DAVID Y. IGE
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DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

October 26, 2017

TO: Scott Glenn
Director, Office of Environmental Quality Control
Department of Health

FROM: Duane Y. Kashiwai
Public Works Administrator, Facilities Development Branch

SUBJECT: **Final Environmental Assessment (FEA-FONSI) for East Kapolei Middle School**
Tax Map Key: (1) 9-1-017:106, Kapolei, Oahu, Hawaii

The State of Hawaii, Department of Education hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the new East Kapolei Middle School project situated at TMK (1) 9-1-017:106, in the Ewa District on the island of Oahu, for publication in the next available edition of *The Environmental Notice*.

Enclosed is a completed OEQC Publication Form, two copies of the Final EA, an Adobe Acrobat PDF file of the Final EA, and an electronic copy of the publication form in Microsoft Word.

If there are any questions, please contact Brenda Lowrey, Facilities Planner, Planning Section, Facilities Development Branch, at (808) 784-5080.

DYK:jmb
Enclosures

c: Arnold Fukunaga, Project Management Section, Facilities Development Branch

18-203

AGENCY
PUBLICATION FORM

Project Name:	East Kapolei Middle School
Project Short Name:	(please use no more than five succinct words; count not to include document status, e.g., EA)
HRS §343-5 Trigger(s):	Propose the use of state or county lands and the use of state or county funds
Island(s):	Oahu
Judicial District(s):	Ewa
TMK(s):	(1) 9-1-017: 106
Permit(s)/Approval(s):	Environmental Assessment (EA), per Chapter 343, Hawaii Revised Statutes, FAA approvals, National Pollutant Discharge Elimination System (NPDES) Permit, Disability and Communications Access Board (DCAB) Approval, Individual Wastewater System Approval, Permit to Perform Work in a Public Right of Way (ROW), Water Allocation Letter, Community Noise Permit, Street Usage Permit, Grading Permit, Site work Permit, Building Permits, Zoning Waivers.
Proposing/Determining Agency:	State of Hawaii, Department of Education, Office of School Facilities and Support Services
Contact Name, Email, Telephone, Address	Ms. Brenda Lowrey, Planning Section, Facilities Development Branch Brenda_Lowrey/FacilDev/HIDOE@notes.k12.hi.us (808) 784-5091 3633 Waialae Ave., Rm. C209 Honolulu, HI 96816
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	SSFM International, Inc.
Contact Name, Email, Telephone, Address	Mr. Jared K. Chang, AICP jchang@ssfm.com (808) 531-1308 501 Sumner Street, Suite 620 Honolulu, Hawaii 96817

Status (select one)	**Submittal Requirements**
____ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
_X___ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

____	FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
	FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
____	Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____	Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____	Other	Contact the OEQC if your action is not one of the above items.

Project Summary
Provide a description of the proposed action and purpose and need in 200 words or less.

The State of Hawaii, Department of Education (DOE) is proposing to build a new middle school in East Kapolei, named East Kapolei Middle School (EKMS). EKMS will be located on an 18-acre parcel dedicated to the State DOE. The parcel is vacant and bound by Keahumoa Parkway on the south, Maunakapu Street on the west, and Maweke Street on the east. The proposed action involves the construction of a new middle school consisting of six (6) buildings organized around a central commons area with provisions for future classroom buildings. In addition to the school buildings and central commons areas, the campus includes physical education areas consisting of a covered play court, an open play court, and two play fields sized to accommodate soccer and softball. The school will be designed for an enrollment of 1,050 students with plans for expansion to accommodate an additional 350 students in the future. The site design includes provisions for the future construction of one additional House (House No.4) and five portable classrooms that will allow enrollment to increase to 1,400 students. In total, the school is expected to accommodate 1,520 students and staff.

FINAL ENVIRONMENTAL ASSESSMENT

EAST KAPOLEI MIDDLE SCHOOL
KAPOLEI, OAHU, HAWAII

OCTOBER 2017

Prepared for:
Hawaii State Department of Education

Prepared by:
SSFM International

The Cover: The image on the cover depicts the view into the Cafeteria from the Campus Commons area located in the "heart" of the school. The Administration building is situated to the right. Image provided by Ferraro Choi & Associates, 2016.

EAST KAPOLEI MIDDLE SCHOOL
TAX MAP KEY: (1) 9-1-017:106
KAPOLEI, HAWAII

FINAL ENVIRONMENTAL ASSESSMENT/ FINDING OF NO SIGNIFICANT IMPACT

Prepared Pursuant to:
Chapter 343, Hawaii Revised Statutes and
Title 11, Chapter 200, Hawaii Department of Health Administrative Rules

Proposing Agency:
State of Hawaii
Department of Education

Prepared by:
SSFM International, Inc.

October 2017

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PROJECT SUMMARY INFORMATION

Project Name:	East Kapolei Middle School Department of Education Job No. Q82000-12
Project Description:	Construction of a new middle school planned for a design enrollment of 1,050 students with an area for future expansion of up to 350 additional students.
Project Location:	Kapolei, Oahu, Hawaii (See Figure 1)
Tax Map Key:	(1) 9-1-017: 106 (See Figure 2)
Land Area:	18 acres
Landowner:	State of Hawaii, Department of Education via Executive Order No. 4052, recorded on June 16, 2016.
Proposing Agency:	Department of Education State of Hawaii 1151 Punchbowl Street Honolulu, Hawaii 96813
Accepting Agency:	Department of Education, State of Hawaii
State Land Use Classification:	Urban (See Figure 4)
City and County Zoning:	AG-1, Restricted Agriculture (See Figure 5)
City and County Ewa Development Plan Land Use Map Designation:	Residential and Low Density Apartment Community/ Future Intermediate School Conceptual Location (See Figure 6)
Special Management Area:	Not within the Special Management Area (SMA)
Existing Use / Prior Use:	Vacant Land / Agriculture
Purpose of the Environmental Assessment:	The project utilizes State funding and State-owned land.
HRS Chapter 343 Determination:	Finding of No Significant Impact (FONSI)

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ACRONYMS

ADT	average daily traffic
BMPs	best management practices
BWS	Board of Water Supply
CHPS	Collaborative for High Performance Schools
City	City and County of Honolulu
CWA	Clean Water Act
CZM	coastal zone management
CZMA	Coastal Zone Management Act
dB	decibels
dBA	decibels-A weighted
DBEDT	Department of Business, Economic Development & Tourism
DCAB	Disability and Communications Access Board
DHHL	Department of Hawaiian Home Lands
DOE	Department of Education
DOH	Department of Health
DPR	Department of Parks and Recreation
Draft EA	Draft Environmental Assessment
DTS	Department of Transportation Services
EA	Environmental Assessment
EKMS	East Kapolei Middle School
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FADS	Facilities Assessment Development Schedule
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
GET	general excise tax
gpd	gallons per day
gpm	gallons per minute
HAR	Hawaii Administrative Rules
HDOT	Hawaii Department of Transportation
HECO	Hawaiian Electric Company
HFD	Honolulu Fire Department
HFDC	Hawaii Housing Finance and Development Corporation
HI-CHPS	Hawaii Collaborative for High Performance Schools
HRS	Hawaii Revised Statutes
Kroc Center	The Salvation Army Kroc Center Hawaii
LOS	Level of Service
LUO	Land Use Ordinance
mg/l	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PE	Physical Education
psi	pounds per square inch

PV	photovoltaic
ROH	Revised Ordinances of Honolulu
ROW	Right-of-Way
SHPD	State Historic Preservation Division
SMA	Special Management Area
State	State of Hawaii
STEM	Science, Technology, Engineering, and Mathematics
SWCA	SWCA Environmental Consultants
TMK	Tax-Map-Key
TOD	transit-oriented development
UHWO	University of Hawaii – West Oahu
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WRCC	Western Regional Climate Center

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1.0 INTRODUCTION

The State of Hawaii (State), Department of Education (DOE) is proposing to build a new middle school in East Kapolei, named East Kapolei Middle School (EKMS). This Final Environmental Assessment (Final EA) was prepared in conformance with Hawaii Revised Statutes (HRS), Chapter 343, Environmental Impact Statements, and Hawaii Administrative Rules (HAR), Title 11, Chapter 200, Environmental Impact Statement Rules. This project will use State capital improvement funds and as a result, is subject to State environmental documentation requirements. The State DOE serves as both the Proposing Agency as well as the Approving Agency for this environmental assessment.

1.1 PROJECT LOCATION

EKMS will be located on an 18-acre parcel in Kapolei, Oahu identified as Tax Map Key (TMK) 9-1-017: 106. This parcel is located within the Department of Hawaiian Home Lands' (DHHL) East Kapolei II subdivision on a parcel dedicated to the State DOE for a new middle school. The parcel is vacant and bound by Keahumoa Parkway (East-West Road) on the south, Maunakapu Street on the west, and Maweke Street on the east. The project site is approximately 800-feet east of the intersection with Kualakai Parkway (North-South Road) (see Figures 1 and 2).

1.2 EXISTING AND FUTURE SURROUNDING USES

The proposed EKMS site is located within a growing planned area of East Kapolei consisting of single family and multi-family homes, community centers, a regional shopping center, and university. A brief summary of surrounding uses is provided below and shown in Figure 3, Vicinity Map. Photos of the site and surrounding uses are included in Appendix A-1.

- DHHL has two developments within East Kapolei. East Kapolei I (referred to as Kanehili) is an approximately 92 acre parcel located on the northwest corner at the intersection of Kualakai Parkway and Kapolei Parkway and contains 403 lots designated for single-family homes. The second development is East Kapolei II, located off of Keahumoa Parkway. By 2019, an additional 289 single family homes are expected to be built within the East Kapolei II development.
- Hawaii Housing Finance and Development Corporation's (HFDC) low density apartments, called Kooloaula, were completed in 2013 and consist of 120 affordable rental apartments adjacent to the proposed EKMS site.
- Ka Makana Alii is a mixed-use center located on 67 acres off of Kapolei Parkway south of Kanehili. This regional mixed use center includes shopping, dining, entertainment, two hotels, and office spaces.
- University of Hawaii, West Oahu (UHWO) is located to the west of the project site and has an approximate Fall 2016 enrollment of nearly 3,000 students. UHWO is a four-year, comprehensive university with an emphasis on baccalaureate education founded in the liberal arts, serving professional, career-related, and applied fields, based on State and regional needs.

- The Hoopili development is located to the north and east sides of East Kapolei. Hoopili will eventually include the construction of 11,750 homes on 1,600 acres. Construction is projected to begin in 2016 and be completed in phases over the next 20 to 30 years. Sales of homes in Hoopili began in summer of 2017.
- The Salvation Army Kroc Center is community center located adjacent to the school on a 15-acre parcel. The Kroc Center is comprised of a 200,000 square foot facility which opened in February 2012.
- The Honolulu Rail Transit Project is in construction and will include an East Kapolei Transit Center located between Kualakai Parkway and the Kroc Center. There will be a park and ride lot which will include 900 stalls.
- *Abutilon menziesii*, known as Kooloaula, is an endangered species endemic to Hawaii. A natural preserve has been established on an adjacent parcel to protect this rare plant.

1.3 EXISTING LAND USE DESIGNATIONS

State Land Use District

Under Chapter 205, HRS, all lands in the State of Hawaii 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 areas are classified as "Urban District" on the State's Land Use District Boundary Map, as shown in Figure 4.

City and County Zoning District

All lands within the City are zoned into specific districts. These districts and the land uses permitted within them are regulated under the City's Land Use Ordinance (LUO), Chapter 21, Revised Ordinances of Honolulu (ROH), and are shown on zoning maps. This LUO 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 AG-1, Restricted Agriculture, as shown in Figure 5.

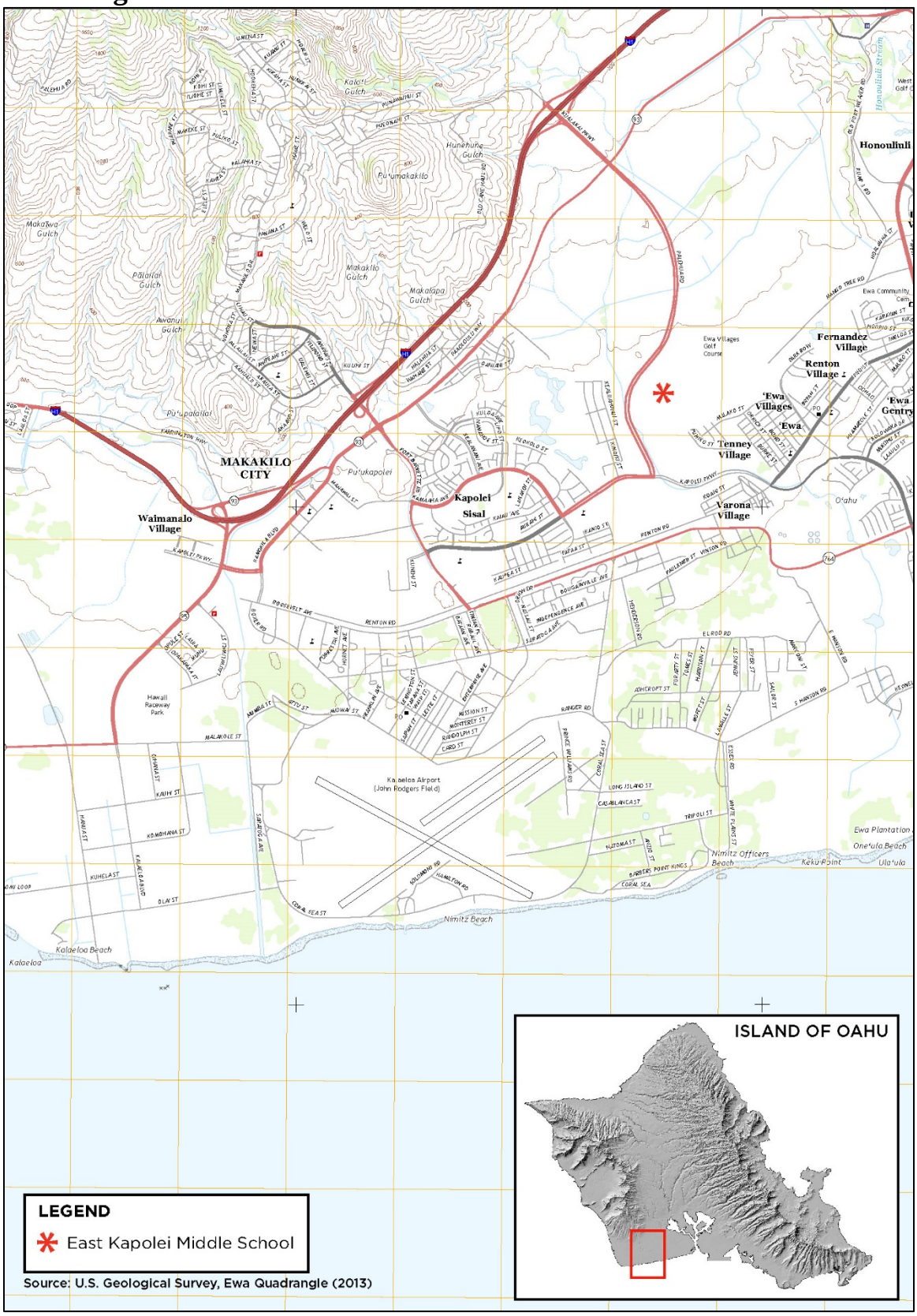
City and County Development Plan

The project site is located within the City and County of Honolulu's Ewa Development Plan. This plan, adopted in 1997 (revised in 2013), includes the vision, policies, and guidelines to guide public policy, investment, and decision-making within Ewa through the 2035 horizon (City 2013). As shown on this Development Plan's Land Use Map, the project site is located in and East Kapolei area planned to become a "low and medium density residential" community and identified as needing a future middle school, as shown in Figure 6.

Special Management Area

The proposed EKMS school site and surrounding areas are situated outside of the County's SMA; therefore, a SMA permit will not be required.

Figure 1: PROJECT LOCATION MAP



Source: U.S. Geological Survey, Ewa Quadrangle (2013)

Figure 2: TAX MAP KEY

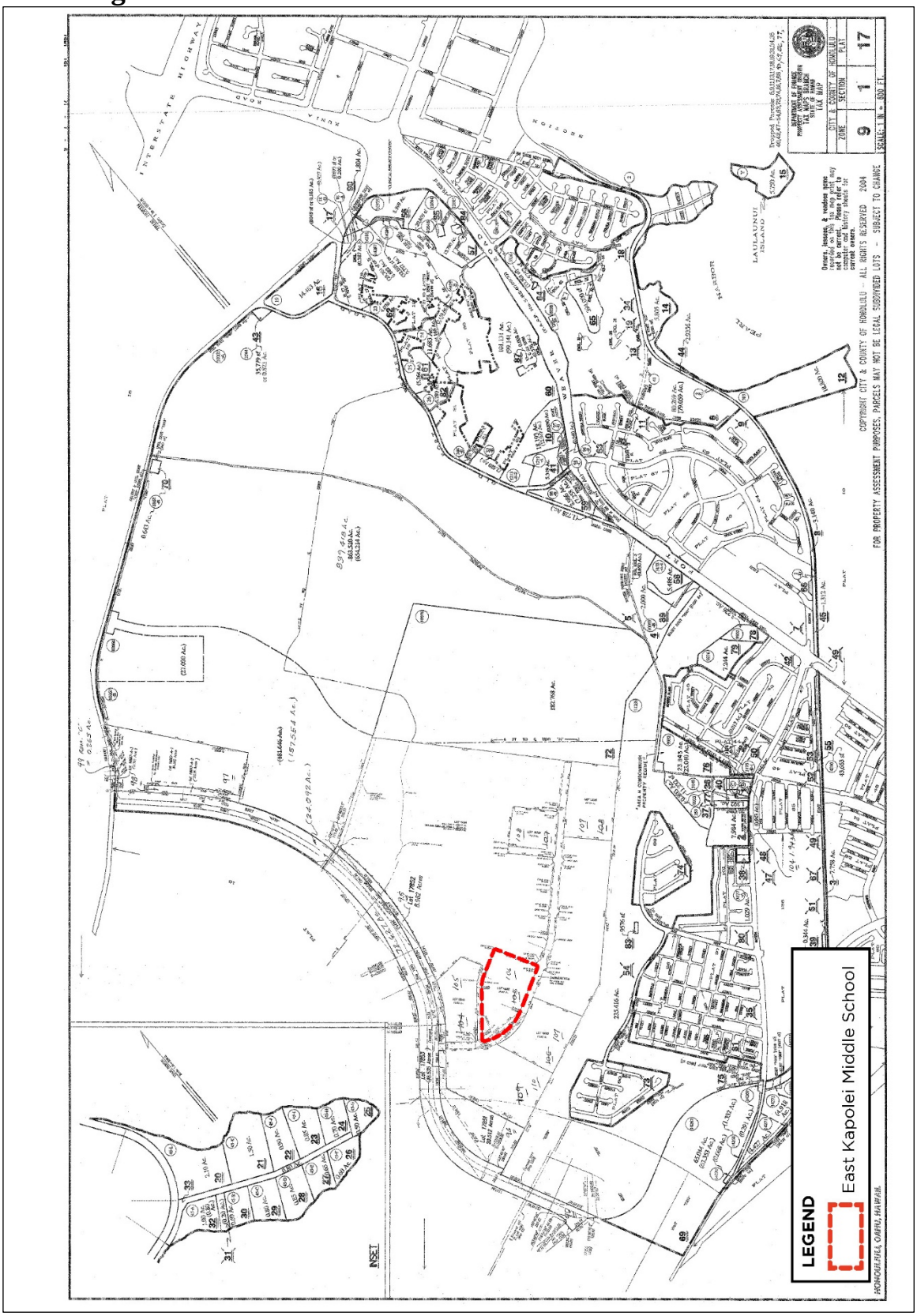


Figure 3: VICINITY MAP

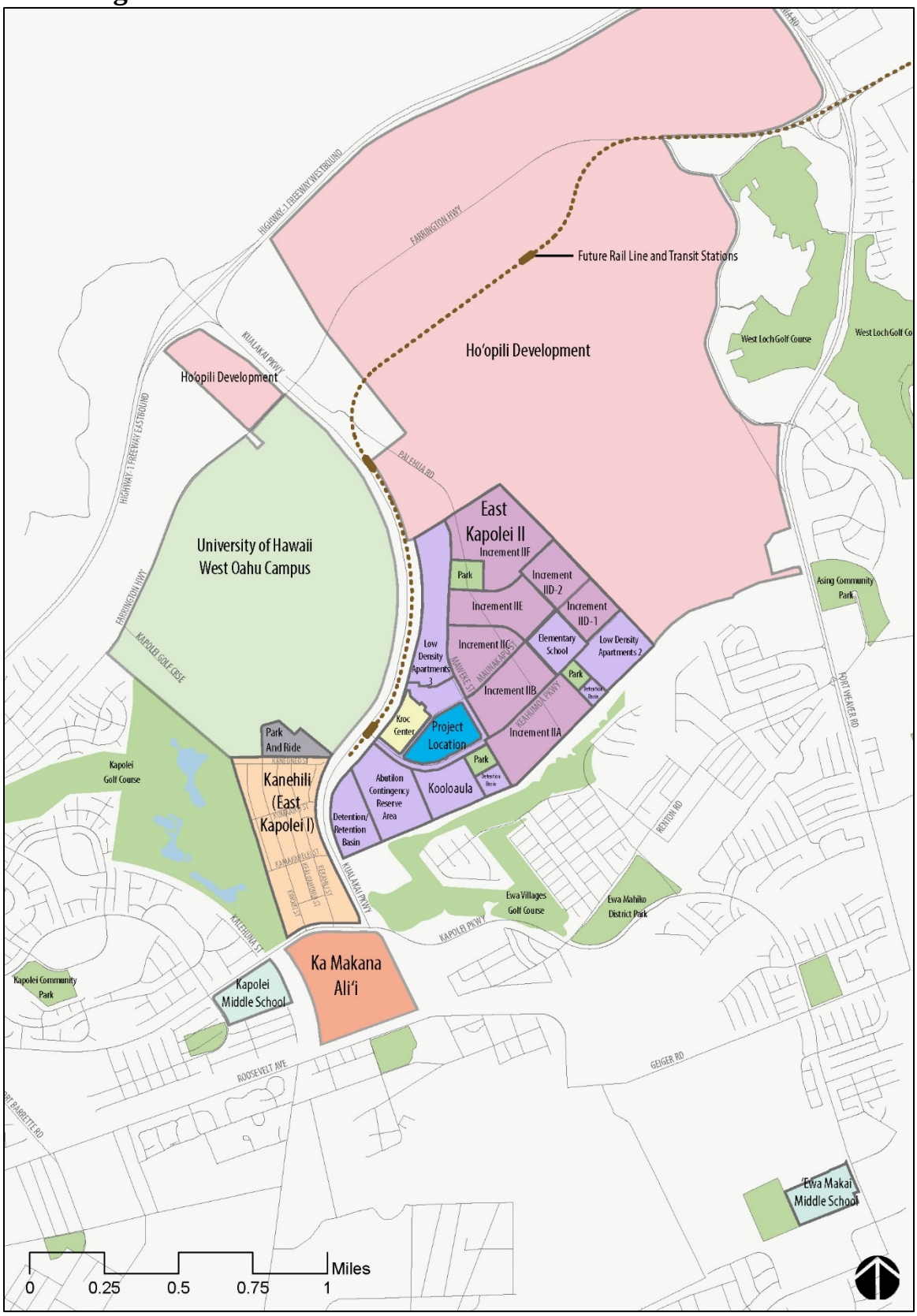


Figure 4: STATE LAND USE DISTRICT

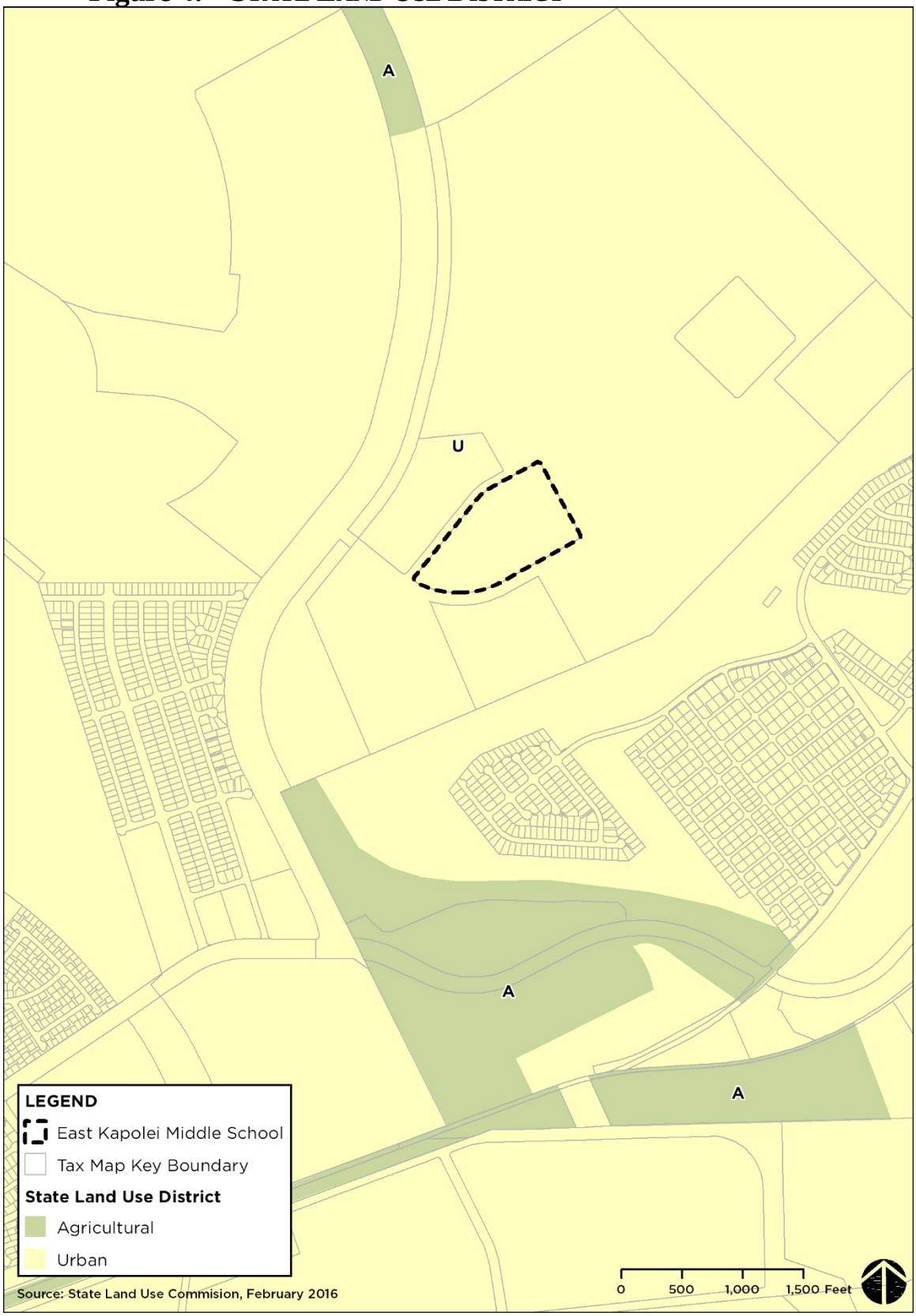


Figure 5: CITY AND COUNTY OF HONOLULU ZONING

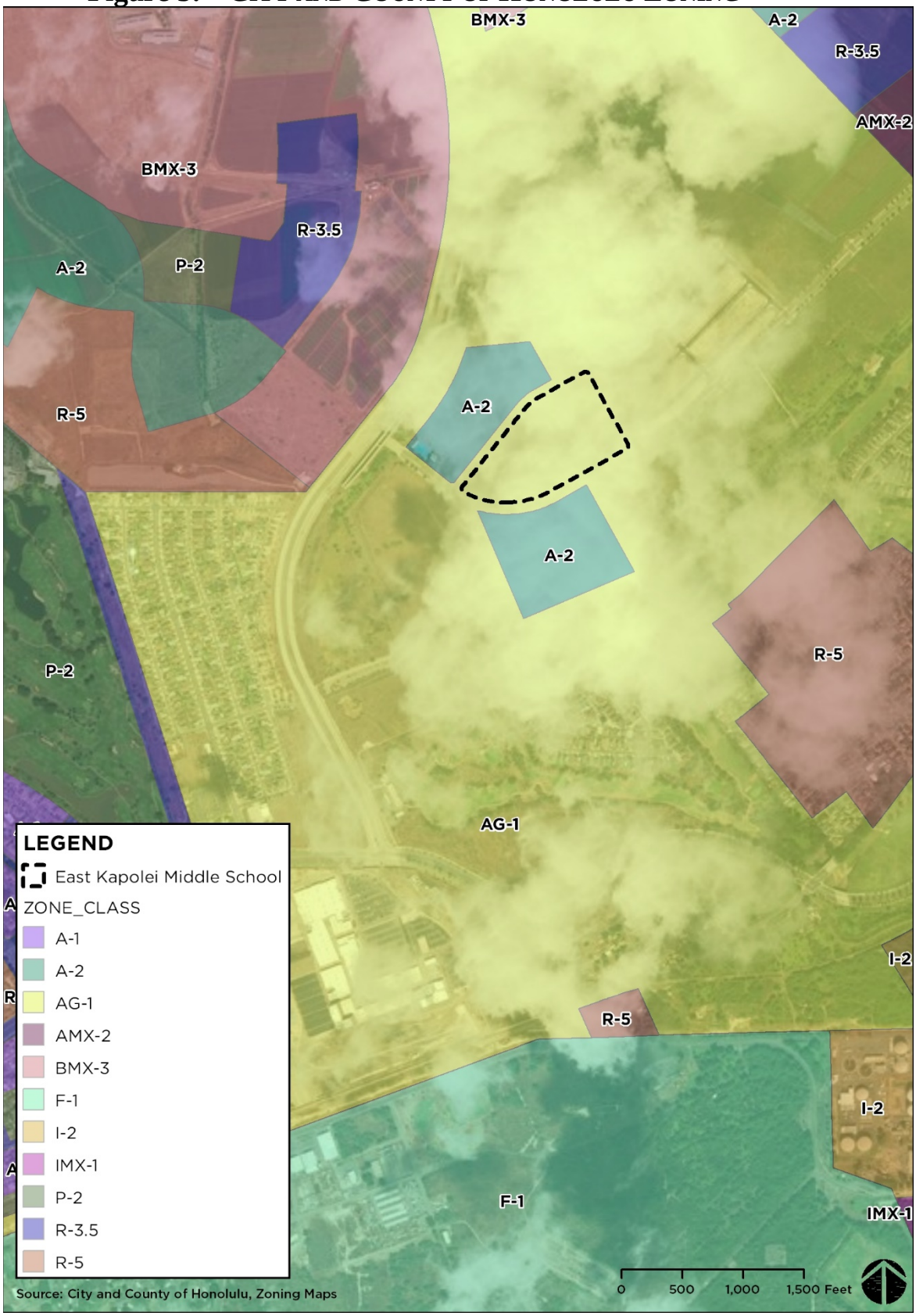
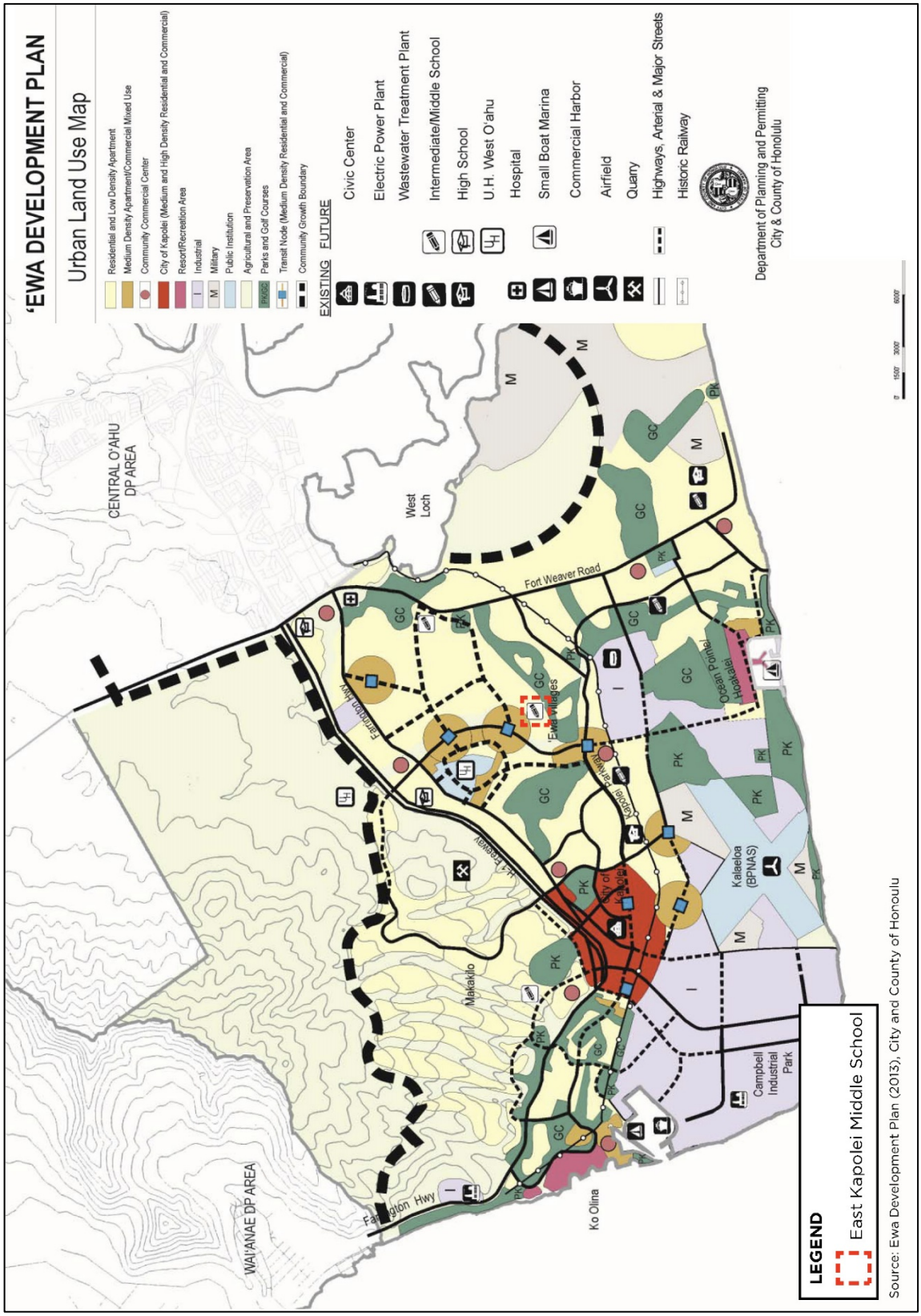


Figure 6: EWA DEVELOPMENT PLAN LAND USE MAP



2.0 PROJECT DESCRIPTION

This section provides an overview of the proposed action.

2.1 PROJECT GOALS AND OBJECTIVES

The DOE objectives for EKMS are:

- Create a 21st Century educational facility that will be economical to construct, provide a superior learning environment and be cost effective to operate and maintain.
- Design the facility to incorporate high visibility and focus on the science, technology, engineering and math (STEM) program spaces as envisioned by Project Lead the Way.
- Strive for whole-campus Collaborative for High Performance Schools (CHPS) Verified recognition. CHPS is a national organization committed to building a new generation of healthy, efficient, environmentally responsive schools for all school children. The adaptation of CHPS Criteria for Hawaii schools is known as Hawaii-CHPS (HI-CHPS). The HI-CHPS Criteria, 2012 Edition, will be applied to this project and EKMS will strive for CHPS Verified recognition. As of January 2016 there are no CHPS Verified whole-campuses in Hawaii. EKMS has the opportunity be the first of such campus in Hawaii.

2.2 NEED FOR THE PROJECT

Since the adoption of the 1977 General Plan for the City and County of Honolulu (City), the Kapolei-Ewa region has been designated as the Secondary Urban Center for Oahu. The City's policy has been to "keep the country country" by fully developing Oahu's urban corridor and by building Oahu's "Second City" in Ewa. Over the past 40 years, both the State and City have committed to providing the necessary public infrastructure to support Oahu's Second City.

According to the 2011 State DOE *Analysis of the Leeward Oahu School Impact District* study, approximately 30,000 new residential units are expected to be built within the Kapolei and Campbell Complex regions over the next 25 years. Approximately 10,750 students are expected to be added to the Kapolei Complex and 1,100 students to the Campbell Complex once the future residential units are completed (DOE, 2011). Consequently, there are a number of development projects within the Campbell-Kapolei Complex areas that have committed school sites to the DOE to meet youth educational needs. EKMS is one of three (3) new middle school sites reserved for the DOE within the Kapolei Complex. The students attending this new school will come from the rapidly growing Campbell-Kapolei Complex areas and possibly a portion of the students attending Kapolei Middle School which is currently exceeding planned enrollment capacity.

2.3 DESCRIPTION OF THE PROJECT

The proposed action involves the construction of a new middle school which consists of six (6) buildings organized around a central commons with provisions for a future classroom building (House No. 4). In addition to the school buildings and central commons areas, the campus includes Physical Education (PE) areas consisting of a covered play court, an open play court, and two play fields sized to accommodate soccer and softball.

The six main buildings are listed below and identified in Figure 7:

1. Administration/Student Center/Library/Art
2. 6th Grade House/Electives (House No.1)
3. 7th Grade House/Electives (House No.2)
4. 8th Grade House/Electives (House No.3)
5. Cafeteria/Music/Choral
6. PE Locker/Showers/Classrooms

The school will be designed for an enrollment of 1,050 students with plans for expansion to accommodate an additional 350 students in the future. The site design includes provisions for the future construction of one additional House (House No.4) and five portable classrooms that will allow enrollment to increase to 1,400 students. In total, the school is expected to accommodate 1,520 students and staff.

Figure 7: MAIN SCHOOL BUILDINGS

Source: Ferraro Choi & Associates Ltd. (2016)

2.3.1 CAMPUS SITE DESIGN AND FACILITIES

The EKMS campus layout is defined by a centralized educational complex organized around a multipurpose central commons opening to an athletic complex with play fields on the upwind (northeast) portion of the site (see Figures 8, and 9). The campus would include approximately 213,000 square feet of total building area. With the future addition of House No. 4 and five (5) portable classrooms, an additional 42,000 square feet would be added bringing the full build-out total building area to 255,000 square feet.

Much of the school will be designed for seasonal "mixed mode" ventilation to achieve high performance and thermal comfort in either the natural ventilation mode (November through April) or the air conditioning mode (May through October), giving occupants a choice for modulating their learning environment to suit their needs. All buildings that are scheduled for natural ventilation or mixed mode ventilation, including the classroom Houses, Cafeteria, and PE complex, are oriented for effective cross ventilation from prevailing northeasterly trade winds. Design of the ventilation system will conform to the requirements of HAR Chapter 11-39, Air Conditioning and Ventilation.

Administration/Student Services/Library/Media Center/Art Building

The Administration/Student Center/Library/Art Building is a one-story, fully air conditioned building, which places the administration function at the main entrance to the school and the Library/Media Center at the far end on axis with the main entry and forming a terminus for the multi-purpose Commons. The Student Center and Art classrooms are centrally located in the building and are accessed from the Commons.

Commons

The Commons serves as a primary organizing element for the educational complex and will serve the multiple purposes of a central play and event area, morning gatherings, performance venue, and outdoor gathering space.

Dining/Multi-Purpose/Music Building

The Dining/Multi-Purpose/Music Building is a one-story building comprised of a double height, mixed mode ventilated (mechanical and naturally ventilated) dining multi-purpose room with fixed stage, a full service kitchen, a fully air conditioned custodial center, and a fully air conditioned wing for the music and choral programs. The Dining/Multi-Purpose room opens to the Commons and features a broad, shaded dining lanai which also provides sheltered space for performances facing the commons.

The food service facility will have a conventional kitchen capable of storing and preparing food for students and staff. The kitchen shall include dry storage, cold storage, preparation areas, cooking lines, four serving lines, pot washing, a tray return area, a can wash, staff toilets, staff lockers, an office and a compressor room. There will also be a loading area and a space for a dumpster. The Cafeteria and attached food preparation area, is designed for Category III enhanced hurricane protection in accordance with the Hawaii State Building Code. The design considers a higher design wind speed for structural design, and windborne debris impacts resistance glazing and doors.

6th, 7th, and 8th Grade Houses (Classroom Buildings)

The three (3) classroom buildings are referred to as "Houses." Each House is a single, three-story building; Houses are identical in physical design.

PE Building and Play Courts

The PE Building forms the hub of the athletic complex and is a one-story building comprised of a naturally ventilated windward locker/shower wing and a leeward classroom wing. The locker/shower wing is oriented to take advantage of cross ventilation from prevailing breezes. Radial pedestrian walkways provide a convenient link between the PE facilities and the educational complex. The separation between the PE facilities and the educational buildings helps to mitigate disruption to classes from sports-related noise.

The covered Play Court is striped and equipped for full court basketball and has a storage building for equipment. The uncovered Play Court is striped for multi-purpose use including three half-court basketball courts, tennis, and volleyball. Two play fields are located on the northeast side of the PE Building. The larger play field is sized to accommodate soccer. The smaller play field is sized to accommodate informal softball and is provided with a permanent backstop. The school's new playfields and outdoor play courts will partially serve as a new community recreational park since these features will be open to the public during non-school hours.

Security Fence and Gates

The design of the school includes provisions for a safe and secure campus. Vehicular and pedestrian access points will be gated and 6-foot vinyl coated chain-link fence shall enclose the perimeter of the property for security. A second fencing system further secures the inner campus area.

Demolition and Site Preparation

The site is currently undeveloped. Demolition will consist primarily of clearing and grubbing of the entire site. Existing sidewalks and driveways will be demolished and adjusted based on revised entrance and exits to the site. Temporary erosion control measures shall be provided in accordance with National Pollutant Discharge Elimination System (NPDES) requirements, HAR Chapter 11-54 and 11-55, City requirements, and to meet HI-CHPS Credit SS.P2.

The grading of the project site will be in conformance with the City's Grading Ordinance and the recommendations of the geotechnical engineer. Permanent cut or fill slopes shall not exceed 2H: 1V. Grading setback from the property line shall be 4 feet based on an overall cut or fill height of 4 to 8 feet. On-site fill will be used wherever possible. Erosion and dust control will adhere to the Erosion Control Plan approved by the City. The grading will follow Best Management Practices (BMPs) as prescribed in the NPDES Permit.

Landscaping

The proposed campus landscaping is based on the Ewa Plain's unique natural and cultural history, regional climatic and on-site microclimatic conditions for indoor and outdoor

thermal comfort, and long term maintenance and sustainability. The landscape is the 'green infrastructure' of the campus, a critical component of the overall design providing numerous benefits and ecosystem services. A photo palette of the proposed campus plant and tree species is provided in Appendix A-2.

The campus site plan (See Figure 8: Site Plan) is organized to create exterior open spaces that complement and integrate the campus buildings. Pedestrian walkways connecting buildings and open spaces feature special paving accents and landscape features such as stone lined and planted rain gardens. Flexible Outdoor Learning spaces will be a major feature of EKMS and a model for 21st Century Education in Hawaii. Besides the Campus Commons' ability to serve as an outdoor learning space, outdoor learning gardens are incorporated into the site plan to extend the indoor classrooms into the landscape. Besides serving as outdoor learning spaces, these areas also function as informal social gathering places. These spaces are bordered by planted bioswales which reveal the movement of stormwater during heavier rain events and create a garden like learning environment adjacent to classrooms. Site furnishings include built-in seatwalls, skateboard racks and bike racks.

2.3.2 ROADS, CIRCULATION AND PARKING

Access and Egress

There are three (3) access driveways to EKMS which all utilize existing curb cuts. The driveway off of Keahumoa Parkway will be for bus drop-offs and access to the faculty parking lot. The northern driveway off of Maunakapu Street is proposed for parents, visitors, and student drop-off and pick-up. Onsite queuing for approximately 50 cars is provided and mitigates the potential for street traffic related to morning drop-off and afternoon pick-up. The southern driveway off of Maunakapu Street is for secondary access to the faculty parking lot and serves as an exit for buses. Fire access is provided via campus roadways and an on-site fire lane with access off Maunakapu Street. The primary loading and receiving and trash zone is located behind the kitchen, with convenient proximity to the Music Building.

Parking

There are two main parking lots on the campus which can be interconnected at times desired by the school. The main parking lot on the north is primarily for parents and visitors. The second parking lot on the west is primarily for staff. Additional space is provided for parking four (4) golf carts used by custodial staff. The teacher parking lot is located on the west side of the site and accessed from the bus drop-off route. A total of 231 standard parking and 4 loading stalls are provided.

Site Circulation

Parking, circulation, access, and egress for parents and visitors is separated from school bus service, loading, and receiving. The parent drop-off loop has entry and exit off Maunakapu Street. A curb-side parent drop-off area is provided along the access drive adjacent to the Administration Building (parallel to Maunakapu Street). This access drive

is wide enough to allow cars to bypass parked vehicles along the drop-off areas. Speed tables will be provided at marked crossings to control speed and increase visibility of pedestrians. Bus drop-off will occur via a separate driveway with entrance off Keahumoa Parkway and exits to Maunakapu Street.

2.3.3 INFRASTRUCTURE

The school will require minor site demolition, clearing and grubbing, grading, and new pavements for parking lots, driveways, and walkways. Onsite utilities will consist of drainage infrastructure, detention basins, sanitary sewer, domestic and fire water systems, electric and telecommunications, and gas service.

Irrigation

An irrigation system will be installed, however by applying a bioregional landscape design approach, the water demand for landscape irrigation will be significantly reduced in comparison to typical tropical landscapes in the built environment. Besides using appropriate native and naturalized dry land plant species, another means of reducing irrigation water use is through applying drip and low flow irrigation technology and equipment in lieu of the traditional spray equipment where appropriate, such as in confined spaces adjacent to and between buildings.

Smart irrigation controllers, which monitor on-site rainfall, wind, atmospheric temperature and even soil moisture, will also be installed. Based on the environmental data received, the controller calculates the evapotranspiration rate, water loss from plants through transpiration and evaporation and adjusts the amount of irrigation water to what the plant needs. Irrigation water consumption can be reduced by as much as 50% by employing these technologies. Both drip and smart irrigation technology will be used at EKMS.

A City and County of Honolulu owned R-1 non-potable irrigation water distribution line is located in Keahumoa Parkway, along the West and South property boundary of the project site. Although this R-1 recycled non-potable irrigation water distribution line is not yet active, DOE anticipates utilizing this non-potable water resource once it becomes available so as not to rely on BWS potable drinking water supply. In preparation for tying into the County R-1 irrigation water system, the design will comply with the State Department of Health Wastewater Branch guidelines, which govern the use of recycled waste water. This will minimize future additional costs for retrofitting the irrigation system for DOH non-potable recycled water use. Also, the costs for non-potable water irrigation pipes and equipment are minimal in comparison to potable water irrigation equipment.

The proposed uses of appropriate plants, rain gardens, bioswales, non-potable water (in the future when available), smart controllers and drip irrigation are all consistent with the Land Scape Industry Council of Hawaii's, Landscape Irrigation Conservation BMPs.

Bioswale/Storm Water Retention

The site drainage design approach will generally maintain the existing undeveloped drainage pattern. The development of paved parking, vehicular and pedestrian circulation, and buildings for EKMS will increase impervious surfaces and thus increase the storm

water runoff of the site. The increased storm water runoff will be conveyed, collected, and temporarily stored in 'Green Infrastructure' devices called bioswales, rain gardens and retention basins located along the low portion of the campus along the campus perimeter Southwest, South, and Southeast of the Grade Level Houses E, F and G. In addition to these areas, there are retention zones proposed along the east side of Library and west side of Building H. Bioswales, rain gardens and retention basins are planted, linear and broad, or localized depressions in the ground that mimic natural hydrologic functions by filtering and cleansing storm water pollutants using plants and percolation through the soil thus replenishing the ground water table on a developed site. This "green infrastructure" system will assist with the conveyance, collection and temporary retention of storm water runoff. The retention zone includes bioswales, rain gardens and retention basins which reveal the movement of stormwater during heavier rain events and create a garden like learning environment adjacent to classrooms.

Runoff from the south portions of grade level house roofs will be conveyed from building downspouts in rock lined pipe receptacles to stone lined channels leading to the main bioswale channel, also stone lined. At the north ends of each House, there is a more formal triangular shaped rain garden that is also stone lined and interspersed with planting.

Best management practices (BMP) for stormwater management are being implemented in accordance with HI-CHPS verification requirements. The project's storm drainage system is being designed to comply with the City and County of Honolulu Rules Relating to Storm Drainage Standards and Standard Details for Public Works Construction. Further, the proposed landscaping plan incorporate planted bioswales and storm water retention zones along the southwest, south and southeast campus perimeter.

2.4 ALTERNATIVES CONSIDERED

Alternatives considered to the proposed construction of the new middle school facility consisted of: 1) not implementing the project (No Action Alternative), and 2) alternative site configurations and building design.

No Action Alternative

No Action Alternative (i.e., the future baseline against which impacts of the project can be measured) would leave the project site undeveloped. 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 Kapolei and Ewa communities. Consequently, this alternative was eliminated from further consideration because it would not properly address the need for a new middle school in Kapolei. The students who are proposed to attend EKMS would be required to attend other middle schools within the Kapolei and Campbell complex areas. Most of these are at or over capacity. Furthermore, funds for this project are being appropriated, and taking no action to construct the new middle school would result in those appropriations lapsing.

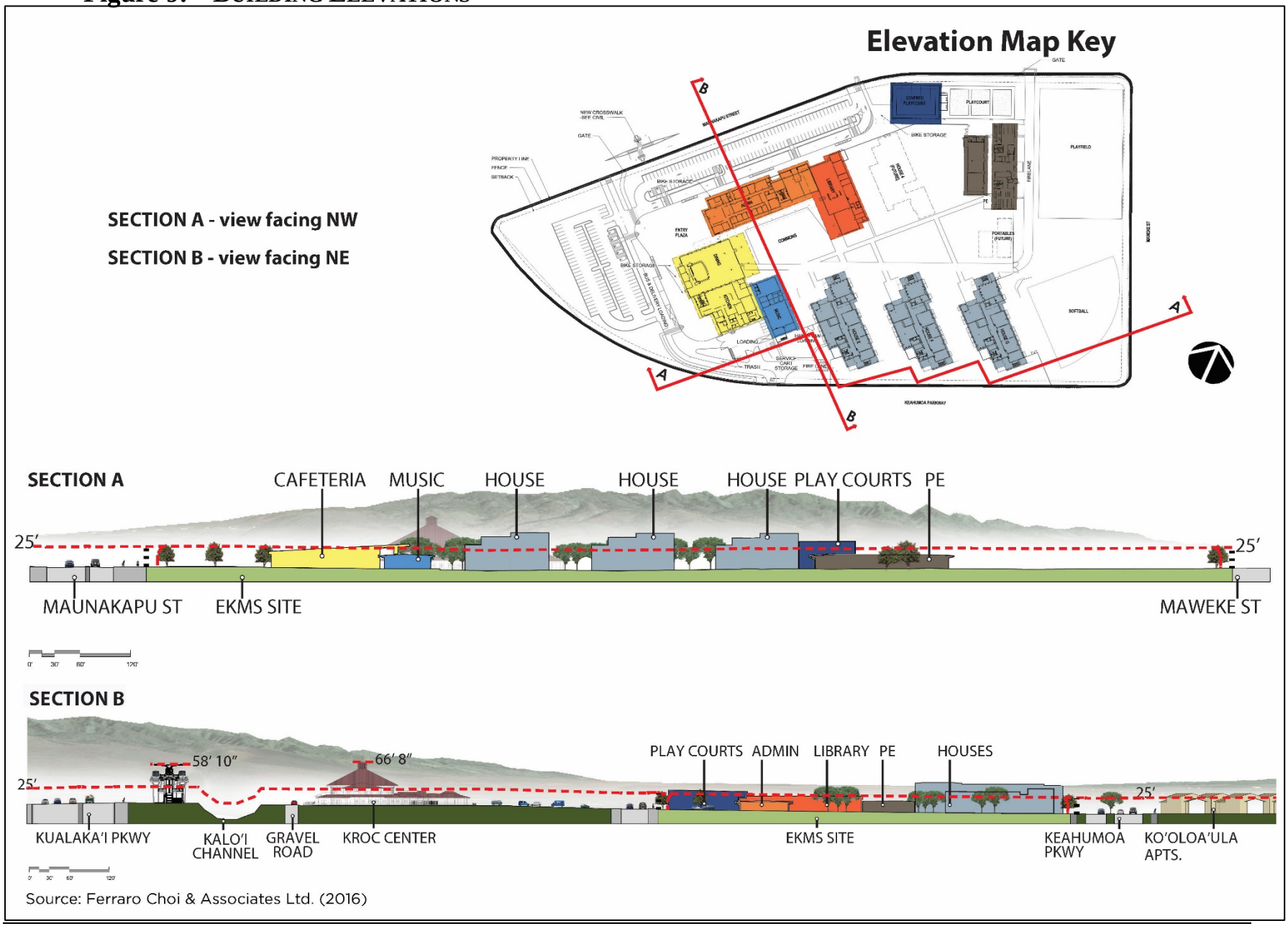
Alternative Site Configurations and Building Designs

The school building configuration was selected after considering alternative site layouts, building heights, and footprints for the new middle school buildings. Additional design considerations involved optimizing natural ventilation, maximizing open space and necessary programmatic adjacencies. Most of the alternative configurations did not involve a significant difference in the relationship of the school to its surroundings or to the functioning of the school. The final site layout chosen will be one that best serves the project needs and objectives. Careful consideration was made of alternative site layouts and building designs during the design charrette.

Figure 8: CONCEPTUAL SITE PLAN

Source: Ferraro Choi & Associates Ltd. (2016)

Figure 9: BUILDING ELEVATIONS



Source: Ferraro Choi & Associates Ltd. (2016)

2.5 ESTIMATED PROJECT COSTS

The project will be constructed with capital improvement funds from the State. Due to the nature of the legislative funding process, it is anticipated that the project will need to be constructed in phases. The current estimated construction cost is $97 million in 2016 dollars.

2.6 REQUIRED PERMITS AND APPROVALS

The following is a list of permits and approvals that may be required for the project:

Federal

- Federal Aviation Administration (FAA) Approvals, as applicable, and may include: Form 7460-1 for photovoltaic installation

State of Hawaii

- Environmental Assessment (EA), per Chapter 343, Hawaii Revised Statutes
- National Pollutant Discharge Elimination System (NPDES) Permit
- Disability and Communications Access Board (DCAB) Approval
- Individual Wastewater System Approval from the Department of Health (DOH), Wastewater Branch
- Permit to Perform Work in a Public Right of Way (ROW) from the Department of Transportation (HDOT)
- Community Noise Permit from the DOH, Indoor and Radiological Health Branch
- Water allocation letter from the Department of Hawaiian Home Lands for daily storage

City and County of Honolulu

- Street Usage Permit from the City Department of Transportation Services (DTS)
- Grading Permit
- Site work Permit
- Building Permits (One for each building)
- Zoning Waivers: Building Area on Lot Exceeding 10%, Height Limit Exceeding 25 Feet

3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS & MITIGATION MEASURES

This section describes the surrounding environment in the vicinity of the subject property, the probable environmental impacts associated its development for a school facility, and provides any mitigating measures, if necessary.

3.1 CLIMATE

Oahu's temperatures have small seasonal variation and average monthly temperatures range from 73 to 81 degrees Fahrenheit throughout the year. Temperatures in the Ewa plain area are expected to be similar to island-wide averages. The average annual temperatures recorded between 1949 and 2006 at the National Oceanic and Atmospheric Administration (NOAA) Ewa Plantation (Station No. 741) averaged about 75 degrees (WRCC, 2011).

While most precipitation in Hawaii occurs during the winter months, the Ewa area has a semiarid climate. Annual rainfall in the Ewa area is typically non-substantial with an average about 21.5 inches per year (WRCC, 2011).

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.

Project Impacts

The project is not anticipated to have any effect on the region's climate. The EKMS landscape design approach is to replicate the naturalized dry shrub and grass lands common to the Ewa Plain.

3.2 FLORA AND FAUNA

A Biological Resource Assessment was prepared for the project in November 2014 by SWCA Environmental Consultants (SWCA). A copy of this document is provided in Appendix D (SWCA, 2014). SWCA conducted a review of available scientific and technical literature regarding natural resources in and near the project area. Additionally, SWCA conducted pedestrian botanical and fauna surveys to document all plant species and vegetative communities. The entire project area was thoroughly scanned for the endangered Kooloaula species. All birds, mammals, reptiles, amphibians, and insect species seen or heard were recorded. Surveys for Hawaiian hoary bats were not conducted, but any areas of suitable habitat for roosting and foraging were noted during the survey.

A fenced 18-acre contingency reserve area for Kooloaula (*Abutilon menziesii*) is located to the immediate southwest of the project site on the other side of Keahumoa Parkway. The contingency reserve area was established as part of the *Habitat Conservation Plan for Abutilon menziesii at Kapolei.* No "take" or development can occur within the reserve area (HDOT, 2004).

Project Impacts and Mitigation

Hawaiian hoary bat

There are very few tree species that occur in the project area and none appear to be suitable roosting trees, however shower trees (Cassia spp.) have been documented as roost trees and it is possible that the rainbow shower trees planted between the sidewalk and Maunakapu Street could potentially be used as roost trees by Hawaiian hoary bats. Per the U.S. Fish and Wildlife Service (FWS), impacts to this species can be minimized if trees or woody plants over 15 feet tall are not disturbed, removed or trimmed during bat birthing and pup rearing season (June 1 through September 15). These trees are located outside of the new school property and will remain untouched since clearing activities would be limited to the project site. Currently, there are no existing trees greater than 15 feet tall within the project site, however the potential for impacts do exist and inspections for woody plants over 15 feet tall would be necessary prior to the start of ground clearance and grubbing activities. If present, the removal of those plants should be appropriately timed to avoid disturbance to any Hawaiian hoary bats in the area. It should also be noted that landscaping for the school will include planting of new shower trees onsite which may provide additional potential roosting trees in the future.

Hawaiian waterbirds

Potential impacts to Hawaiian waterbirds exist due to the observance of bird species during the avifauna survey and intermittent presence of standing water within the project site. The Hawaiian stilt, Hawaiian coot, Hawaiian gallinule, and Hawaiian duck, collectively referred to as Hawaiian waterbirds, are known to occur at various sites within the vicinity of the project area such as Pearl Harbor and Pouhala Marsh. Hawaiian waterbirds, in particular, the Hawaiian stilt, is known to nest in sub-optimal locations like ponding water. The avifauna survey conducted for this project observed two Hawaiian stilts in flight along the western boundary of the project area. If standing water remains or additional standing water areas are created during project construction, Hawaiian stilts may be attracted to the site. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation, reduced reproductive success due to disturbance within the vicinity of a nest, injury or death from being hit by a vehicle and thus the project may create an attractive nuisance. Therefore, the following impact minimization measures are suggested:

1) Not more than three (3) days prior to the start of construction activities, inspect the subject activity areas for any standing waterbodies or nesting areas of Hawaiian waterbirds.

2) If a nest or active brood is found, the contractor shall contact the FWS Pacific Islands Fish and Wildlife Office within 48 hours, establish a 100-foot buffer around the nest or brood and stop all work within the buffer until the chicks/ducklings have fledged.

There are no permanent standing water features proposed as part of the design therefore it is not anticipated that prolonged periods of standing water would occur throughout the construction period, aside from occurrences of prolonged severe rain and or storm events.

Photovoltaic Solar Systems

Since the new school's electrical distribution system is being designed to facilitate installation of a future photovoltaic solar system, the FWS has indicated that some photovoltaic systems on the United States mainland are resulting in impacts to migratory waterfowl and shorebirds. Recent impacts are being observed at solar facilities in California, where birds have been inadvertently attracted to these sites due to solar panels' resemblance to water and their proximity to important migratory flyways. This attraction has caused some birds to collide with solar arrays resulting in injuries and mortalities. While attraction to solar arrays has not yet been documented in Hawaii it is recommend that personnel at the project site be educated about the potential for birds to be attracted and inadvertently harmed. However, since it not known at this time when a photovoltaic system will be installed at the school this will be addressed at the appropriate time. The FWS has indicated that they are available to the State to provide additional information about the photovoltaic system's impacts to native Hawaiian species as it becomes available, and may assist the State in avoiding and minimizing impacts.

Hawaiian seabirds

Outdoor lighting, such as street lights and night-time work, can adversely impact listed and migratory seabird species found in the vicinity of the proposed school. Any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. Therefore, the following minimization measures will be implemented:

1) Although nighttime construction work is not anticipated at this time, it would be avoided during the seabird fledging period of September 15 through December 15. Further, nighttime construction lighting would be down-shielded and only used when necessary.

2) The school's programmable exterior lighting system will be split up into "nightlight" and "curfew" circuits. Nightlight circuits will be left on from dusk-to-dawn while curfew circuits will be turned on during dusk and turned off at a scheduled time in the evening. Further, exterior light fixtures will be directed to avoid light pollution and trespass.

Hawaiian owl

The Hawaiian owl or Pueo (*Asio flammeus sandwichensis*) are endemic to the Hawaiian Islands and are an endangered species on Oahu. According to the State DLNR, Pueo occupy a variety of habitats, including wet and dry forests, but are most common in open

habitats such as grasslands, shrublands, and montane parklands, including urban areas and those actively managed for conservation. However, because of a lack of historical population data and the species' current, broad habitat use, key habitat variables are difficult to determine. Pueo are likely susceptible to the same factors that threaten other native Hawaiian birds, including: loss and degradation of habitat, predation by introduced mammals, and disease.

Use of the subject property for a new school is not expected to have any adverse impact on flora or faunal resources. Because of previous disturbance to the property, the flora and fauna communities on the property are comprised of non-native birds and plants. Migratory birds such as the Pacific golden plover and ruddy turnstone may temporarily use the project area for foraging or resting; however, because these species do not nest in the project area, they are unlikely to be harmed by construction activities.

The City and County LUO requires a shrub screen and canopy trees along the street frontage and in the parking lots to provide a visual screen and shade. Appropriate native and adaptive dry land shrub species will be planted in informal clusters that will not require trimming, hedging, or pruning and will grow to their natural form. Canopy trees will consist of three or more appropriate native and or naturalized species. Species diversity is desired to create a resilient and healthy urban forest resistant to pests and diseases. Branch pruning and structural shaping will be required infrequently, once or twice a year, by qualified arborists and tree workers to maintain a safe and healthy tree canopy to maximize the numerous environmental health and ecosystem services and benefits that trees provide.

The play fields to the east of the campus, the central spine open space and the campus commons open space will be covered with Turf Grass. Turf grass is one of the few plant species capable of withstanding active play and heavy foot traffic. It is also among the most water consumptive, high maintenance and nutrient needy plant species used in the built environment. As such, turf grass is provided in areas only where it is absolutely needed; on play fields and on outdoor gathering spaces where a soft but stable surface is desired.

No state or federal listed threatened, endangered, or candidate plant species were observed in the project area during the survey. The project area does not contain critical habitat for threatened or endangered species.

BMPs will be implemented to minimize risk of siltation and pollution through stormwater runoff during construction. If necessary, additional BMPs will be implemented during construction to minimize impacts to migratory bird species. The majority of site lighting including parking lot lighting and most building mounted exterior lighting is full-cutoff. The central campus is lit by shorter, low wattage pedestrian scale pole mounted luminaires that are designated cut-off. In addition, a handful of large exterior canopies/overhangs are lit indirectly via uplight. These indirect uplights are aimed to minimize light spill beyond the canopies.

The exterior lighting is controlled such that roughly half of the lighting will be off during times when the campus is not occupied via time schedule. The exact schedule will be at the school's discretion, but will likely be no later than 10pm each night.

The campus contains no sportsfields or open playcourts that will be lit by electric lighting. In addition, the campus has been designed to provide, but not exceed, light levels recommended by the Illuminating Engineering Society of North America (IESNA).

3.3 GEOGRAPHY, TOPOGRAPHY, AND SOILS

3.3.1 TOPOGRAPHY AND SOILS

The campus site is generally flat and covered with light to moderate vegetation. There is a gentle slope from Northwest to Southeast with a grade change of about 7 feet between the high point to the low point of the site.

The project area's soils are classified as Honouliuli clay with slopes between 0 to 2 percent (HxA) and slopes between 2 to 6 percent (HxB). These well-drained soils typically found on Oahu's coastal plains are described as having slow runoff and no more than slight erosion hazard (NRCS, 1972) (see Figure 10).

3.3.2 HAZARDOUS SITE ASSESSMENT

A Final Site Assessment Report was completed for the East Kapolei Brownfields Agricultural Property, which included the proposed EKMS site, in December 2007 by Tetra Tech EM Inc. for the State of Hawaii, Department of Health (DOH), Hazard Evaluation and Emergency Response Office (HEER). This assessment covered approximately 318 acres of land. The site assessment consisted of field observations, collecting and analyzing surface soil samples for the purpose of determining whether the former agricultural property was suitable for development of residential uses. A copy of the Final Site Assessment Report and DOH acceptance letter is included in Appendix F of this document.

According to the report, potential problems at the subject property included possible surface soil contamination from historical application of herbicides and pesticides and possible unidentified areas of agricultural chemical mixing and loading. These potential problems were the primary reasons for conducting the site assessment and soil sampling activities.

Tetra Tech EM Inc. did not encounter any previously unidentified areas of potential agricultural mixing and loading during field observation or sampling activities. The field investigation consisted of subdividing the entire site into 59 decision units. A total of 59 surface soil multi-increment samples, 6 duplicate surface soil multi-increment samples, and 4 equipment rinsate water samples were analyzed in a laboratory. Sample were screened for Total Metals, Organophosphorus Pesticides, Organochlorine Pesticides, Chlorinated Herbicides and Total Dioxin/Furan. The sample screening results indicated that there were no elevated concentrations of Total Metals, Organophosphorus Pesticides, Organochlorine Pesticides, and Chlorinated Herbicides detected in the soil. Although, dioxins/furans were detected, the levels were below DOH Environmental Action Level of 390ng/kg.

Project Impacts and Mitigation

Recommendations in the Final Site Assessment Report concluded that there were no elevated concentrations of contaminants of potential concern in the soil that suggest the conditions were not suitable for residential use or that any additional sampling or evaluation is necessary. By letter dated January 8, 2008, DOH provided concurrence with the conclusions and recommendation by Tetra Tech EM Inc. and agreed to a "No Further Action" determination for the site for residential use.

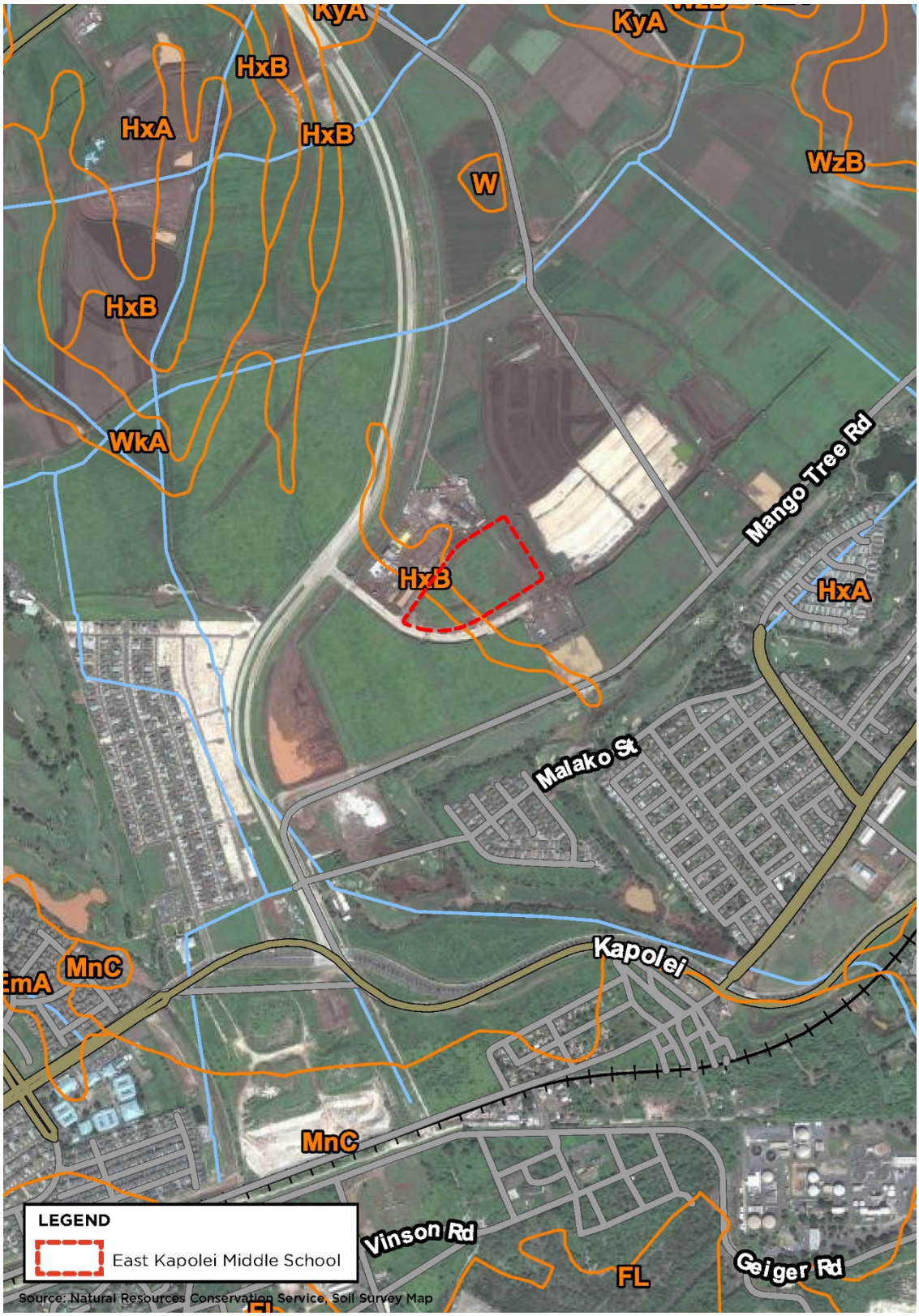
The site is currently undeveloped. Demolition will consist primarily of clearing and grubbing of the entire site. Existing sidewalks and driveways will be demolished and adjusted based on revised entrance and exits to the site. Temporary erosion control measures shall be provided in accordance with NPDES requirements, HAR Chapter 11-54 and 11-55, City requirements and to meet HI-CHPS Credit SS.P2.

The site drainage design approach will generally maintain the existing undeveloped drainage pattern. The development of paved parking, vehicular and pedestrian circulation, and buildings for EKMS will increase impervious surfaces and thus increase the storm water runoff of the site. The increased storm water runoff will be conveyed, collected, and temporarily stored in 'Green Infrastructure' devices called bioswales, rain gardens, and retention basins located along the low portion of the campus. Bioswales, rain gardens, and retention basins are planted, linear and broad, or localized depressions in the ground that mimic natural hydrologic functions by filtering and cleansing storm water pollutants using plants and percolation through the soil thus replenishing the ground water table on a developed site.

The perimeter bioswale will share some similar ground covers, shrubs, and canopy trees with the Dry Shrub/Grass Land Zone for landscape continuity and to comply with the City's LUO street frontage landscape requirements. However, additional species will be included here that are capable of tolerating both dry conditions and short periods of storm water inundation. The landscape design intent for the bioswale along the campus perimeter is to replicate an intermittent dry stream bed environment of the Ewa Plain. Similar to the Dry Shrub/Grass Land Zone, irrigation water and maintenance for the bioswale will be minimal.

The Storm Water Retention Basins adjacent to the South and Southeast ends of the Houses provide learning opportunities due to their proximity to the classrooms. Retention basin plants may include culturally significant riparian plants such as those that provide food, medicinal, utilitarian, and ceremonial purposes while also function as green infrastructure. The landscape for these areas will also feature not only drought tolerant planting but xeriscape ground plane treatment. Gravel mulch and larger stone groundcover underlaid with landscape weed fabric covers much of the ground plane for a water efficient and low maintenance landscape. Runoff from roof is received from the building downspout pipe in rock-lined pipe receptacles then conveyed in stone-lined channels to the main bioswale channel, which is also stone-lined. At the north ends of each House, there is a more formal triangular-shaped rain garden that is also stone-lined and interspersed with planting. Storm Water Retention Basins will receive an enhanced level of maintenance and irrigation due to their proximity to classrooms.

Figure 10: NATURAL RESOURCES CONSERVATION SERVICE (NRCS) SOILS SURVEY MAP



No significant impact to topographic landforms or soils at the subject property is anticipated. The site of the proposed project was utilized as a staging area during the construction of the Joseph P. Leong Highway in the 1990s. As a result, the topsoil was subject to grading and then buried under gravel and other alluvium, which makes the project site less suitable for agricultural use than its current Prime rating indicates. Development of the subject property will require grading for lot preparation and is likely to reduce the overall elevation of the parcel and reduce the difference of elevation at the lower and higher sections of the parcel. All earthwork will comply with the City's grading regulations. A construction grading permit will be required.

3.4 HYDROLOGY

According to the *Aquifer Identification and Classification for O'ahu*, the subject property overlies the Waipahu aquifer system of the Pearl Harbor aquifer sector (Mink and Lau, 1990). Two aquifer types exist within this portion of the Waipahu aquifer system. The first contains groundwater that is basal and confined and found in sedimentary-type geology. Water from this aquifer is ecologically important, has a low salinity of 250 to 1,000 milligrams per liter (mg/l) of chloride, is irreplaceable, and has a high vulnerability to contamination. The second aquifer type contains groundwater that is basal and unconfined and found in flank-type geology. Water from this aquifer is ecologically important, has a low salinity of 250 to 1,000 mg/l of chloride, is irreplaceable, and has a moderate vulnerability to contamination.

Kaloi Gulch is an intermittent drainageway fed by streams in the upper reaches of the Kaloi watershed. Kaloi Gulch is fed from headwaters originating in the Waianae Mountains. During sugar cultivation, Kaloi Gulch fed a series of agricultural ditches and currently provides regional drainage of stormflows during periods of heavy rainfall.

In 2015, SWCA conducted a delineation of potential wetlands and other waters of the U.S. regulated under the Clean Water Act (CWA) for the project. The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory data do not identify any wetland features in the project area; however, the U.S. Geological Survey topographic map indicated the potential presence of a manmade drainage feature running through the project area which had the potential to be a wetland. The feature in question did not meet the three-criterion test for wetlands pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE, 1987), as well as the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region* (USACE, 2012). The ditch and excavated depression on-site was created in uplands and lacked a direct connection to downslope wetlands or waters, therefore no wetlands or waters of the U.S. were identified on the property.

Project Impacts and Mitigation

No long-term impacts to groundwater aquifers or surface waters are expected to result from acquisition of the property and its use for a school.

There are no wetlands within the project site. Developments in the surrounding area have altered the historic flow of stormwater, which is likely now diverted along the large,

grassed channel running parallel to North-South Road, approximately 650 feet (200 meters) north and west of the project area. Both the historical and current conditions at the project site appear insufficient for the development of wetlands.

BMPs will be implemented to minimize risk of siltation and pollution through construction related stormwater runoff.

3.5 FLOOD AND TSUNAMI HAZARD

According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency, the subject property is located in Zone "X", which is an area that has been determined to be outside the 0.2% annual chance floodplain and outside of the 500 year floodplain (see Figure 11). According to the State Civil Defense Tsunami Evacuation Zone maps, the subject property is not within a tsunami evacuation zone.

Project Impacts and Mitigation

The proposed project would affect existing sheet flow patterns and generate increased runoff through the creation of new impervious surfaces. The project's storm drainage system will be designed to comply with the latest City *Rules Relating to Storm Drainage Standards* and *Standard Details for Public Works Construction.* The on-site drainage system will be designed for a 10-year recurrence interval, and will consist of swales, detention basins, pipes, drain inlets, and manholes. The on-site system overflows will connect to the existing drainage system via 30-inch drainage pipes located along Keahumoa Parkway.

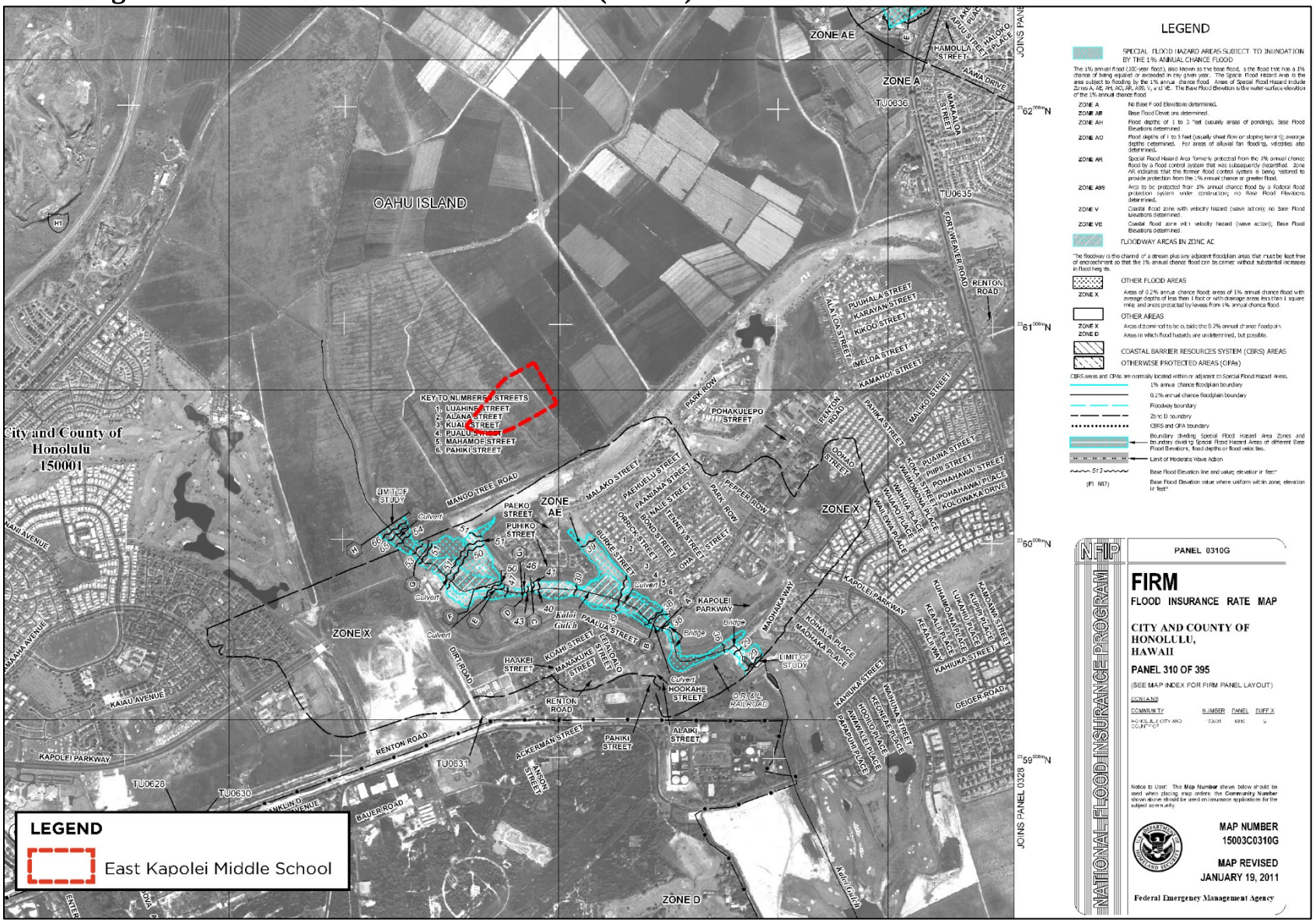
3.6 NOISE

A significant source of ambient noise is generated from landings and take-offs at Kalaeloa Airport, located within 2 miles southwest of EKMS. HDOT, Airports Division, has determined that the school site is located within the Kalaeloa Airport's 55dB and 60 dBA (A-weighted sound levels (decibels)) daytime noise level exposure contours. Aircraft noise at the school site (Day-Night Average Sound Level of 55 to 60 dBA, will be at a level which the Airports Division noise compatibility guidelines indicate is compatible with the proposed school use. EKMS is outside the 55dBA daytime noise contours of the Honolulu International Airport, located about 7 miles east of the school.

An analysis of ambient noises was conducted at the project site. The anticipated daytime ambient noise level at the school is anticipated to be between 42 to 57 dBA. Ambient noises are caused predominantly from the surrounding vehicular traffic, wind, and occasional aircraft.

The Honolulu Rail Transit Project substructure and East Kapolei Station is located approximately 1,000 feet from nearest proposed school building; however, no noise impacts are anticipated at the school since ambient noise levels are expected to be 42 dBA at the East Kapolei Station based on a 2006 U.H. West Oahu Campus Noise Report.

Figure 11: FLOOD INSURANCE RATE MAP (FIRM)



State of Hawaii, Community Noise Control

The maximum permissible noise levels are enforced by the DOH for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Table 1. In determining the maximum permissible sound level, the background noise level is taken into account by the DOH.

Table 1: COMMUNITY NOISE CONTROL REGULATED NOISE LEVELS

Zoning District		Day Hours (7 AM – 10 PM)	Night Hours (10 PM – 7 AM)
Class A	Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (exterior)	45 dBA (exterior)
Class B	Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (exterior)	50 dBA (exterior)
Class C	Agriculture, Country, Industrial	70 dBA (exterior)	70 dBA (exterior)

Project Impacts and Mitigation

Noise generated by this project would generally involve short-term construction related noise generated by equipment and 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. State DOE noise standards require that all school spaces meet a background ambient noise level not to exceed 50 dBA. Libraries and main reading rooms must meet a background ambient noise level not to exceed 45 dBA. The Federal Aviation Administration (FAA) describes residences outside the day and night sound levels 65 dBA noise contour as compatible without restrictions. HDOT, Airports Division, maximum noise levels are 5 dB lower than the FAA. Also, the Airports Division specifically calls for maximum allowable day and night sound levels for schools at 60 dBA.

The noise sensitive properties that are predicted to experience the highest noise levels during construction activities are the existing residences nearby. As a mitigation 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. Noise barriers will be placed to fence in the noise within the project site. The noise barriers will be constructed in accordance with State Department of Accounting and General Services and DOE specifications.

Adverse impacts from construction noise are not expected to be 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 would be selected to ensure that the equipment will efficiently provide the power needed with the most moderate noise. Enclosures will be properly located and designed to moderate noise emissions from mechanical sources. In addition, 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.

According to the DOH Community Noise Control rules, in cases where construction noise exceeds or is expected to exceed the State's "maximum permissible" property line noise levels, a permit must be obtained from the State DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels. In order for the State DOH to issue a construction noise permit, the Contractor must submit a noise permit application to the DOH, which describes the construction activities for the project. Prior to issuing the noise permit, the State DOH may require action by the Contractor to incorporate noise mitigation into the construction plan. The DOH may also require the Contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The Contractor should use reasonable and standard practices to mitigate noise, such as using mufflers on diesel and gasoline engines, using properly tuned and balanced machines, etc. However, the State DOH may require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities.

Specific permit restrictions for construction activities in the DOH Community Noise Control rules are:

- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."
- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 a.m. and after 6:00 p.m. on Saturday."
- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

3.7 AIR QUALITY

The U. S. Environmental Protection Agency (EPA) sets national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM_{10} and $PM_{2.5}$). Hawaii has also established a state ambient air standard for hydrogen sulfide. The State DOH operates several air monitoring stations throughout the state, including four stations on Oahu.

Both Federal and State air quality standards in Ewa are generally met because of prevalent trade winds and lack of any major stationary pollutant emission sources. According to the *State of Hawaii Annual Summary 2015 Air Quality Data*, measured levels of PM_{10}, SO_2 (sulfur dioxide), and NO_2 (nitrogen dioxide) are well within State and Federal ambient air quality standards for the Island of Oahu (DOH, 2016).

Project Impacts and Mitigation

Short-term impacts to air quality from fugitive dust may occur during development of the property. These impacts could result from construction vehicle activities and fugitive dust from excavation and grading. There are two potential types of air pollution emissions associated with these construction activities. First, fugitive dust caused by vehicle movements and excavation/fill activities. Second, vehicle exhaust emissions from on-site construction equipment. These impacts will be minimized through the implementation of BMPs to control construction dust and emissions in compliance with provisions of HAR Section 11.60.1-33. All work will be in conformance with the air pollution standards and regulations of the State DOH.

3.8 HISTORICAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

3.8.1 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

The EKMS site is located within the Honouliuli Ahupuaa, which is the largest traditional land unit on Oahu and extends from the shores of Pearl Harbor's West Loch in the east to the border of Nanakuli Ahupuaa at Pili O Kahu in the west. This ahupuaa includes 12 miles of coastline and extends in the mauka (inland) direction to the vicinity of Schofield Barracks in Wahiawa. Honouliuli means "dark bay" and is noted as being named for the waters of Pearl Harbor.

In pre-contact Hawaii, this area (including the location of the EKMS) would have been mostly lowland dry shrub and grassland, dominated by species such as *wiliwili*, *lama*, sandalwood, *aalii*, scrub *ohia* and *pili* grass. In the post-contact period, the project area has been mainly used as cattle pastures and for sugarcane cultivation. Currently, the non-cultivated portions are covered with introduced species such as *kiawe* and *koa haole* and the vast majority of the area consists of plowed fields, with crops of pumpkins, squash, cucumbers, bananas, beans and other vegetables (CSH, 2006). There are no current agricultural activities occurring on the EKMS site which has been previously graded as part of master plan development efforts for the East Kapolei Property Development.

Cultural Survey Hawaii's background summary and predictive model from the East Kapolei Property development inventory survey (CSH, 2006), describe three (3) known areas of Hawaiian settlement in the Honouliuli Ahupuaa. Two areas are well-documented which include the coastal zone between Kalaeloa and Koolina; and the Honouliuli Taro lands centered around the west side of Pearl Harbor at Honouliuli Stream's outlet. There are relatively few documented archaeological resources from the third settlement area which is described as Puukuua on the east side of the Waianae Ridge, seven miles inland. EKMS is situated well outside of these three (3) identified settlement areas.

There have been many previous archaeological research efforts and studies conducted in the vicinity of the EKMS site within the Honouliuli Ahupuaa. In 1990, Cultural Surveys Hawaii

conducted an archaeological reconnaissance survey of Ewa Villages including extant Renton, Tenney and Varona Villages, three (3) former plantation village sites (C Village, Mill Village, Middle Village) and other sites associated with the Ewa Plantation infrastructure (CSH, 1990). The Ewa Villages settlement represents an in-tact example of a historic plantation village and its history and significance have been well-documented in past studies. Since the adjacent Ewa plain has been in sugar cultivation from 1890 to 1971, the focus of the Ewa Villages community has provided the field workers, office staff and production line staff through a reciprocal relationship with Castle & Cooke Inc. as the plantation operator. Ewa Villages was the core of a company town envisioned, planned, constructed, and maintained by the operator to house and sustain its employees (R.M. Towill, 1991). The 1990 survey found no evidence of any pre-Contact activity and resulted in recommendations for documentation of several ruined plantation structure sites.

In 1996, Scientific Consulting Services conducted an archaeological inventory survey in an area to the west of the Tenney and Varona Plantation Villages and north of the Honouliuli Treatment Plant. That survey resulted in no archaeological site findings.

Consultations in 1996 between the State Historic Preservation Division (SHPD) and Hawaii Agricultural & Rural Development Program (HARDP), on behalf of the Hawaii Housing Finance & Development Corporation (HHFDC) (formerly a part of the Housing and Community Development Corporation of Hawaii), resulted in a SHPD review and determination of potential impacts on historic sites for an area in the Honouliuli Ahupuaa described as the East Kapolei Development Project. These lands included the proposed EKMS site in its entirety.

Project Impacts and Mitigation

Based on the results of previous studies and known past land uses on the East Kapolei Development Project site, the presence of any significant archaeological sites on the surface or subsurface of the property was determined by SHPD to be unlikely due to the disruption caused by continuous sugarcane cultivation for nearly 70 years. A letter dated August 4, 1994 (SHPD Doc. No. 9408TD01) from the SHPD to HARDP provided the following determination:

> *A review of our records shows that there are no known historic sites on these 1,300 acres of state lands. These lands were used for commercial sugar cane cultivation for many years and this would have destroyed any historic sites that might have been present. We believe that reclassification of these lands and their future development will have "no effect" on historic sites.*

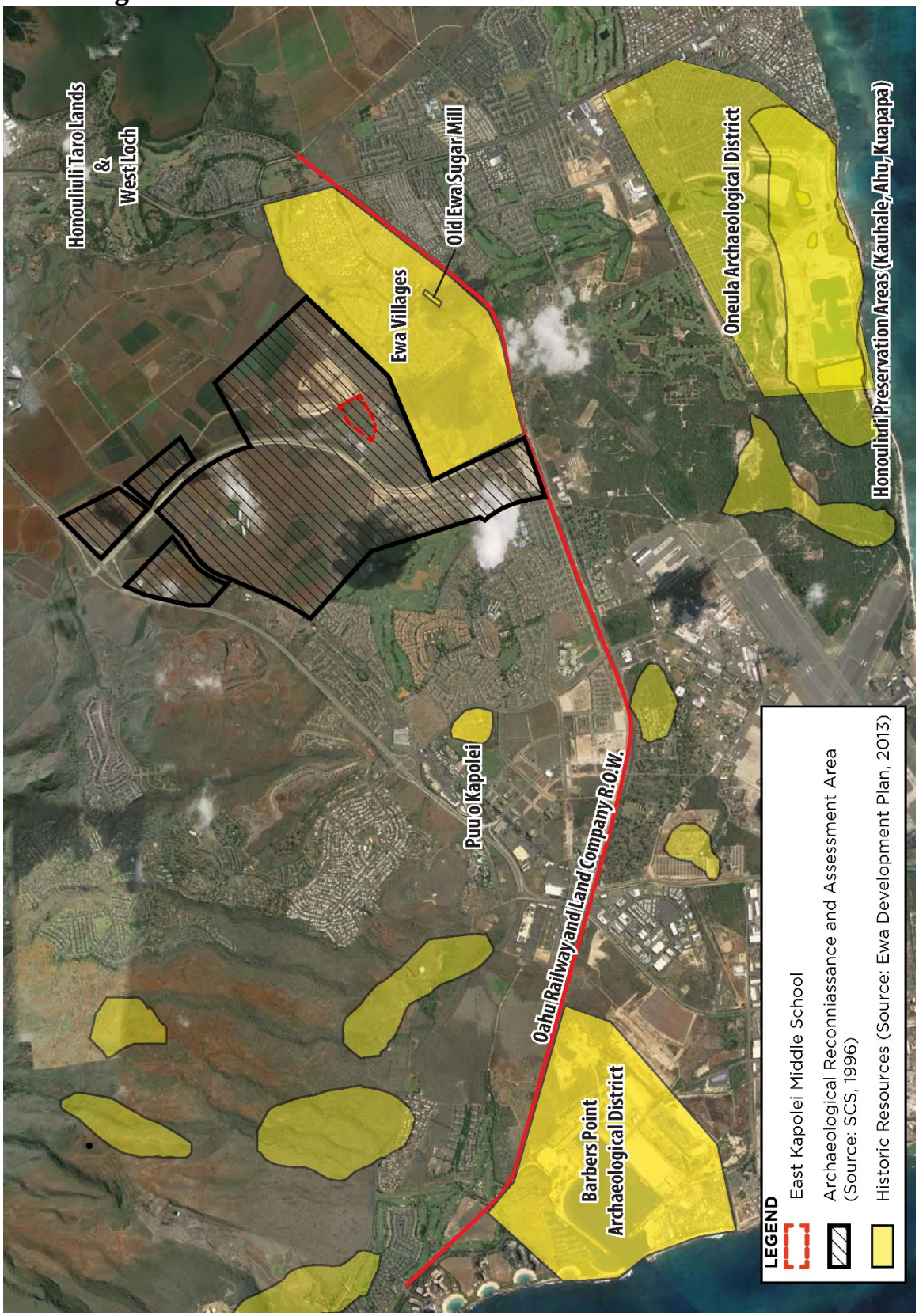
This SHPD determination was subsequently reviewed and confirmed by the *Archeological Reconnaissance and Assessment of the HFDC – East Kapolei Development Project* prepared by Scientific Consultant Services in November, 1996. Copies of these correspondences are included in Appendix G of this document. Through an on-site inspection of the subject property, Scientific Consultant Services confirmed that sugarcane plantation operations covered the entire area indicated in SHPD's determination. Through visual inspections and given the lack of cultural resources found during field inspections, Scientific Consultant Services concurred with the SHPD assessment and determination that future development of the East Kapolei Development Project (inclusive of the EKMS site) would have "no effect" on historic sites and that no further cultural resource work is required. The boundaries of the *Archeological Reconnaissance and Assessment*

of the HFDC – East Kapolei Development Project and EKMS site in relation to the area's significant historic resources is provided in Figure 12: Historic Resources.

No impact to archaeological resources is anticipated as according to a previous determination by SHPD. No historic sites are known to be present on the property based on previous archaeological surveys and assessments. Based on predictive models for the Honouliuli Ahupuaa, there is very little indication of human occupation or any other utilization of the EKMS location. Furthermore, no sites within the EKMS site or immediate vicinity are listed on the Hawaii or National Register of Historic Places or are under consideration.

In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, sand deposits, or sink holes are identified during the demolition and/or construction work, work will cease in the immediate vicinity of the find, the find will be protected from additional disturbance, and the SHPD will be contacted.

Figure 12: HISTORIC RESOURCES



3.8.2 CULTURAL RESOURCES

The *Ewa Development Plan* identifies several cultural resources which are significant, in addition to 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 Honouliuli Ahupuaa has a rich cultural past and is significant in the history of Hawaii according to a review of a 2006 Cultural Impact Assessment completed by Cultural Surveys Hawaii for the Hoopili Project (CSH, 2006). That assessment included research on the overall Honouliuli Ahupuaa and consultations with Hawaiian organizations, government agencies, community members and cultural descendants with ties to Ewa. While the large Hoopili project was the primary topic of discussion, many of the recollections by those consulted relate to the ahupuaa as a whole and is referenced to assist with the assessment in this section. Within the Honouliuli Ahupuaa and vicinity of the EKMS location, the following historical and potential cultural practices were identified:

- Gathering for Plant Resources – Given the diversity of coastal lowland, transition and upland forest zones in this ahupuaa, it is likely that one of the traditional cultural practices would have been the gathering of native plant species.

- Taro cultivation – It has been documented that taro was grown in the wetlands known as the "Honouliuli Taro Lands" located to the east of the EKMS site, near West Loch and the mouth of Honouliuli Stream.

- Paakai (Salt Making) – Paakai was used by Hawaiians for curing food. Hawaiians are known to be the only Polynesian culture that produced salt from the sea by constructing salt pans. Salt making was abundant throughout the Ewa Plain near coastal areas.

- Marine Resource Gathering – The ocean and West Loch area were valuable resources to Native Hawaiians who are considered traditionally as expert fishermen. The shoreline of Puuloa (Pearl Harbor) is noted as having an abundant variety of marine life for subsistence, including *papio*, mullet, oysters, clams and all types of crab as well as *limu*. *Limu* was very important to the Hawaiian diet. Avifauna was also available throughout the Ewa Plain. During pre- and post-contact years, the ahupuaa did not have enough adequate subsistence resources to support a large human settlement area since resources were mainly limited to marine resources, fertile coastline and stream gulch area agricultural lands. The earliest record of the size of native population in the Honouliuli Ahupuaa are known through censuses taken by Protestant missionaries beginning in 1831. In that 1831-1832 census, the population of Honouliuli was recorded as 1,026 but declined to 870 persons by the 1835-36 census (CSH, 1997). In the earliest map of the area, the population settlement was concentrated to the West Loch area in the vicinity of Papapapuhi Point. The Monsarrat survey map of 1878 documents substantial settlement at the "Honouliuli Taro Lands" in the Papapapuhi Point area and that location was the focus of the population of Honouliuli in early historic times. That location provided amenities ranging from access to fishponds,

taro loi, shellfish, and salt pans and is expected that the same amenities would have focused prehistoric populations there as well (CSH, 1997).

- Trails - This ahupuaa is documented as having been a main thoroughfare for travelers to the settlements on the western coastline. According to John Papa's account of Honouliuli's trails in *Fragments of Hawaiian History*, the most common traditional Hawaiian trail from the West Loch area to the northern Waianae Coast was by way of Kolekole Pass which is to the north of Ewa and leads through the Waianae mountain range. Another trail from Puuloa (Pearl Harbor) to Puu Kapolei was mentioned that likely followed the route of present Farrington Highway through Honouliuli, located approximately 1 mile north of the EKMS Site.

- The importance of Puu Kapolei, located approximately 1.6 miles to the west, as a seasonal solstice landmark related to an ancient cultural viewing event, of which is in the vicinity of the proposed school lies, is of particular cultural importance to Hawaii.

The EKMS site was part of the Ewa Plantation established in 1890 and operated by Castle & Cooke Incorporated. The land was owned by James Campbell and used primarily for growing sugar cane. In 1970, ownership transferred to Oahu Sugar Company and remained in agricultural cultivation until 1994. Since the mid-1990s the State of Hawaii obtained the property from Campbell Estate and leased land for commercial fruit and vegetable cultivation. The entire site has been extensively graded repeatedly over the past century in association with sugar cane cultivation and other agricultural activities and roadways.

Project Impacts and Mitigation

The accessibility to the EKMS site for gathering or other cultural practices was radically curtailed during the second half of the 19th century due to private agricultural use. In the late 1800's, cattle grazing dominated and the rapid introduction of sugarcane cultivation likely denuded the landscape of much of the native vegetation. Throughout the 20th century sugarcane cultivation dominated (CSH, 2006). Based on this and current understanding, no contemporary or continuing cultural practices are currently occurring on the EKMS site.

The West Loch community is located approximately 2 miles east of the EKMS site and former Honouliuli Taro Lands. Currently, there is no taro cultivation occurring at the project area or vicinity and the project is situated at a significant distance away from the shoreline. In terms of plant resource and marine resource gathering, this project is not expected to affect access to shoreline areas or have an impact on the gathering of plant or marine resources. The project area generally consists of sparsely vegetated land with no significant botanical resources present. See Section 3.2 of this document for botanical resources currently present.

The EKMS site is not located within any of the significant Native Hawaiian cultural and archaeological sites identified in the current *Ewa Development Plan*, including the Barbers Point Archaeological District, Ewa Beach Midden Site, Okiokiolepe Pond, or Oneula Archaeological District. The proposed EKMS is not anticipated to have any impacts on ongoing cultural practices occurring at Puu Kapolei, nor are there any visual impacts expected on this cultural resource. No

visual impacts are anticipated to affect the ahupuaa's existing visual landmarks or significant historic features from the plantation era and earlier periods.

This project would not significantly restrict access to other surrounding areas that may be used for cultural practices because the school use would be limited to the site. Furthermore, the EKMS will eventually be entirely surrounded by development projects including DHHL's residential developments, HHFDC's low density apartments, and the Salvation Army Kroc Center.

In response to DOE's recent request for a SHPD determination under Hawaii Revised Statues Chapter 6E-8, Historic Preservation Review, SHPD acknowledged that previous archaeological studies for the greater Honouliuli area have documented very few historic properties and recorded generally low potential for archaeological resources. And based on the availability of existing information, it was unlikely that sinkholes are present within the project area. However, SHPD indicated that more information on the proposed project site is desired and has requested archaeological monitoring for the project (SHPD Doc. No.: 1709KM17). Due to the potential for the project site to contain sinkholes with iwi kupuna or avi-fauna an Archaeological Monitoring Plan will be prepared and approved by SHPD prior to the start of ground disturbing activities. A copy of this correspondence is included in Appendix G.

3.9 VISUAL RESOURCES

The *Ewa Development Plan* (City, 2013) identifies significant views and vistas within the plan area. These include the following:

- Distant vistas of the shoreline from the H-1 Freeway above the Ewa Plain;
- Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waianae Development Plan Area;
- Views of the Waianae Range from H-1 Freeway between Kunia Road and
- Kaloi Gulch and from Kunia Road;
- Views of Na Puu at Kapolei, Palailai, and Makakilo;
- Mauka and makai views; and
- Views of central Honolulu and Diamond Head, particularly from Puu O Kapolei, Puu Palailai, and Puu Makakilo.

In addition, the *Ewa Development Plan* establishes guidelines for development in the City of Kapolei. These include using landscaping to enhance and complement the City's urban form, provide continuity between the various districts, and enhance and preserve view corridors wherever possible.

Project Impacts and Mitigations

The project site is not located within a significant viewplane or vista; therefore, the proposed project will not have an impact on scenic viewplanes or scenic resources. The proposed project will include a landscaping plan that will replicate the naturalized dry shrub and grass lands common to the Ewa Plain.

3.10 ROADWAYS AND TRAFFIC

A traffic study was conducted for the proposed project in September 2015 (SSFM, 2015) and is included in this Draft EA as Appendix E. The traffic study analyzed existing conditions and impacts in the surrounding area as a result of the full build-out of EKMS.

Access

Vehicular Access

The project site is bound by the following roadways:

- Keahumoa Parkway (East-West Road) on the south,
- Maunakapu Street (Road E) on the west, and
- The proposed Maweke Street (Road A) on the east.

Vehicle access to the project site would be via the aforementioned roadways to one of three proposed access driveways, as shown in Figure 8 in Section 2.0. There would be one driveway off Keahumoa Parkway that would be for bus drop-offs and access to the faculty/staff parking lot. There would be two driveways off Maunakapu Street: (1) a northern driveway for student drop-off and pick-up, and (2) a southern driveway for secondary access to the faculty/staff parking lot and an exit for buses.

Transit Access

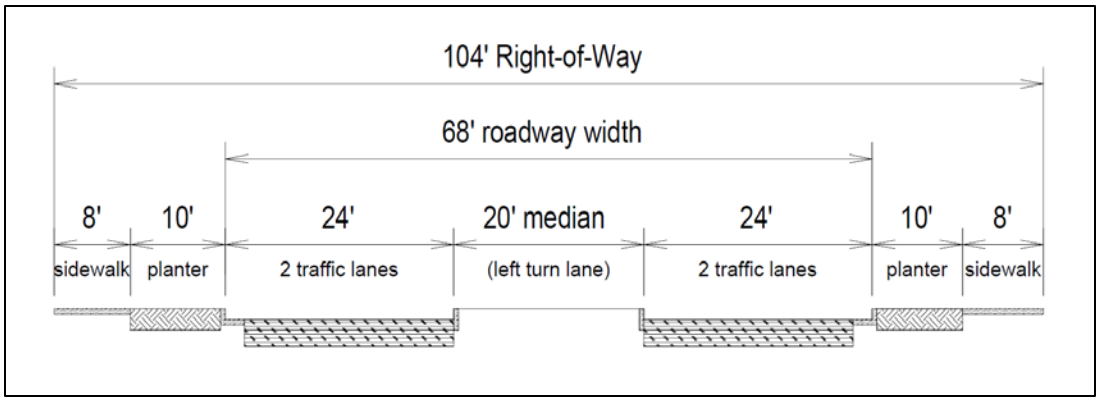
The City's transit system, TheBus, does not have any bus stops or routes in the vicinity of the project. The closest bus stop is more than one mile away, and is served by Route 41 – Kapolei/Ewa Beach. When complete, the East Kapolei Rail Station will be located approximately 800 feet from the EKMS property boundary at the intersection of Kualakai Parkway and Keahumoa Parkway.

Bicycle and Pedestrian Access

The surrounding transportation infrastructure has largely been built out with wide sidewalks, including paved sidewalks on both sides of the road along Kualakai Parkway, Keahumoa Parkway, and Maunakapu Street. There is also a multi-use path along the east side of the southern portion of Kualakai Parkway.

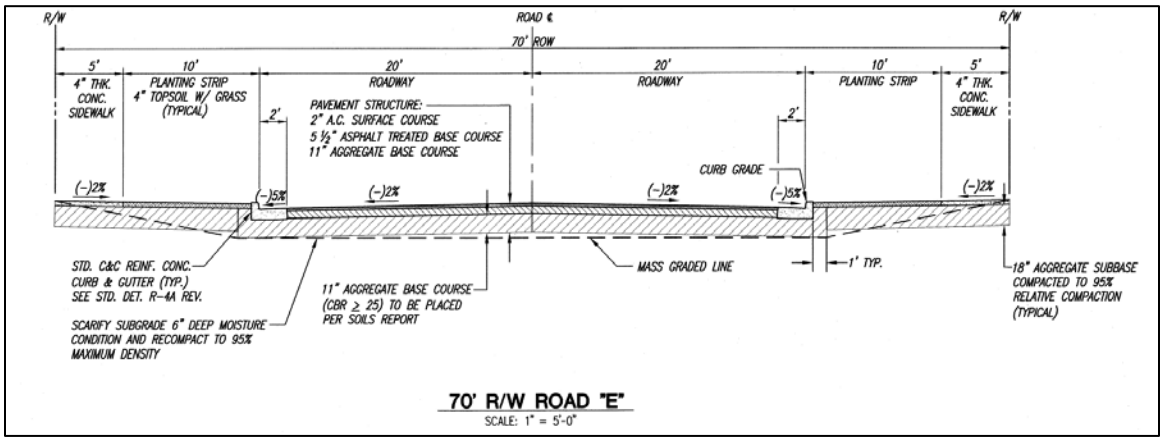
Street cross-sections showing sidewalk widths on Keahumoa Parkway and Maunakapu Street are shown below. Sidewalks along both sides of Keahumoa Parkway are 8 feet wide and adjacent to a 10 foot landscaped planner strip. Sidewalks along Maunakapu Street are 5 feet wide and adjacent to a 10 foot landscaped planter strip.

Figure 13: CROSS SECTIONS ALONG KEAHUMOA PARKWAY



Source: Traffic Analysis Report East Kapolei II (Julian Ng, Inc, 2007)

Figure 14: CROSS SECTIONS ALONG MAUNAKAPU STREET



Source: Approved Plans for KHHL Land Development Division, East Kapolei II Development, Road E Extension (http://dhhl.hawaii.gov/procurement/2012-2/ifb-12-hhl-004/)

Existing Traffic Volumes

Existing Roadway Volumes

Average daily traffic (ADT) along Kualakai Parkway near the project area is shown in Table 2 and comes from HDOT *Historical Traffic Station Maps* (HDOT, 2013).

Table 2: ROADWAY AVERAGE DAILY TRAFFIC

Roadway	Location	Year	ADT

Kualakai Parkway	Between Farrington Highway and Kapolei Parkway	2010	8,500
Kapolei Parkway	Between Kamaaha Avenue and Kualakai Parkway	2010	5,200
		2011	7,300
		2013	22,700

Source: *Historical Traffic Station Maps* (HDOT, 2013)

The only counts along Kualakai Parkway occurred in October 2010 and showed an ADT of 8,500 vehicles per day. Much of this area, including the Kroc Center, had not been constructed at the time of these counts; therefore, the traffic volumes are assumed to have grown since then.

ADT along Kapolei Parkway is included in Table 2 for comparison purposes. The counting station location is approximately ¼-mile west of Kualakai Parkway. It shows an increase in ADT from 2010 and 2011 with the greater increase in volume in 2013. This is most likely due to the opening of an extension of Kapolei Parkway between Fort Barrette Road and Kamaaha Avenue in March 2012. The opening of this extension improved connectivity within Kapolei as an alternative to travelling along Kamokila Boulevard. The Kapolei Parkway extension between Kamokila Boulevard and Kamaaha Avenue was opened in October 2014. This provides a direct path from East Kapolei to Costco, Home Depot, Target, and the Kapolei Judiciary Complex.

Intersection Peak Hour Volumes

Intersection turning movement counts were taken on Thursday, April 23, 2015, during the weekday AM and PM peak periods (6:00 to 9:00 AM and 2:00 to 6:00 PM, respectively) at the three study intersections: Kualakai Parkway at Keahumoa Parkway, Maunakapu Street at Keahumoa Parkway, and Kooloaula Main Driveway at Keahumoa Parkway. These counting periods include the projected school drop-off and pick-up times. The turning movement traffic counts included the classification of passenger vehicles, heavy vehicles (buses, trucks, vehicles with trailers), bicycles, and pedestrians. The peak hours varied at each study intersection and are shown in Table 3. Individual intersection peak hours were used to account for the highest traffic volume at each intersection.

Table 3: INTERSECTION PEAK HOURS

Intersection	AM Peak Hour	PM Peak Hour
Kualakai Parkway at Keahumoa Parkway	7:00 – 8:00 AM	4:15 – 5:15 PM
Maunakapu Street at Keahumoa Parkway	7:15 – 8:15 AM	4:15 – 5:15 PM
Kooloaula Main Driveway at Keahumoa Parkway	6:45 – 7:45 AM	2:45 – 3:45 PM

Transit Bus Volumes

As previously mentioned, there are no existing bus stops or routes in the vicinity of the project; therefore, transit bus volumes were not obtained.

Pedestrians and Bicycle Volumes

Pedestrian and bicycle volumes were counted at the following intersections: Kualakai Parkway and Keahumoa Parkway, Maunakapu Street and Keahumoa Parkway, and Kooloaula Main Driveway and Keahumoa Parkway. Bicycle and pedestrian peak hour volumes are in Table 4.

Table 4: BICYCLE AND PEDESTRIAN PEAK HOUR VOLUMES

Intersection	Peak Hour	Bicycle Volume	Pedestrian Volume
Kualakai Parkway at Keahumoa Parkway	AM	0	4
	PM	0	0
Maunakapu street at Keahumoa Parkway	AM	0	1
	PM	2	0
Kooloaula Main Driveway at Keahumoa Parkway	AM	0	2
	PM	0	2

As shown in the table, there is a low volume of pedestrians and bicycles in the project area. This low volume is most likely due to the limited trip generators in the area. However, there is a multi-use path along Kualakai Parkway and there are paved sidewalks throughout Kualakai Parkway, Keahumoa Parkway, and Maunakapu Street.

Level of Service

Vehicle Level of Service and Volume

Level of Service (LOS) is a term used to describe the conditions of a roadway based on factors that determine the rate of movement of vehicles along the roadway. LOS are ranked from A (free flow, the optimum condition) to F (forced or breakdown flow, the worst condition). The LOS method can be used as a tool to determine whether modification of a roadway is needed in order to prevent congestion.

Existing (2015) Intersection Conditions (LOS)

Existing (2015) LOS for the intersections of Keahumoa Parkway at Maunakapu Street and Keahumoa Parkway at Kooloaula driveway operated at an appropriate LOS B or better during the AM and PM peak hours (see Table 5). With the limited development and vehicles, but built-out roadway infrastructure, there is minimal delay from these side-street approaches. However, the westbound left turn movement at the intersection of Kualakai Parkway with Keahumoa Parkway operated at LOS F during the AM and PM peak hours with v/c less than 1.0.

Table 5: EXISTING (2015) INTERSECTION LEVEL OF SERVICE

Intersection	App	Mvmt	AM			PM		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualakai Parkway and Keahumoa Parkway	WB	L	**53.1**	0.50	**F**	**51.1**	0.56	**F**
		R	11.2	0.07	B	10.4	0.10	B
	SB	L	10.2	0.19	B	9.0	0.13	A
	EB	L	7.9	0.18	A	7.7	0.16	A

Keahumoa Parkway and Maunakapu Street	SB	LR	8.7	0.05	A	9.0	0.13	A
Keahumoa Parkway and Kooloaula driveway	NB	L	8.8	0.05	A	8.8	0.03	A
		R	0.0	0.00	A	8.4	0.01	A
	WB	L	0.0	0.00	A	7.3	0.01	A

Project Impacts and Mitigations

As discussed in Section 1.2, there are several developments proposed within the surrounding East Kapolei region. Future (2019) Without Project peak hour volumes were calculated by applying the background growth to the existing through volumes along Kualakai Parkway and adding trips related to the surrounding area developments. It is expected that there will be an increase in pedestrian and bicycle traffic in the area due to the development of East Kapolei IIB and IIC, as well as the opening of the East Kapolei Transit Station. Table 6 identifies the expected growth in ADT as a result of the surrounding area development.

Table 6: FUTURE (2019) WITHOUT PROJECT ROADWAY ADT COMPARISON

Roadway	Year	ADT
Kualakai Parkway	Existing (2010)	8,500
	Future (2019) Without Project	15,000

There will be a minimal increase to Future (2019) daily traffic volumes along Kualakai Parkway as a result of the project related traffic. Projected Future (2019) With Project roadway ADT is shown in Table 7.

Table 7: FUTURE (2019) WITH PROJECT ROADWAY ADT COMPARISON

Roadway	Year	ADT
Kualakai Parkway	Existing (2010)	8,500
	Future (2019) Without Project	15,000
	Future (2019) With Project	16,500

The design enrollment for EKMS will be 1,050 students with a school opening date in the fall of 2019. However, by the year 2019, the only residential units anticipated to be developed and occupied within East Kapolei will be Kanehili and East Kapolei IIB and IIC. The remainder of East Kapolei II and residential units within UHWO are not expected to be completed. Therefore, it is assumed there will be capacity at the school allowing students residing outside of East Kapolei to attend EKMS. As more developments within East Kapolei II and UHWO are developed and occupied, it is assumed that the school will primarily serve students within East Kapolei.

Table 8 provides the project-related trip generation used for the analysis of potential impacts to roadways and traffic from the proposed project. It is assumed that a percentage of students residing within Kanehili will walk or bike to EKMS by using the crosswalk across Kualakai Parkway at the intersection with Kapolei Parkway and shared-use path on the east side of Kualakai Parkway. It was also assumed that all students residing within East Kapolei IIB and IIC will walk or bike to school as these developments are less than ½-mile from EKMS with safe routes planned.

Table 8: PROJECT RELATED TRIP GENERATION FOR EKMS

Trip Type	Trip Generation					
	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Parent	420	420	840	210	210	420
Faculty and Staff	100	0	100	0	100	100
Total Vehicles	**520**	**420**	**940**	**210**	**310**	**520**
Walker and Bicyclists	630	0	630	0	630	630
School Bus	0	0	0	0	0	0

Table 9 identifies AM and PM peak hour LOS upon completion of EKMS. It should be noted that new traffic signals are being installed in conjunction with this project, at the intersections of Keahumoa Parkway at Kualakai Parkway and Keahumoa Parkway at Maunakapu Street. Keahumoa Parkway and Maunakapu Street are owned and operated by the City while Kualakai Parkway is owned and operated by the State. Therefore, the intersection of Keahumoa Parkway and Kualakai Parkway will be maintained and operated by the State and the intersection with Maunakapu Street will be owned and operated by the City. Traffic signal conduit and pull boxes were installed at each intersection as a part of a previous project; therefore, all that is needed for operation are the traffic signal poles, signal heads, controller/cabinet, and cabling which will be pulled through existing conduit.

Table 9: FUTURE (2019) WITH PROJECT INTERSECTION LEVEL OF SERVICE

Intersection	App	Mvmt	AM Peak Hour			PM Peak Hour		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualakai Parkway and Keahumoa Parkway (Signalized)	Intersection		**59.8**	**-**	**E**	26.1	-	C
	WB	L	**61.7**	0.97	**E**	39.6	0.89	D
		R	27.6	0.64	C	21.7	0.47	C
	SB	L	**67.0**	0.94	**E**	45.4	0.88	D
		T	6.5	0.22	A	7.8	0.50	A
	NB	T	**77.2**	**1.07**	**F**	34.5	0.87	C
		R	**87.3**	**1.09**	**F**	35.3	0.87	D

Keahumoa Parkway and Maunakapu Street	EB	L	11.0	0.58	B	9.4	0.45	A
	SB	LR	16.5	0.68	C	15.3	0.65	C
Keahumoa Parkway and Kooloaula driveway	NB	L	11.5	0.07	B	9.8	0.04	A
		R	0.0	0.00	A	8.7	0.01	A
	WB	L	0.0	0.00	A	7.5	0.01	A
	EB	L	7.6	0.07	A	0.0	0.0	A

Another consideration is that middle school dismissal is typically earlier than PM commuter peak hours. Additionally, the volume of students leaving the school in the afternoon happens over an extended period due to after school activities. Therefore, only 20% of students are assumed to be picked up during the PM peak hour while others may have been picked up before or after the PM peak hour.

Mitigation Measures for Kualakai Parkway and Keahumoa Parkway Intersection

The intersection of Kualakai Parkway and Keahumoa Parkway operates at LOS E during the AM peak hour. The northbound approach during the AM peak hour operates at LOS F for the through and right turn movements with a v/c greater than 1.0. The northbound right turn movement is over 500 vehicles during the AM peak which reflects the large amount of vehicles accessing Keahumoa Parkway to drop students off at EKMS. Providing a dedicated right turn lane results in the intersection operating at an acceptable LOS D during the AM peak hour. Per HDOT, the Keahumoa and Kualakai intersection is expected to be signalized and improved per an agreement between Hoopili developer, D.R Horton and HDOT. The dedicated right-turn lane from northbound Kualakai Parkway onto Keahumoa Parkway will be constructed by DOE as part of the EKMS project.

Mitigation Measures for Keahumoa Parkway and Maunakapu Street Intersection

Traffic signal warrants were conducted at the intersection of Keahumoa Parkway and Maunakapu Street using the projected Future (2019) With Project peak hour volumes. Warrant 3, Peak Hour passed under these future conditions. Consequently, installation of a traffic signal at this intersection is included in the EKMS budget and will be installed in Phase 2 of the project

Mitigation Measures for Keahumoa Parkway and Kooloaula/EKMS Driveway Intersection

Traffic signal warrants were conducted at the intersection of Keahumoa Parkway and Kooloaula/EKMS driveway using the projected Future (2019) With Project peak hour volumes. Warrant 3, Peak Hour. This intersection did not pass under these future conditions and therefore a traffic signal is not recommended for installation.

The Oahu Bike Plan identifies Keahumoa Parkway as a facility with a proposed bike lane, however Keahumoa Parkway was recently constructed and the bike lane was not included. Improvements to Keahumoa Parkway to install a bike lane or widen sidewalks are not included with the EKMS project at this time. Sidewalks along Keahumoa Parkway are generally wide, but still do not meet AASHTO Guidelines for Bicycle Facilities (Section 5.2.1) which call for a 12 foot to 14 foot width for shared use paths. There is also a 10 foot wide landscaped strip adjacent to the existing sidewalk

which does provide some relief for shared use fronting the school. In addition, since 60% of students will walk or bike to school a Safe Routes to School program should be established.

3.11 UTILITIES

3.11.1 ELECTRICAL AND COMMUNICATION

Electrical service lines are presently located along Keahumoa Parkway. Electrical service is available and will be provided by the Hawaiian Electric Company (HECO). Cable television, internet, and telephone service will be provided by Oceanic Time Warner Cable/Spectrum.

Project Impacts and Mitigation

The new school will create an increased demand for electrical and communication services. The campus will be served by a single primary feeder from HECO located at a manhole on Keahumoa Parkway. This increased demand is not expected to have a significant impact on HECO's distribution facilities or power generation facilities. The facility will meet or exceed applicable energy conservation guidelines and building code requirements and seek HI-CHPS Verified certification through incorporation of the following sustainable design elements:

- Occupancy sensors will be provided to turn off electric lights in unoccupied spaces.
- Manual override switches will be provided to turn "off" luminaries where adequate daylight is available for task within individual spaces.
- Energy efficient luminaries
- Exterior fixtures will be directed to avoid light pollution and trespass
- Commissioning of electrical systems
- The majority of interior lighting and all exterior lighting is planned to be LED based.

Appropriate coordination will also be conducted with these utility companies during the project's design to ensure appropriate services and utilities are provided and properly programmed.

The building's electrical distribution system is designed to facilitate installation of a future photovoltaic (PV) solar system. Based on the roof areas identified as potential PV array locations, there is currently adequate roof area to support a net-zero energy campus if all array areas are built out. However, interconnection agreements currently available from HECO would not allow a full PV build out as indicated above due to system size caps placed on the various agreements. Furthermore, all PV systems on existing campuses are procured through the DOE's Ka Hei program and, as a result, the EKMS project does not have full control over whether PV systems get built on the campus. Additionally, Ka Hei was originally structured to support existing campuses, and it has not yet been determined how that program will interact with new campuses such as EKMS.

3.11.2 WATER SYSTEM

Potable water supply for the EKMS property is provided by the Honolulu Board of Water Supply (BWS). The school facilities' potable water supply and fire protection will be serviced by an existing 16-inch water line within Keahumoa Parkway. The static water pressure just outside of

the school property is estimated to be 65 pounds per square inch (psi) (46 psi residual pressure with 2,000 gallons per minute (gpm) fire flow demand), as determined by the BWS. A City and County of Honolulu owned R-1 non-potable irrigation water distribution line is located in Keahumoa Parkway, along the West and South property boundary of the project site, however this R-1 recycled non-potable irrigation water distribution line is not yet active.

Project Impacts and Mitigation

Completion of the new middle school would result in an increase in water demand on the BWS potable water system. The school's domestic water system will accommodate 1,181 fixture units and be designed to meet 230 gpm flow volume. The school's irrigation water system will accommodate 85 fixture units and be designed to meet 40 gpm flow volume. A summary of the water demands are included below:

Domestic Water Supply Demands	
Average Daily Demand:	74,160 gallons per day (gpd)
Maximum Day Demand:	111,240 gpd
Peak Hour Demand:	22,480 gpd
Landscape Water Demands	
Estimate Average Daily Demand:	25,000 gpd

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.

The potable water system will comply with the latest BWS Water System Standards and Standard Details for Water System Construction. The school will require a 6-inch DC meter for the fire supply line and a 3-inch compound meter for the domestic line. A 3-inch reduced pressure backflow preventer and a 6-inch double check valve back flow preventer will also be provided, as required by the BWS.

All buildings will have sprinkler systems; existing fire hydrants located along Maunakapu Street and Keahumoa Parkway meet the building coverage requirements (450 feet from the property line as the hose lays).

The project will require a temporary potable water connection, with reduced pressure principle backflow preventer, to the East Kapolei II nonpotable irrigation system. At a future date and as funding becomes available, the BWS will construct R-1 recycled water system improvements along Kualakai Parkway and connect the East Kapolei II nonpotable irrigation system. As part of the project, BWS will remove the temporary potable connection and restore the area. The water demand for landscape irrigation is significantly reduced in comparison to typical tropical landscapes in Oahu's built environment. The perimeter landscape areas of the campus will require supplemental water only during the driest periods of the year. Besides using appropriate native and naturalized dry land plant species, another means of reducing irrigation water use will be through applying drip and low flow irrigation technology and equipment in lieu of the traditional spray equipment, where appropriate. Another means of reducing irrigation water use is through the use of smart irrigation controllers, which monitor on-site rainfall, wind, atmospheric

temperature, and soil moisture. Both drip and smart irrigation technology will be used at EKMS. An irrigation system operations and maintenance manual will be prepared for the school. Also, post-construction landscape irrigation system performance will be monitored and evaluated during the first year in order to develop recommendations for future system improvements. The proposed uses of appropriate plants, rain gardens, bioswales, non-potable water (in the future when available), smart controllers and drip irrigation are all consistent with the Landscape Industry Council of Hawaii's, Landscape Irrigation Conservation BMPs.

3.11.3 WASTEWATER SYSTEM

The proposed school will connect to the Honouliuli Wastewater Treatment Plant (WWTP) which is owned and operated by the City. The Honouliuli WWTP service area encompasses approximately 76,000 acres and ranges from Red Hill up to Mililani and extends to Ko Olina. There is an existing City 10-inch sewer line along Keahumoa Parkway which connects to Honouliuli WWTP.

The school is expected to generate approximately 38,000 gpd of sanitary sewage. This average sewage flow allocation is based on an assumed 25 gallons per person, per day for up to 1,520 persons. This will be collected in a system of on-site pipes designed to comply with applicable City design standards.

Project Impacts and Mitigation

The sewer system will be designed to comply with the *Design Standards of the Department of Wastewater Management, Volume I* (City, 1993). The school buildings will connect to 6-inch gravity sewer collection lines within the school property. The sewer collection lines will connect to the City and County of Honolulu 10-inch sewer line along Keahumoa Parkway via an existing 6-inch sewer lateral that extends to the property line.

3.11.4 DRAINAGE SYSTEM

The site is located in the vicinity of an intermittent stream known as Kaloi Gulch, which also serves a major drainageway to help prevent upland areas from flooding during heavy rainstorms. There is an existing City 30-inch drainage pipe located along Keahumoa Parkway.

The pre-existing condition runoff is approximately 19 cubic feet per second. The campus drainage system will utilize swales and direct downspout connections to transmit runoff to a combination of surface and subsurface detention and retention basins around campus. The campus drainage system connects to the City system at two locations along Keahumoa Street, and runoff will be released at a controlled rate not to exceed existing peak runoff flows.

Project Impacts and Mitigations

The project storm drainage system will be designed to comply with the latest City *Rules Relating to Storm Drainage Standards* (City, 2000) and *Standard Details for Public Works Construction* (City, 1984). The on-site drainage system will be designed for a 10-year recurrence interval, and

will consist of swales, detention basins, infiltration basins, pipes, drain inlets, and manholes. The on-site system overflows will connect to the City drainage system via existing 30-inch drainage pipes located along Keahumoa Parkway. Consistent with the City's standards, the storm drainage system will be designed to capture and detain the 10-year storm increased runoff from impervious surfaces to ensure that there are no detrimental impacts on the downstream areas.

The parking lots and portions of the site fronting the parking lots will drain to large 36-inch storage pipes located on the west end of the site. Two shallow detention basins will be located above the pipes to allow controlled overflow into the basins. Three additional detention basins will be located on the south perimeter of the site near the Houses.

A Bioswale/Storm Water Retention Zone is located along the campus perimeter Southwest, South, and Southeast of the Grade Level Houses E, F and G. In addition to these areas, there are retention zones proposed along the east side of Library and west side of Building H.

The site drainage design approach will generally maintain the existing undeveloped drainage pattern. The development of paved parking, vehicular and pedestrian circulation, and buildings for EKMS will increase impervious surfaces and thus increase the storm water runoff of the site. The increased storm water runoff will be conveyed, collected, and temporarily stored in 'Green Infrastructure' devices called bioswales, rain gardens and retention basins located along the low portion of the campus. Bioswales, rain gardens and retention basins are planted, linear and broad, or localized depressions in the ground that mimic natural hydrologic functions by filtering and cleansing storm water pollutants using plants and percolation through the soil thus replenishing the ground water table on a developed site.

Runoff from the south portions of grade level house roofs will be conveyed from building downspouts in rock lined pipe receptacles to stone lined channels leading to the main bioswale channel, also stone lined. At the north ends of each House, there is a more formal triangular shaped rain garden that is also stone lined and interspersed with planting.

BMP controls should be included at the construction site to prevent trailing of dirt and debris on City roadways and any damage to the existing roadway and sidewalk area caused by the project should be repaired to current City standards as well as meet ADA requirements.

3.11.5 GAS

Hawaii Gas, maintains underground utility gas mains in the project vicinity which serves the surrounding commercial and residential customers in the area. Existing gas lines have been installed within Keahumoa Parkway and Maunakapu Street.

Project Impacts and Mitigations

Gas service will be provided to the school's kitchen utilizing an existing lateral connection along Keahumoa Parkway. Appropriate coordination with Hawaii Gas is being conducted during the project's design phase to minimize any potential conflicts with the existing gas facilities in the area.

3.11.6 SOLID WASTE

Solid waste collection, disposal, and recycling operations serving Ewa is provided by the City's 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.

Project Impacts and Mitigations

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 it in accordance with agency regulations. Such activities are expected to have a minimal impact on City solid waste facilities.

3.12 COMMUNITY FACILITIES

Major community facilities in the vicinity of EKMS are noted below.

Educational Facilities

The project site is located in the Honolulu Public Schools Leeward Oahu District in the Campbell-Kapolei Complex Area. There are 12 elementary schools, 1 intermediate school, 2 middle schools, and 2 high schools within this complex area.

Public schools in the immediate vicinity of the proposed project include Kapolei High School and Kapolei Middle School along Kapolei Parkway and Kapolei Elementary along Kamaaha Loop. Other schools that serve the Kapolei area include the following four elementary schools: Barbers Point Elementary, Hookele Elementary, Makakilo Elementary, and Mauka Lani Elementary.

Medical Facilities

The nearest hospital to the project site is The Queen's Medical Center – West Oahu located in Ewa Beach at 91-2141 Fort Weaver Rd, approximately 5.4 miles northeast of the project site. The next nearest full service medical facility to the project site is the Pali Momi Medical Center, which also serves west Oahu and is located in Aiea approximately 11.5 miles east-northeast of the project site.

Emergency Responders

Police protection is provided by the Honolulu Police Department. The project site is located in District 8 – Kapolei/Waianae, Sector 3, which covers the areas of Kapolei, Ewa, Ewa Beach, and Kalaeloa. It is served by the Kapolei Station located at 1100 Kamokila Boulevard approximately 3.5 miles west-southwest of the project site.

Fire protection is provided by the HFD. The project site is a part of Battalion 1 and is served by the East Kapolei Fire Station located at 91-1211 Kinoiki Street, approximately 1.1 miles southwest of the project site.

Emergency medical service is provided by the City's Emergency Services Department, Emergency Medical Services Division. The Department has 20 ambulance units and two Rapid Response units in two districts. All ambulance units are designated as advanced life support units, meaning they are staffed by at least two people. The project area is served by District 1, which includes the western region of Oahu.

Community Parks and Recreational Resources

The City and County of Honolulu, Department of Parks and Recreation (DPR) manages and maintains a system of parks on the island of O'ahu. The proposed project is located in District 3 – Leeward. The nearest DPR-managed parks to the project site include the following: Kamilila Community Park, Kapolei Community Park, Kapolei Regional Park, Geiger Community Park, Ewa Beach Community Park, and Ewa Mahiko Community Park. Additionally, The Salvation Army Kroc Center Hawaii (Kroc Center), a community center that includes a gymnasium, health and wellness center, and aquatics center, as well as conference/banquet rooms, preschool, and dormitory, is located adjacent to the project site.

Project Impacts and Mitigation

The proposed project is not expected to have significant negative impacts on community facilities or services, including educational facilities, medical facilities, emergency responders, or community parks and recreational resources.

Educational Facilities

As discussed in Section 2.2, approximately 10,750 students are expected to be added to the Kapolei Complex and 1,100 students to the Campbell Complex once the future residential units are completed (DOE, 2011). The proposed project would provide a necessary facility to educate these students, as well as provide a beneficial impact by potentially enrolling students from Kapolei Middle School, which is currently exceeding planned enrollment capacity.

Medical Facilities

It is not anticipated that the proposed project would have an impact on the service capabilities of The Queens Medical Center – West Oahu. The school would not result in an increase in population, and it is not expected that there would be a greater need for medical services as a result of the proposed project.

Emergency Responders

It is not anticipated that construction activities would result in an increase in calls for fire, police, or medical services. However, if an incident were to occur during construction that required fire, police, or medical attention, the level of demand could be met by the existing fire, police, and emergency medical services force.

With regard to fire protection, an automatic, addressable, fire alarm system with an Emergency Voice Alarm Communication System will be provided to meet the requirements of the adopted editions of the International Building Code and Uniform Fire Code, with City amendments, and National Fire Protection Association (NFPA) 72.

Fire truck access will utilize the school's main drive aisles and drop off areas. The fire truck shall enter from the Keahumoa Parkway driveway and can exit out of either driveway along Maunakapu Road. Bollards would need to be removed to exit out the parent drop off loop driveway.

An additional fire lane internal through the school campus is required. Access to this fire lane is via a separate gate dedicated for fire truck access off Maunakapu Street and access located next to the handivan drop off. The fire lane shall consist of concrete walkway, grass pavers, and gravel pavers. The limits of the fire lane shall be visually delineated. All fire access shall be compliant to the City's Fire Department Standards and Uniform Fire Code.

Community Parks and Recreational Facilities

The proposed project would not have a direct impact on any City or State parks or existing recreational facilities. The school's new playfields and outdoor play courts will partially serve as a new community recreational park since these features will be open to the public during non-school hours. This would result in a benefit to the surrounding residential community.

Construction of the proposed project would occur adjacent to the Kroc Center. Noise from construction may affect the enjoyment of some users of the facility. The Contractor would be required to obtain a Noise Permit from the State DOH prior to starting construction. State DOH may require action by the Contractor to incorporate noise mitigation into the construction plan. The DOH may also require the Contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The State DOH may also require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities. The Contractor would comply with all restrictions contained in the noise permit.

3.13 SOCIOECONOMIC ENVIRONMENT

The following discussion describes the profile of the existing community and the anticipated effects of the proposed school on the surrounding Kapolei community.

According to the Ewa Development Plan the population in this area will have grown from 68,700 people in 2000 to over 164,000 by 2035. Between 2000 and 2035, over 35,000 new housing units will have been built in a series of master planned communities. Job growth is anticipated to rise from 16,400 non-construction jobs in 2000 to over 87,000 in 2035. Oahu residents and visitors will be attracted to Ewa by a new university campus, the Ko Olina Resort, the Hoakalei Resort, a major super regional park, and a thriving City of Kapolei, which has retail and commercial establishments and private and government offices (City, 2013).

Demographics

The majority of the EKMS student population is expected to come from the Kapolei and Campbell complex areas where approximately 30,000 new residential units are expected to be built within the Kapolei and Campbell Complex regions over the next 25 years (DOE, 2011). A portion of the students attending Kapolei Middle School, which is currently exceeding planned enrollment capacity, may also possibly attend EKMS. The exact boundaries for the school population will not be delineated until the school is nearly ready to be open.

The U.S. Census Bureau compiles demographic information on population, housing and employment every 10 years, with the most recent data available from the year 2010. Census data from the Kapolei (96707) and Ewa Beach (96706) Zip Code Tabulation Areas is provided in the table below. These data sets are shown in comparison to the City as a whole.

Table 10: SELECTED POPULATION AND HOUSING CHARACTERISTICS

Characteristic	Honolulu County	Kapolei	Ewa Beach
Population			
Population Total	953,207	38,817	62,730
Median Age	37.8	32.8	32.9
Age under 5 years	61,261	3,076	5,218
Age 5 to 9 years	57,818	3,052	5,095
Age 10 to 14 years	56,147	3,090	4,873
Age 15 to 19 years	60,344	3,097	4,590
Housing and Households			
Total Housing units	315,988	12,461	18,319
Number of households	311,047	11,253	17,331
Average household size	2.95	3.38	3.61
Percent of total housing units occupied	92.3%	90.3%	94.6%
Percent of households with individuals under 18 yrs	34.8%	49.8%	51.0%

SOURCE: DBEDT census tabulations (http://census.hawaii.gov/Census_2010/demographic/demo_profile_zipcode/)

Project Impacts and Mitigation

The proposed new middle school is not expected to change the existing resident population in the surrounding community or region. This is a State-initiated capital improvement project to provide a needed educational facility. The new school is proposed in response to ongoing and expected population increases in Kapolei and Ewa, leading to a need for several additional middle schools. There are no new residential units or visitor units associated with this project. Consequently, this project would not change existing uses in the surrounding area or have a significant impact on surrounding land uses.

Short-Term Jobs

The estimated construction cost of the EKMS is $97 million. 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. 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. 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 120 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 EKMS will be part of the DOE statewide system that can draw workers from other parts of the island.

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 be 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 increases in revenue since they are only associated with construction activities. However, operational jobs will continually increase tax revenues due to their long-term nature.

3.14 SECONDARY AND CUMULATIVE 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 Development Plan community and surrounding region, and thus would not generate the associated adverse secondary effects on infrastructure, public facilities, and housing.

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 affect or be affected by the project.

There are a number of ongoing major private development projects occurring within vicinity of the proposed middle school. In the immediate vicinity of the project site, there is the Hoopili and East Kapolei developments, which are being constructed concurrently. BMPs, such as erosion control and other mitigation measures, would be implemented, including 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.

4.0 CONFORMANCE WITH PLANS AND POLICIES

4.1 HAWAII STATE PLAN

The Hawaii State Plan, codified as Chapter 226, Hawaii Revised Statutes, serves as a guide for the future long-range development of the State. The Hawaii State Plan identifies goals, objectives, and policies for the State to: provide a basis for determining priorities and allocating limited resources; improve coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities; and establish a system for plan formulation and program coordination to integrate major state and county activities.

This section discusses whether the proposed school conforms or is in conflict with the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan. There are certain sections of the Hawaii State Plan that are not applicable and the proposed school is not expected to result in conflicts with these sections since they deal with un-related issues. The sections include: §226-7 (Economy—agriculture); §226-8 (Economy-visitor industry); §226-9 (Economy-federal expenditures); §226-10 (Economy-potential growth and innovative activities); §226-10.5 (Economy-information industry); §226-15 (Facility Systems-solid and liquid wastes); §226-17 (Facility Systems-transportation); §226-18.5 (Facility Systems-telecommunications); §226—20 (Socio-Cultural Advancement-health); §226-22 (Socio-Cultural Advancement-social services); §226-23 (Socio-Cultural Advancement-leisure); §226-24 (Socio-Cultural Advancement-individual rights and personal well-being); §226-25 (Socio-Cultural Advancement-culture); and §226-26 (Socio-Cultural Advancement-public safety).

§226-4 State goals.

Goal 1 - A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.

Goal 2 - A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

Goal 3 - Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Discussion:

The addition of a new middle school in east Kapolei is consistent with the State goals. Significant residential growth associated with Oahu's Second City policies is anticipated. The proposed school is needed to serve existing and new Kapolei residents and be an important public resource for present and future generations in Kapolei.

§226 -5 Objective and policies for population.

Objective - It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

Policy 7 - Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

Discussion:

The proposed school does not conflict with the State's objectives or policies for population. The use of the proposed 18-acre site was coordinated in connection with the 1,300 acre East Kapolei Master Plan Development and is consistent with the timing and desired levels of growth in the region.

§226-6 Objectives and policies for the economy – in general.

Objective 1 - Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.

Objective 2 - A steadily growing and diversified economic base that is no overtly depended on a few industries, and includes the development and expansion of industries on the neighbor islands.

Policy 9 – Strive to achieve a level of construction activity responsive to, and consistent with, state growth policies.

Policy 20 –Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirement of new or innovative potential growth industries in particular.

Discussion:

The proposed school does not conflict with the State's objectives or policies for the general economy. The estimated construction cost of the EKMS is $97 million. 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. 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 GET on development costs and construction materials, along with corporate income tax, and personal income tax from construction workers and long-term permanent jobs.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

Objective 1 - Prudent use of Hawaii's land-based, shoreline, and marine resources.

Objective 2 - Effective protection of Hawaii's unique and fragile environmental resources.

Policy 3 - Take into account the physical attributes of areas when planning and designing activities and facilities.

§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.

Objective - Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.

Policy 3 - Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.

Policy 5 - Encourage the design of developments and activities that complement the natural

§226-13 Objectives and policies for the physical environment--land, air, and water quality.

Objective 1 - Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.

Objective 2 - Greater public awareness and appreciation of Hawaii's environmental resources.

Policy 1 - Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.

Policy 5 - Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.

Policy 6 - Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

Policy 7 - Encourage urban developments in close proximity to existing services and facilities.

Discussion:

The proposed school does not conflict with the State's objectives or policies for the physical environment. The school location is well inland of shoreline areas and therefore impacts to marine resources are expected to be minimal. No long-term impacts to groundwater aquifers or surface waters are expected to result from the school uses. There are no wetlands within the project site.

Appropriate BMPs will be implemented to minimize risk of siltation and pollution through construction related stormwater runoff. The project storm drainage system will be designed to comply with the latest City and County of Honolulu *Rules Relating to Storm Drainage Standards* and *Standard Details for Public Works Construction*.

> *§226-14 Objective and policies for facility systems--in general.*
>
> *Objective - Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.*
>
> *Policy 1 - Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.*
>
> *§226-16 Objective and policies for facility systems--water.*
>
> *Objective - Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.*
>
> *Policy 3 - Reclaim and encourage the productive use of runoff water and wastewater discharges.*
>
> *Policy 6 - Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.*
>
> *§226-18 Objectives and policies for facility systems--energy.*
>
> *Objective 2 - Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.*
>
> *Objective 3 - Greater diversification of energy generation in the face of threats to Hawaii's energy supplies and systems.*
>
> *General Policy - ensure the short- and long-term provision of adequate, reasonably priced, and dependable energy services to accommodate demand.*
>
> *Policy 1 - Support research and development as well as promote the use of renewable energy sources;*

Discussion:

The proposed school does not conflict with the State's objectives or policies for facility systems. The school's design is consistent with promotion of water conservation programs and practices in government. The water demand for landscape irrigation is significantly reduced in comparison to typical tropical landscapes in Oahu's built environment. Besides using appropriate native and naturalized dry land plant species, another means of reducing irrigation water use will be through

applying drip and low flow irrigation technology and equipment in lieu of the traditional spray equipment, where appropriate. Another means of reducing irrigation water use is through the use of smart irrigation controllers, which monitor on-site rainfall, wind, atmospheric temperature and even soil moisture. Both drip and smart irrigation technology will be used at EKMS.

The school's design is being submitted for CHPS Verified recognition, which is a certification of healthy, efficient, environmentally responsive schools for all school children. This recognition is consistent with promoting the use of renewable energy sources. As of January 2016 there are no CHPS Verified whole-campuses in Hawaii. EKMS has the opportunity be the first of such campus in Hawaii. Further, the school's electrical distribution system is designed to facilitate installation of a future PV solar system.

§226-19 Objectives and policies for socio-cultural advancement--housing.

Objective 1 - Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaii's population.

Objective 2 - The orderly development of residential areas sensitive to community needs and other land uses.

Policy 5 - Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

§226-21 Objective and policies for socio-cultural advancement--education.

Objective - Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.

Policy 1 - Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.

Policy 2 - Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

Policy 3 - Provide appropriate educational opportunities for groups with special needs.

Policy 4 - Promote educational programs which enhance understanding of Hawaii's cultural heritage.

Policy 7 - Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.

Policy 8 - Emphasize quality educational programs in Hawaii's institutions to promote academic excellence.

§226-27 Objectives and policies for socio-cultural advancement--government.

Objective 1 - Efficient, effective, and responsive government services at all levels in the State.

Policy 1 - Provide for necessary public goods and services not assumed by the private sector.

Discussion:

The proposed school does not conflict with the State's objectives or policies for socio-cultural advancement. According to the *Ewa Development Plan*, the population in this area will have grown from 68,700 people in 2000 to over 164,000 by 2035. Between 2000 and 2035, over 35,000 new housing units will have been built in a series of master planned communities. These new homes in the area will require accessibility to public facilities and services, such as schools, which results in greater opportunities for Hawaii's people to secure homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals.

Job growth is anticipated to rise from 16,400 non-construction jobs in 2000 to over 87,000 in 2035. O'ahu residents and visitors will be attracted to Ewa by a new university campus, the Ko Olina Resort, the Hoakalei Resort, a major super regional park, and a thriving City of Kapolei which has retail and commercial establishments and private and government offices (City, 2013).

The addition of EKMS to the rapidly growing Kapolei area is consistent with the objective to provide a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations and further ensures that adequate and accessible educational services and facilities are provide to meet community needs.

Priority Guidelines

The State of Hawaii has priority guidelines within HRS §226 covering seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation. The following discussion focuses on the proposed project's consistency with applicable priority guidelines related to quality education and sustainability. The proposed school is not expected to result in conflicts any of the remaining priority guidelines.

§226-107 Quality education. Priority guidelines to promote quality education:

Priority Guideline 1 - Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;

Priority Guideline 2 - Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;

Priority Guideline 3 - Initiate efforts to improve the quality of education by improving the capabilities of the education work force;

Priority Guideline 4 - Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;

Priority Guideline 5 - Increase and improve the use of information technology in education by the availability of telecommunications equipment for: (A) The electronic exchange of information; (B) Statewide electronic mail; and (C) Access to the Internet. Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;

Priority Guideline 6 - Pursue the establishment of Hawaii's public and private universities and colleges as research and training centers of the Pacific;

Priority Guideline 7 - Develop resources and programs for early childhood education;

Priority Guideline 8 - Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and

Priority Guideline 9 - Strengthen and expand educational programs and services for students with special needs.

Discussion:

The proposed school does not conflict with the State's priority guidelines to promote quality education. The primary design objective is to achieve a benchmark, cost effective middle school based upon 21st Century Learning principles and high performance/low maintenance sustainable design practice.

§226-108 Sustainability. Priority guidelines and principles to promote sustainability shall include:

Priority Guideline 1 - Encouraging balanced economic, social, community, and environmental priorities;

Priority Guideline 2 - Encouraging planning that respects and promotes living within the natural resources and limits of the State;

Priority Guideline 3 - Promoting a diversified and dynamic economy;

Priority Guideline 4 - Encouraging respect for the host culture;

Priority Guideline 5 - Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;

Priority Guideline 6 - Considering the principles of the ahupuaa system; and

Priority Guideline 7 - Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.

Discussion:

The proposed school does not conflict with the State's priority guidelines on sustainability. Much of the school's design was developed with sustainable concepts as the underlying theme. As discussed previously, the school's design is being submitted for CHPS Verified recognition. Most of the schools facilities will be designed for seasonal "mixed mode" ventilation to achieve high performance and thermal comfort in either the natural ventilation mode (November through April) or the air conditioning mode (May through October), giving occupants a choice for modulating their learning environment to suit their needs. All buildings that are scheduled for natural ventilation or mixed mode ventilation, including the classroom Houses, Cafeteria and PE complex are oriented for effective cross ventilation from prevailing northeasterly trade winds.

The school's design is consistent with promotion of water conservation programs and practices in government. The water demand for landscape irrigation is significantly reduced in comparison to typical tropical landscapes in Oahu's built environment. Besides using appropriate native and naturalized dry land plant species, another means of reducing irrigation water use will be through applying drip and low flow irrigation technology and equipment in lieu of the traditional spray equipment, where appropriate. Another means of reducing irrigation water use is through the use of smart irrigation controllers, which monitor on-site rainfall, wind, atmospheric temperature and even soil moisture. Both drip and smart irrigation technology will be used at EKMS.

The school's electrical distribution system is designed to facilitate installation of a future PV solar system.

4.2 HAWAII REVISED STATUES CHAPTER 344

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

§344-3 Environmental policy. It shall be the policy of the State, through its programs, authorities, and resources to:

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 Hawaii.

Policy 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.

Discussion:

The proposed school does not conflict with the State's Environmental Policy and is consistent with the policy to "enhance the quality of life" by "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."

§344-4 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.

Discussion:

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

(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) Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves;

(F) Maintain an integrated system of state land use planning which coordinates the state and county general plans;

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

Discussion:

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 (R-1), when available.

BMPs would be implemented 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.

Discussion:

There are no anticipated 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. The project proposed use of appropriate native and naturalized dry land plant species compatible with the Ewa plain.

(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;

(C) Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.

Discussion:

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 since there are no known traditional cultural practices affect by the construction or operations of the proposed school.

(5) Economic development.

(A) Encourage industries in Hawaii which would be in harmony with our environment;

(B) Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands;

(C) Encourage federal activities in Hawaii to protect the environment;

(D) Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment;

(E) Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms;

(F) Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.

Discussion:

The project does not conflict with these guidelines for economic development.

(6) Transportation.

(A) Encourage transportation systems in harmony with the lifestyle of the people and environment of the State;

(B) Adopt guidelines to alleviate environmental degradation caused by motor vehicles;

(C) Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.

Discussion:

When complete, the East Kapolei Rail Station will be located approximately 800 feet from the project site at the intersection of Kualakai Parkway and Keahumoa Parkway. The surrounding transportation infrastructure has largely been built out with wide sidewalks, including paved sidewalks on both sides of the road along Kualakai Parkway, Keahumoa Parkway, and Maunakapu Street. There is also a multi-use path along the east side of the southern portion of Kualakai Parkway.

(7) Energy.

(A) Encourage the efficient use of energy resources.

Discussion:

Design of the EKMS is aimed at achieving CHPS recognition by incorporating sustainable design features.

(8) 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) Foster safe, sanitary, and decent homes;

(E) 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.

Discussion:

The project does not conflict with these guidelines on community life and housing since the project is consistent with the Oahu General Plan and Ewa Development Plan.

(9) Education and culture.

(A) Foster culture and the arts and promote their linkage to the enhancement of the environment;

(B) Encourage both formal and informal environmental education to all age groups.

Discussion:

The project does not conflict with these guidelines on education and culture. The students attending this new school will come from the rapidly growing Campbell-Kapolei Complex areas and possibly a portion of the students attending Kapolei Middle School, which is currently exceeding planned enrollment capacity.

(10) Citizen participation.

(A) Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations; and

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

Discussion:

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.

4.3 HAWAII REVISED STATUTES CHAPTER 343

EKMS will be constructed on State-owned lands and will be funded by the State. Therefore, this EA was prepared in accordance with LUO requirements, Chapter 343, HRS, and Title 11, Chapter 200, HAR.

4.4 HAWAII REVISED STATUES CHAPTER 205A

The CZMA encourages coastal states to protect coastal resources consistent with the state's coastal zone management program. The objectives of the CZM Program are to provide the public with recreational opportunities, protect historic resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce hazards and manage development.

Within Hawaii, the CZM program was authorized by HRS Chapter 205A, and is administered by the Office of Planning within DBEDT. Actions anywhere within the State must comply with the CZM program. As discussed throughout this document, the proposed project is not anticipated to have adverse impacts on the area's recreational opportunities, historic resources, scenic and open space resources, or coastal ecosystems.

Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

A) Improve coordination and funding of coastal recreational planning and management; and

B) Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:

i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

v) Ensuring public recreational use of county, state and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;

vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches and artificial reefs for surfing and fishing; and

viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Discussion:

The proposed project will comply with applicable rules and regulations designed to control or reduce pollution, including point and non-point source water pollution, to conserve both the natural resources and the recreational value of the affected coastline.

Historic Resources

Objective:

Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

A) Identify and analyze significant archaeological resources;

B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion:

The proposed project will be constructed in keeping with the guidelines and objectives of the aforementioned objective and policies.

Scenic and Open Space Resources

Objective:

Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

A) Identify valued scenic resources in the coastal zone management area;

B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion:

The project is not anticipated to have a significant negative impact on scenic viewplanes or scenic resources in the surrounding area. The proposed project would include a landscaping plan that would replicate the naturalized dry shrub and grass lands common to the Ewa Plain.

Coastal Ecosystems

Objective:

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

Policies:

A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources

B) Improve the technical basis for natural resource management;

C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance

D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine water ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion:

The proposed project will be consistent with these policies. To minimize degradation to the water quality of near-shore waters, BMPs would be implemented during the construction phase of this project. Such measures would be developed during the design of this project, and would comply with the County's Erosion and Sedimentation Control regulations. Drainage will be designed to maintain acceptable drainage patterns.

Economic Uses

Objective:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

A) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;

B) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

i) Utilization of presently designated locations is not feasible;

ii) Adverse environmental effects are minimized; and

iii) Important to the State's economy.

Discussion:

The proposed project will be consistent with these policies and will have a beneficial impact on the State and local economy through the creation of temporary construction jobs, permanent educational field jobs, and additional tax revenue generation to the State and City.

Coastal Hazards

Objective:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies:

A) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;

B) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;

C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

D) Prevent coastal flooding from inland projects.

Discussion:

The design of the proposed project will conform to all regulatory requirements to ensure adequate and proper storm drainage and erosion control to the surrounding properties.

According to the Flood Insurance Rate Map prepared by the Federal Emergency Management Agency, the subject property is located in Zone “X” which is an area that has been determined to be outside the 0.2% annual chance floodplain and outside of the 500 year floodplain. According

to the State Civil Defense Tsunami Evacuation Zone maps, the subject property is not within a tsunami evacuation zone.

Public Participation

Objective:

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

Policies:

A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion:

The EA process requires public notification and two periods for public comment: one for the Draft EA and one for the Final EA.

4.5 STATE LAND USE LAW

The State Land Use Law, Chapter 205, HRS, classifies all lands in the State into four land use districts: Urban, Rural, Agricultural, and Conservation. The use of the subject property for a public middle school is consistent with the Urban designation.

4.6 CITY AND COUNTY OF HONOLULU GENERAL PLAN

The *General Plan* of the City and County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of island residents and shapes the strategies and actions needed to achieve them. The General Plan was adopted in 1992 and most recently amended in 2002. It is the first level of a comprehensive planning process that addresses physical, social, economic, and environmental concerns. The proposed school is consistent with the following objectives and policies of the Honolulu General Plan:

> *Objective B: To provide a wide range of educational opportunities for the people of O‘ahu.*
>
> *Policy 4: Encourage the construction of school facilities that are designed for flexibility and high levels of use.*
>
> *Policy 5: Facilitate the appropriate location of learning institutions from the preschool through the university levels.*

4.7 EWA DEVELOPMENT PLAN

The City's Development or Sustainable Communities Plans consist of conceptual schemes for implementing the development or sustainable community objectives and policies of the City's *General Plan*. The purpose of the plans are to set forth the desired sequence, patterns, and characteristics of future development or sustainability of a region or community. Therefore, these plans are detailed guidelines for the physical sustainability or development of the island. The plans consist of maps depicting the land use pattern, public facilities, open spaces, general principles and common provisions, and specific urban design principles and controls. The *Ewa Development Plan* was first adopted by the City Council in 1997. The current version of the plan was adopted as Ordinance 13-26 in July 2013.

Under this Development Plan's Land Use Map, the project site is designated as "low and medium density residential" and identifies a future middle school at the project site, as shown in Figure 6.

4.8 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE

The proposed EKMS property is designated as AG-1, Restricted Agricultural, by the City's LUO. The LUO regulates land use in a manner that will encourage orderly development in accordance with the General Plan and area development plans. According to LUO Section 21-3.50, the intent of the AG-1 restricted agricultural district "is to conserve and protect important agricultural lands for the performance of agricultural functions by permitting only those uses which perpetuate the retention of these lands in the production of food, feed, forage, fiber crops and horticultural plants."

Table 21-3 from the City's LUO identifies the permitted and conditionally permitted uses within all zoning districts. "Public uses and structures" are permitted in all zoning districts, including the AG-1 district. According to the Definitions section in the LUO "public uses and structures" are "those uses conducted by or structures owned or managed by the federal government, the State of Hawaii or the city to fulfill a governmental function, activity or service for public benefit and in accordance with public policy. Excluded are uses which are not purely a function, activity or service of government and structures leased by government to private entrepreneurs or to nonprofit organizations. Typical public uses and structures include: libraries, base yards, satellite city halls, public schools and post offices".

The proposed EKMS is consistent with the definition of public use and therefore permitted within the existing AG-1 district. Table 13 shows the AG-1 district development standards along with how the proposed project conforms to those standards, if applicable.

Table 11: AG-1 DISTRICT DEVELOPMENT STANDARDS

Development Standard	Standard LUO Value	Proposed EKMS Value
Minimum Lot Area (acres)	5 ac	18 ac
Minimum Lot Width and Depth (feet)	150 ft	The Lot is approximately 700 feet wide and 1,300 feet deep
Minimum Yard Setbacks (feet)	Front - 15 ft Side and Rear – 10 ft	Front > 15 ft Side and Rear > 10 ft
Maximum Building Area (% of zoning lot)	10% for non-agricultural structures	15% to 18%, depending on final design.
Maximum Height (feet)	15 ft (or 25ft with height setbacks)	Classroom Houses are 44.5 ft tall, Covered Playcourt is approximately 27.5 ft. tall, and Cafeteria is 27.5 ft tall as measured from the property line elevation, all exceed the 25ft height limit.
Height Setbacks	1 ft setback for each 2 ft of addl. height	The Covered Playcourt roof encroaches into the height setback. See Figure 12.
Total Parking Stalls	1 per 400 sq ft of classroom and office space = 209 stalls	231 stalls
Accessible Stalls	101 to 150 stall lots require 5 Accessible parking stalls	10 total (5 per parking lot)
Van Stalls	1 of 6 required Accessible stalls shall be a van stall at each location	3 total (2 stalls in Parent Lot and 1 stall in Teacher Lot)
Loading Stalls	Category B = 4 stalls	4 stalls

Source: LUO Table 21-3.1

The Department of Planning and Permitting (DPP), Land Use Permits Division was consulted regarding the schools proposed design deviations from the AG-1 designation development standards. According to DPP, the zoning waiver process would be used to approve deviations from the LUO standards. A zoning waiver, as opposed to a zoning variance, would apply to this project because it is a public (use) school and meets the LUO definition for "public uses and structures." As shown in the above table, the proposed school will comply with minimum lot area, minimum lot with and depth, and yard setback standards. A zoning waiver will be requested for exceedances of the maximum building area, maximum height and height setbacks standards.

Maximum Building Area

The proposed school building footprint is expected to cover between 15% and 18%, or approximately 136,000 sf, of the zoning lot inclusive of covered exterior walkways and covered overhangs up to the edge of supporting structures. The ultimate coverage percentage is dependent upon completion of the final design, but is expected to exceed the AG-1 standard of 10% maximum building area coverage for non-agricultural structures. While the use of the property (as a middle school) is not related to agricultural use, public schools are permitted in all

City zoning districts. The proposed EKMS building area coverage is consistent with most middle schools in the State. The sizing of school facilities are dependent on the DOE Facilities Assessment Development Schedule (FADS) which designates the total program area for new schools based upon 21st Century Learning principles and high performance/low maintenance sustainable design practice.

Maximum height and height setbacks standards

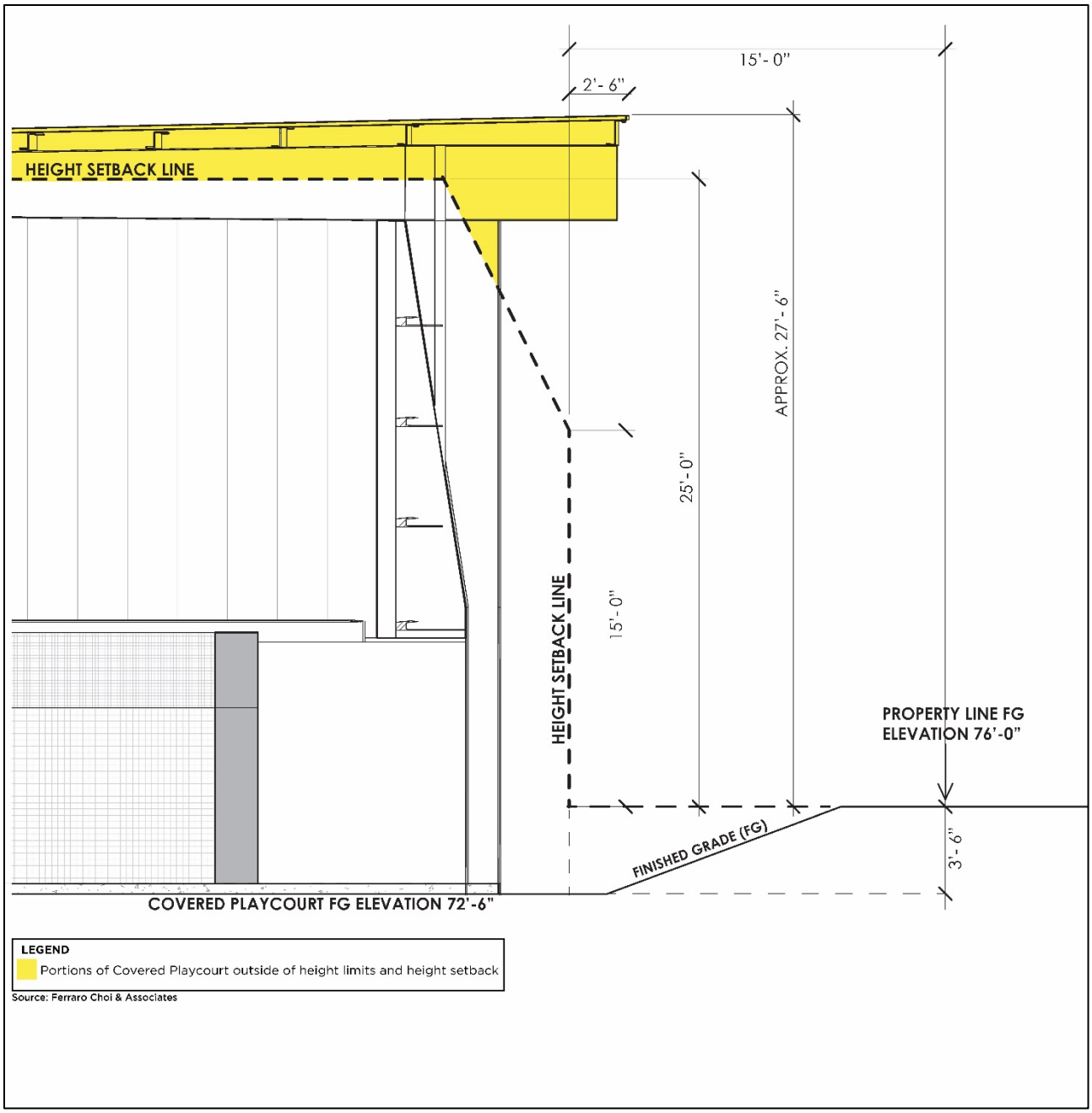
The proposed classroom houses measure approximately 45 feet above finished grade. The covered play court measures approximately 31 feet above finished grade, but is also approximately 3.5 feet below grade at the nearest property line elevation. The Cafeteria is almost 28 feet above finished grade. The Cafeteria, covered play court and three (3) identical classroom houses will exceed the maximum height of 25 feet.

The classroom houses do not encroach into the height setback. The roof structure of the covered playcourt encroaches into the height setback as shown in the Figure 15. This encroachment is necessary due to the following constraints and design objectives: 1) the current proposed location of the covered playcourt is situated in order to accommodate proper spacing from the future House No. 4; and 2) the covered playcourt will serve as an after school facility and its location close to the parent pick-up and drop-off location is desirable from a safety and security standpoint.

4.9 EWA IMPACT FEE

According to the ROH, Chapter 33A, “impact fees shall be charged and assessed for all new land development activities that require a building permit in the Ewa region” with a few exceptions. The ROH also states that the fees are to be borne by those who “directly contribute to expanding the population and increasing economic activity in the Ewa region through new land development activities.” Construction of the new school will require a building permit and it is anticipated that the State will attribute an existing credit towards the Impact Fee based on their construction of Fort Weaver road widening project.

Figure 15: PLAY COURT HEIGHT SETBACK



4.10 EAST KAPOLEI NEIGHBORHOOD TRANSIT-ORIENTED PLAN

The East Kapolei Neighborhood TOD (transit-oriented development) Plan envisions each of the three (3) stations (Hoopili, University of Hawaii at West Oahu and East Kapolei) within the East Kapolei region as compact, pedestrian friendly environments that provide numerous housing, employment and recreational opportunities (City, 2010). The overall vision of the plan calls for an integrated, connected urban environment that fosters healthy living and cultural identity. Neighborhoods that include transportation options for residents, workers and visitors alike. Implementation of the plan is anticipated to result in the creation of a TOD Special District to explicitly promote TOD and help implement the Plan's vision.

The proposed school is consistent with the East Kapolei Neighborhood TOD Plan in that it will support the growing planned communities within the East Kapolei region as a new cultural node located around the East Kapolei Station. EKMS will become a destination point for local riders and pedestrians. Per the Plan's zoning recommendations, schools would be permitted in both TOD and Transit-Influenced Zone (TIZ) precincts. The EKMS is located within the proposed East Kapolei TOD precinct and would be a permitted use. TOD areas are intended to contain a mix of complementary uses which are land uses that that offer goods and services at different times of the day and week and provide a consolidated "one-stop" area for people to live, work, shop and participate in entertainment and community activities in close proximity to one another. A new middle school would be consistent with this concept since EKMS is intended to server the surrounding mixed residential community. The new school is also providing new community open spaces and its cafeteria will serve as hurricane shelter in accordance with the Hawaii State Building Code.

4.11 HONOLULU COMPLETE STREETS DESIGN MANUAL

The proposed school is consistent with the Honolulu Complete Streets Design Manual (City, 2016). According to the Honolulu Complete Streets Design Manual, it is suggested that marked crosswalks are used on all legs at a signalized intersection (Section 4.6 Crosswalk and Ramp Placement) to provide convenience and safety for people on foot. The intersection of Keahumoa Parkway and Maunakapu Street will be a signalized intersection and will have marked crosswalks on the east leg and north leg. A marked crosswalk on the west leg is not recommended due to the potential of pedestrian conflicts with the high volume of the southbound right turning vehicles. An angled median crossing will be installed along Maunakapu Street near the school driveway and Kroc Center driveway. Angled median crossings force people on foot to look for oncoming vehicles (Section 5.2.12).

5.0 FINDINGS AND DETERMINATION

The proposed development of a new middle school in Kapolei is not anticipated to have a significant impact based on the criteria set forth in the State DOH Rules, Chapter 200, Title 11, Section 12. The objective of this assessment is to identify and consider the "significance" of potential environmental effects, which includes the sum of effects on the quality of the environment along with cumulative long-term effects.

As set forth in the DOH Rules, Chapter 200, Title 11, a prescribed set of 13 Significance Criteria is used to determine the project's impact on the environment. The project's relationship to each criterion is discussed in this chapter and followed by the ensuing project determination.

5.1 FINDINGS

To determine whether a proposed action may have a significant effect on the environment under HAR Title 11, Chapter 200, the Approving Agency needs 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).

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

The proposed school is not anticipated to result in an irrevocable commitment to loss or destruction of any natural or cultural resource. Since the Kapolei-Ewa region has been designated as the Secondary Urban Center for Oahu, both the State and City have committed to providing the necessary public infrastructure to support Oahu's Second City. Approximately 30,000 new residential units are expected to be built within the Kapolei and Campbell Complex regions over the next 25 years resulting in an estimated 12,000 students being added to the region. The proposed EKMS will be located on a site designated for that specific purpose. The Ewa Development Plan also shows the EKMS site as a Future Intermediate School Conceptual Location (Figure 6 in this document).

Because of previous agricultural disturbance to the property, impacts to any natural flora or faunal resources will not result in irrevocable commitment to loss or destruction of any natural resources. No state or federal listed threatened, endangered, or candidate plant species were observed in the project area during the biological survey and the project area does not contain critical habitat for threatened or endangered species. However, there still remains a chance of potential impacts to flora and avifauna species that require minimization measures through design or construction best management practices for avoidance.

No historic sites are known to be present on the property based on previous archaeological surveys, and no impacts to archaeological resources are anticipated according to the SHPD. No impacts to cultural resources or practices are expected as the site is not associated with ongoing cultural practices and no contemporary or continuing cultural practices are currently occurring on the

EKMS site. The accessibility to the EKMS site for gathering or other cultural practices was radically curtailed during the second half of the 19th century due to private agricultural use.

The West Loch community is located approximately 2 miles east of the EKMS site and former Honouliuli Taro Lands. Currently, there is no taro cultivation occurring at the project area or vicinity and the project is situated at a significant distance away from the shoreline. In terms of plant resource and marine resource gathering, this project is not expected to affect access to shoreline areas or have an impact on the gathering of plant or marine resources. The project area generally consists of sparsely vegetated land with no significant botanical resources present.

The EKMS site is not located within any of the significant Native Hawaiian cultural and archaeological sites identified in the current Ewa Development Plan, including the Barbers Point Archaeological District, Ewa Beach Midden Site, Okiokiolepe Pond, or Oneula Archaeological District. The proposed EKMS is not anticipated to have any impacts on ongoing cultural practices occurring at Puu Kapolei, nor are there any visual impacts expected on this cultural resource.

This project would not significantly restrict access to other surrounding areas that may be used for cultural practices because the school use would be limited to the site. Furthermore, the EKMS will eventually be entirely surrounded by development projects including DHHL's residential developments, HHFDC's low density apartments, and the Salvation Army Kroc Center.

The SHPD has acknowledged that previous archaeological studies for the greater Honouliuli area have documented very few historic properties and recorded generally low potential for archaeological resources. However, SHPD indicated that more information on the proposed project site is desired and has requested archaeological monitoring for the project (SHPD Doc. No.: 1709KM17).

2. *Curtails the range of beneficial use of the environment;*

The proposed development will not curtail the range of potential beneficial uses of the subject parcel or surrounding environment. The proposed school site is located within a growing planned area of East Kapolei consisting of single family and multi-family homes, community centers, a regional shopping center, and university. The proposed middle school will provide a community benefit by providing needed educational facilities in the growing DOE Kapolei-Campbell Complex. The Ewa Development Plan also shows the EKMS site as a Future Intermediate School Conceptual Location.

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.*

As discussed in Section 4.2, the proposed school does not conflict with the long-term environmental policies of goals and guidelines as expressed in Chapter 344, HRS.

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

The subject property is currently unutilized and has been set aside specifically for development as a future school. In the short-term, the proposed action will have a beneficial economic impact through the creation of temporary construction jobs. Additional revenue to the state will be composed primarily of GET on development costs and construction materials, along with corporate income tax and personal income tax from construction workers and long-term permanent jobs.

The new school is proposed in response to ongoing and expected population increases in Kapolei and Ewa, leading to a need for several additional middle schools. There are no new residential units or visitor units associated with this project. Consequently, this project would not change existing uses in the surrounding area or have a significant impact on surrounding land uses. Therefore, the project is expected to have a positive impact on social welfare in the area.

No impact to cultural practices is anticipated as the subject property is not associated with ongoing cultural activities and no archaeological sites are known to be present on the property.

5. Substantially affects public health;

The proposed action is not anticipated to have any environmental impacts that would affect public health. No hazardous materials will be used during construction, and construction impacts to water and air quality will be minimized through the implementation of BMPs. The Cafeteria and attached food preparation area will serve as an emergency shelter and is designed for Category III enhanced hurricane protection in accordance with the Hawaii State Building Code. The design considers a higher design wind speed for structural design, and windborne debris impacts resistance glazing and doors.

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

The proposed project would not result in an increase in population. According to the 2011 State DOE *Analysis of the Leeward Oahu School Impact District* study, approximately 30,000 new residential units are expected to be built within the Kapolei and Campbell Complex regions over the next 25 years. Approximately 10,750 students are expected to be added to the Kapolei Complex and 1,100 students to the Campbell Complex once the future residential units are completed (DOE, 2011). EKMS would serve existing and new population to the area.

The proposed project is not expected to have significant negative impacts on community facilities or services, including educational facilities, medical facilities, emergency responders, or community parks and recreational resources.

7. Involves a substantial degradation of environmental quality;

The proposed action is not expected to cause a substantial degradation of environmental quality. No hazardous materials will be used during construction, and construction impacts to water and air quality will be minimized through the implementation of BMPs. No significant long-term adverse impacts are anticipated from development of the subject property for an educational facility.

8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger 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 affect or be affected by the project. There are a number of ongoing major private development projects occurring within vicinity of the proposed EKMS. In the immediate vicinity of the project site, there is the Hoopili and East Kapolei developments, which are being constructed concurrently. BMPs, such as erosion control and other mitigation measures, would be implemented, including 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.

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

Because of previous agricultural disturbance to the property, impacts to rare, threatened, or endangered species are not anticipated however there still remains a chance of potential impacts to flora and avifauna species that require minimization measures through design or construction best management practices for avoidance.

There are very few tree species that occur in the project area and none appear to be suitable roosting trees, however shower trees (Cassia spp.) have been documented as roost trees and it is possible that the rainbow shower trees planted between the sidewalk and Maunakapu Street could potentially be used as roost trees by Hawaiian hoary bats. These trees are located outside of the new school property and will remain untouched since clearing activities would be limited to the project site. Currently, there are no existing trees greater than 15 feet tall within the project site, however the potential for impacts do exist and inspections for woody plants over 15 feet tall would be necessary prior to the start of ground clearance and grubbing activities. If present, the removal of those plants should be appropriately timed to avoid disturbance to any Hawaiian hoary bats in the area. It should also be noted that landscaping for the school will include planting of new shower trees onsite which may provide additional potential roosting trees in the future.

Potential impacts to Hawaiian waterbirds exist due to the observance of bird species during the avifauna survey and intermittent presence of standing water within the project site. There are no permanent standing water features proposed as part of the design therefore it is not anticipated that prolonged periods of standing water would occur throughout the construction period, aside from occurrences of prolonged severe rain and or storm events. Not more than three (3) days prior to the start of construction activities, the subject work areas will be inspected for any standing waterbodies or nesting areas of Hawaiian waterbirds. If a nest or active brood is found, the contractor shall contact the FWS Pacific Islands Fish and Wildlife Office within 48 hours, establish a 100-foot buffer around the nest or brood and stop all work within the buffer until the chicks/ducklings have fledged.

Although nighttime construction work is not anticipated at this time, it would be avoided during the seabird fledging period of September 15 through December 15. Further, nighttime construction lighting would be down-shielded and only used when necessary. The school's programmable

exterior lighting system will be split up into "nightlight" and "curfew" circuits. Nightlight circuits will be left on from dusk-to-dawn while curfew circuits will be turned on during dusk and turned off at a scheduled time in the evening. Further, exterior light fixtures will be directed to avoid light pollution and trespass.

BMPs will be implemented to minimize risk of siltation and pollution through stormwater runoff during construction. If necessary, additional BMPs will be implemented during construction to minimize impacts to migratory bird species. The majority of site lighting including parking lot lighting and most building mounted exterior lighting is full-cutoff. The central campus is lit by shorter, low wattage pedestrian scale pole mounted luminaires that are designated cut-off. In addition, a handful of large exterior canopies/overhangs are lit indirectly via uplight. These indirect uplights are aimed to minimize light spill beyond the canopies.

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

No significant impact to air or water quality or ambient noise levels are anticipated to result from the proposed action. Short-term impacts during construction of the facility will be minimized through the implementation of BMPs to control construction dust and emissions in compliance with provisions of HAR Section 11.60.1-33. All work will be in conformance with the air pollution standards and regulations of the DOH.

The school air conditioning and other mechanical equipment will generate noise, but the air conditioning equipment that will be used would be selected to ensure that the equipment will efficiently provide the power needed with the most moderate noise. Enclosures will be properly located and designed to moderate noise emissions from mechanical sources. In addition, 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.

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 water.

The subject property is not located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically-hazardous land, estuary, fresh water, or near coastal waters.

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

The project site is not located within a significant viewplane or vista; therefore, the proposed project is not anticipated to have an impact on scenic viewplanes or scenic resources. The proposed project will include a landscaping plan that will replicate the naturalized dry shrub and grass lands common to the Ewa Plain.

13. Requires substantial energy consumption.

Construction of the project will not require substantial energy consumption relative to other similar projects. After the project is completed, energy will be conserved by using modern energy efficient appliances and fixtures and application of green design concepts. The building's electrical distribution system is designed to facilitate installation of a future photovoltaic (PV) solar system. All PV systems on existing campuses are procured through the DOE's Ka Hei program. Ka Hei was originally structured to support existing campuses, and it has not yet been determined how that program will interact with new campuses such as EKMS.

5.2 DETERMINATION

Based upon the information and results of the assessments conducted for the project site, a FONSI determination is issued for the proposed middle school.

6.0 AGENCY AND PUBLIC CONSULTATION

6.1 PRE-ASSESSMENT AND DRAFT EA CONSULTATION

The following is a list of agencies and organizations to which pre-assessment letters as well as notices of the availability of the Draft EA for review were sent. Appendix B includes the pre-assessment letters and the responses. Appendix C includes the Draft EA comments and response letters.

Table 12: LIST OF AGENCIES AND ORGANIZATIONS CONSULTED

	Consulted Agency or Organization	Pre-Assessment Response Received	Draft EA Response Received
Federal Agencies	U.S. Geological Survey – Pacific Islands Water Science Center		
	U.S. Department of Agriculture - Natural Resources Conservation Service		
	U.S. Department of Interior, Fish and Wildlife Service, Pacific Island Region	X	X
State Agencies	DBEDT – Office of Planning	X	
	Department of Accounting and General Services	X	
	DOH - Environmental Planning Office	X	X
	DOH - Clean Water Branch	X	
	DOH – Clean Air Branch		
	DOH – Indoor and Radiological Health Branch	X	
	DOH – Hazard Evaluation and Emergency Response Office		

	DLNR – State Historic Preservation Division		
	DLNR – Land Division	X	X
	DLNR – Engineering Division		X
	DLNR - CWRM	X	X
	Department of Transportation	X	X
	Office of Hawaiian Affairs	X	X
	Department of Hawaiian Home Lands		
	OEQC		
County Agencies	Board of Water Supply	X	X
	Department of Community Services	X	
	Department of Design and Construction	X	X
	Department of Environmental Services		
	Department of Facility Maintenance	X	X
	Department of Planning and Permitting	X	X
	Department of Parks and Recreation	X	
	Department of Transportation Services	X	X
	Honolulu Fire Department	X	X
	Honolulu Police Department	X	X
Elected Officials	State Senator Mike Gabbard (20th Senatorial District)		
	State Representative Ty Cullen (39th House District)		

	Councilmember Kymberly Marcos Pine (Council District 1)		
	Councilmember Ron Menor (Council District 9)		
Utility Companies	HECO		X
	Hawaii Gas	X	X
	Hawaiian Telecom	X	
	Oceanic Time Warner		
Citizen Groups and Individuals	Ms. Evelyn Souza, Chair (Makakili/Kapolei/Honokai Hale Neighborhood Board No. 34)		
	Mr. Mitchell Tynanes, Chair (Ewa Neighborhood Board No. 23)		
	Mr. Shad Kane, Moku Representative (Moku O Kakuhihewa)		

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Appendix A-1: Photos of the Site and Surrounding Uses

Aerial image of the project area and vicinity. Source: Google Earth, image dated 2014.

Panoramic view of the project site facing northwest.

View of the project site from Keahumoa Parkway looking northwest. KROC Center is shown in the background.

View of the project site from Keahumoa Parkway looking west. KROC Center is shown in the background.

View of the project site from Keahumoa Parkway looking north.

View of the project site from Keahumoa Parkway looking north.

View of Kooloaula Apartments to the south, across Keahumoa Parkway.

View from along Maunakapu Street facing south. Kooloaula Apartments are in the background.

View along Keahumoa Parkway facing east. The fenced Abutilon Menziesii contingency reserve is to the right with Kooloaula Apartments in the background.

Entrance to Kroc Center along Maunakapu Street.

View of future Special Olympics Hawaii site to the northwest, across Maunakapu Street.

View of future DHHL East Kapolei, Increment IIB, development to the north.

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Appendix A-2: Photos of Proposed Plant and Tree Species

Monkeypod Tree
Samanea saman

Milo
Thespesia populnea

False Olive
Buddleja salinga

Hala
Pandanus tectorius

Gold tree
Tabebuia donnell-smithii

Hawai`i Treecotton
Kokia drynarioides

Koaia
Acacia koaia

Kukui
Aleurites moluccana

Lonomea
Sapindus oahuensis

Naio (Tree)
Myoporum sandwicense

Neem Tree
Azadirachta indica

Ohia (Tree)
Metrosideros polymorpha

Rainbow Shower
Cassia x nealiae

Silver Trumpet
Tabebuia argentea

Ulu
Artocarpus altilus

Alahe`e
Psydrax odorata

A`alii
Dodonaea viscosa

Hinahina Ewa
Achyranthes splendens

King's Mantle
Thunbergia erecta

Ko`oloa `Ula
Abutilon menziesii

Kulu`i
Nototrichium sandwicense

Naio
Myoporum sandwicense

Nanu
Gardenia brighamii

Naupaka
Scaevola sericea

Papala
Charpentiera tomentosa

Red Ixora
Ixora casei 'Super King'

Kokio ula
Hibiscus kokio saintjohnianus

Sisal Hemp
Agave sisalana

`Aweoweo
Chenopodium oahuense

Akoko
Chamaesyce celastroides

Bermuda Grass
Cynodon dactlyon

Buffel Grass
Pennisetum ciliare

Dwarf Laua`e Fern
Microsorum scolopendrum 'Dwarf'

Feverfew
Tanacetum parthenium

Ohelo kai
Lycium sandwicense

Kupu Kupu Fern
Nephrolepis cordifolia

Nehe
Melanthera integrifolia

Oahu sedge
Carex wahuensis

Pa`u-o-hi`iaka
Jacquemontia ovalifolia sandwicensis

Pili grass
Heteropogon contortus

Pohinahina
Vitex rotundifolia

Pohuehue

Ipomea pes-caprae

`Akia

Wikstroemia uva-ursi

`Aki`aki

Sporobolus virginicus

`Uki`uki

Dianella sandwicensis

'Ulei

Osteomeles anthyllidifolia

Appendix B: Pre-Assessment Consultation Comments and Responses

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 20 2016
JKG JUN 16 2016
FILE FILE COPY

In Reply Refer To:
01EPIF00-2016-TA-0336

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

Subject: Technical Assistance for the Proposed East Kapolei Middle School Project, Kapolei, O'ahu

Dear Mr. Chang:

The U.S. Fish and Wildlife Service received your letter on May 20, 2016, requesting our comments on the proposed East Kapolei Middle School Project. The project is located on an 18-acre parcel within the East Kapolei Master Plan Development project area, Kapolei, O'ahu [TMK: (1) 9-1-017:106]. We understand SSFM International, Inc. will be preparing the Draft Environmental Assessment (DEA) for the project in accordance with Chapter 343, Hawai'i Revised Statutes on behalf of the State of Hawai'i, Department of Education (DOE). The project involves the construction of: four three-story classroom buildings; several single-story buildings with approximately 53 classrooms; nine special education resource rooms; a music building; library media center; computer resource center; an administration area and student center for support services; dining/multi-purpose rooms; physical education area consisting of open and covered play courts, a soccer field, and football field; two interconnected parking lots with 231 parking stalls, including additional accessible parking stalls, van stalls, and loading stalls; utility services (*i.e.*, power, water, sewer, gas, cable); walkways; and landscaping. The school will be designed photovoltaic ready to accommodate a future renewable energy system and support up to 1,400 students.

We have reviewed the information you provided and pertinent information in our files, including data compiled by the Hawai'i Biodiversity and Mapping Program as it pertains to listed species and designated critical habitat in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*). There is no federally designated critical habitat within the immediate vicinity of the proposed project. Our data indicate that the following federally listed species may occur within the vicinity of the project: the endangered Hawaiian hoary bat or ope'ape'a (*Lasiurus cinereus semotus*), the endangered Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*), the endangered Hawaiian gallinule or 'alae 'ula (*Gallinula galeata sandvicensis*), the endangered Hawaiian coot or 'alae ke'oke'o (*Fulica alai*), the endangered Hawaiian duck or koloa maoli (*Anas wyvilliana*), the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*), and the threatened Newell's shearwater or 'a'o (*Puffinus newelli*), and an endangered plant, *Abutilon menziesii* or ko'oloa'ula. Also, the wedge-tailed

shearwater or 'ua'u kani (*Puffinus pacificus*), a species protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712] (MBTA), may occur within the project vicinity. We offer the following comments to assist you in preparing the DEA.

Hawaiian hoary bat

The Hawaiian hoary bat roosts in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to Hawaiian hoary bats in the project area.

Hawaiian waterbirds

The Hawaiian stilt, Hawaiian coot, Hawaiian gallinule, and Hawaiian duck, collectively referred to as Hawaiian waterbirds, occur at various sites within the vicinity of the project area (*e.g.*, Pearl Harbor, Pouhala Marsh). Hawaiian waterbirds, in particular, the Hawaiian stilt, is known to nest in sub-optimal locations (*e.g.*, any ponding water) if present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation, reduced reproductive success due to disturbance within the vicinity of a nest, injury or death from being hit by a vehicle and thus the project may create an attractive nuisance. Therefore, we recommend you design the proposed project in a manner that minimizes the amount of time standing water is present during construction, thereby, reducing the potential to attract waterbirds.

Please note that some photovoltaic systems on the United States mainland are resulting in impacts to migratory waterfowl and shorebirds. This source of mortality has been described previously (McCrary *et al.* 1986; Kagan *et al.* 2014), and recent impacts are being observed at solar facilities in California, including the Desert Sunlight Solar Farm and Genesis Solar Energy Project. Birds have been inadvertently attracted to these sites due to solar panels' resemblance to water and their proximity to important migratory flyways (Donnelly-Shores 2013 and Clarke 2013). Once attracted, collisions with the solar arrays have resulted in injuries and mortalities; once grounded, birds are also subject to predation (Kagan *et al.* 2014). While attraction to solar arrays has not yet been documented in Hawaii, the State harbors a significant diversity of waterbird and shorebird species, including the federally endangered Hawaiian waterbirds. We recommend that personnel at the project site be educated about the potential for birds to be attracted and inadvertently harmed. If monitoring indicates that species are occurring at the photovoltaic system, or additional information about the photovoltaic system's impacts to native Hawaiian species becomes available, please contact us so we may assist you in avoiding and minimizing impacts.

Hawaiian seabirds

Outdoor lighting, such as street lights and night-time work, can adversely impact listed and migratory seabird species found in the vicinity of the proposed project. Seabirds fly at night and are attracted to artificially lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators or often struck by vehicles along roadways. Wedge-tailed shearwater nesting colonies are located on

offshore islets and several locations on O'ahu and every year many young shearwaters are downed and struck along O'ahu roadways. Any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality.

If night-time work is proposed for your project, impacts to seabirds can be minimized by shielding outdoor lights to the maximum extent possible, eliminating night-time construction, and providing all project staff with information about seabird fallout. All lights, including street lights, should be shielded so the bulb can only be seen from below and use the lowest wattage bulbs possible. The DEA should address all potential impacts to seabirds and outline conservation measures to minimize these impacts.

Abutilon menziesii

The State of Hawaii Habitat Conservation Plan (HCP) for *A. menziesii* at Kapolei (dated March 2004), and the United States Fish and Wildlife Service (Service) Biological Opinion, dated August 5, 2004 (1-2-2004-F-123), addressed the development of 1,300 acres in East Kapolei and conservation measures for the protection of *A. menziesii*. Pursuant to the State of Hawaii's HCP and the Service's Biological Opinion, any development that may impact the aforementioned parcel is subject to the requirements of a Certificate of Inclusion from Hawaii Department of Transportation (sponsor of the HCP and mitigation responsibilities). The developer (and any subsequent landowners who agree to accept transfer of the Certificate of Inclusion) must agree to and implement the terms of the plan. To date, Certificates of Inclusion have been issued to the Department of Hawaiian Home Lands, the University of Hawaii, and the City and County of Honolulu who anticipate undertaking developments of housing and educational facilities.

If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance.

General Comments

Hawai'i's native ecosystems are heavily impacted by exotic invasive plants. Whenever possible we recommend using native species for landscaping. If native plants do not meet the landscaping objectives, we recommend choosing species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Weed Risk Assessment for Hawai'i and Pacific Islands (http://www.botany.hawaii.edu/faculty/daehler/wra/) and Global Compendium of Weeds (http://www.hear.org/gcw/).

The proposed project may cause soil erosion and sedimentation; therefore we are attaching the Service's recommended Best Management Practices regarding sedimentation and erosion control. We encourage you to incorporate the relevant practices into your project design.

We appreciate your efforts to conserve listed species and we look forward to reviewing the DEA for the proposed project. If you have questions about our comments, please contact Leila Gibson, Fish and Wildlife Biologist (phone: 808-792-9400, email: leila_gibson@fws.gov).

Sincerely,

Aaron Nadig
Island Team Manager
O'ahu, Kaua'i, North Western Hawaiian Islands,
and American Samoa

Enclosure: Service BMPs for erosion and sediment control

Literature Cited

Clarke, C. 2013. "*Endangered Bird Found Dead at Desert Solar Power Facility*" (On-line), KCET. Available online at http://www.kcet.org/news/rewire/solar/photovoltaic-pv/endangered-bird-dead-at-desert-solar-facility.html

Donnelly-Shores, P. 2013. "*Big Solar and Avian Mortality*" (On-line), Berkeley Energy & Resources Collaborative. Available online at http://berc.berkeley.edu/big-solar-and-avian-mortality/

Kagan, R. A., T. C. Viner, P. W. Trail, and E. O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory.

McCrary, R. D., R. L. McKernan, R. W. Schreiber, W. D. Wagner, and T. C. Sciarrotta. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology 57(2):135-141.

U.S. Fish and Wildlife Service
Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see *http://www.haccp-nrm.org/Wizard/default.asp*) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

SSFM International

February 21, 2017 SSFM 2013_172.000

Mr. Aaron Nadig, Island Team Manager
Oahu, Kauai, North Western Hawaiian Islands, and American Samoa
U.S. Department of the Interior, Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O‘ahu, Hawai‘i

Dear Mr. Nadig:

Thank you for your letter dated June 16, 2016 regarding the East Kapolei Middle School Project. A Biological Resource Assessment was conducted for the project on October 31, 2014. No federally listed threatened, endangered, or candidate plant species were observed in the project area during the survey. One pair of Hawaiian stilt was observed in flight along the western boundary of the project area. The project will implement the guidelines promulgated by the U.S. Fish and Wildlife Service to avoid or minimize impacts to listed species, Hawaiian waterbirds, and Hawaiian seabirds. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

A bioregional landscape design approach will be applied to the project, which will significantly reduce the water demand for landscape irrigation. Landscaped areas will be comprised of appropriate native and naturalized dry land plant species. Best management practices and erosion control measures will be included in the design and implemented as part of construction.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

OFFICE OF PLANNING
STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

SSFM INTERNATIONAL, INC.
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MAY 31 2016

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FILE

Ref. No. P-15168

May 25, 2016

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

Dear Mr. Chang:

Subject: East Kapolei Middle School Project
Pre-Assessment Consultation for Draft Environmental Assessment
Tax Map Key: (1) 9-1-017: 106
Kapolei, Oahu, Hawaii

Thank you for the opportunity to provide comments on the Pre-Assessment Consultation request for the Draft Environmental Assessment (EA) being prepared for the East Kapolei Middle School Project located in Kapolei, Oahu.

The Department of Education (DOE) is proposing to construct a new 18-acre middle school which will include four three-story classroom buildings, several single-story buildings, resource rooms, a music building, a library media center, a computer resource center, a student center, a covered play court, two play fields, two parking lots, and other associated uses. The project site is currently vacant and is within the State Urban District, directly across from the Kroc Center.

The Office of Planning (OP) has reviewed the application and offers the following comments related to OP program responsibilities and priorities under HRS Chapter 226, the Hawaii State Plan, and its current involvement in State agency transit-oriented development (TOD) planning.

1. Consistency with HRS Chapter 226, Hawaii State Plan. HRS Chapter 226, the Hawaii State Plan, provides goals, objectives, policies, and priority guidelines for growth, development, and the allocation of resources throughout the State. Pursuant to HAR § 11-200-10(4), the proposed project must demonstrate that it is consistent with a number of State environmental, social, and economic goals and policies regarding land use. As such, the Draft EA should include an analysis of whether the proposed project conforms or is in conflict with the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan.

Relative to the sustainability priority guidelines, we request that the Draft EA describe the smart growth and livability principles, resource conservation, and green building measures that are expected to be employed in the project. Please see OP's Technical Assistance Memorandum for more information at http://files.hawaii.gov/dbedt/op/docs/OP_TAM_2013-12-03.pdf.

2. Transit-oriented development. The project is within walking distance of the City's planned East Kapolei rail transit station, and lies within the draft East Kapolei Neighborhood Transit-Oriented Development Plan area. TOD shifts public planning emphasis to mixing uses, increasing density, and creating a public realm of public gathering places and safe and pleasant streetscapes that promote pedestrian activity and alternative modes of transportation to the automobile. The Draft EA should discuss how the proposed project will complement TOD objectives.

   Further consideration should be given to improving pedestrian access to the project along Keahumoa Parkway, which leads directly to the rail station, as this will likely be a key street at full buildout of this area.

3. High school facilities. In light of the shortage of high school facilities in the region, there has been some discussion of using the Middle School site to help address this need. As such, the Draft EA should discuss the potential temporary use of this site as a high school.

Thank you for the opportunity to comment. If you have any questions regarding this letter, please contact Katie Mineo at (808) 587-2883.

Sincerely,

Leo R. Asuncion
Director

c: State Department of Education

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Leo R. Asuncion, Director
State of Hawaii
Office of Planning
235 S. Beretania Street, 6th floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Asuncion:

Thank you for your letter dated May 25, 2016 regarding the East Kapolei Middle School Project. The Draft EA will include an analysis of the project's conformance with the State's environmental, social, and economic goals and policies, including the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DAVID Y. IGE
GOVERNOR

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

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:
STP 8.1980

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JUN 27 2016
JKG

FILE COPY

June 21, 2016

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

Dear Mr. Chang:

Subject: East Kapolei Middle School Project
Pre-Assessment Consultation for Draft Environmental Assessment
Kapolei, Oahu, Hawaii
TMK: (1) 9-1-017:106

Our Department of Transportation's (DOT) comments on the subject project are as follows:

Airports Division (DOT-AIR)

1. The proposed school site is within 2 miles of Runway 4L/22R of the Kalaeloa Airport (JRF) in a northeasterly direction.
2. The subject property is located within the Kalaeloa Airport's Noise Exposure Map 55-60 DNL noise contour and the environmental assessment should identify appropriate soundproofing for proposed structures.
3. As additional conditions of development approval, the environmental assessment should identify mitigations that may be needed due to the proximity of the airport and the potential for fumes, smoke, vibrations, odors, etc. that may result for aircraft flight operations. The subsequent school development must not create any hazards to air navigation.
4. Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports, requires a minimum distance of five (5) statute miles between the farthest edge of the Air Operations Area (AOA) and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure space. This includes using appropriate landscaping that deters bird nesting and foraging. Though FAA Advisory Circular is termed "advisory," it is a requirement for certificated airports such as JRF.

5. In the event a photovoltaic (PV) system will be considered for installation, please provide DOTA and the Federal Aviation Administration (FAA) your proposed plans for review prior to construction. PV systems can create a hazardous condition for a pilot due to possible glint and glare reflected from the PV array, therefore additional studies and/or mitigation may need to be undertaken. We are coordinating our review with the Oahu Airport District Manager, Roy Sakata, and his staff and we will monitor the situation into the future.

Highways Division (DOT-HWY)

HWY is still reviewing the subject project. Supplemental comments will be sent as soon as the review is completed.

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,

FORD N. FUCHIGAMI
Director of Transportation

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Ford N. Fuchigami, Director
State of Hawaii Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Fuchigami:

Thank you for your letter dated June 21, 2016 regarding the East Kapolei Middle School Project. The Draft EA will identify the proximity of the project site to the Kalaeloa Airport. The Draft EA will include a discussion on the existing noise environment and mitigation measures to minimize impacts to the school from airport operations, if necessary, and project design will incorporate soundproofing as appropriate. The Draft EA will include an analysis of the project's consistency with the Federal Aviation Administration Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports.

The school will be designed photovoltaic (PV)-ready to accommodate a future renewable energy system. The PV contractor will be advised to submit PV design plans to the Hawaii Department of Transportation Airports Division (DOT-AIR) and the Federal Aviation Administration for review prior to construction.

We look forward to receiving supplemental comments from the Hawaii Department of Transportation Highways Division (DOT-HWY) upon completion of preliminary review. Copies of the Draft EA will be provided to DOT-AIR and DOT-HWY when published.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DAVID Y. IGE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

MAY 16 2016

SSFM INTERNATIONAL, INC.
RECEIVED
MAY 18 2016

DOUGLAS MURDOCK
COMPTROLLER

AUDREY HIDANO
Deputy Comptroller

JKE

(P)1130.6

FILE COPY

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

Dear Mr. Chang:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment
East Kapolei Middle School Project
Kapolei, Oahu, Hawaii
TMK: (1) 9-1-017: 106

Thank you for the opportunity to comment on the subject project. The proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Public Works Division at 586-0584.

Sincerely,

For DOUGLAS MURDOCK
Comptroller

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Roderick Becker, Comptroller
State of Hawaii Department of Accounting and General Services
P.O. Box 119
Honolulu, HI 96810-0019

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Becker:

Thank you for your department's letter dated May 16, 2016 regarding the East Kapolei Middle School Project. We note that your department has no comments and that the proposed project will not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

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

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
File:

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MAY 13 2016
JKC
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May 09, 2016

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

Dear Mr. Chang:

Thank you for your submittal requesting comments to the Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project, Kapolei, Oahu, Hawaii, Tax Map Key (1) 9-1-017:106.

Project activities shall comply with the following Administrative Rules of the Department of Health:

- Chapter 11-39 Air Conditioning & Ventilating
- Chapter 11-46 Community Noise Control

Should you have any questions, please contact me at (808) 586-4700.

Sincerely,

Jeffrey M. Eckerd
Program Manager
Indoor and Radiological Health Branch

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Jeffrey M. Eckerd, Program Manager
State of Hawaii Department of Health
Indoor and Radiological Health Brach
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Eckerd:

Thank you for your letter dated May 9, 2016 regarding the East Kapolei Middle School Project. Project activities will comply with the applicable Administrative Rules of the Department of Health, including Chapters 11-39 and 11-46. The school will be designed for thermal comfort in either natural ventilation or air conditioning modes, giving students, teachers, and staff options for modulating their indoor temperatures.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

EPO 16-176

June 3, 2016

Mr. Jared Chang
Senior Planner
SSFM International 501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Email: jchang@ssfm.com

Dear Mr. Ezer:

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment (PAC DEA)
New School - East Kapolei Middle School Project
TMK: (1) 9-1-017: 106

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA PAC to our office on May 9, 2016. Thank you for allowing us to review and comment of the proposed project. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard comments.

EPO suggests you review guidance maps and viewers available on the Environmental Planning GIS website: http://health.hawaii.gov/epo/egis

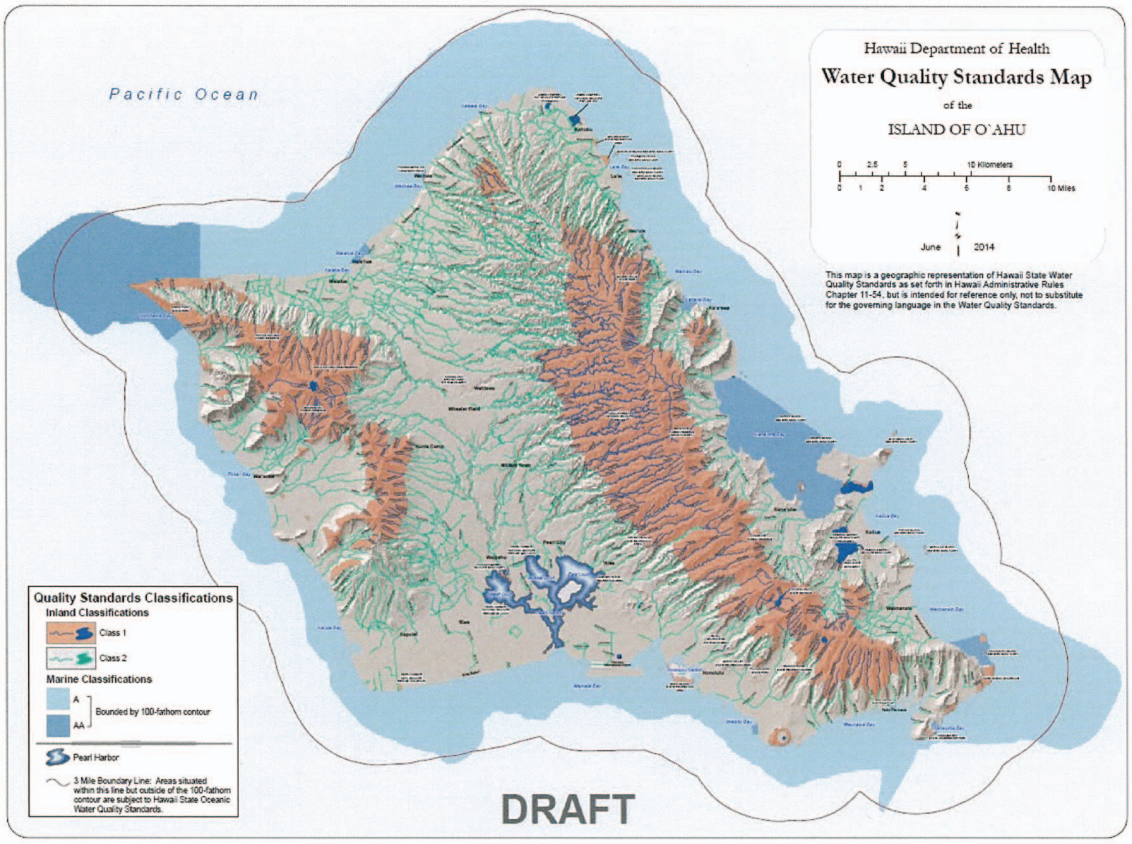
EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov.

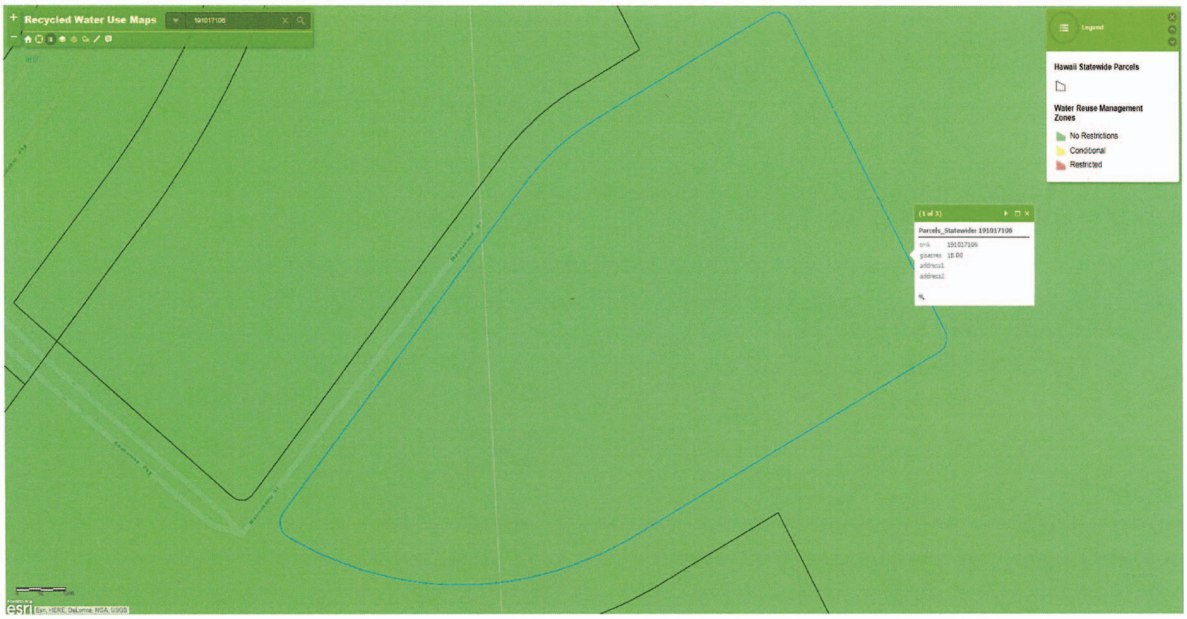
We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

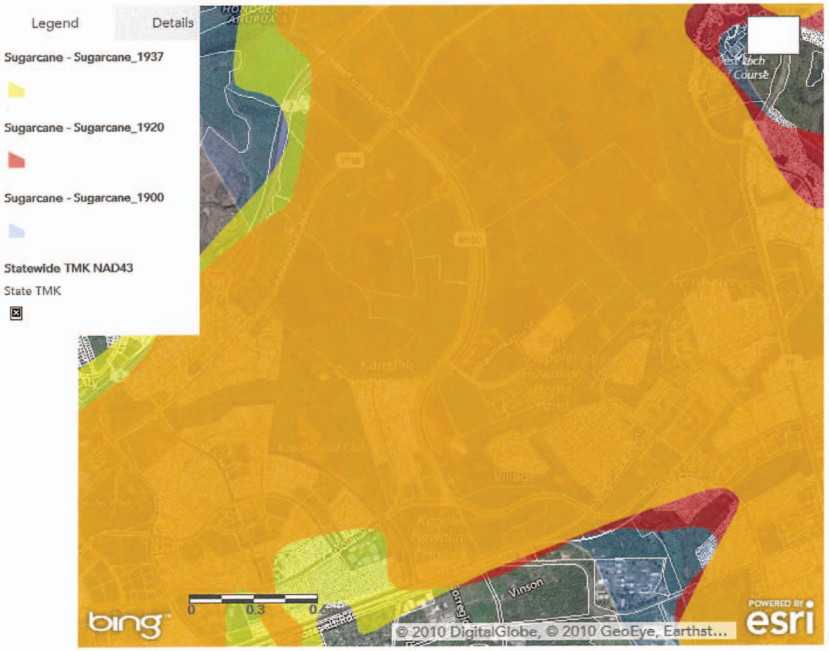
Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

Attachments:
Attachment 1: Environmental Health Management Web App Snipit of Project Area : http://health.hawaii.gov/epo/egis
Attachment 2: Clean Water Branch: Water Quality Standards Map
Attachment 3: Wastewater Branch: Recycled Water Use Map of Project Area
Attachment 4: Historic Sugarcane Map of Project Area
Attachment 5: OEQC Viewer: http://eha-web.doh.hawaii.gov/oeqc-viewer
Attachment 6: U.S. EPA EJScreen Report: http://www2.epa.gov/ejscreen


Pacific Ocean
Hawaii Department of Health
Water Quality Standards Map
of the
ISLAND OF O'AHU
0 2.5 5 10 Kilometers
0 1 2 4 6 8 10 Miles
June 2014
This map is a geographic representation of Hawaii State Water Quality Standards as set forth in Hawaii Administrative Rules Chapter 11-54, but is intended for reference only, not to substitute for the governing language in the Water Quality Standards.
Quality Standards Classifications
Inland Classifications
Class 1
Class 2
Marine Classifications
A
AA
Bounded by 100-fathom contour
Pearl Harbor
3 Mile Boundary Line: Areas situated within this line but outside of the 100-fathom contour are subject to Hawaii State Oceanic Water Quality Standards.
DRAFT


Recycled Water Use Maps
191017106
Legend
Hawaii Statewide Parcels
Water Reuse Management Zones
No Restrictions
Conditional
Restricted
(1 of 3)
Parcels_Statewide 191017106
gis_trk 191017106
gisacres 18.00
address1
address2
Esri, HERE, DeLorme, NGA, USGS

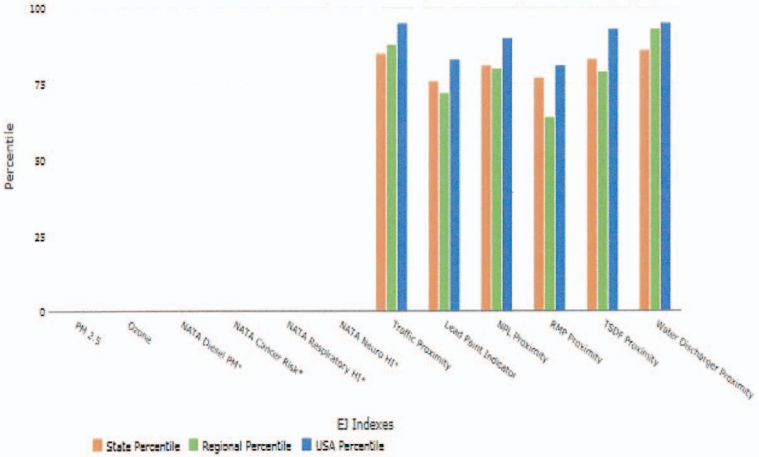
HISTORIC SUGARCANE LANDS MAP VIEWER



EJSCREEN Report for 1 mile Ring around the Corridor
HAWAII, EPA Region 9
Approximate Population: 9424
East Kapolei Middle School

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA Diesel PM*	N/A	N/A	N/A
EJ Index for NATA Air Toxics Cancer Risk*	N/A	N/A	N/A
EJ Index for NATA Respiratory Hazard Index*	N/A	N/A	N/A
EJ Index for NATA Neurological Hazard Index*	N/A	N/A	N/A
EJ Index for Traffic Proximity and Volume	85	88	95
EJ Index for Lead Paint Indicator	76	72	83
EJ Index for NPL Proximity	81	80	90
EJ Index for RMP Proximity	77	64	81
EJ Index for TSDF Proximity	83	79	93
EJ Index for Water Discharger Proximity	86	93	95

EJ Index for the Selected Area Compared to All People's Block Groups in the State/Region/US



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

Selected Variables	Raw data	State Average	%ile in State	EPA Region Average	%ile in EPA Region	USA Average	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu g/m^3$)	N/A	N/A	N/A	9.95	N/A	9.78	N/A
Ozone (ppb)	N/A	N/A	N/A	49.7	N/A	46.1	N/A
NATA Diesel PM ($\mu g/m^3$)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Air Toxics Cancer Risk (risk per MM)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Respiratory Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Neurological Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Proximity and Volume (daily traffic count/distance to road)	220	280	73	190	76	110	88
Lead Paint Indicator (% pre-1960s housing)	0.16	0.17	58	0.25	51	0.3	43
NPL Proximity (site count/km distance)	0.11	0.092	76	0.11	75	0.096	78
RMP Proximity (facility count/km distance)	0.16	0.18	72	0.41	45	0.31	56
TSDF Proximity (facility count/km distance)	0.12	0.092	79	0.12	74	0.054	91
Water Discharger Proximity (count/km)	0.52	0.33	80	0.19	93	0.25	89
Demographic Indicators							
Demographic Index	57%	51%	69	46%	66	35%	80
Minority Population	94%	77%	81	57%	87	36%	92
Low Income Population	20%	25%	45	35%	32	34%	32
Linguistically Isolated Population	6%	6%	65	9%	49	5%	74
Population with Less Than High School Education	11%	10%	66	15%	44	14%	51
Population under Age 5	9%	6%	81	7%	75	7%	79
Population over Age 64	10%	14%	29	12%	50	13%	39

*The National-Scale Air Toxics Assessment (NATA) environmental indicators and EJ indexes, which include cancer risk, respiratory hazard, neurodevelopment hazard, and diesel particulate matter will be added into EJSCREEN during the first full public update after the soon-to-be-released 2011 dataset is made available. The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

SSFM International

February 21, 2017

SSFM 2013_172.000

Ms. Laura Leialoha Phillips McIntyre, AICP, Program Manager
State of Hawaii Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, HI 96801

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Ms. McIntyre:

Thank you for your letter dated June 3, 2016 regarding the East Kapolei Middle School Project. The Draft EA will include a review of the standard comments provided via the Department of Health, Environmental Planning Office website. Furthermore, we appreciate your information regarding available online resources, and we will utilize these resources during the preparation of the Draft EA. A copy of the Draft EA will be provided when published.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

501 Sumner Street | Suite 620 | Honolulu, Hawaii 96817 | Tel 808.531.1308 | Fax 855.329.7736 | www.ssfm.com
Planning | Project & Construction Management | Structural, Civil & Traffic Engineering

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DAVID Y. IGE
GOVERNOR OF HAWAII

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

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 17 2016
FILE

FILE COPY

In reply, please refer to:
File:

06027PGH.16

June 14, 2016

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

Dear Mr. Chang:

SUBJECT: Comments on Pre-Assessment Consultation for
Draft Environmental Assessment for
East Kapolei Middle School Project
TMK (1) 9-1-017:106
Kapolei, Island of Oahu, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated May 5, 2016, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf

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

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

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

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

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for a NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee ($1,000 for an individual NPDES permit or $500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

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

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects

   natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

   b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g. minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

   c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

   d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

   e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb/, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

GH:ak

DAVID Y. IGE
GOVERNOR OF HAWAII

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

SSFM INTERNATIONAL, INC.
RECEIVED
MAY 18 2016
JAC

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD/CWB

05026PCTM.16

FILE
FILE COPY

May 13, 2016

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

Dear Mr. Chang:

SUBJECT: Comments on the Pre-Assessment Consultation for Draft Environmental Assessment (DEA) for East Kapolei Middle School TMK: (1) 9-1-017:106 Kapolei, Island of Oahu, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated May 5, 2016. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at:
http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf

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

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3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Office (Tel: 835-4303) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; Hawaii Revised Statutes, §342D-1 and Hawaii Administrative Rules (HAR), Chapter 11-54.

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

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects

natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g. minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb/, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

CTM:bk

c: EPO [via e-mail only]

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Alec Wong, P.E., Chief
State of Hawaii Department of Health
Clean Water Branch
P.O. Box 3378
Honolulu, HI 96801-3378

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Wong:

Thank you for your letters dated May 13, 2016 and June 13, 2016 regarding the East Kapolei Middle School Project. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

The Draft EA will include a review of the standard comments provided via the Department of Health's website. The proposed project will be designed in compliance with the applicable Administrative Rules of the Department of Health, including Chapters 11-54 and 11-55. The project will not involve work in, over, or under waters of the US, nor will it result in any discharge into navigable waters. National Pollutant Discharge Elimination System (NPDES) and related permits will be identified and addressed in the Draft EA.

In addition, the project will incorporate a bioregional landscape design approach, which will significantly reduce the water demand for landscape irrigation. Both drip and smart irrigation technology will be used at East Kapolei Middle School. It is expected that landscaped areas will be irrigated using recycled water. Landscaped areas will be comprised of appropriate native and naturalized dry land plant species.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 7, 2016

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

via email: jchang@ssfm.com

Dear Mr. Chang:

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on June 2, 2016, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION
2016 JUN -6 AM 11: 10
DEPT. OF LAND & NAT. RESOURCES
STATE OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.
JONATHAN STARR

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR

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

June 3, 2016

REF: RFD.4406.3

TO: Mr. Russell Tsuji, Administrator
Land Division Oahu, DLNR-LD

FROM: Jeffrey T. Pearson, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project

FILE NO.: RFD.4406.3
TMK NO.: (1) 9-1-017:106

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[X] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

[X] 6. We recommend the use of alternative water sources, wherever practicable.

[ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at

http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☒ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER: The DEA should discuss the projected water demands for the project, both potable and non-potable, and provide the calculations used to estimate demands. The DEA should identify the proposed water source(s) to support the project.

Water conservation and efficiency measures to be implemented should also be discussed. The DEA should consider the use of water-efficient commercial equipment which can help to save both water and energy, as well as associated costs. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/products/index.html. Commission has published a Water Conservation Manual for State of Hawaii Facilities (2007) that lists conservation measures for restrooms and shower facilities; kitchens, cafeterias, and staff rooms; and landscaping. The Commission has also published a Handbook for Stormwater Reclamation and Reuse Best Management Practices in Hawaii (2008). Please visit the Commission's website at http://hawaii.gov/dlnr/cwrm to view or download a copy of these documents.

The Commission encourages the use of xeriscaping or drught-tolerant plantings. To help you select the type of plants appropriate for the climate in your area, visit the Board of Water Supply's website at http://www.boardofwatersupply.com/cssweb/display.cfm?sid=1360.

If you have any questions, please contact Lenore Ohye of the Commission staff at 587-0216.

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 11, 2016

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__ Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

RECEIVED
COMMISSION ON WATER RESOURCE MANAGEMENT
2016 MAY 11 PM 3:14

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project
LOCATION: Kapolei, Island of Oahu; TMK: (1) 9-1-017:106
APPLICANT: Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **June 1, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed: /s/ Jeffrey T. Pearson, P.E.

Print Name: Deputy Director
Date: June 3, 2016

cc: Central Files

RW 4406.3
14004

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 2, 2016

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

via email: jchang@ssfm.com

Dear Mr. Chang:

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project

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

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division – Oahu District on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

'16 MAY 11 AM09:57 ENGINEERING

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 11, 2016

MEMORANDUM

TO: FR:

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__ Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

RECEIVED
LAND DIVISION
2016 MAY 19 AM 11:08
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO:

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project
LOCATION: Kapolei, Island of Oahu; TMK: (1) 9-1-017:106
APPLICANT: Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **June 1, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed:

Print Name: Carty S. Chang, Chief Engineer
Date: 5/12/16

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

To: Land Division
Ref: Pre-Assessment Consultation for DEA for East Kapolei Middle School Project

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a designated Flood Hazard.

The owner or the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zone designations can be found using the Flood Insurance Rate Map (FIRM), which can be accessed through the Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

National Flood Insurance Program establishes the rules and regulations of the NFIP - Title 44 of the Code of Federal Regulations (44CFR). The NFIP Zone X is a designation where there is no perceived flood impact. Therefore, the NFIP does not regulate any development within a Zone X designation.

Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may take precedence over the NFIP standards as local designations prove to be more restrictive. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

The applicant should include water demands and infrastructure required to meet project needs. Please note that the projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 5/12/16

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2016 MAY 17 AM 6:05
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

May 11, 2016

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__ Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project
LOCATION: Kapolei, Island of Oahu; TMK: (1) 9-1-017:106
APPLICANT: Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **June 1, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed: _____
Print Name: _____
Date: 5/16/16

cc: Central Files

February 21, 2017

SSFM 2013_172.000

Mr. Jeffrey T. Pearson, P.E., Deputy Director
State of Hawaii Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Pearson:

Thank you for your letter dated June 3, 2016 regarding the East Kapolei Middle School Project. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

The project will strive for the Collaborative for High Performance Schools (CHPS) Verified recognition. CHPS is a national organization committed to building a new generation of healthy, efficient, and environmentally responsive schools. The CHPS and Leadership in Energy and Environmental Design (LEED) for Schools rating systems have similar intents but are structurally, philosophically, and programmatically different. However, due to cost and time constraints, the State of Hawaii Department of Education has chosen the CHPS program.

A bioregional landscape design approach will be applied to the project, which will significantly reduce the water demand for landscape irrigation. =Best management practices (BMPs) and erosion control measures will be included in the design and implemented as part of construction.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

February 21, 2017

SSFM 2013_172.000

Mr. Carty S. Chang, Chief Engineer
State of Hawaii Department of Land and Natural Resources
Engineering Division
P.O. Box 621
Honolulu, HI 96809

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Chang:

Thank you for your letter dated May 11, 2016 regarding the East Kapolei Middle School Project. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

The City and County of Honolulu, Department of Planning and Permitting and the Honolulu Board of Water Supply (BWS) were consulted as part of the pre-assessment process. Design plans will be coordinated with the BWS for review and approval as part of ministerial permits required for the project.

Anticipated water demands and calculations will be provided to the State of Hawaii, Department of Land and Natural Resources, Engineering Division. Water demands will also be analyzed in the Draft EA.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

SSFM International

February 21, 2017

SSFM 2013_172.000

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

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Tsuji:

Thank you for your letter dated June 2, 2016 regarding the East Kapolei Middle School Project. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

PHONE (808) 594-1888

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

FAX (808) 594-1938

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 09 2016
UKE
FILE COPY

HRD16-7863

June 3, 2016

Jared Chang
SSFM International
501 Summer Street, Suite 620
Honolulu, HI 96817

Re: Request for Pre-Assessment Consultation for the Draft Environmental Assessment of East Kapolei Middle School
External Reference SSFM 2013_172.000
Honouliuli Ahupua'a, 'Ewa Moku, O'ahu Mokupuni
Tax Map Key (1) 9-1-017:106

Aloha Mr. Chang:

The Office of Hawaiian Affairs (OHA) is in receipt of your May 12, 2016 letter requesting pre-assessment consultation on the draft environmental assessment (DEA) of the East Kapolei Middle School. SSFM International is acting on behalf of the State of Hawai'i Department of Education (DOE).

The DOE is proposing to design and construct a new school, East Kapolei Middle School (School), to accommodate the rapid development in the 'Ewa-Kapolei area. It consists of seven buildings organized around a central commons and a physical education area.

OHA appreciates the outreach efforts that the DOE has undertaken by consulting with us. In the future, we would appreciate a list of all other consulted parties in order to determine whether additional ones, particularly Native Hawaiian Organizations (NHO), should be suggested. If you have not already done so, please consult with the 'Aha Moku Council, the appropriate O'ahu-based Hawaiian Civic Clubs, and the O'ahu Island Burial Council. We also recommend consultation with NHO from the area identified on the NHO list maintained by the Department of Interior (DOI), available at https://www.doi.gov/hawaiian/NHOL.

Mahalo for the opportunity to comment. Should you have any questions, please contact Jeannin Jeremiah at 594-1790 or by email at jeanninj@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:jj

**Please address replies and similar, future correspondence to our agency:*
Dr. Kamana'opono Crabbe
Attn: OHA Compliance Enforcement
560 N. Nimitz Hwy, Ste. 200
Honolulu, HI 96817

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 23 2016
JKG

KIRK CALDWELL
MAYOR

GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2016/ELOG-1157(WA)
FILE COPY

June 21, 2016

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

Dear Mr. Chang:

SUBJECT: Pre-Assessment for Draft Environmental Assessment (DEA)
East Kapolei Middle School
Kapolei, Oahu - Honouliuli
Tax Map Key 9-1-17: 106

This responds to your request for comments received on May 9, 2016, regarding the Pre-Assessment Consultation for Draft Environmental Assessment for East Kapolei Middle School Project. We have reviewed the Project summary and have the following comments:

A. Land Use Permits Division, Urban Design Branch:

Land Use Ordinance Table 21-3 Master Use Table, Schools, Intermediate are a permitted use in the AG-1 Restricted Agricultural District with a Conditional Use Permit minor.

B. Site Development Division, Civil Engineering Branch:

Pursuant to the current storm water quality standards, include a narrative explaining the Project's water quality.

Be advised that the current standards are being revised and the updated version will be adopted in several months. With that said, the Project shall comply with the prevailing storm water quality standards at the time the construction/grading plans are submitted for review and approval.

C. Planning Division, Community Planning Branch:

This Project is within a quarter mile of the East Kapolei Rail Station and adjacent to the KROC Center. It falls under the guidance of the draft East Kapolei Transit-Oriented

Development (TOD) Plan which area is intended to become a TOD Special District. In the Draft EA, the following should be considered:

1. The Draft EA should focus attention on how the Project enhances the pedestrian environment to promote walk ability and connectivity on all sides of the Middle School campus. Pedestrian amenities include.

   (a) Wide sidewalks and pedestrian zones where large concentrations of students gather;
   (b) Street trees for shade over the sidewalks; and
   (c) Internal pedestrian walkways to connect to adjacent streets. More openings in the perimeter chain-link fence should be considered along Keahumoa Parkway and Maweke Street to improve connectivity.

2. Please provide street cross-sections in the Draft EA. The Project should ensure all forms of transportation are accommodated in accordance with the draft Honolulu Complete Streets Design Manual.

3. Safe, secure neighborhoods and streets surrounding the campus should allow students of this age the opportunity to safely ride their bicycles and walk to school. In the Draft EA, indicate where on the school grounds bicycle racks and storage will be located.

4. In accordance with the draft Honolulu Complete Streets Design Manual and draft East Kapolei TOD Plan, incorporate "street water management" and "green street" principles into the campus design.

D. Planning Division, Development Plans and Zone Change Branch:

The proposed new East Kapolei Middle School is consistent with the 2013 Ewa Development Plan vision of providing adequate infrastructure to meet the needs of new and existing development.

As noted in Section 4.7 and shown conceptually on the Urban Land Use Map and the Public Facilities Map, the State Department of Education has projected a need for three new intermediate schools for Ewa by 2030 which this school will help meet.

The Ewa Development Plan also includes guidelines regarding schools as community centers (Section 4.7) and as emergency shelters (Section 4.8) that the Draft EA should address the following:

1. How will the school design facilitate community use during non-school hours and weekends? To the extent that the DOE's mandated mission of education is not affected, school design should reflect the role schools also play as cultural and recreational centers and as meeting facilities for the East Kapolei community.

2. How will the school design reflect the likely community need for hurricane resistant shelters? To the extent that the DOE mandated mission of education is not affected, the school should be designed and constructed to help provide such a shelter.

   There is a state wide shortage of shelters capable of withstanding hurricane force winds, and climate change is expected to increase the number of high intensity storms affecting the State of Hawaii.

Should you have any questions, please contact William Ammons of our staff at 768-8025.

Very truly yours,

FOR George I. Atta, FAICP
Director

Doc 1360723

SSFM International

February 21, 2017 SSFM 2013_172.000

Ms. Kathy Sokugawa, Acting Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, Oʻahu, Hawaiʻi

Dear Ms. Sokugawa:

Thank you for your letter dated June 21, 2016 regarding the East Kapolei Middle School Project. The project will submit an application for a Conditional Use Permit – Minor.

The Draft EA will include a discussion regarding water quality. The project will comply with the prevailing storm water quality standards at the time the construction/grading plans are submitted for review and approval.

The Draft EA will include an analysis of the project's consistency with the goals and objectives of the East Kapolei Neighborhood Transit-Oriented Development Plan, the 2013 Ewa Development Plan, and the draft Honolulu Complete Streets Design Manual. Project design will include bicycle racks and storage, and the locations of these facilities will be included in the Draft EA. Additionally, the Draft EA will include street cross-sections.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

SSFM INTERNATIONAL, INC.
RECEIVED
MAY 16 2016
JKG

KIRK CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

MARIE A. McCAULEY
CARY OKIMOTO
DEPUTY CHIEFS

OUR REFERENCE MT-DK

FILE COPY

May 12, 2016

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

Dear Mr. Chang:

This is in response to your letter dated May 5, 2016, requesting comments on the Pre-Assessment Consultation, Draft Environmental Assessment, for the East Kapolei Middle School project.

Based on the information provided, this project should have no significant impact on the services or operations of the Honolulu Police Department at this time.

If there are any questions, please call Major Kurt Kendro of District 8 (Kapolei) at 723-8403.

Thank you for the opportunity to review this project.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
MARK TSUYEMURA,
Management Analyst VI
Office of the Chief

Serving and Protecting With Aloha

SSFM International

February 21, 2017 SSFM 2013_172.000

Mr. Mark Tsuyemura, Management Analyst VI
Office of the Chief for Louis M. Kealoha, Chief
City and County of Honolulu
Honolulu Police Department
801 South Beretania Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Tsuyemura:

Thank you for your letter dated May 12, 2016 regarding the East Kapolei Middle School Project. We note that the Honolulu Police Department does not anticipate significant impacts on the services or operations of the Department from the project.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK CALDWELL
MAYOR

MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 06 2016
JKC
FILE
FILE COPY

June 1, 2016

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

Dear Mr. Chang:

Subject: Preassessment Consultation for Draft Environmental Assessment
East Kapolei Middle School Project
Kapolei, Oahu, Hawaii
Tax Map Key: 9-1-017: 106

In response to your letter dated May 5, 2016, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; Uniform Fire Code [UFC]™, 2012 Edition, Sections 18.2.3.2.2, 18.2.3.2.2.1.)

   A fire department access road shall extend to within 50 feet of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; UFC™, 2012 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet from a water supply on a

fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; UFC™, 2012 Edition, Section 18.3.1, as amended.)

3. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road shall meet county requirements. (NFPA 1; UFC™, 2012 Edition, Section 18.2.3.4.1.1 and 18.2.3.4.1.2, as amended.)

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

Should you have questions, please contact Battalion Chief Terry Seelig of our Fire Prevention Bureau at 723-7151 or tseelig@honolulu.gov.

Sincerely,

SOCRATES D. BRATAKOS
Assistant Chief

SDB/SY:bh

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Socrates D. Bratakos, Assistant Chief
City and County of Honolulu
Honolulu Fire Department
636 South Street
Honolulu, HI 96813-5007

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Bratakos:

Thank you for your letter dated June 1, 2016 regarding the East Kapolei Middle School Project. The school will have designated fire access lanes in accordance with City and County of Honolulu Fire Department Standards and Uniform Fire Code. The fire access routes will encompass all building structures and be clearly marked with appropriate signage and markings.

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

Design plans will be coordinated with the Honolulu Fire Department through the review process. A copy of the Draft EA will be provided when published.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DEPARTMENT OF PARKS & RECREATION
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
Phone: (808) 768-3003 • Fax: (808) 768-3053
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

MICHELE K. NEKOTA
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

RECEIVED
MAY 23 2016

FILE COPY

FILE

May 13, 2016

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

Dear Mr. Chang:

SUBJECT: East Kapolei Middle School Project
Tax Map Key (1) 9-1-017:00106
Pre-Assessment Consultant for Draft Environmental Assessment
Kapolei, Oahu, Hawaii.

Thank you for the opportunity to review and comment on the Pre-Assessment Consultation stage of the Draft Environmental Assessment for the East Kapolei Middle School Prject.

The Department of Parks and Recreation has no comment as the proposed project will have no impact on any of our programs and facilities. You may remove us as a consulted party for the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner at 768-3017.

Sincerely,

Michele K. Nekota
Director

MKN:jr
(652353)

SSFM International

February 21, 2017

SSFM 2013_172.000

Ms. Michele K. Nekota, Director
City and County of Honolulu
Department of Parks and Recreation
1000 Uluohia Street, Suite 309
Kapolei, HI 96707

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Ms. Nekota:

Thank you for your letter dated May 13, 2016 regarding the East Kapolei Middle School Project. We note that your department has no comments and that the proposed project will not impact any of the Department of Parks and Recreation's programs and facilities. As requested, we will remove the City and County of Honolulu Department of Parks & Recreation from the mailing list.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Ulu`ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 16-422

SSFM INTERNATIONAL, INC.
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MAY 25 2016
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May 26, 2016

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

Dear Mr. Chang:

SUBJECT: East Kapolei Middle School Project
Tax Map Key (1) 9-1-017: 106
Pre-Assessment Consultation for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Thank you for the opportunity to review and provide our input regarding your letter dated May 5, 2016, on the above-subject project.

We have no comments at this time, as we do not have any facilities or easements on the subject property.

If you have any questions, please contact Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Ross S. Sasamura, P.E.
Director and Chief Engineer

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Ross S. Sasamura, P.E., Director and Chief Engineer
City and County of Honolulu
Department of Facility Maintenance
1000 Uluohia Street, Suite 215
Kapolei, HI 96707

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Sasamura:

Thank you for your letter dated May 26, 2016 regarding the East Kapolei Middle School Project. We note that your department has no comment as there are no City and County of Honolulu Department of Facility Maintenance facilities or easements on the subject property.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

DEPARTMENT OF COMMUNITY SERVICES

CITY AND COUNTY OF HONOLULU

715 SOUTH KING STREET, SUITE 311 ● HONOLULU, HAWAII 96813 ● AREA CODE 808 ● PHONE: 768-7762 ● FAX: 768-7792

KIRK CALDWELL
MAYOR

GARY K. NAKATA
DIRECTOR

BARBARA YAMASHITA
DEPUTY DIRECTOR

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MAY 31 2016
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FILE COPY

May 23, 2016

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

Dear Mr. Chang:

SUBJECT: Pre-Assessment Consultation
Draft Environmental Assessment
East Kapolei Middle School Project
Kapolei, Oahu, Hawaii
Tax Map Key: (1) 9-1-017: 106

We have reviewed your letter, and the enclosed Project Summary and Map.

Our review of the documents provided indicates the proposed project will have no adverse impacts on any Department of Community Services' activities or projects at this time.

Thank you for providing us with the opportunity to comment on this matter.

Sincerely,

Gary K. Nakata
Director

GKN:jc

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Gary K. Nakata, Director
City and County of Honolulu
Department of Community Services
715 S. King Street, Suite 311
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Nakata:

Thank you for your letter dated May 23, 2016 regarding the East Kapolei Middle School Project. We note that your department has no comment and the proposed project will have no adverse impacts on any Department of Community Services' activities or projects at this time.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

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

KIRK CALDWELL
MAYOR

MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

SSFM INTERNATIONAL, INC.
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JUN 02 2016

TP5/16-652619R

FILE COPY

FILE

June 2, 2016

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

Dear Mr. Chang:

SUBJECT: East Kapolei Middle School Project; Pre-Assessment Consultation for Draft Environmental Assessment (DEA); Tax Map Key: (1) 9-1-017: 106; Kapolei, Oahu, Hawaii

In response to your letter dated May 5, 2016, we have the following comments:

1. The DEA should include a Traffic Impact Assessment Report that evaluates existing traffic conditions of the surrounding City roadways, possible impacts to traffic and pedestrian patterns as a result of the project, and measures to mitigate these impacts. The design should be based on complete streets principles that emphasize pedestrian and bicycle access. Vehicle ingress and egress to the project should be located and designed to ensure the safety of pedestrians, especially students.

2. The Ewa Neighborhood Board No. 23, and the Kapolei/Makakilo Neighborhood Board No. 34, as well as the area residents, businesses, etc., should be kept apprised of the details of the proposed project and the impacts, particularly during construction, the project may have on the adjoining local street area network.

3. A street usage permit from the City's Department of Transportation Services should be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

We reserve further comment pending submission of the DEA.

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

Michael D. Formby
Director

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Wes Frysztacki, Director
City and County of Honolulu
Department of Transportation Services
650 South King Street, 3rd floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Frysztacki:

Thank you for your letter dated June 2, 2016 regarding the East Kapolei Middle School Project. A Traffic Impact Assessment Report will be included in the Draft EA. We are incorporating your department's areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months. A copy of the Draft EA will be provided when published.

A street usage permit will be obtained from the Department of Transportation Services if applicable. Project stakeholders will be notified of planned construction activities that may impact the local street area network.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

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

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

SSFM INTERNATIONAL, INC.
RECEIVED
JUN 2 5 2016
JKC
FILE
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June 22, 2016

SSFM International
Attn: Jared Chang
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang,

Subject: East Kapolei Middle School Project
Tax Map Key (1) 9-1-017:106
Pre-Assessment Consultation for Draft Environmental Assessment
Kapolei, Oahu, Hawaii

The Department of Design and Construction has no comments at this time.

Thank you for the opportunity to review and comment. If there are any further questions, please call me at 768-8480.

Sincerely,

Robert Kroning, P.E.
Director

RJK:ms(652193)

SSFM International

February 21, 2017

SSFM 2013_172.000

Mr. Robert Kroning, P.E., Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Kroning:

Thank you for your letter dated June 22, 2016 regarding the East Kapolei Middle School Project. We note that your department has no comments at this time. A copy of the Draft EA will be provided for your review when published.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

BOARD OF WATER SUPPLY

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

July 8, 2016

RECEIVED JUL 13 2016

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FILE

KIRK CALDWELL, MAYOR

DUANE R. MIYASHIRO, Chair
ADAM C. WONG, Vice Chair
DAVID C. HULIHEE
KAPUA SPROAT
BRYAN P. ANDAYA

ROSS S. SASAMURA, Ex-Officio
FORD N. FUCHIGAMI, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

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

Dear Mr. Chang:

Subject: Your Letter Dated May 5, 2016 Requesting Comments on the Draft Environmental Assessment for the Proposed East Kapolei Middle School Project – Tax Map Key: 9-1-017: 106

Thank you for the opportunity to comment on the proposed project.

The existing water system is adequate to accommodate the proposed improvements project. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

The developer is required to obtain a water allocation letter from the State's Department of Hawaiian Home Lands for daily storage.

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

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

The developer will be required to design and construct a temporary potable water connection, with reduced pressure principle backflow preventer, to the East Kapolei II nonpotable irrigation system. At a future date and as funding becomes available, BWS will construct R-1 recycled water system improvements along Kualakai Parkway and connect the East Kapolei II nonpotable irrigation system. As part of the project, BWS will remove the temporary potable connection and restore the area.

The BWS WSFC will not be applicable to the irrigation service because BWS intends to convert the irrigation system to recycled water, and we currently have no established impact fees associated with the R-1 recycled water system.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Water for Life . . . Ka Wai Ola

SSFM International

February 21, 2017 SSFM 2013_172.000

Mr. Ernest Y.W. Lau, P.E., Manager and Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Lau:

Thank you for your letter dated July 8, 2016 regarding the East Kapolei Middle School Project. We acknowledge that the existing water system is adequate to accommodate the proposed project. We are incorporating your areas of interest in the Draft Environmental Assessment, which is anticipated to be available for review in the coming months.

Design plans will be coordinated with the Board of Water Supply (BWS) for review and approval as part of the design and ministerial permits process. The on-site fire protection requirements will be coordinated with the Honolulu Fire Department.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

HAWAI'I GAS
THE CLEAN ENERGY COMPANY

SSFM INTERNATIONAL, INC.
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MAY 27 2016
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May 23, 2016

FILE COPY

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

Dear Mr. Chang:

Subject: East Kapolei Middle School Project
Tax Map Key (1) 9-1-017:106
Pre-Assessment Consultation for Draft Environmental Assessment
Kapolei, Oahu, Hawaii

Please be advised that Hawaii Gas maintains underground utility gas mains in the right of way surrounding the project vicinity, which serves commercial and residential customers in the area and is interconnected with the utility network in Kapolei. We would appreciate your consideration during the project planning and design process to minimize any potential conflicts with the existing gas facilities in the project area.

Thank you for the opportunity to comment on the Draft Environmental Assessment. Should there be any questions, or if additional information is desired, please call Colin Chikamoto at 596-1430.

Sincerely,

Hawaii Gas

Keith K. Yamamoto
Manager, Engineering

KKY:krs

SSFM International

February 21, 2017 SSFM 2013_172.000

Mr. Keith K. Yamamoto, Manager, Engineering
Hawaii Gas
P.O. Box 3000
Honolulu, HI 96802-3000

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O'ahu, Hawai'i

Dear Mr. Yamamoto:

Thank you for your letter dated May 23, 2016 regarding the East Kapolei Middle School Project. Applicable issues pertaining to existing underground utility gas mains in the project vicinity will be addressed in the Draft EA. A copy of the Draft EA will be provided when published.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

501 Sumner Street | Suite 620 | Honolulu, Hawaii 96817 | Tel 808.531.1308 | Fax 855.329.7736 | www.ssfm.com
Planning | Project & Construction Management | Structural, Civil & Traffic Engineering

Hawaiian Telcom

May 31, 2016

SSFM INTERNATIONAL, INC.
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JUN 03 2016
FILE

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

Dear Mr. Chang:

Subject: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Pre-Assessment Consultation for Draft Environmental Assessment
Kapolei, Oahu, Hawaii

Thank you for the opportunity to review and comment during the Pre-Assessment Consultation for Draft Environmental Assessment process for the subject project.

Because the Salvation Army's Kroc Center on the adjacent property is located on Hawaiian Home Lands, Hawaiian Telcom requests verification of whether or not the proposed project's parcel is also located on Hawaiian Home Lands. The finding will determine how Hawaiian Telcom will provide service to the site.

If you have any questions or require assistance in the future on this project, please call me at 546-7761.

Sincerely,

Les Loo
Network Engineer – Outside Plant Engineering
Network Engineering & Planning

cc: File [Kapolei]

Always on.
PO Box 2200, Honolulu HI 96841 hawaiiantel.com

February 21, 2017

SSFM 2013_172.000

Mr. Les Loo, Network Engineer
Outside Plant Engineering Network
Engineering and Planning
Hawaiian Telcom
P.O. Box 2200
Honolulu, HI 96841

SUBJECT: **East Kapolei Middle School Project**
Tax Map Key (1) 9-1-017: 106
Response to Pre-Assessment Comments for Draft Environmental Assessment
Kapolei, O‘ahu, Hawai‘i

Dear Mr. Loo:

Thank you for your letter dated May 31, 2016 regarding the East Kapolei Middle School Project. The proposed project’s parcel is located on lands owned by the State of Hawaii.

If you have any questions on this matter or the project, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com. Mahalo.

SSFM INTERNATIONAL, INC.

Jared Chang
Senior Planner

cc: State Department of Education

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Appendix C: Draft EA Consultation Comments and Responses

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

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

KIRK CALDWELL
MAYOR

~~LOUIS M. KEALOHA~~
CHIEF

CARY OKIMOTO
~~JERRY INOUYE~~
DEPUTY CHIEFS

SSFM INTERNATIONAL, INC.
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JUL 03 2017
JKC

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OUR REFERENCE MT-DK

July 1, 2017

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

Dear Mr. Chang:

This is in response to your letter dated June 22, 2017, requesting comments on the Draft Environmental Assessment for the East Kapolei Middle School project.

Based on the information provided, this project should have no significant impact on the services or operations of the Honolulu Police Department at this time.

If there are any questions, please call Major Sean Naito of District 8 (Kapolei) at 723-8403.

Thank you for the opportunity to review this project.

Sincerely,

CARY OKIMOTO
Acting Chief of Police

By,
MARK TSUYEMURA,
Management Analyst VI
Office of the Chief

cc: Ms. Brenda Lowrey
Department of Education

Serving and Protecting With Aloha

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Mark Tsuyemura, Management Analyst VI
Office of the Chief
City and County of Honolulu
Honolulu Police Department
801 South Beretania Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Tsuyemura:

Thank you for your letter dated July 1, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. We note that the Honolulu Police Department does not anticipate significant impacts on the services or operations of the Department from the project.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

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

KIRK CALDWELL
MAYOR

MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

RECEIVED
JUL 13 2017
JKC

FILE COPY

July 10, 2017

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

Dear Mr. Chang:

Subject: Draft Environmental Assessment (DEA)
East Kapolei Middle School
Kapolei, Hawaii
Tax Map Key: 9-1-017: 106

In response to your letter dated June 22, 2017, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; Uniform Fire Code [UFC]™, 2012 Edition, Sections 18.2.3.2.2, and 18.2.3.2.2.1.)

   A fire department access road shall extend to within 50 feet of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; UFC™, 2012 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet from a water supply on a

   fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; UFC™, 2012 Edition, Section 18.3.1, as amended.)

3. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road shall meet county requirements. (NFPA 1; UFC™, 2012 Edition, Sections 18.2.3.4.1.1 and 18.2.3.4.1.2, as amended.)

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

Should you have questions, please contact Battalion Chief Wayne Masuda of our Fire Prevention Bureau at 723-7151 or wmasuda@honolulu.gov.

Sincerely,

SOCRATES D. BRATAKOS
Assistant Chief

SDB/SY:ps

cc: Ms. Brenda Lowrey
State of Hawaii Department of Education

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Socrates D. Bratakos, Assistant Chief
City and County of Honolulu
Honolulu Fire Department
636 South Street
Honolulu, HI 96813-5007

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Bratakos:

Thank you for your letter dated July 10, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. We acknowledge that the proposed school will have appropriate fire department access lanes in accordance with City and County of Honolulu Fire Department (HFD) Standards and Uniform Fire Code. The fire access routes will meet vertical clearance requirements and encompass all building structures and be clearly marked with appropriate signage and markings.

The Honolulu Board of Water Supply has acknowledged the existing water system will be adequate to serve the proposed school, subject to final approval during the building permit process. It is anticipated that street hydrants are sufficient to meet the Honolulu Fire Department's 150-foot coverage requirements. Preliminary design plans were coordinated with Mr. Dyron Ota, Fire Inspector with the HFD in March 2016. The HFD's preliminary comments have been incorporated in to subsequent design plans. Final design plans will be routed to the HFD for review and approval through City's building permit approval process.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

RECEIVED
JUL 17 2017

In Reply Refer To:
01EPIF00-2016-TA-0336

ORIGINAL

JUL 14 2017

Mr. Jared Chang, AICP
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

Subject: Draft Environmental Assessment for the East Kapolei Middle School, Kapolei, O'ahu

Dear Mr. Chang:

The U.S. Fish and Wildlife Service received your letter on June 24, 2017, requesting our comments on the Draft Environmental Assessment (EA) for the East Kapolei Middle School being proposed by the State of Hawai'i Department of Education (DOE). The project is located on an 18-acre parcel within the East Kapolei Master Plan Development project area, Kapolei, O'ahu [TMK: (1) 9-1-017:106]. We understand SSFM International, Inc. has prepared the Draft EA for the project in accordance with Chapter 343, Hawai'i Revised Statutes on behalf of the DOE. The project involves the construction of: central commons areas, three three-story classroom buildings; library media center; computer resource center; an administration area and student center for support services; dining/multi-purpose/music building; physical education area consisting of open and covered play courts, a soccer field, and softball field; two interconnected parking lots with 231 parking stalls, including additional accessible parking stalls, van stalls, and four loading stalls; utility services (*i.e.*, power, water, sewer, gas, cable); walkways; and landscaping. The site design includes provisions for the future construction of one additional three-story classroom building and five portable classrooms that will allow enrollment to increase to 1,400 students. The school will be designed to facilitate installation of a future photovoltaic renewable energy system.

We previously provided comments regarding the proposed project in a letter dated, June 16, 2016, regarding the following species: the endangered Hawaiian hoary bat or ope'ape'a (*Lasiurus cinereus semotus*); the endangered Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*); the endangered Hawaiian gallinule or 'alae 'ula (*Gallinula galeata sandvicensis*); the endangered Hawaiian coot or 'alae ke'oke'o (*Fulica alai*); the endangered Hawaiian duck or koloa maoli (*Anas wyvilliana*); the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*; the threatened Newell's shearwater or 'a'o (*Puffinus auricularis newelli*); an endangered plant, *Abutilon menziesii* or ko'oloa'ula; and the wedge-tailed shearwater or 'ua'u

kani (*Puffinus pacificus*), a species protected under the MBTA. However, the Draft EA did not address all of our comments.

This letter has been prepared under the authority of and in accordance with provisions of the National Environmental Policy Act of 1969 [42 U.S.C. 4321 *et seq.*; 83 Stat. 401], as amended (NEPA); the Endangered Species Act of 1973 [16 U.S.C. 1531 *et seq.*; 87 Stat. 884], as amended (ESA); the Migratory Bird Treaty Act of 1918 [16 U.S.C. 703-712] (MBTA); and other authorities mandating Service concern for environmental values. Based on these authorities, we offer the following comments for your consideration.

Hawaiian hoary bat

The Biological Resource Assessment for East Kapolei Middle School mentioned potential roosting trees were present within the project area. However, Section 3.2 Flora and Fauna of the Draft EA does not mention the Hawaiian hoary bat, the potential presence of roost trees, or measures to be incorporated into the project to address potential impacts to the species. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to Hawaiian hoary bats in the project area. We recommend the Final EA address all potential impacts to the Hawaiian hoary bat and identify measures to avoid and minimize these impacts.

Hawaiian waterbirds

The Hawaiian stilt, Hawaiian coot, Hawaiian gallinule, and Hawaiian duck, collectively referred to as Hawaiian waterbirds, occur at various sites within the vicinity of the project area (*e.g.*, Pearl Harbor, Pouhala Marsh). Hawaiian waterbirds, in particular, the Hawaiian stilt, is known to nest in sub-optimal locations (*e.g.*, any ponding water) if present. According to the Biological Resource Assessment for East Kapolei Middle School, two Hawaiian stilts were observed in flight along the western boundary of the project area. In addition, standing water was observed in the project area. If standing water remains or additional standing water areas are created during project construction, Hawaiian stilts may be attracted to the site.

Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation, reduced reproductive success due to disturbance within the vicinity of a nest, injury or death from being hit by a vehicle and thus the project may create an attractive nuisance. The Draft EA does not address Hawaiian waterbirds. We recommend the Final EA address all potential impacts to Hawaiian waterbirds and identify measures to avoid and minimize these impacts. We recommend you consider incorporating the following measures into your project description to avoid and minimize impacts to listed Hawaiian waterbirds:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site;
- Have a biological monitor familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys within three days of project initiation and after any subsequent delay of work of three or more days (during which the birds may attempt to nest). If a nest or active brood is found:
    - Contact PIFWO within 48 hours for further guidance.
    - Establish and maintain 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. No potentially disruptive activities or habitat alteration will occur within this buffer.
    - A biological monitor familiar with the species' biology will be present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- Design the proposed project in a manner that minimizes the amount of time standing water is present during construction, thereby, reducing the potential to attract waterbirds.

Page 42, Section 3.11.1 Electrical and Communication states, "The building's electrical distribution system is designed to facilitate installation of a future photovoltaic (PV) solar system." In our previous letter we mentioned our concern with photovoltaic systems on the mainland causing mortality of waterfowl and shorebirds. While attraction to solar arrays has not been documented in Hawaii, we are concerned about potential impacts to Hawaii's native waterbirds and shorebirds. The Draft EA does not address the potential for the PV solar system to impact wildlife and how potential impacts will be addressed if and when it is installed. We recommend the Draft EA address potential impacts of the PV solar system on Hawaii's native species and measures to avoid and minimize these impacts.

Hawaiian seabirds

The Hawaiian petrel, Newell's shearwater, and wedge-tailed shearwater, collectively referred to as Hawaiian seabirds, have been documented within the vicinity of the proposed project area (*e.g.*, Kapolei, Ewa, and Campbell Industrial Park). Hawaiian seabirds may traverse the project area at night during the breeding season (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young Hawaiian petrels and Newell's shearwaters (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable. Also vulnerable at this time are young wedge-tailed shearwaters that may traverse the project area from being attracted to the lights inland from their nests along the coastline and offshore islets.

The Draft EA did not address Hawaiian seabirds. We recommend the Final EA address all potential impacts to Hawaiian seabird and identify measures to avoid and minimize these impacts. We recommend you consider incorporating the following measures into your project to avoid and minimize impacts to Hawaiian seabirds:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only used when necessary;

- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area;
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15; and
- Provide all project staff with information about seabird fallout and let them know that downed seabirds can be taken to Sea Life Park for rehabilitation.

We appreciate your efforts to conserve listed species and we look forward to reviewing the Final EA for the proposed project. If you have questions about our comments, please contact Leila Nagatani, Fish and Wildlife Biologist (phone: 808-792-9400, email: leila_nagatani@fws.gov). When referring to this project, please include this reference number: 01EPIF00-2016-TA-0336.

Sincerely,

Aaron Nadig
Island Team Manager
O'ahu, Kaua'i, North Western Hawaiian Islands and American Samoa

cc: State of Hawaii DOE, Honolulu

SSFM International

October 27, 2017 SSFM 2013_172.000

Mr. Aaron Nadig, Island Team Manager
Oahu, Kauai, North Western Hawaiian Islands, and American Samoa
U.S. Department of the Interior, Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Nadig:

Thank you for your letter dated July 14, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

Hawaiian hoary bat
The Final EA will include a discussion in Section 3.2 Flora and Fauna to acknowledge the potential for Hawaiian hoary bats to be found in the vicinity of the new school due to the presence of potential roost trees, identified as the rainbow shower trees planted between the sidewalk and roadway along Maunakapu Street. The existing trees along Maunakapu Street are located outside of the new school property and will not be affected since they can be avoided altogether from damages from construction vehicles and equipment. Currently, there are no existing trees greater than 15 feet tall within the project site, however we acknowledge that the potential for impacts do exist and suggest that inspections for woody plants over 15 feet tall would be necessary prior to the start of ground clearance and grubbing activities. If present, the removal of those plants will be appropriately timed to avoid disturbance to any Hawaiian hoary bats in the area. Please note also that landscaping for the school will include planting of new shower trees onsite which may become potential roosting trees in the future.

Hawaiian waterbirds
Potential impacts to Hawaiian waterbirds and mitigation measures to minimize those impacts will be discussed in Section 3.2 of the Final EA. We acknowledge that potential impacts to Hawaiian waterbirds do exist due to the observance of bird species and intermittent presence of standing water within the project site. Therefore, the following mitigation measures will be included in the Final EA.

1) The project site will be inspected for any standing waterbodies within the site, not more than three (3) days prior to the start of construction activities that may impact any habitat or nesting areas of Hawaiian waterbirds.
2) If a nest or active brood is found, the contractor shall contact the PIFWO within 48 hours, establish a 100-foot buffer around the nest or brood and stop all work within the buffer until the chicks/ducklings have fledged.

There are no permanent standing water features proposed as part of the design, therefore it is not anticipated that prolonged periods of standing water would occur throughout the construction period, aside from occurrences of prolonged severe rain and or storm events.

Photovoltaic Solar System

The Final EA will include a discussion on the potential for rooftop photovoltaic panels to have adverse impacts on Hawaiian waterbird and shorebird species, based on documented occurrences in the mainland. We note that the migratory bird species attraction to solar arrays have not yet been documented in the State of Hawaii but we will acknowledge the potential for impacts. Since the new school's electrical distribution system is only being designed to facilitate installation of a future photovoltaic solar system, the timing of installation of the future PV system is not known at this time. Subsequently, minimization measures to reduce the inadvertent attraction of bird species to the solar panels will have to be addressed at the appropriate time. The Final EA will include a discussion that suggests school personnel be informed and educated about the potential for birds to be attracted and inadvertently harmed by solar arrays. We also recommend that the State continue to engage FWS PIFWO for further information as it becomes available.

Hawaiian seabirds

A discussion on potential impacts to Hawaiian seabirds will be included in the Final EA Section 3.2. We acknowledge that outdoor lighting, such as street lights and night-time work lights, can adversely impact migratory seabird species and any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. The majority of the schools exterior lighting, including parking lot lighting and most building mounted exterior lighting will be full-cutoff. The central campus will be lit by shorter, low wattage pedestrian scale pole mounted luminaires that are designated cut-off. In addition, a handful of large exterior canopies/overhangs are lit indirectly via uplight. These indirect uplights are positioned to minimize light spill beyond the canopies.

The exterior lighting is controlled such that roughly half of the lighting will be off during times when the campus is not occupied. This occurs via time schedule and the exact schedule will be at the school's discretion, but will likely be no later than 10 pm each night. It is likely that a manual override function will be available for nights that the campus will be used for functions.

The campus contains no sportsfields or open playcourts that will be lit by electric lighting. In addition, the campus has been designed to provide, but not exceed, light levels recommended by the Illuminating Engineering Society of North America (IESNA) and the following minimization measures will be implemented:

1) Although nighttime construction work is not anticipated at this time, it would be avoided during the seabird fledging period of September 15 through December 15. Further, nighttime construction lighting would be down-shielded and only used when necessary.

2) The school's programmable exterior lighting system will be split up into "nightlight" and "curfew" circuits. Nightlight circuits will be left on from dusk-to-dawn while curfew circuits will be turned on during dusk and turned off at a scheduled time in the evening. Further, exterior light fixtures will be directed to avoid light pollution and trespass.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

HAWAI'I GAS
THE CLEAN ENERGY COMPANY

RECEIVED
JUL 17 2017
jkc

FILE COPY
FILE

July 11, 2017

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

Dear Mr. Chang:

Subject: East Kapolei Middle School
Draft Environmental Assessment
TMK: 9-1-017:106

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

Thank you for the opportunity to comment on the Draft Environmental Assessment. Should there be any questions, or if additional information is desired, please call Jeremy Santiago at 594-5552.

Sincerely,

Hawaii Gas

Keith K. Yamamoto
Manager, Engineering

KKY:krs

cc: State Department of Education, c/o Ms. Brenda Lowrey

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Keith K. Yamamoto, Manager, Engineering
Hawaii Gas
P.O. Box 3000
Honolulu, HI 96802-3000

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Yamamoto:

Thank you for your letter dated July 11, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education, we offer the following response.

We acknowledge that Hawaii Gas maintains underground utility gas mains in the project vicinity and serves commercial and residential customers in the area. Coordination with Hawaii Gas is ongoing during the project's design to minimize potential conflicts with existing gas facilities.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

EPO 17-153

July 18, 2017

Mr. Jared K. Chang, AICP
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
Email: jchang@ssfm.com

Dear Mr. Chang:

SUBJECT: Draft Environmental Assessment (DEA) for East Kapolei Middle School, Kapolei, Oahu
TMK: (1) 9-1-017:106

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA to our office via the OEQC link:
http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2017-06-23-OA-DEA-East-Kapolei-Middle-School.pdf

We understand from the OEQC publication form project summary that *"The State of Hawaii, Department of Education (DOE) is proposing to build a new middle school in East Kapolei, named East Kapolei Middle School (EKMS). EKMS will be located on an 18-acre parcel dedicated to the State DOE. The parcel is vacant and bound by Keahumoa Parkway on the south, Maunakapu Street on the west, and Maweke Street on the east. The proposed action involves the construction of a new middle school consisting of six (6) buildings organized around a central commons area with provisions for future classroom buildings. In addition to the school buildings and central commons areas, the campus includes physical education areas consisting of a covered play court, an open play court, and two play fields sized to accommodate soccer and softball. The school will be designed for an enrollment of 1,050 students with plans for expansion to accommodate an additional 350 students in the future. The site design includes provisions for the future construction of one additional House (House No.4) and five portable classrooms that will allow enrollment to increase to 1,400 students. In total, the school is expected to accommodate 1,520 students and staff."*

Hawaii's environmental review laws require Environmental Assessments (EAs) and Environmental Impact Statements (EISs) to consider health in the discussion and the mitigation measures to reduce negative impacts. In its definition of 'impacts,' §11-200-2, Hawaii Administrative Rules (HAR) includes health effects, whether primary (direct), secondary (indirect), or cumulative. Further, §11-200-12(b)(5), HAR, lists public health as one of the criteria for determining whether an action may have a significant impact on the environment.

We advocate that you consider health from a broad perspective; one that accounts for the social, economic, and environmental determinants of health and wellbeing. Community well-being can be impacted by access to physical activity, health care, feelings of social connectedness and safety. Design solutions that take these factors into consideration positively contribute to the social determinants of health in a community, improving the well-being of those who live there by influencing health promoting behaviors. Social determinants contribute to preventable chronic diseases such as asthma, diabetes, obesity, and cardiovascular disease.

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments to support sustainable healthy design are provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard

comments. EPO has an updated environmental Geographic Information System (GIS) website page http://health.hawaii.gov/epo/egis It compiles various maps and viewers from our environmental health programs.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: https://eha-cloud.doh.hawaii.gov. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (Hawaii Administrative Rules {HAR}, Chapter 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: http://health.hawaii.gov/cwb. If you have any questions, please contact the Clean Water Branch (CWB), Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Please note that all wastewater plans must conform to applicable provisions (HAR, Chapter 11-62, "Wastewater Systems"). We reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: http://health.hawaii.gov/wastewater and contact the Planning and Design Section of the Wastewater Branch (WWB) at (808) 586-4294.

Any waste generated by the project (that is not a hazardous waste as defined in state hazardous waste laws and regulations), needs to be disposed of at a solid waste management facility that complies with the applicable provisions (HAR, Chapter 11-58.1 "Solid Waste Management Control"). The open burning of any of these wastes, on or off site, is strictly prohibited. You may wish you review the Minimizing Construction & Demolition Waste Management Guide at: http://health.hawaii.gov/shwb/files/2016/05/constdem16.pdf Additional information is accessible at: http://health.hawaii.gov/shwb. For specific questions call (808) 586-4226.

If temporary fugitive dust emissions could be emitted when the project site is prepared for construction and/or when construction activities occur, we recommend you review the need and/or requirements for a Clean Air Branch (CAB) permit (HAR, Chapter 11-60.1 "Air Pollution Control"). Effective air pollution control measures need to be provided to prevent or minimize any fugitive dust emissions caused by construction work from affecting the surrounding areas. This includes the off-site roadways used to enter/exit the project. The control measures could include, but are not limited to, the use of water wagons, sprinkler systems, and dust fences. For questions contact the Clean Air Branch via e-mail at: Cab.General@doh.hawaii.gov or call (808) 586-4200.

In 2015, Hawaii passed Act 97 which amended Hawaii's Renewable Portfolio Standards by setting a goal for Hawaii to become one hundred percent renewable by the year 2045. To reach this goal Hawaii should transform its transportation sector from the use of fossil fuels to renewable fuel, electric vehicles (EV)s, and public transit systems including bikeshare programs. To address "range anxiety" and facilitate the adoption of EVs, it is essential that EV charging stations be added to any planned parking areas open to the EV driving public. All future plans should strive to encourage the use of personal bicycles though the development of designated bike lanes and class A bike trails. All efforts should be made to reduce harmful vehicle emissions, reduce vehicle miles travelled (VMT's), encourage alternative modes of transport and increase physical activity.

If noise created during the construction phase of the project may exceed the maximum allowable levels (HAR, Chapter 11-46, "Community Noise Control") then a noise permit may be required and needs to be obtained before the commencement of work. Relevant information is online at: http://health.hawaii.gov/irhb/noise EPO recommends you contact the Indoor and Radiological Health Branch (IRHB) at (808) 586-4700 with any specific questions.

We recommend a phase I Environmental Site Assessment (ESA) and site investigation for projects on formerly and currently zoned agricultural land used for growing sugar, pineapple or other agricultural products. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants may have occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and/or groundwater sampling plan. Please refer to Sections 3 and 4 of the HEER Office Technical Guidance Manual http://www.hawaiidoh.org. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with State Law (HRS, Chapter 128D, "Environmental Response Law", Chapter 451, "State Contingency Plan"). To identify HEER records related to the property, visit http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/public-records. For information on site assessment and cleanup programs review: http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/site-assessment-and-cleanup-programs. Any specific questions should be directed to the HEER office at (808) 586-4249.

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: http://eha-web.doh.hawaii.gov/oegc-viewer. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) {Hawaii Revised Statutes, Chapter 343} documents have been prepared.

To better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

Mahalo nui loa,

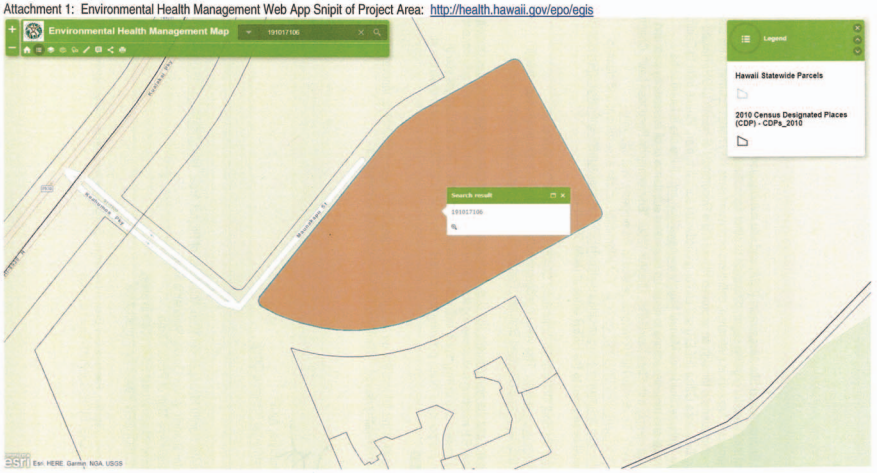
Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

LM:nn

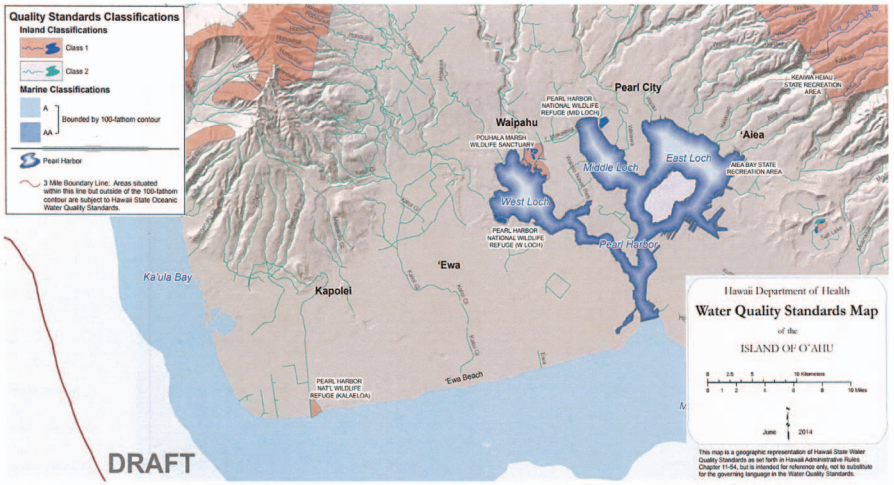
Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis
Attachment 2: Clean Water Branch: Water Quality Standards Map
Attachment 3: Historic Sugarcane Map of Project Area
Attachment 4: OEQC viewer (of some past EA's, EIS's in area)
Attachment 5: U.S. EPA EJSCREEN Report for Project Area

c: Brenda Lowrey, DOE, Planning Section, Facilities Dev Branch (via email: Brenda.Lowrey/FacilDev/HIDOE@notes.k12.hi.us)
DOH: HEER, CWB, WWB, CAB, IRHB, CDPPHD {via email only}

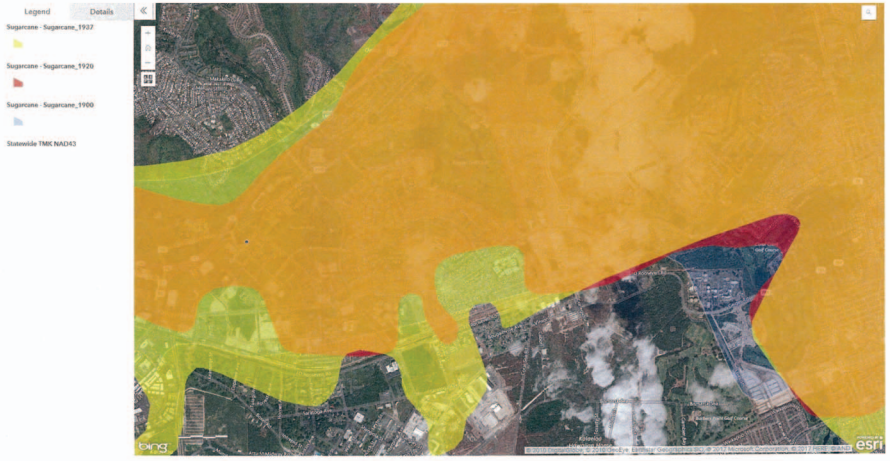
Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis



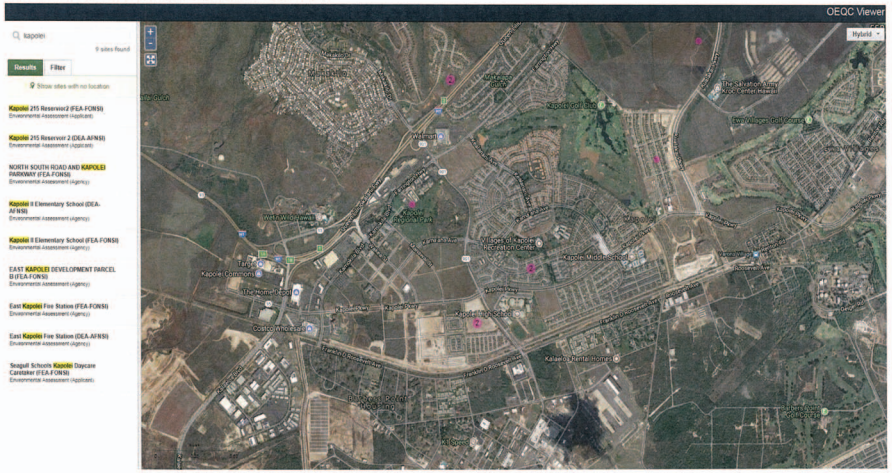
Attachment 2: Clean Water Branch: Water Quality Standards Map



Attachment 3: Historic Sugarcane Map of Project Area



Attachment 4: OEQC viewer (of some past EA's, EIS's in area)



Attachment 5: U.S. EPA EJSCREEN Report for Project Area

EPA United States Environmental Protection Agency

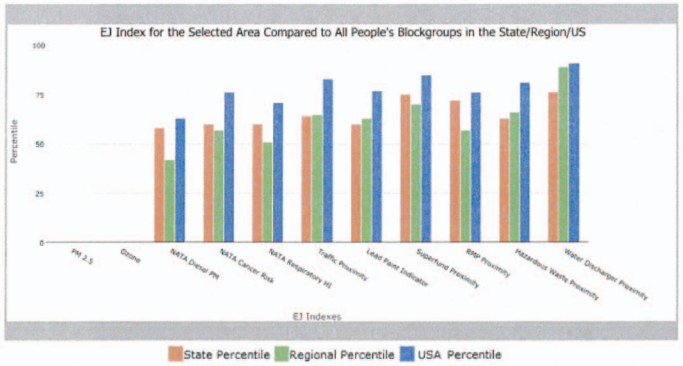
EJSCREEN Report (Version 2016)

1 mile Ring Centered at 21.344804,-158.047779, HAWAII, EPA Region 9

Approximate Population: 7,291

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	58	42	63
EJ Index for NATA* Air Toxics Cancer Risk	60	57	76
EJ Index for NATA* Respiratory Hazard Index	60	51	71
EJ Index for Traffic Proximity and Volume	64	65	83
EJ Index for Lead Paint Indicator	60	63	77
EJ Index for Superfund Proximity	75	70	85
EJ Index for RMP Proximity	72	57	76
EJ Index for Hazardous Waste Proximity*	63	66	81
EJ Index for Water Discharger Proximity	76	89	91



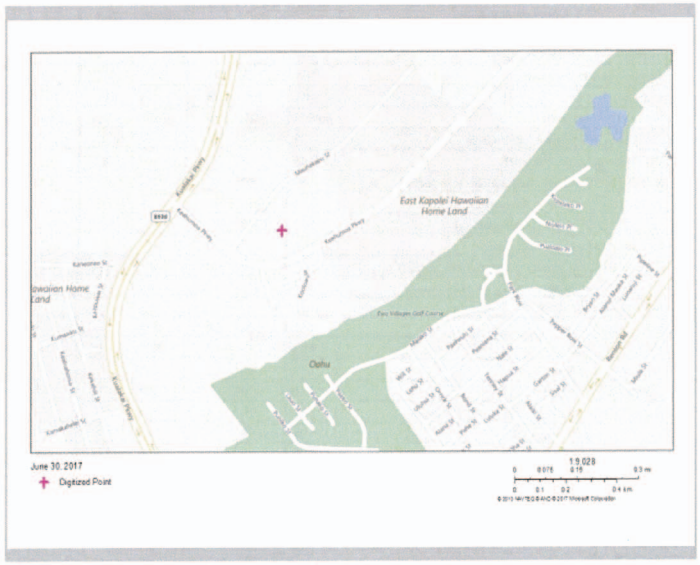
This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 21.344804,-158.047779, HAWAII, EPA Region 9

Approximate Population: 7,291

Input Area (sq. miles): 3.14



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 21.344804,-158.047779, HAWAII, EPA Region 9

Approximate Population: 7,291

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA* Diesel PM (µg/m³)	0.0973	0.149	54	0.978	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	34	34	62	43	<50th	40	<50th
NATA* Respiratory Hazard Index	0.98	1	56	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	230	990	54	1100	46	590	64
Lead Paint Indicator (% Pre-1960 Housing)	0.11	0.16	52	0.24	47	0.3	38
Superfund Proximity (site count/km distance)	0.12	0.098	75	0.15	69	0.13	71
RMP Proximity (facility count/km distance)	0.18	0.19	75	0.57	42	0.43	51
Hazardous Waste Proximity+ (facility count/km distance)	0.1	0.14	62	0.14	62	0.11	69
Water Discharger Proximity (facility count/km distance)	0.51	0.34	77	0.2	91	0.31	84
Demographic Indicators							
Demographic Index	54%	52%	59	47%	61	36%	77
Minority Population	96%	77%	89	58%	91	37%	94
Low Income Population	12%	26%	22	36%	15	35%	15
Linguistically Isolated Population	1%	6%	27	9%	21	5%	47
Population With Less Than High School Education	10%	9%	64	17%	41	14%	48
Population Under 5 years of age	9%	6%	79	7%	75	6%	78
Population over 64 years of age	7%	15%	14	13%	29	14%	21

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

SSFM International

October 27, 2017

SSFM 2013_172.000

Ms. Laura Leialoha Phillips McIntyre, AICP, Program Manager
State of Hawaii Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, HI 96801

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Ms. McIntyre:

Thank you for your letter dated June 18, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

We appreciate your information regarding available online resources, and we have utilized these resources during the preparation of the Final EA. Please note that the school is being designed for whole-campus Collaborative for High Performance Schools (CHPS) Verified recognition. CHPS is a national organization committed to building a new generation of healthy, efficient, environmentally responsive schools for all school children. The adaptation of CHPS Criteria for Hawaii schools is known as Hawaii-CHPS and will be applied to this project. EKMS has the opportunity be the first of such campus in Hawaii. This design goal is consistent with your comments regarding community health and well-being, in addition to related design standard for best management practices (BMPs) concerning stormwater management, wastewater and landscaping irrigation.

A Final Site Assessment Report was completed for the East Kapolei Brownfields Agricultural Property, which included the proposed EKMS site, in December 2007 by Tetra Tech EM Inc. This assessment covered approximately 318 acres of land. Recommendations in the Final Site Assessment Report concluded that there were no elevated concentrations of contaminants of potential concern in the soil that suggest the conditions were not suitable for residential use or that any additional sampling or evaluation is necessary. By letter dated January 8, 2008, DOH provided concurrence with the conclusions and recommendation by Tetra Tech EM Inc. and agreed to a "No Further Action" determination for the site for residential use. The Environmental Protection Agency's environmental justice mapper was reviewed per your recommendation.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

Jared Chang

From: Liu, Rouen <rouen.liu@hawaiianelectric.com>
Sent: Monday, July 17, 2017 6:07 PM
To: Jared Chang
Cc: Kuwaye, Kristen
Subject: Draft EA for the East Kapolei Middle School

Dear Mr. Chang

Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objection to the project. Should HECO have existing easements and facilities on the subject property, we will need continued access for maintenance of our facilities. We appreciate your efforts to keep us apprised of the subject project in the planning process. As the proposed East Kapolei Middle School project comes to fruition, please continue to keep us informed. Further along in the design, we will be better able to evaluate the effects on our system facilities.
If you have any questions, please call me at 1-808-543-7245.

Sincerely,

Rouen Q. W. Liu
Permits Engineer
Hawaiian Electric Company, Inc.
Tel: (808) 543-7245
Email: Rouen.liu@hawaiianelectric.com

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SSFM International

October 27, 2017 SSFM 2013_172.000

Mr. Rouen Liu
Permits Engineer
Hawaiian Electric Company
P.O. Box 3978
Honolulu, HI 96812-3978

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Liu:

Thank you for your email received on July 17, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project.

We acknowledge the Hawaiian Electric Company (HECO) has no objection to the project and should HECO have existing easements and facilities on the subject property, continued access would be required for your facility maintenance. Design coordination with HECO will be ongoing as plans progress.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 21, 2017

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

via email: jchang@ssfm.com

Dear Mr. Chang:

SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School

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

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division – Oahu District on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

cc: Ms. Brenda Lowrey, DOE-Office of School Facilities & Support

---

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2017 JUL -3 AM 8:41
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

June 28, 2017

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School
LOCATION: Kapolei/Ewa, Island of Oahu; TMK No. (1) 9-1-017:106
APPLICANT: State of Hawaii Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **July 20, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

Any use of State Lands under Land Board jurisdiction require a land disposition from the Board, most likely an Executive Order.

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

Signed: Darlene Bryant-Takamatsu
Print Name: Darlene Bryant-Takamatsu
Date: 6/30/17

cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION
2017 JUL -6 AM 10: 40
DEPT. OF LAND & NATURAL RESOURCES STATE OF

'17 JUN 29 AM 10:41 ENGINEERING

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 28, 2017

MEMORANDUM

TO:

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
Engineering X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School
LOCATION: Kapolei/Ewa, Island of Oahu; TMK No. (1) 9-1-017:106
APPLICANT: State of Hawaii Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **July 20, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed:

Print Name: Carty S. Chang, Chief Engineer
Date: 7/5/17

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
Ref: Draft Environmental Assessment (DEA) for the East Kapolei Middle School

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within an area of special Flood Hazard.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zone designations can be found using the Flood Insurance Rate Map (FIRM), which can be accessed through the Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may take precedence over the NFIP standards as local designations prove to be more restrictive. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

The applicant should include water demands and infrastructure required to meet project needs. Please note that the projects within State lands requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.

Signed:
CARTY S. CHANG, CHIEF ENGINEER

Date: 7/5/17

SSFM International

October 27, 2017 SSFM 2013_172.000

Mr. Russell Tsuji, Administrator
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Tsuji:

Thank you for your letter dated July 21, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School (EKMS) Project. We offer the following responses to your comments.

Land Division: We acknowledge that any use of State Lands under Land Board jurisdiction require a land disposition from the Board. Please note that the control of the project site has been provided to the Department of Education via Executive Order No. 4052, recorded on June 16, 2016.

Engineering Division: According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency, the subject property is located in Zone "X", which is an area that has been determined to be outside the 0.2% annual chance floodplain and outside of the 500 year floodplain. The project's storm drainage system will be designed to comply with the latest City Rules Relating to Storm Drainage Standards and Standard Details for Public Works Construction. At the appropriate time, final water demand and calculations will be provided to the Engineering Division for the State Water Projects Plan Update projections.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 24, 2017

SSFM International, Inc.
Attn: Mr. Jared Chang, Senior Planner via email: jchang@ssfm.com
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Mr. Chang:

SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on July 21, 2017, enclosed are comments from the Commission on Water Resources Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

for Russell Y. Tsuji
Land Administrator

Enclosure(s)

cc: Ms. Brenda Lowrey, DOE-Office of School Facilities & Support
Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
LAND DIV
2017 JUL 21 AM 7:50
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
COMMISSION ON WATER RESOURCE MANAGEMENT
2017 JUN 29 AM 10:49

June 28, 2017

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School
LOCATION: Kapolei/Ewa, Island of Oahu; TMK No. (1) 9-1-017:106
APPLICANT: State of Hawaii Department of Education

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **July 20, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed: /s/ Jeffrey T. Pearson, P.E.

Print Name: Deputy Director
Date: July 20, 2017

cc: Central Files

RFD.4406.3
15842

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
NEIL J. HANNAHS
PAUL J. MEYER
VIRGINIA PRESSLER, M.D.

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR

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

July 20, 2017

REF: RFD.4406.3

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: Jeffrey T. Pearson, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Draft Environmental Assessment (DEA) for the East Kapolei Middle School

FILE NO.: RFD.4406.3
TMK NO.: (1) 9-1-017:106

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[X] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/

[X] 6. We recommend the use of alternative water sources, wherever practicable.

[ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER: The Commission strongly encourages the implementation of water conservation measures, best management practices to mitigate stormwater runoff, and the reuse of stormwater and other alternative non-potable sources, where practicable.

A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/products/index.html.

The Commission has also published a Water Conservation Manual for State of Hawaii Facilities (2007) that lists conservation measures for restrooms and shower facilities; kitchens, cafeterias, and staff rooms; and landscaping. As noted above, the Landscape Industry Council of Hawaii has also published a set of best management practices. We support the proposed use of native and naturalized dry land plant species for landscaping, the application of drip, low flow irrigation technology, and the use of smart irrigation controllers.

If you have any questions, please contact Lenore Ohye of the Commission staff at 587-0216.

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Russell Tsuji, Administrator
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr Tsuji:

Thank you for your letter dated July 24, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School (EKMS) Project. We offer the following responses to your comments.

1. The project's design is being coordinated with the City and County of Honolulu's Department of Planning and Permitting and the Honolulu Board of Water Supply.

2. Copies of the Draft EA and Pre-Assessment Consultation letter were provided to the Engineering Division of the State Department of Land and Natural Resources for review and comment. The Engineering Division has requested water demands and infrastructure requirements for inclusion in the State Water Projects Plan Update projections. These demands and associated calculations will be provided to the Engineering Division, when appropriate.

4. The school is being designed using the Hawaii Collaborative for High Performance School Guidelines (HI-CHPS) which is a nationally recognized, consensus based system specifically for schools, and will be seeking certification as a HI-CHPS Verified project. HI-CHPS principles include designing with water efficient fixtures and water efficient practices. The HI-CHPS verification is similar to the Leadership in Energy and Environmental Design (LEED) certification in that it commits school campus designers to strive for healthy, efficient, environmentally responsive schools for all school children. Low-flow water conserving fixtures are currently proposed in the design that include, 1.28 gallon per flush water closets, 0.125 gallon per flush urinals, and 0.5 gallon per minute metering lavatory faucets. These fixtures save more water than what is currently required per the City and County of Honolulu's Plumbing Code baseline requirements.

5. Best management practices (BMP) for stormwater management are being implemented in accordance with HI-CHPS verification requirements. The project's storm drainage system is being designed to comply with the City and County of Honolulu Rules Relating to Storm Drainage Standards and Standard Details for Public Works Construction. Further, the proposed landscaping plan incorporate planted bioswales and storm water retention zones along the southwest, south and southeast campus perimeter. This "green infrastructure" system will assist with the conveyance, collection and temporary retention of storm water runoff. The retention zone includes bioswales, rain gardens and retention basins which reveal the movement of stormwater during heavier rain events and create a garden like learning environment adjacent to classrooms.

6. A City and County of Honolulu owned R-1 nonpotable irrigation water distribution line is located in Keahumoa Parkway, along the West and South property boundary of the project site. Although this R-1 recycled non-potable irrigation water distribution line is not yet active, DOE anticipates utilizing this non-potable water resource once it becomes available so as not to rely on BWS potable drinking water supply. In preparation for tying into the County R-1 irrigation water system, the design will comply with the State Department of Health Wastewater Branch guidelines, which govern the use of recycled waste water. This will minimize future additional costs for retrofitting the irrigation system for DOH non-potable recycled water use. Per BWS, at a future date and as funding becomes available, the BWS will construct R-1 recycled water system improvements along Kualakai Parkway and connect the East Kapolei II nonpotable irrigation system.

8. Landscape irrigation conservation BMPs are being implemented in the site design. The School is applying a bioregional landscape design approach where the water demand for landscape irrigation will be significantly reduced in comparison to typical tropical landscapes in the built environment. Besides using appropriate native and naturalized dry land plant species, another means of reducing irrigation water use will be through applying drip and low flow irrigation technology and equipment in lieu of the traditional spray equipment where appropriate. Smart irrigation controllers, which monitor on-site rainfall, wind, atmospheric temperature and even soil moisture, will also be installed. The proposed uses of appropriate plants, rain gardens, bioswales, non-potable water (in the future when available), smart controllers and drip irrigation are all consistent with the Landscape Industry Council of Hawaii's, Landscape Irrigation Conservation BMPs.

Other. As described above, the EKMS is utilizing appropriate water conservation measures and best management practices to mitigate storm water runoff and supports the reuse of storm water and other alternative non-potable sources.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. T. HIU
DEPUTY DIRECTOR

SSFM INTERNATIONAL, INC.
RECEIVED
JUL 24 2017
JKC

July 21, 2017

2017/ELOG-1237(JL1)

FILE COPY
FILE

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

Dear Mr. Chang:

SUBJECT: Request for Comments
Draft Environmental Assessment
East Kapolei Middle School
East Kapolei II Subdivision – Kapolei
Tax Map Key 9-1-017: 106

This responds to your request for comments on the Draft Environmental Assessment (DEA) for the proposed East Kapolei Middle School (EKMS), received June 23, 2017. Comments from the Department of Planning and Permitting (DPP) include:

A. Planning Division, Development Plans and Zone Change Branch: Your acknowledgement letter (dated February 21, 2017) and the DEA did not respond to DPP's previous Comment D2 (DPP letter dated June 21, 2016), so it is being repeated in full below and it should be addressed in the Final Environmental Assessment (FEA).

"D2. How will the school design reflect the likely community need for hurricane resistant shelters? To the extent that the Department of Education's mandated mission of education is not affected, the school should be designed and constructed to help provide such a shelter.

There is a statewide shortage of shelters capable of withstanding hurricane force winds, and climate change is expected to increase the number of high-intensity storms affecting the State of Hawaii."

The following corrections, updates, and clarifications should be addressed in the FEA:

1. The description of the relation of the Project to the Ewa Development Plan on the Project Summary information page and Page 2 of the DEA is incorrect. The corrected text for the Project Summary page is shown below:

City and County Ewa Development Plan Land Use Map Designation: "Residential and Low Density Apartment Community/Future Intermediate School Conceptual Location"

The corrected text for Existing Land Use Designations on Page 2, under City and County Development Plan, should be:

"As shown on this Development Plan's Land Use Map, the Project site is located in an East Kapolei area planned to become a "low and medium density residential" community and identified as needing a future middle school, as shown in Figure 6."

2. In the Surrounding Uses section on Page 2, it states that construction for the Hoopili development is projected to begin in 2016. Is that correct? What is status in 2017?

3. The Land Use Map on Page 7 is missing the A-2 zoned parcel across Keahumoa Parkway.

B. Planning Division, Community Planning Branch:

1. According to your acknowledgement letter (dated February 21, 2017), an analysis of the Project's consistency of the East Kapolei Neighborhood Transit-Oriented Plan and the Honolulu Complete Streets Design Manual was to be provided in DEA Section 4.0 "Conformance with Plans and Polices." Please include this analysis in the FEA.

2. Comment C from DPP's previous letter (dated June 21, 2016) was not fully addressed:

   a. Street cross-sections were not provided in order to assess adequate sidewalk widths around the EKMS campus and adequate connections from the East Kapolei Rail Station and surrounding neighborhoods.

   b. More gate openings to increase accessibility and encourage walking were not provided.

   c. With up to 60% of EKMS students projected to walk and bike, how many bike racks will be provided in the identified storage areas?

   d. Why does parking dominate the front, primary sides of the campus rather than having the buildings showcase the school by bringing them closer to the street? One of the central tenets of Transit-Oriented-Development is to bring more activity to the street in order to create a sense of place and arrival.

3. Further clarifications to be provided in the FEA include:

   a. In the DEA, a percentage of students are expected to walk or bike from the Kanehili subdivision. Please clarify what route they are to take to get to Kualakai Parkway since there are no access points onto Kualakai Parkway from the subdivision without crossing private property. Please provide what percentages of students are expected to walk or bike from this subdivision.

   b. Without such public access points in the Kanehili Subdivision onto Kualakai Parkway, estimate the change in percentage of students that will walk or bike since they will have a more circuitous route (via Kapolei Parkway) and substantially longer distance thereby discouraging biking and or walking. This will also likely affect the traffic generated by the Project as well, particularly on the northbound right-turn movement from Kualakai Parkway onto Keahumoa Parkway that is already projected to operate at level of service (LOS) F in the AM peak hour.

c. Please clarify which agency will provide the dedicated right-turn movement from northbound Kualakai Parkway onto Keahumoa Parkway to relieve the LOS F projected for this movement by the Project in 2019. Also, indicate the agency's timeline for completing this road improvement.

d. Clarify why the EKMS campus has a dedicated school bus loading and unloading area and separate entrance off Keahumoa Parkway when the Traffic Impact Analysis Report assumes that none (0) of the students will be arriving by bus. There may also be conflicts created between the pedestrians coming from the parking lot and buses and heavy delivery vehicles in the loading area.

e. Please clarify whether the use of the proposed canopy trees and their spacing will match what is shown on the Site Plan, Figure 8 of the DEA.

C. Site Development Division, Civil Engineering Branch:

The Project shall comply with the prevailing soil erosion and storm water quality standards at the time the construction/grading plans are submitted to DPP for review and approval. Be advised that the current soil erosion and water quality standards will be superseded in its entirety with the Rules Relating to Water Quality, effective August 16, 2017. Grading work shall be done in accordance with Chapter 14, Articles 13, 14 and 15 of the Revised Ordinances of Honolulu.

Should you have any questions, please contact Janet Lau of our Urban Design Branch at (808) 768-8033 or by email at janet.lau@honolulu.gov.

Very truly yours,

FOR Kathy K. Sokugawa
Acting Director

/cc: Brenda Lowrey
State Department of Education

Doc1488142

SSFM International

October 27, 2017

SSFM 2013_172.000

Ms. Kathy Sokugawa, Acting Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Ms. Sokugawa:

Thank you for your letter dated July 21, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. We offer our apology for not addressing all of your previous comments in the Draft EA. They have been incorporated into the Final EA and summarized in this letter. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

A. Planning Division. Development Plans and Zone Change Branch:

D.2 The Cafeteria and attached food preparation area is designed to serve as a community shelter during severe weather or hurricane events. The design meets Category III, enhanced hurricane protection in accordance with the Hawaii State Building Code.

1. The suggested corrections, updates and clarifications have been incorporated in the Final EA.

2. An article in the Honolulu Star Advertiser, published on September 8, 2016, reported on the groundbreaking ceremony for D.R. Horton's Hoopili master planned community project. Per the article, the first available homes in were projected for delivery by summer of 2017. Currently on the D.R. Horton website, single-family homes are being offered for sale in the Haakea community within Hoopili.

3. The Land Use Map is updated and now includes the A-2 zoned parcel across Keahumoa Parkway.

B. Planning Division, Community Planning Branch:

1. A discussion of the project's consistency with the East Kapolei Neighborhood Transit-Oriented Plan and the Honolulu Complete Streets Design Manual is now included in the Final EA, Section 4.0 Conformance with Plans and Policies. In summary, the use of the parcel for a new middle school does not conflict with the East Kapolei Neighborhood TOD Plan's proposed zoning and land use recommendations and applicable consistencies with the Complete Streets Design Manual are highlighted.

2a. Street cross-sections for Keahumoa Parkway and Maunakapu Street have been added to the Final EA, Section 3.10 Roadways and Traffic. Sidewalks along both sides of Keahumoa Parkway are 8 feet wide and adjacent to a 10 foot landscaped planner strip. Sidewalks along Maunakapu Street are 5 feet wide and adjacent to a 10 foot landscaped planter strip.

2b. There are six (6) gate openings for pedestrian access into the school. There are two (2) pedestrian gates each along Mawake Street, Keahumoa Parkway and Maunakapu Street.

2c. The Traffic Impact Analysis Report assumed that approximately 630 students will walk or bike to school, based on that, 200 bike stalls will be provided at the school initially. DOE has indicated that more bike stalls can be added in the future, if needed.

2d. The vehicular access, egress, circulation, and parking areas are situated on the downwind portion (southwest) of the project site to support the site's design of utilizing the prevailing trade winds as natural ventilation. Creating a safe and educational focused learning environment for children is one of the main reasons for consolidating the school buildings together around a central commons area that will serve multiple purposes, such as central play and event area, morning gatherings, performance and outdoor gathering space. We acknowledge that street activation in TOD areas can be important when considering arrival and sense of place aspects however, these design concepts must be utilized as appropriate to the location and land use. When developing a middle school for young children, "bringing more activity to the street" would not be desirable and creates a less secure environment than what is desired. Further, interaction with the public at the sidewalk and street level must be carefully controlled with schools.

3a. The total assumed percentage of students expected to walk or bike to school was 60%, with that percentage expected to increase as the residential development matures around EKMS. The Traffic Impact Analysis Report states that some students can be expected to walk or bike from the Kanehili subdivision, however the breakdown of how many students from this subdivision was not computed. The assumption used is that a majority of the students coming from that subdivision would be dropped off due to the long route needed to get to the school or since it may be on the way to work for parents heading toward H-1 Freeway. Those students who do bike or walk would do so by using the crosswalk across Kualakai Parkway at the intersection with Kapolei Parkway and then shared-use path on the east side of Kualakai Parkway up to Keahumoa Parkway. In the future, other pedestrian improvements are likely to be constructed which may include an

elevated pedestrian walkway crossing Kualakai Parkway to get to the East Kapolei Rail Station.

3b. We agree with this statement and acknowledge that the traffic analysis assumed most of the students from this subdivision would be dropped off at school due to the circuitous route (via Kapolei Parkway). Subsequently, this intersection will receive improvements to mitigate traffic generated by the school and other developments. Per HDOT, the Keahumoa and Kualakai intersection is expected to be signalized and improved per an agreement between Hoopili developer, D.R Horton and HDOT. As part of the EKMS project, a new dedicated right-turn lane from northbound Kualakai Parkway onto Keahumoa Parkway will be constructed before the school is opened.

3c. The dedicated right-turn lane from northbound Kualakai Parkway onto Keahumoa Parkway will be constructed by DOE as part of the EKMS project.

3d. School buses are only used to pick up students 1 ½ miles away from school. Since the majority of residential developments within East Kapolei are within 1 ½ miles from EKMS, no buses were accounted for during the morning and afternoon peak hours. School buses would primarily be used for school functions off campus. The location was specifically chosen to separate buses from primary points of entry and exit by students and parents. Deliveries are scheduled by the school and they will manage times so as not to conflict with bus use.

3e. The proposed canopy trees and spacing will generally match what is shown on the Site Plan, Figure 8 of the Final EA however it is subject to change during final design and during design permitting.

C. Site Development Division. Civil Engineering Branch:

Acknowledging that the Project will comply with the prevailing soil erosion and storm water quality standards at the time the construction/grading plans are submitted to DPP for review and approval.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

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

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

SSFM INTERNATIONAL, INC.
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July 25, 2017

FILE COPY

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

Dear Mr. Chang,

Subject: Draft Environmental Assessment for Kapolei Middle School
TMKs: (1) 9-1-017:106 Kapolei/Ewa, Oahu,

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments at this time.

If there are any further questions, please contact me at 768-8480.

Sincerely,

Robert J. Kroning, P.E.
Director

RJK:ms(694157)

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Robert Kroning, P.E., Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th Floor
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Kroning:

Thank you for your letter dated July 25, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. We note that the Department of Design and Construction does not have any comments at this time.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Ulu`ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 17-419

July 25, 2017

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JUL 27 2017
JKC

FILE COPY
FILE

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

Dear Mr. Chang:

Subject: East Kapolei Middle School
TMK: (1) 9-1-017:106

This is in response to your letter dated June 22, 2017, requesting for comments on the subject project.

We have no comments at this time as we do not have any facilities or easements on the subject property.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Ross S. Sasamura, P.E.
Director and Chief Engineer

cc: State, Department of Education Ms. Brenda Lowrey

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Ross Sasamura, P.E.
Director and Chief Engineer
City and County of Honolulu
Department of Facility Maintenance
1000 Uluohia Street, Suite 215
Kapolei, Hawaii 96707

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Sasamura:

Thank you for your letter dated July 25, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. We note that the Department of Facility Maintenance does not have any comments at this time and do not have any facilities or easements on the subject property.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

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

KIRK CALDWELL
MAYOR

WES FRYSZTACKI
DIRECTOR

JON Y. NOUCHI
DEPUTY DIRECTOR

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TP6/17-694635R

July 27, 2017

FILE COPY

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

Dear Mr. Chang:

SUBJECT: Draft Environmental Assessment (DEA) for East Kapolei Middle School

Thank you for the opportunity to provide comments on the Draft Environmental Assessment for East Kapolei Middle School. In response to your letter dated June 22, 2017, we have the following comments:

1. **Section 2.3: Project Description**

Access and Egress. Please provide detailed calculations of the school drop-off loop design and length, including how it accommodates on-site stacking generated by the projected student population. Please reference the specific standard used in the design of the drop-off loop.

Site plans included in EA in Figures 7, 8, and 2 (of the Traffic Impact Analysis Report) vary in the placement of bike storage, gates, and crosswalks. Please confirm which layout is proposed. A capacity for the bike storage should be depicted that is sufficient to hold the approximately 315 bicycles forecasted by the Modal Split section of the Traffic Impact Analysis Report (TIAR).

The throat of the driveway going into the school at Keahumoa Parkway and Kooloaula should be at right angles for at least one bus length into the property.

2. **Section 2.6: Required Permits and Approvals**

Plans should be reviewed and approved by the Disability and Communication Access Board to ensure full compliance with the American with Disabilities Act (ADA).

A street usage permit from the City's Department of Transportation Services (DTS) should be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

DTS supports the waiver of the height limit to allow the construction of neighborhood schools and thereby reducing the traffic impact.

3. **Section 3.0: Pedestrian & Bicycle Access**

Complete Streets. The Application should contain further discussion of compliance with County and State Complete Streets policies, pursuant to Act 54, Session Laws of Hawaii 2009, HRS §264-20.5 and ROH 12-15. The Project should elaborate on how it will comply with Complete Streets policies, including specific adherence to the following key Complete Streets principles: 1) safety, 2) Context Sensitive Solutions, 3) accessibility and mobility for all, 4) use and comfort of all users, 5) consistency of design guidelines and standards, 6) energy efficiency, 7) health, and 8) green infrastructure.

Please provide a series of detailed cross-sections of the major roads and parkway in Figure 9. The DEA should evaluate whether improvements and facilities are needed to aid vehicular, pedestrian, bicycle, and public transportation circulation by implementing Complete Streets principles. When feasible, the project should include Complete Streets provisions as part of the improvements. Cross sections should detail Complete Streets improvements in the right-of-way, including any bicycle facilities.

Pedestrian Facilities. Pedestrian pathways should provide internal circulation within the parking lots and connect from the parking area to the buildings. Pedestrians and bicyclists shall have a designated safe path between any road and the school building. These should be marked in Figure 8. ADA ramps should also be delineated. A crosswalk is needed on Keahumoa Parkway. Pedestrian access and a gate should also be provided to the playfields sports fields on Maweke Street. Existing sidewalks should be widened to the width of a multipurpose path for the entire perimeter of the school grounds for adequate pedestrian circulation.

Access to East Kapolei Rail Station. The project is 800 feet from the East Kapolei Rail Station. An analysis of pedestrian circulation needs to be conducted to ensure safe and convenient pedestrian access to the planned rail station, the planned bus stops and other major destinations in the area. The added vehicular traffic will cause the negative impacts to the pedestrians accessing the East Kapolei Rail Station. The DEA needs to identify and analyze those impacts at the subject intersections and provide the appropriate mitigations.

Bicycle Facilities. Please provide a bike lane or a pro-rated contribution for a bike lane on Keahumoa Parkway as per the Oahu Bike Plan (2012). On-site bike racks and secure bike storage for the students, employees and visitors should be included.

Environmental Design. School parking lots and perimeter ground design should follow Crime Prevention through Environmental Design (CPTED) principles, and avoid chain link or wrought-iron bars as fencing material. The DTS prefers the strategic use of low hedges or planters, small trees to demarcate school boundaries and create defensible, safe spaces.

4. **Section 3.10 Roadways and Traffic**

Travel Demand. The projected Average Daily Traffic (ADT) for Keahumoa Parkway and surrounding roads is low when compared to the regional model. The traffic signal at Keahumoa and Maunakapu should be installed by the Department of Education prior to the opening of the school.

Since 80% of students are expected to travel from school by means other than automobile, a safe route to school program should be established.

Construction Impacts. Construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets. Construction schedules should be coordinated with other nearby properties that have planned developments to ensure minimal impacts on City streets. Best Management Practice controls should be included at construction site to prevent trailing of dirt and debris on City roadways. Any damage to the existing roadway and sidewalk area caused by the project should be repaired to current City standards as well as meet ADA requirements.

5. **Section 4.0 Conformance with Plans and Policies**

Priority Guidelines on Sustainability. In addressing priority guidelines on sustainability more thoroughly (page 56), the Project should also consider certification by a green building rating system, including but not limited to nationally recognized rating systems such as Leadership in Energy and Environmental Design (LEED), the Living Building Challenge, Green Globes, or another comparable State-approved, nationally recognized, and consensus-based guideline, standard, or system.

The DTS supports school certification such as the LEED Building Design and Construction for Schools Version 4.0 as it mitigates Location and Transportation (LT) impacts including but not limited to: a) minimizing the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff, b) reducing pollution by promoting alternatives to conventionally fueled automobiles, c) increasing access to quality transit, d) reducing Vehicle Miles Traveled (VMT) through the integration of bicycle facilities and e) compact, walkable development that encourages a density and diversity of surrounding uses.

6. **Section 6.0 Agency and Public Consultation**

Local Area Network. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., should be kept apprised of the details of the proposed project and the impacts that the project may have on the adjoining local street area network.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Nicola Szibbo of my staff at 768-8359.

Very truly yours,

Wes Frysztacki
Director

cc: Brenda Lowrey, State Department of Education

SSFM International

October 27, 2017 SSFM 2013_172.000

Mr. Wes Frysztacki, Director
City and County of Honolulu
Department of Transportation Services
650 South King Street, 3rd floor
Honolulu, HI 96813X

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Frysztacki:

Thank you for your letter dated July 27, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

1. Section 2.3: Project Description
Access and Egress. The current student drop-off area fronting the Administration Building is about 400 feet long. At an estimated average of 20 feet per car length, we assume that up to 20 cars would be able to queue along the curbside at the same time. In addition, more cars would be able to queue within the parking lot before getting to the curb so the total queuing capacity on-site is estimated to be about 40 cars.

The driveway into EKMS was positioned in alignment with the Kroc Center driveway across of Maunakapu Street as a roadway best practices. Subsequently, the parking lot was designed to allow for maximum queuing within the space allowed. There was no specific design standard applied to the drop-off loop design, but it has been vetted during preliminary design stages with the DOE and school designers and generally considered adequate for stacking when compared to other DOE schools. The loop width needed to be wide enough to accommodate fire trucks (minimum is 20 feet, current design is 22 feet) and two lanes (striped) so cars can exit without waiting behind other cars dropping off students.

The site plan provided in the EA depicts the latest conceptual layout.

Please note that the Traffic Impact Analysis Report (TIAR) did not breakdown the estimated split between bicyclist and walkers. The split between bikes and walkers is unknown at this time and will vary per school. For your reference, both Ewa Makai Middle School and Kapolei Middle School currently have nearly 50% of their students walking, biking, skateboarding or

using scooters to get to school. At this time, the 200 bike stalls proposed was estimated to be sufficient and DOE will assess whether more stalls are needed in the future.

The current "throat" of the driveway entering from Keahumoa Parkway is at a right angle for at least 50 feet. This distance is adequate for buses and fire trucks to enter the property without impacting vehicles traveling westbound on Keahumoa Parkway.

2. Section 2.6: Required Permits and Approvals
The school plans will be reviewed and approved by the Disability and Communication Access Board to ensure full compliance with the American with Disabilities Act (ADA). The school will be compliant with 2010 ADA standards for accessible design.

We acknowledge that a street usage permit will be required from the City's Department of Transportation Services (DTS) for any construction-related work that may require the temporary closure of any City street traffic lane.

We acknowledge and appreciate that DTS supports the waiver of the height limit to allow the construction of neighborhood schools and thereby reducing the traffic impact.

3. Section 3.0: Pedestrian & Bicycle Access
Complete Streets. A discussion of the project's consistency with the East Kapolei Neighborhood Transit-Oriented Plan and the Honolulu Complete Streets Design Manual is included in the Final EA, Section 4.0 Conformance with Plans and Policies. In summary, the use of the parcel for a new middle school does not conflict with the East Kapolei Neighborhood TOD Plan's proposed zoning and land use recommendations and applicable consistencies with the Complete Streets Design Manual are highlighted.

Street cross-sections for Keahumoa Parkway and Maunakapu Street are included in the Final EA, Section 3.10 Roadways and Traffic including a discussion on other proposed roadway improvements. Sidewalks along both sides of Keahumoa Parkway are 8 feet wide and adjacent to a 10 foot landscaped planner strip. Sidewalks along Maunakapu Street are 5 feet wide and adjacent to a 10 foot landscaped planter strip. The Oahu Bike Plan identifies Keahumoa Parkway as a facility with a proposed bike lane, however Keahumoa Parkway was recently constructed and the bike lane was not included. Improvements to Keahumoa Parkway to install a bike lane or widen sidewalks are not included with the EKMS project. We do note that the sidewalks along Keahumoa Parkway are generally wide, but still do not meet AASHTO Guidelines for Bicycle Facilities (Section 5.2.1) which call for a 12 foot to 14 foot width for shared use paths. There is also a 10 foot wide landscaped strip adjacent to the existing sidewalk which does provide some relief for shared use fronting the school.

Pedestrian Facilities. There is one (1) ADA ramp and four (4) loading zones, identified on Figure 8: Site Plan. There are six (6) gate openings for pedestrian access into the school. There are two (2) pedestrian gates each along Mawake Street, Keahumoa Parkway and Maunakapu Street. Pedestrian pathways are provided within the school site to allow for adequate and safe connections. The school will be compliant with 2010 ADA standards for accessible design.

Access to East Kapolei Rail Station. Pedestrian access to the East Kapolei Rail Station would be provided via existing sidewalks along Keahumoa Parkway. A new traffic signal will be installed at Maunakapu Street which would mitigate negative pedestrian impacts by controlling the flow of vehicular traffic and providing a safe and efficient way for pedestrians to cross Maunakapu Street headed to and from the rail station. It is also our understanding that the City DTS is planning other multimodal access improvements associated with this rail station. These improvements will result in benefits to EKMS similar to the Kroc Center and other adjacent land uses.

Bicycle Facilities. The Oahu Bike Plan identifies Keahumoa Parkway as a facility with a proposed bike lane, however adding a bike lane to Keahumoa Parkway is not planned at this time. Two hundred bike stalls will be provided at the school and DOE will assess whether more stalls are needed at an appropriate time.

Environmental Design. DOE has specific requirements for fences and prefers to have chain link fences for security purposes.

Travel Demand. The Average Daily Traffic (ADT) was calculated by using the projected peak hour volumes and dividing by the design hour factor. The projected peak hour volumes include background growth, and trips generated by surrounding developments and the project.
A traffic signal will be installed by DOE at Keahumoa and Maunakapu during Phase 2 of the school buildout. Currently, Phase 1 does not warrant the need for a traffic signal.

Please note that it was assumed that 60% of students will walk or bike to school. We agree and acknowledge that agree that a Safe Routes to School program should be established. This recommendation will be included in the Final EA.

Construction Impacts. Construction of the school will include best management practices (BMPs), as applicable to minimize adverse impacts to the environmental and adjacent properties. At a minimum, BMPs will implemented to control construction dust and emissions, construction related stormwater runoff, grading and earthwork. We acknowledge that BMP controls should be included at the construction site to prevent trailing of dirt and debris on City roadways and any damage to the existing roadway and sidewalk area caused by the project should be repaired to current City standards as well as meet ADA requirements.

5. Section 4.0 Conformance with Plans and Policies
Priority Guidelines on Sustainability. We acknowledge and appreciate that the DTS supports school certification such as the Leadership in Energy and Environmental Design (LEED) Building Design and Construction for Schools. The school is being designed for whole-campus Collaborative for High Performance Schools (CHPS) Verified recognition. The HI-CHPS verification is similar to the LEED certification in that it commits school campus designers to strive for healthy, efficient, environmentally responsive schools for all school children. The adaptation of CHPS Criteria for Hawaii schools is known as Hawaii-CHPS and will be applied to this project. EKMS has the opportunity be the first of such campus in Hawaii.

6. Section 6.0 Agency and Public Consultation
Local Area Network. We acknowledge that affected Neighborhood Boards, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., will be kept apprised of the details of the proposed project through design and permitting, as appropriate.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

July 28, 2017

SSFM INTERNATIONAL, INC.
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KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
DAVID C. HULIHEE
KAPUA SPROAT
KAY C. MATSUI

ROSS S. SASAMURA, Ex-Officio
FORD N. FUCHIGAMI, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

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

Dear Mr. Chang:

Subject: Your Letter Dated June 22, 2017 Requesting Comments on the Draft Environmental Assessment for the Proposed East Kapolei Middle School Project
Tax Map Key: 9-1-017: 106

Thank you for the opportunity to comment on the proposed project.

The existing water system is adequate to accommodate the proposed improvements project. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

For this proposed project, the developer is required to obtain a water allocation letter from the State's Department of Hawaiian Home Lands for daily storage.

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

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

The developer will be required to design and construct a temporary potable water connection, with reduced pressure principle backflow preventer, to the East Kapolei II nonpotable irrigation system. At a future date and as funding becomes available, the BWS will construct R-1 recycled water system improvements along Kualakai Parkway and connect the East Kapolei II nonpotable irrigation system. As part of the project, BWS will remove the temporary potable connection and restore the area.

The construction drawings should be submitted for our approval.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Water for Life . . . Ka Wai Ola

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Ernest Y.W. Lau, P.E., Manager and Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Lau:

Thank you for your letter dated July 28, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

We acknowledge that based on current data, the existing water system is adequate to accommodate the proposed project and that DOE will require a water allocation letter from the Department of Hawaiian Home Lands for daily storage. Design plans are being coordinated with the Board of Water Supply for review and approval as part of the design and ministerial permits process. The on-site fire protection requirements have been coordinated with the Honolulu Fire Department.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

PHONE (808) 594-1888

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

FAX (808) 594-1938

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July 24, 2017

Jared Chang, AICP
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, HI 96817

Re: Comments on Draft Environmental Assessment for East Kapolei Middle School
SSFM 2013_172.000
Honouliuli Ahupua'a, 'Ewa Moku, O'ahu Mokupuni
Tax Map Key: (1) 9-1-017: 106

Aloha e Mr. Chang:

The Office of Hawaiian Affairs (OHA) received your letter and draft environmental assessment (DEA) on June 23, 2017. The State of Hawai'i Department of Education is proposing to construct the East Kapolei Middle School on an 18-acre parcel in Kapolei on the 'Ewa plain. According to your letter, a Finding of No Significant Impact (FONSI) determination is anticipated for this project.

As one of our strategic priorities is ho'ona'auao (education) and with most middle schools in the Kapolei and Campbell complex areas at or exceeding capacity, OHA understands the need for additional public education facilities. We are concerned, however, that the anticipated FONSI determination may be premature, given that potential environmental effects to cultural resources, iwi kūpuna (human remains/burials), and the endangered pueo have not been evaluated.

The DEA includes a one-page letter with three accompany pages of figures documenting an archaeological reconnaissance of more than 1,000 acres conducted in 1996, prior to the adoption of the Hawaiian Administrative Rules governing standards for archaeological surveys and reports.[1] The letter fails to meet the archaeological survey report requirements under the administrative rules as it is lacking a discussion of survey methodology, background research,

[1] Haw. Admin. R. § 13-276, Rules Governing Standards for Archaeological Inventory Surveys and Reports

and prior archaeological studies. It is also unclear if the one-day reconnaissance encompassed the entire project area depicted in the figure.

The 'Ewa plain has historically been known to contain sinkholes in which iwi kūpuna and avi-faunal remains have been encountered. These sinkholes can continue to exist in areas that have been graded or heavily cultivated for agricultural use. OHA recommends conducting an archaeological inventory survey with subsurface testing of the project area prior to moving forward with project development.

According to the biological resource assessment in the DEA, SWCA Environmental Consultants conducted a one day survey focused on the endangered ko'oloa'ula. No mention of pueo, an endangered species on the island of O'ahu,[2] is made in the assessment. Pueo are known to frequent the Honouliuli area. OHA recommends conducting a biological survey to identify pueo in the proposed project area. If you have not already done so, we suggest consulting with Michael Lee. Mr. Lee is intimately familiar with the community's work regarding pueo and protecting pueo habitat in the Honouliuli area and could provide valuable information regarding pueo in Honouliuli. It is our understanding that the Department of Forestry and Wildlife (DOFAW) will be commencing a pueo survey in August, which will include the neighboring University of Hawai'i – West O'ahu. We also suggest contacting Afsheen Siddiqi, DOFAW biologist, for more information about the upcoming pueo survey.

Thank you for initiating consultation and providing the opportunity to comment. We look forward to continuing consultation. Should you have any questions or if you need contact information for Mr. Lee or Ms. Siddiqi, please contact Teresa Kaneakua at (808) 594-0231 or teresak@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:tk

Cc: Ms. Brenda Lowrey, State Department of Education, Office of School Facilities and Support

[2] Haw. Admin. R. § 13-124, Exhibit 2, List of Species of Endangered Wildlife in Hawai'i.

SSFM International

October 27, 2017 SSFM 2013_172.000

Dr. Kamanaʻopono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer
Office of Hawaiian Affairs
560 Nimitz Highway, Suite 200
Honolulu, Hawaii 96817

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, Oʻahu, Hawaiʻi

Dear Dr. Crabbe:

Thank you for your letter dated July 24, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School (EKMS) Project. We acknowledge that your office has concerns regarding potential impacts the new middle school may have on cultural resources, human remains/burials (iwi kupuna) and the endangered Pueo. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

Cultural Resources
The *Ewa Development Plan* identifies several cultural resources which are significant, in addition to 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 EKMS site is not located within any of the significant Native Hawaiian cultural and archaeological sites identified in the *Ewa Development Plan*, including the Barbers Point Archaeological District, Ewa Beach Midden Site, Okiokiolepe Pond, or Oneula Archaeological District.

The Final EA includes a discussion of potential cultural resources and practices occurring within in the vicinity of the project site. In summary, our research has identified following cultural resources/practices: 1) Gathering for Plant Resources; 2) Taro cultivation; 3) Paakai (Salt Making); 4) Marine Resource Gathering; 5) Trails; and 6) Puu Kapolei. Based on those research findings, we suggest that the accessibility and use of the specific EKMS project site for gathering or other cultural practices has been radically curtailed due to agricultural use from the 1800's to the 20th century. Agricultural activities have been the dominant land use which primarily included cattle grazing and then sugarcane cultivation. It is our understanding that no contemporary or continuing cultural practices are currently occurring on the specific EKMS site.

Human remains/burials
There have been many previous archaeological research efforts and studies conducted for the EKMS site or immediate vicinity of the EKMS site within the Honouliuli Ahupuaa. The Final EA includes a summary and discussion of the relevant studies previously conducted. Based on those findings and past history of land uses on the EKMS project site, the presence of any significant archaeological sites on the surface or subsurface of the property was determined by SHPD to have a low potential (SHPD Doc. No. 9408TD01). This SHPD determination was subsequently reviewed and concurred with in a follow-up Archeological Reconnaissance and Assessment of the East Kapolei Development Project prepared by Scientific Consultant Services in November, 1996.

In response to DOE's recent request for a SHPD determination under Hawaii Revised Statues Chapter 6E-8, Historic Preservation Review, SHPD acknowledged that previous archaeological studies for the greater Honouliuli area have documented very few historic properties and recorded generally low potential for archaeological resources at the EKMS site. And based on the availability of existing information, it was unlikely that sinkholes are present within the project area. However, SHPD indicated that more information on the proposed project site was desired and has requested archaeological monitoring for the project (SHPD Doc. No.: 1709KM17). We will acknowledge in the Final EA the potential for the project site to contain sinkholes with iwi kupuna or avi-fauna. Subsequently, per SHPD's recommendations, an Archaeological Monitoring Plan will be prepared and approved by SHPD prior to the start of construction and ground disturbing activities.

Hawaiian owl
The Final EA, Section 3.2 Flora and Fauna will include a discussion that acknowledges potential impacts to the endangered Pueo species and discuss any applicable measures to minimize impacts to this species.

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

DAVID Y. IGE
GOVERNOR

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

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:

STP 8.2189

SSFM INTERNATIONAL INC.
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August 2, 2017

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

Dear Mr. Chang:

Subject: East Kapolei Middle School
Draft Environmental Assessment
Kapolei, Oahu, Hawaii
TMK: (1) 9-1-017:106

Department of Transportation (DOT) comments on the subject project are as follows:

Airports Division (DOT-AIR)

1. The proposed project is located approximately 2.25 miles from the end of Runway 22R at Kalaeloa Airport (JRF). All projects within a five-mile radius from airports must conform with the requirements of the State of Hawaii, Office of Planning, Technical Assistance Memorandum (TAM), to avoid incompatible airport land uses that may pose safety hazards to airport operations. The TAM is available at: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf.

2. The project property is located outside of the JRF and the Daniel K. Inouye (formerly Honolulu) International Airport Noise Exposure Map noise contours. However, the proposed project may be subject to single event noise from aircraft operations.

3. Due to the proximity of the airports, there is a potential for fumes, smoke, vibrations, odors, etc., from aircraft flight operations over the proposed project.

4. If photovoltaic (PV) systems are being considered, such systems can create a hazardous condition for a pilot due to possible glint and glare. The following website may assist with preparation of a glint and glare analysis: www.sandia.gov/glare.

The submittal of a Federal Aviation Administration (FAA) Form 7460-1 for the PV installation may be required. Note that you will need latitude, longitude, ground elevation and the above ground elevation data for the installation site in order to fully complete this form. You will also need to attach a copy of your glint and glare analysis with your submittal of FAA Form 7460-1.

It is recommended that the highest rated non-glare materials be used in the PV systems to mitigate potential hazard to the greatest degree possible. If glint or glare from the PV array creates a hazardous condition for pilots, the owner of the photovoltaic system must be prepared to immediately mitigate the hazard, upon notification by the DOT-AIR or the FAA.

In addition, PV installations have been known to emit signals that create radio frequency interference and disrupt air-to-ground communications. The developer must insure that the PV system installation does not create radio frequency interference.

5. The proposed facilities, including landscaping and proposed water features, must be designed and operated according to the requirements of FAA Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports.

Highways Division (DOT-HWY)

1. The Traffic Impact Analysis Report (TIAR) references the Manual on Uniform Traffic Control Devices (MUTCD) Traffic Signal Warrant 3, Peak Hour, and this is incorrect as DOT does not consider it applicable to this kind of situation.

2. The Traffic Impact Analysis Report (TIAR) recommended that a channelized right-turn lane be constructed on north-bound Kualakai Parkway due to the volume of school-related vehicles in the AM Peak period to improve the level of service. The DOT recommends the Department of Education provide this transportation improvement since this improvement will mitigate the traffic impact created by the subject project.

3. The Keahumoa and Kualakai intersection is expected to be signalized and improved per an agreement between Hoopili developer, D.R Horton and DOT.

STP 8.2189

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,

FORD N. FUCHIGAMI
Director of Transportation

SSFM International

October 27, 2017

SSFM 2013_172.000

Mr. Ford N. Fuchigami, Director
State of Hawaii Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

SUBJECT: **East Kapolei Middle School Project**
Chapter 343, HRS Draft Environmental Assessment
Tax Map Key (1) 9-1-017: 106
Kapolei, O'ahu, Hawai'i

Dear Mr. Fuchigami:

Thank you for your letter dated August 2, 2017 concerning the Chapter 343, Hawaii Revised Statues (HRS) Draft Environmental Assessment (EA) for the East Kapolei Middle School Project. On behalf of the State Department of Education (DOE), the following responses are offered to your comments:

Airports Division
The proposed project will conform to the Technical Assistance Memorandum to avoid incompatible land uses that may pose safety hazards to airport operations. Applicable Federal Aviation Administration (FAA) forms, such as Form 7460-1 would be completed as necessary for photovoltaic installation. The PV contractor will be advised to submit PV design plans to the Hawaii Department of Transportation Airports Division (DOT-AIR) and the Federal Aviation Administration for review prior to construction. The proposed school does not have any water features planned that would apply to the requirements of FAA Advisory Circular concerning Hazardous Wildlife Attractants on or Near Airports.

Highways Division
We acknowledge that the Traffic Signal Warrant 3, Peak Hour from the Manual on Uniform Traffic Control Devices (MUTCD), is considered not applicable to the intersection of Kualakai Parkway and Keahumoa Parkway. The dedicated right-turn lane from northbound Kualakai Parkway onto Keahumoa Parkway will be constructed by DOE as part of the EKMS project.

October 27, 2017

Mahalo for your participation in the environmental assessment review process. If there are any further questions, please feel free to contact me at (808) 356-1242 or by email at jchang@ssfm.com.

SSFM INTERNATIONAL, INC.

Jared Chang, AICP
Email: jchang@ssfm.com

Cc: Ms Brenda Lowrey – Department of Education

Appendix D: Biological Survey

BIOLOGICAL RESOURCE ASSESSMENT FOR EAST KAPOLEI MIDDLE SCHOOL

Prepared for

Ferraro Choi and Associates

Prepared by

SWCA Environmental Consultants

November 2014

BIOLOGICAL RESOURCE ASSESSMENT FOR EAST KAPOLEI MIDDLE SCHOOL

Prepared for

Ferraro Choi and Associates
1240 Ala Moana Boulevard, Suite 510
Honolulu, Hawai'i 96814-4298
(808) 540-0802

Prepared by

SWCA Environmental Consultants
Bishop Square ASB Tower
1001 Bishop Street, Suite 2800
Honolulu, Hawai'i 96813
(808) 548-7922
www.swca.com

SWCA Project No. 29151

November 19, 2014

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1. INTRODUCTION

Ferraro Choi and Associates and SSFM International (SSFM) have invited SWCA Environmental Consultants (SWCA) to conduct a biological resource assessment to support the environmental assessment (EA) for the proposed East Kapolei Middle School project, with particular focus on the endangered koʻoloaʻula (*Abutilon menziesii*). Koʻoloaʻula was federally listed as an endangered species in 1986 and is now protected under the provisions of the Federal Endangered Species Act of 1973, as amended (ESA); and Chapter 195D, Hawaiʻi Revised Statutes (HRS), as amended. This report summarizes the findings of the survey conducted by SWCA botanists and biologists on October 31, 2014. The objectives of the survey are as follows:

1. Conduct a 1-day field survey to identify and record all vascular plant species and vegetation communities observed in the project area. Relative abundance of each species will also be noted. Voucher specimens may be collected, if necessary, for later identification in the herbarium and for verification with the most recent taxonomic literature. Areas most likely to harbor native plants (e.g., gulches, steep slopes, pits, rocky outcrops, etc.) will be more intensively surveyed. Particular emphasis will be placed on detection of koʻoloaʻula. Any individuals of this species in the project area will be flagged, then mapped using global positioning system (GPS) data.

2. Conduct a 1-day survey to document terrestrial fauna (birds, mammals, reptiles, amphibians, and large insects) in the project area.

3. Prepare a report describing the terrestrial flora and fauna in the project area based on available literature and SWCA's surveys. The report will also include an assessment of potential impacts to these resources as a result of the project, and recommendations regarding measures to minimize or avoid impacts to these resources. The report will identify any state or federally listed candidate, threatened, or endangered species; species of concern; and/or rare species found or known to occur in the project area. Special emphasis will be placed on koʻoloaʻula, including recommendations on course of action if any are identified in the project area.

2. DESCRIPTION OF THE PROJECT AREA

2.1. Location and Vicinity

The project area is located in Kapolei on the 'Ewa Plain on the Island of Oʻahu (Figure 1). The 18-acre (7.3-hectare [ha]) project area encompasses a single Tax Map Key (9-1-017:106). It is bordered by Maunakapu Street on the northwest and Keahumoa Parkway (formerly East-West Road) on the south and southeast. The project area is accessed by Kualakai Parkway (North-South Road). Elevations at the project area range from 67 to 72 feet (20–22 meters [m]) above sea level. The terrain is mostly flat.

Notable land uses in the vicinity include the following: the Salvation Army Kroc Center, a large community center; Koʻoloaʻula, a rental community for low-income family apartments and townhomes; and Ewa Villages Golf Course, an 18-hole course run by the city and county that has a large water feature. A fenced Contingency Reserve Area for koʻoloaʻula is located approximately 1,000 feet (305 m) southwest of the project area (Figure 2).

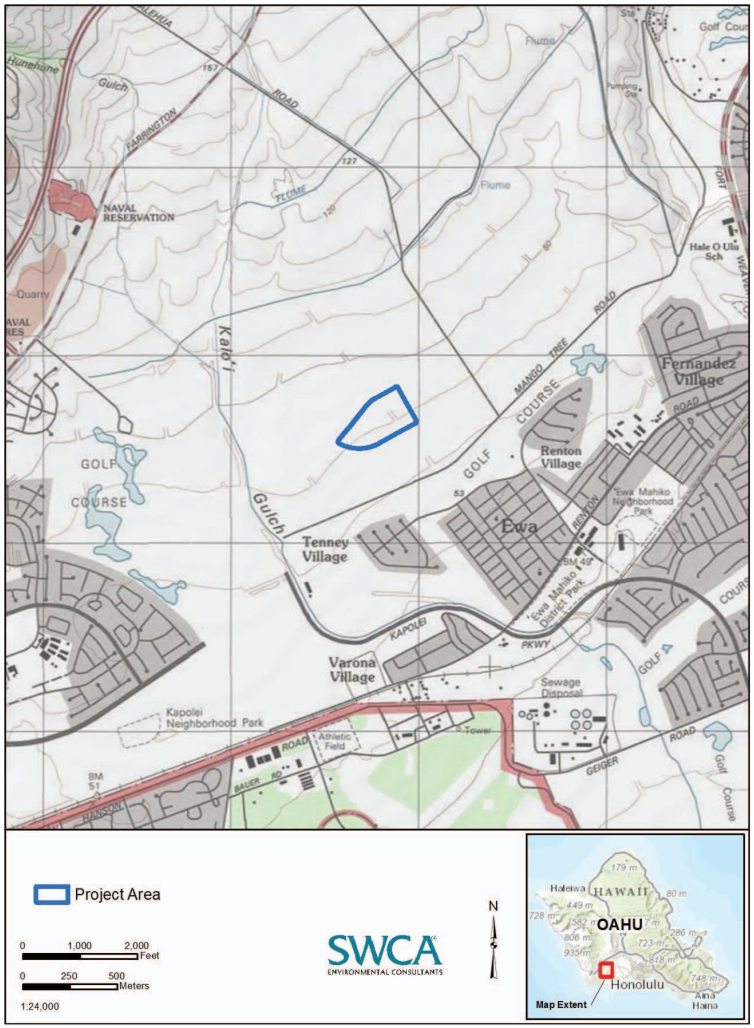

Figure 1. Project area location.

Figure 2. Project area and adjacent Contingency Reserve Area.

3. METHODS

SWCA conducted a review of available scientific and technical literature regarding natural resources in and near the project area. This literature review encompassed a thorough search of referred scientific journals, technical journals, and reports; EAs and environmental impact statements; relevant government documents; and unpublished data that provide insight into the natural history and ecology of the area. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the project area.

A field reconnaissance of the project area was conducted by four SWCA biologists on October 31, 2014.

3.1. Flora

A pedestrian botanical survey was conducted in the project area on October 31, 2014, to document all vascular plant species and vegetation communities. Relative abundance (e.g., "abundant," "common," "uncommon," and "rare") of each species was also noted. Areas more likely to support native plants (e.g., rocky outcrops and shady areas) were more intensively examined. During the survey, the team (two botanists and one technician) spaced themselves an approximate distance of 40–50 feet (12–15 m) apart, and thoroughly scanned the entire project area for the endangered koʻoloaʻula.

Plants recorded during the survey are indicative of the season ("rainy" versus "dry") and the environmental conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would result in minor variations in the species and abundances of plants observed.

3.2. Fauna

Fauna surveys consisted of pedestrian surveys of the project area on October 31, 2014. All birds, mammals, reptiles, amphibians, and insect species seen or heard were noted. No bat detectors were deployed in the project area. Recommendations for the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) provided in this report are based on areas of suitable habitat for foraging and roosting that were noted during the bird survey.

4. RESULTS

No state or federally listed threatened, endangered, or candidate plant species (including koʻoloaʻula) were observed in the project area during the survey. However, a pair of endangered Hawaiian stilt or aeʻo (*Himantopus mexicanus knudseni*) was observed in flight along the western boundary of the project area.[1] The project area does not contain critical habitat for threatened or endangered species.

[1] For species names, common/Hawaiian names are provided first, followed by scientific names in parentheses. If no common or Hawaiian name is known, only the scientific name is provided.

4.1. Flora

No state or federally listed endangered, threatened, or candidate plant species, or rare native Hawaiian plant species were observed in the project area. In all, 61 plant species were recorded in the project area during the survey. Of these, six species are native to the Hawaiian Islands: alena (*Boerhavia repens*), hoary abutilon (*Abutilon incanum*), ʻilima (*Sida fallax*), pāʻuohiʻiaka (*Jacquemontia ovalifolia*), seaside helotropium (*Heliotropium curassavicum*), and ʻuhaloa (*Waltheria indica*). None of these species are considered rare (Wagner et al. 1999). Appendix A provides a list of all plant species observed by SWCA biologists in the project area during the survey.

The vegetation in the project area is primarily dominated by buffelgrass (*Cenchrus ciliaris*) (Figure 3). Non-native tumbleweed (*Salsola tragus*) is also abundant, particularly toward the edges of the project area (Figure 4).

Common species found widely scattered throughout the site include hoary abutilon, ʻuhaloa, saltbush (*Atriplex suberecta*), swollen fingergrass (*Chloris barbata*), morning glory (*Ipomoea obscura*), and wild bean (*Macroptilium lathyroides*). Pitted beardgrass (*Bothriochloa pertusa*) is locally abundant, and kiawe (*Prosopis pallida*) trees are sparsely scattered in the central portion of the project area. Rainbow shower trees (*Cassia* x *nealiae*) are planted along Maunakapu Street.

Figure 3. Vegetation in the project area, showing dominance of buffelgrass (*Cenchrus ciliaris*).

Figure 4. Non-native tumbleweed (*Salsola tragus*) is particularly abundant near the edges of the project area.

Figure 5. The indigenous hoary abutilon (*Abutilon incanum*), which is common in the project area, was examined closely due to its vegetative resemblance to koʻoloaʻula (*Abutilon menziesii*).

4.2. Fauna

4.2.1. Avifauna

The bird species observed in the project area are those typically found in disturbed areas in lowland areas of O‘ahu. In all, 13 species were documented (Table 1). Two Hawaiian stilts or ae‘o were observed in flight, transiting along the boundary of the project area. This species is listed as endangered under the ESA and HRS 195D. An additional waterbird species, Hawaiian duck–like ducks (*Anas* sp.), which are likely to be mallard–Hawaiian duck hybrids, was observed in standing water on the site. All other bird species observed are introduced species common to developed areas.

Table 1. Birds Observed by SWCA in the Project Area and Vicinity

Common Name	Scientific Name	Status	MBTA
Cattle egret	*Bubulcus ibis*	NN	X
Common myna	*Acridotheres tristis*	NN	
Common waxbill	*Estrilda astrild*	NN	
Grey francolin	*Francolinus pondicerianus*	NN	
Hawaiian duck–mallard hybrids*	*Anas* sp.	NN	X
Hawaiian stilt	*Himantopus mexicanus knudseni*	E, End	X
House finch	*Haemorhous mexicanus*	NN	X
Japanese white-eye	*Zosterops japonicus*	NN	
Red-crested cardinal	*Paroaria coronata*	NN	
Red-vented bulbul	*Pycnonotus cafer*	NN	
Skylark	*Alauda arvensis*	NN	
Spotted dove	*Streptopelia chinensis*	NN	
Zebra dove	*Geopelia striata*	NN	
	Total species	**13**	

Status: E = endemic, NN = non-native permanent resident; End = federally and state endangered

MBTA = Migratory Bird Treaty Act

*These were observations of ducks that are likely hybrids of the native Hawaiian duck (*Anas wyvilliana*) and the introduced mallard (*Anas platyrhynchos*).

4.2.2. Hawaiian Hoary Bat

Surveys for Hawaiian hoary bats were not conducted, but any areas of suitable habitat for roosting and foraging were noted during the survey. Hawaiian hoary bats forage in open, wooded, and linear habitats with a wide range of vegetation types. These animals are insectivores, and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 m) offshore (U.S. Department of Agriculture 2009). Hawaiian hoary bats typically roost in dense canopy foliage or in subcanopy when canopy is sparse, with open access for launching into flight (personal communication, Frank Bonaccorso, U.S. Geological Survey). The very few tree species that occur in the project area are sparsely scattered throughout and do not appear to be suitable roosting trees. However, shower trees (*Cassia* spp.) have been documented as roost trees, and it is possible that the rainbow shower trees planted along Maunakapu Street could potentially be used roost trees.

4.2.3. Other Mammals

No mammals were seen during the survey; however, dogs (*Canis familiaris*) and cats (*Felis catus*) are likely to enter the project area due to the nearby residences. Other mammals that can be expected on-site include mice (*Mus musculus*), rats (*Rattus* spp.), and mongoose (*Herpestes javanicus*).

4.2.4. Reptiles and Amphibians

No reptiles or amphibians were seen during the survey. None of the terrestrial reptiles or amphibians in Hawai‘i are native to the islands.

4.2.5. Invertebrates

Only one native invertebrate—the native globe skimmer (*Pantala flavescens*)—was seen during the survey. All other invertebrates observed in the project area during the survey are non-native to the Hawaiian Islands; these include the Sonoran carpenter bee (*Xylocopa sonorina*), large orange sulphur butterfly (*Phoebis agarithe*), gulf fritillary (*Agraulis vanillae*), roseate skimmer (*Orthemis ferruginea*), and seven spotted ladybeetle (*Coccinella septempunctata*).

4.3. Aquatic Features

Standing water was observed in the project area. During the survey, the feature was estimated at 98 × 22 feet (30 × 7 m) in size. The depression appears manmade based on its shape and the presence of an adjacent elevated berm. Some hydrophytic vegetation was noted in and along the edges of the water.

Figure 6. Standing water observed in the project area.

5. DISCUSSION AND RECOMMENDATIONS

5.1. Flora

No threatened or endangered plants were found during the reconnaissance survey. Although the ʻEwa area is within the historical range of the endangered koʻoloaʻula, the species is not known to have recently been documented in project area (Greg Mansker, Horticulturist, Hawaiʻi Department of Land and Natural Resources, personal communication on October 31, 2014) and has not been seen during recent surveys in the vicinity (AECOS 2010 and 2011; SWCA 2012 and 2013). Approximately 90% of the plant species seen during the survey are not native to Hawaiʻi, and the native species present are types common throughout the Hawaiian Islands. Therefore, the proposed project is not expected to have a significant, adverse impact on botanical resources.

SWCA recommends that native Hawaiian plants be employed for landscaping around the project area to the maximum extent possible. Potential native species that may be appropriate for landscaping at the proposed project area include koʻoloaʻula, kou (*Cordia subcordata*), ʻilieʻe (*Plumbago zeylanica*), and ʻaʻaliʻi (*Dodonaea viscosa*).

Additional information on selecting appropriate (non-invasive) plants for landscaping can be obtained from the following websites:

- http://www.nativeplants.Hawaii.edu/
- http://www.plantpono.org/non-invasive-plants.php
- http://www.hear.org/alternativestoinvasives/pdfs/mcaac_hpwra_a2i_list.pdf
- http://www.hear.org/oisc/oahuearlydetectionproject/pdfs/oedposterwhatnottoplant.pdf

5.2. Fauna

5.2.1. Federally Listed Species

Hawaiian stilt

Oʻahu supports the largest number of stilts in the state, with an estimated 35%–50% of the population residing on the island (USFWS 2011). Endangered Hawaiian stilts were observed flying along the project boundary. These birds may fly over the project area from nearby developments and golf courses, which contain water features that are attractive to waterbirds. Hawaiian stilts favor open wetland habitats with minimal vegetative cover and water depths of less than 9.4 inches (24 centimeters [cm]), as well as tidal mudflats (Robinson et al. 1999). Portions of the project area appear to hold standing water after periods of extended heavy rainfall, which could attract listed waterbirds, particularly the endangered Hawaiian stilt.

Minor alterations of local topography in low-lying areas to prevent ponding could reduce attraction of Hawaiian stilt during construction.

The following best management practices (BMPs) would avoid and minimize impacts to listed waterbirds should they occur on-site before or during construction:

- In areas where Hawaiian waterbirds have been observed, nest searches will be conducted by a qualified biologist prior to any work taking place and after any subsequent delay in work of 3 or more days (during which birds may attempt nesting). Hawaiian stilts nest from mid-February through late August, with variable peak nesting from year to year (Robinson et al. 1999).

- If a nest with eggs is discovered, work will cease within 150 feet (46 m) of the nest for a minimum of 70 days (10 weeks); if a nest with chicks is discovered, work will cease for a minimum of 49 days (7 weeks). These guidelines are intended to protect chicks, and may be shortened if monitoring is conducted often enough to note when chicks have fledged (usually 5–6 weeks after hatching). Work will not begin in the area until 2 weeks after chicks have fledged.
- If an endangered Hawaiian waterbird is found in the area during ongoing management activities, all activity within 50 feet (15 m) of the bird will cease; the bird will also not be approached within 50 feet. Work may continue after the bird leaves the area of its own accord.

Hawaiian hoary bats

Hawaiian hoary bats are known to occur on Oʻahu in native, non-native, agricultural, and developed landscapes (U.S. Department of Agriculture 2009; USFWS 1998). They have been documented roosting in shower trees similar to the ones on the site. If trees are expected to be cut as a result of the project, direct impacts to bats would only occur if a juvenile bat that is too small to fly but too large to be carried by a parent were present in a tree that was cut down.

Although the chances of adversely affecting Hawaiian hoary bats as a result of the proposed project are likely small, the following measures are recommended as a conservative impact avoidance measure:

- Any fences that are erected as part of the project should have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the project area were observed with barbed wire during the survey; however, if fences are present, the top strand of barbed wire should be removed or replaced with barbless wire.
- No trees taller than 15 feet (4.6 m) should be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

Implementation of these guidelines, which have been promulgated by the U.S. Fish and Wildlife Service (USFWS 1998), is expected to avoid all direct impacts to Hawaiian hoary bats.

5.2.2. Migratory Bird Treaty Act

SWCA observed the following four bird species federally protected under the Migratory Bird Treaty Act (MBTA) during this survey: the cattle egret (*Bubulcus ibis*), Hawaiian duck–mallard hybrids, Hawaiian stilt, and house finch (*Haemorhous mexicanus*). Construction at the site may temporarily displace some of these bird species, but long-term impacts are not expected. These birds (likely limited to a few individuals) are expected to find suitable foraging habitat at nearby areas. The temporary displacement of these individuals in the project area is not expected to affect an individual's survival or the overall species' populations.

5.3. Aquatic Features

Standing water was observed in a portion of the project area during the survey. Under Section 404 of the Clean Water Act (CWA), dredged and fill material may not be discharged into jurisdictional Waters of the U.S. (including wetlands) without a permit. The 1987 *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), as amended, outlines the technical guidelines and methods for identifying and delineating wetlands potentially subject to Section 404 of the CWA. Jurisdictional wetlands are identified using the following three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. All three criteria must be present for an area to be considered a wetland, unless the site is disturbed.

A wetland determination and delineation was not conducted by SWCA as part of the survey. If the area is determined to be a wetland and considered jurisdictional (Water of the U.S.), a Section 404 permit may be required from the Honolulu District U.S. Army Corps of Engineers (USACE) to place dredged or fill material in the area.

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Appendix A

CHECKLIST OF PLANTS OBSERVED AT THE PROPOSED EAST KAPOLEI MIDDLE SCHOOL PROJECT AREA ON OCTOBER 31, 2014

The following checklist is an inventory of plant species observed by SWCA botanists on October 31, 2014, during the survey of the proposed East Kapolei Middle School project area. The plant names are arranged alphabetically by family and then by species into two groups: Monocots and Dicots. The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999), Wagner and Herbst (2003), and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012).

Status:

E: Endemic = native only to the Hawaiian Islands
I: Indigenous = native to the Hawaiian Islands and elsewhere
P: Polynesian = introduced by Polynesians
X: Introduced/alien = all plants brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (James Cook's arrival in the islands in 1778)

Relative Site Abundance:

A: Abundant = forming a major part of the vegetation within the project area
C: Common = widely scattered throughout the area or locally abundant within a portion of it
U: Uncommon = scattered sparsely throughout the area or occurring in a few small patches
R: Rare = only a few isolated individuals within the project area

Scientific Name	Common and Hawaiian Name(s)	Status	Abundance
MONOCOTS			
CYPERACEAE			
Cyperus rotundus L.	nut grass, kili'o'opu	X	R
POACEAE			
Bothriochloa pertusa (L.) A. Camus	pitted beardgrass	X	C
Cenchrus ciliaris L.	buffelgrass	X	A
Cenchrus echinatus L.	common sandbur	X	U
Chloris barbata Sw.	swollen fingergrass	X	C
Cynodon dactylon (L.) Pers.	Bermuda grass	X	U
Digitaria insularis (L.) Mez ex Ekman	sourgrass	X	U
Melinis repens (Willd.) Zizka	Natal redtop, Natal grass	X	R
Urochloa maxima (Jacq.) R. D. Webster	Guinea grass	X	U
DICOTS			
AMARANTHACEAE			
Amaranthus viridis L.	slender amaranth	X	U
Salsola tragus L.	tumbleweed, salsola	X	A

ASCLEPIADACEAE			
Calotropis gigantean (L.) W. T. Aiton	crown flower	X	R
ASTERACEAE			
Bidens alba (L.) DC. var. *radiata* (Sch. Bip.) Ballard ex T.E. Melchert	Spanish needle, beggartick	X	R
Conyza bonariensis (L.) Cronq.	hairy horseweed	X	U
Emilia fosbergii Nicolson	pualele	X	R
Pluchea carolinensis (Jacq.) G. Don	sourbush, marsh fleabane	X	R
Pluchea indica (L.) Less.	Indian fleabane, Indian pluchea, marsh fleabane	X	U
Tridax procumbens L.	coat buttons	X	R
Verbesina encelioides (Cav.) Benth. & Hook	golden crown-beard	X	U
BIGNONIACEAE			
Spathodea campanulata P. Beauv.	African tulip tree	X	R
BORAGINACEAE			
Heliotropium curassavicum L.	seaside heliotrope	I	R
Heliotropium procumbens Mill.	heliotrope	X	R
BUDDLEJACEAE			
Buddleja asiatica Lour.	huelo 'ilio, dog tail	X	R
CHENOPODIACEAE			
Atriplex suberecta Verd.	saltbush	X	C
CONVOLVULACEAE			
Ipomoea triloba L.	little bell	X	U
Ipomoea obscura (L.) Ker Gawl.	morning glory	X	C
Jacquemontia ovalifolia (Choisy) H. Hallier	pā'uohi'iaka	I	R
Merremia aegyptia (L.) Urb.	hairy merremia	X	U
CURCURBITACEAE			
Coccinia grandis (L.) Voigt	ivy gourd	X	R
EUPHORBIACEAE			
Euphorbia heterophylla L.	kaliko	X	U
Euphorbia hirta L.	hairy spurge, garden spurge	X	U
Euphorbia hypericifolia L.	graceful spurge	X	U

Ricinus communis L.	castor bean	X	R
FABACEAE			
Cassia x *nealiae* H.S. Irwin & Barneby	rainbow shower tree	X	U
Chamaecrista nictitans (L.) Moench	partridge pea	X	U
Crotalaria incana L.	fuzzy rattlepod	X	C
Desmanthus pernambucanus (L.) Thell.	slender mimosa, virgate mimosa	X	R
Desmodium incanum DC.	Spanish clover	X	R
Desmodium triflorum (L.) DC.	tick trefoil, tick clover	X	R
Indigofera spicata Forssk	creeping indigo	X	R
Indigofera suffruticosa Mill.	indigo, ‘inikō	X	R
Leucaena leucocephala (Lam.) de Wit	koa haole	X	U
Macroptilium atropurpureum (DC) Urb.	–	X	R
Macroptilium lathyroides (L.) Urb.	wild bean, cow pea	X	C
Mimosa pudica L.	sensitive plant	X	R
Pithecellobium dulce (Roxb.) Benth.	‘opiuma, Manila tamarind	X	U
Prosopis pallida (Hunb. and Bonpl. Ex Willd.) Kunth	kiawe, algarroba, mesquite	X	U
LAMIACEAE			
Hyptis suaveolens (L.) Poit.	–	X	U
Leonotis nepetifolia (L.) R. Br.	Lion’s ear	X	R
MALVACEAE			
Abutilon incanum (Link) Sweet	hoary abutilon, ma‘o	I?	C
Malvastrum coromandelianum (L.) Garcke ssp. *coromandelianum*	false mallow	X	R
Sida acuta N. L. Burm	–-	X	U
Sida fallax Walp.	‘ilima	I	U
NYCTAGINACEAE			
Boerhavia repens L.	alena	I	R
PASSIFLORACEAE			
Passiflora foetida L.	love-in-a-mist, running pop	X	R
PORTULACACEAE			
Portulaca oleracea L.	pigweed, ‘ākulikuli kula	X	U
RUBIACEAE			
Spermacoce assurgens Ruiz and Pav.	coat buttons, buttonweed	X	R

SOLANACEAE			
Nicotiana glauca Graham	tree tobacco	X	R
Solanum lycopersicum L.	tomato	X	R
STERCULIACEAE			
Waltheria indica L.	‘uhaloa	I	C
ZYGOPHLLACEAE			
Tribulus terrestris L.	puncture vine, goat head	X	R

Appendix E: Traffic Impact Assessment

FINAL

East Kapolei Middle School
Kapolei, O'ahu

Traffic Impact Analysis Report

September 2015

Prepared for

Ferraro Choi and Associates Ltd.

Prepared by

SSFM INTERNATIONAL

MICHAEL Y. PACKARD
LICENSED PROFESSIONAL ENGINEER
NO. 13441-C
HAWAII USA

This work was prepared by me or under my supervision:

Michael Y. Packard
Date: 9/11/2015
Licensed Professional Engineer
License Number 13441
Expires: 4/30/2016

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I. PROJECT DESCRIPTION

The State of Hawaiʻi Department of Education (DOE) is proposing to construct East Kapolei Middle School (EKMS) in the East Kapolei II subdivision of Kapolei on the island of Oʻahu (see Figure 1). The project is being proposed on a vacant parcel located at Tax Map Key 9-1-017:106. The parcel is bound by Keahumoa Parkway (East-West Road) on the south, Maunakapu Street (Road E) on the west, and the proposed Maweke Street (Road A) on the east. The project site is approximately 800-feet east of the intersection with Kualakaʻi Parkway (North-South Road). The surrounding transportation infrastructure has largely been built out with wide sidewalks, landscaped buffers, curb and gutters, raised medians, through-travel and turn lanes, and traffic signal conduit and stub-outs for future connections when needed. Also included are curb cuts for driveways that serve as the designated access points for the property.

Current plans for EKMS are for an initial student enrollment of 1,050 with the school opening date in the fall of 2019. The proposed EKMS will include several buildings for administrative services, student services, physical education, library and classrooms. Also included on the campus are soccer and baseball fields as well as an outdoor covered play court.

The entirety of East Kapolei II was previously analyzed in the *Traffic Analysis Report East Kapolei II* (Ng, 2007). At that time, the middle school had a planned enrollment of 500 students which was anticipated to result in acceptable traffic operations along roadways and at intersections in the area using two-way stop sign controls. It was anticipated that with the surrounding area development and ultimate extension of Keahumoa Parkway, the primary intersections would eventually need to be signalized.

This traffic impact analysis report (TIAR) evaluates existing traffic conditions and assesses impacts on the surrounding area as a result of the proposed development of EKMS as it exists. Anticipated traffic impacts on the transportation network will be reviewed and mitigation measures proposed. This TIAR summarizes the results of the study along with proposed mitigation measures in support of an Environmental Assessment.

There are three proposed access driveway locations to EKMS. The one driveway off of Keahumoa Parkway will be for bus drop-offs and access to the faculty/staff parking lot. The northern driveway off of Maunakapu Street is proposed for student drop-off and pick-up. The southern driveway off of Maunakapu Street is for secondary access to the faculty/staff parking lot and serves as an exit for buses. Within the internal vehicle circulation, there will be a location for bus drop offs and another location for parent drop offs. The conceptual site plan for EKMS is provided in Figure 2.

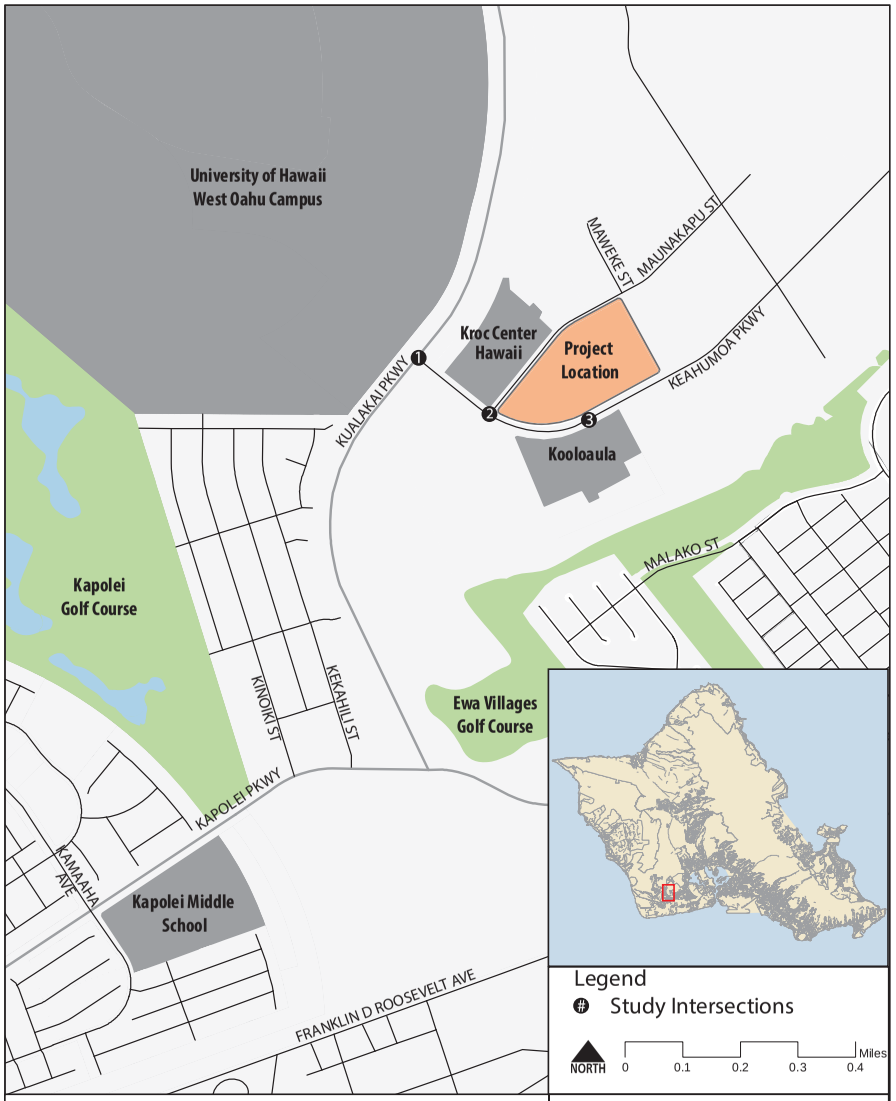

Figure 1: Location Map

East Kapolei Middle School - Kapolei, O'ahu

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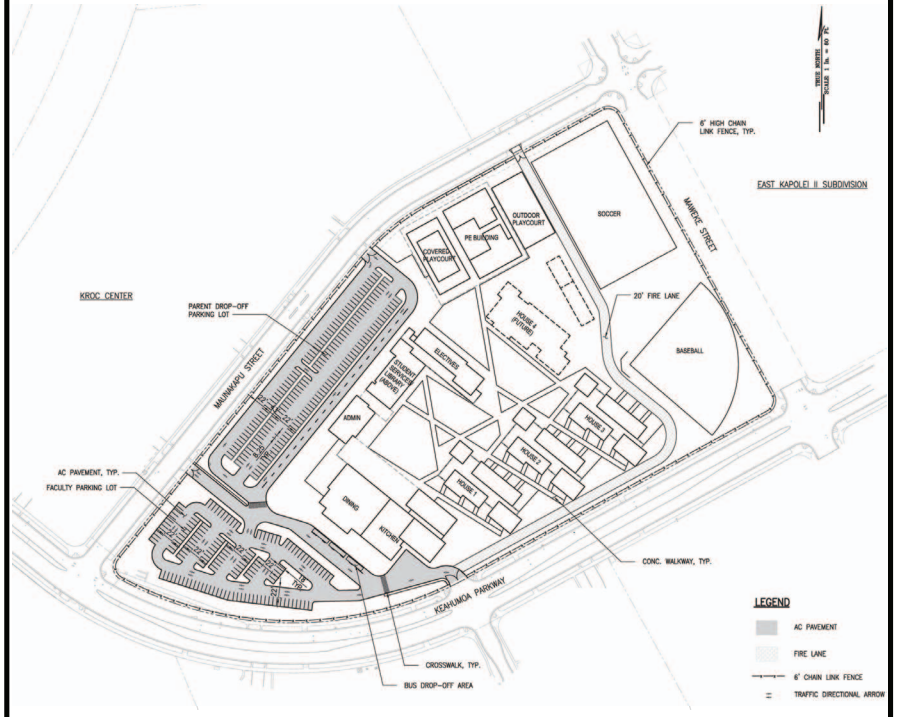

Source: SSFM International (April 29, 2015)

Figure 2: Conceptual Master Plan East Kapolei Middle School

East Kapolei Middle School – Kapolei, O'ahu

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II. EXISTING CONDITIONS

East Kapolei II is a neighborhood located between ʻEwa and Kapolei. The transportation infrastructure surrounding the EKMS project site has largely been built out with turn lanes and curb cuts for access through driveways. The assumptions that went into roadway capacity design were that the surrounding parcels would be developed and Keahumoa Parkway would be extended to provide a throughway connection for vehicles.

A. Geometric Configuration

Kualakaʻi Parkway (State Highway Route 8930) is a four-lane divided highway with landscaped medians, paved sidewalks and paved shoulders on both sides of the road. A multi-use path exists on the east side of the road in places towards the south of Kualakaʻi Parkway. Kualakaʻi Parkway has been paved to accommodate a six-lane highway, however parts of the paved travelway are hatched out through pavement marking to restrict full use of the roadway at this time. This capacity is not currently needed. Kualakaʻi Parkway opened in February 2010 and is approximately 2.5 miles in length, extending from H-1 Freeway at the northern terminus to Kapolei Parkway at the southern terminus. Kualakaʻi Parkway is an urban principal arterial and has a posted speed limit of 35 mph.

Keahumoa Parkway (also referred to as East-West Road) is a four-lane divided highway with a landscaped median and space for dedicated left-turn lanes that have been hatched out through pavement marking. There are paved sidewalks with a landscaped buffer on both sides of the roadway. Keahumoa Parkway has been constructed from Kualakaʻi Parkway to the eastern boarder of East Kapolei. It is proposed that Keahumoa Parkway will be extended to become a connection from Fort Weaver Road to Farrington Highway.

Maunakapu Street is a two-lane roadway that currently provides driveway access to The Salvation Army Ray & Joan Kroc Corps Community Center (Kroc Center) which opened in February 2012. The Kroc Center has a pool, fitness classes, health and wellness center, worship and preforming arts center, and a multi-use gymnasium. *Traffic Demand Study and Parking Management Plan for Kroc Center Hawaiʻi* (F&P, December 2007) states that most of the traffic generated by the Kroc Center is over the weekend or weekday evenings. Therefore, the peak traffic will have little impact on traffic at EKMS.

Koʻoloaʻula driveway provides access to the Koʻoloaʻula multi-family residential subdivision. Koʻoloaʻula opened in April 2013 and by December 2013, the 120 apartments were occupied. This driveway is aligned across from the proposed EKMS driveway.

Existing study intersection lane configurations are shown in Figure 3.

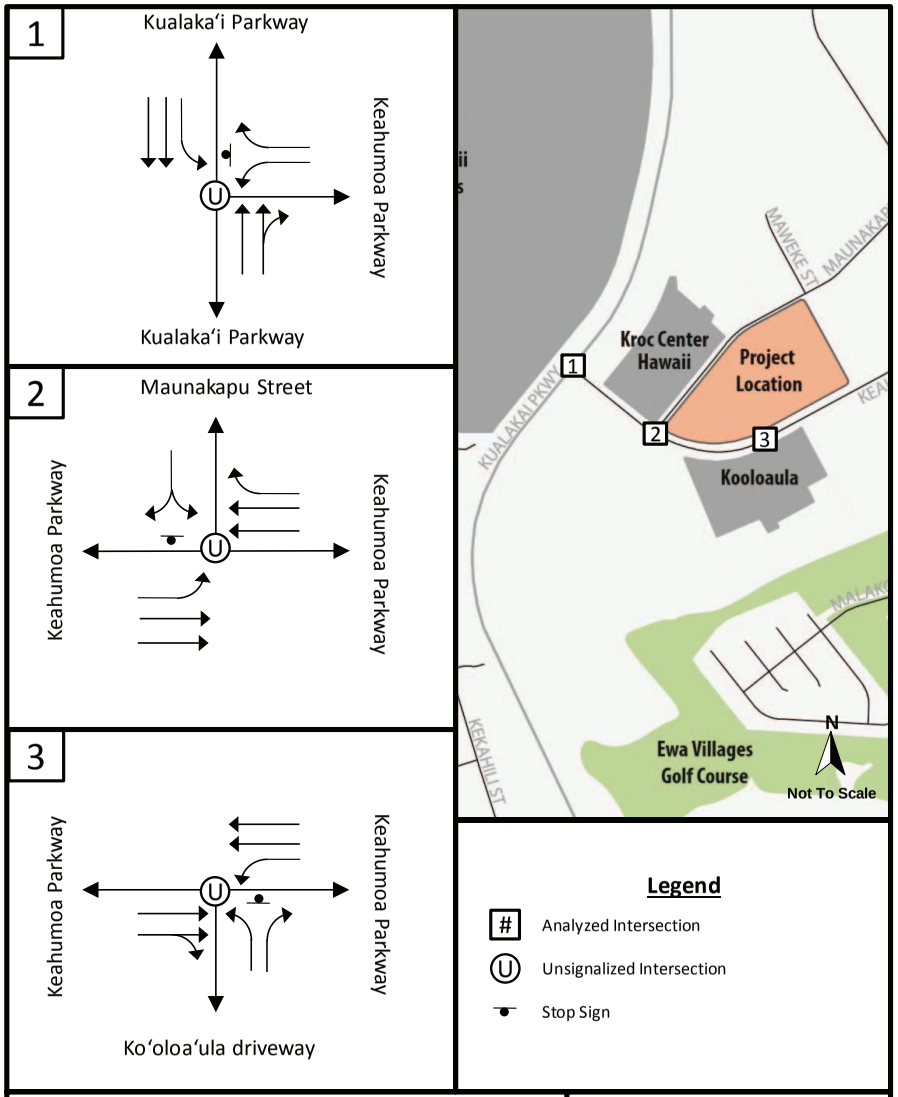

Figure 3: Existing (2015) Lane Configurations

East Kapolei Middle School – Kapolei, Oʻahu

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B. Volumes

1. 24-Hour Roadway Volumes

Average daily traffic (ADT) along Kualakaʻi Parkway near the project area is shown in Table 1 and comes from Hawaiʻi Department of Transportation (HDOT) *Historical Traffic Station Maps*.

Table 1: Roadway Average Daily Traffic

Roadway	Location	Year	ADT
Kualakaʻi Parkway	Between Farrington Highway and Kapolei Parkway	2010	8,500
Kapolei Parkway	Between Kamaʻaha Avenue and Kualakaʻi Parkway	2010	5,200
		2011	7,300
		2013	22,700

Source: *Historical Traffic Station Maps* (HDOT)

The only counts along Kualakaʻi Parkway occurred in October 2010 and showed an ADT of 8,500 vehicles per day. Much of this area, including the Kroc Center, had not been constructed at the time of these counts and therefore the traffic volumes are assumed to have grown since then. However, there is no additional HDOT data provided in the *Historical Traffic Station Maps* along Kualakaʻi Parkway from 2010 to 2013. Figure 4 provides a graph showing directional hourly distribution along the roadway segment at the HDOT traffic station counts. Appendix A includes the detailed 24-hour traffic count data.

Of the 900 vehicles travelling along Kualakaʻi Parkway during the AM peak hour, approximately 550 vehicles were travelling in the northbound direction and 350 vehicles in the southbound direction. Of the 700 vehicles travelling along Kualakaʻi Parkway during the PM peak hour, 250 vehicles were in the northbound direction and 450 vehicles were traveling in the southbound direction.

ADT along Kapolei Parkway is included in Table 1 for comparison purposes. The counting station location is approximately ¼-mile west of Kualakaʻi Parkway. It shows an increase in ADT from 2010 and 2011 with the greater increase in volume in 2013. This is most likely due to the opening of an extension of Kapolei Parkway between Fort Barrette Road and Kamaʻaha Avenue in March 2012. The opening of this extension improved connectivity within Kapolei as an alternative to travelling along Kamokila Boulevard. The Kapolei Parkway extension between Kamokila Boulevard and Kamaʻaha Avenue was opened in October 2014. This provides a direct path from East Kapolei to Costco, Home Depot, Target and the Kapolei Judiciary Complex.

Figure 5 provides a graph showing directional hourly distribution along Kapolei Parkway from 2013. The traffic volumes along Kapolei Parkway were approximately 1,300 and 1,650 vehicles during the AM and PM peak hours respectively. Of the 1,300 vehicles traveling during the AM peak hour, 750 vehicles were travelling in the eastbound direction and 550 vehicles in the westbound direction. Of the 1,650 vehicles traveling during the PM peak hour, 900 vehicles were travelling in the eastbound direction and 750 vehicles in the westbound direction. The directional traffic volumes are shown to be higher in the eastbound direction. This may be the result of access to the H-1 Freeway from Kualakaʻi Parkway.

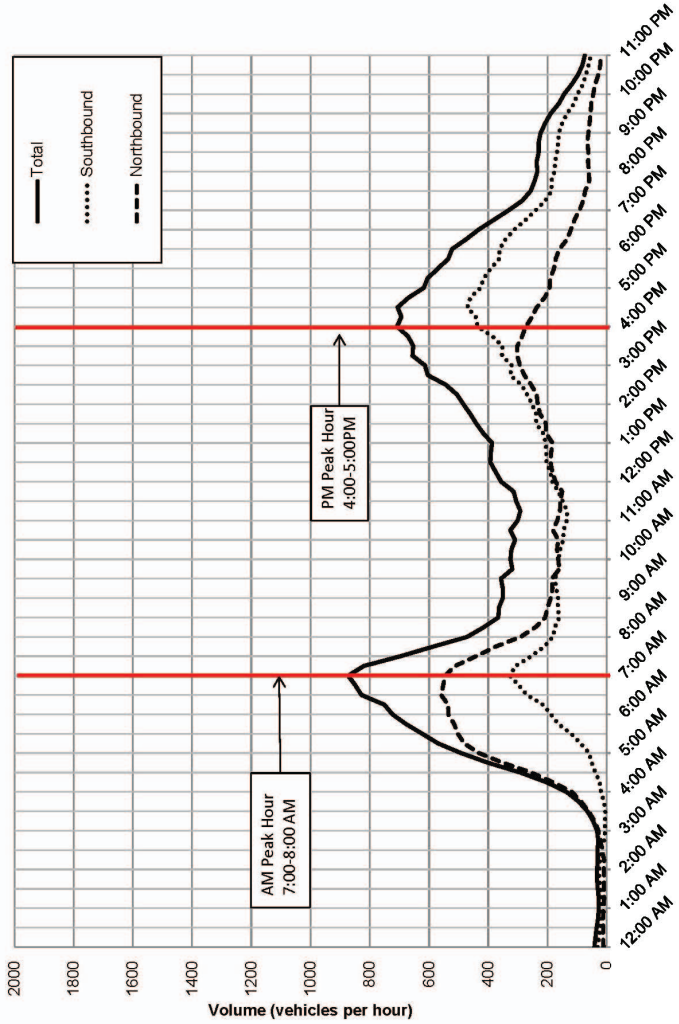

Figure 4: Kualakaʻi Parkway between Farrington Highway and Kapolei Parkway, 24-Hour Volume Distribution

East Kapolei Middle School – Kapolei, Oʻahu

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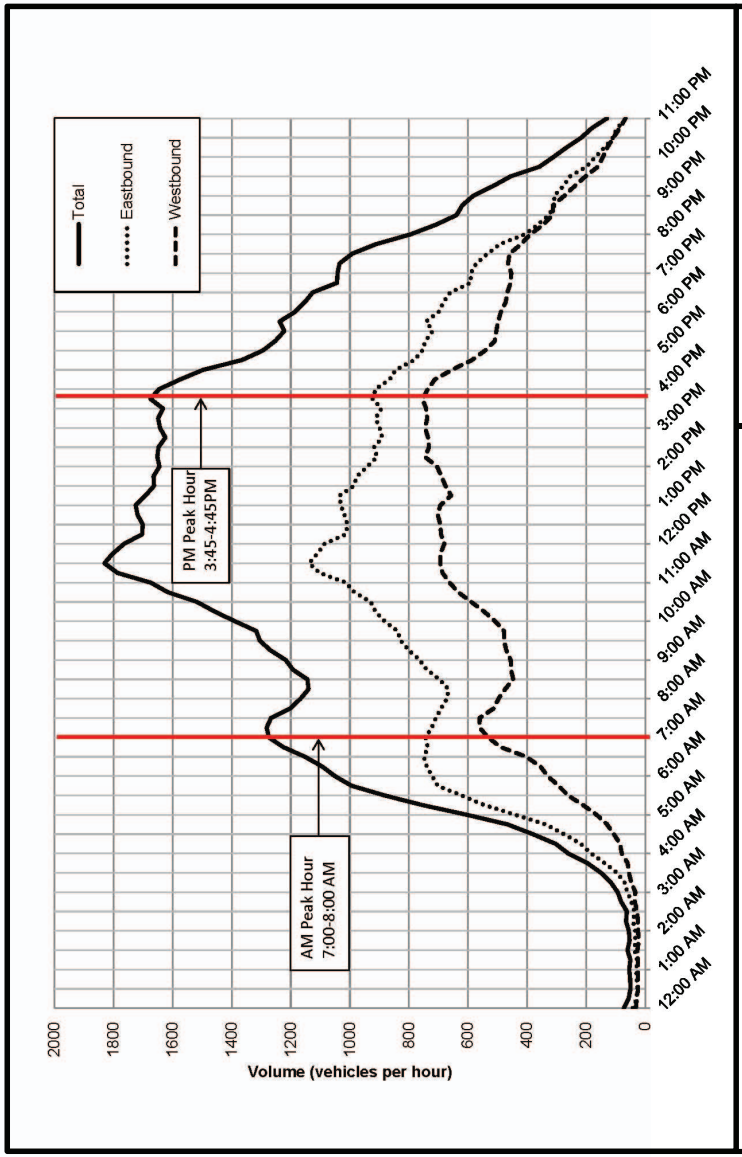

Figure 5: Kapolei Parkway between Kama'aha Avenue and Kualaka'i Parkway, 24-Hour Volume Distribution

East Kapolei Middle School – Kapolei, O'ahu

2. Intersection Peak Hour Volumes

Intersection turning movement counts were taken on Thursday, April 23, 2015 during the weekday AM and PM peak periods (6:00-9:00 AM and 2:00-6:00 PM, respectively) at the three study intersections, Kualaka'i Parkway at Keahumoa Parkway, Maunakapu Street at Keahumoa Parkway, and Ko'oloa'ula Main Driveway at Keahumoa Parkway. These counting periods include the projected school drop-off and pick-up times. The turning movement traffic counts included the classification of passenger vehicles, heavy vehicles (buses, trucks, vehicles with trailers), bicycles, and pedestrians.

Heavy vehicles are presented as the percent of heavy vehicles as compared to all the vehicles. Table 2 provides the percent of heavy vehicles traveling through the intersection by each approach. The percent of heavy vehicles at the intersection of Kualaka'i Parkway and Keahumoa Parkway ranged from 4.0% and 11.1% during the AM peak hour and 0.6% and 1.1% during the PM peak hour. The percent of heavy vehicles in the eastbound and westbound approaches along Keahumoa Parkway from Maunakapu Street and Ko'oloa'ula driveway was much higher probably due to the fact that there are construction vehicles using the road to build surrounding developments.

Table 2: Percent of Heavy Vehicles during the Peak Hours

Intersection	Approach	AM Peak Hour		PM Peak Hour	
		Volume (vehicles)	%	Volume (vehicles)	%
Kualaka'i Parkway at Keahumoa Parkway	Northbound	29	4.0	5	1.0
	Southbound	27	5.5	10	1.1
	Westbound	12	11.1	1	0.6
Maunakapu Street at Keahumoa Parkway	Southbound	1	2.3	0	0.0
	Eastbound	15	5.5	0	0.0
	Westbound	16	28.6	0	0.0
Ko'oloa'ula Main Driveway at Keahumoa Parkway	Northbound	1	2.6	2	4.2
	Eastbound	8	26.7	6	24.0
	Westbound	8	72.7	10	41.7

The peak hours varied at each study intersection and are shown in Table 3. Individual intersection peak hours were used to account for the highest traffic volume at each intersection. Peak hour turning movement volumes at each study intersection are presented in Figure 6. Appendix A includes the detailed turning movement classification count data.

Table 3: Intersection Peak Hours

Intersection	AM Peak Hour	PM Peak Hour
Kualaka'i Parkway at Keahumoa Parkway	7:00 – 8:00 AM	4:15 – 5:15 PM
Maunakapu Street at Keahumoa Parkway	7:15 – 8:15 AM	4:15 – 5:15 PM
Ko'oloa'ula Main Driveway at Keahumoa Parkway	6:45 – 7:45 AM	2:45 – 3:45 PM

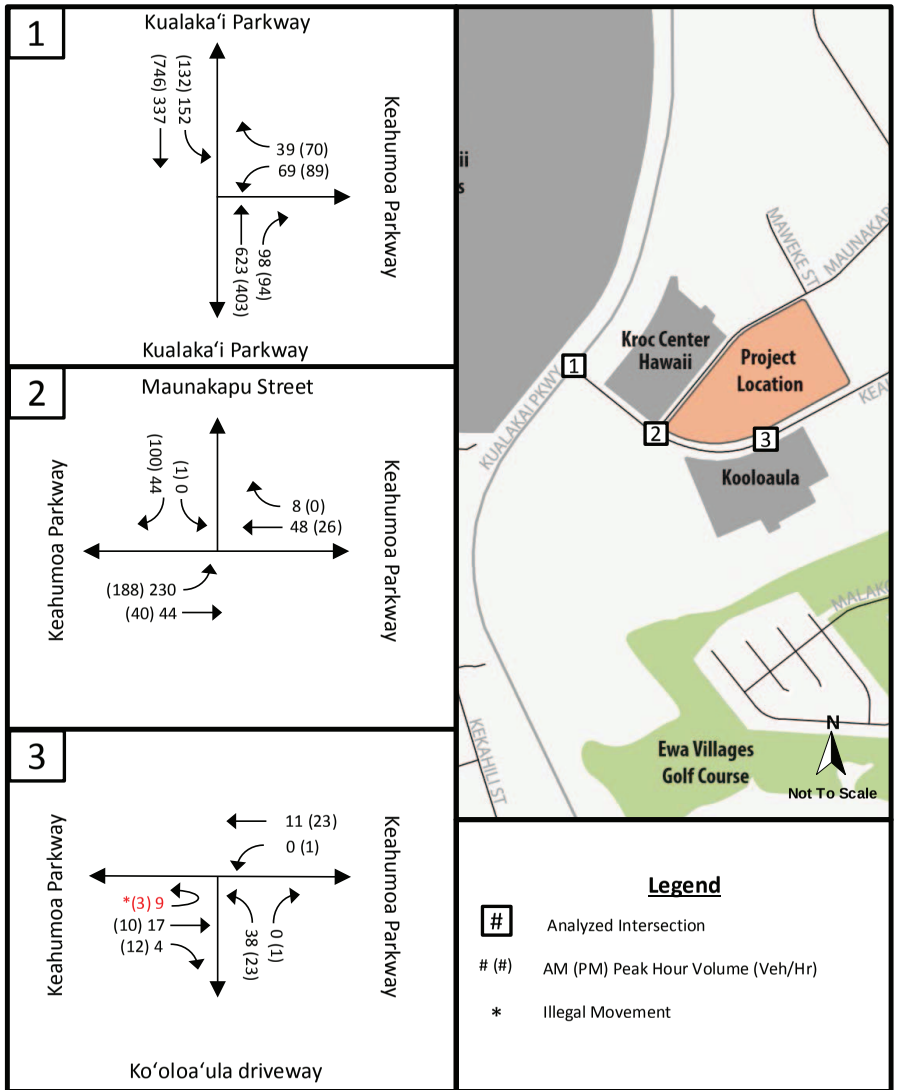

Figure 6: Existing (2015) Peak Hour Volumes

East Kapolei Middle School – Kapolei, O'ahu

3. Multi Modal System

a) Transit Bus

The City and County of Honolulu transit system (TheBus) has no bus stops or routes in the vicinity of the project. The closest bus stop is more than a mile away. The closest route to the project location is Route 41 – Kapolei/'Ewa Beach.

b) Bicycle and Pedestrians

Pedestrian and bicycle volumes were counted at each intersection and are shown in Table 4. There were no bicycles travelling during the AM peak hour and only two bicycles during the PM peak hour. There were less than five pedestrians per hour counted during the AM and PM peak hours. These low volumes are most likely due to the limited trip generators in the area. There is a multi-use path along Kualaka'i Parkway and paved sidewalks throughout Kualaka'i Parkway, Keahumoa Parkway and Maunakapu Street.

Table 4: Bicycle and Pedestrian Peak Hour Volumes

Intersection	Peak Hour	Bicycle Volume	Pedestrian Volume
Kualaka'i Parkway at Keahumoa Parkway	AM	0	4
	PM	0	0
Maunakapu street at Keahumoa Parkway	AM	0	1
	PM	2	0
Ko'oloa'ula Main Driveway at Keahumoa Parkway	AM	0	2
	PM	0	2

c) Rail Transit

When complete, the East Kapolei Rail Station will be located 800 feet away at the intersection of Kualaka'i Parkway at Keahumoa Parkway.

C. Existing Level of Service

1. Methodology

Level of service (LOS) is a rating system used in traffic engineering to measure the effectiveness of roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) states that an appropriate LOS for an urban arterial, which is the classification of Kualaka'i Parkway through the study area, is LOS C or D. Therefore, it is assumed that appropriate LOS for study intersections and turning movements should be LOS D or better. Intersection LOS and delay was determined for the AM and PM peak hours using *Synchro Version 9.0* traffic analysis software.

As stated in the *Highway Capacity Manual (HCM)* (TRB, 2010), LOS for a two-way stop controlled (TWSC) intersection is determined by the measured control delay (see Table 5) and is defined for each minor movement, not for the intersection as a whole. Vehicles traveling along the major, free-flow road, of a

TWSC intersection, proceed through with minimal delay. Those vehicles approaching the intersection along the minor movement are controlled by a stop sign and thus experience delay attributable to the volume of vehicles passing along the free-flow road and the gaps available.

Table 5: LOS Criteria for Unsignalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

Source: *Highway Capacity Manual* (TRB, 2010)

The LOS analysis for signalized intersections is based on average total vehicle delay based on the methodologies of the *HCM* (TRB, 2010) shown in Table 6. High numbers of vehicles passing the intersection, long cycle lengths, inappropriate signal phasing, or a poor signal progression can result in long delays, and consequently poor LOS.

Table 6: LOS Criteria for Signalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Source: *HCM* (TRB, 2010)

Another measure of intersection operation is the volume to capacity (v/c) ratio. This is the ratio of the volume of traffic utilizing the intersection compared to the maximum volume of vehicles that can be accommodated by the intersection during a specific period of time. A v/c ratio under 0.85 means the intersection is operating under capacity and excessive delays are not experienced. An intersection is operating near its capacity when v/c ratios range from 0.85 to 0.95. Unstable flows are expected when the v/c ratio is between 0.95 and 1.0. Any v/c ratio greater than or equal to 1.0 indicates that the intersection is operating at or above capacity which results in a LOS F per the *HCM* (TRB, 2010). A traffic movement can have a poor LOS but low v/c which suggests that the traffic volumes along that movement are low but have to wait a long time to make the movement. This is common for low volume protected turn movements or side streets that have to wait through a long cycle length for their split to come up.

2. Existing (2015) Intersection Conditions

Existing (2015) LOS for the intersections of Keahumoa Parkway at Maunakapu Street and Keahumoa Parkway at Koʻoloaʻula driveway operated at an appropriate LOS B or better during the AM and PM peak hours (see Table 7). With the limited development and vehicles, but built-out roadway infrastructure, there is minimal delay from these side-street approaches. However, the westbound left turn movement at the intersection of Kualakaʻi Parkway with Keahumoa Parkway operated at LOS F during the AM and PM peak hours with v/c less than 1.0. Appendix B provides the detailed analysis reports for the Existing (2015) conditions.

Table 7: Existing (2015) Intersection Level of Service

Intersection	App	Mvmt	AM			PM		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualakaʻi Parkway and Keahumoa Parkway	WB	L	**53.1**	0.50	**F**	**51.1**	0.56	**F**
		R	11.2	0.07	B	10.4	0.10	B
	SB	L	10.2	0.19	B	9.0	0.13	A
Keahumoa Parkway and Maunakapu Street	EB	L	7.9	0.18	A	7.7	0.16	A
	SB	LR	8.7	0.05	A	9.0	0.13	A
Keahumoa Parkway and Koʻoloaʻula driveway	NB	L	8.8	0.05	A	8.8	0.03	A
		R	0.0	0.00	A	8.4	0.01	A
	WB	L	0.0	0.00	A	7.3	0.01	A

3. Mitigation Measures for Kualakaʻi Parkway and Keahumoa Parkway Intersection

At the intersection of Kualakaʻi Parkway and Keahumoa Parkway, the westbound left turn movement resulted in LOS F during both peak hours although v/c less than 1.0 which suggests that capacity exists.

Potential mitigation includes signalization of the intersection. The *Manual on Uniform Traffic Control Devices (MUTCD)* (FHWA, 2009) states that prior to signalization of an intersection, an engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic signal is justified. It is noted that the satisfaction of a traffic signal warrant shall not in itself require the installation of a traffic control signal. With the traffic volumes collected, Warrant 3, Peak Hour was run for the intersection of Kualakaʻi Parkway and Keahumoa Parkway, utilizing the existing lane configurations. The intersection was analyzed for the configuration with two lanes along the major roadway approach and two lanes along the minor roadway approach. Warrant 3, Peak Hour did not pass under these existing conditions (see Appendix B for the traffic signal warrant analysis report).

With signal warrants not passing, a mitigation measure to reduce delay for the left-turn movement would be to install a median refuge lane along southbound Kualakaʻi Parkway. This refuge lane allows left turning vehicles to cross one direction of traffic at a time.

III. FUTURE (2019) CONDITIONS

Future conditions were assessed for the year 2019, the proposed year that EKMS will open.

A. Surrounding Area Conditions

1. Surrounding Developments

There are several developments proposed within the surrounding East Kapolei region. Figure 7 shows the location of these developments. Details regarding each development are discussed in the following section.

a) Department of Hawaiian Home Lands East Kapolei I and East Kapolei II

Development within East Kapolei has been occurring over the past five years and will continue. The Department of Hawaiian Home Lands (DHHL) has two developments within East Kapolei. East Kapolei I (referred to as Kānehili) is an approximately 92 acre parcel located on the northwest corner at the intersection of Kualaka'i Parkway and Kapolei Parkway. There are 403 empty lots, designated for single-family homes, proposed within East Kapolei I. As of June 2015, 346 of these lots were built on and occupied. It was noted that a sound/safety wall needs to be built along Kualaka'i Parkway on the eastern boarder of Kānehili prior to construction being permitted on the remaining 57 lots. DHHL posted an "Invitation to Bid" on May 26, 2015 for the construction of the Kānehili Sound/Safety Wall. It is assumed that the sound/safety wall will be constructed and the remaining 57 lots will be built on and homes occupied by the year 2019. Therefore, the remaining lots of this development will be included in the Future (2019) analysis.

DHHL's second development is East Kapolei II, located off of Keahumoa Parkway (also referred to as East-West Road). The two sections that are planned for completion and occupation by 2019 are East Kapolei IIB and IIC. East Kapolei IIB will have 160 lots designated for single-family homes. These are anticipated to be completed and occupied by late 2016. East Kapolei IIC will have 129 lots designated for single-family homes. These are anticipated to be completed and occupied by 2018. Trips generated by East Kapolei IIB and IIC will be included in the Future (2019) analysis.

DHHL has additional construction proposed in the area. East Kapolei IIA will have 192 lots designated for single-family homes. The development may become multi-family and therefore the number of total units is unknown at this time. The development is anticipated to be completed and occupied by 2021. East Kapolei IID, IIE and IIF are still in the planning stages. East Kapolei IIA, IID, IIE and IIF will not be included in the Future (2019) analysis.

b) Hawai'i Housing Finance and Development Corporation (HHFDC) Low Density Apartments

There are low density apartments (LDA) proposed to be built adjacent to East Kapolei II. Ko'oloa'ula was considered LDA and completed in 2013. LDA 2 is located east of East Kapolei IIA on a 19 acre parcel with approximately 318 multi-family units proposed. LDA 3 is located on 66-acres, west of East Kapolei IIC, IIE and IIF, with approximately 400 multi-family units proposed. There are no current plans or schedule for construction of LDA 2 or LDA 3 and therefore these developments are included in the Future (2019) analysis.

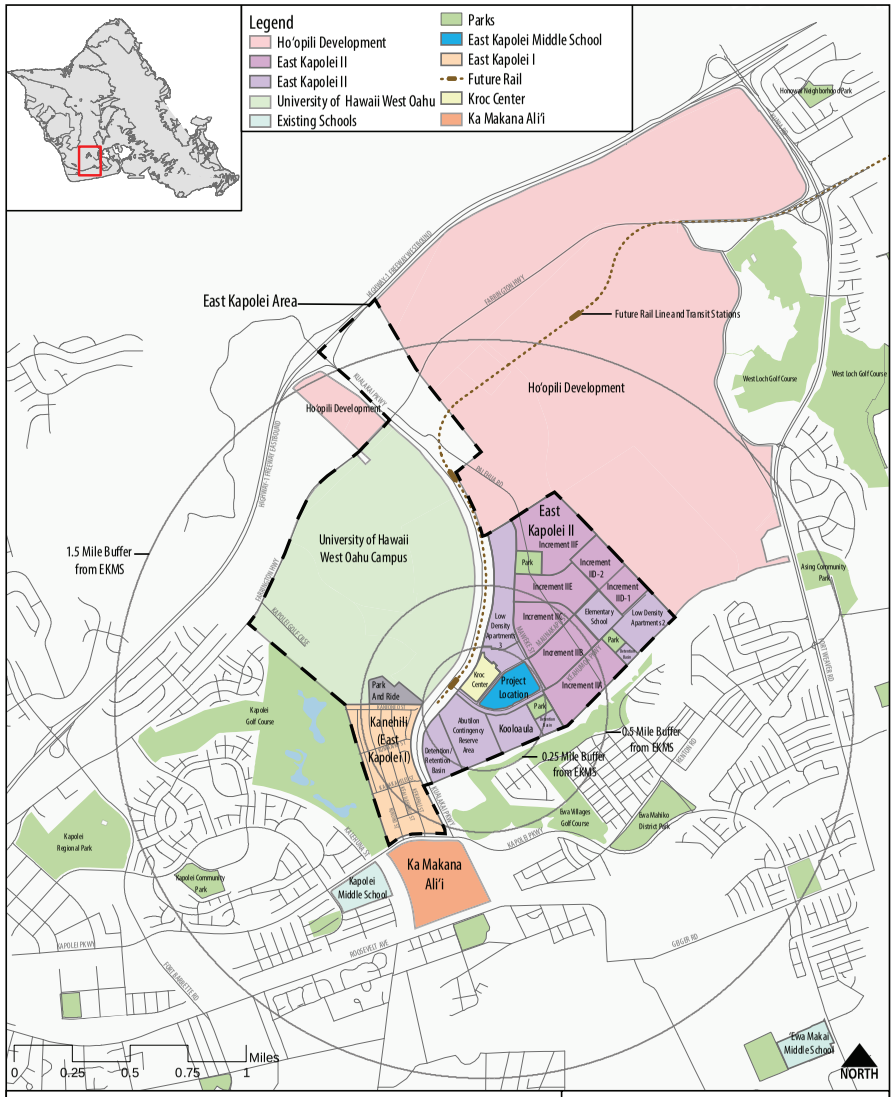

Figure 7: Surrounding Area Developments

East Kapolei Middle School - Kapolei, O'ahu

SSFM INTERNATIONAL

c) Ka Makana Ali'i

Ka Makana Ali'i is a mixed-use center located on 67 acres off of Kapolei Parkway south of Kānehili. This mixed use center will include a regional mall of shopping, dining, and entertainment, two hotel and office spaces. Ka Makana Ali'i will be built in two phases. Phase 1 will include 560,000 square feet of retail space, 45,000 square feet of restaurant space, 40,000 square feet of entertainment space and a hotel with 175 rooms. Phase 2 will include over 200,000 square feet of office space. Construction began in March 2015. The first phase of the development is planned to be open by late 2016. It is assumed that the second phase will be completed by 2019. Therefore, trips generated by Ka Makana Ali'i will be included in the Future (2019) analysis.

d) University of Hawai'i – West Oahu

Phase 1 of University of Hawai'i – West O'ahu (UHWO) included the library, courtyard, study and meeting places and initial classroom buildings. These were completed in July 2012 and classes began at the new campus in August 2012. It is expected that enrollment of UHWO will be 4,000 by 2015. The 2014 enrollment at UHWO was about 2,700 students. Enrollment cannot expand beyond 4,000 students until additional facilities and capacity are provided. Due to the lack of schedule available for additional development of the UHWO facilities, the trips generated by the UHWO expansion will not be included in the Future (2019) analysis.

e) Ho'opili

Ho'opili is adjacent to the north and east sides of East Kapolei. On May 6, 2015, the City Council unanimously approved Ho'opili project. Ho'opili includes the construction of 11,750 homes on 1,600 acres. This also includes schools constructed for the development. Construction is projected to begin in 2016. It is anticipated that construction will be completed in phases over the next 20 to 30 years. Although the number of units developed by 2019 is unknown, it is assumed that some growth from Ho'opili will occur and included in the Future (2019) analysis.

f) East Kapolei Park and Ride

The Honolulu Rail Transit is in construction and is expected to be partly completed by 2019. The construction schedule is currently in flux and there is a possibility that the Honolulu Rail Transit will not be operational by 2019. East Kapolei Transit Center will be at the western terminus of the Honolulu Rail Transit and is located between Kualaka'i Parkway and the Kroc Center. There will be a park and ride lot which will include 900 stalls. The park and ride is proposed to be located north of Kānehili. Through coordination with surrounding stakeholders it was noted that the proposed location of the park and ride is in the location of the temporary detention basin for Kānehili. It is unknown when UHWO will install the internal drainage system and remove the existing detention basin. Meeting minutes from UH Committee on Planning and Facilities meeting on October 22, 2014 stated that "there are ongoing discussions about a potential relationship with UHWO and the East Kapolei Rail Station. A temporary park & ride is being considered for this location, once the detention basin issues are addressed…"At this time, there are still discussions as to the location of the park and ride due to the detention basin issue. Therefore, project related trips generated by the park and ride will not be individually calculated but assumed to be a part of the background growth associated with the surrounding area. Due to the proximity of the East Kapolei

Rail Station and park and ride lot, it is anticipated that the ultimate operation of the Honolulu Rail Transit will have a large impact on vehicular and multi-modal traffic in the area.

B. Geometric Conditions

From research into the *Statewide Transportation Improvements Program* (STIP), no roadway projects are anticipated by 2019 in the area that would affect the roadway geometrics at the study intersections. It is assumed that the extension of Keahumoa Parkway between Kualaka'i Parkway and Farrington Highway will not occur by 2019. Therefore, it is assumed that lane configurations for Future (2019) conditions at the study intersections will remain similar to existing conditions (as shown in Figure 3) unless mitigation measures are completed as proposed.

C. Volumes

1. Background Growth

Insufficient historical counts exist along Kualaka'i Parkway for use in calculating growth. The *Traffic Analysis Report for East Kapolei II* (Ng, 2007) applied an increase of 3.5% per year to the through traffic volumes along Kualaka'i Parkway to account for regional growth. Since EKMS is within the East Kapolei II area, this background growth rate is considered appropriate. Therefore, a 3.5% annual compounded growth rate was applied to the existing through volumes on Kualaka'i Parkway.

2. Surrounding Area Development

Trips generated from the remaining 57 single-family units for Kānehili and the proposed 289 DHHL single-family units for East Kapolei IIB and IIC were calculated using the rates for single-family land use from the *Trip Generation, 8th Edition* (ITE, 2008). Table 8 shows the trips generated by these developments. These trips were distributed on the roadway based on the *O'ahu MPO's 2035 Travel Demand Forecast Model (TDFM)*.

Table 8: Trip Generation for Kānehili and East Kapolei IIB and IIC

Land Use [ITE Code]	Project	Quantity of Units	Trip Generation					
			AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single-Family Detached Housing [210]	Kānehili	57 Dwelling Units	2	6	8	7	4	11
Single-Family Detached Housing [210]	East Kapolei IIB and IIC	289 Dwelling Units	54	163	217	184	108	292

It is assumed that Ka Makana Ali'i will be fully built out by 2019. The project-related trips for Ka Manaka Ali'i as provided in the *Traffic Evaluation for Ka Makana Ali'i* (PB Americas, Inc., 2011) were included in the surrounding area development trips.

3. Future (2019) Without Project Volumes

Future (2019) Without Project peak hour volumes were calculated by applying the background growth to the existing through volumes along Kualakaʻi Parkway and adding trips related to the surrounding area developments. It is expected that there will be an increase in pedestrian and bicycle traffic in the area due to the development of East Kapolei IIB and IIC, as well as the opening of the East Kapolei Transit Station.

The Future (2019) Without Project peak hour vehicle volumes at the study intersections are shown in Figure 8. There will be an increase to Future (2019) Without Project ADT along Kualakaʻi Parkway as a result of the background growth and surrounding area development (see Table 9).

Table 9: Future (2019) Without Project Roadway ADT Comparison

Roadway	Year	ADT
Kualakaʻi Parkway	Existing (2010)	8,500
	Future (2019) Without Project	15,000

4. Project Volumes

The initial projected enrollment for EKMS will be 1,050 students with a school opening date in the fall of 2019. The proposed EKMS will include buildings for administrative services, student services, physical education, library and classrooms, soccer and baseball fields, and outdoor covered play courts. A potential future classroom building addition would bring the enrollment to 1,400 students. The future analysis considered the initial enrollment of 1,050 students to determine trips generated as it was unknown when the additional classroom would be built and if there will be funding for it.

a) Trip Generation

Trips generated were calculated using rates of comparable middle schools nationally as provided in the *Trip Generation, 8th Edition* (ITE, 2008). Table 10 includes the trips generated for a middle school with 1,050 students. This calculation takes into consideration trips resulting from students, faculty, and staff.

Table 10: Project Related Trip Generation per ITE Trip Generation Rates

Land Use [ITE Code]	Quantity	Units	Trip Generation							
			AM Peak Hour				PM Peak Hour			
			Rate	In	Out	Total	Rate	In	Out	Total
Middle School [522]	1,050	Students	0.54	312	255	567	0.16	82	86	168

Source: *Trip Generation, 8th Edition* (ITE, 2008)

It should be noted that middle school dismissal is typically earlier than PM commuter peak hours. Additionally, the volume of students leaving the school in the afternoon happens over an extended period due to after school activities. Therefore, only 20% of students are assumed to be picked up during the PM peak hour while others may have been picked up before or after the PM peak hour.

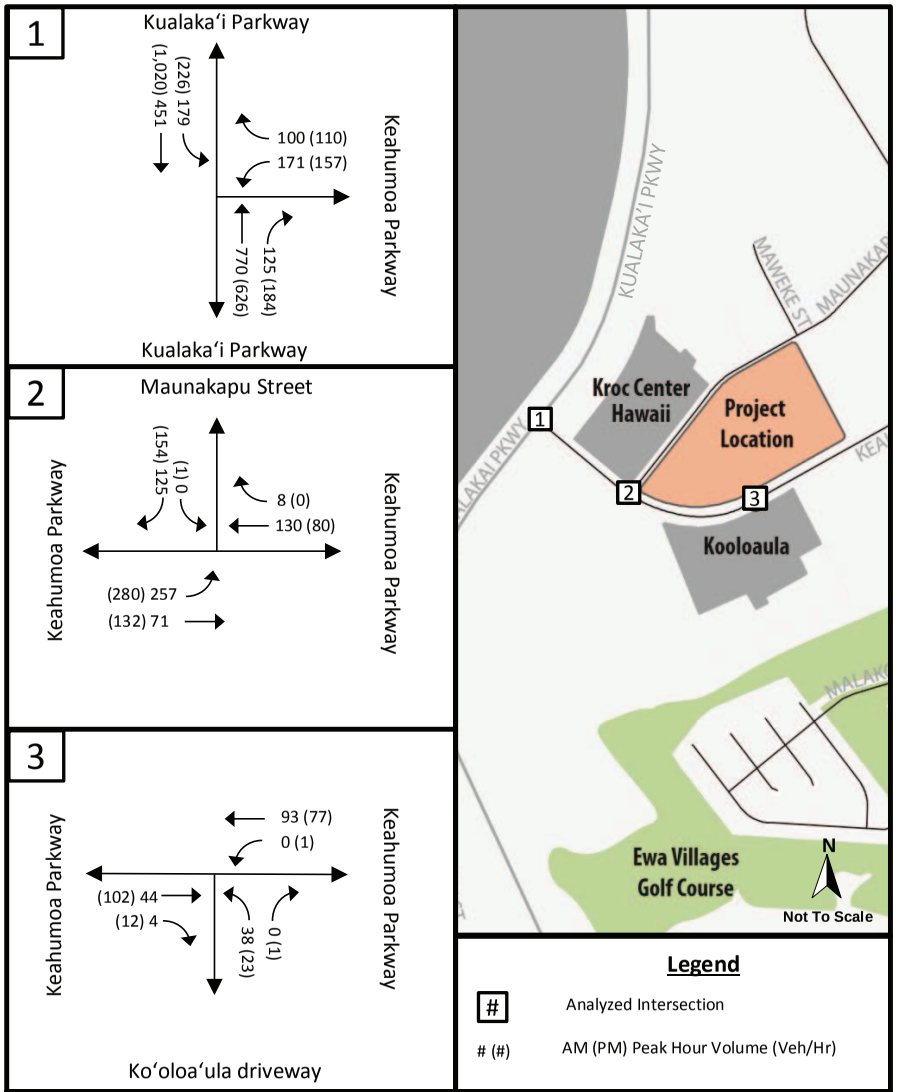

Figure 8: Future (2019) Without Project Peak Hour Volumes

East Kapolei Middle School – Kapolei, Oʻahu

b) Trip Distribution/Assignment

Origin-destination data was taken from the *O'ahu MPO 2035 Travel Demand Forecast Model (TDFM)* for use in determining trip distribution for the project area. The trip distribution included were different for faculty/staff and parent drop off/pick up. Vehicles travelling to/from the north along Kualaka'i Parkway travel along H-1 Freeway to/from east or west. Vehicles travelling to/from the south on Kualaka'i Parkway travel within the Kapolei area or to/from 'Ewa.

Based on data in the OMPO *TDFM* the trip distribution for faculty and staff will be 51% to/from the north and 49% to/from the south for both peak hours based on OMPO *TDFM*. During the AM peak hour, faculty and staff enter at the EKMS driveway off of Keahumoa Parkway to access the parking lot. During the PM peak hour, faculty and staff using the parking lot will exit at the EKMS driveway closest to Keahumoa Parkway, off of Maunakapu Street.

EKMS will serve residents within East Kapolei. However, by the year 2019, the only residential units anticipated to be developed and occupied within East Kapolei will be Kānehili and East Kapolei IIB and IIC. The remainder of East Kapolei II and residential units within UHWO are not expected to be completed. Therefore, it is assumed there will be capacity at the school allowing students residing outside of East Kapolei to attend EKMS. As more developments within East Kapolei II and UHWO are developed and occupied, it is assumed that the school will primarily serve students within East Kapolei.

It was assumed that most passenger vehicle student drop-off trips will be done in route to work. Information collected from the OMPO *TDFM* states that the projected trip distribution for students arriving at EKMS by passenger vehicle was 12% from the north and 72% from the south. It also notes that after dropping off the student, 37% of the vehicles travel north while 63% travel south. This assumes that there will be more work within the Kapolei area which will attract these trips. Therefore, there is a higher percentage of parents traveling south after dropping off a student to travel to work within the Kapolei area. During the afternoon pick up, the trip distribution was reversed. Parents entering EKMS, 37% traveled from the north and 63% traveled from the south. When leaving EKMS, 12% travel to the north and 72% to the south. Figure 9 shows the trip distribution.

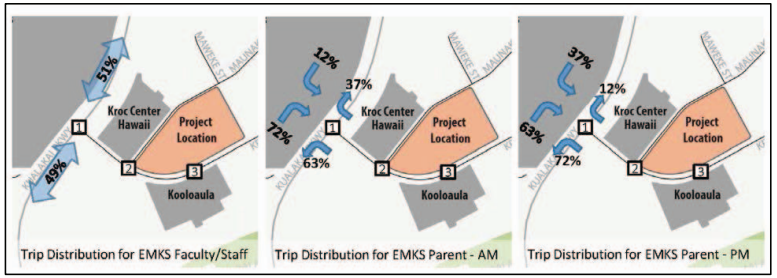

Figure 9: Trip Distribution for Project Related Trips

c) Modal Split

(1) 'Ewa Makai Middle School

'Ewa Makai Middle School (EMMS), located 3.5 miles away, opened in January 2011 and currently has an enrollment of approximately 900 students. This includes students who are picked up by bus from the Kroc Center. EMMS is currently is in the process of planning for a future expansion to accommodate an additional 500 students. Of the 900-student population, approximately 200 students (22%) bike, 200 students (22%) walk/skateboard/scooter, 20 students (2%) are accommodated by bus, and the remaining students (54%) are driven. Staff drive and drive alone.

(2) Kapolei Middle School

Kapolei Middle School (KMS), located approximately one-mile away, has an enrollment of approximately 1,500 students. KMS serves students living between Honokai Hale on the west through Kapolei on the east. Due to the large number of students, KMS is on a multi-track system with four tracks. Three tracks are in session at any one time while the fourth track is on vacation. These tracks are rotated throughout the year. It was noted that approximately 5-10% of the students bike, 10-20% walk/skateboard/scooter, 35% are accommodated by bus, and the remaining students 35-50% are driven.

(3) East Kapolei Middle School

Existing conditions at EMMS and KMS reflect a need for additional middle school capacity which EKMS will provide. Travel to EMMS and KMS also show a high percent of non-vehicular trips for students not served by bus. With the construction of EKMS and additional residential development in the immediate area, it is assumed that bus use would be limited and walking/biking percent high.

At the time of this report, DOE had not set the school boundaries for EKMS. Therefore, it was assumed that EKMS will service East Kapolei (as outlined in Figure 7), which will likely include households which currently would attend KMS. Traditionally, school buses are only used to pick up students 1 ½ miles away from school. Since the residential developments within East Kapolei are within a 1 ½ miles from EKMS no buses will be accounted for. Considering the current student enrollment and need for expansion of surrounding area middle schools, most students are assumed to live within close proximity of EKMS. Design features of the school and surrounding area are being constructed with the intent to increase walkability which is expected to increase the volume of students walking or biking. Therefore, the following assumptions were used to calculate the trips generated for EKMS during the peak hours:

- Approximately 60% of students will walk or bike to school
- Approximately 40% of students will be dropped off by passenger vehicle in the morning
- Approximately 20% of students will be picked up by passenger vehicle in the afternoon
- Assume there are the same amount of faculty and staff (100 total) traveling during the peak hours by car.

d) Project Related Peak Hour Volumes

It is assumed that a percentage of students residing within Kānehili will walk or bike to East Kapolei Middle School by using the crosswalk across Kualaka'i Parkway at the intersection with Kapolei Parkway or shared-use path on the east side of Kualaka'i Parkway. It was also assumed that all students residing within

East Kapolei IIB and IIC will walk or bike to school as these developments are less than ½-mile from EKMS with safe routes planned.

Table 11 provides the project related trip generation which will be used for the Future (2019) With Project analysis.

Table 11: Project Related Trip Generation for EKMS

Trip Type	Trip Generation					
	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Parent	420	420	840	210	210	420
Faculty and Staff	100	0	100	0	100	100
Total Vehicles	**520**	**420**	**940**	**210**	**310**	**520**
Walker and Bicyclists	630	0	630	0	630	630
School Bus	0	0	0	0	0	0

Project related trips were distributed and Project Related Peak Hour Volumes are shown in Figure 10.

e) Future (2019) With Project Peak Hour Volumes

Project related peak hour volumes were added to Future (2019) Without Project Peak Hour Volumes for the resulting Future (2019) With Project traffic volumes (see Figure 11). These volumes were used in the analysis for Future (2019) With Project conditions.

There will be a minimal increase to Future (2019) daily traffic volumes along Kualakaʻi Parkway as a result of the project related traffic. Projected Future (2019) With Project roadway ADT is shown in Table 12.

Table 12: Future (2019) With Project Roadway ADT Comparison

Roadway	Year	ADT
Kualakaʻi Parkway	Existing (2010)	8,500
	Future (2019) Without Project	15,000
	Future (2019) With Project	16,500

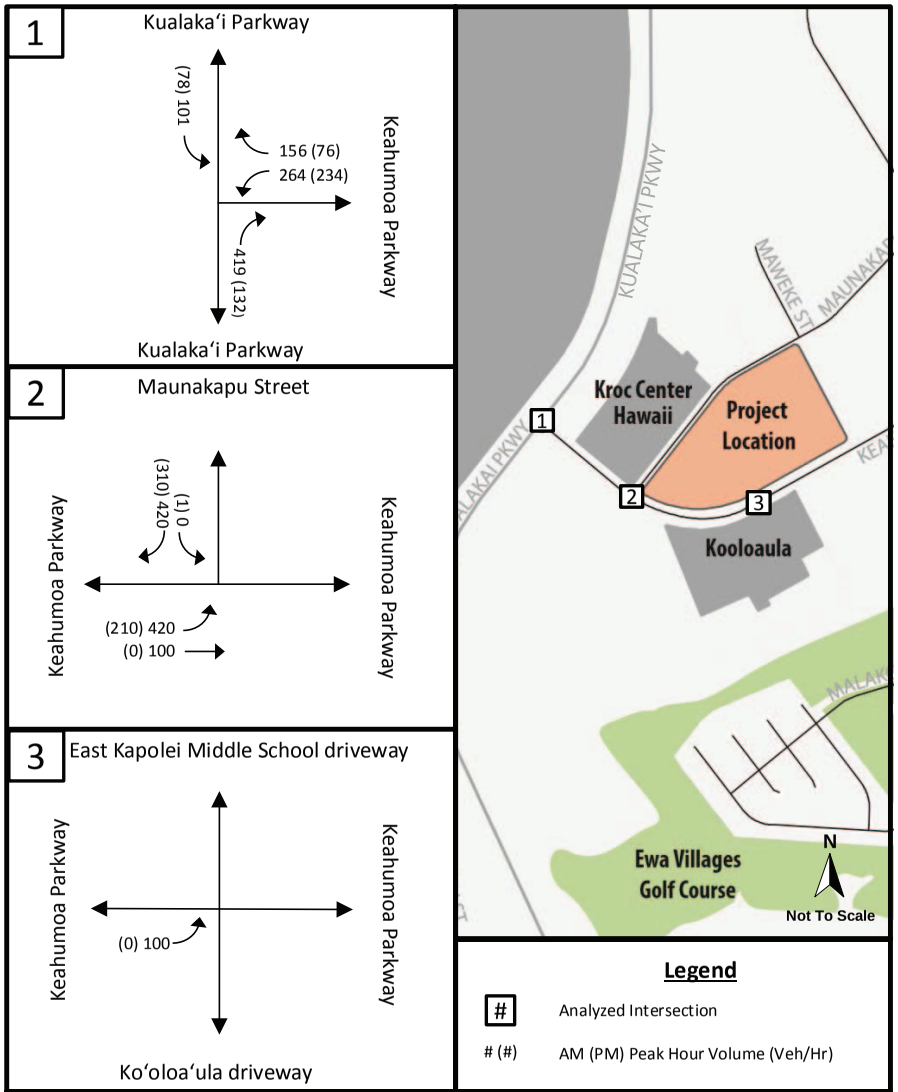

Figure 10: Project Related Peak Hour Volumes

East Kapolei Middle School – Kapolei, Oʻahu

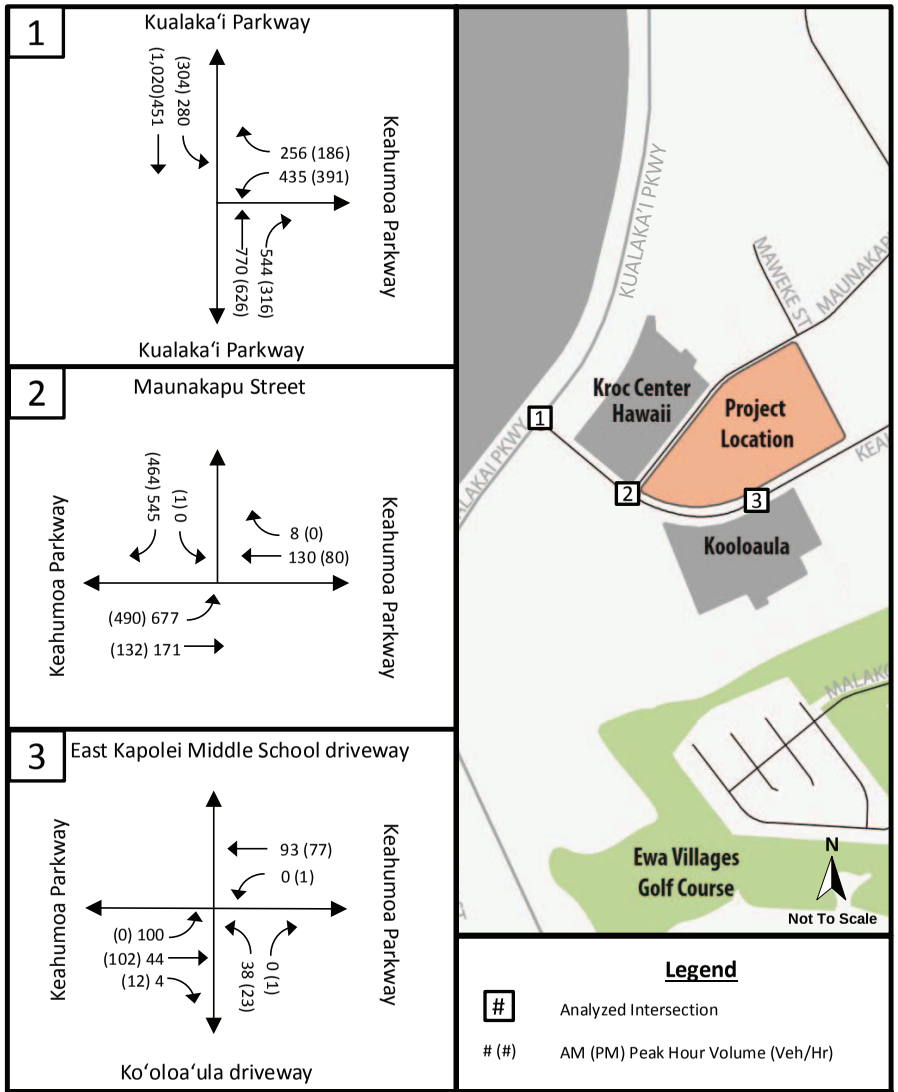

Figure 11: Future (2019) With Project Peak Hour Volumes

East Kapolei Middle School – Kapolei, O'ahu

SSFM INTERNATIONAL

D. Future Level of Service

1. Future (2019) Without Project

The Future (2019) Without Project conditions result in similar study intersection LOS, but slightly higher delay, as compared to Existing (2015) conditions (see Table 13). The intersection of Kualaka'i Parkway at Keahumoa Parkway resulted in LOS F for the westbound left turn movement which had a higher delay and a v/c ratio greater than 1.0. This is a result of more vehicles on Kualaka'i Parkway and less gaps for vehicles from Keahumoa Parkway to enter the major road. Appendix C provides the detailed analysis reports for the Future (2019) Without Project conditions.

Table 13: Future (2019) Without Project Intersection Level of Service

Intersection	App	Mvmt	AM Peak Hour			PM Peak Hour		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualaka'i Parkway and Keahumoa Parkway	WB	L	**620.7**	**2.12**	**F**	**1146.7**	**3.18**	**F**
		R	13.3	0.20	B	12.8	0.20	B
	SB	L	11.7	0.26	B	11.6	0.30	B
Keahumoa Parkway and Maunakapu Street	EB	L	8.3	0.22	A	8.3	0.26	A
	SB	LR	9.4	0.16	A	9.7	0.22	A
Keahumoa Parkway and Ko'oloa'ula driveway	NB	L	9.3	0.05	A	9.8	0.04	A
		R	0.0	0.00	A	8.7	0.01	A
	WB	L	0.0	0.00	A	7.5	0.01	A

a) Mitigation Measures for Kualaka'i Parkway and Keahumoa Parkway Intersection

Traffic signal warrants were conducted using the projected Future (2019) Without Project peak hour volumes. Warrant 3, Peak Hour passed under these future conditions. As a signalized intersection, the resulting intersection operations were found to be appropriate with all movements resulting in LOS B or better (see Table 14). Intersection analysis reports and traffic signal warrant reports are provided in Appendix C.

Table 14: Future (2019) Without Project Mitigation - Level of Service

Intersection	App	Mvmt	AM Peak Hour			PM Peak Hour		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualaka'i Parkway and Keahumoa Parkway (Signalized)	Intersection		12.3	-	B	10.9	-	B
	WB	L	19.7	0.66	B	20.4	0.64	C
		R	17.5	0.43	B	19.0	0.51	B
	SB	L	24.4	0.78	C	24.1	0.79	C
		T	3.3	0.21	A	4.0	0.47	A
	NB	T	12.3	0.68	B	12.9	0.65	B
		R	12.3	0.89	B	13.0	0.65	B

2. Future (2019) With Project

Future (2019) With Project has the same lane configurations as Future (2019) Without Project and a traffic signal at the intersection of Kualakaʻi Parkway and Keahumoa Parkway. The Future (2019) With Project conditions result in an increase in delay (see Table 15). With a signalized intersection at Kualakaʻi Parkway and Keahumoa Parkway, the intersection resulted in LOS E and LOS C for the AM and PM peak hours, respectively. The westbound left turn and southbound left turn movements and the northbound through and right turn movements had longer delays during the AM peak hour as there was an increase in volumes to drop off students. The intersections of Keahumoa Parkway at Maunakapu Street and at Koʻoloaʻula driveway/EKMS driveway continued to operate at LOS B or better and therefore were considered acceptable. Appendix D provides the detailed analysis reports for the Future (2019) With Project conditions.

Table 15: Future (2019) With Project Intersection Level of Service

Intersection	App	Mvmt	AM Peak Hour			PM Peak Hour		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualakaʻi Parkway and Keahumoa Parkway (Signalized)	Intersection		**59.8**	**-**	**E**	26.1	-	C
	WB	L	**61.7**	0.97	**E**	39.6	0.89	D
		R	27.6	0.64	C	21.7	0.47	C
	SB	L	**67.0**	0.94	**E**	45.4	0.88	D
		T	6.5	0.22	A	7.8	0.50	A
	NB	T	**77.2**	**1.07**	**F**	34.5	0.87	C
		R	**87.3**	**1.09**	**F**	35.3	0.87	D
Keahumoa Parkway and Maunakapu Street	EB	L	11.0	0.58	B	9.4	0.45	A
	SB	LR	16.5	0.68	C	15.3	0.65	C
Keahumoa Parkway and Koʻoloaʻula driveway	NB	L	11.5	0.07	B	9.8	0.04	A
		R	0.0	0.00	A	8.7	0.01	A
	WB	L	0.0	0.00	A	7.5	0.01	A
	EB	L	7.6	0.07	A	0.0	0.0	A

a) Mitigation Measures for Kualakaʻi Parkway and Keahumoa Parkway Intersection

The intersection of Kualakaʻi Parkway and Keahumoa Parkway operates at LOS E during the AM peak hour. The northbound approach during the AM peak hour operates at LOS F for the through and right turn movements with a v/c greater than 1.0. The northbound right turn movement is over 500 vehicles during the AM peak which reflects the large amount of vehicles accessing Keahumoa Parkway to drop students off at EKMS. Providing a dedicated right turn lane results in the intersection operating at LOS D during the AM peak hour (see Table 16). However, the northbound right turn movement still operates at LOS F during the AM peak hour. Intersection analysis reports are provided in Appendix D. Channelizing the right turn movement may lessen the delay and reduce the distance needed for pedestrians to cross the road. Table 16 shows the results of the intersection by channelizing the right turn movement.

Table 16: Future (2019) With Project Mitigation - Level of Service

Intersection	App	Mvmt	AM Peak Hour			PM Peak Hour		
			Delay	v/c	LOS	Delay	v/c	LOS
Kualakaʻi Parkway and Keahumoa Parkway (with NB right-turn lane without channelization)	Intersection		42.9	-	D	19.4	-	B
	WB	L	36.6	0.89	D	33.2	0.87	C
		R	21.3	0.58	C	19.0	0.46	B
	SB	L	41.8	0.86	D	36.9	0.86	D
		T	7.0	0.23	A	7.7	0.52	A
	NB	T	22.9	0.74	C	19.3	0.63	B
		R	**116.9**	**1.16**	**F**	23.3	0.71	C
Kualakaʻi Parkway and Keahumoa Parkway (with NB right-turn lane channelization)	Intersection		23.5	-	C	18.5	-	B
	WB	L	33.4	0.88	C	31.9	0.86	C
		R	20.0	0.58	B	18.6	0.46	B
	SB	L	38.7	0.85	D	35.7	0.86	D
		T	7.0	0.24	A	7.7	0.53	A
	NB	T	23.3	0.77	C	19.3	0.65	B
		R	Right-turn channelized			Right-turn channelized		

b) Mitigation Measures for Keahumoa Parkway and Maunakapu Street Intersection

Traffic signal warrants were conducted at the intersection of Keahumoa Parkway and Maunakapu Street using the projected Future (2019) With Project peak hour volumes. Warrant 3, Peak Hour passed under these future conditions. However, traffic signals are not recommended for installation at this time due to the acceptable LOS C intersection operations. Traffic signal warrant reports are provided in Appendix D.

c) Mitigation Measures for Keahumoa Parkway and Koʻoloaʻula/EKMS Driveway Intersection

Traffic signal warrants were conducted at the intersection of Keahumoa Parkway and Koʻoloaʻula/EKMS driveway using the projected Future (2019) With Project peak hour volumes. Warrant 3, Peak Hour did not pass under these future conditions and therefore a traffic signal is not recommended for installation. Traffic signal warrant reports are provided in Appendix D.

IV. SUMMARY AND RECOMMENDATION

The State of Hawai'i Department of Education is proposing to construct East Kapolei Middle School in the East Kapolei II subdivision in Kapolei on the island of O'ahu. The proposed EKMS will include several buildings for administrative services, student services, physical education, library and classrooms. Also included on the campus are soccer and baseball fields as well as an outdoor covered play court. The initial enrollment will be 1,050 students with an opening in fall 2019. There are plans to provide a future classroom building addition which will allow for the school's enrollment to increase to 1,400 students. This addition is projected to occur after 2019 and will not be included in this analysis. This traffic impact analysis report was prepared in support of an Environmental Assessment being completed for the project.

Existing (2015) LOS were determined to be appropriate at the unsignalized intersections of Keahumoa Parkway at Maunakapu Street and Keahumoa Parkway at Ko'oloa'ula driveway. The westbound left turn movement at the intersection of Kualaka'i Parkway at Keahumoa Parkway had a poor LOS however Warrant 3, Peak Hour did not pass.

- For Existing (2015) conditions, it is recommended to install a median refuge lane along the southbound Kualaka'i Parkway in order to reduce delay for the left-turn movement.

Future (2019) Without Project conditions considered the impact of increased vehicle volumes due to surrounding area development on the existing lane configuration. The intersections of Keahumoa Parkway at Maunakapu Street and Keahumoa Parkway at Ko'oloa'ula driveway resulted in appropriate LOS and thus no mitigation measures are recommended. Future (2019) Without Project conditions resulted in poor LOS and high v/c ratio for the westbound left turn movement at the intersection of Kualaka'i Parkway and Keahumoa Parkway. Warrant 3, Peak Hour passed at this intersection.

- For Future (2019) Without Project conditions, it is recommended to signalize the intersection of Kualaka'i Parkway and Keahumoa Parkway in order to achieve an acceptable LOS

Trips resulting from the development of EKMS include those made by students and faculty/staff and include a distribution between motorized or non-motorized travel. With the addition of EKMS project related trips, Future (2019) With Project resulted in poor LOS at the intersection of Kualaka'i Parkway and Keahumoa Parkway. This is a result of high turning volumes to access the middle school during the AM peak hour. The intersections of Keahumoa Parkway at Maunakapu Street and Keahumoa Parkway at Ko'oloa'ula driveway resulted in appropriate LOS and thus no mitigating measures are recommended.

- For Future (2019) With Project conditions, it is recommended to provide a dedicated and channelized (with raised island) right-turn lane in the northbound direction on Kualaka'i Parkway in order to achieve an acceptable LOS and reduce the pedestrian crossing distance.

V. REFERENCES

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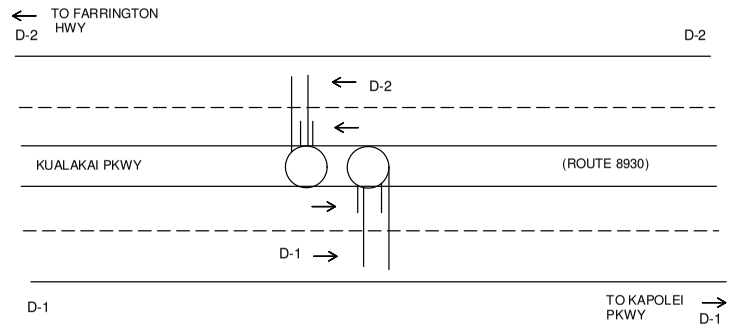
Appendix A

24-Hour Data and Intersection Peak Period Traffic Counts

ISLAND: OAHU
AREA: EWA



Station No:	B72 8930 00124		
Station Location:			
Kualakai Parkway between Farrington Highway & Kapolei Parkway			
Station Mileage:	1.24	GPS Coord (Latitude):	21.35226 N
		GPS Coord (Longitude):	158.04893 W
Begin Survey (Date/Time):		End Survey (Date/Time):	
Survey Method: LOOP HOSE OTHER		Survey Type: VOL CLASS SPEED OTHER	
Survey Crew:		Module No.:	

HPMS DATA

Segment Description:

Segment Begin LRS	0.00	Segment End LRS	0.24	Length	0.24

Facility Name	Juris	Func Class	Area Type	Route No.	Route Mile	D-1 = Direction to End of Route D-2 = Direction to Beginning of Route	
Kualakai Pkwy	S	14	2	8930	1.24	D-1	To Kapolei Parkway
						D-2	TO H-1 OVERPASS

Sketch By: EPJ Date: 10/14/2010 SLD:

Run Date: 2010/12/09

Hawaii Department of Transportation
Highways Division **Highways Planning Survey Section**
2010 Program Count - Summary

Site ID: B72893000124 **Town:** Oahu **DIR 1:** +MP **DIR 2:**-MP **Final AADT:** 0
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER **Count Type:**CLASS **Counter Type:** Tube **Route No:** 8930
Location: Kualakai Pkwy b/t Farrington Hwy _Kapolei Pkwy

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 10/19/2010															
12:00-12:15	11	1	12	06:00-06:15	37	122	159	12:00-12:15	29	32	61	06:00-06:15	99	55	154
12:15-12:30	7	2	9	06:15-06:30	45	113	158	12:15-12:30	41	30	71	06:15-06:30	95	37	132
12:30-12:45	8	2	10	06:30-06:45	53	127	180	12:30-12:45	49	47	96	06:30-06:45	83	30	113
12:45-01:00	4	1	5	06:45-07:00	46	116	162	12:45-01:00	54	59	113	06:45-07:00	79	28	107
01:00-01:15	3	4	7	07:00-07:15	64	109	173	01:00-01:15	47	40	87	07:00-07:15	82	31	113
01:15-01:30	5	2	7	07:15-07:30	98	116	214	01:15-01:30	59	47	106	07:15-07:30	70	22	92
01:30-01:45	4	3	7	07:30-07:45	87	122	209	01:30-01:45	51	38	89	07:30-07:45	46	22	68
01:45-02:00	2	2	4	07:45-08:00	75	133	208	01:45-02:00	46	44	90	07:45-08:00	44	13	57
02:00-02:15	4	1	5	08:00-08:15	42	85	127	02:00-02:15	52	54	106	08:00-08:15	50	18	68
02:15-02:30	9	4	13	08:15-08:30	49	90	139	02:15-02:30	67	53	120	08:15-08:30	46	17	63
02:30-02:45	7	2	9	08:30-08:45	43	64	107	02:30-02:45	51	73	124	08:30-08:45	44	8	52
02:45-03:00	3	1	4	08:45-09:00	44	52	96	02:45-03:00	63	62	125	08:45-09:00	33	17	50
03:00-03:15	3	0	3	09:00-09:15	31	41	72	03:00-03:15	75	68	143	09:00-09:15	45	14	59
03:15-03:30	1	9	10	09:15-09:30	28	43	71	03:15-03:30	98	74	172	09:15-09:30	44	15	59
03:30-03:45	0	11	11	09:30-09:45	52	59	111	03:30-03:45	83	84	167	09:30-09:45	43	18	61
03:45-04:00	0	8	8	09:45-10:00	40	41	81	03:45-04:00	62	69	131	09:45-10:00	34	12	46
04:00-04:15	3	13	16	10:00-10:15	39	39	78	04:00-04:15	104	86	190	10:00-10:15	32	10	42
04:15-04:30	0	27	27	10:15-10:30	36	51	87	04:15-04:30	96	64	160	10:15-10:30	27	15	42
04:30-04:45	4	31	35	10:30-10:45	37	24	61	04:30-04:45	131	65	196	10:30-10:45	18	10	28
04:45-05:00	11	41	52	10:45-11:00	39	54	93	04:45-05:00	120	55	175	10:45-11:00	22	5	27
05:00-05:15	4	70	74	11:00-11:15	32	37	69	05:00-05:15	110	60	170	11:00-11:15	18	7	25
05:15-05:30	16	114	130	11:15-11:30	30	45	75	05:15-05:30	123	35	158	11:15-11:30	17	0	17
05:30-05:45	16	121	137	11:30-11:45	35	47	82	05:30-05:45	114	44	158	11:30-11:45	10	7	17
05:45-06:00	19	124	143	11:45-12:00	31	33	64	05:45-06:00	83	38	121	11:45-12:00	13	3	16

AM COMMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	
TWO DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM		
AM - PEAK HR VOLUME	324	480	804
AM - K FACTOR (%)			9.74
AM - D (%)	40.30	59.70	100.00
DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM	05:45 AM to 06:45 AM	
AM - PEAK HR VOLUME	324	486	

PM COMMUTER PERIOD (15:00-19:00)	DIR 1	DIR 2	
TWO DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:00 PM to 05:00 PM		
PM - PEAK HR VOLUME	451	270	721
PM - K FACTOR (%)			8.74
PM - D (%)	62.55	37.45	100.00
DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:30 PM to 05:30 PM	03:15 PM to 04:15 PM	
PM - PEAK HR VOLUME	484	313	

AM PERIOD (00:00-12:00)			
TWO DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM		
AM - PEAK HR VOLUME	324	480	804
AM - K FACTOR (%)			9.74
AM - D (%)	40.30	59.70	100.00

PM PERIOD (12:00-24:00)			
TWO DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:00 PM to 05:00 PM		
PM - PEAK HR VOLUME	451	270	721
PM - K FACTOR (%)			8.74
PM - D (%)	62.55	37.45	100.00

NON-COMMUTER PERIOD (09:00-15:00)			
TWO DIRECTIONAL PEAK			
PEAK HR TIME	02:00 PM to 03:00 PM		
PEAK HR VOLUME	233	242	475
DIRECTIONAL PEAK			
PEAK HR TIME	02:00 PM to 03:00 PM	02:00 PM to 03:00 PM	
PEAK HR VOLUME	233	242	

6-HR, 12-HR, 24-HR PERIODS	DIR 1	DIR 2	Total
AM 6-HR PERIOD (06:00-12:00)	1,113	1,763	2,876
AM 12-HR PERIOD (00:00-12:00)	1,257	2,357	3,614
PM 6-HR PERIOD (12:00-18:00)	1,808	1,321	3,129
PM 12-HR PERIOD (12:00-24:00)	2,902	1,735	4,637
24 HOUR PERIOD	4,159	4,092	8,251
D (%)	50.41	49.59	100.00

Run Date: 2010/12/09

Hawaii Department of Transportation
Highways Division **Highways Planning Survey Section**
2010 Program Count - Summary

Site ID: B72893000124 **Town:** Oahu **DIR 1:** +MP **DIR 2:**-MP **Final AADT:** 0
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER **Count Type:**CLASS **Counter Type:** Tube **Route No:** 8930
Location: Kualakai Pkwy b/t Farrington Hwy _Kapolei Pkwy

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 10/20/2010															
12:00-12:15	7	3	10	06:00-06:15	33	130	163	12:00-12:15	42	32	74	06:00-06:15	97	55	152
12:15-12:30	11	2	13	06:15-06:30	48	139	187	12:15-12:30	43	54	97	06:15-06:30	105	37	142
12:30-12:45	8	3	11	06:30-06:45	67	153	220	12:30-12:45	53	39	92	06:30-06:45	85	42	127
12:45-01:00	6	6	12	06:45-07:00	46	170	216	12:45-01:00	53	53	106	06:45-07:00	81	35	116
01:00-01:15	5	1	6	07:00-07:15	60	144	204	01:00-01:15	40	46	86	07:00-07:15	73	27	100
01:15-01:30	4	2	6	07:15-07:30	103	182	285	01:15-01:30	49	49	98	07:15-07:30	71	25	96
01:30-01:45	2	2	4	07:30-07:45	89	143	232	01:30-01:45	52	43	95	07:30-07:45	44	26	70
01:45-02:00	7	2	9	07:45-08:00	76	141	217	01:45-02:00	65	57	122	07:45-08:00	48	16	64
02:00-02:15	5	3	8	08:00-08:15	43	101	144	02:00-02:15	53	75	128	08:00-08:15	41	13	54
02:15-02:30	6	1	7	08:15-08:30	47	66	113	02:15-02:30	87	42	129	08:15-08:30	51	18	69
02:30-02:45	8	1	9	08:30-08:45	44	67	111	02:30-02:45	53	49	102	08:30-08:45	48	12	60
02:45-03:00	5	4	9	08:45-09:00	47	56	103	02:45-03:00	76	56	132	08:45-09:00	37	15	52
03:00-03:15	3	2	5	09:00-09:15	43	44	87	03:00-03:15	65	70	135	09:00-09:15	45	23	68
03:15-03:30	2	10	12	09:15-09:30	37	46	83	03:15-03:30	94	57	151	09:15-09:30	39	19	58
03:30-03:45	0	2	2	09:30-09:45	47	56	103	03:30-03:45	96	84	180	09:30-09:45	40	10	50
03:45-04:00	2	12	14	09:45-10:00	48	45	93	03:45-04:00	68	78	146	09:45-10:00	30	12	42
04:00-04:15	2	15	17	10:00-10:15	48	34	82	04:00-04:15	102	70	172	10:00-10:15	35	20	55
04:15-04:30	1	32	33	10:15-10:30	37	42	79	04:15-04:30	91	67	158	10:15-10:30	25	13	38
04:30-04:45	4	34	38	10:30-10:45	36	41	77	04:30-04:45	117	70	187	10:30-10:45	18	11	29
04:45-05:00	12	40	52	10:45-11:00	53	40	93	04:45-05:00	110	66	176	10:45-11:00	19	6	25
05:00-05:15	9	84	93	11:00-11:15	41	44	85	05:00-05:15	108	53	161	11:00-11:15	12	8	20
05:15-05:30	13	94	107	11:15-11:30	24	40	64	05:15-05:30	122	64	186	11:15-11:30	14	6	20
05:30-05:45	18	135	153	11:30-11:45	36	53	89	05:30-05:45	112	39	151	11:30-11:45	7	3	10
05:45-06:00	23	122	145	11:45-12:00	39	32	71	05:45-06:00	79	49	128	11:45-12:00	15	4	19

AM COMMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	
TWO DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM		
AM - PEAK HR VOLUME	328	610	938
AM - K FACTOR (%)			10.78
AM - D (%)	34.97	65.03	100.00
DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM	06:30 AM to 07:30 AM	
AM - PEAK HR VOLUME	328	649	

PM COMMUTER PERIOD (15:00-19:00)	DIR 1	DIR 2	
TWO DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:30 PM to 05:30 PM		
PM - PEAK HR VOLUME	457	253	710
PM - K FACTOR (%)			8.16
PM - D (%)	64.37	35.63	100.00
DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:30 PM to 05:30 PM	03:30 PM to 04:30 PM	
PM - PEAK HR VOLUME	457	299	

AM PERIOD (00:00-12:00)			
TWO DIRECTIONAL PEAK			
AM - PEAK HR TIME	07:00 AM to 08:00 AM		
AM - PEAK HR VOLUME	328	610	938
AM - K FACTOR (%)			10.78
AM - D (%)	34.97	65.03	100.00

PM PERIOD (12:00-24:00)			
TWO DIRECTIONAL PEAK			
PM - PEAK HR TIME	04:30 PM to 05:30 PM		
PM - PEAK HR VOLUME	457	253	710
PM - K FACTOR (%)			8.16
PM - D (%)	64.37	35.63	100.00

NON-COMMUTER PERIOD (09:00-15:00)			
TWO DIRECTIONAL PEAK			
PEAK HR TIME	02:00 PM to 03:00 PM		
PEAK HR VOLUME	269	222	491
DIRECTIONAL PEAK			
PEAK HR TIME	02:00 PM to 03:00 PM	01:15 PM to 02:15 PM	
PEAK HR VOLUME	269	224	

6-HR, 12-HR, 24-HR PERIODS	DIR 1	DIR 2	Total
AM 6-HR PERIOD (06:00-12:00)	1,192	2,009	3,201
AM 12-HR PERIOD (00:00-12:00)	1,355	2,621	3,976
PM 6-HR PERIOD (12:00-18:00)	1,830	1,362	3,192
PM 12-HR PERIOD (12:00-24:00)	2,910	1,818	4,728
24 HOUR PERIOD	4,265	4,439	8,704
D (%)	49.00	51.00	100.00

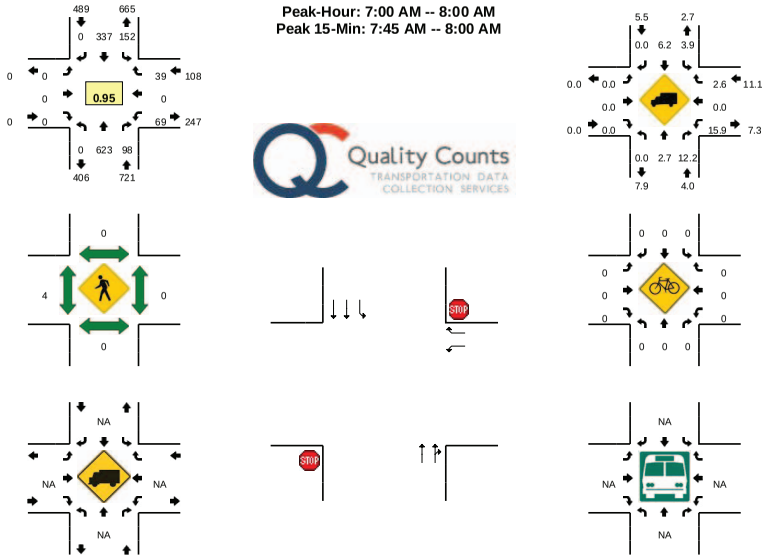
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kualakai Pkwy -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367901
DATE: Thu, Apr 23 2015

Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



15-Min Count Period Beginning At	Kualakai Pkwy (Northbound)				Kualakai Pkwy (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	159	10	0	10	30	0	2	0	0	0	0	10	0	13	0	234	
6:15 AM	0	140	4	0	19	54	0	1	0	0	0	0	9	0	7	0	234	
6:30 AM	0	154	12	0	19	57	0	4	0	0	0	0	7	0	11	0	264	
6:45 AM	0	155	18	1	15	54	0	3	0	0	0	0	16	0	9	0	271	1003
7:00 AM	0	167	17	0	19	92	0	2	0	0	0	0	14	0	9	0	320	1089
7:15 AM	0	154	17	0	30	75	0	1	0	0	0	0	20	0	10	0	307	1162
7:30 AM	0	147	23	0	55	92	0	0	0	0	0	0	18	0	10	0	345	1243
7:45 AM	0	155	41	0	45	78	0	0	0	0	0	0	17	0	10	0	346	1318
8:00 AM	0	123	42	0	31	48	0	0	0	0	0	0	18	0	11	0	273	1271
8:15 AM	0	108	26	0	17	64	0	0	0	0	0	0	16	0	12	0	243	1207
8:30 AM	0	90	19	0	11	36	0	0	0	0	0	1	9	0	10	0	176	1038
8:45 AM	0	88	21	0	11	35	0	0	0	0	0	0	17	0	10	0	182	874

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	620	164	0	180	312	0	0	0	0	0	0	68	0	40	0	1384
Heavy Trucks	0	16	12		4	44	0		0	0	0		4	0	0		80
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/4/2015 4:24 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

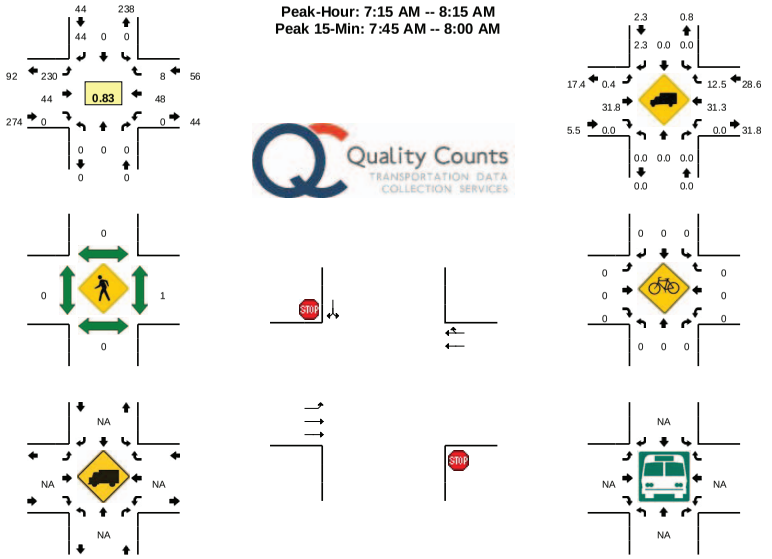
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Maunakapu St -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367905
DATE: Thu, Apr 23 2015

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



15-Min Count Period Beginning At	Maunakapu St (Northbound)				Maunakapu St (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	9	0	13	8	0	0	0	8	0	0	38	
6:15 AM	0	0	0	0	0	0	7	0	15	8	0	0	0	3	1	0	34	
6:30 AM	0	0	0	0	0	0	5	0	23	5	0	0	0	14	0	0	47	
6:45 AM	0	0	0	0	1	0	9	0	32	4	0	0	0	11	1	0	58	177
7:00 AM	0	0	0	0	0	0	11	0	26	10	0	0	0	13	0	0	60	199
7:15 AM	0	0	0	0	0	0	12	0	36	9	0	0	0	16	1	0	74	239
7:30 AM	0	0	0	0	0	0	7	0	72	6	0	0	0	15	0	0	100	292
7:45 AM	0	0	0	0	0	0	14	0	69	12	0	0	0	10	7	0	112	346
8:00 AM	0	0	0	0	0	0	11	0	53	17	0	0	0	7	0	0	88	374
8:15 AM	0	0	0	0	0	0	12	0	37	6	0	0	0	9	0	0	64	364
8:30 AM	0	0	0	0	1	0	8	0	28	5	0	0	0	7	1	0	50	314
8:45 AM	0	0	0	0	0	0	10	0	23	9	0	0	0	10	0	0	52	254

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	56	0	276	48	0	0	0	40	28	0	448
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	8	4		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/4/2015 4:24 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

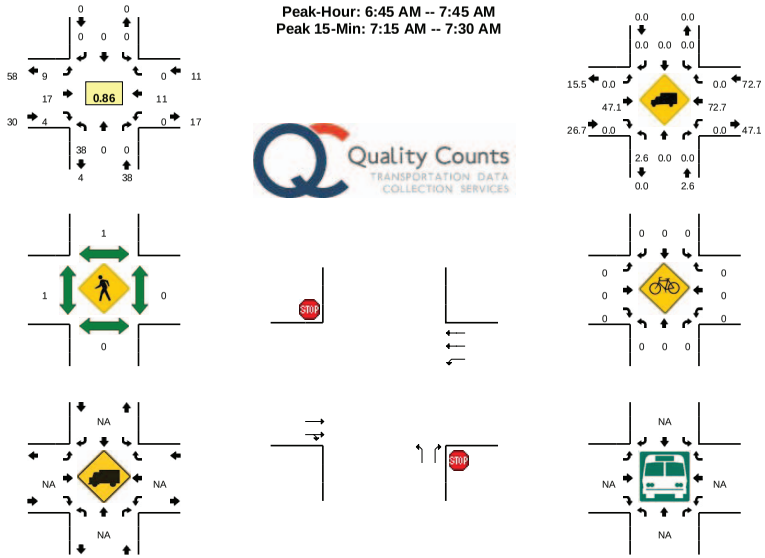
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kooloaula Main Dwy -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367903
DATE: Thu, Apr 23 2015

Peak-Hour: 6:45 AM -- 7:45 AM
Peak 15-Min: 7:15 AM -- 7:30 AM



15-Min Count Period Beginning At	Kooloaula Main Dwy (Northbound)				Kooloaula Main Dwy (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	7	0	0	0	0	0	0	0	0	4	0	1	0	1	0	0	13	
6:15 AM	3	0	0	0	0	0	0	0	0	7	1	0	0	1	0	0	12	
6:30 AM	9	0	0	0	0	0	0	0	0	2	1	2	0	1	0	0	15	
6:45 AM	8	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	14	54
7:00 AM	12	0	0	0	0	0	0	0	0	6	1	3	0	0	0	0	22	63
7:15 AM	9	0	0	0	0	0	0	0	0	4	2	4	0	4	0	0	23	74
7:30 AM	9	0	0	0	0	0	0	0	0	3	1	2	0	5	0	0	20	79
7:45 AM	5	0	0	0	0	0	0	0	0	3	1	3	0	2	0	0	14	79
8:00 AM	2	0	0	0	0	0	0	0	0	6	7	1	0	4	0	0	20	77
8:15 AM	5	0	0	0	0	0	0	0	0	4	3	1	0	5	0	0	18	72
8:30 AM	4	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	10	62
8:45 AM	5	0	0	0	0	0	0	0	0	5	2	2	0	3	0	0	17	65

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	0	0	0	0	0	0	0	0	16	8	16	0	16	0	0	92
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	12	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/4/2015 4:24 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

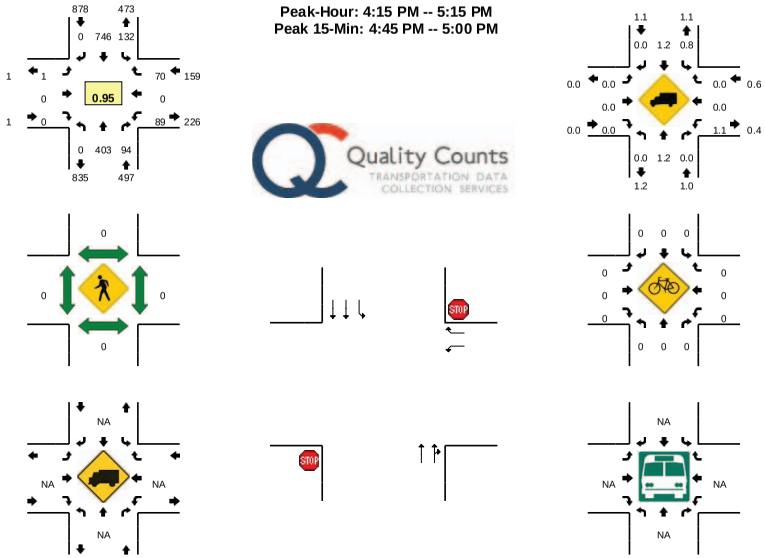
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kualakai Pkwy -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367902
DATE: Thu, Apr 23 2015

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:45 PM -- 5:00 PM



15-Min Count Period Beginning At	Kualakai Pkwy (Northbound)				Kualakai Pkwy (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	69	11	0	14	85	0	0	0	0	0	0	22	0	13	0	214	
2:15 PM	0	98	15	0	10	118	0	0	0	0	0	0	13	0	13	0	267	
2:30 PM	0	82	11	0	15	123	0	0	0	0	0	0	14	0	23	0	268	
2:45 PM	0	92	13	0	19	113	0	0	0	0	0	0	19	0	18	0	274	1023
3:00 PM	0	101	19	1	12	149	0	0	0	0	0	1	25	0	44	0	352	1161
3:15 PM	0	90	16	0	22	152	0	0	0	0	0	0	12	0	15	0	307	1201
3:30 PM	0	130	12	1	19	153	0	0	0	0	0	0	20	0	35	0	370	1303
3:45 PM	0	116	24	0	22	168	0	0	0	0	0	1	20	0	34	0	385	1414
4:00 PM	0	95	19	0	10	164	0	0	0	0	0	1	17	0	26	0	332	1394
4:15 PM	0	91	21	0	31	177	0	0	0	0	0	0	16	0	15	0	351	1438
4:30 PM	0	113	13	0	24	193	0	0	0	0	0	0	28	0	16	0	387	1455
4:45 PM	0	101	35	0	51	181	0	0	0	0	0	0	20	0	16	0	404	1474
5:00 PM	0	98	25	0	26	195	0	0	0	0	0	1	25	0	23	0	393	1535
5:15 PM	0	59	20	0	20	169	0	0	0	0	0	1	27	0	19	0	315	1499
5:30 PM	0	91	11	0	18	161	0	0	0	0	0	1	12	0	19	0	313	1425
5:45 PM	0	62	22	0	18	138	0	0	0	0	0	0	19	0	13	0	272	1293

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	404	140	0	204	724	0	0	0	0	0	0	80	0	64	0	1616
Heavy Trucks	0	8	0		4	4	0		0	0	0		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/4/2015 4:24 PM

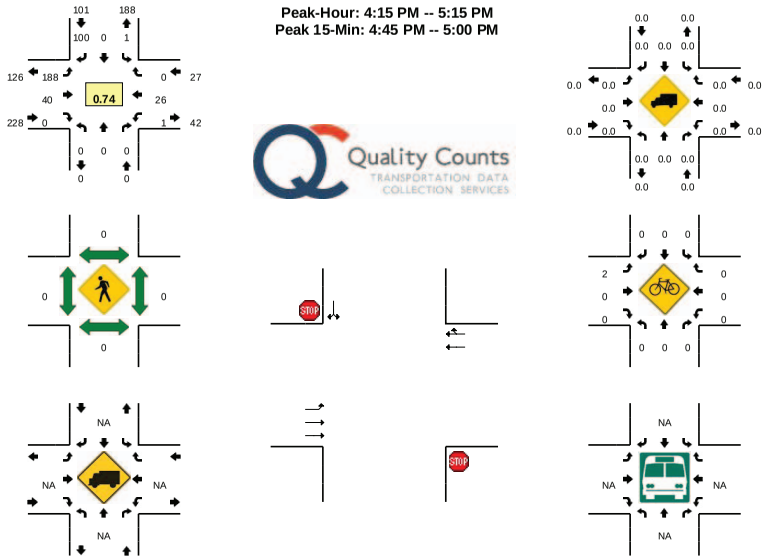
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Maunakapu St -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367906
DATE: Thu, Apr 23 2015

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:45 PM -- 5:00 PM



15-Min Count Period Beginning At	Maunakapu St (Northbound)				Maunakapu St (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	0	0	12	0	13	17	0	0	0	8	0	0	50	
2:15 PM	0	0	0	0	0	0	12	0	13	13	0	0	0	9	0	0	47	
2:30 PM	0	0	0	0	0	0	19	0	17	10	0	0	0	7	0	1	54	
2:45 PM	0	0	0	0	0	0	12	0	22	12	0	0	0	15	0	0	61	212
3:00 PM	0	0	0	0	1	0	46	0	23	11	0	0	0	11	0	0	92	254
3:15 PM	0	0	0	0	0	0	17	0	21	13	0	0	0	9	2	0	62	269
3:30 PM	0	0	0	0	0	0	29	0	24	8	0	0	0	12	1	1	75	290
3:45 PM	0	0	0	0	0	0	27	0	38	9	0	1	0	11	0	0	86	315
4:00 PM	0	0	0	0	0	0	28	0	26	4	0	1	0	2	1	0	62	285
4:15 PM	0	0	0	0	0	0	18	0	43	7	0	0	0	8	0	0	76	299
4:30 PM	0	0	0	0	0	0	25	0	35	5	0	0	0	5	0	0	70	294
4:45 PM	0	0	0	0	1	0	28	0	70	15	0	0	0	5	0	1	120	328
5:00 PM	0	0	0	0	0	0	29	0	40	13	0	0	0	8	0	0	90	356
5:15 PM	0	0	0	0	0	0	23	0	34	5	0	0	0	5	1	0	68	348
5:30 PM	0	0	0	0	1	0	18	0	20	8	0	0	0	4	0	0	51	329
5:45 PM	0	0	0	0	0	0	13	0	33	7	0	0	0	8	0	0	61	270

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	112	0	280	60	0	0	0	20	0	4	480
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		1	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

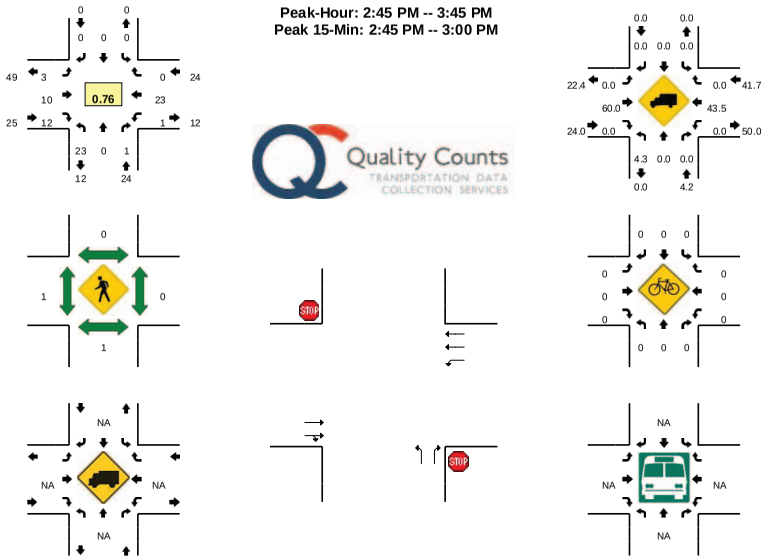
Report generated on 5/4/2015 4:24 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Kooloaula Main Dwy -- Keahumoa Pkwy
CITY/STATE: Ewa Beach, HI

QC JOB #: 13367904
DATE: Thu, Apr 23 2015

Peak-Hour: 2:45 PM -- 3:45 PM
Peak 15-Min: 2:45 PM -- 3:00 PM



15-Min Count Period Beginning At	Kooloaula Main Dwy (Northbound)				Kooloaula Main Dwy (Southbound)				Keahumoa Pkwy (Eastbound)				Keahumoa Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	2	0	1	0	0	0	0	0	0	7	3	0	0	6	0	0	19	
2:15 PM	4	0	0	0	0	0	0	0	0	5	1	0	0	5	0	0	15	
2:30 PM	1	0	0	0	0	0	0	0	0	4	2	3	0	3	0	1	14	
2:45 PM	8	0	1	0	0	0	0	0	0	3	5	3	0	4	0	0	24	72
3:00 PM	4	0	0	0	0	0	0	0	0	2	2	0	0	6	0	0	14	67
3:15 PM	5	0	0	0	0	0	0	0	0	3	4	0	0	6	0	1	19	71
3:30 PM	6	0	0	0	0	0	0	0	0	2	1	0	0	7	0	0	16	73
3:45 PM	9	0	0	1	0	0	0	0	0	2	3	1	0	0	0	0	16	65
4:00 PM	4	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	6	57
4:15 PM	6	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	12	50
4:30 PM	4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	6	40
4:45 PM	6	0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	12	36
5:00 PM	6	0	0	0	0	0	0	0	0	1	3	2	0	0	0	0	12	42
5:15 PM	4	0	0	0	0	0	0	0	0	1	3	1	1	1	0	0	11	41
5:30 PM	4	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	7	42
5:45 PM	6	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	10	40

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	0	4	0	0	0	0	0	0	12	20	12	0	16	0	0	96
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	12	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/4/2015 4:24 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B

Analysis Reports
Existing (2015) Conditions

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	69	39	623	98	152	337
Future Vol, veh/h	69	39	623	98	152	337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	325	0	-	-	800	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	41	656	103	160	355

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1204	379	0	0	759	0
Stage 1	707	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	177	619	-	-	848	-
Stage 1	450	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	144	619	-	-	848	-
Mov Cap-2 Maneuver	144	-	-	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	468	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38	0	3.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	144	619	848	-
HCM Lane V/C Ratio	-	-	0.504	0.066	0.189	-
HCM Control Delay (s)	-	-	53.1	11.2	10.2	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	2.4	0.2	0.7	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	230	44	48	8	0	44
Future Vol, veh/h	230	44	48	8	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	277	53	58	10	0	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	67	0	-	0	644	34
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	581	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1533	-	-	-	405	1032
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	522	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1533	-	-	-	332	1032
Mov Cap-2 Maneuver	-	-	-	-	332	-
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	428	-

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1533	-	-	-	1032
HCM Lane V/C Ratio	0.181	-	-	-	0.051
HCM Control Delay (s)	7.9	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.7	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	17	4	0	11	38	0
Future Vol, veh/h	17	4	0	11	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	5	0	13	44	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	24	0	28	12
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1589	-	983	1065
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	1016	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1589	-	983	1065
Mov Cap-2 Maneuver	-	-	-	-	983	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	1016	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	983	-	-	-	1589	-
HCM Lane V/C Ratio	0.045	-	-	-	-	-
HCM Control Delay (s)	8.8	0	-	-	0	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	89	70	403	94	132	746
Future Vol, veh/h	89	70	403	94	132	746
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	325	0	-	-	800	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	74	424	99	139	785

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1145	262	0	0	523	0
Stage 1	474	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	193	737	-	-	1040	-
Stage 1	592	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	737	-	-	1040	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.2	0	1.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	167	737	1040	-
HCM Lane V/C Ratio	-	-	0.561	0.1	0.134	-
HCM Control Delay (s)	-	-	51.1	10.4	9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	2.9	0.3	0.5	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	188	40	26	0	1	100
Future Vol, veh/h	188	40	26	0	1	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	54	35	0	1	135

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	570	18
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1575	-	-	-	452	1056
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1575	-	-	-	379	1056
Mov Cap-2 Maneuver	-	-	-	-	379	-
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	462	-

Approach	EB	WB	SB
HCM Control Delay, s	6.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	1038
HCM Lane V/C Ratio	0.161	-	-	-	0.131
HCM Control Delay (s)	7.7	-	-	-	9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	10	12	1	23	23	1
Future Vol, veh/h	10	12	1	23	23	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	16	1	30	30	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	29	0	39	14
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	18	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1582	-	968	1062
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	1002	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1582	-	967	1062
Mov Cap-2 Maneuver	-	-	-	-	967	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	967	1062	-	-	1582	-
HCM Lane V/C Ratio	0.031	0.001	-	-	0.001	-
HCM Control Delay (s)	8.8	8.4	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Appendix C

Analysis Reports
Future (2019) Without Project Conditions

Intersection	
Int Delay, s/veh	61

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	171	100	770	125	179	451
Future Vol, veh/h	171	100	770	125	179	451
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	325	0	-	-	800	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	180	105	811	132	188	475

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1490	471	0	0	942	0
Stage 1	876	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 115	539	-	-	724	-
Stage 1	368	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 85	539	-	-	724	-
Mov Cap-2 Maneuver	~ 85	-	-	-	-	-
Stage 1	368	-	-	-	-	-
Stage 2	372	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 396.6	0	3.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	85	539	724	-
HCM Lane V/C Ratio	-	-	2.118	0.195	0.26	-
HCM Control Delay (s)	-	-	$ 620.7	13.3	11.7	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	16.1	0.7	1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	257	71	130	8	0	125
Future Vol, veh/h	257	71	130	8	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	310	86	157	10	0	151

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	166	0	-	0	823	83
Stage 1	-	-	-	-	161	-
Stage 2	-	-	-	-	662	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1410	-	-	-	312	960
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	475	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	243	960
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	371	-

Approach	EB	WB	SB
HCM Control Delay, s	6.5	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1410	-	-	-	960
HCM Lane V/C Ratio	0.22	-	-	-	0.157
HCM Control Delay (s)	8.3	-	-	-	9.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.8	-	-	-	0.6

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	44	4	0	93	38	0
Future Vol, veh/h	44	4	0	93	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	5	0	108	44	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	56	0	107	28
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1547	-	879	1041
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1547	-	879	1041
Mov Cap-2 Maneuver	-	-	-	-	879	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	879	-	-	-	1547	-
HCM Lane V/C Ratio	0.05	-	-	-	-	-
HCM Control Delay (s)	9.3	0	-	-	0	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	-	0	-

Intersection	
Int Delay, s/veh	79.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	157	110	626	184	226	1020
Future Vol, veh/h	157	110	626	184	226	1020
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	325	0	-	-	800	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	116	659	194	238	1074

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1769	426	0	0	853	0
Stage 1	756	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 75	577	-	-	782	-
Stage 1	424	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 52	577	-	-	782	-
Mov Cap-2 Maneuver	~ 52	-	-	-	-	-
Stage 1	424	-	-	-	-	-
Stage 2	217	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 679.6	0	2.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	52	577	782	-
HCM Lane V/C Ratio	-	-	3.178	0.201	0.304	-
HCM Control Delay (s)	-	$	1146.7	12.8	11.6	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	17.7	0.7	1.3	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	280	132	80	0	1	154
Future Vol, veh/h	280	132	80	0	1	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	378	178	108	0	1	208

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	108	0	-	0	954	54
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	846	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1480	-	-	-	257	1002
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1480	-	-	-	191	1002
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	284	-

Approach	EB	WB	SB
HCM Control Delay, s	5.6	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1480	-	-	-	975
HCM Lane V/C Ratio	0.256	-	-	-	0.215
HCM Control Delay (s)	8.3	-	-	-	9.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	1	-	-	-	0.8

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	102	12	1	77	23	1
Future Vol, veh/h	102	12	1	77	23	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	16	1	101	30	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	150	0	195	75
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1429	-	776	971
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	963	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1429	-	775	971
Mov Cap-2 Maneuver	-	-	-	-	775	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	775	971	-	-	1429	-
HCM Lane V/C Ratio	0.039	0.001	-	-	0.001	-
HCM Control Delay (s)	9.8	8.7	-	-	7.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	171	100	770	125	179	451
Future Volume (veh/h)	171	100	770	125	179	451
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	180	105	811	132	188	475
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	272	243	1200	195	240	2247
Arrive On Green	0.15	0.15	0.39	0.39	0.14	0.63
Sat Flow, veh/h	1774	1583	3142	496	1774	3632
Grp Volume(v), veh/h	180	105	471	472	188	475
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1775	1774	1770
Q Serve(g_s), s	4.1	2.6	9.3	9.3	4.4	2.4
Cycle Q Clear(g_c), s	4.1	2.6	9.3	9.3	4.4	2.4
Prop In Lane	1.00	1.00		0.28	1.00	
Lane Grp Cap(c), veh/h	272	243	696	698	240	2247
V/C Ratio(X)	0.66	0.43	0.68	0.68	0.78	0.21
Avail Cap(c_a), veh/h	751	671	833	835	355	2748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	16.3	10.6	10.6	17.8	3.3
Incr Delay (d2), s/veh	2.7	1.2	1.7	1.7	6.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.2	4.8	4.8	2.6	1.1
LnGrp Delay(d),s/veh	19.7	17.5	12.3	12.3	24.4	3.3
LnGrp LOS	B	B	B	B	C	A
Approach Vol, veh/h	285		943			663
Approach Delay, s/veh	18.9		12.3			9.3
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.3	21.2				31.5		11.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	8.5	20.0				33.0		18.0
Max Q Clear Time (g_c+I1), s	6.4	11.3				4.4		6.1
Green Ext Time (p_c), s	0.1	5.4				10.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	157	110	626	184	226	1020
Future Volume (veh/h)	157	110	626	184	226	1020
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	165	116	659	194	238	1074
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	228	1021	300	300	2301
Arrive On Green	0.14	0.14	0.38	0.38	0.17	0.65
Sat Flow, veh/h	1774	1583	2792	794	1774	3632
Grp Volume(v), veh/h	165	116	432	421	238	1074
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1723	1774	1770
Q Serve(g_s), s	3.8	3.0	8.8	8.8	5.6	6.7
Cycle Q Clear(g_c), s	3.8	3.0	8.8	8.8	5.6	6.7
Prop In Lane	1.00	1.00		0.46	1.00	
Lane Grp Cap(c), veh/h	256	228	669	652	300	2301
V/C Ratio(X)	0.64	0.51	0.65	0.65	0.79	0.47
Avail Cap(c_a), veh/h	730	651	728	709	426	2670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	17.3	11.2	11.2	17.5	3.8
Incr Delay (d2), s/veh	2.7	1.7	1.8	1.8	6.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.4	4.5	4.4	3.3	3.2
LnGrp Delay(d),s/veh	20.4	19.0	12.9	13.0	24.1	4.0
LnGrp LOS	C	B	B	B	C	A
Approach Vol, veh/h	281		853			1312
Approach Delay, s/veh	19.8		13.0			7.6
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.9	21.0				32.9		10.8
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.5	18.0				33.0		18.0
Max Q Clear Time (g_c+I1), s	7.6	10.8				8.7		5.8
Green Ext Time (p_c), s	0.2	5.8				14.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Appendix D

Analysis Reports
Future (2019) With Project Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	435	256	770	544	280	451		
Future Volume (veh/h)	435	256	770	544	280	451		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	458	269	811	573	295	475		
Adj No. of Lanes	1	1	2	0	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	471	420	758	525	312	2175		
Arrive On Green	0.27	0.27	0.38	0.38	0.18	0.61		
Sat Flow, veh/h	1774	1583	2096	1385	1774	3632		
Grp Volume(v), veh/h	458	269	715	669	295	475		
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1618	1774	1770		
Q Serve(g_s), s	19.2	11.3	28.4	28.4	12.3	4.5		
Cycle Q Clear(g_c), s	19.2	11.3	28.4	28.4	12.3	4.5		
Prop In Lane	1.00	1.00		0.86	1.00			
Lane Grp Cap(c), veh/h	471	420	670	613	312	2175		
V/C Ratio(X)	0.97	0.64	1.07	1.09	0.94	0.22		
Avail Cap(c_a), veh/h	471	420	670	613	312	2175		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	27.3	24.4	23.3	23.3	30.5	6.4		
Incr Delay (d2), s/veh	34.4	3.3	53.9	64.0	36.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	13.8	5.3	23.8	23.5	9.1	2.2		
LnGrp Delay(d),s/veh	61.7	27.6	77.2	87.3	67.0	6.5		
LnGrp LOS	E	C	F	F	E	A		
Approach Vol, veh/h	727		1384			770		
Approach Delay, s/veh	49.1		82.1			29.7		
Approach LOS	D		F			C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.7	32.9				50.6		24.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	13.2	28.4				46.1		19.9
Max Q Clear Time (g_c+I1), s	14.3	30.4				6.5		21.2
Green Ext Time (p_c), s	0.0	0.0				19.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	59.8
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	10.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	677	171	130	8	0	545
Future Vol, veh/h	677	171	130	8	0	545
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	816	206	157	10	0	657

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	166	0	-	0	1895	83
Stage 1	-	-	-	-	161	-
Stage 2	-	-	-	-	1734	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1410	-	-	-	61	960
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	127	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	26	960
Mov Cap-2 Maneuver	-	-	-	-	26	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	54	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1410	-	-	-	960
HCM Lane V/C Ratio	0.578	-	-	-	0.684
HCM Control Delay (s)	11	-	-	-	16.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	3.9	-	-	-	5.7

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	100	44	4	0	93	0	38	0	0	0	0	0
Future Vol, veh/h	100	44	4	0	93	0	38	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	75	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	86	86	86	86	92	86	92	86	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	109	51	5	0	108	0	44	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	108	0	0	56	0	0	325	379	28
Stage 1	-	-	-	-	-	-	271	271	-
Stage 2	-	-	-	-	-	-	54	108	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1480	-	-	1547	-	-	644	552	1041
Stage 1	-	-	-	-	-	-	750	684	-
Stage 2	-	-	-	-	-	-	962	805	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1480	-	-	1547	-	-	597	0	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	597	0	-
Stage 1	-	-	-	-	-	-	695	0	-
Stage 2	-	-	-	-	-	-	962	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	597	-	1480	-	-	1547	-	-
HCM Lane V/C Ratio	0.074	-	0.073	-	-	-	-	-
HCM Control Delay (s)	11.5	0	7.6	-	-	0	-	-
HCM Lane LOS	B	A	A	-	-	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	391	186	626	316	304	1020
Future Volume (veh/h)	391	186	626	316	304	1020
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	412	196	659	333	320	1074
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	465	415	755	382	364	2137
Arrive On Green	0.26	0.26	0.33	0.33	0.21	0.60
Sat Flow, veh/h	1774	1583	2371	1151	1774	3632
Grp Volume(v), veh/h	412	196	512	480	320	1074
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1660	1774	1770
Q Serve(g_s), s	15.0	7.0	18.3	18.3	11.7	11.6
Cycle Q Clear(g_c), s	15.0	7.0	18.3	18.3	11.7	11.6
Prop In Lane	1.00	1.00		0.69	1.00	
Lane Grp Cap(c), veh/h	465	415	587	550	364	2137
V/C Ratio(X)	0.89	0.47	0.87	0.87	0.88	0.50
Avail Cap(c_a), veh/h	515	460	593	556	383	2187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	20.9	21.1	21.1	25.9	7.6
Incr Delay (d2), s/veh	15.8	0.8	13.4	14.1	19.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	3.1	11.0	10.4	7.7	5.6
LnGrp Delay(d),s/veh	39.6	21.7	34.5	35.3	45.4	7.8
LnGrp LOS	D	C	C	D	D	A
Approach Vol, veh/h	608		992			1394
Approach Delay, s/veh	33.8		34.9			16.4
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	18.3	26.8				45.1		22.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	14.5	22.5				41.5		19.5
Max Q Clear Time (g_c+I1), s	13.7	20.3				13.6		17.0
Green Ext Time (p_c), s	0.1	2.0				17.4		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	490	132	80	0	1	464
Future Vol, veh/h	490	132	80	0	1	464
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	662	178	108	0	1	627

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	108	0	-	0	1522	54
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	1414	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1480	-	-	-	109	1002
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	190	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1480	-	-	-	60	1002
Mov Cap-2 Maneuver	-	-	-	-	60	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	105	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1480	-	-	-	969
HCM Lane V/C Ratio	0.447	-	-	-	0.648
HCM Control Delay (s)	9.4	-	-	-	15.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	2.4	-	-	-	5

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	102	12	1	77	0	23	0	1	0	0	0
Future Vol, veh/h	0	102	12	1	77	0	23	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	75	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	76	76	76	76	92	76	92	76	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	134	16	1	101	0	30	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	101	0	0	150	0	0	195	246	75
Stage 1	-	-	-	-	-	-	142	142	-
Stage 2	-	-	-	-	-	-	53	104	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1489	-	-	1429	-	-	776	655	971
Stage 1	-	-	-	-	-	-	870	778	-
Stage 2	-	-	-	-	-	-	963	808	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1489	-	-	1429	-	-	775	0	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	775	0	-
Stage 1	-	-	-	-	-	-	870	0	-
Stage 2	-	-	-	-	-	-	962	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	775	971	1489	-	-	1429	-	-
HCM Lane V/C Ratio	0.039	0.001	-	-	-	0.001	-	-
HCM Control Delay (s)	9.8	8.7	0	-	-	7.5	-	-
HCM Lane LOS	A	A	A	-	-	A	-	-
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	435	256	770	544	280	451
Future Volume (veh/h)	435	256	770	544	280	451
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	458	269	811	573	295	475
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	517	461	1100	492	343	2025
Arrive On Green	0.29	0.29	0.31	0.31	0.19	0.57
Sat Flow, veh/h	1774	1583	3632	1583	1774	3632
Grp Volume(v), veh/h	458	269	811	573	295	475
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1583	1774	1770
Q Serve(g_s), s	16.3	9.6	13.5	20.5	10.6	4.4
Cycle Q Clear(g_c), s	16.3	9.6	13.5	20.5	10.6	4.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	517	461	1100	492	343	2025
V/C Ratio(X)	0.89	0.58	0.74	1.16	0.86	0.23
Avail Cap(c_a), veh/h	578	516	1100	492	390	2120
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	20.0	20.3	22.7	25.7	7.0
Incr Delay (d2), s/veh	14.3	1.4	2.6	94.2	16.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	4.3	6.9	21.8	6.7	2.1
LnGrp Delay(d),s/veh	36.6	21.3	22.9	116.9	41.8	7.0
LnGrp LOS	D	C	C	F	D	A
Approach Vol, veh/h	727		1384			770
Approach Delay, s/veh	31.0		61.8			20.3
Approach LOS	C		E			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.2	25.0				42.2		23.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	14.5	20.5				39.5		21.5
Max Q Clear Time (g_c+I1), s	12.6	22.5				6.4		18.3
Green Ext Time (p_c), s	0.2	0.0				14.5		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	42.9
HCM 2010 LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	391	186	626	316	304	1020
Future Volume (veh/h)	391	186	626	316	304	1020
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	412	196	659	333	320	1074
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	475	424	1046	468	373	2057
Arrive On Green	0.27	0.27	0.30	0.30	0.21	0.58
Sat Flow, veh/h	1774	1583	3632	1583	1774	3632
Grp Volume(v), veh/h	412	196	659	333	320	1074
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1583	1774	1770
Q Serve(g_s), s	13.2	6.2	9.6	11.2	10.4	10.9
Cycle Q Clear(g_c), s	13.2	6.2	9.6	11.2	10.4	10.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	475	424	1046	468	373	2057
V/C Ratio(X)	0.87	0.46	0.63	0.71	0.86	0.52
Avail Cap(c_a), veh/h	550	491	1098	491	431	2226
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	18.2	18.2	18.7	22.7	7.5
Incr Delay (d2), s/veh	12.4	0.8	1.1	4.5	14.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	2.8	4.8	5.5	6.5	5.3
LnGrp Delay(d),s/veh	33.2	19.0	19.3	23.3	36.9	7.7
LnGrp LOS	C	B	B	C	D	A
Approach Vol, veh/h	608		992			1394
Approach Delay, s/veh	28.6		20.6			14.4
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	22.1				39.1		20.5
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	14.5	18.5				37.5		18.5
Max Q Clear Time (g_c+I1), s	12.4	13.2				12.9		15.2
Green Ext Time (p_c), s	0.2	4.4				15.2		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	435	256	770	544	280	451
Future Volume (veh/h)	435	256	770	544	280	451
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	458	269	811	0	295	475
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	523	467	1048	469	345	1990
Arrive On Green	0.29	0.29	0.30	0.00	0.19	0.56
Sat Flow, veh/h	1774	1583	3632	1583	1774	3632
Grp Volume(v), veh/h	458	269	811	0	295	475
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1583	1774	1770
Q Serve(g_s), s	15.5	9.1	13.2	0.0	10.1	4.3
Cycle Q Clear(g_c), s	15.5	9.1	13.2	0.0	10.1	4.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	523	467	1048	469	345	1990
V/C Ratio(X)	0.88	0.58	0.77	0.00	0.85	0.24
Avail Cap(c_a), veh/h	605	540	1152	515	408	2219
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	18.9	20.2	0.0	24.5	7.0
Incr Delay (d2), s/veh	12.3	1.1	3.1	0.0	14.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	4.1	6.9	0.0	6.3	2.1
LnGrp Delay(d),s/veh	33.4	20.0	23.3	0.0	38.7	7.0
LnGrp LOS	C	B	C		D	A
Approach Vol, veh/h	727		811			770
Approach Delay, s/veh	28.4		23.3			19.1
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.8	23.2				39.9		23.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	14.5	20.5				39.5		21.5
Max Q Clear Time (g_c+I1), s	12.1	15.2				6.3		17.5
Green Ext Time (p_c), s	0.2	3.5				10.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	391	186	626	316	304	1020
Future Volume (veh/h)	391	186	626	316	304	1020
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	412	196	659	0	320	1074
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	478	426	1022	457	374	2041
Arrive On Green	0.27	0.27	0.29	0.00	0.21	0.58
Sat Flow, veh/h	1774	1583	3632	1583	1774	3632
Grp Volume(v), veh/h	412	196	659	0	320	1074
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1583	1774	1770
Q Serve(g_s), s	12.9	6.0	9.5	0.0	10.1	10.8
Cycle Q Clear(g_c), s	12.9	6.0	9.5	0.0	10.1	10.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	478	426	1022	457	374	2041
V/C Ratio(X)	0.86	0.46	0.65	0.00	0.86	0.53
Avail Cap(c_a), veh/h	562	501	1121	501	440	2272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	17.8	18.2	0.0	22.2	7.5
Incr Delay (d2), s/veh	11.6	0.8	1.1	0.0	13.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	2.7	4.7	0.0	6.4	5.3
LnGrp Delay(d),s/veh	31.9	18.6	19.3	0.0	35.7	7.7
LnGrp LOS	C	B	B		D	A
Approach Vol, veh/h	608		659			1394
Approach Delay, s/veh	27.6		19.3			14.1
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.8	21.4				38.2		20.2
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	14.5	18.5				37.5		18.5
Max Q Clear Time (g_c+I1), s	12.1	11.5				12.8		14.9
Green Ext Time (p_c), s	0.2	5.4				13.7		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Appendix F: Final Site Assessment Report

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME LEINAALA FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File: EHA/HEER Office

08-030 MGC

January 16, 2008

Mr. Morris Atta
Department of Land and Natural Resources
1151 Punchbowl St., Room 130
Honolulu, Hawaii 96813

Mr. Darell Ing
Department of Hawaiian Homelands
P.O. Box 1879
Honolulu, Hawaii 96805

Facility: East Kapolei Affordable Housing Project - Agricultural Property

Subject: Review of Final Site Assessment Report
No Further Action Determination

Dear Mr. Atta and Mr. Ing:

The Final Site Assessment Report prepared by Tetra Tech dated December 12, 2007 for East Kapolei Affordable Housing Project –Agricultural Property was reviewed. The investigation succeeded in collecting sufficient information to determine if the site is suitable for future residential development. The site investigation used multi-incremental sampling by subdividing the site into 59 decision units of 5000 sq ft (approx. size of a home lot). Surface soil samples were collected and analyzed for Total Metals, Organophosphorus Pesticides, Organochlorine Pesticides, Chlorinated Herbicides and Total Dioxin/Furan.

There were no elevated concentrations of Total Metals, Organophosphorus Pesticides, Organochlorine Pesticides, and Chlorinated Herbicides detected in the soil. Although, dioxins/furans were detected, the levels were below HDOH Environmental Action Level of 390 ng/kg.

The HDOH concurs with the Tetra Tech conclusion/recommendation and agrees to a No Further Action determination for the site for the proposed residential development. However, please be aware that if new information indicates that contamination is present at the site at levels that pose a threat to public health, the environment, or natural resources, DOH might require additional investigation and clean-up work to be performed.

If you have further questions regarding this matter, please call Melody Calisay at 586-7577.

Sincerely,

KEITH E. KAWAOKA, D. Env., Program Manager
Hazard Evaluation and Emergency Response Office

RECEIVED
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HEER OFFICE

East Kapolei Affordable Housing Project
Kapolei, Oahu, Hawaii

FINAL SITE ASSESSMENT REPORT

Prepared for

Office of Hazard Evaluation and Emergency Response
Hawaii State Department of Health
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

Prepared by

Tetra Tech EM Inc.
707 Richards Street, Suite 300
Honolulu, Hawaii 96813

December 12, 2007

7 of 1

EXECUTIVE SUMMARY

A site assessment was completed at the former East Kapolei agricultural property according to project plans and data quality objectives. The purpose of the site assessment was to collect sufficient information to determine if areas of the property are currently suitable for a future residential housing development based on the methodologies presented in the sampling and analysis plan (Ecology and Environment, Inc. 2006), and data quality objectives and sampling memoranda (Tetra Tech 2006c, 2006d). The site assessment consisted of collecting and analyzing surface soil samples from decision units at the property. A summary of the field investigation, findings, and recommendations is presented below.

Field Investigation

The field investigation consisted of subdividing the site into 59 decision units. A total of 59 surface soil multi-increment samples, 6 duplicate surface soil multi-increment samples, and 4 equipment rinsate water samples were submitted for laboratory analyses. There were no deviations from the project plans and the data quality assessment indicates that the data is valid and usable.

Field Observations

No previously unidentified areas of potential agricultural chemical mixing and loading were observed during the site reconnaissance or during the site assessment sampling activities.

Investigation Results

Sample results were compared to primary screening levels established in the project plans and this report. With the exception of three dioxin samples analyzed by the XDS-Calux Bioassay method, concentrations of chemicals of potential concern in the soil within all decision units were below the action levels. Duplicate samples evaluated by EPA-approved GC/MS methodology were collected at two of the three decision units with the Calux methodology exceedences; each of the GC/MS results was below the screening values. Comparison of the two analytical methods indicates that the Calux bioassay analysis overestimates the dioxin concentrations and resulted in a consistently higher concentration of dioxin than GC/MS. However, Calux serves as an effective screening tool for dioxin analysis.

A background concentration for dioxin was calculated based on the 25 soil samples analyzed for dioxins by GC/MS. The background concentration was based on the 95th upper confidence of the maximum value detected of the 25 samples. The background level for dioxin was calculated at 93.97 nanograms per kilogram.

Recommendations

There are no elevated concentrations of chemicals of potential concern in the soil that suggest conditions are not suitable for residential reuse, or that any additional sampling or evaluation is necessary.

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Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
COPC	Contaminant of potential concern
CRA	Contingency Reserve Area
DHHL	Department of Hawaiian Homelands
DLNR	Department of Land and Natural Resources
DU	decision unit
EAL	Environmental Action Level
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
GC/MS	Gas Chromatography Mass Spectometry
GPS	Global Positioning System
HDOH	State of Hawaii, Department of Health
HEER	Hazard Evaluation and Emergency Response
IDW	investigation derived waste
LCS	laboratory control sample
MDH	Minnesota Department of Health
mg/kg	milligrams per kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ng/kg	nanograms per kilogram
OSC	Oahu Sugar Company
PARCC	precision, accuracy, representativeness, comparability, and completeness parameters
PCDD	polychlorinated dibenzo(p)dioxins
PCDF	polychlorinated dibenzo(p)furans
PCP	pentachlorophenol
PML	Pesticide Mixing and Loading
PPE	personal protective equipment
PRG	Region 9 Preliminary Remediation Goals (2004)
QA/QC	Quality Assessment/Quality Control
QC	quality control
REAC	Response Engineering and Analytical Contract
RPD	relative percent difference
SAP	Sampling and Analysis Plan
START	Superfund Technical Assessment and Response Team
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCDF	2,3,7,8-tetrachlorodibenzo-p-furan
TEF	toxicity equivalent factor
TEQ	toxicity equivalent
TMK	Tax Map Key
USDA	United States Department of Agriculture
XDS	Xenobiotic Detection Systems

1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech) was tasked by the State of Hawaii, Department of Health (HDOH), Hazard Evaluation and Emergency Response Office (HEER) to conduct a site assessment of the East Kapolei property, currently used as agricultural fields and proposed for the development of the East Kapolei Affordable Housing Project, located in Kapolei, Oahu, Hawaii (See Figure 1).

The entire East Kapolei property consists of approximately 404 acres of land currently owned by the State of Hawaii and operated by the State of Hawaii Department of Land and Natural Resources (DLNR). This site assessment focused on approximately 318 acres of land referred to as the East Kapolei Brownfields Agricultural Property. The project site excluded two areas: (1) approximately 3 acres of land, which included an area referred to as the Oahu Sugar Company (OSC) Pesticide Mixing and Loading (PML) Area and (2) approximately 83 acres of land located on the western portion of the property where the Hawaii Department of Transportation was excavating land for use as a drainage basin. Aside from the developmental activities in relation to the drainage basin, various environmental concerns at the East Kapolei property have necessitated the division of the land into two discrete project areas to be evaluated.

The OSC PML Area is a 0.634-acre portion of land located in the northwest portion of the East Kapolei property. Historically, this site was used as a primary mixing and loading area for agricultural chemicals, and previous investigations have documented that soil both inside and outside the fenced area is contaminated with dieldrin, arsenic, atrazine, ametryn, pentachlorophenol (PCP), trifluralin, polychlorinated dibenzo-dioxins (PCDD), and polychlorinated dibenzo-furans (PCDF) at concentrations above current U.S. Environmental Protection Agency (EPA) Region 9 2004 Preliminary Remediation Goals (PRG) for residential soil and December 2003, HDOH *Screening For Environmental Concerns At Sites,* Environmental Action Levels (EAL).

Based on the historical connection of the OSC PML Area with the property being proposed for development, the potential for soil contamination similar to what has been documented in association with the OSC PML Area exists throughout the agricultural property. This report addresses the evaluation of the agricultural property prior to the development of the property for residential use. The strategy used for the property evaluation was adapted from a Sampling and Analysis Plan (SAP) prepared by Ecology and Environment, Inc. titled "*East Kapolei Agricultural Property Phase II Site Assessment, Sampling and Analysis Plan*" dated February 2006. After reviewing the SAP, Tetra Tech prepared a Sampling Memorandum identifying the proposed technical approach to adequately characterize the East Kapolei property. The Sampling Memorandum, dated May 12, 2006, was submitted and approved by the HEER Office and the EPA Region 9 Quality Assurance Officer.

1.1 APPARENT PROBLEMS

The apparent problems at the site, which contributed to the determination that a site assessment was necessary, are as follows:

- Possible surface soil contamination from historical application of herbicides and pesticides. The principal chemicals of potential concern (COPC) are dieldrin, arsenic, atrazine, ametryn, PCP, trifluralin, and dioxins above current EPA PRGs for residential soil and HDOH EALs.
- Finding previously unidentified areas of potential agricultural chemical mixing and loading. The surface soil may be contaminated with COPCs due to operational and waste disposal practices as well as migration of contaminants from the OSC PML Area.

Metals, dioxins, pesticides, and herbicides of concern are environmentally persistent, migrate slowly, and will not greatly vary in concentration in soil over time. Given the location and relative inaccessibility of potential contamination, the threat to groundwater, surface water and present communities is not expected to be immediate or imminent. However, the threat would be increased due to the development activities, since the contamination, if present, would be exposed. Further, a residential development would establish a community in close proximity to contamination.

2.0 PROJECT BACKGROUND

The following sections detail the site background, environmental concerns at the site, and the summary of previous environmental investigations that were conducted at the site.

2.1 SITE DESCRIPTION

The East Kapolei Affordable Housing Project agricultural property consists of two contiguous parcels of land with a total area of approximately 401 acres. The two parcels are Parcel Tax Map Key (TMK) 1-9-1-017-071 and Parcel TMK 1-9-1-017-088 that create a wedge-shaped property situated approximately 1 mile southeast of Highway 1 and northwest of the village of Ewa and the Ewa Village Golf Course (See Figure 2). The OSC PML Area, which is not part of this site assessment, is located on the northwest portion of Parcel TMK 1-9-1-017-088

Approximately two thirds of the agricultural property is characterized by active agricultural fields that were observed to be in various states of cultivation including freshly tilled land, fallow fields, recently harvested areas, and fields where additives such as herbicides and pesticides had recently been applied. The remaining one third of the property, on the western portion of the site, consists of undeveloped land overgrown with field grass and kiawe trees and shrubs. Irrigation ditches were observed across the property; however, the ditches are no longer used to transmit water to the fields. Piping and irrigation lines associated with a pumping station located north of the subject property are currently used to water the crops. A chain link fence enclosed area located on the westernmost portion of the property is designated as a contingency reserve area (CRA). The CRA is a 20-acre environmental preserve that is monitored by the DLNR Division of Forestry and Wildlife due to the presence of endangered plants. Various unnamed dirt access roads cross the entire property. Additionally, North-South Road, Mango Tree Road, and Palehua Road are located on the northern, southern, and central portions of the project area, respectively.

The elevation of the property ranges from approximately 60 feet above sea level at the southern portion to approximately 110 feet above sea level at the northern portion.

2.2 SITE HISTORY AND OPERATIONS

The East Kapolei property, which includes the project area, was part of the Ewa Plantation established in 1890 and operated by Castle & Cooke Incorporated. The land that Castle & Cooke Incorporated utilized was owned by James Campbell and was used for growing sugar cane. In 1970, Oahu Sugar Company assumed ownership of the plantation and continued operation until 1994. During its operational history various herbicides and pesticides were mixed at the PML Area and applied to portions of the agricultural

fields. In the mid 1990s the State of Hawaii obtained the property from the Campbell Estate and the fields are currently leased for commercial fruit and vegetable cultivation.

2.3 PREVIOUS INVESTIGATIONS

Previous investigations in relation to the East Kapolei Affordable Housing Project focused exclusively on the OSC PML Area and the land in the immediate vicinity of the area. The agricultural fields beyond the PML Area had not been investigated. A report titled "Phase I Environmental Site Assessment at East Kapolei Brownfield, Kapolei, Hawaii" prepared by AMEC Earth and Environmental, Inc., dated September 2004 and a report titled "East Kapolei Agricultural Property Phase II Site Assessment Sampling and Analysis Plan" prepared by Ecology and Environment, Inc. dated February 2006 were reviewed by Tetra Tech and provided information concerning previous investigations. A summary of the PML Area investigations is presented below:

- In 1990 the University of Hawaii and the Hawaii Department of Agriculture identified the OSC PML Area as a source or location of pesticide and herbicide contamination.
- Several studies were performed by HDOH that did not provide conclusive evidence of contamination. In 1992 a non-sampling preliminary site assessment was performed by HDOH that included document reviews, interviews, and a site visit. The conclusion from the site assessment was that pesticides and herbicides had been used historically on the property.
- In 1997 and 1999 results from limited surface soil sampling at the site indicated arsenic, PCP, and dioxin/furan concentrations were above the EPA Region 9 PRGs.
- In 2000, the EPA Response Engineering and Analytical Contract (REAC) conducted additional sampling when surface and subsurface soil was collected. Some analytical results exceeded the PRGs for dioxins, furans, PCP, atrazine, trifluralin, dieldrin, and arsenic.
- No additional intrusive investigations were conducted following the EPA REAC sampling; however, in 2001 the United States EPA Superfund Technical Assessment and Response Team (START) conducted an evaluation of the date from the previous investigations and recommended further sampling to delineate soil contamination and evaluate the groundwater.
- A Phase I Environmental Site Assessment (ESA) was also conducted in 2004 by AMEC to evaluate the property. Based on a review of previous investigations, AMEC concluded that soil from various portions of the pesticide mixing and loading area exceeded the PRGs for PCDD/PCDF as dioxin/dibenzofuran, atrazine, trifluralin, dieldrin, PCP, arsenic, and manganese. Although the manganese concentrations were elevated it was determined that the native soil at the property tends to be rich in this metal naturally and it is therefore unlikely to be a contaminant of concern. In addition to the review of the previous sampling investigations, AMEC also identified an area of potential pesticide mixing and loading used by the current tenants during their site visit. The suspected area "was observed to have a water source, with a 2-inch diameter PVC pipe with 2-inch hose, and the area had approximately eight 5-gallon, recently emptied pesticide containers stockpiled…" The area was located approximately 100 feet east of the OSC PML Area and also contained an area of standing water and stressed vegetation. The presence of the standing water also caused concern since a potential existed for the surface water runoff from the OSC PML Area to drain to and impact the suspected area.

3.0 STUDY AREA INVESTIGATION

This section presents a summary of the activities that were conducted during the site assessment between April and July 2006 in accordance with an adapted sampling memorandum prepared by Tetra Tech and approved by HDOH. These protocols regulate assigning sample numbers, identifying chemicals of concern, handling samples, generating chain-of-custody, adhering to analytical methods, and quality control measures. All sampling was conducted in accordance with the SAP (Ecology and Environment, Inc. 2006) and sampling memorandum (Tetra Tech 2006d).

3.1 PRE-SAMPLING SITE RECONNAISSANCE

A site reconnaissance was conducted on April 28, 2006. Photographs from the site reconnaissance are included in a photolog presented in Appendix A. Mr. Darrell Ing, a land agent for the Department of Hawaiian Home Lands (DHHL) Land Development Division, guided the site visit and provided information concerning the property. The tour of the property consisted of driving around the exterior boundary and observing the land characteristics, topographic features, vegetative cover, and current uses. Observations were made from the dirt and gravel, unimproved North-South Road, Mango Tree Road, and the southern extension of Palehua Road, which are located along the northern, southern, and central portions of the project area, respectively.

The property was characterized by level ground with a combination of active agricultural fields and undeveloped land overgrown with field grass and kiawe trees and shrubs. Dense vegetation was observed within the CRA fence line on the western portion of the property. The OSC PML Area was observed on the northern portion of the project area, adjacent to the corner of Palehua Road and an unnamed dirt access road. Southeast from this site, across the dirt road, is an area designated as a Potential Contaminated Area. These two locations are scheduled to be investigated by Enviroservices and Training Center, LLC under a separate project. Fallow agricultural fields were observed north of the PML Area. No areas of concern (areas of stressed vegetation, hazardous substances, staining, unidentified drums or containers, etc.), where a concentrated sampling effort would be deemed necessary, were observed during the site reconnaissance.

At the conclusion of the site visit, Tetra Tech requested that Mr. Ing identify the current tenant farmers who utilize the project area. The purpose of this information would be used to help with determining the current farming schedules and crop rotations and avoid disturbing the current operations. Mr. Ing provided the phone number for Mr. Mike Sou with Aloun Farms, the company that currently leases the property. Mr. Sou requested that Tetra Tech identify the areas scheduled for sampling on a map and fax

the information to the Aloun Farms office. Following a review of the proposed sampling areas, Mr. Sou stated that farming operations would not be affected by the sample collection and that the farmland in question was not scheduled for pesticide or herbicide application. He requested that sampling personnel attempt to avoid stepping on vines, plants, or vegetables in the agricultural fields.

Based on the site reconnaissance, Tetra Tech concluded that the site conditions were conducive to properly implementing the proposed sampling strategy. The property is predominantly flat and open, which would facilitate access across the agricultural fields. Although an ecologically sensitive area exists on the property, permission was granted to perform sampling if a decision unit falls within the boundaries of the CRA. Additionally, following a discussion with the current tenant farmers, neither the timing for the sample collection nor the placement of the decision units was changed.

3.2 CONTINGENCY RESERVE AREA MEETING AND TRAINING

On May 1, 2006, Tetra Tech contacted Mr. Greg Mansker, a representative with Forestry and Wildlife, to discuss the environmental preserve and to determine if the area would create a conflict with the sampling strategy. The area in question is referred to as the Abutilon CRA and although endangered plants are located on the property, no concerns were identified with entering the area to conduct surficial soil sampling. Due to the ecological sensitivity of the reserve; however, he requested that prior to the scheduling of the sampling events, that a representative from Forestry and Wildlife conduct a brief training session to help the sampling individuals or teams identify the endangered plants and avoid disturbing them. Mr. Mansker also requested that only surficial sampling occur and stated that vehicles would be prohibited from entering the area.

On July 21, 2006, Mr. Mansker conducted an endangered plant species identification training session for Tetra Tech personnel within the CRA. The endangered plant abutilon, also known as Red Ilima, is a small 1 to 2 foot shrub, with silvery heart-shaped leaves, and small, red, down turned, pendant-shaped flowers. Plastic pipes have been placed into the ground next to the plants as identifying markers. Irrigation pipes located across the CRA deliver water to the base of the plants. Other than avoiding the plants, Mr. Mansker also requested that Tetra Tech avoid damaging the irrigation system. Following the training session, Tetra Tech concluded that no change in the sampling strategy would be necessary.

3.3 SAMPLING STRATEGY

As discussed in Section 1.0, the sampling strategy for the East Kapolei agricultural property derived from the February 2006 SAP prepared by Ecology and Environment, Inc. and was adapted into a Sampling Memorandum prepared by Tetra Tech dated May 12, 2006. The sampling strategy was based on

characterizing surface soil concentrations at 59 decision units at the site. The identification of 59 decision units results in a 95th percent upper confidence that concentrations at the site do not exceed the screening levels identified, regardless of site size (DOH 2007, EPA 1989). The 59 decision units were determined as follows:

1. The entire 401-acre site was divided into 59 strata or grids of approximately 7 acres in size.
2. Within each grid, one geographic point was identified by a random number generator.
3. Each point served as the center of a 5,000 square foot decision unit to represent the estimated dimensions of a residential home lot.

The result was 59 decision units located in a stratified random pattern throughout the entire site. Figure 3 presents the distribution of the decision grids, decision units, and center points of the decision units across the project area. Special consideration was made to those decision units which were located within or near the boundaries of the CRA. The latitude and longitude coordinates of the center point of each decision unit was loaded into a global positioning system (GPS) unit for use in the field. The coordinates are presented in Appendix B.

3.4 SAMPLING PROTOCOLS

This section identifies sampling protocols that were followed during the field investigation, including methods and equipment, sample collection, sample preparation, decontamination, waste disposal, and sample containers. All sampling was conducted in accordance with the SAP (Ecology and Environment, Inc. 2006) and sampling memorandum (Tetra Tech 2006d).

3.4.1 Soil Sampling

Surficial soil samples were collected from July 26 to July 31, 2006. The center point of each decision unit was located within the project area using the coordinates that had been loaded into the GPS unit. A wooden stake was placed at the center point and, using a compass and a measuring tape, the corners of the decision unit were established by measuring 35 feet in the northeast, southeast, southwest, and northwest directions from the center point. This process created an approximately 5,000 square foot decision unit where each of the sides was oriented so that incremental soil samples could be collected orthogonally across the sampling area in a north to south manner.

One multi-increment surface soil sample was collected from each of the 59 decision units. The multi-increment soil sample consisted of 40 subsamples collected from 0 to 6 inches below ground surface (bgs) within each decision unit. The multi-increment sampling technique was used to maximize the goal of

obtaining sufficient material over the decision unit to account for both compositional and distributional heterogeneity. Photographs of the sampling procedures are included in a photolog presented in Appendix A. The sampling protocol followed these steps:

1. The field sampler began at a corner of the decision unit and sampled in an orthogonal pattern, moving from north to south to collect subsamples from 40 locations within each decision unit. The location of the subsamples was not critical as long as they were distributed throughout the decision unit. The samples were collected with a stainless steel trowel. A stainless steel hammer was used to break up the surface soil at areas where the soil was too hard or compact to collect with the trowel. The soil was placed into a new, disposable paper bag. A new paper bag was used for each decision unit and disposed after a single use.
2. The 40 subsamples were mixed in the bag to form one composited, multi-increment sample.
3. The composited sample was allowed to air dry and then sieved through a #10 sieve into a disposable aluminum pan. A new aluminum pan was used for each decision unit and disposed after a single use. Any material larger than the #10 sieve size was placed aside for later return to the decision unit of origin.
4. The sieved soil was redistributed into a 1-inch thick uniform layer within the aluminum pan.
5. Forty incremental subsamples of the sieved soil were randomly collected from across the aluminum pan using a stainless steel spoon and placed into sample jars. If more than one sample jar was to be submitted to the laboratory from a single decision unit, then the soil remaining in the container was re-leveled each time a sample jar was filled. Re-leveling consisted of gently redistributing the entire contents of the pan to reestablish a uniform depth and maintain a homogenous grain size distribution.

Twenty five additional split samples were prepared for dioxin/furan analysis by EPA Method 8290A gas chromatography mass spectrometry (GC/MS). Split samples were prepared from the same soil that was collected at the multi-increment soil sample locations.

3.4.2 Decontamination

All non-consumable materials that came into contact with soil during the sampling event were decontaminated. These materials included stainless steel trowels, hammers, sieves, and spoons. The decontamination process included a non-phosphate detergent and tap water wash using a scrub brush to scour the surface of the equipment and remove soil particles, a tap water rinse, a de-ionized water rinse, an isopropyl alcohol rinse, and air drying. All liquids used during the decontamination process were contained in 5-gallon plastic buckets. The volume of decontamination liquids generated daily during the sampling investigation was sufficiently low to allow for disposal on the ground surface of the property. Fresh water and detergent were used at the commencement of each day.

The effectiveness of the decontamination process was confirmed by the collection of daily equipment rinsate blanks. De-ionized water was poured over decontaminated equipment and drained into sample bottles for laboratory analysis. The analysis performed on the rinse water was identical to the analysis of the soil samples, except rinse water was not analyzed by the Xenobiotic Detection System (XDS)-Calux Bioassay method. Results of the blank samples are discussed in Section 4.4.2.

3.4.3 Management of Investigation Derived Waste

Investigation derived waste (IDW) included disposable field sampling equipment and personal protective equipment (PPE). The disposable equipment was intended for one-time use and was packaged in double bagged plastic bags for proper off-property disposal in municipal dumpsters.

3.5 Sample Handling and Custody

Soil samples were placed into one 8-ounce glass jar and one 4-ounce glass jar for laboratory analysis. One additional 8-ounce jar of soil was prepared for each split sample for GC/MS analysis. Two additional 8-ounce jars of soil were prepared for each decision unit where soil was collected for matrix spike/matrix spike duplicate (MS/MSD) analysis. Six 1-liter, glass, unpreserved, amber bottles and one 250-mililiter polyethylene bottle with nitric acid preservative were filled with equipment rinsate water for laboratory analysis.

Following collection, all samples were labeled, wrapped with protective bubble wrap material, placed into sealable plastic bags, and packed into insulated coolers prepared with frozen Blue Ice® to maintain the temperature at or below 4° Celsius. The sample identification information was logged onto a chain-of-custody, which was placed in a sealable plastic bag accompanied by a United States Department of Agriculture (USDA) soil permit provided by the analytical laboratories, and taped to the inside of the coolers. Copies of the chain-of-custody forms are presented in Appendix C. Custody seals were placed across the lids of the coolers and the coolers were then sealed with packing tape. Sample coolers were shipped to Columbia Analytical Services Laboratory located in Kelso, Washington and Xenobiotic Detection Systems, Inc. located in Durham, North Carolina by Federal Express. The specific analyses performed by each laboratory are described in the following section.

3.6 Analytical Methods

The following COPCs were identified from previous investigations in the vicinity of the agricultural fields:

- Dieldrin
- Arsenic

- Atrazine
- Ametryn
- PCP
- Trifluralin
- PCDD/PCDF reported as TCDD Total toxicity equivalent concentration TEQ

Due to the presence of these contaminants at the adjacent PML Area, analyses for these constituents were conducted for the agricultural fields. During the pre-sampling site visit, Tetra Tech identified the current use of pesticides or herbicides within the site boundaries based on posted warning signs that were observed on agricultural fields that had recently been applied with additives. As a result, the complete suite of pesticides was recommended for analysis.

The following laboratory analyses were conducted to determine the extent of contamination of the project area that may have been influenced by historical use:

- Inorganic metals, arsenic only by EPA Method 6020B. Soil samples where arsenic values exceed the screening level will be re-analyzed through physiologically-based extraction tests to measure the bioaccessibility of the arsenic that is present.

- Dioxin/Furans by XDS-Calux Bioassay and EPA Method 8290A GC/MS for 25 split samples. The GC/MS analysis was performed to verify the results of the XDS-Calux Bioassay analysis. For the East Kapolei Affordable Housing Project these methods were used to analyze for the specific chemicals of concern PCDD/PCDF.

- Organophosphorus Pesticides by EPA Method 8141. For the East Kapolei Affordable Housing Project this method was used to analyze for the following specific chemicals of concern: ametryn, atrazine, and trifluralin.

- Organochlorine Pesticides by EPA Method 8081. For the East Kapolei Affordable Housing Project this method was used to analyze for the specific chemicals of concern dieldrin and PCP.

- Chlorinated Herbicides by EPA Method 8151. This method was not used to analyze for a specific chemical of concern specific for the East Kapolei Affordable Housing Project.

Soil and rinsate water samples were shipped to Columbia Analytical Services Laboratory located in Kelso, Washington for all analysis except XDS-Calux Bioassay analysis. Soil samples collected for XDS-Calux Bioassay analysis were shipped to Xenobiotic Detection Systems, Inc. located in Durham, North Carolina.

3.6.1 Special analytical requirements

The subsampling process described in Section 3.4.1 was repeated for soil samples received by the Columbia Analytical Services Laboratory prior to analysis. This included laying soil samples out in a uniform layer and collecting subsamples from across the layer. Subsampling was not performed by Xenobiotic Detection Systems, Inc.

3.6.2 Field Quality Control Samples

Quality control (QC) samples were collected according to the methodology and protocols presented in the existing sampling analysis plan prepared by Ecology and Environment, Inc., with the exception of the field duplicates. Six field duplicate samples (10 percent of the total number of samples) were randomly collected among the decision units during the field investigation. Each field duplicate was collected according to the steps identified in Section 3.4.1; however, in the first step, the field sampler began sampling at a different corner of the decision unit. Results of the field duplicates were used to estimate the representativeness of the multi-increment sampling for the decision units at the site.

Samples collected from arbitrarily selected decision units were identified for use as laboratory QC samples for MS/MSD analysis. Three laboratory QC samples (5 percent of the total number of samples) were prepared for this purpose. Additional volume of soil was collected from these decision units to provide enough material for the analysis by the laboratory.

A discussion of QC sample results is presented in Section 4.4.2.

3.7 Deviations from the Sampling Memorandum

There were no deviations from the sampling memorandum during the site assessment.

3.8 Data Verification and Validation

Validation and verification of the data generated during field and laboratory activities was completed by Ms. Sara Woolley, a project chemist with Tetra Tech, to obtain data of defensible and acceptable quality. Data validation reports are included in Appendix D. All analytical results were evaluated in accordance with precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters. The subsections below detail the results relating to each of the PARCC parameters.

3.8.1 Precision

Generally, the relative percent difference (RPD) of the MS/MSD, and laboratory control samples (LCS) data that were analyzed fell within the limits defined in the SAP. Data that did not fall within the limits were qualified.

3.8.2 Accuracy

Accuracy was evaluated through the MS/MSD, LCS, and field blank samples. Data generated for the site assessment were in accordance with accuracy parameters identified in the SAP.

3.8.3 Representativeness

Surface soil samples were collected for the site assessment. All samples were collected from the decision units in accordance with the procedures presented in the SAP. Due to the incremental sampling collection method used for soils, the concentration of COPCs measured within each decision unit should be representative of the true mean concentration for the decision unit. Based on the samples collected and analyzed, the data generated is assumed to be representative of the media sampled. Additional discussion regarding representativeness and sample duplicates is included in Section 3.6.2.

3.8.4 Comparability

Comparability of data was achieved by consistently following procedures for sampling and field activities and by using the same type of sampling equipment at each area and by using standard measurement units in reporting analytical data. Laboratory data were reported in consistent units for each analytical test. Soil chemical data were corrected for percent moisture and were reported in dry weight.

3.8.5 Completeness

The data validation qualified a few of the data but no data was rejected. Therefore, all of the data collected during the investigation was analyzed. Completeness was 100 percent.

4.0 DATA PRESENTATION AND RESULTS

This section presents the results for the analytical program and compares them to their constituent screening levels. The laboratory analytical results from soil collected within the agricultural fields were compared to EAL and EPA Region 9 PRGs for residential soils as follows:

- Dieldrin results were compared to EAL and PRG concentrations of 0.03 mg/kg.
- Arsenic results were compared to background levels of arsenic in Hawaii soils at 20 mg/kg. Samples with results exceeding 20 mg/kg were proposed to be evaluated for bioaccessibility and compared to State-specific arsenic bioavailability levels; however, no values exceeded 20 mg/kg.
- Atrazine results were compared to a PRG concentration of 2.2 mg/kg and an EAL concentration of 3.1 mg/kg. The EAL value for atrazine was provided by Mr. Roger Brewer with HDOH.
- Ametryn results were compared to a PRG concentration of 550 mg/kg. No EALs exist for ametryn.
- PCP results were compared to a PRG concentration of 3 mg/kg and an EAL concentration of 69 mg/kg. The EAL value for PCP was provided by Mr. Roger Brewer with HDOH.
- Trifluralin results will be compared to a PRG concentration of 63 mg/kg. No EALs exist for trifluralin.

The evaluation of dioxins was provided by Mr. Roger Brewer with the HEER Office in a memorandum dated March 23, 2006. The approach uses a combination of references for dioxin toxicity factors including those used by EPA, the Minnesota Department of Health (MDH), and the Agency for Toxic Substances and Disease Registry (ATSDR).

Dioxins are defined as a family of chlorinated compounds with similar chemical structures and mechanisms of toxicity, referred to as congeners. Human health risks associated with dioxins are evaluated by the examination of seventeen specific congeners and the toxicity of each congener is assigned a value in relation to the most potent congener, 2,3,7,8-TDD. The values are reported as toxicity equivalence factors (TEF). The individual congener concentrations reported by the laboratory are then multiplied by their individual TEF to produce a toxicity equivalence quotient (TEQ). The total 2,3,7,8-TDD TEQ concentration for a soil sample is then calculated by adding together the TEQ concentrations of each individual congener. The EPA and MDH have established residential soil screening levels of 42 ng/kg and 390 ng/kg, respectively, based on cancer slope factors that were calculated based on dioxin TEQs. These screening levels form the basis for the examination of the East Kapolei agricultural fields as

well as the OSC PML Area. Polychlorinated dibenzo-dioxin/furan (PCDD/PCDF) results are reported as TCDD Total TEQ.

Background dioxin levels established during the agricultural field sampling were compared with samples collected at the former PML area. If background concentrations were below 42 nanograms per kilogram (ng/kg) then the extent of dioxin contamination at the mixing area would be compared with this number. If background dioxin concentrations from the agricultural fields were greater than 42 ng/kg then the extent of contamination at the mixing area would be compared with the new number. Additionally, areas where concentrations were above 390 ng/kg would be evaluated.

4.1 SOIL SAMPLE RESULTS

The complete laboratory analytical results for each soil sample obtained from the site during this investigation are presented in Appendix E. Tables 1 through 7 present a summary of the results for each individual analysis. The following table and discussion is a summary of the specific chemicals of concern for the East Kapolei Affordable Housing Project.

Soil Sample Results of Specific Chemicals of Concern for the East Kapolei Affordable Housing Project

	Arsenic (mg/kg)	Ametryn (mg/kg)	Atrazine (mg/kg)	Dieldrin (mg/kg)	Dioxin TEQ Calux XDS Method (ng/kg)	Dioxin TEQ GC/MS Method (ng/kg)	PCP (mg/kg)	Trifluralin (mg/kg)
EAL	**20**	**NA**	**3.1 (1)**	**0.03**	**NA**	**NA**	**69 (1)**	**NA**
PRG	**NA**	**550**	**2.2**	**0.03**	**NA**	**NA**	**3**	**63**
Detection Limit	**0.005**	**0.055**	**0.055**	**0.005**	**NA**	**NA**	**0.005**	**0.055**
DU-1	7.5	ND	ND	ND	83.03 ± 4.65	NA	ND	ND
DU-2	14.9	ND	ND	ND	258.10 ± 23.32	NA	ND	ND
DU-3	4.2	ND	ND	ND	118.12 ± 8.82	NA	ND	ND
DU-4	17.2	ND	ND	ND	137.74 ± 4.73	NA	ND	ND

	Arsenic (mg/kg)	Ametryn (mg/kg)	Atrazine (mg/kg)	Dieldrin (mg/kg)	Dioxin TEQ Calux XDS Method (ng/kg)	Dioxin TEQ GC/MS Method (ng/kg)	PCP (mg/kg)	Trifluralin (mg/kg)
EAL	**20**	**NA**	**3.1 (1)**	**0.03**	**NA**	**NA**	**69 (1)**	**NA**
PRG	**NA**	**550**	**2.2**	**0.03**	**NA**	**NA**	**3**	**63**
Detection Limit	**0.005**	**0.055**	**0.055**	**0.005**	**NA**	**NA**	**0.005**	**0.055**
DU-4D	11	ND	ND	ND	114.31 ± 10.45	NA	ND	ND
DU-5	10.7	ND	ND	ND	235.92 ± 2.76	NA	ND	ND
DU-6	9.6	ND	ND	ND	224.89 ± 25.26	88.1134	ND	ND
DU-7	6.3	ND	ND	ND	96.28 ± 11.29	38.1903	ND	ND
DU-8	7.4	ND	ND	ND	47.07 ± 2.56	NA	ND	ND
DU-9	10.6	ND	ND	ND	103.86 ± 6.29	NA	ND	ND
DU-10	10.2	ND	ND	ND	169.72 ± 16.12	60.2187	ND	ND
DU-11	8.7	ND	ND	ND	96.74 ± 13.77	NA	ND	ND
DU-12	11.9	ND	ND	ND	98.03 ± 2.55	41.1592	ND	ND
DU-12D	9.6	ND	ND	ND	89.26 ± 4.93	NA	ND	ND
DU-13	9.7	ND	ND	ND	126.74 ± 7.14	49.0156	ND	ND
DU-14	7.3	ND	ND	ND	76.72 ± 5.89	NA	ND	ND
DU-15	6.5	ND	ND	ND	58.01 ± 5.13	NA	ND	ND
DU-16	6.4	ND	ND	ND	79.50 ± 5.15	NA	ND	ND
DU-17	7.4	ND	ND	ND	109.54 ± 17.16	NA	ND	ND
DU-18	6.1	ND	ND	ND	57.27 ± 3.06	NA	ND	ND
DU-18D	8	ND	ND	ND	62.06 ± 4.64	NA	ND	ND

	Arsenic (mg/kg)	Ametryn (mg/kg)	Atrazine (mg/kg)	Dieldrin (mg/kg)	Dioxin TEQ Calux XDS Method (ng/kg)	Dioxin TEQ GC/MS Method (ng/kg)	PCP (mg/kg)	Trifluralin (mg/kg)
EAL	**20**	**NA**	**3.1 (1)**	**0.03**	**NA**	**NA**	**69 (1)**	**NA**
PRG	**NA**	**550**	**2.2**	**0.03**	**NA**	**NA**	**3**	**63**
Detection Limit	**0.005**	**0.055**	**0.055**	**0.005**	**NA**	**NA**	**0.005**	**0.055**
DU-19	12.4	ND	ND	ND	120.94 ± 8.26	NA	ND	ND
DU-20	7.1	ND	ND	ND	116.28 ± 15.71	NA	ND	ND
DU-21	8.2	ND	ND	ND	134.27 ± 4.79	NA	ND	ND
DU-22	4.4	ND	ND	ND	68.99 ± 6.75	NA	ND	ND
DU-23	3.4	ND	ND	ND	59.73 ± 4.80	NA	ND	ND
DU-24	7.4	ND	ND	ND	141.17 ± 14.43	NA	ND	ND
DU-25	7.5	ND	ND	ND	121.78 ± 6.43	NA	ND	ND
DU-26	7	ND	ND	ND	170.86 ± 39.88	NA	ND	ND
DU-27	7.2	ND	ND	ND	137.58 ± 15.51	NA	ND	ND
DU-28	4.9	ND	ND	ND	56.97 ± 3.11	NA	ND	ND
DU-29	3.5	ND	ND	ND	105.70 ± 8.71	NA	ND	ND
DU-30	3.9	ND	ND	ND	56.88 ± 1.48	NA	ND	ND
DU-30D	5	ND	ND	ND	72.28 ± 8.13	NA	ND	ND
DU-31	4.9	ND	ND	ND	58.59 ± 15.40	30.5959	ND	ND
DU-32	9.4	ND	ND	ND	736.16 ± 113.45	100.6597	ND	ND
DU-33	10.8	ND	ND	ND	188.89 ± 14.01	36.5465	ND	ND
DU-34	8.2	ND	ND	ND	267.03 ± 27.14	NA	ND	ND

	Arsenic (mg/kg)	Ametryn (mg/kg)	Atrazine (mg/kg)	Dieldrin (mg/kg)	Dioxin TEQ Calux XDS Method (ng/kg)	Dioxin TEQ GC/MS Method (ng/kg)	PCP (mg/kg)	Trifluralin (mg/kg)
EAL	**20**	**NA**	**3.1 (1)**	**0.03**	**NA**	**NA**	**69 (1)**	**NA**
PRG	**NA**	**550**	**2.2**	**0.03**	**NA**	**NA**	**3**	**63**
Detection Limit	**0.005**	**0.055**	**0.055**	**0.005**	**NA**	**NA**	**0.005**	**0.055**
DU-35	11.5	ND	ND	ND	331.42 ± 56.18	NA	ND	ND
DU-36	9.6	ND	ND	ND	446.32 ± 88.50	NA	ND	ND
DU-37	7.8	ND	ND	ND	180.29 ± 13.10	NA	ND	ND
DU-38	5.7	ND	ND	ND	245.17 ± 23.45	38.8146	ND	ND
DU-39	6.1	ND	ND	ND	424.30 ± 46.10	59.249	ND	ND
DU-40	9.3	ND	ND	ND	221.95 ± 3.63	36.7207	ND	ND
DU-41	11.5	ND	ND	ND	281.46 ± 17.49	39.0139	ND	ND
DU-42	11.1	ND	ND	ND	114.80 ± 13.39	NA	ND	ND
DU-43	7	ND	ND	ND	131.19 ± 13.57	NA	ND	ND
DU-44	9.6	ND	ND	ND	164.78 ± 9.06	NA	ND	ND
DU-45	6.7	ND	ND	ND	133.93 ± 3.43	NA	ND	ND
DU-46	6.7	ND	ND	ND	141.83 ± 5.72	42.7712	ND	ND
DU-47	10.3	ND	ND	ND	137.92 ± 12.66	54.3294	ND	ND
DU-48	12.3	ND	ND	ND	120.83 ± 3.07	43.3179	ND	ND
DU-49	10.1	ND	ND	ND	115.75 ± 2.50	32.554	ND	ND
DU-50	12.2	ND	ND	ND	129.55 ± 8.05	45.799	ND	ND
DU-50D	11.3	ND	ND	ND	130.00 ± 6.38	NA	ND	ND

	Arsenic (mg/kg)	Ametryn (mg/kg)	Atrazine (mg/kg)	Dieldrin (mg/kg)	Dioxin TEQ Calux XDS Method (ng/kg)	Dioxin TEQ GC/MS Method (ng/kg)	PCP (mg/kg)	Trifluralin (mg/kg)
EAL	**20**	**NA**	**3.1 (1)**	**0.03**	**NA**	**NA**	**69 (1)**	**NA**
PRG	**NA**	**550**	**2.2**	**0.03**	**NA**	**NA**	**3**	**63**
Detection Limit	**0.005**	**0.055**	**0.055**	**0.005**	**NA**	**NA**	**0.005**	**0.055**
DU-51	11.7	ND	ND	ND	107.79 ± 3.97	29.9383	ND	ND
DU-52	7.3	ND	ND	ND	91.27 ± 22.47	NA	ND	ND
DU-53	7.1	ND	ND	ND	80.71 ± 6.41	19.2461	ND	ND
DU-54	11.2	ND	ND	ND	212.24 ± 26.72	49.264	ND	ND
DU-55	11	ND	ND	ND	162.74 ± 6.51	41.6955	ND	ND
DU-56	8.6	ND	ND	ND	129.35 ± 8.54	37.4374	ND	ND
DU-56D	11.5	ND	ND	ND	136.95 ± 9.44	NA	ND	ND
DU-57	9.7	ND	ND	ND	159.48 ± 9.32	49.1186	ND	ND
DU-58	9.8	ND	ND	ND	146.52 ± 4.58	37.2494	ND	ND
DU-59	6.9	ND	ND	ND	122.13 ± 2.20	35.6504	ND	ND

Notes:

(1) The EAL was computed by Mr. Roger Brewer with HDOH

DU – Decision Unit

EAL - 2005 Hawaii Department of Health Tier I Environmental Action Levels for soils is greater than 150 to surface water where groundwater is not a current or potential source of drinking water.

mg/kg – milligrams per kilogram

NA – not applicable

ng/kg – nanograms per kilogram

PRG - 2004 Environmental Protection Agency Region 9 Preliminary Remediation Goals for Residential Soils

TEQ – toxicity equivalent

Arsenic. Arsenic was detected in all samples. Results ranged from a minimum of 3.4 mg/kg to a maximum of 17.2 mg/kg at decision units DU-23 and DU-04, respectively. Arsenic results are

presented in Table 1.

Organophosphorus Pesticides. No organophosphorus pesticides, including the COPCs, were detected above the analytical reporting limits. Organophosphorus pesticides results are presented in Table 2.

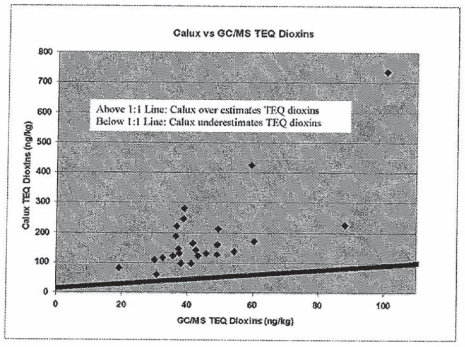
Organochlorine Pesticides. No organochlorine pesticides, including the COPCs, were detected above the analytical reporting limits. Organochlorine pesticides results are presented in Table 3.

Chlorinated Herbicides. No chlorinated herbicides were detected above the analytical reporting limits. Chlorinated herbicides results are presented in Table 4.

Dioxins. Twenty-five soil samples were submitted for analysis by EPA Method 8290A GC/MS. Dioxin/Furan calculated TEQ results from these samples ranged from a minimum of 19.2461 ng/kg to a maximum of 100.6597 ng/kg at decision units DU-53 and DU-32, respectively. The results from 15 of the 25 samples were at or below the low risk action level of 42 ng/kg. The results from the remaining 10 samples were within the intermediate risk action level between 42 ng/kg and less than or equal to 390 ng/kg. A summary of the calculated TEQ for GC/MS analysis are presented in Table 5.

Sixty-five soil samples were submitted for analysis by XDS-Calux Bioassay. The TEQ results ranged from a minimum of 47.07 ng/kg to a maximum of 736.16 ng/kg at decision units DU-08 and DU-32, respectively. The results from 62 samples were within the intermediate risk action level of greater than 42 ng/kg and less than or equal to 390 ng/kg. The results at three decision units were greater than the high risk action level of 390 ng/kg. These samples were DU-39, DU-36, and DU-32 with concentrations of 424.30 ng/kg, 446.32 ng/kg, and 736.16 ng/kg, respectively. Analytical results from XDS-Calux Bioassay are presented in Table 6.

A comparison of the two dioxin analytes indicates that GC/MS results were consistently lower than the XDS-Calux Bioassay results. A summary of the comparison is presented below.



GC/MS analysis was coincidentally performed on two of the XDS-Calux Bioassay analysis samples, which exceeded the high risk level: DU-39 and DU-32. The GC/MS results for these two samples (DU-39 (59 ng/kg) and DU-32 (101 ng/kg)), verified that the TEQ dioxin levels in these two DU's are below the action level of 390 ng/kg. Table 7 presents a breakdown of the individual congeners from the GC/MS analysis and a comparison of the calculated TEQ from GC/MS analysis and the TEQ results from XDS-Calux Bioassay. Figure 5 presents the locations of the decision units where GC/MS TEQ results fell within the intermediate risk action level of 42 ng/kg and less than or equal to 390 ng/kg.

The Calux method presents TCDD Total TEQ results for dioxin/furan without the identification of specific congeners. Method 8290A GC/MS presents results for individual congeners and the TCDD Total TEQ results were calculated by Tetra Tech.

Although the Calux method consistently overestimates TEQ dioxin results in comparison to GC/MS analytical results, it was determined that the Calux method can be used as a preliminary screening technique to evaluate agricultural fields. Updated HDOH guidance concerning pesticides in former agricultural lands and related areas, states that, "bioassay methods [such as Calux] offer a cheaper and faster approach to screen for dioxins in soils (HDOH 2007)." Where soil sample results are below the action levels for dioxins when using the Calux method then HDOH recommends that no further testing is required; however, if the preliminary results are above the action levels then it is recommended that retesting occur through the use of GC/MS. In addition, the updated guidance states that, "for sites where a bioassay method [Calux] is used for dioxin analysis, HDOH recommends that dioxin levels be confirmed on 10 percent of the samples using GC/MS (or two samples, whichever is greater)."

4.2 COMPARISON OF CHEMICALS OF POTENTIAL CONCERN RESULTS TO REGULATORY SCREENING LEVELS

The laboratory analytical results from soil collected within the agricultural fields were compared to HDOH Tier I EAL and EPA Region 9 PRG for residential soils as follows:

Arsenic. Arsenic results were compared to background levels of arsenic in Hawaii soils at 20 mg/kg. No arsenic results exceeded the 20 mg/kg concentration.

Ametryn. Ametryn results will be compared to a PRG concentration of 550 mg/kg. No EALs exist for ametryn. Amytryn was not detected in any of the samples.

Atrazine. Atrazine results were compared to a PRG concentration of 2.2 mg/kg and an EAL concentration of 3.1 mg/kg. Atrazine was not detected in any of the samples.

Dieldrin. Dieldrin results were compared to EAL and PRG concentrations of 0.03 milligrams per kilogram (mg/kg). Dieldrin was not detected in any of the samples.

Dioxin. TCDD Total TEQ values were compared to the intermediate risk action level between 42 ng/kg and less than 390 ng/kg. All but three of the samples analyzed by the XDS-Calux method were below the screening level. Of the three that exceeded the screening level, two duplicate samples were analyzed by GC/MS which did not exceed the screening levels. Results from 15 of the 25 GC/MC samples were at or below the low risk action level of 42 ng/kg. The results from

the remaining 10 GC/MS samples were within the intermediate risk action level between 42 ng/kg and less than 390 ng/kg. All GC/MS samples were below the 390 ng/kg screening level.

PCP. PCP results were compared to a PRG concentration of 3 mg/kg and an EAL concentration of 69 mg/kg. PCP was not detected in any of the samples.

Trifluralin. Trifluralin results will be compared to a PRG concentration of 63 mg/kg. No EALs exist for trifluralin. Trifluralin was not detected in any of the samples.

4.3 BACKGROUND EVALUATION

In addition to evaluating soil conditions suitable for possible residential reuse, soil sample results were evaluated to establish background dioxin levels for the project area and the PML site. The proposed strategy was to evaluate results from XDS-Calux Bioassay method for 65 samples with confirmation of the results through 25 EPA Method 8290A GC/MS samples. A preliminary evaluation of the results indicates that the Calux methodology overestimates the dioxin values; therefore, the data from the GC/MS methodology was evaluated. A summary of the data evaluation is presented below.

Dioxin Background Evaluation

Decision Unit	GC/MS Dioxin Value (TEQ ng/kg)
DU-06	88.1134
DU-07	38.1903
DU-10	60.2187
DU-12	41.1592
DU-13	49.0156
DU-31	30.5959
DU-32	100.6597
DU-33	36.5465
DU-38	38.8146
DU-39	59.249
DU-40	36.7207
DU-41	39.0139
DU-46	42.7712
DU-47	54.3294
DU-48	43.3179
DU-49	32.554
DU-50	45.799
DU-51	29.9383
DU-53	19.2461
DU-54	49.264
DU-55	41.6955
DU-56	37.4374
DU-57	49.1186
DU-58	37.2494

Decision Unit	GC/MS Dioxin Value (TEQ ng/kg)
DU-59	35.6504
	Statistical Summary
n	25
Minimum value	19.25
Maximum Value	100.66
Mean Value	45.47
Standard Deviation Value	17.06
Confidence Value	6.69
95th Confidence of Maximum Value	93.97

The background determination assumes that the dioxin data set represent values not impacted by the PML area, and therefore the 95th confidence level of the maximum value reported is proposed as the background level. The calculated background level for dioxin is 93.97 ng/kg.

4.4 DATA QUALITY ASSESSMENT

The quality of the data presented in this report is based the on the chosen methodology and strategy, adherence to field and laboratory procedures set forth in the sampling memorandum (Tetra Tech 2006d), interpretation of the results, and a continual examination of the data quality objectives.

4.4.1 Chosen Methodology and Strategy

The sampling methodology used in this site assessment was to combine multiple incremental soil samples collected within a decision unit into a single composite soil sample to estimate average concentrations within that decision unit. The assessment included a methodology to minimize the fundamental error in sampling. The methodology included four factors, as follows:

1. Multi-Increment sampling – Using incremental sampling provided an improved approximation of the mean concentration of any chemical across the entire decision unit without focusing on small scale anomalies that might have occurred by traditional biased or judgmental sampling techniques.

2. Particle size and shape considerations – The samples were sieved to a maximum 2 millimeter diameter. Where possible, clay particles were forced through the sieve openings. This action allows the analytical laboratory to achieve a more representative result due to the larger amount of surface area of the particles.

3. Sub sampling by the laboratory – Sub sampling of the sample jar was conducted at the analytical laboratory; therefore, all portions of the sample were analyzed.

4. Increased sample weight – Larger sample weights reduce the fundamental error of the analysis. The laboratory selected for this project analyzed the samples in 1 gram increments following subsampling procedures.

4.4.2 Quality Control Samples

Data quality control samples included the concentrations for analytical laboratory samples from field duplicates and equipment blanks. All equipment rinsate blanks were free of any detected contamination. The data validation reports for the duplicates and equipment blanks are provided in Appendix D.

Field duplicates were collected at 10 percent of the total sample number; 6 duplicate samples were collected. Field duplicates were evaluated for the relative percent difference for each analyte detected. A summary of the field duplicates is presented below.

Field Duplicate Evaluation

Sample ID	Analyte	Original Sample (mg/kg)	Duplicate Sample (mg/kg)	Relative Percent Difference (%)
DU-04	Dioxin TEQ	137.74	114.31	18.6
DU-12	Dioxin TEQ	98.03	89.26	9.4
DU-18	Dioxin TEQ	57.27	62.06	8.0
DU-30	Dioxin TEQ	56.88	72.28	23.8
DU-50	Dioxin TEQ	129.55	130	0.3
DU-56	Dioxin TEQ	129.35	136.95	5.7
			Average Dioxin TEQ RPD	*11.0%*
DU-04	Arsenic	17.2	11	44.0
DU-12	Arsenic	11.9	9.6	21.4
DU-18	Arsenic	6.1	8	27.0
DU-30	Arsenic	3.9	5	24.7
DU-50	Arsenic	12.2	11.3	7.7
DU-56	Arsenic	8.6	11.5	28.9
			Average Arsenic RPD	*25.6%*

4.4.3 Data Validation

All laboratory data for this project was validated and verified by Tetra Tech. Complete data validation reports for this project are included in Appendix D. The validation reports indicated bias of the data due to internal laboratory quality control and the data were reflagged as necessary. The validation also allowed the minimization of the tolerable limits in the decision errors.

4.4.4 Examination of the Data Quality Objectives

The data quality objectives prepared during planning activities (Tetra Tech 2006a) are shown in the following table.

STEP 1: State the Problem
Analytical results from previous investigations at the OSC PML Area may not fully represent the agricultural fields being examined for this site assessment. Additional sampling is necessary to characterize the agricultural fields based on known uses and previous investigation results in order to assess the feasibility of residential development of the property.
STEP 2: Identify the Decisions
What are the risks and corrective action recommendations for the agricultural fields? Previous property investigations at the OSC PML Area indicate that the property is associated with pesticide and herbicide application. What is the estimated average concentration of COPCs within the agricultural property?
STEP 3: Identify Inputs to the Decisions
Analytical data from soil samples collected during previous sampling events, historical knowledge of use at the site, analytical data collected during the current sampling event, screening levels, and QA/QC data.
STEP 4: Define Study Boundaries
Sampling will be limited to the agricultural fields within the boundaries of the East Kapolei property.
STEP 5: Develop Decision Rules
Soil will be compared to HDOH EALs and EPA Region 9 PRGs for residential soil as well as EALs computed by HDOH for specific COPCs for which formal action levels have not currently been established.
STEP 6: Specify Tolerable Limits on Decision Errors
Analytical data must meet the project specifications for precision, accuracy, representativeness, completeness, and comparability as prescribed by the quality assurance objectives outlined in this report.
STEP 7: Optimize the Sampling Design
Current sampling design is intended to best represent a potential future human exposure scenario in each decision unit. Increment sampling locations are proposed in a random stratified method designed to collect an amount of soil to adequately represent the multiple sizes of soil grains and adequately characterize the decision unit.

The field activities, data collection, and data evaluation meet the data quality objectives established for the project. Continual examination of these objectives was satisfied during the site assessment.

5.0 SUMMARY AND RECOMMENDATIONS

A site assessment was completed at the former East Kapolei agricultural property according to project plans (Ecology and Environment 2006; Tetra Tech 2006d) and data quality objectives (Tetra Tech 2006a). The purpose of the site assessment was to collect sufficient information to determine if areas of the property are currently suitable for a future residential housing development based on the methodologies presented in the SAP (Ecology and Environment, Inc. 2006) and sampling memorandum (Tetra Tech 2006c). The site assessment consisted of collecting and analyzing surface soil samples from decision units at the property. A summary of the field investigation, findings, and recommendations are presented below.

5.1 FIELD INVESTIGATION

The field investigation consisted of subdividing the site into 59 decision units. A total of 59 surface soil multi-increment samples, 6 duplicate surface soil multi-increment samples, and 4 equipment rinsate water samples were submitted for laboratory analyses. There were no deviations from the project plans and the data quality assessment indicates that the data is valid and usable.

5.2 FIELD OBSERVATIONS

No previously unidentified areas of potential agricultural chemical mixing and loading were observed during the site reconnaissance or during the site assessment sampling activities.

5.3 INVESTIGATION RESULTS

Sample results were compared to primary screening levels established in the project plans and this report. With the exception of three dioxin samples analyzed by the XDS-Calux Bioassay method, concentrations of COPCs in the soil within all decision units were below the action levels. Duplicate samples were collected at two of the three decision units with the Calux methodology exceedences; each of the EPA-approved GC/MS methodology results was below the screening values. Comparison of the two analytes indicates that the Calux methodology overestimates the dioxin concentrations, and as a result, the exceedences are not considered representative. The background level for dioxin was estimated at 93.97 ng/kg.

5.4 RECOMMENDATIONS

There are no elevated concentrations of COPCs in the soil that suggest conditions are not suitable for residential reuse, or that any additional sampling or evaluation is necessary.

6.0 REFERENCES

AMEC Earth and Environmental, Inc. 2004. "Phase I Environmental Site Assessment at East Kapolei Brownfield, Kapolei, Hawaii." September.

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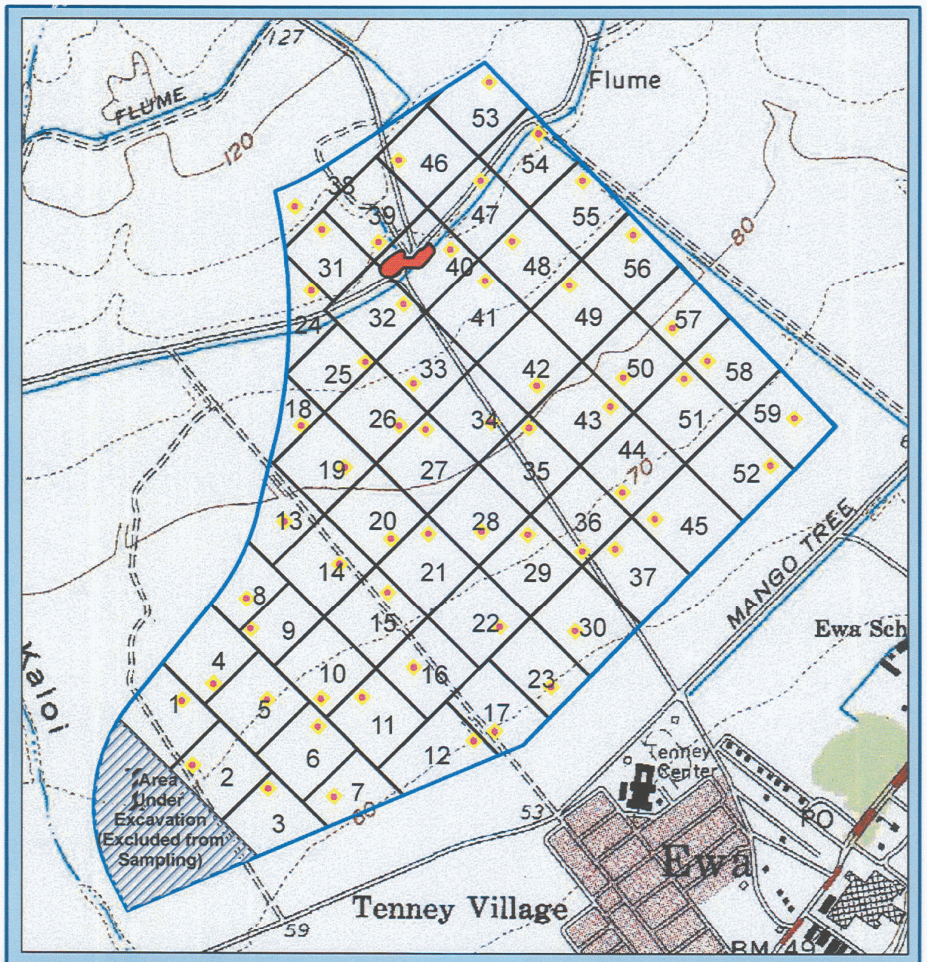
———. 2006c. "East Kapolei Affordable Housing Project, Site Reconnaissance Summary Memorandum." May 5.

———. 2006d. "East Kapolei Affordable Housing Project, Sampling Memorandum." May 12.

U.S. Environmental Protection Agency. 1989, Methods of Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media: US Environmental Protection Agency, Office of Solid Waste and Emergency Response, EPA 230/02-89-042. February 1989 http://www.hanford.gov/dqo/project/level5/vol1soil.pdf



Legend

0 500 1,000 1,500 2,000 Feet

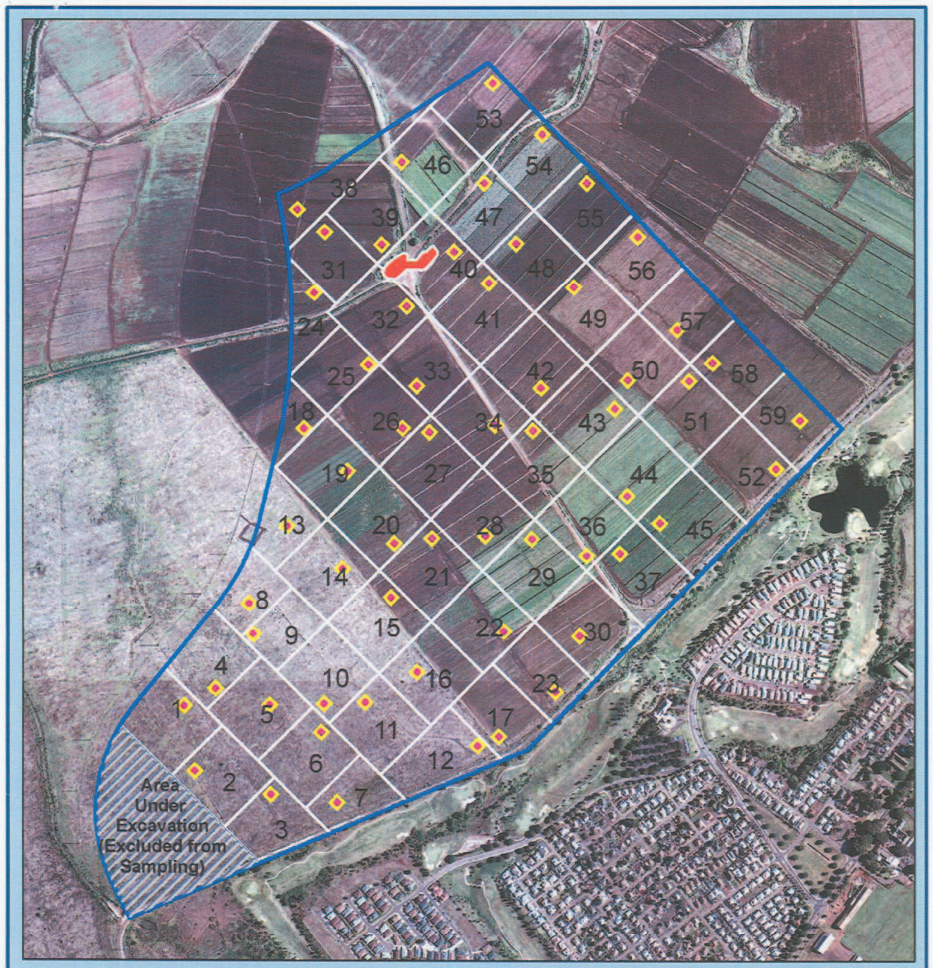
- Center of Decision Units
- Decision Units
- Decision Grids
- Pesticide Mixing and Loading Area and Potential Contamination Area
- Site Boundary

N W E S

EAST KAPOLEI AFFORDABLE HOUSING
TASK ORDER 13
HAWAII DEPARTMENT OF HEALTH
SAMPLING LOCATIONS
USGS TOPOGRAPHIC MAP

Tetra Tech EM Inc

FIGURE 1



Legend

0 490 980 1,470 1,960 Feet

- Center of Decision Units
- Decision Units
- Decision Grids
- Pesticide Mixing and Loading Area and Potential Contamination Area
- Site Boundary

N W E S

EAST KAPOLEI AFFORDABLE HOUSING
TASK ORDER 13
HAWAII DEPARTMENT OF HEALTH
SAMPLING LOCATIONS
AERIAL PHOTOGRAPH

Tetra Tech EM Inc

FIGURE 2

Appendix G: Archaeological Resource Correspondences

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DAVID Y. IGE
GOVERNOR OF
HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 29, 2017

IN REPLY REFER TO:
Log No.: 2017.020172
Doc. No.: 1709KM17
Archaeology

Duane Kashiwai, Public Works Administrator
Facilities Development Branch
Department of Education
P.O. Box 2360
Honolulu, HI 96804

Dear Mr. Kashiwai:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Request for Determination for East Kapolei Middle School
Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu
TMK: (1) 9-1-017:106

Thank you for the request for determination for the proposed East Kapolei Middle School (EKMS) project. The State of Hawaii is the landowner and the project proponent is the Department of Education (DOE). The DOE is proposing to construct a new school facility on the vacant, 18-acre parcel. The State Historic Preservation Division (SHPD) received this submittal on September 28, 2017. Previously, SHPD received a draft Environmental Assessment (EA) prepared in support of this project (June 23, 2017; Log No. 2017.01343).

The DOE is proposing constructing a new middle school as part of the overall East Kapolei II development. The school will be located within the East Kapolei II subdivision and is anticipated to accommodate 1,520 students and staff. The current proposal is to construct multiple buildings and accompanying facilities: an administration, library, student and art center; 6th, 7th, and 8th grade buildings; cafeteria and music building; physical education center with lockers, showers, and classrooms. A seventh building may be added in the future as well. Ground disturbing activities will involve excavation for the building foundations and utilities, and grading of the site.

The submittal provides an overview of previous archaeological research, existing conditions, and other information. Although no archaeological inventory survey has been completed for the property, there are known historic properties within the parcel. Previous archaeological studies for the greater Honouliuli area have documented very few historic properties and recorded generally low potential for archaeological resources. Review of USDA soil classification indicates soils are dominated by the Honouliuli clay (HxA and HxB) series. Geotechnical boring for the EKMS indicates that silty clay sediments extend to depths greater than 20 ft. below surface. The submittal also indicates that the proposed EKMS site was part of the former Ewa Plantation and the site has been heavily disturbed by the prior agricultural activities.

In addition to the background information, the DOE also consulted with the Office of Hawaiian Affairs (OHA) regarding the draft environmental assessment being prepared for the EKMS project. The DOE received a response from OHA on July 24, 2017 (HRD17-7863 B). OHA commented that the ʻEwa plan is known to contain potentially culturally sensitive sinkholes and recommended an archaeological inventory survey being conducted.

Based on the above information, it seems unlikely that sinkholes are present within the project area. However, **SHPD has insufficient information for providing a determination** for the proposed project. **SHPD requests** archaeological monitoring be conducted for the proposed project to adequately identify archaeological historic properties, determine potential impacts to them, and to ensure that appropriate mitigation is implemented.

Additionally, prior to project work commencing, the SHPD looks forward to receiving an archaeological monitoring plan meeting the requirements of HAR §13-279-4. Per Hawaii Administrative Rules (HAR) §13-279-3, archaeological monitoring may be utilized as an identification, mitigation, or post-mitigation contingency measure. Archaeological monitoring shall adequately identify and document any archaeological historic properties, assess their significance, provide a project effect recommendation, and provide appropriate mitigation recommendations.

For a list of permitted archaeological firms, see http://dlnr.hawaii.gov/shpd/about/branches/archaeology/.

Please contact Kimi Matsushima at (808) 692-8027 or at Kimi.R.Matsushima@hawaii.gov for questions regarding archaeological resources or this letter.

Aloha,

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Brenda Lowry, DOE (Brenda_Lowrey/FacilDev/HIDOE@notes.k12.hi.us)
Jared Chang, SSFM (jchang@ssfm.com)

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 777 Honolulu, Hawai'i 96813

11-6-96

Mr. David Hulse
PBR Hawaii
Pacific Tower, Suite 650
1100 Bishop Street
Honolulu, HI 96813

RE: Archaeological Reconnaissance and Assessment of the H.F.D.C- East Kapolei Development Project.

Dear Mr. Hulse;

At your request, Scientific Consultant Services, Inc. (SCS) has undertaken on behalf of PBR Hawaii, a cultural resources review of the subject properties being considered for development at Kapolei (TMK 9-1-16:17)(Figures 1 and 2).

The 1994 letter provided to us by your firm was generated by Don Hibbard of Historic Preservation Division (SHPD) and directed to Dean Uchida of Hawaii Agricultural and Rural Development Program (HARRP). This letter clearly indicates that most of the present project area has been declared to have "no effect" on historic sites due to the many years of commercial sugarcane production on these lands (Attachment A, Doc No. 9408TD01).

In order to be certain that sugarcane plantation operations covered the entire parcel indicated in Figure 2, SCS conducted an on-site inspection of the subject properties on October 23rd, 1996. Under the overall supervision of Robert L. Spear, Ph.D., Senior Archaeologist Jennifer Robins, B.A., and Field Assistant Amy Buffum accessed the northern section of the project area from Farrington Highway (Figures 3 and 4). The purpose of this visual inspection was to confirm that no cultural resources could be located in either the Hunehune and Kaloi Gulches or on the broad agricultural plains. These two gulches are approximately 4 meters wide and 4 meters deep. They appear to be natural gulches that have been modified for cane irrigation.

Given the lack of cultural resources found during the field inspection, and the State of Hawai'i letter referenced above, we concur with the Historic Preservation Division's assessment that future development on these land parcels will have "no effect" on historic sites, and that no further cultural resource work is required.

Sincerely,

Robert L. Spear, Ph.D.
President
Scientific Consultant Services, Inc.

cc. Dr. Tom Dye (SHPD)

PH. 808-597-1182 SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS FAX. 808-597-1193
ALSO ON MAUI • P.O. BOX 1074 • PUUNENE, HAWAII 96784 • 800-577-6767

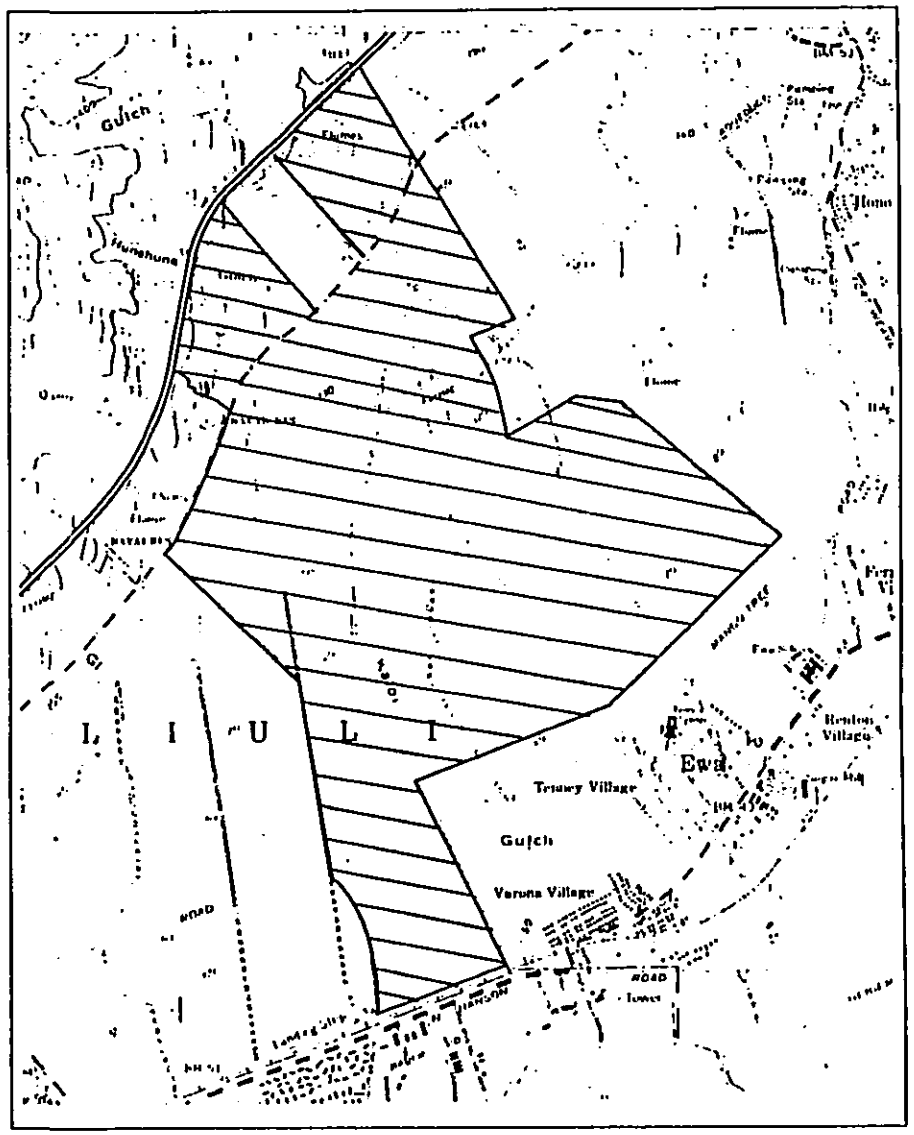

FIGURE 1: USGS EWA QUADRANGLE SHOWING PROJECT AREA.

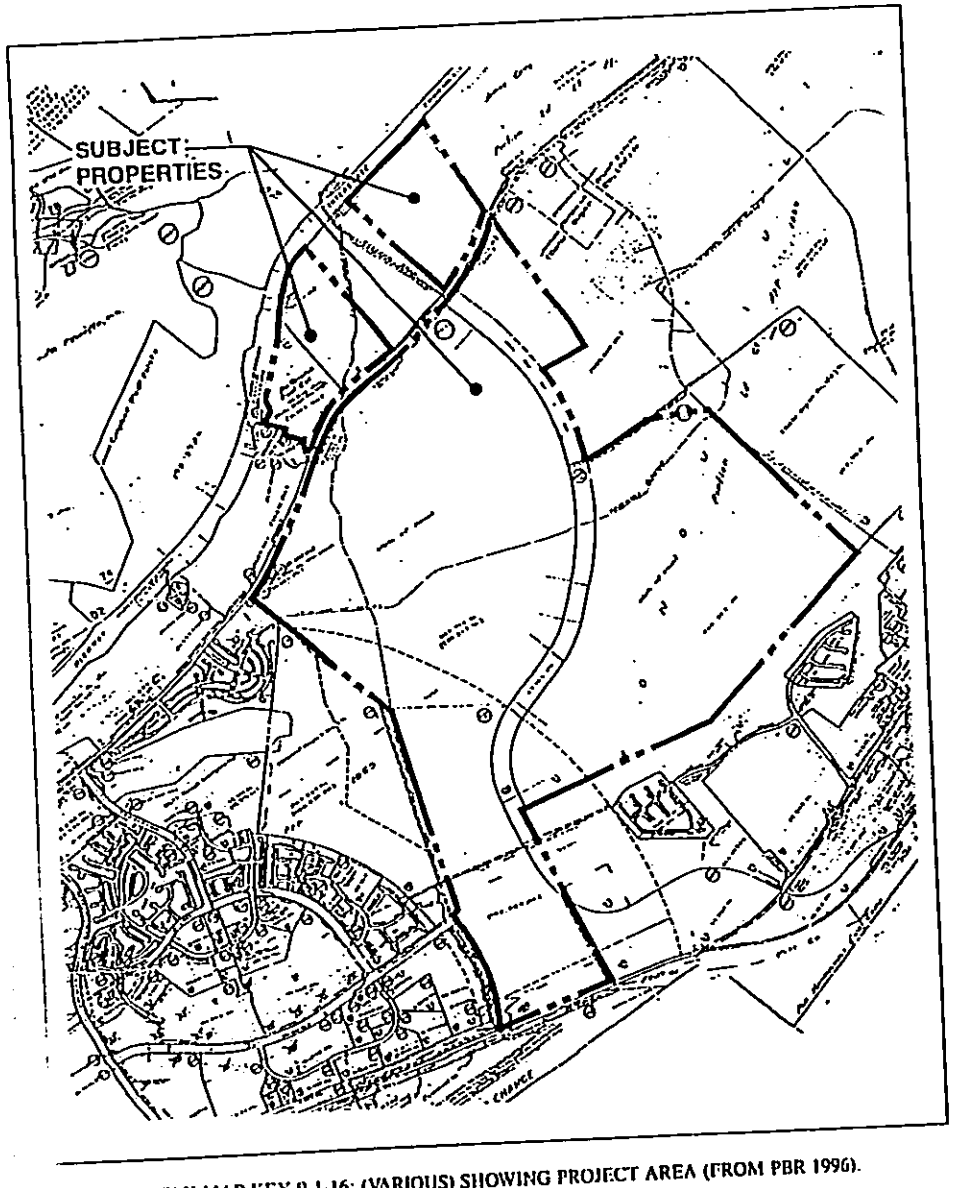

FIGURE 2: TAX MAP KEY 9-1-16: (VARIOUS) SHOWING PROJECT AREA (FROM PBR 1996).

FIGURE 3: GENERAL PROJECT AREA VIEW WITH HUNEHUNE GULCH IN THE DISTANCE. VIEW TO SOUTH.

FIGURE 4: GENERAL PROJECT AREA VIEW ALONG KALOI GULCH. VIEW TO SOUTHWEST.

ATTACHMENT A

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU HAWAII 96813

41712

August 4, 1994

MEMORANDUM

LOG NO: 12362
DOC NO: 9408ED01

TO Dean Uchida
Hawaii Agricultural and Rural Development Program (HARRP)

FROM Don Hibbard, Administrator
Historic Preservation Division

SUBJECT State Lands at Kapolei, Reclassification from Agriculture to Urban
Honouliuli, 'Ewa, O'ahu
TMK: 9-1-16: por. 25; 9-1-17: por. 4

A review of our records shows that there are no known historic sites on these 1,300 acres of state lands. These lands were used for commercial sugar cane cultivation for many years and this would have destroyed any historic sites that might have been present. We believe that reclassification of these lands and their future development will have "no effect" on historic sites.

HD:jk

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