart Storage	1	180	180			
				Area of Teacher Center			900			
Total Area-Teacher Center	27	100	2700	**Total Area-Teacher Center**	3	900	**2,700**			

2005 Fads TYPE/COMPONENT	Original Number	Unit Area/SF	Fads Area	NEW OR REVISED TYPE/COMPONENT	Number	Unit Area Sq. Ft.	Revised FADS	Clsrm. Count	Tradeoff Recap	Remarks
Computer Resource Center	2			**Computer Resource**	2					
Group Activity Area	4	200	800	Group Activity Area	4	200	800			
Common Activity Area	1	200	200	Common Activity Area	1	200	200			
Circulation Area	1	200	200	Circulation Area	1	200	200			
Area of Computer Center			1200	Area of Computer Center			1,200			
Total Area-Computer Cent.	2	1,200	2400	**Total Area-Computer Cent.**	2	1,200	2,400			
PE Locker/Shower (Girls)	1			**PE Locker/Shower (Girls)**	1					
Locker Room	1	1,040	1040	Locker Room	1	1,040	1,040			
Individual Shower Stalls	24	40	960	Individual Shower Stalls	24	40	960			
Shower Booth (ADA)	1	60	60	Shower Booth (ADA)	1	60	60			
PE Office	1	100	100	PE Office	1	100	100			
Faculty/Locker/Shwr./Restrm.	1	100	100	Faculty/Locker/Shwr./Restrm	1	100	100			
Restroom	1	150	150	Restroom	1	150	150			
Towel/Supply Storage	1	250	250	Towel/Supply Storage	1	250	250			
General Storage	1	275	275	General Storage	1	275	275			
Janitor's Closet	1	40	40	Janitor's Closet	1	40	40			
Circulation Area	1	300	300	Circulation Area	1	300	300			
Area of Girl's PE Lckr/Shwr			3275	Area of Girls PE Lckr/Shwr.			3,275			
PE Locker/Shower (Boys)	1			**PE Locker/Shower (Boys)**	1					
Locker Room	1	1,040	1040	Locker Room	1	1,040	1,040			
Individual Shower Stalls	24	40	960	Individual Shower Stalls	24	40	960			
Shower Booth (ADA)	1	60	60	Shower Booth (ADA)	1	60	60			
PE Office	1	100	100	PE Office	1	100	100			
Faculty/Locker/Shwr./Restrm.	1	100	100	Faculty/Locker/Shwr./Restrm	1	100	100			
Restroom	1	150	150	Restroom	1	150	150			
Towel/Supply Storage	1	250	250	Towel/Supply Storage	1	250	250			
General Storage	1	275	275	General Storage	1	275	275			
Janitor's Closet	1	40	40	Janitor's Closet	1	40	40			
Circulation Area	1	300	300	Circulation Area	1	300	300			
Area of Boy's Lockr./Shwr.			3275	Area of Boy's Lockr./Shwr.			3,275			
PE Lckr./Shwr. Commons	1			**PE Lckr./Shwr. Commons**	1					
Laundry Room	1	160	160	Laundry Room	1	160	160			
Heater & Electric Room	2		By Designer	Heater & Electric Room	2		By Designer			
First-Aid Room	1	120	120	First-Aid Room	1	120	120			
Area of Commons - PE Lckr./S	1		280	Area-Commons - PE Lckr./S	1		280			
Total Area of PE Lckr./Shwr.	1		6830	**Total Area of PE Lckr./Shwr.**	1		6,830			
Itinerant Special Ed			330	**Itinerant Special Ed**			330			
(From Above Special Ed)				(From Above Special Ed)						

2005 Fads TYPE/COMPONENT	Original Number	Unit Area/SF	Fads Area	NEW OR REVISED TYPE/COMPONENT	Number	Unit Area Sq. Ft.	Revised FADS	Clsrm. Count	Tradeoff Recap	Remarks
Total Support Area			48912	Total Support Area			48,912			
Subtotal - School Area			120802	Subtotal - School Area			120,803			
Additional Storage	2%	120802	2416	Additional Storage	2%	120,803	2,416			
TOTAL SCHOOL-PROGRAM AREA			123218	TOTAL SCHOOL PROGRAM AREA			123,219			
OUTDOOR PHYSICAL EDUCATION				OUTDOOR PHYSICAL EDUCATION						
Playfield "A"	1	90,000	90000	Playfield "A"	1	90,000	90,000			
Playfield "B"	1	75,000	75000	Playfield "B"	1	75,000	75,000			
Playcourt	1	10,368	10368	Playcourt	1	10,368	10,368			
Covered Playcourt	1	10,368	10368	Covered Playcourt	1	10,368	10,368			
Stage & Storage	1	1,230	1230	Stage & Storage	1	1,230	1,230			
AREA OF OUTDOOR PHYSICAL EDUCATION			186966	AREA OF OUTDOOR PHYSICAL EDUCATION			186,966			
				CORE AND SUPPORT AREAS						
				Toilet Rooms			2,088			
				Interior Commons @ Neighborhoods			28,440			
				Mechanical Rooms			1,639			
				Signal/Electrical Rooms			1,098			
				Staff Restroom at Elective Area			192			
				Corridors and Circulation			37,048			
				Subtotal - Core and Support Areas			70,505			
				Total Area for School			193,724			
				NTG Factor			1.57			

BASIS FOR DESIGN



LOCATION MAP

NOT TO SCALE

VICINITY MAP

NOT TO SCALE

PREPARED BY:
MITSUNAGA & ASSOCIATES, INC.
747 AMANA STREET, SUITE 216
HONOLULU, HAWAII 96814
PHONE: 945-7882 FAX: 944-2563
EMAIL: MITSUNAGA-CIVIL@HAWAIIRR.COM

EWA MAKAI MIDDLE SCHOOL
FIGURE 1 - LOCATION AND VICINITY MAP
EWA OAHU HAWAII

Date: July 2005
DOE Job No.

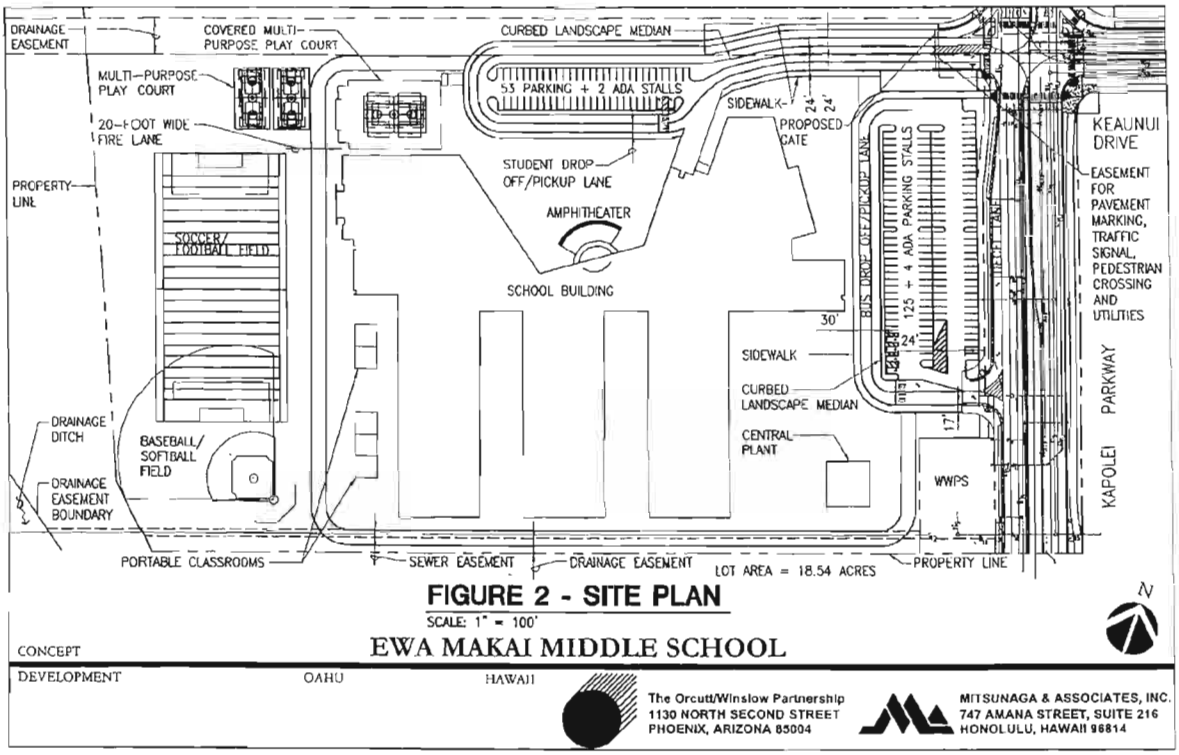


FIGURE 2 - SITE PLAN

SCALE: 1" = 100'

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

The Orcutt/Winslow Partnership
1130 NORTH SECOND STREET
PHOENIX, ARIZONA 85004

MITSUNAGA & ASSOCIATES, INC.
747 AMANA STREET, SUITE 216
HONOLULU, HAWAII 96814

LANDSCAPE ARCHITECTURE BASIS FOR DESIGN

Ewa Makai Middle School – The School of Tomorrow

LANDSCAPE CONCEPT

The landscape concept for the Ewa Makai Middle School will support the design of the classroom building and addresses function, the Hawaiian culture, the climate of the Ewa plains, and landscape maintenance.

- Function – In a middle school setting, function is key to the design of the landscape. The outdoor areas are essential to support learning, whether the classes, or sports fields and courts. The design also takes into account all users including students, faculty, and community members.

  In order to accommodate various functions, the design provides specific venues from an amphitheater which seats up to 1,000 people to intimate gathering areas for small groups in the interior classroom courtyards. The sports fields provide for multi-use activities.

- Culture – The Ewa Makai Middle School landscape design will promote the uniqueness of the Hawaiian culture. Native plants as well as culturally significant plants will be integrated into the classroom courtyards and can become a part of the curriculum and learning experience.

  Each of the classroom courtyards will have a theme which supports the middle school curriculum. The amphitheater area will also be designed with a theme as its basis.

- Climate – The Ewa climate demands a need for shade. Large canopy trees provide shade in the parking lots on two sides of the school. Shade trees help to keep the building cool especially on the west and south faces.

- Maintenance – Any successful landscape requires consistent maintenance. However, the judicious selection and placement of plants will help to keep maintenance to a minimum. Plants will be selected for qualities relating to function, culture, and climate. An automatic irrigation system will provide efficient watering with minimum overspray and pudding. Mulches shall be used at the base of the trees to control weeds, reduce moisture loss, and protect the plants from mowers and string trimmers.

PLAN FEATURES

- Entry – The school will have a sign at the corner or Kapolei Parkway and the entry drive. The sign will have accent landscaping to support it such as palms and low ground covers.

- Entry Plaza – The entrance to the school will be a welcoming landscaped plaza with special paving, accent palms and trees, built-in seating, and an identification sign for the school. It will be a place where students can meet friends before and after school.

- Amphitheater – The amphitheater will be the main gathering space for the school. It will have raised seating that may accommodate up to 1,000 people. The space will be shaded by a fabric-like structure that could be in the form of a sail. The floor of the amphitheater will be paved with special paving in a blue wave pattern suggesting a voyage on the sea.

- Classroom Courtyards – Each classroom courtyard will have a theme which supports the middle school curriculum. Examples are: Space, Native Hawaiian Species, and an *ahupua'a*. Students may be encourages to help maintain these spaces. If a *lo'i* is integrated into the design, students could be involved in the planting and harvesting of taro.

  The courtyards are long and linear. The landscape design will break up the spaces and create smaller intimate gathering spaces. Natural shapes and curvilinear forms will lessen the linear feel of the space.

ARCHITECTURAL BASIS FOR DESIGN

Ewa Makai Middle School – The School of Tomorrow

LAND ZONING

Tax Map Key:
9-1-069: 005 (Lot 90003)

Address:
91-6501 Kapolei Parkway
Ewa, Oahu, Hawaii 96706

Land Area
18.542 Acres

Code References

Zoning Code
Land Use Ordinance, Department of Planning & Permitting, City and County of Honolulu Amendments

Building Code: Per meeting with Department of Planning and Permitting on June, 17, 2005, the Ewa Makai Middle School will be reviewed under the 2003 International Building Code Requirements. See agency letter to file.

Land Zoning Requirements

- Flood Zone is Firm Zone D
- Height Limit is 25 ft. Waiver will be required for heights above the 25 ft. for residential. Heights above this limit will require a waiver.
- Not in historic site register
- Lot restrictions – none
- Not in SMA/Shoreline restrictions
- Not is any Special Districts
- State Land Use designation is Urban
- Zoning is R-5
- The parcel is presently in an un-subdivided vacant land area and will need to be subdivided
- Gentry has design guidelines for the area in place

BUILDING CODE

- The occupancy group is E (educational) per Section 305
- Construction type is Type II-B, Unlimited per Table 503.
- Per Section 507.8, the area of a one story building may be unlimited if the following conditions are met:
  1. Each classroom shall have not less than two means of egress, with one means of egress being a direct exit to the outside of the building complying with Section 1017.
  2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3 1.1.
  3. The building is surrounded and adjoined by public ways or yards not less than 60 ft. in width.

Ewa Makai Middle School meets all of the above conditions.

- Total actual area of school is 193,794 s.f. This is allowed under the unlimited area condition for E occupancies
- Maximum height allowed is 2 stories - 25 ft.
- Actual height is 42 ft. and one story. Waiver will be required for the increase in height above 25 ft.
- Fire resistance rating requirements for Type II-B is no rating required per Table 601.
- Exiting:
  - Each classroom to have 2 exits per Type II-B requirement
  - Occupant load calculation (per Table 1004.1.2)
    - Classroom – 20 s.f. per person. 27 general classrooms @ 980 s.f. – 26,460 s.f./20 = ***1323 occupants***
    - Special Education Classrooms – 4 FSC @ 1360 s.f. = 5440 s.f/20 = ***272 occupants***
    - PE Classrooms 2 @ 980 s.f. = 1960 s.f./20 = ***98 occupants***
    - Resource Classrooms – 9 @ 600 s.f. = 5400 s.f./20 = ***270 occupants***
    - Supplemental Classrooms Dance/CSAP/Virtual Reality = 4140 s.f./20 = **207 occupants**
    - Shops/Labs/Vocational – 50 s.f. per person – 24,636 s.f./50 = ***493 occupants*** (includes all science, shops, labs, and computer resource areas)
    - Music/Choral – 5,655 s.f./20 = ***283 occupants***
    - Library – reading rooms – 50 s.f. per person, stack areas – 100 gross s.f. – 4755 s.f./50 = ***95 occupants for reading area.***
    - Kitchen – 200 s.f. gross. 3926 s.f./200 = ***20 occupants***
    - Dining/Assembly – 15 s.f. 7200 s.f./15 = ***480 occupants***
    - Locker Room – 50 s.f.. 6,830 s.f./50 = **137 occupants**
    - Offices and Conference Rooms – 100 s.f.. 17662 s.f. = ***177 occupants*** (includes all offices and conference rooms)
    - Accessory storage/mechanical rooms/equipment rooms – 300 s f. 5153 s.f./100 = **52 occupants**
    - **Total occupant load for entire school: 3907**
- Minimum egress width is per Section 1005. With sprinkler system, the factor is 0.15 for occupants served.
- Corridor widths for each wing of building:
  - Typical Classroom Pod Wing – Total occupant load per wing is 660 occupants x 0.15 = 99" Actual corridor width provided is 24 ft. – 40 ft.
  - Electives Wing – Total occupant load is 676 occupants x 0.15 = 101.4" Actual corridor width provided is 120" (10 ft.)
  - Administration Wing – Total occupant load is 42 occupants x .15 – 6.3". Actual corridor width provided is 72" (6 ft.)
  - Counseling Wing – Total occupant load is 103 occupants x .15 = 15.45" Actual corridor width provided is 72" (6 ft.)
  - Minimum No. of exits – 4 as required by Table 1018.1 for occupancies over 1,000
  - Egress width components per Table 1005.1. Total occupant load 3907 x .15 = 586" minimum (49 ft.). Total provided – 2 exits from each classroom. Additionally, main exit doors along corridors = 1584"(132 ft.) of exit door.

HAWAII MODEL ENERGY CODE REQUIREMENTS

- Roof – minimum insulation R value = R-19
- Walls – minimum to be determined during the design
- Windows – minimum glass shading coefficient to be determined during the design

DEPARTMENT OF HEALTH – SANITARY FACILTIES

Allowable minimum sanitary facilities for students per the Department of Health Chapter 11, for entire school is based on maximum design enrollment of 1050 students. The following was ascertained from Table II – Schools.

525 Males	525 Females
17 wc	10 wc
9 urinals	8 lavs
8 lavs	

Fixtures provided per the plan

Males	Females
17 wc	27 wc
11 urinals	18 lavs
17 lavs	

Per the Uniform Plumbing Code, 14 drinking fountains required (1 per 75 students)

For Administration/Counseling/Staff.

73 Males	73 Females
4 wc	4 wc
4 lavs	4 lavs

Provided:
-One restroom for each sex in each Teacher/Faculty Center (4)
- Staff restrooms in Media Center, Counseling & CSAP, PE Locker/Showers, Custodial Center, Administration Wing, and Health Center

STATE REQUIREMENTS

- State Occupational Safety and Health Law (OSHA)
- HRS, Act 308/309, Section 103-50 relating to persons with disabilities (use current ADA Accessibility Guidelines, 36 C.F.R.PT.1191)

STRUCTURAL BASIS FOR DESIGN

Ewa Makai Middle School – The School of Tomorrow

STRUCTURAL FRAMING SYSTEM

Foundation
The foundation system will consist of continuous and spread footings bearing on in-situ soils or engineered fill.

Slab-On-Grade
The concrete slab-on-grade will be 4" minimum thick, reinforced with #4 @ 16" o.c. on a moisture barrier. This building is entirely one story.

Walls
Exterior walls, bearing walls, and shear walls will be of 8" grouted masonry units or 8" thick concrete walls.

Columns
Poured in place concrete or CMU columns will be used to support beams and girders.

Roof
- 1-1/2" deep x 22 gauge metal decking will be used over purlins to support the insulation and steel roofing. The decking will also be used as a horizontal diaphragm.
- 8" or 10" deep x 14 gauge purlins spaced at approximately 4'-0" o.c. will be used to support the metal decking and span between the steel beams, trusses or frames.
- Structural steel beams, trusses or frames will be used to support the roof framing and be spaced at approximately 20'-0" o.c.

Agency References

Uniform Building Code (UBC 1997)

Building Code Requirements for Reinforced Concrete (ACI 318-89)

AISC Manual of Steel Design, 1986

Cold Formed Steel Design, 1986

Reinforced Masonry Engineering Handbook, Fifth Edition

MECHANICAL
BASIS FOR DESIGN
Ewa Makai Middle School – The School of Tomorrow

DESIGN REFERENCES

Americans with Disabilities Act Accessibility Guidelines (ADAAG)

ASHRAE 62-1989, Ventilation for Acceptable Indoor Air Quality

ASHRAE Fundamentals - 2003 Edition

Educational Specifications Middle School, Department of Education, State of Hawaii

Building Energy Efficiency Standards, Chapter 32 ROH, 1995.

NFPA 13 - Installation of Sprinkler Systems - 2002 Edition.

NFPA 90A - Installation of Air Conditioning and Ventilating Systems - 2002 Edition.

NFPA 96 - Ventilation Control and Fire Protection of Commercial Cooking Operations - 2004 Ed.

Uniform Fire Code 1997 Edition with City and County of Honolulu Amendments

Uniform Plumbing Code - 1997 Edition with City and County of Honolulu Amendments

Design Standards for Air Conditioning Schools, Revised 10/31/96, State of Hawaii, Department of Education

State of Hawaii, Department of Health, Hawaii Administrative Rules – Title 11, Chapter 39, Air Conditioning and Ventilation

GENERAL MECHANICAL SCOPE OF WORK

- Provide fire protection, plumbing, air conditioning and ventilation systems for a new middle school in Ewa Beach, Oahu, Hawaii area.
- Fire protection work will include providing a wet pipe fire sprinkler system for the building where required by the Building Code.
- Plumbing work will include providing plumbing fixtures and water, vent and sewer systems for classrooms, restrooms and support facilities.
- Air conditioning work will include providing conditioned air to the classrooms, offices and support facilities to provide a high indoor air quality environment.
- Ventilation work will include providing mechanical ventilation for the restrooms, kitchen grease hoods and science room fume removal.

DETAILED DESCRIPTION

Fire Protection System

- Building will be protected by a wet pipe fire sprinkler system throughout. Fire sprinkler risers will be placed indoors to minimize vandalism. Sprinkler heads will be concealed pendant type to minimize vandalism as requested by DAGS Central Services. The sprinkler system will be provided in accordance with NFPA 13.
- No fire pump is planned. Adequacy of water supply source will be determined during design development. Current floor area will require a minimum of 3 each, 6" diameter sprinkler connections to the site water supply.

Plumbing System

Plumbing Fixtures

- Floor mounted flush valve water closets and urinals, wall hung lavatories, floor drains and hose bibbs will be provided at the restrooms. Fixtures will be selected to meet the ultra-low flow requirements of reference (K). No hot water will be provided to these restrooms. Selected fixtures will be handicapped accessible, mounted at adult height, in accordance with ADAAG.
- Each classroom will be provided with a countertop stainless steel sink per Reference (D). No hot water will be

provided, with selected sinks to be handicapped accessible, mounted at adult height, in accordance with ADAAG. In addition, a solids interceptor (clay trap) will be provided for the sink, where required by the design references.

- The science classrooms will be provided with acid resistant sinks. No hot water will be provided to the classrooms. Selected sinks to be handicapped accessible, mounted at adult height, in accordance with ADAAG. In addition, an acid neutralization tank will be provided at the exterior of the building to capture any acids from the science classrooms only, before the waste discharges into the sanitary sewer system.
- Kitchen sinks, food preparation equipment and dishwashing equipment will be provided with hot water and cold water. Sinks and hot water dispensers for offices, workrooms and other specialized rooms will be provided where authorized by the design references.
- The kitchen fixtures will drain to a grease interceptor at the exterior of the building to capture any grease before the waste discharges into the sanitary sewer system. Grease interceptors shall be sized and selected in accordance with the county wastewater requirements.
- Gym/Athletic Facilities/P.E. locker rooms will be provided with built-in shower stalls. Hot water will be provided to all showers. Selected showers to be handicapped accessible, mounted at adult height, in accordance with ADAAG, Reference A. Shower valves will be pressure compensated type with temperature control at each valve.
- The building exterior will be provided with concealed wall hydrants, located approximately 100 feet on center for washdown of adjacent walkways and supplemental irrigation of planting areas. The wall hydrants were selected in lieu of wall mounted hose bibbs to reduce vandalism and aesthetics.

Domestic Water Piping

- New water piping will be Type K, hard drawn copper for below ground areas and Type L, hard drawn copper for above ground areas. Fittings will be cast bronze or wrot copper with soldered ends with tin-antimony solder (no lead solder allowed). If soil is highly corrosive and has caused premature failure of underground copper pipes, non-metallic pipes will be considered. Hot water piping below grade will be pre-insulated or field-insulated copper tubing, while above grade hot water piping will be of copper construction and insulated fiberglass with all service self sealing jacket.

Drainage, Waste and Vent Piping

- New drainage, waste and vent (DWV) piping will be service weight no-hub cast iron soil pipe and fittings with cast iron mechanical couplings for underground applications and no-hub cast iron soil pipe and fittings with stainless steel bands for above grade applications.
- Science classrooms will be provided with acid resistant DWV piping and fittings
- Exposed DWV piping for kitchen fixtures will be DWV copper pipe with wrought copper, soldered ends fittings.

Handicapped Accessibility

- Handicapped accessibility provisions will be designed using the Americans with Disabilities Act Accessibility Guidelines (ADAAG) design criteria. All fixture heights will be designed to adult height dimensions. Specific criteria will be verified with the Disability and Communication Access Board (DCAB), State of Hawaii during design phase.

Hot Water System

- A life cycle cost analysis during the design phase will be provided to determine if waste heat recovery from the air conditioning system is a cost effective method to preheat the domestic water. Per the Building Energy

Efficiency Standards, Reference F, waste heat recovery is required "unless the system can be shown to be not cost effective over its anticipated service life" (para 32-9.3.(h)). At this time, water-to-water heat pump in the chilled water return piping of the air conditioning water chiller system is planned to be included. The heat pumps generate hot water by precooling the air conditioning chilled water. Supplemental water heating if there is inadequate hot water available from the heat pumps will be accomplished with gas fired boilers. Hot water storage tank(s) and a hot water recirculation system will be provided to recirculate water from the central plant to the main building.

- In addition, air-to-water heat pumps will be evaluated during design to precool makeup air for the kitchen hoods and concurrently heat hot water for domestic use.

- The hot water system temperature will be 140 degrees F for the kitchen and 120 degrees F for all other fixtures supplied hot water. A tempering valve station will be provided to temper the hot water to 120 degrees F.

- A booster water heater will be provided if required by the dishwashing equipment to raise the water temperature to the meet the requirements of Hawaii Department of Health Sanitation and the equipment manufacturer.

Domestic Water Demand

- The schematic drawings indicate a fixture unit count of 658 fixture units, 165 gpm required for the facility. A 4" service lateral will be coordinated with the civil consultant to provide adequate water supply for the plumbing system.

Synthetic Natural Gas

- Gas will be provided for hot water heaters, kitchen appliances and equipment requiring gas.

Air Conditioning System

- A chilled water system with a combination of variable air volume (VAV) air handling units (AHU) and ducted, constant volume fan coil units (FCU) will be used for the various buildings. The AHU's will be used for the classrooms and other rooms while the FCU's will be used for small rooms or unoccupied rooms that with high internal loads require heat removal (e.g. telecommunications rooms).

- The campus will be served by a central chilled water plant distributing chilled water to the main building. The main building will be separated into seven zones as follows:

  1) Music/Art/PE
  2) Administration
  3) Media Center
  4) Classroom 1
  5) Classroom 2
  6) Classroom 3
  7) Dining

- The general concept is to provide zones with a constant volume displacement ventilation system to cool and ventilate the rooms. Special displacement diffusers mounted to the room walls at floor level will provide uniform horizontal supply air flow. The air will be heated by the room loads and rise to the ceiling where it will be returned to a central station, chilled water AHU. The return air will be used to reheat the supply air and precool the incoming outside air. Some of the return air will be exhausted and the remainder mixed with the precooled outside air. The mixed air is cooled and dehumidified as it passes through the cooling coil.

- CO2 levels will be measured in each classroom and the amount of outside air will be increased if CO2 levels are higher than recommended by Reference (B) for ventilation demand control. The amount of outside air and return air will be regulated by motorized dampers and by modulating the fan speed of the AHU

- Room temperature control will be provided by reheating the supply air at the reheat coil. Reheat water will be produced by the water-water heat pump

that precools the chilled water as it returns to the chillers.

- Where room layouts (e.g. many adjacent small offices or rooms) may not be cost effective to use displacement ventilation concept, a traditional overhead VAV system, FCU or other system will be considered.

- Two (2) centrifugal chillers, located indoors at the central mechanical plant building, will be provided with two (2) open circuit, counter flow cooling towers. The estimated peak capacity of the chilled water plant is 500 tons. Chiller plant equipment will be selected to meet the efficiency requirements of Reference F.

- The cooling towers will be located outdoors on a concrete slab on grade and enclosed to attenuate noise from the towers and prevent unauthorized tampering with the equipment. The cooling towers will be connected to the chillers with above ground condenser water piping. The cooling towers will be provided with variable speed or two (2) speed fan motors to increase energy efficiency and reduce noise.

- The chilled water is distributed from the central mechanical plant building to the buildings on campus by a primary/secondary pumping system, consisting of constant volume primary pumps and variable volume secondary pumps. The primary pumps provide a constant flow of chilled water through the chillers and the secondary pumps provide a variable chilled water flow to the air handling units, as required to meet the varying cooling load. The variable flow secondary pumping scheme provides greater energy efficiency, reducing energy costs, when compared to other pumping schemes.

- The AHU's will be floor mounted in mechanical rooms for ease of service and maintenance. The AHU's will be insulated, double wall construction with a solid inner wall for improved indoor air quality as well as noise attenuation. Each AHU will be equipped with solid state variable frequency drives (VFD) to vary the fan speed, thereby varying the supply air, return air and outside air quantities and saving on fan energy that is not required during part load operation.

- A reheat water coil will be provided for each conditioned room requiring temperature control by modulating reheat water flow to meet the room setpoint. The reheat coils and distribution ductwork will be located above the ceiling. All ductwork will be galvanized sheet metal, constructed in accordance with specified pressure class from the Sheet Metal & Air Conditioning Contractor's National Association, Inc. (SMACNA) Duct Construction Standards and insulated with a minimum of 2" thick exterior foil faced, fiberglass ductwrap insulation for improved indoor air quality (e.g. easier to clean ducts and less places within the duct to trap dirt, dust and other contaminants).

- The air conditioning system will be controlled by a campus wide energy monitoring and control system (EMCS) that will schedule system on/off times and monitor system operation and select control strategy. In addition, each building will have a building automation system (BAS) monitor and control the individual equipment unit control panels in that building (e.g. AHU's, FCU's, chillers). A personal computer (PC) complete with CPU, monitor, keyboard, printer and modem will be provided for communication and monitoring of the campus wide EMCS. The PC should be located in the Administration area or other occupied area if the school will operate the air conditioning system.

- Outside air requirements are based on the requirements of ASHRAE 62-1989 and will be 15 cfm/person for classroom areas, 20 cfm/person in office areas, 0.1 cfm/sf in corridors, 0.5 cfm/sf in lockers and 0.05 cfm/sf in storage areas.

Ventilation System

Restrooms and Locker rooms

- Rest rooms and locker rooms will be ventilated by transferring air from adjacent air conditioned areas to the rest rooms and lockers. If conditioned air is not available, fresh air will be transferred to the restroom and lockers rooms from the exterior. The rest rooms

will be exhaust at a minimum of 2 cfm/sf (if using conditioned air) or 4 cfm/sf (if using fresh air), in accordance the Department of Health (DOH) guidelines, Reference M. The exhaust fans may be interlocked with the air conditioning system and operate whenever the air conditioning system is operating during normal business hours to exhaust the outside air.

- Air curtains will be provided at the service entrance to the kitchen and at all exterior doors to the student and faculty dining areas. Control of fans will be manual push buttons that will controlled by the kitchen staff only.

- Ceiling fans in the dining areas may be provided if warranted for air circulation. Fans shall be coordinated with the ceiling assembly and aesthetics. Controls for fans will be manual switches.

Kitchen Exhaust System

- A ducted kitchen exhaust system will be provided to remove heat, grease laden exhaust and odors from the kitchen exhaust hood(s) to meet the requirements of DOH in Reference M. The exhaust fans will be oversized to lower fan speeds and provided with soft starters to minimize noise radiated to the surroundings during startup. Capacities will be based on the size of the hoods. Exposed ductwork will be welded stainless steel. Concealed ductwork will be welded, ungalvanized carbon steel. Exhaust fan shall be rated for use in a grease hood system.

- If the kitchen is provided an automatic dishwasher, a mechanical exhaust system shall be provided to exhaust the steam vapor from the dishwasher. Ductwork will be welded stainless steel.

ELECTRICAL ENGINEERING BASIS FOR DESIGN

Ewa Makai Middle School – The School of Tomorrow

DESIGN REFERENCES

DOE Design Guide for Fire Alarm Criteria.

Uniform Fire Code, 1997, with local amendments.

DOE Educational Specifications and Facilities Guide for Middle Schools.

Uniform Building Code, 1997, with local amendments.

National Electrical Code (NEC) NFPA 70-2002.

Life Safety Code, NFPA 101-2003.

Illuminating Engineering Society of North America (IESNA) Lighting Handbook, Ninth Edition, 2000.

Hawaii Model Energy Code, July 1993.

PRIMARY EXTERIOR ELECTRICAL SYSTEM

- Primary power will be derived from the existing Hawaiian Electric Company (HECo) primary underground system along Kapolei Parkway. Primary ductline to serve the new campus will be provided by the roadway and subdivision infrastructure development project.

- A primary underground ductline and handhole system will intercept and extend the ductline stub-outs to the proposed HECo primary switch and service transformer dedicated to the campus.

- Project will provide concrete equipment pads for the pad-mounted transformer and primary switch. Procurement and installation of primary cabling and the equipment is the responsibility of HECo.

- The school will be billed on Rate Schedule P "Large Power Service."

- All work related to the primary electrical system will be coordinated with HECo.

SECONDARY EXTERIOR ELECTRICAL SYSTEM

- Secondary power for the new campus will originate from one new HECo pad-mounted transformer. The transformer will supply power to the campus at 480/277 volts, 3 phase, 4 wire, 60 Hertz.

- Secondary service electrical feeders will be routed from the pad-mounted transformer to the main campus electrical room within the Central Plant building.

- The secondary switchboard will be provided with a kilowatt-hour HECo revenue meter.

- Secondary distribution system will consist of individual 600 volt conductors, with RHW/USE insulations, within electrical handholes and concrete encased PVC ductlines.

EXTERIOR TELEPHONE SYSTEM

- Telephone service will be derived from the Hawaiian Telcom (HT) underground distribution system along Kapolei Parkway. Telephone ductline stub-outs to serve the campus will be provided by the roadway and subdivision infrastructure development project.

- The telephone service ductline stub-outs will be intercepted and extended to the Main Signal Room (Media Control/Signal Processing Room.)

- Exterior telephone system will consist of underground handholes and empty concrete encased with muletape.

- Telephone service entrance cables to be provided by HT

EXTERIOR CABLE TELEVISION SYSTEM

- Cable television (CATV) service will be derived from the Oceanic Time Warner Cable (OTWC) underground

distribution system along Kapolei Parkway. CATV ductline stub-outs to serve the campus will be provided by the roadway and subdivision infrastructure development project.

- The CATV service ductline stub-outs will be intercepted and extended to the Main Signal Room similar to the telephone system.

- CATV service entrance cables to be provided by OTWC.

EXTERIOR LIGHTING

- Energy efficient high pressure sodium (HPS) luminaries to be provided at exterior doorways of the new buildings for safety and general illumination around the entrances/exits.

- HPS pole mounted lights will be provided for illumination of all driveways, vehicle parking areas, and selected pedestrian walkways. Target lighting level will be an average of 0.5 footcandles maintained illumination.

- Site and building mounted exterior lights will be operated by lighting contactors with time switch controls.

- General area lighting will be provided for the outdoor stage area of the Amphitheater and Covered Playcourt. Lighting will be accomplished via building mounted lights. **No** specialty performance lighting will be provided.

SPORTS LIGHTING

- Ballfields and playcourts (outdoor and covered) will not be illuminated for activities after dark

INTERIOR WIRING SYSTEM

- Electrical wiring systems will consist of insulated copper conductors in raceways.

- Raceways will consist of galvanized rigid steel conduit for all exposed work. EMT conduit will be permitted above grade slab where cast into concrete and within concealed wall and ceiling spaces. PVC conduit will be utilized underground and under grade floor slabs.

- Electrical equipment enclosures will be NEMA Type 1 for interior locations and NEMA Type 4X for exterior locations.

- Secondary power will be distributed at 480/277 volts, 3 phase, 4 wire, 60 Hertz. Step-down dry-type transformers will be utilized to provide 208/120 volts, 3 phases, 4 wire, 60 Hertz power where necessary.

- Power feeders to each major building "wing" of the facility to be routed exterior to the main building via an underground ductline system. This distribution concept is based upon Building Department concurrence that the facility is a "large" structure with

fire separation of the wings, thus permitting dedicated feeders directly to each wing's electrical room from the main switchboard in the Central Plant Building.

SWITCHBOARDS AND PANELBOARDS

- The switchboards and panelboards will have copper bussing.

- Switchboard main circuit breaker will be of the insulated case type. Switchboard feeder circuit breaker and all circuit breakers within panelboards will be equipped with bolt-on, molded-case circuit breakers.

- Switchboard and panelboards will be equipped with separate ground busses. Isolated ground busses will be provided where required.

- Switchboard will be equipped with a Kirk-key interlocked circuit breaker to facilitate connection of a portable generator during an extended HECo power outage. Qualified electrical personnel will need to manually shed loads as required to match portable generator capacity whenever this emergency power feature is utilized.

RECEPTACLES

- Convenience receptacles will be provided throughout the facilities. Each habitable room will have a minimum of one receptacle.

- Ground Fault Circuit Interrupter (GFCI) receptacles will be provided at countertops with sinks, toilets, and exterior walls throughout the facilities. GFCI receptacles will also be provided at the outdoor stage for portable spotlights and performance equipment. All exterior receptacles will be provided with lockable weatherproof covers.

- All exterior receptacles within student restrooms will be controlled by a switch located in a nearby janitor's closet.

- Receptacle locations will conform to the DOE Educational Specifications and Facilities Guide and as modified per DOE direction.

INTERIOR LIGHTING

Target footcandle levels will be as recommended by the IESNA Lighting Handbook. The following target footcandle lighting levels will be used.

Design Illumination Levels

Room Usage	Maintained Footcandles	Lamp Type
Conference Rooms	50	Fluorescent
Maintenance/ Custodial	20	Fluorescent
Lounges	30	Fluorescent
Offices	50	Fluorescent
Classrooms	70	Fluorescent
Library Stacks/ Meeting	30/70	Fluorescent
Treatment/ Recovery Room	70	Fluorescent
Lobby/ Waiting	30	Fluorescent
Toilet Facilities	20	Fluorescent
Mechanical Room	20	Fluorescent
Electrical Room	25	Fluorescent
Main Signal Room	50	Fluorescent
Corridors	20	Fluorescent
Storage Areas	20	Fluorescent

- General interior illumination will be provided by energy efficient fluorescent luminaries utilizing T-8 lamps and electronic ballasts except as otherwise noted. Luminaries will be equipped with standard A-12 acrylic prismatic lenses and be recessed into the ceiling whenever possible.

- Multi-level and/or zone switching will be provided in large rooms for energy conservations and selectivity for task illumination. Occupancy sensors will be provided in classrooms, offices, and conference rooms to meet energy efficient standards required by the Hawaii Model Energy Code.

- Luminaries within stack and reading areas of the library will be provided with electronic ballasts with a sound rating of A+.

- Illuminated exit signs will be provided for all emergency exits and exit passageways as required by NFPA 101, Life Safety Code.

- Emergency lighting will be provided in conformance with NFPA 101, Life Safety Code. Emergency lighting will utilize integral battery backup modules within selected fluorescent luminaries.

INTERIOR TELEPHONE DISTRIBUTION SYSTEM

- Interior telephone distribution raceway systems will be provided throughout the building. Telephone switching equipment, instruments, interior cabling, and terminations by the interconnect company vendor retained by the School/DOE.

- Telephone distribution raceway systems will consist of empty raceways with pullstrings, outlet boxes with blank device cover plates, pullboxes, and connections to the respective building grounding system.

- Telephone raceways will consist of ¾" minimum diameter conduits.

- Telephone backboards will be provided with isolated ground type convenience receptacles nearby.

- Telephone outlet locations will conform to the DOE Educational Specifications and Facilities Guide.

ADMINISTRATIVE DATA (AD) AND INFORMATION DATA (ID) RACEWAY SYSTEMS

- Empty AD and ID raceway systems will be provided for the project. AD and ID equipment, cables, jacks, and terminations by others.
- Interior AD and ID raceway systems will consist of empty raceways with pullstring, outlet boxes with blank device cover plates, pullboxes, backboards, and connections to the respective building ground system.
- AD and ID raceways will consist of 1" minimum diameter conduits.
- AD and ID backboards will be provided with isolated ground type convenience receptacles nearby.
- AD and ID outlet locations will conform to the DOE Educational Specifications and Facilities Guide.

CABLE TELEVISION (CATV) RACEWAY SYSTEM

- Empty CATV raceway system will be provided for the project. CATV equipment, cables, jacks, and terminations are anticipated to be provided by the OTWC as a public service contribution to the community.
- Interior CATV raceway system will consist of empty raceways with pullstring, outlet boxes wth blank device cover plates, pullboxes, backboards, and ground.
- CATV raceways will consist of 3/4" minimum diameter conduit with pullstring.
- All CATV backboards will be provided with isolated ground convenience receptacles nearby.
- All CATV system layouts will conform to the Educational Specifications and Facilities Guide.

FIRM ALARM SYSTEM

- A campus-wide, integrated fire alarm system will be provided. The Main Fire Alarm Control Panel (MFACP) will be located in the Administration wing of the facility. Fire alarm equipment will consist of pull stations, horns, visual signaling devices, raceways and wiring. Additional initiation devices such as smoke detectors, food service fire protection system connections, etc. will be provided as necessary.
- All devices within a given building will be hard-wired to the MFACP.
- All fire alarm systems will conform to the DAGS Guide for Fire Alarm Systems.

INTERCOM/PROGRAM BELL SYSTEM

- An integrated intercom/program bell system including a main control console/rack, remote control master consoles, speakers, and call origination stations will be provided for the campus. The head-end equipment will be located in the Main Signal Room
- Intercom/Program Bell raceways will consist of ¾" minimum diameter conduit, cabling as required.
- No program clocks will be provided per DAGS and DOE direction.

GROUNDING SYSTEMS

- All exterior luminaire poles will be grounded and bonded.
- A separate ground bus will be provided within each switchboard and panelboard. Isolated ground busses will be provided where required.
- Bare copper ground wires, bonded to the building grounding system, will be provided in each signal room. Ground conductors to consist of 6' coils of bare #6 copper ground wires. Final terminations by the individual signal interconnect company vendors (s) retained by the School/ DOE.
- There has not been any equipment with specialized grounding requirements identified for this project.

CHARETTE SESSION NOTES

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 1/Day One
March 14, 2005 (Monday)

Tony Chun welcomed the Steering Committee for Ewa Makai Middle School.

1 helpful hint
2. need to agree or to disagree for the good of the kids

Paul Wimslow: What is the right school for Ewa. "YOUR SCHOOL" - A Design Guide

1. Learning Environments
2. What is the soul of this school
3. Goal – productive citizen, life long learners
4. Relationships, social structure, elements into building design
5. Brain – neurons increased in rich environments
   - brain environments affect our brain which controls behavior development
   - environmental factors affect the brain
   - take out negative stimuli
6. Teaching & learning characteristics
   - Challenge current beliefs
     - Learning relevant to students
     - Use real life activities
     - School staff & facilities as teaching tools
     - Provide space that match activities
   - Teaching style
     - Learning styles
     - Student maturation
     - School organization
   - Teaching style
     - discovery
     - interaction
     - presentation
7. Trends
8. Implementation Strategies – social environment
9. Social structure
10. How to accommodate
11. Performance
12. Student maturation – physical size
13. Scheduling – calendar can affect space
14. Success – scheduling, corporeal environment, physical environment, social environment, curriculum standards
15. Parent meeting space
16. Leaving styles 7 kinds of smart logic, word, picture, music, body people, self
17. Nomenclature – classroom, office, creative center, lab, exploration
18. What we know now social comfort allows emotional preparedness, full stomach helps
19. Student development
20. Student maturation
21. See & be seen, see & be seen little, see but not be seen, neither see or be seen
22. Building as a learning tool
23. sustainable non direct light

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Exercise 1 – How Do We Learn?
The Steering Committee was asked to think of ways that individuals learn.

Group 1 (see Charette 1-Exhibit 1)	Group 2 (see Charette 1-Exhibit 1)	Group 3 (see Charette 1-Exhibit 1)	Group 4 (see Charette 1-Exhibit 2)
Dail Rehee Marvin Yonamine Anne Greseth-Kim Sharene Tam	Tony Debbie Nakamoto Gaylyn Nakatsuka John Okinaka	Debra Hatada Randy Iarra Rie Kodama	Nick Nichols Lydell Acosta
Visually	By example	Trial & error	5-sense/physical learning
Auditory	Sensory	Senses (smell, tough, hear, see)	By reading, By speaking
Kinesthetically	Hands-on	Prior knowledge	By tactile, auditory, visual
Emotionally	By mistake/experience	Hands on, Through others	By modeling, Motivators for leering,
Modeling	By other's mistakes	Practice, repetition	Reward Exploring/Experimenting
Physical Learning	Successes	Reading, writing, observing	Trial & error
Socially	Role-play	Exploration, dream making	Repetition, By coaching
Trial and error	Visualization	Interacting	Small group & big group
Discovery/Exploration	Reading	Questioning, inquiry	Assigning roles/responsibility
Peers	Lecture	Caching, modeling	Setting expectation
Parental Example	Visual	Teaching others	Encouragement
Musically	Listening	Positive reinforcement	Comfortable, Suitable
Olfactory	Auditory	From peers, Internet, technology,	Environment
Flexibility	Kinesthetic (tactile)	Collaboration	Standards – setting standards
Adaptable	Taste, Oleo factory	Project based learning – real life	By sharing/discussion
Creatively	Osmosis, Mimicking	learning application	Right tools
Memorization	Simulation	Open to learning, Problem solving,	Drills, Practice, Inspiration
Linear/algorithmic	Emotional (fear, love)	Exploration and imagination	Out of necessity/survival
Heuristic	With others(peers/parents/	experience	Exhibition
	mentor/children/elders/groups)	Simulation/stimulation	Experimenting, asking question

Groups focused on how children lean. Question was how we learn.

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Exercise 2 – Where Do We Learn?

The Steering Committee was asked to think of places where learning takes place

Group 1 (see Charette 1-Exhibit 3)	Group 2 (see Charette 1-Exhibit 3)	Group 3 (see Charette 1-Exhibit 4)	Group 4 (see Charette 1-Exhibit 4)
Dail Rehee Marvin Yonamine Anne Greseth-Kim Sharene Tam	Debbie Nakamoto Gaylyn Nakatsuka John Okinaka Tony Chun	Debra Hatada Randy Iarra Rie Kodama	Lydell Acosta Una Chan Nick Nichols
Home Meeting Playground Store Church Media (TV/News) Museums Beach Travel Parks Sitting in traffic Theater Library Friend house Stadium Grandma's house	Home School On a team Library By myself In traffic Under stress At work Recreational activities Shopping In the shower/on the toilet	At home Lunch with friends At the car wash At the mall Airport Parties Park, beach Sporting events Movies In the bathroom In the car, driving Field trips Anywhere, in a line, waiting Starbucks Bookstores, library Home depot Swap meet	Bathroom Anywhere/everywhere Traffic Restaurants TV/movie Shopping mails Library Theater Plays Sports Games Special events Work School Beach Outdoors

Exercise 3 – Teaching Style

The Steering Committee was asked to come up with various teaching styles.

Group 1 (see Charette 1-Exhibit 5)	Group 2 (see Charette 1-Exhibit 5)	Group 3 (see Charette 1-Exhibit 6)	Group 4 (see Charette 1-Exhibit 6)
Dail Rehee Marvin Yonamine Anne Greseth-Kim Sharene Tam	Debbie Nakamoto Gaylyn Nakatsuka John Okinaka Tony Chun	Debra Hatada Randy Iarra Rie Kodama	Lydell Acosta Una Chan Nick Nichols
Lecture Dictators (don't question) Facilitative Project – based learning Experiments / scientific Hands-on learning (art, music) Modeling/setting an example Discussion	Using peers Lecture Coaching Group projects Direct st particular method: role-playing, projects Use of examples Exemplars (high level examples)	Demonstration Lecture Whole group/small group Individual Question/answer Exploration experimenting Differentiated teaching (addressing all senses)	Visual /auditory Presentation (students & teacher) Guided practice Evaluation (assignment) Combination of educational tools (textbook, computer, media, interviewing skills) Mapping & webbing

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Field trips responsibility Life sills Research Memorization/rote Direct instruction Interdisciplinary units Whole group; vs. small group vs. one to one Peer education shadowing preserves	Use of rubrics: description of levels of performance – product Using technology: audiovisual, computers Question and answer: Exploration Differentiation: based on student styles, strengths this interest	Workshop structure (mini lesson work time closure) Researched based Best practices	Project based (hands on) Modeling or simulation Small groups field trips Exploration outside resources(Comminute business, guests & speaker

Discussion 1

The steering committees discussed the existing site characteristics to design "The Right School For Ewa"

Site		
Geographical characteristics	Community	Transportation to school
Flat & hot No trades Rain fall slightly Shade is important	1st increment - local family (little more income) 2nd increment – military a lot of homeless parents work & children stay school (the school is children's home) a lot of transient children	bus

Needs for Ewa Makai Middle School

- Student performance to bring parents to school
- Need to focus on technology to prepares children for red world
- Need to be convenient

Questions from Paul Winslow. What are your expectations as educator?

- Clean & safe (safe from invasion)
- Inclusion (special ED)
- Test Score & high academic Standards
- Measurable results
- Interaction among schools
- Easy to maintenance
- Welcoming admin.
- Easy accessible (prominent place)
- More integration

Discussion 2

The steering committees discussed on educational plan to design "The Right School For Ewa"

Group discussion 1– Social Features
The steering committee was asked to characterize social features into physical, emotional & social characteristics to understand middle school students.

Group 1	Group 2	Group 3
7th grade	6th grade	8th grade
Brenda Lowrey, John Okinaka, Rei Kodama, Randy Ibarra, Gaylyn Nakatsuka	Marvin Yonamine, Sharene Tam, Una Chan, Debbie Nakamoto, Anne Greseth-Kim	Lydell Acosta, Nick Nichols, Ari Caracol, George Coates

Girls

	Physical	Emotional	Social
6th	4'-10" to 5'-5" 70 lbs to 140lbs Undeveloped to fully developed	Moody, impulsive, naive, worldly, immature egocentric, "mean girls", Sassy (smart mouth)	Status conscious, peers – important, asserting independence, searching for identity & role models, interest in opposite or same sex
7th	4'-0" to 5'-10" Long hair Wide range of development Puberty Willing to challenge boys (motor skills develop sooner)	Self conscious (easily embarrassed) Starting to like boys, more girls fights, cattiness, attitude/ hold grudges – do not like to be spot lighted, eager to be part of a group – helpful	Friendship run hot & cold Cliques – range of behaviors from silliness to adolescence, distancing from parents-trends/fads/make-up, peer pressure, talk a lot
8th	4'-5" to 5'-5", Average 5'-0" Weight 75lbs to 150 lbs Average 115	Reputation/what others think, peer pressure, friendships-very important, less dependent on family, fear conflicts – Differently w/resolving, love, moody, excitable, infatuated, dramatic, over reactive, super sensitive.	Popularity, not be the smart one, appearance/hygiene, boy friend/girl friend (older boys/bad boys) Appearance/hair/wake-up Material & tones – designer, wear/shoes, self-conscious.

Boys

	Physical	Emotional	Social
6th	4'-8" to 5'-7", 70 lbs to 150 lbs, undeveloped to develop	moody, active/impulsive, hormones kick in, naive to worldly, more independent, "show-off" abilities, sassy-smart talk	beginning of gang ID, interest in opposite sex, strong sense of fairness, tends to see the world as black /white (no gray), want to please – uncooperative
7th	short to tall 4'-6" to 6', coordination stars to develop, puberty, voice change, muscular, development – range, eats a lot, Need to be active, sexual awareness.	Shy-don't like to be spot lighted, attitudes-unintentional insensitivity, starting to like girls	likes/task up, challenges, travels in "packs", one or two close friends – others are acquaintances Peer pressure – more social conscious than academic
8th	5'-0" to 5'-7", average 5'-0", 80 lbs to 160 lbs, average 120	love infatuation, self-conscious, minimum-showing w/family.	Competitive hierarchy, not be the smart, not to be teased, sense of belonging, search for self identity, peer sensitivity, embarrassment, peer acceptance, appearance/hygiene

Discussion 2 - Needs for Middle school students in building based on social characteristics of middle school children

Girls	Boys
room & outdoor space that children can not hide	Indoor space
space for mediation, counseling & small groups	Alternative student activity spaces
No dead ends small group areas within larger space	Small white boards
more display spaces	Undivided showers & locker rooms

Group discussion 2– How can we create experiences in various spaces that area non-traditional?
The steering committee was asked to white a graphic script on where these learning experiences happen

Group 1 (Randy Ibarra, John Okinaka, Gaylyn Nakatsuka, Ric Kodama)

- **Performance**
  - Outdoor stage/amphitheatre (secondary gathering space)
  - Geographical markets/travel on walls, walkways and directional sighs.
  - Cultural gardens/items
  - Did you know signs/wall
  - Interchangeable tile wall mount
  - Holographic
  - Shopping mall theme
- **Art/music**
  - Showcases outside
  - Lots of color
  - Broadcast technology
  - Make own CDs/make CD cover
  - Graphic arts: (space for equipment)
  - Make magazine cover to highlight events
  - Need space for media center
- **BPA**
  - Job training
  - Cooking class can open a restaurant
  - School recorded CDs/magazines should be sold
  - Agriculture could be sold
  - Metal/jewelry create items to sell

Group 2 (Debbie Nakamoto, Anne Greseth-Kim, Marvin Yonamine)

- **Administration**
  - Whole campus view (VP's)
  - Reception area with comfortable seating and family learning center (toys for kids)
  - Display area/area for student work
  - Board for student work
  - Incorporate themes in office (art, murals, etc)
  - Reading materials/training brochures
  - Touch-screen directory
  - Clerk workspace business-like
  - Shaded window for registrar (in walkway)
- **Classrooms**
  - Operable walls/projectable walls
  - One-way mirror on wall for observation of model lesson

-
  - Mini theatre in one building arts
- **Connector/walks**
  - Map (tiled in) of the world on the floor with a common area to identify famous people from different places
- **Labs**
  - Individual fully equipped labs for each science class
- **Playfields**
  - Exercise/fitness equipment, rock wall
  - Pool – simulation (looks like the ocean)

Group 3 (Una Chan, Tony Chun , Brenda Lowrey)

- **Gym**
  - Climbing wall, gymnastics
  - Self defense, ballet
  - Indoor soccer, stage
  - Multi-media (large screens for movies), art murals
  - Physics experiments to hang heavy things
- **Cafeteria**
  - Movies/TV station – broadcasts during lunch
  - Work study round tables
  - Kids set up businesses (shiatsu, manicures, snacks, etc)
  - Nutrition – learning from cafeteria workers
  - Sushi conveyor belt
  - Hostesses, wait staff
- **Kitchen**
  - Demonstration – view windows into kitchen
  - Fireplace/campfires, art with food
  - Math with calories, science with nutrition
  - Food garden, organic composting/recycling
- **Large common area**
  - Human puzzles – 3D, geometric shapes, kids can build/rearrange
  - Mazes
  - Floors with game boards (wireless)
  - Amphitheater seating, walls to sit on
- **Small Common Areas**
  - Informal & formal groups
  - Walls with electronic tough game boards
  - Lockers under work surfaces/counter to create group work area & meeting space
  - Spaces that can "grow" – flexible floor plans
  - Exposed structures
- **Playfields**
  - Shade
  - Viewing area
  - Low wall (planter walls, interactive) for seating
  - Play equipment – not elementary type but for climbing

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Group 4 (Ari Caracol, George Coates, Nick Nichols, Lydell Acosta)

- **Media center**
  - Large window/natural light/daylight – appealing landscape
  - Ability to have a theater room for viewing (with production component, radio/TV broadcasting)
  - Integrated sound system for assembly/meeting
  - Integrated audio/visual components
  - High ceilings/day lighting
  - Ability for reproduction, media production area, video production/editing
  - Video – conferencing component
  - "Technology WKM" copying/burning CD
- **Internet café**
  - Excitement for media center
  - The music -variety of music
  - The lounge-the comfort factor
  - The connectivity with the world/community
    Virtual reality area – to take the student to the "desired place" (student could actual be there within the actual setting –" allows to all the senses")
  - Communication/multi-media center – ability to interact in a "real" way
  - An interior garden – variety of settings from private to small grouping individual reading
  - A loft space
- **Performing Arts**
  - Presentation areas – a variety of small to large group
  - Access for dressing, costume storage and to public audience
  - Appropriate lighting/sound fabrication
    Spaces for set design/builder
  - Need to meld instructional space
    Address music, drama, play, and dance
  - Support storage space
  - Mirrors
  - Stages if need
- **Courtyards – interior & exterior**
  - Shade
  - Grass – control dust
  - Hard surface
  - Variety of act ivies
  - Display
  - Performing area
    Need private area for dressing
  - Audio/visual connection
    It can be covered/protected from weather

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette I/Day Three

March 16, 2005 (Wednesday)
Continuat on of March 16, 2005
The steering committee members presented their homework, ***"Think Outside The Box"***, assigned on March 15, 2005.(See Charette 1-Exhibit 7)

Swipe Card "An ATM type of machine where students and parents can drive through during, before or after school hours to check or print out homework assignments, course syllables, etc Each student will be assigned a pin no. and must have his/her I.D. card" (Lydell Acosta)

Holographic Launching PAD – "holographic launching PAD that is networked in all rooms. What is projected in one room can be replicated simultaneously in all the other room" (Anthony Chun)

A Miniature Golf Area - This may integrate the health and fitness aspect, with environmental awareness – greenery, gardening, water conservation and also enable students to display their artistry through structures that they construct (science ideas can be used) Also provide space to "hang out" during breaks for non-participating students Business/marketing strategies can be implemented. (Ari Caracol)

"Four Season Center" & "interactive Center" – Learning about weather, projection on wall, Kiosk at Learning Center (Una Chen)

"College World Room" – have an interactive room with big screen TV's connected to college websites around the nation. Students can view college web cams and take campus tours from this room, get in depth information about campuses, weather reports, community and campus life. This way, students realize that there are many options besides the university of Hawaii system (Marvin yonamine)

Scanners - that assist support staff to check in/out students from their offices –logging down time in/out for attendance. This will Require students to have their ID's (John Okinaka)

"Theme Park Setting" – enters campus on a roller coaster. "Lunch" cage in a big tent along with assemble/drama/performance for P.E. we would have an "Olympic settings" track/field. Environmental would be relying on solar Powers/wind/ocean/some how create powers from volcano (Randy Ibara)

Herb Garden – fragrance/aromatherapy, taste/flavor foods, cultivation lessons
Stress relief rubber room or area - soft sculptures –lounging, stretching, and varying bouncy surfaces
Obstacle course around campus – jumps rope route
Community events – jingle bell caroling contest in costume (include Ilima int)
Forum stage – impromptu performances
Outdoor Mini Amphitheater - with fenced seating, surrounded by tall trees for Shakespeare play and/or poetry readings

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Discussion on FAD & possibility of Ewa Makai Middle School
Revised FADS (Brenda Lowrey & Nick Nichols) (see Charette 1-Exhibit 8)

- 27 general classrooms
- 9 Science classrooms
- 4 FSC
- 2 Resource rooms

Ewa Makai Middle School can be:

- Core Classroom groupings
- 100 + students
- Wheel within the core group
- Wheel courses – keyboarding, media, gardening, etc

"The trend for Middle Schools is for smaller learning communities and rooms that can be used for multi-proposes" (Paul Winslow)

- Nee to build School for communities
- Need a room for staff development center for teachers
- Comprehensive alienation

Discussion on Functional Relationships (see Charette 1-Exhibit 9, 10, & 11)

- Non – traditional
- Cluster for multi grades
- 2 line or 3 line relationship to classrooms
- Cafeteria proximity to classrooms or kiosk
- Student center flows cafeteria

Opportunities:

- Virtual room (2)
- Health – fitness center (1)
- PE
- Dance (1)
- Elective(1)
- CSAP (Comprehensive Student Alienation Personal) (1)

Assignment for the Steering Committee "Curriculum Ideas"
The Steering Committee was asked to list all curriculums that they can think of for Ewa Makai Middle school's students

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 1/Day Four

March 17, 2005 (Thursday)
Continuation of March 16, 2005
The Steering Committee presented their ides of curriculum for Ewa Makai Middle School students to create exciting space into the building (see Charette 1-Exhibit 12)

- **"KALO to POI"** (environment studies) - Interdisciplinary unit involving, English, math, S.S. science, and industrial arts.
- **Chin Up Bars a long hallways** – levels around perimeters of circulation spaces for seating and performing
- **Environmental Study, Health & Fitness, performing arts** – Exhibition, outdoor stadium coliseum with bleachers for spectators.
- **Gastro turf**. That could be marked for sporting events also good for performances.
- **Plug** – ins for saved system or integrated speakers.
- **Solar system** - Solar powered lighting fixtures.
- **Navigation** – Hawaiian, Polynesian, galactic.
- **Roller coater theme park**
- **Power** – water sources
- **Polynesian navigation theme**
- **Performing Arts** – stations = footprints, theater in the round, black room
- **Clubs**
- **Recycling**
- **Water sports** - sailing, paddling
- **Fitness** – 24 hour fitness, Olympic stadium
- **Clear Waste Piping** - to see where water goes
- **Individual sports** - biking, rock wall, fishing
- **Circular Art Center/Class** – Circular classroom with deter display

Exercise 1
The steering committee had a group discussion to conceptualize the functions and elements of a neighborhood. (see Charette 1-Exhibit 13-17)

Group 1 (see Charette 1-Exhibit 13 & 14)	Group 2 (see Charette 1-Exhibit 15 & 16)	Group 3 (see Charette 1-Exhibit 17)
John Okinaka	Brenda Lowrey	Lydell Acosta
Marvin Yonamine	Una Chan	Rie Kodama
Anne Greseth-Kim	Ari Caracol	Nick Nicols
Tony Chun	Randy Ibarra	Sharene Tam
Gaylyn Nakatsuka	Debbie Luning	George Coates

Discussion on Site Condition
Ken Santana from Mitsunaga & Associates, Inc. participated to discussion on Site Condition

- Driveway – north
- Accel lane
- Sewer pump station
- Main entrance – right turn only
- City wants 2 lane in & 2 lane out
- Large stacking area useful in afternoon
- Consideration on how to children get to school
- 2 parking
- buses – 8 buses/50'=400 sqft
- hook up storm drain system
- pedestrian access from adjoining site

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 1/Day Five
March 18, 2005 (Friday)

Presentation by Design Team
The Design Team developed three schemes based on options, which the steering committee developed on March 17, for review and comments

Scheme One (see Charette 1-Exhibit 18& 19)
As presented by Paul Winslow
- Single building
- Cluster of buildings
- Dining & Media at center

Scheme Two (see Charette 1-Exhibit 20)
As presented by Caroline Lobo
- Single building

Scheme Three (see Charette 1-Exhibit 21)
As presented by Steve Worng
- Traditional building

Discussion on conceptual floor plan
- Cultural elements such as sense of family & community
- Middle school culture – socialization
- Story building for safety/security
- For fitness, need funning track around campus
- Recycling program for environmental studies
- Landscape
- College campus feel

Group Discussion
The steering committee was asked to develop three schemes by design team

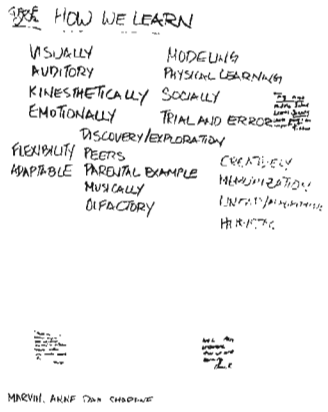
Group 1 (see Charette 1-Exhibit 22)	Group 2 (see Charette 1-Exhibit 23)	Group 3 (see Charette 1-Exhibit 24)
Debbie Luning Galyn Nakatsuka Marvin Yonamine Ari Caracol Rie Kodama	Una Chan Lydell Acosta Marvin Yonamine Anne Greseth-Kim Janna Mihara	Anthony Chun Randy Ibarra John Okinaka Sharene Tam
Split play field – buffer on street side Admin/media – together around dining Corner classrooms	Story classroom and one story Covered play court near lunch	Mall concept-shopping mall

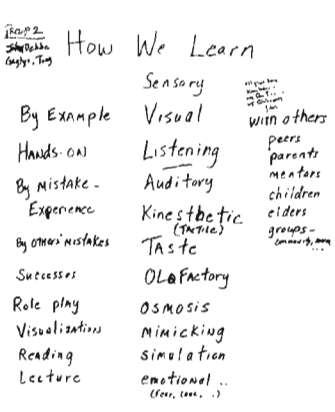
Open Discussion on Charette 1
- Difficult time in beginning but eye opening
- Good that the design team asked questions to draw it out
- For security purpose, one building is better
- Recycling area (environmental feature)
- Landscaped zone

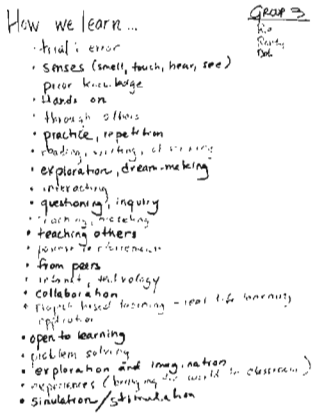
Question: What should we be most sensitive to?
- Culture – sense of family, sense of community, middle school culture
- Place to gather
- Security after school hours

Question: is there anything to watch out for?
- Concern of stairwells
- Safety & security on outside

EXHIBITS – NOTES TAKEN DURING CHARETTE ONE



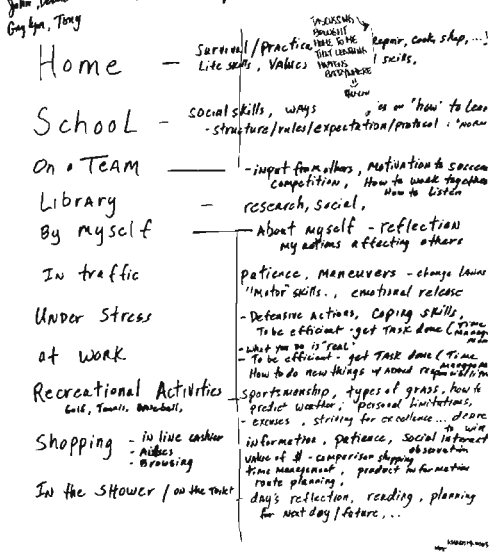




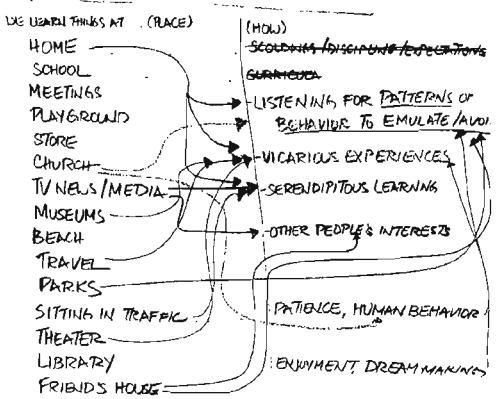
WAYS WE LEARN: Group 4 (Lyndi, Art, Una, Nick)

- 5 Senses / Physical Learning
- By Reading
- " Speaking
- " Tactile, Auditory, Visual
- " Modeling / Imitation
- Motivators for LEARNING
  - Rewards: · Intrinsic / Personal
    · Extrinsic / Reward Tangible
- Exploring · Experimenting
- Trial & Error · Asking question · Researching
- Repetition
- By Coaching
- Small Group & Big Group
  - Assigning roles & Responsibilities
- Setting EXPECTATIONS
- Standards - Setting Standards
- By sharing / discussing
- Right tools
  - Proper equipment - from paper/pencil to technology
  - Encouragement
  - Comfortable
  - Suitable ENVIRONMENT
- Drills
- Practice
- Inspiration
- Out of Necessity/Survival
- EXHIBITION

Grp 2 (John, Debbie, Gay Lyn, Tony) Where We Learn



GROUP #1 PLACES WHERE WE LEARN



★ YOU CAN LEARN ANYWHERE YOU ARE AT EVERY WAKING MOMENT BY LISTENING, OBSERVING, AND EXPLORING. ★

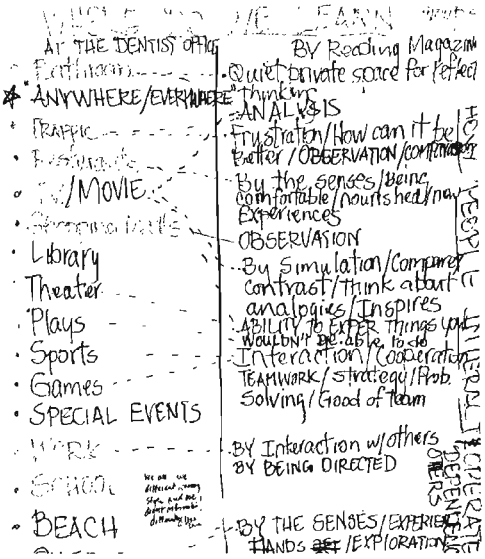
Great thoughts! M. Nichols

Places where we learn...

#3

- at home
- lunch w/ friends - rest.
- at the car wash
- at the mall
- airport
- parties
- park, beach
- sporting events
- movies
- in the bathroom
- in the car, driving
- field trips
- anywhere, in a line, waiting
- ~~at~~ Starbucks
- Bookstores, Library
- Home Depot
- Swap Meet

- communication, tolerance
- social interaction, etiquette
- observation
- budget, math, comparison shopping, check writing
- following directions
- conversation, up on people skills, current & trends
- swim, skills in sports
- team building skills, good sportsmanship
- be quiet, sit still, think, predict
- read, think, observation, problem-solve
- map reading, directions, vocab
- observation, experience
- birds.
- people watching - behaviors - thinking



GROUP #1

TEACHING STYLES/STRATEGIES

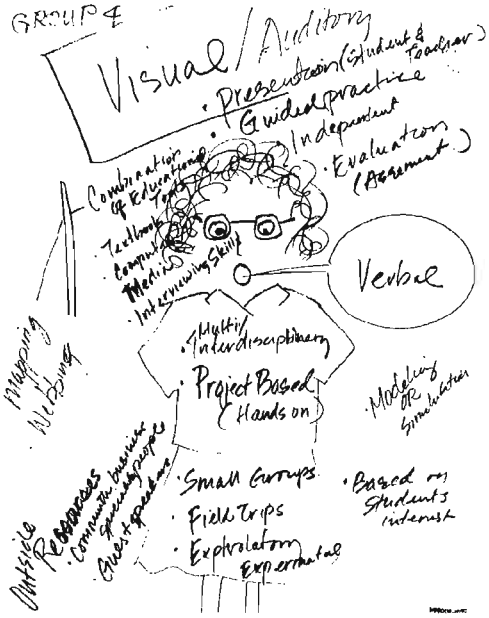
LECTURE
DICTATORS (DON'T QUESTION)
FACILITATIVE
PROJECT-BASED LEARNING
EXPERIMENTS/SCIENTIFIC
HANDS-ON LEARNING (ART, MUSIC)
MODELING/SETTING AN EXAMPLE
DISCUSSIONS
FIELD TRIPS
CIVIC RESPONSIBILITY
LIFE SKILLS
RESEARCH
MEMORIZATION/ROTE
DIRECT INSTRUCTION
INTERDISCIPLINARY UNITS
WHOLE GROUP VS SMALL GROUP VS ONE TO ONE
PEER EDUCATION
SHADOWING PROGRAMS

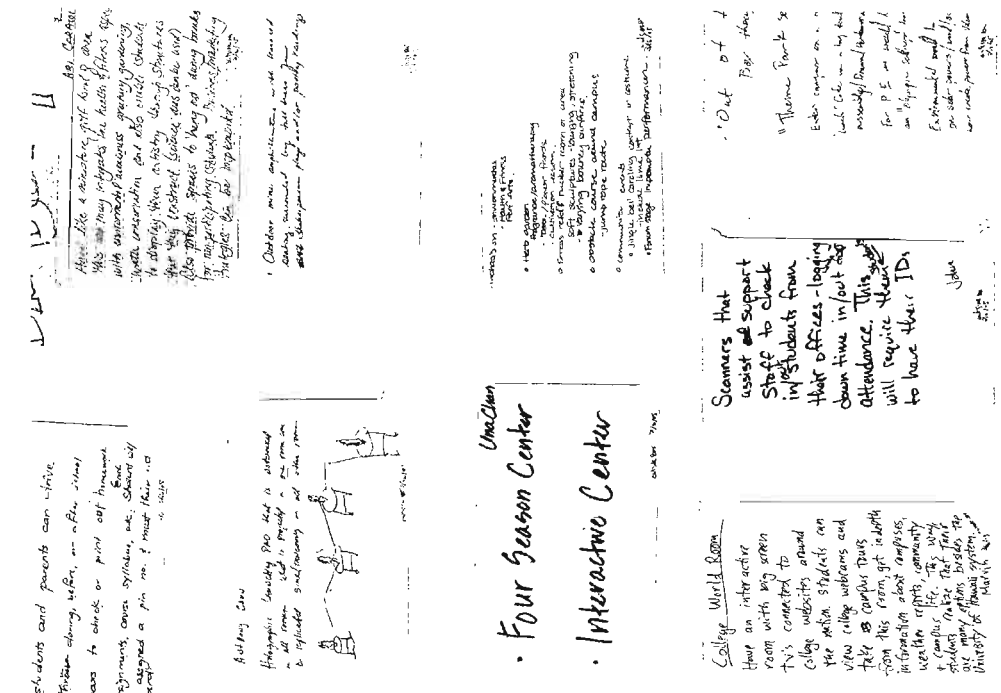
GRP 2

Teaching Styles

Using Peers · Peer tutoring, pacing, Groups, role model, High achievers mentor - acad.
Lecture
Trial and Error : Series of scaffolding Activities (layered in levels)
Coaching :
Group projects :
Direct st particular method : role playing, projects
Use of examples
Exemplars (High level examples)
Use of Rubrics : Description of Levels of performance - product
Using Technology : Audiovisual, computers,
Question and Answer :
Exploration
Differentiation · based on student styles, strengths, interest.


Teaching Styles
#3
Demonstration
Model
Practice
Lecture
Read
Do
whole grp./small grp
individual
Exploration
Experimenting
Question/Answer
Differentiated Teaching
(addressing all senses)
Working Structure
Mini Lesson
Work Time
Closure
Research Based
Best Practices


GROUP 4
Visual/Auditory
Presentation (student & teacher)
Guided practice
Independent
Evaluation
(Assessment)
Combination of Education Tools
Textbooks
Computer
Internet
Interviewing Skills
Verbal
Multi/Interdisciplinary
Project Based
Hands on
Modeling
Simulation
Small Groups
Field Trips
Exploratory Experimental
Based on Students interests
Outside Resources
Community business
Specialty people
Guest speakers
Mapping
Writing


Students and parents can view
Problem during week, on after school
have to check or print out homework
assignments, class syllabus, etc. Should
be designed a pin no. I must have ID
Building Use
Photographic Laundry Pad that is activated
Four Season Center
Interactive Center
College World Room
Have an interactive
room with big screen
TV's connected to
college websites around
the nation. Students can
view college webcams and
take campus tours
from this room, get in depth
information about campuses,
weather reports, community
& campus links that their
students may access. This will
University of Hawaii system
Scanners that
assist and support
staff to check
in/students from
that offices - logging
down time in/out and
attendance. This
will require
to have their ID

FADS #'s

LA	6	18 General Clsrms.
MATH	6	
SS	6	
Science	6	

13 Special Ed.
- 4 FSC
- 9 Resource

+ 2 Health
+ 4 PE
+ 5 Supplementals
+ 1 General 6th Grade

SPECIALTIES
- 1 ARTS & CRAFTS
- 2 MUSIC
- 1 BUSINESS ED.
- 1 INDUSTRIAL ARTS

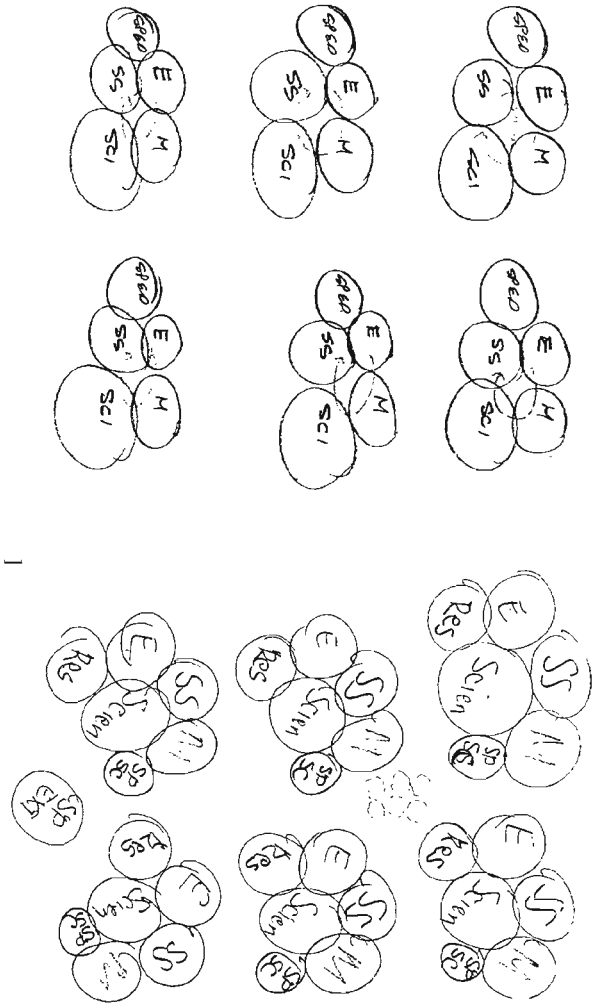
OPTION / RATIONALE
provide 9 groupings to facilitate multi-track

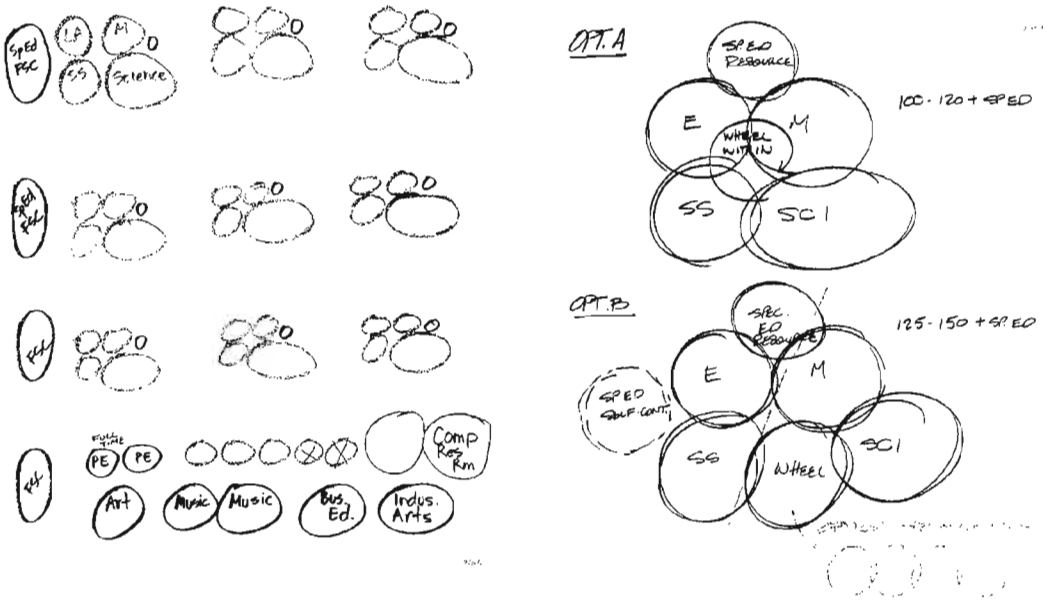
LA/	9	27 (18+9)
Math/	9	
SS/	9	
Science	9	(6+3)

from 9 SpEd Resource
- -3 Science (left/2 Reason left to split into 9 off/comf)
- -4 General
- -1 General 6th Grade
- -2 Health
- -2 PE or 2 Supplmtl

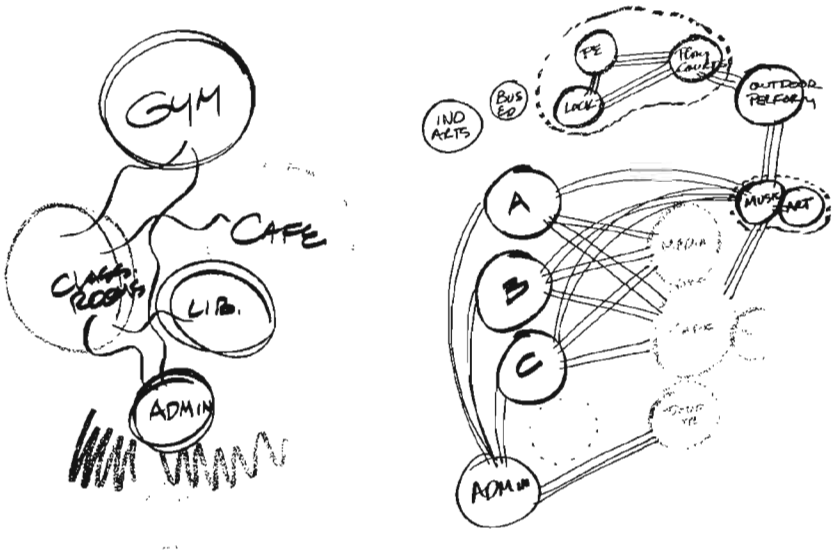
4 FSC
2 Resource (to be split into (9 office/tutoring spaces))

~~left~~ 0 Health
2 PE
5 Supplementals
+ Specialties



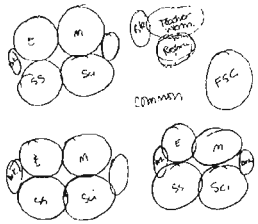

OPT. A
SPED RESOURCE
E
M
WHEEL WITHIN
SS
SCI
100 - 120 + SPED
OPT. B
SPEC ED RESOURCE
SPED SELF-CONT.
E
M
SS
WHEEL
SCI
125 - 150 + SPED
PE
PE
Art
Music
Music
Bus. Ed.
Indus. Arts
Comp Rms Rm

A - 67


GYM
CAFE
LIB.
ADMIN
PE
IND ARTS
BUS ED
LOCK
OUTDOOR PERFORM
A
B
C
ADMIN
3/16/05

A - 68

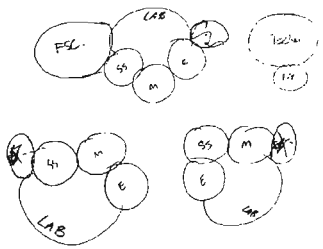
Grp 1



Option 1

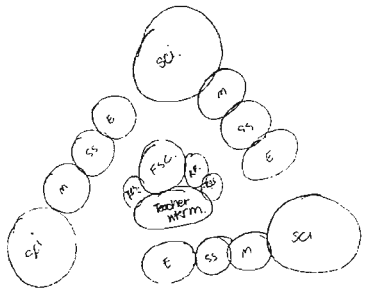
Grp 1

Option 2

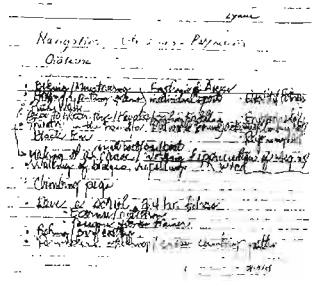


Grp 1

Option 3



Performing Arts
Stations - footprints

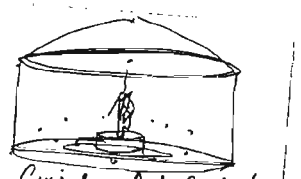


Environmental Study: Health + Fitness: Refining Data

Stages - Exhibition

Canvas Stadium/classroom with blankets for seating. Step one in town centers asks what they think is behind the curtain for street queen to perform. Step two for street queen to perform behind curtain. Select personal objects behind curtain.

Learning walls here in inviting room/interface where students present ideas/plans to friends. Students could work at/present ideas in Environmental Studies classes, ch. group ideas in Environmental Studies classes, ch.



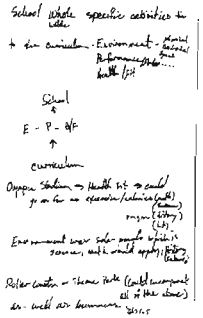
Circular Art Center/Class

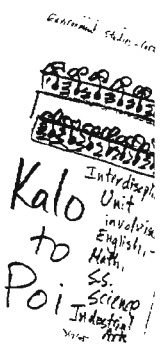
chin up bars along hallways

levels around

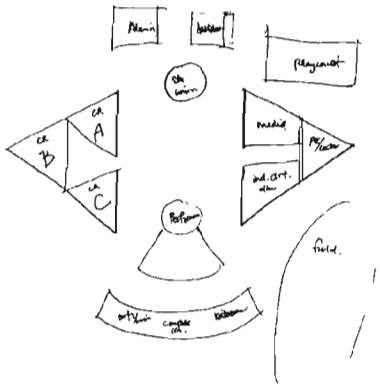
perimeters of circulation spaces for seating & performing

clear waste piping to see where watergoes

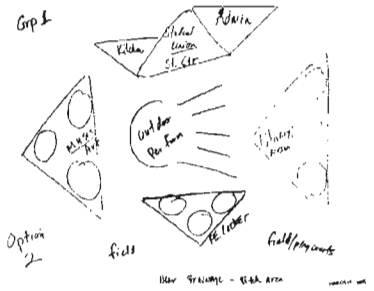


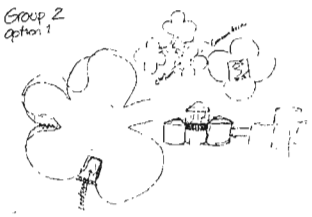


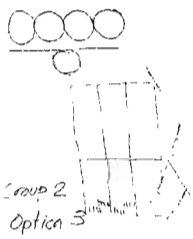
Group 1



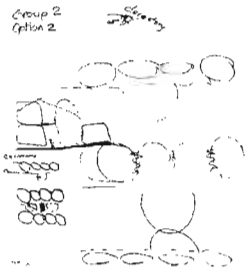
Opt. 1

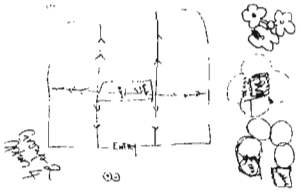


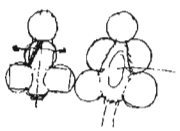


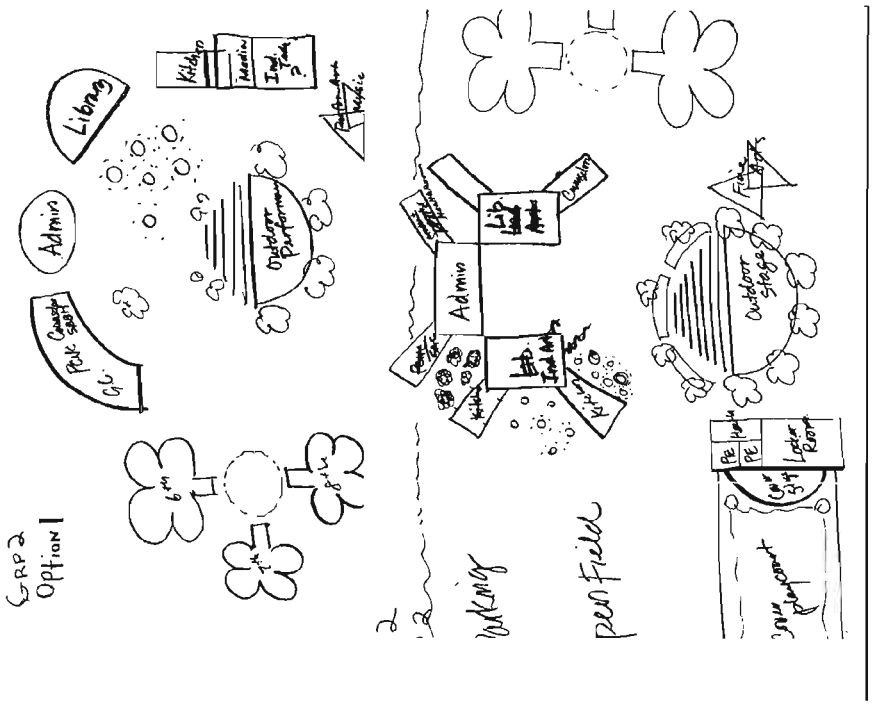


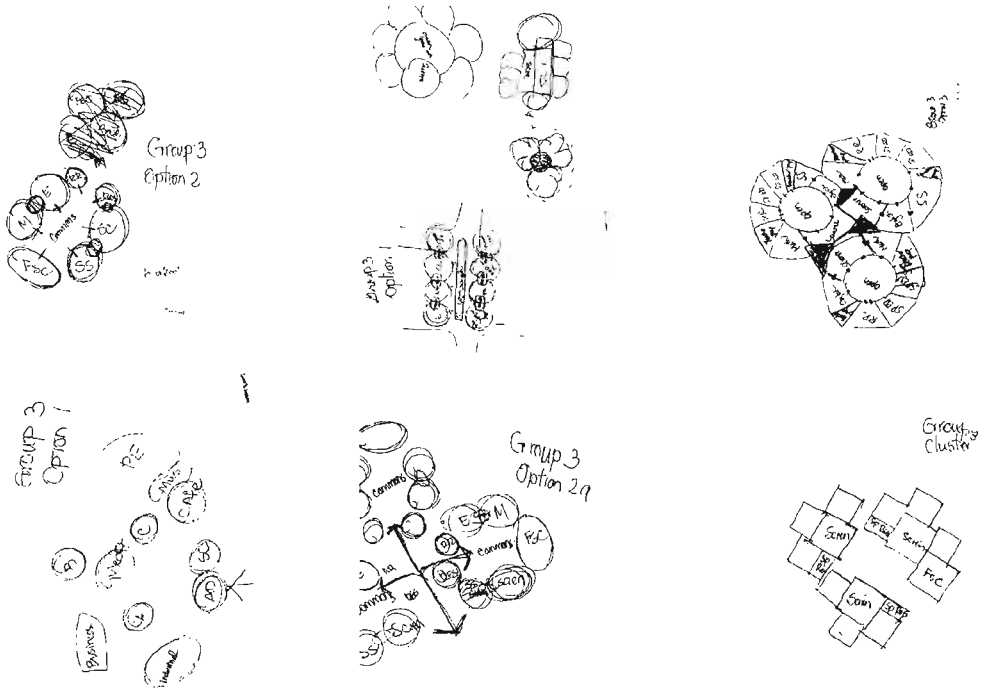
OPTION 5
Grp 2

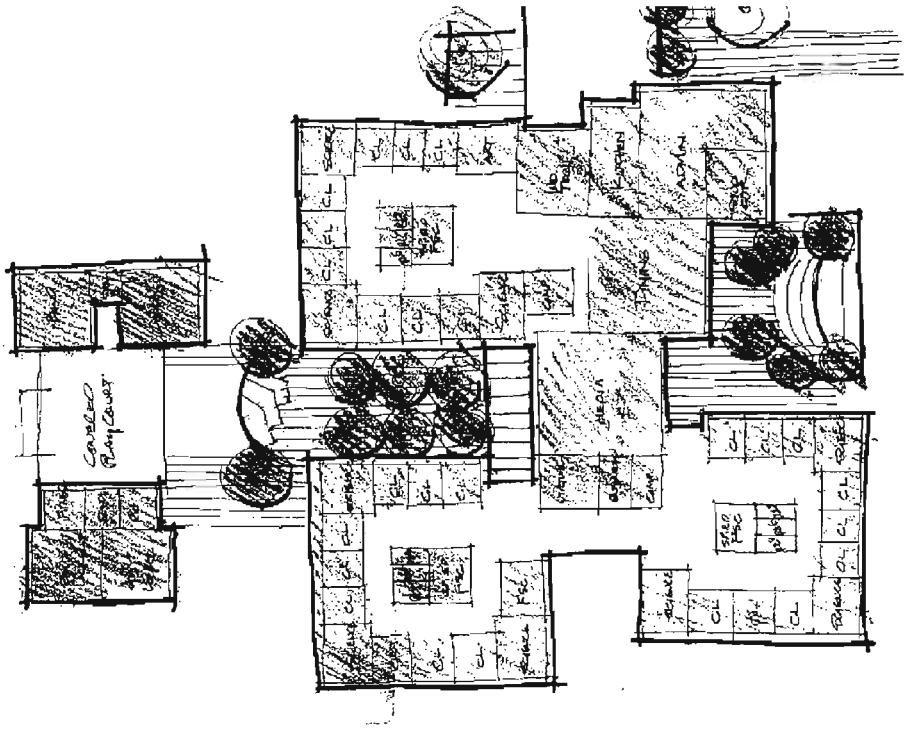




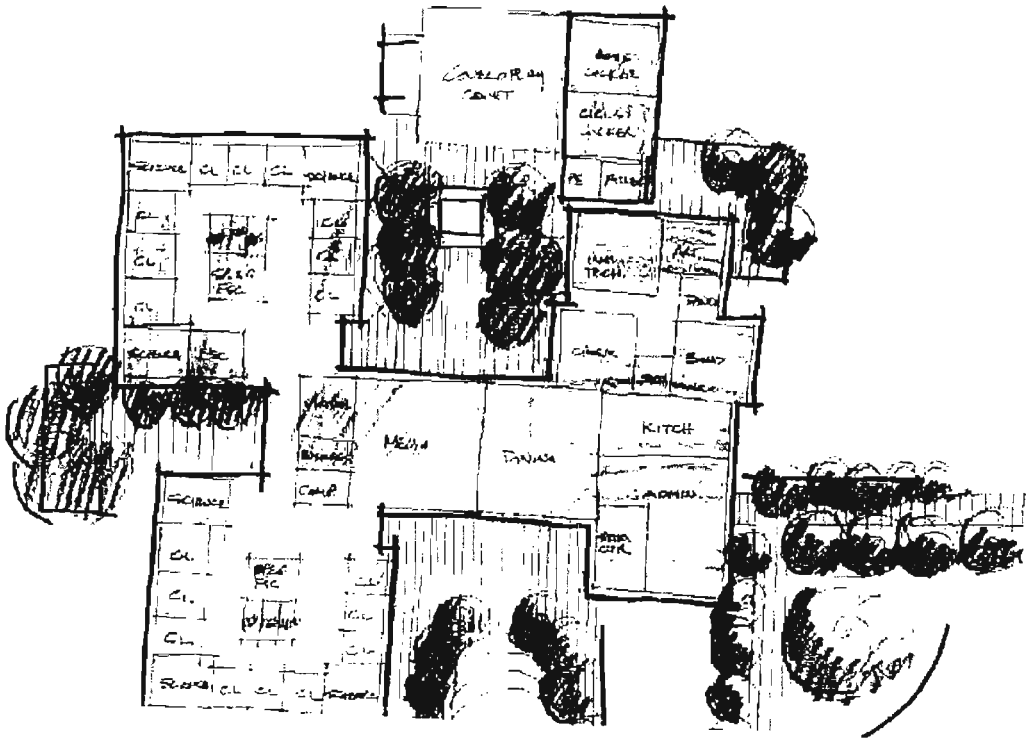



GRP 2
Option 1
Library
Admin
Pre Counter staff
Outdoor Performance
Kitchen
Admin
Outdoor stages
Pre
Pre
Locker Room
pen field

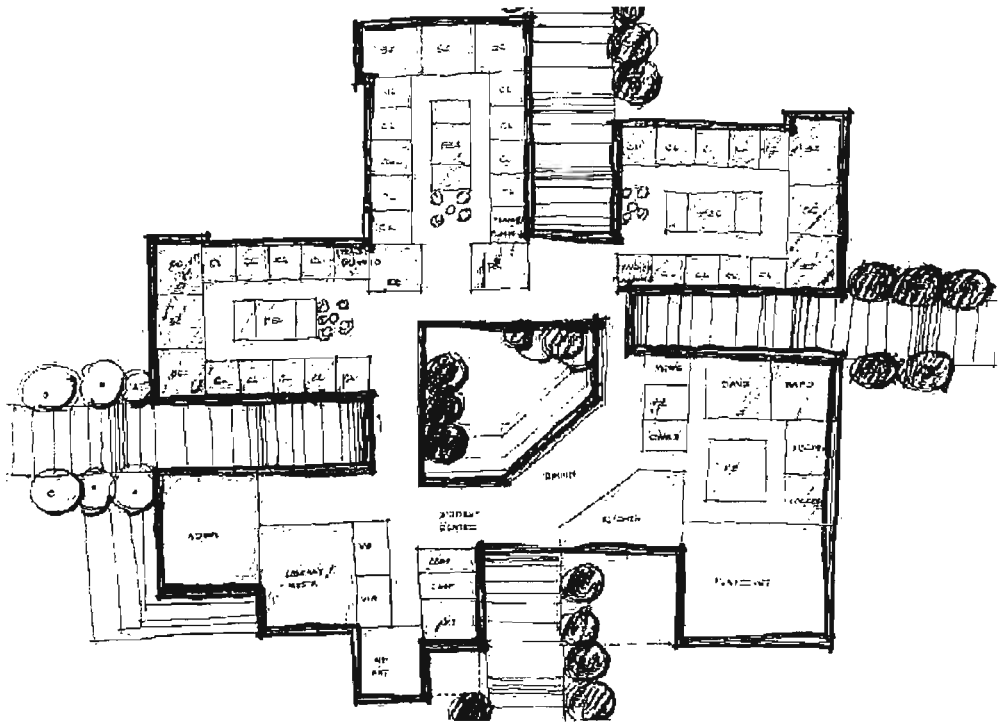

Group 3
Option 2
Group 3
Option 1
Group 3
Option 2a
Group 3
Cluster



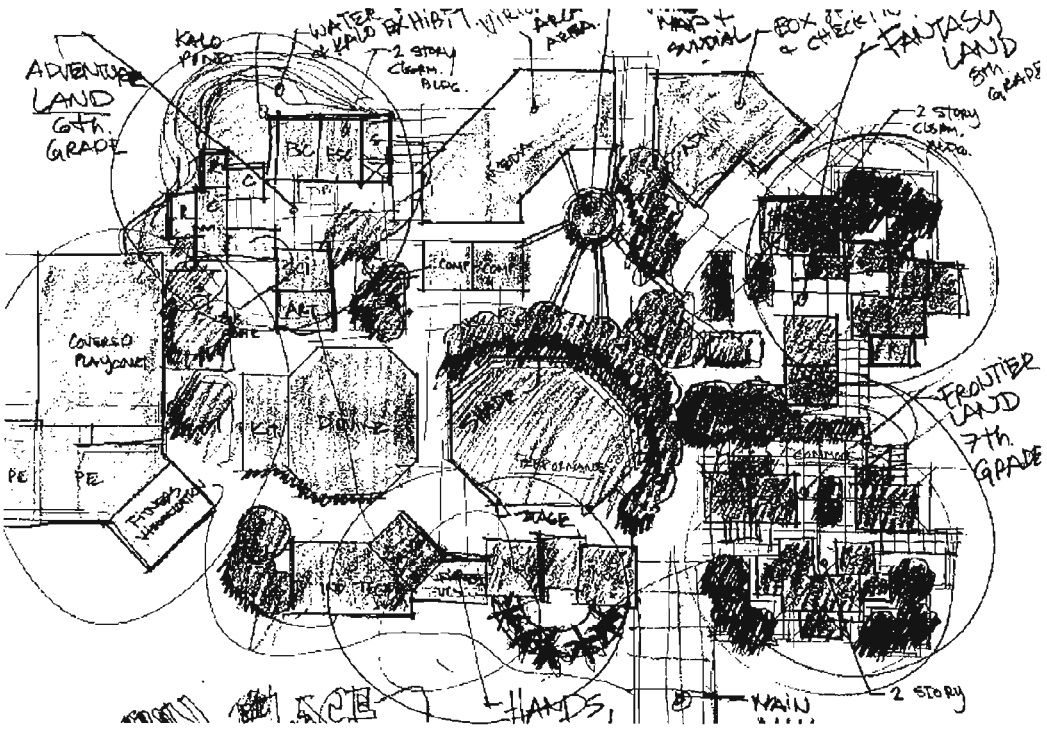
A - 75

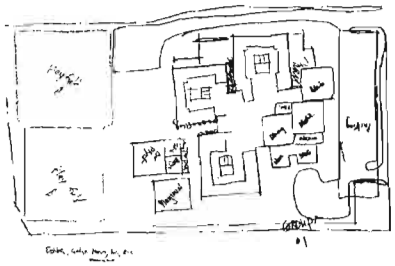


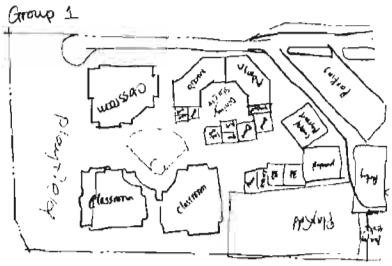
A - 76

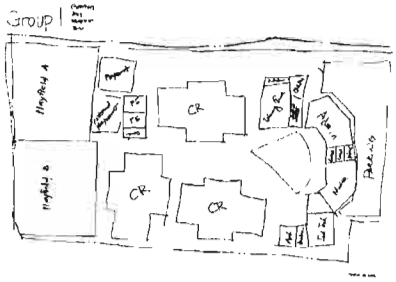


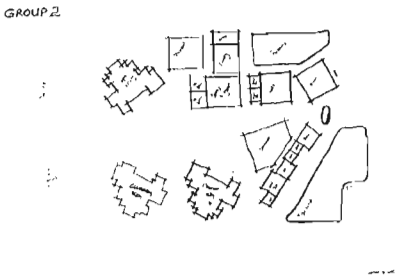
C

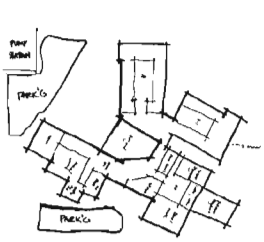

ADVENTURE LAND 6th. GRADE
KALO PATCH
WATER & KALO EXHIBIT
2 STORY CLSRM. BLDG.
ADMIN
FANTASY LAND 5th. GRADE
2 STORY CLSRM. BLDG.
COVERED PLAYCOURT
FRONTIER LAND 7th. GRADE
STAGE
2 STORY



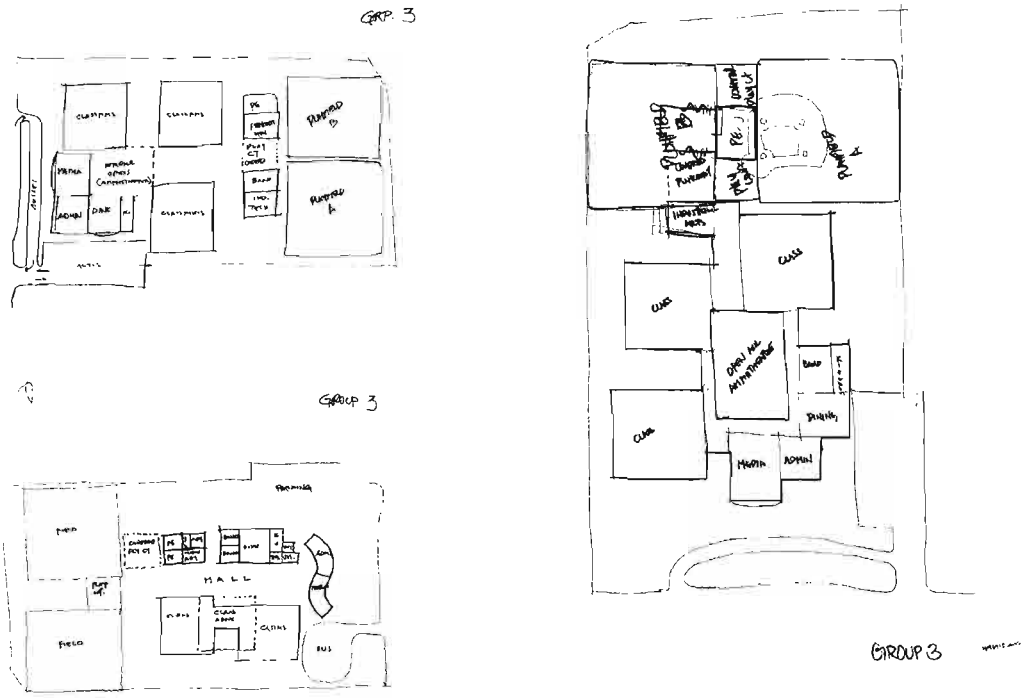

Group 1
Classroom
Classroom
Playfield


Group I
CR
CR
CR


GROUP 2


GROUP 2


GRP 2



EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 2/Day One
April 11, 2005 (Monday)
Continuation of Charette 1

Review of the last Charette
Overview of the Charette 2

- The Goal of this meeting are:
  - To accommodate various learning styles, teaching styles and curriculums to a building.
  - To relate a building to students
- Homework for the steering committee - **"Specific Two Ideas of Curriculum in a Building"**

Exercise – how to relate various learning styles to a building

- Virtual room 1 MAX rm. – movable furniture
- Operable walls- tackable surface or magnets
- Bigger sinks in every classroom
- Able to see in classroom
- Classroom to hold about 50 people
- Natural energy lab
- Sliding doors with windows – open to lanai
- Science classroom – connect to outside
- Admin/counseling center – open atmosphere
- Open ceilings – usage
- Art curriculum – display walls
- Direction's signage
- Video cameras
- Band – dual entry way
- Loading dock
- Math – electrically connected
- Learning is social – lot of windows – glass walls
- Conveyer belt to stage
- Rooms should have enough space for activity oriented lessons - commons good but have respect for other people
- Conference room for 6-8 people

Group Discussion – Curriculum (what you learn/how we take care of the students) (see Charette 2 – Exhibit 1)
The steering committee was asked to discuss about curriculums.
Group 1 (Tony Chan, Debbie Luning, Annette Nishikawa)

- **English & Social Studies**
  - Elevated or sunken performance areas (mini)
  - Balcony/loft area (performances)
  - Large space – project areas
  - Flexible groupings – 1/3, 1/3, 1/3 – physical environment supports (large group/small group/independent study)
  - Shortage space – for student projects
  - Display area for student work
  - Writing process/workshop - real life, news room, publishing
  - Personal space – physical features
  - Comfortable reading area – library setting, shelving/ built in for books, area conferencing
  - Elmo's, over head – need for shortage

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Continuation from previous page

Group 2 (Gaylyn Nakatsuka, Nick Nichols, Marvin Yonamine, John Okinaka)

- **Business/Technology**
  - Recoding Studio (visual/audio) > marketing product (licensing, distribution etc.)→Final product being utilized by public,
  - Partnerships w/ knowledgeable personal access of space (resource room) of conference rms.
  - School promotion over web including partnerships/community
  - Recycling contra. – Open to public eventually, run as a business-self-sustain

Group 3 (Ari Caracol, Randy Ibarra, Anne Greseth-Kim, Brenda Lowrey)

- **Math/Science**

Math

- White board space
- Group tables (flexibility in furniture)
- Measurement indicators throughout classroom (feet, volume, area etc.) metric
- conversion smart
  Projection screen (built-in) to display concepts/formulas
- Solar pump – water column

Science (6th-physical, 7th-biology, 8th-earth/space)

- Movable lab tables
- Rain water catchments
- Technological capabilities
- "Special" trash receptacles
- Outdoor sink/accessibility
- Built-in aquarium/terrarium (walls displays)
- Built-in science refrigerator
- High ceilings (physical science)
- Micro-Elmo scope
- Sky lights (experiments)

Group 4 (Lydell Acosta, Una Chan)

- **Art/Music**
  - Elements & principles (design)
  - -2 dimensional – drawing, painting, silkscreen
  - -3 dimensional – Sculptural ceramics, wood silkscreen
  - Spot lights in hallways also a mini art museum to display work (for public, auction)
  - Convert work area
  - Drawing paints/potters where
  - Dry Rack for clay – open gate
  - Large windows
  - Unfinished floor for cleanings

Presentation of the Site Plan – by Ken Santana, Civil Engineer from Mitsunaga & Associates, Inc

- Can reuse rain for water fall
- Use of colors on ADA parking

Comments from the steering committee:

- Need to discourage students crossing the streets
- Need to create fence

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Presentation by Architects

The Design Team developed ten schemes as an architectural site plan for the steering committee's review and comments.

	PRO	CON
SCHEME A (see Charette 2 - Exhibit 2)	Admin, student center & Media - centralized, closed, easy to serve Student's needs Cluster type	Not enough variety of fitness/environmental features
SCHEME B (see Charette 2 - Exhibit 3 & 4)	Good flow to the campus Can be install solar panel for elec. Can be install water catch Open courtyard Impressive entrance Like second story Individual courtyard space Many walls for student to display	Covered play court seems to be far away from the rest of campus Sac room too far away from admin.
SCHEME C (see Charette 2 - Exhibit 5)	Administration & student center/dining area all in one area	Long straight central corridor
SCHEME D (see Charette 2 - Exhibit 5)	Open feeling Individual building Courtyard to support the performing Covered courtyard Track around the campuses for usage of fitness A lot outdoor areas for learning activities Media has two entrances	Amphitheater is missing Want mini art museum Not enough space
SCHEME E (see Charette 2 - Exhibit 6)	Classrooms all in one general area Very compact overall design Cluster design Layout to facilitate ease of movement to all components Science right next to all classroom Media located on center Band bldg Covered to performance area Many walls for student to display	Kitchen next to admin. (Noisy)
SCHEME F (see Charette 2 - Exhibit 6)	Media located on the campus Courtyard can be used for art/sculpture garden Good connections to outside from science & other classrooms	
SCHEME G (see Charette 2 - Exhibit 7)	Easy access to media, dining & admin. By all grade level class Open spaces for kids/visitors to flow into bldg.	Amphitheater is missing Location of Dining & Media
SCHEME H (see Charette 2 - Exhibit 7)	Amphitheater entrance focus on the performing arts Opportunities for outdoors accessibility Elective areas easily accessible	Kitchen next to admin. (Noisy)

	Enclosed areas Securing building High ceilings for mobile art, sculpture display	
SCHEME I (see Charette 2 - Exhibit 8)	Classroom pads (open to the mall) Amphitheater is focal point One story (security reasons) Science classroom has outdoor access	Admin is far from dining
SCHEME J (see Charette 2 - Exhibit 8)		Location of covered play & play court

Discussion on advantage of single building educationally

- Interaction among students and teachers
- Comfortable to teach inside of the building
- Plantation does not work
- One entry for security
- Easy access
- More available space

Discussion on features of learning environment. (see Charette 2 – Exhibit 9)

The Steering Committee discussed on the relationship of school features in order to best exhibit the learning environments of Ewa Makai Middle School.

- Need to have extra desk space for teacher's
- Need have one teachers' planning room per one cluster
- 6th, 7th and 8th grade should be one cluster for social matter
- Math, English, science and social studies should be one group
- Media center should be up front as symbol

Decision

The steering Committee selected Single Building Scheme for the best learning and teaching environment for Ewa Makai Middle School.

Charette 2/Day Two

April 12, 2005 (Tuesday)
Continuation of day one, April 11, 2005

Presentation by Architects

The Design Team developed three single building schemes that were selected from by the steering committee on April 11, 2005.

	PRO	CON
SCHEME A by Steven Wong (see Charette 2 - Exhibit 10)	Commons Rotate plan then, it works	Dining No social reaction
SCHEME B by Caroline Lobo (see Charette 2 - Exhibit 11)	Amphitheater Focus Sense of security Family Science project space College campus feel Student center on center Centerized campus gives more chance for students to socialize Administratively works	
SCHEME C by Paul Winslow (see Charette 2 - Exhibit 12)	Dining Funneling effect Entrance Commons Single bldg Maintenance, shopping mall space	Play court integration

Overall comments on three schemes:

- Student entry from "C" to "B"
- Performance – eave studies
- Different school

Discussion on Administration (see Charette 2 – Exhibit 13)

- Lobby should be next to the clerk and general office
- Need separate window for attendance clerk

Discussion on Special Education (see Charette 2 Exhibit 14)

- Downsized FSC
- Downsized resource to 450 S.F
- Proximity to nurse-seizures
- Timeout room – no window
- Operable wall between resource room and 600 S.F. each
- Reduce one FSC at CSAP to 980 S.F and save 3775 S.F.
- 4 self contain classrooms
- half classroom size and 9 classrooms or full classroom size and 6 classrooms
- operable partition divides on big room
- conference room for special education
- access to nurse and drop off
- kitchen, sink, stove, living room, bed room
- one of full self contain classroom need to be close to drop off

Paul Winslow had small group meeting with PEOSON"S NAME to specify the needs for special education (see Charette 2 – Exhibit 14)

- shower - curtain
- desk chair – no cross leg chair
- 6 computer stations
- enough space for special education technology (such as double size computer screen)
- movable computer desk work better
- wall cabinet is not useful for children
- base cabinet works better for children
- high shelving for teachers
- access from outside
- whiteboard and tackboard
- no colors

Caroline Lobo had small group meeting with PERSON"S NAME to clarify the relationship and the needs for Arts (see Charette 2-Exhibit 15)

- 10 computers min.
- art storage
- storage
- drawing rack
- base cabinet
- display area

Charette 2/Day Three
April 13, 2005 (Wednesday)
Continuation of April 12, 2005

Presentation by Architects
The Design Team developed one schematic floor plan based on discussion on three schemes on April 12, 2005
Schematic Floor Plan – as presented by Paul Winslow (see Charette 2 – Exhibit 16)

- Tried to scale out
- Increased size of resource room
- Moved media center to left
- Made art and theater close to each other
- Created covered play court

Schematic Floor Plan for Administration – as presented by Caroline Lobo (see Charette 2 Exhibit 17)
Comments:

- Teacher's mail box needs to be relocated
- Conference room and principal room should not be seen by students coming in
- CSFF should be relocated somewhere people can not see

The Steering Committee discussed the floor plan of the administration and developed the relationship diagram (see Charette 2 – Exhibit 18)
Caroline Lobo developed 2 schemes for the administration based on the Steering Committee's comments, discussion, and diagram. (see Charetee 2 Exhibit 18)
As a result, The Steering Committee selected Scheme B
Guest Speaker xxxxxx

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Group Discussion – Critique of overall floor plan

The Steering Committee was asked to criticize overall floor plan on sheet provided to improve it. (see Charette 2 – Exhibit 19-20)

Group 1	Large windows/glass walls for visual observance for computer lab, business classroom, general classroom, band room, dance room & media center. Information kiosk w/interactive screens, directional signage (school location in relation to world, island school facilities or way finding arrows) Fire access lane – use for physical fitness track World map Indoor walking 'track' Presentation area w/sunken seating Wall for viewing movies above doors at interior and exterior Built in seating or benches throughout Taro center Recycling center Planters for herbs/aromatherapy throughout
Group 2	Opportunity for cultural garden at courtyard Need for shade at amphitheater View window at media center Mini-gallery at dinning area Poles for banners at corner Display cases Large monitors for showcasing art projects Recycling Possible location for lockers under work table/counters or display top tables Kalo growing aquaculture at courtyard Operable wall to provide larger space for interdicting teaming Performance alcoves Opportunities for fitness seating that would double hopscotch or activities in floor in big area
Group 3	Transparent wall, certain amount of glass/display ability Doors to accommodate lift equipment for maintenance Consider for girls/boy restroom Kilo planting area & Hawaiian planting area/native Hawaiian plants Different shape or type of nosing for admin so that public knows it is a different building classroom Outdoor serving area, outside of the kitchen for outdoor amphitheater events food sales/fundraising Use external PE doors for outdoor restroom for amphitheater events, or small unisex restrooms outside of covered play courts Indoor & outdoor presentation place w/ability to combing to one large virtual operable door Fitness. climbing wall No mirrors inside bathroom Flooring should be non-slip in wet art lab, locker room, and poss. IA Possible to flip/floor the R/R & T/P but R/R at current location make it accessible to many at wall hrs.

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 2/Day Four

April 14, 2005 (Tuesday)

Continuation of day one, April 13, 2005

Presentation by the Design Team (see Charette 2-Exhibit 21)

Discussion - Dream School

Students from Ilima Intermediate School were invited to shear their dream school. (see Charette 2-Exhibit 22)

- All enclosed and air conditioned.
- Lockers – need during lunch
- Place to eat outside
- Groupings – 5-12
- Computer Access
- Swimming pool
- Organized Teams
- Clubs (art/Chess)
- Buildings by grade
- Peer counselors
- Counseling – safe place and confidential
- Performance
- Teacher is the friend
- Place where you can express yourself at any time such as Karaoke Machine. Camera documentary
- Game room
- Stove – food/map (run by students)
- Vending machines
- More choices (food)
- Reward system
- Green House
- Rainwater harvesting
- Water slide/pool
- Clean building
- Sound proof room
- Fewer exist – more security
- Parents parking/ bus separate/ staff separate
- Computer for each student (zip disk/student)
- More sports stuff
- Place for lockers
- Easy access to reference
- Store, Supplies to do project
- More chance for PE, scholarship
- Student activity room
- Places to rest – bean bags
- Variety of activities
- Bathrooms
- Pre-packaged foods
- Student contest
- Diving competition

Group Discussion – Suggestions on schematic floor plan (see Charette 2 – Exhibit 23 &26)

Group 1

Suggestions for kitchen

- Have variety available (hot meal, bottled water, salad bar, left over, can juices, sandwich, shakes
- Multiple serving area (counters for hot food, kiosk for quick meals scattered in convenient place)
- Capacity, to have mtgs, in dining room, faculty mtgs, rent to community, use as area for large school events

Suggestions for elective area

- Possible leave home EC as second class in B/C can not compete w/cafeteria
- Industry. Tech needs large are for large construction project
- Band needs access to a parking lot to transport equipment and instruments to concerts
- Non- slip floors in Art & Science where there's sinks ensure adequate drainage for chemical/eye wash areas

Suggestions for Amphitheater

- Student mural
  Prevent skate boarding by using preventable surface
- Gate entry to amphitheater
- No fountain in library

Overall

- Move science room across the open space (swap w/rest. Space)
- Operable walls in resource rooms
- Operable walls in Eng, Math, SS class
- Science T. racks. Ceiling electrical drops
- Laptops for science classes of they can be portable: lab around the room; work tables (acid resistant if possible) in center of room for lectures group work, paper/pencil work, etc.
- Poss. Closet w/lock & key in core classes, science rooms all need storage above labs, not under
- Check w/science teachers for need of gas source at diff. Levels
- Outdoors tool shaeks, kink, house bibs for science/soc. St

- Need Storage space for M/T closets
- Drop down screen from ceiling in dining area
- Themed flooring
- Opening for dance class
- Gated at courtyard

Group 2

- Retractable walls to open up CR to each other as well as core commons
- Open up w/retractable walls resource rooms/fsc
- Science rooms - roll up doors or double drs
- Teacher. Station in each CR w/admin date/telephone drop
- TP-1350 sq. ft each – similar to KHS model – Transparence wall
- Acoustically treated DR area to Facilitate large group meetings faculty core mugs
- Switch home EC/and dance rooms
- If amphitheater is not shaded, students will not get optimum use of it during day (possible over hangs)
- Outdoor counseling/socialization area equipped w/picnic tables, part benches w/shade
- Waterfall to be gated/secured w/recyclable water
- Possible water features in each courtyard
- Shaded seating area in courtyard
- Meditation area in courtyard
- Make interior of kitchen visible
- Exterior wall need glass
- Need awning outside of kitchen area
- Serving area outdoors at kitchen & home ecng facilities
- Tweak media center footprint to provide more frontage/window viewing @ kitchen
- Graphics identify
- Main custodial svc center near kitchen
- Exterior restrooms/unisex toilets at near covered play court
- Secure neighborhoods to facilitate rental of commons area
- Move band rooms so they have access to exterior and parking for easy loading/unloading of equipments/instruments for performance
- Move arts & dance to main corridor so classes can be observed by students thru viewing window
- Extend corridors to exit next to locker rooms

Group 3

- Move band to wall near amphitheater- easy access for performance, after hour activity
- Move P.E classroom next to P.E lockers
- Move industrial tech to corner away from lockers
- Hot lunch serving area
- Waiki line several lines?
- Avoid crowding and waiting to play on pay
- Several Kiosk (mini carts) dispersed throughout dining area
- Need storage for tables during special events when dining area needs to be cleared
- Use of facilities for public use
- Need to secure area from entering into pods or any other area During non-lunch for instruction or work time need electrical plays in the floor

Charette 2/Day Five
April 15, 2005 (Friday)
Continuation of day one, April 14, 2005

Presentation of schematic floor plan by the Design Team (see Charette 2 Exhibit 27-30)
Comments:

- Operable partition – cont as two
- Rework size of small art room
- Attach small art room next to kiln
- Rework corridor
- Add the PCNC
- Add opening from student center to outside performance
- Combine virtual/media production/student conference
- Push media control and teacher's office up
- Put one general classroom back in elective area

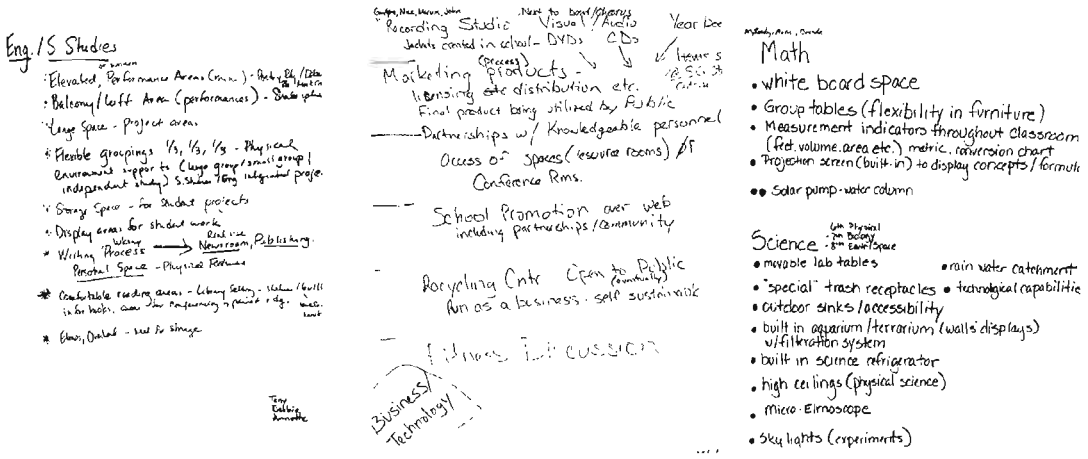
Discussion – what can we shrink?

- General Classroom and resource room can be reduced.
- Bused up to 12 sq. ft.
- Downsize industrial technology to 2000 sq. ft.
- Downsize band/choral to 1440 sq. ft.
- Administration can not be reduced
- Dining and kitchen can be downsized
- Medial center can be downsized
- Need one bigger storage near custodian

Discussion – Character of "Ewa Makai Middle School"

- Feeling of safety
- Feeling of oneness
- Should not look like a performing
- Feeling for performing arts
- Lots of trees
- Sun light come in
- Stage lighting
- Built in seating

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



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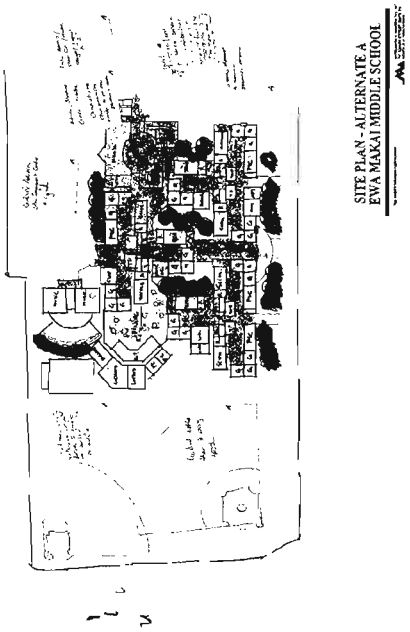
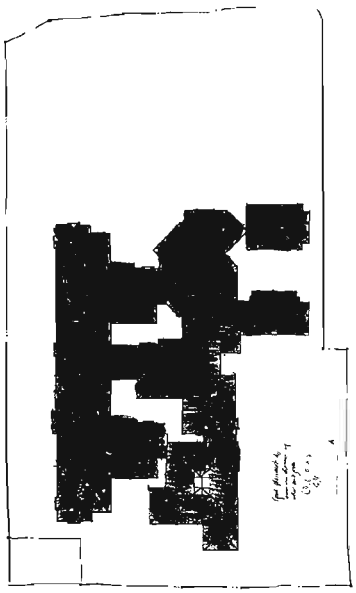


SITE PLAN - ALTERNATE A
EWA MAKAI MIDDLE SCHOOL



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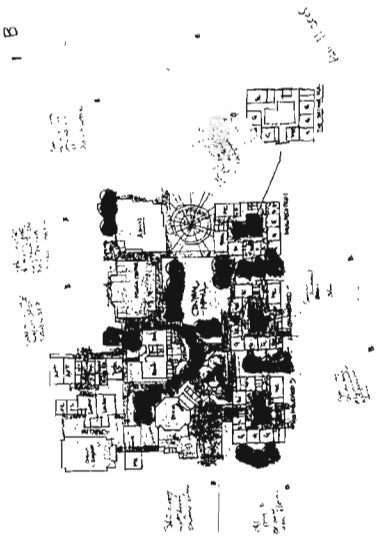

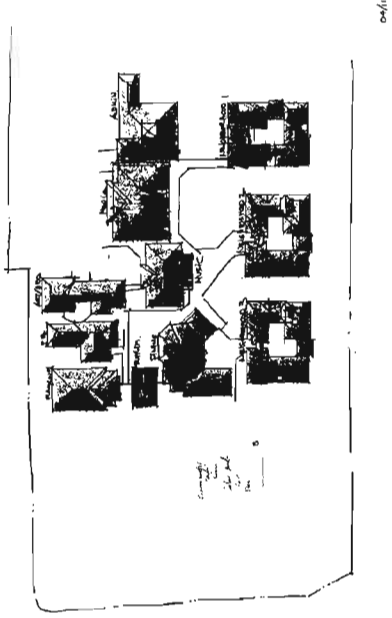

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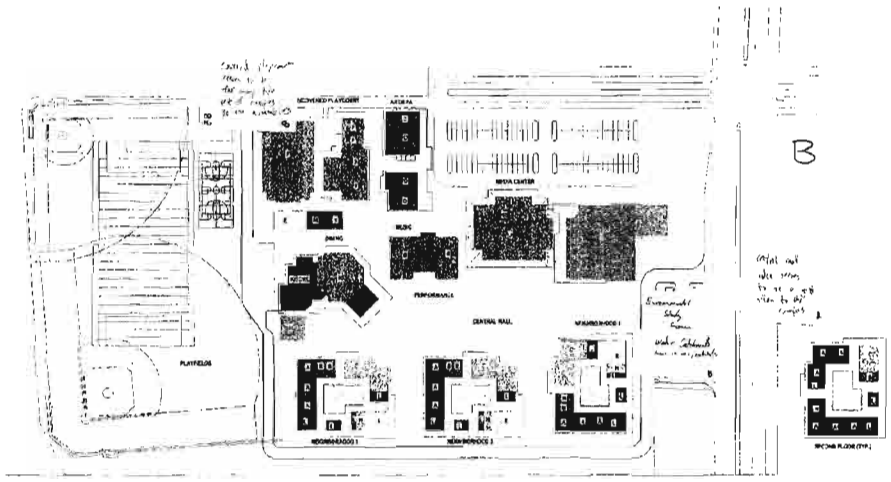

- A GENERAL CLASSROOM (27)
- B RESOURCE CLASSROOM (9)
- C SCIENCE CLASSROOM (9)
- D ART/BFA CLASSROOM (3)
- E SPECIAL ED FSC (4)
- F PE LOCKER/SHOWERS (2)
- G MUSIC (2)
- H TEACHER PLANNING
- I ADMINISTRATION/STUDENT SUPPORT
- J MEDIA CENTER
- K DINING/FORUM
- L SUPPORT
- N VISUALIZATION CLASSROOM (1)
- N SUPPLEMENTAL CLASSROOM (5)

SITE PLAN - ALTERNATE B
EWA MAKAI MIDDLE SCHOOL

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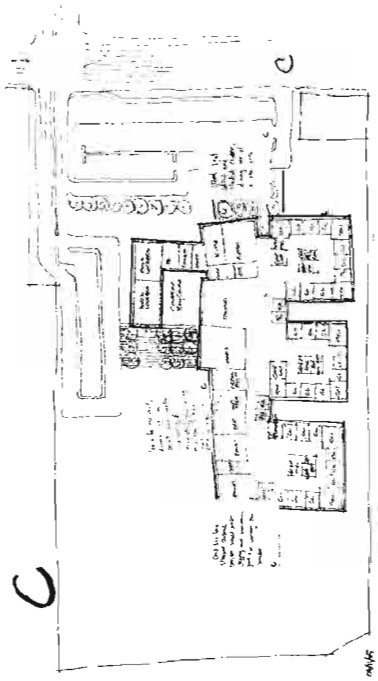

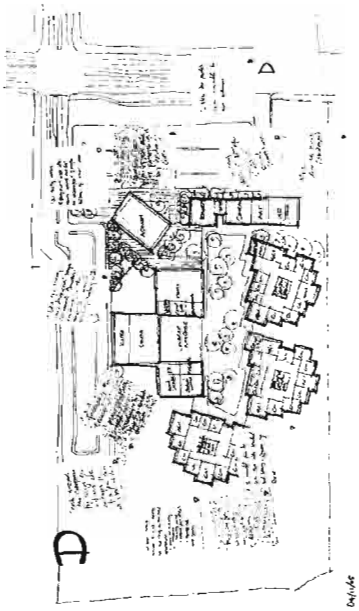

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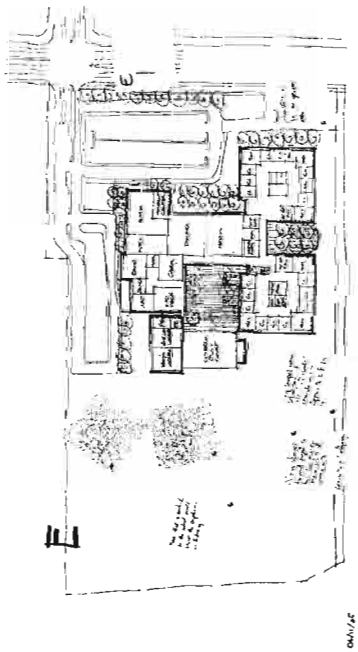

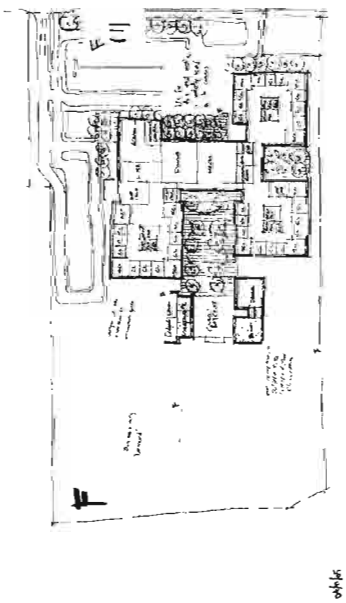

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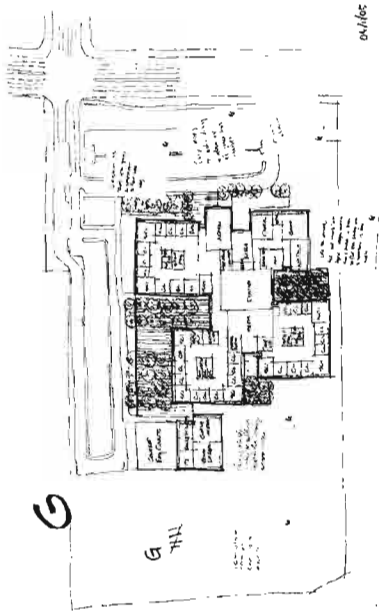

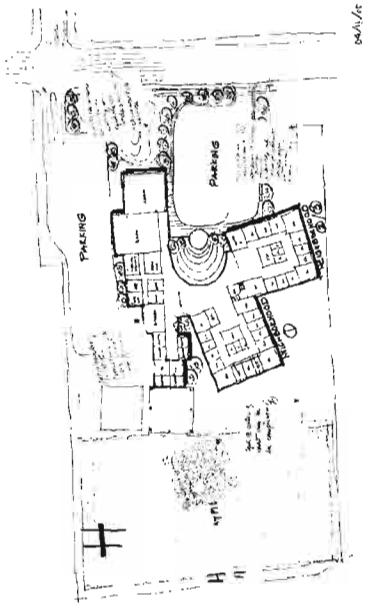

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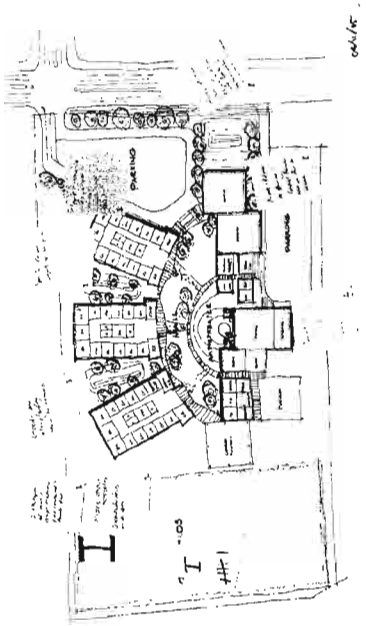

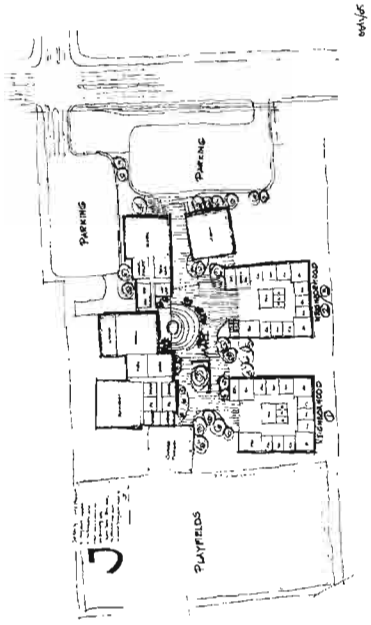

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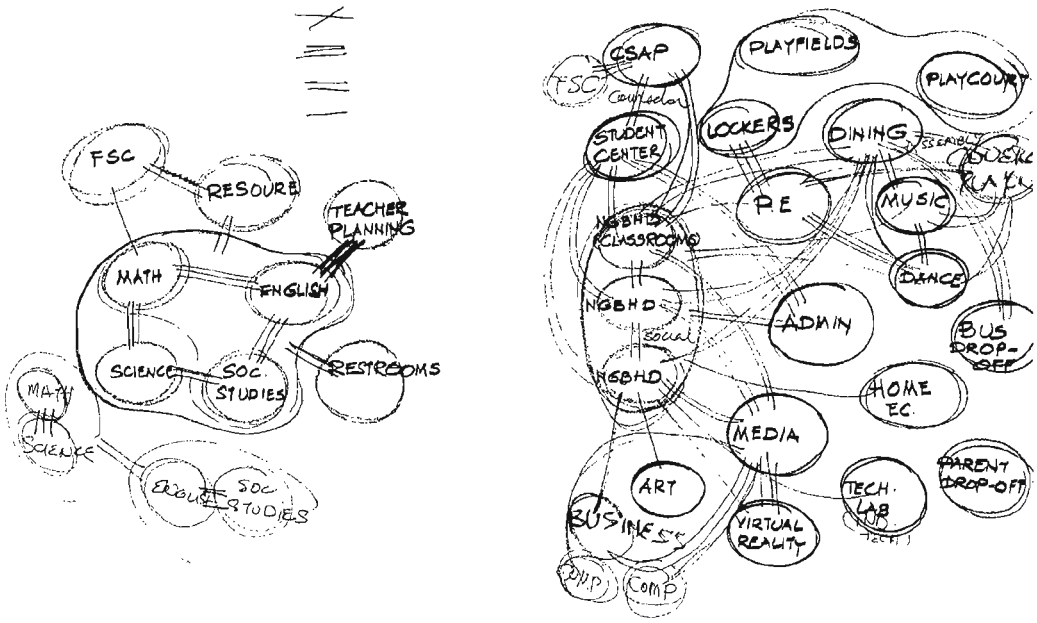

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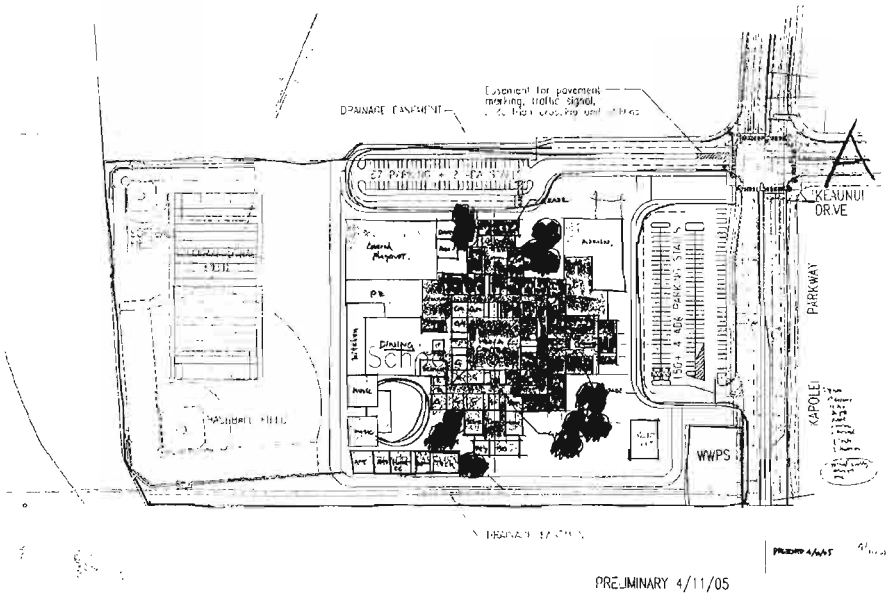

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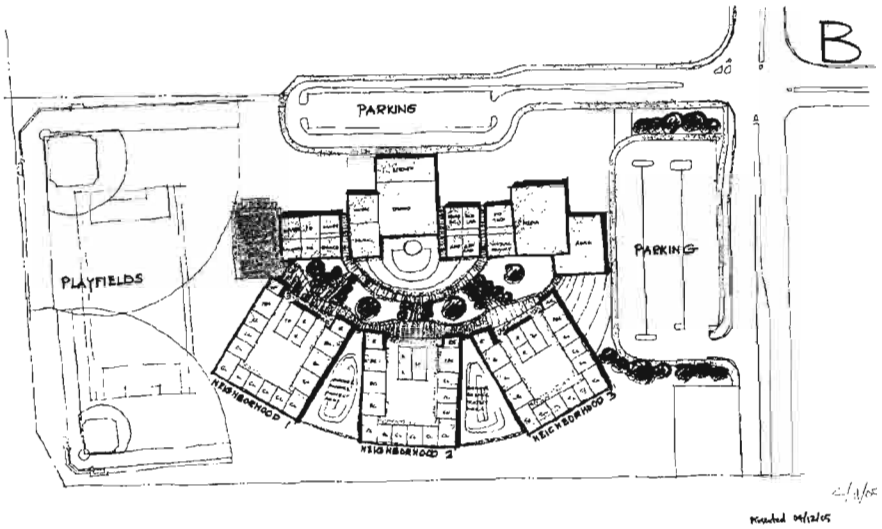

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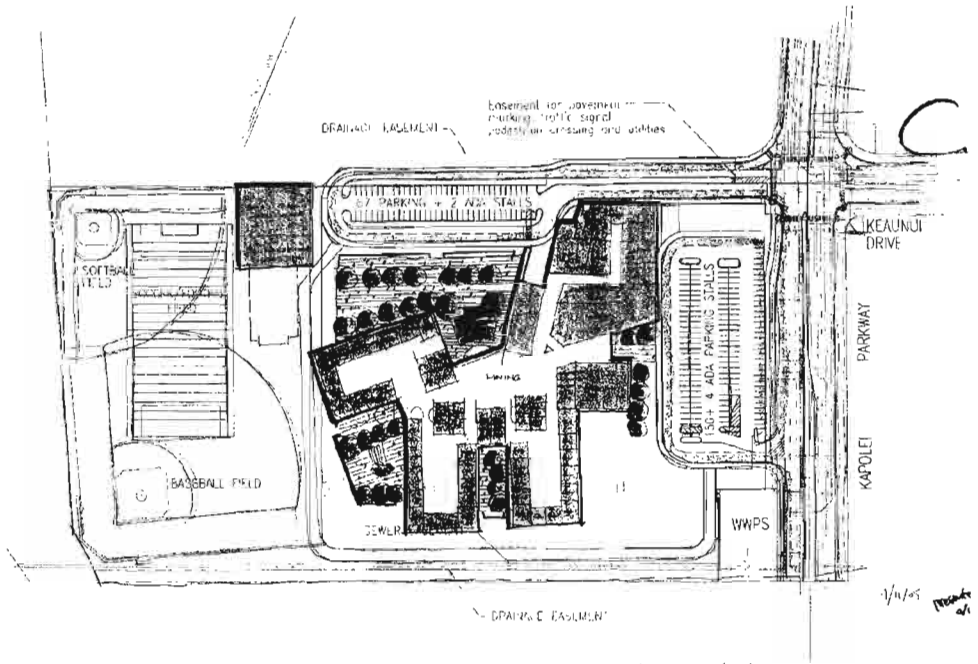

PRELIMINARY 4/11/05

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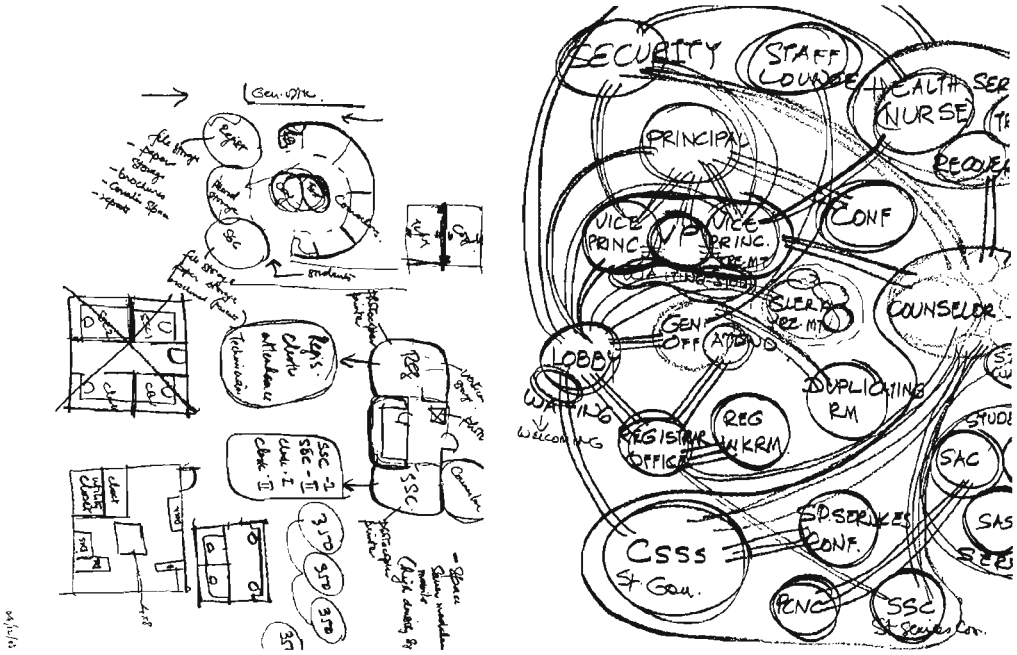

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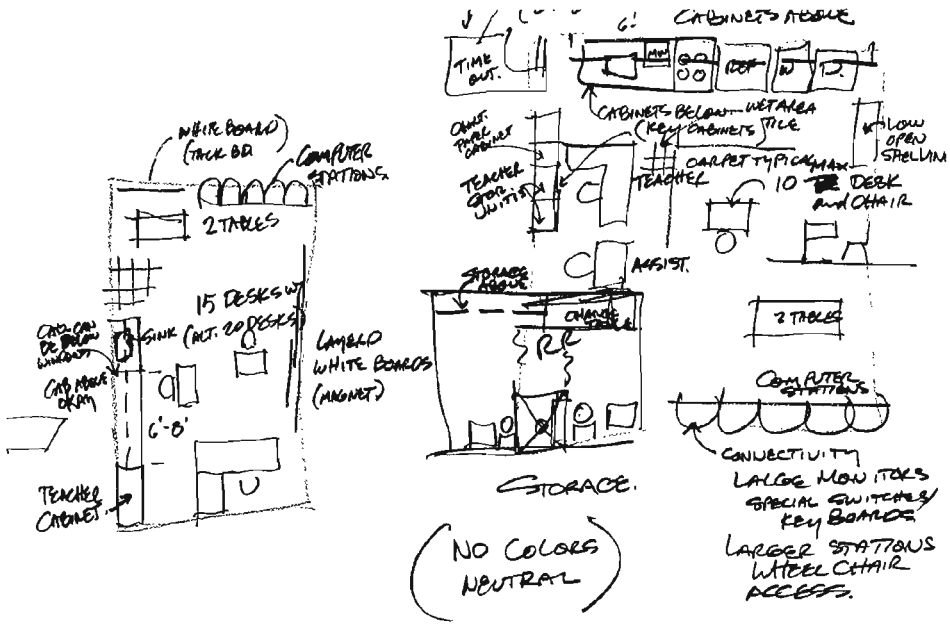

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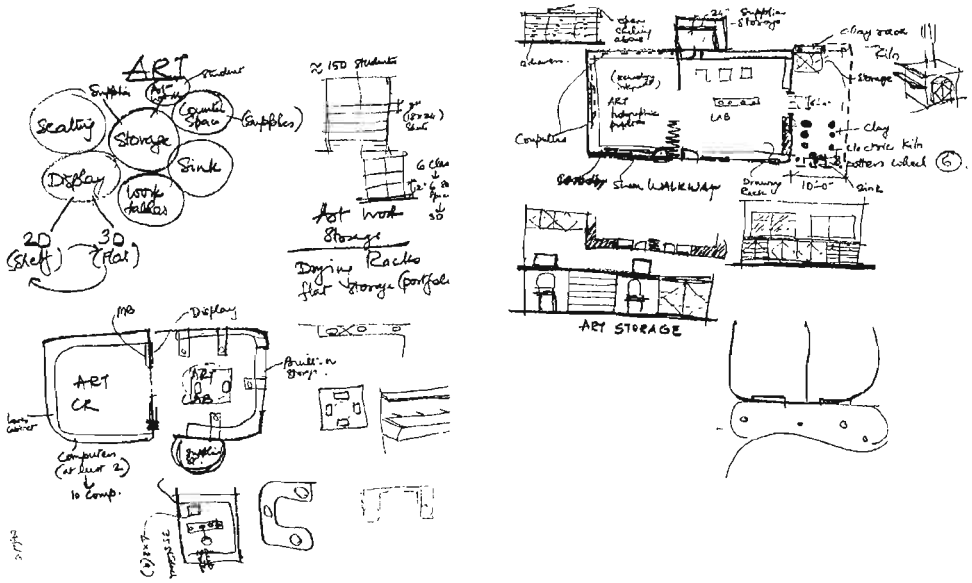

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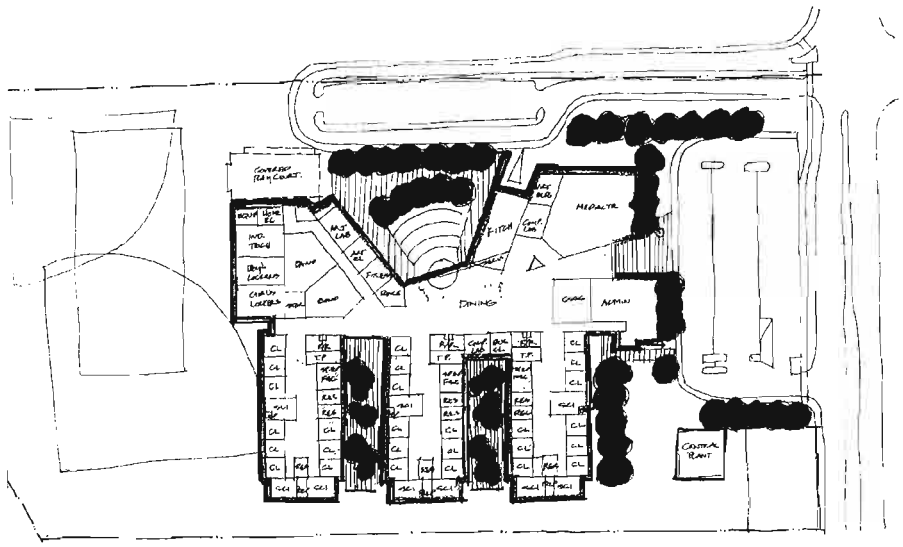

04/13/15

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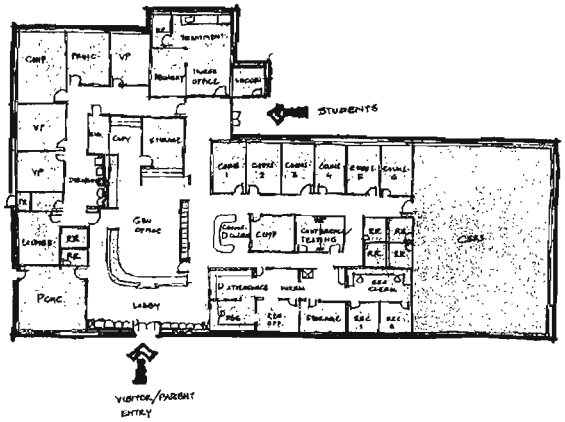
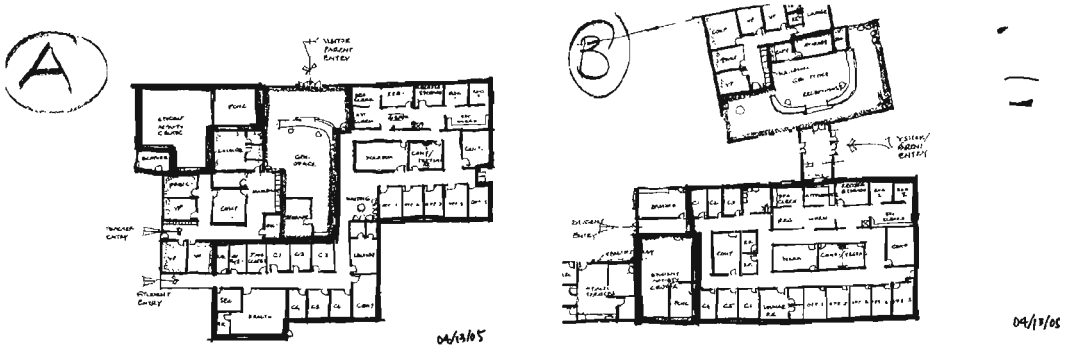


ADMINISTRATION
04/13/05

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



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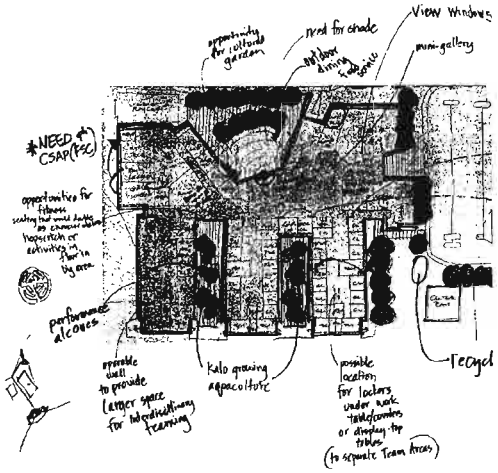

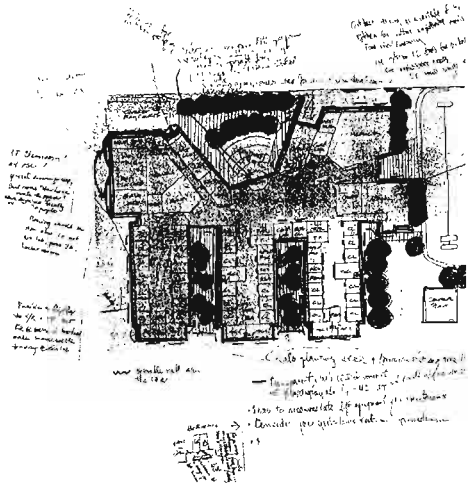

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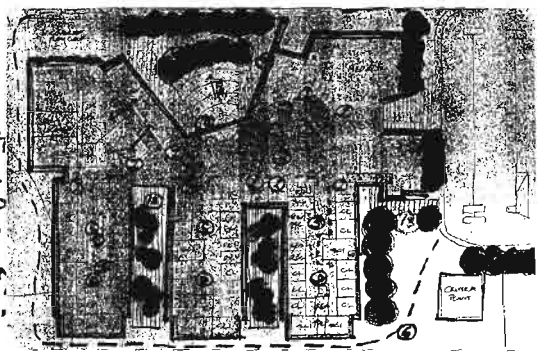
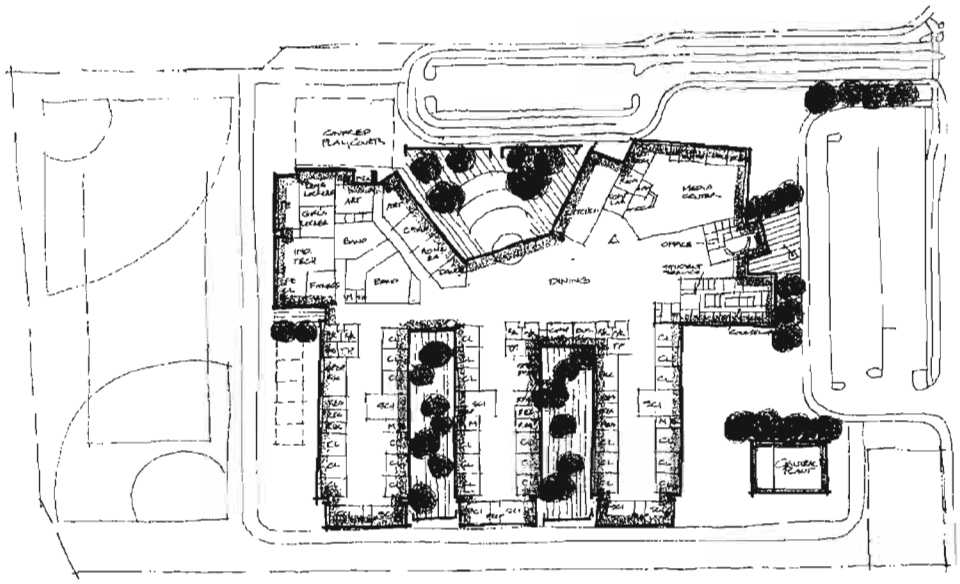


① Large windows/glass walls for visual observance.
② Information kiosk w/ interacti screens, directional signage (school location in relation to world, island, school facilities) way finding arrows.
③ Student info/activities/displa wall w/ electronic marquee,
④ Mural wall for student art (grade-level)
⑤ Incorporate physical fitness apparatus
⑥ Fire access lane - use for physical fitness track.
⑦ World map
⑧ Indoor walking track
⑨ Presentation area w/ sunken seating (eg for poetry reading)
⑩ Built in seating or benches throughout
⑫ Taro center loi
⑬ Recycling center?
⑭ planters for herbs/aromatherapy

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



04/14/05

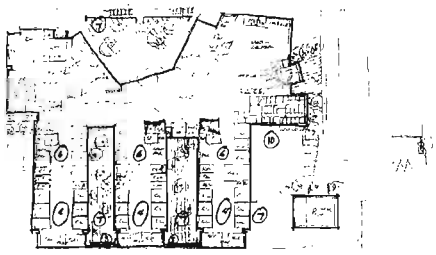
EXHIBIT - NOTES TAKEN DURING CHARETTE TWO

- AREAS FOR PAINTING/KARAOKE (SELF EXPRESSION)
- GAME RM
- CAMERAS - FRIENDS PICTURES
- STORE - PENCIL/MARKER (RUN BY STUDENTS)
- VENDING MACHINES
- MORE CHOICES (FOOD)
- REWARD SYSTEM
- GREENHOUSE
- RAINWATER HARVESTING
- WATER SLIDE / POOL
- CLEAN BLDG
- SOUND PROOF RM.
- FEWER EXITS
- PARENT/KIDS [illegible] (SEPARATE) START EARLIER

- COMPUTER PER EACH STUDENT (ZIP DISK/STORAGE)
- STORE, LOCKERS, [illegible] (BAG, STORE [illegible]), [illegible]
- [illegible]
- INTERACTIVE / HANDS ON
- LONGER RECESS ?
- FIELD - GR.
- 'HOME LIKE'. COMFORTABLE

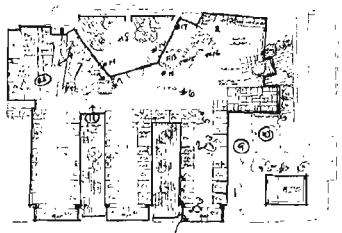
- ENCLOSED - A/C
- LOCKERS
- OUTDOOR DINING
- GROUPS - 5-12
- OUTDOOR/INDOOR READING AREA
- COMPUTER ACCESS
- SWIMMING POOL
- ORGANIZED TEAMS
- CLUBS(ART, CHESS)
- BUILDINGS BY GRADE
- PEER COUNSELORS - CONFIDENTIALITY
- PERFORMANCE AREAS
- BETTER EDUCATION / TEACHERS

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



① Operable walls should be of high quality for constant use / noise reduction
② Walls between core classrooms should be operable for larger classroom settings, more flexibility in class sizes. Spec Resources
③ There should be a janitor room in each pod.
④ Presentations should have electrical outlets in floors for microphone, etc. Overhead lighting for student "self expression" or class lessons.
⑤ Teacher planning/lounges should be lower
⑥ Small Seating areas that have computer kiosks for student use. Individual/2 or small grp
⑦ Have tables & benches for outdoor dining areas and seating areas for reading/quiet time a outdoor seating options
⑧ Fence wall so that outsiders are not able to get in. Seating better after hours security, extra gate & capability for ponds, waterfalls, etc.
⑨ Provide lots of room for bike racks. Highly visible, to deter thefts.
⑩ Lanai area for outdoor counselling sessions. Covered/shaded areas. Waiting area.

① Retractable walls to open up CR → each other as well as core commons.
② Open up w/ retractable walls resource rooms / FSE
③ Science Rooms - Roll ~~out~~ up Doors or Doub le d
④ Tchr. Station in each CR w/ admin data / telephone drop



⑤ TP - 1350 sq. ft each - similar to KHS Model - Transparent walls.
⑥ Acoustically treated DR area to facilitate large group meetings/ie. faculty/all core mtgs.
⑦ Switch Home Ec/and Dance rooms
⑧ If amphitheatre is not shaded, students will not get Optimum use of it during day. (possible overhangs)

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO

⑨ Enclose area to create courtyard for 1st pod / neighborhood
⑩ Outdoor ~~counseling~~ counseling / socialization area equipped w/ picnic tables, park benches - w/ shade.
⑪ Waterfall feature (to be gated / secured) - w/ recyclable water
⑫ Outdoor court areas -
- possible water features in each (waterface, koi pond, loi)
- Shaded Seating areas - benches,
- Meditation area - rock garden

#13. Make interior of kitchen visible - exterior walls - glass put awnings outside of kitchen area
#14 • Serving area outdoors (serving windows) at Kitchen & home ec.
#15 • Graphics (ie. neon signs), banners) identifying facilities, neighborhoods.
#16 • Tweak media center footprint to provide more frontage / window viewing @ kitchen
#17. Main custodial svc center near kitchen
#18. Exterior restrooms / unisex toilets @ near covid playcourt
#19. Secure neighborhoods (rollup storefront or swinging drs/gates) to control of commons area.

20. Move ~~Home~~ Econ rooms so they have access to exterior & parking for easy loading/unloading of equipt/instruments for performances.
21. Have arts & dance to mezz corridor so activities can be observed by students thru viewing windows
22. Extend corridor to exit next to teacher workroom

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO

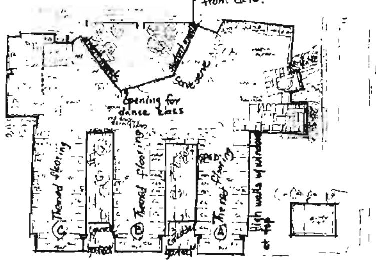
- Gate entry to amphitheatre.
- Prevent skate boarding by using preventable surface

No water fountain in the library.

Serve @ off hours from cafe.

Drop-down screens from ceiling in dining area.

Need storage space for H/T closets



Suggestions:

1. Move (A) Science room across the open space (Swap w/ Res. space)
2. Operable walls in resource rooms
3. Operable walls in Eng, Math, SS classes
4. Sci. T. reec. ceiling electrical drops
5. Lap tops for science classes so they can be portable; lab around the room; worktables (acid resistant if possible) in center of room for lectures, group work, paper/pencil work, etc.
6. Poss. closet w/ lock + key in core classes; Science rooms all need storage above labs, not under.
7. Check w/ science teachers for need of gas source at diff. levels
8. Outdoor tool shacks, sink, hose bibs for science/soc. st.

Suggestions for Kitchen.

1. Have variety available daily
   - hot meal
   - left over
   - sandwich
   - bottled water
   - can juices
   - shakes
   - salad bar
2. Multiple serving areas -
   - counters for hot food
   - kiosks for quick meals scattered in convenient places
3. Capacity to have mtgs. in dining rms: i.e. faculty mtgs., rent to community; use as area for large school events.

Suggestions for elective area

1. Possibly leave Home Ec as second class in b/c cannot compete w/ cafeteria
2. Indust. Tech needs large are for large construction proj.
3. Band needs access to a parking lot to transport equip mt. and instruments to concerts.
4. Non-slip floors in Art & Science where there's sinks. Ensure adequate drainage for chemical/eye wash areas

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO

Dining Comments

- Hot lunch serving area =
- Wiki line (ie cheeseburger, saimin, pizza) Several lines?

Lessen congestion — Solve concern:

Avoid crowding and waiting to plop a pay (suggest: spreading out play and pay areas.)

Suggestion: several kiosk (mini carts) dispersed throughout dining area

Concern: cleanliness, safety, of dining room ie. spills, rubbish, slippery floors, etc...

?? Storage for tables during special events? when dining area needs to be cleared

?? Use of facilities for public use?

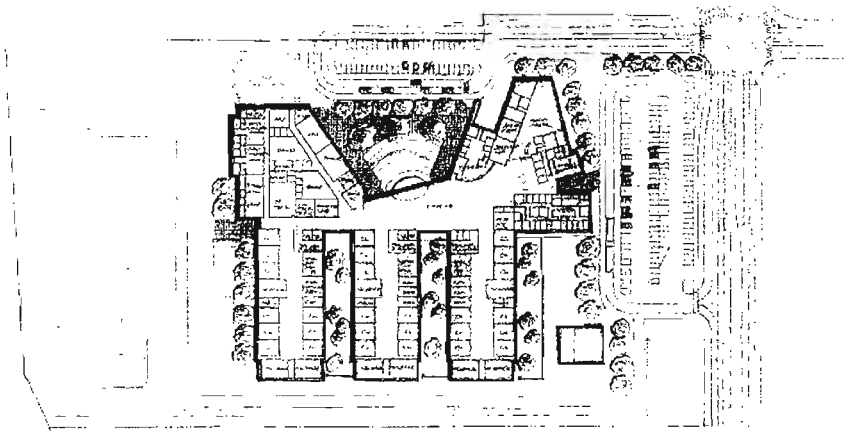
* Need to secure area - from entering into pods or any other areas

- During non-lunch — for instruction or work time need Electrical Plugs in the floor...
  * Airport Hubs needed

Electives Corner

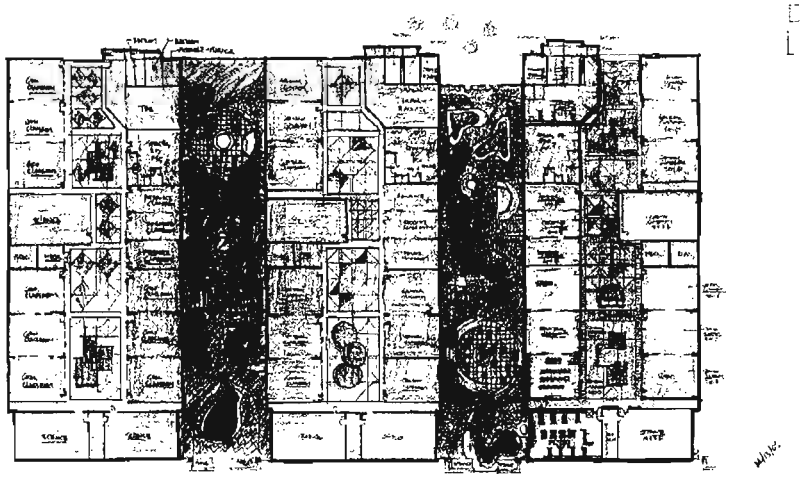
- move band to wall near ampitheater
  - easy access for performance, after-hour activity
- move P.E. classroom next to PE lockers
  Fitness
- move industrial tech to corner away from lockers.

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



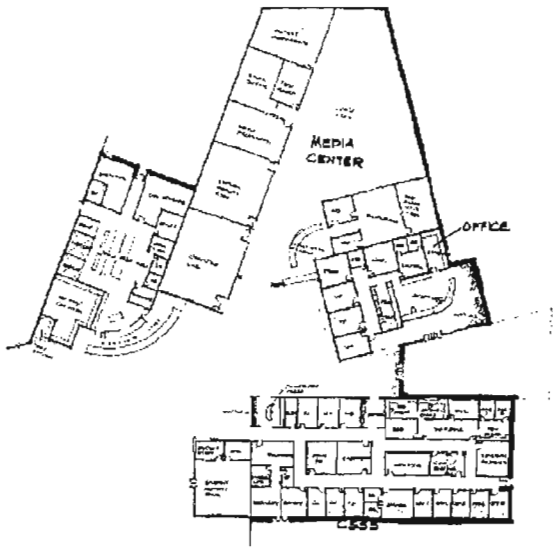
CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — OAHU HAWAII — APRIL 2006

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — OAHU HAWAII — APRIL 2006

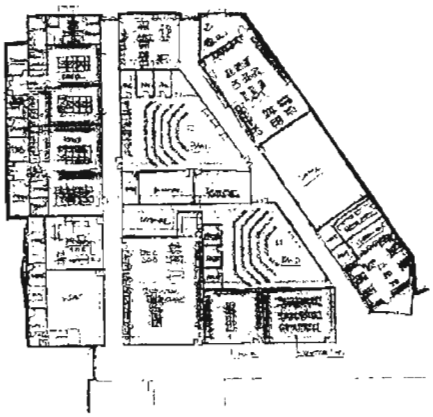
EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — APRIL 200[illegible]

OAHU — HAWAII

EXHIBIT - NOTES TAKEN DURING CHARETTE TWO



CONCEPT DEVELOPMENT — EWA MAKAI MIDDLE SCHOOL — APRIL 2005

OAHU — HAWAII

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 3/Day One
May 9, 2005 (Monday)
Continuation of Charette 2

Presentation by The Design Team
(see Charette 3 – Exhibit 1)

- Middle wing – switch science to right side
- Possible partition at sing
- Place mirror at inside wall
- Check code for fixture contour
- Windows from science classroom into common area middle exit at wall
- Add storage.
- Provide storage at library right side
- 3 pallets on floor
- add more storage at custodial center
- revise workroom ad CSSS move wall so that workroom can be divided
- virtual reality room – flush doors – no window
- no need secured storage in workroom – make testing room bigger with rook counters
- overhead cabinets above files at register and work counter below
- need one copier for register
- push counselors to left and make one waiting beiger at register
- add exist our from counseling to main dining
- move safety officer to mechanical room
- discussion on location of health room
- art classroom – project out in room
- art classroom – make two storage rooms out of room shown on plan
- kiln room accessible from both rooms
- space about 5 wheels
- need long storage room
- switch dance w/ art
- kiln with outside covered wall
- add a teacher restroom at specialty wing
- flip flop restroom with equipment storage at covered play court
- flip autodial with dry storage and corridor out at kitchen

Mamo's general comments

- lots of area for student
- different themes in learning gardens
- space for back packs
- lawks downs blinds on windows accommodations concern with enough ever lighting
- smelly dumpster near service cafeteria
- dumpster near play court

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 3/Day Two
May 10, 2005 (Tuesday)
Continuation of May 9, 2005

Presentation by The Design Team (see Charette 3 - Exhibit 2)
Comments:

- Add gate
- Revise door to make more secure
- Redo teacher's workroom
- Qualifying statement – note – relationships only furniture shown for scale only
- No island in science lab
- Science – flexibility of use – work tables only
- Storage for dining area
- Gates at PE lockers area
- Break in counter at lobby of admin
- Security is important
- Community

Mamo – 3 area

- Student achievement
- Safety and security
- Middle school
- Community
- Ways to experience adult world
- Mall like invitation
- Inside like a gallery
- "Heart of the School is amphitheater"

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Charette 3/Day Three
May 11, 2005 (Wednesday)
Continuation of May 10, 2005

Welcome – Tony Chun
Nick Nichols, Department of Education – Facilities Branch
- Thanked the Steering Committee and all representative to participate the final day of Charette
- The quality of Ewa Makai Middle School has been developed so well in Charette meeting
- Introduced Paul Winslow as Facilitator

Paul Winslow, The Orcutt/Winslow partnership
- Introduction of The Orcutt/Winslow
- Thanked the Steering Committee for participating Charette meeting and exploring their ideas.

Steven Wong, Mitsunaga & Associates, Inc. – Presentation about the site (see Charette 3-Exhibit 3)
- Still in process to develop
- Trade winds from Northeast
- Bus – right turn only
- Heart of School is amphitheater
- Student's drop off is located at amphitheater
- Mechanical building will be educational building
- Created dynamic feeling and secure feeling for students and teachers

Caroline Lobo, the Ocutt/Winslow, reviewed how we got single building
- Scheme A: students break up into 3 small size group gives more interaction among students and teachers
  Media is center of school
  Theater intergrades with arts & Performance
  Smaller Learning community bout one big building
- Scheme B: Outdoor and Indoor Concept
  As walking in, more secure space in bulling
  Create Court yard at center in single building
  Nationhood concept as Scheme A
  Between neighborhood, courtyard exist
- Scheme C: no outdoor and courtyard
  More space in building
  Amphitheater at center

Paul Winslow, the Ocutt/Winslow, reviewed how we got 3 schemes to final design.
- Students from Ilima Intermediate School want to stay in building
- Want to hang out at same place

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

<u>The Steering Committee members presented final design. (See conceptual drawings included in this report – pages 24 – 35)</u>
Marvine Yonamine, The Steering Committee Member (see Charette 3-Exhibit 4)
- Classroom Cluster – 3 wings
  - 3 wings for multi-track
  - by grade
  - "School in School" concept
    Small teaching class (English, match & science) X teaching team
  - One wing has 3 teaching team
  - Special education exist center to involve Neighborhood classrooms
    Restrooms are located at front due to security to be monitored
  - Provided portable partition for teaching team and to make small classroom bigger as educational space
  - Flexible

Debbie Nakamoto, The Steering Committee Member (see Charette 3-Exhibit 5)
- Administration Building
  - Administration is "Head of School"
  - Let the public enter straight to the general office
  - Convenient for parents
  - CSSS close to Administration
  - Security can view Student Center
  - Principal can view Student Center
  - Health Room is located at the entrance to provide easy access for students and emergency
  - Idea of location for Media center is "not hidden space" and "accessible"
  - Computer lab is "Box Theater" where can be used for anything in feature
  - Computer lab has projection in whole room
  - The concept of cafeteria is "Shopping Mole"
  - Cafeteria has center space for activity, students' display
  - Cafeteria is "Student focused space"

Una Chan, The Steering Committee Member (see Charette 3-Exhibit 6)
- Arts & Performing
  - Home economics room is "Small Shop" where students can sale things
  - Fitness area provides elective class, flexibility, and opportunities to students

Randy Ibarra, The Steering Committee Member (see Charette 3-Exhibit 7)
- Overall Floor Plan
  - Thought of restroom in neighborhood a lot
  - Concerned landscape for maintenance
  - Round table for maintenance
  - Practicality
  - Easy maintenance

EWA MAKAI MIDDLE SCHOOL PLANNING CHARETTE

Jonelle Ohiro, Jonelle Oshiro Landscape Architect

- Landscape
  - Function overall cominuty
  - Intergrades culture detail in landscape
  - Created a lot of shade
  - Provide school name and log to identify at entrance
  - Theater as "heart of school"
  - Image of theater is "sailing"
  - Used blue to provide cooling and comfort
  - Provide each different theme in each courtyard between classroom wings
  - Theme are "Space", "earth", and "culture"
  - Provided Upper forest theme and middle forest theme to teach culture such as how banana grows
  - Provide a gate at each courtyard between classroom wing to make secure (Paul Winslow)

Caroline Lobo, The Ocutte/Winslow Partnership

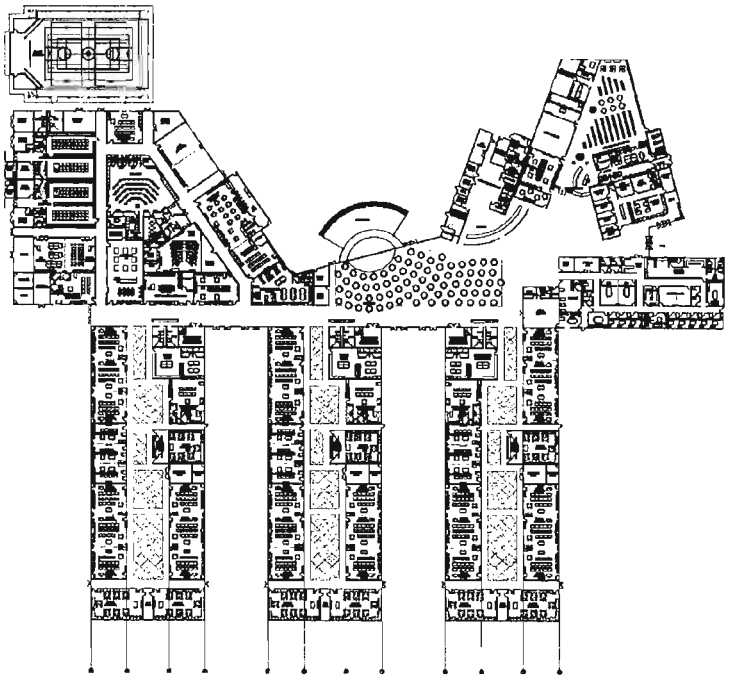
- Overall Final Design
  - Concerned existing site
  - Water efficiency
  - Limited energy use
  - Provide natural day light to all classroom for student learning effectively
  - Provide cooler space for students
  - Use proper material to create best quality of indoor environment

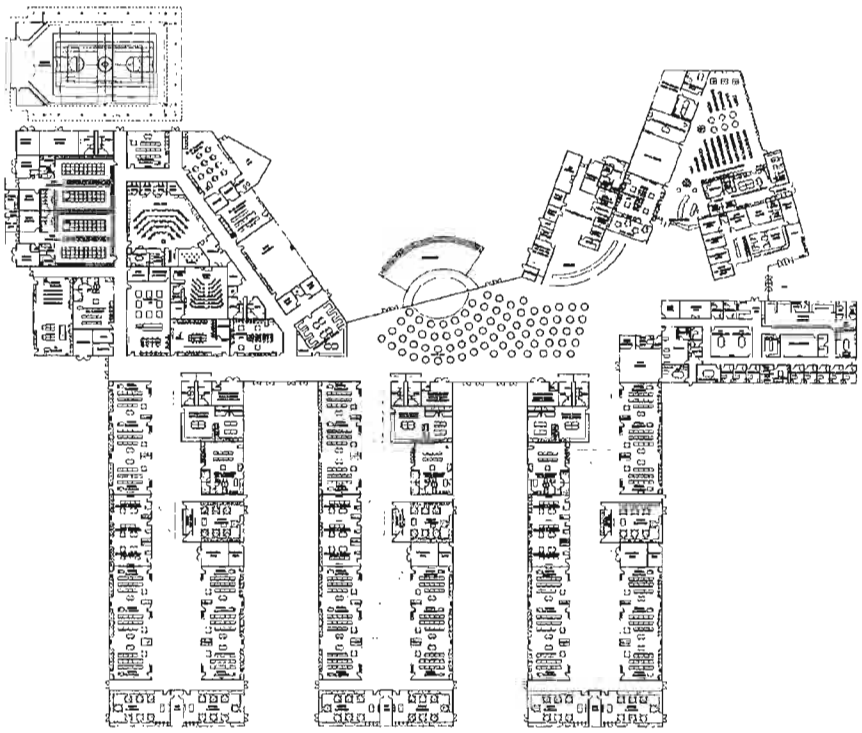
Question and Answers

- "Solar Components in school?"
  - use local utility such as solar pumps etc. but need to working on that with mechanical engineer.
  - Practically, initial cost is little bit higher.
  - Not really economical
- "Is there A/C? Is there A/C that cost 50% less"
  - Might exist. We are searching.
  - Might be control system
- "Capacity of theater?"
  Not found actual number of seats yet, but enough space for 200 or 300 seating

Comments from The Steering Committee members

- All Ideas of Ewa Makai Middle school is for children, teacher, community member, parents, and students.
- Ewa Makai Middle School will provide opportunities to learn and give perfect environment for students want to stay
- Ewa Maki Middle School will definitely be "Incredible School"
- Thanks to the design team





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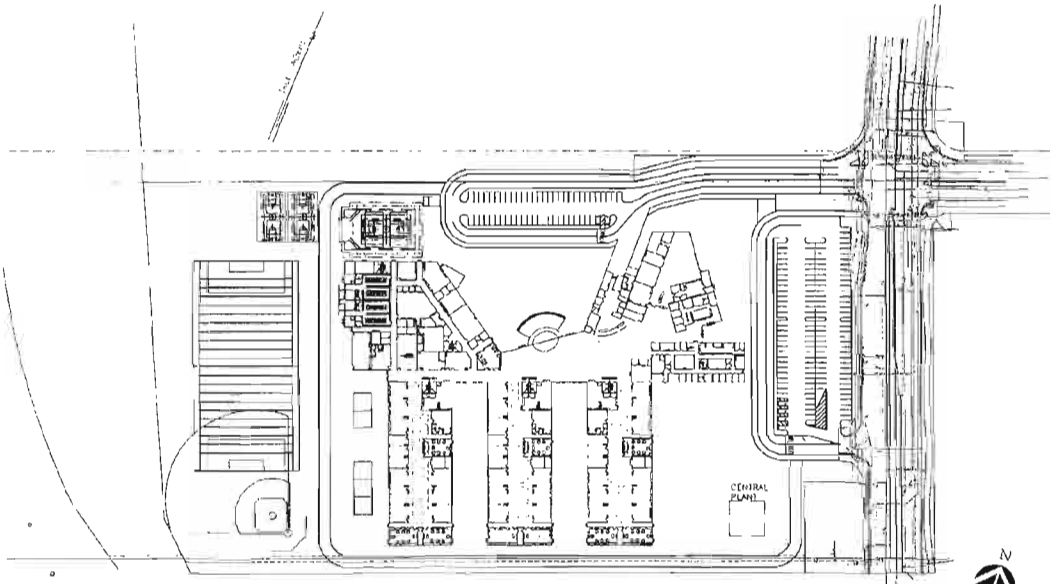

SITE PLAN
SCALE: 1" = 50 FT.

CONCEPT
DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

MAY 2005 - CHARETTE THREE

OAHU HAWAII

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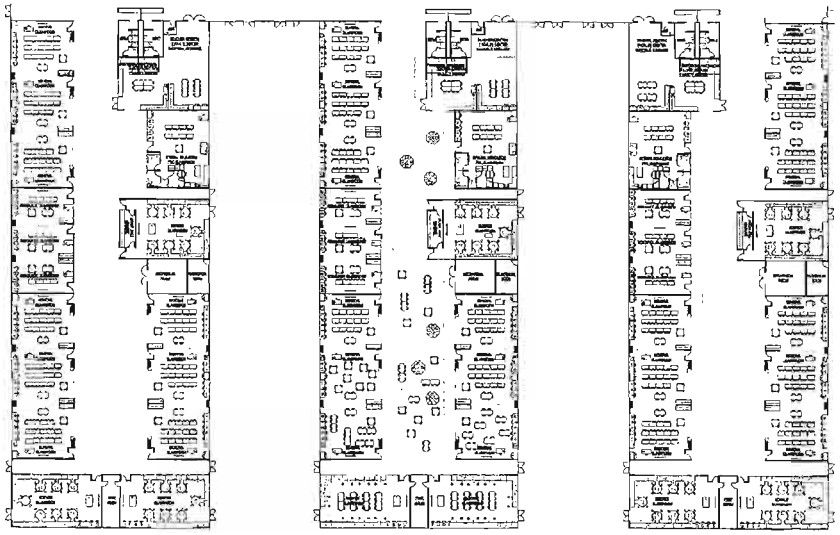

GRAPHIC SCALE

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

MAY 2005 - CHARETTE THREE

OAHU HAWAII

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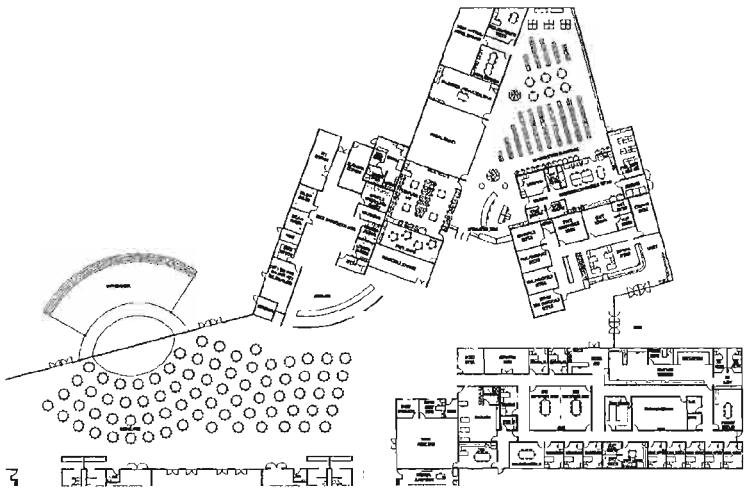

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

MAY 2005 - CHARETTE THREE

OAHU HAWAII

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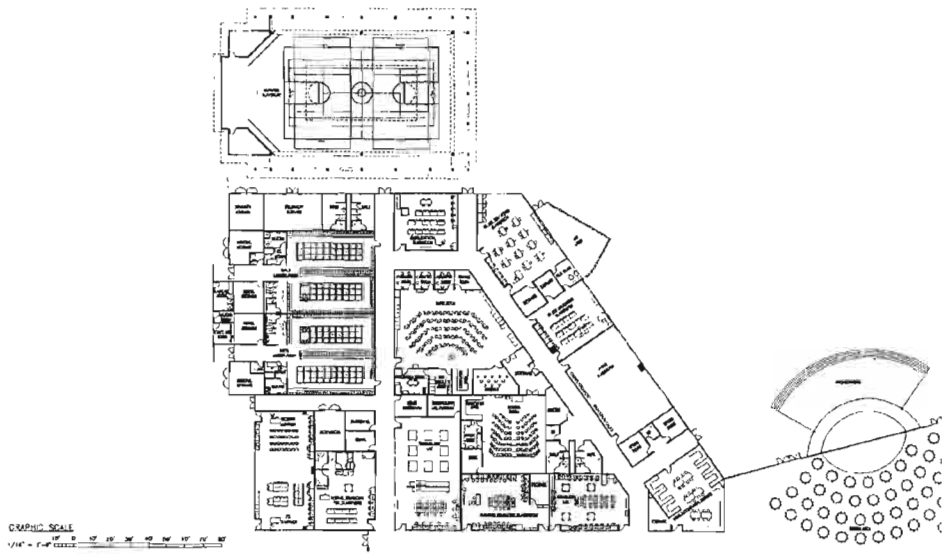


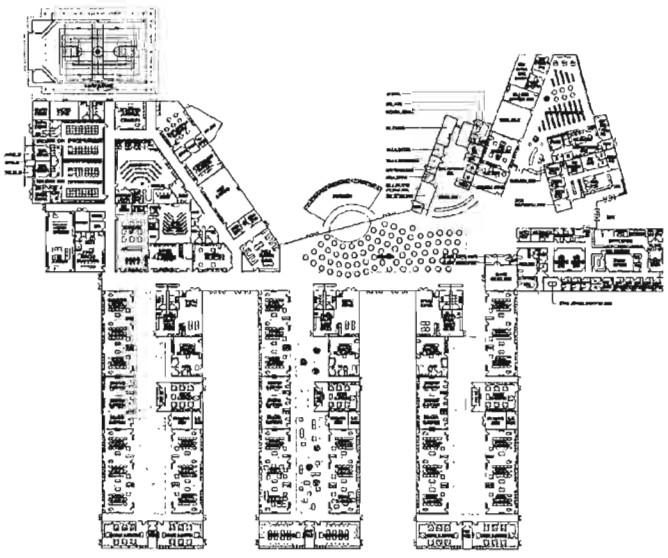
GRAPHIC SCALE

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

MAY 2005 - CHARETTE THREE



GRAPHIC SCALE

CONCEPT DEVELOPMENT

EWA MAKAI MIDDLE SCHOOL

OAHU HAWAII

MAY 2005 CHARETTE THREE

AGENCY CORRESPONDENCE

Mitsunaga & Associates, Inc
747 Amana Street Suite 216
Honolulu, Hawaii 96814
Ph (808) 946-7882
Fax. (808) 946-2563
E-Mail: mitsunaga003@hawaii.rr.com

June 17, 2005

Mr. Tim Hiu
Department of Planning & Permitting
Building Division
650 S. King St. 12th. Floor
Honolulu, Hawaii 96813

Subject: **Ewa Makai Middle School**

Dear Mr. Hiu:
Thank you very much for your review of our conceptual plans for the new Ewa Makai Middle School. We requested this review since this is a very innovative one building school. The Department of Education currently does not have a school of this type or magnitude, which is all under one roof. Per our meeting, the following were your preliminary review comments and suggestions on the plans that were presented.

1. The code that the building will be reviewed under will be the 2003 International Building Code since this code allows much more "leniency" in the design than the 1997 Uniform Building Code. You indicated that the 2003 code will be adopted soon by the City and County of Honolulu. Although not currently adopted, Architects may currently request that their plans be reviewed under this code.

2. The building is currently has about 193,000 s.f. under roof. You suggested that the Type of Construction that this will fall under will be a Type II –B, Unlimited. In effect, this means that this building may have unlimited area and be unprotected if certain conditions are met. These conditions would be under Section 507.8 which are:
   - The building is fully sprinklered and one story.
   - The building has the required number of exits out of the classrooms.

3. The building can be considered as be one occupancy which is an E occupancy. There will not be mixed occupancies since the 2003 code allows this building to be an educational building.

4. The Choral Room shows only one exit out and there will need to be two exits.

5. The electives wing will need a one hour exit corridor. Fire rated doors will need to be placed at the end of the corridors. These doors could be magnetic hold-open type.

6. Additional exits out from the Dance Classroom will be required.

7. The structural roof members at the Dining commons were placed at 25 ft. clear to allow the structural members to be un-protected per the 1997 UBC. You indicated that since this building will now be reviewed under the 2003 IBC, the entire building is un-protected and therefore, the 25 ft. limitation need not apply. The roof plate height can be dropped.

8. The classrooms at the Neighborhood commons are designed to open up to the common area with operable partitions. You indicated that this will be allowed and the commons will not be considered a one hour corridor and the operable partitions need not be fire rated. However, additional exits out from the classrooms to the outside gardens will need to be provided.

9. You noted that under the 2003 IBC, the diagonal distance required between exit doors is 1/3 the distance rather than the old ½ minimum distance under the 1997 code.

10. Fire sprinkling will be required under the tent structure and the tent structure needs to be made with fire retardant material.

As a final comment, you indicated that the design can proceed under this concept. A set of plans was left with you and you indicated that a copy of this letter will be placed in the project file as future reference for this project.

Finally, thank you very much for your time and assistance.

Sincerely.
Mitsunaga & Associates, Inc.

Steven D. Wong A.I.A.
xc: Mr. Nick Nichols, Facilities - DOE

STATEMENT OF PROBABLE COSTS

STATEMENT OF PROBABLE COST

Ewa Makai Middle School – The School of Tomorrow

The estimated construction cost for this entire school is approximately $64 million dollars. This translates to approximately $314 per SF.

CC ARTICLE 5
COST ESTIMATES - PLANNING AND DESIGN PHASES

PROJECT	EWA MAKAI MIDDLE SCHOOL		
	EWA, OAHU, HAWAII	DATE	27 JULY 2005
D O E Job No		SHEET	1 of 1
PRIME CONSULTANT	Mitsunaga & Associates, Inc	DESIGN STAGE:	
ESTIMATOR	Cost Engineering of Hawaii, Inc		PLANNING
For estimate, escalation assumed at	0.4167 % per month		
Construction period assumed at	730 working days		

SUMMARY OF CONSTRUCTION COST

A Primary Facility (list primary facility or facilities with cost)			$51,529,773
	Middle School	193,724 /gsf	$41,507,304
	Mechanical		$6,616,000
	Electrical		$3,406,469
B Supporting Facilities (list supporting facilities or facilities with cost)			$6,024,266
	Site Electrical		$185,000
	Civil		$4,381,100
	Covered Playcourt, Stage & Storage	11,598 /gsf	$1,444,021
	Landscaping		$014,145
C Other Cost (list other costs)			$5,845,404
	Escalation 10.00%		$5,845,404
	TOTAL ESTIMATED CONSTRUCTION COST		$64,200,443

EWA MAKAI MIDDLE SCHOOL EDUCATIONAL PLAN

DRAFT March 11, 2005

'Ewa Makai Middle School

Educational Plan

This document is to be used for guidance during the design charette for the new school. It was developed with input from:

Lydell Acosta	Anne Greseth-Kim	Chantal Moncrease
Naomi Aimoto	Tosh Hosoda	Jim Moylan
Tom Berg	Randy Ibarra	Debra Nakamoto
Christopher Callisto	Rie Kortama	Nick Nichols
Ari Carecoi	Brenda Lowrey	Annette Nishikawa
Mario Carrera	Debbie Lueng	John Okinaka
Una Chan	Eileen Lynn	Faye Taira
Curtis Chang	Tesha Malama	Sharene Tam
Anthony Chun	Tish Mercado	Marvie Yonamine
Guy Figueroa	Jenna Minara	

'Ewa Makai Middle School

Vision:

'Ewa Makai Middle School
where learners are inspired to explore

Mission:

Together we will:

1. Cultivate a safe, nurturing and rich environment through interactive partnerships and symbiotic relationships
2. Engage in a dynamic, responsive curriculum to produce life-long learners
3. Unify a sense of community pride by fostering partnerships throughout the community
4. Be receptive to technological advancements

while encouraging the growth of positive, productive citizens.

General Instructional Needs

Middle school education needs to address the changing needs of adolescents as they transition from an elementary school setting on to high school. In addition, our ever-changing, global, knowledge-based economy demands that schools equip our students of today and tomorrow with the skills to survive and creatively to thrive in such a world. The diverse needs of all students must also be considered along with the benefits derived from positive mentoring relationships with adults on campus. For Eva Marie Middle School, those objectives will be met through the establishment of small learning communities within the larger middle school environment. The design of the school shall support learning within grade levels and provide the flexibility to cluster teams within grade levels and / or across grade levels.

Curriculum will be delivered through a variety of instructional strategies and group settings. A fundamental aspect of the middle school program will be to provide relevant learning experiences to address the state standards and to explore various curriculums through hands-on, activity-based experiences. Groupings may vary from independent learning, individual classes, teaming, up to large group activities. The school facilities shall be flexible and designed to support the exploratory nature of the curriculum.

Flexibility can be provided in many ways: through the thoughtful clustering of instructional spaces, appropriate use of operable walls, the inclusion of break-out rooms, and consideration for the functions needed to support a quality, standards-based education. The clustering of instructional spaces should recognize the teaming opportunities within the four core classes (Language Arts, Math, Science, and Social Studies) and therefore provide settings to accommodate a variety of group sizes. The ability to open up walls between spaces through the use of operable walls is a benefit that should be considered along with all the functions of the individual spaces. Break-out rooms can provide small meeting areas, opportunities for one-on-one tutoring and additional instructional spaces when they are appropriately located with good supervision capabilities.

Provisions to support a multi-track schedule should be addressed in the design of the school, including teacher planning areas and storage spaces.

Spaces to address the multiple disciplines of middle school students (kinesthetic, inter-personal, intra-personal, visual, auditory etc.) should be considered within both the general instructional settings and the exploratory or specialty curriculum areas.

Specialty Curriculum Focus Areas

Exploratory curriculum is an important aspect of middle school education and an integral part of the vision for the school. It provides opportunities for grouping students into different teams or learning clusters. The design of the school shall support the three specialty focus areas of environmental studies, performing arts, and health and fitness. Whether specific spaces are designated for these specialty areas, or through the adaptable use of general classrooms, science laboratories and multi-purpose spaces, the school shall reflect the value placed on these themes. The school's mission can support these themes through cultivating interactive partnerships and being receptive to technological advances.

Staff development and opportunities for teachers to plan together will be encouraged. Dedicated spaces for these functions are important to support the staff in their mission of providing a quality, challenging, standards-based education for the students and to allow for monitoring cooperative behaviors for the students. Coordination between core teachers and specialty focus teachers will be encouraged to support multi-disciplinary learning opportunities.

Special Education Needs

The success of all learners is an important goal of the school. Inclusion will be the standard to integrate special education students into the general learner population. To reach this goal a variety of spaces to support the needs of special education students within the team setting will be required. Fully self-contained special education classrooms shall be included in the core classroom clusters throughout the campus. Resource rooms should also be dispersed throughout the campus. The adjacencies and locations of these spaces to support facilities and ease of access to drop off areas should be given detailed consideration.

Student Center

The advisor/advisee relationship is integral to the middle school philosophy. along with providing opportunities for mentoring relationships on campus support the idea of creating a student center within the campus. This center would physically group the counselors, student activities coordinator/center support services for special education services, the PCNC, health center, and safety officer. While the adults housed here would interact with the administration, special service providers and parents, the main focus would be on the students and supporting the all around needs of every child and family.

Student Activities

While the physical location of the student activities coordinator's office and the adjacent center would be located in a Student Center facility, the campus itself should be designed in support of the vision – a place where learners are inspired to explore – and mission including interactive partnerships, life-long learning, and unifying community pride. Designing for the vision and mission can translate into a welcoming and effective environment for student activities throughout the campus.

School / Community Connections

This school has the unique challenge and opportunity to bring the community together, and the physical design should reflect this. There should be true sense of identity, a sense of belonging, and a connectedness to the community. A major design impact in helping the community to feel welcome and willing to partner with the school will be the way traffic flow is planned out and if enough parking is provided. Overflow parking for community events should also be considered. A directory or "you are here" type of sign system may be appropriate.

Administration

An important balance for middle school administration is to be able to monitor the campus and maintain control without being seen negatively as the "boss". While it is important to maintain control of the entry to the campus, the administrators should also be connected to the interior of the campus. Strong connections exist between the administration staff and the counselors, health center, safety officer, PCNC and student activities coordinator. Within the admin area conference spaces should be provided that are easily accessible while maintaining a high level of privacy. Privacy throughout administrative spaces is also a necessity.

Library / Resource Center

The design of the library should reflect the high value placed on literacy by the school and community. The location of the library should take into consideration the possible after hours use along with a desired ease in returning books after hours. Whether it is learning through traditional books and resources, or utilizing technology to learn, the library is a significant component of a middle school because of its endless opportunities for exploration.

Dining / Cafeteria

Flexibility in the cafeteria is important in order to accommodate the dining needs of the students while allowing for school assemblies and other events. The inclusion of a permanent "stage" is required along with secured storage spaces that could be used by the school and / or by community groups or others who might rent the cafeteria. The size of the stage should be maximized, within building code limits, given the performing arts focus of the school.

In order to promote and support the healthy eating habits of students, the idea of remote kiosks or other spaces on campus where cafeteria food could be sold is desired. These remote outdoor areas would provide comfortable gathering spaces for the students and

of grab-and-go to congregating in the cafeteria. If vending machines are provided on the campus they need to provide healthy choices and be in a secure location.

Outdoor Areas

The design of the school needs to recognize that while middle school students might say that school is their life – it may not be the academics that is foremost in their minds but the socializing and peer relationships that they associate with school. Therefore the school's vision and mission need to be reflected in the design of the outdoor areas as well as in the building design.

The need for shade is paramount given the climate of the campus site. The inclusion of a covered playcourt with a presentation area is a necessity that can provide an area large enough for school-wide assemblies or meet the dual needs of health and fitness and conference units.

The spaces between buildings shall be given as much thought as the more formal outdoor areas such as a main assembly green, campus entries, parent drop-off zones, bus waiting areas and outdoor gathering spaces of various sizes. The design of the school needs to support learning in all settings. Tempering the sun's heat and providing shaded areas are necessary for the comfortable utilization of outdoor areas.

The landscape design for the school needs to take into consideration many factors. It should be indigenous to the area (require low water levels), be easy to maintain, provide groundcoverings that do not invite critters, and provide shade.

Safety and Security

Providing for the safety and security of students and staff includes not only the building design but the efficient circulation and separation of vehicular and pedestrian traffic. The campus pedestrian entries should be welcoming and direct while still providing clear traffic flow for parent drop-offs, bus drop-offs, staff vehicles and service vehicles. It is envisioned that the students will arrive at the school on bicycles and as pedestrians

from various directions, so multiple entrances (with appropriate facilities for bicycle parking) shall be provided, along with the means to secure these entrances after hours.

The facilities must be designed in a manner to resist vandalism and theft and therefore it is the challenge of the designers to balance the visual implications of security with the integral relationship desired with the community.

Other Considerations

The thermal comfort of students and staff shall be an important consideration in the design of the school. An energy efficient system of air conditioning should be provided along with accommodations for the effective natural ventilation of specific areas.

The electrical and utility support systems should be designed with a view toward the future. Possible security alarms, security systems and future technology needs should be anticipated in the layout and sizing of the original systems.

APPENDIX D

"LEED for Schools"
Certification Rating Checklist
And
Building Floor Plans

LEED NC v2.2 for Ewa Makai Middle School

Certified: 29-35 points Silver: 36-42 points Gold: 43-56 points Platinum: 57-77 points Possible Points 77

	Total points targeted		**38**	15			
			Yes	**Maybe**	**Assigned to**	**Remarks**	**Submittals required**
Sustainable Sites	**Possible Points**	**16**	**9**	**4**			
Prerequisite 1	**Erosion & Sedimentation Control**				Civil		Erosion control plan per EPA's guidelines
Prerequisite 2	**Environmental Contamination Free Site**				Civil		Environmental assessment report
Credit 1	**Site Selection**	**1**	1		Civil	Verify site is not a prime farmland or site's elevation is elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA	
Credit 2	**Development Density & Communication Connectivity**	**1**		1			
Credit 3	**Brownfield Redevelopment**	**1**					
Credit 4.1	**Alternative Transportation**, Public Transportation Access	**1**	1		DOE/Architect	Review Ewa Makai's public transportation plan	Site plan showing bus drop off
Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	**1**	1		Architect	5% of occupant load	Site plan showing bicycle racks and shower facilities with calculations
Credit 4.3	**Alternative Transportation**, Low Emitting/Fuel Efficient Vehicles	**1**		1	DOE/Architect	Verify if school part of 'Cleaner Cities' organization	
Credit 4.4	**Alternative Transportation**, Parking Capacity	**1**	1		DOE/Architect	does not exceed zoning requirements, car/van pooling for 5% of occupant load	documentation of car pooling
Credit 5.1	**Site Development**, Portect or Restore Habitat	**1**					
Credit 5.2	**Site Development**, Maximize Open Space	**1**		1	Architect	building footprint + driveways + parking and playcourts >local zoning for open space by 25%	zoning documentation, site plan
Credit 6.1	**Stormwater Design**, Quantity Control	**1**	1				Stormwater management plan
Credit 6.2	**Stormwater Design**, Quality Control	**1**	1		Civil	compliance/exceeds EPA's best management practice for removal of Total Suspended Soils (TSS) and Total Phosphorous (TP)	
Credit 7.1	**Heat Island Effect**, Non-Roof	**1**		1	Architect/Landscape	Shading with trees within 5 years, high reflective materials for sidewalks etc., verify wih DOE	
Credit 7.2	**Heat Island** Effect, Roof	**1**	1		Architect	Solar reflectance Index for steep roofs >29, for low slope roofs>78	
Credit 8	**Light Pollution Reduction**	**1**	1		Electrical	IESNA best practices (shielding of exterior luminaire), no light spillover from interior	photometric plan required
	Future Expansion Within Master Plan	**1**					
	Joint Use of Facilities	**1**	1		DOE/Architect		Agreement between DOE and adjoining neighborhood, site plan
Water Efficiency		**6**	**3**	**3**			
Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	**1**	1		Landscape		

Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	**1**	1		Landscape/Architect	rain-water harvesting & existing non-potable waterline (Campbell Estate)	
Credit 2	**Innovative Wastewater Technologies**	**1**		1	Plumbing	rain-water harvesting, low flow faucets, waterless urinals, misc. equipment using less water	
Credit 3.1	**Water Use Reduction**, 20% Reduction	**1**	1		Plumbing	low flow faucets, low flow fixtures, wash-fountains (http://www.bradleycorp.com/prodinfo/fixtures/founts/index.htm)	Low-flow lavatory -1.8gpf, low flow kitchen sink-1.8gpf,low flow shower-1.8gpf,hand wash fountain-0.5gpf, low flow water closet - 1.1 gpf
Credit 3.2	**Water Use Reduction**, 30% Reduction	**1**		1	Plumbing		
Credit 4	**Process Water Use Reduction**, 20% Reduction	**1**		1	Kitchen	dishwasher - 1gallon/rack, Food Steamers - 2 gallons/hour or Boilerless steamers only Pre-Rinse Spray Valves -1.4 gallons per minute Kitchen Sinks Faucet6- 2.2 gallons/minute	
Energy & Atmosphere	Possible Points	**17**	**4**	**6**			
Prereq 1	**Fundamental Building Systems Commisioning**				Commissioning agent	between 50c/sft - $1/sft	between $100,000 - $200,000
Prereq 2	**Minimum Energy Performance**				Consultant	Mechanical to provide Carrier energy analysis info.	
Prereq 3	**Fundamental Refrigerant Management**				Mechanical		
Credit 1.1	**Optimize Energy Performance**	**10**	4	2	Consultant	Utility charge-.30c/kWh, hours of operation, electrical usage, equipment info.	hours of operation, electrical usage, equipment info. (ASHRAE base case-1.67W/sft, design to 1.2W/sft)
Credit 2.1	**On-site Renewable Energy**	**3**		1	Architect		double glazing w/ low-e
Credit 3	**Enhanced Commissioning**	**1**		1	Architect	Verify	
Credit 4	**Enhanced Refrigerant Management**	**1**		1	Mechanical		Refrigerant 134-A v/s Refrigerant 123
Credit 5	**Measurement & Verification**	**1**		1	Architect	Verify	
Credit 6	**Green Power**	**1**					
Materials & Resources	Possible Points	**13**	**5**	**1**			
Prereq 1	**Storage & Collection of Recyclables**				Architect	Verify with school custodial staff	Recycling plan for facility
Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	**1**					
Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	**1**					
Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	**1**					
Credit 2.1	**Construction Waste Management**, Divert 50%	**1**	1		Contractor	Specifications required (metal, masonry, gyp.bd)	actual tickets from recycling companies
Credit 2.2	**Construction Waste Management**, Divert 75%	**1**					
Credit 3.1	**Resource Reuse**, Specify 5%	**1**				Verify if any existing furniture/equipment will be used	
Credit 3.2	**Resource Reuse**, Specify 10%	**1**					
Credit 4.1	**Recycled Content**, Specify 10% PC + PI	**1**	1		Architect/Interiors	fly-ash concrete, linoleum, carpet, ceiling tiles	
Credit 4.2	**Recycled Content**, Specify 20% PC + PI	**1**		1	Architect/Interiors		

Credit 5.1	**Regional Materials**, 20% Manufactured Locally	**1**	1		Contractor	Specifications required	
Credit 5.2	**Regional Materials**, of 20% Above, 50% Harvested Locally	**1**					
Credit 6	**Rapidly Renewable Materials**	**1**	1		Contractor	Specifications required	
Credit 7	**Certified Wood**	**1**	1		Contractor	Specifications required	
Indoor Environmental Quality	Possible Points	**19**	**14**	**1**			
Prereq 1	**Minimum IAQ Performance**				Architect		
Prereq 2	**Environmental Tobacco Smoke (ETS) Control**				Architect		copy of approved bill, letter from school
Prereq 3	**Minimum Acoustical Performance**				Architect		45 Dba minimum
Credit 1	**Outdoor Air Delivery Monitoring**	**1**	1		Mechanical	specify CO2 sensors	
Credit 2	**Increased Ventilation**	**1**	1		Mechanical		
Credit 3.1	**Construction IAQ Management Plan**, During Construction	**1**	1		Contractor	MERV 8 filters during construction, specifications required	Product data cut-sheets and photographs
Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	**1**	1		Contractor	MERV 13 filters before occupancy, specifications required	Product data cut-sheets and photographs
Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	**1**	1		Interiors	Specifications required	Product data cut-sheets required
Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	**1**	1		Interiors	Specifications required	Product data cut-sheets required
Credit 4.3	**Low-Emitting Materials**, Flooring Systems	**1**	1		Interiors	Specifications required	Product data cut-sheets required
Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	**1**	1		Interiors	Specifications required	Product data cut-sheets required
Credit 5	**Indoor Chemical & Pollutant Source Control**	**1**	1		Interiors	walk-off mats, exhaust system	
Credit 6.1	**Lighting System Design & Controllability**	**1**	1		Electrical	manual over-ride	
Credit 6.2	**Thermal Comfort Controllability**	**1**	1		Mechanical		
Credit 7.1	**Indoor Environmental Comfort**, Design	**1**	1		Mechanical		ASHRAE 55-2004 compliance documentation
Credit 7.2	**Indoor Environmental Comfort**, Verification	**1**					
Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	**1**	1		Architect		Light transmittance of at least 85%
Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	**1**		1	Architect		
	Enhanced Acoustical Performance	**2**					
	Mold Prevention	**1**					
	Low Impact Cleaning & Maintenance Equipment Policy	**1**	1		DOE/Architect	Verify w/ DOE and school custodial staff (Green Seal products)	Product data cut-sheets
Innovation & Design	Possible Points	6	**3**	**0**			
Credit 1.1	**Innovation in Design**	**4**	1		Architect	Water harvesting	
Credit 2	**LEED Accredited Professional**	**1**	1		Architect		
Credit 3	**The School As a Teaching Tool**	**1**	1		DOE/Architect	Develop awareness program and/or integrate into school curriculum	

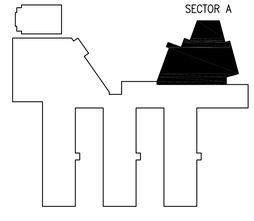
Certified: 29-35 points
Silver: 36-42 points **38** **14**
Gold: 43-56 points
Platinum: 57-77 points

Ideas for exploration

1 Water harvesting - multiple collection points, localized landscape distribution v/s central OH/underground tank water to be used for irrigation/flushing — Coordinate w/ Civil, landscape and plumbing
2

GENERAL NOTES :

1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8.__



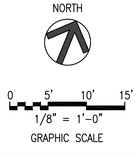
KEY PLAN
NOT TO SCALE

A
A-4.1

SECTOR "A" FLOOR PLAN - ADMINISTRATION/LIBRARY/DINING/KITCHEN

SCALE : 1/8" = 1'-0"

ELEVATION KEY



1/8" = 1'-0"
GRAPHIC SCALE

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EXPIRATION DATE:

MITSUNAGA & ASSOCIATES, INC.

FACILITIES DEVELOPMENT BRANCH
DEPARTMENT OF EDUCATION
STATE OF HAWAII

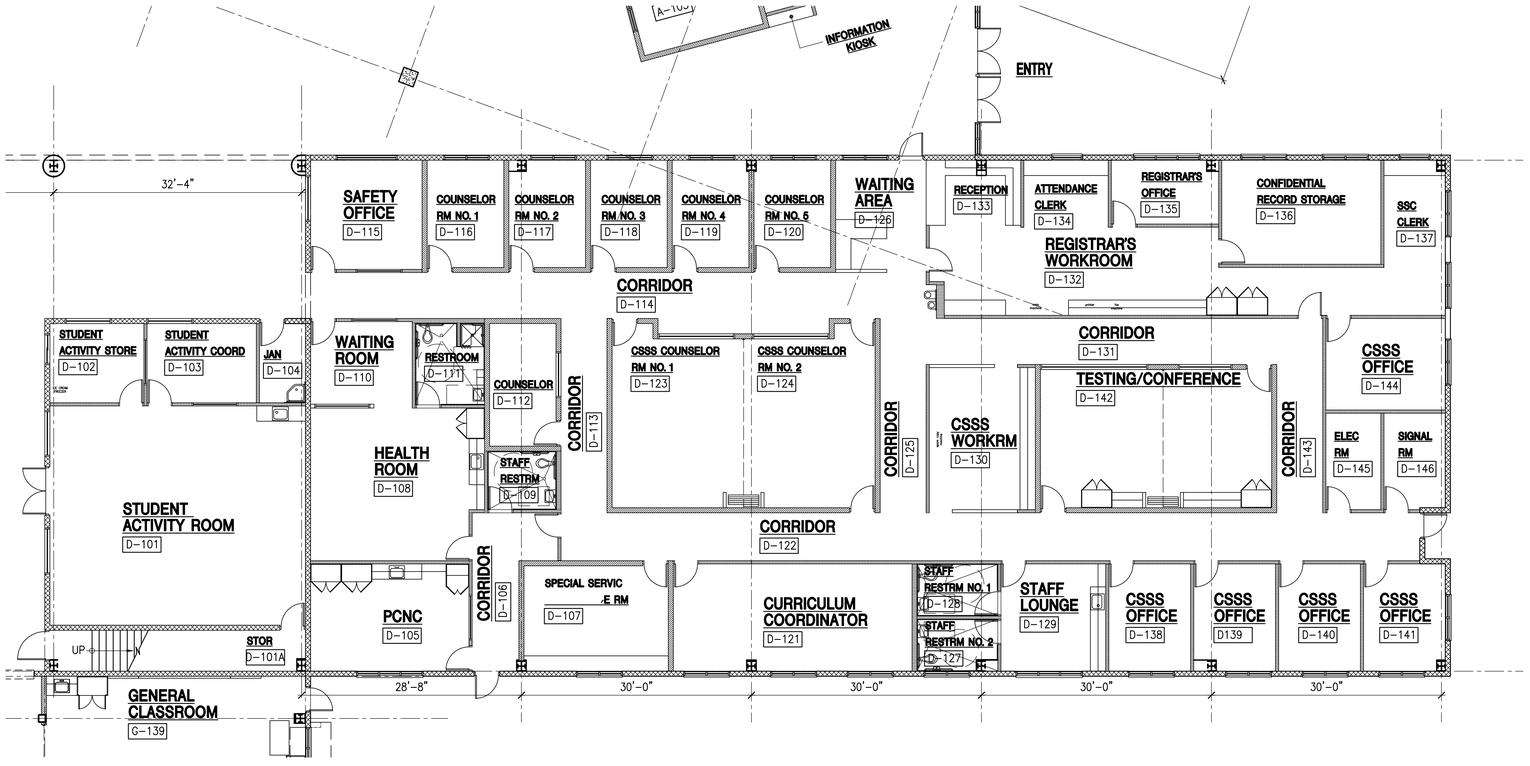
EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTOR "A" FLOOR PLAN
ADMINISTRATION/LIBRARY/DINING/KITCHEN

MITSUNAGA & ASSOCIATES, INC.

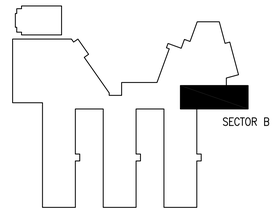
DESIGNED BY: SW	CHECKED BY: SW		DRAWING NO. A-4.1
DRAWN BY: CAD	APPROVED BY: SW	DATE NOVEMBER 1, 2007	SHEET OF ___ SHTS
SCALE: AS SHOWN			

FILE _____ DRAWER _____ FOLDER _____



GENERAL NOTES :

1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8._

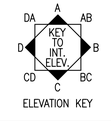


KEY PLAN
NOT TO SCALE

A
A-4.2

SECTOR "B" FLOOR PLAN - STUDENT SERVICES (COUNSELING)

SCALE : 1/8" = 1'-0"



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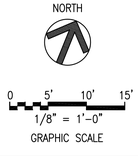

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REVISION NO.	SYM.	DESCRIPTION	SHT OF	DATE

FACILITIES DEVELOPMENT BRANCH
DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTOR "B" FLOOR PLAN
STUDENT SERVICES (COUNSELING)

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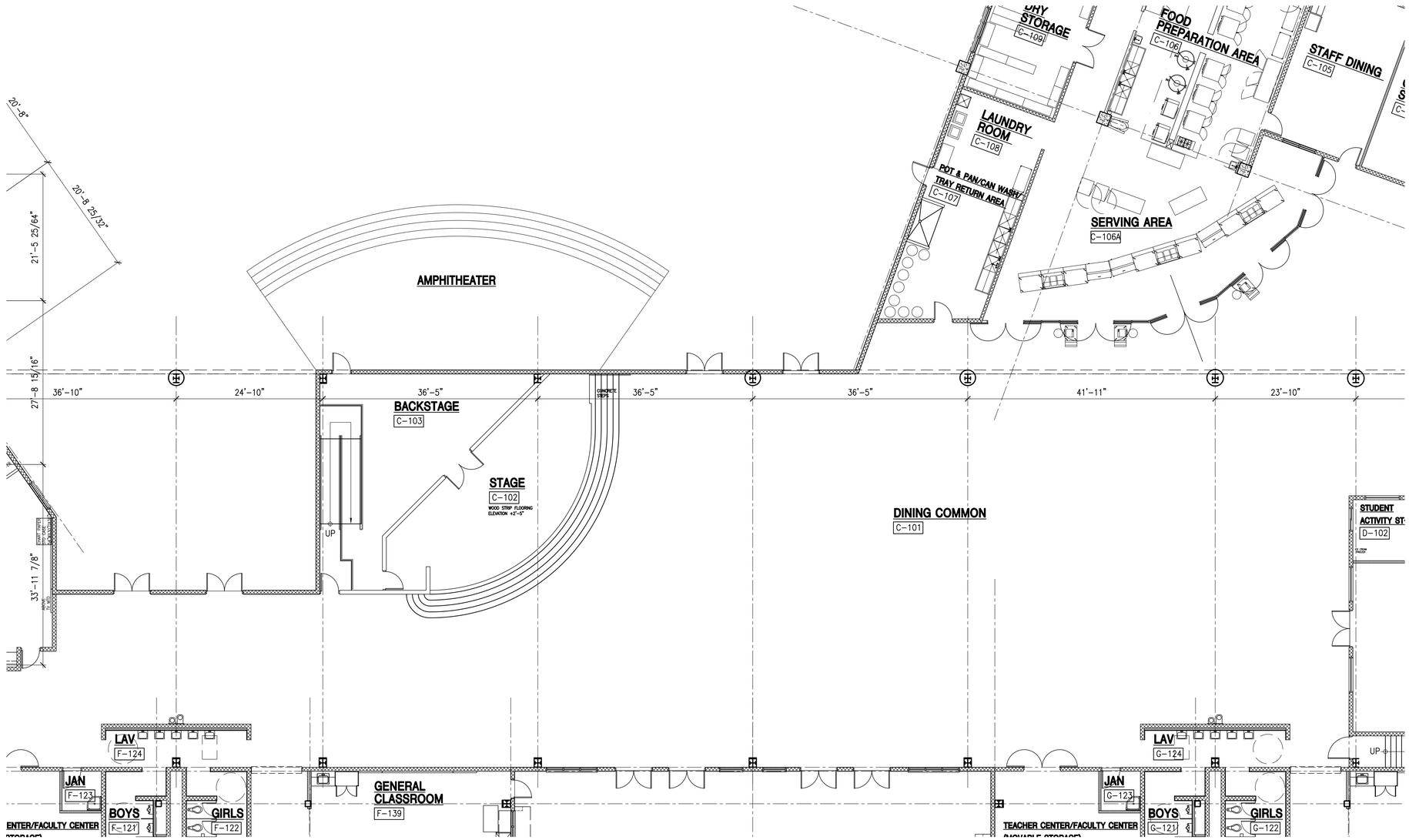

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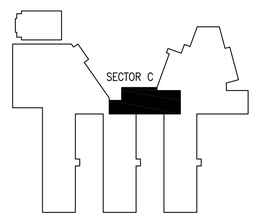
1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8._



KEY PLAN
NOT TO SCALE

A
A-4.3

SECTOR "C" FLOOR PLAN - DINING/COMMONS

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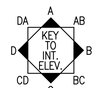

ELEVATION KEY

NORTH

0 5' 10' 15'

1/8" = 1'-0"

GRAPHIC SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT OF	DATE

FACILITIES DEVELOPMENT BRANCH
DEPARTMENT OF EDUCATION
STATE OF HAWAII

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DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTOR "C" FLOOR PLAN
DINING/COMMONS

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SCALE: AS SHOWN		SHEET OF ___ SHTS

FILE _____ DRAWER _____ FOLDER _____

EQUIPMENT STORAGE H-134
FSC H-177
TOILET 2 H-176
SHOWER H-175
TOILET 2 H-174
ART EDUCATION CLASSROOM 1 H-173
ART LANAI
PRACTICE RM NO. 1 H-157
PRACTICE RM NO. 2 H-158
PRACTICE RM NO. 3 H-159
LOCKER ROOM
BAND ROOM H-156
STORAGE NO. 1 H-170
STORAGE NO. 2 H-171
DUCATION CLASSROOM 2 H-169
P.E. OFFICE H-128
JAN H-126
RESTRM H-127
UNISEX H-125
P.E. STORAGE H-124
CORRIDOR H-135
ENSEMBLE H-152
INSTR REPAIR & STORAGE H-153
BAND OFFICE/ LIBRARY & STOR H-154
VESTIBULE H-155
CORRIDOR H-160
ACADEMIC H-168
ROOM FITNESS
MECHANICAL H-139
SIGNAL H-140
COMPUTER AREA H-146
CHORAL ROOM H-147
JAN H-150
BOYS H-149
DANCE CLASSROOM H-167
GREEN ROOM H-166
RR H-165
GREEN ROOM H-164
CORRIDOR H-163
STORAGE H-162
ELECTRICAL H-137
TECHNOLOGY LAB STORAGE H-138
OFFICE/ LIBRARY H-145
GIRLS H-148
RR H-151
TECHNOLOGY LABORATORY H-136
ROBE H-144
OFFICE H-142
BUSINESS EDUCATION CLASSROOM H-141
COMPUTERLAB H-143
FAMILY CONSUMER SCIENCE H-161
CORRIDOR

30'-4"
33'-4"
32'-8"
26'-0"
20'-8"
20'-8 25/32"
4'-0"
38'-1 61/64"
12'-4"
38'-0"
30'-2 3/64"
34'-5 11/32"
27'-11 1/64"
37'-11 53/64"
21'-5 25/64"
27'-8 15/16"
36'-10"
33'-11 7/8"

GENERAL NOTES :

1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8._

SECTOR D

KEY PLAN
NOT TO SCALE

A
A-4.4

SECTOR "D" FLOOR PLAN - ELECTIVES

SCALE : 1/8" = 1'-0"

ELEVATION KEY

NORTH

0 5' 10' 15'
1/8" = 1'-0"
GRAPHIC SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT OF	DATE

FACILITIES DEVELOPMENT BRANCH
DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTOR "D" FLOOR PLAN
ELECTIVES

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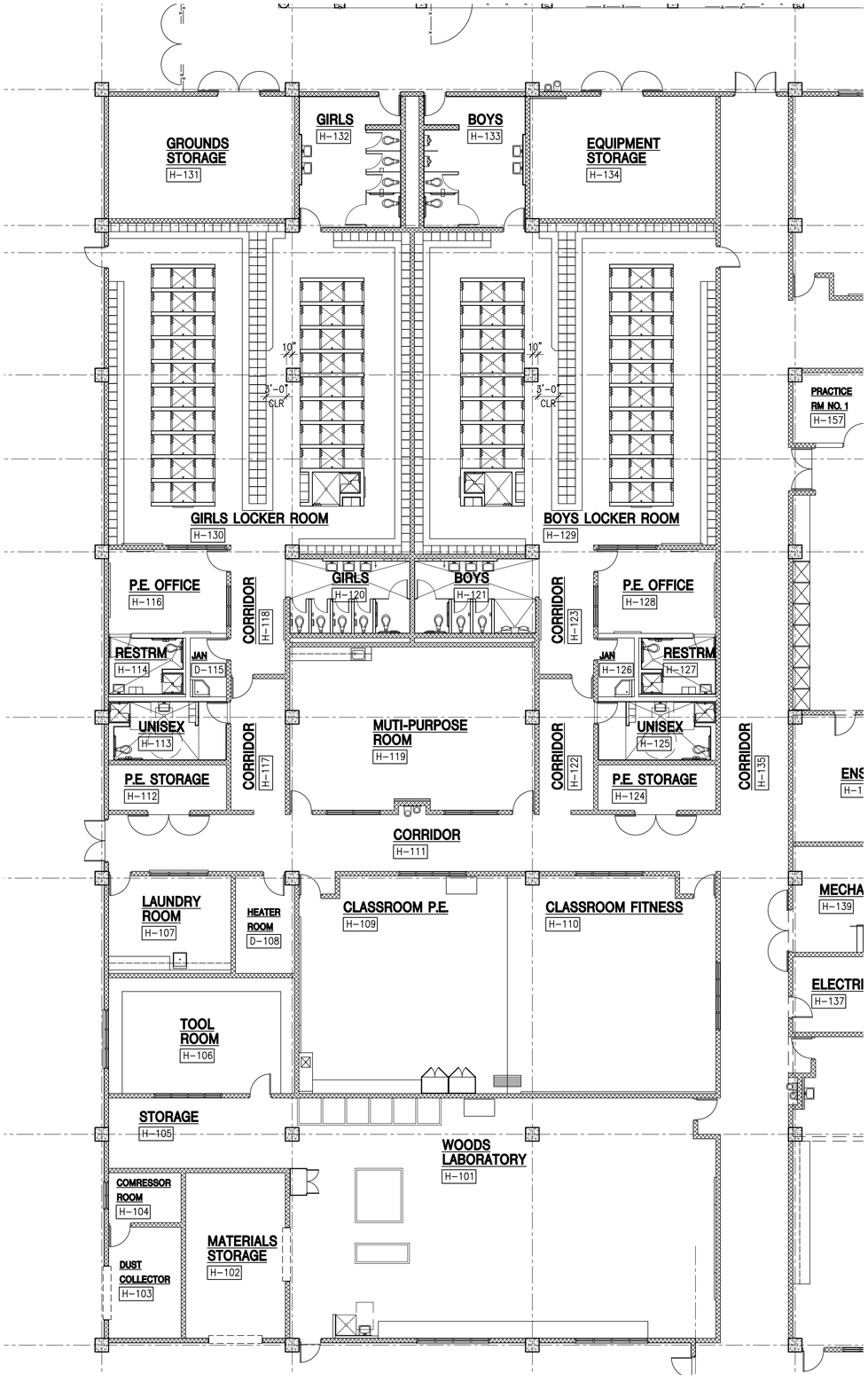


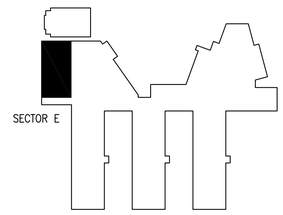
A
A-4.5

SECTOR "E" FLOOR PLAN - ELECTIVES

SCALE : 1/8" = 1'-0"

GENERAL NOTES :

1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8._



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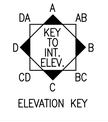

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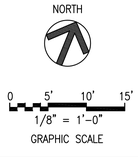

GRAPHIC SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT ___ OF ___	DATE

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DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTOR "E" FLOOR PLAN
ELECTIVES

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DRAWN BY: CAD	APPROVED BY: SW	DATE: NOVEMBER 1, 2007
SCALE: AS SHOWN		SHEET OF ___ SHTS

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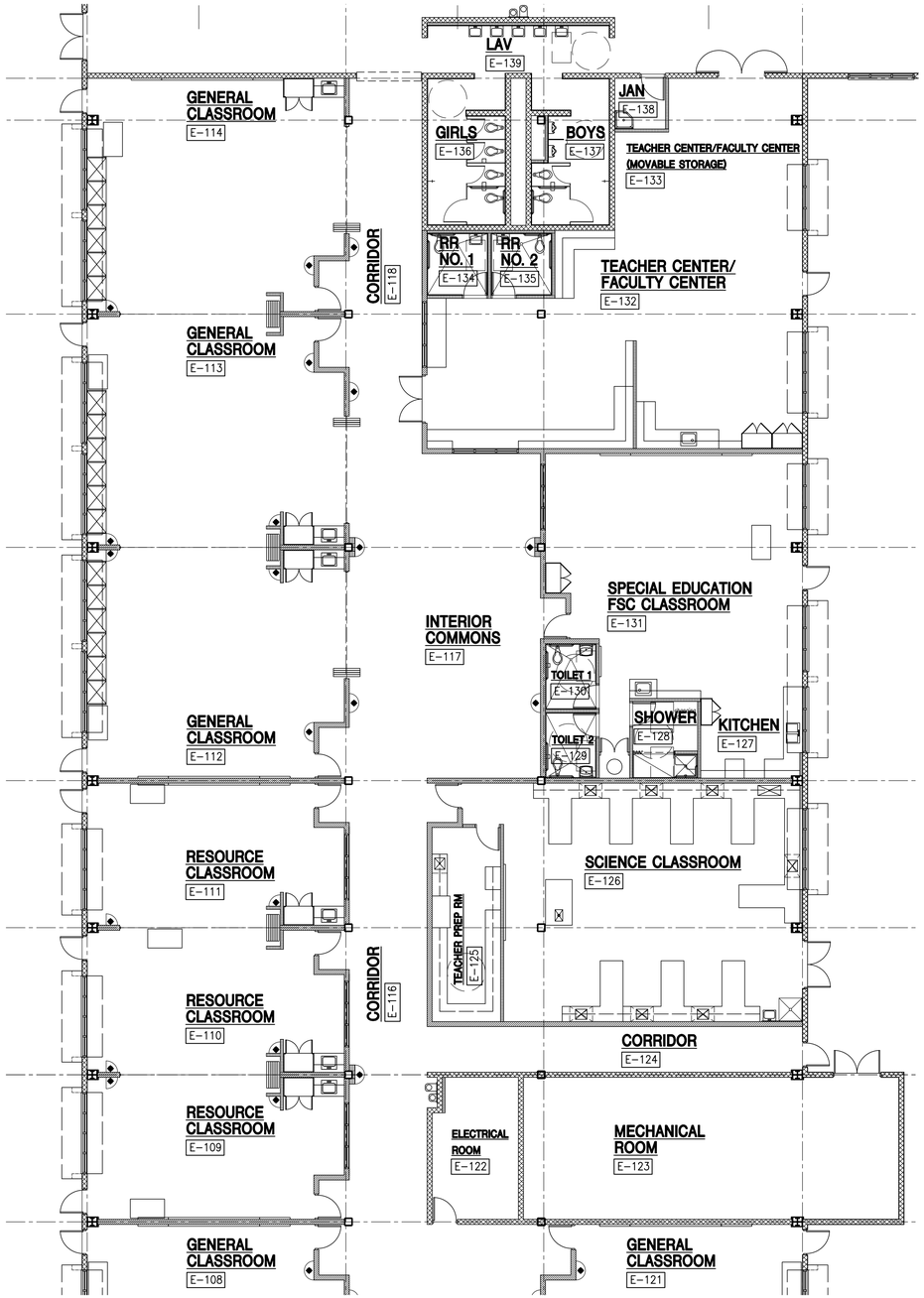
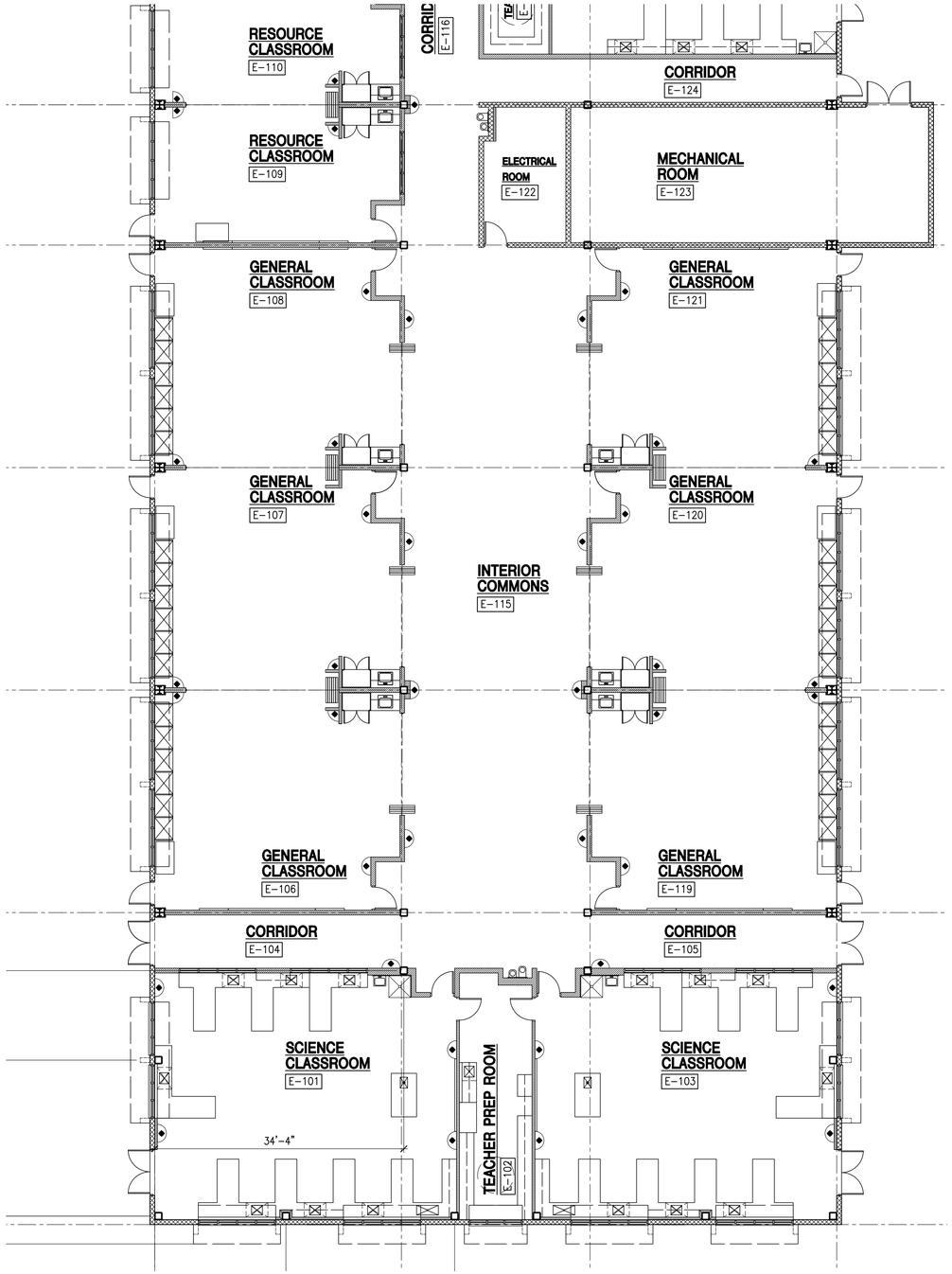


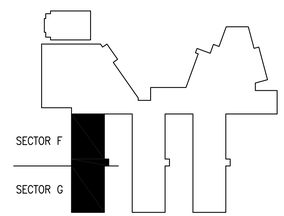
SECTOR "F" - NEIGHBORHOOD 1



SECTOR "G" - NEIGHBORHOOD 1

GENERAL NOTES :

1) FOR INTERIOR ELEVATIONS SEE SHEETS A-8.1 THRU A-8._

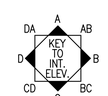


KEY PLAN
NOT TO SCALE

A
A-4.6

SECTORS "F" & "G" FLOOR PLANS - NEIGHBORHOOD 1

SCALE : 1/8" = 1'-0"



ELEVATION KEY

NORTH

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1/8" = 1'-0"
GRAPHIC SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT OF	DATE

FACILITIES DEVELOPMENT BRANCH
DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTORS "F" & "G" FLOOR PLANS
NEIGHBORHOOD 1

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DESIGNED BY:	CHECKED BY:		DRAWING NO.
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SCALE: AS SHOWN			

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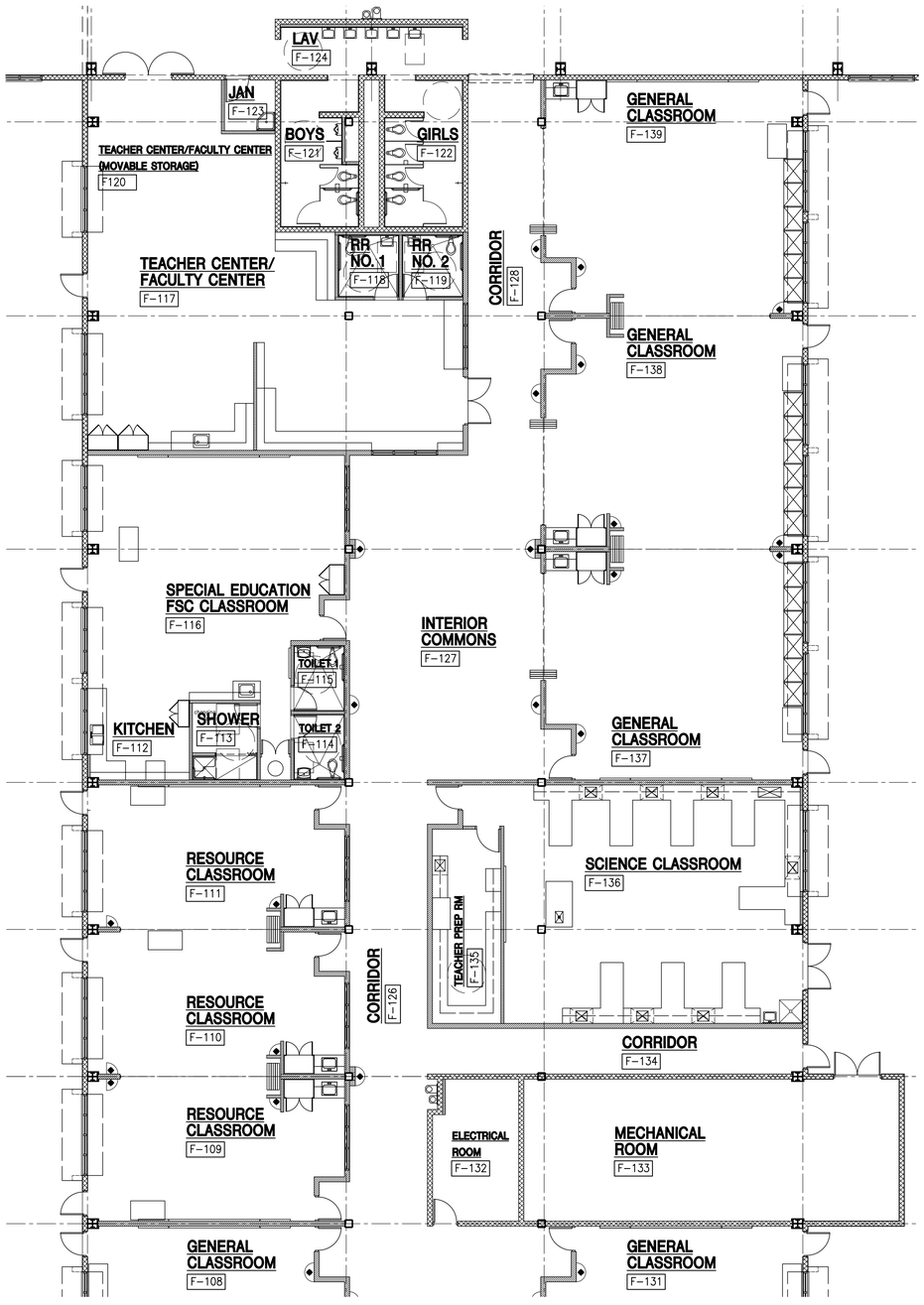

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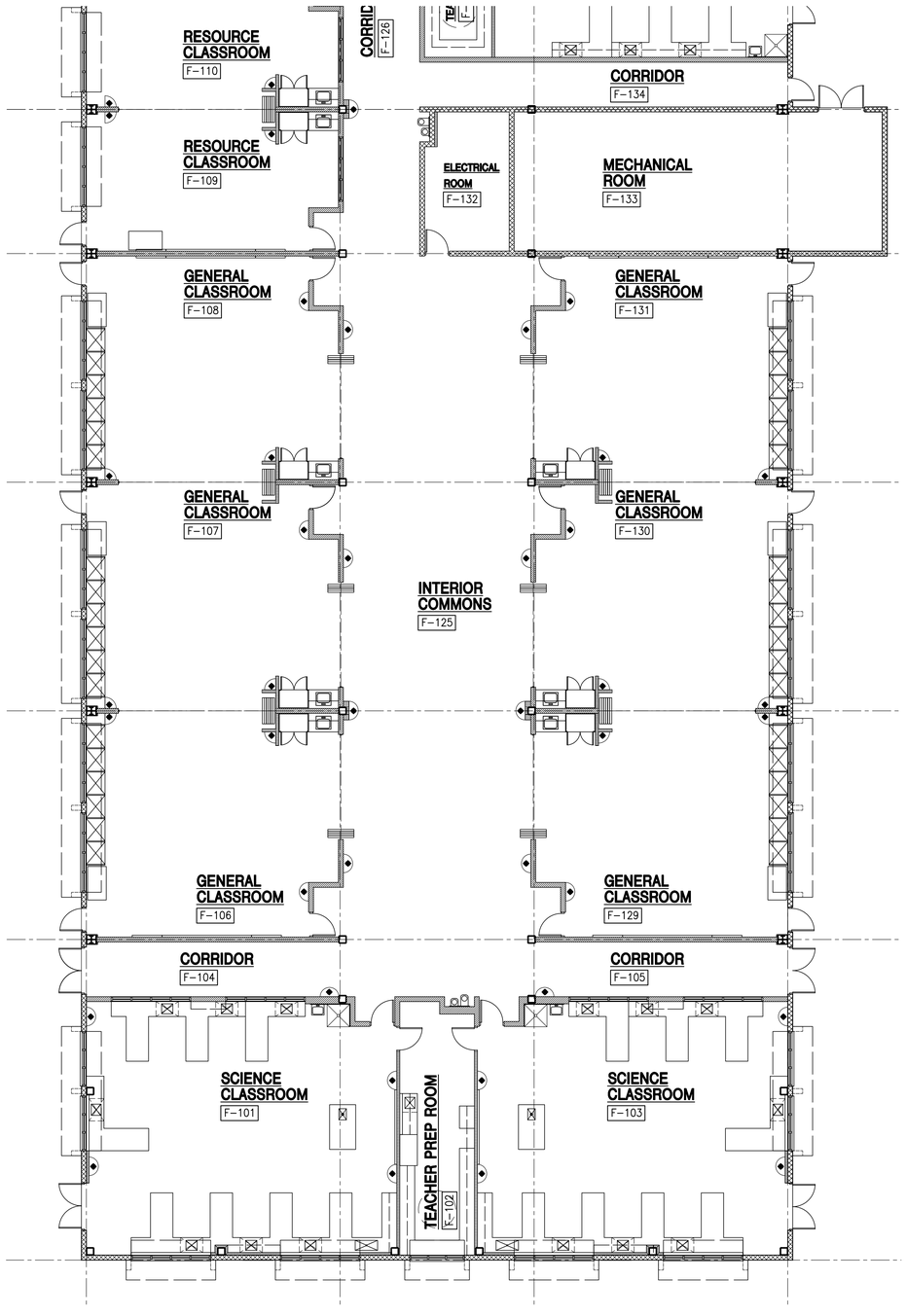

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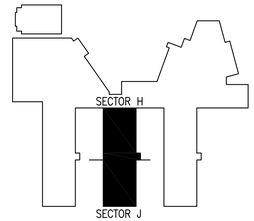

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A-4.7

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SCALE : 1/8" = 1'-0"

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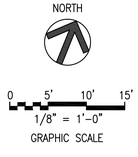

GRAPHIC SCALE

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DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTORS "H" & "J" FLOOR PLANS
NEIGHBORHOOD 2

MITSUNAGA & ASSOCIATES, INC.		DRAWING NO. A-4.7
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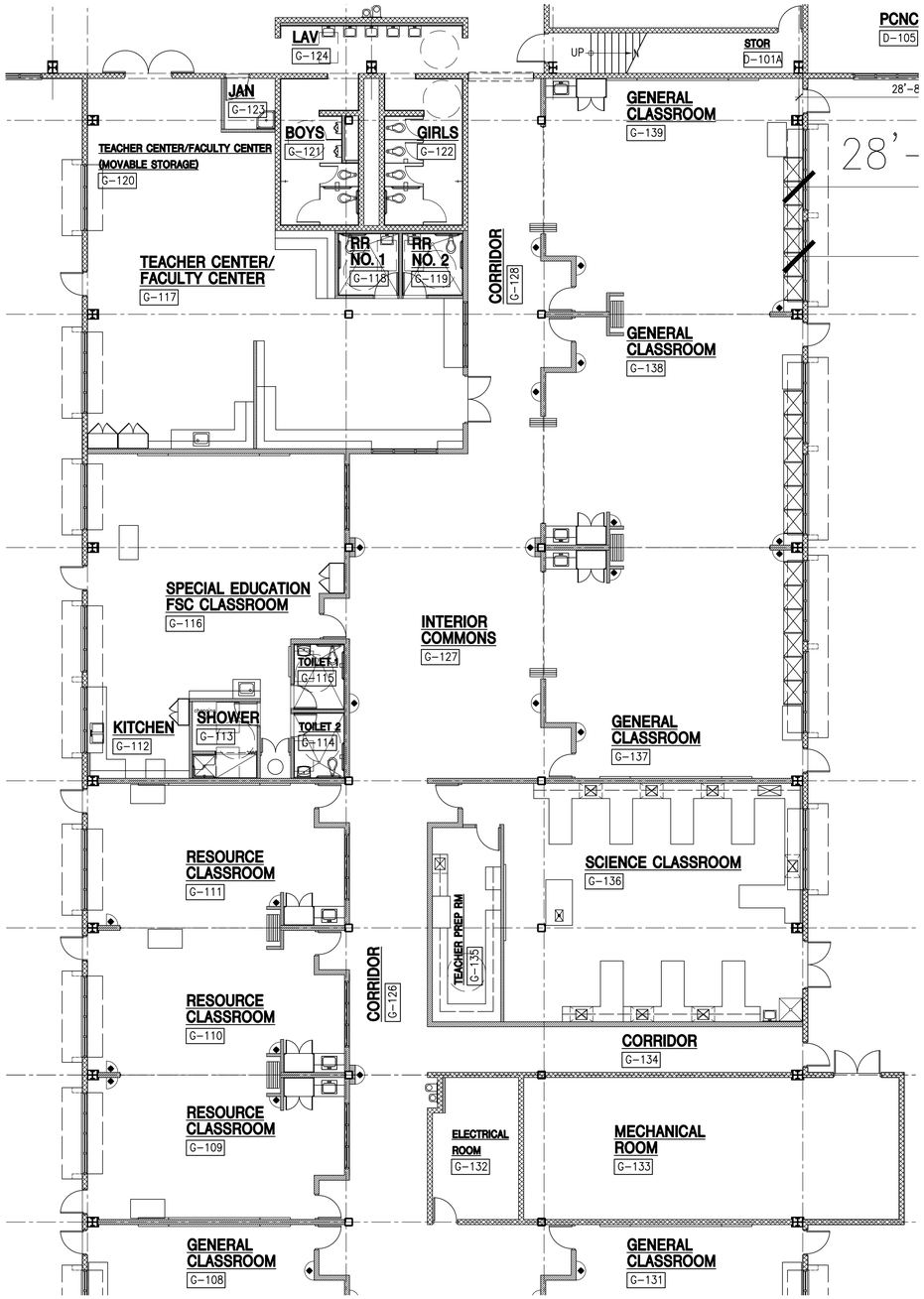

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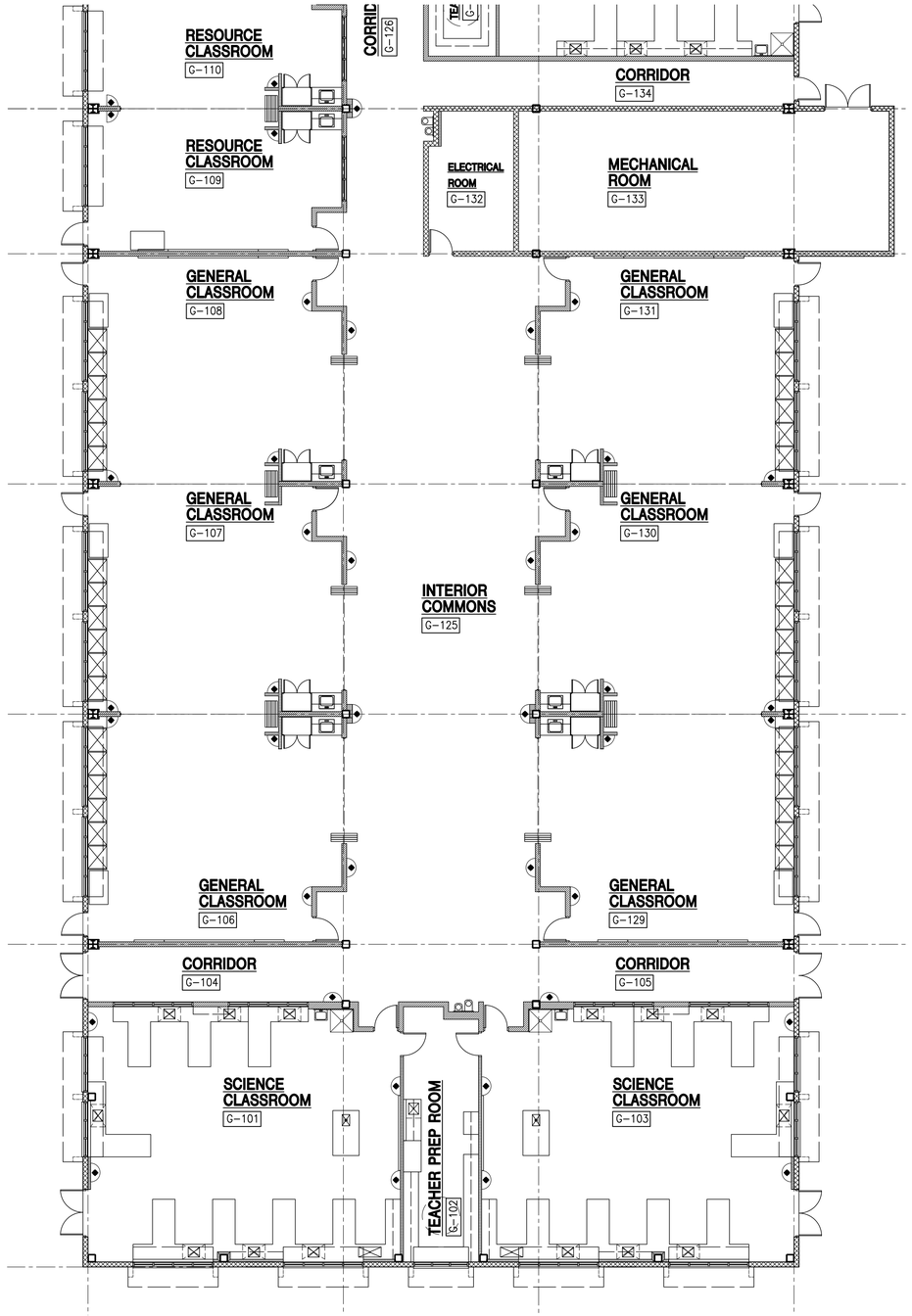

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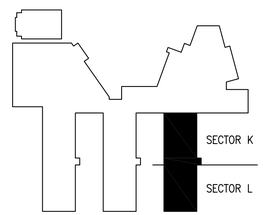

KEY PLAN
NOT TO SCALE

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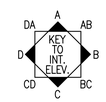

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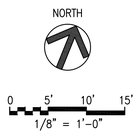

GRAPHIC SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT OF	DATE

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DEPARTMENT OF EDUCATION
STATE OF HAWAII

EWA MAKAI MIDDLE SCHOOL
DOE PROJECT NO. P00135-06
EWA OAHU HAWAII

SECTORS "K" & "L" FLOOR PLANS
NEIGHBORHOOD 3

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APPENDIX E

Traffic Impact Assessment Report

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

'EWA MAKAI MIDDLE SCHOOL PROJECT

'EWA, O'AHU, HAWAI'I

JULY 2008

PREPARED FOR:

Mitsunaga and Associates, Inc.
747 Amana Street, Suite 216
Honolulu, Hawai'i 96814

PREPARED BY:

SSFM INTERNATIONAL

SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

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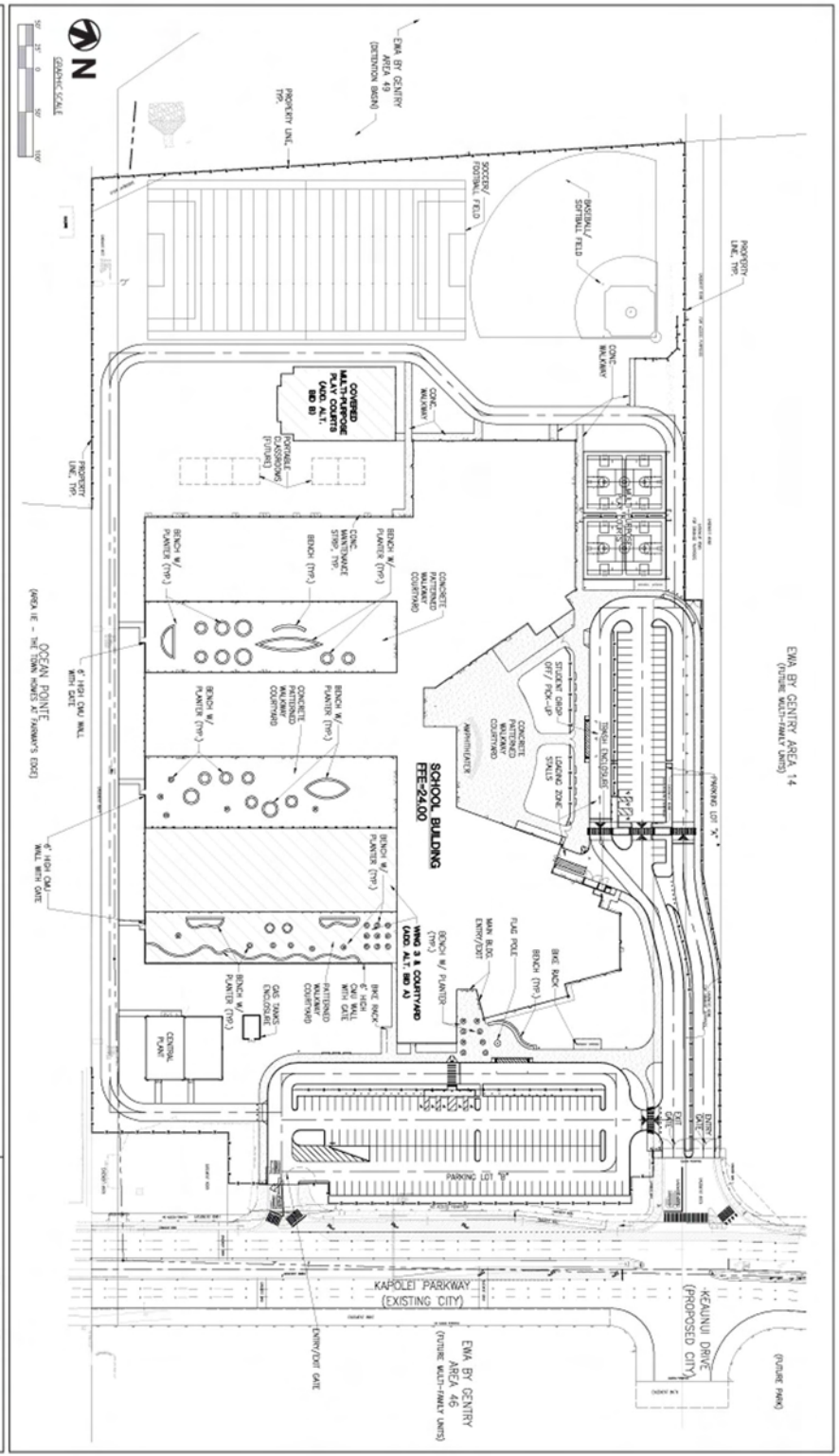
CHAPTER 1
PROJECT DESCRIPTION

1.1 PROJECT LOCATION AND DESCRIPTION

The 'Ewa Makai Middle School will be a new education facility (middle school) to be located off Kapolei Parkway between Coral Creek Golf Course and the Ocean Point Subdivision. The location is shown in Figure 1. The new middle school will be designed to accommodate up to 1050 students with 100 faculty and staff. The proposed site plan is presented in Figure 2. The site plan and information about the expected number of students and faculty and other characteristics relevant to traffic are based on the report on the design charrettes for the school, which were held in 2005.

Figure 1. Project Location Map



Ewa Makai Middle School
State of Hawai'i Department of Education

SITE PLAN

Figure 2

Source: Mitsunaga and Associates, October 2008

1.2 PURPOSE OF THE STUDY

The purpose of this study is to assess the impact of vehicles entering and leaving the school onto the roadway network. The major point of access at the site for students is off of a new road that aligns with Keaunui Drive on the west side of Kapolei Parkway. A second point of access will be for faculty and staff and for the buses that will deliver and pick up students. The second access is off Kapolei Parkway approximately 400 feet south of the intersection and it will be designated as a right-in/right-out only (RIRO) driveway. A conceptualized view of the intersection study network is provided in Figure 3.

The roadway facilities included under this study include: 1) Kapolei Parkway, 2) Geiger Road, 3) Keaunui Street, 4) Kaioli Street, 5) Keoneula Boulevard, and 6) Kaileolea Street as shown on Figure 3. The intersections associated with these roadways are listed below.

Impacts are predicted on traffic flow at the following intersections:

- Kapolei Parkway at Geiger Road
- Kapolei Parkway at Keaunui Street
- Kapolei Parkway at the secondary school access (RIRO) to be located about 400 feet to the south of the major school access (future intersection)
- Kapolei Parkway at Kaioli Street
- Kapolei Parkway at Keoneula Boulevard
- Keoneula Boulevard at Kaileolea Street (near Ocean Point Elementary School and fire station site)

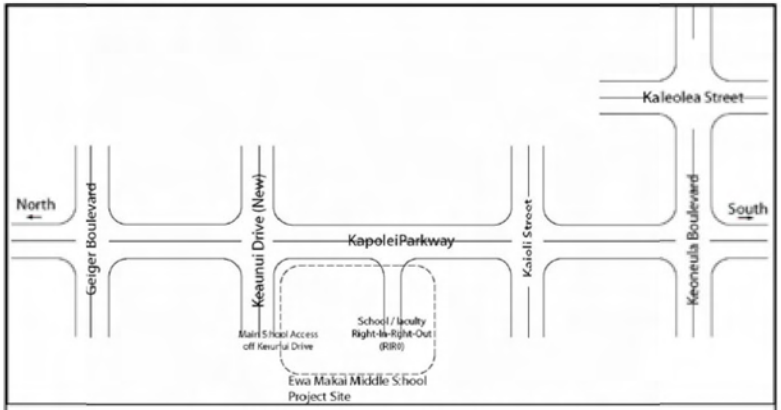


Figure 3 – Conceptual Intersection Study Network

1.3 STUDY METHODOLOGY

The study methodology follows the recommended practice and guidelines described in the Institute of Transportation Engineering (ITE) *Traffic Access and Impact Studies for Site Development* (1991). The ITE guidelines are accepted by the Hawai'i Department of Transportation (HDOT) and the City and County of Honolulu as the preferred method for preparing traffic studies for land development projects.

The approach consisted of assessing existing conditions, predicting background traffic growth, and assessing traffic conditions in the year of opening of the school. It was determined that the school should be fully built and occupied by the year 2010. Therefore, this study made assessments of current traffic conditions for the year 2007 and, future conditions in the year 2010, with and without the school in place. The major tasks included the following:

1. Conducted field survey and traffic counts at four (4) of the six (6) study network intersections. At the time when traffic counts were conducted, Keaunui Drive and the second school access intersections were not open to traffic.
2. Developed trip generation characteristics for the proposed project for the study year 2010.
3. Forecast future traffic conditions without the project for the study year 2010.
4. Forecast future traffic conditions with the project, and evaluated impacts on traffic conditions.
5. Identified mitigation measures and other recommendations to address impacts on traffic conditions.
6. Forecasted traffic volumes resulting from the generation of traffic created by the school were added to existing plus background growth to derive future traffic volumes with the site fully developed.

The Highway Capacity Manual (HCM) 2000 Edition was used to assess traffic conditions standards and Leve of Service (LOS) for the intersections in the study area. The Synchro software was used to apply the HCM methods.

Standards

The primary measure of traffic flow quality for the study used the definition of Level of Service (LOS) found in the HCM. LOS at intersections measures the quality of traffic flow to the delay time experienced by drivers. The HCM provides guidance on the use of the concept of level of service for streets and intersections. A tiered system has been established to describe traffic flow and congestion as related to observed and measured or predicted operational values. For intersections, the measure is stopped time delay. The following figure provides the HCM criteria for LOS for intersections. As noted, the LOS varies from "A' to "F", with the quality of traffic service declining as the levels move from "A" towards 'F". With declining LOS, the ability to travel at the desired speed is inhibited by

other vehicles either adjacent, opposite, or in front of a driver.

Generally, in urban areas and growing rural areas transitioning to urban areas, it is expected that LOS D will be acceptable in the morning and afternoon peak hours. Traffic movements with LOS E or worse would need to be reviewed to determine if any changes or improvements could be made to improve the LOS to an acceptable level. LOS F represents an unacceptable condition.

Table 1 indicates LOS and the thresholds of delay for signalized and non-signalized intersections:

Table 1. Criteria for Levels of Service for Intersections[1]

Level of Service	Signalized Intersections	Non-signalized Intersections
	Vehicle Delay (seconds)	Vehicle Delay (Seconds)
A	< 10	< 10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	> 80	> 50

Level of service is graded from A to F to indicate increasing congestion, longer delays and greater limitation in mobility to drivers. Level of service D is acceptable for non-signalized intersections. LOS is C if the average delay is less than 25 seconds. Level of service E is generally considered to be "capacity." Level of service F indicates a condition where capacity has been exceeded and long queues develop. The peak hour factors for each movement along with estimated truck percentages are available in Appendix C.

The prediction of project generated traffic was made using the guidelines of the ITE in its publications *Trip Generation, 7th Edition*, and the *Trip Generation Handbook*. However, judgment needs to be applied to ITE school trip generation rates due to the variability in school access methods across the country. Some schools are positioned to encourage walking and some schools, particularly private schools, have very high rates of children being dropped off by parents. Still other schools may have very high rates of buses delivering students.

The National Cooperative Highway Research Program (NCHRP) Report 279 provided criteria for the analysis of the need for a right turn lane given design hour or predicted traffic volumes. The criteria applied to both school access points were used to consider the need for additional road design considerations.

[1] From Highway Capacity Manual, 2000 Edition, Transportation Research Board.

CHAPTER 2
EXISTING CONDITIONS

Field surveys were conducted of roadway facilites surrounding the 'Ewa Makai Middle School project site along with surrounding land uses to assess and evaluate existing traffic conditions in the area. These conditions were used asa basis for estimating potential traffic impacts from the project. This chapter discusses existing conditions that including land uses, roadway facilities, and traffic conditions.

The 'Ewa Macai Middle School project site of about 18 acres is identified by Tax Map Key 9-1-069: 005 (Lot 90003). This property generally consists of a rectangular shaped parcel bordered by Kapolei Parkway on the east and undeveloped agricultural lands on the west. The parcel is located within the Urban District of the State Land Use District. The property is zoned A-1, Low Density Apartment District under the City's zoning. The property is not located within the City's Special Management Area.

The property is currently undeveloped and was formerly used foragriculture. The topography of the site is generally flat. Photos of this project site are included in the Appendix A.

2.1 SURROUNDING LAND USES

The new school site is situated within the planned development community called 'Ewa by Gentry – Makai. 'Ewa Makai is an extension of the 'Ewa by Gentry Development that has been underway in the region for the past 15 years. 'Ewa Makai includes up to 550 single family and 1329 multi-family residential units, light industrial uses, community recreational center, middle school, church sites, and two neighborhood park sites. A portion of the homesplanned for 'Ewa Makai have already been constructed and are occupied. Additionally, several golf courses and neighborhood parks can be found in the vicinity of the project site. Figure 4 shows the proximity surrounding land uses to the school site.

2.2 EXISTING ROADWAYS

The 'Ewa Makai Middle School project site is located on Kapolei Parkway about 4,000 feet south of its intersection with Geiger Road. It is located in the western section of 'Ewa, a rapidly growing area with several new residential and commercial developments underway. Kapolei Parkway has a cross-section of three lanes in each direction in the vicinity of the project site

The intersection of Kapolei Parkway at Geiger Road is controlled by anactuated traffic signal. The intersection of Keoneula Boulevard at Kailoelea Drive is also controllec by an actuated traffic signal. A copy of the traffic signal plan and timing information for these intersections are provided in Appendix B.

PROJECT VICINITY MAP — **Figure 4**

'Ewa Makai Middle School
State of Hawai'i, Department of Education

Source: Hawai'i Aviation Atlas 2000 (Aerial)

Description of Existing Major Roadway Network

Kapolei Parkway is the major roadway providing vehicular access to the 'Ewa Makai Middle School project site. Kapolei Parkway is City owned and maintained, and is a two-way collector street generally running in a mauka-makai (north-south) direction parallel to Fort Weaver Road. Kapolei Parkway serves as one of the major roadways providing vehicular access to the communities of 'Ewa and Kapolei. As shown on the location map, this roadway primarily serves residential areas within the 'Ewa communities.

Kapolei Parkway is a four- to six-lane road, two-directional with a median. However, immediately adjacent to the project site Kapolei Parkway becomes five-lanes wide, with three-lanes northbound and two-lanes southbound. South (makai) of the Keoneua Boulevard intersection, the road is striped for four-lanes (two each direction) and eventually decreases to two-lanes (one lane each direction).

Kapolei Parkway has a posted speed limit of 30 miles per hour (mph) in the area of the project site. Crosswalks for pedestrians are provided south of the project site at the intersection of Keoneula Blvd. There is no on-street parking permitted along the roadway fronting the project site.

Description of Existing Intersections

1. Kapolei Parkway and Geiger Road: A signalized four-leg intersecton. Separate left-turn storage lanes are provided on Kapolei Parkway for both westbound (to Kapolei) and eastbound (to Fort Weaver Road) vehicles. Separate right-turn lanes for westbound and eastbound vehicles are also provided on Kapolei Parkway. Heading westbound, Geiger Road consists of three lanes with a separate left-turn storage lane and a right-turn lane for vehicles turning southbound and northbound on Kapolei Parkway, respectively.
2. Kapolei Parkway and Keaunui Drive (new): A non-signalized, three-leg T-intersection. A separate left-turn storage lane is provided along Kapolei Avenue for southbound (to makai) vehicles turning onto Keaunui Drive. The Keaunui Drive leg to this intersection consists of a separate left-turn lane and a right-turn, yield-controlled lane.
3. Kapolei Parkway and Kaioli Street: A non-signalized, four-leg intersection. Access from Kaioli Street onto Kapolei Parkway is controlled via two-way stop-sign (only on Kaioli Street).
4. Kapolei Parkway and Keoneula Boulevard: A non-signalized, four-leg intersection. Shared through, right-turn and left-turn lanes are provided along Keoneula Boulevard when approaching Kapolei Parkway. In the northbound (mauka) direction on Kapolei Parkway, there is one lane approaching the intersection which turns into three lanes after crossing Keoneula Boulevard. In the southbound (makai) direction on Kapolei Parkway, there are separate right-turn and left-turn storage lanes and two through lanes.
5. Keoneula Boulevard and Kaileolea Street: A signalized, four-leg intersection. The intersection of Kaoli Street with Kapolei parkway is non-signalized. Vehicles entering onto Kapolei Parkway in both mauka and makai directions are stop-sign controlled.

2.3 EXISTING TRAFFIC VOLUMES

Manual traffic counts were taken at four (4) study network intersections on May 24, 2007 during the morning peak period between 6:00 and 8:30 a.m., and during the afternoon peak period between 3:00 and 6:00 p.m. Observations of the general traffic conditions were also made. There were no accidents or unusual traffic patterns that were observed during the count period.

Traffic volume data at these intersections were manually collected using an electronic traffic data collector. The counts showed that the morning peak hour occurred from 7:00 to 8:00 a.m., and the afternoon peak hour occurred from 3:00 to 4:00 p.m. Results of the traffic count data is provided in Appendix C of this document. Figure 5 shows the current peak hour traffic volumes for the 7:00 to 8:00 a.m. morning peak hour and the 3:00 to 4:00 p.m. afternoon peak hour. Since the upstream and downstream volumes are relatively close in comparing adjacent intersections, no adjustments were made to the volumes.

Using the traffic data collection results, the peak period for morning traffic was shown to last from 6:00 to 8:00 a.m. The peak period for the afternoon traffic was shown to last from 3:00 to 6:00 p.m. The traffic data the afternoon peak period to be more spread out when compared to the morning peak period.

2.4 EXISTING LEVEL OF SERVICE ANALYSIS

The Highway Capacity Manual (HCM) was used to assess the congestion and LOS of the study intersections for the existing conditions using the Synchro software and its SimTraffic simulation module. The results of the Synchro/HCM analysis are shown in Table 2 and Figure 5. The printouts from Synchro and SimTraffic for the existing conditons analysis are provided in Appendix D.

Most traffic movements for the morning and afternoon peak hours have LOS D or better. For an urban area such as the Honolulu and 'Ewa Beach areas, LOS D is considered acceptable for peak hours. As seen in Table 2 (on next page) and Figure 5, only two (2) traffic movements have significant existing congestion and delays greater than LOS D. The intersections are listed below:

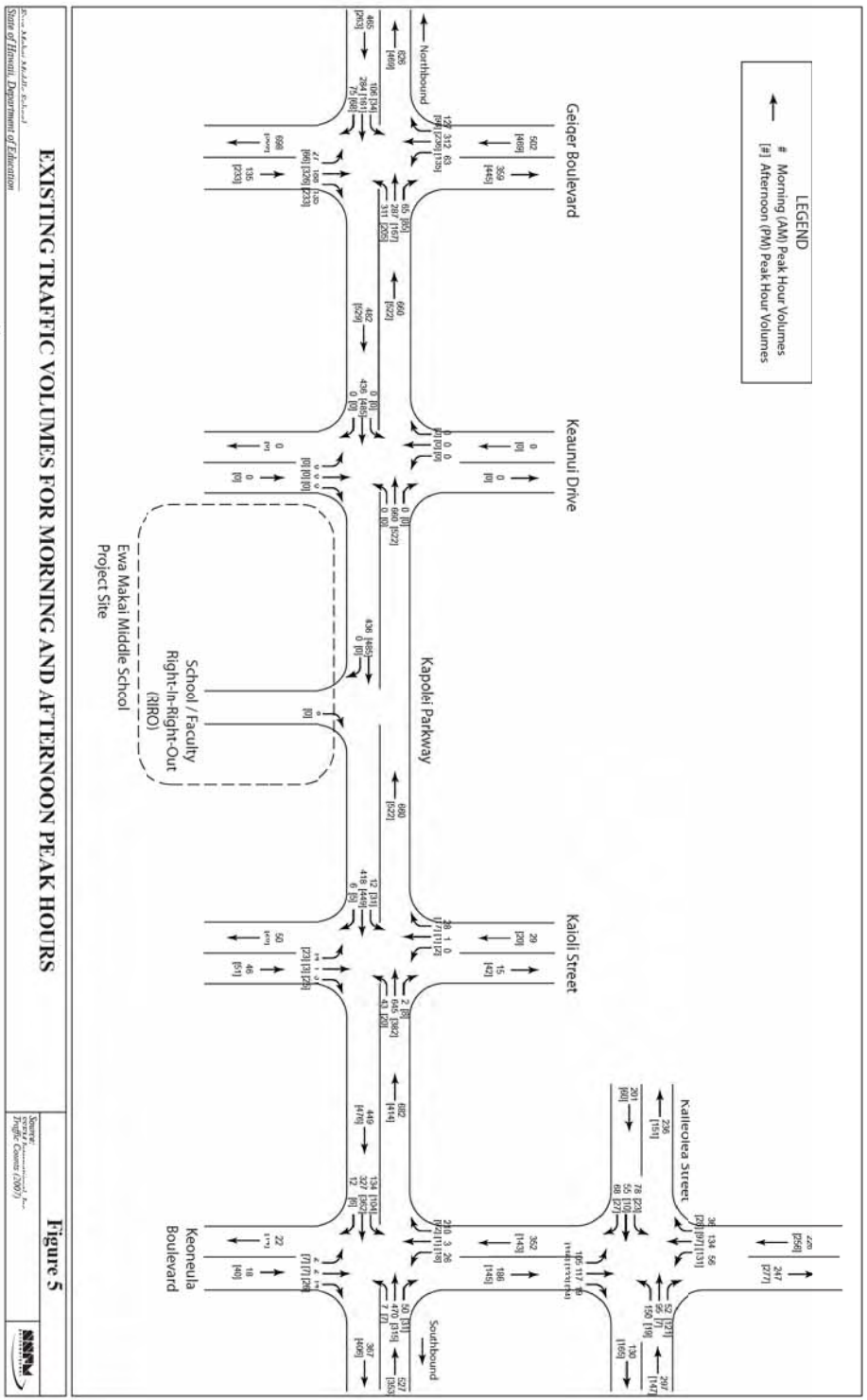
1. Kapolei Parkway and Geiger Road: The northbound left (morning) and westbound left (afternoon) movements were calculated to have LOS F (v/c > 1) and LOS E (v/c = 0.81), respectively.
2. Kapolei Parkway and Keoneula Boulevard: The eastbound left (morning) and eastbound left (afternoon) movements were calculated to have LOS F (v/c > 1) and LOS E (v/c only 0.07), respectively.

The current poor LOS for the northbound and westbound left turns at the intersection of Kapolei Parkway at Geiger Road is related to the operation of the traffic signal. The poor LOS for the eastbound left turn from Keoneula Boulevard at Kapolei Parkway, a non-signalized intersection is due to the difficulty in getting gaps in traffic at the stop sign.

During the data collection period, neither of the intersections experienced extensive queues or congestion lasting more than a single cycle in the case of Kapolei Parkway and Geiger Road.

Table 2. LOS and Other Measures for Existing Conditions for A.M. and P.M. Peak Hours

Intersection	Movement	A.M. Peak Hour			P.M. Peak hour		
		Delay	v/c	LOS	Delay	v/c	LOS
Kapolei Parkway at Geiger Road	Northbound Left turn	> 80	> 1	F	37.4	0.69	D
	Northbound Thru/right	25.9	0.55	C	29.1	0.46	C
	Southbound Left turn	44.1	0.63	D	27.5	0.27	C
	Southbound Thru/right	29.7	0.47	C	36.6	0.42	D
	Eastbound Left	41.9	0.33	D	41.8	0.55	D
	Eastbound Thru/right	28	0.65	C	27.7	0.81	C
	Westbound Left	45.3	0.57	D	68.6	0.81	E
	Westbound Thru/right	35	0.82	C	18.4	0.53	B
	Total	40.5	0.73	D	30.8	0.7	C
Kapolei Parkway at Kaioli Street	Eastbound Left	27.9	0.09	D	25.3	0.14	D
	Eastbound Thru/right	10.7	0.06	B	12	0.06	B
	Westbound Left	0	0	A	22.3	0.01	C
	Westbound Thru/right	11.9	0.06	B	10.7	0.03	B
	Northbound Left turn	8.5	0.05	A	8.6	0.02	A
	Northbound Thru/right	0	0.29	A	0	0.1	A
	Southbound Left turn	9.3	0.02	A	8.4	0.03	A
	Southbound Thru/right	0	0.19	A	0	0.21	A
	Total	1.3	0.31	A	1.6	0.25	A
Kapolei Parkway at Keoneula Boulevard	Eastbound Left	> 50	> 1	F	37	0.07	E
	Eastbound Thru/right	22.9	0.02	C	23.6	0.03	C
	Westbound Left	23.1	0.13	C	23.8	0.1	C
	Westbound Thru/right	23.1	0.57	C	22.8	0.17	C
	Northbound Left turn	8.2	0.01	A	8.2	0.01	A
	Northbound Thru/right	0	0.37	A	0	0.23	A
	Southbound Left turn	9.6	0.17	A	8.4	0.1	A
	Southbound Thru/right	0	0.15	A	0	0.16	A
	Total	> 50	0.61	B	3.2	0.41	A
Keonula Boulevard at Kaileolea Street	Eastbound Left	6.3	0.31	A	3.7	0.03	A
	Eastbound Thru/right	5.5	0.13	A	3.8	0.1	A
	Westbound Left	5.4	0.1	A	4.3	0.24	A
	Westbound Thru/right	5.6	0.18	A	3.8	0.08	A
	Northbound Left turn	10.7	0.47	B	12.4	0.1	B
	Northbound Thru/right	10.5	0.47	B	14.1	0.42	B
	Southbound Left turn	10.9	0.49	B	12.5	0.03	B
	Southbound Thru/right	9.3	0.21	A	12.4	0.09	B
	Total	8.2	0.38	A	7	0.29	A



EXISTING TRAFFIC VOLUMES FOR MORNING AND AFTERNOON PEAK HOURS

Figure 5

Source: Austin, Tsutsumi & Associates, Inc. Traffic Counts (2007)

State of Hawaii, Department of Education

CHAPTER 3
TRAFFIC FORECASTS

3.1 BACKGROUND TRAFFIC FORECAST

Daily traffic volumes were not available from HDOT for any count stations located nearby. However, two traffic studies done in previous years for two major developments in the nearby 'Ewa Beach area were available and information from these two studies was used in the preparation of this report. The two major developments are: 'Ewa By Gentry project and the Ocean Pointe project.

The 'Ewa By Gentry project is expected to have 1879 residential units, 30 acres of light industrial uses, a community recreational center, two churches and two neighborhood parks and be completed in the year 2010. The traffic study for this project was completed by Parsons Brinckerhoff in 2003. The Ocean Pointe development will have 4850 residential units, a marina, visitor accommodations, retail shops, 20 acres of parks and a golf course. It is expected the full project would be completed in the year 2014. The traffic study for the Ocean Point project was completed by Pacific Planning and Engineering, Inc. in 2001.

The anticipated build out schedule for these two projects is shown in Table 3. There are no other known major projects in the area that would affect the future traffic volumes in the area. Thus, the traffic from these projects should encompass the majority of any new traffic added to the street system in the area. The 'Ewa Makai Middle School is expected to be completed and occupied in late 2010.

In the years between 2007 and 2010, 46% of the 'Ewa By Gentry and 25% of the Ocean Point projects will be completed and occupied. Thus, the predicted traffic volumes from the two traffic impact studies were considered appropriate for estimating the future traffic added to the street system in proportion to the expected percentage completion in the year 2010.

Table 3. Build-Out Schedule for Surrounding Developments

Project	'Ewa By Gentry	'Ewa By Gentry	Ocean Point	Ocean Point
Year	Total Units	Units Built by 2010	Total Units	Units Built by 2010
2002	—	—	—	—
2003	—	—	—	—
2004	—	—	1295	—
2005	90	—	261	—
2006	192	—	360	—
2007	227	227	400	400
2008	270	270	400	400
2009	246	246	400	400
2010	240	—	—	—
2011	123	—	—	—
2012	90	—	—	—
2013	87	—	—	—
2014	60	—	—	—
2015	90	—	—	—
2016	70	—	—	—
2017	80	—	—	—
Total	1865	743	4850	1200
By 2010	1583	46%	1200	25%

The traffic volumes were then factored based on the predicted 2010 build schedules and upstream and downstream turning percentages to forecast added trips for each study intersection for the morning and afternoon peak hours. Figures 6 and 7 show trips predicted to be added to the street system in the year 2010, which are included at the end of this Chapter.

Figure 8 and Table 4 show the total trips added to the street system in 2010 without the middle school project. Nine (9) intersection movements each in A.M. and P.M. are predicted to have poor LOS F in the year 2010 with the 'Ewa By Gentry and Ocean Point projects in place without the new 'Ewa Beach Middle School. This represents the background against which the impacts of the new school traffic generation should be judged.

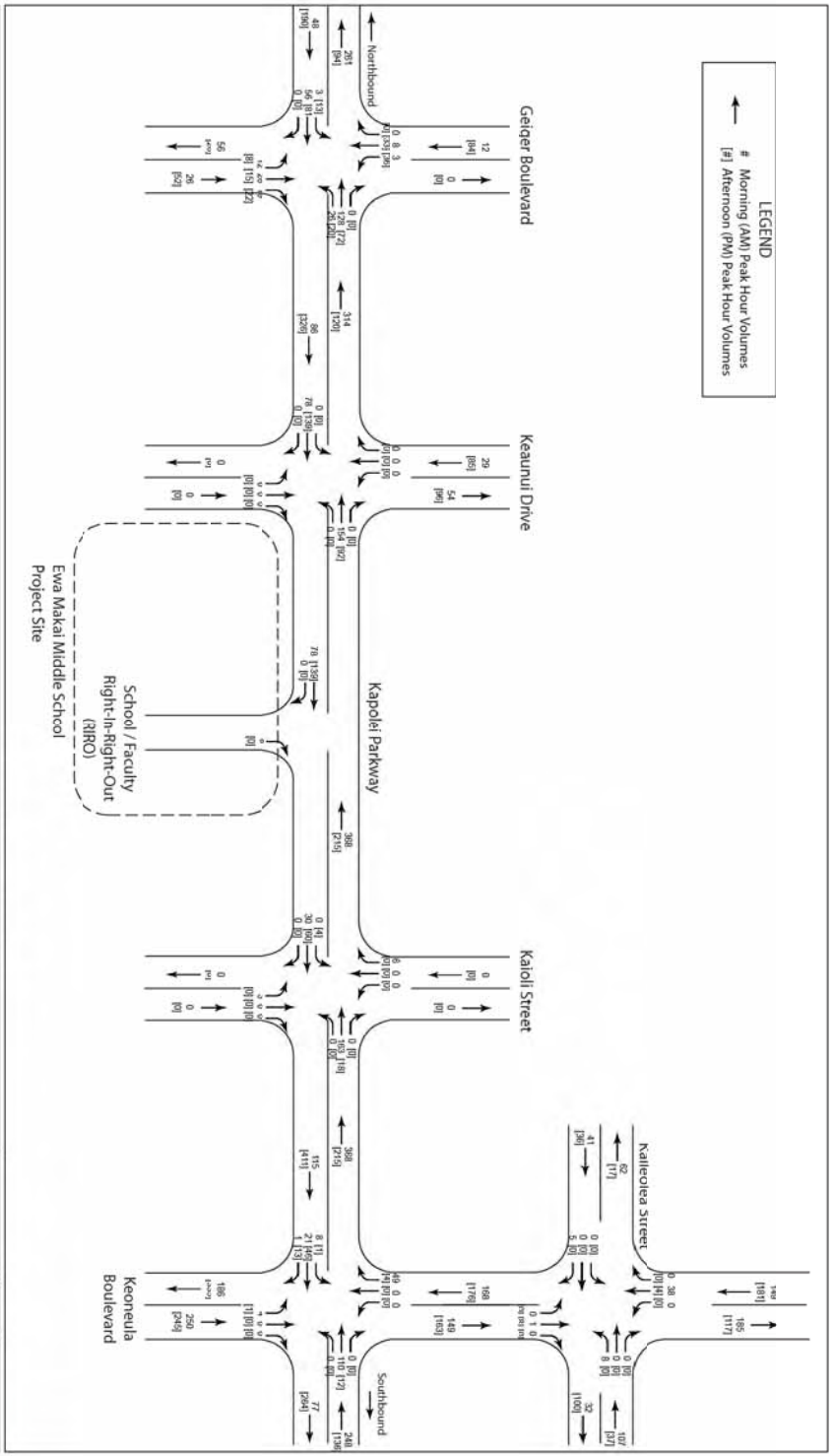
Table 4. LOS and Other Measures for Future 2010 Without School for A.M. and P.M. Peak Hours

Intersection	Movement	A.M. Peak Hour Delay (Sec.)	A.M. Peak Hour v/c Ratio	A.M. Peak Hour LOS	P.M. Peak hour Delay (Sec.)	P.M. Peak hour v/c Ratio	P.M. Peak hour LOS
Kapolei Parkway at Geiger Road	Northbound Left turn	> 80	> 1	F	> 80	> 1	F
	Northbound Thru/right	76.9	> 1	E	> 80	> 1	F
	Southbound Left turn	> 80	0.99	F	74.4	0.75	E
	Southbound Thru/right	33.7	0.56	C	40.3	0.71	D
	Eastbound Left	59.2	0.59	E	51.6	0.59	D
	Eastbound Thru/right	39.9	0.81	F	> 80	> 1	F
	Westbound Left	> 80	0.86	F	> 80	> 1	F
	Westbound Thru/right	41.2	0.84	D	25.1	0.62	C
	Total	71.8	0.95	E	82.0	> 1	F
Kapolei Parkway at Kaioli Street*	Eastbound Left	96.0	.34	F	94.6	.44	F
	Eastbound Thru/right	14.4	.09	B	19.3	.11	C
	Westbound Left	0	0	A	48.6	.03	E
	Westbound Thru/right	18.1	.14	C	14.0	.05	B
	Northbound Left turn	9.5	.06	A	10.7	.04	B
	Northbound Thru/right	0	.53	A	0	.14	A
	Southbound Left turn	12.3	.03	B	9.3	.05	A
	Southbound Thru/right	0	.29	A	0	.41	A
	Total	1.7	.47	A	2.3	.39	A
Kapolei Parkway at Keoneula Boulevard	Eastbound Left	> 50	> 1	F	> 50	> 1	F
	Eastbound Thru/right	> 50	> 1	F	86.8	.64	F
	Westbound Left	> 50	> 1	F	31.4	.54	D
	Westbound Thru/right	> 50	> 1	F	> 50	> 1	F
	Northbound Left turn	8.8	.08	A	10.3	.09	B
	Northbound Thru/right	0	.58	A	0	.31	A

Table 4 (cont.). LOS and Other Measures for Future 2010 Without School for A.M and P.M. Peak Hours

	Southbound Left turn	12.2	.29	B	9.5	.22	A
	Southbound Thru/right	0	.18	A	0	.28	A
	Total	> 50	> 1	F	>50	.71	C
Keoneula Boulevard at Kaileolea Street	Eastbound Left	12.9	.56	B	3.5	.05	A
	Eastbound Thru/right	10.5	.25	B	3.9	.22	A
	Westbound Left	9.0	.18	A	5.1	.42	A
	Westbound Thru/right	9.8	.36	A	3.8	.19	A
	Northbound Left turn	13.4	.57	B	17.9	.28	B
	Northbound Thru/right	12.1	.47	B	21.9	.60	C
	Southbound Left turn	13.4	.54	B	17.7	.26	B
	Southbound Thru/right	10.4	.20	B	17.3	.19	B
	Total	11.2	.57	B	8.2	.47	A
Kapolei Parkway at Keaunui Drive	Eastbound Left	0	0	A	0	0	A
	Eastbound Thru/right	0	0	A	0	0	A
	Westbound Left	51.5	.44	F	66.5	.73	F
	Westbound Thru/right	11.6	.01	B	11.3	.14	B
	Northbound Left turn	0	0	A	0	0	A
	Northbound Thru/right	0	.29	A	0	.19	A
	Southbound Left turn	13.1	.15	B	10.8	.16	B
	Southbound Thru/right	0	.25	A	0	.36	A
	Total	2.0	.43	A	5.1	.46	A
Kapolei Parkway at Second Access (RIRO Only)*	Eastbound Right	0	0	A	0	0	A
	Northbound Thru	0	.38	A	0	.22	A
	Southbound Thru/Right	0	.28	A	0	.40	A
	Total	0	.40	A	0	.32	A

* Stop sign controlled intersection. V/C ratio shown is ICU% from Synchro Delay and V/C shown are the highest for each lane group calculated. See appendices for printouts and further discussion.

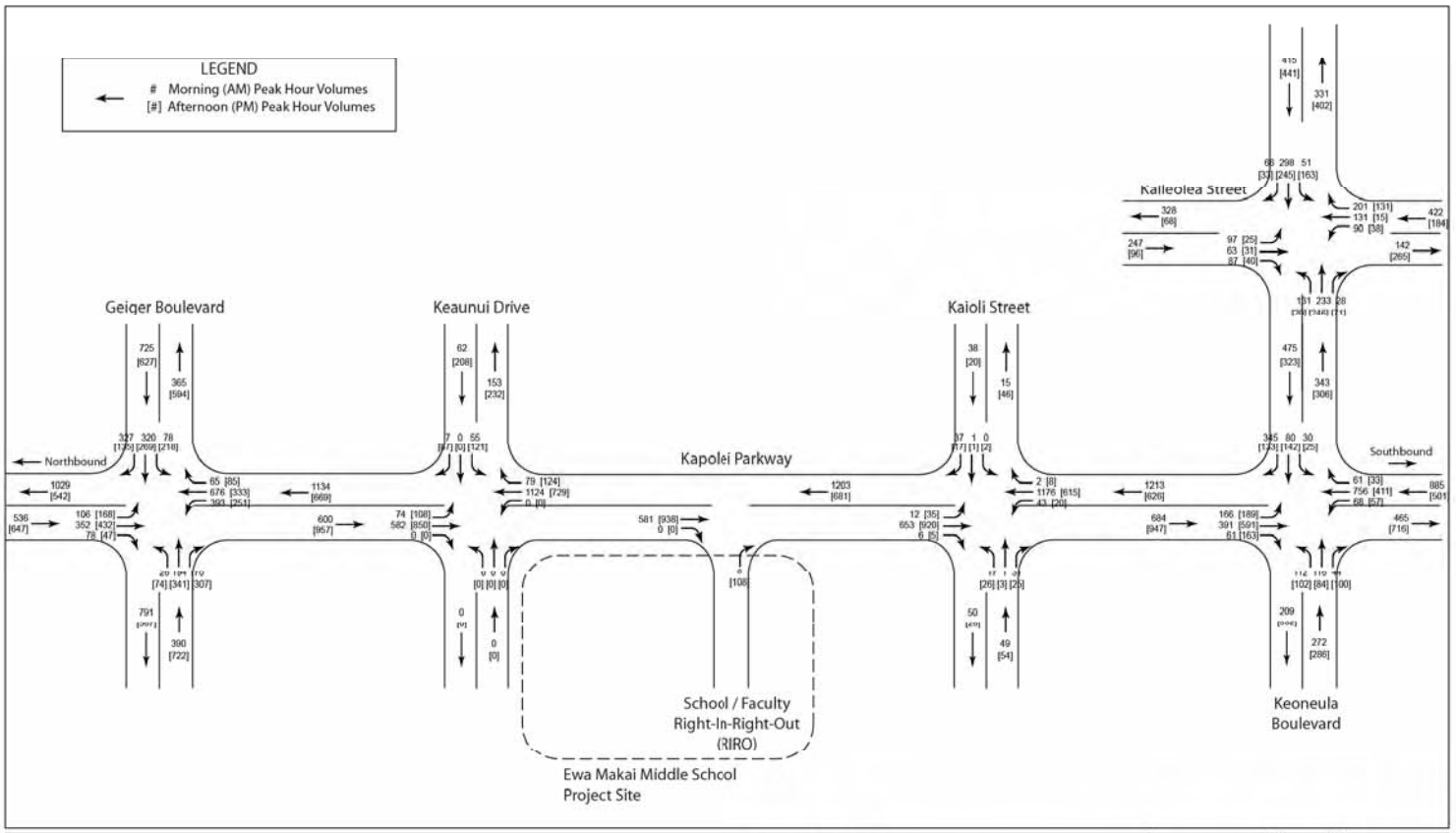


PREDICTED ADDED TRAFFIC FROM EWA BY GENTRY PROJECT IN 2010

Figure 6

Source: Parsons Brinckerhoff (TIAR, 2003)

Ewa Makai Middle School
State of Hawaii, Department of Education

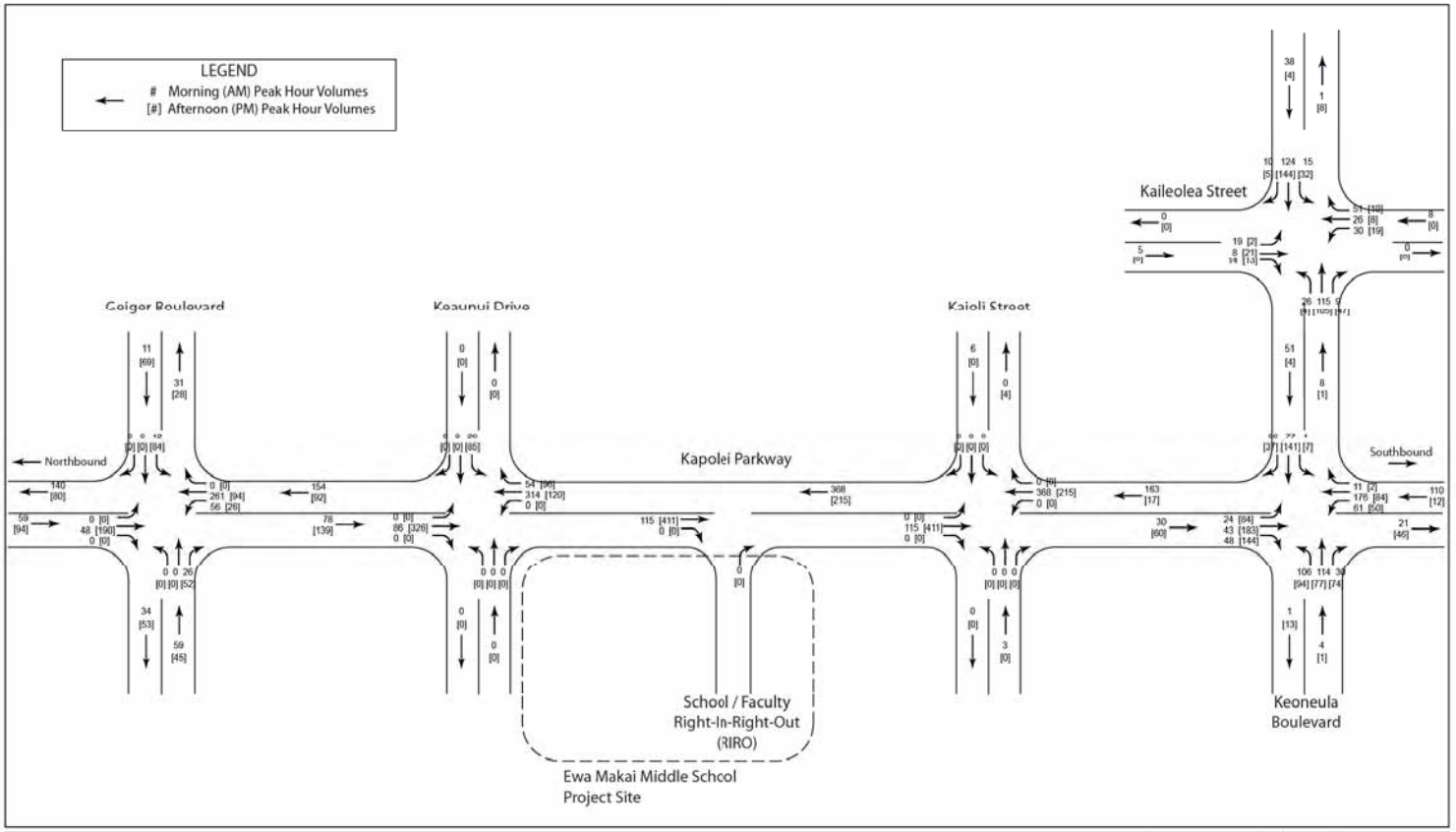


Predicted Traffic Without the New Middle School Project in 2010

Figure 8

Source: SSFM International, Inc.

Ewa Makai Middle School
State of Hawaii, Department of Education



PREDICTED ADDED TRAFFIC FROM OCEAN POINTE PROJECT IN 2010

Figure 7

Source: SSFM International, Inc. Pacific Planning (TIAR)

Ewa Makai Middle School
State of Hawaii, Department of Education

3.2 NEW MIDDLE SCHOOL TRAFFIC GENERATION

The planning charrette for the school provided information on the expected number of students and faculty. Discussions were held with staff and the Principal working at nearby Ilima Intermediate School to assess the ratio of students walking to school verses those who are dropped off. Additionally, a one-day field survey was conducted at Ilima Intermediate School which identified and counted the numbers of students; walking to school, dropped of by a vehicle or other (such as riding a bicycle). Based on the discussions with Ilima Intermediate School faculty and data collected by the fied survey, the following assumptions were made regarding development of the trip generation for the new middle school:

1. The morning peak hour will be between 7:00 and 8:00 a.m. While the exact bell times are not yet known, this should provide for a conservative estimate of future traffic conditions.
2. The afternoon peak hour will be between 3:00 and 4:00 p.m. While the exact bell times are not yet known, this should provide for a conservative estimate of future traffic conditions. It may be that the dismissal time will be before 3:00 p.m. but allowing the afternoon peak study hour to be for this hour will allow for a conservative review of future traffic conditions.
3. Approximately 30% of the students will walk to school. This is sightly below the percentage at the Ilima Intermediate School but the location of the new middle school has fewer students located at a reasonable walk distance. It is likey that fewer students may walk.
4. Eight (8) school buses will drop off students. This assumption is based upon discussions held with the Transportation Officer for the State of Hawai'i, Department of Education, Leeward District Office
5. Approximately 20% of students (or 254 students) are dropped off in the morning.
6. Twenty of one hundred faculty and staff will park in the parking lot accessed from the major access point opposite the new connector to Fort Weaver Boulevard.
7. Eighty of one hundred faculty and staff will park in the faculty and bus parking lot accessed as a right-in/right-out only located to the south of the major access point.

Taking into account the above assumptions and factors, the following table of trip generation was developed (Table 5).

Table 5. Trip Generation Summary for 'Ewa Beach Mddle School

	A.M Peak Hour			P.M. Peak Hour		
	In	Out	Total	In	Out	Total
Parents	254	254	508	104	104	208
Faculty and Staff	100	0	100	0	100	100
Buses	8	8	16	8	8	16
Total Vehicle	362	262	624	112	212	324
Walkers and Bikers	315	0	315	0	315	315

The peak morning school arrival time for both students and faculty/staff coincides with the morning peak hour. Given early dismissals throughout the day and some late-stays, the volume exiting the school in the afternoon peak hour is more spread than the amount entering in the morning peak hour. During inclement weather conditions, it can be expected that a number of students who normally walk or bike may be dropped off by parents. However, this is not the normal occurrence and design of the entry, exit and drop-off facilities can accommodate the increase. The above calculations do not take into account absentees, so the numbers can be considered worse case.

3.3 TRAFFIC ADDED TO STREET NETWORK

Trip distribution was determined by examining the predicted traffic volumes at the peak hours in the year 2010 with the Ocean Pointe and Ewa By Gentry projects in place. Trips were apportioned according to the turning movements at the intersections in the study network. Figure 9 shows the LOS conditions for the street network without the trips added from the new middle school.

Figure 10 shows the trip distribution percentages for the new school traffic for the study network. Using the *Wintast* program with the trip generation data, the trips added to the street network due to the new 'Ewa Beach Middle School is shown in Figure 11.

3.4 TRAFFIC VOLUMES WITH MIDDLE SCHOOL IN PLACE IN 2010

Using the existing 2007 volumes plus added background growth plus new trips generated by the project at full build out, the predicted traffic volumes are shown in Figure 12 for the school being in place in the year 2010. The next chapter will analyze the future conditions that arise from predicted traffic volumes. Exciting

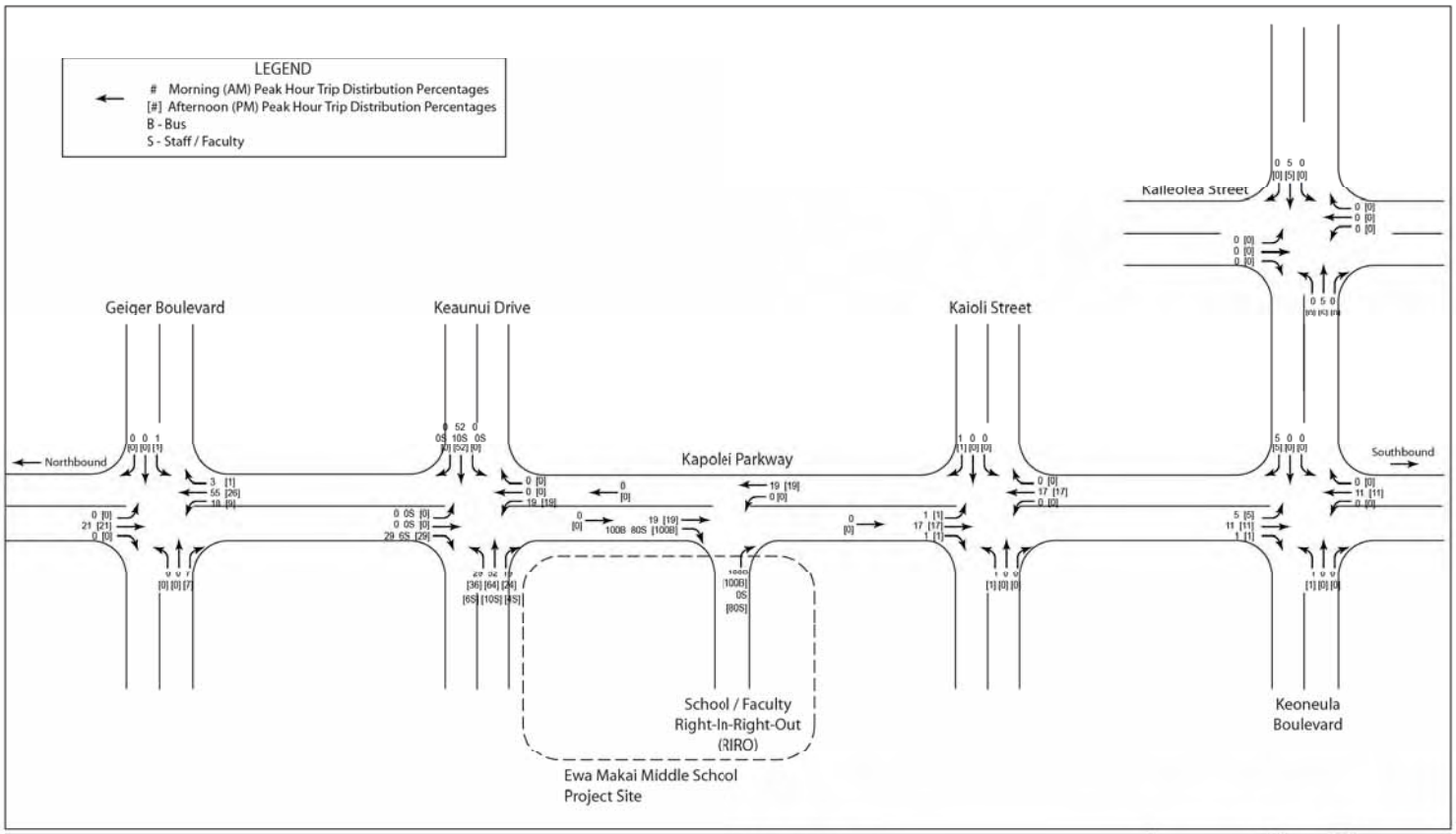
3.5 FUTURE TRAFFIC SIGNALS

The traffic studies for 'Ewa By Gentry and for Ocean Point developments envision the need to install future traffic signals at two locations:

1. Kapolei Parkway and Keaunui Drive
2. Kapolei Parkway and Keoneula Boulevard

The Synchro runs made with the middle school in place assume the installation of traffic signals due to the traffic volume added by the 'Ewa By Gentry and Ocean Point projects. Analysis shows that the volumes for the two peak hours studied, justify signalization.

The decision on instalation of traffic signals would come when the City and County of Honolulu (City) and State Department of Transportation (HDOT) determine that it is warranted based on a detailed signal warrant study. However, based on the future traffic volumes and the design of these two intersections, it is evident that traffic signal control will be needed.



Percentage (%) Trip Distribution for New School Trips

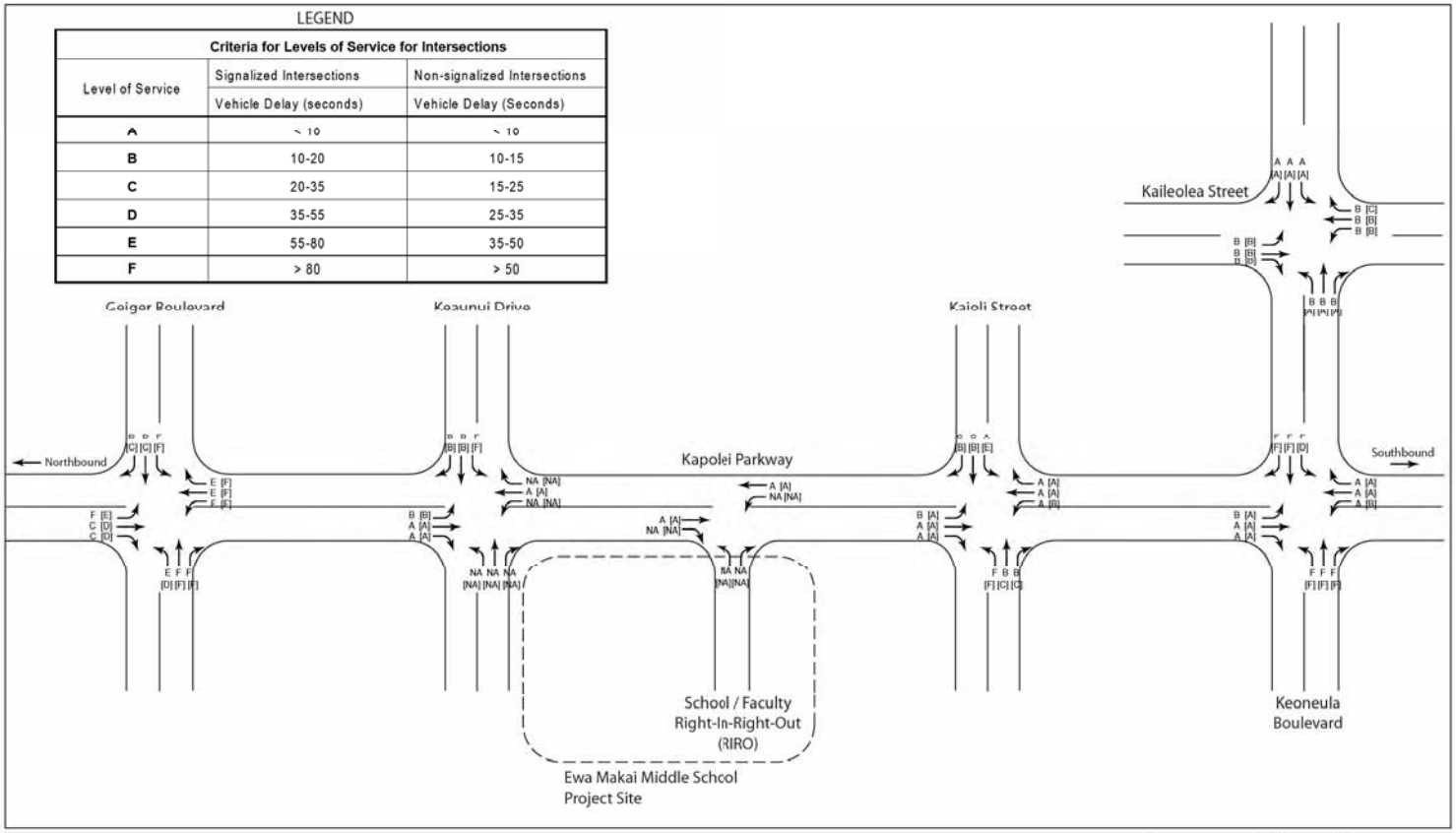
Figure 10

Source: SSFM International, Inc.

Ewa Makai Middle School
State of Hawaii, Department of Education

LEGEND

Criteria for Levels of Service for Intersections		
Level of Service	Signalized Intersections	Non-signalized Intersections
	Vehicle Delay (seconds)	Vehicle Delay (Seconds)
A	≤ 10	≤ 10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	> 80	> 50

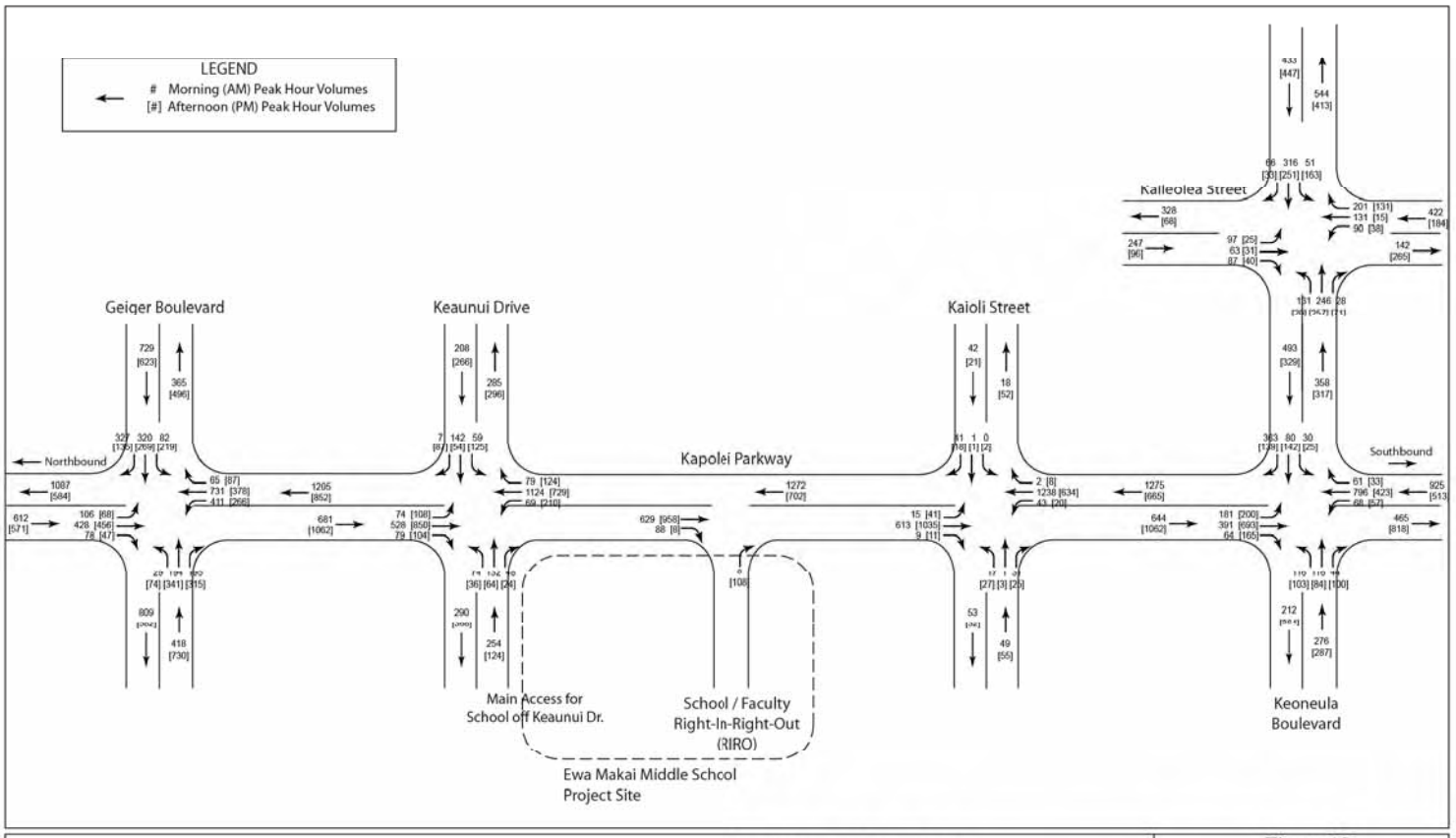


Levels of Service (LOS) for Future No Build Conditions for Morning and Afternoon Peak Hours

Figure 9

Source: SSFM International, Inc.

Ewa Makai Middle School
State of Hawaii, Department of Education

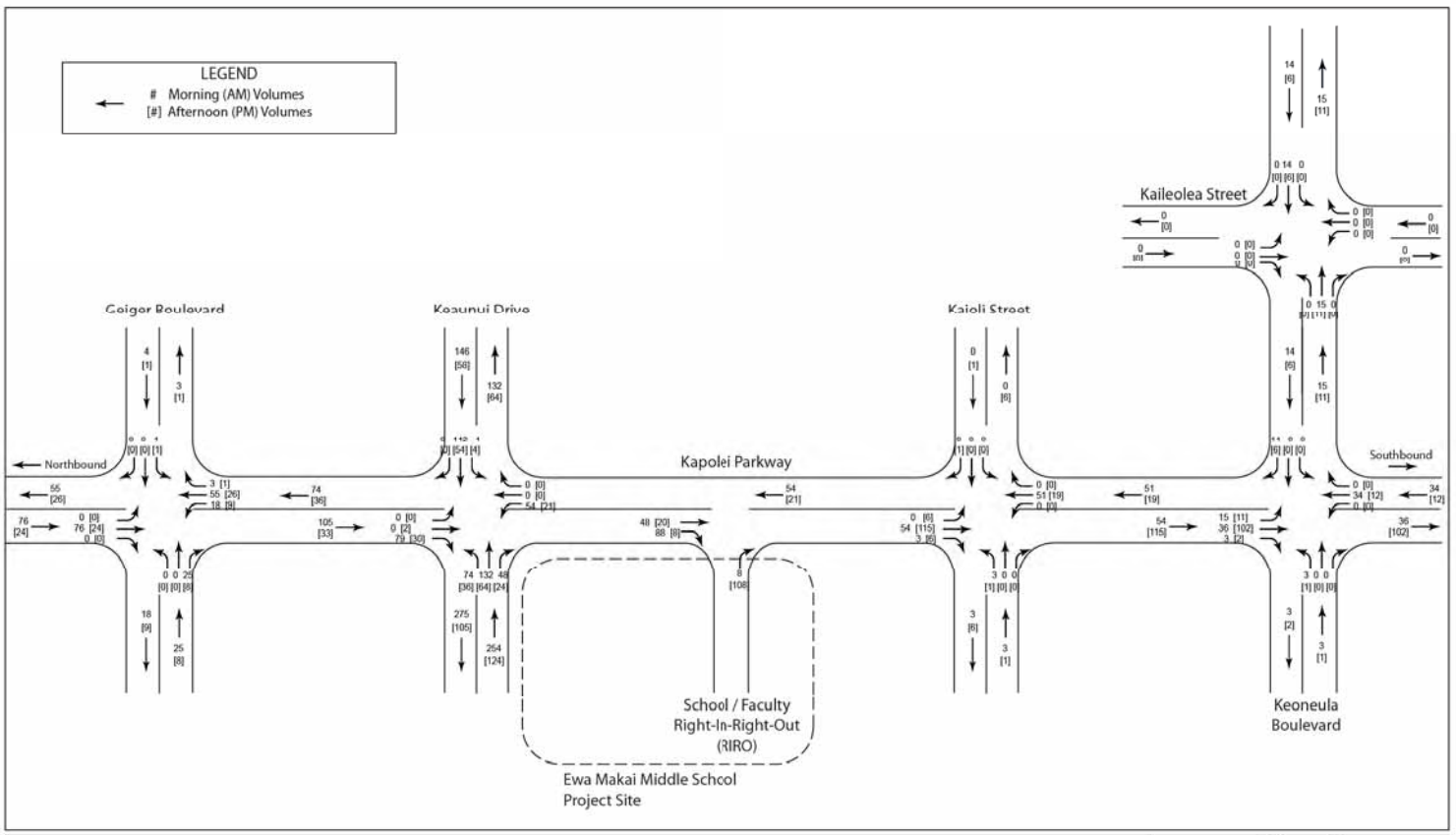


Predicted Traffic from New Middle School 2010 (Includes Background Traffic)

Figure 12

Source: SSFM International, Inc.

Ewa Makai Middle School
State of Hawaii, Department of Education



Predicted Added Traffic from New Middle School 2010

Figure 11

Source: SSFM International, Inc.

Ewa Makai Middle School
State of Hawaii, Department of Education

CHAPTER 4
ANALYSIS OF FUTURE CONDITIONS

4.1 LEVEL OF SERVICE ANALYSIS (LOS)

The 2010 LOS with future background traffic and the school in place is found on Table 6 and Figure 13. Some movements show an improved LOS which would be due to the addition of new traffic signals at the intersections of Kapolei Parkway and Keaunui Drive and at the Kapolei Parkway and Keoneula Boulevard.

For comparison, Table 7 shows movements which would have poor LOS (E or F) with the school in place and without the traffic signals at the abovementioned intersections. However, as seen in comparing Tables 4 and 6, there are no intersection movements which are made worse as a result of adding the school traffic.

Table 8 shows the LOS for the major school access point without a signal in place. This table indicates that the access point will not operate well for either the morning or afternoon peak hours. Again, this analysis supports the need for installation of a traffic signal with timing that accounts for pedestrian crossings.

4.2 ROAD DESIGN CONSIDERATIONS

NCHRP Report 279 provides criteria for the analysis of the need for a right turn lane given design hour or predicted traffic volumes. Using the predicted traffic volumes for the intersection of Kapolei Parkway at both access ponts, it was determined that a right turn for southbound traffic entering the school might be needed during the afternoon peak hour. The criterion of NCHRP Report 279 was applied to the intersection of Kapolei Parkway and Keaunui Drive with the school in place and shows a need for a right-turn lane for southbound traffic entering the school from Kapolei Parkway. A similar effort was undertaken to review the secondary (RIRO) access point for the school which indicates that the addition of a right-turn lane for southbound right turn traffic at the RIRO access would be beneficial.

Table 6. Future Year Conditions (2010) with School - A.M. and P.M. Peak Hours With Traffic Signals In Place

Intersection	Movement	A.M. Peak Hour			P.M. Peak hour		
		Delay (Sec.)	v/c Ratio	LOS	Delay (Sec.)	v/c Ratio	LOS
Kapolei Parkway At Geiger Road	Northbound Left tun	> 80	> 1	F	> 80	> 1	F
	Northbound Thru/right	> 80	> 1	F	> 80	> 1	F
	Southbound Left tun	> 80	.99	F	> 80	.92	F
	Southbound Thru/right	> 80	.56	C	36.1	.65	D
	Eastbound Left	41.1	.33	D	60.6	.59	E
	Eastbound Thru/right	35.5	.81	D	43.5	.85	D
	Westbound Left	39.1	.46	D	> 80	.90	F
	Westbound Thru/right	29.1	.75	C	40.0	.83	D

Table 6 (cont.). Future Year Conditions (2010) with School - A.M. and P.M. Peak Hours With Traffic Signals In Place

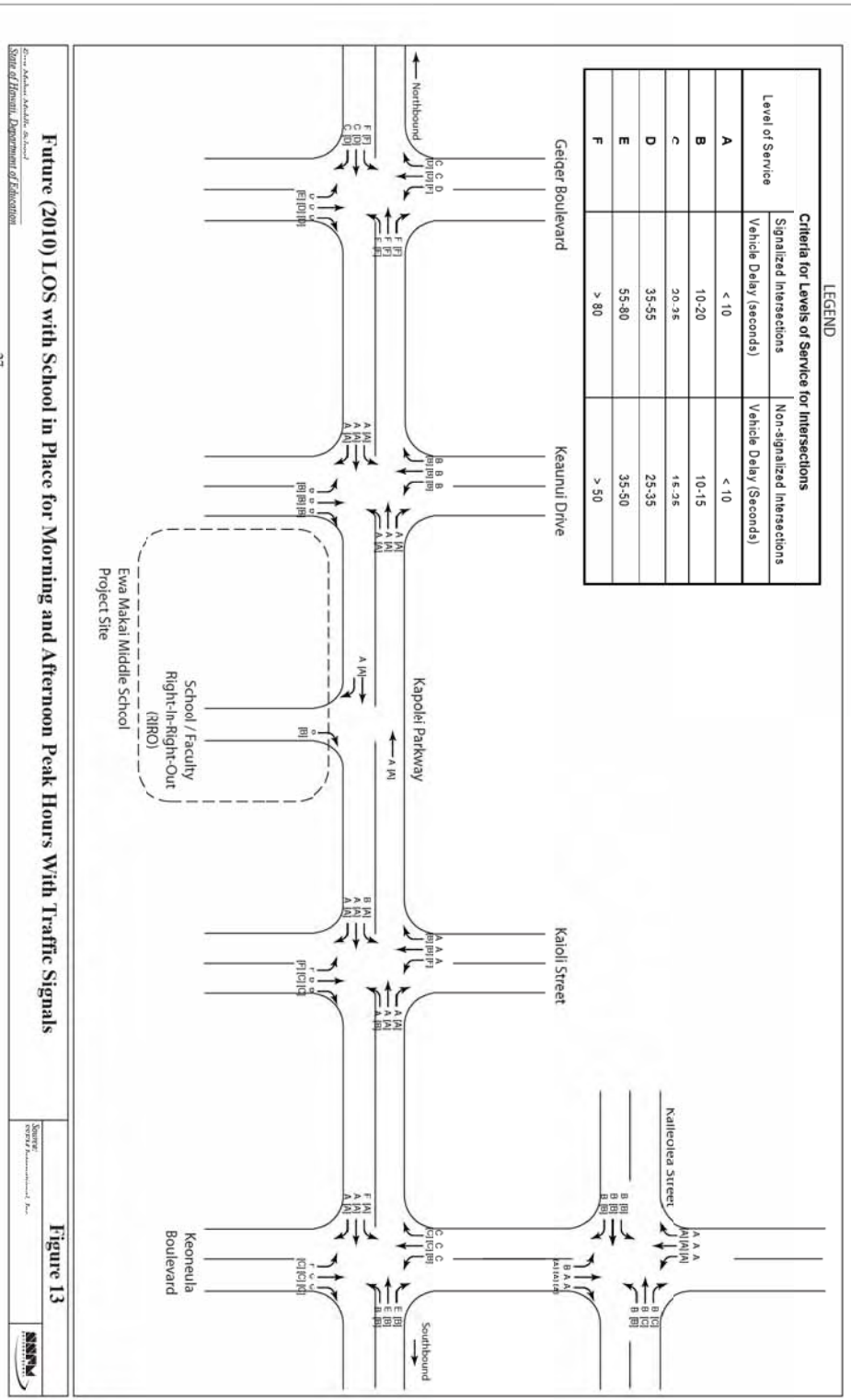
Kapolei Parkway At Kaioli Street*	Eastbound Left	> 50	.43	F	> 80	.61	F
	Eastbound Thru/right	14.4	.09	B	22.6	.14	C
	Westbound Left	0	0	A	58.6	.03	F
	Westbound Thru/right	18.9	.16	A	14.9	.06	B
	Northbound Left turn	9.3	.06	A	11.5	.04	B
	Northbound Thru/right	0	.56	A	0	.29	A
	Southbound Left turn	12.9	.04	B	9.4	.05	A
	Southbound Thru/right	0	.28	A	0	.47	A
	Total	2.1	.49	A	3.2	.43	A
Kapolei Parkway At Keoneula Boulevard	Eastbound Left	> 80	.95	F	24.0	.54	C
	Eastbound Thru/right	28.4	.21	C	20.3	.27	C
	Westbound Left	27.7	.12	C	19.4	.11	B
	Westbound Thru/right	33.8	.64	C	21.3	.42	C
	Northbound Left turn	12.4	.19	B	13.4	.31	B
	Northbound Thru/right	67.5	1.05	E	18.2	.70	B
	Southbound Left turn	> 80	.58	F	9.3	.53	A
	Southbound Thru/right	7.4	.26	A	6.6	.48	A
	Total	48.5	1.02	D	13.5	.62	B
Keonula Boulevard at Kaileola Avenue	Eastbound Left	13.3	.57	B	3.4	.05	A
	Eastbound Thru/right	9.3	.26	A	3.9	.22	A
	Westbound Left	9.0	.18	A	5.1	.43	A
	Westbound Thru/right	9.8	.36	A	3.8	.19	A
	Northbound Left turn	14.2	.57	B	18.4	.29	B
	Northbound Thru/right	12.7	.48	B	22.6	.61	C
	Southbound Left turn	14.3	.56	B	18.2	.27	B
	Southbound Thru/right	10.9	.21	B	17.7	.19	B
	Total	11.6	.57	B	8.3	.47	A
Kapolei Parkway At Keaunui Drive*	Eastbound Left	17.2	.29	B	16.6	.14	B
	Eastbound Thru/right	18.4	.49	B	17.0	.23	B
	Westbound Left	17.1	.26	B	18.7	.45	B
	Westbound Thru/right	17.7	.39	B	18.1	.39	B
	Northbound Left turn	4.3	.16	A	4.3	.09	A
	Northbound Thru/right	5.1	.42	A	4.8	.28	A
	Southbound Left turn	6.1	.39	A	5.4	.32	A
	Southbound Thru/right	4.6	.29	A	5.8	.48	A
	Total	7.5	.44	A	7.5	.47	A
Kapolei Parkway at Second Access (RIRO)*	Eastbound Right	10.7	.01	B	12.5	.20	B
	Northbound Thru	0	.41	A	0	.20	A
	Southbound Thru/Right	0	.25	A	0	.41	A
	Total	0	.42	A	0.8	.43	A

Table 7. Intersection Movements with Poor LOS in the Year 2010 with School

Intersection	Movement	Peak Time Perod	LOS & Congestion
Kapolei Parkway at Geiger Road	Northbound Left Turn	A.M.	F, v/c > 1
		P.M.	F, v/c > 1
	Northbound Thru/Right	A.M.	E, v/c > 1
		P.M.	F, v/c > 1
	Southbound Left Turn	A.M.	F, v/c =0.99
		P.M.	E, v/c =0.75
	Eastbound Left	A.M.	E, v/c =0.59
	Eastbound Thru/Right	A.M.	F, v/c =0.81
		P.M.	F, v/c > 1
	Westbound Left	A.M.	F, v/c =0.86
		P.M.	F, v/c > 1
Kapolei Parkway at Kaioli Street	Eastbound Left	A.M.	F, v/c =0.34
		P.M.	F, v/c =0.44
	Westbound Left	P.M.	E, v/c =0.03
Kapolei Parkway at Keoneula Boulevard	Eastbound Left	A.M.	F, v/c > 1
	Eastbound Left	P.M.	F, v/c > 1
	Eastbound Thru/Right	A.M.	F, v/c > 1
		P.M.	F, v/c =0.64
	Westbound Left	A.M.	F, v/c > 1
	Westbound Thru/Right	A.M.	F, v/c > 1
		P.M.	F, v/c > 1
Kapolei Parkway at Keaunui Drive	Westbound Left	A.M.	F, v/c =0.44
		P.M.	F, v/c =0.73

Table 8. Future Year Conditions (2010) with School for A.M. and P.M. Peak Hours without a Traffic Signal in Place

Intersection	Movement	A.M. Peak Hour			P.M. Peak hour		
		Delay (Sec.)	v/c Ratio	LOS	Delay (Sec.)	v/c Ratio	LOS
Kapolei Parkway at New School Access and Connector to Fort Weaver Road*	Eastbound Left	> 50	> 1	F	> 50	> 1	F
	Eastbound Thru/right	> 50	> 1	F	> 50	> 1	F
	Westbound Left	> 50	> 1	F	> 50	> 1	F
	Westbound Thru/right	> 50	> 1	F	> 50	> 1	F
	Northbound Left tun	9.4	.07	A	10.6	.03	B
	Northbound Thru/right	0	.29	A	0	.17	A
	Southbound Left tun	13.1	.15	B	10.4	.15	B
	Southbound Thru/right	0	.25	A	0	.36	A
	Total	> 50	.58	A	> 50	.52	A



Future (2010) LOS with School in Place for Morning and Afternoon Peak Hours With Traffic Signals

Figure 13

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

As a result of the analysis of the data collected and the predicted traffic conditions, the following conclusions are made:

1. The traffic added to the street network at build out of the school will in and of itself not create any significant traffic congestion or traffic flow problems. This is based on a comparison of traffic volumes for the a.m. and p.m. peak hours with and without the school in place but with the background growth due to the 'Ewa By Gentry and Ocean Point projects.
2. The NCHRP Report 279 criteria indicate that consideration should be given to addition of right turn lanes for the two new school entrances.
3. As 'Ewa By Gentry and Ocean Point continue towards fuller build-out, traffic signals will be needed to accommodate background and new school traffic at the intersections of Kapolei Parkway at the new school and the connector to Ft. Weaver Boulevard, at Kapolei Parkway at Keoneula Boulevard. These signals were envisioned by the 'Ewa By Gentry and Ocean Point traffic impact analysis study reports done for those projects and verified by this study. It will be necessary to conduct the updated signal warrants at least every two years.

5.2 RECOMMENDATIONS

The following recommendations are made for the full build out of the project:

1. The school district should consider the addition of right turn lanes on Kapolei Parkway at the two new school entrances. While the NCHRP 279 criteria indicate the possible need for the turn lanes, the HCM analysis shows acceptable LOS without the lanes. It will be necessary to review this with the City and HDOT.
2. The County and HDOT should continue to monitor traffic volume growth on Kapolei Parkway resulting from the on-going development of the 'Ewa By Gentry and Ocean Point projects. At some point, signalization will be required for the intersections of Kapolei Parkway and Keaunui Drive and Kapolei Parkway and Keoneula Boulevard. It is recommended that these signals be in place before the construction of the school is completed.
3. The signals which will be necessary at the intersections of Kapolei Parkway, at the new school access and the connector to Ft. Weaver Boulevard and at Keoneula Boulevard should have pedestrian features on all approaches. This study indicates about 350 students walking to school each day and many of them will need to cross Kapolei Parkway at these locations. Pedestrian signals and push buttons along with well-marked crosswalks will be essential. Crossing guard protection at peak school times may also be needed and should be considered. The school district may want to consider establishment of a safe routes to school program for this school due to the large number of potential walkers and the newness of the school and residential neighborhood.
4. Adequate radii should be provided for the school access points along with sufficient on-site storage for vehicle queues.

'Ewa Makai Middle School
Draft Environmental Assessment
Chapter 5
Conclusions and Recommendations

APPENDICES

APPENDIX A

SITE PHOTOGRAPHS

Photo 1A
Intersection - Geiger Rd / Kapolei Parkway facing N

Photo 1B
Intersection - Geiger Rd / Kapolei Parkway facing E

Photo 2A
Intersection - Future Keanui Drive /
Kapolei Parkway facing E

Photo 2B
Intersedion - Future Keanui Drive /
Kapolei Parkway facing SE

Photo 3A
Project Site entrance from Kapolei Parkway facing S

Photo 2B
Project Site entrance from Kapolei Parkway facing SW

Photo 4A
Intersection - Kapolei Parkway / Kaioli St facing E

Photo 4B
IIntersection - Kapolei Parkway / Kaioli St facing SE

Photo 5A
Intersection - Keoneula Blvd /
Kapolei Parkway facing NE

Photo 5B
Intersection - Keoneula Blvd /
Kapolei Parkway facing NE

Photo 6A
Intersection - Keoneula Blvd / Kaleolea facing W

Photo 6B
Intersection - Keoneula Blvd /
Kaileolea facing N - Elen School

APPENDIX B

TRAFFIC SIGNAL PLAN AND TIMING INFORMATION

APPENDED SIGNAL TIMING PLANS FOR CONSULTANTS

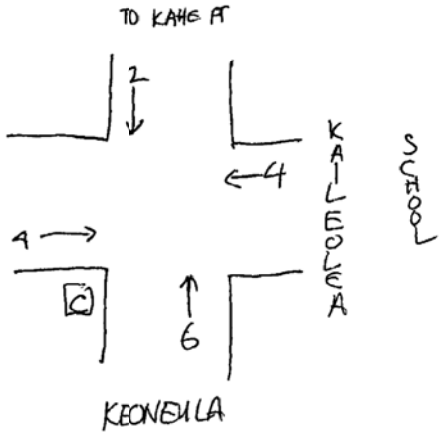
INTERSECTION: KEONELUA & KAILEOLEA

PHASING INFORMATION

Phase	2	4	6					
Ped Walk	7	7	7					
Ped FDW	20	25	20					
Min Green	10	5	10					
Veh Ext Max Gap Min Gap	5.0 ↓	3.5 ↓	5.0 ↓					
Max Limit	60	60	60					
Yellow All Red	4 2	4 2	4 2					

CYCLE INFORMATION

	AM PLAN	PM PLAN	SAT PLAN
Cycle Length	Free	Free	Free
Force Off 1			
Force Off 2			
Force Off 3			
Force Off 4			
Force Off 5			
Force Off 6			
Force Off 7			
Force Off 8			
Offset			



Phasing Diagram

2 ↓	4 ⇐			
6 ↑				

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APPENDED SIGNAL TIMING PLANS FOR CONSULTANTS

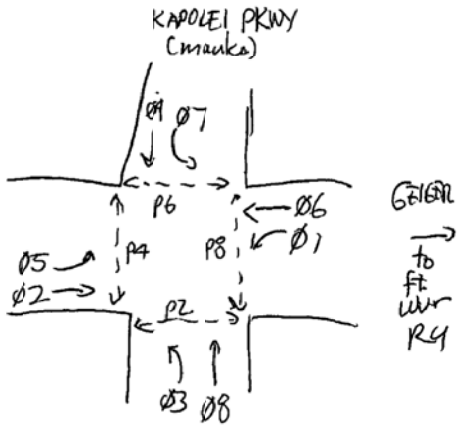
INTERSECTION: GEIGER @ KAPOLEI PARKWAY

PHASING INFORMATION

Phase	1	2	3	4	5	6	7	8
Ped Walk		7		7		7		7
Ped FDW		27		18		27		18
Min Green	5	10	5	5	5	10	5	5
Veh Ext Max Gap Min Gap	2.0 ↓	5.0 ↓	2.0 ↓	3.0 ↓	2.0 ↓	5.0 ↓	2.0 ↓	3.0 ↓
Max Limit	30	60	30	30	30	60	30	30
Yellow All Red	4 1	4 2	4 1	4 1	4 1	4 2	4 1	4 1

CYCLE INFORMATION

	AM PLAN	PM PLAN	SAT PLAN
Cycle Length	Free	Free	Free
Force Off 1			
Force Off 2			
Force Off 3			
Force Off 4			
Force Off 5			
Force Off 6			
Force Off 7			
Force Off 8			
Offset			



Phasing Diagram

1 ↙	2 →	3 ↰	4 ↓	
5 ↗	6 ←	7 ↳	8 ↑	

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APPENDIX C

MANUAL TRAFFIC COUNT DATA

File Name : AM - Kapolei Prkway - Kaioli St Rov
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					KS From East					KP From South					KS From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	3	72	0	0	75	9	0	0	0	9	0	149	4	0	153	4	0	0	0	4	241
06:15 AM	8	63	2	0	73	9	0	0	0	9	0	129	6	0	135	0	0	2	0	2	219
06:30 AM	8	73	4	0	85	11	0	3	0	14	0	148	13	0	161	3	0	4	0	7	267
06:45 AM	6	70	1	0	77	8	0	0	0	8	0	117	16	0	133	8	0	4	0	12	230
Total	25	278	7	0	310	37	0	3	0	40	0	543	39	0	582	15	0	10	0	25	957
07:00 AM	3	101	1	0	105	8	0	0	0	8	0	137	14	0	151	10	0	2	0	12	276
07:15 AM	1	108	2	0	111	8	0	0	0	8	0	159	6	0	165	9	0	4	0	13	297
07:30 AM	1	130	3	0	134	8	0	0	0	8	2	177	12	0	191	6	1	6	0	13	346
07:45 AM	1	79	6	0	86	4	1	0	0	5	0	172	11	0	183	6	0	2	0	8	282
Total	6	418	12	0	436	28	1	0	0	29	2	645	43	0	690	31	1	14	0	46	1201
08:00 AM	1	55	4	0	60	8	0	0	0	8	1	112	4	0	117	4	0	0	0	4	189
08:15 AM	0	36	1	0	37	3	0	2	0	5	0	77	6	0	83	2	0	4	0	6	131
Grand Total	32	801	24	0	857	76	1	5	0	82	3	1377	94	0	1474	52	1	28	0	81	2494
Apprch %	3.7	93.5	2.8	0		92.7	1.2	6.1	0		0.2	93.4	6.4	0		64.2	1.2	34.6	0		
Total %	1.3	32.1	1	0	34.4	3	0	0.2	0	3.3	0.1	55.2	3.8	0	59.1	2.1	0	1.1	0	3.2	
Unshifted	30	769	21	0	820	76	1	5	0	82	3	1348	81	0	1432	47	0	26	0	73	2407
% Unshifted	93.8	96	87.5	0	95.7	100	100	100	0	100	100	97.9	86.2	0	97.2	90.4	0	92.9	0	90.1	96.5
Bank 1	2	32	3	0	37	0	0	0	0	0	0	29	13	0	42	5	1	2	0	8	87
% Bank 1	6.2	4	12.5	0	4.3	0	0	0	0	0	0	2.1	13.8	0	2.8	9.6	100	7.1	0	9.9	3.5

File Name : AM - Kapolei Prkway - Geiger Rd
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					GR From East					KP From South					GR From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	25	25	14	0	64	14	96	13	0	123	9	54	99	0	162	29	20	0	0	49	398
06:15 AM	31	21	15	1	68	29	88	24	0	141	12	52	88	0	152	29	36	2	0	67	428
06:30 AM	21	33	27	0	81	22	107	18	0	147	10	61	89	0	160	38	58	6	0	102	490
06:45 AM	30	39	16	0	85	14	89	20	0	123	12	69	64	0	145	29	52	6	0	87	440
Total	107	118	72	1	298	79	380	75	0	534	43	236	340	0	619	125	166	14	0	305	1756
07:00 AM	17	55	32	0	104	40	97	23	0	160	16	54	75	0	145	24	31	3	0	58	467
07:15 AM	25	57	27	0	109	27	95	13	0	135	8	79	91	0	178	46	49	5	0	100	522
07:30 AM	26	91	35	0	152	35	77	13	0	125	16	80	89	0	185	36	48	7	0	91	553
07:45 AM	7	45	12	0	64	25	43	14	0	82	25	74	56	0	155	29	60	12	1	102	403
Total	75	248	106	0	429	127	312	63	0	502	65	287	311	0	663	135	188	27	1	351	1945
08:00 AM	12	20	22	0	54	27	48	18	0	93	23	66	54	0	143	33	33	11	0	77	367
08:15 AM	8	16	8	0	32	25	56	12	1	94	15	36	34	0	85	31	34	7	0	72	283
Grand Total	202	402	208	1	813	258	796	168	1	1223	146	625	739	0	1510	324	421	59	1	805	4351
Apprch %	24.8	49.4	25.6	0.1		21.1	65.1	13.7	0.1		9.7	41.4	48.9	0		40.2	52.3	7.3	0.1		
Total %	4.6	9.2	4.8	0	18.7	5.9	18.3	3.9	0	28.1	3.4	14.4	17	0	34.7	7.4	9.7	1.4	0	18.5	
Unshifted	202	402	208	1	813	258	796	168	1	1223	146	625	739	0	1510	324	421	59	1	805	4351
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name : AM - Keoneula Blvd - Kailoolea St
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KS From North					KB From East					KS From South					KB From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	2	0	2	0	4	1	39	13	0	53	45	1	8	0	54	1	14	0	0	15	126
06:15 AM	0	1	0	0	1	1	37	12	0	50	31	0	8	0	39	1	19	4	0	24	114
06:30 AM	7	0	5	0	12	2	41	18	0	61	47	6	9	0	62	2	21	10	0	33	168
06:45 AM	8	2	11	0	21	9	25	13	0	47	33	9	8	0	50	2	29	9	0	40	158
Total	17	3	18	0	38	13	142	56	0	211	156	16	33	0	205	6	83	23	0	112	566
07:00 AM	8	7	12	0	27	14	13	2	0	29	43	16	11	0	70	5	31	21	0	57	183
07:15 AM	19	10	18	0	47	15	29	11	0	55	46	26	13	0	85	3	24	25	0	52	239
07:30 AM	30	32	29	0	91	22	42	7	0	71	45	49	19	0	113	3	39	45	0	87	362
07:45 AM	11	6	19	0	36	5	50	16	0	71	16	4	9	0	29	8	23	14	0	45	181
Total	68	55	78	0	201	56	134	36	0	226	150	95	52	0	297	19	117	105	0	241	965
08:00 AM	10	1	4	0	15	3	18	10	0	31	32	1	6	0	39	3	17	4	0	24	109
08:15 AM	3	1	3	0	7	2	15	4	0	21	22	3	2	0	27	3	9	4	0	16	75
Grand Total	98	60	105	0	263	74	309	106	0	489	360	115	93	0	568	31	226	136	0	393	1713
Apprch %	37.3	22.8	39.9	0		15.1	63.2	21.7	0		63.4	20.2	16.4	0		7.9	57.5	34.6	0		
Total %	5.7	3.5	6.1	0	15.4	4.3	18	6.2	0	28.5	21	6.7	5.4	0	33.2	1.8	13.2	7.9	0	22.9	
Unshifted	98	60	105	0	263	74	298	103	0	475	360	114	92	0	566	30	209	136	0	375	1679
% Unshifted	100	100	100	0	100	100	96.4	97.2	0	97.1	100	99.1	98.9	0	99.6	96.8	92.5	100	0	95.4	98
Bank 1	0	0	0	0	0	0	11	3	0	14	0	1	1	0	2	1	17	0	0	18	34
% Bank 1	0	0	0	0	0	0	3.6	2.8	0	2.9	0	0.9	1.1	0	0.4	3.2	7.5	0	0	4.6	2

File Name : AM - Kapolei Prkway at Keoneula Blvd
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					KB From East					KP From South					KB From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	9	54	4	1	68	36	6	4	2	48	4	114	1	1	120	19	0	4	0	23	259
06:15 AM	12	53	10	0	75	27	8	8	0	43	4	97	0	0	101	14	0	4	0	18	237
06:30 AM	9	51	14	0	74	38	6	8	0	52	9	121	0	0	130	5	0	2	0	7	263
06:45 AM	8	53	15	0	76	31	2	8	0	41	16	103	5	0	124	9	0	1	0	10	251
Total	38	211	43	1	293	132	22	28	2	184	33	435	6	1	475	47	0	11	0	58	1010
07:00 AM	2	79	33	0	114	33	0	2	1	36	13	109	6	0	128	3	1	1	0	5	283
07:15 AM	5	83	33	0	121	45	2	5	0	52	10	123	0	0	133	2	0	0	0	2	308
07:30 AM	3	103	47	0	153	74	1	6	0	81	18	120	0	0	138	6	0	1	0	7	379
07:45 AM	2	62	21	0	85	58	0	13	0	71	9	118	1	0	128	3	1	0	0	4	288
Total	12	327	134	0	473	210	3	26	1	240	50	470	7	0	527	14	2	2	0	18	1258
08:00 AM	2	47	13	0	62	24	1	9	0	34	6	90	3	0	99	2	0	2	0	4	199
08:15 AM	3	44	6	0	53	14	0	3	0	17	7	67	1	0	75	2	0	3	0	5	150
Grand Total	55	629	196	1	881	380	26	66	3	475	96	1062	17	1	1176	65	2	18	0	85	2617
Apprch %	6.2	71.4	22.2	0.1		80	5.5	13.9	0.6		8.2	90.3	1.4	0.1		76.5	2.4	21.2	0		
Total %	2.1	24	7.5	0	33.7	14.5	1	2.5	0.1	18.2	3.7	40.6	0.6	0	44.9	2.5	0.1	0.7	0	3.2	
Unshifted	54	626	196	1	877	379	26	65	3	473	96	1056	17	1	1170	63	2	17	0	82	2602
% Unshifted	98.2	99.5	100	100	99.5	99.7	100	98.5	100	99.6	100	99.4	100	100	99.5	96.9	100	94.4	0	96.5	99.4
Bank 1	1	3	0	0	4	1	0	1	0	2	0	6	0	0	6	2	0	1	0	3	15
% Bank 1	1.8	0.5	0	0	0.5	0.3	0	1.5	0	0.4	0	0.6	0	0	0.5	3.1	0	5.6	0	3.5	0.6

File Name : PM - Kapolei Prkway - Kaioli St
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					KS From East					KP From South					KS From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	101	8	0	109	7	0	0	0	7	4	84	5	0	93	3	0	1	0	4	213
03:15 PM	2	107	6	0	115	0	1	0	0	1	1	97	4	0	102	7	1	0	0	8	226
03:30 PM	2	122	10	0	134	4	0	1	0	5	1	112	6	0	119	12	1	22	0	35	293
03:45 PM	1	119	7	0	127	6	0	1	0	7	2	89	5	0	96	3	1	0	0	4	234
Total	5	449	31	0	485	17	1	2	0	20	8	382	20	0	410	25	3	23	0	51	966
04:00 PM	5	109	9	0	123	6	0	1	0	7	2	80	4	0	86	1	0	2	0	3	219
04:15 PM	2	121	9	0	132	4	0	2	0	6	3	74	4	0	81	1	1	3	0	5	224
04:30 PM	2	121	10	0	133	8	0	1	0	9	3	71	4	0	78	1	0	1	0	2	222
04:45 PM	3	141	6	0	150	2	0	0	0	2	2	78	2	0	82	1	0	2	0	3	237
Total	12	492	34	0	538	20	0	4	0	24	10	303	14	0	327	4	1	8	0	13	902
05:00 PM	3	103	5	0	111	3	0	1	0	4	1	66	0	0	67	0	0	4	0	4	186
05:15 PM	1	110	7	0	118	5	0	2	0	7	0	83	5	0	88	2	1	2	0	5	218
05:30 PM	2	106	4	0	112	3	0	0	0	3	2	64	2	0	68	1	0	7	0	8	191
05:45 PM	6	107	9	0	122	2	1	0	0	3	2	61	4	0	67	5	0	1	0	6	198
Total	12	426	25	0	463	13	1	3	0	17	5	274	11	0	290	8	1	14	0	23	793
Grand Total	29	1367	90	0	1486	50	2	9	0	61	23	959	45	0	1027	37	5	45	0	87	2661
Apprch %	2	92	6.1	0		82	3.3	14.8	0		2.2	93.4	4.4	0		42.5	5.7	51.7	0		
Total %	1.1	51.4	3.4	0	55.8	1.9	0.1	0.3	0	2.3	0.9	36	1.7	0	38.6	1.4	0.2	1.7	0	3.3	
Unshifted	29	1354	90	0	1473	50	2	9	0	61	23	944	44	0	1011	36	5	45	0	86	2631
% Unshifted	100	99	100	0	99.1	100	100	100	0	100	100	98.4	97.8	0	98.4	97.3	100	100	0	98.9	98.9
Bank 1	0	13	0	0	13	0	0	0	0	0	0	15	1	0	16	1	0	0	0	1	30
% Bank 1	0	1	0	0	0.9	0	0	0	0	0	0	1.6	2.2	0	1.6	2.7	0	0	0	1.1	1.1

File Name : PM - Kapolei Prkway - Geiger Rd
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					GR From East					KP From South					GR From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	8	32	18	0	58	27	49	21	0	97	18	34	55	0	107	63	73	19	0	155	417
03:15 PM	11	37	16	0	64	37	79	22	0	138	16	32	46	0	94	59	88	17	0	164	460
03:30 PM	4	49	15	0	68	37	51	23	0	111	27	59	65	0	151	57	81	19	0	157	487
03:45 PM	11	43	19	0	73	34	57	32	0	123	24	42	39	0	105	54	84	11	1	150	451
Total	34	161	68	0	263	135	236	98	0	469	85	167	205	0	457	233	326	66	1	626	1815
04:00 PM	8	30	15	1	54	40	57	31	0	128	11	42	32	0	85	68	87	18	0	173	440
04:15 PM	7	56	15	0	78	41	51	22	0	114	23	28	30	0	81	58	85	15	0	158	431
04:30 PM	5	37	21	0	63	44	51	28	1	124	8	41	36	0	85	73	75	15	0	163	435
04:45 PM	7	40	15	0	62	37	54	25	0	116	9	35	34	0	78	74	73	13	0	160	416
Total	27	163	66	1	257	162	213	106	1	482	51	146	132	0	329	273	320	61	0	654	1722
05:00 PM	15	36	14	0	65	41	35	27	0	103	17	33	23	0	73	51	94	14	0	159	400
05:15 PM	4	38	11	0	53	47	28	22	0	97	12	31	41	0	84	66	82	18	1	167	401
05:30 PM	7	37	21	0	65	34	47	15	0	96	14	40	28	0	82	58	75	15	0	148	391
05:45 PM	17	38	19	0	74	47	38	36	0	121	13	24	27	0	64	61	71	21	0	153	412
Total	43	149	65	0	257	169	148	100	0	417	56	128	119	0	303	236	322	68	1	627	1604
Grand Total	104	473	199	1	777	466	597	304	1	1368	192	441	456	0	1089	742	968	195	2	1907	5141
Apprch %	13.4	60.9	25.6	0.1		34.1	43.6	22.2	0.1		17.6	40.5	41.9	0		38.9	50.8	10.2	0.1		
Total %	2	9.2	3.9	0	15.1	9.1	11.6	5.9	0	26.6	3.7	8.6	8.9	0	21.2	14.4	18.8	3.8	0	37.1	
Unshifted	104	473	199	1	777	466	597	304	1	1368	192	441	456	0	1089	742	968	195	2	1907	5141
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name : PM - Keoneula Blvd - Kaileolea St
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KS From North					KB From East					KS From South					KB From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	4	3	3	0	10	4	18	34	0	56	22	0	3	0	25	3	21	4	0	28	119
03:15 PM	3	4	7	0	14	7	23	36	0	66	31	2	7	0	40	4	22	7	0	33	153
03:30 PM	10	2	7	0	19	9	31	26	0	66	46	2	3	0	51	11	48	1	0	60	196
03:45 PM	10	1	6	0	17	8	25	35	0	68	22	3	6	0	31	6	42	4	0	52	168
Total	27	10	23	0	60	28	97	131	0	256	121	7	19	0	147	24	133	16	0	173	636
04:00 PM	6	5	8	0	19	14	25	24	0	63	24	1	5	0	30	8	29	4	0	41	153
04:15 PM	8	2	4	0	14	4	16	29	0	49	17	3	4	0	24	2	24	2	0	28	115
04:30 PM	4	6	2	0	12	6	23	29	0	58	27	5	3	0	35	5	23	6	0	34	139
04:45 PM	5	10	6	0	21	13	17	28	0	58	23	2	1	0	26	13	24	8	0	45	150
Total	23	23	20	0	66	37	81	110	0	228	91	11	13	0	115	28	100	20	0	148	557
05:00 PM	5	10	13	0	28	9	10	25	0	44	25	3	6	0	34	6	19	6	0	31	137
05:15 PM	12	8	9	0	29	11	17	31	0	59	29	1	9	0	39	3	23	7	0	37	149
05:30 PM	5	3	11	0	19	3	27	32	0	62	26	2	5	0	33	9	26	2	0	37	151
05:45 PM	4	1	8	0	13	2	20	42	0	64	31	0	1	0	32	9	17	3	1	30	139
Total	26	22	36	0	84	25	74	130	0	229	106	6	16	0	128	29	87	18	1	135	576
Grand Total	76	55	79	0	210	90	252	371	0	713	318	24	48	0	390	81	320	54	1	456	1769
Apprch %	36.2	26.2	37.6	0		12.6	35.3	52	0		81.5	6.2	12.3	0		17.8	70.2	11.8	0.2		
Total %	4.3	3.1	4.5	0	11.9	5.1	14.2	21	0	40.3	18	1.4	2.7	0	22	4.6	18.1	3.1	0.1	25.8	
Unshifted	76	55	79	0	210	89	245	369	0	703	314	24	46	0	384	80	312	54	1	447	1744
% Unshifted	100	100	100	0	100	98.9	97.2	99.5	0	98.6	98.7	100	95.8	0	98.5	98.8	97.5	100	100	98	98.6
Bank 1	0	0	0	0	0	1	7	2	0	10	4	0	2	0	6	1	8	0	0	9	25
% Bank 1	0	0	0	0	0	1.1	2.8	0.5	0	1.4	1.3	0	4.2	0	1.5	1.2	2.5	0	0	2	1.4

File Name : PM - Kapolei Prkway at Keoneula Blvd
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted - Bank 1

	KP From North					KB From East					KP From South					KB From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	83	20	0	103	17	0	5	0	22	3	79	4	0	86	3	0	1	0	4	215
03:15 PM	3	93	17	0	113	23	0	4	0	27	9	77	2	0	88	12	0	3	0	15	243
03:30 PM	2	95	24	0	121	20	0	5	0	24	10	80	0	0	90	7	4	2	0	13	276
03:45 PM	1	91	33	0	125	23	1	4	0	28	9	71	1	0	81	4	3	1	0	8	242
Total	6	362	104	0	472	92	1	18	0	111	31	315	7	0	353	26	7	7	0	40	976
04:00 PM	1	86	27	0	114	17	0	10	0	27	4	69	0	0	73	0	0	2	0	2	216
04:15 PM	0	102	27	0	129	18	1	5	0	24	3	63	0	0	66	0	1	1	0	2	221
04:30 PM	2	91	29	0	122	15	2	8	0	25	8	57	0	0	65	1	1	0	0	2	214
04:45 PM	0	112	29	0	141	14	0	2	0	16	11	64	0	0	75	1	1	0	0	2	234
Total	3	391	112	0	506	64	3	25	0	92	26	253	0	0	279	2	3	3	0	8	885
05:00 PM	1	88	16	1	106	13	0	7	0	20	5	53	0	0	58	1	1	1	0	3	187
05:15 PM	1	87	21	0	109	19	1	6	0	26	10	66	0	0	76	0	0	0	0	0	211
05:30 PM	0	72	30	0	102	18	1	6	0	25	4	48	1	0	53	1	0	0	0	1	181
05:45 PM	4	83	21	0	108	16	0	5	0	21	4	48	0	0	52	0	0	2	0	2	183
Total	6	330	88	1	425	66	2	24	0	92	23	215	1	0	239	2	1	3	0	6	762
06:00 PM	0	99	18	0	117	23	0	5	0	28	4	48	1	0	53	0	1	0	0	1	199
Grand Total	15	1182	322	1	1520	245	6	72	0	323	84	831	9	0	924	30	12	13	0	55	2822
Apprch %	1	77.8	21.2	0.1		75.9	1.9	22.3	0		9.1	89.9	1	0		54.5	21.8	23.6	0		
Total %	0.5	41.9	11.4	0	53.9	8.7	0.2	2.6	0	11.4	3	29.4	0.3	0	32.7	1.1	0.4	0.5	0	1.9	
Unshifted	13	1165	317	0	1495	239	6	70	0	315	81	811	8	0	900	27	11	13	0	51	2761
% Unshifted	86.7	98.6	98.4	0	98.4	97.6	100	97.2	0	97.5	96.4	97.6	88.9	0	97.4	90	91.7	100	0	92.7	97.8
Bank 1	2	17	5	1	25	6	0	2	0	8	3	20	1	0	24	3	1	0	0	4	61
% Bank 1	13.3	1.4	1.6	100	1.6	2.4	0	2.8	0	2.5	3.6	2.4	11.1	0	2.6	10	8.3	0	0	7.3	2.2

APPENDIX D

SYNCHRO AND SIM TRAFFIC DATA SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	3466		1770	3382			1830	1583		1810	1583
Flt Permitted	0.58	1.00		0.62	1.00			0.81	1.00		0.70	1.00
Satd. Flow (perm)	1076	3466		1163	3382			1507	1583		1303	1583
Volume (vph)	105	117	19	36	134	56	52	95	150	78	55	68
Peak-hour factor PHF	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Adj. Flow (vph)	157	175	28	54	200	84	78	142	224	116	82	101
Lane Group Flow (vph)	157	203	0	54	284	0	0	220	224	0	198	101
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	14.6	14.6		14.6	14.6			9.1	9.1		9.1	9.1
Effective Green, g (s)	16.6	16.6		16.6	16.6			11.1	11.1		11.1	11.1
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.31	0.31		0.31	0.31
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	500	1612		541	1573			469	492		405	492
v/s Ratio Prot		0.06			0.08							
v/s Ratio Perm	c0.15			0.05				0.15	0.14		c0.15	0.06
v/c Ratio	0.31	0.13		0.10	0.18			0.47	0.46		0.49	0.21
Uniform Delay, d1	6.0	5.4		5.4	5.6			9.9	9.9		10.0	9.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.0		0.1	0.1			0.7	0.7		0.9	0.2
Delay (s)	6.3	5.5		5.4	5.6			10.7	10.5		10.9	9.3
Level of Service	A	A		A	A			B	B		B	A
Approach Delay (s)		5.8			5.6			10.6			10.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
c Critical Lane Group			

Kapolei Pkwy at Geiger — AM Future No Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.93		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1735		1770	1784		1770	1863	1583	1770	3413	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1735		1770	1784		1770	1863	1583	1770	3413	
Volume (vph)	39	216	180	78	320	127	393	676	65	106	352	78
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	44	245	205	89	364	144	447	768	74	120	400	89
Lane Group Flow (vph)	44	450	0	89	508	0	447	768	74	120	489	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	2.3	30.9		4.0	32.6		20.1	39.2	39.2	5.0	25.1	
Effective Green, g (s)	4.3	32.9		6.0	34.6		21.1	40.2	40.2	7.0	26.1	
Actuated g/C Ratio	0.04	0.32		0.06	0.34		0.21	0.39	0.39	0.07	0.26	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.0	5.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	75	559		104	605		366	734	623	121	880	
v/s Ratio Prot	0.02	0.26		c0.05	c0.28		c0.25	c0.41		0.07	0.14	
v/s Ratio Perm									0.05			
v/c Ratio	0.59	0.81		0.86	0.84		1.22	1.05	0.12	0.99	0.56	
Uniform Delay, d1	48.0	31.7		47.6	31.2		40.5	30.9	19.7	47.5	33.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.2	8.3		45.8	10.0		121.8	46.0	0.1	79.0	0.8	
Delay (s)	59.2	39.9		93.4	41.2		162.3	76.9	19.8	126.5	33.7	
Level of Service	E	D		F	D		F	E	B	F	C	
Approach Delay (s)		41.6			48.9			103.2			52.0	
Approach LOS		D			D			F			D	

Intersection Summary

HCM Average Control Delay	71.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	102.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	E
c Critical Lane Group			

Kapolei Pkwy at Kaioli — AM Existing 2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	1	31	0	1	28	43	645	2	12	418	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	16	1	36	0	1	32	49	741	2	14	480	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1014	1154	244	1145	1356	372	487			744		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1154	244	1145	1356	372	487			744		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	99	95	100	99	95	95			98		
cM capacity (veh/h)	173	139	757	139	139	625	1072			860		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	16	37	0	33	49	494	249	14	320	167
Volume Left	16	0	0	0	49	0	0	14	0	0
Volume Right	0	36	0	32	0	0	2	0	0	7
cSH	173	665	1700	558	1072	1700	1700	860	1700	1700
Volume to Capacity	0.09	0.06	0.00	0.06	0.05	0.29	0.15	0.02	0.19	0.10
Queue Length (ft)	8	4	0	5	4	0	0	1	0	0
Control Delay (s)	27.9	10.7	0.0	11.9	8.5	0.0	0.0	9.3	0.0	0.0
Lane LOS	D	B	A	B	A			A		
Approach Delay (s)	16.0		11.9		0.5			0.3		
Approach LOS	C		B							

Intersection Summary

Average Delay	1.3		
Intersection Capacity Utilization	306%	ICU Level of Service	A

Kapolei Pkwy at Keoneula — AM Existing 2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	2	14	26	3	210	7	470	50	134	327	12
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (veh/h)	2	2	17	31	4	253	8	566	60	161	394	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Mediar type		Raised			Raised							
Mediar storage veh)		1			1							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1562	1367	204	1151	1345	596	408			627		
vC1, stage 1 conf vol	724	724		613	613							
vC2, stage 2 conf vol	838	643		538	731							
vCu, unblocked vol	1562	1367	204	1151	1345	596	408			627		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	99	98	87	98	43	99			83		
cM capacity (veh/h)	-29	203	802	248	237	447	1147			951		

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	2	2	18	31	2	254	8	627	161	263	146
Volume Left	2	0	0	31	0	0	8	0	161	0	0
Volume Right	0	0	17	0	0	253	0	60	0	0	14
cSH	0	203	708	248	237	445	1147	1700	951	1700	1700
Volume to Capacity	Err	0.01	0.02	0.13	0.01	0.57	0.01	0.37	0.17	0.15	0.09
Queue Length (ft)	Err	1	2	11	1	87	1	0	15	0	0
Control Delay (s)	Err	22.9	10.2	21.6	20.3	23.4	8.2	0.0	9.6	0.0	0.0
Lane LOS	F	C	B	C	C	C	A		A		
Approach Delay (s)	Err			23.1			0.1		2.7		
Approach LOS	F			C							

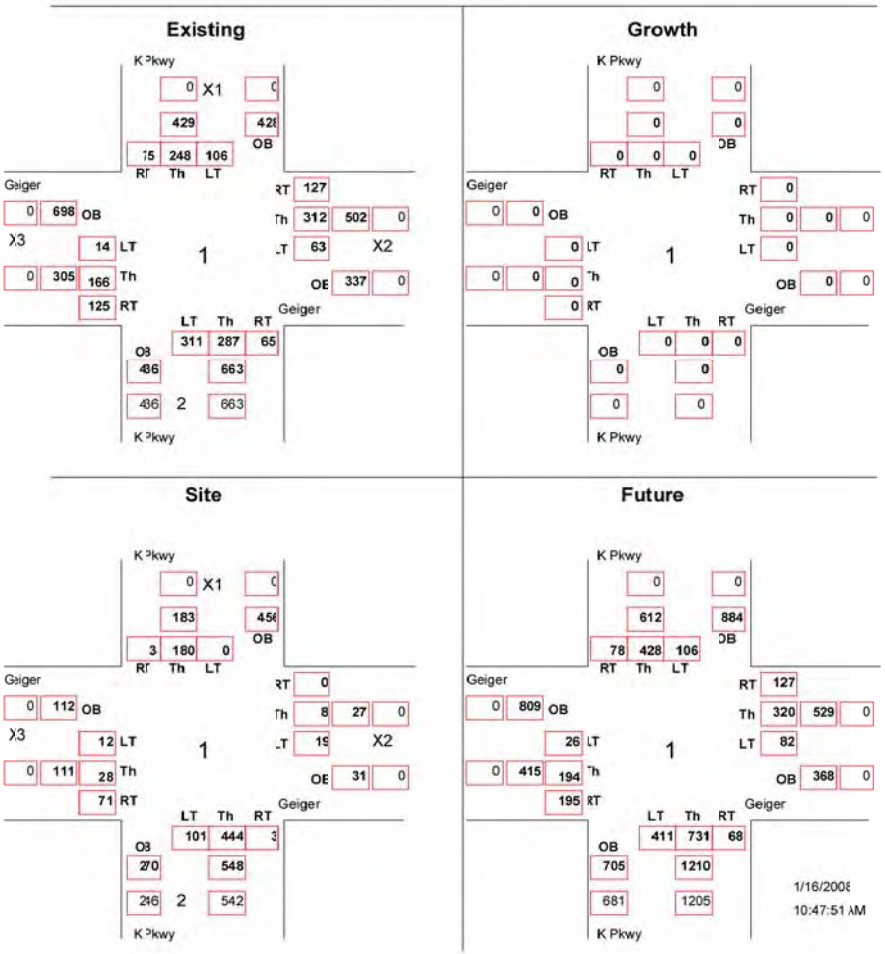
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B

rogerdgre1-lt51

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Kapolei Pkwy at Geiger
Intersection ID: 1

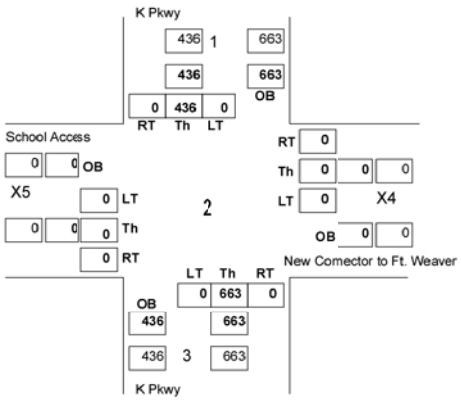


Intersection Turning Movements

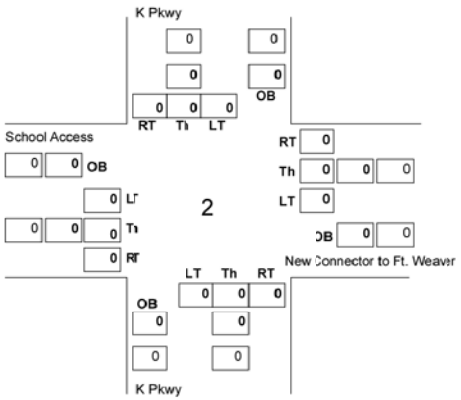
Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Kapolei Pkwy at School/New Connector to Ft Weaver Keanui
Intersection ID: 2

Existing



Growth



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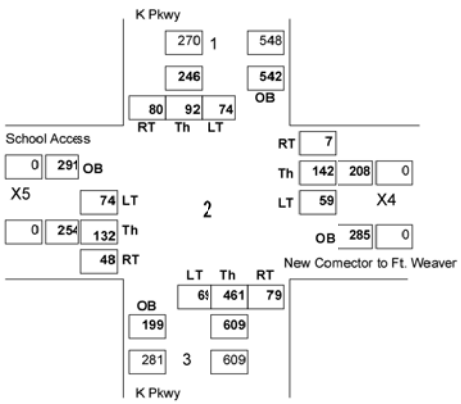

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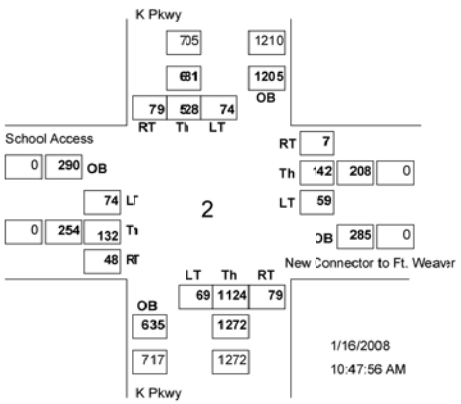


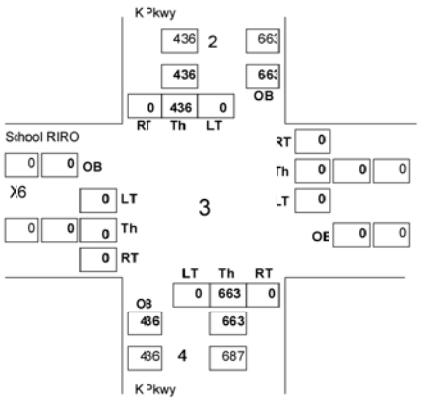
1/16/2008
10:47:56 AM

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Kapolei Pkwy at School Right-in/Right-out
Intersection ID: 3

Existing



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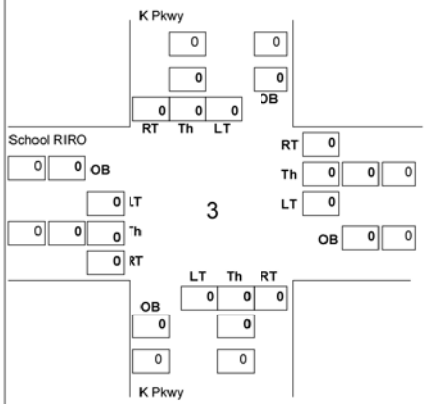

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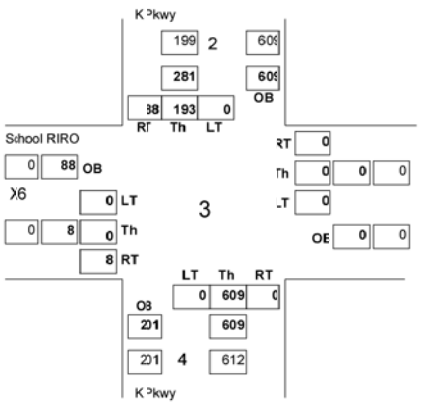

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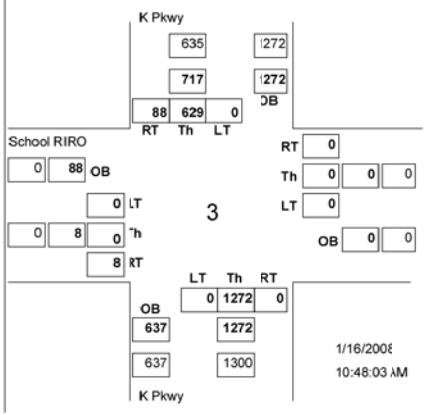

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10:48:03 AM

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Kapolei Pkwy at Kaioli
Intersection ID: 4

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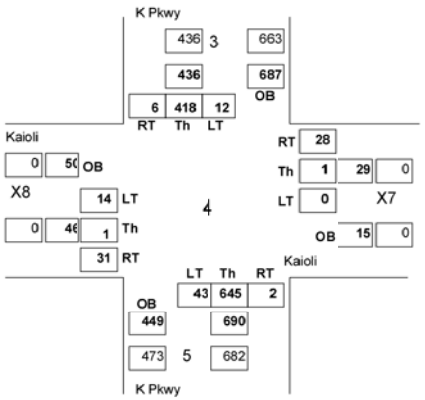

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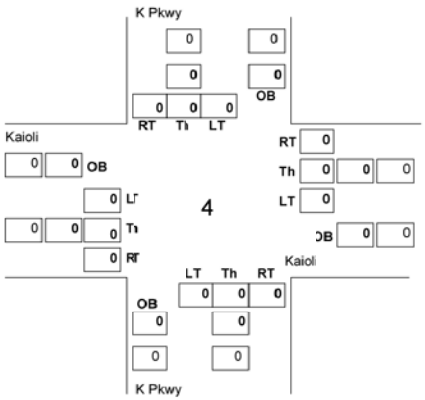

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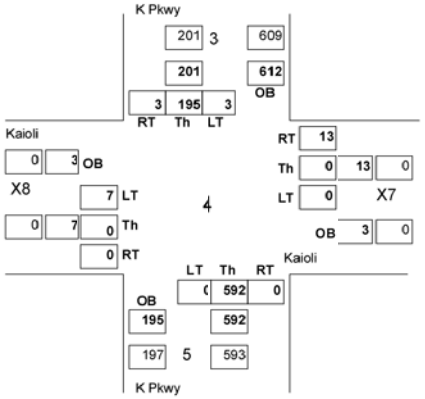

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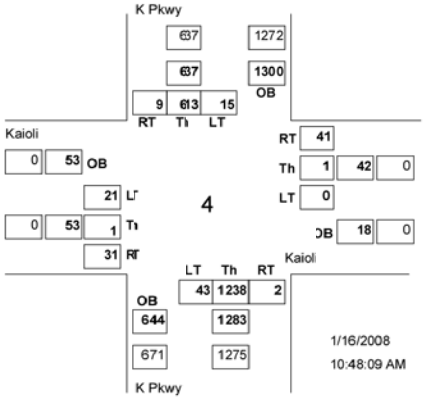

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Kapolei Pkwy at Keoneula
Intersection ID: 5

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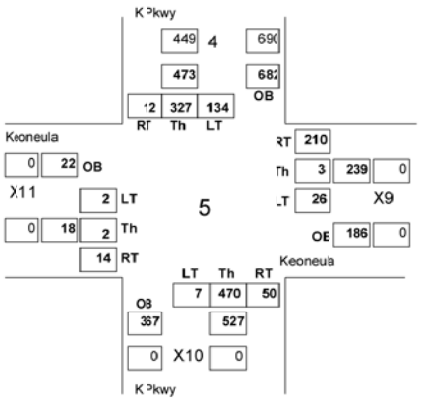

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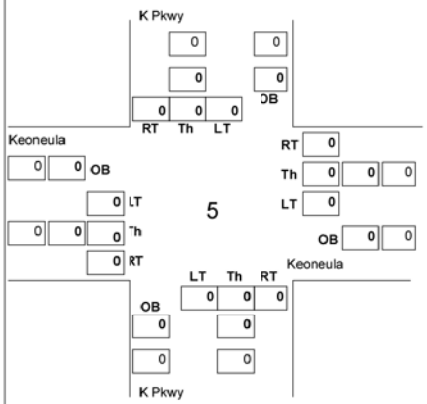

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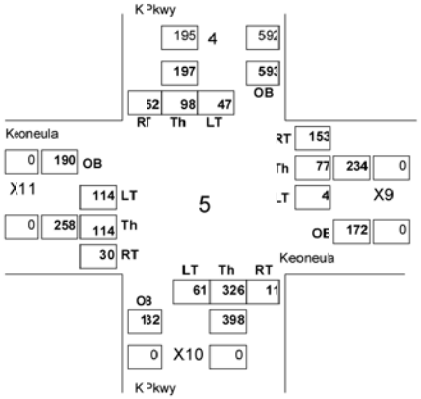

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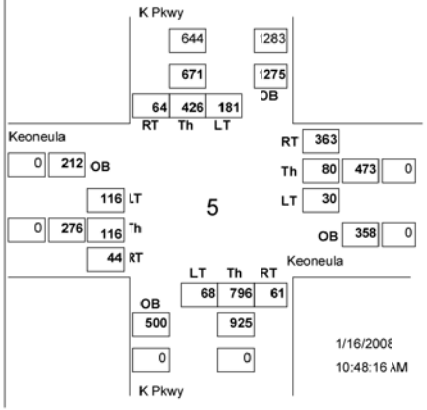

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: AM

Intersection Name: Keoneula at Kaileolea
Intersection ID: 6

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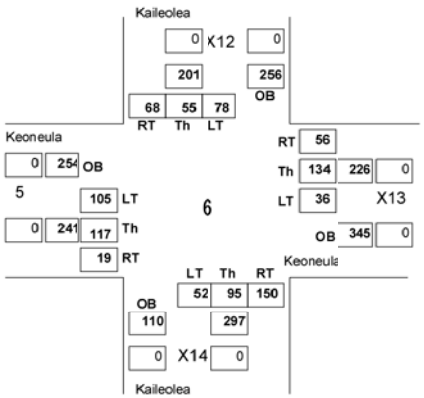

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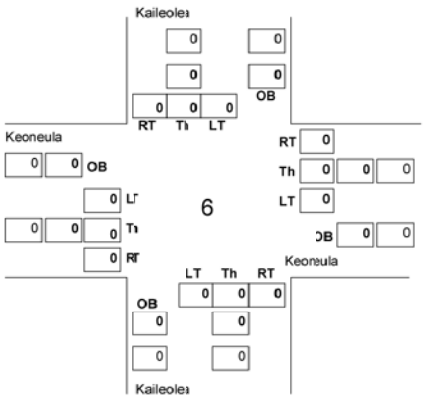

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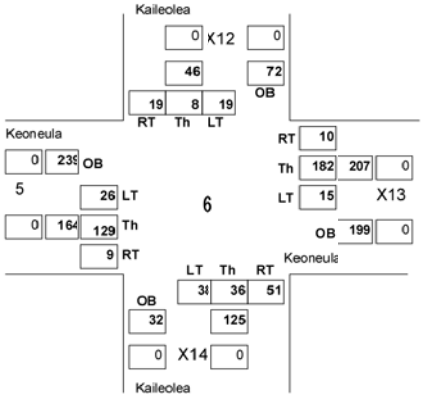

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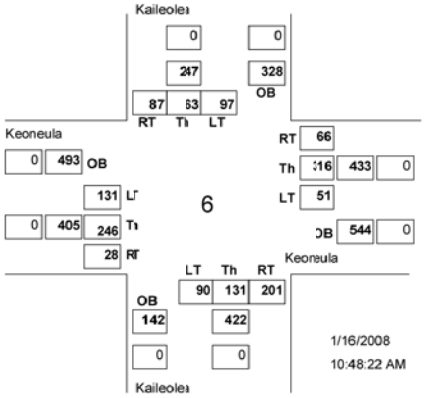

Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Kapolei Pkwy at Geiger
Intersection ID: 1

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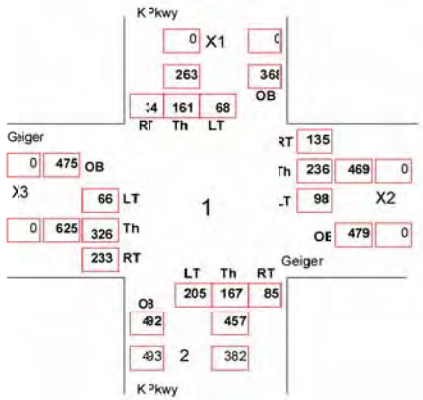

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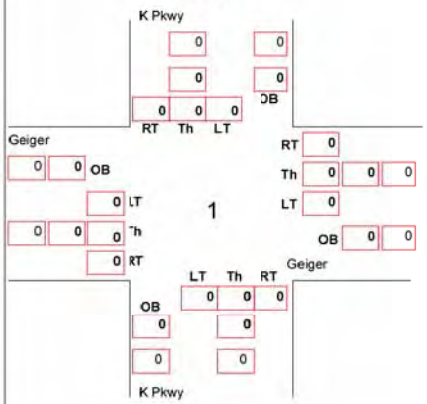

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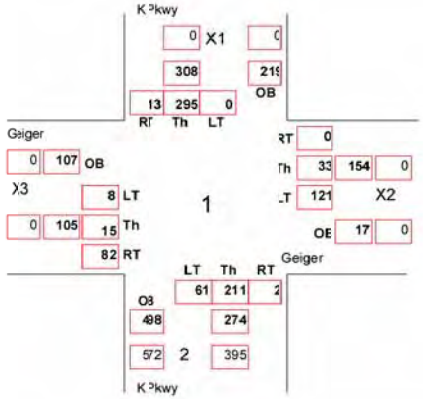

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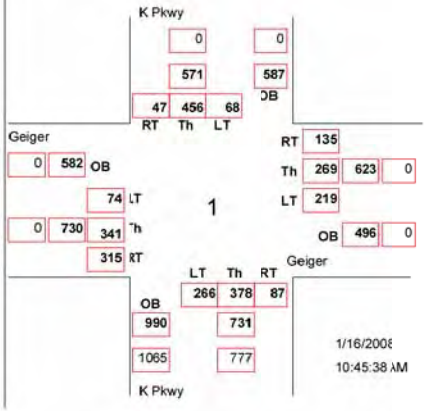
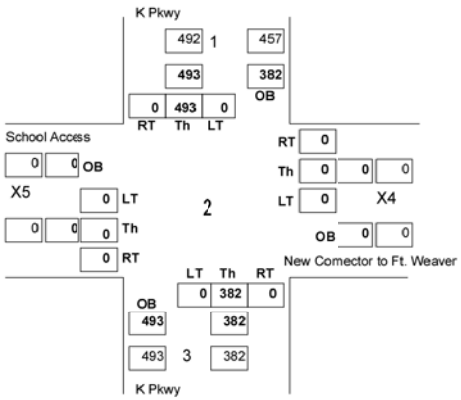


Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Kapolei Pkwy at School/New Connector to Ft Weaver Keanui
Intersection ID: 2

Existing



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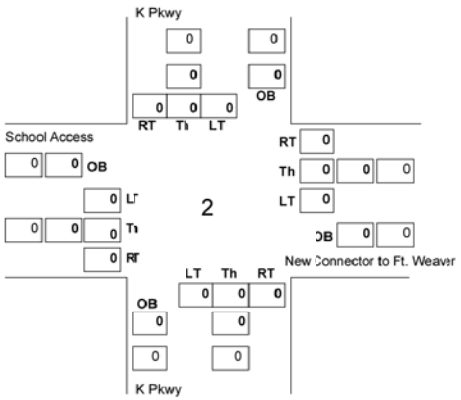

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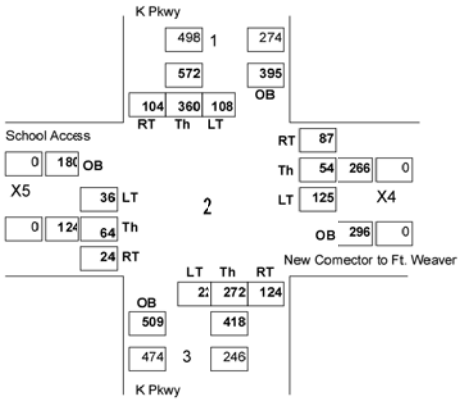

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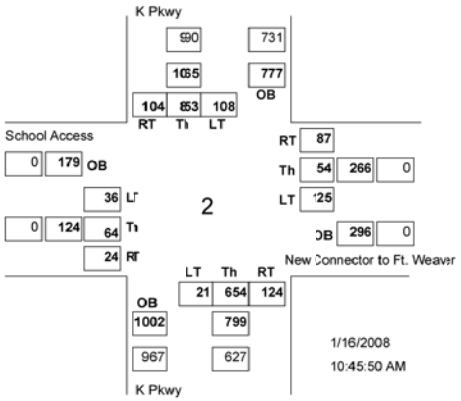

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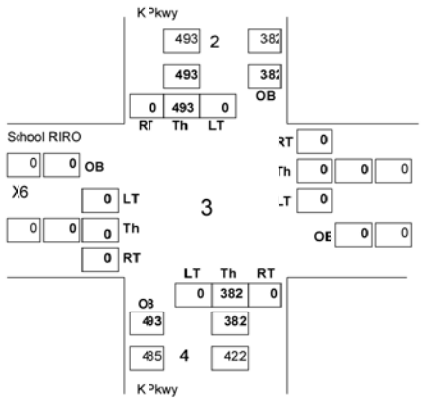
Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Kapolei Pkwy at School Right-in/Right-out
Intersection ID: 3

Existing



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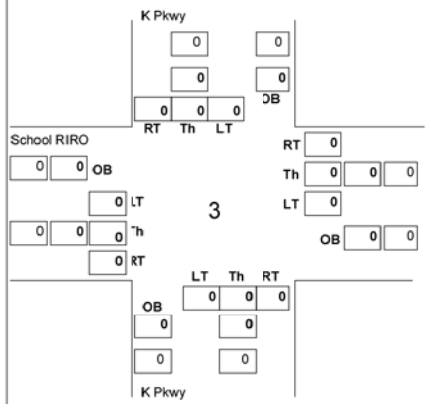

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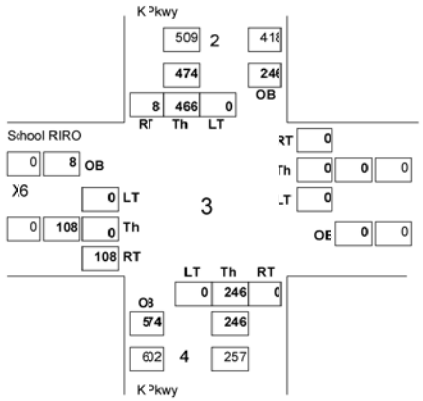

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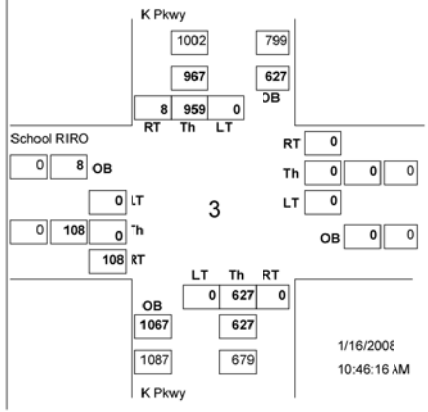

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Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Kapolei Pkwy at Kaioli
Intersection ID: 4

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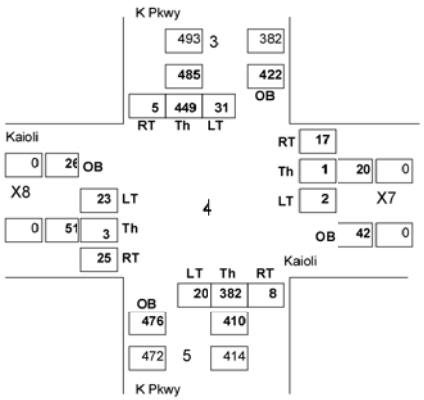

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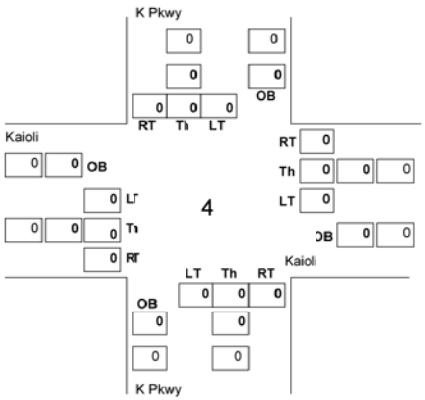

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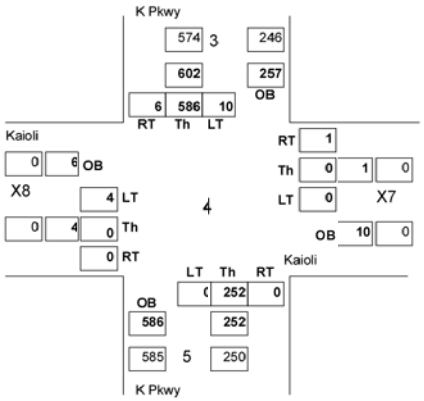

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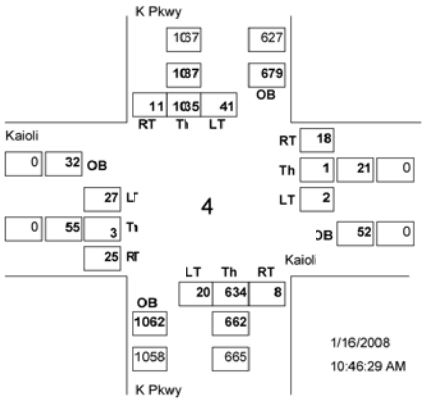
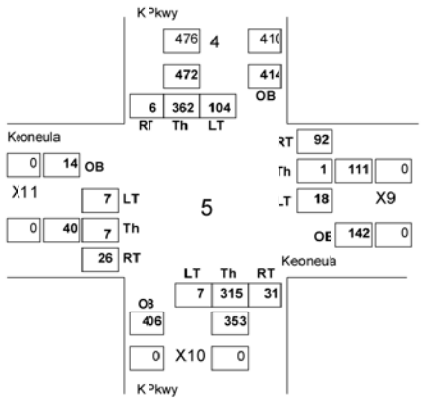


Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Kapolei Pkwy at Keoneula
Intersection ID: 5

Existing



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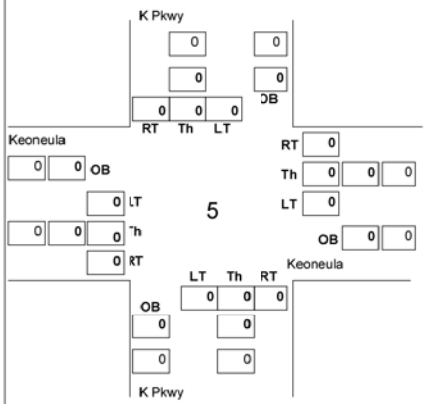

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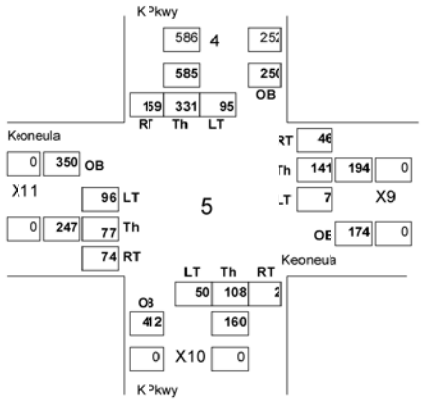

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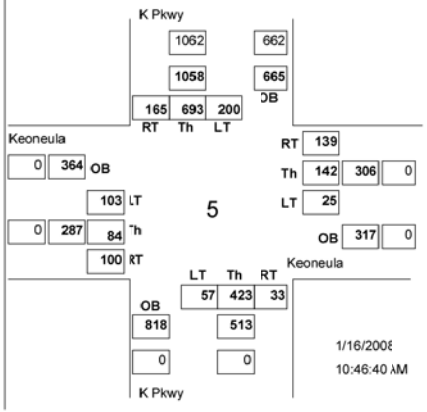
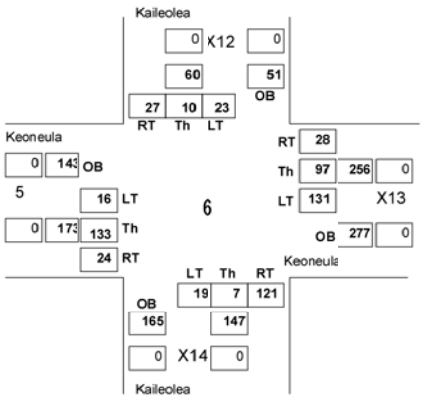


Intersection Turning Movements

Project: Ewa Middle School TIAR
Scenario: Project with Current Proposed Plan
Time Period: PM

Intersection Name: Keoneula at Kaileolea
Intersection ID: 6

Existing



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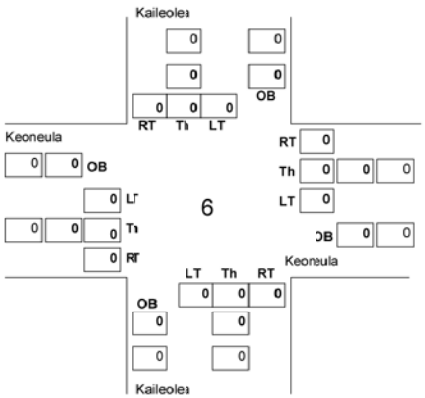

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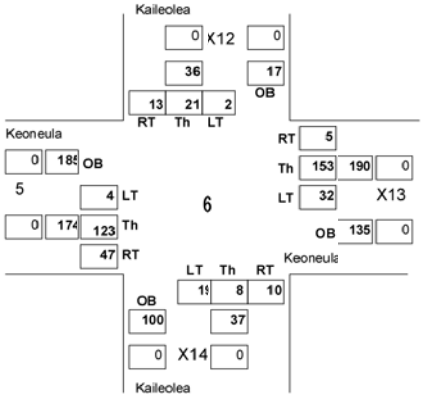

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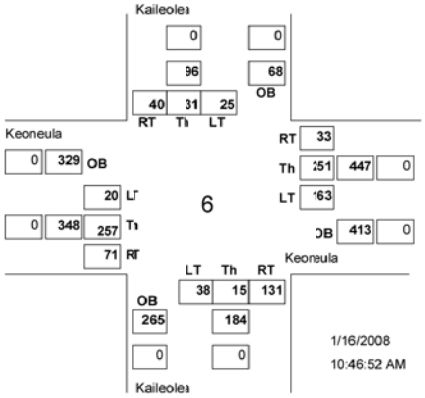

APPENDIX F

Phase II Environmental Site Assessment

PHASE II ENVIRONMENTAL SITE ASSESSMENT
PROPOSED EWA MAKAI MIDDLE SCHOOL LOCATION
LOT 16887, MAP 1304
(LAND COURT APPLICATION NO. 1069)
ISLAND OF OAHU, HAWAII

TMK (1) 9-1-069:027

MNA JOB NO. 20691

OCTOBER 23, 2008

Environmental Studies and Consulting Services

99-1046 Iwaena St. Suite 210A, Aiea, Hawaii, USA 96701 • 808.484.9214
94 Kohola Street, Hilo Hawaii, USA 96720 • 808.935.8727

This Phase II ESA is prepared for:

SSFM International, Inc.
501 Summer Street, Suite 620
Honolulu, HI 96817

Phase II Environmental Site Assessment for Proposed Ewa Makai Middle School Location Lot 16887, Map 1304 (Land Court Application No. 1069) Island of Oahu, Hawaii TMK (1) 9-1-069:027

MNA Job No. 20691

October 21, 2008

Eunjin Kotkovetz
Environmental Engineer

Myounghee Noh
Consulting Chemist

Myounghee Noh & Associates, L.L.C.
99-1046 Iwaena Street, Suite 210A
Aiea, Hawaii 96701
Tel (808) 484-9214
Fax (808) 484-4660
Toll free (888) 747-8448
www.noh-associates.com

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Phase II ESA at the Proposed Ewa Makai Middle School Location
October 2008

APPENDICES

LIST OF ABBREVIATIONS

bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DU	Decision Unit
EAL	Environmental Action Level
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
HDOH	Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
IDW	Investigation Derived Waste
mg/kg	milligrams per kilogram
MIS	Multi-Increment Sampling/Sample
MNA	Myounghee Noh & Associates, L.L.C.
PPE	Personal Protective Equipment
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
SVOCs	Semivolatile Organic Compounds
TMK	Tax Map Key
TPH-DRO	Total Petroleum Hydrocarbons as Diesel Range Organics
VOCs	Volatile Organic Compounds

1.0 EXECUTIVE SUMMARY

Myounghee Noh & Associates, L.L.C. (MNA), was retained to conduct a Phase II Environmental Site Assessment (ESA) at the Proposed Ewa Makai Middle School Location at Lot 16887, Map 1304, TMK (1) 9-1-069:027 (Figure 1). This Phase II ESA was conducted by Myounghee Noh & Associates, L.L.C., herein referred to as MNA, for SSFM International, Inc., 501 Sumner Street, Suite 620, Honolulu, HI, 96817.

The purpose of this Phase II ESA was to confirm the presence or absence of any *recognized environmental conditions (REC)* at the subject property. Additionally, the purpose of this ESA was to identify potential risks from environmental contaminants, if any, to construction workers and occupants of Ewa Makai Middle School.

1.1 Sampling and Analysis

A multi-incremental sampling (MIS) technique was implemented to collect samples from surface at 0-2 inch below ground surface (bgs) and subsurface at 2-2.5 ft bgs and 5-5.5 ft bgs at the subject school site.

Prior to the sampling, MNA established grid systems which resulted in 50 surface soil sampling points (increments), and 30 subsurface sampling points. The sample locations are depicted in Figure 2 and Figure 3, respectively.

The surface soil increments were collected using a Terra Core sampler from the 50 sampling points. For the 2-2.5 ft bgs, and 5-5.5 ft bgs MIS, MNA used direct-push drill rig with a split spoon sampler. The direct-push drill rig encountered refusal at nine sampling points at about 2 ft bgs, and at seven sampling points at about 4 ft bgs. Therefore, 21 increments were collected from the 2-2.5 ft bgs and 14 increments from the 5-5.5 ft bgs.

All MIS samples were analyzed for Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO), Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) Metals (arsenic, barium, cadium, chromium, lead, mercury, selenium, and silver), pesticides, and herbicides.

1.2 Results and Conclusions

The analytical results were compared to the Hawaii Department of Health (HDOH) Environmental Action Levels (EALs) for soil with unrestricted land use above a non-drinking water resource and greater than 150 meters from surface water.

<u>DU1-S0 (Surface MIS, 50 increments)</u>
Low levels of TPH-DRO, metals (arsenic, barium, chromium, and mercury), and pesticides (4,4'-DDE, heptachlor epoxide, alpha- and gamma-chlordane) were detected. All were below the EALs.

DU1-S2.5-1 (2-2.5 ft bgs MIS, 21 increments)
Low levels of metals (arsenic, barium, chromium, and mercury), a herbicide (pentachlorophenol), and pesticides (heptachlor epoxide and gamma-chlordane) were detected, but all were well below the EALs.

DU1-S5.5 (5-6 ft bgs MIS, 14 increments)
Low levels of metals (barium, chromium, and mercury) and a pesticide (gamma-chlordane) were detected but all were well below the EALs.

Based on sampling and analysis of 0-2 inch surface, 2-2.5 ft bgs, and 5-6 ft bgs MIS soil samples, MNA concludes that *recognized environmental conditions* do not exist within the proposed Ewa Makai Middle School Location with respect to the selected EALs. No further investigation is recommended.

2.0 INTRODUCTION

Myounghee Noh & Associates, L.L.C. (MNA), was retained to conduct a Phase II Environmental Site Assessment (ESA) at the Proposed Ewa Makai Middle School Location at Lot 16887, Map 1304, TMK (1) 9-1-69-027 (Figure 1). This Phase II ESA was conducted by Myounghee Noh & Associates, L.L.C., herein referred to as MNA, for SSFM International, Inc., 501 Sumner Street, Suite 620, Honolulu, HI, 96817.

2.1 Purpose

The purpose of this Phase II ESA was to confirm the presence or absence of any *recognized environmental conditions (REC)* at the subject property. Additionally, the purpose of this ESA was to identify potential risks from environmental contaminants, if any, to construction workers and occupants of the proposed Ewa Makai Middle School.

2.2 Data Quality Objective

The Data Quality Objective (DQO) is to determine if any environmental hazards exist during and after the construction and to answer the question "Will there be any contaminants that may have an impact on the site workers and cause an indoor air scenario?" The decision unit was defined as the footprint of the proposed school site.

3.0 SAMPLING

This section describes various aspects of the sampling conducted by MNA during September 16-17, 2008. Analytical methods and results are presented in Section 4.0 and Section 5.0, respectively. No groundwater was encountered.

3.1 Sampling Grid

The entire subject site, approximately 1,450 ft x 720 ft, was defined as one decision unit (DU) based on the assumed former agricultural use of the site, and two grid systems were used for 50 surface and 30 subsurface MIS samples. Soil sampling and analysis are summarized in Table 1.

Table 1. Summary of Soil Sampling and Analysis

Sample Type	Sample ID	Depth (bgs)	Planned increments	Increments collected	Analytes
Surface MIS	DU1-S0	0-2 inch	50	50	TPH-DRO VOCs SVOCs RCRA metals Pesticides Herbicides
Subsurface MIS	DU1-S2.5-1	2-2.5 ft	30	21	
	DU1-S5.5	5-5.5 ft	30	14	
QC MIS	DU1-S2.5-2	2-2.5 ft	30	21	
	DU1-S2.5-3	2-2.5 ft	30	21	

Figure 1. Site Location

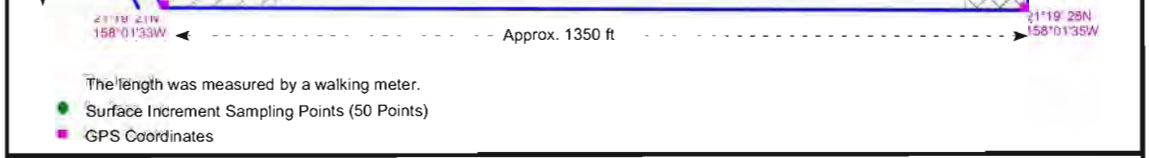

Figure 2. Surface Increment Sampling Points

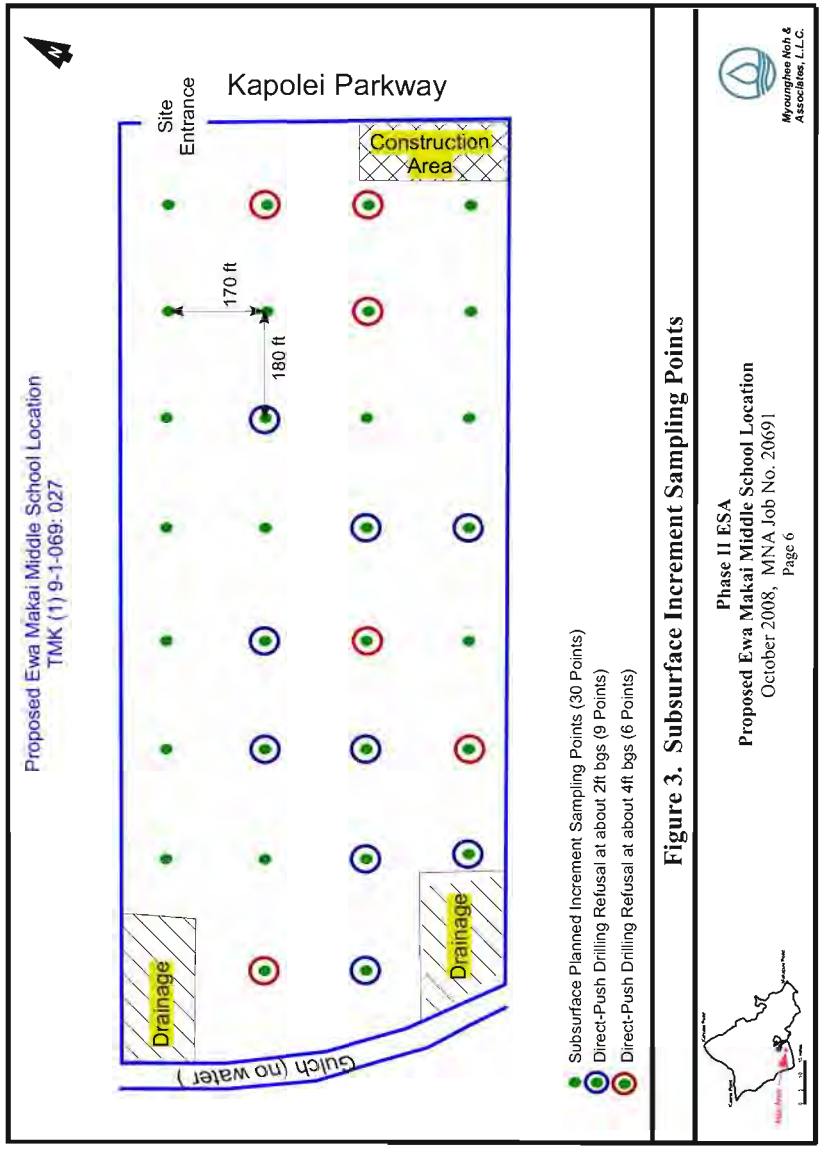

Figure 3. Subsurface Increment Sampling Points

Phase II ESA
Proposed Ewa Makai Middle School Location
October 2008, MNA Job No. 20691
Page 6

Myounghee Noh & Associates, L.L.C.

3.2 Surface MIS

On September 16, 2008, MNA collected one surface MIS containing 50 soil increments. The surface of the subject site was covered with foreign crushed paper material (dust control assumed). Before incremental soil sampling, MNA removed the paper material at each sampling point. The surface soil was collected from 0-2 inchs bgs using 10-gram Terra Core samplers. MNA collected 10 gram soil samples for VOCs analysis at each point and placed them all in a 500-mL amber bottle containing methanol. MNA then collected 30 gram soil samples and placed then all in a sealable plastic bag for the analysis of TPH-DRO, SVOCs, RCRA metals, pesticides, and herbicides. The surface MIS was labeled as DU1-S0.

3.3 Subsurface MIS

On September 17, 2008, MNA performed subsurface multi-incremental sampling. Prior to sampling, subsurface utilities were checked at the 30 increment sampling points using a toner. MNA collected subsurface MISs at the depth of 2-2.5 ft bgs and 5-5.5 bgs.

MNA used a direct-push drill rig with a split spoon sampler to observe and collect the subsurface soil. MNA advanced the direct-push equipment at 30 incremental sampling points. The direct-push encountered refusal from nine sampling points at about 2 ft bgs, and from seven sampling points at about 4 ft bgs. Therefore, MNA collected 21 increments from 2-2.5 ft bgs and 14 increments from 5-5.5 ft bgs (Table 1)

Once the required depth was achieved, a 10-gram soil sample for VOCs analysis was immediately collected using a 10-gram Terra Core sampler and placed into a 500-mL amber bottle containing methanol. MNA then collected a 50-gram soil sample at each sampling point and placed them all into a sealable plastic bag for the analysis of TPH-DRO, SVOCs, RCRA metals, pesticides, and herbicides. The subsurface MISs were labeled as DU1-S2.5 and DU1-S5.5, respectively.

3.4 Preservation

All samples were labeled and recorded in a chain of custody document. Samples were placed in a cooler and chilled to 4°C with wet ice for transport to the analytical laboratory. VOC samples were preserved in amber bottles containing methanol and chilled in the cooler.

3.5 Quality Control

Several measures were taken to ensure the integrity of the samples and the quality analytical data as follows:

- Triplicate MISs were collected from the 2-2.5 ft bgs soil to support the repeatability of the sampling technique and analytical practice and representativeness of the subject site
- Temperature blanks were kept with each sample cooler to ensure samples were properly preserved

- A trip blank sample was transported with the VOA sample containers from the field to the laboratory and analyzed for VOCs to ensure that cross-contamination had not occured

3.6 Transportation

Samples were packed in a cooler chilled with wet ice. The cooler was transported under chain-of-custody to the analytical laboratory Test America located at 99-193 Aiea Heights Drive, Suite 121 Aiea, Hawaii.

3.7 Decontamination

Decontamination needs were eliminated by using a disposable sampling tool, Terra Core. Drilling equipment was decontaminated between sample collections using a four-step process as outlined below:

- Removed gross soil and materials
- Washed with Liquinox®
- Rinsed with tap water
- Rinsed with distilled water

3.8 Investigation Derived Waste

Investigation derived waste (IDW) was minimized through the selection of sampling techniques and the use of disposable sampling equipment. IDW included soil, decontamination water, disposable personal protective equipment (PPE), and disposable sampling tools. IDW soil was generated during the investigation and was used to backfill the borings. Approximately three gallons of decontamination wastewater was generated and was transported to the MNA's Aiea facility. Less than one trash bag of PPE and disposable sampling tools were generated and disposed of in a municipal waste dumpster.

4.0 ANALYSIS

The MIS soil samples were analyzed by Test America, a lab that is validated by the U.S. Navy Facility Engineering Service Center.

Surface, subsurface, and subsurface QC MISs were analyzed for:

- Total petroleum hydrocarbons as diesel range organics (TPH-DRO) by the Environmental Protection Agency (EPA) Method 8015M
- Volatile organic compounds (VOCs) by the EPA Method 8260C
- Semivolatile organic compounds (SVOCs) by the EPA Method 8270B
- RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by the EPA Methods 6010/7000
- Pesticides by the EPA 8081A
- Herbicides by the EPA 8151A

5.0 RESULTS AND DISCUSSION

Analytical results were received from Test America and are summarized in Table 2. The contaminants presented in Table 2 are those detected from the laboratory analysis. The complete analytical report is included in Appendix A.

The analytical results were compared to the Hawaii Department of Health (DOH) Environmental Action Levels (EALs) for soil with unrestricted land use above a non-drinking water resource and greater than 150 meters from surface water.

DU1-S0 (Surface MIS)
Low levels of TPH-DRO, metals (arsenic, barium, chromium, and mercury), and pesticides (4,4'-DDE, heptachlor epoxide, alpha- and gamma-chlordane) were detected. All were below the EALs. But arsenic was detected 18.8 mg/kg. This arsenic concentration approaches the EAL that is 20 mg/kg. VOCs and SVOCs were not detected at DU1-S0.

DU1-S2.5-1 (2-2.5 ft bgs MIS)
Low levels of metals (arsenic, barium, chromium, and mercury), herbicides (pentachlorophenol), and pesticides (heptachlor epoxide and gamma-chlordane) were detected, but all were well below the EALs. TPH-DRO, VOCs, and SVOCs were not detected at DU1-S2.5-1.

DU1-S5.5 (5-6 ft bgs MIS)
Low levels of metals (barium, chromium, and mercury) and a pesticide (gamma-chlordane) were detected but well below the EALs. TPH-DRO, VOCs, and SVOCs were not detected at DU1-S5.5.

DU1-S2.5-2 and DU1-S2.5-3 (QC MISs at 2-2.5 ft bgs)
The analytical results of two QC MISs at 2-2.5 ft bgs were compared with the results of DU1-S2.5-1. Arsenic, barium, chromium, mercury, pentachlorophenol, heptachlor epoxide, and gamma-chlordane were detected in similar concentrations from all three MISs but their concentrations were well below the EALs. TPH-DRO and lead were detected at DU1-S2.5-2, but the concentrations were also below the EALs.

Table 2. Summary of Soil Sample Results & Tier 1 EALs

Sample ID (Depth)	Contaminants detected	Concentration (mg/kg)	Tier 1 EALs* (mg/kg)	Tier 1 Exceeded?
DU1-S0 (0-2 inch bgs)	TPH-DRO	7.29	500	No
	Arsenic	18.8	20	No
	Barium	94.6	750	No
	Chromium	81	500	No
	Mercury	0.0825	4.7	No
	4,4'-DDE (Pesticide)	0.0024	1.4	No
	Heptachlor epoxide (Pesticide)	0.001	0.046	No
	alpha-chlordane (Pesticide)	0.00038	7	No
	gamma-chlordane (Pesticide)	0.0013	7	No
DU1-S2.5-1 (2-2.5 ft bgs)	Arsenic	10.9	20	No
	Barium	58.7	750	No
	Chromium	38.1	500	No
	Mercury	0.0504	4.7	No
	Pentachlorophenol (Herbicide)	0.0034	3	No
	Heptachlor epoxide	0.00046	0.046	No
	gamma-chlordane	0.00054	7	No
DU1-S5.5 (5-5.5 ft bgs)	Barium	33.1	750	No
	Chromium	22.3	500	No
	Mercury	0.00881	4.7	No
	gamma-chlordane	0.00063	7	No
DU1-S2.5-2 (2-2.5 ft bgs)	TPH-DRO	6.39	500	No
	Arsenic	10.7	20	No
	Barium	61.8	750	No
	Chromium	36	500	No
	Lead	21.2	200	No
	Mercury	0.0416	4.7	No
	Pentachlorophenol	0.0049	3	No
	Heptachlor epoxide	0.00054	0.046	No
	gamma-chlordane	0.00053	7	No
DU1-S2.5-3 (2-2.5 ft bgs)	Arsenic	12.8	20	No
	Barium	64.5	750	No
	Chromium	41.7	500	No
	Mercury	0.0477	4.7	No
	Pentachlorophenol	0.0048	3	No
	Heptachlor epoxide	0.00042	0.046	No
	gamma-chlordane	0.00054	7	No

*HDOH-HEER, Summer 2008

6.0 DATA QUALITY REVIEW

6.1 Sample Holding Times

Technical holding times for all TPH-DRO, SVOC, metals, and VOC analyses were met.

6.2 Laboratory Blank Results

None of the TPH-DRO, SVOC, metals, and VOC analytes were found in the laboratory blank sample which indicated that the analytical processes were free of the contaminants.

6.3 Laboratory Performance Review

Based on the laboratory duplicate, laboratory control sample (LCS), and matrix spike/matrix spike duplicate (MS/MSD) quality control results, the overall analytical approach (preparative, cleanup, and determinative methods) to the sample matrix from the Ewa Makai Middle School site was applicable. The MS/MSD results were helpful in evaluating method performance in the Ewa Makai Middle School sample matrix.

6.4 Field Performance Review

Based on the analysis of the triplicate samples collected at 2-2.5 ft bgs, the overall results were within 20% agreement, except for the TPH-DRO results. For TPH-DRO and lead results, laboratory reporting limits were used in calculations of standard deviation (STDEV), average, and relative percent difference (RPD) (Table 3).

Table 3. Triplicate Data Comparison

Contaminants detected	DU1-S2.5-1 (mg/Kg)	DU1-S2.5-2 (mg/Kg)	DU1-S2.5-3 (mg/Kg)	STDEV	AVG	RPD
TPH-DRO	<3.91*	6.39	<3.93*	1.426090	4.74333	30%
Arsenic	10.9	10.7	12.8	1.159023	11.46667	10%
Barium	58.7	61.8	64.5	2.902298	61.66667	5%
Chromium	38.1	36	41.7	2.882707	38.60000	7%
Lead	<18.5*	21.2	<19.4*	1.374773	19.70000	7%
Mercury	0.0504	0.0416	0.0477	0.004508	0.04657	10%
Pentachlorophenol	0.0034	0.0049	0.0048	0.000839	0.00437	19%
Heptachlor epoxide	0.00046	0.00054	0.00042	0.000061	0.00047	13%
gamma-Chlordane	0.00054	0.00053	0.00054	0.000006	0.00054	1%

*The laboratory reporting limits were used in calculations for those not-detected results.
STDEV – Standard deviation
AVG – Average
RPD – Relative percent difference

7.0 CONCLUSIONS

Based on the analysis of surface (0-2 inch bgs) and subsurface (2-2.5 ft and 5-5.5 ft bgs) soil MIS samples, MNA concludes that *recognized environmental conditions* do not exist within the proposed Ewa Makai Middle School Location with respect to the current (summer 2008) EALs. No further investigation is recommended.

8.0 REFERENCES

HDOH-HEER. **2008**, Summer. EAL Surfer: Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater. Honolulu, HI.

APPENDIX A

Laboratory Analytical Report

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
99-193 Aiea Heights Drive. Suite 121 Aiea. HI 96701 * 808-486-5227 * Fax 808-486-2456

October 03, 2008

LABORATORY REPORT

Client:
Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Attn: Adam Custer

Work Order: HRI0096
Project Name: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691
Date Received: 09/18/08

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed

The Chain of Custody, 1 page, is included and is an integral part of this report. This entire report was reviewed and approved for release

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

CASE NARRATIVE: Samples were prepared by incremental subsampling in accordance with the EPA/600/R-03/027 Guidance Document.

Samples were received into laboratory at a temperature of 4 °C.

NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Approved By:

Mike D. Solick
Project Manager

NELAC Certification # E87907

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
99-193 Aiea Heights Drive. Suite 121 Aiea. HI 96701 * 808-486-5227 * Fax 808-486-2456

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
691 DU1-S0	HRI0096-01	09/17/08 11:50
691 DU1-S0-V	HRI0096-02	09/16/08 13:45
691 DU1-S2.5-1	HRI0096-03	09/17/08 17:30
691 DU1-S2.5-2	HRI0096-04	09/17/08 17:30
691 DU1-S2.5-3	HRI0096-05	09/17/08 17:30
691 DU1-S5.5	HRI0096-06	09/17/08 17:30

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-01 (691 DU1-S0 - Solid/Soil)					**Sampled:**	**09/17/08 11:50**		**Recvd: 09/18/08 13:50**	
Extractable Petroleum Hydrocarbons by 8015M									
DRO	**7.29**		mg/kg	3.93	1	10/01/08 19:40	09/23/08	8123010	SW8015M
Surr: o-Terphenyl (35-120%)	*118 %*					"	"	"	"
Semivolatile Organics by GC/MS									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.328	1	09/26/08 14:09	09/25/08	8125006	SW8270C
1,2,4-Trichlorobenzene	ND		"	0.328	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	0.328	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	0.328	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	0.328	"	"	"	"	"
1-Chloronaphthalene	ND		"	0.328	"	"	"	"	"
1-Methylnaphthalene	ND		"	0.328	"	"	"	"	"
1-Naphthylamine	ND		"	0.656	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND		"	0.328	"	"	"	"	"
2,4,5-Trichlorophenol	ND		"	0.328	"	"	"	"	"
2,4,6-Trichlorophenol	ND		"	0.328	"	"	"	"	"
2,4-Dichlorophenol	ND		"	0.328	"	"	"	"	"
2,4-Dimethylphenol	ND		"	0.328	"	"	"	"	"
2,4-Dinitrophenol	ND		"	1.69	"	"	"	"	"
2,4-Dinitrotoluene	ND		"	0.328	"	"	"	"	"
2,6-Dichlorophenol	ND		"	0.328	"	"	"	"	"
2,6-Dinitrotoluene	ND		"	0.328	"	"	"	"	"
2-Chloronaphthalene	ND		"	0.328	"	"	"	"	"
2-Chlorophenol	ND		"	0.328	"	"	"	"	"
2-Methylnaphthalene	ND		"	0.328	"	"	"	"	"
2-Methylphenol (o-Cresol)	ND		"	0.328	"	"	"	"	"
2-Naphthylamine	ND		"	0.656	"	"	"	"	"
2-Nitroaniline	ND		"	0.328	"	"	"	"	"
2-Nitrophenol	ND		"	0.328	"	"	"	"	"
2-Picoline	ND		"	0.328	"	"	"	"	"
3,3'-Dichlorobenzidine	ND		"	0.328	"	"	"	"	"
3,4-Methylphenol (m,p-Cresol)	ND		"	0.328	"	"	"	"	"
3-Methylcholanthrene	ND		"	0.328	"	"	"	"	"
3-Nitroaniline	ND		"	0.328	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND		"	0.328	"	"	"	"	"
4-Aminobiphenyl	ND		"	0.656	"	"	"	"	"
4-Bromophenyl phenyl ether	ND		"	0.328	"	"	"	"	"
4-Chloro-3-methylphenol	ND		"	0.328	"	"	"	"	"
4-Chloroaniline	ND		"	0.328	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND		"	0.328	"	"	"	"	"
4-Nitroaniline	ND		"	0.328	"	"	"	"	"
4-Nitrophenol	ND		"	0.328	"	"	"	"	"
7,12-Dimethylbenz (a) anthracene	ND		"	0.328	"	"	"	"	"
a,a-Dimethylphenethylamine	ND		"	0.328	"	"	"	"	"
Acenaphthene	ND		"	0.328	"	"	"	"	"
Acenaphthylene	ND		"	0.328	"	"	"	"	"
Acetophenone	ND		"	0.328	"	"	"	"	"
Aniline	ND		"	0.328	"	"	"	"	"

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
99-193 Aiea Heights Drive, Suite 121 Aiea, HI 96701 * 808-486-5227 * Fax 808-486-2456

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-01 (691 DU1-S0 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 11:50**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Anthracene	ND		"	0.328	"	"	"	"	"
Azobenzene	ND		"	0.328	"	"	"	"	"
Benzidine	ND		"	1.69	"	"	"	"	"
Benzo (a) anthracene	ND		"	0.328	"	"	"	"	"
Benzo (a) pyrene	ND		"	0.328	"	"	"	"	"
Benzo (b) fluoranthene	ND		"	0.328	"	"	"	"	"
Benzo (g,h,i) perylene	ND		"	0.328	"	"	"	"	"
Benzo (k) fluoranthene	ND		"	0.328	"	"	"	"	"
Benzoic acid	ND		"	0.328	"	"	"	"	"
Benzyl alcohol	ND		"	0.328	"	"	"	"	"
Bis(2-chloroethoxy)methane	ND		"	0.328	"	"	"	"	"
Bis(2-chloroethyl)ether	ND		"	0.328	"	"	"	"	"
Bis(2-chloroisopropyl) ether	ND		"	0.328	"	"	"	"	"
Bis(2-ethylhexyl)phthalate	ND		"	0.328	"	"	"	"	"
Butyl benzyl phthalate	ND		"	0.328	"	"	"	"	"
Chrysene	ND		"	0.328	"	"	"	"	"
Dibenz (a,j) acridine	ND		"	0.328	"	"	"	"	"
Dibenzo (a,h) anthracene	ND		"	0.328	"	"	"	"	"
Dibenzofuran	ND		"	0.328	"	"	"	"	"
Diethyl phthalate	ND		"	0.328	"	"	"	"	"
Dimethyl phthalate	ND		"	0.328	"	"	"	"	"
Dimethylaminoazobenzene	ND		"	0.328	"	"	"	"	"
Di-n-butyl phthalate	ND		"	0.328	"	"	"	"	"
Di-n-octyl phthalate	ND		"	0.328	"	"	"	"	"
Ethyl Methanesulfonate	ND		"	0.328	"	"	"	"	"
Fluoranthene	ND		"	0.328	"	"	"	"	"
Fluorene	ND		"	0.328	"	"	"	"	"
Hexachlorobenzene	ND		"	0.328	"	"	"	"	"
Hexachlorobutadiene	ND		"	0.328	"	"	"	"	"
Hexachlorocyclopentadiene	ND		"	0.328	"	"	"	"	"
Hexachloroethane	ND		"	0.328	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND		"	0.328	"	"	"	"	"
Isophorone	ND		"	0.328	"	"	"	"	"
Methyl Methanesulfonate	ND		"	0.328	"	"	"	"	"
Naphthalene	ND		"	0.328	"	"	"	"	"
Nitrobenzene	ND		"	0.328	"	"	"	"	"
N-Nitrosodimethylamine	ND		"	0.328	"	"	"	"	"
N-Nitrosodi-n-butylamine	ND		"	0.328	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND		"	0.328	"	"	"	"	"
N-Nitrosodiphenylamine	ND		"	0.328	"	"	"	"	"
N-Nitrosopiperidine	ND		"	0.328	"	"	"	"	"
Pentachloronitrobenzene	ND		"	0.328	"	"	"	"	"
Pentachlorophenol	ND		"	0.328	"	"	"	"	"
Phenacetin	ND		"	0.328	"	"	"	"	"
Phenanthrene	ND		"	0.328	"	"	"	"	"
Phenol	ND		"	0.328	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

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Project: Ewa Makai Middle Phase II
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Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-01 (691 DU1-S0 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 11:50**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Pronamide	ND		"	0.328	"	"	"	"	"
Pyrene	ND		"	0.328	"	"	"	"	"
Pyridine	ND		"	0.328	"	"	"	"	"
Surr: 2,4,6-Tribromophenol (40-120%)	*84 %*					"	"	"	"
Surr: 2-Fluorobiphenyl (45-120%)	*82 %*					"	"	"	"
Surr: 2-Fluorophenol (30-120%)	*72 %*					"	"	"	"
Surr: Nitrobenzene-d5 (35-120%)	*78 %*					"	"	"	"
Surr: Phenol-d6 (40-120%)	*68 %*					"	"	"	"
Surr: Terphenyl-d14 (40-130%)	*97 %*					"	"	"	"
Total Metals by SW 846 Series Methods									
Arsenic	**18.8**		mg/kg	9.90	10	09/30/08 15:13	09/30/08	8130006	SW6010B
Barium	**94.6**		"	19.8	"	"	"	"	"
Cadmium	ND	RL3	"	9.90	"	"	"	"	"
Chromium	**81.0**		"	9.90	"	"	"	"	"
Lead	ND	RL3	"	19.8	"	"	"	"	"
Mercury	**0.0825**		"	0.00490	1	09/29/08 17:41	09/29/08	8129008	SW7471
Selenium	ND	RL3	"	19.8	10	09/30/08 15:13	09/30/08	8130006	SW6010B
Silver	ND	RL3	"	9.90	"	"	"	"	"

TestAmerica
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Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-02 (691 DU1-S0-V - Solid/Soil)					**Sampled:**	**09/16/08 13:45**		**Recvd: 09/18/08 13:50**	
Volatile Organic Compounds by EPA 8260B									
1,1,1,2-Tetrachloroethane	ND		mg/kg	0.484	50	09/24/08 14:10	09/24/08	8L25011	SW8260B
1,1,1-Trichloroethane	ND		"	0.484	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND		"	0.484	"	"	"	"	"
1,1,2-Trichloroethane	ND		"	0.484	"	"	"	"	"
1,1-Dichloroethane	ND		"	2.42	"	"	"	"	"
1,1-Dichloroethene	ND		"	0.484	"	"	"	"	"
1,1-Dichloropropene	ND		"	0.484	"	"	"	"	"
1,2,3-Trichlorobenzene	ND		"	0.484	"	"	"	"	"
1,2,3-Trichloropropane	ND		"	0.484	"	"	"	"	"
1,2,4-Trichlorobenzene	ND		"	2.42	"	"	"	"	"
1,2,4-Trimethylbenzene	ND		"	0.484	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND		"	0.484	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND		"	0.484	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	2.42	"	"	"	"	"
1,2-Dichloroethane	ND		"	0.484	"	"	"	"	"
1,2-Dichloropropane	ND		"	0.484	"	"	"	"	"
1,3,5-Trimethylbenzene	ND		"	0.484	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	2.42	"	"	"	"	"
1,3-Dichloropropane	ND		"	0.484	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	2.42	"	"	"	"	"
2,2-Dichloropropane	ND		"	0.484	"	"	"	"	"
2-Butanone (MEK)	ND		"	2.42	"	"	"	"	"
2-Chlorotoluene	ND		"	0.484	"	"	"	"	"
2-Hexanone	ND		"	2.42	"	"	"	"	"
4-Chlorotoluene	ND		"	0.484	"	"	"	"	"
4-Methyl-2-pentanone (MIBK)	ND		"	2.42	"	"	"	"	"
Acetone	ND		"	2.42	"	"	"	"	"
Acrylonitrile	ND		"	2.42	"	"	"	"	"
Benzene	ND		"	0.484	"	"	"	"	"
Bromobenzene	ND		"	0.484	"	"	"	"	"
Bromochloromethane	ND		"	2.42	"	"	"	"	"
Bromodichloromethane	ND		"	0.484	"	"	"	"	"
Bromoform	ND		"	0.484	"	"	"	"	"
Bromomethane	ND		"	4.84	"	"	"	"	"
Carbon disulfide	ND		"	0.484	"	"	"	"	"
Carbon Tetrachloride	ND		"	0.484	"	"	"	"	"
Chlorobenzene	ND		"	0.484	"	"	"	"	"
Chlorodibromomethane	ND		"	0.484	"	"	"	"	"
Chloroethane	ND		"	2.42	"	"	"	"	"
Chloroform	ND		"	0.484	"	"	"	"	"
Chloromethane	ND		"	2.42	"	"	"	"	"
cis-1,2-Dichloroethene	ND		"	0.484	"	"	"	"	"
cis-1,3-Dichloropropene	ND		"	0.484	"	"	"	"	"
Dibromomethane	ND		"	0.484	"	"	"	"	"
Dichlorodifluoromethane	ND		"	2.42	"	"	"	"	"
Ethylbenzene	ND		"	0.484	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-02 (691 DU1-S0-V - Solid/Soil) - cont.					**Sampled: 09/16/08 13:45**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Hexachlorobutadiene	ND		"	2.42	"	"	"	"	"
Iodomethane	ND		"	2.42	"	"	"	"	"
Isopropylbenzene	ND		"	0.484	"	"	"	"	"
m,p-Xylene	ND		"	0.484	"	"	"	"	"
Methyl tert-Butyl Ether	ND		"	0.242	"	"	"	"	"
Methylene Chloride	ND		"	2.42	"	"	"	"	"
Naphthalene	ND		"	2.42	"	"	"	"	"
n-Butylbenzene	ND		"	0.484	"	"	"	"	"
n-Propylbenzene	ND		"	0.484	"	"	"	"	"
o-Xylene	ND		"	0.484	"	"	"	"	"
p-Isopropyltoluene	ND		"	0.484	"	"	"	"	"
sec-Butylbenzene	ND		"	0.484	"	"	"	"	"
Styrene	ND		"	0.484	"	"	"	"	"
tert-Butylbenzene	ND		"	0.484	"	"	"	"	"
Tetrachloroethene	ND		"	0.484	"	"	"	"	"
Toluene	ND		"	0.484	"	"	"	"	"
trans-1,2-Dichloroethene	ND		"	0.484	"	"	"	"	"
trans-1,3-Dichloropropene	ND		"	0.484	"	"	"	"	"
trans-1,4-Dichloro-2-butene	ND		"	2.42	"	"	"	"	"
Trichloroethene	ND		"	0.484	"	"	"	"	"
Trichlorofluoromethane	ND		"	0.484	"	"	"	"	"
Vinyl Acetate	ND		"	2.42	"	"	"	"	"
Vinyl chloride	ND		"	2.42	"	"	"	"	"
Surr: 1,2-Dichloroethane-d4 (80-120%)	*94 %*					"	"	"	"
Surr: 4-Bromofluorobenzene (80-120%)	*93 %*					"	"	"	"
Surr: Dibromofluoromethane (80-120%)	*101 %*					"	"	"	"
Surr: Toluene-d8 (80-120%)	*92 %*					"	"	"	"

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99-193 Aiea Heights Drive, Suite 121 Aiea, HI 96701 * 808-486-5227 * Fax 808-486-2456

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-03 (691 DU1-S2.5-1 - Solid/Soil)					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Extractable Petroleum Hydrocarbons by 8015M									
DRO	ND		mg/kg	3.91	1	10/01/08 20:07	09/23/08	8123010	SW8015M
Surr: o-Terphenyl (35-120%)	*108 %*					"	"	"	"
Semivolatile Organics by GC/MS									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.325	1	09/26/08 14:50	09/25/08	8125006	SW8270C
1,2,4-Trichlorobenzene	ND		"	0.325	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	0.325	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	0.325	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	0.325	"	"	"	"	"
1-Chloronaphthalene	ND		"	0.325	"	"	"	"	"
1-Methylnaphthalene	ND		"	0.325	"	"	"	"	"
1-Naphthylamine	ND		"	0.649	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND		"	0.325	"	"	"	"	"
2,4,5-Trichlorophenol	ND		"	0.325	"	"	"	"	"
2,4,6-Trichlorophenol	ND		"	0.325	"	"	"	"	"
2,4-Dichlorophenol	ND		"	0.325	"	"	"	"	"
2,4-Dimethylphenol	ND		"	0.325	"	"	"	"	"
2,4-Dinitrophenol	ND		"	1.67	"	"	"	"	"
2,4-Dinitrotoluene	ND		"	0.325	"	"	"	"	"
2,6-Dichlorophenol	ND		"	0.325	"	"	"	"	"
2,6-Dinitrotoluene	ND		"	0.325	"	"	"	"	"
2-Chloronaphthalene	ND		"	0.325	"	"	"	"	"
2-Chlorophenol	ND		"	0.325	"	"	"	"	"
2-Methylnaphthalene	ND		"	0.325	"	"	"	"	"
2-Methylphenol (o-Cresol)	ND		"	0.325	"	"	"	"	"
2-Naphthylamine	ND		"	0.649	"	"	"	"	"
2-Nitroaniline	ND		"	0.325	"	"	"	"	"
2-Nitrophenol	ND		"	0.325	"	"	"	"	"
2-Picoline	ND		"	0.325	"	"	"	"	"
3,3'-Dichlorobenzidine	ND		"	0.325	"	"	"	"	"
3,4-Methylphenol (m,p-Cresol)	ND		"	0.325	"	"	"	"	"
3-Methylcholanthrene	ND		"	0.325	"	"	"	"	"
3-Nitroaniline	ND		"	0.325	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND		"	0.325	"	"	"	"	"
4-Aminobiphenyl	ND		"	0.649	"	"	"	"	"
4-Bromophenyl phenyl ether	ND		"	0.325	"	"	"	"	"
4-Chloro-3-methylphenol	ND		"	0.325	"	"	"	"	"
4-Chloroaniline	ND		"	0.325	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND		"	0.325	"	"	"	"	"
4-Nitroaniline	ND		"	0.325	"	"	"	"	"
4-Nitrophenol	ND		"	0.325	"	"	"	"	"
7,12-Dimethylbenz (a) anthracene	ND		"	0.325	"	"	"	"	"
a,a-Dimethylphenethylamine	ND		"	0.325	"	"	"	"	"
Acenaphthene	ND		"	0.325	"	"	"	"	"
Acenaphthylene	ND		"	0.325	"	"	"	"	"
Acetophenone	ND		"	0.325	"	"	"	"	"
Aniline	ND		"	0.325	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
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Work Order: HRI0096
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Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-03 (691 DU1-S2.5-1 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Semivolatile Organics by GC/MS - cont.									
Anthracene	ND		"	0.325	"	"	"	"	"
Azobenzene	ND		"	0.325	"	"	"	"	"
Benzidine	ND		"	1.67	"	"	"	"	"
Benzo (a) anthracene	ND		"	0.325	"	"	"	"	"
Benzo (a) pyrene	ND		"	0.325	"	"	"	"	"
Benzo (b) fluoranthene	ND		"	0.325	"	"	"	"	"
Benzo (g,h,i) perylene	ND		"	0.325	"	"	"	"	"
Benzo (k) fluoranthene	ND		"	0.325	"	"	"	"	"
Benzoic acid	ND		"	0.325	"	"	"	"	"
Benzyl alcohol	ND		"	0.325	"	"	"	"	"
Bis(2-chloroethoxy)methane	ND		"	0.325	"	"	"	"	"
Bis(2-chloroethyl)ether	ND		"	0.325	"	"	"	"	"
Bis(2-chloroisopropyl) ether	ND		"	0.325	"	"	"	"	"
Bis(2-ethylhexyl)phthalate	ND		"	0.325	"	"	"	"	"
Butyl benzyl phthalate	ND		"	0.325	"	"	"	"	"
Chrysene	ND		"	0.325	"	"	"	"	"
Dibenz (a,j) acridine	ND		"	0.325	"	"	"	"	"
Dibenzo (a,h) anthracene	ND		"	0.325	"	"	"	"	"
Dibenzofuran	ND		"	0.325	"	"	"	"	"
Diethyl phthalate	ND		"	0.325	"	"	"	"	"
Dimethyl phthalate	ND		"	0.325	"	"	"	"	"
Dimethylaminoazobenzene	ND		"	0.325	"	"	"	"	"
Di-n-butyl phthalate	ND		"	0.325	"	"	"	"	"
Di-n-octyl phthalate	ND		"	0.325	"	"	"	"	"
Ethyl Methanesulfonate	ND		"	0.325	"	"	"	"	"
Fluoranthene	ND		"	0.325	"	"	"	"	"
Fluorene	ND		"	0.325	"	"	"	"	"
Hexachlorobenzene	ND		"	0.325	"	"	"	"	"
Hexachlorobutadiene	ND		"	0.325	"	"	"	"	"
Hexachlorocyclopentadiene	ND		"	0.325	"	"	"	"	"
Hexachloroethane	ND		"	0.325	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND		"	0.325	"	"	"	"	"
Isophorone	ND		"	0.325	"	"	"	"	"
Methyl Methanesulfonate	ND		"	0.325	"	"	"	"	"
Naphthalene	ND		"	0.325	"	"	"	"	"
Nitrobenzene	ND		"	0.325	"	"	"	"	"
N-Nitrosodimethylamine	ND		"	0.325	"	"	"	"	"
N-Nitrosodi-n-butylamine	ND		"	0.325	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND		"	0.325	"	"	"	"	"
N-Nitrosodiphenylamine	ND		"	0.325	"	"	"	"	"
N-Nitrosopiperidine	ND		"	0.325	"	"	"	"	"
Pentachloronitrobenzene	ND		"	0.325	"	"	"	"	"
Pentachlorophenol	ND		"	0.325	"	"	"	"	"
Phenacetin	ND		"	0.325	"	"	"	"	"
Phenanthrene	ND		"	0.325	"	"	"	"	"
Phenol	ND		"	0.325	"	"	"	"	"

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-03 (691 DU1-S2.5-1 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Semivolatile Organics by GC/MS - cont.									
Pronamide	ND		"	0.325	"	"	"	"	"
Pyrene	ND		"	0.325	"	"	"	"	"
Pyridine	ND		"	0.325	"	"	"	"	"
Surr: 2,4,6-Tribromophenol (40-120%)	*74 %*					"	"	"	"
Surr: 2-Fluorobiphenyl (45-120%)	*76 %*					"	"	"	"
Surr: 2-Fluorophenol (30-120%)	*66 %*					"	"	"	"
Surr: Nitrobenzene-d5 (35-120%)	*73 %*					"	"	"	"
Surr: Phenol-d6 (40-120%)	*66 %*					"	"	"	"
Surr: Terphenyl-d14 (40-130%)	*85 %*					"	"	"	"
Total Metals by SW 846 Series Methods									
Arsenic	**10.9**		mg/kg	9.26	10	09/30/08 15:27	09/30/08	8130006	SW6010B
Barium	**58.7**		"	18.5	"	"	"	"	"
Cadmium	ND	RL3	"	9.26	"	"	"	"	"
Chromium	**38.1**		"	9.26	"	"	"	"	"
Lead	ND	RL3	"	18.5	"	"	"	"	"
Mercury	**0.0504**		"	0.00481	1	09/29/08 17:42	09/29/08	8129008	SW7471
Selenium	ND	RL3	"	18.5	10	09/30/08 15:27	09/30/08	8130006	SW6010B
Silver	ND	RL3	"	9.26	"	"	"	"	"
Volatile Organic Compounds by EPA 8260B									
1,1,1,2-Tetrachloroethane	ND		mg/kg	0.796	50	09/24/08 14:37	09/24/08	8125011	SW8260B
1,1,1-Trichloroethane	ND		"	0.796	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND		"	0.796	"	"	"	"	"
1,1,2-Trichloroethane	ND		"	0.796	"	"	"	"	"
1,1-Dichloroethane	ND		"	3.98	"	"	"	"	"
1,1-Dichloroethene	ND		"	0.796	"	"	"	"	"
1,1-Dichloropropene	ND		"	0.796	"	"	"	"	"
1,2,3-Trichlorobenzene	ND		"	0.796	"	"	"	"	"
1,2,3-Trichloropropane	ND		"	0.796	"	"	"	"	"
1,2,4-Trichlorobenzene	ND		"	3.98	"	"	"	"	"
1,2,4-Trimethylbenzene	ND		"	0.796	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND		"	0.796	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND		"	0.796	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	3.98	"	"	"	"	"
1,2-Dichloroethane	ND		"	0.796	"	"	"	"	"
1,2-Dichloropropane	ND		"	0.796	"	"	"	"	"
1,3,5-Trimethylbenzene	ND		"	0.796	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	3.98	"	"	"	"	"
1,3-Dichloropropane	ND		"	0.796	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	3.98	"	"	"	"	"
2,2-Dichloropropane	ND		"	0.796	"	"	"	"	"
2-Butanone (MEK)	ND		"	3.98	"	"	"	"	"
2-Chlorotoluene	ND		"	0.796	"	"	"	"	"
2-Hexanone	ND		"	3.98	"	"	"	"	"
4-Chlorotoluene	ND		"	0.796	"	"	"	"	"
4-Methyl-2-pentanone (MIBK)	ND		"	3.98	"	"	"	"	"

Myounghee Noh & Associates
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Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-03 (691 DU1-S2.5-1 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Acetone	ND		"	3.98	"	"	"	"	"
Acrylonitrile	ND		"	3.98	"	"	"	"	"
Benzene	ND		"	0.796	"	"	"	"	"
Bromobenzene	ND		"	0.796	"	"	"	"	"
Bromochloromethane	ND		"	3.98	"	"	"	"	"
Bromodichloromethane	ND		"	0.796	"	"	"	"	"
Bromoform	ND		"	0.796	"	"	"	"	"
Bromomethane	ND		"	7.96	"	"	"	"	"
Carbon disulfide	ND		"	0.796	"	"	"	"	"
Carbon Tetrachloride	ND		"	0.796	"	"	"	"	"
Chlorobenzene	ND		"	0.796	"	"	"	"	"
Chlorodibromomethane	ND		"	0.796	"	"	"	"	"
Chloroethane	ND		"	3.98	"	"	"	"	"
Chloroform	ND		"	0.796	"	"	"	"	"
Chloromethane	ND		"	3.98	"	"	"	"	"
cis-1,2-Dichloroethene	ND		"	0.796	"	"	"	"	"
cis-1,3-Dichloropropene	ND		"	0.796	"	"	"	"	"
Dibromomethane	ND		"	0.796	"	"	"	"	"
Dichlorodifluoromethane	ND		"	3.98	"	"	"	"	"
Ethylbenzene	ND		"	0.796	"	"	"	"	"
Hexachlorobutadiene	ND		"	3.98	"	"	"	"	"
Iodomethane	ND		"	3.98	"	"	"	"	"
Isopropylbenzene	ND		"	0.796	"	"	"	"	"
m,p-Xylene	ND		"	0.796	"	"	"	"	"
Methyl tert-Butyl Ether	ND		"	0.398	"	"	"	"	"
Methylene Chloride	ND		"	3.98	"	"	"	"	"
Naphthalene	ND		"	3.98	"	"	"	"	"
n-Butylbenzene	ND		"	0.796	"	"	"	"	"
n-Propylbenzene	ND		"	0.796	"	"	"	"	"
o-Xylene	ND		"	0.796	"	"	"	"	"
p-Isopropyltoluene	ND		"	0.796	"	"	"	"	"
sec-Butylbenzene	ND		"	0.796	"	"	"	"	"
Styrene	ND		"	0.796	"	"	"	"	"
tert-Butylbenzene	ND		"	0.796	"	"	"	"	"
Tetrachloroethene	ND		"	0.796	"	"	"	"	"
Toluene	ND		"	0.796	"	"	"	"	"
trans-1,2-Dichloroethene	ND		"	0.796	"	"	"	"	"
trans-1,3-Dichloropropene	ND		"	0.796	"	"	"	"	"
trans-1,4-Dichloro-2-butene	ND		"	3.98	"	"	"	"	"
Trichloroethene	ND		"	0.796	"	"	"	"	"
Trichlorofluoromethane	ND		"	0.796	"	"	"	"	"
Vinyl Acetate	ND		"	3.98	"	"	"	"	"
Vinyl chloride	ND		"	3.98	"	"	"	"	"
Surr: 1,2-Dichloroethane-d4 (80-120%)	*92 %*					*"*	*"*	*"*	*"*
Surr: 4-Bromofluorobenzene (80-120%)	*97 %*					*"*	*"*	*"*	*"*
Surr: Dibromofluoromethane (80-120%)	*99 %*					*"*	*"*	*"*	*"*

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691
Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-03 (691 DU1-S2.5-1 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Surr: Toluene-d8 (80-120%)	*97 %*					*"*	*"*	*"*	*"*

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Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-04 (691 DU1-S2.5-2 - Solid/Soil)					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Extractable Petroleum Hydrocarbons by 8015M									
DRO	6.39		mg/kg	3.96	1	09/30/08 08:25	09/23/08	8123010	SW8015M
Surr: o-Terphenyl (35-120%)	*116 %*					"	"	"	"
Semivolatile Organics by GC/MS									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.327	1	09/26/08 15:30	09/25/08	8125006	SW8270C
1,2,4-Trichlorobenzene	ND		"	0.327	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1-Chloronaphthalene	ND		"	0.327	"	"	"	"	"
1-Methylnaphthalene	ND		"	0.327	"	"	"	"	"
1-Naphthylamine	ND		"	0.653	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND		"	0.327	"	"	"	"	"
2,4,5-Trichlorophenol	ND		"	0.327	"	"	"	"	"
2,4,6-Trichlorophenol	ND		"	0.327	"	"	"	"	"
2,4-Dichlorophenol	ND		"	0.327	"	"	"	"	"
2,4-Dimethylphenol	ND		"	0.327	"	"	"	"	"
2,4-Dinitrophenol	ND		"	1.68	"	"	"	"	"
2,4-Dinitrotoluene	ND		"	0.327	"	"	"	"	"
2,6-Dichlorophenol	ND		"	0.327	"	"	"	"	"
2,6-Dinitrotoluene	ND		"	0.327	"	"	"	"	"
2-Chloronaphthalene	ND		"	0.327	"	"	"	"	"
2-Chlorophenol	ND		"	0.327	"	"	"	"	"
2-Methylnaphthalene	ND		"	0.327	"	"	"	"	"
2-Methylphenol (o-Cresol)	ND		"	0.327	"	"	"	"	"
2-Naphthylamine	ND		"	0.653	"	"	"	"	"
2-Nitroaniline	ND		"	0.327	"	"	"	"	"
2-Nitrophenol	ND		"	0.327	"	"	"	"	"
2-Picoline	ND		"	0.327	"	"	"	"	"
3,3'-Dichlorobenzidine	ND		"	0.327	"	"	"	"	"
3,4-Methylphenol (m,p-Cresol)	ND		"	0.327	"	"	"	"	"
3-Methylcholanthrene	ND		"	0.327	"	"	"	"	"
3-Nitroaniline	ND		"	0.327	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND		"	0.327	"	"	"	"	"
4-Aminobiphenyl	ND		"	0.653	"	"	"	"	"
4-Bromophenyl phenyl ether	ND		"	0.327	"	"	"	"	"
4-Chloro-3-methylphenol	ND		"	0.327	"	"	"	"	"
4-Chloroaniline	ND		"	0.327	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND		"	0.327	"	"	"	"	"
4-Nitroaniline	ND		"	0.327	"	"	"	"	"
4-Nitrophenol	ND		"	0.327	"	"	"	"	"
7,12-Dimethylbenz (a) anthracene	ND		"	0.327	"	"	"	"	"
a,a-Dimethylphenethylamine	ND		"	0.327	"	"	"	"	"
Acenaphthene	ND		"	0.327	"	"	"	"	"
Acenaphthylene	ND		"	0.327	"	"	"	"	"
Acetophenone	ND		"	0.327	"	"	"	"	"
Aniline	ND		"	0.327	"	"	"	"	"

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99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-04 (691 DU1-S2.5-2 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Anthracene	ND		"	0.327	"	"	"	"	"
Azobenzene	ND		"	0.327	"	"	"	"	"
Benzidine	ND		"	1.68	"	"	"	"	"
Benzo (a) anthracene	ND		"	0.327	"	"	"	"	"
Benzo (a) pyrene	ND		"	0.327	"	"	"	"	"
Benzo (b) fluoranthene	ND		"	0.327	"	"	"	"	"
Benzo (g,h,i) perylene	ND		"	0.327	"	"	"	"	"
Benzo (k) fluoranthene	ND		"	0.327	"	"	"	"	"
Benzoic acid	ND		"	0.327	"	"	"	"	"
Benzyl alcohol	ND		"	0.327	"	"	"	"	"
Bis(2-chloroethoxy)methane	ND		"	0.327	"	"	"	"	"
Bis(2-chloroethyl)ether	ND		"	0.327	"	"	"	"	"
Bis(2-chloroisopropyl) ether	ND		"	0.327	"	"	"	"	"
Bis(2-ethylhexyl)phthalate	ND		"	0.327	"	"	"	"	"
Butyl benzyl phthalate	ND		"	0.327	"	"	"	"	"
Chrysene	ND		"	0.327	"	"	"	"	"
Dibenz (a,j) acridine	ND		"	0.327	"	"	"	"	"
Dibenzo (a,h) anthracene	ND		"	0.327	"	"	"	"	"
Dibenzofuran	ND		"	0.327	"	"	"	"	"
Diethyl phthalate	ND		"	0.327	"	"	"	"	"
Dimethyl phthalate	ND		"	0.327	"	"	"	"	"
Dimethylaminoazobenzene	ND		"	0.327	"	"	"	"	"
Di-n-butyl phthalate	ND		"	0.327	"	"	"	"	"
Di-n-octyl phthalate	ND		"	0.327	"	"	"	"	"
Ethyl Methanesulfonate	ND		"	0.327	"	"	"	"	"
Fluoranthene	ND		"	0.327	"	"	"	"	"
Fluorene	ND		"	0.327	"	"	"	"	"
Hexachlorobenzene	ND		"	0.327	"	"	"	"	"
Hexachlorobutadiene	ND		"	0.327	"	"	"	"	"
Hexachlorocyclopentadiene	ND		"	0.327	"	"	"	"	"
Hexachloroethane	ND		"	0.327	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND		"	0.327	"	"	"	"	"
Isophorone	ND		"	0.327	"	"	"	"	"
Methyl Methanesulfonate	ND		"	0.327	"	"	"	"	"
Naphthalene	ND		"	0.327	"	"	"	"	"
Nitrobenzene	ND		"	0.327	"	"	"	"	"
N-Nitrosodimethylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodi-n-butylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodiphenylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosopiperidine	ND		"	0.327	"	"	"	"	"
Pentachloronitrobenzene	ND		"	0.327	"	"	"	"	"
Pentachlorophenol	ND		"	0.327	"	"	"	"	"
Phenacetin	ND		"	0.327	"	"	"	"	"
Phenanthrene	ND		"	0.327	"	"	"	"	"
Phenol	ND		"	0.327	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
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Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-04 (691 DU1-S2.5-2 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Pronamide	ND		"	0.327	"	"	"	"	"
Pyrene	ND		"	0.327	"	"	"	"	"
Pyridine	ND		"	0.327	"	"	"	"	"
Surr: 2,4,6-Tribromophenol (40-120%)	*75 %*					"	"	"	"
Surr: 2-Fluorobiphenyl (45-120%)	*74 %*					"	"	"	"
Surr: 2-Fluorophenol (30-120%)	*67 %*					"	"	"	"
Surr: Nitrobenzene-d5 (35-120%)	*72 %*					"	"	"	"
Surr: Phenol-d6 (40-120%)	*66 %*					"	"	"	"
Surr: Terphenyl-d14 (40-130%)	*86 %*					"	"	"	"
Total Metals by SW 846 Series Methods									
Arsenic	**10.7**		mg/kg	9.80	10	09/30/08 15:32	09/30/08	8130006	SW6010B
Barium	**61.8**		"	19.6	"	"	"	"	"
Cadmium	ND	RL3	"	9.80	"	"	"	"	"
Chromium	**36.0**		"	9.80	"	"	"	"	"
Lead	**21.2**		"	19.6	"	"	"	"	"
Mercury	**0.0416**		"	0.00481	1	09/29/08 17:43	09/29/08	8129008	SW7471
Selenium	ND	RL3	"	19.6	10	09/30/08 15:32	09/30/08	8130006	SW6010B
Silver	ND	RL3	"	9.80	"	"	"	"	"
Volatile Organic Compounds by EPA 8260B									
1,1,1,2-Tetrachloroethane	ND		mg/kg	0.845	50	09/24/08 15:23	09/24/08	8125011	SW8260B
1,1,1-Trichloroethane	ND		"	0.845	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND		"	0.845	"	"	"	"	"
1,1,2-Trichloroethane	ND		"	0.845	"	"	"	"	"
1,1-Dichloroethane	ND		"	4.22	"	"	"	"	"
1,1-Dichloroethene	ND		"	0.845	"	"	"	"	"
1,1-Dichloropropene	ND		"	0.845	"	"	"	"	"
1,2,3-Trichlorobenzene	ND		"	0.845	"	"	"	"	"
1,2,3-Trichloropropane	ND		"	0.845	"	"	"	"	"
1,2,4-Trichlorobenzene	ND		"	4.22	"	"	"	"	"
1,2,4-Trimethylbenzene	ND		"	0.845	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND		"	0.845	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND		"	0.845	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	4.22	"	"	"	"	"
1,2-Dichloroethane	ND		"	0.845	"	"	"	"	"
1,2-Dichloropropane	ND		"	0.845	"	"	"	"	"
1,3,5-Trimethylbenzene	ND		"	0.845	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	4.22	"	"	"	"	"
1,3-Dichloropropane	ND		"	0.845	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	4.22	"	"	"	"	"
2,2-Dichloropropane	ND		"	0.845	"	"	"	"	"
2-Butanone (MEK)	ND		"	4.22	"	"	"	"	"
2-Chlorotoluene	ND		"	0.845	"	"	"	"	"
2-Hexanone	ND		"	4.22	"	"	"	"	"
4-Chlorotoluene	ND		"	0.845	"	"	"	"	"
4-Methyl-2-pentanone (MIBK)	ND		"	4.22	"	"	"	"	"

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99-1046 Iwaena Street - Suite 210A
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Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-04 (691 DU1-S2.5-2 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Volatile Organic Compounds by EPA 8260B - cont.									
Acetone	ND		"	4.22	"	"	"	"	"
Acrylonitrile	ND		"	4.22	"	"	"	"	"
Benzene	ND		"	0.845	"	"	"	"	"
Bromobenzene	ND		"	0.845	"	"	"	"	"
Bromochloromethane	ND		"	4.22	"	"	"	"	"
Bromodichloromethane	ND		"	0.845	"	"	"	"	"
Bromoform	ND		"	0.845	"	"	"	"	"
Bromomethane	ND		"	8.45	"	"	"	"	"
Carbon disulfide	ND		"	0.845	"	"	"	"	"
Carbon Tetrachloride	ND		"	0.845	"	"	"	"	"
Chlorobenzene	ND		"	0.845	"	"	"	"	"
Chlorodibromomethane	ND		"	0.845	"	"	"	"	"
Chloroethane	ND		"	4.22	"	"	"	"	"
Chloroform	ND		"	0.845	"	"	"	"	"
Chloromethane	ND		"	4.22	"	"	"	"	"
cis-1,2-Dichloroethene	ND		"	0.845	"	"	"	"	"
cis-1,3-Dichloropropene	ND		"	0.845	"	"	"	"	"
Dibromomethane	ND		"	0.845	"	"	"	"	"
Dichlorodifluoromethane	ND		"	4.22	"	"	"	"	"
Ethylbenzene	ND		"	0.845	"	"	"	"	"
Hexachlorobutadiene	ND		"	4.22	"	"	"	"	"
Iodomethane	ND		"	4.22	"	"	"	"	"
Isopropylbenzene	ND		"	0.845	"	"	"	"	"
m,p-Xylene	ND		"	0.845	"	"	"	"	"
Methyl tert-Butyl Ether	ND		"	0.422	"	"	"	"	"
Methylene Chloride	ND		"	4.22	"	"	"	"	"
Naphthalene	ND		"	4.22	"	"	"	"	"
n-Butylbenzene	ND		"	0.845	"	"	"	"	"
n-Propylbenzene	ND		"	0.845	"	"	"	"	"
o-Xylene	ND		"	0.845	"	"	"	"	"
p-Isopropyltoluene	ND		"	0.845	"	"	"	"	"
sec-Butylbenzene	ND		"	0.845	"	"	"	"	"
Styrene	ND		"	0.845	"	"	"	"	"
tert-Butylbenzene	ND		"	0.845	"	"	"	"	"
Tetrachloroethene	ND		"	0.845	"	"	"	"	"
Toluene	ND		"	0.845	"	"	"	"	"
trans-1,2-Dichloroethene	ND		"	0.845	"	"	"	"	"
trans-1,3-Dichloropropene	ND		"	0.845	"	"	"	"	"
trans-1,4-Dichloro-2-butene	ND		"	4.22	"	"	"	"	"
Trichloroethene	ND		"	0.845	"	"	"	"	"
Trichlorofluoromethane	ND		"	0.845	"	"	"	"	"
Vinyl Acetate	ND		"	4.22	"	"	"	"	"
Vinyl chloride	ND		"	4.22	"	"	"	"	"
Surr: 1,2-Dichloroethane-d4 (80-120%)	*92 %*					"	"	"	"
Surr: 4-Bromofluorobenzene (80-120%)	*92 %*					"	"	"	"
Surr: Dibromofluoromethane (80-120%)	*97 %*					"	"	"	"

Myounghee Noh & Associates
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Received: 09/18/08
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ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-04 (691 DU1-S2.5-2 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Surr: Toluene-d8 (80-120%)	*94 %*					"	"	"	"

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ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-05 (691 DU1-S2.5-3 - Solid/Soil)					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Extractable Petroleum Hydrocarbons by 8015M									
DRO	ND		mg/kg	3.93	1	09/30/08 08:49	09/23/08	8123010	SW8015M
Surr: o-Terphenyl (35-120%)	*107 %*					"	"	"	"
Semivolatile Organics by GC/MS									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.324	1	09/26/08 16:10	09/25/08	8125006	SW8270C
1,2,4-Trichlorobenzene	ND		"	0.324	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	0.324	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	0.324	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	0.324	"	"	"	"	"
1-Chloronaphthalene	ND		"	0.324	"	"	"	"	"
1-Methylnaphthalene	ND		"	0.324	"	"	"	"	"
1-Naphthylamine	ND		"	0.647	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND		"	0.324	"	"	"	"	"
2,4,5-Trichlorophenol	ND		"	0.324	"	"	"	"	"
2,4,6-Trichlorophenol	ND		"	0.324	"	"	"	"	"
2,4-Dichlorophenol	ND		"	0.324	"	"	"	"	"
2,4-Dimethylphenol	ND		"	0.324	"	"	"	"	"
2,4-Dinitrophenol	ND		"	1.67	"	"	"	"	"
2,4-Dinitrotoluene	ND		"	0.324	"	"	"	"	"
2,6-Dichlorophenol	ND		"	0.324	"	"	"	"	"
2,6-Dinitrotoluene	ND		"	0.324	"	"	"	"	"
2-Chloronaphthalene	ND		"	0.324	"	"	"	"	"
2-Chlorophenol	ND		"	0.324	"	"	"	"	"
2-Methylnaphthalene	ND		"	0.324	"	"	"	"	"
2-Methylphenol (o-Cresol)	ND		"	0.324	"	"	"	"	"
2-Naphthylamine	ND		"	0.647	"	"	"	"	"
2-Nitroaniline	ND		"	0.324	"	"	"	"	"
2-Nitrophenol	ND		"	0.324	"	"	"	"	"
2-Picoline	ND		"	0.324	"	"	"	"	"
3,3'-Dichlorobenzidine	ND		"	0.324	"	"	"	"	"
3,4-Methylphenol (m,p-Cresol)	ND		"	0.324	"	"	"	"	"
3-Methylcholanthrene	ND		"	0.324	"	"	"	"	"
3-Nitroaniline	ND		"	0.324	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND		"	0.324	"	"	"	"	"
4-Aminobiphenyl	ND		"	0.647	"	"	"	"	"
4-Bromophenyl phenyl ether	ND		"	0.324	"	"	"	"	"
4-Chloro-3-methylphenol	ND		"	0.324	"	"	"	"	"
4-Chloroaniline	ND		"	0.324	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND		"	0.324	"	"	"	"	"
4-Nitroaniline	ND		"	0.324	"	"	"	"	"
4-Nitrophenol	ND		"	0.324	"	"	"	"	"
7,12-Dimethylbenz (a) anthracene	ND		"	0.324	"	"	"	"	"
a,a-Dimethylphenethylamine	ND		"	0.324	"	"	"	"	"
Acenaphthene	ND		"	0.324	"	"	"	"	"
Acenaphthylene	ND		"	0.324	"	"	"	"	"
Acetophenone	ND		"	0.324	"	"	"	"	"
Aniline	ND		"	0.324	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-05 (691 DU1-S2.5-3 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Semivolatile Organics by GC/MS - cont.									
Anthracene	ND		"	0.324	"	"	"	"	"
Azobenzene	ND		"	0.324	"	"	"	"	"
Benzidine	ND		"	1.67	"	"	"	"	"
Benzo (a) anthracene	ND		"	0.324	"	"	"	"	"
Benzo (a) pyrene	ND		"	0.324	"	"	"	"	"
Benzo (b) fluoranthene	ND		"	0.324	"	"	"	"	"
Benzo (g,h,i) perylene	ND		"	0.324	"	"	"	"	"
Benzo (k) fluoranthene	ND		"	0.324	"	"	"	"	"
Benzoic acid	ND		"	0.324	"	"	"	"	"
Benzyl alcohol	ND		"	0.324	"	"	"	"	"
Bis(2-chloroethoxy)methane	ND		"	0.324	"	"	"	"	"
Bis(2-chloroethyl)ether	ND		"	0.324	"	"	"	"	"
Bis(2-chloroisopropyl) ether	ND		"	0.324	"	"	"	"	"
Bis(2-ethylhexyl)phthalate	ND		"	0.324	"	"	"	"	"
Butyl benzyl phthalate	ND		"	0.324	"	"	"	"	"
Chrysene	ND		"	0.324	"	"	"	"	"
Dibenz (a,j) acridine	ND		"	0.324	"	"	"	"	"
Dibenzo (a,h) anthracene	ND		"	0.324	"	"	"	"	"
Dibenzofuran	ND		"	0.324	"	"	"	"	"
Diethyl phthalate	ND		"	0.324	"	"	"	"	"
Dimethyl phthalate	ND		"	0.324	"	"	"	"	"
Dimethylaminoazobenzene	ND		"	0.324	"	"	"	"	"
Di-n-butyl phthalate	ND		"	0.324	"	"	"	"	"
Di-n-octyl phthalate	ND		"	0.324	"	"	"	"	"
Ethyl Methanesulfonate	ND		"	0.324	"	"	"	"	"
Fluoranthene	ND		"	0.324	"	"	"	"	"
Fluorene	ND		"	0.324	"	"	"	"	"
Hexachlorobenzene	ND		"	0.324	"	"	"	"	"
Hexachlorobutadiene	ND		"	0.324	"	"	"	"	"
Hexachlorocyclopentadiene	ND		"	0.324	"	"	"	"	"
Hexachloroethane	ND		"	0.324	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND		"	0.324	"	"	"	"	"
Isophorone	ND		"	0.324	"	"	"	"	"
Methyl Methanesulfonate	ND		"	0.324	"	"	"	"	"
Naphthalene	ND		"	0.324	"	"	"	"	"
Nitrobenzene	ND		"	0.324	"	"	"	"	"
N-Nitrosodimethylamine	ND		"	0.324	"	"	"	"	"
N-Nitrosodi-n-butylamine	ND		"	0.324	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND		"	0.324	"	"	"	"	"
N-Nitrosodiphenylamine	ND		"	0.324	"	"	"	"	"
N-Nitrosopiperidine	ND		"	0.324	"	"	"	"	"
Pentachloronitrobenzene	ND		"	0.324	"	"	"	"	"
Pentachlorophenol	ND		"	0.324	"	"	"	"	"
Phenacetin	ND		"	0.324	"	"	"	"	"
Phenanthrene	ND		"	0.324	"	"	"	"	"
Phenol	ND		"	0.324	"	"	"	"	"

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-05 (691 DU1-S2.5-3 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Semivolatile Organics by GC/MS - cont.									
Pronamide	ND		"	0.324	"	"	"	"	"
Pyrene	ND		"	0.324	"	"	"	"	"
Pyridine	ND		"	0.324	"	"	"	"	"
Surr: 2,4,6-Tribromophenol (40-120%)	*67 %*					"	"	"	"
Surr: 2-Fluorobiphenyl (45-120%)	*74 %*					"	"	"	"
Surr: 2-Fluorophenol (30-120%)	*64 %*					"	"	"	"
Surr: Nitrobenzene-d5 (35-120%)	*66 %*					"	"	"	"
Surr: Phenol-d6 (40-120%)	*60 %*					"	"	"	"
Surr: Terphenyl-d14 (40-130%)	*86 %*					"	"	"	"
Total Metals by SW 846 Series Methods									
Arsenic	**12.8**		mg/kg	9.71	10	09/30/08 15:37	09/30/08	8130006	SW6010B
Barium	**64.5**		"	19.4	"	"	"	"	"
Cadmium	ND	RL3	"	9.71	"	"	"	"	"
Chromium	**41.7**		"	9.71	"	"	"	"	"
Lead	ND	RL3	"	19.4	"	"	"	"	"
Mercury	**0.0477**		"	0.00472	1	09/29/08 17:45	09/29/08	8129008	SW7471
Selenium	ND	RL3	"	19.4	10	09/30/08 15:37	09/30/08	8130006	SW6010B
Silver	ND	RL3	"	9.71	"	"	"	"	"
Volatile Organic Compounds by EPA 8260B									
1,1,1,2-Tetrachloroethane	ND		mg/kg	0.831	50	09/24/08 15:50	09/24/08	8125011	SW8260B
1,1,1-Trichloroethane	ND		"	0.831	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND		"	0.831	"	"	"	"	"
1,1,2-Trichloroethane	ND		"	0.831	"	"	"	"	"
1,1-Dichloroethane	ND		"	4.15	"	"	"	"	"
1,1-Dichloroethene	ND		"	0.831	"	"	"	"	"
1,1-Dichloropropene	ND		"	0.831	"	"	"	"	"
1,2,3-Trichlorobenzene	ND		"	0.831	"	"	"	"	"
1,2,3-Trichloropropane	ND		"	0.831	"	"	"	"	"
1,2,4-Trichlorobenzene	ND		"	4.15	"	"	"	"	"
1,2,4-Trimethylbenzene	ND		"	0.831	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND		"	0.831	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND		"	0.831	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	4.15	"	"	"	"	"
1,2-Dichloroethane	ND		"	0.831	"	"	"	"	"
1,2-Dichloropropane	ND		"	0.831	"	"	"	"	"
1,3,5-Trimethylbenzene	ND		"	0.831	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	4.15	"	"	"	"	"
1,3-Dichloropropane	ND		"	0.831	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	4.15	"	"	"	"	"
2,2-Dichloropropane	ND		"	0.831	"	"	"	"	"
2-Butanone (MEK)	ND		"	4.15	"	"	"	"	"
2-Chlorotoluene	ND		"	0.831	"	"	"	"	"
2-Hexanone	ND		"	4.15	"	"	"	"	"
4-Chlorotoluene	ND		"	0.831	"	"	"	"	"
4-Methyl-2-pentanone (MIBK)	ND		"	4.15	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
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Work Order: HRI0096
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Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-05 (691 DU1-S2.5-3 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Acetone	ND		"	4.15	"	"	"	"	"
Acrylonitrile	ND		"	4.15	"	"	"	"	"
Benzene	ND		"	0.831	"	"	"	"	"
Bromobenzene	ND		"	0.831	"	"	"	"	"
Bromochloromethane	ND		"	4.15	"	"	"	"	"
Bromodichloromethane	ND		"	0.831	"	"	"	"	"
Bromoform	ND		"	0.831	"	"	"	"	"
Bromomethane	ND		"	8.31	"	"	"	"	"
Carbon disulfide	ND		"	0.831	"	"	"	"	"
Carbon Tetrachloride	ND		"	0.831	"	"	"	"	"
Chlorobenzene	ND		"	0.831	"	"	"	"	"
Chlorodibromomethane	ND		"	0.831	"	"	"	"	"
Chloroethane	ND		"	4.15	"	"	"	"	"
Chloroform	ND		"	0.831	"	"	"	"	"
Chloromethane	ND		"	4.15	"	"	"	"	"
cis-1,2-Dichloroethene	ND		"	0.831	"	"	"	"	"
cis-1,3-Dichloropropene	ND		"	0.831	"	"	"	"	"
Dibromomethane	ND		"	0.831	"	"	"	"	"
Dichlorodifluoromethane	ND		"	4.15	"	"	"	"	"
Ethylbenzene	ND		"	0.831	"	"	"	"	"
Hexachlorobutadiene	ND		"	4.15	"	"	"	"	"
Iodomethane	ND		"	4.15	"	"	"	"	"
Isopropylbenzene	ND		"	0.831	"	"	"	"	"
m,p-Xylene	ND		"	0.831	"	"	"	"	"
Methyl tert-Butyl Ether	ND		"	0.415	"	"	"	"	"
Methylene Chloride	ND		"	4.15	"	"	"	"	"
Naphthalene	ND		"	4.15	"	"	"	"	"
n-Butylbenzene	ND		"	0.831	"	"	"	"	"
n-Propylbenzene	ND		"	0.831	"	"	"	"	"
o-Xylene	ND		"	0.831	"	"	"	"	"
p-Isopropyltoluene	ND		"	0.831	"	"	"	"	"
sec-Butylbenzene	ND		"	0.831	"	"	"	"	"
Styrene	ND		"	0.831	"	"	"	"	"
tert-Butylbenzene	ND		"	0.831	"	"	"	"	"
Tetrachloroethene	ND		"	0.831	"	"	"	"	"
Toluene	ND		"	0.831	"	"	"	"	"
trans-1,2-Dichloroethene	ND		"	0.831	"	"	"	"	"
trans-1,3-Dichloropropene	ND		"	0.831	"	"	"	"	"
trans-1,4-Dichloro-2-butene	ND		"	4.15	"	"	"	"	"
Trichloroethene	ND		"	0.831	"	"	"	"	"
Trichlorofluoromethane	ND		"	0.831	"	"	"	"	"
Vinyl Acetate	ND		"	4.15	"	"	"	"	"
Vinyl chloride	ND		"	4.15	"	"	"	"	"
Surr: 1,2-Dichloroethane-d4 (80-120%)	*94 %*					"	"	"	"
Surr: 4-Bromofluorobenzene (80-120%)	*98 %*					"	"	"	"
Surr: Dibromofluoromethane (80-120%)	*101 %*					"	"	"	"

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-05 (691 DU1-S2.5-3 - Solid/Soil) - cont.					**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**		
Volatile Organic Compounds by EPA 8260B - cont.									
Surr: Toluene-d8 (80-120%)	*93 %*					"	"	"	"

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ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-06 (691 DU1-S5.5 - Solid/Soil)					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Extractable Petroleum Hydrocarbons by 8015M									
DRO	ND		mg/kg	3.96	1	10/01/08 22:19	09/23/08	8123010	SW8015M
Surr: o-Terphenyl (35-120%)	*102 %*					"	"	"	"
Semivolatile Organics by GC/MS									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.327	1	09/26/08 16:51	09/25/08	8125006	SW8270C
1,2,4-Trichlorobenzene	ND		"	0.327	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	0.327	"	"	"	"	"
1-Chloronaphthalene	ND		"	0.327	"	"	"	"	"
1-Methylnaphthalene	ND		"	0.327	"	"	"	"	"
1-Naphthylamine	ND		"	0.653	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND		"	0.327	"	"	"	"	"
2,4,5-Trichlorophenol	ND		"	0.327	"	"	"	"	"
2,4,6-Trichlorophenol	ND		"	0.327	"	"	"	"	"
2,4-Dichlorophenol	ND		"	0.327	"	"	"	"	"
2,4-Dimethylphenol	ND		"	0.327	"	"	"	"	"
2,4-Dinitrophenol	ND		"	1.68	"	"	"	"	"
2,4-Dinitrotoluene	ND		"	0.327	"	"	"	"	"
2,6-Dichlorophenol	ND		"	0.327	"	"	"	"	"
2,6-Dinitrotoluene	ND		"	0.327	"	"	"	"	"
2-Chloronaphthalene	ND		"	0.327	"	"	"	"	"
2-Chlorophenol	ND		"	0.327	"	"	"	"	"
2-Methylnaphthalene	ND		"	0.327	"	"	"	"	"
2-Methylphenol (o-Cresol)	ND		"	0.327	"	"	"	"	"
2-Naphthylamine	ND		"	0.653	"	"	"	"	"
2-Nitroaniline	ND		"	0.327	"	"	"	"	"
2-Nitrophenol	ND		"	0.327	"	"	"	"	"
2-Picoline	ND		"	0.327	"	"	"	"	"
3,3'-Dichlorobenzidine	ND		"	0.327	"	"	"	"	"
3,4-Methylphenol (m,p-Cresol)	ND		"	0.327	"	"	"	"	"
3-Methylcholanthrene	ND		"	0.327	"	"	"	"	"
3-Nitroaniline	ND		"	0.327	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND		"	0.327	"	"	"	"	"
4-Aminobiphenyl	ND		"	0.653	"	"	"	"	"
4-Bromophenyl phenyl ether	ND		"	0.327	"	"	"	"	"
4-Chloro-3-methylphenol	ND		"	0.327	"	"	"	"	"
4-Chloroaniline	ND		"	0.327	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND		"	0.327	"	"	"	"	"
4-Nitroaniline	ND		"	0.327	"	"	"	"	"
4-Nitrophenol	ND		"	0.327	"	"	"	"	"
7,12-Dimethylbenz (a) anthracene	ND		"	0.327	"	"	"	"	"
a,a-Dimethylphenethylamine	ND		"	0.327	"	"	"	"	"
Acenaphthene	ND		"	0.327	"	"	"	"	"
Acenaphthylene	ND		"	0.327	"	"	"	"	"
Acetophenone	ND		"	0.327	"	"	"	"	"
Aniline	ND		"	0.327	"	"	"	"	"

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ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-06 (691 DU1-S5.5 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Anthracene	ND		"	0.327	"	"	"	"	"
Azobenzene	ND		"	0.327	"	"	"	"	"
Benzidine	ND		"	1.68	"	"	"	"	"
Benzo (a) anthracene	ND		"	0.327	"	"	"	"	"
Benzo (a) pyrene	ND		"	0.327	"	"	"	"	"
Benzo (b) fluoranthene	ND		"	0.327	"	"	"	"	"
Benzo (g,h,i) perylene	ND		"	0.327	"	"	"	"	"
Benzo (k) fluoranthene	ND		"	0.327	"	"	"	"	"
Benzoic acid	ND		"	0.327	"	"	"	"	"
Benzyl alcohol	ND		"	0.327	"	"	"	"	"
Bis(2-chloroethoxy)methane	ND		"	0.327	"	"	"	"	"
Bis(2-chloroethyl)ether	ND		"	0.327	"	"	"	"	"
Bis(2-chloroisopropyl) ether	ND		"	0.327	"	"	"	"	"
Bis(2-ethylhexyl)phthalate	ND		"	0.327	"	"	"	"	"
Butyl benzyl phthalate	ND		"	0.327	"	"	"	"	"
Chrysene	ND		"	0.327	"	"	"	"	"
Dibenz (a,j) acridine	ND		"	0.327	"	"	"	"	"
Dibenzo (a,h) anthracene	ND		"	0.327	"	"	"	"	"
Dibenzofuran	ND		"	0.327	"	"	"	"	"
Diethyl phthalate	ND		"	0.327	"	"	"	"	"
Dimethyl phthalate	ND		"	0.327	"	"	"	"	"
Dimethylaminoazobenzene	ND		"	0.327	"	"	"	"	"
Di-n-butyl phthalate	ND		"	0.327	"	"	"	"	"
Di-n-octyl phthalate	ND		"	0.327	"	"	"	"	"
Ethyl Methanesulfonate	ND		"	0.327	"	"	"	"	"
Fluoranthene	ND		"	0.327	"	"	"	"	"
Fluorene	ND		"	0.327	"	"	"	"	"
Hexachlorobenzene	ND		"	0.327	"	"	"	"	"
Hexachlorobutadiene	ND		"	0.327	"	"	"	"	"
Hexachlorocyclopentadiene	ND		"	0.327	"	"	"	"	"
Hexachloroethane	ND		"	0.327	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND		"	0.327	"	"	"	"	"
Isophorone	ND		"	0.327	"	"	"	"	"
Methyl Methanesulfonate	ND		"	0.327	"	"	"	"	"
Naphthalene	ND		"	0.327	"	"	"	"	"
Nitrobenzene	ND		"	0.327	"	"	"	"	"
N-Nitrosodimethylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodi-n-butylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosodiphenylamine	ND		"	0.327	"	"	"	"	"
N-Nitrosopiperidine	ND		"	0.327	"	"	"	"	"
Pentachloronitrobenzene	ND		"	0.327	"	"	"	"	"
Pentachlorophenol	ND		"	0.327	"	"	"	"	"
Phenacetin	ND		"	0.327	"	"	"	"	"
Phenanthrene	ND		"	0.327	"	"	"	"	"
Phenol	ND		"	0.327	"	"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-06 (691 DU1-S5.5 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Semivolatile Organics by GC/MS - cont.									
Pronamide	ND		"	0.327	"	"	"	"	"
Pyrene	ND		"	0.327	"	"	"	"	"
Pyridine	ND		"	0.327	"	"	"	"	"
Surr: 2,4,6-Tribromophenol (40-120%)	*69 %*					"	"	"	"
Surr: 2-Fluorobiphenyl (45-120%)	*76 %*					"	"	"	"
Surr: 2-Fluorophenol (30-120%)	*69 %*					"	"	"	"
Surr: Nitrobenzene-d5 (35-120%)	*75 %*					"	"	"	"
Surr: Phenol-d6 (40-120%)	*69 %*					"	"	"	"
Surr: Terphenyl-d14 (40-130%)	*80 %*					"	"	"	"
Total Metals by SW 846 Series Methods									
Arsenic	ND	RL3	mg/kg	9.52	10	09/30/08 15:42	09/30/08	8130006	SW6010B
Barium	**33.1**		"	19.0	"	"	"	"	"
Cadmium	ND	RL3	"	9.52	"	"	"	"	"
Chromium	**22.3**		"	9.52	"	"	"	"	"
Lead	ND	RL3	"	19.0	"	"	"	"	"
Mercury	**0.00881**		"	0.00455	1	09/29/08 17:46	09/29/08	8129008	SW7471
Selenium	ND	RL3	"	19.0	10	09/30/08 15:42	09/30/08	8130006	SW6010B
Silver	ND	RL3	"	9.52	"	"	"	"	"
Volatile Organic Compounds by EPA 8260B									
1,1,1,2-Tetrachloroethane	ND		mg/kg	1.15	50	09/24/08 16:16	09/24/08	8125011	SW8260B
1,1,1-Trichloroethane	ND		"	1.15	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND		"	1.15	"	"	"	"	"
1,1,2-Trichloroethane	ND		"	1.15	"	"	"	"	"
1,1-Dichloroethane	ND		"	5.76	"	"	"	"	"
1,1-Dichloroethene	ND		"	1.15	"	"	"	"	"
1,1-Dichloropropene	ND		"	1.15	"	"	"	"	"
1,2,3-Trichlorobenzene	ND		"	1.15	"	"	"	"	"
1,2,3-Trichloropropane	ND		"	1.15	"	"	"	"	"
1,2,4-Trichlorobenzene	ND		"	5.76	"	"	"	"	"
1,2,4-Trimethylbenzene	ND		"	1.15	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND		"	1.15	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND		"	1.15	"	"	"	"	"
1,2-Dichlorobenzene	ND		"	5.76	"	"	"	"	"
1,2-Dichloroethane	ND		"	1.15	"	"	"	"	"
1,2-Dichloropropane	ND		"	1.15	"	"	"	"	"
1,3,5-Trimethylbenzene	ND		"	1.15	"	"	"	"	"
1,3-Dichlorobenzene	ND		"	5.76	"	"	"	"	"
1,3-Dichloropropane	ND		"	1.15	"	"	"	"	"
1,4-Dichlorobenzene	ND		"	5.76	"	"	"	"	"
2,2-Dichloropropane	ND		"	1.15	"	"	"	"	"
2-Butanone (MEK)	ND		"	5.76	"	"	"	"	"
2-Chlorotoluene	ND		"	1.15	"	"	"	"	"
2-Hexanone	ND		"	5.76	"	"	"	"	"
4-Chlorotoluene	ND		"	1.15	"	"	"	"	"
4-Methyl-2-pentanone (MIBK)	ND		"	5.76	"	"	"	"	"

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-06 (691 DU1-S5.5 - Solid/Soil) - cont.					**Sampled:**	**09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Volatile Organic Compounds by EPA 8260B - cont.									
Acetone	ND		"	5.76	"	"	"	"	"
Acrylonitrile	ND		"	5.76	"	"	"	"	"
Benzene	ND		"	1.15	"	"	"	"	"
Bromobenzene	ND		"	1.15	"	"	"	"	"
Bromochloromethane	ND		"	5.76	"	"	"	"	"
Bromodichloromethane	ND		"	1.15	"	"	"	"	"
Bromoform	ND		"	1.15	"	"	"	"	"
Bromomethane	ND		"	11.5	"	"	"	"	"
Carbon disulfide	ND		"	1.15	"	"	"	"	"
Carbon Tetrachloride	ND		"	1.15	"	"	"	"	"
Chlorobenzene	ND		"	1.15	"	"	"	"	"
Chlorodibromomethane	ND		"	1.15	"	"	"	"	"
Chloroethane	ND		"	5.76	"	"	"	"	"
Chloroform	ND		"	1.15	"	"	"	"	"
Chloromethane	ND		"	5.76	"	"	"	"	"
cis-1,2-Dichloroethene	ND		"	1.15	"	"	"	"	"
cis-1,3-Dichloropropene	ND		"	1.15	"	"	"	"	"
Dibromomethane	ND		"	1.15	"	"	"	"	"
Dichlorodifluoromethane	ND		"	5.76	"	"	"	"	"
Ethylbenzene	ND		"	1.15	"	"	"	"	"
Hexachlorobutadiene	ND		"	5.76	"	"	"	"	"
Iodomethane	ND		"	5.76	"	"	"	"	"
Isopropylbenzene	ND		"	1.15	"	"	"	"	"
m,p-Xylene	ND		"	1.15	"	"	"	"	"
Methyl tert-Butyl Ether	ND		"	0.576	"	"	"	"	"
Methylene Chloride	ND		"	5.76	"	"	"	"	"
Naphthalene	ND		"	5.76	"	"	"	"	"
n-Butylbenzene	ND		"	1.15	"	"	"	"	"
n-Propylbenzene	ND		"	1.15	"	"	"	"	"
o-Xylene	ND		"	1.15	"	"	"	"	"
p-Isopropyltoluene	ND		"	1.15	"	"	"	"	"
sec-Butylbenzene	ND		"	1.15	"	"	"	"	"
Styrene	ND		"	1.15	"	"	"	"	"
tert-Butylbenzene	ND		"	1.15	"	"	"	"	"
Tetrachloroethene	ND		"	1.15	"	"	"	"	"
Toluene	ND		"	1.15	"	"	"	"	"
trans-1,2-Dichloroethene	ND		"	1.15	"	"	"	"	"
trans-1,3-Dichloropropene	ND		"	1.15	"	"	"	"	"
trans-1,4-Dichloro-2-butene	ND		"	5.76	"	"	"	"	"
Trichloroethene	ND		"	1.15	"	"	"	"	"
Trichlorofluoromethane	ND		"	1.15	"	"	"	"	"
Vinyl Acetate	ND		"	5.76	"	"	"	"	"
Vinyl chloride	ND		"	5.76	"	"	"	"	"
Surr: 1,2-Dichloroethane-d4 (80-120%)	*96 %*					"	"	"	"
Surr: 4-Bromofluorobenzene (80-120%)	*98 %*					"	"	"	"
Surr: Dibromofluoromethane (80-120%)	*100 %*					"	"	"	"

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
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Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	Rpt Limit	Dilution	Date Analyzed	Prep Date	Seq/ Batch	Method
Sample ID: HRI0096-06 (691 DU1-S5.5 - Solid/Soil) - cont.						**Sampled: 09/17/08 17:30**		**Recvd: 09/18/08 13:50**	
Volatile Organic Compounds by EPA 8260B - cont.									
Surr: Toluene-d8 (80-120%)	*93 %*					"	"	"	"

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LABORATORY BLANK QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Extractable Petroleum Hydrocarbons by 8015M													
Batch\Seq: 8123010 Extracted: 09/23/08													
Blank Analyzed: 09/29/2008 (8123010-BLK1)													
DRO			mg/kg	N/A	4.00	ND							
Surrogate: o-Terphenyl			mg/kg					*99*		*35-120*			
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Blank Analyzed: 09/26/2008 (8125006-BLK1)													
1,2,4,5-Tetrachlorobenzene			mg/kg	N/A	0.330	ND							
1,2,4-Trichlorobenzene			mg/kg	N/A	0.330	ND							
1,2-Dichlorobenzene			mg/kg	N/A	0.330	ND							
1,3-Dichlorobenzene			mg/kg	N/A	0.330	ND							
1,4-Dichlorobenzene			mg/kg	N/A	0.330	ND							
1-Chloronaphthalene			mg/kg	N/A	0.330	ND							
1-Methylnaphthalene			mg/kg	N/A	0.330	ND							
1-Naphthylamine			mg/kg	N/A	0.660	ND							
2,3,4,6-Tetrachlorophenol			mg/kg	N/A	0.330	ND							
2,4,5-Trichlorophenol			mg/kg	N/A	0.330	ND							
2,4,6-Trichlorophenol			mg/kg	N/A	0.330	ND							
2,4-Dichlorophenol			mg/kg	N/A	0.330	ND							
2,4-Dimethylphenol			mg/kg	N/A	0.330	ND							
2,4-Dinitrophenol			mg/kg	N/A	1.70	ND							
2,4-Dinitrotoluene			mg/kg	N/A	0.330	ND							
2,6-Dichlorophenol			mg/kg	N/A	0.330	ND							
2,6-Dinitrotoluene			mg/kg	N/A	0.330	ND							
2-Chloronaphthalene			mg/kg	N/A	0.330	ND							
2-Chlorophenol			mg/kg	N/A	0.330	ND							
2-Methylnaphthalene			mg/kg	N/A	0.330	ND							
2-Methylphenol (o-Cresol)			mg/kg	N/A	0.330	ND							
2-Naphthylamine			mg/kg	N/A	0.660	ND							
2-Nitroaniline			mg/kg	N/A	0.330	ND							
2-Nitrophenol			mg/kg	N/A	0.330	ND							
2-Picoline			mg/kg	N/A	0.330	ND							
3,3'-Dichlorobenzidine			mg/kg	N/A	0.330	ND							
3,4-Methylphenol (m,p-Cresol)			mg/kg	N/A	0.330	ND							
3-Methylcholanthrene			mg/kg	N/A	0.330	ND							
3-Nitroaniline			mg/kg	N/A	0.330	ND							
4,6-Dinitro-2-methylphenol			mg/kg	N/A	0.330	ND							
4-Aminobiphenyl			mg/kg	N/A	0.660	ND							
4-Bromophenyl phenyl ether			mg/kg	N/A	0.330	ND							
4-Chloro-3-methylphenol			mg/kg	N/A	0.330	ND							
4-Chloroaniline			mg/kg	N/A	0.330	ND							
4-Chlorophenyl phenyl ether			mg/kg	N/A	0.330	ND							
4-Nitroaniline			mg/kg	N/A	0.330	ND							
4-Nitrophenol			mg/kg	N/A	0.330	ND							
7,12-Dimethylbenz (a) anthracene			mg/kg	N/A	0.330	ND							
a,a-Dimethylphenethylamine			mg/kg	N/A	0.330	ND							

Myounghee Noh & Associates
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Received: 09/18/08
Reported: 10/03/08 09:04

LABORATORY BLANK QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Blank Analyzed: 09/26/2008 (8125006-BLK1)													
Acenaphthene			mg/kg	N/A	0.330	ND							
Acenaphthylene			mg/kg	N/A	0.330	ND							
Acetophenone			mg/kg	N/A	0.330	ND							
Aniline			mg/kg	N/A	0.330	ND							
Anthracene			mg/kg	N/A	0.330	ND							
Azobenzene			mg/kg	N/A	0.330	ND							
Benzidine			mg/kg	N/A	1.70	ND							
Benzo (a) anthracene			mg/kg	N/A	0.330	ND							
Benzo (a) pyrene			mg/kg	N/A	0.330	ND							
Benzo (b) fluoranthene			mg/kg	N/A	0.330	ND							
Benzo (g,h,i) perylene			mg/kg	N/A	0.330	ND							
Benzo (k) fluoranthene			mg/kg	N/A	0.330	ND							
Benzoic acid			mg/kg	N/A	0.330	ND							
Benzyl alcohol			mg/kg	N/A	0.330	ND							
Bis(2-chloroethoxy)methane			mg/kg	N/A	0.330	ND							
Bis(2-chloroethyl)ether			mg/kg	N/A	0.330	ND							
Bis(2-chloroisopropyl) ether			mg/kg	N/A	0.330	ND							
Bis(2-ethylhexyl)phthalate			mg/kg	N/A	0.330	ND							
Butyl benzyl phthalate			mg/kg	N/A	0.330	ND							
Chrysene			mg/kg	N/A	0.330	ND							
Dibenz (a,j) acridine			mg/kg	N/A	0.330	ND							
Dibenzo (a,h) anthracene			mg/kg	N/A	0.330	ND							
Dibenzofuran			mg/kg	N/A	0.330	ND							
Diethyl phthalate			mg/kg	N/A	0.330	ND							
Dimethyl phthalate			mg/kg	N/A	0.330	ND							
Dimethylaminoazobenzene			mg/kg	N/A	0.330	ND							
Di-n-butyl phthalate			mg/kg	N/A	0.330	ND							
Di-n-octyl phthalate			mg/kg	N/A	0.330	ND							
Ethyl Methanesulfonate			mg/kg	N/A	0.330	ND							
Fluoranthene			mg/kg	N/A	0.330	ND							
Fluorene			mg/kg	N/A	0.330	ND							
Hexachlorobenzene			mg/kg	N/A	0.330	ND							
Hexachlorobutadiene			mg/kg	N/A	0.330	ND							
Hexachlorocyclopentadiene			mg/kg	N/A	0.330	ND							
Hexachloroethane			mg/kg	N/A	0.330	ND							
Indeno (1,2,3-cd) pyrene			mg/kg	N/A	0.330	ND							
Isophorone			mg/kg	N/A	0.330	ND							
Methyl Methanesulfonate			mg/kg	N/A	0.330	ND							
Naphthalene			mg/kg	N/A	0.330	ND							
Nitrobenzene			mg/kg	N/A	0.330	ND							
N-Nitrosodimethylamine			mg/kg	N/A	0.330	ND							
N-Nitrosodi-n-butylamine			mg/kg	N/A	0.330	ND							
N-Nitrosodi-n-propylamine			mg/kg	N/A	0.330	ND							
N-Nitrosodiphenylamine			mg/kg	N/A	0.330	ND							
N-Nitrosopiperidine			mg/kg	N/A	0.330	ND							

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Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LABORATORY BLANK QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Blank Analyzed: 09/26/2008 (8125006-BLK1)													
Pentachloronitrobenzene			mg/kg	N/A	0.330	ND							
Pentachlorophenol			mg/kg	N/A	0.330	ND							
Phenacetin			mg/kg	N/A	0.330	ND							
Phenanthrene			mg/kg	N/A	0.330	ND							
Phenol			mg/kg	N/A	0.330	ND							
Pronamide			mg/kg	N/A	0.330	ND							
Pyrene			mg/kg	N/A	0.330	ND							
Pyridine			mg/kg	N/A	0.330	ND							
Surrogate: 2,4,6-Tribromophenol			mg/kg					*71*		*40-120*			
Surrogate: 2-Fluorobiphenyl			mg/kg					*77*		*45-120*			
Surrogate: 2-Fluorophenol			mg/kg					*70*		*30-120*			
Surrogate: Nitrobenzene-d5			mg/kg					*76*		*35-120*			
Surrogate: Phenol-d6			mg/kg					*70*		*40-120*			
Surrogate: Terphenyl-d14			mg/kg					*84*		*40-130*			
Total Metals by SW 846 Series Methods													
Batch\Seq: 8129008 Extracted: 09/29/08													
Blank Analyzed: 09/29/2008 (8129008-BLK1)													
Mercury			mg/kg	N/A	0.00500	ND							
Batch\Seq: 8130006 Extracted: 09/30/08													
Blank Analyzed: 09/30/2008 (8130006-BLK1)													
Arsenic			mg/kg	N/A	1.00	ND							
Barium			mg/kg	N/A	2.00	ND							
Cadmium			mg/kg	N/A	1.00	ND							
Chromium			mg/kg	N/A	1.00	ND							
Lead			mg/kg	N/A	2.00	ND							
Selenium			mg/kg	N/A	2.00	ND							
Silver			mg/kg	N/A	1.00	ND							
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Blank Analyzed: 09/24/2008 (8125011-BLK1)													
1,1,1,2-Tetrachloroethane			mg/kg	N/A	0.0100	ND							
1,1,1-Trichloroethane			mg/kg	N/A	0.0100	ND							
1,1,2,2-Tetrachloroethane			mg/kg	N/A	0.0100	ND							
1,1,2-Trichloroethane			mg/kg	N/A	0.0100	ND							
1,1-Dichloroethane			mg/kg	N/A	0.0500	ND							
1,1-Dichloroethene			mg/kg	N/A	0.0100	ND							
1,1-Dichloropropene			mg/kg	N/A	0.0100	ND							
1,2,3-Trichlorobenzene			mg/kg	N/A	0.0100	ND							
1,2,3-Trichloropropane			mg/kg	N/A	0.0100	ND							
1,2,4-Trichlorobenzene			mg/kg	N/A	0.0500	ND							
1,2,4-Trimethylbenzene			mg/kg	N/A	0.0100	ND							
1,2-Dibromo-3-chloropropane			mg/kg	N/A	0.0100	ND							
1,2-Dibromoethane (EDB)			mg/kg	N/A	0.0100	ND							

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99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LABORATORY BLANK QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Blank Analyzed: 09/24/2008 (8125011-BLK1)													
1,2-Dichlorobenzene			mg/kg	N/A	0.0500	ND							
1,2-Dichloroethane			mg/kg	N/A	0.0100	ND							
1,2-Dichloropropane			mg/kg	N/A	0.0100	ND							
1,3,5-Trimethylbenzene			mg/kg	N/A	0.0100	ND							
1,3-Dichlorobenzene			mg/kg	N/A	0.0500	ND							
1,3-Dichloropropane			mg/kg	N/A	0.0100	ND							
1,4-Dichlorobenzene			mg/kg	N/A	0.0500	ND							
2,2-Dichloropropane			mg/kg	N/A	0.0100	ND							
2-Butanone (MEK)			mg/kg	N/A	0.0500	ND							
2-Chlorotoluene			mg/kg	N/A	0.0100	ND							
2-Hexanone			mg/kg	N/A	0.0500	ND							
4-Chlorotoluene			mg/kg	N/A	0.0100	ND							
4-Methyl-2-pentanone (MIBK)			mg/kg	N/A	0.0500	ND							
Acetone			mg/kg	N/A	0.0500	ND							
Acrylonitrile			mg/kg	N/A	0.0500	ND							
Benzene			mg/kg	N/A	0.0100	ND							
Bromobenzene			mg/kg	N/A	0.0100	ND							
Bromochloromethane			mg/kg	N/A	0.0500	ND							
Bromodichloromethane			mg/kg	N/A	0.0100	ND							
Bromoform			mg/kg	N/A	0.0100	ND							
Bromomethane			mg/kg	N/A	0.100	ND							
Carbon disulfide			mg/kg	N/A	0.0100	ND							
Carbon Tetrachloride			mg/kg	N/A	0.0100	ND							
Chlorobenzene			mg/kg	N/A	0.0100	ND							
Chlorodibromomethane			mg/kg	N/A	0.0100	ND							
Chloroethane			mg/kg	N/A	0.0500	ND							
Chloroform			mg/kg	N/A	0.0100	ND							
Chloromethane			mg/kg	N/A	0.0500	ND							
cis-1,2-Dichloroethene			mg/kg	N/A	0.0100	ND							
cis-1,3-Dichloropropene			mg/kg	N/A	0.0100	ND							
Dibromomethane			mg/kg	N/A	0.0100	ND							
Dichlorodifluoromethane			mg/kg	N/A	0.0500	ND							
Ethylbenzene			mg/kg	N/A	0.0100	ND							
Hexachlorobutadiene			mg/kg	N/A	0.0500	ND							
Iodomethane			mg/kg	N/A	0.0500	ND							
Isopropylbenzene			mg/kg	N/A	0.0100	ND							
m,p-Xylene			mg/kg	N/A	0.0100	ND							
Methyl tert-Butyl Ether			mg/kg	N/A	0.00500	ND							
Methylene Chloride			mg/kg	N/A	0.0500	ND							
Naphthalene			mg/kg	N/A	0.0500	ND							
n-Butylbenzene			mg/kg	N/A	0.0100	ND							
n-Propylbenzene			mg/kg	N/A	0.0100	ND							
o-Xylene			mg/kg	N/A	0.0100	ND							
p-Isopropyltoluene			mg/kg	N/A	0.0100	ND							
sec-Butylbenzene			mg/kg	N/A	0.0100	ND							

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LABORATORY BLANK QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Blank Analyzed: 09/24/2008 (8125011-BLK1)													
Styrene			mg/kg	N/A	0.0100	ND							
tert-Butylbenzene			mg/kg	N/A	0.0100	ND							
Tetrachloroethene			mg/kg	N/A	0.0100	ND							
Toluene			mg/kg	N/A	0.0100	ND							
trans-1,2-Dichloroethene			mg/kg	N/A	0.0100	ND							
trans-1,3-Dichloropropene			mg/kg	N/A	0.0100	ND							
trans-1,4-Dichloro-2-butene			mg/kg	N/A	0.0500	ND							
Trichloroethene			mg/kg	N/A	0.0100	ND							
Trichlorofluoromethane			mg/kg	N/A	0.0100	ND							
Vinyl Acetate			mg/kg	N/A	0.0500	ND							
Vinyl chloride			mg/kg	N/A	0.0500	ND							
Surrogate: 1,2-Dichloroethane-d4			mg/kg					*93*		*80-120*			
Surrogate: 4-Bromofluorobenzene			mg/kg					*96*		*80-120*			
Surrogate: Dibromofluoromethane			mg/kg					*100*		*80-120*			
Surrogate: Toluene-d8			mg/kg					*97*		*80-120*			

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LABORATORY DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Extractable Petroleum Hydrocarbons by 8015M												
Batch\Seq: 8123010 Extracted: 09/23/08												
Duplicate Analyzed: 10/01/2008 (8123010-DUP1)				QC Source Sample: HRI0096-01								
DRO	7.29		mg/kg	N/A	3.96	7.55				3	30	
Surrogate: o-Terphenyl			mg/kg				*115*		*35-120*			
Semivolatile Organics by GC/MS												
Batch\Seq: 8125006 Extracted: 09/25/08												
Duplicate Analyzed: 09/26/2008 (8125006-DUP1)				QC Source Sample: HRI0096-01								
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
1,2,4-Trichlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
1,2-Dichlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
1,3-Dichlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
1,4-Dichlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
1-Chloronaphthalene	ND		mg/kg	N/A	0.324	ND					30	
1-Methylnaphthalene	ND		mg/kg	N/A	0.324	ND					30	
1-Naphthylamine	ND		mg/kg	N/A	0.647	ND					30	
2,3,4,6-Tetrachlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2,4,5-Trichlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2,4,6-Trichlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2,4-Dichlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2,4-Dimethylphenol	ND		mg/kg	N/A	0.324	ND					30	
2,4-Dinitrophenol	ND		mg/kg	N/A	1.67	ND					30	
2,4-Dinitrotoluene	ND		mg/kg	N/A	0.324	ND					30	
2,6-Dichlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2,6-Dinitrotoluene	ND		mg/kg	N/A	0.324	ND					30	
2-Chloronaphthalene	ND		mg/kg	N/A	0.324	ND					30	
2-Chlorophenol	ND		mg/kg	N/A	0.324	ND					30	
2-Methylnaphthalene	ND		mg/kg	N/A	0.324	ND					30	
2-Methylphenol (o-Cresol)	ND		mg/kg	N/A	0.324	ND					30	
2-Naphthylamine	ND		mg/kg	N/A	0.647	ND					30	
2-Nitroaniline	ND		mg/kg	N/A	0.324	ND					30	
2-Nitrophenol	ND		mg/kg	N/A	0.324	ND					30	
2-Picoline	ND		mg/kg	N/A	0.324	ND					30	
3,3'-Dichlorobenzidine	ND		mg/kg	N/A	0.324	ND					30	
3,4-Methylphenol (m,p-Cresol)	ND		mg/kg	N/A	0.324	ND					30	
3-Methylcholanthrene	ND		mg/kg	N/A	0.324	ND					30	
3-Nitroaniline	ND		mg/kg	N/A	0.324	ND					30	
4,6-Dinitro-2-methylphenol	ND		mg/kg	N/A	0.324	ND					30	
4-Aminobiphenyl	ND		mg/kg	N/A	0.647	ND					30	
4-Bromophenyl phenyl ether	ND		mg/kg	N/A	0.324	ND					30	
4-Chloro-3-methylphenol	ND		mg/kg	N/A	0.324	ND					30	
4-Chloroaniline	ND		mg/kg	N/A	0.324	ND					30	
4-Chlorophenyl phenyl ether	ND		mg/kg	N/A	0.324	ND					30	
4-Nitroaniline	ND		mg/kg	N/A	0.324	ND					30	
4-Nitrophenol	0.233		mg/kg	N/A	0.324	ND					30	
7,12-Dimethylbenz (a) anthracene	ND		mg/kg	N/A	0.324	ND					30	
a,a-Dimethylphenethylamine	0.00232		mg/kg	N/A	0.324	0.00229				1	30	

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LABORATORY DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS												
Batch\Seq: 8125006 Extracted: 09/25/08												
Duplicate Analyzed: 09/26/2008 (8125006-DUP1)				QC Source Sample: HRI0096-01								
Acenaphthene	ND		mg/kg	N/A	0.324	ND					30	
Acenaphthylene	ND		mg/kg	N/A	0.324	ND					30	
Acetophenone	ND		mg/kg	N/A	0.324	ND					30	
Aniline	ND		mg/kg	N/A	0.324	ND					30	
Anthracene	ND		mg/kg	N/A	0.324	ND					30	
Azobenzene	ND		mg/kg	N/A	0.324	ND					30	
Benzidine	ND		mg/kg	N/A	1.67	ND					30	
Benzo (a) anthracene	ND		mg/kg	N/A	0.324	ND					30	
Benzo (a) pyrene	ND		mg/kg	N/A	0.324	ND					30	
Benzo (b) fluoranthene	ND		mg/kg	N/A	0.324	ND					30	
Benzo (g,h,i) perylene	ND		mg/kg	N/A	0.324	ND					30	
Benzo (k) fluoranthene	ND		mg/kg	N/A	0.324	ND					30	
Benzoic acid	ND		mg/kg	N/A	0.324	ND					30	
Benzyl alcohol	ND		mg/kg	N/A	0.324	ND					30	
Bis(2-chloroethoxy)methane	ND		mg/kg	N/A	0.324	ND					30	
Bis(2-chloroethyl)ether	ND		mg/kg	N/A	0.324	ND					30	
Bis(2-chloroisopropyl) ether	ND		mg/kg	N/A	0.324	ND					30	
Bis(2-ethylhexyl)phthalate	ND		mg/kg	N/A	0.324	ND					30	
Butyl benzyl phthalate	ND		mg/kg	N/A	0.324	ND					30	
Chrysene	ND		mg/kg	N/A	0.324	ND					30	
Dibenz (a,j) acridine	ND		mg/kg	N/A	0.324	ND					30	
Dibenzo (a,h) anthracene	ND		mg/kg	N/A	0.324	ND					30	
Dibenzofuran	ND		mg/kg	N/A	0.324	ND					30	
Diethyl phthalate	ND		mg/kg	N/A	0.324	ND					30	
Dimethyl phthalate	ND		mg/kg	N/A	0.324	ND					30	
Dimethylaminoazobenzene	ND		mg/kg	N/A	0.324	ND					30	
Di-n-butyl phthalate	ND		mg/kg	N/A	0.324	ND					30	
Di-n-octyl phthalate	ND		mg/kg	N/A	0.324	ND					30	
Ethyl Methanesulfonate	ND		mg/kg	N/A	0.324	ND					30	
Fluoranthene	ND		mg/kg	N/A	0.324	ND					30	
Fluorene	ND		mg/kg	N/A	0.324	ND					30	
Hexachlorobenzene	ND		mg/kg	N/A	0.324	ND					30	
Hexachlorobutadiene	ND		mg/kg	N/A	0.324	ND					30	
Hexachlorocyclopentadiene	ND		mg/kg	N/A	0.324	ND					30	
Hexachloroethane	ND		mg/kg	N/A	0.324	ND					30	
Indeno (1,2,3-cd) pyrene	ND		mg/kg	N/A	0.324	ND					30	
Isophorone	ND		mg/kg	N/A	0.324	ND					30	
Methyl Methanesulfonate	ND		mg/kg	N/A	0.324	ND					30	
Naphthalene	ND		mg/kg	N/A	0.324	ND					30	
Nitrobenzene	ND		mg/kg	N/A	0.324	ND					30	
N-Nitrosodimethylamine	ND		mg/kg	N/A	0.324	ND					30	
N-Nitrosodi-n-butylamine	ND		mg/kg	N/A	0.324	ND					30	
N-Nitrosodi-n-propylamine	0.182		mg/kg	N/A	0.324	0.152				18	30	
N-Nitrosodiphenylamine	ND		mg/kg	N/A	0.324	ND					30	
N-Nitrosopiperidine	ND		mg/kg	N/A	0.324	ND					30	

Myounghee Noh & Associates
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Reported: 10/03/08 09:04

LABORATORY DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS												
Batch\Seq: 8125006 Extracted: 09/25/08												
Duplicate Analyzed: 09/26/2008 (8125006-DUP1)					QC Source Sample: HRI0096-01							
Pentachloronitrobenzene	ND		mg/kg	N/A	0.324	ND					30	
Pentachlorophenol	ND		mg/kg	N/A	0.324	ND					30	
Phenacetin	ND		mg/kg	N/A	0.324	ND					30	
Phenanthrene	ND		mg/kg	N/A	0.324	ND					30	
Phenol	ND		mg/kg	N/A	0.324	ND					30	
Pronamide	ND		mg/kg	N/A	0.324	ND					30	
Pyrene	ND		mg/kg	N/A	0.324	ND					30	
Pyridine	ND		mg/kg	N/A	0.324	ND					30	
Surrogate: 2,4,6-Tribromophenol			mg/kg				*79*		*40-120*			
Surrogate: 2-Fluorobiphenyl			mg/kg				*75*		*45-120*			
Surrogate: 2-Fluorophenol			mg/kg				*63*		*30-120*			
Surrogate: Nitrobenzene-d5			mg/kg				*71*		*35-120*			
Surrogate: Phenol-d6			mg/kg				*67*		*40-120*			
Surrogate: Terphenyl-d14			mg/kg				*80*		*40-130*			

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99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
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Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LCS/LCS DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Extractable Petroleum Hydrocarbons by 8015M													
Batch\Seq: 8123010 Extracted: 09/23/08													
LCS Analyzed: 09/29/2008 (8123010-BS1)													
DRO		167	mg/kg	N/A	4.00	137		82		50-115			
Surrogate: o-Terphenyl			mg/kg					*83*		*35-120*			
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
LCS Analyzed: 09/26/2008 (8125006-BS1)													
1,2,4,5-Tetrachlorobenzene			mg/kg	N/A	0.330	ND				60-120			
1,2,4-Trichlorobenzene		1.67	mg/kg	N/A	0.330	1.39		83		45-120			
1,2-Dichlorobenzene		1.67	mg/kg	N/A	0.330	1.29		77		45-120			
1,3-Dichlorobenzene		1.67	mg/kg	N/A	0.330	1.21		73		45-120			
1,4-Dichlorobenzene		1.67	mg/kg	N/A	0.330	1.22		73		50-120			
1-Methylnaphthalene			mg/kg	N/A	0.330	ND				10-120			
1-Naphthylamine			mg/kg	N/A	0.660	ND				30-120			
2,3,4,6-Tetrachlorophenol			mg/kg	N/A	0.330	ND				60-120			
2,4,5-Trichlorophenol		1.67	mg/kg	N/A	0.330	1.57		94		50-120			
2,4,6-Trichlorophenol		1.67	mg/kg	N/A	0.330	1.45		87		55-120			
2,4-Dichlorophenol		1.67	mg/kg	N/A	0.330	1.42		85		50-120			
2,4-Dimethylphenol		1.67	mg/kg	N/A	0.330	1.36		82		40-120			
2,4-Dinitrophenol		1 67	mg/kg	N/A	1.70	1 47		88		40-120			
2,4-Dinitrotoluene		1.67	mg/kg	N/A	0.330	1.62		97		55-120			
2,6-Dichlorophenol			mg/kg	N/A	0.330	ND				55-120			
2,6-Dinitrotoluene		1.67	mg/kg	N/A	0.330	1.53		92		60-120			
2-Chloronaphthalene		1.67	mg/kg	N/A	0.330	1.30		78		45-120			
2-Chlorophenol		1.67	mg/kg	N/A	0.330	1.35		81		45-120			
2-Methylnaphthalene		1.67	mg/kg	N/A	0.330	1.42		85		50-120			
2-Methylphenol (o-Cresol)		1.67	mg/kg	N/A	0.330	1.52		91		50-120			
2-Naphthylamine			mg/kg	N/A	0.660	ND				30-120			
2-Nitroaniline		1.67	mg/kg	N/A	0.330	1.59		95		60-120			
2-Nitrophenol		1.67	mg/kg	N/A	0.330	1.39		83		50-120			
2-Picoline			mg/kg	N/A	0.330	ND				10-120			
3,3'-Dichlorobenzidine			mg/kg	N/A	0.330	ND				55-120			
3,4-Methylphenol (m,p-Cresol)		1.67	mg/kg	N/A	0.330	1.53		92		45-120			
3-Methylcholanthrene			mg/kg	N/A	0.330	ND				60-120			
3-Nitroaniline		1 67	mg/kg	N/A	0.330	1.29		78		50-120			
4,6-Dinitro-2-methylphenol		1.67	mg/kg	N/A	0.330	1.66		100		55-120			
4-Aminobiphenyl			mg/kg	N/A	0.660	ND				60-120			
4-Bromophenyl phenyl ether		1.67	mg/kg	N/A	0.330	1.44		86		60-120			
4-Chloro-3-methylphenol		1.67	mg/kg	N/A	0.330	1.53		92		55-120			
4-Chloroaniline		1.67	mg/kg	N/A	0.330	0.637		38		10-120			
4-Chlorophenyl phenyl ether		1.67	mg/kg	N/A	0.330	1.53		92		55-120			
4-Nitroaniline		1.67	mg/kg	N/A	0.330	1.60		96		60-120			
4-Nitrophenol		1.67	mg/kg	N/A	0.330	1.32		79		45-120			
7,12-Dimethylbenz (a) anthracene			mg/kg	N/A	0.330	ND				45-145			
a,a-Dimethylphenethylamine			mg/kg	N/A	0.330	0.0987				10-120			
Acenaphthene		1.67	mg/kg	N/A	0.330	1.54		92		60-120			

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LCS/LCS DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
LCS Analyzed: 09/26/2008 (8125006-BS1)													
Acenaphthylene		1.67	mg/kg	N/A	0.330	1.33		80		50-120			
Acetophenone			mg/kg	N/A	0.330	ND				60-120			
Aniline			mg/kg	N/A	0.330	ND				30-120			
Anthracene		1.67	mg/kg	N/A	0.330	1.55		93		60-120			
Azobenzene		1.67	mg/kg	N/A	0.330	1.47		88		60-120			
Benzidine			mg/kg	N/A	1.70	ND				10-120			
Benzo (a) anthracene		1.67	mg/kg	N/A	0.330	1.57		94		65-120			
Benzo (a) pyrene		1.67	mg/kg	N/A	0.330	1.45		87		45-120			
Benzo (b) fluoranthene		1.67	mg/kg	N/A	0.330	1.62		97		45-140			
Benzo (g,h,i) perylene		1.67	mg/kg	N/A	0.330	1.52		91		55-140			
Benzo (k) fluoranthene		1.67	mg/kg	N/A	0.330	1.72		103		50-130			
Bis(2-chloroethoxy)methane		1.67	mg/kg	N/A	0.330	1.45		87		45-120			
Bis(2-chloroethyl)ether		1.67	mg/kg	N/A	0.330	1.46		87		45-120			
Bis(2-chloroisopropyl) ether		1.67	mg/kg	N/A	0.330	1.62		97		40-120			
Bis(2-ethylhexyl)phthalate		1.67	mg/kg	N/A	0.330	1.66		99		60-120			
Butyl benzyl phthalate		1.67	mg/kg	N/A	0.330	1.63		98		60-120			
Chrysene		1.67	mg/kg	N/A	0.330	1.64		98		65-120			
Dibenz (a,j) acridine			mg/kg	N/A	0.330	ND				10-150			
Dibenzo (a,h) anthracene		1.67	mg/kg	N/A	0.330	1.54		92		50-150			
Dibenzofuran		1.67	mg/kg	N/A	0.330	1.50		90		55-120			
Diethyl phthalate		1.67	mg/kg	N/A	0.330	1.67		100		60-120			
Dimethyl phthalate		1.67	mg/kg	N/A	0.330	1.53		92		55-120			
Dimethylaminoazobenzene			mg/kg	N/A	0.330	ND				60-120			
Di-n-butyl phthalate		1.67	mg/kg	N/A	0.330	1.64		98		60-120			
Di-n-octyl phthalate		1.67	mg/kg	N/A	0.330	1.59		96		60-120			
Ethyl Methanesulfonate			mg/kg	N/A	0.330	ND				60-120			
Fluoranthene		1.67	mg/kg	N/A	0.330	1.72		103		60-120			
Fluorene		1.67	mg/kg	N/A	0.330	1.59		95		60-120			
Hexachlorobenzene		1.67	mg/kg	N/A	0.330	1.50		90		60-120			
Hexachlorobutadiene		1.67	mg/kg	N/A	0.330	1.38		83		40-120			
Hexachlorocyclopentadiene		1.67	mg/kg	N/A	0.330	1.25		75		25-120			
Hexachloroethane		1.67	mg/kg	N/A	0.330	1.27		76		40-120			
Indeno (1,2,3-cd) pyrene		1.67	mg/kg	N/A	0.330	1.52		91		50-120			
Isophorone		1.67	mg/kg	N/A	0.330	1.38		83		50-120			
Methyl Methanesulfonate			mg/kg	N/A	0.330	ND				50-120			
Naphthalene		1.67	mg/kg	N/A	0.330	1.40		84		50-120			
Nitrobenzene		1.67	mg/kg	N/A	0.330	1.42		85		45-120			
N-Nitrosodimethylamine		1.67	mg/kg	N/A	0.330	1.30		78		35-120			
N-Nitrosodi-n-butylamine			mg/kg	N/A	0.330	ND				60-120			
N-Nitrosodi-n-propylamine		1.67	mg/kg	N/A	0.330	1.92		115		40-120			
N-Nitrosodiphenylamine			mg/kg	N/A	0.330	ND				60-120			
N-Nitrosopiperidine			mg/kg	N/A	0.330	ND				65-120			
Pentachloronitrobenzene			mg/kg	N/A	0.330	ND				65-120			
Pentachlorophenol		1.67	mg/kg	N/A	0.330	1.44		86		50-120			
Phenacetin			mg/kg	N/A	0.330	0.0857				65-120			

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

LCS/LCS DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
LCS Analyzed: 09/26/2008 (8125006-BS1)													
Phenanthrene		1.67	mg/kg	N/A	0.330	1.60		96		60-120			
Phenol		1.67	mg/kg	N/A	0.330	1.36		82		45-120			
Pronamide			mg/kg	N/A	0.330	ND				50-120			
Pyrene		1.67	mg/kg	N/A	0.330	1.61		96		60-120			
Pyridine			mg/kg	N/A	0.330	ND				10-120			
Surrogate: 2,4,6-Tribromophenol			mg/kg					*87*		*40-120*			
Surrogate: 2-Fluorobiphenyl			mg/kg					*84*		*45-120*			
Surrogate: 2-Fluorophenol			mg/kg					*75*		*30-120*			
Surrogate: Nitrobenzene-d5			mg/kg					*81*		*35-120*			
Surrogate: Phenol-d6			mg/kg					*82*		*40-120*			
Surrogate: Terphenyl-d14			mg/kg					*84*		*40-130*			
Total Metals by SW 846 Series Methods													
Batch\Seq: 8129008 Extracted: 09/29/08													
LCS Analyzed: 09/29/2008 (8129008-BS1)													
Mercury		0.524	mg/kg	N/A	0.0500	0.576		110		80-120			
Batch\Seq: 8130006 Extracted: 09/30/08													
LCS Analyzed: 09/30/2008 (8130006-BS1)													
Arsenic		100	mg/kg	N/A	10.0	114		114		80-120			
Barium		100	mg/kg	N/A	20.0	114		114		80-120			
Cadmium		100	mg/kg	N/A	10.0	114		114		80-120			
Chromium		100	mg/kg	N/A	10.0	107		107		80-120			
Lead		100	mg/kg	N/A	20.0	111		111		80-120			
Selenium		100	mg/kg	N/A	20.0	110		110		80-120			
Silver		10.0	mg/kg	N/A	10.0	10.3		103		80-120			
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
LCS Analyzed: 09/24/2008 (8125011-BS1)													
1,1,1,2-Tetrachloroethane		0.0984	mg/kg	N/A	0.0100	0.0895		91		75-120			
1,1,1-Trichloroethane		0.100	mg/kg	N/A	0.0100	0.0915		92		75-120			
1,1,2,2-Tetrachloroethane		0.0984	mg/kg	N/A	0.0100	0.0850		86		70-120			
1,1,2-Trichloroethane		0.0986	mg/kg	N/A	0.0100	0.0855		87		75-120			
1,1-Dichloroethane		0.0996	mg/kg	N/A	0.0500	0.0979		98		80-120			
1,1-Dichloroethene		0.0990	mg/kg	N/A	0.0100	0.0777		78		75-120			
1,1-Dichloropropene		0.0990	mg/kg	N/A	0.0100	0.0909		92		75-120			
1,2,3-Trichlorobenzene		0.100	mg/kg	N/A	0.0100	0.0847		85		65-120			
1,2,3-Trichloropropane		0.0986	mg/kg	N/A	0.0100	0.0854		87		70-120			
1,2,4-Trichlorobenzene		0.0994	mg/kg	N/A	0.0500	0.0854		86		70-120			
1,2,4-Trimethylbenzene		0.100	mg/kg	N/A	0.0100	0.0866		87		75-120			
1,2-Dibromo-3-chloropropane		0.100	mg/kg	N/A	0.0100	0.0730		73		65-120			
1,2-Dibromoethane (EDB)		0.100	mg/kg	N/A	0.0100	0.0879		88		70-120			
1,2-Dichlorobenzene		0.0998	mg/kg	N/A	0.0500	0.0861		86		80-120			
1,2-Dichloroethane		0.100	mg/kg	N/A	0.0100	0.0852		85		75-120			
1,2-Dichloropropane		0.100	mg/kg	N/A	0.0100	0.0938		94		75-120			

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
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LCS/LCS DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
LCS Analyzed: 09/24/2008 (8125011-BS1)													
1,3,5-Trimethylbenzene		0.0988	mg/kg	N/A	0.0100	0.0822		83		75-120			
1,3-Dichlorobenzene		0.0999	mg/kg	N/A	0.0500	0.0850		85		75-120			
1,3-Dichloropropane		0.0996	mg/kg	N/A	0.0100	0.0872		88		70-120			
1,4-Dichlorobenzene		0.100	mg/kg	N/A	0.0500	0.0825		83		75-120			
2,2-Dichloropropane		0.100	mg/kg	N/A	0.0100	0.0921		92		70-130			
2-Butanone (MEK)		0.500	mg/kg	N/A	0.0500	0.341		68		60-130			
2-Chlorotoluene		0.0989	mg/kg	N/A	0.0100	0.0847		86		75-120			
2-Hexanone		0.500	mg/kg	N/A	0.0500	0.425		85		65-120			
4-Chlorotoluene		0.0986	mg/kg	N/A	0.0100	0.0859		87		75-120			
4-Methyl-2-pentanone (MIBK)		0.497	mg/kg	N/A	0.0500	0.423		85		65-130			
Acetone		0.500	mg/kg	N/A	0.0500	0.349		70		45-130			
Acrylonitrile		0.490	mg/kg	N/A	0.0500	0.456		93		50-120			
Benzene		0.100	mg/kg	N/A	0.0100	0.0871		87		80-120			
Bromobenzene		0.0995	mg/kg	N/A	0.0100	0.0868		87		80-120			
Bromochloromethane		0.0990	mg/kg	N/A	0.0500	0.0925		93		75-120			
Bromodichloromethane		0.100	mg/kg	N/A	0.0100	0.0866		87		80-120			
Bromoform		0.0990	mg/kg	N/A	0.0100	0.0821		83		70-120			
Bromomethane		0.100	mg/kg	N/A	0.100	0.130		130		65-120			L
Carbon disulfide		0.100	mg/kg	N/A	0.0100	0.0843		84		45-130			
Carbon Tetrachloride		0.100	mg/kg	N/A	0.0100	0.0859		86		80-120			
Chlorobenzene		0.100	mg/kg	N/A	0.0100	0.0838		84		80-120			
Chlorodibromomethane		0.0980	mg/kg	N/A	0.0100	0.0855		87		75-120			
Chloroethane		0.100	mg/kg	N/A	0.0500	0.106		106		70-130			
Chloroform		0.0998	mg/kg	N/A	0.0100	0.0855		86		80-120			
Chloromethane		0.100	mg/kg	N/A	0.0500	0.101		101		35-140			
cis-1,2-Dichloroethene		0.100	mg/kg	N/A	0.0100	0.0926		93		80-120			
cis-1,3-Dichloropropene		0.105	mg/kg	N/A	0.0100	0.0882		84		70-120			
Dibromomethane		0.0986	mg/kg	N/A	0.0100	0.0868		88		75-120			
Dichlorodifluoromethane		0.100	mg/kg	N/A	0.0500	0.0772		77		35-140			
Ethylbenzene		0.100	mg/kg	N/A	0.0100	0.0880		88		75-120			
Hexachlorobutadiene		0.0981	mg/kg	N/A	0.0500	0.0817		83		60-120			
Isopropylbenzene		0.0994	mg/kg	N/A	0.0100	0.0861		87		75-120			
m,p-Xylene		0.200	mg/kg	N/A	0.0100	0.171		85		70-120			
Methyl tert-Butyl Ether		0.100	mg/kg	N/A	0.00500	0.0876		88		70-120			
Methylene Chloride		0.100	mg/kg	N/A	0.0500	0.0904		90		80-120			
Naphthalene		0.100	mg/kg	N/A	0.0500	0.0869		87		60-120			
n-Butylbenzene		0.0990	mg/kg	N/A	0.0100	0.0885		89		70-120			
n-Propylbenzene		0.100	mg/kg	N/A	0.0100	0.0854		85		75-120			
o-Xylene		0.0990	mg/kg	N/A	0.0100	0.0850		86		75-120			
p-Isopropyltoluene		0.0994	mg/kg	N/A	0.0100	0.0807		81		65-120			
sec-Butylbenzene		0.100	mg/kg	N/A	0.0100	0.0826		83		70-120			
Styrene		0.0998	mg/kg	N/A	0.0100	0.0964		97		75-120			
tert-Butylbenzene		0.0990	mg/kg	N/A	0.0100	0.0863		87		70-120			
Tetrachloroethene		0.100	mg/kg	N/A	0.0100	0.0804		80		60-120			
Toluene		0.100	mg/kg	N/A	0.0100	0.0858		86		75-120			

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

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Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
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LCS/LCS DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
LCS Analyzed: 09/24/2008 (8125011-BS1)													
trans-1,2-Dichloroethene		0.100	mg/kg	N/A	0.0100	0.0950		95		80-120			
trans-1,3-Dichloropropene		0.0950	mg/kg	N/A	0.0100	0.0799		84		65-120			
trans-1,4-Dichloro-2-butene		0.100	mg/kg	N/A	0.0500	0.0805		81		55-120			
Trichloroethene		0.100	mg/kg	N/A	0.0100	0.0871		87		80-120			
Trichlorofluoromethane		0.100	mg/kg	N/A	0.0100	0.115		115		80-130			
Vinyl Acetate		0.100	mg/kg	N/A	0.0500	0.107		107		40-150			
Vinyl chloride		0.100	mg/kg	N/A	0.0500	0.106		106		50-140			
Surrogate: 1,2-Dichloroethane-d4			mg/kg					*98*		*80-120*			
Surrogate: 4-Bromofluorobenzene			mg/kg					*96*		*80-120*			
Surrogate: Dibromofluoromethane			mg/kg					*100*		*80-120*			
Surrogate: Toluene-d8			mg/kg					*95*		*80-120*			

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Extractable Petroleum Hydrocarbons by 8015M													
Batch\Seq: 8123010 Extracted: 09/23/08													
Matrix Spike Analyzed: 10/01/2008 (8123010-MS1)				QC Source Sample: HRI0096-01									
DRO	7.29	166	mg/kg	N/A	3.97	150		86		50-115			
Surrogate: o-Terphenyl			mg/kg					*87*		*35-120*			
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Matrix Spike Analyzed: 09/26/2008 (8125006-MS1)				QC Source Sample: HRI0111-06									
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	N/A	0.330	ND				60-120			
1,2,4-Trichlorobenzene	ND	1.67	mg/kg	N/A	0.330	1.29		77		45-120			
1,2-Dichlorobenzene	ND	1.67	mg/kg	N/A	0.330	1.12		67		45-120			
1,3-Dichlorobenzene	ND	1.67	mg/kg	N/A	0.330	1.04		62		45-120			
1,4-Dichlorobenzene	ND	1.67	mg/kg	N/A	0.330	1.06		63		50-120			
1-Chloronaphthalene	ND		mg/kg	N/A	0.330	1.67				55-120			
1-Methylnaphthalene	ND		mg/kg	N/A	0.330	ND				10-120			
1-Naphthylamine	ND		mg/kg	N/A	0.660	ND				30-120			
2,3,4,6-Tetrachlorophenol	ND		mg/kg	N/A	0.330	ND				60-120			
2,4,5-Trichlorophenol	ND	1.67	mg/kg	N/A	0.330	1.55		93		50-120			
2,4,6-Trichlorophenol	ND	1.67	mg/kg	N/A	0.330	1.43		86		55-120			
2,4-Dichlorophenol	ND	1.67	mg/kg	N/A	0.330	1.41		84		50-120			
2,4-Dimethylphenol	ND	1.67	mg/kg	N/A	0.330	1.48		89		40-120			
2,4-Dinitrophenol	ND	1.67	mg/kg	N/A	1.70	1.41		85		40-120			
2,4-Dinitrotoluene	ND	1.67	mg/kg	N/A	0.330	1.60		96		55-120			
2,6-Dichlorophenol	ND		mg/kg	N/A	0.330	ND				55-120			
2,6-Dinitrotoluene	ND	1.67	mg/kg	N/A	0.330	1.52		91		60-120			
2-Chloronaphthalene	ND	1.67	mg/kg	N/A	0.330	1.25		75		45-120			
2-Chlorophenol	ND	1.67	mg/kg	N/A	0.330	1.33		80		45-120			
2-Methylnaphthalene	ND	1.67	mg/kg	N/A	0.330	1.33		80		50-120			
2-Methylphenol (o-Cresol)	ND	1.67	mg/kg	N/A	0.330	1.51		90		50-120			
2-Naphthylamine	ND		mg/kg	N/A	0.660	ND				30-120			
2-Nitroaniline	ND	1.67	mg/kg	N/A	0.330	1.56		94		60-120			
2-Nitrophenol	ND	1.67	mg/kg	N/A	0.330	1.38		83		50-120			
2-Picoline	ND		mg/kg	N/A	0.330	ND				10-120			
3,3'-Dichlorobenzidine	ND		mg/kg	N/A	0.330	ND				55-120			
3,4-Methylphenol (m,p-Cresol)	ND	1.67	mg/kg	N/A	0.330	1.50		90		45-120			
3-Methylcholanthrene	ND		mg/kg	N/A	0.330	ND				60-120			
3-Nitroaniline	ND	1.67	mg/kg	N/A	0.330	1.31		79		50-120			
4,6-Dinitro-2-methylphenol	ND	1.67	mg/kg	N/A	0.330	1.67		100		55-120			
4-Aminobiphenyl	ND		mg/kg	N/A	0.660	ND				60-120			
4-Bromophenyl phenyl ether	ND	1.67	mg/kg	N/A	0.330	1.22		73		60-120			
4-Chloro-3-methylphenol	ND	1.67	mg/kg	N/A	0.330	1.50		90		55-120			
4-Chloroaniline	ND	1.67	mg/kg	N/A	0.330	0.921		55		10-120			
4-Chlorophenyl phenyl ether	ND	1.67	mg/kg	N/A	0.330	1.48		89		55-120			
4-Nitroaniline	ND	1.67	mg/kg	N/A	0.330	1.55		93		60-120			
4-Nitrophenol	ND	1.67	mg/kg	N/A	0.330	1.46		88		45-120			
7,12-Dimethylbenz (a) anthracene	ND		mg/kg	N/A	0.330	ND				45-145			
a,a-Dimethylphenethylamine	0.00200		mg/kg	N/A	0.330	0.0913				10-120			

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Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

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Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Matrix Spike Analyzed: 09/26/2008 (8125006-MS1)				QC Source Sample: HRI0111-06									
Acenaphthene	ND	1.67	mg/kg	N/A	0.330	1.49		90		60-120			
Acenaphthylene	ND	1.67	mg/kg	N/A	0.330	1.28		77		50-120			
Acetophenone	ND		mg/kg	N/A	0.330	ND				60-120			
Aniline	ND		mg/kg	N/A	0.330	ND				30-120			
Anthracene	ND	1.67	mg/kg	N/A	0.330	1.53		92		60-120			
Azobenzene	ND	1.67	mg/kg	N/A	0.330	1.44		86		60-120			
Benzidine	ND		mg/kg	N/A	1.70	ND				10-120			
Benzo (a) anthracene	ND	1.67	mg/kg	N/A	0.330	1.55		93		65-120			
Benzo (a) pyrene	ND	1.67	mg/kg	N/A	0.330	1.55		93		45-120			
Benzo (b) fluoranthene	ND	1.67	mg/kg	N/A	0.330	1.50		90		45-140			
Benzo (g,h,i) perylene	ND	1.67	mg/kg	N/A	0.330	1.58		95		55-140			
Benzo (k) fluoranthene	ND	1.67	mg/kg	N/A	0.330	1.63		98		50-130			
Bis(2-chloroethoxy)methane	ND	1.67	mg/kg	N/A	0.330	1.42		85		45-120			
Bis(2-chloroethyl)ether	ND	1.67	mg/kg	N/A	0.330	1.38		83		45-120			
Bis(2-chloroisopropyl) ether	ND	1.67	mg/kg	N/A	0.330	1.46		88		40-120			
Bis(2-ethylhexyl)phthalate	ND	1.67	mg/kg	N/A	0.330	1.64		98		60-120			
Butyl benzyl phthalate	ND	1.67	mg/kg	N/A	0.330	1.59		95		60-120			
Chrysene	ND	1.67	mg/kg	N/A	0.330	1.57		94		65-120			
Dibenz (a,j) acridine	ND		mg/kg	N/A	0.330	ND				10-150			
Dibenzo (a,h) anthracene	ND	1.67	mg/kg	N/A	0.330	1.56		94		50-150			
Dibenzofuran	ND	1.67	mg/kg	N/A	0.330	1.45		87		55-120			
Diethyl phthalate	ND	1.67	mg/kg	N/A	0.330	1.64		98		60-120			
Dimethyl phthalate	ND	1.67	mg/kg	N/A	0.330	1.51		90		55-120			
Dimethylaminoazobenzene	ND		mg/kg	N/A	0.330	ND				60-120			
Di-n-butyl phthalate	ND	1.67	mg/kg	N/A	0.330	1.62		97		60-120			
Di-n-octyl phthalate	ND	1.67	mg/kg	N/A	0.330	1.52		91		60-120			
Ethyl Methanesulfonate	ND		mg/kg	N/A	0.330	ND				60-120			
Fluoranthene	ND	1.67	mg/kg	N/A	0.330	1.67		100		60-120			
Fluorene	ND	1.67	mg/kg	N/A	0.330	1.56		93		60-120			
Hexachlorobenzene	ND	1.67	mg/kg	N/A	0.330	1.52		91		60-120			
Hexachlorobutadiene	ND	1.67	mg/kg	N/A	0.330	1.28		77		40-120			
Hexachlorocyclopentadiene	ND	1.67	mg/kg	N/A	0.330	1.12		67		25-120			
Hexachloroethane	ND	1.67	mg/kg	N/A	0.330	1.08		65		40-120			
Indeno (1,2,3-cd) pyrene	ND	1.67	mg/kg	N/A	0.330	1.54		93		50-120			
Isophorone	ND	1.67	mg/kg	N/A	0.330	1.34		81		50-120			
Methyl Methanesulfonate	ND		mg/kg	N/A	0.330	ND				50-120			
Naphthalene	ND	1.67	mg/kg	N/A	0.330	1.32		79		50-120			
Nitrobenzene	ND	1.67	mg/kg	N/A	0.330	1.36		82		45-120			
N-Nitrosodimethylamine	ND	1.67	mg/kg	N/A	0.330	1.35		81		35-120			
N-Nitrosodi-n-butylamine	ND		mg/kg	N/A	0.330	ND				60-120			
N-Nitrosodi-n-propylamine	0.151	1.67	mg/kg	N/A	0.330	1.80		99		40-120			
N-Nitrosodiphenylamine	ND		mg/kg	N/A	0.330	ND				60-120			
N-Nitrosopiperidine	ND		mg/kg	N/A	0.330	ND				65-120			
Pentachloronitrobenzene	ND		mg/kg	N/A	0.330	ND				65-120			
Pentachlorophenol	ND	1.67	mg/kg	N/A	0.330	1.46		88		50-120			

Myounghee Noh & Associates
99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
Reported: 10/03/08 09:04

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Semivolatile Organics by GC/MS													
Batch\Seq: 8125006 Extracted: 09/25/08													
Matrix Spike Analyzed: 09/26/2008 (8125006-MS1)				QC Source Sample: HRI0111-06									
Phenacetin	ND		mg/kg	N/A	0.330	0.0833				65-120			
Phenanthrene	ND	1.67	mg/kg	N/A	0.330	1.59		95		60-120			
Phenol	ND	1.67	mg/kg	N/A	0.330	1.34		81		45-120			
Pronamide	ND		mg/kg	N/A	0.330	ND				50-120			
Pyrene	ND	1.67	mg/kg	N/A	0.330	1.56		94		60-120			
Pyridine	ND		mg/kg	N/A	0.330	ND				10-120			
Surrogate: 2,4,6-Tribromophenol			mg/kg					*91*		*40-120*			
Surrogate: 2-Fluorobiphenyl			mg/kg					*81*		*45-120*			
Surrogate: 2-Fluorophenol			mg/kg					*76*		*30-120*			
Surrogate: Nitrobenzene-d5			mg/kg					*80*		*35-120*			
Surrogate: Phenol-d6			mg/kg					*82*		*40-120*			
Surrogate: Terphenyl-d14			mg/kg					*82*		*40-130*			
Total Metals by SW 846 Series Methods													
Batch\Seq: 8129008 Extracted: 09/29/08													
Matrix Spike Analyzed: 09/29/2008 (8129008-MS1)				QC Source Sample: HRI0096-01									
Mercury	0.0825	0.504	mg/kg	N/A	0.0481	0.620	0.623	107	109	75-125	1	20	
Batch\Seq: 8130006 Extracted: 09/30/08													
Matrix Spike Analyzed: 09/30/2008 (8130006-MS1)				QC Source Sample: HRI0093-01									
Arsenic	2.50	95.2	mg/kg	N/A	9.52	93.7	116	96	115	80-120	21	20	R
Barium	74.9	95.2	mg/kg	N/A	19.0	174	212	105	139	80-120	20	20	M1
Cadmium	ND	95.2	mg/kg	N/A	9.52	90.0	111	95	112	80-120	21	20	R
Chromium	10.6	95.2	mg/kg	N/A	9.52	102	123	96	114	80-120	19	20	
Lead	9.93	95.2	mg/kg	N/A	19.0	99.2	121	94	112	80-120	20	20	
Selenium	ND	95.2	mg/kg	N/A	19.0	86.9	107	91	109	80-120	21	20	R
Silver	ND	9.52	mg/kg	N/A	9.52	7.62	9.92	80	100	80-120	26	20	R
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Matrix Spike Analyzed: 09/24/2008 (8125011-MS1)				QC Source Sample: HRI0096-06									
1,1,1,2-Tetrachloroethane	ND	11.3	mg/kg	N/A	1.15	9.19	11.2	81	98	75-120	19	25	
1,1,1-Trichloroethane	ND	11.5	mg/kg	N/A	1 15	9.12	11.4	79	99	75-120	22	25	
1,1,2,2-Tetrachloroethane	ND	11.3	mg/kg	N/A	1.15	9.10	11.1	80	98	70-120	20	25	
1,1,2-Trichloroethane	ND	11.4	mg/kg	N/A	1 15	9.13	11.1	80	98	75-120	20	25	
1,1-Dichloroethane	ND	11.5	mg/kg	N/A	5.76	9.88	11.6	86	101	80-120	16	25	
1,1-Dichloroethene	ND	11.4	mg/kg	N/A	1.15	8.02	9.61	70	84	75-120	18	25	M8
1,1-Dichloropropene	ND	11.4	mg/kg	N/A	1.15	9.12	10.9	80	95	75-120	18	25	
1,2,3-Trichlorobenzene	ND	11.5	mg/kg	N/A	1.15	8.56	11.3	74	98	65-120	28	25	R2
1,2,3-Trichloropropane	ND	11.4	mg/kg	N/A	1.15	9.14	11.4	80	101	70-120	22	25	
1,2,4-Trichlorobenzene	ND	11.5	mg/kg	N/A	5.76	8.55	11.0	75	96	70-120	25	25	
1,2,4-Trimethylbenzene	ND	11.5	mg/kg	N/A	1.15	8.95	11.5	78	100	75-120	25	25	
1,2-Dibromo-3-chloropropane	ND	11.5	mg/kg	N/A	1.15	7.66	9.87	66	86	65-120	25	25	
1,2-Dibromoethane (EDB)	ND	11 5	mg/kg	N/A	1.15	9.24	11.2	80	98	70-120	20	25	
1,2-Dichlorobenzene	ND	11.5	mg/kg	N/A	5.76	8.90	10.9	77	95	80-120	20	25	M8
1,2-Dichloroethane	ND	11 5	mg/kg	N/A	1.15	8 98	11.2	78	97	75-120	22	25	

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99-193 Aiea Heights Drive. Suite 121 Aiea. HI 96701 * 808-486-5227 * Fax 808-486-2456

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99-1046 Iwaena Street - Suite 210A
Aiea, HI 96701
Adam Custer

Work Order: HRI0096
Project: Ewa Makai Middle Phase II
Project Number: Ewa Makai Middle Phase II, 20691

Received: 09/18/08
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MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC DATA

Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Matrix Spike Analyzed: 09/24/2008 (8125011-MS1)				QC Source Sample: HRI0096-06									
1,2-Dichloropropane	ND	11.5	mg/kg	N/A	1.15	9.57	11.7	83	102	75-120	20	25	
1,3,5-Trimethylbenzene	ND	11.4	mg/kg	N/A	1.15	8.42	10.5	74	92	75-120	22	25	M8
1,3-Dichlorobenzene	ND	11.5	mg/kg	N/A	5.76	8.50	10.8	74	94	75-120	24	25	M8
1,3-Dichloropropane	ND	11.5	mg/kg	N/A	1.15	9.00	11.4	78	99	70-120	23	25	
1,4-Dichlorobenzene	ND	11.5	mg/kg	N/A	5.76	8.35	10.6	72	92	75-120	23	25	M8
2,2-Dichloropropane	ND	11.5	mg/kg	N/A	1.15	8.70	10.5	75	91	70-130	19	25	
2-Butanone (MEK)	ND	57 6	mg/kg	N/A	5.76	35 7	44 9	62	78	60-130	23	25	
2-Chlorotoluene	ND	11.4	mg/kg	N/A	1.15	8.60	10.4	75	91	75-120	19	25	
2-Hexanone	ND	57.6	mg/kg	N/A	5.76	48 1	58 9	84	102	65-120	20	25	
4-Chlorotoluene	ND	11.4	mg/kg	N/A	1.15	8.53	10.6	75	94	75-120	22	25	
4-Methyl-2-pentanone (MIBK)	ND	57.3	mg/kg	N/A	5 76	46.9	56.6	82	99	65-130	19	25	
Acetone	ND	57.6	mg/kg	N/A	5.76	40.1	52.5	70	91	45-130	27	25	R2
Acrylonitrile	ND	56.5	mg/kg	N/A	5 76	48.0	59.2	85	105	50-120	21	25	
Benzene	ND	11.5	mg/kg	N/A	1.15	9.00	11.4	78	99	80-120	23	25	M8
Bromobenzene	ND	11.5	mg/kg	N/A	1.15	9.28	11.5	81	100	80-120	21	25	
Bromochloromethane	ND	11.4	mg/kg	N/A	5.76	9.29	11.5	81	101	75-120	22	25	
Bromodichloromethane	ND	11.5	mg/kg	N/A	1.15	8.85	11.0	77	96	80-120	22	25	M8
Bromoform	ND	11.4	mg/kg	N/A	1.15	8.43	10.5	74	92	70-120	22	25	
Bromomethane	ND	11.5	mg/kg	N/A	11.5	13.0	13.7	113	119	65-120	5	25	
Carbon disulfide	ND	11.5	mg/kg	N/A	1.15	8.45	10.3	73	89	45-130	19	25	
Carbon Tetrachloride	ND	11.5	mg/kg	N/A	1.15	8.57	10.7	74	93	80-120	22	25	M8
Chlorobenzene	ND	11.5	mg/kg	N/A	1.15	8.71	10.8	76	93	80-120	21	25	M8
Chlorodibromomethane	ND	11.3	mg/kg	N/A	1.15	8.99	11.1	80	98	75-120	21	25	
Chloroethane	ND	11 5	mg/kg	N/A	5.76	11.2	12 0	97	105	70-130	8	25	
Chloroform	ND	11.5	mg/kg	N/A	1.15	8.64	10.6	75	92	80-120	21	25	M8
Chloromethane	ND	11.5	mg/kg	N/A	5 76	9.03	9.45	78	82	35-140	5	25	
cis-1,2-Dichloroethene	ND	11.5	mg/kg	N/A	1.15	9.25	11.5	80	100	80-120	22	25	
cis-1,3-Dichloropropene	ND	12.1	mg/kg	N/A	1 15	8.94	10.9	74	90	70-120	20	25	
Dibromomethane	ND	11.4	mg/kg	N/A	1.15	9.00	11.0	79	97	75-120	20	25	
Dichlorodifluoromethane	ND	11.5	mg/kg	N/A	5.76	6.81	7.11	59	62	35-140	4	25	
Ethylbenzene	ND	11.5	mg/kg	N/A	1.15	9.06	10.9	79	95	75-120	19	25	
Hexachlorobutadiene	ND	11.3	mg/kg	N/A	5.76	8.05	10.4	71	92	60-120	26	25	R2
Isopropylbenzene	ND	11.5	mg/kg	N/A	1.15	8.72	11.0	76	96	75-120	23	25	
m,p-Xylene	ND	23.0	mg/kg	N/A	1.15	18.4	21.7	80	94	70-120	16	25	
Methyl tert-Butyl Ether	ND	11.5	mg/kg	N/A	0.576	9.35	11.3	81	99	70-120	19	25	
Methylene Chloride	ND	11.5	mg/kg	N/A	5.76	9.26	11.3	80	99	80-120	20	25	
Naphthalene	ND	11.5	mg/kg	N/A	5.76	9.11	11.6	79	101	60-120	24	25	
n-Butylbenzene	ND	11.4	mg/kg	N/A	1.15	8.75	10.4	77	92	70-120	18	25	
n-Propylbenzene	ND	11 5	mg/kg	N/A	1.15	9 09	11 1	79	96	75-120	20	25	
o-Xylene	ND	11.4	mg/kg	N/A	1.15	8.73	10.9	77	96	75-120	22	25	
p-Isopropyltoluene	ND	11.5	mg/kg	N/A	1 15	8.20	10.4	72	91	65-120	24	25	
sec-Butylbenzene	ND	11.5	mg/kg	N/A	1.15	8.44	10.1	73	88	70-120	18	25	
Styrene	ND	11.5	mg/kg	N/A	1 15	9.66	11.6	84	101	75-120	18	25	
tert-Butylbenzene	ND	11.4	mg/kg	N/A	1.15	8.75	10.9	77	96	70-120	22	25	
Tetrachloroethene	ND	11.5	mg/kg	N/A	1.15	8.10	10.3	70	89	60-120	24	25	

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Analyte	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD	RPD Limit	Q
Volatile Organic Compounds by EPA 8260B													
Batch\Seq: 8125011 Extracted: 09/24/08													
Matrix Spike Analyzed: 09/24/2008 (8125011-MS1)				**QC Source Sample: HRI0096-06**									
Toluene	ND	11.5	mg/kg	N/A	1.15	8.71	10.7	76	93	75-120	20	25	
trans-1,2-Dichloroethene	ND	11.5	mg/kg	N/A	1.15	9.59	11.7	83	102	80-120	20	25	
trans-1,3-Dichloropropene	ND	10.9	mg/kg	N/A	1.15	8.47	10.2	77	93	65-120	19	25	
trans-1,4-Dichloro-2-butene	ND	11.5	mg/kg	N/A	5.76	8.26	10.7	72	93	55-120	26	25	R2
Trichloroethene	ND	11.5	mg/kg	N/A	1.15	9.21	11.2	80	97	80-120	19	25	
Trichlorofluoromethane	ND	11.5	mg/kg	N/A	1.15	9.98	10.3	87	89	80-130	3	25	
Vinyl Acetate	ND	11.5	mg/kg	N/A	5.76	10 7	12 9	93	112	40-150	18	25	
Vinyl chloride	ND	11.5	mg/kg	N/A	5.76	9.02	9.38	78	81	50-140	4	25	
Surrogate: 1,2-Dichloroethane-d4			mg/kg					*97*	*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene			mg/kg					*97*	*95*	*80-120*			
Surrogate: Dibromofluoromethane			mg/kg					*100*	*99*	*80-120*			
Surrogate: Toluene-d8			mg/kg					*98*	*97*	*80-120*			

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CERTIFICATION SUMMARY

TestAmerica Honolulu

Method	Matrix	Nelac	Hawaii
SW6010B	Solid/Soil	X	
SW7471	Solid/Soil	X	
SW8015M	Solid/Soil	X	
SW8260B	Solid/Soil	X	
SW8270C	Solid/Soil	X	

Subcontracted Laboratories

STL - Seattle, WA

5755 8th Street East - Tacoma,, WA 98424

Analysis Performed: 8081A Pesticides
Samples: HRI0096-01, HRI0096-03, HRI0096-04, HRI0096-05, HRI0096-06

Analysis Performed: 8151 Herbicides
Samples: HRI0096-01, HRI0096-03, HRI0096-04, HRI0096-05, HRI0096-06

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

DATA QUALIFIERS AND DEFINITIONS

L	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.
M1	The MS and/or MSD were outside the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
R	The RPD exceeded the method control limit due to sample matrix effects. The individual analyte QA/QC recoveries, however, were within acceptance limits.
R2	The RPD exceeded the acceptance limit.
RL3	Reporting limit raised due to high concentrations of non-target analytes.
ND	Not detected at the reporting limit (or method detection limit if shown)

ADDITIONAL COMMENTS

TestAmerica
ANALYTICAL TESTING CORPORATION

TestAmerica - Honolulu
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808-486-LABS (5227) • Fax 808-486-2456

LABORATORY USE ONLY
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LOCATION
CONTAINERS

Chain of Custody / Analysis Request Form

Report to: Adam Custer
Company name: Youngkee Noh & Associates
Address: 99-1076 Iwaena St Suite 210A
City: AIEA State: HI ZIP: 96701
Phone: 808-484-9214 Fax: 808-484-4660
Sampler: AC, EK, AI # samples in shipment: 6

Project identification
Job name: EWA Makai Middle Phase II
Job number: 20691
P.O. number:
Contact email address: adam@noh-associates.com
Date results needed: TAT STD

Indicate analyses requested: 8015 DRO; 8260 VOC; 8260 SVOC; RCRA 8; 8081 Pesticides; 8151 Herbicides

Item no.	Client sample ID	COC	GRAB	Matrix	Preservation method	Sampling Date	Sampling Time	No. of containers	Laboratory ID no.
1	691 DU1 - S 0			Soil	N	9/17/08	11:50A	1	HRI0096-01
2	691 DU1 - S 0 - V			Soil	MeOH	9/16/08	1:45P	1	-02
3	691 DU1 - S 2.5-1			Soil	MeOH	9/17/08	5:30P	2	-03
4	691 DU1 - S 2.5-2			Soil	MeOH	9/17/08	5:30P	2	-04
5	691 DU1 - S 2.5-3			Soil	MeOH	9/17/08	5:30P	2	-05
6	691 DU1 - S 5.5			Soil	MeOH	9/17/08	5:30P	2	-06
7	LAST ENTRY								
8									
9									
10									

Released by (print / sign)	Date / time released	Delivery method	Received by (print / sign)	Company / Agency affiliation	Date / time received	Condition noted
Adam Custer	9/18/08 1:50	hand	M Hleshka /	TAmerica	9/18/81 13:50	Intact 4°C
	/				/	
	/				/	

Comments: MTS samples

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 580-11367-1
Job Description: HRI0096

For:
TestAmerica Laboratories, Inc
99-193 Aiea Heights Drive
Suite 121
Aiea, HI 96701

Attention: Mike D. Solick

Terri L Torres
Project Manager II
terri.torres@testamericainc.com
09/30/2008

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

TestAmerica Laboratories, Inc.
TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com

Job Narrative
580-J11367-1

GC Semi VOA - Method(s) 8081A
The LCS for batch 580-36417 was inadvertently spiked with MDL spike rather than the Matrix Spike. All target analytes were recovered within acceptable QC limits, but due to the low (1ug/L) spike, may have "ND" as their result. All associated sample surrogates were within QC limits and no sample remained to re-extract; therefore the results were reported.

In the event that the RPD between the primary and secondary columns for a given analyte exceeds 40%, the greater of the two values is reported and flagged "p," unless interference is noted, in which case, the lesser value is reported and the result flagged "PI."

METHOD SUMMARY

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Herbicides (GC/MS)	TAL TAC	SW846 8151A	
Multi Incremental Sample Preparation	TAL TAC		EPA Increm, Prep
Extraction (Herbicides)	TAL TAC		SW846 8151A
Organochlorine Pesticides (GC)	TAL TAC	SW846 8081A	
Multi Incremental Sample Preparation	TAL TAC		EPA Increm, Prep
Ultrasonic Extraction	TAL TAC		SW846 3550B

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-11367-1	HRI0096-01	Solid	09/17/2008 1150	09/25/2008 1130
580-11367-2	HRI0096-03	Solid	09/17/2008 1730	09/25/2008 1130
580-11367-3	HRI0096-04	Solid	09/17/2008 1730	09/25/2008 1130
580-11367-4	HRI0096-05	Solid	09/17/2008 1730	09/25/2008 1130
580-11367-5	HRI0096-06	Solid	09/17/2008 1730	09/25/2008 1130

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-01**

Lab Sample ID: 580-11367-1 Date Sampled: 09/17/2008 1150
Client Matrix: Solid Date Received: 09/25/2008 1130

8151A Herbicides (GC/MS)

Method: 8151A Analysis Batch: 580-36469 Instrument ID: SEA008
Preparation: 8151A Prep Batch: 580-36439 Lab File ID: L29143.D
Dilution: 1.0 Initial Weight/Volume: 30.1589 g
Date Analyzed: 09/27/2008 2019 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Dalapon		ND		8.3
4-Nitrophenol		ND		3.3
Dicamba		ND		3.3
Mecoprop		ND		3.3
MCPA		ND		3.3
Dichlorprop		ND		3.3
2,4-D		ND		3.3
Pentachlorophenol		ND		3.3
Silvex (2,4,5-TP)		ND		3.3
2,4,5-T		ND		3.3
Dinoseb		ND		8.3
2,4-DB		ND		3.3

Surrogate	%Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	61	51 - 129

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-03**

Lab Sample ID: 580-11367-2 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8151A Herbicides (GC/MS)

Method: 8151A Analysis Batch: 580-36469 Instrument ID: SEA008
Preparation: 8151A Prep Batch: 580-36439 Lab File ID: L29144.D
Dilution: 1.0 Initial Weight/Volume: 30.4789 g
Date Analyzed: 09/27/2008 2044 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Dalapon		ND		8.2
4-Nitrophenol		ND		3.3
Dicamba		ND		3.3
Mecoprop		ND		3.3
MCPA		ND		3.3
Dichlorprop		ND		3.3
2,4-D		ND		3.3
Pentachlorophenol		3.4		3.3
Silvex (2,4,5-TP)		ND		3.3
2,4,5-T		ND		3.3
Dinoseb		ND		8.2
2,4-DB		ND		3.3

Surrogate	%Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	71	51 - 129

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-04**

Lab Sample ID: 580-11367-3 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8151A Herbicides (GC/MS)

Method: 8151A Analysis Batch: 580-36469 Instrument ID: SEA008
Preparation: 8151A Prep Batch: 580-36439 Lab File ID: L29145.D
Dilution: 1.0 Initial Weight/Volume: 30.5236 g
Date Analyzed: 09/27/2008 2108 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Dalapon		ND		8.2
4-Nitrophenol		ND		3.3
Dicamba		ND		3.3
Mecoprop		ND		3.3
MCPA		ND		3.3
Dichlorprop		ND		3.3
2,4-D		ND		3.3
Pentachlorophenol		4.9		3.3
Silvex (2,4,5-TP)		ND		3.3
2,4,5-T		ND		3.3
Dinoseb		ND		8.2
2,4-DB		ND		3.3

Surrogate	%Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	68	51 - 129

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-05**

Lab Sample ID: 580-11367-4 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8151A Herbicides (GC/MS)

Method: 8151A Analysis Batch: 580-36469 Instrument ID: SEA008
Preparation: 8151A Prep Batch: 580-36439 Lab File ID: L29146.D
Dilution: 1.0 Initial Weight/Volume: 30.2751 g
Date Analyzed: 09/27/2008 2132 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Dalapon		ND		8.2
4-Nitrophenol		ND		3.3
Dicamba		ND		3.3
Mecoprop		ND		3.3
MCPA		ND		3.3
Dichlorprop		ND		3.3
2,4-D		ND		3.3
Pentachlorophenol		4.8		3.3
Silvex (2,4,5-TP)		ND		3.3
2,4,5-T		ND		3.3
Dinoseb		ND		8.2
2,4-DB		ND		3.3

Surrogate	%Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	59	51 - 129

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-06**

Lab Sample ID: 580-11367-5 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8151A Herbicides (GC/MS)

Method: 8151A Analysis Batch: 580-36469 Instrument ID: SEA008
Preparation: 8151A Prep Batch: 580-36439 Lab File ID: L29147.D
Dilution: 1.0 Initial Weight/Volume: 30.1855 g
Date Analyzed: 09/27/2008 2156 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Dalapon		ND		8.3
4-Nitrophenol		ND		3.3
Dicamba		ND		3.3
Mecoprop		ND		3.3
MCPA		ND		3.3
Dichlorprop		ND		3.3
2,4-D		ND		3.3
Pentachlorophenol		ND		3.3
Silvex (2,4,5-TP)		ND		3.3
2,4,5-T		ND		3.3
Dinoseb		ND		8.3
2,4-DB		ND		3.3

Surrogate	%Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	82	51 - 129

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-01**

Lab Sample ID: 580-11367-1 Date Sampled: 09/17/2008 1150
Client Matrix: Solid Date Received: 09/25/2008 1130

8081A Organochlorine Pesticides (GC)

Method: 8081A Analysis Batch: 580-36468 Instrument ID: SEA035
Preparation: 3550B Prep Batch: 580-36417 Lab File ID: ECD35475.D
Dilution: 1.0 Initial Weight/Volume: 30.4098 g
Date Analyzed: 09/29/2008 1206 Final Weight/Volume: 10 mL
Date Prepared: 09/26/2008 1124 Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Aldrin		ND		0.33
alpha-BHC		ND		0.33
beta-BHC		ND		0.33
delta-BHC		ND		0.33
gamma-BHC (Lindane)		ND		0.33
4,4'-DDD		ND		0.66
4,4'-DDE		2.4		0.66
4,4'-DDT		ND		0.66
Dieldrin		ND		0.66
Endosulfan I		ND		0.33
Endosulfan II		ND		0.66
Endosulfan sulfate		ND		0.66
Endrin		ND		0.66
Endrin aldehyde		ND		0.66
Heptachlor		ND		0.33
Heptachlor epoxide		1.0		0.33
Methoxychlor		ND		3.3
Endrin ketone		ND		0.66
Toxaphene		ND		33
alpha-Chlordane		0.38	I P	0.33
gamma-Chlordane		1.3		0.33

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	75	49 - 123
DCB Decachlorobiphenyl	78	40 - 158

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-03**

Lab Sample ID: 580-11367-2 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8081A Organochlorine Pesticides (GC)

Method: 8081A Analysis Batch: 580-36468 Instrument ID: SEA035
Preparation: 3550B Prep Batch: 580-36417 Lab File ID: ECD35476.D
Dilution: 1.0 Initial Weight/Volume: 30.1996 g
Date Analyzed: 09/29/2008 1253 Final Weight/Volume: 10 mL
Date Prepared: 09/26/2008 1124 Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Aldrin		ND		0.33
alpha-BHC		ND		0.33
beta-BHC		ND		0.33
delta-BHC		ND		0.33
gamma-BHC (Lindane)		ND		0.33
4,4'-DDD		ND		0.66
4,4'-DDE		ND		0.66
4,4'-DDT		ND		0.66
Dieldrin		ND		0.66
Endosulfan I		ND		0.33
Endosulfan II		ND		0.66
Endosulfan sulfate		ND		0.66
Endrin		ND		0.66
Endrin aldehyde		ND		0.66
Heptachlor		ND		0.33
Heptachlor epoxide		0.46		0.33
Methoxychlor		ND		3.3
Endrin ketone		ND		0.66
Toxaphene		ND		33
alpha-Chlordane		ND		0.33
gamma-Chlordane		0.54		0.33

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	78	49 - 123
DCB Decachlorobiphenyl	94	40 - 158

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-04**

Lab Sample ID: 580-11367-3 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8081A Organochlorine Pesticides (GC)

Method: 8081A Analysis Batch: 580-36468 Instrument ID: SEA035
Preparation: 3550B Prep Batch: 580-36417 Lab File ID: ECD35477.D
Dilution: 1.0 Initial Weight/Volume: 30.3552 g
Date Analyzed: 09/29/2008 1312 Final Weight/Volume: 10 mL
Date Prepared: 09/26/2008 1124 Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Aldrin		ND		0.33
alpha-BHC		ND		0.33
beta-BHC		ND		0.33
delta-BHC		ND		0.33
gamma-BHC (Lindane)		ND		0.33
4,4'-DDD		ND		0.66
4,4'-DDE		ND		0.66
4,4'-DDT		ND		0.66
Dieldrin		ND		0.66
Endosulfan I		ND		0.33
Endosulfan II		ND		0.66
Endosulfan sulfate		ND		0.66
Endrin		ND		0.66
Endrin aldehyde		ND		0.66
Heptachlor		ND		0.33
Heptachlor epoxide		0.54		0.33
Methoxychlor		ND		3.3
Endrin ketone		ND		0.66
Toxaphene		ND		33
alpha-Chlordane		ND		0.33
gamma-Chlordane		0.53		0.33

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	101	49 - 123
DCB Decachlorobiphenyl	118	40 - 158

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-05**

Lab Sample ID: 580-11367-4 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8081A Organochlorine Pesticides (GC)

Method: 8081A Analysis Batch: 580-36468 Instrument ID: SEA035
Preparation: 3550B Prep Batch: 580-36417 Lab File ID: ECD35478.D
Dilution: 1.0 Initial Weight/Volume: 30.4082 g
Date Analyzed: 09/29/2008 1332 Final Weight/Volume: 10 mL
Date Prepared: 09/26/2008 1124 Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Aldrin		ND		0.33
alpha-BHC		ND		0.33
beta-BHC		ND		0.33
delta-BHC		ND		0.33
gamma-BHC (Lindane)		ND		0.33
4,4'-DDD		ND		0.66
4,4'-DDE		ND		0.66
4,4'-DDT		ND		0.66
Dieldrin		ND		0.66
Endosulfan I		ND		0.33
Endosulfan II		ND		0.66
Endosulfan sulfate		ND		0.66
Endrin		ND		0.66
Endrin aldehyde		ND		0.66
Heptachlor		ND		0.33
Heptachlor epoxide		0.42		0.33
Methoxychlor		ND		3.3
Endrin ketone		ND		0.66
Toxaphene		ND		33
alpha-Chlordane		ND		0.33
gamma-Chlordane		0.54		0.33

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	74	49 - 123
DCB Decachlorobiphenyl	98	40 - 158

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Client Sample ID: **HRI0096-06**

Lab Sample ID: 580-11367-5 Date Sampled: 09/17/2008 1730
Client Matrix: Solid Date Received: 09/25/2008 1130

8081A Organochlorine Pesticides (GC)

Method: 8081A Analysis Batch: 580-36468 Instrument ID: SEA035
Preparation: 3550B Prep Batch: 580-36417 Lab File ID: ECD35479.D
Dilution: 1.0 Initial Weight/Volume: 30.5039 g
Date Analyzed: 09/29/2008 1351 Final Weight/Volume: 10 mL
Date Prepared: 09/26/2008 1124 Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	RL
Aldrin		ND		0.33
alpha-BHC		ND		0.33
beta-BHC		ND		0.33
delta-BHC		ND		0.33
gamma-BHC (Lindane)		ND		0.33
4,4'-DDD		ND		0.66
4,4'-DDE		ND		0.66
4,4'-DDT		ND		0.66
Dieldrin		ND		0.66
Endosulfan I		ND		0.33
Endosulfan II		ND		0.66
Endosulfan sulfate		ND		0.66
Endrin		ND		0.66
Endrin aldehyde		ND		0.66
Heptachlor		ND		0.33
Heptachlor epoxide		ND		0.33
Methoxychlor		ND		3.3
Endrin ketone		ND		0.66
Toxaphene		ND		33
alpha-Chlordane		ND		0.33
gamma-Chlordane		0.63		0.33

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	85	49 - 123
DCB Decachlorobiphenyl	75	40 - 158

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Method Blank - Batch: 580-36439

Method: 8151A
Preparation: 8151A

Lab Sample ID: MB 580-36439/1-A Analysis Batch: 580-36469 Instrument ID: SEA008
Client Matrix: Solid Prep Batch: 580-36439 Lab File ID: L29139.D
Dilution: 1.0 Units: ug/Kg Initial Weight/Volume: 30.0000 g
Date Analyzed: 09/27/2008 1841 Final Weight/Volume: 10 mL
Date Prepared: 09/27/2008 1218 Injection Volume: 1.0 uL

Analyte	Result	Qual	RL
Dalapon	ND		8.3
4-Nitrophenol	ND		3.3
Dicamba	ND		3.3
Mecoprop	ND		3.3
MCPA	ND		3.3
Dichlorprop	ND		3.3
2,4-D	ND		3.3
Pentachlorophenol	ND		3.3
Silvex (2,4,5-TP)	ND		3.3
2,4,5-T	ND		3.3
Dinoseb	ND		8.3
2,4-DB	ND		3.3

Surrogate	% Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	82	51 - 129

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: TestAmerica Laboratories, Inc

Job Number: 580-11367-1

Lab Control Spike - Batch: 580-36439

Method: 8151A
Preparation: 8151A

Lab Sample ID: LCS 580-36439/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 09/27/2008 1906
Date Prepared: 09/27/2008 1218

Analysis Batch: 580-36469
Prep Batch: 580-36439
Units: ug/Kg

Instrument ID: SEA008
Lab File ID: L29140.D
Initial Weight/Volume: 30.0000 g
Final Weight/Volume: 10 mL
Injection Volume: 1.0 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Dalapon	333	222	67	16 - 74	
Dicamba	333	314	94	48 - 123	
Mecoprop	333	352	106	53 - 154	
MCPA	333	355	106	50 - 150	
Dichlorprop	333	384	115	75 - 140	
2,4-D	333	346	104	46 - 136	
Pentachlorophenol	333	329	99	50 - 150	
Silvex (2,4,5-TP)	333	325	97	52 - 137	
Dinoseb	333	387	116	18 - 157	
2,4-DB	333	328	98	50 - 155	

Surrogate	% Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	107	51 - 129

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: TestAmerica Laboratories, Inc

Job Number: 580-11367-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-36439

Method: 8151A
Preparation: 8151A

MS Lab Sample ID: 580-11367-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 09/27/2008 1930
Date Prepared: 09/27/2008 1218

Analysis Batch: 580-36469
Prep Batch: 580-36439

Instrument ID: SEA008
Lab File ID: L29141.D
Initial Weight/Volume: 30.4981 g
Final Weight/Volume: 10 mL
Injection Volume: 1.0 uL

MSD Lab Sample ID: 580-11367-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 09/27/2008 1955
Date Prepared: 09/27/2008 1218

Analysis Batch: 580-36469
Prep Batch: 580-36439

Instrument ID: SEA008
Lab File ID: L29142.D
Initial Weight/Volume: 30.3866 g
Final Weight/Volume: 10 mL
Injection Volume: 1.0 uL

	% Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Dalapon	52	48	16 - 74	9	30		
Dicamba	84	83	48 - 123	0	30		
Mecoprop	88	105	53 - 154	18	30		
MCPA	89	93	50 - 150	4	30		
Dichlorprop	92	102	75 - 140	10	30		
2,4-D	78	89	46 - 136	13	30		
Pentachlorophenol	89	98	50 - 150	10	30		
Silvex (2,4,5-TP)	85	88	52 - 137	4	30		
Dinoseb	110	115	18 - 157	5	30		
2,4-DB	99	106	50 - 155	7	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2,4-Dichlorophenylacetic acid	75	85	51 - 129

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: TestAmerica Laboratories, Inc

Job Number: 580-11367-1

Method Blank - Batch: 580-36417

Method: 8081A
Preparation: 3550B

Lab Sample ID: MB 580-36417/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 09/29/2008 1126
Date Prepared: 09/26/2008 1124

Analysis Batch: 580-36468
Prep Batch: 580-36417
Units: ug/Kg

Instrument ID: SEA035
Lab File ID: ECD35473.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	Result	Qual	RL
Aldrin	ND		1.0
alpha-BHC	ND		1.0
beta-BHC	ND		1.0
delta-BHC	ND		1.0
gamma-BHC (Lindane)	ND		1.0
4,4'-DDD	ND		2.0
4,4'-DDE	ND		2.0
4,4'-DDT	ND		2.0
Dieldrin	ND		2.0
Endosulfan I	ND		1.0
Endosulfan II	ND		2.0
Endosulfan sulfate	ND		2.0
Endrin	ND		2.0
Endrin aldehyde	ND		2.0
Heptachlor	ND		1.0
Heptachlor epoxide	ND		1.0
Methoxychlor	ND		10
Endrin ketone	ND		2.0
Toxaphene	ND		100
alpha-Chlordane	ND		1.0
gamma-Chlordane	ND		1.0

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	85	49 - 123
DCB Decachlorobiphenyl	69	40 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: TestAmerica Laboratories, Inc

Job Number: 580-11367-1

Lab Control Spike - Batch: 580-36417

Method: 8081A
Preparation: 3550B

Lab Sample ID: LCS 580-36417/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 09/29/2008 1146
Date Prepared: 09/26/2008 1124

Analysis Batch: 580-36468
Prep Batch: 580-36417
Units: ug/Kg

Instrument ID: SEA035
Lab File ID: ECD35474.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume: 1.0 uL
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aldrin	1.00	ND	98	53 - 126	
alpha-BHC	1.00	ND	99	41 - 128	
beta-BHC	1.00	ND	98	48 - 121	
delta-BHC	1.00	ND	73	22 - 153	
gamma-BHC (Lindane)	1.00	ND	99	50 - 127	
4,4'-DDD	1.00	ND	103	44 - 141	
4,4'-DDE	1.00	ND	86	47 - 140	
4,4'-DDT	1.00	ND	91	34 - 159	
Dieldrin	1.00	ND	96	53 - 134	
Endosulfan I	1.00	1.05	105	52 - 122	
Endosulfan II	1.00	ND	95	53 - 132	
Endosulfan sulfate	1.00	ND	93	42 - 128	
Endrin	1.00	ND	100	46 - 138	
Endrin aldehyde	1.00	ND	102	12 - 179	
Heptachlor	1.00	1.09	109	50 - 130	
Heptachlor epoxide	1.00	1.08	108	49 - 123	
Methoxychlor	1.00	ND	103	46 - 154	
Endrin ketone	1.00	ND	92	45 - 127	
alpha-Chlordane	1.00	1.02	102	46 - 118	
gamma-Chlordane	1.00	1.15	115	49 - 122	

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	91	49 - 123
DCB Decachlorobiphenyl	73	40 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

DATA REPORTING QUALIFIERS

Client: TestAmerica Laboratories, Inc Job Number: 580-11367-1

Lab Section	Qualifier	Description
GC Semi VOA		
	I	Indicates the presence of an interference, recovery is not calculated.
	P	The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%

cardboard box 14.0°C

SUBCONTRACT ORDER

TestAmerica Honolulu

HRI0096

11367

SENDING LABORATORY:

TestAmerica Honolulu
99-193 Aiea Heights Drive, Suite 121
Aiea, HI 96701
Phone: 808-486-5227
Fax: 808-486-2456
Project Manager: Mike D. Solick
Client: Myounghee Noh & Associates

RECEIVING LABORATORY:

TestAmerica Tacoma
5755 8th Street East
Tacoma,, WA 98424
Phone :(253) 922-2310
Fax: 253
Project Location: Hawaii
Receipt Temperature: _____°C Ice: Y / N

Analysis	Units	Due	Expires	Interlab Price	Surch	Comments
Sample ID: HRI0096-01	**Solid/Soil**		Sampled: **09/17/08 11:50**			
8081A Pesticides	mg/kg	10/02/08	10/01/08 11:50	$135.00	0%	
8151 Herbicides	mg/kg	10/02/08	09/24/08 11:50	$195.00	0%	
Containers Supplied: Incremental Sub-sample (analyze entire content) (C)						
Sample ID: HRI0096-03	**Solid/Soil**		Sampled: **09/17/08 17:30**			
8081A Pesticides	mg/kg	10/02/08	10/01/08 17:30	$135.00	0%	
8151 Herbicides	mg/kg	10/02/08	09/24/08 17:30	$195.00	0%	
Containers Supplied: Incremental Sub-sample (analyze entire content) (D)						
Sample ID: HRI0096-04	**Solid/Soil**		Sampled: **09/17/08 17:30**			
8081A Pesticides	mg/kg	10/02/08	10/01/08 17:30	$135.00	0%	
8151 Herbicides	mg/kg	10/02/08	09/24/08 17:30	$195.00	0%	
Containers Supplied: Incremental Sub-sample (analyze entire content) (D)						
Sample ID: HRI0096-05	**Solid/Soil**		Sampled: **09/17/08 17:30**			
8081A Pesticides	mg/kg	10/02/08	10/01/08 17:30	$135.00	0%	
8151 Herbicides	mg/kg	10/02/08	09/24/08 17:30	$195.00	0%	
Containers Supplied: Incremental Sub-sample (analyze entire content) (D)						

Released By	Date/Time	Received By	Date/Time
ELAster	9/24/8 1300		9-25-08 11:30am

SUBCONTRACT ORDER

TestAmerica Honolulu

HRI0096

Analysis	Units	Due	Expires	Interlab Price	Surch	Comments
Sample ID: HRI0096-06	**Solid/Soil**		Sampled: 09/17/08 17:30			
8081A Pesticides	mg/kg	10/02/08	10/01/08 17:30	$135.00	0%	
8151 Herbicides	mg/kg	10/02/08	09/24/08 17:30	$195.00	0%	
Containers Supplied:						
Incremental Sub-sample (analyze entire content) (D)						

Login Sample Receipt Check List

Client: TestAmerica Laboratories, Inc

Job Number: 580-11367-1

Login Number: 11367
Creator: Harding, Jessica
List Number: 1

List Source: TestAmerica Tacoma

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable	False	Temp @ 14.0
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropnate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

TestAmerica
ANALYTICAL TESTING CORPORATION

TestAmerica - Honolulu
99-193 Aiea Heights Drive Suite 121 • Aiea, HI 96701-3900
808-486-LABS (5227) • Fax 808-486-2456

LABORATORY USE ONLY
LAB JOB NO. HI00996
LOCATION
CONTAINERS

Chain of Custody / Analysis Request Form

Report to: Adam Custer
Company name: Myounghee Noh & Associates
Address: 99-1076 Iwaena St Suite 210A
City: AIEA State: HI ZIP: 96701
Phone: 808-484-9214 Fax: 808-484-4668
Samplers: AC, EK, AI # samples in shipment: 6

Project identification
Job name: EWA Makai Middle Phase II
Job number: 20691
P.O. number:
Contact email address: adam@noh-associates.com
Date results needed: TAT STD

Indicate analyses requested: 8015 DRO; 8260 VOC; 8260 SVOC; RCRA 8; 8081 Pesticides; 8151 Herbicides

Item no.	Client sample ID	COMP	GRAB	Matrix	Preservation method	Sampling Date	Sampling Time	No. of containers	Laboratory ID no
1	691 DU1 - SO			Water	N	9/17/08	11:50 A	1	HI00996-01
2	691 DU1 - SO - V			Water	MeOH	9/17/08	1:45 P	1	-02
3	691 DU1 - S 2.5-1			Water	N/MeOH	9/17/08	5:30 P	2	-03
4	691 DU1 - S 2.5-2			Water	N/MeOH	9/17/08	5:30 P	2	-04
5	691 DU1 - S 2.5-3			Water	N/MeOH	9/17/08	5:30 P	2	-05
6	691 DU1 - S 5.5			Water	N/MeOH	9/17/08	5:30 P	2	-06
7	LAST ENTRY								
8									
9									
10									

sample was cool upon receival

Released by (print / sign)	Date / time released	Delivery method	Received by (print / sign)	Company / Agency affiliation	Date / time received	Condition noted
Adam Custer	9/18/08 1:50	hand	M Hleskett	TestAmerica	9/18/08 13:50	intact 4°C
	/				/	
	/				/	

Comments: MS samples

Please check one:
☒ Dispose by lab
☐ Return to client
☐ Archive

COC REV 09/2006 Distribution: White - TestAmerica Yellow - TestAmerica Pink - Client

Page 1 of 1

Photograph 1. A view of the subject site to the west from the entrance (September 15, 2008)

Photograph 2. A view of the subject entrance, blocked for unauthorized traffic (September 15, 2008).

Photograph 3. A view of an irrigation ditch/former cane road located west of the subject site. No surface water was observed at the time of the soil sampling (September 15, 2008).

Photograph 4. A view of the drainage pond at northwest corner of the subject site (September 15, 2008).

MNA 20691

Photograph 5. A view of the geologic stratum at the drainage excavation. Bedrock was observed at about 2ft below ground surface (September 15, 2008).

Photograph 6. Another view of the geologic stratum at the drainage excavation (September 15, 2008).

Photograph 7. A view of MNA staff measuring length of the subject site using a walking meter (September 16, 2008).

Photograph 8. A view of surface soil sampling. The white paper mulch shown was assumed to have been used for dust control therefore not included in the sampling (September 16, 2008).

MNA 20691

Photograph 9. A view of subsurface soil sampling. The houses south of the subject site is shown in the background (September 17, 2008).

Photograph 10. A closer view of boring for subsurface soil sampling (September 17, 2008).

Photograph 11. A view of soil incremental sampling. Laboratory-provided glass jars were used for equal volume of soil (September 17, 2008).

Photograph 12. A view of the direct-push drill tip for subsurface sampling. The sampler encountered refusal due to the presence of rocks (September 17, 2008).

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