EWA MAKAI MIDDLE SCHOOL

FINAL ENVIRONMENTAL ASSESSMENT

DECEMBER 2008

PREPARED FOR:
STATE OF HAWAII
DEPARTMENT OF EDUCATION

PREPARED BY:
SSFM INTERNATIONAL INC.

FINAL ENVIRONMENTAL ASSESSMENT

FOR

ʻEWA MAKAI MIDDLE SCHOOL PROJECT

ʻEWA, OʻAHU, HAWAIʻI

DECEMBER 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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CHAPTER 1
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).

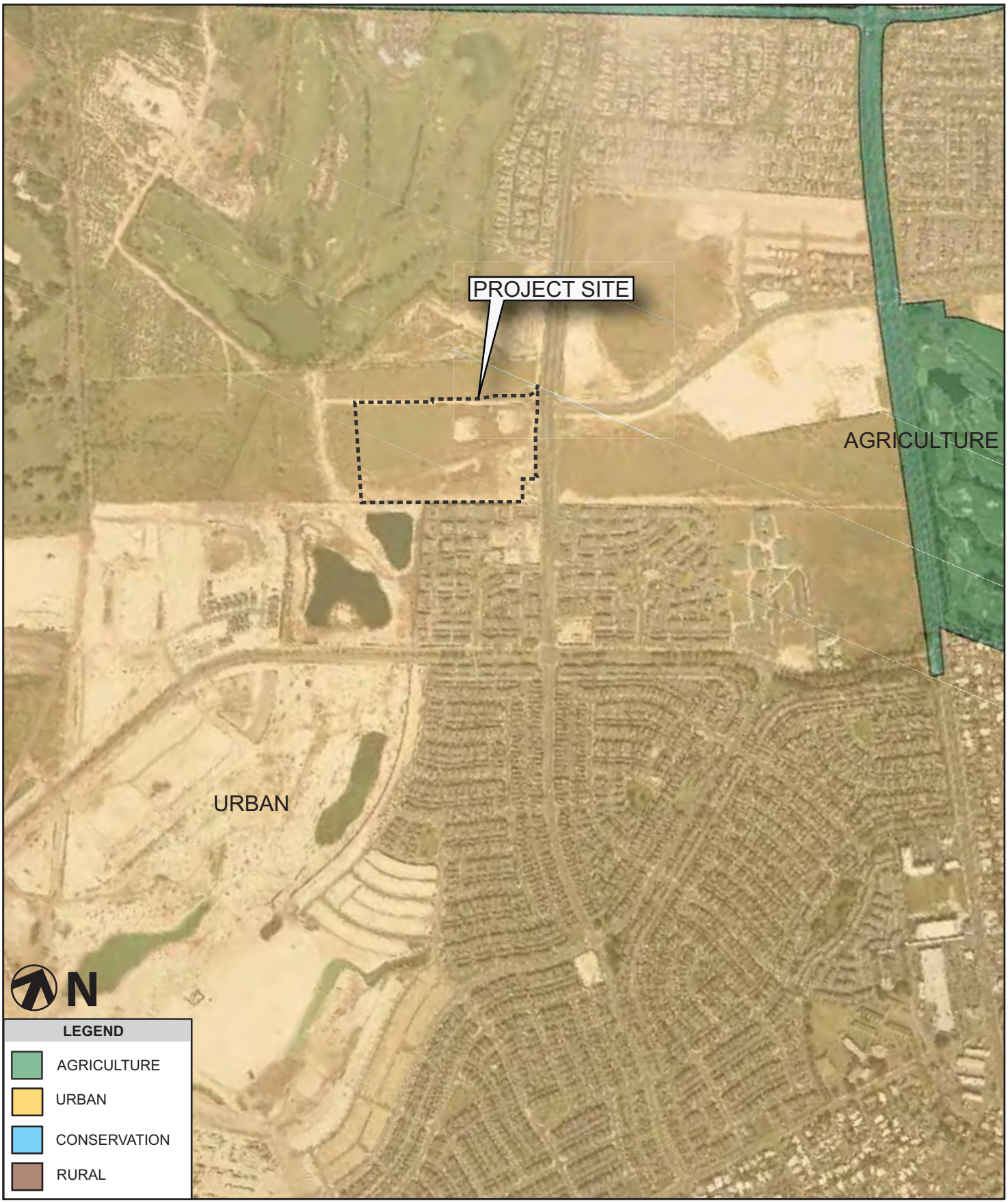
Under this Development Plan's Urban Land Use Map, the project site is designated as "low and medium density residential". Figure 1.3 shows the project site in relation to the 'Ewa Development Plan Urban Land Use Map. Discussion of the project's consistency with this development plan is provided in Chapter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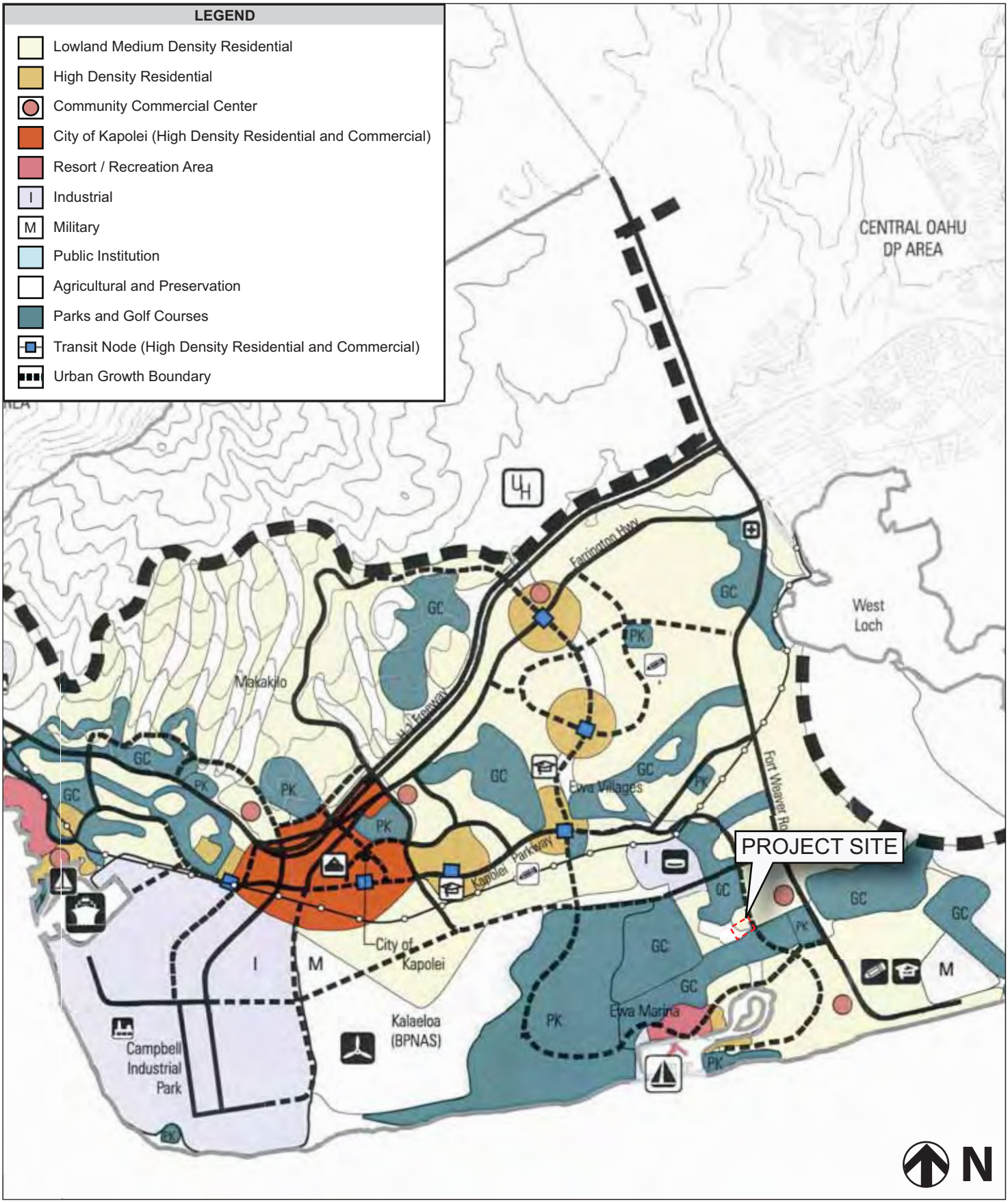

'EWA DEVELOPMENT PLAN LAND USE MAP

'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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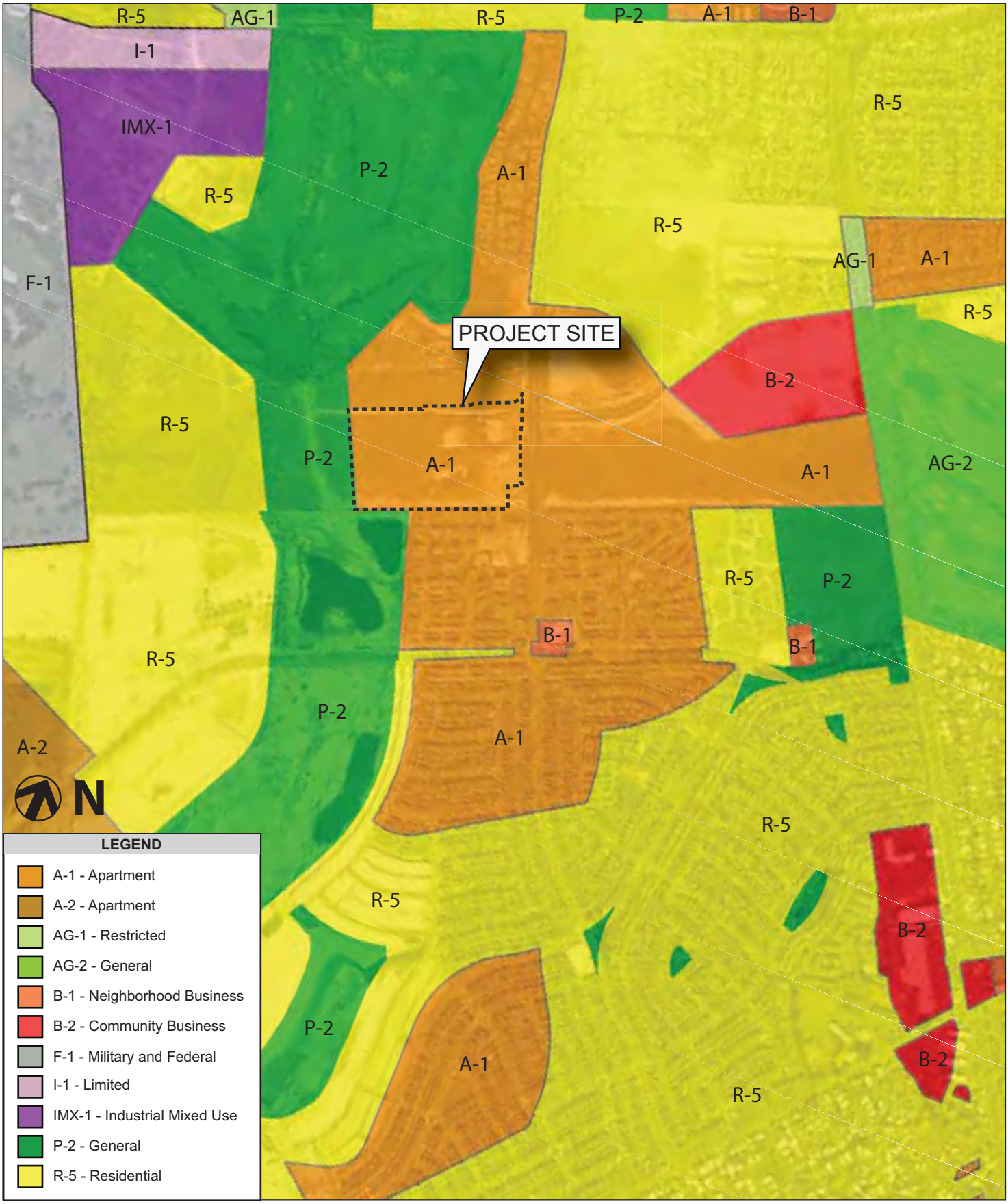

CITY ZONING DISTRICT MAP

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.

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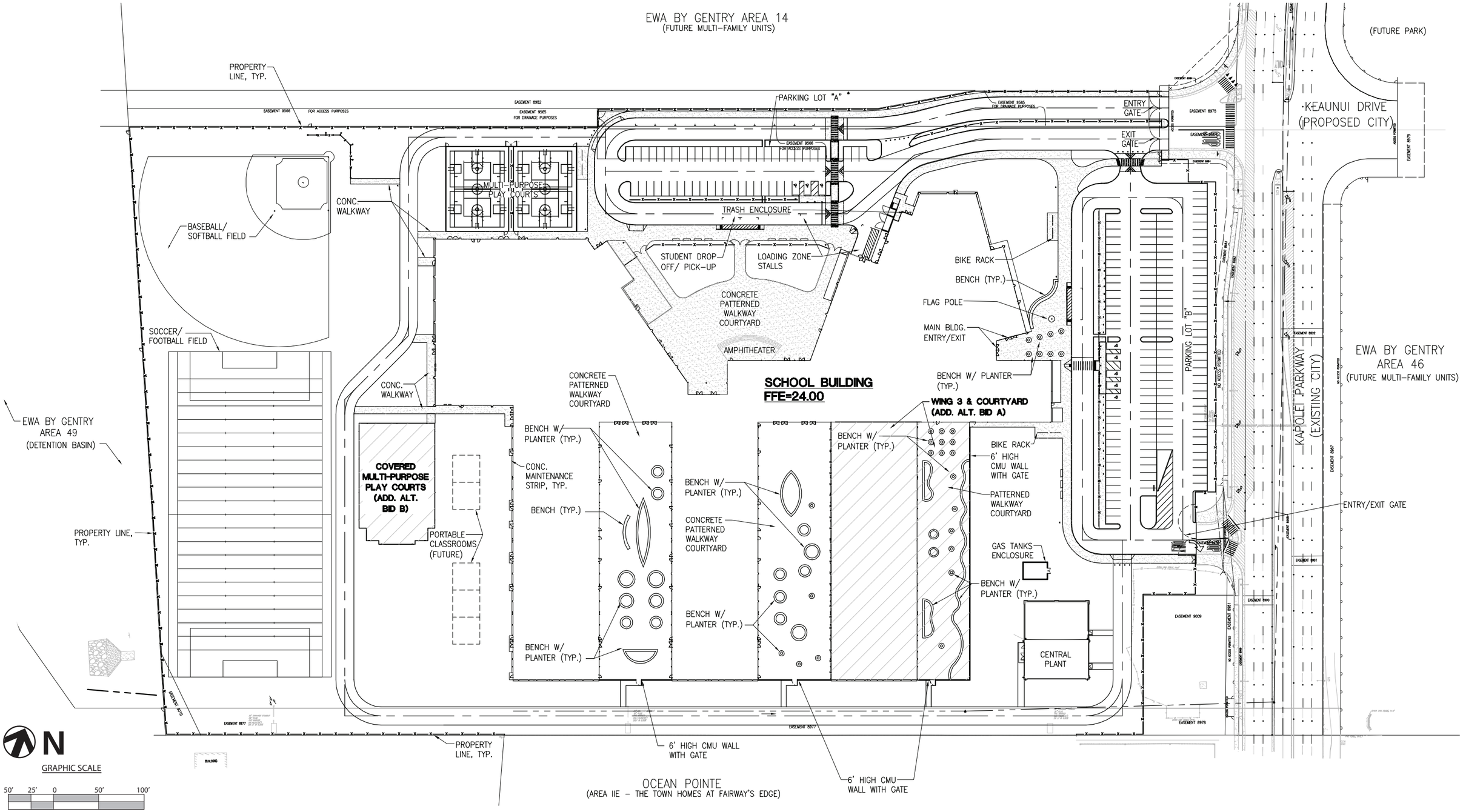

SITE PLAN

Figure 2.2

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

Source:
Mitsunaga and Associates, October2008

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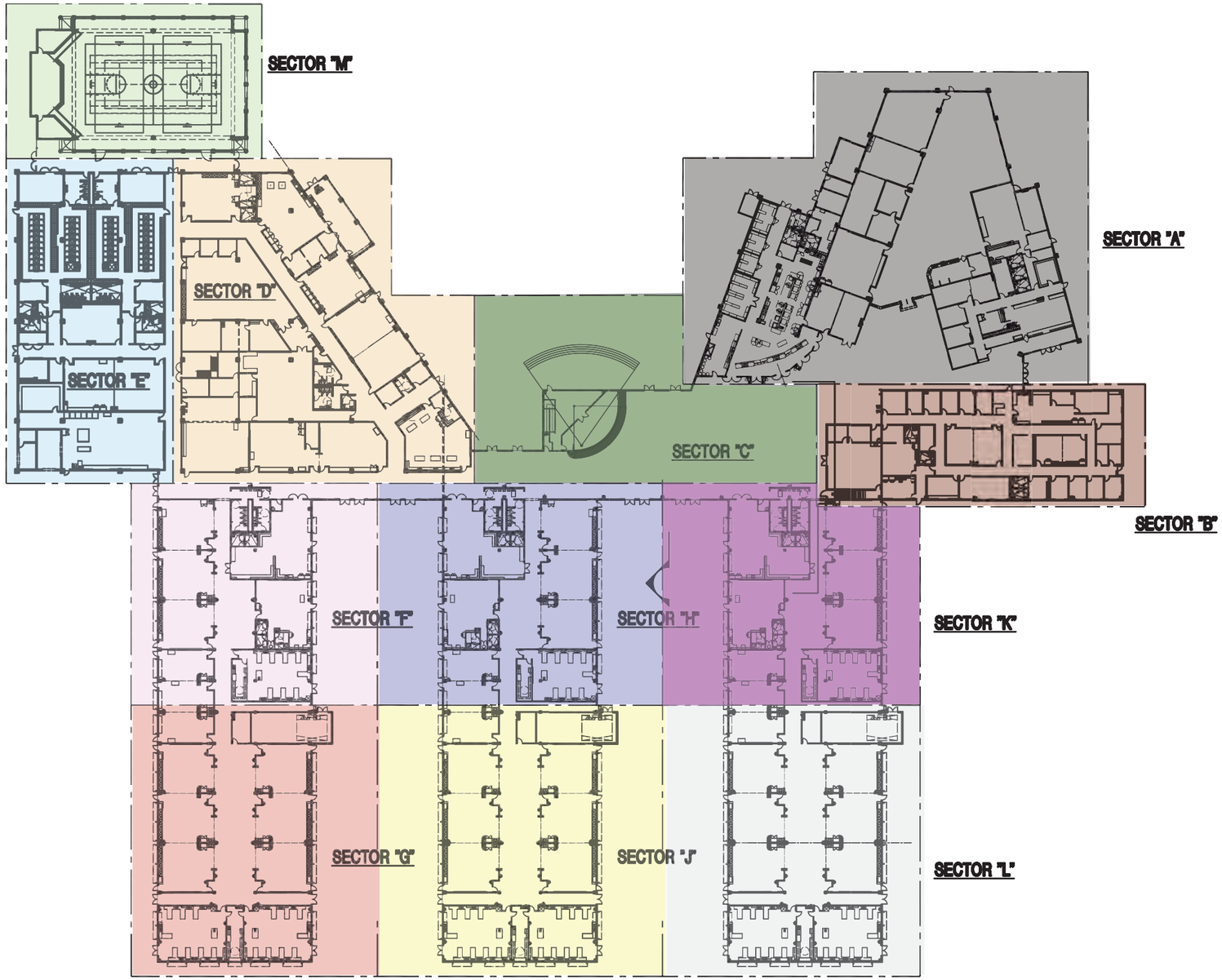


LEGEND

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 late 2010 or 2011.

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

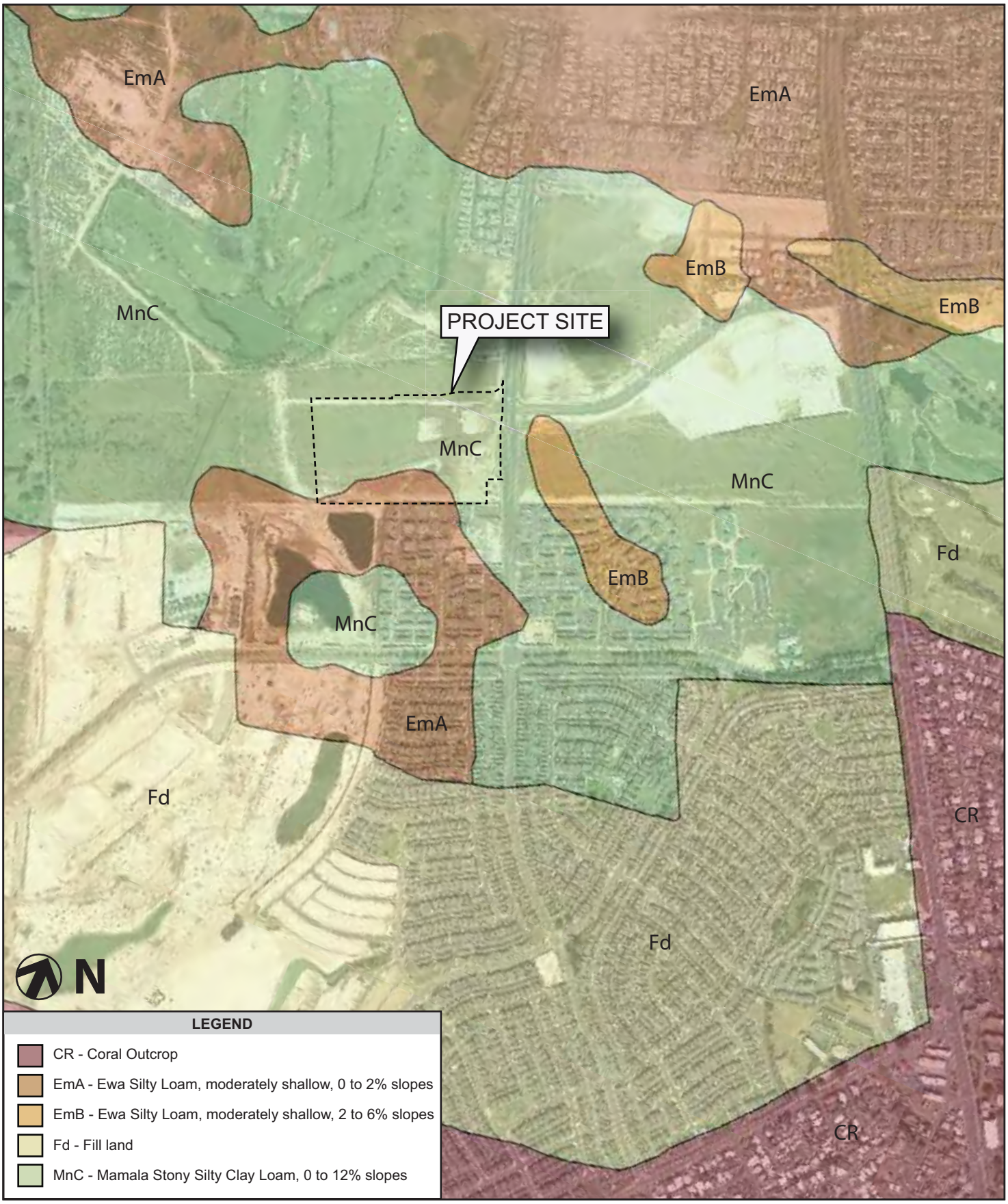
The U.S. Department of Agriculture, Soil Conservation Service's *Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i* includes general soil maps developed for these islands based upon soil surveys. As indicated by the soil maps, the project site is situated on lands 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

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.

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 Department of Planning and Permitting's "Rules Relating to Storm Drainage Standards," January 2000. Such plans will be submitted for City review and approval during the project's design phase.

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.

Impacts and Mitigation Measures

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

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

The proposed middle school will not be designed to serve as a formal emergency shelter. The State Civil Defense Division evaluates the need for Department of Education (DOE) facilities to serve as informal shelters and DOE will be pursuing their determination for this school site. In addition, the school building will be designed in accordance with City building code requirements minimizing its susceptibility to structural damage from natural disasters. Furthermore, the proposed middle school will be provided with an emergency generator connector switch and the location for a generator will be provided near the loading dock.

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. 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.

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 eaves will provide sun protection.

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.

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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.

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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 780 fixture units (fu) and be designed to meet 180 gallons per minute (gpm) flow volume. A reduced pressure principle backflow preventer will also be provided, as required by BWS. The school's potable water supply and fire protection will be serviced by a new 12-inch water line within the Kapolei Parkway extension.

Fire hydrants will be located on-site and supply sufficient fire flow at 2000 gpm residual pressure. In accordance 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 line will require a 2-inch water meter and 2.5-inch irrigation line separate from the potable water system. This water will be used for landscaping a total area of about 340,000 square feet (sf). A summary of the water calculations used for the project are included below.

Domestic Water Supply Demands:

School Use: 4000 gallons/acre or 60 gallons/student & faculty

Building Facility Area = 18.54 acres

Student & Faculty = 1050+100 = 1150

- Average Daily Demand: 4000 gpd/ac. x 18.54 ac. = 74,680 gpd [1]
- Maximum Daily Demand: 1.5 x 74,680 gpd = 112,020 gpd
- Peak Hour Demand: 3.0 x 74,680 gpd = 224,040 gpd

Landscape Water Demands:

Total Landscape Area: 340,000 sf

- Estimated Average Daily Water Usage: 66,000 gpd
- Estimated Maximum Demand: 110 gpm
- Fixture Units: 300 fu

[1] a more conservative flow calculation than using flow/student & faculty = 1150 x 60 = 69,000 gpd

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 within Zone D of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map for this area. 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 or 2011.

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 will eventually provide vehicular access to the communities of Kapolei, Villages of Kapolei, 'Ewa Villages, 'Ewa by Gentry, and 'Ewa Beach. 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 school.

Kaioli Street is a two-way, two-lane street which intersects with Kapolei Parkway south of the project site. This is a stop-sign controlled intersection which primarily serves the residential areas adjacent to the project site. The posted speed limit on Kaioli Street is 15 mph.

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 ‘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 Pointe 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) determines 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 with or without the added school traffic.

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 were 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 'Ewa by Gentry and Ocean Pointe projects. Furthermore, consideration should be given to addition of right turn lanes for the two new school entrances. However, while the NCHRP 279 criteria indicate the possible need for the turn lanes, the HCM analysis shows acceptable LOS without the lanes. It may be necessary to review this with the City at a more appropriate time.

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 Keaunui Drive and at Kapolei Parkway at Keoneula Boulevard. These signals were envisioned by the 'Ewa by Gentry and Ocean Pointe traffic impact analysis study reports done for those projects and verified by this project's TIAR. It is recommended to conduct the updated signal warrants at least every two years.

The City should continue to monitor traffic volume growth on Kapolei Parkway resulting from the on-going development of the 'Ewa by Gentry and Ocean Pointe 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 safety features on all approaches. The TIAR assumes about 350 students walking to school each day and it is anticipated that many of them will 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. At the appropriate time, school district may 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. City approved warning road signs for school pedestrian zones are also included in the project's design. The actual signs and locations will be coordinated with the City, as appropriate.

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.

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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 'Ewa 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 Hawai'i 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 'Ewa 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 Hawai'i residents not resulting in any in-migration. The project would not have a significant effect on the existing or future resident population in 'Ewa.

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.

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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

8.2 DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS

The Draft Environmental Assessment was published in the November 8, 2008, issue of the State Office of Environmental Quality Control’s *The Environmental Notice*, initiating a 30-day public comment period that ended on December 8, 2008. Copies of the Draft EA were distributed to the following parties for review and comments. Those parties that submitted comments are indicated by “»” next to them. Comment letters received from those parties along with correlating response letters from the applicant are included in Appendix B. This Final EA has incorporated additional information in response to comments received on the 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
- Department of Transportation
- Office of Hawaiian Affairs
» Land Division, DLNR
- 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 (Senator Will Espero)

UTILITY COMPANIES

- Hawai‘i Electric Company
» Hawaiian Telcom
- Oceanic Time Warner
- The Gas Company

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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 ‘Ewa 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 DETERMINATION

Based upon the information and results of the assessments conducted for the project site; a Finding of No Significant Impact (FONSI) determination should be warranted for the ‘Ewa 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
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APPENDICES

APPENDIX A

Photos of Project Site and Surrounding Areas

APPENDIX B-1

Early Consultation Comments And Responses

APPENDIX B-2

Draft EA Consultation Comments And Responses

APPENDIX C

2005 Design Charette Summary Report

APPENDIX D

"LEED for Schools"
Certification Rating Checklist
And
Building Floor Plans

APPENDIX E

Traffic Impact Assessment Report

APPENDIX F

Phase II Environmental Site Assessment